thermokon®

HOME OF SENSOR TECHNOLOGY

MADE IN GERMANY

PRODUCTS

VALID FROM 1ST MAY 2020

THE EFFECTIVE SENSOR MANUFACTURER FROM GERMANY

USE

SR06 LCD

JOY

NOVOS 7

THE NEW ROOM SERIES BY THERMOKON®

The new Room Sensors and
Operating Units by Thermokon®

New Company Headquarters
since January 1, 2014

SMD Assembly Line

Former Company Headquarters
in Mittenaar-Bicken

THERMOKON AT A GLANCE

» 2020

2020	**Launch** of the high-end touch room operating unit thanos EVO
2019	**Launch** of the new room sensors and operating units – **NOVOS**
2017	**Company Anniversary** 30 Years Thermokon Sensortechnik GmbH
2016	**Premiere** of the new and innovative enclosure „USE"
2015	**Launch** of the new design room operating unit „JOY"
2015	**Investment** into a new SMD assembly line
2015	**Establishing** Thermokon Sensor Technology Nederland B.V., Netherlands
2014	**Establishing** Thermokon Norge AS, Norway
2013	**New Company Headquarters** in Mittenaar-Offenbach
2013	**Establishing** Thermokon Americas LP, USA
2013	**Establishing** Thermokon Sensortechnik Switzerland AG
2012	**A reason to celebrate:** 25 Years Thermokon Sensortechnik GmbH
2011	**Establishing** Thermokon Automation Equipment Co. Ltd., China
2011	**Launch of the** high-end touch room operating unit thanos

» 2010

|	
2009	**Extension** of the product portfolio to sensors with BACnet interface
2007	**Further extension** of the company building by 600 m^2
2005	**Launch** of the design room operating unit WRF08
2005	**Extension** of the product portfolio to sensors with Modbus interface
2004	**Launch** of the innovative wireless sensor system EasySens®
2002	**Launch** of the surface mounted room operating unit WRF04
2002	**Establishing** Thermokon-Danelko Elektronik AB, Sweden
2002	**Anniversary** 15 Years Thermokon Sensortechnik GmbH
2000	**Further extension** of the company building to 2.000 m^2

» 2000

1998	**Establishing** Thermokon Components GmbH, Austria
1997	**Extension** of the company building in in Mittenaar-Bicken
1995	**First production** of humidity sensors
1995	**Extension** of the product portfolio to sensors with LON interface
1995	**First production** of mixed gas and brightness sensors
1995	**Launch** of a quality management system according to DIN EN ISO 9001
1994	**New company building** in Mittenaar-Bicken

» 1990

1987	**Development and production** of temperature sensors for the heating industry
1987	**Company foundation** of Thermokon Sensortechnik GmbH by Harald Zygan

HOME OF SENSOR TECHNOLOGY
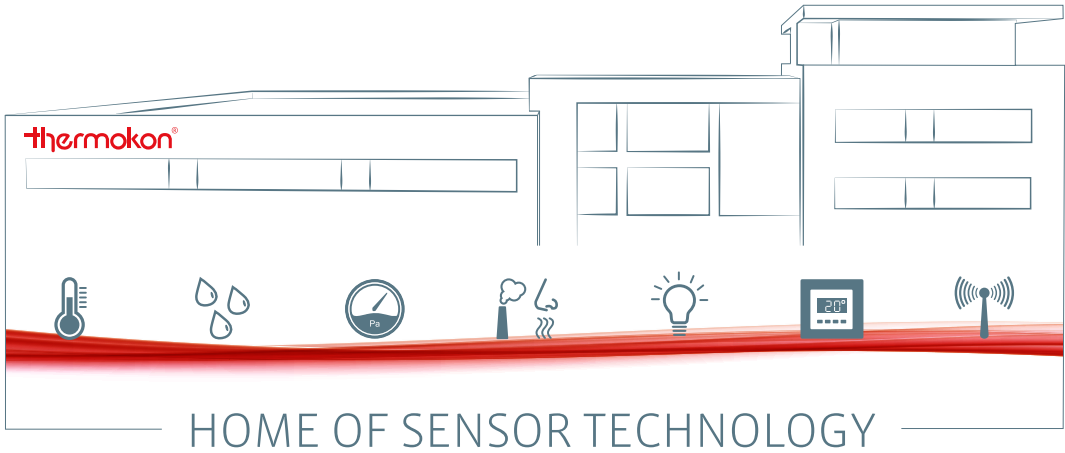
FROM A SINGLE PRODUCT TO A SYSTEM SOLUTION

» ENERGY-EFFICIENT HIGH-TECH PRODUCTS

What started with the foundation of Thermokon Sensor-technik GmbH by Harald Zygan in 1987 has evolved to a success story quickly: The initial specialization on temperature sensors for the boiler industry was soon followed by an extension of the portfolio to sensor solutions for the detection of relative humidity, air quality and brightness. Those products laid the foundation for energy-efficient products within our systems and solutions.

Nowadays, we are contributing actively to the sustainability of buildings as well as the reduction of CO_2 emissions. When developing our high-tech products we pay especially attention to a lean and plug & play design so that our systems are "easy to install". Of course, a time and cost-saving configuration is considered as well.

» CONTINUOUS GROWTH

Our growth to a Global Player involves a consequent optimization of our headquarters and included a new building in Mittenaar-Bicken in 1994. This building was continuously extended in the following years. In 2014 we moved our headquarters to a new location in Mittenaar-Offenbach.

A generous construction, latest technologies and ideal production conditions give us the flexibility and creativity for the development and production of advanced sensor solutions.

MADE IN GERMANY

Table of Contents

EasySens® – Transmitter

Room operating units

Temperature

Humidity

Air quality

Light & Motion

Input modules

Window-/door contacts

thermokon®

Table of Contents

📟 Room Operating Units/Controller

🌡 Temperature

Humidity

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Power Thyristors

Accessories / Information

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INTEROPERABLE SYSTEM INTEGRATION

Intelligent building technology requires a communication between all components. When developing new solutions we take care that our products are compatible with all common BUS systems so to enable an easy interoperable system integration

Modbus
Since its development in the year 1979 the Modbus protocol had become a standard in the industrial communication and plays an important role as an application protocol for data transmission. As the Modbus TCP type, it had significantly advanced the Ethernet communication in the automation. The combination of manufacturer independent data visualization via Modbus and the universal network standard TCP/IP and the Ethernet enable the open exchange of process data.

BACnet
The communication protocol BACnet, which is independent of manufacturers, is especially designed for applications in the building automation. The objective of BACnet is the allocation of uniform, non-committed standards for data communication. In Europe BACnet is represented by the BACnet Interest Group Europe (BIG-EU), the industrial association for the use of global BACnet standards according to ISO 16484-5. BACnet distinguishes itself by high transfer rates.

LON
The idea of LON technology (Local Operating Network), a worldwide standardized communication and automation protocol, is the interoperability, a high application width and a comprehensive possibility of field applications enabling the realization of global building automation solutions. Data transmission is made directly from device to device. A central control system is not required.

COMPATIBILITY IS THE ASSET

KNX

The KNX technology has established well as a worldwide standard for all applications in the field of home and building system technology – from energy management, HVAC applications or security systems via lighting and shutter control up to the operation of household appliances and audio/video solutions. KNX is based on the installation tool ETS which is independent of manufacturers and products. ETS is equipped with a full set of transmission media as well as a configuration mode enabling an overall use.

digitalSTROM

digitalSTROM networks all electrical devices in a household via the existing circuit lines and enables a new dimension of living comfort.From individual light changes up to more energy efficiency and security at home, there is almost nothing that cannot be easily and comfortably be controlled and automated with digitalSTROM. All necessary components can be mounted everywhere fast and clean. All applications can be controlled via switch or virtually via PC and smart phone. digitalSTROM is the future of your current – but can be used today already.

EasySens®

The use of innovative technology makes it possible: The wireless EnOcean based system EasySens® enables a networked building automation – self-powered, intelligent and maintenance-free. Thus, EasySens® offers best possible flexibility for realizing individual requirements in new buildings and refurbishments.

OUR EXPERTISE –
YOUR SUCCESS

For more than 30 years, THERMOKON is recognized worldwide for leveraging standards in intelligent buildings with engineering, innovation and quality "Made in Germany". Thanks to the development and production of sophisticaed sensors and sensor systems we are creating an additional benefit for our customers all over the world. We focus on efficiency, sustainability and openness to new fields of technology as well as a close cooperation and thorough dialogue with our clients.

As a leader for innovation with a broad scope of applications we are continuously developing our portfolio further and offer decisive benefits with regards to product-related values, customized solutions and engineering. Our complete range of products is designed to energy-efficient buildings striving for an "A" classification according to DIN EN 15232.

APPLICATION KNOW-HOW

CORE COMPETENCE: SENSORS
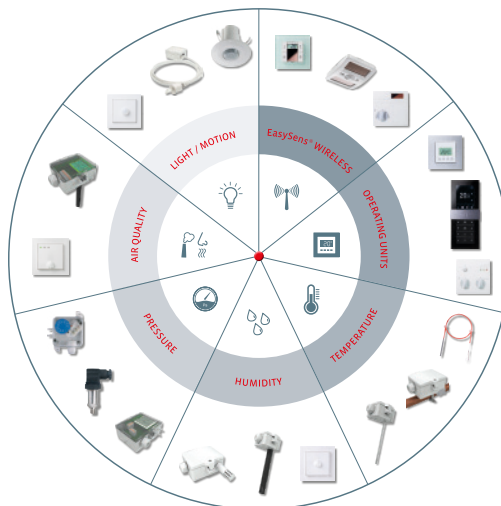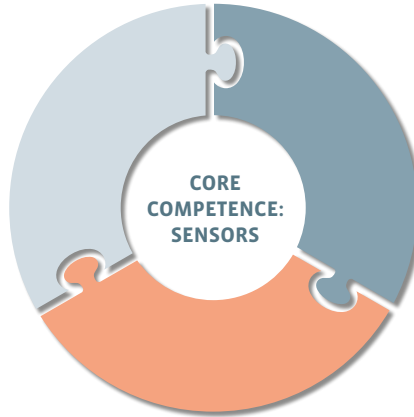
PROCESS KNOW-HOW

TECHNOLOGY KNOW-HOW

QUALIFIED, RELIABLE, EFFICIENT

As the "Home of Sensor Technology" for building automation and HVAC Thermokon offers the essential knowledge to combine quality with efficiency to create customers' benefit by innovative solutions. Your success is guaranteed by our expertise. Thanks to well-engineered and high-grade products, a 5-year warranty with accommodating exceptions and proactive initiation of new innovations, you can rely on us at any time.

Efficiency is an additional strength. We offer an excellent cost-performance ratio which pays off in terms of quality and service. Comprehensive sensor solutions are offered from a single source.

» APPLICATION KNOW-HOW

We know and understand your applications – thus we consult and act goal-oriented.

» TECHNOLOGY KNOW-HOW

We have the necessary technology know-how to offer customized products and service.

» PROCESS KNOW-HOW

We anticipate your processes and make them more lean and efficient, enabling you to save time and money.

Worldwide Subsidiaries and Distributors

FROM MITTENAAR
ACROSS THE GLOBE

» GLOBAL PLAYER WITH
REGIONAL ROOTS

Trend-setting sensors and sensor systems are developed
and produced at our headquarters in Mittenaar-Offen-
bach with currently 200 employees. Besides our core
values – safety, openness to new technologies and sus-
tainability as well as our daily motivation striving for
excellence in sensors, we established an own R&D de-
partment, an in-house test laboratory, a climatic cham-
ber as well as an own SMD assembly line for our PCBs.

In addition, our finished goods warehouse ensures our
delivery ability at any time. The responsible handling of
resources in all corporate sectors is self-evident.

» REPRESENTED IN MORE
THAN 80 COUNTRIES

Our clients are manufacturers, system integrators, cont-
roller companies and strategic distributors in the HVAC
industry and building automation. Our products and
systems are exported all over the world.

A local support and presence is guaranteed by branches
in Austria, Sweden, China, Switzerland, Finland and the
the Netherlands as well as a sales agency in Russia. Due
to a complementary cooperation with distributors in
many parts of the world our product portfolio is availa-
ble in more than 80 countries.

thermokon®

NOVOS

THE NEW ROOM SERIES BY THERMOKON®

The uniform design of the "NOVOS" series with various configuration options and the smart enclosure, which is especially targeting design-oriented applications, underlines that NOVOS meets highest customer demands.

The flat fingerprint insensitive cover offers possibilities to adopt the wall design by choosing a custom coloured cover film.

The portfolio of room units and sensors can be applied to various applications for modern building automation by detecting temperature, humidity, CO_2 or VOC gases to control room air conditioning, brightness and shading.

NOVOS Touch

NOVOS 7

AVAILABLE TYPES

» NOVOS Touch

» Controlling room climate, lights and shutters

» Individually configurable scenes

» Up to four integrated sensors
   (temperature, relative humidity, CO2 and VOC)

» Clear visualization of values with trends and
   traffic light indication (TLF)

» 4,8" Touchscreen, glass surface

» Different enclosure colours available:
   (white, black, aluminium)

» Outputs:
   BACnet, RS485 Modbus, KNX*

» NOVOS 7

» Controlling room climate, lights and shutters

» Individually configurable scenes

» Up to four integrated sensors
   (temperature, relative humidity, CO2 and VOC)

» Clear visualization of values with trends and traffic
   light indication

» 3,5" TFT display, push-and-rotary switch,
   four user defined buttons

» Different enclosure colours available
   (white, black, aluminium)

» Outputs:
   BACnet, RS485 Modbus, KNX*

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NOVOS 5 x Design	NOVOS 3 x	NOVOS 5 Design	NOVOS 3

» NOVOS 5 x / 3 x

» Up to four integrated sensors
(temperature, relative humidity, CO2 and VOC)

» Outputs:
Passive, 0..10 V, 4..20 mA, BACnet, RS485 Modbus, KNX*

» Setpoint adjuster, rotary switch
and button with integrated RGB LED

» NOVOS 3 x:
Available with EasySens® radio

» Different enclosure colours available
(white, black, aluminium)

» Optionally available with RGB display and/or design
cover (aluminium or black)

» NOVOS 5 / 3

» Measuring of:
Temperature, relative humidity, CO2 or VOC

» Outputs:
Passive, 0..10 V, 4..20 mA, BACnet, RS485 Modbus, KNX*

» NOVOS 3:
Available with EasySens® radio

» Different enclosure colours available
(white, black, aluminium)

» Optionally available with RGB display and/or design
cover (aluminium or black)

passive | 0..10 V | 4..20 mA   BACnet   Modbus   KNX

» Discover NOVOS online!
novos.thermokon.com

* available in 2021

NOVOS Touch

Thanks to the high-resolution 4,8" touch screen and its precious glass surface, "NOVOS Touch" is the highlight among the new room operating units of Thermokon. The intuitive smartphone-like touch interface is easy to operate and provides status messages in the display as well as a dashboard to view all values in one.

Moreover, "NOVOS Touch" provides up to four integrated sensors, that enable the simultaneous detection of temperature, humidity, CO_2 and VOC.

The control of blinds is comfortable by simple up/down commands, venetian blind adjustments or precise blind positions by slider elements.

In addition to numerical values the range of value can be indicated by traffic light function. Furthermore, floor plans can be uploaded to easily control peripherals. The RS485 Modbus interface is perfectly enhancing the capabilities of the new NOVOS Touch.

» ADVANTAGES AND HIGHLIGHTS

» Intuitive and comfortable user interface to control room climate, lighting and shading

» Individual scenes can be defined and called

» Integration of up to four sensors in one device (temperature, relative humidity, CO_2 and VOC)

» ECO mode for an energy-efficient room control

» Clear visualization of values with trends and traffic light indication

» High-resolution 4,8" Touch screen with a real glass surface

» Digital input for external devices/sensors

» BACnet or RS485 Modbus interface

ASHRAE BACnet   Modbus

novos
Touch

09|38
12 | Sep 2028

21,4 °C   23,0 °C

original size

NOVOS 7

» GENERAL INFORMATION

A majority of the features integrated in the NOVOS Touch are also available for the NOVOS 7 – the second landmark room unit within the NOVOS family.

The powerful room unit with a 3,5" TFT display impresses with an easy-to-navigate user interface by means of a push-and-rotary switch. In addition four configurable touch buttons allow quick access of frequently used functions or scenes.

» ADVANTAGES AND HIGHLIGHTS

» Intuitive and comfortable user interface to control room climate, lighting and shading

» Individual scenes can be defined and called

» Integration of up to four sensors in one device (temperature, relative humidity, CO_2 and VOC)

» Clear visualization of values with trends and traffic light indication

» Push-and-rotary switch for an intuitive menu navigation

» Four configurable touch buttons

» High-quality 3,5" TFT display

» BACnet or RS485 Modbus interface

noVos 7

09|38
12 Sep 2028

🌡 21,4 °C

🌡Set 18,5 °C

original size

NOVOS 5 x / 3 x

» GENERAL INFORMATION

Room units with a neat design and haptics. Main functionalities required in the efficient building automation are available by means of temperature setpoint adjustment, rotary switch for fan stage adjustment and presence button with an integrated RGB LED for status indication.

The optional RGB display offers a better visualization of measured values and indicate the status in case values have exceeded a defined threshold. All devices are available either with a passive output, 0..10 V signals, 4..20 mA live-zero signals or a Modbus interface.

Further, all NOVOS products can be customized by means of a design cover (aluminium or black) and complement the numerous possibilities with NOVOS 5 x and NOVOS 3 x.

» ADVANTAGES AND HIGHLIGHTS

» Integrated temperature sensor

» Outputs:
  Passive, 0..10 V, 4..20 mA, BACnet or RS485 Modbus

» **NOVOS 5 x:**
  Setpoint adjuster, rotary switch and integrated LED-button, optionally equipped with an RGB display

» **NOVOS 3 x:**
  Setpoint adjuster and integrated LED button

» Optionally available with design cover (aluminium or black)

passive | 0..10 V | 4..20 mA

ASHRAE **BACnet**   **Modbus**

novos

5 x / 3 x

thermokon®

Temp (°C)

21.5

A

NOVOS 5 / 3

» GENERAL INFORMATION

NOVOS 5 and NOVOS 3 complement the new room unit series for a reliable and precise measurement of all values required for an efficient room automation. Sensors available for the NOVOS family comprise temperature, relative humdity, CO2 and VOC.

By means of the optional RGB display, the NOVOS 5 can provide an immediate indication in case thresholds have been exceeded as well as displaying status messages. The NOVOS 3 is able to indicate threshold exceedance by changing colours (red, yellow, green) in the LED button (RGB) for example for monitoring CO2 or VOC levels.

Based on individual preferences, the NOVOS family can be customized with different design films and specified with common signals such as RTDs, 0..10 V or 4..20 mA signals as well as an RS485 Modbus interface.

» ADVANTAGES AND HIGHLIGHTS

» Different versions available for measuring temperature, relative humidity, CO2 and VOC

» Outputs:
Passive, 0..10 V, 4..20 mA, BACnet or RS485 Modbus

» Freely configurable threshold values via Modbus or NOVOSapp

» **NOVOS 5**:
RGB display with traffic light indication for status feedback

» **NOVOS 3**:
Optionally available with traffic light indication via RGB LED for types with CO2 and VOC

» Optionally available with design film (aluminium or black)

passive | 0..10 V | 4..20 mA

ASHRAE **BACnet**   **Modbus**

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novos
5 / 3

CO2 (ppm) 540 VOC (%) 23
rH (%) 45 Temp (°C)

NOVOSapp

» GENERAL INFORMATION

Although every NOVOS will come with a standard configuration that matches the majority of typical applications in room automation, the devices can be further customized with an individual configuration to suit also complex applications by means of the new NOVOSapp, which also simplifies the integration.

Additionally, each device can be customized post-integration to further extend the functionality to suit new requirements – from changing measuring ranges to setting maintenance intervals, adjustment of offset values or adjusting thresholds for the traffic light indication.

The communication between the NOVOS devices and a mobile end device is enabled by a Bluetooth dongle, that is connected temporarily to the device.

» FUNCTIONS

» Individual configuration of output signals

» Adjustment of display features and values

» Parameterizing the traffic light indication for sensor values and thresholds

» Setting individual measuring ranges and maintenance intervals

» Parameterization of live-zero signals (e.g. 1..10 V etc.)

» Subsequent setting of offset values to compensate external temperature influencing factors

» Communication via Bluetooth® Low-Energy module (pluggable, compatible with USE devices as well)

» Modbus address offset (extendable up to 247 addresses)

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NOVOS – TECHNICAL HIGHLIGHTS
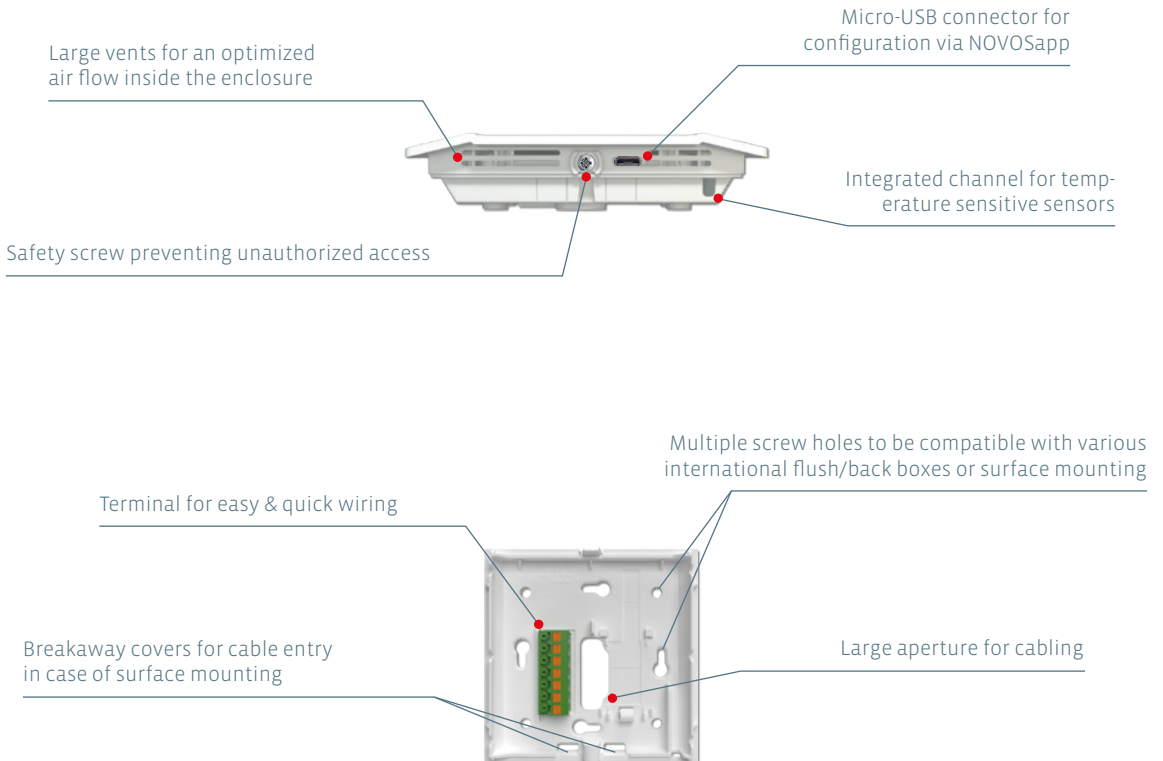
NOVOS

THE NEW ROOM SERIES BY THERMOKON®

Large vents for an optimized
air flow inside the enclosure

Micro-USB connector for
configuration via NOVOSapp

Safety screw preventing unauthorized access

Integrated channel for temp-
erature sensitive sensors

Terminal for easy & quick wiring

Multiple screw holes to be compatible with various
international flush/back boxes or surface mounting

Breakaway covers for cable entry
in case of surface mounting

Large aperture for cabling

EasySens® – THE SELF-POWERED INTELLIGENT WIRELESS SYSTEM

The use of innovative technology makes it possible: The wireless EnOcean based system EasySens® enables a networked building automation – self-powered, intelligent and maintenance-free. Thus, EasySens® offers best possible flexibility for realizing individual requirements in new buildings and refurbishments.

» THE BENEFITS

- » Cost saving thanks to Energy Harvesting
- » Flexibility with sensor location – quick and easy mounting and commissioning
- » Easy, wireless integration in existing buildings as well as retrofit adaptions to changed room layouts
- » Reduction of fire load
- » Direct mounting to representative measuring points
- » Compatibility and interoperability with different manufacturers by using international standards (IEC 14543-3-10)

» SELF-POWERED

Thanks to EasySens® wired power supplies and the change of batteries are things of the past. The Energy Harvesting technology enables a self-powered operation of products.

» Energy is extracted by using integrated solar cells and kinetic energy of the sensor environment.

» INTELLIGENT

Using the approved international frequencies, EasySens® based transmitters and receivers communicate autonomously in the building automation.

- » Status synchronization and triggering of different control commands based on defined parameters
- » Bidirectional communication of self-powered devices by means of SmartACKNOWLEDGE

» WIRELESS

Thanks to EasySens® variable room layouts, reconstructions during running hotel operation or renovations in heritage-protected buildings are pretty simple.

- » No time-consuming works – no wiring
- » Low costs of material enabling cost-effective system solutions

EasySens®

The Self-Powered, Intelligent Wireless System

SYSTEM OVERVIEW

TRANSMITTERS

RECEIVERS
(TRANSCEIVER)

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airConfig airScan

TOOLBOX

INTEROPERABLE
SYSTEM INTEGRATION

ASHRAE BACnet   digitalSTROM   ETHERNET

KNX®   LON
LOCAL OPERATING NETWORK   Modbus

airConfig –
COMMISSIONING MADE EASY!

The use of EnOcean RF telegrams and the airScan USB transceiver make it possible: airConfig enables comfortable parameterization of your EasySens® devices by means of special remote commissioning commands.

No more direct interaction and tiresome accessing of devices in buildings. Benefit by a significant time-saving. Thus, the communication of your devices is guaranteed.

» COMFORT INCLUSIVE: INSTALLATION + CONFIGURATION

- » Individual designation of sensors
- » Configuration of measured values (EEP) and sensor parameters
- » Learning-in of sensors by means of Drag & Drop via RF (Remote Management)
- » Saving of time (configuration via Copy&Paste)
- » Remote access to product and project information

» THE BENEFITS

- » Simple seamlessly learning-in, configuration and deletion of devices via RF technology
- » Adjustment of configuration parameters – e.g. waking-up cycles or measuring ranges – in the device settings
- » Saving of configuration parameters
- » Transparent and central availability system information
- » Uncomplicated handling of maintenance and support works

» FLEXIBILITY AND SAFETY

- » Structured product presentation thanks to device ID
- » Change of product configurations even at inaccessible mounting places
- » Change of specifications and parameterization on-site or via remote access
- » Password protected configuration of actuators
- » Identification via visual and acoustic feedback

airScan –
MEASURING AND MONITORING

airScan

You would like to plan and realize EasySens projects simply? Then airScan, the field strength measuring instrument of Thermokon, is the right tool for you: The traffic light indication (RSSI) displays the signal strengths received and shows reliably the optimal mounting place for transmitters and receivers.

Even in daily use the work with airScan cannot be easier. On the well-structured surface all telegrams received are clearly listed and allocated to the corresponding product.

» THE BENEFITS

- » Find the best location for your device
- » Monitoring function for easy evaluation of RF telegrams
- » Logging, repeater function and possibility of remote maintenance
- » Data export for further process/analysis in CSV-, XML- or XLS data formats
- » Generation and transmission of EnOcean telegrams
- » Status detection of product ID, field strength and manufacturers of integrated products
- » Full support of EEP2.6.3. standards

» GENERATION OF TELEGRAMS – EASY, FLEXIBLE, UNCOMPLICATED

- » Taking-over of desired EnOcean profile from a pre-defined EEP selection
- » Definition of telegram content via input fields
- » Easy and fast generation and transmission of telegrams

» CLEAR VISUAL STRUCTURE

- » Translation of various available measuring values
- » Reliable information on signal quality or RSSI value of telegrams by colour indicator (traffic light system) or graphs

» PROFESSIONAL MULTI-PURPOSE EVALUATION

- » Detailed evaluation of telegrams (data bytes, RSSI value, sub-telegrams etc.)
- » Decoding of measuring values
- » Background saving of received telegrams
- » Possibility of data export as well as automated forwarding to a FTP server or an e-mail account

SmartACKNOWLEDGE –
BIDIRECTIONALITY IS SMART

By means of SmartACKNOWLEDGE EnOcean based self-powered devices can communicate bidirectionally. They are transmitting the measuring values detected to the building control technology in regularly intervals. In addition to the important status information, the display indicates a centrally controlled reset to default set points. There is no smarter way.

For example our bidirectional room operating units SR06 LCD: In regular intervals the device wakes-up from its sleeping mode and transmits its data and measuring values to a bidirectional receiver or a gateway within some miliseconds. Milliseconds later, SR06 LCD is waking-up again and sends a so-called reclaim telegram to signalize its readiness for receiving. Now, the gateway can transmit the ready data and information to the operating unit.

» THE BENEFITS
» Comfortable solution for the bidirectional communication of room operating units and building control technology
» User guidance by means of clear display hints (e.g. information about opened windows)
» Increase of energy efficiency enabled by the possibility to restore the defined basic set points
» Self-powered operation via solar cell

Please note:
» The use of repeaters is not feasible with SmartACK-NOWLEDGE as the signal running time is delayed indefinitely.
» Most of Thermokon gateways are capable of SmartACKNOWLEDGE. Latest information can be obtained by your personal contact.

① Data

② Reclaim telegram (approx. 80 ms)

③ Immediate response (max. 3 ms)

ENERGY HARVESTING –
RESOURCE FRIENDLY AND MOST FLEXIBLE

Thanks to Energy Harvesting your sensors are not powered by socket outlet but is gained directly from the sensors themselves, either by an integrated solar cell or by the use of movement as a natural energy source – e.g. upon actuation of operating elements.

Thus, your sensors are self-powered and can be freely placed in a room. No batteries are needed at all. The resources gained are used skillfully and economically so that a long lifetime of the sensors is guaranteed.

At present, the products of the following fields are available as battery- and wireless sensors:

» Temperatur sensors
» Humidity sensors
» Light and motion sensors
» Window contacts and handles
» Switches for light and blind

EnOcean ALLIANCE

Almost 40% of the total energy requirements is needed by houses and buildings. This fact can be changed by means of the EnOcean based technology.

More than 300 worldwide leading companies of the building control technology formed the EnOcean Alliance in 2008 with the target to establish the battery- and wireless technology for flexible and maintenance-free sensor solutions in residential, commercial and industrial properties to get sustainable buildings. New standards shall be set by the creation of interoperable system solutions.

As a founder member we support the further development of a wide range of fully compatible and wireless products enabling the monitoring and control of home and building technology so to ensure the future of this innovative sensor technology.

Worldwide, EnOcean is the first and major ISO/IEC RF standard which optimizes solutions with a significant low energy consumption and energy harvesting.

USE „S"

THE **USE** FAMILY FOR EASY AND FAST MOUNTING

» THE ENCLOSURE FOR MOUNTING EFFICIENCY

The innovative enclosures of the **USE** family are setting new standards: Mounting of sensors is easier, faster and more comfortable than ever before. **USE** makes the decisive difference.

UNIVERSALLY MOUNTABLE

SAVING TIME

EASY TO INSTALL

» UNIVERSAL MOUNTING

USE – an intelligent and flexible mounting solution - no matter if for temperature, humidity, air quality or pressure sensors: the **USE** devices enable various mounting methods: with clip, base, flange or even on a DIN rail.

For best possible application flexibility the enclosures of the **USE** family have various modular inserts and cable glands as well as corresponding changeable sealing inserts.

» become a **USE**R | The **Thermokon**® USE Family

thermokon®

USE „M"

USE „L"
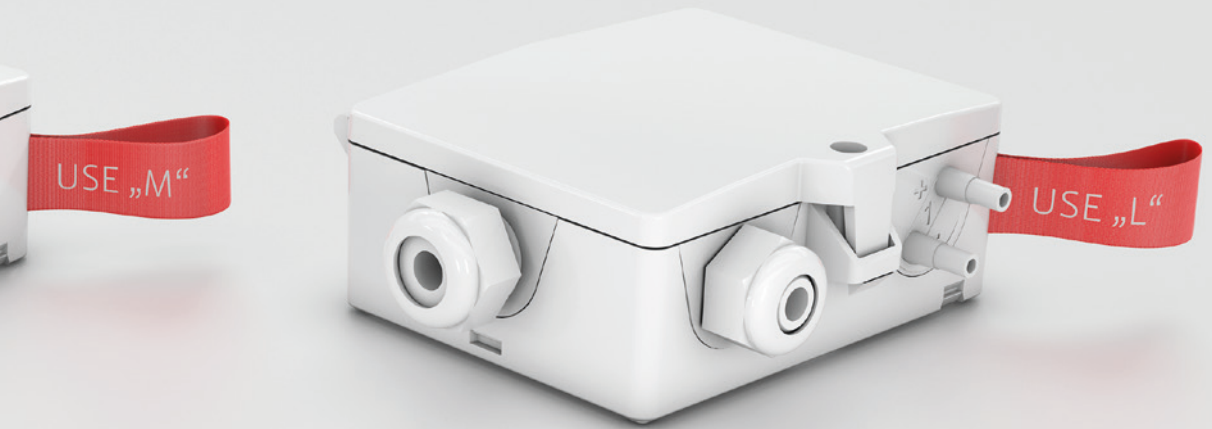
UNIVERSALLY MOUNTABLE

» Intelligent and flexible mounting solutions for temperature, humidity, air quality, pressure sensors and others

» Various modular inserts and cable glands (M16, M20, M25) as well as different changeable sealing inserts for different cable cross-sections

SAVING OF TIME
(up to 50% less installation time*)

» No tools needed for opening, closing or wiring

» High mounting flexibility

» Removable cable glands

EASY TO INSTALL

» Hinged-over (captive) with quick release fastener

» Fast connection thanks to removable terminal clamps

» Pre-assembly possible

*compared to the pre-assembly of previous enclosure types

thermokon®
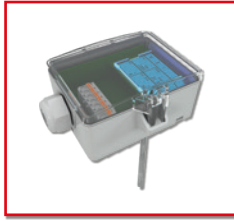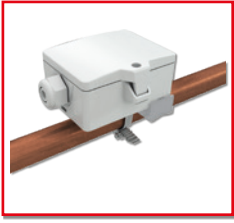
THE 8 BENEFITS OF THE **USE** FAMILY

» (1) HIGH-RESOLUTION COLOURED DISPLAY

» Easy to read Matrix-LCD
» Displaying up to 4 Sensor Values simultaneously, individual selection
» Status indicaton (maintenance, failure etc.)
» Status-dependent RGB background illumination (red, green, blue, white)
» Dimmable luminosity
» Horizontal or vertical display possible
» Configurable via "**USE**app"
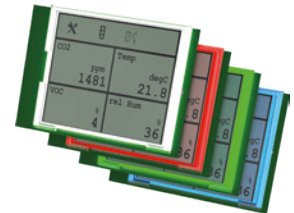
» (2) APPLICATION-SPECIFIC, EXCHANGEABLE INSERTS AND CABLE GLANDS

» Cable glands Flextherm M20 (Ø=4,5..9 mm), M25
» Differential pressure entries: 2-fold, 4-fold (for 2 measurements)
» Blind cover for EasySens® wireless applications
» Multiple sealing inserts for different cables and cable diameters

thermokon®

» (3) VISUALIZATION OF DEVICE STATUS AND MEASURED VALUES USING TRAFFIC LIGHT FUNCTION (TLF)

» Predefined measuring ranges and devices status are indicated
  using different background illumination
» Individual configuration possible using the "**USE**app"
  (only in case standard configuration is not suitable)
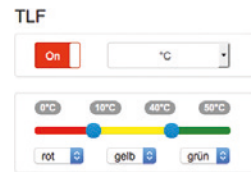
» (4) MODULAR PLATFORM CONSISTING OF BASE AND OPTION PCBs

By means of the base PCB, the **USE** family offers multiple option PCBs to extend
functionality of every device in order to customize to specific applications e.g.
- Display/traffic light function (TLF)
- 4..20 mA (with/without display)
- BUS systems (with/without display)
- Relay (with/without display)
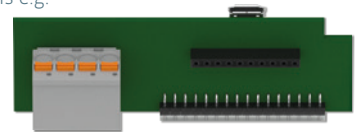
» (5) THRESHOLD SWITCHES

» Two relays (5A) to switch in case of exceeding/falling below predefined threshold values
» Protection mechanism to remain below set limit values
» Individual configuration possible using the "**USE**app"

LON
LOCAL OPERATING NETWORK

BACnet ASHRAE

Modbus
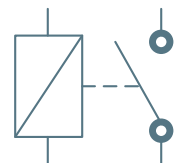
ALWAYS THE BEST SOLUTION

» (**6**) LIVE ZERO SIGNAL (0..5 V, 1..5 V, 0..10 V, 1..10 V, 2..10 V)

» Increase in system reliability by means of quick detection of failures
   and drop-outs.(e.g. defective cables)
» The value „zero" (0 V) will not be read as a normed signal
   (e.g. 1..10 V for 0..50 °C)
» Configuration via "**USE**app" possible

» (**7**) BUS COMPATIBILITY

» All products in **USE** M and **USE** L enclosures
   are compatible with **Modbus**, **BACnet** and **LON (NEW)**
» Strainless BUS-settings via Dip-switches possible
» Modbus-Address extension using "**USE** app"
» Indication of Modbus-Address in the LCD
» Separated cable glands for BUS communication

Modbus

BACnet ASHRAE

LON
LOCAL OPERATING NETWORK

NEW

» (**8**) OUTPUT SIGNALS 0..10 V AND 4..20 mA

» Adaptation of output signals to DDC inputs
» All products in the **USE** M and **USE** L enclosure offer
   default 0..10 V outputs
» All types V and VV are also available with 4..20 mA outputs (A / AA)

THERMOKON® USEapp –
FOR INDIVIDUAL CONFIGURATION

» HIGHLIGHTS AND FEATURES

- » Communication via Bluetooth® Low-Energy-Module (BLE)
- » For use on mobile terminals (Android and iOS)
- » Individual configuration of output signals
- » Setting of different measuring ranges

- » Additional adjustment of offset values
- » Parameterization of Live-Zero-Signal (1...10 V etc.)
- » Setting options for display indications
- » Customized parameterization of traffic-light function (TLF)

- » Setting of relay performance and thresholds
- » Modbus address offset (extension)
- » Possibility of firmware updates on-the-go (OTG)
- » Adjustment of maintenance intervals

Thermokon® USEapp

All "**USE**app" based products are supplied with a fully functional standard configuration for direct mounting/installation. Via the "**USE**app" it is feasible to extend the range of use and to adapt the configuration individually to application requirements.

Multi-function with appealing design
JOY SR Fancoil – JOY SR HC – JOY Fancoil – JOY HC

	GENERAL				
Type	Buttons temperature	Buttons fan control	RS485 Modbus	EasySens®	Configuration via
Joy Fancoil 5DO	■	■			SD Card
Joy Fancoil 5DO RS485 Modbus	■	■	■		SD Card, BUS
Joy Fancoil EC AO2DO	■	■			SD Card
Joy Fancoil EC AO2DO RS485 Modbus	■	■	■		SD Card, BUS
Joy HC AO2DO	■				SD Card
Joy HC AO2DO RS485 Modbus	■		■		SD Card, BUS
Joy SR HC AO2DO RS485 Modbus	■		■	■	SD Card, BUS
Joy Fancoil EC 3AO	■	■			SD Card
Joy Fancoil EC 3AO RS485 Modbus	■	■	■		SD Card, BUS
Joy SR Fancoil EC 3AO RS485 Modbus	■	■	■	■	SD Card, BUS
Joy HC 3AO	■				SD Card
Joy HC 3AO RS485 Modbus	■		■		SD Card, BUS
Joy SR HC 3AO RS485 Modbus	■		■	■	SD Card, BUS

INPUTS		OUTPUTS				
Power supply	Universal (configurable)	3x digital (fan)	2x digital (heating/cooling)	1x analogue (EC fan)	1x analogue (6-way valve)	2x analogue (heating/cooling)
230 V	3x	■	■			
230 V	2x	■	■			
230 V	3x		■	■		
230 V	2x		■	■		
230 V	3x		■		■	
230 V	2x		■		■	
230 V	2x		■		■	
24 V	3x			■	■*	■
24 V	2x			■	■*	■
24 V	2x			■	■*	■
24 V	3x				■	■
24 V	2x				■	■
24 V	2x				■	■

* Instead of 2x analogue (heating/cooling)

thermokon®

KaDeWe
Berlin, Germany

European Central Bank, New Building
Frankfurt, Germany

European Patent Office
Munich, Germany

Scandic
Berlin, Germany

Fairmont Hotel Vier Jahreszeiten
Hamburg, Germany
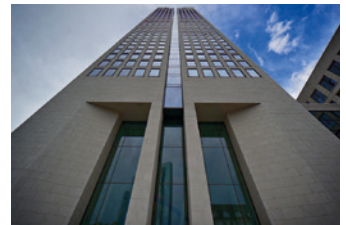
Opera Tower
Frankfurt, Germany

Waldorf Astoria
Berlin, Germany

Semperoper
Dresden, Germany

Liebfrauenkirche (Cultural Heritage)
Trier, Germany

Generali Insurance, Headquarter
Triest, Italy

Star Arctic Hotel
Saariselkä, Finland

Grand Hyatt
Dubai, UAE

thermokon®

Fondation Louis Vuitton
Paris, France

University of Oslo
Oslo, Norway

Tomson Riviera Apartment Towers
Shanghai, China

4 Towers Business Area
Madrid, Spain

Flughafen Roissy Charles de Gaulle
Paris, France

The National Gallery of Art
Washington D.C., USA
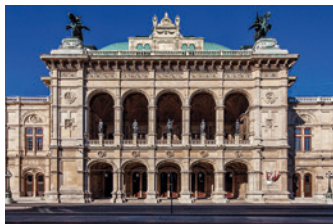
State Opera
Vienna, Austria

Ascot Racecourse
Ascot, England
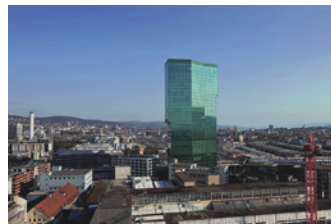
Prime Tower
Zurich, Switzerland

University of Canterbury
Christchurch, New Zealand

Changi City Point Shopping Mall
Singapore
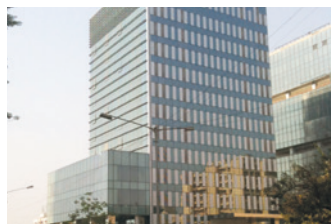
First Rand Bank,
Mumbai, India

5-YEAR WARRANTY

» LASTING RELIABILITY

Due to high quality and durability of our products we
offer a 5-year warranty from date of production for all
products produced as of 01.01.2014.

You are interested in details? Please visit:
www.thermokon.de/en/product-highlights/5-years-warranty/

SI-PROTECTION

» FOR NON-CORRODING SENSORS

If the ambient temperature fluctuates around dew-
point, condensatation might appear. For your sensors
condensate can have unpleasant consequences: Humi-
dity penetrates into the soldering point of the sensor,
the sensor oxidizes and begins to corrode. Thus, the
measuring result becomes unreliable.

SI-Protection offers you a safe protection against corro-
sion damages, vibrations and measuring inaccuracies.
The contact points of the sensors are first coated with
epoxy resin and with a casting compound afterwards.

Due to the permanent connection with the insulation
material of the wire a closed unit is established protec-
ting the sensor reliably against vibration and humidity.
This effect is additionally supported by the rolled pocket.

EasySens® Transmitter

Innovative self-powered wireless technology generates energy by means of harvesting ambient light or motion. Interoperable, cost-effective and energy-efficient solutions in building automation are available using our wireless sensor system EasySens®.

» BENEFITS

» Communication without wires and batteries
» Change possible without stopping hotel operations
» Fastest time for installation and commissioning
» Essential enhancement in comfort with max. energy saving (up to 70%)
» Reduction of fire load

1

JOY SR Fancoil / JOY SR HC

High-end room operating unit, types available for fancoil or heating/cooling applications, integrated RS485 Modbus interface

2

NOVOS 3 SR x

Surface-mounted wireless room sensor for temperature & rel. humidity Available with various control elements and features

3

SR04 CO2

Room sensor CO2/temperature/ rel. humidity Available with display and traffic light function

4

Mini

Wireless switch 2-/4-channel lighting/blinds Available in various colours

5

SR-MDS

Ceiling multi sensor for light and motion detection for room/space applications

6

SR-KCS02

Wireless switch for key card activation to regulate lighting and air-conditioning e.g. in hotel rooms

7

STC65-BUS

Gateway for evaluation of EasySens transmitters/switches and connection to the defined BUS system

ASHRAE **BACnet**

KNX

LON
LOCAL OPERATING NETWORK

Modbus

PLACE TO FEEL COMFORTABLE – YOUR HOTEL

All EasySens® devices wirelessly communicate via EnOcean radio. Temperature, set point, air quality, occupancy and switching signals are received and transmitted to superior communication protocols such as KNX, BACnet, LON or RS485 Modbus. This system ensures the possibility to reset all used automation elements to standard values.
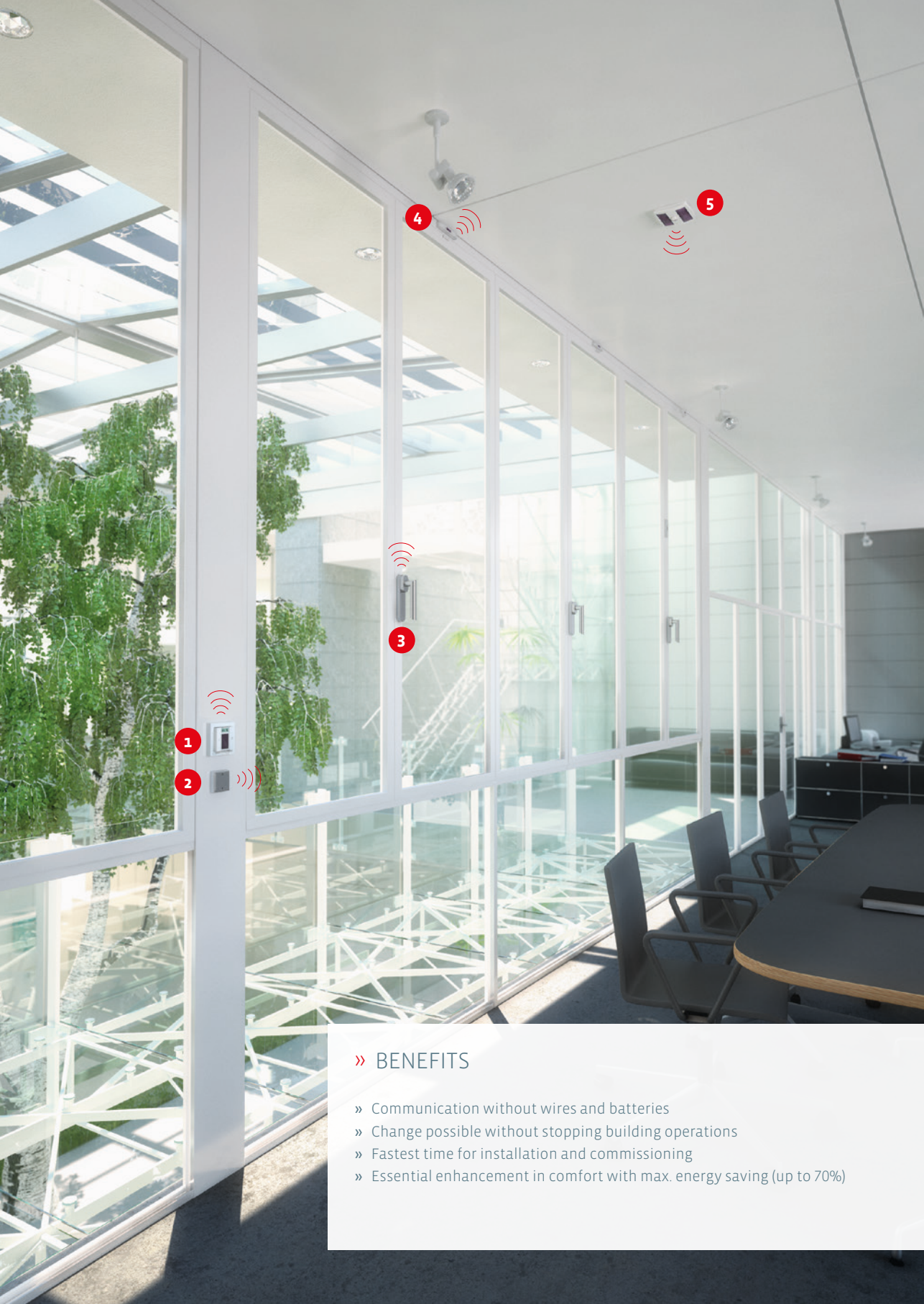
» Communication without wires and batteries
» Change possible without stopping building operations
» Fastest time for installation and commissioning
» Essential enhancement in comfort with max. energy saving (up to 70%)

SR06 LCD 2T/4T

Self powered room operation unit, for setpoint and fan stage adjustment, switch 55x55 mm of various manufacturers possible

Mini

Wireless switch 2-/4-channel lighting/blinds, available in various colours

SRG02

Wireless window handle for status monitoring, available in various colours

SRW02

Wireless window contact for status monitoring of windows and doors

SR-MDS Solar

Ceiling multi sensor detecting light and motion in space/office applications

COMFORT AT WORK

All EasySens® devices wirelessly communicate via EnOcean radio. Temperature, set point, air quality, occupancy and switching signals are received and transmitted to superior communication protocols such as KNX, BACnet, LON or RS485 Modbus. This system ensures the possibility to reset all used automation elements to standard values.

JOY SR Fancoil

The design-oriented JOY SR Fan coil with its EasySens® radio interface is used for individual temperature control and activation of fan coil units in hotels, offices and living rooms. The JOY is designed for 2- or 4-pipe systems and offers change-over functionality. Two configurable inputs can be used to account for room occupancy and energy locks. In addition to controlling hard-wired proportional valve actuators (also 6-way valves) and a 0..10 V EC fan, EasySens® radio sensors (e.g.motion, temperature, window contacts) can be integrated. An overwrite through radio is possible by using a superior controller profile or in hard-wired fashion via Modbus RS485. This ensures individual and energy-efficient room air conditioning. The device (glass front in white or black) uses a monochrome display with backlight and touch-sensitive operating keys. An integrated scheduler with three time channels, each with four different time periods, allows for optimized energy control. The JOY is fitted to be installed in a flush-mounted standard EU box. For hotel applications, the device offers the possibility to integrate an additional zone (e.g. bathroom heating) in combination with a room temperature sensor and an SAB+/SAB05 radio valve actuator.

Function overview on page 40 enocean Modbus

TECHNICAL DATA	
Measured values	temperature
Output voltage	3x 0..10 V = (to control EC fan, heating & cooling or to control 6-way control valve)
Network technology	RS485 Modbus
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 2 VA
Measuring range temp.	0..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	1x input for floating contact, 1x input for NTC10k or floating contact
Control functions	setpoint 0..+50 °C
Functions	built-in PI controller, MSG-Server for 2nd zone
Display	LCD 60x44 mm, 240x160 px, backlight cold white
Enclosure	PC, pure white, black, glass
Protection (IP)	IP30 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², inputs: terminal block, max. 1,0 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Modbus

Fan coil thermostat with radio interface temperature – RS485 Modbus 24 V		ES1
Item description	Item No.	€
JOY SR Fancoil EC 3AO RS485 Modbus white 24 V	701020	221,90
JOY SR Fancoil EC 3AO RS485 Modbus black 24 V	701037	233,90

Accessories			AS1
Item description	Item No.	On stock	€
Software/Plug-In for configuration (free via www. thermokon.com)			0,00
SD card (2 GB)	500098	⊜	11,60
Decorative frame pure white for JOY	681452	⊜	12,40
Decorative frame black for JOY	740951	⊜	12,40
Frame for surface mounting JOY, pure white with installation set	760201	⊜	24,80
Frame for surface mounting JOY, jet black with installation set	760195	⊜	24,80

JOY SR HC

The design-oriented JOY SR HC 3AO provides three 0..10 V outputs for the control of heating/cooling valves or a 6-way valve. The 230 V powered type AO2DO offers relay outputs for controlling heating and cooling valves through PWM. In addition, EasySens® radio sensors (e.g.motion, temperature, window contacts) can be integrated wirelessly. An overwrite through radio is possible by using a superior controller profile or in hard-wired fashion via Modbus RS485. This ensures individual and energy-efficient room air conditioning. The device (glass front in white or black) uses a monochrome display and touch-sensitive operating keys. An integrated scheduler with three time channels, each with four different time periods allows for optimized energy control. The JOY is fitted to be installed in a flush-mounted standard EU box. For hotel applications, the device offers the possibility to integrate an additional zone (e.g. bathroom heating) in combination with a room temperature sensor and an SAB+/SAB05 radio valve actuator.

Function overview on page 40   enocean®   Modbus

TECHNICAL DATA	
Measured values	temperature
Output voltage	types AO2DO: 0..10 V = (to control 6-way control valve), types 3AO: 3x 0..10 V = (to control 6-way control valve, heating & cooling)
Output switch contact	types AO2DO: 2x contact NO (1x heating, 1x cooling)
Network technology	RS485 Modbus
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	85..260 V ~, types 3AO: 15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 2 VA
Measuring range temp.	0..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	1x input for floating contact, 1x input for NTC10k or floating contact
Control functions	setpoint 0..+50 °C
Functions	integrated PI and two-/three-position controller, MSG-Server for 2nd zone
Display	LCD 60x44 mm, 240x160 px, backlight cold white
Enclosure	PC, pure white, black, glass
Protection (IP)	IP30 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², inputs: terminal block, max. 1,0 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Modbus

Room thermostat heating/cooling with radio interface – RS485 Modbus 85..260 V		ES1
Item description	Item No.	€
JOY SR HC AO2DO RS485 Modbus white MVolt	756914	221,90
JOY SR HC AO2DO RS485 Modbus black MVolt	756938	233,90

Modbus

Room thermostat heating/cooling with radio interface – RS485 Modbus 24 V		ES1
Item description	Item No.	€
JOY SR HC 3AO RS485 Modbus white 24 V	700993	221,90
JOY SR HC 3AO RS485 Modbus black 24 V	701006	233,90

Accessories			AS1
Item description	Item No.	On stock	€
Software/Plug-In for configuration (free via www. thermokon.com)			0,00
SD card (2 GB)	500098	⊜	11,60
Decorative frame pure white for JOY	681452	⊜	12,40
Decorative frame black for JOY	740951	⊜	12,40
Frame for surface mounting JOY, pure white with installation set	760201	⊜	24,80
Frame for surface mounting JOY, jet black with installation set	760195	⊜	24,80

SR06 LCD

Energy-harvesting wireless room operating unit with an integrated LCD for the measurement of temperature and relative humidity (rH version). Depending on the type, temperature set point, fan stages, room occupancy, lighting or blinds can be controlled using the operating buttons on the device. The device transmits its measured values to corresponding receivers or gateways, which directly process the information or - depending on the application - forward it to a BMS controller. Using the SmartACK protocol, the bidirectional communication is capable of managing a local overwrite from BMS of e.g. set point, fan stages and room occupancy. The SR06 LCD can be wirelessly parameterized by using the airConfig software or alternatively through the optional USB programming interface. Although the SR06 LCD is a self-powered device, the energy capacitor of the device can also be charged via USB interface if required. It can be integrated into almost any 55x55 mm frames, allowing you to choose from many designs and frame manufacturers. The SR06 LCD is mounted by using the adhesive pad or screws.

SR06 LCD 4T pure white brilliant,
switch range Gira E2 pure white

SR06 LCD 2T+Light aluminium,
switch range Gira E2 aluminium

SR06 LCD 2T+Blind anthracite,
switch range Gira E2 anthracite

LABELLING TYPES

Standard labelling
for model 2T
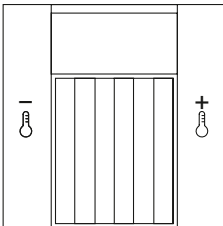
Standard labelling
for model 2T+Light
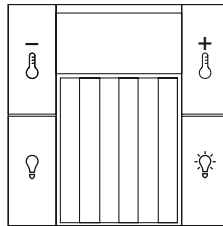
Standard labelling
for model 2T+Blind
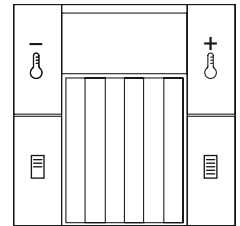
Labelling type 1 (ltype1)
for model 4T
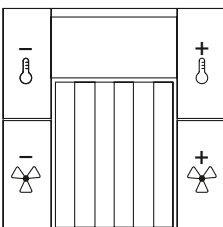
Labelling type 2 (ltype2)
for model 4T

Labelling type 3 (ltype3)
for model 4T

airConfig   SmartACK   enocean®

TECHNICAL DATA	
Measured values	temperature, humidity, depending on the device
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Data transmission	bidirectional SmartACK (SmartACKNOWLEDGE) airConfig ready
Power supply	solar cell LiPo-battery, maintenance-free optional: backup battery CR1632
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measurement interval	WakeUp time = 240 sec. (default) heartbeat cycle = every 10th wakeup optionally configurable via airConfig or SR06ConfigSW
Switch range Berker	S.1, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue *
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	A 500, AS 500, A plus, A creation
Switch range Merten	M-Smart, M-Plan, M-Pure
Control functions	occupancy signalling fan stages setpoint
No. of buttons	2T: 2 buttons, 4T: 4 buttons
Display	LCD 29x12 mm, monochrome
Setpoint range	+15..+30 °C ±1..10 °C optionally configurable via airConfig or SR06ConfigSW
Enclosure	PC, pure white brilliant, aluminium, Jung aluminium (suitable for switch ranges Jung), anthracite
Protection (IP)	IP20 according to EN 60529
Ambient condition	0..+40 °C
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	* in switch program with intermediate frame integrated coin cell backup possibility for usage in dimly lit rooms for configuration an optional programming interface is available (refer to accessories) energy storage can be recharged with a separate USB-cable to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

NEW: WITH SIGNIFICANTLY IMPROVED ENERGY BALANCE

Item description: product | humidity (rH) | number of buttons | labelling type | switch range | colour

SR06 LCD Temp

Wireless room operating unit temperature 2T		ES2
Item description	Item No.	€
SR06 LCD 2T pure white brilliant without frame	728843	190,70
SR06 LCD 2T aluminium without frame	728881	190,70
SR06 LCD 2T Jung aluminium without frame	728966	190,70
SR06 LCD 2T anthracite without frame	728928	190,70

Wireless room operating unit temperature 2T+Light		ES2
Item description	Item No.	€
SR06 LCD 2T+Light pure white brilliant without frame	728850	209,60
SR06 LCD 2T+Light aluminium without frame	728898	209,60
SR06 LCD 2T+Light Jung aluminium without frame	729000	209,60
SR06 LCD 2T+Light anthracite without frame	728935	209,60

Wireless room operating unit temperature 2T+Blind		ES2
Item description	Item No.	€
SR06 LCD 2T+Blind pure white brilliant without frame	731836	209,60
SR06 LCD 2T+Blind aluminium without frame	728904	209,60
SR06 LCD 2T+Blind Jung aluminium without frame	729017	209,60
SR06 LCD 2T+Blind anthracite without frame	728942	209,60

Wireless room operating unit temperature 4T		ES2
Item description	Item No.	€
SR06 LCD 4T ltype1 pure white brilliant without frame	728874	205,50
SR06 LCD 4T ltype1 aluminium without frame	728911	205,50
SR06 LCD 4T ltype1 Jung aluminium without frame	729024	205,50
SR06 LCD 4T ltype1 anthracite without frame	728959	205,50

SR06 LCD Temp_rH

Wireless room operating unit temperature + humidity 2T		ES2
Item description	Item No.	€
SR06 LCD rH 2T pure white brilliant without frame	729031	230,70
SR06 LCD rH 2T aluminium without frame	729062	230,70
SR06 LCD rH 2T Jung aluminium without frame	729109	230,70
SR06 LCD rH 2T anthracite without frame	729147	230,70

Wireless room operating unit temperature + humidity 2T+Light		ES2
Item description	Item No.	€
SR06 LCD rH 2T+Light pure white brilliant without frame	693035	249,60
SR06 LCD rH 2T+Light aluminium without frame	729079	249,60
SR06 LCD rH 2T+Light Jung aluminium without frame	729116	249,60
SR06 LCD rH 2T+Light anthracite without frame	729154	249,60

Item description: product | number of buttons | labelling type | switch range | colour

SR06 LCD Temp_rH

Wireless room operating unit temperature + humidity 2T+Blind		ES2
Item description	Item No.	€
SR06 LCD rH 2T+Blind pure white brilliant without frame	729048	249,60
SR06 LCD rH 2T+Blind aluminium without frame	729086	249,60
SR06 LCD rH 2T+Blind Jung aluminium without frame	729123	249,60
SR06 LCD rH 2T+Blind anthracite without frame	729161	249,60

Wireless room operating unit temperature + humidity 4T		ES2
Item description	Item No.	€
SR06 LCD rH 4T ltype1 pure white brilliant without frame	729055	245,50
SR06 LCD rH 4T ltype1 aluminium without frame	729093	245,50
SR06 LCD rH 4T ltype1 Jung aluminium without frame	729130	245,50
SR06 LCD rH 4T ltype1 anthracite without frame	729178	245,50

Options	
Item description	€
Labelling type 2 (ltype2)	0,00
Labelling type 3 (ltype3)	0,00

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

Accessories			AS1
Item description	Item No.	On stock	€
Coin cell CR1632	597814	⊜	4,15
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

SR06 LCD

Example designs

SR06 LCD 4T ltype1 pure white brilliant,
switch range Gira Esprit glass mint

SR06 LCD 2T anthracite,
switch range Jung A Creation anthracite
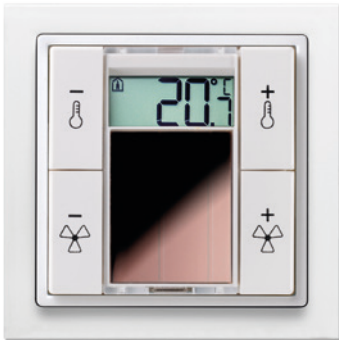
SR06 LCD 4T ltype1 pure white brilliant,
switch range Busch-Jaeger future® linear studio white

SR06 LCD 4T ltype3 aluminium,
switch range Gira Event aluminium

SR07 x

DATA SHEETS

Energy-harvesting wireless room operating unit for the measurement of temperature and relative humidity (rH version) in living and office spaces. Also available with set point potentiometer, slide switch (for example 'Day/Night') or occupancy button. The device transmits its values unidirectionally to receiving actuators or gateways, which process the information directly or – depending on the application – forward it to a BMS controller. It can be integrated into almost any 55x55 mm frames, allowing you to choose from many designs and frame manufacturers. The SR07 x is mounted by using the adhesive pad or screws.

SR07 P aluminium,
switch range Gira E2

SR07 PT pure white brilliant,
switch range Gira E2

SR07 PMS (day/night) anthracite,
switch range Gira E2

TECHNICAL DATA	
Measured values	temperature, humidity, depending on the device
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery CR1632
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change ›0,8 K or ›1,6% rH, otherwise every 1000 sec.
Switch range Berker	S.1, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue *
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	A 500, AS 500, A plus, A creation
Switch range Merten	M-Smart, M-Plan, M-Pure
Setpoint (P)	potentiometer
Slide switch (MS)	I/0, day/night
Button (T)	for presence detection
Enclosure	PC, pure white brilliant, aluminium, Jung aluminium (suitable for switch ranges Jung), anthracite
Protection (IP)	IP20 according to EN 60529
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery content	adhesive foil
Notes	* in switch program with intermediate frame integrated coin cell backup possibility for usage in dimly lit rooms

enocean

SR07 x

Labelling types

SR07 PT
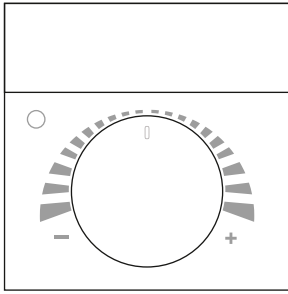
SR07 PMS (day/night)
SR07 PMS (I / 0)
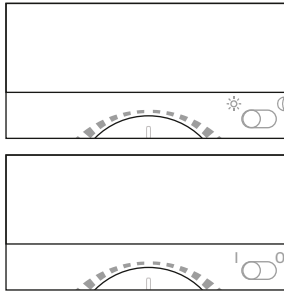
SR07 P
standard labelling colour
(refer to options – ltypeSC)
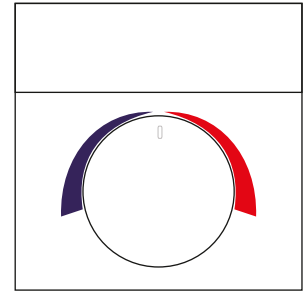
SR07 x Temp

Item description: product | operating elements | switch range | colour

Wireless room operating unit temperature type P		ES2
Item description	Item No.	€
SR07 P pure white brilliant without frame	634113	155,70
SR07 P aluminium without frame	729246	155,70
SR07 P Jung aluminium without frame	729314	155,70
SR07 P anthracite without frame	729376	155,70

Wireless room operating unit temperature type PT		ES2
Item description	Item No.	€
SR07 PT pure white brilliant without frame	729185	164,20
SR07 PT aluminium without frame	729260	164,20
SR07 PT Jung aluminium without frame	729321	164,20
SR07 PT anthracite without frame	729383	164,20

Wireless room operating unit temperature type PMS (day/night)		ES2
Item description	Item No.	€
SR07 PMS (day/night) pure white brilliant without frame	729192	164,20
SR07 PMS (day/night) aluminium without frame	729277	164,20
SR07 PMS (day/night) Jung aluminium without frame	729338	164,20
SR07 PMS (day/night) anthracite without frame	729390	164,20

Item description: product | operating elements | humidity (rH) | switch range | colour

SR07 x Temp_rH

Wireless room operating unit temperature + humidity type P		ES2
Item description	Item No.	€
SR07 P rH pure white brilliant without frame	729208	195,70
SR07 P rH aluminium without frame	729284	195,70
SR07 P rH Jung aluminium without frame	729345	195,70
SR07 P rH anthracite without frame	729406	195,70

Wireless room operating unit temperature + humidity type PT		ES2
Item description	Item No.	€
SR07 PT rH pure white brilliant without frame	729215	204,20
SR07 PT rH aluminium without frame	729291	204,20
SR07 PT rH Jung aluminium without frame	729352	204,20
SR07 PT rH anthracite without frame	729413	204,20

Wireless room operating unit temperature + humidity type PMS (day/night)		ES2
Item description	Item No.	€
SR07 PMS rH (day/night) pure white brilliant without frame	729239	204,20
SR07 PMS rH (day/night) aluminium without frame	729307	204,20
SR07 PMS rH (day/night) Jung aluminium without frame	729369	204,20
SR07 PMS rH (day/night) anthracite without frame	729420	204,20

Options	
Item description	€
Default labelling P colour red+blue (ltypeSC)	6,20
Default labelling MS I/0	0,00

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

Accessories			AS1
Item description	Item No.	On stock	€
Coin cell CR1632	597814	⊜	4,15

NOVOS 3 SR x

Energy-harvesting wireless room operating unit in the NOVOS design for the integrated measurement of temperature and relative humidity (rH version) in living and office spaces as well as controls through operating elements such as set point and occupancy button. The device is mounted using the adhesive pad or screws included and transmits its values unidirectionally to EasySens® receiving actuators or gateways, which process the information directly or – depending on the application – forward it to a BMS controller.

NOVOS 3 SR P   NOVOS 3 SR T   NOVOS 3 SR PT

enocean®

TECHNICAL DATA	
Measured values	temperature, humidity, depending on the device
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery LS14250 (3,6 V)
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,8 K, otherwise every 1000 sec. adjustable via jumper
Setpoint (P)	potentiometer
Button (T)	for presence detection
Enclosure	PC V0, pure white, design cover (optional)
Protection (IP)	IP20 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery content	adhesive foil
Notes	integrated battery backup possibility for usage in dimly lit rooms

NOVOS 3 SR x

Wireless room operating unit temperature		ES2
Item description	Item No.	€
NOVOS 3 SR P white Temp	754064	136,40
NOVOS 3 SR T white Temp	754071	141,40
NOVOS 3 SR PT white Temp	754095	156,40

Wireless room operating unit temperature + humidity		ES2
Item description	Item No.	€
NOVOS 3 SR P white Temp_rH	754101	176,40
NOVOS 3 SR T white Temp_rH	754118	181,40
NOVOS 3 SR PT white Temp_rH	754125	196,40

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⬭	12,00
Design cover NOVOS 3 black	⬭	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⬭	0,85
Frame for surface mounting NOVOS 3/WRF04	111584	⬭	12,80
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⬭	29,80

NOVOS 3 SR PT
enclosure colour black

NOVOS 3 SR PT
enclosure colour aluminium

SR07

Energy-harvesting wireless room sensor for measuring temperature in residential and commercial buildings. The SR07 transmits its measured values unidirectionally to compatible EasySens® receiving actuators or gateways, which forward the information to a BMS controller. It can be integrated into a wide range of common switch ranges and frames, allowing you to choose from many designs and frame manufacturers.

SR07 pure white brilliant,
switch range Gira E2

SR07 aluminium,
switch range Gira E2

SR07 anthracite,
switch range Gira E2

TECHNICAL DATA	
Measured values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery CR1632
Measuring range temp.	0..+40 °C
Accuracy temperature	±0,4 K (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,8 K otherwise every 1000 sec.
Switch range Berker	S.1, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue *
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	A 500, AS 500, A plus, A creation
Switch range Merten	M-Smart, M-Plan, M-Pure
Enclosure	PC, pure white brilliant, aluminium, Jung aluminium (suitable for switch ranges Jung), anthracite
Protection (IP)	IP20 according to EN 60529
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery content	adhesive foil
Notes	* in switch program with intermediate frame integrated coin cell backup possibility for usage in dimly lit rooms for devices with operating elements please refer to product SR07 x

SR07

Item description: product | switch range | colour

Wireless room sensor temperature		ES2
Item description	Item No.	€
SR07 Temp pure white brilliant without frame	729437	138,80
SR07 Temp aluminium without frame	729444	138,80
SR07 Temp Jung aluminium without frame	729451	138,80
SR07 Temp anthracite without frame	729468	138,80

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

Accessories			AS1
Item description	Item No.	On stock	€
Coin cell CR1632	597814	⊜	4,15

NOVOS 3 SR Temp

Energy-harvesting wireless room sensor in the NOVOS design for measuring temperature in residential and commercial buildings. Mounted directly on the wall using the adhesive pad or screws included, the NOVOS 3 SR Temp transmits its measured values to EasySens® receiving actuators or gateways, which process the information directly or – depending on the application – forward it to a BMS controller.

NOVOS 3 SR Temp

NOVOS 3 SR Temp
enclosure colour black

NOVOS 3 SR Temp
enclosure colour aluminium

TECHNICAL DATA	
Measured values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery LS14250 (3,6 V)
Measuring range temp.	0..+40 °C
Accuracy temperature	±0,4 K (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,8 K, otherwise every 1000 sec. adjustable via jumper
Enclosure	PC V0, pure white
Protection (IP)	IP20 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery content	adhesive foil
Notes	integrated battery backup possibility for usage in dimly lit rooms for devices with operating elements please refer to product NOVOS SR 3 x

NOVOS 3 SR Temp

Wireless room sensor temperature		ES2
Item description	Item No.	€
NOVOS 3 SR Temp white	754040	121,40

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80

SR65

Energy-harvesting wireless sensor for measuring temperature in outdoor areas or industrial environments (for example in cold stores, production halls and warehouses). The airConfig software can be used to parameterize the SR65 to customized measurement ranges, transmission intervals and wake-up times. When used in dark places (e.g. server rooms), a backup battery can be inserted.

airConfig
enocean

TECHNICAL DATA	
Measured values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	-20..+60 °C, optionally configurable via airConfig
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default), heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent, with quick lock screws
Protection (IP)	IP65 according to EN 60529
Pocket	stainless steel V4A, Ø=6 mm, L=40 mm
Ambient condition	-25..+65 °C, max. 85% rH short term condensation
Notes	integrated battery backup possibility for usage in dimly lit rooms to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

Wireless outdoor sensor temperature			ES2
Item description	Item No.	On stock	€
SR65	230001	⊜	139,60

Accessories			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⊜	4,15
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

SR65 AKF

Energy-harvesting wireless duct sensor for the measurement of temperature in gaseous media of heating, ventilation and air-coditioning systems. The SR65 AKF can be configured via airConfig software to customized measurement ranges, transmission intervals and wake-up times. When used in dark places, a backup battery can be inserted.

airConfig   enocean®

TECHNICAL DATA	
Measured values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas), 928 MHz
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	-40..+130 °C (A5-02-xx EEPs) optionally configurable via airConfig
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent, with quick lock screws
Protection (IP)	IP65 according to EN 60529
Pocket	stainless steel V4A, Ø=6 mm, L=100 mm mounting lengths available: 50 | 100 | 150 | 200 | 250 | 300 | 450 mm
Ambient condition	-25..+65 °C, max. 85% rH short term condensation
Notes	integrated battery backup possibility for usage in dimly lit rooms other probe lengths on request to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

SR65 AKF

Item description: product | pocket (length.Ø)

Wireless duct/immersion sensor temperature		ES2
Item description	Item No.	€
SR65 AKF 100.06	630566	148,10

Accessories			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⊜	4,15
Mounting flange MF6DS flexible (suitable for Ø=6 mm; AS2)	669016	⊜	6,50
Mounting flange MF6 (brass)	3407	⊜	6,50
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

Accessories – thermowells brass for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⊜	9,20

Accessories – thermowells stainless steel for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⊜	19,40
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	⊜	18,70

SR65 TF

Energy-harvesting wireless cable sensor for measuring temperature in gaseous media in heating, ventilation and air-conditioning systems. The SR65 TF can be configured via airConfig software to customized measurement ranges, transmission intervals and wake-up times. When used in dark places, a backup battery can be inserted.

airConfig   enocean®

TECHNICAL DATA	
Measured values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	-20..+60 °C optionally configurable via airConfig
Operating temperature range	-40..+130 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent, with quick lock screws
Protection (IP)	IP65 according to EN 60529
Pocket	stainless steel V4A, Ø=6 mm, L=50 mm mounting lengths available: 50 | 100 | 150 | 200 | 250 mm
Ambient condition	-25..+65 °C, max. 85% rH short term condensation
Notes	integrated battery backup possibility for usage in dimly lit rooms other probe lengths on request to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

SR65 TF

Item description: product | pocket (length.Ø) | cable length (L)

Wireless cable sensor temperature		ES2
Item description	Item No.	€
SR65 TF 050.06 L1000	245647	141,60

Options	
Item description	€
Add per meter of connection cable -50..+180 °C	1,80

Order example for different items:
SR65 TF | 050.06 | L2000

SR65 TF	= product
050.06	= pocket (length.Ø)
L2000	= cable length (mm)

Accessories			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⊜	4,15
Mounting flange MF6DS flexible (suitable for Ø=6 mm; AS2)	669016	⊜	6,50
Mounting flange MF6 (brass)	3407	⊜	6,50
KL6VA – Compression fittings G 1/4" for Ø=6 mm with cutting ring VA, stainless steel	103213	⊜	13,10
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

Accessories – thermowells stainless steel for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	⊜	17,60
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⊜	19,40
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824	⊜	20,90
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848	⊜	22,00
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862	⊜	27,30

Accessories – thermowells brass for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	⊜	8,10
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⊜	9,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015	⊜	9,70
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022	⊜	10,10
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985	⊜	11,60

SR65 VFG

DATA SHEETS
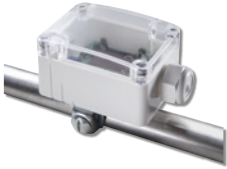
Energy-harvesting wireless contact sensor for measuring temperature on ducts/pipes.The SR65 VFG can be configured via airConfig software to customized measurement ranges, transmission intervals and wake-up times. When used in dark places, a backup battery can be inserted.

airConfig   enocean®

TECHNICAL DATA	
Measured values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	+10..+90 °C optionally configurable via airConfig
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent, with quick lock screws
Protection (IP)	IP65 according to EN 60529
Pocket	brass, spring loaded sensor
Ambient condition	-25..+65 °C, max. 85% rH short term condensation
Notes	integrated battery backup possibility for usage in dimly lit rooms to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

Wireless contact sensors temperature		ES2
Item description	Item No.	€
SR65 VFG	239615	139,60

Accessories			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⊜	4,15
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

SR07 rH

Energy-harvesting wireless room sensor for measuring temperature and humidity in residential and commercial buildings. The SR07 rH transmits its measured values to EasySens® receiving actuators or gateways, which forward the information to a BMS controller. It can be integrated into a wide range of common switch ranges, allowing you to choose from many designs and manufacturers.

SR07 rH pure white brilliant,
switch range Gira E2

SR07 rH aluminium,
switch range Gira E2

SR07 rH anthracite,
switch range Gira E2

TECHNICAL DATA	
Measured values	humidity, temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery CR1632
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change ›0,8 K or ›1,6% rH, otherwise every 1000 sec.
Switch range Berker	S.1, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue *
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	A 500, AS 500, A plus, A creation
Switch range Merten	M-Smart, M-Plan, M-Pure
Enclosure	PC, pure white brilliant, aluminium, Jung aluminium (suitable for switch ranges Jung), anthracite
Protection (IP)	IP20 according to EN 60529
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery content	adhesive foil
Notes	* in switch program with intermediate frame integrated coin cell backup possibility for usage in dimly lit rooms for devices with operating elements please refer to product SR07 x

SR07 rH

Item description: product | switch range | colour

Wireless room sensor temperature + humidity		ES2
Item description	Item No.	€
SR07 Temp_rH pure white brilliant without frame	729550	178,80
SR07 Temp_rH aluminium without frame	729567	178,80
SR07 Temp_rH Jung aluminium without frame	729581	178,80
SR07 Temp_rH anthracite without frame	729598	178,80

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

Accessories			AS1
Item description	Item No.	On stock	€
Coin cell CR1632	597814	⊜	4,15

NOVOS 3 SR rH

Energy-harvesting wireless room sensor in the NOVOS design for measuring temperature and relative humidity in residential and commercial buildings. The NOVOS 3 SR rH transmits its measured values to EasySens® receiving actuators or gateways, which forward the information to a BMS controller.

NOVOS 3 SR rH

NOVOS 3 SR rH
enclosure colour black

NOVOS 3 SR rH
enclosure colour aluminium

TECHNICAL DATA	
Measured values	humidity, temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery LS14250 (3,6 V)
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change ›0,8 K or ›1,6% rH, otherwise every 1000 sec. adjustable via jumper
Enclosure	PC V0, pure white
Protection (IP)	IP20 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery content	adhesive foil
Notes	integrated battery backup possibility for usage in dimly lit rooms for devices with operating elements please refer to product NOVOS SR 3 x

NOVOS 3 SR rH

Wireless room sensor temperature + humidity		ES2
Item description	Item No.	€
NOVOS 3 SR Temp_rH white	754057	161,40

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80

SR65 rH

Energy-harvesting wireless sensor for measuring temperature and relative humidity in outdoor areas or industrial environments (for example cold stores, production halls and warehouses). The airConfig software can be used to easily parameterize measurement ranges, transmission intervals and wake-up times. When used in rooms with low ambient light levels, a backup battery can be inserted.

airConfig enocean

TECHNICAL DATA	
Measured values	humidity, temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	-20..+60 °C, optionally configurable via airConfig
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measurement interval	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent, with quick lock screws
Protection (IP)	IP65 according to EN 60529
Ambient condition	-20..+70 °C, max. 85% rH short term condensation
Delivery content	incl. rain protection PA6, white
Notes	integrated battery backup possibility for usage in dimly lit rooms to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

SR65 rH

Wireless outdoor sensor temperature + humidity			ES2
Item description	Item No.	On stock	€
SR65 rH	540391	⊜	251,40

Accessories			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⊜	4,15
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Filter stainless steel, wire mesh (spare part)	231169	⊜	9,05
Sun/rain protection PA6 white for outdoor humidity sensors	587709	⊜	6,00
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

SR04 CO2

Radio room sensor for measuring CO2, temperature and relative humidity (optional) in residential and commercial buildings. The SR04 CO2 can be connected to EasySens® receiving actuators or gateways, which forward the information to a BMS controller.

SR04 CO2	SR04 CO2 LCD TLF	SR04 CO2 LCD / SR04 CO2 TLF

TECHNICAL DATA	
Measured values	CO2, temperature, humidity, depending on the device
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 1,5 W (24 V =) | 3,6 VA (24 V ~)
Measuring range temp.	0..+51 °C
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..2550 ppm
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Accuracy humidity	±3% between 20..80% rH (typ. at 21 °C)
Accuracy CO2	±75 ppm, ›750 ppm: ±10% (typ. at 21 °C, 1015 hPa)
Measurement interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change ›1 K or ›2,5% rH or 50 ppm, otherwise every 1000 sec. adjustable via jumper
Calibration	self-calibration, Dual Channel
Sensor	CO2: NDIR (non-dispersive, infrared)
Display	LCD 29x12 mm, monochrome, optional 3 LEDs indicating air quality (CO2, traffic light function 'TLF'), optional
Enclosure	PC, pure white
Protection (IP)	IP30 according to EN 60529
Cable entry	breaking points top/bottom, rear entry
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) screw mounted onto flat surface
Notes	optional with display "LCD" optional with traffic light function "TLF"

SR04 CO2

Item description: product | LCD | TLF (traffic light function)

Room sensor with radio interface temperature + CO2			ES2
Item description	Item No.	On stock	€
SR04 CO2	442510	⊜	287,00
SR04 CO2 LCD	467131		316,60
SR04 CO2 TLF	436557		294,40
SR04 CO2 LCD TLF	630634		324,00

Room sensor with radio interface temperature + humidity + CO2		ES2
Item description	Item No.	€
SR04 CO2 rH	434768	339,80
SR04 CO2 rH LCD	462228	369,40
SR04 CO2 rH TLF	516143	347,20
SR04 CO2 rH LCD TLF	474757	376,80

Accessories			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10

SR-MDS

The SR-MDS is a radio multi-sensor to measure light levels and detect motion. The SR-MDS is typically ceiling-mounted and powered by 24 V so as to permit reliable operations in rooms with low light levels (e.g. basements).

TECHNICAL DATA	
Measured values	luminosity, motion
Radio technology	EnOcean (IEC 14543-3-10), STM
Frequency	868 MHz
Power supply	SR-MDS: flex. 15..240 V =/~ SR-MDS BAT: 3x battery LS14250, 3,6 V
Power consumption	typ. 0,8 W (24 V =) | 1,2 VA (24 V ~)
Measuring range light	0..510 Lux
Measurement interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change of brightness ›10 lux in case of detected motion every 1000 sec. at change of brightness ‹10 lux in case of no motion detected every 100 sec. at change of brightness ‹10 lux in case of detected motion every 10 sec. at change of brightness ›10 lux in case of detected motion immediately at status change from no motion to motion or reverse after expiring of the follow-up time (approx. 1000 sec.) adjustable via jumper
Dectection range	Ø=5 m at a sensor height of approx. 2,5 m
Enclosure	ABS, pure white
Protection (IP)	IP20 according to EN 60529
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Notes	appropriate for constant light control

Item description: product | BAT (battery)

Wireless ceiling sensor light + motion			ES2
Item description	Item No.	On stock	€
SR-MDS	396486	⊜	235,00
SR-MDS BAT	396462		235,00

Accessories			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⊜	4,15
Enclosure for surface mounting SR-MDS pure white	514439	⊜	49,50
Mounting ring for hollow ceiling with retaining clips to be used with SR-MDS	627825	⊜	6,70

SR-MDS Solar

DATA SHEETS

Energy-harvesting wireless radio multi-sensor to measure light levels and detect motion. The SR-MDS Solar can be integrated into compatible receiving actuators or gateways.

airConfig   enocean®

TECHNICAL DATA	
Measured values	luminosity, motion
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Data transmission	airConfig ready
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery LS14250 (3,6 V)
Measuring range light	0..510 Lux (standard), 0..1000 Lux (10 Bit), 0..1020 Lux optionally configurable via airConfig
Transmission interval	occupancy (30, 60 sec., 10, 15 min.) light (10, 20, 30, 60 sec. when value changes) configured via airConfig immediately at status change from no motion to motion or reverse after expiring of the follow-up time or at change of brightness › 2% FS
Dectection range	Ø=5 m at a sensor height of approx. 2,8 m, 102° x 92°
Sensor	PIR (passive infrared)
Enclosure	PC, pure white
Protection (IP)	IP50 according to EN 60529
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	screw mounted onto flat surface
Notes	integrated battery backup possibility for usage in dimly lit rooms to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

Wireless ceiling sensor light + motion			ES2
Item description	Item No.	On stock	€
SR-MDS Solar	591577	⬦	221,10

Accessories			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⬦	4,15
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⬦	103,50

SR-MOC Solar

Energy-harvesting wireless ceiling-mounted sensor for motion detection and integration into EasySens® receiving actuators or gateways.

enocean

TECHNICAL DATA	
Measured values	motion
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free Battery: Coin cell CR2032 (optional) terminal for external power supply 3..5 V =
Transmission interval	immediately at status change from no motion to motion during occupancy: every 2 min. no occupancy: after 10 and 30 min. every hour as heartbeat (optional)
Dectection range	Ø=5 m at a sensor height of approx. 2,5 m
Sensor	PIR (passive infrared)
Enclosure	PC, white
Protection (IP)	IP50 according to EN 60529
Ambient condition	-10..+40 °C, max. 85% rH non-condensing
Mounting	surface mounting, to be mounted flat onto the surface using adhesive foil (included) or screws

Wireless ceiling sensor motion			ES2
Item description	Item No.	On stock	€
SR-MOC Solar	566070	⬭	167,80

Accessories			AS1
Item description	Item No.	On stock	€
Coin cell CR2032	347013	⬭	4,15
Fixing kit rawlplugs and screws (2x each)	660945	⬭	0,85

SR-MOW Solar

DATA SHEETS

Energy-harvesting wireless wall-mounted sensor for motion detection and integration into EasySens® receiving actuators or gateways.

TECHNICAL DATA	
Measured values	motion
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free Battery: Coin cell CR2032 (optional) terminal for external power supply 3..5 V =
Transmission interval	immediately at status change from no motion to motion during occupancy: every 2 min. no occupancy: after 10 and 30 min. every hour as heartbeat (optional)
Dectection range	Wide angle lens up to 15 m, field lens up to 30 m when mounted at height 2,10 m
Sensor	PIR (passive infrared)
Enclosure	PC, white
Protection (IP)	IP20 according to EN 60529
Ambient condition	-10..+40 °C
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws

Wireless wall sensor motion			ES2
Item description	Item No.	On stock	€
SR-MOW Solar	566094	⊜	146,70

Accessories			AS1
Item description	Item No.	On stock	€
Coin cell CR2032	347013	⊜	4,15
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85

SR65 Li

Energy-harvesting wireless light sensor for constant light control applications, saving energy by lowering the artificial light. The SR65 Li can furthermore be configured individually via airConfig.

airConfig   enocean

TECHNICAL DATA	
Measured values	luminosity
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range light	0..510 Lux, 0..1000 Lux (10 Bit), 0..1020 Lux, 300..30.000 Lux, 600..60.000 Lux optionally configurable via airConfig
Measurement interval	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white, cover PC, transparent with quick lock screws
Protection (IP)	IP65 according to EN 60529
Ambient condition	-20..+70 °C, max. 85% rH short term condensation
Notes	resolution: 8 bit or 10 bit to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

Wireless outdoor sensor light		ES2
Item description	Item No.	€
SR65 Li	598354	172,90

Accessories			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⊜	4,15
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

SR-MI

DATA SHEETS

EasySens® metering interface for wireless radio transmission of pulse signals for gas, water, electric and BTU meters with an S0 interface.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	external transmitting antenna with magnetic base
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,2 W (24 V =) | 0,4 VA (24 V ~)
Inputs	3x S0-interface
Enclosure	ABS, light grey
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external transmitting antenna 2,5 m with magnetic base

Wireless module		ES2
Item description	Item No.	€
SR-MI	471428	174,40

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊖	57,60
Antenna extension 20 m	257213	⊖	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊖	14,70

SR65-3AI

The SR65-3AI has 3x 0..10 V inputs. The inputs can be wirelessly transmitted with the SR65-3AI to an EasySens® receiving actuator or can be integrated through gateways into existing BUS networks.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,2 W (24 V =) | 0,4 VA (24 V ~)
Measurement interval	WakeUp time = 100 sec. (default), heartbeat cycle = every 10th wakeup adjustable via jumper
Inputs	3x analog input, 0..10 V
Enclosure	PA6.6, pure white, cover PC, transparent, with quick lock screws
Protection (IP)	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Electrical connection	plug-in terminal, max. 1,5 mm²
Ambient condition	-25..+65 °C, max. 85% rH short term condensation

Wireless module		ES2
Item description	Item No.	€
SR65-3AI	527071	139,60

SR65 DI

DATA SHEETS

The SR65 DI is a wireless transmitter for the binary status of relay inputs. The status of the digital input is transmitted through radio to corresponding remote controllers in the EnOcean network or can be transferred through a gateway to any BUS network. It is often used as a push signal for night-time temperature reduction of heating controllers or ECO/comfort switching.

airConfig

enocean®

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Data transmission	airConfig ready
Power supply	solar cell, internal super cap, battery LS14250 (3,6 V)
Measurement interval	WakeUp time = 100 sec. (default), heartbeat cycle = every 10th wakeup configured via airConfig
Inputs	1x input for floating contact, contact resistance max. 1000 Ω
Enclosure	PA6.6, pure white, cover PC, transparent, with quick lock screws
Protection (IP)	IP65 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-25..+65 °C, max. 85% rH short term condensation
Delivery content	1x battery LS14250
Notes	to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

Binary module		ES2
Item description	Item No.	€
SR65 DI	267731	139,60

Accessories			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⊜	4,15
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

SRG02

DATA SHEETS

Battery- and wireless window handle for status monitoring of windows (lock option available) with radio interface. When actuated, the handle transmits a radio signal with the handle position to a receiving actuator or gateway. The window handle is used to optimize energy consumption in the building, as heating/cooling or ventilation gets deactivated when windows are open. Equipped with a variable length square spindle for profile depths of 32..42 mm for most common window frames.

SRG02 aluminium pure white   SRG02 aluminium steel grey   SRG02 stainless steel

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	internal transmitting antenna
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	turning the window handle
Enclosure	aluminium pure white painted, aluminium steel grey, stainless steel
Ambient condition	+5..+40 °C, max. 80% rH non-condensing
Mounting	Square spindle, variable lengths (for tread depth 32..42 mm)
Notes	lockable (option), sideways with position precision

Wireless window handle			ES1
Item description	Item No.	On stock	€
SRG02 aluminium pure white	730747	⊜	108,00
SRG02 aluminium steel grey	730730	⊜	108,00
SRG02 stainless steel	730723	⊜	181,30

Wireless window handle, lockable			ES1
Item description	Item No.	On stock	€
SRG02 lockable aluminium pure white	730716	⊜	155,00
SRG02 lockable aluminium steel grey	730709	⊜	155,00

SRW02

DATA SHEETS

Energy-harvesting wireless window contact for the status monitoring of windows and doors. Ideal for retrofitting applications in hotel rooms or office spaces to increase energy savings.

SRW02 pure white

SRW02 anthracite

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	internal transmitting/receiving antenna
Power supply	solar cell, internal super cap, maintenance-free coin cell CR1225 (optional)
Transmission interval	at status change, otherwise every 1000 sec.
Sensor	Reed contact and magnet
Enclosure	PC/ABS, pure white, anthracite
Protection (IP)	IP40 according to EN 60529
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws

Wireless window/door contact			ES1
Item description	Item No.	On stock	€
SRW02 pure white	727297	⊜	69,70
SRW02 anthracite	750479	⊜	75,70

Accessories			AS1
Item description	Item No.	On stock	€
Coin cell CR1225	727310	⊜	4,15

Wireless switch Mini

Energy-harvesting wireless switch for adjusting the (dimming) status of lights and blinds. The EasySens® radio technology offers flexible attachment to glass and plasterboard walls using the adhesive pad or screws.
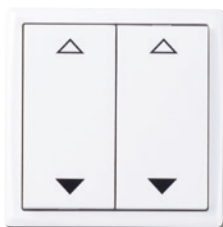
4-channel blinds, pure white brilliant   2-channel light, aluminium   2-channel blinds, anthracite

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pressing the switches
Control functions	actuation force 7 N, actuation range 2 mm, operating cycle quantity › 50.000
No. of buttons	2-channel (1 switch), 4-channel (2 switches)
Labelling	O, I (version light), Δ▼ (version blinds), special printing available on request
Enclosure	dimensions: 61x61x15 mm incl. frame, pure white brilliant, aluminium, anthracite
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	prices including frame

Wireless switch Mini

Item description: product | number of buttons | model light | colour

Wireless switches 2-channel light		ES2
Item description	Item No.	€
Switch Mini 2-channel light pure white brilliant	430647	66,30
Switch Mini 2-channel light aluminium varnished	430661	66,30
Switch Mini 2-channel light anthracite	430623	66,30

Wireless switches 4-channel light		ES2
Item description	Item No.	€
Switch Mini 4-channel light pure white brilliant	430838	68,60
Switch Mini 4-channel light aluminium varnished	430852	68,60
Switch Mini 4-channel light anthracite	430814	68,60

Item description: product | number of buttons | model shutters | colour

Wireless switches 2-channel blind		ES2
Item description	Item No.	€
Switch Mini 2-channel blind pure white brilliant	430630	66,30
Switch Mini 2-channel blind aluminium varnished	430654	66,30
Switch Mini 2-channel blind anthracite	430302	66,30

Wireless switches 4-channel blind		ES2
Item description	Item No.	€
Switch Mini 4-channel blind pure white brilliant	430821	68,60
Switch Mini 4-channel blind aluminium varnished	430845	68,60
Switch Mini 4-channel blind anthracite	430807	68,60

Wireless switch 55x55

DATA SHEETS

Energy-harvesting wireless switch for adjusting the (dimming) status of lights and blinds. The EasySens® radio technology offers flexible attachment to glass and plasterboard walls using the adhesive pad or screws.

2-channel blinds,
Gira E2 pure white
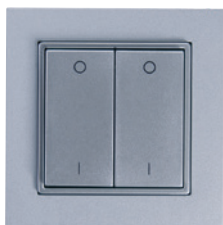
4-channel light,
Gira E2 aluminium

4-channel blinds,
Gira E2 anthracite

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pressing the switches
Switch range Berker	S.1 *, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI *
Switch range Feller	EDIZIOdue *
Switch range Gira	E2 *, E3 *, Standard 55 *, Esprit *, Event *, F100 *
Switch range Jung	A 500 *, AS 500 *, A creation *
Switch range Merten	M-Smart *, M-Plan *, M-Pure *, 1-M, Atelier-M, Artec *, Antik *
Switch range Peha	AURA, AURA glass
Control functions	actuation force 7 N actuation range 2 mm operating cycle quantity › 50.000
No. of buttons	2-channel (1 switch), 4-channel (2 switches)
Labelling	O, I (version light) Δ▼ (version blinds) special printing available on request
Enclosure	PC, pure white brilliant, pure white matt, aluminium, Jung aluminium (suitable for switch ranges Jung), anthracite luminescent intermediate frame, yellow, green phosphorescent available (see accessories); can easily be used instead of the intermediate frame, guideline: with an illumination of 400 lux for 20-30 minutes the frame will glow about 12 hours
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	* in switch program with intermediate frame, when ordering other switch programmes, please specify colour

Item description: number of buttons | model light | switch range | colour

Wireless switch 55x55

Wireless switches 2-channel light		ES1
Item description	Item No.	€
Switch 2-channel light 55x55 pure white matt without frame	730167	72,00
Switch 2-channel light 55x55 pure white brilliant without frame	730372	72,00
Switch 2-channel light 55x55 aluminium without frame	730419	72,00
Switch 2-channel light 55x55 Jung aluminium without frame	730457	72,00
Switch 2-channel light 55x55 anthracite without frame	730495	72,00

Wireless switches 4-channel light		ES1
Item description	Item No.	€
Switch 4-channel light 55x55 pure white matt without frame	730181	74,20
Switch 4-channel light 55x55 pure white brilliant without frame	730389	74,20
Switch 4-channel light 55x55 aluminium without frame	730426	74,20
Switch 4-channel light 55x55 Jung aluminium without frame	730464	74,20
Switch 4-channel light 55x55 anthracite without frame	730501	74,20

Item description: number of buttons | model shutters | switch range | colour

Wireless switches 2-channel blind		ES1
Item description	Item No.	€
Switch 2-channel blind 55x55 pure white matt without frame	730235	72,00
Switch 2-channel blind 55x55 pure white brilliant without frame	730396	72,00
Switch 2-channel blind 55x55 aluminium without frame	730433	72,00
Switch 2-channel blind 55x55 Jung aluminium without frame	730471	72,00
Switch 2-channel blind 55x55 anthracite without frame	730518	72,00

Wireless switches 4-channel blind		ES1
Item description	Item No.	€
Switch 4-channel blind 55x55 pure white matt without frame	730365	74,20
Switch 4-channel blind 55x55 pure white brilliant without frame	730402	74,20
Switch 4-channel blind 55x55 aluminium without frame	730440	74,20
Switch 4-channel blind 55x55 Jung aluminium without frame	730488	74,20
Switch 4-channel blind 55x55 anthracite without frame	730525	74,20

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

Wireless switch BJ 63x63

Energy-harvesting wireless switch for adjusting the (dimming) status of lights and blinds, especially for Busch-Jaeger (63x63mm) designs. The radio technology offers flexible attachment to glass and plasterboard walls using the adhesive pad or screws.

4-channel blinds,
future® linear studio white

4-channel light,
future® linear aluminium silver

2-channel blinds,
future® linear anthracite

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pressing the switches
Switch range Busch-Jaeger	solo®, future® linear, Busch-axcent®
Control functions	actuation force 7 N actuation range 2 mm operating cycle quantity › 50.000
No. of buttons	2-channel (1 switch) 4-channel (2 switches)
Labelling	O, I (version light) Δ▼ (version blinds) special printing available on request
Enclosure	anthracite, studio white, ivory white, aluminium silver
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	frame designs Solo, Future and Axcent at the same price, ask for Carat, white (studio) and matt black available on request, Busch-balance® SI see Radio control 55x55

Item description: number of buttons | model light | switch range | colour

Wireless switch BJ 63x63

Wireless switches 2-channel light		ES1
Item description	Item No.	€
Switch 2-channel light BJ63x63 studio white without frame	730532	74,20
Switch 2-channel light BJ63x63 ivory white without frame	730570	74,20
Switch 2-channel light BJ63x63 aluminium silver without frame	730631	74,20
Switch 2-channel light BJ63x63 anthracite without frame	730754	74,20

Wireless switches 4-channel light		ES1
Item description	Item No.	€
Switch 4-channel light BJ63x63 studio white without frame	730549	76,50
Switch 4-channel light BJ63x63 ivory white without frame	730587	76,50
Switch 4-channel light BJ63x63 aluminium silver without frame	730648	76,50
Switch 4-channel light BJ63x63 anthracite without frame	730761	76,50

Item description: number of buttons | model shutters | switch range | colour

Wireless switches 2-channel blind		ES1
Item description	Item No.	€
Switch 2-channel blind BJ63x63 studio white without frame	730556	74,20
Switch 2-channel blind BJ63x63 ivory white without frame	730594	74,20
Switch 2-channel blind BJ63x63 aluminium silver without frame	730655	74,20
Switch 2-channel blind BJ63x63 anthracite without frame	730778	74,20

Wireless switches 4-channel blind		ES1
Item description	Item No.	€
Switch 4-channel blind BJ63x63 studio white without frame	730563	76,50
Switch 4-channel blind BJ63x63 ivory white without frame	730600	76,50
Switch 4-channel blind BJ63x63 aluminium silver without frame	730693	76,50
Switch 4-channel blind BJ63x63 anthracite without frame	730785	76,50

Options	
Item description	€
Switch ranges Busch-Jaeger future® linear	solo®	Busch-axcent®	4,50

Order example for different items:
4-channel | shutters | Busch-Jaeger solo®

4-channel	= number of buttons
shutters	= model
Busch-Jaeger solo®	= switch range Glas

Wireless switch Jung LS 990

Energy-harvesting wireless switch for adjusting the (dimming) status of lights and blinds, especially for JUNG designs. The radio technology offers flexible attachment to glass and plasterboard walls using the adhesive pad or screws.

4-channel light,
LS 990 alpin white

2-channel light,
LS 990 light grey

4-channel blinds,
LS 990 white

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pressing the switches
Switch range Jung	LS 990
Control functions	actuation force 7 N, actuation range 2 mm, operating cycle quantity › 50.000
No. of buttons	2-channel (1 switch), 4-channel (2 switches)
Labelling	O, I (version light), Δ▼ (version blinds)
Enclosure	white, alpin white, light grey
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	prices incl. frame LS990, LS 990 aluminium varnished and stainless steel varnished on request. Switch programme LS-design on request

Item description: number of buttons | model light | switch range | colour

Wireless switch Jung LS 990

Wireless switches 2-channel light		ES1
Item description	Item No.	€
Switch 2-channel light Jung LS 990 white	435390	110,90
Switch 2-channel light Jung LS 990 alpin white	435376	110,90
Switch 2-channel light Jung LS 990 light grey	435413	110,90

Wireless switches 4-channel light		ES1
Item description	Item No.	€
Switch 4-channel light Jung LS 990 white	435475	115,00
Switch 4-channel light Jung LS 990 alpin white	435451	115,00
Switch 4-channel light Jung LS 990 light grey	435499	115,00

Item description: number of buttons | model shutters | switch range | colour

Wireless switches 2-channel blind		ES1
Item description	Item No.	€
Switch 2-channel blind Jung LS 990 white	435406	110,90
Switch 2-channel blind Jung LS 990 alpin white	435383	110,90
Switch 2-channel blind Jung LS 990 light grey	435420	110,90

Wireless switches 4-channel blind		ES1
Item description	Item No.	€
Switch 4-channel blind Jung LS 990 white	435482	115,00
Switch 4-channel blind Jung LS 990 alpin white	435468	115,00
Switch 4-channel blind Jung LS 990 light grey	435505	115,00

Hand-held

The EasySens® hand-held switch works as a remote control for EasySens® receiving actuators or gateways, which can integrate the wireless signals into an exisiting network and application.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas), 928 MHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pushing the buttons
Control functions	actuation force 7 N, actuation range 2 mm, operating cycle quantity › 50.000
No. of buttons	4-channel (4 buttons)
Labelling	A, B, C, D
Enclosure	black
Ambient condition	-25..+65 °C, max. 85% rH non-condensing

Hand-held switch		ES1
Item description	Item No.	€
Hand-held switch 4 channel	314602	101,30

SR-KCS02

Energy-harvesting wireless key card switch for occupancy-based control of lighting or air conditioning in rooms. The self-powered wireless EasySens® radio permits flexible installation on glass surfaces or walls using adhesive pads or screws.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	at status change
Enclosure	PC, pure white
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws

Wireless card switch		ES2
Item description	Item No.	€
SR-KCS02	691413	83,50

Notes
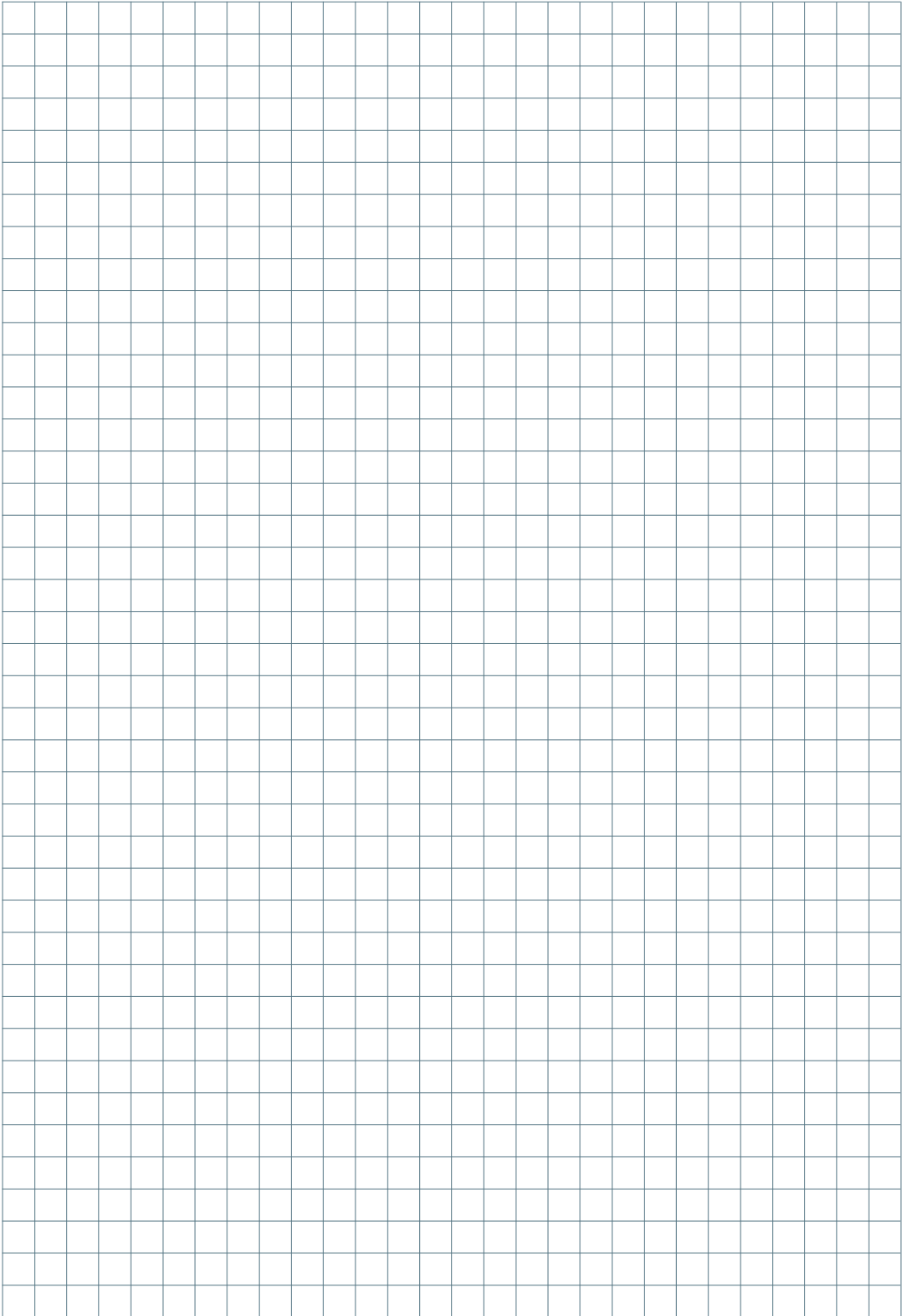
EasySens®
Receiver

Innovative self-powered wireless technology generates energy by means of harvesting ambient light or motion. Interoperable, cost-effective and energy-efficient solutions in building automation is available using our wireless sensor system EasySens®.

IntoMesh – Transmitter

» BENEFITS

» Communication without batteries or cables
» Interoperable
» Energy-efficient control of heating and lighting
» High working and learning comfort through air conditioning and blind-control as required

SR04 CO2

Room sensor CO2/temperature/
rel. humidity
Available with display and traffic
light function

NOVOS 3 SR x

Surface-mounted wireless room
sensor for temperature & rel. humidity
Available with various control
elements and features
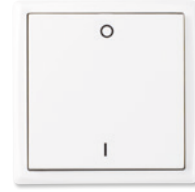
Mini

Wireless switch 2-/4-channel
lighting/blinds
Available in various colours

STC-DO8 / STC-PLUS 4DO

Universal receiver with 8 digital outputs, with
expansion module STC-PLUS 4DO for control of
heating/cooling/ fan coils, for switching lights/
blinds, signal contact and more.

STC-DO / SRC-AO

Flush-mounted receiver (24 V or 230 V) with digital
or analogue outputs for control of thermostats,
humidistats, fans or temperature, for switching of
lights or blinds, and more

CONCENTRATION

All devices communicate wireless via EnOcean technology. Temperature, set point, air quality, occupancy and switch signals for lighting and blinds, are transmitted via bidirectional receivers, STC-DO8/ STC-PLUS 4DO resp. STC-DO/ SRC-AO as standalone with local digital or analogue outputs or to superior communication protocols such as KNX, BACnet, LON or Modbus. This system allows a substantial increase in comfort along with optimum energy savings.

STC65-RS485 Modbus

DATA SHEETS

Bidirectional gateway with RS485 Modbus interface for integration of up to 32 EasySens® devices. Freely programmable 32 channels allow for a bidirectional communication with 32 addresses (registers) and SAB+/SAB05 wireless valve actuators for example. The STC65-RS485 Modbus includes an ext. transmitting/receiving antenna (2.5 m).

)))(((SmartACK   enocean   Modbus

TECHNICAL DATA	
Network technology	RS485 Modbus
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas), 928 MHz
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	bidirectional, SmartACK (SmartACKNOWLEDGE)
Receiving channels	32 (SAB) + 32 (Rx)
Transmitting channels	32 (SAB) + 32 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,6 W (24 V =) | 1,5 VA (24 V ~)
Display	4 LEDs for showing state of device
Enclosure	PA6.6, pure white, cover PC, transparent, with quick lock screws
Protection (IP)	IP42 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm, seal insert for double cable entry for wire max Ø=6 mm
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base, software for configuration (freeware via download)
Notes	up to 15 SmartACKNOWLEDGE devices (SmartACK), magnetic antenna plate recommended to improve radio coverage

Modbus

Gateway – EnOcean <-> RS485 Modbus			ES2
Item description	Item No.	On stock	€
STC65-RS485 Modbus	385695	⊜	248,20

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊜	57,60
Antenna extension 20 m	257213	⊜	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊜	14,70

STC65-RS485 EVC

DATA SHEETS

Bidirectional gateway with serial RS485 interface and IP42 enclosure for integrating up to 64 EasySens® sensors or wireless switches into a network. Transmission of field-programmable telegrams to max. 127 addresses. The gateway includes an ext. transmitting/receiving antenna (2.5 m).

SmartACK enocean®

TECHNICAL DATA	
Network technology	RS485 EVC
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	bidirectional, SmartACK (SmartACKNOWLEDGE)
Receiving channels	filter mode: 64 (Rx), Gateway mode: ∞ (Rx)
Transmitting channels	filter mode: 128 (Tx), Gateway mode: 128 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,8 W (24 V =) | 2 VA (24 V ~)
Display	4 LEDs for showing state of device
Enclosure	PA6.6, pure white, cover PC, transparent, with quick lock screws
Protection (IP)	IP42 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm, seal insert for double cable entry for wire max Ø=6 mm
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base, software for configuration (freeware via download)
Notes	up to 15 SmartACKNOWLEDGE devices (SmartACK), magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean <-> RS485 EVC			ES2
Item description	Item No.	On stock	€
STC65-RS485 EVC	393898	⬖	248,20

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⬖	57,60
Antenna extension 20 m	257213	⬖	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⬖	14,70

STC65-FTT LON

Bidirectional gateway for connecting up to 11 EasySens® sensors and transmitters to controllers and control systems with LON interface. With predefined sensor objects (sensor, switch, ...) and corresponding output variables (SNVT) for communication in a LON network. Especially designed to upgrade existing LON installations with wireless technologies for increased energy savings.

LON
LOCAL OPERATING NETWORK

TECHNICAL DATA	
Network technology	LON FT (free topology)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	bidirectional
Receiving channels	11 (Rx)
Transmitting channels	11 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,5 W (24 V =) | 0,82 VA (24 V ~)
Display	2 LEDs + service LED
Enclosure	PA6.6, pure white, cover PC, transparent, with quick lock screws
Protection (IP)	IP42 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm², seal insert for double cable entry for wire max Ø=6 mm
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base, incl. plug-in for turbo LONmaker
Notes	magnetic antenna plate recommended to improve radio coverage

LON
LOCAL OPERATING NETWORK

Gateway – EnOcean <·> FTT LON			ES2
Item description	Item No.	On stock	€
STC65-FTT LON	393904	⊜	297,30

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊜	57,60
Antenna extension 20 m	257213	⊜	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊜	14,70

STC-BACnet IP

DATA SHEETS

The STC-BACnet IP gateway is designed for bidirectional communication between EasySens® devices and building management systems with a BACnet IP interface. Configuration can be easily performed with the EasySens® airConfig software tool. Details of the communication protocol are described in the software documentation accordingly. The delivery content includes an external antenna for achieving best transmission ranges.

airConfig   enocean®   BACnet

TECHNICAL DATA	
Network technology	BACnet IP
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	bidirectional, airConfig ready
Receiving channels	no limit
Transmitting channels	128 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 3 W (24 V =) | 5 VA (24 V ~)
Enclosure	ABS, light grey
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base, software for configuration (freeware via download)
Notes	for network connection use a shielded standard Ethernet cable CAT 5, to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz), magnetic antenna plate recommended to improve radio coverage

BACnet

Gateway – EnOcean <-> BACnet IP		ES1
Item description	Item No.	€
STC-BACnet IP V2	696470	429,60

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊜	57,60
Antenna extension 20 m	257213	⊜	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊜	14,70
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

SRC65-BACnet MS/TP

The unidirectional SRC65-BACnet MS/TP gateway allows the reception of information from EasySens® sensors, switches, room units and other transmitters. Details of the communication protocol are described in the software documentation accordingly. The delivery content includes an external antenna for achieving best transmission ranges.

TECHNICAL DATA	
Network technology	BACnet MS/TP
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	external receiving antenna with magnetic base
Data transmission	unidirectional
Receiving channels	32 (Rx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 1 W (24 V =) | 1,3 VA (24 V ~)
Display	4 LEDs for showing state of device
Enclosure	PA6.6, pure white, cover PC, transparent, with quick lock screws
Protection (IP)	IP42 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm² seal insert for double cable entry for wire max Ø=6 mm
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery content	incl. external receiving antenna 2,5 m with magnetic base
Notes	magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean -> BACnet MS/TP		ES1
Item description	Item No.	€
SRC65-BACnet MS/TP	396431	269,70

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊜	57,60
Antenna extension 20 m	257213	⊜	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊜	14,70

STC-EnOcean-IP

DATA SHEETS

The STC-EnOcean IP gateway allows for an easy integration of EasySens® sensors and actuators into the Internet of Things (IoT). The new EnOcean-over-IP gateway communicates JSON streams or RestAPI command lines. The seamless commissioning and configuration can be done through any browser interface. The graphical dataflow-oriented processing of the EnOcean information can be performed by the integrated free Node-RED editor (https://nodered.org/) and enables simple, rule-based processing of information. It can further be used to send push notifications via SMS/e-Mail, if values exceed thresholds (additional required hardware not included). EasySens® devices can be integrated very easily into cloud-based applications. Compatible with IP-based controllers and display systems.

TECHNICAL DATA	
Network technology	TCP/IP
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	unidirectional
Receiving channels	no limit
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 3 W (24 V =) | 5 VA (24 V ~)
Enclosure	ABS, light grey
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base, software for configuration (freeware via download)
Notes	magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean ‹·› IP		ES1
Item description	Item No.	€
STC-EnOcean-IP	737814	405,30

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊜	57,60
Antenna extension 20 m	257213	⊜	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊜	14,70

STC-KNX

Bidirectional gateway for connecting up to 32 EasySens® sensors or wireless switches to a KNX network. The device offers additional logical control blocks, which can be configured for: switching and dimming lights, blinds up/down, presence, set point adjustment, fan stages, humidity sensor, window contact/handle, binary input, light and motion.

TECHNICAL DATA	
Network technology	KNX (TP)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Data transmission	bidirectional
Receiving channels	32 (Rx)
Transmitting channels	32 (Tx)
Power supply	supply via BUS
Power consumption	max. 12 mA
Display	graphic display monochrome (internal)
Enclosure	PC, white
Protection (IP)	IP20 according to EN 60529
Electrical connection	KNX terminal rd/bl (WAGO 243-212)
Ambient condition	-5..+45 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm)
Notes	product database for ETS4/5 (freeware via download)

Gateway – EnOcean <-> KNX			ES1
Item description	Item No.	On stock	€
STC-KNX	698948	⬤	380,00

STC-KNX UP

DATA SHEETS

Flush-mounted bidirectional gateway for EasySens® sensors to integrate into a KNX network with a maximum of 8 channels. The STC-KNX UP offers logical control blocks, which can be configured for: switching and dimming lights, blinds up/down, presence, set point adjustment, fan stages, humidity sensor, window handle/contact, binary input, light and motion.

TECHNICAL DATA	
Network technology	KNX (TP)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Data transmission	bidirectional
Receiving channels	8 (Rx)
Transmitting channels	8 (Tx)
Power supply	supply via BUS
Power consumption	max. 12 mA
Enclosure	ABS, blue
Protection (IP)	IP20 according to EN 60529
Electrical connection	KNX terminal rd/bl (WAGO 243-212)
Ambient condition	-5..+45 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	product database for ETS4/5 (freeware via download)

Gateway – EnOcean ‹-› KNX			ES1
Item description	Item No.	On stock	€
STC-KNX UP	725132	⬤	280,00

STC-dS

Bidirectional gateway for extending a digitalSTROM system with EasySens® wireless devices like sensors, room units, valve actuators, switches, window contacts and window handles. Sensors, room units, valve actuators, wireless switches, wireless window contacts and window handles can be easily connected to an existing digitalSTROM network.

TECHNICAL DATA	
Network technology	digitalSTROM (dS)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	bidirectional
Power supply	external power supply (USB micro), 5 V =, 1 A
Power consumption	typ. 3,2 W (5 V =)
Enclosure	PC, ABS, white
Protection (IP)	IP20 according to EN 60529
Electrical connection	USB Micro, RJ45 Ethernet (8P8C), 10/100 MBit/s
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base, incl. external power supply, Ethernet cable 1,5 m (CAT 5)
Notes	magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean ‹-› digitalSTROM		DS1
Item description	Item No.	€
STC-dS	637442	408,40

STC-dS HS

Bidirectional gateway for extending a digitalSTROM system with EasySens® wireless devices like sensors, room units, valve actuators, switches, window contacts and window handles, designed to be mounted on DIN rail TS35 (35x7,5 mm) in accordance with EN 60715. The wireless devices can be seamlessly integrated and used like standard digitalSTROM components.

TECHNICAL DATA	
Network technology	digitalSTROM (dS)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	bidirectional
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 3 W (24 V =) | 5 VA (24 V ~)
Enclosure	ABS, light grey
Protection (IP)	IP20 according to EN 60529
Electrical connection	removable plug-in terminal, max. 2,5 mm², RJ45 Ethernet (8P8C), 10/100 MBit/s
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base
Notes	magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean <-> digitalSTROM		DS1
Item description	Item No.	€
STC-dS HS	711340	408,40

STC-DO

Bidirectional flush-mounted receiving actuator for EasySens® devices with one relay output. Functions/applications can be individually configured via airConfig software for e.g. heating with PWM, heating ON/OFF, signal contact, status feedback, hygrostat control, heating/cooling with PWM, light ON/OFF or fan speed control. The STC-DO is a universal relay acatuator that can be configured through airConfig depending on the application.

STC-DO 24 V   STC-DO 240 V

TECHNICAL DATA	
Output switch contact	changeover contact 24 V: floating, load max. 3 A 240 V: non-floating, load max. 10 A
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional, airConfig ready
Power supply	24 V: 15..24 V = (±10%) or 24 V ~ (±10%) SELV 240 V: 100..240 V ~
Power consumption	24 V: typ. 1,5 W (24 V =) | 3,4 VA (24 V ~) 240 V: max. 0,5 VA (standby)
Enclosure	ABS, red
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

Wireless receiver – multifunctional actor		ES2
Item description	Item No.	€
STC-DO airConfig 24 V	593731	143,30
STC-DO airConfig 100..240 V	593748	143,30

Accessories			
Item description	Item No.	On stock	€
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704		103,50

STC-DO Light

DATA SHEETS

Bidirectional flush-mounted receiving actuator for lighting applications compatible with EasySens® wireless switches and room operating units. The configuration and teach-in is performed by using the buttons on the device.

TECHNICAL DATA	
Output switch contact	max. 10 A (230 V)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional
Power supply	100..240 V ~
Power consumption	standby <0,5 W
Functions	lighting, fan control, switch actuator, staircase light
Enclosure	ABS, red
Protection (IP)	IP20 according to EN 60529
Electrical connection	plug-in terminal, max. 1,5 mm²
Ambient condition	-20..+40 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Wireless receiver – switch actuator light		ES2
Item description	Item No.	€
STC-DO Light 230 V	568371	143,30

STC-DO Blind

Bidirectional flush-mounted receiving actuator for blind applications with EasySens® wireless switches and room operating units. The configuration and teach-in is done via buttons on the device.

TECHNICAL DATA	
Output switch contact	max. 1 A (230 V)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional
Power supply	100..240 V ~
Power consumption	standby ‹0,5 W
Functions	blinds/shutter, switch actuator, slat changing
Enclosure	ABS, red
Protection (IP)	IP20 according to EN 60529
Electrical connection	plug-in terminal, max. 1,5 mm²
Ambient condition	-20..+40 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Wireless receiver – switch actuator blind		ES2
Item description	Item No.	€
STC-DO Blind 230 V	568364	143,30

SRC-AO Climate

DATA SHEETS

Unidirectional flush-mounted receiving actuator for room temperature control of proportional heating or cooling valves (type V with 1x 0..10 V), proportional heating and cooling valves (type VV with 2x 0..10 V) or 6-way valves (type 6WV).

TECHNICAL DATA	
Output voltage	V: 1x 0..10 V VV: 2x 0..10 V
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	internal receiving antenna
Data transmission	unidirectional
Receiving channels	per channel: 1 room control unit, 1 input module for night reduction, up to 10 window contacts or window handles
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 1 W (24 V =) | 1,5 VA (24 V ~)
Functions	V: heating or cooling VV: heating and cooling, continuously 0..10 V 6WV: 6-way valve
Enclosure	ABS, red
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Wireless receiver – climate actuator 0..10 V		ES2
Item description	Item No.	€
SRC-AO Climate V	508278	142,90
SRC-AO Climate VV	508285	167,50
SRC-AO Climate 6WV	530255	142,90

SRC-AO Dim

DATA SHEETS

Unidirectional flush-mounted receiving actuator for dimming up to two 1..10 V or 0..10 V dimming actuators and electronic ballasts (ECGs) through EasySens® wireless switches. The SRC-AO DIM can accommodate up to 32 EasySens® wireless switches.

TECHNICAL DATA	
Output voltage	V: 1x 0..10 V VV: 2x 0..10 V
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	internal receiving antenna
Data transmission	unidirectional
Receiving channels	32 (Rx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 1 W (24 V =) | 1,5 VA (24 V ~)
Functions	V: 1-fold dimming actuator lighting VV: 2-fold dimming actuator lighting
Enclosure	ABS, red
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Wireless receiver – dimming actuator 0..10 V		ES2
Item description	Item No.	€
SRC-AO Dim V	499606	143,30
SRC-AO Dim VV	502931	167,50

SRC-AO Multi

Unidirectional flush-mounted receiving actuator with two proportional 0..10 V outputs for converting EasySens® wireless sensors such as temperature, temperature setpoint, humidity, etc. into 0..10 V signals.

TECHNICAL DATA	
Output voltage	V: 1x 0..10 V VV: 2x 0..10 V
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	internal receiving antenna
Data transmission	unidirectional
Receiving channels	per channel 1 (Rx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 1 W (24 V =) | 1,5 VA (24 V ~)
Functions	per output 1 sensor value (e.g. temperature, setpoint, humidity, actuating variable, dimming value)
Enclosure	ABS, red
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Wireless receiver – multi-functional actuator 0..10 V		ES2
Item description	Item No.	€
SRC-AO Multi V	508315	143,30
SRC-AO Multi VV	508322	167,50

STC-DO8

Bidirectional receiving actuator for (DIN) rail mounting with 8 relay outputs (expandable up to 12 relay outputs using the ‚STC-PLUS 4DO' expansion module) for the evaluation of EnOcean sensors, switches and room operating units. Suitable for heating/cooling control, fan coil control, light switching, shutter and blind control. The delivery content includes an external antenna for achieving best possible transmission range.

STC-DO8
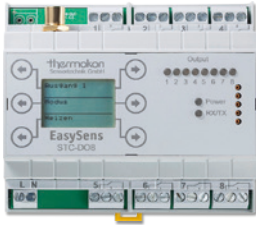
STC-DO8 with extension module
STC-PLUS 4DO

TECHNICAL DATA	
Output switch contact	8x relay with change-over contact (volt free contact), 230 V ~ / 6 A, 24 V = / 6 A, + 4x relay with additional module STC-PLUS 4DO
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	bidirectional
Power supply	100..240 V ~, 15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 2,0 W (24 V =) | 3,5 VA (24 V ~ / 230 V ~)
Functions	lighting, blinds/shutter, heating/cooling (PI), fancoil controller, heating ON/OFF, heating with PWM output, heating/cooling with PWM output, signalling contact, hygrostat controller, fan release
Display	graphic display monochrome
Enclosure	ABS, light grey
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+60 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base
Notes	magnetic antenna plate recommended to improve radio coverage

STC-DO8

Wireless receiver – multi relay 100..240 V		ES2
Item description	Item No.	€
STC-DO8 100..240 V type heating/cooling	490030	332,60
STC-DO8 100..240 V type fancoil, heating/cooling	490047	332,60
STC-DO8 100..240 V type switch actuator	490054	332,60

Wireless receiver – multi relay 24 V		ES2
Item description	Item No.	€
STC-DO8 24 V type heating/cooling	564458	332,60
STC-DO8 24 V type fancoil, heating/cooling	631495	332,60
STC-DO8 24 V type switch actuator	561273	332,60

Extension module		ES2
Item description	Item No.	€
STC-PLUS 4DO	517690	149,20

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊜	57,60
Antenna extension 20 m	257213	⊜	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊜	14,70
Connector STC-DO8 to STC-PLUS 4DO	517577	⊜	7,70

SRC-ADO

Unidirectional receiving actuator for (DIN) rail mounting with 4 analogue outputs 0..10 V and 2 (max. 4) potential-free relay outputs. For connecting EasySens® sensors, wireless switches, room operating units and wireless window contacts or window handles. Depending on the application, the device can be parameterized via software to control a fan coil unit with change-over, a PI controller for heating/cooling or 1..10 V dimmers or work as an interface between EasySens® wireless sensors and a BMS controller (overwrite wirelessly). The delivery content includes an external antenna for achieving best possible transmission range.

TECHNICAL DATA	
Output voltage	4x 0..10 V
Output switch contact	2DO: 2x changeover contact, floating, 4DO: 4x changeover contact, floating
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	unidirectional
Power supply	100..240 V ~, 15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 3,5 W (24 V =)	6,5 VA (24 V ~), max. 5 VA (..240 V ~)
Functions	lighting, blinds/shutter, heating/cooling (PI), fancoil controller, heating ON/OFF, heating with PWM output, heating/cooling with PWM output, signalling contact, hygrostat controller, fan release
Switching values	8 A resistive load (24 V =/~ | 230 V ~), 2 A inductive load (230 V ~)
Enclosure	ABS, light grey
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+60 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base
Notes	magnetic antenna plate recommended to improve radio coverage

SRC-ADO

Wireless receiver – multi 0..10 V	relay 2DO 100..240 V		ES2
Item description	Item No.	€
SRC-ADO 4AA/2DO 100..240 V type dimming/heating/cooling	267502	322,80
SRC-ADO 4AA/2DO 100..240 V type fancoil, change-over	423236	322,80

Wireless receiver – multi 0..10 V	relay 4DO 100..240 V		ES2
Item description	Item No.	€
SRC-ADO 4AA/4DO 100..240 V type dim/heating/cooling	273275	347,00
SRC-ADO 4AA/4DO 100..240 V type fancoil, change-over	423243	347,00

Wireless receiver – multi 0..10 V	relay 2DO 24 V		ES2
Item description	Item No.	€
SRC-ADO 4AA/2DO 24 V type dimming/heating/cooling	420105	322,80
SRC-ADO 4AA/2DO 24 V type fancoil, change-over	494816	322,80

Wireless receiver – multi 0..10 V	relay 4DO 24 V		ES2
Item description	Item No.	€
SRC-ADO 4AA/4DO 24 V type dimming/heating/cooling	455428	347,00
SRC-ADO 4AA/4DO 24 V type fancoil, change-over	502955	347,00

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊜	57,60
Antenna extension 20 m	257213	⊜	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊜	14,70

STC-MSG Server

The STC-MSG server is used for stand-alone solutions in combination with EasySens® room operating units and up to 8 or 16 SAB+/SAB05 radio valve actuators. An integrated scheduler can be individually set up as well as window contacts/handles can be learned in for increased energy savings. The parameterization of individual functions can be conducted through an integrated configuration menu using the display and respective buttons. The delivery content includes an external antenna for achieving best possible transmission range.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	external transmitting/receiving antenna with magnetic base
Data transmission	bidirectional
Receiving channels	8/16 SAB + 1 room sensor, 10 digital input modules, switches or presence detectors + 20 window contacts or window handles (Rx)
Transmitting channels	8/16 SAB + status telegrams (Tx)
Power supply	100..240 V ~
Power consumption	typ. 3,5 VA
Display	graphic display monochrome
Enclosure	ABS, light grey
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base
Notes	magnetic antenna plate recommended to improve radio coverage

Heating/cooling circuit controller		ES2
Item description	Item No.	€
STC-MSG Server 8 channel	501590	276,50
STC-MSG Server 16 channel	507080	314,40

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⏚	57,60
Antenna extension 20 m	257213	⏚	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⏚	14,70

STC-MSG Server UP

DATA SHEETS

The STC-MSG Server UP is is used for stand-alone solutions in combination with EasySens® room operating units and up to 5 SAB+/SAB05 radio valve actuators. It is possible to use the 'energy lock' function by teaching-in wireless window contacts and window handles so that when a window is open, the SAB closes the valve and saves heating/cooling energy. The following number of sensors can be connected: 5 EasySens® valve actuators (SABx), 1 room unit e.g. SR04 x, SR06 LCD x or SR07 x, 10 digital input modules SR65 DI, EasySens® switches, EasySens® presence detectors (e.g. SR-MDS, SR-MOW), 20 window contacts SRW or window handles SRG.

airConfig   enocean®

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional, airConfig ready
Power supply	100..240 V ~ 15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 2 VA (100...240 V ~)
Enclosure	ABS, red
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

Heating/cooling circuit controller 1 channel		ES2
Item description	Item No.	€
STC-MSG Server UP 100..240 V	550048	136,20
STC-MSG Server UP 24 V	688222	136,20

Accessories			
Item description	Item No.	On stock	€
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

SAB+

Self-powered wireless EasySens® valve actuator for individual room temperature control. The new electronic heating valve actuator uses the temperature difference between the radiator and ambient room temperature to generate electrical energy by means of a thermo-electric generator. Sufficient energy can be stored in the integrated high-performance capacitor to ensure reliable operation even during periods of insufficient energy management (summer months, transition period between seasons). Adapters are available for numerous valve manufacturers.

airConfig   enocean®

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional airConfig ready Bluetooth® interface on request
Power supply	maintenance-free thermal energy harvesting
Measuring range temp.	0..+40 °C
Measurement interval	every 2..20 min., configured via airConfig (in 2 min. steps) or via button
Transmission interval	every 2..20 min., configured via airConfig (in 2 min. steps) or via button
Functions	actuator operation, self-control mode, automatic closing point control, frost protection function (type heating) or heat protection function (type cooling)
Display	status-LED
Enclosure	PC, pure white, aluminium
Protection (IP)	IP40 according to EN 60529
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	screw mounted, M30 x 1,5 optional valve adapter available
Notes	to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz), with integrated, digital temperature transmitter, nominal stroke 3.8 mm, automatically adjusting, regulation time: 0,24 mm/s, pulling load: ›100 N

SAB+

Battery-less radio valve actuator EasySens® with thermal energy harvesting			ES2
Item description	Item No.	On stock	€
SAB+ (Heating)	669108	⊜	165,00
SAB+ (Cooling)	715409	⊜	165,00

Accessories			AS1
Item description	Item No.	On stock	€
SAB Lock – dismounting protection SAB	688611	⊜	6,20
Safety lock dismounting protection SAB	706148	⊜	10,70
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

Accessories – valve adapters			AS1
Item description	Item No.	On stock	€
Valve adapter SAB for Giacomini Z810 (22,6 mm)	634724		24,70
Valve adapter SAB for Oventrop Z809 (M30x1,0)	611978		24,70
Valve adapter SAB for Herz Z807 (M28 X 1,5 mm)	595070		24,70
Valve adapter SAB for Danfoss RA2000 Z802	589093		24,70
Valve adapter SAB for Danfoss RAV Z803	589109		24,70
Valve adapter SAB for Danfoss RAV-L Z804	589116		24,70
Valve adapter SAB for Danfoss Z800	589079		24,70
Valve adapter SAB for Danfoss Z801	589086		24,70
Valve adapter SAB for Danfoss Z805	615181		24,70
Further valve adapters on request			

SAB05

Battery-powered wireless EasySens® valve actuator for individual room temperature control. The SAB05 is compatible with the STC-MSG server (for stand-alone solutions) or EasySens® gateways to integrate into BUS networks. Parameterisation can be done through airConfig software. The SAB05 is completely wireless and powered by 3x AA batteries. Adapters are available for numerous valve manufacturers.

airConfig   enocean®

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional, airConfig ready
Power supply	3 batteries (type AA)
Measuring range temp.	0..+40 °C
Measurement interval	every 2..20 min., configured via airConfig (in 2 min. steps) or via button
Transmission interval	every 2..20 min., configured via airConfig (in 2 min. steps) or via button
Functions	radio interface, actuator operation, self-control mode, automatic closing point control, frost protection function
Display	status-LED, multi-colored
Enclosure	PC, pure white
Protection (IP)	IP40 according to EN 60529
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	screw mounted, M30 x 1,5, optional valve adapter available
Delivery content	incl. 3 batteries (type AA)
Notes	to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz), with integrated, digital temperature transmitter, Regulation distance: max. 3 mm (automatic adaption by initialisation), regulation time: 0,1 mm/s, pulling load: 100 N nominal

SAB05

Valve actuator			ES2
Item description	Item No.	On stock	€
SAB05	513753	⊜	140,00

Accessories			AS1
Item description	Item No.	On stock	€
Battery protection SAB05	595612	⊜	19,00
SAB Lock – dismounting protection SAB	688611	⊜	6,20
Safety lock dismounting protection SAB	706148	⊜	10,70
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

Accessories – valve adapters			AS1
Item description	Item No.	On stock	€
Valve adapter SAB for Giacomini Z810 (22,6 mm)	634724		24,70
Valve adapter SAB for Oventrop Z809 (M30x1,0)	611978		24,70
Valve adapter SAB for Herz Z807 (M28 X 1,5 mm)	595070		24,70
Valve adapter SAB for Danfoss RA2000 Z802	589093		24,70
Valve adapter SAB for Danfoss RAV Z803	589109		24,70
Valve adapter SAB for Danfoss RAV-L Z804	589116		24,70
Valve adapter SAB for Danfoss Z800	589079		24,70
Valve adapter SAB for Danfoss Z801	589086		24,70
Valve adapter SAB for Danfoss Z805	615181		24,70
Further valve adapters on request			

SRE-Repeater

DATA SHEETS

The SRE-Repeater is used for repeating radio telegrams between EnOcean transmitters and receivers/gateways. The repeater is typically used when transmission range problems occur between transmitter and receiver in an existing installation (e.g. due to walls being pulled in, furniture/cabinets being moved). Level 1, Level 2 and Smart Repeating (rule-based filters) can be set using the free airConfig software. Ideal for installation in suspended ceilings.

airConfig

enocean

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	internal transmitting/receiving antenna external transmitting/receiving antenna with magnetic base
Data transmission	bidirectional, airConfig ready
Power supply	flex. 15..240 V =/~
Power consumption	typ. 1 VA (15..240 V =/ ~)
Functions	level-1, level-2, smart-operation, rule based, max. 10 rules, configured via airConfig
Enclosure	PA6.6, pure white, cover PC, transparent, with quick lock screws
Protection (IP)	IP65 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery content	incl. external transmitting/receiving antenna 2,5 m with magnetic base, only version with external antenna
Notes	to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz), magnetic antenna plate for the external antenna recommended to improve radio coverage

Wireless repeater		ES2
Item description	Item No.	€
SRE-Repeater MultiLevel internal ant.	593809	137,20
SRE-Repeater MultiLevel external ant.	593830	157,30

Accessories			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊜	57,60
Antenna extension 20 m	257213	⊜	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊜	14,70
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50

SRE-Repeater UP

DATA SHEETS

The SRE-Repeater UP is especially designed for flush-mounting and used for repeating radio telegrams between EnOcean transmitters and receivers/gateways. The repeater is typically used when transmission range problems occur between transmitter and receiver in an existing installation (e.g. due to walls being pulled in, furniture/cabinets being moved). Level 1, Level 2 and Smart Repeating (rule-based filters) can be set using the free airConfig software.

airConfig   enocean®

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional, airConfig ready
Power supply	100..240 V ~
Power consumption	max. 2 VA (100...240 V ~), standby <0,5 W
Functions	level-1, level-2, smart-operation, rule based, max. 10 rules, configured via airConfig
Enclosure	ABS, red
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

Wireless repeater		ES2
Item description	Item No.	€
SRE-Repeater UP MultiLevel internal ant.	556736	115,10

Accessories			
Item description	Item No.	On stock	€
airConfig (freeware via www.thermokon.com)			0,00
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⬲	103,50

airScan

Thermokon's airScan software in connection with the EnOcean-USB transceiver (incl. license) turns your PC or Mac into a field strength measuring device. This tool is used to measure transmission ranges and to determine the optimal mounting spots for EnOcean transmitters/ receivers. airScan provides a quick overview of EnOcean telegrams, status, EnOcean ID, field strength and manufacturer of the product.

airConfig   enocean

TECHNICAL DATA	
System requirements	the software is available for all Windows- and Apple OS X based computers, min. Windows XP, Adobe Flash, min. USB 2.0
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz (Americas)
Delivery content	1x USB-Stick, software for configuration (freeware via download)
Notes	USB extension (3 m) for optimal positioning of the transmitter/receiver is available (refer to accessories)

airScan (EnOcean usb transceiver + license)			
Item description	Item No.	On stock	€
airScan (net price)	566704	⬮	103,50

Accessories			
Item description	Item No.	On stock	€
USB extension 3 m (net price)	574044	⬮	13,80

airConfig

airConfig allows remote commissioning of selected products from the EasySens® family. Remote commissioning here stands for parameterization without a physical interaction with the device. airConfig uses the EnOcean radio to parameterize the devices using special remote commissioning commands. In order to remotely configure devices, the EnOcean-USB transceiver and the free airConfig software are required.

TECHNICAL DATA	
System requirements	the software is available for all Windows- and Apple OS X based computers. It also runs on the Microsoft surface tablet. An EnOcean based USB stick allows the communication to the devices and your network.
Radio technology	EnOcean (IEC 14543-3-10)
Notes	to use the free software airConfig (download) a USB stick, which is able to send and receive EnOcean telegrams, is necessary. The EnOcean USB stick (incl. license) is included in airScan (item No. 566704 for 868 MHz)

airConfig		
Item description	Item No.	€
airConfig (free of charge)		0,00

Accessories			
Item description	Item No.	On stock	€
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704		103,50
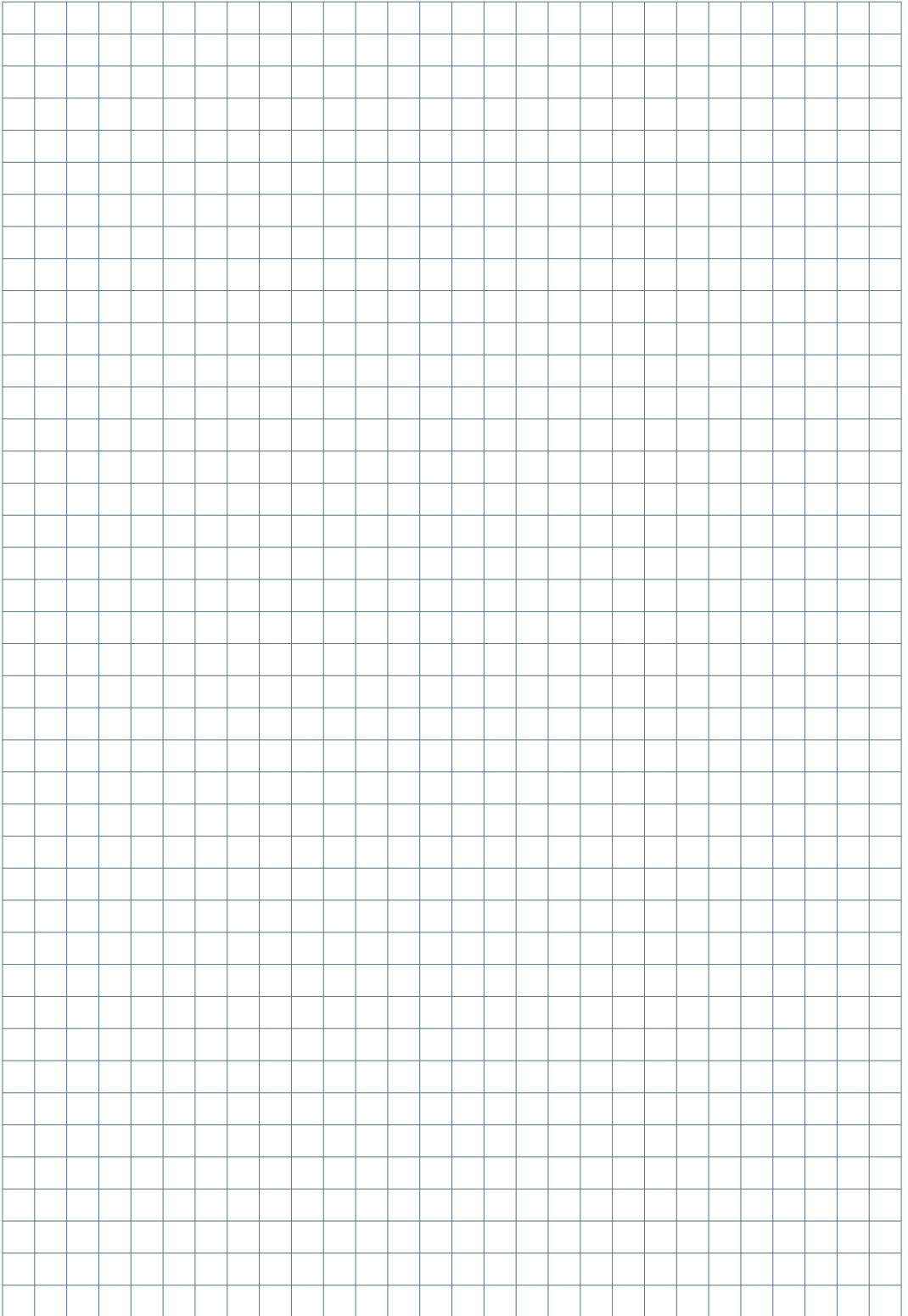
IntoMesh Transmitter

Innovative self-powered wireless technology generates energy by means of harvesting ambient light or motion. Interoperable, cost-effective and energy-efficient solutions in building automation are available using our wireless sensor system EasySens®.

TECHNICAL DATA	
Radio technology	Bluetooth® Low Energy (BLE)
Frequency	2,4 GHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pressing the switches
Switch range Berker	S.1 *, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI *, solo®, future® linear, Busch-axcent®
Switch range Feller	EDIZIOdue *
Switch range Gira	E2 *, E3 *, Standard 55 *, Esprit *, Event *, F100 *
Switch range Jung	LS 990, A 500 *, AS 500 *, A creation *
Switch range Merten	M-Smart *, M-Plan *, M-Pure *, 1-M, Atelier-M, Artec *, Antik *
Switch range Peha	AURA, AURA glass
Control functions	actuation force 7 N actuation range 2 mm operating cycle quantity > 50.000
No. of buttons	2-channel (1 switch) 4-channel (2 switches)
Labelling	O, I (version light) ∆▼ (version blinds) special printing available on request
Enclosure	pure white brilliant, aluminium, Jung aluminium (suitable for switch ranges Jung), anthracite
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	* in switch program with intermediate frame, when ordering other switch programmes, please specify colour, please note surcharges for some switch systems

BLE radio switches (Bluetooth® Low Energy)

Energy-harvesting wireless switch for changing the status of lights and blinds. The BLE technology allows flexible attachment to glass and plasterboard walls using adhesive pads or screws.
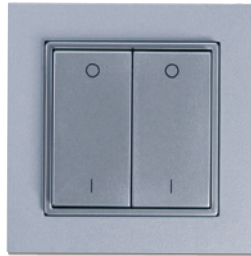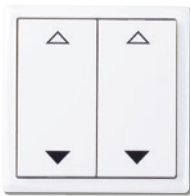
Frame Mini

Wireless switches BLE 2,4 GHz 2-channel light		ES2
Item description	Item No.	€
Switch Mini 2-channel BLE light pure white brilliant	731065	66,30
Switch Mini 2-channel BLE light aluminium varnished	733946	66,30
Switch Mini 2-channel BLE light anthracite	733953	66,30

Wireless switches BLE 2,4 GHz 4-channel light		ES2
Item description	Item No.	€
Switch Mini 4-channel BLE light pure white brilliant	708425	68,60
Switch Mini 4-channel BLE light aluminium varnished	733960	68,60
Switch Mini 4-channel BLE light anthracite	733977	68,60

Wireless switches BLE 2,4 GHz 2-channel blind		ES2
Item description	Item No.	€
Switch Mini 2-channel BLE blind pure white brilliant	733984	66,30
Switch Mini 2-channel BLE blind aluminium varnished	733991	66,30
Switch Mini 2-channel BLE blind anthracite	734004	66,30

Wireless switches BLE 2,4 GHz 4-channel blind		ES2
Item description	Item No.	€
Switch Mini 4-channel BLE blind pure white brilliant	734011	68,60
Switch Mini 4-channel BLE blind aluminium varnished	734028	68,60
Switch Mini 4-channel BLE blind anthracite	734035	68,60

Frame 55x55

Wireless switches BLE 2,4 GHz 2-channel light		ES1
Item description	Item No.	€
Switch 2-channel BLE light 55x55 pure white matt without frame	734042	72,00
Switch 2-channel BLE light 55x55 pure white brilliant without frame	734288	72,00
Switch 2-channel BLE light 55x55 aluminium without frame	734318	72,00
Switch 2-channel BLE light 55x55 Jung aluminium without frame	734325	72,00
Switch 2-channel BLE light 55x55 anthracite without frame	734332	72,00

Wireless switches BLE 2,4 GHz 4-channel light		ES1
Item description	Item No.	€
Switch 4-channel BLE light 55x55 pure white matt without frame	734066	74,20
Switch 4-channel BLE light 55x55 pure white brilliant without frame	734349	74,20
Switch 4-channel BLE light 55x55 aluminium without frame	734356	74,20
Switch 4-channel BLE light 55x55 Jung aluminium without frame	734363	74,20
Switch 4-channel BLE light 55x55 anthracite without frame	734370	74,20

Wireless switches BLE 2,4 GHz 2-channel blind		ES1
Item description	Item No.	€
Switch 2-channel BLE blind 55x55 pure white matt without frame	734110	72,00
Switch 2-channel BLE blind 55x55 pure white brilliant without frame	734387	72,00
Switch 2-channel BLE blind 55x55 aluminium without frame	734394	72,00
Switch 2-channel BLE blind 55x55 Jung aluminium without frame	734400	72,00
Switch 2-channel BLE blind 55x55 anthracite without frame	734417	72,00

Wireless switches BLE 2,4 GHz 4-channel blind		ES1
Item description	Item No.	€
Switch 4-channel BLE blind 55x55 pure white matt without frame	734127	74,20
Switch 4-channel BLE blind 55x55 pure white brilliant without frame	734424	74,20
Switch 4-channel BLE blind 55x55 aluminium without frame	734479	74,20
Switch 4-channel BLE blind 55x55 Jung aluminium without frame	734486	74,20
Switch 4-channel BLE blind 55x55 anthracite without frame	734493	74,20

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass, stainless steel, aluminium (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

Frame Busch-Jaeger

Wireless switches BLE 2,4 GHz 2-channel light		ES1
Item description	Item No.	€
Switch 2-channel BLE light BJ63x63 studio white without frame	734516	74,20
Switch 2-channel BLE light BJ63x63 ivory white without frame	734547	74,20
Switch 2-channel BLE light BJ63x63 aluminium silver without frame	734554	74,20
Switch 2-channel BLE light BJ63x63 anthracite without frame	734561	74,20

Wireless switches BLE 2,4 GHz 4-channel light		ES1
Item description	Item No.	€
Switch 4-channel BLE light BJ63x63 studio white without frame	734509	76,50
Switch 4-channel BLE light BJ63x63 ivory white without frame	734578	76,50
Switch 4-channel BLE light BJ63x63 aluminium silver without frame	734585	76,50
Switch 4-channel BLE light BJ63x63 anthracite without frame	734592	76,50

Wireless switches BLE 2,4 GHz 2-channel blind		ES1
Item description	Item No.	€
Switch 2-channel BLE blind BJ63x63 studio white without frame	734615	74,20
Switch 2-channel BLE blind BJ63x63 ivory white without frame	734622	74,20
Switch 2-channel BLE blind BJ63x63 aluminium silver without frame	735049	74,20
Switch 2-channel BLE blind BJ63x63 anthracite without frame	735056	74,20

Wireless switches BLE 2,4 GHz 4-channel blind		ES1
Item description	Item No.	€
Switch 4-channel BLE blind BJ63x63 studio white without frame	734608	76,50
Switch 4-channel BLE blind BJ63x63 ivory white without frame	735070	76,50
Switch 4-channel BLE blind BJ63x63 aluminium silver without frame	735087	76,50
Switch 4-channel BLE blind BJ63x63 anthracite without frame	735100	76,50

Options	
Item description	€
Switch ranges Busch-Jaeger future® linear | solo® | Busch-axcent®	4,50

Room Operating Units / Controller

Our room operating units are used for temperature detection and integrated operation of HVAC, lighting and blinds for single room control. A variety of sophisticated and high-end designs and optional features are available.

» BENEFITS

» Compatible with multiple BUS systems
» Various control elements to cover a wide range of applications
» Flexible design options with various colours and design frames
» Custom labels/engravings

1

2

WRF06 LCD

Flush-mounted room operating unit
for flexible room control, compatible
to various design frames of numerous
manufacturers

NOVOS Touch

High-end room operating unit
with 4,8" Touchscreen and BUS interface

NOVOS

BACnet ASHRAE   **KNX**®   **LON** *LOCAL OPERATING NETWORK*   **enocean**®   **Modbus**   **digitalSTROM**

PERFECT WORKING CONDITIONS

The multifunctional room operating units combine high-end design along with sophisticated technology: Integrated sensors
for temperature and humidity, switching signals for lighting and blinds, touch-sensitive surfaces in custom design variations.
Communications through standard network technologies: Create the perfect working environment.

NOVOS 7

Multifunctional room operating unit with push-and-rotary switch,
3,5" TFT display and BUS-interface

WRF07

Flush-mounted room operating unit,
compatible with various switch designs
from many manufacturers,
numerous control elements and
custom labels are available.

NOVOS

BACnet   KNX   LON
LOCAL OPERATING NETWORK   enocean   Modbus   digitalSTROM

HIGH LEVEL COMMUNICATION

The multifunctional room operating units combine high grade design along with sophisticated technology: Integrated sensors for temperature and humidity, switching signals for lighting and blinds, touch-sensitive surfaces in custom design variations. Communications via standard network technology: Create the perfect working environment.

thanos EVO

The high-grade materials and sophisticated design of the thanos EVO make it an outstanding room unit for high-end residential or commerical buildings. With its 4.8" touchscreen and up to 4 integrated sensors (temperature, relative humidity, CO2 and VOC), users can individually adjust multiple HVAC and lighting/blinds features. 2D room graphics make operations even more intuitive. External sensors and inputs enhance the multi-functionality of the thanos EVO.

TECHNICAL DATA	
Measured values	temperature, humidity, CO2, VOC (depending on the device)
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 2,5 W (24 V =) | 5 VA (24 V ~)
Measuring range temp.	-50..+50 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, default setting: 0..+50 °C optionally configurable via App, uConfig or BUS
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app, uConfig or BUS
Measuring range CO2	0..2000 ppm | 0..5000 ppm, optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	self-calibration CO2: Dual Channel
Sensor	VOC sensor (heated metal oxide semiconductor) CO2: NDIR (non-dispersive, infrared)
Inputs	1x input for floating contact
Control functions	occupancy signalling light ON/OFF/DIM call scenarios blinds UP/DOWN/SET fan stages setpoint ECO function showing measured value and history

Display	TFT 4,8", 1120x480 px, capacitive touch technology
Colour	white or black
Enclosure	enclosure thanos EVO, PC V0 and glass Design surface glass
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm), to be mounted flat onto the surface using adhesive foil or screws base part can be mounted and wired separately

Modbus

Touch screen room operating unit white temperature + opt. humidity, CO2, VOC – BUS		RU1
Item description	Item No.	€
thanos EVO white Temp RS485 Modbus	753913	419,00
thanos EVO white Temp_rH RS485 Modbus	753944	459,00
thanos EVO white CO2 Temp_rH RS485 Modbus	753968	519,00
thanos EVO white VOC Temp_rH RS485 Modbus	753982	509,00
thanos EVO white CO2+VOC Temp_rH RS485 Modbus	754002	569,00

Modbus

Touch screen room operating unit black temperature + opt. humidity, CO2, VOC – BUS		RU1
Item description	Item No.	€
thanos EVO black Temp RS485 Modbus	753920	431,00
thanos EVO black Temp_rH RS485 Modbus	753951	471,00
thanos EVO black CO2 Temp_rH RS485 Modbus	753975	531,00
thanos EVO black VOC Temp_rH RS485 Modbus	753999	521,00
thanos EVO black CO2+VOC Temp_rH RS485 Modbus	754019	581,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80

NOVOS Touch

Covering the 4.8" touchscreen below a real glass surface, the NOVOS Touch is the flagship model of the NOVOS family. With a maximum of up to 4 integrated sensors (temperature, relative humidity, CO2 and VOC) and the possibility of including external values as well, the NOVOS Touch brilliantly combines comfort and energy efficiency. Mutiple design options and colors provide individualism for the most diverse applications.

NOVOS Touch white

NOVOS Touch black
with design cover black

NOVOS Touch white
with design cover black

Modbus

TECHNICAL DATA	
Measured values	temperature, humidity, CO2, VOC (depending on the device)
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 2,5 W (24 V =) | 5 VA (24 V ~)
Measuring range temp.	-50..+50 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, default setting: 0..+50 °C optionally configurable via App, uConfig or BUS
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app, uConfig or BUS
Measuring range CO2	0..2000 ppm | 0..5000 ppm, optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	CO2: Dual Channel
Sensor	VOC sensor (heated metal oxide semiconductor) CO2: NDIR (non-dispersive, infrared)
Inputs	1x input for floating contact
Control functions	occupancy signalling light ON/OFF/DIM call scenarios blinds UP/DOWN/SET fan stages setpoint ECO function showing measured value and history

Display	TFT 4,8", 1120x480 px, capacitive touch technology
Colour	Enclosure: pure white, black or aluminium design cover: glass, white or black
Enclosure	enclosure NOVOS touch, PC V0 Design surface glass
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm), to be mounted flat onto the surface using adhesive foil or screws base part can be mounted and wired separately
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

Modbus

Touch screen room operating unit temperature + opt. humidity, CO2, VOC – BUS		RU1
Item description	**Item No.**	**€**
NOVOS Touch white Temp RS485 Modbus	761802	389,00
NOVOS Touch white Temp_rH RS485 Modbus	761819	429,00
NOVOS Touch white CO2 Temp_rH RS485 Modbus	761826	489,00
NOVOS Touch white VOC Temp_rH RS485 Modbus	761833	479,00
NOVOS Touch white CO2+VOC Temp_rH RS485 Modbus	761840	539,00

Options	
Item description	**€**
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00
Design cover NOVOS Touch glass black	12,00

Accessories			AS1
Item description	**Item No.**	**On stock**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

NOVOS 7

The NOVOS 7 stands out for its well-known and intuitive user interface using a rotary push button and a 3.5" TFT display. Four favourite buttons allow quick access to frequently used functions such as temperature set point or light control. Blinds and lights can thus be configured accordingly. The NOVOS 7 can be equipped with up to 4 integrated sensors (temperature, relative humidity, CO2 and VOC) and contributes to a comfortable room ambience and energy savings.

NOVOS 7 white

NOVOS 7 black
with design cover black

NOVOS 7 aluminium
with design cover alu

TECHNICAL DATA	
Measured values	temperature, humidity, CO2, VOC (depending on the device)
Network technology	RS485 Modbus
Power supply	24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 2 W (24 V =)
Measuring range temp.	-50..+50 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, default setting: 0..+50 °C optionally configurable via App, uConfig or BUS
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app, uConfig or BUS
Measuring range CO2	0..2000 ppm | 0..5000 ppm, optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Sensor	VOC sensor (heated metal oxide semiconductor) CO2: NDIR (non-dispersive, infrared)
Inputs	1x input for floating contact
Control functions	occupancy signalling light ON/OFF/DIM call scenarios blinds UP/DOWN/SET fan stages setpoint ECO function showing measured value and history
Display	TFT 3,5", 320x480 px
Colour	Enclosure: pure white, black or aluminium

Enclosure	enclosure NOVOS 7, PC V0 design cover pure white, black or aluminium
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm), to be mounted flat onto the surface using adhesive foil or screws base part can be mounted and wired separately
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

Modbus

Room operating unit temperature + opt. humidity, CO2, VOC – BUS		RU1
Item description	Item No.	€
NOVOS 7 white Temp RS485 Modbus	735018	269,00
NOVOS 7 white Temp_rH RS485 Modbus	735025	309,00
NOVOS 7 white CO2 Temp_rH RS485 Modbus	735032	369,00
NOVOS 7 white VOC Temp_rH RS485 Modbus	735063	359,00
NOVOS 7 white CO2+VOC Temp_rH RS485 Modbus	735094	419,00

Room operating unit temperature + opt. humidity, CO2, VOC design – BUS (please specify desired design cover)		RU1
Item description	Item No.	€
NOVOS 7 white design Temp RS485 Modbus	761901	269,00
NOVOS 7 white design Temp_rH RS485 Modbus	761987	309,00
NOVOS 7 white design CO2 Temp_rH RS485 Modbus	762007	369,00
NOVOS 7 white design VOC Temp_rH RS485 Modbus	762014	359,00
NOVOS 7 white design CO2+VOC Temp_rH RS485 Modbus	762038	419,00

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)			AS1
Item description	Item No.	On stock	€
Design cover NOVOS 7 glass alu	745307	⊜	12,00
Design cover NOVOS 7 glass black	745284	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

thanos dS

The elegant thanos dS can be used with a digitalSTROM network to control multiple features such as lighting, room temperature, shading as well as audio and video. In addition, panic or fire alarms as well as wind speed, hail or rain can be visualized.

digitalSTROM

TECHNICAL DATA	
Measured values	temperature, humidity, depending on the device
Network technology	digitalSTROM (dS)
Power supply	230 V ~ (±10%)
Power consumption	typ. 3 W / max. 0,04 A
Measuring range temp.	0..+40 °C,
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±3% between 20..80% rH (typ. at 21 °C)
Control functions	light, blinds, room climate, audio, video, presence, app button
Clip	anodized aluminium
Display	showing room temperature, setpoint, operation mode, fan stage, occupancy audio-visual presentation of events such as alarm, panic, fire is possible
Colour	white or black
Enclosure	PC and glass
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

digitalSTROM

Touch screen room operating unit temperature + humidity – digitalSTROM		DS1
Item description	Item No.	€
thanos rH S black dS	613446	626,10
thanos rH S white dS	613439	626,10

WRF06 LCD VV_DI4

The flush-mounted room operating unit with set point adjustment, fan stage control and occupancy button can be used for an individual temperature control in living spaces as well as hotel and office rooms. With 4 push buttons and an integrated LCD for visualizing temperature, fan stage and occupancy, the WRF06 LCD VV can also control proportional valves directly besides the models to integrate into a Modbus RS485 or LON network. Removable terminals allow for pre-wiring.

WRF06 LCD ltype1 pure white,
frame Gira E2 pure white matt

WRF06 LCD ltype1 anthracite,
frame Peha Aura Glas

WRF06 LCD LON ltype2 aluminium,
frame Merten M-Plan aluminium

0..10 V   **Modbus**   **LON**
LOCAL OPERATING NETWORK

TECHNICAL DATA	
Measured values	temperature
Output voltage	VV: 2x 0..10 V
Network technology	LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,8 W (24 V =) | 2,5 VA (24 V ~), LON: typ. 1,3 W (24 V =) | 1,5 VA (24 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	VV: 2x input digital for floating contact DI4: 4x input digital for floating switch contact
Switch range Berker	S.1, B.3 aluminum, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec *, Antik *
Switch range Peha	AURA, AURA glass
No. of buttons	4
Display	LCD 34x21 mm, monochrome
Enclosure	PC, pure white brilliant, pure white matt, aluminium, anthracite, frame color may differ slightly
Protection (IP)	IP30 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², pluggable
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Delivery content	software for configuration (freeware via download)
Notes	for further variants see chapter room controller, * in switch program with intermediate frame, please specify frame design when ordering, please indicate labelling type in order, BUS: only available with labelling type 1 and 2

WRF06 LCD VV_DI4

labelling type 1 (ltype1)
standard for BUS / optionally for VV

labelling type 2 (ltype2)
optionally for models with BUS

labelling type 3 (ltype3)
standard for models VV

Room operating unit temperature – active 2x 0..10 V			RU2
Item description	Inputs	Item No.	€
WRF06 LCD VV ltype3 pure white matt without frame	2	731089	190,50
WRF06 LCD VV ltype3 pure white brilliant without frame	2	731102	190,50
WRF06 LCD VV ltype3 aluminium without frame	2	731119	190,50
WRF06 LCD VV ltype3 Jung aluminium without frame	2	731126	190,50
WRF06 LCD VV ltype3 anthracite without frame	2	731133	190,50

LON
LOCAL OPERATING NETWORK

Modbus

Room operating unit temperature – RS485 Modbus			RU2
Item description	Inputs	Item No.	€
WRF06 LCD DI4 RS485 Modbus ltype1 pure white matt without frame	4	731140	190,50
WRF06 LCD DI4 RS485 Modbus ltype1 pure white brilliant without frame	4	730068	190,50
WRF06 LCD DI4 RS485 Modbus ltype1 aluminium without frame	4	731164	190,50
WRF06 LCD DI4 RS485 Modbus ltype1 Jung aluminium without frame	4	731195	190,50
WRF06 LCD DI4 RS485 Modbus ltype1 anthracite without frame	4	731201	190,50

Room operating unit temperature – LON			RU2
Item description	Inputs	Item No.	€
WRF06 LCD DI4 LON ltype1 pure white matt without frame	4	731218	274,40
WRF06 LCD DI4 LON ltype1 pure white brilliant without frame	4	731232	274,40
WRF06 LCD DI4 LON ltype1 aluminium without frame	4	731249	274,40
WRF06 LCD DI4 LON ltype1 Jung aluminium without frame	4	731256	274,40
WRF06 LCD DI4 LON ltype1 anthracite without frame	4	731263	274,40

Options	
Item description	€
Labelling type 1 (ltype1) – only type VV	0,00
Labelling type 2 (ltype2) – only BUS models	0,00

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass, stainless steel, aluminium (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

FTW06 LCD dS

The FTW06 LCD is designed for digitalSTROM networks and comes with 4 push buttons and an integrated LCD to be used for temperature and humditiy measurement as well as set point and fan stage adjustment. Through the digitalSTROM system, it can furthermore be remotely controlled. Multiple switch ranges and colour options are available for design-oriented buildings and rooms.

FTW06 LCD dS

digitalSTROM

TECHNICAL DATA	
Measured values	temperature, humidity
Network technology	digitalSTROM (dS)
Power supply	230 V ~ (±10%)
Power consumption	typ. 1,1 W (24 V =) max. 0,04 A (230 V ~)
Measuring range temp.	0..+40 °C
Measuring range humidity	0..95% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Switch range Berker	S.1, B.3 aluminum, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec *, Artec stainless steel *, Antik *
Switch range Peha	AURA, AURA glass
No. of buttons	4
Display	LCD 34x21 mm, monochrome
Enclosure	PC, pure white brilliant, pure white matt, aluminium, anthracite frame color may differ slightly
Protection (IP)	IP30 according to EN 60529
Electrical connection	plug-in terminal, max. 2,5 mm²
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	* in switch program with intermediate frame please specify frame design when ordering

FTW06 LCD dS

Room operating unit humidity– + temperature digitalSTROM		DS1
Item description	Item No.	€
FTW06 LCD dS pure white matt without frame	731270	262,30
FTW06 LCD dS pure white brilliant without frame	731287	262,30
FTW06 LCD dS aluminium without frame	731294	262,30
FTW06 LCD dS Jung aluminium without frame	731300	262,30
FTW06 LCD dS anthracite without frame	731317	262,30

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass, stainless steel, aluminium (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

WRF07

An optically appealing flush-mounted room unit in the design of various switch frame manufacturers. Available in different colors and with different labeling options. Possible operating elements are potentiometers (set point adjustment), LEDs (status feedback), buttons (presence) and rocker switches (operating mode day/night). An integrated temperature sensor is optional. The removable terminal allows for pre-wiring.

WRF07 P ltype1,
Gira E2 pure white matt

WRF07 P ltype1,
Busch-Jaeger alpha nea®

0..10 V

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	TRV: typ. 0,42 W (24 V =) | 0,84 VA (24 V ~)
Measuring range temp.	0..+50 °C, passive: -35..+70 °C
Accuracy temperature	passive: depending on used sensor, TRV : ±1% of measuring range (typ. at 21 °C)
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo®, future® linear, impuls, Busch-axcent®, alpha nea®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antik
Switch range Peha	AURA, AURA glass
Setpoint (P)	potentiometer, 3-wire connection default value 10 kΩ (for other values please request) active output 0..10 V (optional)
Rotary switch (S)	mini rotary switch for fan stage adjustment with up to 5 stages available (please request), switching capacity max. 24 V =/~, 5 W
Rocker switch (S)	for fan speed adjustment
Button (T)	for presence detection, switching capacity max. 600 mW
LED (D)	for status feedback, green (standard), several LEDs possible (e.g. green, yellow, red)
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	for further variants see chapter room controller, other sensors | operating elements | switch ranges on request

Room Operating Units / Controller

WRF07

Types with standard labelling *(only with standard switch ranges)*

Labelling type 1 *(manufacturer standard labelling, depending on switch range)*

WRF07 P ltype1
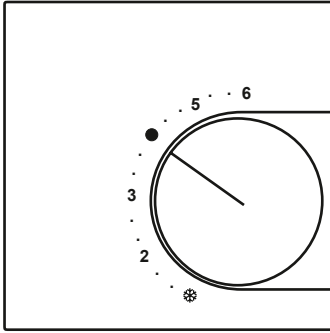
WRF07 P ltype1 Busch-Jaeger
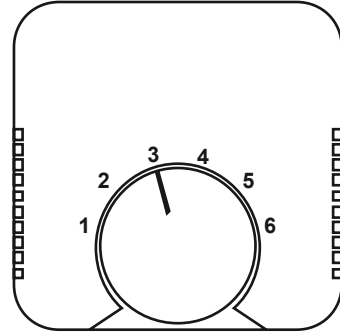
Labelling type 2 *(refer to options)*

WRF07 P ltype2
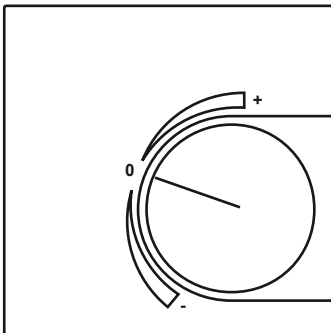
WRF07 P ltype2 Busch-Jaeger
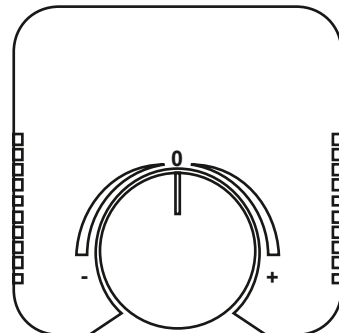
Labelling type 6 – colour red/blue *(refer to options)*

WRF07 P ltype6
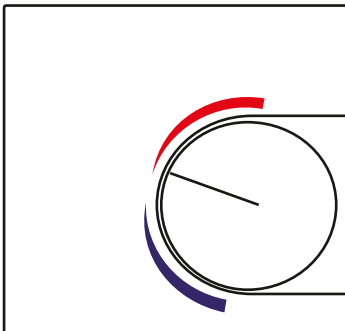
WRF07 P ltype6 Busch-Jaeger
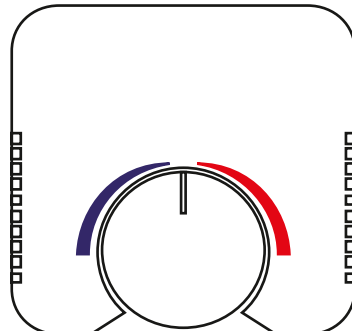
button (T) and LED (D) without labelling by default,
rocker switch (S) labelled with I/O (not available for switch range Busch-Jaeger)

Item descr.: product | operating elements | sensor | labelling type | switch range | colour | potentiometer | LED

WRF07

Room operating unit temperature – without sensor		RU2
Item description	Item No.	€
WRF07 P without sensor ltype1 Gira E2 pure white matt, 10 kOhm	202664	80,70
WRF07 PTD without sensor ltype1 Gira E2 pure white matt, 10 kOhm, LED green	542883	111,50
WRF07 PSD without sensor ltype1 Gira E2 pure white matt, 10 kOhm, LED green	627917	114,90

Room operating unit temperature – PT100		RU2
Item description	Item No.	€
WRF07 P PT100 ltype1 Gira E2 pure white matt, 10 kOhm	628020	87,90
WRF07 PTD PT100 ltype1 Gira E2 pure white matt, 10 kOhm, LED green	553278	118,70
WRF07 PSD PT100 ltype1 Gira E2 pure white matt, 10 kOhm, LED green	627924	122,00

Room operating unit temperature – PT100 1/3 DIN		RU2
Item description	Item No.	€
WRF07 P PT100 1/3 DIN ltype1 Gira E2 pure white matt, 10 kOhm	628037	91,70
WRF07 PTD PT100 1/3 DIN ltype1 Gira E2 pure white matt, 10 kOhm, LED green	628068	122,50
WRF07 PSD PT100 1/3 DIN ltype1 Gira E2 pure white matt, 10 kOhm, LED green	627931	125,90

Room operating unit temperature – PT1000		RU2
Item description	Item No.	€
WRF07 P PT1000 ltype1 Gira E2 pure white matt, 10 kOhm	399012	90,10
WRF07 PTD PT1000 ltype1 Gira E2 pure white matt, 10 kOhm, LED green	291767	120,90
WRF07 PSD PT1000 ltype1 Gira E2 pure white matt, 10 kOhm, LED green	627948	124,30

Room operating unit temperature – PT1000 1/3 DIN		RU2
Item description	Item No.	€
WRF07 P PT1000 1/3 DIN ltype1 Gira E2 pure white matt, 10 kOhm	628044	93,20
WRF07 PTD PT1000 1/3 DIN ltype1 Gira E2 pure white matt, 10 kOhm, LED green	628075	124,00
WRF07 PSD PT1000 1/3 DIN ltype1 Gira E2 pure white matt, 10 kOhm, LED green	627955	127,40

Room operating unit temperature – Ni1000		RU2
Item description	Item No.	€
WRF07 P Ni1000 ltype1 Gira E2 pure white matt, 10 kOhm	400220	89,80
WRF07 PTD Ni1000 ltype1 Gira E2 pure white matt, 10 kOhm, LED green	529266	120,60
WRF07 PSD Ni1000 ltype1 Gira E2 pure white matt, 10 kOhm, LED green	678643	124,00

Room operating unit temperature – Ni1000TK5000		RU2
Item description	Item No.	€
WRF07 P Ni1000TK5000 ltype1 Gira E2 pure white matt, 10 kOhm	193634	93,40
WRF07 PTD Ni1000TK5000 ltype1 Gira E2 pure white matt, 10 kOhm, LED green	628082	124,20
WRF07 PSD Ni1000TK5000 ltype1 Gira E2 pure white matt, 10 kOhm, LED green	627979	127,60

Room operating unit temperature – NTC10k		RU2
Item description	Item No.	€
WRF07 P NTC10k ltype1 Gira E2 pure white matt, 10 kOhm	400237	86,50
WRF07 PTD NTC10k ltype1 Gira E2 pure white matt, 10 kOhm, LED green	628099	117,30
WRF07 PSD NTC10k ltype1 Gira E2 pure white matt, 10 kOhm, LED green	627986	120,70

Room Operating
Units / Controller

WRF07

Item descr.: product | operating elements | sensor | labelling type | switch range | colour | potentiometer | LED

Room operating unit temperature – NTC10k Precon		RU2
Item description	Item No.	€
WRF07 P NTC10k Precon ltype1 Gira E2 pure white matt, 10 kOhm	720939	86,50
WRF07 PTD NTC10k Precon ltype1 Gira E2 pure white matt, 10 kOhm, LED green	628105	117,30
WRF07 PSD NTC10k Precon ltype1 Gira E2 pure white matt, 10 kOhm, LED green	627993	120,70

Room operating unit temperature – NTC20k		RU2
Item description	Item No.	€
WRF07 P NTC20k ltype1 Gira E2 pure white matt, 10 kOhm	191234	86,50
WRF07 PTD NTC20k ltype1 Gira E2 pure white matt, 10 kOhm, LED green	611343	117,30
WRF07 PSD NTC20k ltype1 Gira E2 pure white matt, 10 kOhm, LED green	628006	120,70

Room operating unit temperature – NTC1,8k		RU2
Item description	Item No.	€
WRF07 P NTC1,8k ltype1 Gira E2 pure white matt, 10 kOhm	668484	86,50
WRF07 PTD NTC1,8k ltype1 Gira E2 pure white matt, 10 kOhm, LED green	668507	117,30
WRF07 PSD NTC1,8k ltype1 Gira E2 pure white matt, 10 kOhm, LED green	668521	120,70

Room operating unit temperature – LM235Z		RU2
Item description	Item No.	€
WRF07 P LM235Z ltype1 Gira E2 pure white matt, 10 kOhm	199599	88,40
WRF07 PTD LM235Z ltype1 Gira E2 pure white matt, 10 kOhm, LED green	164863	119,10
WRF07 PSD LM235Z ltype1 Gira E2 pure white matt, 10 kOhm, LED green	628013	122,60

Options	
Item description	€
Passive potentiometer 1 kΩ (poti_1kOhm) or 5 kΩ (Poti_5kOhm), for other values please request	0,00
Active potentiometer 0..10 V (poti_active)	23,00
Rocker switch S with 3 fan stages (FS3: 1-0-2)	3,80
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in further colours and/or ›55 mm (various manufacturers)	12,50
Switch ranges stainless steel	glass	aluminium (different manufacturers)	40,00
Labelling type 2 (ltype2)	4,70
Labelling type 6 colour red+blue (ltype6)	6,20
Additional button	22,60
Additional diode (LED)	18,50
Add to price of NTC10k for sensor NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

WRF07

Item description: product | operating elements | TRV3 | labelling type | switch range | colour | LED

Room operating unit 0..+50 °C – 0..10 V, active potentiometer				RU2
Item description	Inputs	0..10 V	Item No.	€
WRF07 P TRV3 ltype1 Gira E2 pure white matt	-	1	243902	198,70
WRF07 PTD TRV3 ltype1 Gira E2 pure white matt, LED green	-	1	369602	229,40
WRF07 PSD TRV3 ltype1 Gira E2 pure white matt, LED green	-	1	332132	232,80

Options	
Item description	€
Rocker switch S with 3 fan stages (FS3: 1-0-2)	3,80
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in further colours and/or ›55 mm (various manufacturers)	12,50
Switch ranges stainless steel	glass	aluminium (different manufacturers)	40,00
Labelling type 2 (ltype2)	4,70
Labelling type 6 colour red+blue (ltype6)	6,20
Additional button	22,60
Additional diode (LED)	18,50

Accessories			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10

Design examples

WRF07 PSD Merten Artec
special model/special labelling

WRF07 PTD Jung LS stainless steel
ltype6

WRF07 P2D Berker K.1 polar white
with mini rotary-switch

P = potentiometer | PTD = potentiometer, button, LED | PSD = potentiometer, rocker switch, LED

WRF07 BUS

An optically appealing flush-mounted room operating unit in the design of various switch frame manufacturers. Available in different colors and with different labeling options. Possible operating elements are potentiometers (set point adjustment), LEDs (optical status feedback), buttons (presence) and rocker switches (operating mode day/night). An integrated temperature sensor is optional. The removable terminal allows for pre-wiring. It can be connected to Modbus RS485 and BACnet networks.

WRF07 P ltype1,
Gira E2 pure white matt

WRF07 P ltype1,
Busch-Jaeger alpha nea®

TECHNICAL DATA	
Measured values	temperature, humidity, depending on the device
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,9 W (24 V =) | 1 VA (24 V ~)
Measuring range temp.	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Inputs	DI4: 4x input digital for floating switch contact
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.5 aluminum | stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo®, future® linear, impuls, Busch-axcent®, alpha nea®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antik
Switch range Peha	AURA, AURA glass
Setpoint (P)	potentiometer
Rotary switch (S)	mini rotary switch for fan stage adjustment with up to 5 stages available (please request), switching capacity max. 24 V =/~, 5 W
Rocker switch (S)	for fan speed adjustment
Button (T)	for presence detection, switching capacity max. 600 mW
LED (D)	for status feedback, green (standard), several LEDs possible (e.g. green, yellow, red)
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Delivery content	software for configuration (freeware via download)
Notes	for further variants see chapter room controller, other sensors | operating elements | switch ranges on request

Item description: product | operating elements | inputs/outputs | BUS | labelling type | switch range | colour | LED

WRF07 BUS

Modbus

Room operating unit temperature – DI4 RS485 Modbus				RU2
Item description	Inputs	0..10 V	Item No.	€
WRF07 P DI4 RS485 Modbus ltype1 Gira E2 pure white matt	4	-	613910	178,50
WRF07 PTD DI4 RS485 Modbus ltype1 Gira E2 pure white matt, LED green	4	-	628181	189,20

Room operating unit temperature + humidity – DI4 RS485 Modbus				RU2
Item description	Inputs	0..10 V	Item No.	€
WRF07 P rH DI4 RS485 Modbus ltype1 Gira E2 pure white matt	4	-	736695	218,50
WRF07 PTD rH DI4 RS485 Modbus ltype1 Gira E2 pure white matt	4	-	736718	229,20

Options	
Item description	€
Rocker switch S with 3 fan stages (FS3: 1-0-2)	3,80
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in further colours and/or ›55 mm (various manufacturers)	12,50
Switch ranges stainless steel	glass	aluminium (different manufacturers)	40,00
Labelling type 2 (ltype2)	4,70
Labelling type 6 colour red+blue (ltype6)	6,20
Additional button	22,60
Additional diode (LED)	18,50

Accessories			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10

P = potentiometer, PTD = potentiometer, button, LED, PSD = potentiometer, rocker switch, LED

Room Operating Units / Controller

WRF06 x

A visually appealing flush-mounted room operating unit in the design of various switch frame manufacturers. Available in different colors and with different labeling options. Possible operating elements are rotary switches (fan stage adjustment), LEDs (optical status feedback), buttons (presence) and buttons for operating other peripheral devices. A temperature sensor can be added. The removable terminal allows for pre-wiring. It can be connected to Modbus RS485 and LON networks.
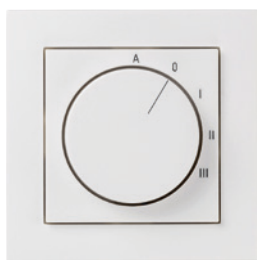
WRF06 S, Gira E2 pure white matt standard labelling	WRF06 TD Gira E2 pure white matt	WRF06 4T4D Jung AS 500 alpine white special model/special labelling

Modbus   LON
LOCAL OPERATING NETWORK

TECHNICAL DATA	
Measured values	temperature
Network technology	LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,9 W (24 V =) | 1 VA (24 V ~)
Measuring range temp.	passive: -35..+70 °C
Accuracy temperature	passive: depending on used sensor
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo®, future® linear, impuls, Busch-axcent®, alpha nea®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antik
Switch range Peha	AURA, AURA glass
Rotary switch (S)	for fan stage adjustment (max. 5 stages), 5-stages (auto,0,I,II,III), 2-stages (0,I), 3-stages (0,I,II), 4-stages (0,I,II,III), double frame has to be used in combination with temperature sensor, switching capacity max. 24 V =/~, 5 W
Button (T)	for presence detection, switching capacity max. 600 mW
LED (D)	for status feedback, green (standard) several LEDs possible (e.g. green, yellow, red)
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², pluggable
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	other temperature sensors on request, for other operating elements please request

WRF06 x

Types with standard labelling
(only with standard switch ranges)

special labelling refer to p. 450

WRF06 TD without labelling
(standard)
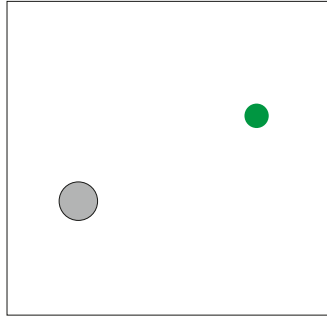
WRF06 S with 5 fan stages
(FS5, standard)

A   0
I
II
III
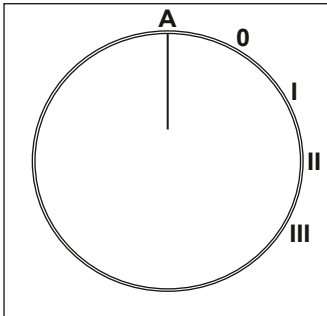
WRF06 S with 4 fan stages
(FS4, refer to options)

0   I
II
III
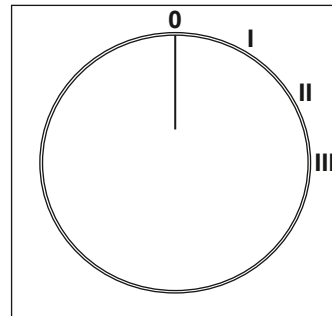
WRF06 S with 3 fan stages
(FS3, refer to options)

0   I
II
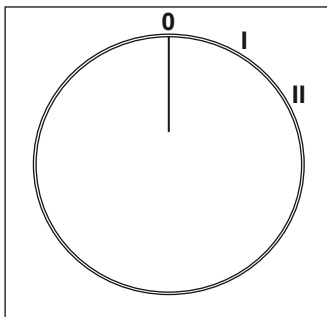
WRF06 S with 2 fan stages
(FS2, refer to options)

0   I
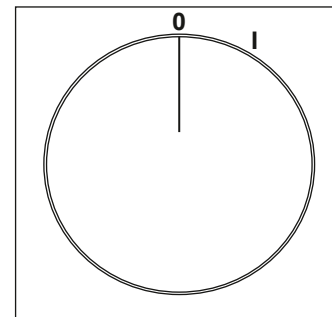
Item description: product | operating elements | sensor | switch range | colour | fan stages | LED

WRF06 x passive

Room operating unit temperature – without sensor		RU2
Item description	Item No.	€
WRF06 S without sensor Gira E2 pure white matt, FS5	629201	85,00
WRF06 TD without sensor Gira E2 pure white matt, LED green	285964	65,60

Room operating unit temperature – passive		RU2
Item description	Item No.	€
WRF06 TD PT100 Gira E2 pure white matt, LED green	564441	72,80
WRF06 TD PT100 1/3 DIN Gira E2 pure white matt, LED green	629409	76,60
WRF06 TD PT1000 Gira E2 pure white matt, LED green	629423	75,10
WRF06 TD PT1000 1/3 DIN Gira E2 pure white matt, LED green	629447	78,10
WRF06 TD Ni1000 Gira E2 pure white matt, LED green	195379	74,60
WRF06 TD Ni1000TK5000 Gira E2 pure white matt, LED green	629461	78,30
WRF06 TD NTC10k Gira E2 pure white matt, LED green	629324	71,50
WRF06 TD NTC10k Precon Gira E2 pure white matt, LED green	629348	71,50
WRF06 TD NTC20k Gira E2 pure white matt, LED green	629362	71,50
WRF06 TD NTC1,8k Gira E2 pure white matt, LED green	668545	71,50
WRF06 TD LM235Z Gira E2 pure white matt, LED green	563703	73,20

WRF06 x BUS

Room operating unit temperature – BUS		RU2
Item description	Item No.	€
WRF06 TD DI4 RS485 Modbus Gira E2 pure white matt, LED green	696487	209,90
WRF06 TD AO2V LON Gira E2 pure white matt, LED green	696531	234,10
WRF06 TD DI4 LON Gira E2 pure white matt, LED green	696555	234,10

Options	
Item description	€
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in further colours and/or ›55 mm (various manufacturers)	12,50
Switch ranges stainless steel	glass	aluminium (different manufacturers)	40,00
Additional button	22,60
Additional diode (LED)	18,50
Rotary switch S with 4 fan stages (FS4)	0,00
Rotary switch S with 3 fan stages (FS3)	0,00
Rotary switch S with 2 fan stages (FS2)	0,00
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

WRF06 INC

The flush-mounted room operating unit with an interface for RS485 Modbus is used for set point adjustment. An outstanding feature is the possibility to overwrite the status via Modbus RS485. It furthermore includes a push button for triggering an ECO mode to save energy. The central knob is used as a rotary push button. The set point can be changed as required by turning the button accordingly. The device status is visualized by LEDs i.e. heating/cooling.

TECHNICAL DATA	
Measured values	temperature
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,3 W (24 V =) | 0,9 VA (24 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Switch range Berker	S.1
Switch range Merten	M-Smart
Setpoint (P)	Encoder for setpoint adjustment heating and cooling with button function for ECO mode
LED (D)	7 LEDs for displaying setpoint adjustment, LED for displaying the ECO mode function
Protection (IP)	IP30 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², pluggable
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	for other frame designs please request

Room operating unit temperature – BUS		RU2
Item description	Item No.	€
WRF06 INC RS485 Modbus Merten M-Smart polar white brilliant	698214	219,20

Accessories			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	🌐	43,10

NOVOS 5 x

The surface-mounted NOVOS 5 x comes in the NOVOS design with an integrated temperature sensor. Possible operating elements are set point potentiometer, status LED with up to 7 selectable colors, rotary switch for fan stage control and a presence button. The connection terminal in the back part allows for pre-wiring. The device is furthermore available with an LCD and integrated traffic light function for indicating the status of measured values. Threshold values and display settings can be individually configured using the Thermokon NOVOSapp.

| NOVOS 5 S | NOVOS 5 PSTD | NOVOS 5 PSTD LCD |

TECHNICAL DATA	
Measured values	temperature
Output passive	passive temperature sensor PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 | NTC10k potentiometer
Measuring range temp.	-35..+70 °C
Accuracy temperature	passive: depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	2-wire (standard) or 4-wire
Setpoint (P)	potentiometer, 3-wire connection default value 10 kΩ (for other values please request) active output 0..10 V (passive optional, active default)
Rotary switch (S)	for fan stage adjustment (max. 5 stages) 5-stages (auto,0,I,II,III) 2-stages (0,I) 3-stages (0,I,II) 4-stages (0,I,II,III) switching capacity max. 125 V ~ (0,3 A) | 30 V = (1 A)
Button (T)	for presence detection, with LED (TD) switching capacity max. 600 mW
LED (D)	for status feedback colour can be set via jumpers
Colour	pure white, black or aluminium

Enclosure	PC V0, design cover pure white, black or aluminium
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	-35..+70 °C
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	other temperature sensors on request

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Measured values	temperature, humidity, CO2, VOC (depending on the device)
Output voltage	1..4x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 10 kΩ
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	typ. 0,4 W (24 V =) | 0,8 VA (24 V ~)
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app or uConfig
Measuring range CO2	0..2000 ppm | 0..5000 ppm, optionally configurable via app or uConfig
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	CO2: Dual Channel, Automatic zero point calibration VOC: self-calibration

Room operating unit temperature – without sensor		RU3
Item description	Item No.	€
NOVOS 5 S white without sensor, FS5	730082	74,70
NOVOS 5 PSTD white without sensor, 10 kOhm, FS5	730112	98,70
NOVOS 5 S white Design without sensor, FS5	730105	74,70
NOVOS 5 PSTD white Design without sensor, 10 kOhm, FS5	731683	98,70

Room operating unit temperature – PT100		RU3
Item description	Item No.	€
NOVOS 5 S white Temp PT100, FS5	730129	82,00
NOVOS 5 PSTD white Temp PT100, 10 kOhm, FS5	730143	106,00
NOVOS 5 S white Design Temp PT100, FS5	730136	82,00
NOVOS 5 PSTD white Design Temp PT100, 10 kOhm, FS5	731690	106,00

Room operating unit temperature – PT1000		RU3
Item description	Item No.	€
NOVOS 5 S white Temp PT1000, FS5	730150	85,00
NOVOS 5 PSTD white Temp PT1000, 10 kOhm, FS5	730198	109,00
NOVOS 5 S white design Temp PT1000, FS5	730174	85,00
NOVOS 5 PSTD white design Temp PT1000, 10 kOhm, FS5	731706	109,00

NOVOS 5 x passive

Room operating unit temperature – PT1000 1/3 DIN		RU3
Item description	Item No.	€
NOVOS 5 S white Temp PT1000 1/3 DIN, FS5	730204	87,50
NOVOS 5 PSTD white Temp PT1000 1/3 DIN, 10 kOhm, FS5	730228	111,50
NOVOS 5 S white design Temp PT1000 1/3 DIN, FS5	730211	87,50
NOVOS 5 PSTD white design Temp PT1000 1/3 DIN, 10 kOhm, FS5	731720	111,50

Room operating unit temperature – Ni1000		RU3
Item description	Item No.	€
NOVOS 5 S white Temp Ni1000, FS5	730273	83,90
NOVOS 5 PSTD white Temp Ni1000, 10 kOhm, FS5	730297	107,90
NOVOS 5 S white design Temp Ni1000, FS5	730280	83,90
NOVOS 5 PSTD white design Temp Ni1000, 10 kOhm, FS5	731737	107,90

Room operating unit temperature – Ni1000TK5000		RU3
Item description	Item No.	€
NOVOS 5 S white Temp Ni1000TK5000, FS5	730303	87,50
NOVOS 5 PSTD white Temp Ni1000TK5000, 10 kOhm, FS5	730327	111,50
NOVOS 5 S white design Temp Ni1000TK5000, FS5	730310	87,50
NOVOS 5 PSTD white design Temp Ni1000TK5000, 10 kOhm, FS5	731751	111,50

Room operating unit temperature – NTC10k		RU3
Item description	Item No.	€
NOVOS 5 S white Temp NTC10k, FS5	730334	80,70
NOVOS 5 PSTD white Temp NTC10k, 10 kOhm, FS5	730358	104,70
NOVOS 5 S white design Temp NTC10k, FS5	730341	80,70
NOVOS 5 PSTD white design Temp NTC10k, 10 kOhm, FS5	731775	104,70

Options	
Item description	€
Passive potentiometer 1 kΩ (poti_1kOhm) or 5 kΩ (Poti_5kOhm), for other values please request	0,00
Active potentiometer 0..10 V (poti_active)	23,00
Rotary switch S with 2/3/4 fan stages (FS2/FS3/FS4)	12,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00
Add to price of NTC10k for sensor NTC1,8k	NTC5k	NTC10k Precon	NTC10k Carel	NTC20k	5,60
Add to price of NTC10k for sensor LM235Z	1,80

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85

NOVOS 5 x active

Room operating unit 0..+50 °C – active 0..10 V, active potentiometer		RU3
Item description	Item No.	€
NOVOS 5 S white Temp TRV, FS5	734936	155,00
NOVOS 5 PSTD white Temp TRV, poti_active, FS5	734943	179,00
NOVOS 5 S white design Temp TRV, FS5	734950	155,00
NOVOS 5 PSTD white design Temp TRV, poti_active, FS5	734967	179,00

Options	
Item description	€
Rotary switch S with 2/3/4 fan stages (FS2/FS3/FS4)	12,00
LCD	40,80
add for additional humidity sensor	40,00
add for additional CO2+VOC sensor	180,00
add for additional CO2 sensor	130,00
add for additional VOC sensor	120,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80

NOVOS 5 PSTD white design
with LCD and design cover black

NOVOS 5 PSTD white design
with LCD and design cover alu

Room Operating
Units / Controller

NOVOS 5 x BUS

The surface-mounted NOVOS 5 x comes in the NOVOS design with an integrated temperature sensor. Possible operating elements are set point potentiometer, status LED with up to 7 selectable colors, rotary switch for fan stage control and a presence button. The connection terminal in the back part allows for separate pre-wiring. The device is furthermore available with an LCD and integrated traffic light indication for indicating the status of measured values. Threshold values and display settings can be individually configured using the Thermokon NOVOSapp.

NOVOS 5 S BUS

NOVOS 5 PSTD BUS

NOVOS 5 PSTD LCD BUS

TECHNICAL DATA	
Measured values	temperature
Network technology	RS485 BACnet (MS/TP)
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	typ. 0,4 W (24 V =) | 0,8 VA (24 V ~)
Measuring range temp.	-35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	1x input for floating contact
Setpoint (P)	potentiometer
Rotary switch (S)	for fan stage adjustment (max. 5 stages) 5-stages (auto,0,I,II,III) 2-stages (0,I), 3-stages (0,I,II), 4-stages (0,I,II,III)
Button (T)	for presence detection, with LED (TD)
LED (D)	for status feedback colour configurable via app, uConfig or BUS
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	PC V0, design cover pure white, black or aluminium
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	-35..+70 °C, LCD: -20..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

NOVOS 5 x BUS

Room operating unit temperature – active RS485 Modbus		RU2
Item description	Item No.	€
NOVOS 5 S white Temp RS485 Modbus, FS5	734974	192,00
NOVOS 5 PSTD white Temp RS485 Modbus, FS5	734981	216,00
NOVOS 5 S white design Temp RS485 Modbus, FS5	734998	192,00
NOVOS 5 PSTD white design Temp RS485 Modbus, FS5	735001	216,00

Room operating unit temperature – active RS485 BACnet (MS/TP)		RU2
Item description	Item No.	€
NOVOS 5 S white Temp RS485 BACnet (MS/TP), FS5	754217	192,00
NOVOS 5 PSTD white Temp RS485 BACnet (MS/TP), FS5	754255	216,00
NOVOS 5 S white design Temp RS485 BACnet (MS/TP), FS5	754415	192,00
NOVOS 5 PSTD white design Temp RS485 BACnet (MS/TP), FS5	754422	216,00

Options	
Item description	€
Rotary switch S with 2/3/4 fan stages (FS2/FS3/FS4)	12,00
LCD	40,80

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80

Room Operating Units / Controller

NOVOS 3 x

The surface-mounted NOVOS 3 x comes in the NOVOS design with an integrated temperature sensor. Possible operating elements are set point potentiometer, status LED with up to 7 selectable colors and a presence button. It furthermore provides passive outputs to superior control systems. The separate back part with its connection terminals allows pre-wiring. Threshold values and display settings can be individually configured using the Thermokon NOVOSapp.

NOVOS 3 P

NOVOS 3 TD

NOVOS 3 PTD

TECHNICAL DATA	
Measured values	temperature
Output passive	passive temperature sensor: PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 | NTC10k potentiometer
Measuring range temp.	passive: -35..+70 °C
Accuracy temperature	passive: depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Setpoint (P)	potentiometer, 3-wire connection default value 10 kΩ (for other values please request)
Button (T)	for presence detection, with LED (TD) switching capacity max. 600 mW
LED (D)	for status feedback passive:, colour can be set via jumpers
Enclosure	PC V0, optionally with design cover black or aluminium
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately
Notes	other temperature sensors on request

DIFFERENT DATA FOR VERSIONS WITH ACTIVE OUTPUT (TRV / TRA)	
Output voltage	1..4x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig) min. load 10 kΩ
Power supply	TRV: 15..35 V = or 19..29 V ~ SELV
Output signal range temp.	Scaling analog output 0..+50 °C (default setting): selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Setpoint (P)	potentiometer active depending on the device
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories)

NOVOS 3 x passive

Room operating unit temperature – without sensor		RU3
Item description	Item No.	€
NOVOS 3 P white without sensor, 10 kOhm	729574	33,20
NOVOS 3 TD white without sensor	729604	38,20
NOVOS 3 PTD white without sensor, 10 kOhm	729611	53,20
NOVOS 3 P white design without sensor, 10 kOhm	729628	33,20
NOVOS 3 TD white design without sensor	729635	38,20
NOVOS 3 PTD white design without sensor, 10 kOhm	729642	53,20

Room operating unit temperature – PT100		RU3
Item description	Item No.	€
NOVOS 3 P white Temp PT100, 10 kOhm	729659	40,50
NOVOS 3 TD white Temp PT100	729666	45,50
NOVOS 3 PTD white Temp PT100, 10 kOhm	729673	60,50
NOVOS 3 P white design Temp PT100, 10 kOhm	729680	40,50
NOVOS 3 TD white design Temp PT100	729697	45,50
NOVOS 3 PTD white design Temp PT100, 10 kOhm	729703	60,50

Room operating unit temperature – PT1000		RU3
Item description	Item No.	€
NOVOS 3 P white Temp PT1000, 10 kOhm	729727	43,50
NOVOS 3 TD white Temp PT1000	729734	48,50
NOVOS 3 PTD white Temp PT1000, 10 kOhm	729741	63,50
NOVOS 3 P white design Temp PT1000, 10 kOhm	729758	43,50
NOVOS 3 TD white design Temp PT1000	729765	48,50
NOVOS 3 PTD white design Temp PT1000, 10 kOhm	729772	63,50

NOVOS 3 x passive

Item description: product | operating elements | sensor

Room operating unit temperature – PT1000 1/3 DIN		RU3
Item description	Item No.	€
NOVOS 3 P white Temp PT1000 1/3 DIN, 10 kOhm	729789	46,00
NOVOS 3 TD white Temp PT1000 1/3 DIN	729796	51,00
NOVOS 3 PTD white Temp PT1000 1/3 DIN, 10 kOhm	729802	66,00
NOVOS 3 P white design Temp PT1000 1/3 DIN, 10 kOhm	729826	46,00
NOVOS 3 TD white design Temp PT1000 1/3 DIN	729833	51,00
NOVOS 3 PTD white design Temp PT1000 1/3 DIN, 10 kOhm	729857	66,00

Room operating unit temperature – Ni1000		RU3
Item description	Item No.	€
NOVOS 3 P white Temp Ni1000, 10 kOhm	729864	42,40
NOVOS 3 TD white Temp Ni1000	729871	47,40
NOVOS 3 PTD white Temp Ni1000, 10 kOhm	729895	62,40
NOVOS 3 P white design Temp Ni1000, 10 kOhm	729901	42,40
NOVOS 3 TD white design Temp Ni1000	729918	47,40
NOVOS 3 PTD white design Temp Ni1000, 10 kOhm	729925	62,40

Room operating unit temperature – Ni1000TK5000		RU3
Item description	Item No.	€
NOVOS 3 P white Temp Ni1000TK5000, 10 kOhm	729932	46,00
NOVOS 3 TD white Temp Ni1000TK5000	729949	51,00
NOVOS 3 PTD white Temp Ni1000TK5000, 10 kOhm	729956	66,00
NOVOS 3 P white design Temp Ni1000TK5000, 10 kOhm	729963	46,00
NOVOS 3 TD white design Temp Ni1000TK5000	729970	51,00
NOVOS 3 PTD white design Temp Ni1000TK5000, 10 kOhm	729987	66,00

Room operating unit temperature – NTC10k		RU3
Item description	Item No.	€
NOVOS 3 P white Temp NTC10k, 10 kOhm	729994	39,20
NOVOS 3 TD white Temp NTC10k	730013	44,20
NOVOS 3 PTD white Temp NTC10k, 10 kOhm	730020	59,20
NOVOS 3 P white design Temp NTC10k, 10 kOhm	730037	39,20
NOVOS 3 TD white design Temp NTC10k	730044	44,20
NOVOS 3 PTD white design Temp NTC10k, 10 kOhm	730051	59,20

Options	
Item description	€
Passive potentiometer 1 kΩ (poti_1kOhm) or 5 kΩ (Poti_5kOhm), for other values please request	0,00
Active potentiometer 0..10 V (poti_active)	23,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

NOVOS 3 x active

Room operating unit 0..+50 °C – active 0..10 V, active potentiometer		RU3
Item description	Item No.	€
NOVOS 3 P white Temp TRV, poti_active	734691	98,70
NOVOS 3 TD white Temp TRV	734714	103,70
NOVOS 3 PTD white Temp TRV, poti_active	734776	118,70
NOVOS 3 P white design Temp TRV, poti_active	734806	98,70
NOVOS 3 TD white design Temp TRV	734837	103,70
NOVOS 3 PTD white design Temp TRV, poti_active	734844	118,70

Options	
Item description	€
add for additional humidity sensor	40,00
add for additional CO2+VOC sensor	210,00
add for additional CO2 sensor	160,00
add for additional VOC sensor	150,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80

NOVOS 3 PTD white design
with design cover black

NOVOS 3 PTD white design
with design cover alu

NOVOS 3 x BUS

The surface-mounted NOVOS 5 x comes in the NOVOS design with an integrated temperature sensor and an RS485 Modbus interface. Possible operating elements are set point potentiometers, status LED with up to 7 selectable colors and presence buttons. The separate back part with its connection terminals allows pre-wiring. Threshold values can be individually configured using the Thermokon NOVOSapp.

| NOVOS 3 P BUS | NOVOS 3 TD BUS | NOVOS 3 PTD BUS |

Modbus

TECHNICAL DATA	
Measured values	temperature
Network technology	RS485 BACnet (MS/TP)
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	typ. 0,4 W (24 V =) | 0,8 VA (24 V ~)
Measuring range temp.	-35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	1x input for floating contact
Setpoint (P)	potentiometer
Button (T)	for presence detection, with LED (TD)
LED (D)	for status feedback, colour configurable via app, uConfig or BUS
Enclosure	PC V0, optionally with design cover black or aluminium
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately

NOVOS 3 x BUS

Modbus

Room operating unit temperature – active RS485 Modbus		RU2
Item description	Item No.	€
NOVOS 3 P white Temp RS485 Modbus	734851	113,30
NOVOS 3 TD white Temp RS485 Modbus	734882	118,30
NOVOS 3 PTD white Temp RS485 Modbus	734899	133,30
NOVOS 3 P white design Temp RS485 Modbus	734905	113,30
NOVOS 3 TD white design Temp RS485 Modbus	734912	118,30
NOVOS 3 PTD white design Temp RS485 Modbus	734929	133,30

BACnet

Room operating unit temperature – active RS485 BACnet (MS/TP)		RU2
Item description	Item No.	€
NOVOS 3 P white Temp RS485 BACnet (MS/TP)	754453	113,30
NOVOS 3 TD white Temp RS485 BACnet (MS/TP)	754460	118,30
NOVOS 3 PTD white Temp RS485 BACnet (MS/TP)	754477	133,30
NOVOS 3 P white design Temp RS485 BACnet (MS/TP)	754484	113,30
NOVOS 3 TD white design Temp RS485 BACnet (MS/TP)	754491	118,30
NOVOS 3 PTD white design Temp RS485 BACnet (MS/TP)	754507	133,30

Options	
Item description	€
add for additional humidity sensor	40,00
add for additional CO2+VOC sensor	210,00
add for additional CO2 sensor	160,00
add for additional VOC sensor	150,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80

LCR Touch

Room operating unit with an integrated temperature sensor (rH sensor optional) and touch surface for visualization of the measured values and room control. It provides connection to an RS485 Modbus network and additional three inputs. The LCR Touch forms the basis for a pleasant indoor climate and well-being. Typical applications are schools, office buildings, hotels or cinemas. The intuitive operation offers all relevant HVAC functions for an intelligent and energy-saving room automation.

Modbus

TECHNICAL DATA	
Measured values	temperature, humidity
Network technology	RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) SELV
Power consumption	typ. 3 W (24 V =) | 5 VA (24 V ~)
Measuring range temp.	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±1 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Inputs	1x input for change-over sensor NTC10k 1x input digital for floating contact (window contact, dew point guard) 1x input digital for floating contact (motion sensors, card switch)
Control functions	setpoint 0..+50 °C, factory setting (+16..+30°C)
No. of buttons	5
Display	LCD 64x41 mm, backlight white
Enclosure	ABS, pure white glass Frame silver
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-10..+50 °C, max. 85% rH short term condensation
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Modbus

Room operating unit temperature – RS485 Modbus		RU1
Item description	Item No.	€
LCR Touch white Temp RS485 Modbus	754323	148,00
LCR Touch white Temp_rH RS485 Modbus	754347	188,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10

JOY Fancoil

The JOY fancoil controller with its high-grade materials, such as the real glass surface, is used for individual temperature control in hotel rooms, offices and living spaces. It is designed for fan coil units with 2- and 4-pipe systems. JOY is capable to control all common kinds of fan coil units (type 5DO for 3-stage fans and type EC for 0..10 V fans). With the EC 3AO model, proportional valve actuators (also 6-way valves) and a 0..10 V EC motor can be controlled. This ensures individual and energy-efficient room air conditioning. The device (available in black or white) offers an integrated LCD and touch-sensitive control buttons. A scheduler can be set with 3 time channels and 4 time periods each. The device is designed for mounting in a flush-mounted box.

JOY Fancoil pure white   JOY Fancoil black   JOY Fancoil with decorative frame
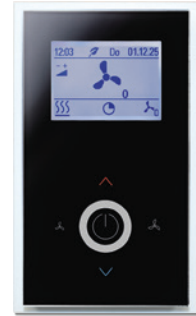
Function overview on page 40   Modbus

TECHNICAL DATA	
Measured values	temperature
Output voltage	types AO2DO: 0..10 V = (to control EC fan), types 3AO: 3x 0..10 V = (to control EC fan, heating & cooling or to control 6-way control valve)
Output switch contact	types 5DO: 5x contact NO (1x heating, 1x cooling, 3x fan stages), types AO2DO: 2x contact NO (1x heating, 1x cooling)
Network technology	RS485 Modbus
Power supply	85..260 V ~, types 3AO: 15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 2 VA (260 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	1x input for NTC10k or floating contact, 1x input digital for floating contact (not types BUS), input change-over (230 V ~), 3AO: instead of input change-over (230 V ~) additional input digital for floating contact
Control functions	setpoint 0..+50 °C
Functions	integrated PI and two-/three-position controller, types 3AO: built-in PI controller
Display	LCD 60x44 mm, 240x160 px, backlight cold white
Enclosure	PC, pure white, black, glass
Protection (IP)	IP30 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², inputs: terminal block, max. 1,0 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm), hollow wall boxes with edge Ø›70 mm have to be covered by wall covering

JOY Fancoil

Fancoil controller temperature – active					RU1
Item description	Inputs	0..10 V	Relay	Item No.	Controller	€
JOY Fancoil 5DO white	3	-	5	751940	✓	172,10
JOY Fancoil 5DO black	3	-	5	751957	✓	184,10
JOY Fancoil EC AO2DO white	3	1	2	751988	✓	172,10
JOY Fancoil EC AO2DO black	3	1	2	751995	✓	184,10
JOY Fancoil EC 3AO white	3	3	-	724975	✓	172,10
JOY Fancoil EC 3AO black	3	3	-	724982	✓	184,10

Fancoil controller temperature – active RS485 Modbus					RU1
Item description	Inputs	0..10 V	Relay	Item No.	Controller	€
JOY Fancoil 5DO RS485 Modbus white	2	-	5	751933	✓	178,50
JOY Fancoil 5DO RS485 Modbus black	2	-	5	751964	✓	190,50
JOY Fancoil EC AO2DO RS485 Modbus white	2	1	2	752015	✓	178,50
JOY Fancoil EC AO2DO RS485 Modbus black	2	1	2	752022	✓	190,50
JOY Fancoil EC 3AO RS485 Modbus white	2	3	-	723817	✓	178,50
JOY Fancoil EC 3AO RS485 Modbus black	2	3	-	724999	✓	190,50

Options	
Item description	€
Change-over sensor NTC10k (model and price on request)	

Accessories			AS1
Item description	Item No.	On stock	€
SD card (2 GB)	500098		11,60
uConfig - Software for configuration (free via www. thermokon.com)		⊜	0,00
Converter RS485 Modbus – USB incl. driver CD for connection to a computer (net price)	668293	⊜	55,50
Decorative frame pure white for JOY	681452	⊜	12,40
Decorative frame black for JOY	740951	⊜	12,40
Frame for surface mounting JOY, pure white with installation set	760201	⊜	24,80
Frame for surface mounting JOY, jet black with installation set	760195	⊜	24,80

LCF Touch

Modern, touch-operated fan coil room thermostat used for individual control of room temperature. It is tailored to be compatible with both 2-pipe and 4-pipe fan coil units and modulating valves (PWM). The device combines digital technology with a large touch screen (LCD), which permits the single room controller to be used intuitively. It further provides an integrated scheduler with 7 days and 4 time periods. It is designed for mounting in a flush-mounted box.

TECHNICAL DATA	
Measured values	temperature
Output switch contact	5x contact NO (1x heating, 1x cooling, 3x fan stages), 240 V: load max. 3 A
Network technology	RS485 Modbus
Power supply	90..265 V ~
Power consumption	max. 0,9 VA (265 V ~)
Measuring range temp.	+1..+50 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	1x input for change-over sensor NTC10k, optional
Control functions	setpoint +1..+50 °C, factory setting (+16..+30°C)
Display	LCD 64x64 mm, touchscreen, white background lighting
Enclosure	ABS, black, glass
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Fancoil controller temperature – active			RU1
Item description	Item No.	Controller	€
LCF Touch	575768	✔	125,30

Fancoil controller temperature – active RS485 Modbus			RU1
Item description	Item No.	Controller	€
LCF Touch RS485 Modbus	575775	✔	139,90

Options	
Item description	€
Change-over sensor NTC10k (model and price on request)	

LCF02 Touch BUS

Modern, touch-operated fan coil room thermostat designed for individual control of room temperature. It is tailored to be compatible with 2-pipe and 4-pipe fan coil units and modulating valves (PWM and 0..10 V). Furthermore, LCF02 Touch provides two configurable digital inputs for e.g. occupancy, window contacts, dew-point contact or change-over. Additionally, it is equipped with an input for external (remote) temperature sensors and an RS485 Modbus interface for overwriting controls parameters. With its flush-mounted design, the LCF02 Touch combines digital technology with a large touch screen (LCD), which makes up for an intuitive operation of the fan coil thermostat. It further provides an integrated scheduler with 7 days and 4 time periods.

Modbus

TECHNICAL DATA	
Measured values	temperature
Output voltage	types 2AO3DO: 2x 0..10 V = (heating & cooling or to control 6-way control valve), types 3AO2DO: 3x 0..10 V = (to control EC fan, heating & cooling or to control 6-way control valve) min. load 10 kΩ
Output switch contact	types 5DO: 5x contact NO (1x heating, 1x cooling, 3x fan stages) types 2AO3DO: 3x contact NO (3x fan stages) types 3AO2DO: 2x contact NO (heating register 3-stage) 240 V: load max. 3 A
Network technology	RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) SELV
Power consumption	typ. 3 W (24 V =) | 5 VA (24 V ~)
Measuring range temp.	+1..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	1x input for change-over sensor NTC10k 1x input digital for floating contact (window contact, dew point guard) 1x input digital for floating contact (motion sensors, card switch)
Control functions	setpoint +1..+50 °C, factory setting (+16..+30°C)
Display	LCD 64x64 mm, touchscreen
Colour	white or black
Enclosure	ABS, glass
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-10..+50 °C, max. 85% rH short term condensation
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Fancoil controller temperature – BUS 24 V			RU1
Item description	Item No.	Controller	€
LCF02 Touch 5DO RS485 Modbus 24 V black	721004	✔	163,60
LCF02 Touch 5DO RS485 Modbus 24 V white	721035	✔	163,60
LCF02 Touch 2AO3DO RS485 Modbus 24 V black	720984	✔	163,60
LCF02 Touch 2AO3DO RS485 Modbus 24 V white	721011	✔	163,60
LCF02 Touch 3AO2DO RS485 Modbus 24 V black	720991	✔	163,60
LCF02 Touch 3AO2DO RS485 Modbus 24 V white	721028	✔	163,60

Options	
Item description	€
Change-over sensor NTC10k (model and price on request)	

Room Operating Units / Controller

LCF02

The fan coil room thermostat is designed to control cooling valves (0..10 V) or 6-way valves (6WV) for individual temperature control in commercial, industrial and residential buildings. It is tailored to be compatible with 2-pipe (type LCF02 C) and 4-pipe applications (type LCF02 6WV) using proportional valves (0..10 V). With its flush-mounted modern design, the LCF02 combines digital technology with a large screen and additional fan stage buttons, which form the basis for an intuitive room comfort control.

TECHNICAL DATA

Measured values	temperature
Output voltage	type C:0..10 V (cooling) type 6WV: 0..10 V (6-way control valve heating & cooling)
Output switch contact	3x contact NO (fan stages | fancoil), type C: additional 1x contact NO (cooling), 250 V, max. Last 5 A
Power supply	15..24 V = (±10%) SELV
Power consumption	typ. 3 W (24 V =)
Measuring range temp.	+1..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	1x input digital for floating contact (window contact, dew point guard) 1x input digital for floating contact (motion sensors, card switch)
Control functions	setpoint +1..+50 °C, factory setting (+16..+30°C)
Display	LCD 64x41 mm, backlight white
Enclosure	ABS, pure white
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Fancoil controller temperature – active			RU1
Item description	Item No.	Controller	€
LCF02 C Fancoil	684606	✔	62,60
LCF02 6WV Fancoil	684613	✔	62,60

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⬒	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⬒	43,10

LCF02 BUS

Modern and intuitive fan coil room thermostat designed for individual control of room temperature. It is tailored to be compatible with 2-pipe and 4-pipe fan coil units and modulating valves (PWM and 0..10 V). Furthermore, the LCF02 provides two configurable digital inputs for occupancy, window contact, dew-point contact or change-over, among other things. Additionally, it is equipped with an input for external (remote) temperature sensors and a RS485 Modbus interface for overwriting controls parameters. With its flush-mounted design, the LCF02 combines digital technology with a large display, making up for an intuitive room control.

Modbus

Room Operating
Units / Controller

TECHNICAL DATA	
Measured values	temperature
Output voltage	types 2AO3DO: 2x 0..10 V = (heating & cooling or to control 6-way control valve), types 3AO2DO: 3x 0..10 V = (to control EC fan, heating & cooling or to control 6-way control valve) min. load 10 kΩ
Output switch contact	types 5DO: 5x contact NO (1x heating, 1x cooling, 3x fan stages), types 2AO3DO: 3x contact NO (3x fan stages), types 3AO2DO: 2x contact NO (heating register 3-stage), 240 V: load max. 3 A
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) SELV
Power consumption	typ. 3 W (24 V =)
Measuring range temp.	+1..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	1x input for change-over sensor NTC10k 1x input digital for floating contact (window contact, dew point guard) 1x input digital for floating contact (motion sensors, card switch)
Control functions	setpoint +1..+50 °C, factory setting (+16..+30°C)
Display	LCD 64x41 mm, backlight white
Enclosure	ABS, pure white
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Fancoil controller temperature – BUS 24 V			RU1
Item description	Item No.	Controller	€
LCF02 5DO RS485 Modbus 24 V	703307	✔	93,40
LCF02 2AO3DO RS485 Modbus 24 V	703314	✔	103,70
LCF02 3AO2DO RS485 Modbus 24 V	703321	✔	113,90

Options	
Item description	€
Change-over sensor NTC10k (model and price on request)	

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⬒	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⬒	43,10

LCF

The fan coil room thermostat LCF has been designed for individual control of temperature in commercial, industrial and residential buildings. It is compatible with 2-pipe and 4-pipe applications and 3-stage fan coils. With its flush-mounted modern design, the device combines digital technology with a large LCD and operating buttons, which make up for an intuitive operation.

TECHNICAL DATA	
Measured values	temperature
Output switch contact	5x contact NO (1x heating, 1x cooling, 3x fan stages), 250 V: load max. 3 A
Power supply	90..265 V ~
Power consumption	max. 0,9 W
Measuring range temp.	+1..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	1x input for change-over sensor NTC10k, optional
Display	LCD 35,5x48,5 mm, white background lighting, for indication of measured values
Enclosure	ABS, pure white
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)

Fancoil controller temperature – active			RU1
Item description	Item No.	Controller	€
LCF	575751	✔	41,10

Options	
Item description	€
Change-over sensor NTC10k (model and price on request)	

JOY HC

The JOY room thermostat with its high-grade materials, such as a real glass surface, is designed for individual temperature control in living spaces, hotel rooms and offices. The heating/cooling valves are controlled either by relay contacts or 0..10 V signals. 6-way valves can also be controlled with the JOY HC. This ensures individual and energy-efficient room air conditioning. The JOY (available in black or white) has an intgerated display and touch-sensitive buttons. Furthermore, the integrated scheduler can handle 3 time channels and 4 periods each. The device is designed for mounting in a flush-mounted box.

JOY HC pure white

JOY HC black

JOY HC with decorative frame

Modbus

TECHNICAL DATA	
Measured values	temperature
Output voltage	types AO2DO: 0..10 V = (to control 6-way control valve), types 3AO: 3x 0..10 V = (to control 6-way control valve, heating & cooling)
Output switch contact	types AO2DO: 2x contact NO (1x heating, 1x cooling)
Network technology	RS485 Modbus
Power supply	85..260 V ~, types 3AO: 15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 2 VA (260 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	1x input for NTC10k or floating contact, 1x input digital for floating contact (not types BUS), input change-over (230 V ~), 3AO: instead of input change-over (230 V ~) additional input digital for floating contact
Control functions	setpoint 0..+50 °C
Functions	integrated two-/three-position controller, types 3AO: built-in PI controller
Display	LCD 60x44 mm, 240x160 px, backlight cold white
Enclosure	PC, pure white, black, glass
Protection (IP)	IP30 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², inputs: terminal block, max. 1,0 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm), hollow wall boxes with edge Ø>70 mm have to be covered by wall covering

JOY HC

Room controller heating/cooling – active						RU1
Item description	Inputs	0..10 V	Relay	Item No.	Controller	€
JOY HC AO2DO white	3	1	2	748995	✓	172,10
JOY HC AO2DO black	3	1	2	752039	✓	184,10
JOY HC 3AO white	3	3	-	725002	✓	172,10
JOY HC 3AO black	3	3	-	725019	✓	184,10

Modbus

Room controller heating/cooling – active RS485 Modbus						RU1
Item description	Inputs	0..10 V	Relay	Item No.	Controller	€
JOY HC AO2DO RS485 Modbus white	2	1	2	752046	✓	178,50
JOY HC AO2DO RS485 Modbus black	2	1	2	752053	✓	190,50
JOY HC 3AO RS485 Modbus white	2	3	-	723732	✓	178,50
JOY HC 3AO RS485 Modbus black	2	3	-	725026	✓	190,50

Options	
Item description	€
Change-over sensor NTC10k (model and price on request)	

Accessories			AS1
Item description	Item No.	On stock	€
SD card (2 GB)	500098	⊜	11,60
uConfig - Software for configuration (free via www. thermokon.com)			0,00
Converter RS485 Modbus – USB incl. driver CD for connection to a computer (net price)	668293	⊜	55,50
Decorative frame pure white for JOY	681452	⊜	12,40
Decorative frame black for JOY	740951	⊜	12,40
Frame for surface mounting JOY, pure white with installation set	760201	⊜	24,80
Frame for surface mounting JOY, jet black with installation set	760195	⊜	24,80

WRF06 LCD RR

The flush-mounted room controller with set point adjustment, fan stage control and occupancy button is used for individual tem-perature control in living spaces, hotel and office rooms. The WRF06 LCD with its 4 push buttons and an integrated LCD can be used with most common switch ranges and is furthermore available in various colors. It is especially suited for design-oriented buildings. Depending on the type, proportional 0..10 V and 6-way valves for heating/ cooling can be controlled. The removable terminals allow for pre-wiring. The WRF06 LCD can be connected through RS485 Modbus or LON to a superior BMS.

WRF06 LCD ltype1 pure white,
frame Gira E2 pure white matt

WRF06 LCD ltype1 anthracite,
frame Peha Aura Glas

WRF06 LCD LON ltype2 aluminium,
frame Merten M-Plan aluminium

Modbus

LON
LOCAL OPERATING NETWORK

TECHNICAL DATA	
Measured values	temperature
Output voltage	AO2V: 2x 0..10 V
Network technology	LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	RS485 Modbus: typ. 0,8 W (24 V =) | 2,5 VA (24 V ~) LON: typ. 1,3 W (24 V =) | 1,5 VA (24 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	floating switch contact
Switch range Berker	S.1, B.3 aluminum, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec *, Antik *
Switch range Peha	AURA, AURA glass
Functions	AO2V: 2 inputs, 2 outputs 0..10 V DO2R: 2 inputs, 2 outputs relay DO2T: 2 inputs, 2 outputs Triac, OVR: 2 inputs, 2 outputs (1x 0..10 V, 1 relay) OVT: 2 inputs, 2 outputs (1x 0..10 V, 1 Triac)
No. of buttons	4
Display	LCD 34x21 mm, monochrome
Enclosure	PC, pure white brilliant, pure white matt, aluminium, anthracite frame color may differ slightly
Protection (IP)	IP30 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², pluggable
Ambient condition	0..+50 °C, max. 85% rH non-condensing

Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm) DO2T, DO2R, OVR, OVT with IO extension need 2 flush-mounting boxes (Ø=60 mm) and double frame (alternatively, the IO unit can be mounted in a deep flush-mounted box or be detached up to 10 m)
Delivery content	software for configuration (freeware via download)
Notes	for further variants see chapter room operating units * in switch program with intermediate frame please specify frame design when ordering please indicate labelling type in order BUS: only available with labelling type 1 and 2

WRF06 LCD RR

Modbus

Room controller temperature – AO2V RS485 Modbus					RU2
Item description	Inputs	0..10 V	Item No.	Controller	€
WRF06 LCD AO2V RS485 Modbus ltype1 pure white matt without frame	2	2	415125	✓	190,50
WRF06 LCD AO2V RS485 Modbus ltype1 pure white brilliant without frame	2	2	731379	✓	190,50
WRF06 LCD AO2V RS485 Modbus ltype1 aluminium without frame	2	2	731386	✓	190,50
WRF06 LCD AO2V RS485 Modbus ltype1 Jung aluminium without frame	2	2	731393	✓	190,50
WRF06 LCD AO2V RS485 Modbus ltype1 anthracite without frame	2	2	731409	✓	190,50

Modbus

Room controller temperature – IO RS485 Modbus (double frame necessary)							RU2
Item description	Inputs	0..10 V	Relay	Triac	Item No.	Controller	€
WRF06 LCD DO2R RS485 Modbus ltype1 pure white matt without frame	2	-	2	-	731416	✓	218,00
WRF06 LCD DO2T RS485 Modbus ltype1 pure white matt without frame	2	-	-	2	731423	✓	218,00
WRF06 LCD OVR RS485 Modbus ltype1 pure white matt without frame	2	1	1	-	731430	✓	218,00
WRF06 LCD OVT RS485 Modbus ltype1 pure white matt without frame	2	1	-	1	731447	✓	218,00

Options	
Item description	€
Labelling type 2 (ltype2) – only BUS models	0,00

WRF06 LCD RR

LON
LOCAL OPERATING NETWORK

Room controller temperature – AO2V LON					RU2
Item description	Inputs	0..10 V	Item No.	Controller	€
WRF06 LCD AO2V LON ltype1 pure white matt without frame	2	2	731454	✔	274,40
WRF06 LCD AO2V LON ltype1 pure white brilliant without frame	2	2	731461	✔	274,40
WRF06 LCD AO2V LON ltype1 aluminium without frame	2	2	731478	✔	274,40
WRF06 LCD AO2V LON ltype1 Jung aluminium without frame	2	2	731485	✔	274,40
WRF06 LCD AO2V LON ltype1 anthracite without frame	2	2	731492	✔	274,40

LON
LOCAL OPERATING NETWORK

Room controller temperature – IO LON (double frame necessary)						RU2
Item description	Inputs	0..10 V	Relay	Triac	Item No.	Controller	€
WRF06 LCD DO2R LON ltype1 pure white matt without frame	2	-	2	-	731577	✔	301,90
WRF06 LCD DO2T LON ltype1 pure white matt without frame	2	-	-	2	731584	✔	301,90
WRF06 LCD OVR LON ltype1 pure white matt without frame	2	1	1	-	731607	✔	301,90
WRF06 LCD OVT LON ltype1 pure white matt without frame	2	1	-	1	731676	✔	301,90

Options	
Item description	€
Labelling type 2 (ltype2) – only BUS models	0,00

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass, stainless steel, aluminium (various manufacturers)	40,00
Double switch (for IO types) with switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	7,50
Double switch (for IO types) with switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	18,50
Double switch (for IO types) with switch ranges glass, stainless steel, aluminium (various manufacturers)	59,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

Accessories			AS1
Item description	Item No.	On stock	€
Converter RS485 Modbus – USB incl. driver CD for connection to a computer (net price)	668293	⬤	55,50

WRF07 RR

The flush-mounted room unit with set point adjustment provides ambient temperature and set point in living spaces, hotel and office rooms. The WRF07 can be used with most common switch ranges and is furthermore available in various colors. It is especially suited for design-oriented buildings. The removable terminals allow for pre-wiring. The WRF07 can be connected through RS485 Modbus or LON to a superior BMS.

WRF07 P ltype1,
Gira E2 pure white matt

WRF07 P ltype1,
Busch-Jaeger alpha nea®

Modbus

LON
LOCAL OPERATING NETWORK

TECHNICAL DATA	
Measured values	temperature, humidity, depending on the device
Output voltage	AO2V: 2x 0..10 V
Network technology	LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 1 W (24 V =) | 2,5 VA (24 V ~)
Measuring range temp.	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Inputs	AO2V: 2 inputs, floating switch contact, DI4: 4x input digital for floating switch contact
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.5 aluminum | stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo®, future® linear, impuls, Busch-axcent®, alpha nea®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antik
Switch range Peha	AURA, AURA glass
Setpoint (P)	potentiometer
Rocker switch (S)	for fan speed adjustment
Button (T)	for presence detection, for fan stage adjustment (depending on the device)
LED (D)	for status feedback, green (standard), several LEDs possible (e.g. green, yellow, red)
Enclosure	Central disc in switch manufacturer's design (appearance may vary)
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing

Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm), DO2T, DO2R, OVR, OVT with IO extension need 2 flush-mounting boxes (Ø=60 mm) and double frame (alternatively, the IO unit can be mounted in a deep flush-mounted box or be detached up to 10 m)
Delivery content	software for configuration (freeware via download)
Notes	for further variants see chapter room operating units, for other operating elements please request, for other frame designs please request

Room controller temperature – AO2V RS485 BACnet				RU2
Item description	Inputs	0..10 V	Item No.	€
WRF07 P AO2V RS485 BACnet (MS/TP) ltype1 Gira E2 pure white matt	2	2	628150	178,50
WRF07 PTD AO2V RS485 BACnet (MS/TP) ltype1 Gira E2 pure white matt, LED green	2	2	628167	189,20

Room controller temperature + humidity – AO2V RS485 BACnet				RU2
Item description	Inputs	0..10 V	Item No.	€
WRF07 P rH AO2V RS485 BACnet (MS/TP) ltype1 Gira E2 pure white matt	2	2	703260	218,50
WRF07 PTD rH AO2V RS485 BACnet (MS/TP) ltype1 Gira E2 pure white matt, LED green	2	2	703291	229,20

Modbus

Room controller temperature – AO2V RS485 Modbus					RU2
Item description	Inputs	0..10 V	Item No.	Controller	€
WRF07 P AO2V RS485 Modbus ltype1 Gira E2 pure white matt	2	2	496094	✔	178,50
WRF07 PTD AO2V RS485 Modbus ltype1 Gira E2 pure white matt, LED green	2	2	497800	✔	189,20

Room controller temperature + humidity – AO2V RS485 Modbus					RU2
Item description	Inputs	0..10 V	Item No.	Controller	€
WRF07 P rH AO2V RS485 Modbus ltype1 Gira E2 pure white matt	2	2	703246	✔	218,50
WRF07 PTD rH AO2V RS485 Modbus ltype1 Gira E2 pure white matt, LED green	2	2	703253	✔	229,20

LON
LOCAL OPERATING NETWORK

Room controller temperature – AO2V	DI4 LON					RU2
Item description	Inputs	0..10 V	Item No.	Controller	€
WRF07 P DI4 LON ltype1 Gira E2 pure white matt	4	-	615600	✔	243,60
WRF07 PTD DI4 LON ltype1 Gira E2 pure white matt, LED green	4	-	595230	✔	255,40
WRF07 P AO2V LON ltype1 Gira E2 pure white matt	2	2	583374	✔	243,60
WRF07 PTD AO2V LON ltype1 Gira E2 pure white matt, LED green	2	2	628174	✔	255,40

Options	
Item description	€
RS485: Rocker switch S with 3 fan stages (FS3: 1-0-2)	3,80
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in further colours and/or ›55 mm (various manufacturers)	12,50
Switch ranges stainless steel	glass	aluminium (different manufacturers)	40,00
Labelling type 2 (ltype2)	4,70
Labelling type 6 colour red+blue (ltype6)	6,20
Additional button	22,60
Additional diode (LED)	18,50

WRF04 x RR

The surface-mounted room controller (with optional display) provides a comfortable and individual temperature control in living spaces, hotel and office rooms. Available operating elements are set point potentiometers, rotary switches for fan stage selection, buttons for occupancy and LEDs for status feedback. Depending on the type, proportional 0..10 V or 2-point valves can be controlled for heating and cooling. The terminal in the back part allows for pre-wiring.

WRF04 PSTD FS5

WRF04 P,
standard labelling colour

Modbus

TECHNICAL DATA	
Measured values	temperature
Output voltage	AO2V: 2x 0..10 V
Output switch contact	Relay: switch contact 24 V | 3 A, floating Triac: 24 V ~ | 1 A, floating
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	RS485 Modbus: typ. 0,4 W (24 V =) | 0,6 VA (24 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	2x entry for floating contacts
Setpoint (P)	potentiometer
Rotary switch (S)	for fan stage adjustment (max. 5 stages) 5-stages (auto,0,I,II,III), 2-stages (0,I), 3-stages (0,I,II), 4-stages (0,I,II,III)
Button (T)	for presence detection
LED (D)	for status feedback, green (standard)
Functions	AO2V: 2 inputs, 2 outputs 0..10 V DO2R: 2 inputs, 2 outputs relay DO2T: 2 inputs, 2 outputs Triac OVR: 2 inputs, 2 outputs (1x 0..10 V, 1 relay) OVT: 2 inputs, 2 outputs (1x 0..10 V, 1 Triac)
Enclosure	PC, pure white
Protection (IP)	IP30 according to EN 60529
Cable entry	breaking points top/bottom, rear entry
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws with frame for surface mounting (accessory) or directly on the wall base part can be mounted and wired separately, DO2T, DO2R, OVR, OVT with IO extension need an additional flush-mounting box (Ø=60 mm)
Notes	for further variants see chapter room operating units, special labelling available on request, special painting available on request, for other operating elements please request

WRF04 x RR

Modbus

Room controller temperature – AO2V RS485 Modbus					RU2
Item description	Inputs	0..10 V	Item No.	Controller	€
WRF04 P AO2V RS485 Modbus	2	2	419956	✓	158,30
WRF04 PTD AO2V RS485 Modbus, LED green	2	2	415613	✓	166,20
WRF04 PSD AO2V RS485 Modbus, FS5, LED green	2	2	419949	✓	184,10
WRF04 PSTD AO2V RS485 Modbus, FS5, LED green	2	2	480505	✓	200,50
WRF04 LCD P AO2V RS485 Modbus	2	2	420020	✓	199,00
WRF04 LCD PTD AO2V RS485 Modbus, LED green	2	2	415620	✓	206,90
WRF04 LCD PSD AO2V RS485 Modbus, FS5, LED green	2	2	419987	✓	224,80
WRF04 LCD PSTD AO2V RS485 Modbus, FS5, LED green	2	2	538442	✓	241,30

Room controller temperature – IO DO2R RS485 Modbus					RU2
Item description	Inputs	0..10 V	Relay	Item No.	Controller	€
WRF04 P DO2R RS485 Modbus, IO	2	-	2	420266	✓	200,90
WRF04 PTD DO2R RS485 Modbus, LED green, IO	2	-	2	420273	✓	208,80
WRF04 PSD DO2R RS485 Modbus, FS5, LED green, IO	2	-	2	420280	✓	226,80
WRF04 LCD P DO2R RS485 Modbus, IO	2	-	2	420327	✓	241,70
WRF04 LCD PTD DO2R RS485 Modbus, LED green, IO	2	-	2	420334	✓	249,60
WRF04 LCD PSD DO2R RS485 Modbus, FS5, LED green, IO	2	-	2	628822	✓	267,50

Room controller temperature – IO DO2T RS485 Modbus					RU2
Item description	Inputs	0..10 V	Triac	Item No.	Controller	€
WRF04 P DO2T RS485 Modbus, IO	2	-	2	420617	✓	200,90
WRF04 PTD DO2T RS485 Modbus, LED green, IO	2	-	2	420624	✓	208,80
WRF04 PSD DO2T RS485 Modbus, FS5, LED green, IO	2	-	2	420631	✓	226,80
WRF04 LCD P DO2T RS485 Modbus, IO	2	-	2	420815	✓	241,70
WRF04 LCD PTD DO2T RS485 Modbus, LED green, IO	2	-	2	628846	✓	249,60
WRF04 LCD PSD DO2T RS485 Modbus, FS5, LED green, IO	2	-	2	628839	✓	267,50

WRF04 x RR

Room controller temperature – IO OVR RS485 Modbus						RU2
Item description	Inputs	0..10 V	Relay	Item No.	Controller	€
WRF04 P OVR RS485 Modbus, IO	2	1	1	420679	✔	200,90
WRF04 PTD OVR RS485 Modbus, LED green, IO	2	1	1	420686	✔	208,80
WRF04 PSD OVR RS485 Modbus, FS5, LED green, IO	2	1	1	420693	✔	226,80
WRF04 LCD P OVR RS485 Modbus, IO	2	1	1	420891	✔	241,70
WRF04 LCD PTD OVR RS485 Modbus, LED green, IO	2	1	1	420907	✔	249,60
WRF04 LCD PSD OVR RS485 Modbus, FS5, LED green, IO	2	1	1	420914	✔	267,50

Room controller temperature – IO OVT RS485 Modbus						RU2
Item description	Inputs	0..10 V	Triac	Item No.	Controller	€
WRF04 P OVT RS485 Modbus, IO	2	1	1	420747	✔	200,90
WRF04 PTD OVT RS485 Modbus, LED green, IO	2	1	1	420754	✔	208,80
WRF04 PSD OVT RS485 Modbus, FS5, LED green, IO	2	1	1	420761	✔	226,80
WRF04 LCD P OVT RS485 Modbus, IO	2	1	1	420952	✔	241,70
WRF04 LCD PTD OVT RS485 Modbus, LED green, IO	2	1	1	630122	✔	249,60
WRF04 LCD PSD OVT RS485 Modbus, FS5, LED green, IO	2	1	1	628877	✔	267,50

Options	
Item description	€
Rotary switch S with 4 fan stages (FS4)	0,00
Rotary switch S with 3 fan stages (FS3)	0,00
Rotary switch S with 2 fan stages (FS2)	0,00
Default labelling P colour red+blue (ltypeSC)	6,20

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊖	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊖	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊖	12,80

LCA

DATA SHEETS

The flat surface-mounted bi-metallic room thermostat with night-time lowering (ECO function) is designed for heating or cooling in 2-pipe systems in residential, industrial and commercial buildings. The set point can be selected through a large rotary knob. It is suitable for infrared heaters and other thermostat-controlled heating systems.

TECHNICAL DATA	
Measured values	temperature
Output switch contact	changeover contact, heating & cooling max. 230 V ~ / 2 A (resistive, non-floating)
Power supply	230 V ~
Sensor	bimetallic contact
Inputs	entry for night reduction -3 K, 230 V ~
Control functions	setpoint
Functions	heating or cooling ON/OFF, night reduction
Setpoint range	+5..+30 °C
Enclosure	ABS, pure white brilliant
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm)

Room controller heating/cooling surface mount – active			RU1
Item description	Item No.	Controller	€
LCA	660822	✔	32,40

LCA D

The flat surface-mounted bimetallic room controller is designed for heating in 2-pipe systems in residential, industrial and commercial buildings. The set point can be adjusted through a large rotary knob. The operating mode is indicated by an LED.

TECHNICAL DATA	
Measured values	temperature
Output switch contact	NC contact heating max. 230 V ~ / 2 A (resistive, non-floating)
Power supply	230 V ~
Sensor	bimetallic contact
LED (D)	heating „ON"
Control functions	setpoint
Functions	heating ON/OFF
Setpoint range	+5..+30 °C
Enclosure	ABS, pure white brilliant
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm)

Room thermostat heating surface mount with LED – active			RU1
Item description	Item No.	Controller	€
LCA D	660815	✓	34,40

Temperature

High-quality materials, modern production processes, and many years of experience: We produce temperature sensors for various applications in buildings for heating, refrigeration and air conditioning systems.

IDEAL TEMPERATURE FOR YOUR APPLICATION

Our sensors are available in various designs and with numerous temperature sensor options, active outputs and BUS systems. Special manufacturing processes guarantee reliable operation even in demanding applications.

BACnet   KNX   LON LOCAL OPERATING NETWORK   enocean   Modbus

1

VFG54+

Contact temperature sensor, available with RS485-Modbus interfaces

2

AF25

Cable/Contact temperature sensor, various cable lengths are available

3

TF25

Cable temperature sensor, available with LON interface

» BENEFITS

» Temperature sensors for various applications and harsh environments
» Numerous passive temperature sensors, active outputs and BUS systems are available
» High protection against external factors due to special high-end manufacturing processes

Temperature

» BENEFITS

» Temperature sensors for various applications and harsh environments
» Numerous passive temperature sensors, active outputs and BUS systems are available
» High protection against external factors due to special high-end manufacturing processes

AGS55+

Outdoor/industrial temperature sensor, available with LON or Modbus interfaces as well LCD

AKF10+

Duct-/ immersion temperature sensor, available with LON or Modbus interfaces as well as LCD

RPF40

Room pendulum temperature sensor, various cable lengths are available

ASHRAE **BACnet**

KNX®

LON
LOCAL OPERATING NETWORK

enocean®

Modbus

Temperature

IDEAL TEMPERATURE FOR YOUR APPLICATION

Our sensors are available in various designs and with numerous temperature sensor options, active outputs and BUS systems. Special manufacturing processes guarantee reliable operation even in demanding applications.

NOVOS 5 Temp active

Active room sensor in the NOVOS 5 enclosure for temperature measurement. The maintenance-free sensor contributes to a pleasant room climate and well-being. Typical applications include schools, office buildings, hotels or cinemas. The NOVOS 5 uses an LCD with color-changing backlight for displaying the measured values and exceeding threshold values. Different parameters like the display settings can be individually configured via Thermokon NOVOSapp. Optionally, operating elements for controlling HVAC systems can be added (see product NOVOS 5 x in the chapter 'Room Operating Units').

NOVOS 5 Temp white LCD

NOVOS 5 Temp white design LCD
with design cover black

NOVOS 5 Temp white design LCD
with design cover alu

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V or 0..5 V, (live-zero configuration via app or uConfig) min. load 10 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	15..35 V = or 19..29 V ~ SELV, TRA: 15..35 V = SELV
Power consumption	typ. 0,6 W (24 V =) | 1,0 VA (24 V ~)
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Operating temperature range	-20..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Display	LCD 29x35 mm with RGB backlight
Colour	pure white, black or aluminium
Enclosure	PC V0, design cover pure white, black or aluminium
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories)

NOVOS 5 Temp active

Room sensor temperature – active 0..10 V | 4..20 mA		TP1
Item description	Item No.	€
NOVOS 5 Temp white LCD TRA	733557	120,00
NOVOS 5 Temp white LCD TRV	733519	120,00

Room sensor temperature design – active 0..10 V | 4..20 mA (please specify desired design cover)		TP1
Item description	Item No.	€
NOVOS 5 Temp white design LCD TRA	733564	120,00
NOVOS 5 Temp white design LCD TRV	733533	120,00

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Temperature

NOVOS 5 Temp BUS

Communicating room sensor in the NOVOS 5 enclosure for temperature measurement. The maintenance-free sensor contributes to a pleasant room climate and well-being. Typical applications include schools, office buildings, hotels or cinemas. The NOVOS 5 uses an LCD with color-changing backlight for displaying the measured values and exceeding threshold values. Different parameters like the display settings can be individually configured via Thermokon NOVOSapp. Optionally, operating elements for controlling HVAC systems can be added (see product NOVOS 5 x in the chapter 'Room Operating Units').

NOVOS 5 Temp white LCD

NOVOS 5 Temp white design LCD with design cover black

NOVOS 5 Temp white design LCD with design cover alu

Modbus   BACnet

TECHNICAL DATA	
Measured values	temperature
Network technology	RS485 BACnet (MS/TP), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	typ. 0,6 W (24 V =) | 1,0 VA (24 V ~)
Measuring range temp.	-35..+70 °C
Operating temperature range	-20..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	1x input for floating contact
Display	LCD 29x35 mm with RGB backlight
Colour	pure white, black or aluminium
Enclosure	PC V0, design cover pure white, black or aluminium
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories)

NOVOS 5 Temp BUS

Room sensor temperature – BUS		TP1
Item description	Item No.	€
NOVOS 5 Temp white LCD RS485 Modbus	733571	157,00
NOVOS 5 Temp white LCD RS485 BACnet (MS/TP)	754712	157,00

Room sensor temperature design – BUS (please specify desired design cover)		TP1
Item description	Item No.	€
NOVOS 5 Temp white design LCD RS485 Modbus	733588	157,00
NOVOS 5 Temp white design LCD RS485 BACnet (MS/TP)	754729	157,00

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Temperature

NOVOS 3 Temp passive

Passive room sensor in the NOVOS 3 enclosure for measuring room temperature. The maintenance-free sensor contributes to a pleasant room climate and well-being. Typical applications include schools, office buildings, hotels or cinemas. Optionally, operating elements for controlling HVAC systems can be added (see product NOVOS 3 x in the chapter 'Room Operating Units').

NOVOS 3 Temp white

NOVOS 3 Temp white design with design cover black

NOVOS 3 Temp white design with design cover alu

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 | NTC10k
Measuring range temp.	-35..+70 °C
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	2-wire (standard) or 4-wire
Colour	pure white, black or aluminium
Enclosure	PC V0, optionally with design cover black or aluminium
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	other temperature sensors on request

NOVOS 3 Temp passive

Room sensor temperature – passive	Item No.	On stock	TP3 €
NOVOS 3 Temp white PT100	728256	⊜	19,50
NOVOS 3 Temp white PT1000	728386	⊜	22,50
NOVOS 3 Temp white PT1000 1/3 DIN	728393		25,00
NOVOS 3 Temp white Ni1000	728409	⊜	21,40
NOVOS 3 Temp white Ni1000TK5000	728416	⊜	25,00
NOVOS 3 Temp white NTC10k	728423	⊜	18,20

Room sensor temperature design – passive (please specify desired design cover)	Item No.	TP3 €
NOVOS 3 Temp white design PT100	728430	19,50
NOVOS 3 Temp white design PT1000	728447	22,50
NOVOS 3 Temp white design PT1000 1/3 DIN	728454	25,00
NOVOS 3 Temp white design Ni1000	728461	21,40
NOVOS 3 Temp white design Ni1000TK5000	728478	25,00
NOVOS 3 Temp white design NTC10k	728485	18,20

Options	€
4-wire connection (4-wire)	5,60
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00
Add to price of NTC10k for sensor NTC1,8k | NTC5k | NTC10k Precon | NTC10k Carel | NTC20k	5,60
Add to price of NTC10k for sensor LM235Z	1,80

Design cover (please order additionally with items design)	On stock	AS1 €
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories	Item No.	On stock	AS1 €
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80

NOVOS 3 Temp active

Active room sensor in the NOVOS 3 enclosure for measuring room temperature. The maintenance-free sensor contributes to a pleasant room climate and well-being. Typical applications include schools, office buildings, hotels or cinemas. Optionally, operating elements for controlling HVAC systems can be added (see product NOVOS 3 x in the chapter 'Room Operating Units').

NOVOS 3 Temp white

NOVOS 3 Temp white design
with design cover black

NOVOS 3 Temp white design
with design cover alu

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	temperature
Output voltage	0..10 V or 0..5 V (live-zero can be configured via app or uConfig), min. load 10 kΩ
Output current	4..20 mA, max. load 500 Ω
Power supply	15..35 V = or 19..29 V ~ SELV TRA: 15..35 V = SELV
Power consumption	typ. 0,6 W (24 V =) | 1,0 VA (24 V ~)
Output signal range temp.	Scaling analog output 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Accuracy temperature	±0,5 K (typ. at 21 °C)
Colour	pure white, black or aluminium
Enclosure	PC V0, optionally with design cover black or aluminium
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories)

NOVOS 3 Temp active

Room sensor temperature – active 0..10 V | 4..20 mA			TP2
Item description	Item No.	On stock	€
NOVOS 3 Temp white TRA	731621	⊜	66,30
NOVOS 3 Temp white TRV	731614	⊜	66,30

Room sensor temperature design – active 0..10 V | 4..20 mA (please specify desired design cover)			TP2
Item description	Item No.	On stock	€
NOVOS 3 Temp white design TRV	731638	⊜	66,30
NOVOS 3 Temp white design TRA	731645	⊜	66,30

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

NOVOS 3 Temp
enclosure colour black

NOVOS 3 Temp
enclosure colour aluminium

Temperature

NOVOS 3 Temp BUS

Communicating room sensor in the NOVOS 3 enclosure for measuring room temperature. The maintenance-free sensor contributes to a pleasant room climate and well-being. Typical applications include schools, office buildings, hotels or cinemas. Optionally, operating elements for controlling HVAC systems can be added (see product NOVOS 3 x in the chapter Room Operating Units)..

NOVOS 3 Temp white

NOVOS 3 Temp white design
with design cover black

NOVOS 3 Temp white design
with design cover alu

Modbus   BACnet

TECHNICAL DATA	
Measured values	temperature
Network technology	RS485 BACnet (MS/TP), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	typ. 0,6 W (24 V =) | 1,0 VA (24 V ~)
Measuring range temp.	-35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	1x input for floating contact
Colour	pure white, black or aluminium
Enclosure	PC V0, optionally with design cover black or aluminium
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories)

NOVOS 3 Temp BUS

Modbus *BACnet*

Room sensor temperature – BUS		TP2
Item description	Item No.	€
NOVOS 3 Temp white RS485 Modbus	731652	102,00
NOVOS 3 Temp white RS485 BACnet (MS/TP)	754736	102,00

Modbus *BACnet*

Room sensor temperature design – BUS (please specify desired design cover)		TP2
Item description	Item No.	€
NOVOS 3 Temp white design RS485 Modbus	731669	102,00
NOVOS 3 Temp white design RS485 BACnet (MS/TP)	754743	102,00

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

NOVOS 3 Temp
enclosure colour black

NOVOS 3 Temp
enclosure colour aluminium

Temperature

WRF04 LON

Surface-mounted room sensor for temperature measurement in living rooms, offices etc. Designed for connection to control and display systems. For pre-wiring at the installation site, the back part with the connection terminals can be removed from the upper part of the enclosure. Optionally, it is possible to add operating elements for controlling HVAC systems.

LON
LOCAL OPERATING NETWORK

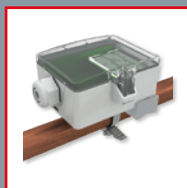| TECHNICAL DATA	
Measured values	temperature
Network technology	LON FT (free topology)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,5 W (24 V =) | 1,7 VA (24 V ~),
Measuring range temp.	0..+50 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Enclosure	PC, pure white
Protection (IP)	IP30 according to EN 60529
Cable entry	breaking points top/bottom, rear entry
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws, with frame for surface mounting (accessory) or directly on the wall base part can be mounted and wired separately
Notes	special painting available on request enclosure stainless steel available (see options)

LON
LOCAL OPERATING NETWORK

Room sensor temperature – active LON		TP2
Item description	Item No.	€
WRF04 LON	193689	178,40

Options	
Item description	€
Stainless steel enclosure	95,30

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
Ball stroke protection BS150, transparent (for series NOVOS 3/WRF04)	647007	⊜	23,30

WRF06 passive

Flush-mounted room sensor for temperature measurement in living rooms, offices etc. Designed for connection to controller and display systems. Due to the high quality optics and the matching design frame from various switch ranges, the device is particularly suitable for design-oriented facilities. It can be mounted separately in a single frame or in a multiple frame. Optionally, it is possible to add operating elements for controlling HVAC systems. Stainless steel version available on request.

WRF06 Busch-Jaeger future® linear studio white

WRF06 Gira E2 pure white matt

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100	PT100 1/3 DIN	PT1000	PT1000 1/3 DIN	Ni1000	Ni1000TK5000 NTC10k	NTC 10k Precon	NTC20k	NTC1,8k LM235Z
Measuring range temp.	-35..+70 °C
Operating temperature range	permissible working temperature: -35..+70 °C
Accuracy temperature	depending on used sensor
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.5 aluminum	stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo® *, future® linear *, impuls, Busch-axcent® *, alpha nea®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec *, Artec stainless steel *, Antik *
Switch range Peha	AURA, AURA glass
Enclosure	Central disc in switch manufacturer's design (appearance may vary)
Protection (IP)	IP20 according to EN 60529
Ambient condition	max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	* in switch program with intermediate frame for other frame designs please request

WRF06 passive

Item description: product | sensor | switch range | colour

Room sensor temperature – passive		TP1
Item description	Item No.	€
WRF06 without sensor Gira E2 pure white matt	626194	37,20
WRF06 PT100 Gira E2 pure white matt	128933	44,40
WRF06 PT100 1/3 DIN Gira E2 pure white matt	137768	48,40
WRF06 PT1000 Gira E2 pure white matt	158299	46,60
WRF06 PT1000 1/3 DIN Gira E2 pure white matt	160773	49,90
WRF06 Ni1000 Gira E2 pure white matt	138314	46,30
WRF06 Ni1000TK5000 Gira E2 pure white matt	121866	49,90
WRF06 NTC10k Gira E2 pure white matt	191050	43,10
WRF06 NTC10k Precon Gira E2 pure white matt	265136	43,10
WRF06 NTC20k Gira E2 pure white matt	199797	43,10
WRF06 NTC1,8k Gira E2 pure white matt	257794	43,10
WRF06 LM235Z Gira E2 pure white matt	121798	44,90

Options	
Item description	€
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in further colours and/or ›55 mm (various manufacturers)	12,50
Switch ranges stainless steel	glass	aluminium (different manufacturers)	40,00
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

WRF06 active

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,3 W (24 V =) | 0,9 VA (24 V ~)
Output signal range temp.	Scaling analog output, 0..+50 °C
Operating temperature range	permissible working temperature, 0..+50 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.5 aluminum | stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo® *, future® linear *, impuls, Busch-axcent® *, alpha nea®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec *, Artec stainless steel *, Antik *
Switch range Peha	AURA, AURA glass
Enclosure	Central disc in switch manufacturer's design (appearance may vary)
Protection (IP)	IP20 according to EN 60529
Ambient condition	max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	* in switch program with intermediate frame for other frame designs please request

Item description: product | TRV3 | switch range | colour

Room sensor temperature – active 0..10 V		TP1
Item description	Item No.	€
WRF06 TRV3 Gira E2 pure white matt	627160	110,00
WRF06 TRV3 Berker S.1 polar white brilliant	582865	110,00
WRF06 TRV3 Busch-Jaeger Busch-balance® SI alpine white	703925	110,00
WRF06 TRV3 Busch-Jaeger Reflex SI alpine white	703932	110,00
WRF06 TRV3 Jung A 500 alpine white	703949	110,00
WRF06 TRV3 Merten M-Smart polar white brilliant	703956	110,00
WRF06 TRV3 Gira E3 pure white matt	703963	110,00

Options	
Item description	€
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in further colours and/or >55 mm (various manufacturers)	12,50
Switch ranges stainless steel | glass | aluminium (different manufacturers)	40,00

Accessories			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10

WRF06 BUS

Modbus · BACnet · LON LOCAL OPERATING NETWORK

DATA SHEETS

TECHNICAL DATA	
Measured values	temperature
Output voltage	AO2V: 2x 0..10 V, min. load 5 kΩ
Network technology	BACnet MS/TP, LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,9 W (24 V =)	1 VA (24 V ~), LON: typ. 0,7 W (24 V =)	2,5 VA (24 V ~)
Measuring range temp.	0..+50 °C
Operating temperature range	permissible working temperature, 0..+50 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Inputs	DI4: 4x input digital for floating switch contact
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.5 aluminum	stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo® *, future® linear *, impuls, Busch-axcent® *, alpha nea®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec *, Artec stainless steel *, Antik *
Switch range Peha	AURA, AURA glass
Protection (IP)	IP20 according to EN 60529
Ambient condition	max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Delivery content	software for configuration (freeware via download)
Notes	* in switch program with intermediate frame for other frame designs please request

Item description: product | BUS | switch range | colour

Modbus

Room sensor temperature – BUS		TP1
Item description	Item No.	€
WRF06 Temp RS485 Modbus pure white matt without frame	726825	123,20
WRF06 Temp RS485 Modbus pure white brilliant without frame	726801	123,20
WRF06 Temp RS485 Modbus aluminium without frame	726856	123,20
WRF06 Temp RS485 Modbus Jung aluminium without frame	726832	123,20
WRF06 Temp RS485 Modbus anthracite without frame	726818	123,20

Modbus · LON LOCAL OPERATING NETWORK

Room sensor temperature – DI4 BUS				TP1
Item description	Inputs	0..10 V	Item No.	€
WRF06 DI4 RS485 Modbus Gira E2 pure white matt	4	-	644402	168,80
WRF06 DI4 LON Gira E2 pure white matt	4	-	644389	193,00

WRF06 BUS

Item description: product | BUS | switch range | colour

Modbus   **BACnet**   **LON**
LOCAL OPERATING NETWORK

Room controller temperature – AO2V BUS				TP1
Item description	Inputs	0..10 V	Item No.	€
WRF06 AO2V Temp RS485 Modbus pure white matt without frame	2	2	762601	164,30
WRF06 AO2V Temp RS485 Modbus pure white brilliant without frame	2	2	746359	164,30
WRF06 AO2V Temp RS485 Modbus anthracite without frame	2	2	762656	164,30
WRF06 AO2V Temp RS485 Modbus aluminium without frame	2	2	762625	164,30
WRF06 AO2V Temp RS485 Modbus Jung aluminium without frame	2	2	762632	164,30
WRF06 AO2V RS485 BACnet Gira E2 pure white matt	2	2	624206	173,40
WRF06 AO2V LON Gira E2 pure white matt	2	2	726870	193,00

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10

Switch ranges (please order additionally)			AS1
Item description	Item No.	On stock	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)			4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)			12,50
Switch ranges glass, stainless steel, aluminium (various manufacturers)			40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue			

Temperature

RDF18

Ceiling flush-mounted sensor for temperature measurement in indoor spaces to be mounted inconspicuously into ceiling panels, thus contributing to an overall clean architectural design.

TECHNICAL DATA	
Measured values	temperature
Output passive	passive temperature sensor
Measuring range temp.	-35..+70 °C
Operating temperature range	permissible working temperature: -35..+70 °C
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	2-wire (standard)
Protection (IP)	IP30 according to EN 60529
Electrical connection	connection wire PVC, 2x Ø=0,25 mm², grey 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Sensor head	ABS, white, Ø=30 mm
Ambient condition	max. 85% rH non-condensing
Mounting	facet mounting
Notes	active types for temperature and humidity available (see humidity – FT-RDF18+)

RDF18

Ceiling flush-mounted sensor temperature – passive		TP2
Item description	Item No.	€
RDF18 PT100 L1000	471237	35,50
RDF18 PT100 1/3 DIN L1000	471244	39,50
RDF18 PT1000 L1000	459235	37,70
RDF18 PT1000 1/3 DIN L1000	458276	41,00
RDF18 Ni1000 L1000	463669	37,40
RDF18 Ni1000TK5000 L1000	471251	41,00
RDF18 NTC10k L1000	457828	34,20
RDF18 NTC10k Precon L1000	471282	34,20
RDF18 NTC20k L1000	459143	34,20
RDF18 NTC1,8k L1000	471275	34,20
RDF18 LM235Z L1000	456296	36,00

Options	
Item description	€
Add per meter of connection cable	1,00
Connection box USE-S	14,50
Add to price of NTC10k for sensor NTC5k | NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

Temperature

RDF-IR

Ceiling flush-mounted sensor for surface temperature measurement in rooms, office spaces and other workplaces. Using the infra-red measuring principle, an averaged temperature over the circular detection range (optical detection range 80 ±5°) is calculated. If two IR sensors are used, the mean, minimum or maximum value of both temperature signals can be provided in addition to the individually measured temperatures of each sensor (configurable via Thermokon USEapp).

RDF-IR V

RDF-IR VV

0..10 V / 4..20 mA   USEapp

TECHNICAL DATA	
Measured values	radiation temperature
Output voltage	0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig)
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	typ. 0,6 W (24 V =) | 1,5 VA (24 V ~)
Output signal range temp.	0..+50 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C adjustable at the transducer
Operating temperature range	permissible working temperature, -20..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range) mounting height max. 7 m, ›7 m ±1,5 K
Sensor	PIR (passive infrared) optical aperture angle (50% sensitivity): 80 ±5°
Enclosure	enclosure USE-M, PC, pure white
Protection (IP)	IP30 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² sensor wire (patch cable) length=1,5 m (default), max. 10 m, plug RJ45
Ambient condition	max. 85% rH non-condensing
Delivery content	incl. mounting base enclosure USE-M pure white

RDF-IR

Ceiling flush mount sensor radiation temperature – active 0..10 V		TP1
Item description	Item No.	€
RDF-IR V L1500	699150	148,80
RDF-IR VV 2xL1500	699167	195,00

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
Sensor wire 1,5 m with RJ45 connector	628785	⊜	5,75
Sensor wire 3 m with RJ45 connector	708852	⊜	7,40
Sensor wire 7,5 m with RJ45 connector	708869	⊜	13,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

thermokon®

RPF40 passive

Pendulum sensor for temperature measurement in large rooms like open space offices, arcades and production plants. Optionally available with a black ball as a radiation sensor with a long-time constant for radiant heaters. Especially designed for control and display systems.

RPF40 passive

RPF40 radiation sensor

SI-Protection

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC20k | NTC1,8k LM235Z
Measuring range temp.	-35..+90 °C
Operating temperature range	permissible working temperature: -35..+90 °C
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	2-wire (standard)
Protection (IP)	IP30 according to EN 60529, SI-Protection
Sensor head	PF31, white, black (only radiation sensor), Ø=40 mm
Ambient condition	max. 85% rH short term condensation
Notes	other sensors and cable lengths on request multi-conductor connection on request

RPF40 passive

Item description: product | sensor | colour (sensor head) | cable length(L)

Room pendulum sensor temperature – passive		TP2
Item description	Item No.	€
RPF40 PT100 white L1000	350006	52,40
RPF40 PT100 1/3 DIN white L1000	265621	56,40
RPF40 PT1000 white L1000	321068	54,60
RPF40 PT1000 1/3 DIN white L1000	329569	57,90
RPF40 Ni1000 white L1000	329279	54,30
RPF40 Ni1000TK5000 white L1000	144193	57,90
RPF40 NTC10k white L1000	351980	51,10
RPF40 NTC10k Precon white L1000	164573	51,10
RPF40 NTC20k white L1000	334792	51,10
RPF40 NTC1,8k white L1000	334549	51,10
RPF40 LM235Z white L1000	339476	52,90

Options	
Item description	€
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Add per meter of connection cable	1,00
Add per meter of connection cable 3-wire -35..+100 °C	1,20
Add per meter of connection cable 4-wire -35..+100 °C	1,40
Sensor head black (radiation sensor)	0,00
Connection box USE-S	14,50
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

thermokon®

RPF40+ active

Pendulum sensor for temperature measurement in large rooms like open space offices, arcades and production plants. Optionally available with black ball as a radiation sensor with long time constants for radiant heaters. Especially designed for control and display systems.

0..10 V / 4..20 mA

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V or 0..5 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	TRV: 15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Output signal range temp.	Scaling analog output, 0..+160 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C adjustable at the transducer
Operating temperature range	permissible working temperature, -35..+90 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP30 according to EN 60529 SI-Protection enclosure: IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² sensor wire PVC soft, Ø=0,25 mm², white 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Sensor head	PF31, white, black (only radiation sensor), Ø=40 mm
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-S pure white
Notes	other cable lengths on request

Item description: product | TRV/TRA MultiRange | colour (sensor head) | cable length(L)

RPF40+ active

Room pendulum sensor temperature – active 0..10 V		TP2
Item description	Item No.	€
RPF40+ TRV MultiRange white L1000	658409	116,40

Room pendulum sensor temperature – active 4..20 mA		TP2
Item description	Item No.	€
RPF40+ TRA MultiRange white L1000	658416	116,40

Options	
Item description	€
Add per meter of connection cable	1,00
Sensor head black (radiation sensor)	0,00

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

RPF100 passive

DATA SHEETS

Pendulum sensor for temperature measurement in large, high rooms like open space offices, arcades, production plants. Especially designed for control and display systems.

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100	PT100 1/3 DIN	PT1000	PT1000 1/3 DIN	Ni1000	Ni1000TK5000 NTC10k	NTC 10k Precon	NTC20k	NTC1,8k, LM235Z
Measuring range temp.	-35..+90 °C
Operating temperature range	permissible working temperature, -35..+90 °C
Accuracy temperature	depending on used sensor, PT100	PT1000: ±0,3 K (typ. at 0 °C, Kl.B), Ni1000: ±0,4 K (typ. at 0 °C), Ni1000TK5000: ±0,4 K (typ. at 0 °C), NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	2-wire (standard)
Protection (IP)	IP30 according to EN 60529, SI-Protection
Pocket	stainless steel V2A, Ø=15 mm, mounting length 100 mm, hex pressed
Ambient condition	max. 85% rH short term condensation
Notes	other sensors and cable lengths on request, multi-conductor connection on request

Room pendulum sensor temperature – passive		TP2
Item description	Item No.	€
RPF100 PT100 L1000	81566	68,10
RPF100 PT100 1/3 DIN L1000	90780	72,10
RPF100 PT1000 L1000	90827	70,30
RPF100 PT1000 1/3 DIN L1000	90865	73,60
RPF100 Ni1000 L1000	90902	70,00
RPF100 Ni1000TK5000 L1000	160612	73,60
RPF100 NTC10k L1000	91060	66,80
RPF100 NTC10k Precon L1000	91107	66,80
RPF100 NTC20k L1000	219952	66,80
RPF100 NTC1,8k L1000	278331	66,80
RPF100 LM235Z L1000	91145	68,60

Options	
Item description	€
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Add per meter of connection cable	1,00
Add per meter of connection cable 3-wire -35..+100 °C	1,20
Add per meter of connection cable 4-wire -35..+100 °C	1,40
Connection box USE-S	14,50
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65
For cable entries and sealing inserts please refer to chapter "Accessories"			

RPF100+ active

Pendulum sensor for temperature measurement in large, high rooms and spaces like open space offices, arcades, production plants. Especially designed for control and display systems.

0..10 V / 4..20 mA

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V or 0..5 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	TRV: 15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =)
Output signal range temp.	Scaling analog output, 0..+160 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C adjustable at the transducer
Operating temperature range	permissible working temperature, -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	plug-in terminal, max. 2,5 mm² sensor wire white 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Pocket	stainless steel V2A, Ø=15 mm, mounting length 100 mm, hex pressed
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-S pure white

Room pendulum sensor temperature – active 0..10 V | 4..20 mA		TP2
Item description	Item No.	€
RPF100+ TRV MultiRange L1000	658423	132,10
RPF100+ TRA MultiRange L1000	658430	132,10

Options	
Item description	€
Add per meter of sensor wire	1,00

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65
For cable entries and sealing inserts please refer to chapter "Accessories"			

AKF10+

Duct sensor for measuring air temperature and other gaseous media (e.g. in ventilation and air conditioning systems). Combined with a thermowell pocket, it can be used as an immersion temperature sensor as well. Models with a relay output for a 2-point controller or a 2-stage 2-point controller and color-changing LCD allow for a wide range of applications. Depending on the model, the AKF10+ can be individually configured via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

AKF10+

AKF10+

AKF10+ relay / BUS

AKF10+ LCD

0..10 V / 4..20 mA   USEapp   **Modbus**   **BACnet**   **LON** LOCAL OPERATING NETWORK   **SI**-Protection

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V or 0..5 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Output passive	PT100	PT100 1/3 DIN	PT1000	PT1000 1/3 DIN	Ni1000	Ni1000TK5000 NTC10k	NTC 10k Precon	NTC20k	NTC1,8k LM235Z	DS18B20 1-wire
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,35 W (24 V =)	0,82 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	PT / Ni: -50..+160 °C (T160) NTC / KTY: -50..+150 °C (T150) LM235Z / DS18B20: -50..+120 °C (T120)
Output signal range temp.	TRV	TRA: Scaling analog output, -20..+80 °C (default setting) selectable from 8 temperature ranges -50..+50	-20..+80	-15..+35	-10..+120	0..+50	0..+100	0..+160	0..+250 °C, adjustable at the transducer
Operating temperature range	permissible working temperature, pocket -50..+160 °C, optional -80..+260 °C (T260) enclosure active: -35..+70 °C, enclosure passive: -35..+90 °C
Accuracy temperature	passive: depending on used sensor ±0,5 K (typ. at 21 °C within default measuring range)
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection (not possible for electronic Sensors)
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pocket	stainless steel V4A, Ø=6 mm, mounting length: 50	100	150	200	250	300	450 mm
Ambient condition	max. 85% rH short term condensation
Mounting	for duct sensors please use mounting clip, mounting flange MF6DS flexible or MF6 (brass) for immersion sensors please use immersion pocket THVADS / THMSDS
Delivery content	incl. mounting clip enclosure USE-S pure white

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig) min. load 5 kΩ
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, TRA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =)	4,3 VA (24 V ~)
Output signal range temp.	Scaling analog output, -20..+80 °C (default setting), selectable from 8 temperature ranges -50..+50	-20..+80	-15..+35	-10..+120	0..+50	0..+100	0..+160	0..+250 °C, adjustable at the transducer, optionally configurable via app or uConfig
Operating temperature range	permissible working temperature, pocket -50..+160 °C, optional -80..+260 °C (T260), enclosure: -35..+70 °C, LCD: -20..+70 °C
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white, LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm²
Mounting	for duct sensors please use mounting flange MF6DS flexible or MF6 (brass), for immersion sensors please use immersion pocket THVADS / THMSDS
Delivery content	incl. mounting flange

Temperature

AKF10+ passive

Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor -50..+160 °C – passive PT100		TP3
Item description	Item No.	€
AKF10+ PT100 050.06	621175 ⊜	32,80
AKF10+ PT100 100.06	621182 ⊜	34,10
AKF10+ PT100 150.06	621199 ⊜	35,40
AKF10+ PT100 200.06	621205 ⊜	36,00
AKF10+ PT100 250.06	621212 ⊜	37,60
AKF10+ PT100 300.06	621229	38,80
AKF10+ PT100 450.06	621236	40,50

Duct/Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP3
Item description	Item No.	€
AKF10+ PT100 1/3 DIN 050.06	621243	36,80
AKF10+ PT100 1/3 DIN 100.06	621250	38,10
AKF10+ PT100 1/3 DIN 150.06	621267	39,40
AKF10+ PT100 1/3 DIN 200.06	621274	40,00
AKF10+ PT100 1/3 DIN 250.06	621281	41,60
AKF10+ PT100 1/3 DIN 300.06	621298	42,80
AKF10+ PT100 1/3 DIN 450.06	621304	44,50

Duct/Immersion sensor -50..+160 °C – passive PT1000		TP3
Item description	Item No.	€
AKF10+ PT1000 050.06	621311 ⊜	35,00
AKF10+ PT1000 100.06	621328 ⊜	36,30
AKF10+ PT1000 150.06	621335 ⊜	37,60
AKF10+ PT1000 200.06	621342 ⊜	38,20
AKF10+ PT1000 250.06	621359 ⊜	39,80
AKF10+ PT1000 300.06	621366	41,00
AKF10+ PT1000 450.06	621373	42,70

Duct/Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN		TP3
Item description	Item No.	€
AKF10+ PT1000 1/3 DIN 050.06	620796	38,30
AKF10+ PT1000 1/3 DIN 100.06	620802	39,60
AKF10+ PT1000 1/3 DIN 150.06	620819	40,90
AKF10+ PT1000 1/3 DIN 200.06	620826	41,50
AKF10+ PT1000 1/3 DIN 250.06	620833	43,10
AKF10+ PT1000 1/3 DIN 300.06	620840	44,30
AKF10+ PT1000 1/3 DIN 450.06	620857	46,00

Duct/Immersion sensor -50..+160 °C – passive Ni1000		TP3
Item description	Item No.	€
AKF10+ Ni1000 050.06	620932 ⊜	34,70
AKF10+ Ni1000 100.06	620949 ⊜	36,00
AKF10+ Ni1000 150.06	620956 ⊜	37,30
AKF10+ Ni1000 200.06	620963 ⊜	37,90
AKF10+ Ni1000 250.06	620970 ⊜	39,50
AKF10+ Ni1000 300.06	620987	40,70
AKF10+ Ni1000 450.06	620994	42,40

Duct/Immersion sensor -50..+160 °C – passive Ni1000TK5000		TP3
Item description	Item No.	€
AKF10+ Ni1000TK5000 050.06	621007 ⊜	38,30
AKF10+ Ni1000TK5000 100.06	621014 ⊜	39,60
AKF10+ Ni1000TK5000 150.06	621021 ⊜	40,90
AKF10+ Ni1000TK5000 200.06	621038 ⊜	41,50
AKF10+ Ni1000TK5000 250.06	621045 ⊜	43,10
AKF10+ Ni1000TK5000 300.06	621052	44,30
AKF10+ Ni1000TK5000 450.06	621069	46,00

Duct/Immersion sensor -50..+150 °C – passive NTC10k		TP3
Item description	Item No.	€
AKF10+ NTC10k 050.06	620864 ⊜	31,50
AKF10+ NTC10k 100.06	620871 ⊜	32,80
AKF10+ NTC10k 150.06	620888 ⊜	34,10
AKF10+ NTC10k 200.06	620895 ⊜	34,70
AKF10+ NTC10k 250.06	620901 ⊜	36,30
AKF10+ NTC10k 300.06	620918	37,50
AKF10+ NTC10k 450.06	620925	39,20

Duct/Immersion sensor -50..+150 °C – passive NTC10k Precon		TP3
Item description	Item No.	€
AKF10+ NTC10k Precon 050.06	621380	31,50
AKF10+ NTC10k Precon 100.06	621397	32,80
AKF10+ NTC10k Precon 150.06	621403	34,10
AKF10+ NTC10k Precon 200.06	621410	34,70
AKF10+ NTC10k Precon 250.06	621427	36,30
AKF10+ NTC10k Precon 300.06	621434	37,50
AKF10+ NTC10k Precon 450.06	621441	39,20

AKF10+ passive

Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor -50..+150 °C – passive NTC20k		TP3
Item description	Item No.	€
AKF10+ NTC20k 050.06	621458	31,50
AKF10+ NTC20k 100.06	621465	32,80
AKF10+ NTC20k 150.06	621472	34,10
AKF10+ NTC20k 200.06	621489	34,70
AKF10+ NTC20k 250.06	621496	36,30
AKF10+ NTC20k 300.06	621502	37,50
AKF10+ NTC20k 450.06	621519	39,20

Duct/Immersion sensor -50..+150 °C – passive NTC1,8k		TP3
Item description	Item No.	€
AKF10+ NTC1,8k 050.06	643030	31,50
AKF10+ NTC1,8k 100.06	632928	32,80
AKF10+ NTC1,8k 150.06	632935	34,10
AKF10+ NTC1,8k 200.06	632942	34,70
AKF10+ NTC1,8k 250.06	632959	36,30
AKF10+ NTC1,8k 300.06	643047	37,50
AKF10+ NTC1,8k 450.06	643054	39,20

Duct/Immersion sensor -50..+120 °C – passive LM235Z			TP3
Item description	Item No.		€
AKF10+ LM235Z 050.06	621106	⊜	33,30
AKF10+ LM235Z 100.06	621113	⊜	34,60
AKF10+ LM235Z 150.06	621120	⊜	35,90
AKF10+ LM235Z 200.06	621137	⊜	36,50
AKF10+ LM235Z 250.06	621144	⊜	38,10
AKF10+ LM235Z 300.06	621151		39,30
AKF10+ LM235Z 450.06	621168		41,00

Options	
Item description	€
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Temperature -80..+260 °C (T260)	11,20
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00
Add to price of PT100 for sensor DS18B20 1-wire	0,00
Add to price of PT100 for sensor FeT	22,40

Order example for different items:

AKF10+ | FeT | 450.06 | 3-wire | T260

AKF10+ = product
FeT = sensor
450.06 = pocket (length.Ø)
3-wire = number of wires
T260 = temperature

Temperature

AKF10+ active

Item description: product | TRV/TRA | pocket (length.Ø)

Duct/Immersion sensor -50..+160 °C – active 0..10 V			TP3
Item description	Item No.	On stock	€
AKF10+ TRV MultiRange 050.06	621595	⊜	76,20
AKF10+ TRV MultiRange 100.06	621601	⊜	77,20
AKF10+ TRV MultiRange 150.06	621618	⊜	78,10
AKF10+ TRV MultiRange 200.06	621625	⊜	78,50
AKF10+ TRV MultiRange 250.06	621632	⊜	79,90
AKF10+ TRV MultiRange 300.06	621649	⊜	80,70
AKF10+ TRV MultiRange 450.06	621656	⊜	81,90

Duct/Immersion sensor -50..+160 °C – active 4..20 mA			TP3
Item description	Item No.	On stock	€
AKF10+ TRA MultiRange 050.06	621663	⊜	76,20
AKF10+ TRA MultiRange 100.06	621670	⊜	77,20
AKF10+ TRA MultiRange 150.06	621687	⊜	78,10
AKF10+ TRA MultiRange 200.06	621694	⊜	78,50
AKF10+ TRA MultiRange 250.06	621700	⊜	79,90
AKF10+ TRA MultiRange 300.06	621717	⊜	80,70
AKF10+ TRA MultiRange 450.06	621724	⊜	81,90

Options	
Item description	€
Temperature -80..+260 °C (T260)	11,20

AKF10+ relay

Item description: product | TRV MultiRange | pocket (length.Ø) | relay

Duct/Immersion sensor -50..+160 °C – active 0..10 V + relay			TP2
Item description	USEapp	Item No.	€
AKF10+ TRV MultiRange 050.06 relay	✓	663304	148,70
AKF10+ TRV MultiRange 100.06 relay	✓	663311	149,70
AKF10+ TRV MultiRange 150.06 relay	✓	663328	150,60
AKF10+ TRV MultiRange 200.06 relay	✓	663335	151,00
AKF10+ TRV MultiRange 250.06 relay	✓	663342	152,40
AKF10+ TRV MultiRange 300.06 relay	✓	663359	153,20
AKF10+ TRV MultiRange 450.06 relay	✓	663366	154,40

AKF10+ LCD

Item description: product | TRV/TRA MultiRange | pocket (length.Ø) | relay

Duct/Immersion sensor -50..+160 °C – active 0..10 V			TP2
Item description	**USE**app	Item No.	€
AKF10+ LCD TRV MultiRange 050.06	✔	663380	149,70
AKF10+ LCD TRV MultiRange 100.06	✔	663397	150,80
AKF10+ LCD TRV MultiRange 150.06	✔	663403	151,70
AKF10+ LCD TRV MultiRange 200.06	✔	663410	152,10
AKF10+ LCD TRV MultiRange 250.06	✔	663427	153,40
AKF10+ LCD TRV MultiRange 300.06	✔	663434	154,30
AKF10+ LCD TRV MultiRange 450.06	✔	663441	155,50

Duct/Immersion sensor -50..+160 °C – active 4..20 mA			TP2
Item description	**USE**app	Item No.	€
AKF10+ LCD TRA MultiRange 050.06	✔	663526	149,70
AKF10+ LCD TRA MultiRange 100.06	✔	663533	150,80
AKF10+ LCD TRA MultiRange 150.06	✔	663540	151,70
AKF10+ LCD TRA MultiRange 200.06	✔	663557	152,10
AKF10+ LCD TRA MultiRange 250.06	✔	663564	153,40
AKF10+ LCD TRA MultiRange 300.06	✔	663571	154,30
AKF10+ LCD TRA MultiRange 450.06	✔	663588	155,50

Duct/Immersion sensor -50..+160 °C – active 0..10 V + relay			TP2
Item description	**USE**app	Item No.	€
AKF10+ LCD TRV MultiRange 050.06 relay	✔	663458	179,80
AKF10+ LCD TRV MultiRange 100.06 relay	✔	663465	180,90
AKF10+ LCD TRV MultiRange 150.06 relay	✔	663472	181,80
AKF10+ LCD TRV MultiRange 200.06 relay	✔	663489	182,20
AKF10+ LCD TRV MultiRange 250.06 relay	✔	663496	183,50
AKF10+ LCD TRV MultiRange 300.06 relay	✔	663502	184,40
AKF10+ LCD TRV MultiRange 450.06 relay	✔	663519	185,60

Temperature

AKF10+ BUS

Item description: product | BUS | pocket (length.Ø)

Modbus

Duct/Immersion sensor -50..+160 °C – active RS485 Modbus			TP2
Item description	USEapp	Item No.	€
AKF10+ RS485 Modbus 050.06	✓	621823	109,00
AKF10+ RS485 Modbus 100.06	✓	621830	110,00
AKF10+ RS485 Modbus 150.06	✓	621847	111,00
AKF10+ RS485 Modbus 200.06	✓	621854	111,40
AKF10+ RS485 Modbus 250.06	✓	621861	112,70
AKF10+ RS485 Modbus 300.06	✓	621878	113,50
AKF10+ RS485 Modbus 450.06	✓	621885	114,80

Modbus

Duct/Immersion sensor -50..+160 °C – active RS485 Modbus			TP2
Item description	USEapp	Item No.	€
AKF10+ LCD RS485 Modbus 050.06	✓	663618	159,30
AKF10+ LCD RS485 Modbus 100.06	✓	663625	160,30
AKF10+ LCD RS485 Modbus 150.06	✓	663632	161,30
AKF10+ LCD RS485 Modbus 200.06	✓	663649	161,70
AKF10+ LCD RS485 Modbus 250.06	✓	663656	163,00
AKF10+ LCD RS485 Modbus 300.06	✓	663663	163,80
AKF10+ LCD RS485 Modbus 450.06	✓	663670	165,10

ASHRAE BACnet

Duct/Immersion sensor -50..+160 °C – active RS485 BACnet			TP2
Item description	USEapp	Item No.	€
AKF10+ RS485 BACnet 050.06	✓	699174	109,00
AKF10+ RS485 BACnet 100.06	✓	699181	110,00
AKF10+ RS485 BACnet 150.06	✓	683838	111,00
AKF10+ RS485 BACnet 200.06	✓	699198	111,40
AKF10+ RS485 BACnet 250.06	✓	699204	112,70
AKF10+ RS485 BACnet 300.06	✓	699211	113,50
AKF10+ RS485 BACnet 450.06	✓	699228	114,80

ASHRAE BACnet

Duct/Immersion sensor -50..+160 °C – active RS485 BACnet			TP2
Item description	USEapp	Item No.	€
AKF10+ LCD RS485 BACnet 050.06	✓	699235	159,30
AKF10+ LCD RS485 BACnet 100.06	✓	699242	160,30
AKF10+ LCD RS485 BACnet 150.06	✓	682848	161,30
AKF10+ LCD RS485 BACnet 200.06	✓	699259	161,70
AKF10+ LCD RS485 BACnet 250.06	✓	699266	163,00
AKF10+ LCD RS485 BACnet 300.06	✓	699273	163,80
AKF10+ LCD RS485 BACnet 450.06	✓	699280	165,10

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES − *AKF10+ passive / AKF10+ active*

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Mounting kit AKF10+ for enclosure USE-S without cable entry	748551	⊜	7,00

ACCESSORIES − *AKF10+ relay / AKF10+ LCD / AKF10+ BUS*

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting flange MF6DS flexible (suitable for Ø=6 mm; AS2)	669016	⊜	6,50
Mounting flange MF6 (brass)	3407	⊜	6,50
Syringe thermal contact fluid	102308	⊜	1,45
Mounting bracket with cable gland for duct sensors Ø=6 mm	670593	⊜	12,40
For cable entries and sealing inserts please refer to chapter "Accessories"			

Accessories – thermowells stainless steel for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	⊜	17,60
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⊜	19,40
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824	⊜	20,90
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848	⊜	22,00
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862	⊜	27,30
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879	⊜	28,60
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893	⊜	29,50
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	⊜	18,70

Accessories – thermowells brass for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	⊜	8,10
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⊜	9,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015	⊜	9,70
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022	⊜	10,10
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985	⊜	11,60
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039	⊜	12,00
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046	⊜	12,20

Temperature

AKF10+ UNI Modbus

DATA SHEETS

Duct sensor for measuring air temperature and other gaseous media (e.g. in ventilation and air conditioning systems), connection through RS485 Modbus to superior controls systems. Combined with a thermowell pocket, it can be used as an immersion temperature sensor. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

Modbus · SI-Protection

TECHNICAL DATA	
Measured values	temperature
Network technology	RS485 Modbus, RTU or ASCII, half-duplex, half-duplex baud rate 9.600, 19.200, 38.400 or 57.600 parity none, even or odd
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 0,7 W (24 V =) | 1,8 VA (24 V ~)
Measuring range temp.	-50..+160 °C
Operating temperature range	permissible working temperature: pocket -50..+160 °C optional -80..+260 °C (T260) enclosure: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529 SI-Protection (not possible for electronic Sensors)
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pocket	stainless steel V4A, Ø=6 mm mounting length: 50 | 100 | 150 | 200 | 250 | 300 | 450 mm
Ambient condition	max. 85% rH short term condensation
Mounting	for duct sensors please use mounting clip, mounting flange MF6DS flexible or MF6 (brass) for immersion sensors please use immersion pocket THVADS / THMSDS
Delivery content	incl. mounting clip enclosure USE-S pure white

AKF10+ UNI Modbus

Item description: product | BUS | pocket (length.Ø)

Modbus

Duct/Immersion sensor -50..+160 °C – active UNI Modbus RTU		TP2
Item description	Item No.	€
AKF10+ UNI Modbus RTU 050.06	747783	76,20
AKF10+ UNI Modbus RTU 100.06	748032	77,20
AKF10+ UNI Modbus RTU 150.06	747769	78,10
AKF10+ UNI Modbus RTU 200.06	747790	78,50
AKF10+ UNI Modbus RTU 250.06	748049	79,90
AKF10+ UNI Modbus RTU 300.06	747776	80,70
AKF10+ UNI Modbus RTU 450.06	748056	81,90

Options	
Item description	€
Temperature -80..+260 °C (T260)	11,20

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Mounting kit AKF10+ for enclosure USE-S without cable entry	748551	⊜	7,00
Mounting flange MF6DS flexible (suitable for Ø=6 mm; AS2)	669016	⊜	6,50
Mounting flange MF6 (brass)	3407	⊜	6,50
Syringe thermal contact fluid	102308	⊜	1,45
Mounting bracket with cable gland for duct sensors Ø=6 mm	670593	⊜	12,40
For cable entries and sealing inserts please refer to chapter "Accessories"			

Accessories – thermowells stainless steel for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	⊜	17,60
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⊜	19,40
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824	⊜	20,90
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848	⊜	22,00
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862	⊜	27,30
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879	⊜	28,60
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893	⊜	29,50
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	⊜	18,70

Accessories – thermowells brass for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	⊜	8,10
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⊜	9,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015	⊜	9,70
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022	⊜	10,10
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985	⊜	11,60
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039	⊜	12,00
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046	⊜	12,20

Temperature

KFK01

Passive duct sensor for measuring air temperature and other gaseous media of HVAC applications (e.g. supply and exhaust ducts).

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k LM235Z
Measuring range temp.	PT / Ni: -50..+160 °C (T160) NTC / KTY: -50..+150 °C (T150) LM235Z: -50..+120 °C (T120) depending on used sensor
Operating temperature range	permissible working temperature, passive: depending on used sensor pocket -50..+160 °C, optional -80..+260 °C (T260) enclosure: -35..+90 °C
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	shape J, aluminium
Protection (IP)	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Pocket	stainless steel V4A, Ø=6 mm mounting length: 50 | 100 | 150 | 200 | 250 | 300 | 450 mm
Ambient condition	max. 85% rH short term condensation
Mounting	for duct sensors please use mounting flange MF6DS flexible or MF6 (brass) for immersion sensors please use immersion pocket THVADS / THMSDS
Notes	for mounting up to +260 °C Mounting flange MF6 (brass) is recommended

Duct/Immersion sensor -50..+160 °C – passive PT100		TP1
Item description	Item No.	€
KFK01 PT100 050.06	626446	44,10
KFK01 PT100 100.06	626453	45,00
KFK01 PT100 150.06	626477	46,60
KFK01 PT100 200.06	626484	48,10
KFK01 PT100 250.06	626491	50,70
KFK01 PT100 300.06	626507	52,80
KFK01 PT100 450.06	626514	56,20

Duct/Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP1
Item description	Item No.	€
KFK01 PT100 1/3 DIN 050.06	626521	48,10
KFK01 PT100 1/3 DIN 100.06	626538	49,00
KFK01 PT100 1/3 DIN 150.06	626545	50,60
KFK01 PT100 1/3 DIN 200.06	626552	52,10
KFK01 PT100 1/3 DIN 250.06	626569	54,70
KFK01 PT100 1/3 DIN 300.06	626576	56,80
KFK01 PT100 1/3 DIN 450.06	626583	60,20

KFK01

Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor -50..+160 °C – passive PT1000		TP1
Item description	Item No.	€
KFK01 PT1000 050.06	626590	46,30
KFK01 PT1000 100.06	626606	47,20
KFK01 PT1000 150.06	626613	48,80
KFK01 PT1000 200.06	626620	50,30
KFK01 PT1000 250.06	626637	52,90
KFK01 PT1000 300.06	626644	55,00
KFK01 PT1000 450.06	626651	58,40

Duct/Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN		TP1
Item description	Item No.	€
KFK01 PT1000 1/3 DIN 050.06	626675	49,60
KFK01 PT1000 1/3 DIN 100.06	626682	50,50
KFK01 PT1000 1/3 DIN 150.06	626699	52,10
KFK01 PT1000 1/3 DIN 200.06	626705	53,60
KFK01 PT1000 1/3 DIN 250.06	626712	56,20
KFK01 PT1000 1/3 DIN 300.06	626729	58,30
KFK01 PT1000 1/3 DIN 450.06	626736	61,70

Duct/Immersion sensor -50..+160 °C – passive Ni1000		TP1
Item description	Item No.	€
KFK01 Ni1000 050.06	626743	46,00
KFK01 Ni1000 100.06	626750	46,90
KFK01 Ni1000 150.06	626767	48,50
KFK01 Ni1000 200.06	626774	50,00
KFK01 Ni1000 250.06	626781	52,60
KFK01 Ni1000 300.06	626798	54,70
KFK01 Ni1000 450.06	626804	58,10

Duct/Immersion sensor -50..+160 °C – passive Ni1000TK5000		TP1
Item description	Item No.	€
KFK01 Ni1000TK5000 050.06	626811	49,60
KFK01 Ni1000TK5000 100.06	626828	50,50
KFK01 Ni1000TK5000 150.06	626835	52,10
KFK01 Ni1000TK5000 200.06	626842	53,60
KFK01 Ni1000TK5000 250.06	626859	56,20
KFK01 Ni1000TK5000 300.06	626866	58,30
KFK01 Ni1000TK5000 450.06	626873	61,70

Duct/Immersion sensor -50..+150 °C – passive NTC10k		TP1
Item description	Item No.	€
KFK01 NTC10k 050.06	626880	42,80
KFK01 NTC10k 100.06	626897	43,70
KFK01 NTC10k 150.06	626903	45,30
KFK01 NTC10k 200.06	626910	46,80
KFK01 NTC10k 250.06	626927	49,40
KFK01 NTC10k 300.06	626934	51,50
KFK01 NTC10k 450.06	626941	54,90

Duct/Immersion sensor -50..+150 °C – passive NTC10k Precon		TP1
Item description	Item No.	€
KFK01 NTC10k Precon 050.06	626958	42,80
KFK01 NTC10k Precon 100.06	626965	43,70
KFK01 NTC10k Precon 150.06	626972	45,30
KFK01 NTC10k Precon 200.06	626989	46,80
KFK01 NTC10k Precon 250.06	626996	49,40
KFK01 NTC10k Precon 300.06	627009	51,50
KFK01 NTC10k Precon 450.06	627016	54,90

Duct/Immersion sensor -50..+150 °C – passive NTC20k		TP1
Item description	Item No.	€
KFK01 NTC20k 050.06	627023	42,80
KFK01 NTC20k 100.06	627030	43,70
KFK01 NTC20k 150.06	627047	45,30
KFK01 NTC20k 200.06	627054	46,80
KFK01 NTC20k 250.06	627061	49,40
KFK01 NTC20k 300.06	627078	51,50
KFK01 NTC20k 400.06	627085	54,90

Duct/Immersion sensor -50..+150 °C – passive NTC1,8k		TP1
Item description	Item No.	€
KFK01 NTC1,8k 050.06	668590	42,80
KFK01 NTC1,8k 100.06	668606	43,70
KFK01 NTC1,8k 150.06	668613	45,30
KFK01 NTC1,8k 200.06	668620	46,80
KFK01 NTC1,8k 250.06	668637	49,40
KFK01 NTC1,8k 300.06	668644	51,50
KFK01 NTC1,8k 450.06	668651	54,90

Temperature

KFK01

Duct/Immersion sensor -50..+120 °C – passive LM235Z		TP1
Item description	Item No.	€
KFK01 LM235Z 050.06	627092	44,60
KFK01 LM235Z 100.06	627108	45,50
KFK01 LM235Z 150.06	627115	47,10
KFK01 LM235Z 200.06	627122	48,60
KFK01 LM235Z 250.06	627139	51,20
KFK01 LM235Z 300.06	627146	53,30
KFK01 LM235Z 450.06	627153	56,70

Options	
Item description	€
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Temperature -80..+260 °C (T260)	11,20
Add to price of NTC10k for sensor NTC5k | NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

Accessories			AS1
Item description	Item No.	On stock	€
Mounting flange MF6DS flexible (suitable for Ø=6 mm; AS2)	669016	⊜	6,50
Mounting flange MF6 (brass)	3407	⊜	6,50

Accessories – thermowells stainless steel for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	⊜	17,60
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⊜	19,40
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824	⊜	20,90
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848	⊜	22,00
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862	⊜	27,30
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879	⊜	28,60
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893	⊜	29,50
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	⊜	18,70

Accessories – thermowells brass for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	⊜	8,10
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⊜	9,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015	⊜	9,70
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022	⊜	10,10
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985	⊜	11,60
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039	⊜	12,00
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046	⊜	12,20

KFK03 passive

Passive duct sensor for measuring air temperature and other gaseous media of HVAC applications (e.g. in supply and exhaust ducts). Designed for connection to superior controls systems. The sensor can be mounted by means of a mounting flange. Combined with a thermowell, it can be used as an immersion temperature sensor as well.

SI-Protection PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA

Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC20k | NTC1,8k LM235Z
Measuring range temp.	PT / Ni: -50..+160 °C (T160), optional -80..+260 °C (T260) NTC: -50..+150 °C (T150) LM235Z: -50..+120 °C (T120)
Operating temperature range	permissible working temperature: passive: depending on used sensor optional -80..+260 °C (T260) enclosure: -35..+90 °C
Accuracy temperature	depending on used sensor
Sensor	2-wire (standard), 3-wire or 4-wire
Enclosure	shape B, aluminium
Protection (IP)	IP66 according to EN 60529, SI-Protection (not possible for electronic Sensors)
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Pocket	stainless steel V4A, Ø=8 mm, mounting length: 100 | 150 | 200 | 250 mm
Ambient condition	max. 85% rH short term condensation
Mounting	for duct sensors please use mounting flange MF8 (VA) for immersion sensors please use immersion pocket THVA / THMS
Notes	other temperature sensors on request

Duct/Immersion sensor -50..+160 °C – passive PT100		TP1
Item description	Item No.	€
KFK03 PT100 100.08	37877	54,70
KFK03 PT100 150.08	37884	56,70
KFK03 PT100 200.08	37891	58,60
KFK03 PT100 250.08	37907	60,80

Duct/Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP1
Item description	Item No.	€
KFK03 PT100 1/3 DIN 100.08	37914	58,70
KFK03 PT100 1/3 DIN 150.08	37921	60,70
KFK03 PT100 1/3 DIN 200.08	37938	62,60
KFK03 PT100 1/3 DIN 250.08	37945	64,80

Duct/Immersion sensor -50..+160 °C – passive PT1000		TP1
Item description	Item No.	€
KFK03 PT1000 100.08	37952	56,90
KFK03 PT1000 150.08	37969	58,90
KFK03 PT1000 200.08	37976	60,80
KFK03 PT1000 250.08	37983	63,00

Duct/Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN		TP1
Item description	Item No.	€
KFK03 PT1000 1/3 DIN 100.08	37990	60,20
KFK03 PT1000 1/3 DIN 150.08	39765	62,20
KFK03 PT1000 1/3 DIN 200.08	39772	64,10
KFK03 PT1000 1/3 DIN 250.08	39789	66,30

KFK03 passive

Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor -50..+160 °C – passive Ni1000		TP1
Item description	Item No.	€
KFK03 Ni1000 100.08	39796	56,60
KFK03 Ni1000 150.08	39802	58,60
KFK03 Ni1000 200.08	39819	60,50
KFK03 Ni1000 250.08	39826	62,70

Duct/Immersion sensor -50..+160 °C – passive Ni1000TK5000		TP1
Item description	Item No.	€
KFK03 Ni1000TK5000 100.08	39833	60,20
KFK03 Ni1000TK5000 150.08	39840	62,20
KFK03 Ni1000TK5000 200.08	39857	64,10
KFK03 Ni1000TK5000 250.08	39864	66,30

Duct/Immersion sensor -50..+150 °C – passive NTC10k		TP1
Item description	Item No.	€
KFK03 NTC10k 100.08	39918	53,40
KFK03 NTC10k 150.08	39925	55,40
KFK03 NTC10k 200.08	39932	57,30
KFK03 NTC10k 250.08	39949	59,50

Duct/Immersion sensor -50..+150 °C – passive NTC10k Precon		TP1
Item description	Item No.	€
KFK03 NTC10k Precon 100.08	39994	53,40
KFK03 NTC10k Precon 150.08	40006	55,40
KFK03 NTC10k Precon 200.08	40013	57,30
KFK03 NTC10k Precon 250.08	40020	59,50

Duct/Immersion sensor -50..+150 °C – passive NTC20k		TP1
Item description	Item No.	€
KFK03 NTC20k 100.08	39956	53,40
KFK03 NTC20k 150.08	39963	55,40
KFK03 NTC20k 200.08	39970	57,30
KFK03 NTC20k 250.08	39987	59,50

Duct/Immersion sensor -50..+150 °C – passive NTC1,8k		TP1
Item description	Item No.	€
KFK03 NTC1,8k 100.08	325912	53,40
KFK03 NTC1,8k 150.08	349031	55,40
KFK03 NTC1,8k 200.08	298803	57,30
KFK03 NTC1,8k 250.08	314329	59,50

Duct/Immersion sensor -50..+120 °C – passive LM235Z		TP1
Item description	Item No.	€
KFK03 LM235Z 100.08	40037	56,00
KFK03 LM235Z 150.08	40044	58,00
KFK03 LM235Z 200.08	40051	59,90
KFK03 LM235Z 250.08	40068	62,10

Options	€
Item description	€
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Temperature -80..+260 °C (T260)	11,20
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

Accessories for KFK03			AS1
Item description	Item No.	On stock	€
Mounting flange MF8 (VA)	103305	⊜	19,30

Accessories – thermowells stainless steel for sensors with pocket Ø=8 mm				AS2
Item description	Length	Item No.	On stock	€
VA thermowell 100 mm type THVA100 (KFK03)	100 mm	584180	⊜	27,80
VA thermowell 150 mm type THVA150 (KFK03)	150 mm	584197	⊜	29,10
VA thermowell 200 mm type THVA200 (KFK03)	200 mm	584203	⊜	30,70
VA thermowell 250 mm type THVA250 (KFK03)	250 mm	594738	⊜	32,30

KFK03 active

Active duct sensor for measuring air temperature and other gaseous media of HVAC applications (e.g. in supply and exhaust ducts). Designed for connection to superior controls systems. The sensor can be mounted by means of a mounting flange. Combined with a thermowell, it can be used as an immersion temperature sensor as well.

0..10 V / 4..20 mA

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

Temperature

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V, min. load 3 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%) SELV
Power consumption	TRV: max. 1 W (24 V =) TRA: max. 0,5 W (24 V =)
Output signal range temp.	Scaling analog output: type-dependent TRV1 | TRA1: -50..+50 °C TRV2 | TRA2: -10..+120 °C TRV3 | TRA3: 0..+50 °C TRV4 | TRA4: 0..+160 °C TRV5 | TRA5: 0..+250 °C
Operating temperature range	permissible working temperature: pocket -50..+160 °C, optional -80..+260 °C (T260) enclosure: -35..+70 °C
Accuracy temperature	±0,2 K ±0,1% of measured value (typ. at 21 °C)
Enclosure	shape B, aluminium
Protection (IP)	IP66 according to EN 60529, SI-Protection
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Pocket	stainless steel V4A, Ø=8 mm mounting length: 100 | 150 | 200 | 250 mm
Ambient condition	max. 85% rH short term condensation
Mounting	for duct sensors please use mounting flange MF8 (VA) for immersion sensors please use immersion pocket THVA / THMS

Duct/Immersion sensor -50..+50 °C – active 0..10 V		TP1
Item description	Item No.	€
KFK03 TRV1 100.08	350983	132,60
KFK03 TRV1 150.08	351010	133,90
KFK03 TRV1 200.08	277860	135,40
KFK03 TRV1 250.08	286879	136,80

Duct/Immersion sensor -10..+120 °C – active 0..10 V		TP1
Item description	Item No.	€
KFK03 TRV2 100.08	332453	132,60
KFK03 TRV2 150.08	326711	133,90
KFK03 TRV2 200.08	351096	135,40
KFK03 TRV2 250.08	347242	136,80

KFK03 active

Item description: product | TRVx/TRAx | pocket (length.Ø)

Duct/Immersion sensor 0..+50 °C – active 0..10 V		TP1
Item description	Item No.	€
KFK03 TRV3 100.08	272315	132,60
KFK03 TRV3 150.08	351027	133,90
KFK03 TRV3 200.08	284905	135,40
KFK03 TRV3 250.08	285094	136,80

Duct/Immersion sensor 0..+160 °C – active 0..10 V		TP1
Item description	Item No.	€
KFK03 TRV4 100.08	351003	132,60
KFK03 TRV4 150.08	261418	133,90
KFK03 TRV4 200.08	351102	135,40
KFK03 TRV4 250.08	347969	136,80

Duct/Immersion sensor 0..+250 °C – active 0..10 V		TP1
Item description	Item No.	€
KFK03 TRV5 100.08	350990	140,40
KFK03 TRV5 150.08	309127	141,80
KFK03 TRV5 200.08	351119	143,20
KFK03 TRV5 250.08	335607	144,60

Duct/Immersion sensor -50..+50 °C – active 4..20 mA		TP1
Item description	Item No.	€
KFK03 TRA1 100.08	152464	132,60
KFK03 TRA1 150.08	165334	133,90
KFK03 TRA1 200.08	232166	135,40
KFK03 TRA1 250.08	204668	136,80

Duct/Immersion sensor -10..+120 °C – active 4..20 mA		TP1
Item description	Item No.	€
KFK03 TRA2 100.08	242639	132,60
KFK03 TRA2 150.08	351034	133,90
KFK03 TRA2 200.08	351041	135,40
KFK03 TRA2 250.08	351133	136,80

Duct/Immersion sensor 0..+50 °C – active 4..20 mA		TP1
Item description	Item No.	€
KFK03 TRA3 100.08	338585	132,60
KFK03 TRA3 150.08	170239	133,90
KFK03 TRA3 200.08	161909	135,40
KFK03 TRA3 250.08	134804	136,80

Duct/Immersion sensor 0..+160 °C – active 4..20 mA		TP1
Item description	Item No.	€
KFK03 TRA4 100.08	315920	132,60
KFK03 TRA4 150.08	338981	133,90
KFK03 TRA4 200.08	337380	135,40
KFK03 TRA4 250.08	303057	136,80

Duct/Immersion sensor 0..+250 °C – active 4..20 mA		TP1
Item description	Item No.	€
KFK03 TRA5 100.08	239080	140,40
KFK03 TRA5 150.08	320948	141,80
KFK03 TRA5 200.08	404792	143,20
KFK03 TRA5 250.08	281577	144,60

Accessories for KFK03			AS1
Item description	Item No.	On stock	€
Mounting flange MF8 (VA)	103305	⊜	19,30

Accessories – thermowells stainless steel for sensors with pocket Ø=8 mm				AS2
Item description	Length	Item No.	On stock	€
VA thermowell 100 mm type THVA100 (KFK03)	100 mm	584180	⊜	27,80
VA thermowell 150 mm type THVA150 (KFK03)	150 mm	584197	⊜	29,10
VA thermowell 200 mm type THVA200 (KFK03)	200 mm	584203	⊜	30,70
VA thermowell 250 mm type THVA250 (KFK03)	250 mm	594738	⊜	32,30

RG03 passive

Duct/Immersion sensor for high temperature measurement in gaseous and liquid media. Designed for connecting to controls and display systems. Especially designed for measuring higher temperatures (e.g. in supply and exhaust ducts).

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT1000
Measuring range temp.	passive: 0..+600 °C
Operating temperature range	permissible working temperature: pocket 0..+500 °C, temporarily up to +600 °C enclosure: -35..+90 °C
Accuracy temperature	depending on used sensor
Enclosure	shape B, aluminium
Protection (IP)	IP66 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Pocket	stainless steel V4A, Ø=11 mm mounting length: 250 | 500 mm
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting flange

Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor 0..+600 °C – passive PT100/PT1000		TP1
Item description	Item No.	€
RG03 PT100 250.11	64361	109,60
RG03 PT100 500.11	64378	112,20
RG03 PT1000 250.11	64385	109,60
RG03 PT1000 500.11	64392	112,20

RG03 active

Duct/Immersion sensor for high temperature measurement in gaseous and liquid media. Designed for connecting to controls and display systems. Especially designed for measuring higher temperatures (e.g. in supply and exhaust ducts).

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V, min. load 3 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%) SELV
Power consumption	TRV: max. 1 W (24 V =), TRA: max. 0,5 W (24 V =)
Output signal range temp.	TRV | TRA: Scaling analog output, type-dependent: TRV6 | TRA6: 0..+400 °C TRV7 | TRA7: 0..+600 °C
Operating temperature range	permissible working temperature: pocket 0..+500 °C, temporarily up to +600 °C enclosure: -35..+70 °C
Accuracy temperature	±0,2 K ±0,1% of measured value (typ. at 21 °C)
Enclosure	shape B, aluminium
Protection (IP)	IP66 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Pocket	stainless steel V4A, Ø=11 mm mounting length: 250 | 500 mm
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting flange

Item description: product | TRV/TRA | pocket (length.Ø)

Duct/Immersion sensor 0..+400 °C – active 0..10 V | 4..20 mATP1		
Item description	Item No.	€
RG03 TRV6 250.11	261982	203,90
RG03 TRV6 500.11	240789	206,40
RG03 TRA6 250.11	177405	203,90
RG03 TRA6 500.11	143936	206,40

Duct/Immersion sensor 0..+600 °C – active 0..10 V | 4..20 mATP1		
Item description	Item No.	€
RG03 TRV7 250.11	64408	203,90
RG03 TRV7 500.11	242127	206,40
RG03 TRA7 250.11	64422	203,90
RG03 TRA7 500.11	78283	206,40

MWF+

Duct sensor for measuring the average temperature in air ducts. The sensor measures the mean temperature value throughout the entire length. A spring at the connection head reduces vibrations. Mounting angles are included in the delivery content. Models with a relay output for a 2-point controller or a 2-stage 2-point controller and color-changing LCD allow for a wide range of applications. Depending on the model, the sensor can be individually configured via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

MWF+ passive / active

MWF+ passive (NTCxx)

MWF+ relay / BUS

MWF+ LCD

Temperature

0..10 V / 4..20 mA   USEapp   Modbus   BACnet   **LON** *LOCAL OPERATING NETWORK*

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Output passive	PT1000 | Ni1000 | Ni1000TK5000 | Ni891 NTC10k | NTC 10k Precon | NTC20k
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	passive: -50..+80 °C NTCxx: 0..+50 °C
Output signal range temp.	TRV | TRA: Scaling analog output: -20..+80 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C adjustable at the transducer
Operating temperature range	permissible working temperature: sensor rod -50..+80 °C enclosure: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range) passive: ±0,4 K (typ. at 0 °C), NTC10k: ±0,2 K (typ. at 25 °C)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Sensor rod	3000 mm, 6000 mm
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting flange, incl. installation set

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 5 kΩ
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, TRA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Output signal range temp.	Scaling analog output: -20..+80 °C (default setting), selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer, optionally configurable via app or uConfig
Operating temperature range	permissible working temperature: sensor rod -50..+80 °C, enclosure: -35..+70 °C, LCD: -20..+70 °C
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white, LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm²

MWF+ passive

Item description: product | sensor | cable length (L)

Duct averaging sensor -50..+80 °C – passive		TP1
Item description	Item No.	€
MWF+ PT1000 L3000 incl. installation kit	620413	81,90
MWF+ PT1000 L6000 incl. installation kit	620420	91,20
MWF+ Ni1000 L3000 incl. installation kit	620437	81,90
MWF+ Ni1000 L6000 incl. installation kit	620444	91,20
MWF+ Ni1000TK5000 L3000 incl. installation kit	675888	81,90
MWF+ Ni1000TK5000 L6000 incl. installation kit	674324	91,20
MWF+ Ni891 L3000 incl. installation kit	699297	115,90
MWF+ Ni891 L6000 incl. installation kit	699303	148,70

Duct averaging sensor 0..+50 °C – passive		TP1
Item description	Item No.	€
MWF+ NTC10k L3000 incl. installation kit	670128	112,90
MWF+ NTC10k L6000 incl. installation kit	670135	128,30
MWF+ NTC10k Precon L3000 incl. installation kit	670142	112,90
MWF+ NTC10k Precon L6000 incl. installation kit	670159	128,30
MWF+ NTC20k L3000 incl. installation kit	670166	112,90
MWF+ NTC20k L6000 incl. installation kit	670173	128,30

MWF+ active

Item description: product | TRV/TRA MultiRange | cable length (L)

Duct averaging sensor -50..+80 °C – active 0..10 V	4..20 mA		TP1
Item description	Item No.	€
MWF+ TRV MultiRange L3000 incl. installation kit	620475	136,20
MWF+ TRV MultiRange L6000 incl. installation kit	620482	144,60
MWF+ TRA MultiRange L3000 incl. installation kit	620499	136,20
MWF+ TRA MultiRange L6000 incl. installation kit	620505	144,60

Temperature

MWF+ LCD / relay

Item description: product | TRV/TRA MultiRange | cable length (L)

Duct averaging sensor -50..+80 °C – active 0..10 V + relay			TP1
Item description	USEapp	Item No.	€
MWF+ TRV MultiRange relay L3000 incl. installation kit	✓	662758	176,30
MWF+ TRV MultiRange relay L6000 incl. installation kit	✓	662765	184,70
MWF+ LCD TRV MultiRange relay L3000 incl. installation kit	✓	662819	207,10
MWF+ LCD TRV MultiRange relay L6000 incl. installation kit	✓	662826	215,50

Duct averaging sensor -50..+80 °C – active 0..10 V | 4..20 mA			TP1
Item description	USEapp	Item No.	€
MWF+ LCD TRV MultiRange L3000 incl. installation kit	✓	662772	177,00
MWF+ LCD TRV MultiRange L6000 incl. installation kit	✓	662789	185,40
MWF+ LCD TRA MultiRange L3000 incl. installation kit	✓	662796	177,00
MWF+ LCD TRA MultiRange L6000 incl. installation kit	✓	662802	185,40

MWF+ BUS

Item description: product | BUS | cable length (L)

Modbus

Duct averaging sensor -50..+80 °C – active RS485 Modbus			TP1
Item description	USEapp	Item No.	€
MWF+ RS485 Modbus L3000 incl. installation kit	✓	662833	179,30
MWF+ RS485 Modbus L6000 incl. installation kit	✓	662840	187,70
MWF+ LCD RS485 Modbus L3000 incl. installation kit	✓	662857	229,60
MWF+ LCD RS485 Modbus L6000 incl. installation kit	✓	662864	238,00

ASHRAE BACnet

Duct averaging sensor -50..+80 °C – active RS485 BACnet (MS/TP)			TP1
Item description	USEapp	Item No.	€
MWF+ RS485 BACnet (MS/TP) L3000 incl. installation kit	✓	699310	179,30
MWF+ RS485 BACnet (MS/TP) L6000 incl. installation kit	✓	699327	187,70
MWF+ LCD RS485 BACnet (MS/TP) L3000 incl. installation kit	✓	699334	229,60
MWF+ LCD RS485 BACnet (MS/TP) L6000 incl. installation kit	✓	699341	238,00

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES − *MWF+ passive / MWF+ active*

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65

ACCESSORIES − *MWF+ LCD / relay / MWF+ BUS*

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting flange MF6 flexible (suitable for Ø=4 | 6 | 7 mm; AS2)	399098	⊜	6,50
Mounting flange MF7 (brass)	102360	⊜	6,50
Installation set TFR/MWF	679466	⊜	8,65
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

MWF400+

Duct sensor for measuring the average temperature in air ducts. The sensor measures the mean temperature value throughout the entire length. A spring at the connection head reduces vibrations. Mounting angles are included in the delivery content. Models with a relay output for a 2-point controller or a 2-stage 2-point controller and color-changing LCD allow for a wide range of applications. Depending on the model, the sensor can be individually configured via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

MWF400+   MWF400+ relay / BUS

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V or 0..5 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Output passive	PT100 | PT1000 | Ni1000 | Ni1000TK5000 | Ni891 NTC10k | NTC20k | NTC1,8k
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =)
Measuring range temp.	passive: -30..+80 °C, depending on used sensor
Output signal range temp.	TRV | TRA: Scaling analog output: -20..+80 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer
Operating temperature range	permissible working temperature: sensor rod -30..+80 °C enclosure: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range) passive: depending on used sensor
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Sensor rod	copper, Ø=4 mm, mounting length 400 mm Sensor neck: stainless steel V4A, Ø=6 mm
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting clip enclosure USE-S pure white

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig) min. load 5 kΩ
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, TRA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Output signal range temp.	Scaling analog output: -20..+80 °C (default setting), selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer, optionally configurable via app or uConfig
Operating temperature range	permissible working temperature: sensor rod -30..+80 °C, enclosure: -35..+70 °C, LCD: -20..+70 °C
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white, LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm²
Delivery content	incl. mounting flange MF6DS flexible

MWF400+ passive

Item description: product | sensor

Duct averaging sensor -30..+80 °C – passive		TP1
Item description	Item No.	€
MWF400+ PT100	654166	71,70
MWF400+ PT1000	660518	71,70
MWF400+ Ni1000	641395	71,70
MWF400+ Ni1000TK5000	641425	71,70
MWF400+ Ni891	699358	71,70
MWF400+ NTC10k	641449	69,80
MWF400+ NTC20k	670319	69,80
MWF400+ NTC1,8k	670333	69,80

MWF400+ active

Item description: product | TRV/TRA MultiRange

Duct averaging sensor -30..+80 °C – active 0..10 V | 4..20 mA		TP1
Item description	Item No.	€
MWF400+ TRV MultiRange	642088	125,90
MWF400+ TRA MultiRange	642095	125,90

Temperature

MWF400+ LCD / relay

Item description: product | TRV/TRA MultiRange

Duct averaging sensor -30..+80 °C – active 0..10 V + relay			TP1
Item description	**USE**app	Item No.	€
MWF400+ TRV MultiRange relay	✓	662871	166,00
MWF400+ LCD TRV MultiRange relay	✓	662963	196,80

Duct averaging sensor -30..+80 °C – active 0..10 V | 4..20 mA			TP1
Item description	**USE**app	Item No.	€
MWF400+ LCD TRV MultiRange	✓	662925	166,70
MWF400+ LCD TRA MultiRange	✓	662956	166,70

MWF400+ BUS

Item description: product | BUS

Modbus

Duct averaging sensor -30..+80 °C – active RS485 Modbus			TP1
Item description	**USE**app	Item No.	€
MWF400+ RS485 Modbus	✓	662970	209,00
MWF400+ LCD RS485 Modbus	✓	662987	259,30

BACnet

Duct averaging sensor -30..+80 °C – active RS485 BACnet			TP1
Item description	**USE**app	Item No.	€
MWF400+ RS485 BACnet (MS/TP)	✓	699365	209,00
MWF400+ LCD RS485 BACnet (MS/TP)	✓	699372	259,30

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES − *MWF400+ passive / MWF400+ active*

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65

ACCESSORIES − *MWF400+ LCD / relay / MWF400+ BUS*

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting flange MF6DS flexible (suitable for Ø=6 mm; AS2)	669016	⊜	6,50
Mounting flange MF7 (brass)	102360	⊜	6,50
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

TFR

Frost protection thermostat for downstream temperature monitoring of e.g. heat exchangers in ventilation and air-conditioning systems. The product offer a small differential gap and a high reproducibility. Resetting can be done automatically or manually (type '-R'). The frost protection thermostat can be used to perform the following functions: stop fan, close outside air dampers, open heating valve 100%, start heating pump, switch-off chiller (condenser) and de-/humidifier, trigger visual and/or audible frost alarm.

TECHNICAL DATA	
Measured values	temperature
Medium	air
Output switch contact	single pole change over, switching capacity max. 10 A (250 V ~)
Accuracy temperature	repeatability ±0,5 K
Setpoint range	-10..+15 °C (default +5 °C)
Switching values	switching differential: 2 °C ±1 °C
Enclosure	PA6, light grey, cover ABS, transparent
Protection (IP)	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 2,5 mm²
Capillary pipe	copper with tube filling R507, length 1,8 | 3 | 6 | 12 m, sensor operating length approx. 600 mm
Ambient condition	-35..+70 °C, max. 85% rH short term condensation
Delivery content	Installation set TFR/MWF (6 pcs)

Frost protection thermostat – automatical reset			TP1
Item description	Item No.	On stock	€
TFR 1800 incl. mounting angle	426435	⊜	78,10
TFR 3000 incl. mounting angle	430371	⊜	73,80
TFR 6000 incl. mounting angle	430395	⊜	76,50
TFR 12000 incl. mounting angle	541916	⊜	89,20

Frost protection thermostat – manual reset			TP1
Item description	Item No.	On stock	€
TFR-R 1800 incl. mounting angle	430364	⊜	93,50
TFR-R 3000 incl. mounting angle	430388	⊜	91,80
TFR-R 6000 incl. mounting angle	430401	⊜	92,30
TFR-R 12000 incl. mounting angle	656061	⊜	115,00

Accessories for TFR			AS1
Item description	Item No.	On stock	€
Mounting flange MF2 (for frost protection thermostats)	435642	⊜	6,50
Installation set TFR/MWF	679466	⊜	8,65

TFRe

Electronic frost protection thermostat for downstream temperature monitoring of e.g. heat exchangers in ventilation and air-conditioning systems. Integrated P-controller for constant control of a heat exchanger valve within its intended operating range. Safety shutdown of the fan and - if necessary - closing the air inlet flaps to protect the heat exchanger in case set thresholds are exceeded. Temperature measurement optionally with a contact sensor, immersion sensor or cable sensor with up to four selectable sensor characteristic curves. For a quick temperature measurement in the return water pipe of the heat exchanger, a fast-response sensor (e.g. TF14 with KL4VA) should be used.

TECHNICAL DATA	
Measured values	temperature
Output voltage	2x 0..10 V, temperature, actuating variable valve drive
Output switch contact	Fan: floating contact NO, 250 V ~ / 6 A Alarm: floating contact NO, 30 V ~ / 1 A
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 2 VA (24 V ~)
Measuring range temp.	-10..+100 °C
Accuracy temperature	±1 K (typ. at 0 °C)
Inputs	for passive sensor NTC10K (default), PT1000, Ni1000, Ni1000TK5000, adjustable for external controller defining control value for valve for fan (floating contact)
Functions	frost protection function controlling valve actuator, alarm adjustable P-Controller (temperature)
Display	LED green – indicator valve actuator, LED red – alarm, LED yellow – fan
Enclosure	ABS, white
Protection (IP)	IP20 according to EN 60529
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Ambient condition	-40..+70 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715

Electronic frost protection thermostat		TP1
Item description	Item No.	€
TFRe	667203	128,00

SFK02+

Immersion sensor for temperature measurement of gases and liquids in HVAC applications. The sensor can be optionally screwed directly into a bonded pocket (see accessories). Types SFKH02+ with a 70 mm neck pipe are designed for applications with insulation materials. The measuring insert can be exchanged without disassembling the entire sensor. Models with a relay output for a 2-point controller or a 2-stage 2-point controller and color-changing LCD allow for a wide range of applications. Depending on the model, the sensor can be individually configured via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

SFK02+

SFKH02+

SFK02+ relay / BUS

SFK02+ LCD

SFKH02+ relay / BUS

0..10 V / 4..20 mA USEapp Modbus BACnet LON LOCAL OPERATING NETWORK SI-Protection PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Medium	gases, fluids
Output voltage	TRV: 1x 0..10 V or 0..5 V
Output current	TRA: 1x 4..20 mA
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC20k | NTC1,8k, LM235Z
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =)
Measuring range temp.	passive: PT / Ni: -50..+160 °C (T160), NTC: -50..+150 °C (T150), LM235Z: -50..+120 °C (T120)
Output signal range temp.	TRV | TRA: Scaling analog output: 0..+160 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer
Operating temperature range	permissible working temperature: pocket -50..+160 °C, optional -80..+260 °C (T260) enclosure active: -35..+70 °C, enclosure passive: -35..+90 °C
Accuracy temperature	passive: depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B), Ni1000: ±0,4 K (typ. at 0 °C), Ni1000TK5000: ±0,4 K (typ. at 0 °C), NTC10K: ±0,22 K (typ. at 25 °C) TRV/TRA: ±0,5 K (typ. at 21 °C within default measuring range)
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Neck pipe	optionally (types SFKH02+), stainless steel V2A, Ø=12 mm, L=70 mm
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2" mounting length: 50 | 100 | 150 | 200 | 250 | 450 mm
Ambient condition	max. 85% rH short term condensation
Notes	types with LCD, relay and BUS in enclosure USE-M with different technical data other temperature sensors on request

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig)
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, A: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Output signal range temp.	Scaling analog output: -20..+80 °C (default setting), selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C optionally configurable via app or uConfig
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm²

Temperature

SFK02+ passive

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+160 °C – passive PT100		TP2
Item description	Item No.	€
SFK02+ PT100 050.08	622295	42,40
SFK02+ PT100 100.08	622301	43,20
SFK02+ PT100 150.08	622318	44,90
SFK02+ PT100 200.08	622325	47,00
SFK02+ PT100 250.08	622332	48,50
SFK02+ PT100 450.08	622349	51,10

Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP2
Item description	Item No.	€
SFK02+ PT100 1/3 DIN 050.08	622356	46,40
SFK02+ PT100 1/3 DIN 100.08	622363	47,20
SFK02+ PT100 1/3 DIN 150.08	622370	48,90
SFK02+ PT100 1/3 DIN 200.08	622387	51,00
SFK02+ PT100 1/3 DIN 250.08	622394	52,50
SFK02+ PT100 1/3 DIN 450.08	622400	55,10

Immersion sensor -50..+160 °C – passive PT1000		TP2
Item description	Item No.	€
SFK02+ PT1000 050.08	622417	44,60
SFK02+ PT1000 100.08	622424	45,40
SFK02+ PT1000 150.08	622431	47,10
SFK02+ PT1000 200.08	622448	49,20
SFK02+ PT1000 250.08	622455	50,70
SFK02+ PT1000 450.08	622462	53,30

Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN		TP2
Item description	Item No.	€
SFK02+ PT1000 1/3 DIN 050.08	621946	47,90
SFK02+ PT1000 1/3 DIN 100.08	621953	48,70
SFK02+ PT1000 1/3 DIN 150.08	621960	50,40
SFK02+ PT1000 1/3 DIN 200.08	621977	52,50
SFK02+ PT1000 1/3 DIN 250.08	621984	54,00
SFK02+ PT1000 1/3 DIN 450.08	621991	56,60

Immersion sensor -50..+160 °C – passive Ni1000		TP2
Item description	Item No.	€
SFK02+ Ni1000 050.08	622080	44,30
SFK02+ Ni1000 100.08	622097	45,10
SFK02+ Ni1000 150.08	622103	46,80
SFK02+ Ni1000 200.08	622110	48,90
SFK02+ Ni1000 250.08	622127	50,40
SFK02+ Ni1000 450.08	622141	53,00

Immersion sensor -50..+160 °C – passive Ni1000TK5000		TP2
Item description	Item No.	€
SFK02+ Ni1000TK5000 050.08	622158	47,90
SFK02+ Ni1000TK5000 100.08	622165	48,70
SFK02+ Ni1000TK5000 150.08	622189	50,40
SFK02+ Ni1000TK5000 200.08	622196	52,50
SFK02+ Ni1000TK5000 250.08	622202	54,00
SFK02+ Ni1000TK5000 450.08	622219	56,60

Immersion sensor -50..+150 °C – passive NTC10k		TP2
Item description	Item No.	€
SFK02+ NTC10k 050.08	622004	41,10
SFK02+ NTC10k 100.08	622011	41,90
SFK02+ NTC10k 150.08	622028	43,60
SFK02+ NTC10k 200.08	622035	45,70
SFK02+ NTC10k 250.08	622042	47,20
SFK02+ NTC10k 450.08	622059	49,80

Immersion sensor -50..+150 °C – passive NTC10k Precon		TP2
Item description	Item No.	€
SFK02+ NTC10k Precon 050.08	622479	41,10
SFK02+ NTC10k Precon 100.08	622486	41,90
SFK02+ NTC10k Precon 150.08	622493	43,60
SFK02+ NTC10k Precon 200.08	622509	45,70
SFK02+ NTC10k Precon 250.08	622516	47,20
SFK02+ NTC10k Precon 450.08	622523	49,80

SFK02+ passive

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+150 °C – passive NTC20k		TP2
Item description	Item No.	€
SFK02+ NTC20k 050.08	622530	41,10
SFK02+ NTC20k 100.08	622547	41,90
SFK02+ NTC20k 150.08	622554	43,60
SFK02+ NTC20k 200.08	622561	45,70
SFK02+ NTC20k 250.08	622578	47,20
SFK02+ NTC20k 450.08	622585	49,80

Immersion sensor -50..+150 °C – passive NTC1,8k		TP2
Item description	Item No.	€
SFK02+ NTC1,8k 050.08	668668	41,10
SFK02+ NTC1,8k 100.08	668675	41,90
SFK02+ NTC1,8k 150.08	668682	43,60
SFK02+ NTC1,8k 200.08	668699	45,70
SFK02+ NTC1,8k 250.08	668705	47,20
SFK02+ NTC1,8k 450.08	668712	49,80

Immersion sensor -50..+120 °C – passive LM235Z		TP2
Item description	Item No.	€
SFK02+ LM235Z 050.08	622226	42,90
SFK02+ LM235Z 100.08	622233	43,70
SFK02+ LM235Z 150.08	622240	45,40
SFK02+ LM235Z 200.08	622257	47,50
SFK02+ LM235Z 250.08	622264	49,00
SFK02+ LM235Z 450.08	622288	51,60

Options	
Item description	€
Neck pipe 70.12 (for applications with insulation materials)	21,00
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Temperature -80..+260 °C (T260)	11,20
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40
Price reduction to PT100 for sensor KTY81-110	KTY81-121	KTY81-122	KTY81-210	-3,40

Temperature

SFK02+ active

Item description: product | TRV/TRA MultiRange | pocket (length.Ø)

Immersion sensor -50..+160 °C – active 0..10 V		TP2
Item description	Item No.	€
SFK02+ TRV MultiRange 050.08	622592	87,80
SFK02+ TRV MultiRange 100.08	622608	88,40
SFK02+ TRV MultiRange 150.08	622615	89,70
SFK02+ TRV MultiRange 200.08	622622	91,50
SFK02+ TRV MultiRange 250.08	622639	92,50
SFK02+ TRV MultiRange 450.08	622646	94,50

Immersion sensor -50..+160 °C – active 4..20 mA		TP2
Item description	Item No.	€
SFK02+ TRA MultiRange 050.08	622653	87,80
SFK02+ TRA MultiRange 100.08	622660	88,40
SFK02+ TRA MultiRange 150.08	622677	89,70
SFK02+ TRA MultiRange 200.08	622684	91,50
SFK02+ TRA MultiRange 250.08	622691	92,50
SFK02+ TRA MultiRange 450.08	622707	94,50

Options	
Item description	€
Neck pipe 70.12 (for applications with insulation materials)	21,00
Temperature -80..+260 °C (T260)	11,20

SFK02+ LCD / relay

Item description: product | TRV/TRA MultiRange | pocket (length.Ø)

Immersion sensor -50..+160 °C – active 0..10 V + relay			TP2
Item description	USEapp	Item No.	€
SFK02+ TRV MultiRange 050.08 relay	✔	665568	118,30
SFK02+ TRV MultiRange 100.08 relay	✔	665575	118,90
SFK02+ TRV MultiRange 150.08 relay	✔	665582	120,20
SFK02+ TRV MultiRange 200.08 relay	✔	665599	122,00
SFK02+ TRV MultiRange 250.08 relay	✔	665605	123,00
SFK02+ TRV MultiRange 450.08 relay	✔	665612	125,00

Immersion sensor -50..+160 °C – active 0..10 V			TP2
Item description	USEapp	Item No.	€
SFK02+ LCD TRV MultiRange 050.08	✔	665476	128,60
SFK02+ LCD TRV MultiRange 100.08	✔	665483	129,20
SFK02+ LCD TRV MultiRange 150.08	✔	665490	130,50
SFK02+ LCD TRV MultiRange 200.08	✔	665506	132,30
SFK02+ LCD TRV MultiRange 250.08	✔	665513	133,30
SFK02+ LCD TRV MultiRange 450.08	✔	665520	135,30

Immersion sensor -50..+160 °C – active 4..20 mA			TP2
Item description	USEapp	Item No.	€
SFK02+ LCD TRA MultiRange 050.08	✔	665681	128,60
SFK02+ LCD TRA MultiRange 100.08	✔	665698	129,20
SFK02+ LCD TRA MultiRange 150.08	✔	665704	130,50
SFK02+ LCD TRA MultiRange 200.08	✔	665711	132,30
SFK02+ LCD TRA MultiRange 250.08	✔	665728	133,30
SFK02+ LCD TRA MultiRange 450.08	✔	665735	135,30

Immersion sensor -50..+160 °C – active 0..10 V + relay			TP2
Item description	USEapp	Item No.	€
SFK02+ LCD TRV MultiRange 050.08 relay	✔	665629	149,30
SFK02+ LCD TRV MultiRange 100.08 relay	✔	665636	149,90
SFK02+ LCD TRV MultiRange 150.08 relay	✔	665643	151,20
SFK02+ LCD TRV MultiRange 200.08 relay	✔	665650	153,00
SFK02+ LCD TRV MultiRange 250.08 relay	✔	665667	154,00
SFK02+ LCD TRV MultiRange 450.08 relay	✔	665674	156,00

Options	
Item description	€
Neck pipe 70.12 (for applications with insulation materials)	21,00

Temperature

SFK02+ BUS

Item description: product | BUS | pocket (length.Ø)

Modbus

Immersion sensor -50..+160 °C – active RS485 Modbus			TP2
Item description	USEapp	Item No.	€
SFK02+ RS485 Modbus 050.08	✓	665742	121,30
SFK02+ RS485 Modbus 100.08	✓	665759	121,90
SFK02+ RS485 Modbus 150.08	✓	665766	123,30
SFK02+ RS485 Modbus 200.08	✓	665773	125,00
SFK02+ RS485 Modbus 250.08	✓	665780	126,00
SFK02+ RS485 Modbus 450.08	✓	665797	128,10

Immersion sensor -50..+160 °C – active RS485 Modbus			TP2
Item description	USEapp	Item No.	€
SFK02+ LCD RS485 Modbus 050.08	✓	665803	171,60
SFK02+ LCD RS485 Modbus 100.08	✓	665810	172,20
SFK02+ LCD RS485 Modbus 150.08	✓	665827	173,60
SFK02+ LCD RS485 Modbus 200.08	✓	665834	175,30
SFK02+ LCD RS485 Modbus 250.08	✓	665841	176,30
SFK02+ LCD RS485 Modbus 450.08	✓	665858	178,40

BACnet

Immersion sensor -50..+160 °C – active RS485 BACnet			TP2
Item description	USEapp	Item No.	€
SFK02+ RS485 BACnet 050.08	✓	699389	121,30
SFK02+ RS485 BACnet 100.08	✓	699396	121,90
SFK02+ RS485 BACnet 150.08	✓	699402	123,30
SFK02+ RS485 BACnet 200.08	✓	699419	125,00
SFK02+ RS485 BACnet 250.08	✓	699426	126,00
SFK02+ RS485 BACnet 450.08	✓	699433	128,10

Immersion sensor -50..+160 °C – active RS485 BACnet			TP2
Item description	USEapp	Item No.	€
SFK02+ LCD RS485 BACnet 050.08	✓	699440	171,60
SFK02+ LCD RS485 BACnet 100.08	✓	699457	172,20
SFK02+ LCD RS485 BACnet 150.08	✓	699464	173,60
SFK02+ LCD RS485 BACnet 200.08	✓	699471	175,30
SFK02+ LCD RS485 BACnet 250.08	✓	699488	176,30
SFK02+ LCD RS485 BACnet 450.08	✓	699495	178,40

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Neck pipe 70.12 (for applications with insulation materials)	21,00
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

Accessories – bonded pockets					AS1
Item description	Length	Pocket length	Item No.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	⊜	46,10
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	⊜	52,80
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	⊜	59,50
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	⊜	65,40

Temperature

SFK02+ UNI Modbus

Immersion sensor with Modbus RS485 interface for temperature measurement of gases and liquids in HVAC applications. The sensor can be optionally screwed directly into a bonded pocket (see accessories). Types SFKH02+ with a 70 mm neck pipe are designed for applications with insulation materials. The measuring insert can be exchanged without disassembling the entire sensor. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

SFK02+ UNI Modbus RTU   SFKH02+ UNI Modbus RTU

TECHNICAL DATA	
Measured values	temperature
Network technology	RS485 Modbus, RTU or ASCII, half-duplex baud rate 9.600, 19.200, 38.400 or 57.600 parity none, even or odd
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 0,7 W (24 V =) | 1,8 VA (24 V ~)
Measuring range temp.	-50..+160 °C
Operating temperature range	permissible working temperature: pocket -50..+160 °C optional -80..+260 °C (T260) enclosure active: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Neck pipe	optionally (types SFKH02+) stainless steel V2A, Ø=12 mm, L=70 mm
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2" mounting length: 50 | 100 | 150 | 200 | 250 | 450 mm
Ambient condition	max. 85% rH short term condensation

SFK02+ UNI Modbus

Item description: product | BUS | pocket (length.Ø)

Modbus

Immersion sensor -50..+160 °C – active UNI Modbus RTU		TP2
Item description	Item No.	€
SFK02+ UNI Modbus RTU 050.08	755986	87,80
SFK02+ UNI Modbus RTU 100.08	747837	88,40
SFK02+ UNI Modbus RTU 150.08	755993	89,70
SFK02+ UNI Modbus RTU 200.08	756006	91,50
SFK02+ UNI Modbus RTU 250.08	756013	92,50
SFK02+ UNI Modbus RTU 450.08	756020	94,50

Options	
Item description	€
Neck pipe 70.12 (for applications with insulation materials)	21,00
Temperature -80..+260 °C (T260)	11,20

Accessories			AS1
Item description	Item No.	On stock	€
For cable entries and sealing inserts please refer to chapter "Accessories"			

Accessories – bonded pockets					AS1
Item description	Length	Pocket length	Item No.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	⊜	46,10
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	⊜	52,80
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	⊜	59,50
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	⊜	65,40

Temperature

SFK02+ FR

Immersion sensor with Ø=4 mm pocket for a fast response and integrated thermowell for temperature measurement of gases and liquids in HVAC applications. Bonded pockets are available as well (see 'Accessories'). Models with a relay output for a 2-point controller or a 2-stage 2-point controller and color-changing LCD allow for a wide range of applications. Depending on the model, the SFK02+ can be individually configured via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

SFK02+ FR

SFK02+ FR relay / BUS

SFK02+ FR LCD

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	temperature
Medium	gases, fluids
Output voltage	TRV: 1x 0..10 V or 0..5 V
Output current	TRA: 1x 4..20 mA
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC20k | NTC1,8k
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =)
Measuring range temp.	passive: PT / Ni: -50..+160 °C (T160), NTC: -50..+150 °C (T150)
Output signal range temp.	TRV | TRA: Scaling analog output 0..+160 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer
Operating temperature range	permissible working temperature: pocket -50..+160 °C enclosure active: -35..+70 °C, enclosure passive: -35..+90 °C
Accuracy temperature	passive: depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B), Ni1000: ±0,4 K (typ. at 0 °C), Ni1000TK5000: ±0,4 K (typ. at 0 °C), NTC10K: ±0,22 K (typ. at 25 °C) TRV/TRA: ±0,5 K (typ. at 21 °C within default measuring range)
Sensor	passive: 2-wire
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pocket	stainless steel V4A, Ø=6 mm, end of sensor Ø=4 mm 50 mm: Ø=4 mm, thread R 1/2" mounting length: 50 | 100 | 200 mm
Ambient condition	max. 85% rH short term condensation
Notes	other temperature sensors on request multi-conductor connection on request

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig)
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV TRA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Output signal range temp.	Scaling analog output, 0..+160 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer optionally configurable via app or uConfig
Operating temperature range	permissible working temperature: pocket -50..+160 °C enclosure: -35..+70 °C LCD: -20..+70 °C
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²

SFK02+ FR passive

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+160 °C – passive PT100		TP2
Item description	Item No.	€
SFK02+ FR PT100 050.04	665926	45,50
SFK02+ FR PT100 100.06/04	665933	46,30
SFK02+ FR PT100 200.06/04	665940	50,10

Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP2
Item description	Item No.	€
SFK02+ FR PT100 1/3 DIN 050.04	665957	49,50
SFK02+ FR PT100 1/3 DIN 100.06/04	665964	50,30
SFK02+ FR PT100 1/3 DIN 200.06/04	665971	54,10

Immersion sensor -50..+160 °C – passive PT1000		TP2
Item description	Item No.	€
SFK02+ FR PT1000 050.04	655583	47,70
SFK02+ FR PT1000 100.06/04	638807	48,50
SFK02+ FR PT1000 200.06/04	640749	52,30

Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN		TP2
Item description	Item No.	€
SFK02+ FR PT1000 1/3 DIN 050.04	665988	51,00
SFK02+ FR PT1000 1/3 DIN 100.06/04	665995	51,80
SFK02+ FR PT1000 1/3 DIN 200.06/04	666008	55,60

Immersion sensor -50..+160 °C – passive Ni1000		TP2
Item description	Item No.	€
SFK02+ FR Ni1000 050.04	666015	47,40
SFK02+ FR Ni1000 100.06/04	657280	48,20
SFK02+ FR Ni1000 200.06/04	666022	52,00

Immersion sensor -50..+160 °C – passive Ni1000TK5000		TP2
Item description	Item No.	€
SFK02+ FR Ni1000TK5000 050.04	655590	51,00
SFK02+ FR Ni1000TK5000 100.06/04	640732	51,80
SFK02+ FR Ni1000TK5000 200.06/04	640770	55,60

Temperature

SFK02+ FR passive

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+150 °C – passive NTC10k		TP2
Item description	Item No.	€
SFK02+ FR NTC10k 050.04	655545	44,20
SFK02+ FR NTC10k 100.06/04	640725	45,00
SFK02+ FR NTC10k 200.06/04	640763	48,80

Immersion sensor -50..+150 °C – passive NTC10k Precon		TP2
Item description	Item No.	€
SFK02+ FR NTC10k Precon 050.04	666053	44,20
SFK02+ FR NTC10k Precon 100.06/04	666060	45,00
SFK02+ FR NTC10k Precon 200.06/04	666077	48,80

Immersion sensor -50..+150 °C – passive NTC20k		TP2
Item description	Item No.	€
SFK02+ FR NTC20k 050.04	655552	44,20
SFK02+ FR NTC20k 100.06/04	645690	45,00
SFK02+ FR NTC20k 200.06/04	655576	48,80

Immersion sensor -50..+150 °C – passive NTC1,8k		TP2
Item description	Item No.	€
SFK02+ FR NTC1,8k 050.04	655538	44,20
SFK02+ FR NTC1,8k 100.06/04	640718	45,00
SFK02+ FR NTC1,8k 200.06/04	640756	48,80

Options	
Item description	€
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

SFK02+ FR active

Item description: product | TRV/TRA MultiRange | pocket (length.Ø)

Immersion sensor -50..+160 °C – active 0..10 V		TP2
Item description	Item No.	€
SFK02+ FR TRV MultiRange 050.04	655620	90,90
SFK02+ FR TRV MultiRange 100.06/04	645881	91,50
SFK02+ FR TRV MultiRange 200.06/04	655637	94,50

Immersion sensor -50..+160 °C – active 4..20 mA		TP2
Item description	Item No.	€
SFK02+ FR TRA MultiRange 050.04	655606	90,90
SFK02+ FR TRA MultiRange 100.06/04	645867	91,50
SFK02+ FR TRA MultiRange 200.06/04	655613	94,50

Item description: product | TRV/TRA MultiRange | relay | pocket (length.Ø)

SFK02+ FR LCD / relay

Immersion sensor -50..+160 °C – active 0..10 V + relay			TP2
Item description	**USE**app	Item No.	€
SFK02+ FR TRV MultiRange 050.04 relay	✓	666169	131,00
SFK02+ FR TRV MultiRange 100.06/04 relay	✓	666176	131,60
SFK02+ FR TRV MultiRange 200.06/04 relay	✓	666183	134,60

Immersion sensor -50..+160 °C – active 0..10 V			TP2
Item description	**USE**app	Item No.	€
SFK02+ FR LCD TRV MultiRange 050.04	✓	666091	141,20
SFK02+ FR LCD TRV MultiRange 100.06/04	✓	666107	141,80
SFK02+ FR LCD TRV MultiRange 200.06/04	✓	666114	144,80

Immersion sensor -50..+160 °C – active 4..20 mA			TP2
Item description	**USE**app	Item No.	€
SFK02+ FR LCD TRA MultiRange 050.04	✓	666121	141,20
SFK02+ FR LCD TRA MultiRange 100.06/04	✓	666138	141,80
SFK02+ FR LCD TRA MultiRange 200.06/04	✓	666145	144,80

Immersion sensor -50..+160 °C – active 0..10 V + relay			TP2
Item description	**USE**app	Item No.	€
SFK02+ FR LCD TRV MultiRange 050.04 relay	✓	666190	161,80
SFK02+ FR LCD TRV MultiRange 100.06/04 relay	✓	666206	162,40
SFK02+ FR LCD TRV MultiRange 200.06/04 relay	✓	666213	165,40

Temperature

SFK02+ FR BUS

Item description: product | BUS | pocket (length.Ø)

Modbus

Immersion sensor -50..+160 °C – active RS485 Modbus			TP2
Item description	USEapp	Item No.	€
SFK02+ FR RS485 Modbus 050.04	✓	666220	133,90
SFK02+ FR RS485 Modbus 100.06/04	✓	666237	134,60
SFK02+ FR RS485 Modbus 200.06/04	✓	666244	137,60

Immersion sensor -50..+160 °C – active RS485 Modbus			TP2
Item description	USEapp	Item No.	€
SFK02+ FR LCD RS485 Modbus 050.04	✓	666251	184,20
SFK02+ FR LCD RS485 Modbus 100.06/04	✓	666268	184,90
SFK02+ FR LCD RS485 Modbus 200.06/04	✓	666275	187,90

BACnet

Immersion sensor -50..+160 °C – active RS485 BACnet			TP2
Item description	USEapp	Item No.	€
SFK02+ FR RS485 BACnet 050.04	✓	699501	133,90
SFK02+ FR RS485 BACnet 100.06/04	✓	699518	134,60
SFK02+ FR RS485 BACnet 200.06/04	✓	699525	137,60

Immersion sensor -50..+160 °C – active RS485 BACnet			TP2
Item description	USEapp	Item No.	€
SFK02+ FR LCD RS485 BACnet 050.04	✓	699532	184,20
SFK02+ FR LCD RS485 BACnet 100.06/04	✓	699549	184,90
SFK02+ FR LCD RS485 BACnet 200.06/04	✓	699556	187,90

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⬡	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⬡	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

SFK01

Immersion sensor with an integrated thermowell for temperature measurement of liquids in HVAC applications (e.g. water lines or water tanks). The type SFKH01 with a 70 mm neck pipe is designed for applications using insulation materials. Bonded pockets are available as well (see 'Accessories').

SFK01

SFKH01

SI-Protection

PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Medium	gases, fluids
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC20k | NTC1,8k LM235Z
Measuring range temp.	PT / Ni: -50..+160 °C (T160), optional -80..+260 °C (T260) NTC: -50..+150 °C (T150) LM235Z: -50..+120 °C (T120)
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	2-wire (standard), 3-wire or 4-wire
Enclosure	shape J, aluminium
Protection (IP)	IP65 according to EN 60529, SI-Protection
Cable entry	M16 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Neck pipe	optionally (types SFKH01), stainless steel V2A, Ø=12 mm, L=70 mm
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2" mounting length: 50 | 100 | 150 | 200 | 250 | 450 mm
Ambient condition	-50..+160 | +150 | +120 °C (only sensor tip), optional -80..+260 °C (only sensor tip) enclosure: -25..+90 °C, max. 85% rH short term condensation
Notes	other temperature sensors on request

Temperature

SFK01

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+160 °C – passive PT100		TP1
Item description	Item No.	€
SFK01 PT100 050.08	37662	47,10
SFK01 PT100 100.08	27717	48,10
SFK01 PT100 150.08	27724	49,60
SFK01 PT100 200.08	27731	51,50
SFK01 PT100 250.08	27748	52,00
SFK01 PT100 450.08	27755	55,00

Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP1
Item description	Item No.	€
SFK01 PT100 1/3 DIN 050.08	27762	51,10
SFK01 PT100 1/3 DIN 100.08	27779	52,10
SFK01 PT100 1/3 DIN 150.08	27786	53,60
SFK01 PT100 1/3 DIN 200.08	27793	55,50
SFK01 PT100 1/3 DIN 250.08	27809	56,00
SFK01 PT100 1/3 DIN 450.08	27816	59,00

Immersion sensor -50..+160 °C – passive PT1000		TP1
Item description	Item No.	€
SFK01 PT1000 050.08	27823	49,30
SFK01 PT1000 100.08	27830	50,30
SFK01 PT1000 150.08	27847	51,80
SFK01 PT1000 200.08	27854	53,70
SFK01 PT1000 250.08	27861	54,20
SFK01 PT1000 450.08	27878	57,20

Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN		TP1
Item description	Item No.	€
SFK01 PT1000 1/3 DIN 050.08	27885	52,60
SFK01 PT1000 1/3 DIN 100.08	27892	53,60
SFK01 PT1000 1/3 DIN 150.08	36740	55,10
SFK01 PT1000 1/3 DIN 200.08	36757	57,00
SFK01 PT1000 1/3 DIN 250.08	36764	57,50
SFK01 PT1000 1/3 DIN 450.08	36771	60,50

Immersion sensor -50..+160 °C – passive Ni1000		TP1
Item description	Item No.	€
SFK01 Ni1000 050.08	36788	49,00
SFK01 Ni1000 100.08	36795	50,00
SFK01 Ni1000 150.08	36801	51,50
SFK01 Ni1000 200.08	36818	53,40
SFK01 Ni1000 250.08	36825	53,90
SFK01 Ni1000 450.08	45292	56,90

Immersion sensor -50..+160 °C – passive Ni1000TK5000		TP1
Item description	Item No.	€
SFK01 Ni1000TK5000 050.08	45308	52,60
SFK01 Ni1000TK5000 100.08	45315	53,60
SFK01 Ni1000TK5000 150.08	45322	55,10
SFK01 Ni1000TK5000 200.08	45339	57,00
SFK01 Ni1000TK5000 250.08	45346	57,50
SFK01 Ni1000TK5000 450.08	45353	60,50

Immersion sensor -50..+150 °C – passive NTC10k		TP1
Item description	Item No.	€
SFK01 NTC10k 050.08	45421	45,80
SFK01 NTC10k 100.08	45438	46,80
SFK01 NTC10k 150.08	45445	48,30
SFK01 NTC10k 200.08	45452	50,20
SFK01 NTC10k 250.08	45469	50,70
SFK01 NTC10k 450.08	45476	53,70

Immersion sensor -50..+150 °C – passive NTC10k Precon		TP1
Item description	Item No.	€
SFK01 NTC10k Precon 050.08	45544	45,80
SFK01 NTC10k Precon 100.08	45551	46,80
SFK01 NTC10k Precon 150.08	45568	48,30
SFK01 NTC10k Precon 200.08	45575	50,20
SFK01 NTC10k Precon 250.08	45582	50,70
SFK01 NTC10k Precon 450.08	45599	53,70

SFK01

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+150 °C – passive NTC20k		TP1
Item description	Item No.	€
SFK01 NTC20k 050.08	45483	45,80
SFK01 NTC20k 100.08	45490	46,80
SFK01 NTC20k 150.08	45506	48,30
SFK01 NTC20k 200.08	45513	50,20
SFK01 NTC20k 250.08	45520	50,70
SFK01 NTC20k 450.08	45537	53,70

Immersion sensor -50..+150 °C – passive NTC1,8k		TP1
Item description	Item No.	€
SFK01 NTC1,8k 050.08	351140	45,80
SFK01 NTC1,8k 100.08	270311	46,80
SFK01 NTC1,8k 150.08	270304	48,30
SFK01 NTC1,8k 200.08	263566	50,20
SFK01 NTC1,8k 250.08	249362	50,70
SFK01 NTC1,8k 450.08	293655	53,70

Immersion sensor -50..+120 °C – passive LM235Z		TP1
Item description	Item No.	€
SFK01 LM235Z 050.08	45605	47,60
SFK01 LM235Z 100.08	45612	48,60
SFK01 LM235Z 150.08	45629	50,10
SFK01 LM235Z 200.08	45636	52,00
SFK01 LM235Z 250.08	45643	52,50
SFK01 LM235Z 450.08	45650	55,50

Options	
Item description	€
Neck pipe 70.12 (for applications with insulation materials)	21,00
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Temperature -80..+260 °C (T260)	11,20
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

Order example for different items:

SFK01 | FeT | 450.08 | 3-wire | T260

SFK01	= product
FeT	= sensor
450.08	= pocket (length.Ø)
3-wire	= number of wires
T260	= temperature

Accessories – bonded pockets					AS1
Item description	Length	Pocket length	Item No.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	⊜	46,10
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	⊜	52,80
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	⊜	59,50
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	⊜	65,40

Temperature

SFK03 passive

Immersion sensor in the enclosure form B with an integrated thermowell for temperature measurement of liquids in HVAC applications (e.g. water lines or water tanks). Designed for connection to superior control systems. The type SFKH03 with a 70 mm neck pipe is designed for applications using insulation materials.

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Medium	gases, fluids
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC20k | NTC1,8k LM235Z
Measuring range temp.	PT / Ni: -50..+160 °C (T160), optional -80..+260 °C (T260) NTC: -50..+150 °C (T150) LM235Z: -50..+120 °C (T120)
Accuracy temperature	depending on used sensor, PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B), Ni1000: ±0,4 K (typ. at 0 °C), Ni1000TK5000: ±0,4 K (typ. at 0 °C), NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	2-wire (standard), 3-wire or 4-wire
Enclosure	shape B, aluminium
Protection (IP)	IP66 according to EN 60529, SI-Protection
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Neck pipe	optionally (types SFKH03), stainless steel V2A, Ø=15 mm, L=70 mm
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2" mounting length: 100 | 150 | 200 | 250 mm
Ambient condition	max. 85% rH short term condensation
Notes	other temperature sensors on request

Immersion sensor -50..+160 °C – passive PT100		TP1
Item description	Item No.	€
SFK03 PT100 100.08	64309	55,80
SFK03 PT100 150.08	71079	57,80
SFK03 PT100 200.08	71086	59,90
SFK03 PT100 250.08	71093	62,90

Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP1
Item description	Item No.	€
SFK03 PT100 1/3 DIN 100.08	71109	59,80
SFK03 PT100 1/3 DIN 150.08	71116	61,80
SFK03 PT100 1/3 DIN 200.08	71123	63,90
SFK03 PT100 1/3 DIN 250.08	71130	66,90

Immersion sensor -50..+160 °C – passive PT1000		TP1
Item description	Item No.	€
SFK03 PT1000 100.08	71147	58,00
SFK03 PT1000 150.08	71154	60,00
SFK03 PT1000 200.08	71161	62,10
SFK03 PT1000 250.08	71178	65,10

Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN		TP1
Item description	Item No.	€
SFK03 PT1000 1/3 DIN 100.08	71185	61,30
SFK03 PT1000 1/3 DIN 150.08	71192	63,30
SFK03 PT1000 1/3 DIN 200.08	71208	65,40
SFK03 PT1000 1/3 DIN 250.08	71215	68,40

SFK03 passive

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+160 °C – passive Ni1000		TP1
Item description	Item No.	€
SFK03 Ni1000 100.08	71222	57,70
SFK03 Ni1000 150.08	71239	59,70
SFK03 Ni1000 200.08	71246	61,80
SFK03 Ni1000 250.08	71253	64,80

Immersion sensor -50..+160 °C – passive Ni1000TK5000		TP1
Item description	Item No.	€
SFK03 Ni1000TK5000 100.08	71260	61,30
SFK03 Ni1000TK5000 150.08	71277	63,30
SFK03 Ni1000TK5000 200.08	71284	65,40
SFK03 Ni1000TK5000 250.08	71291	68,40

Immersion sensor -50..+150 °C – passive NTC10k		TP1
Item description	Item No.	€
SFK03 NTC10k 100.08	71345	54,50
SFK03 NTC10k 150.08	71352	56,50
SFK03 NTC10k 200.08	71369	58,60
SFK03 NTC10k 250.08	71376	61,60

Immersion sensor -50..+150 °C – passive NTC10k Precon		TP1
Item description	Item No.	€
SFK03 NTC10k Precon 100.08	71420	54,50
SFK03 NTC10k Precon 150.08	71437	56,50
SFK03 NTC10k Precon 200.08	71444	58,60
SFK03 NTC10k Precon 250.08	71451	61,60

Immersion sensor -50..+150 °C – passive NTC20k		TP1
Item description	Item No.	€
SFK03 NTC20k 100.08	71383	54,50
SFK03 NTC20k 150.08	71390	56,50
SFK03 NTC20k 200.08	71406	58,60
SFK03 NTC20k 250.08	71413	61,60

Immersion sensor -50..+150 °C – passive NTC1,8k		TP1
Item description	Item No.	€
SFK03 NTC1,8k 100.08	351652	54,50
SFK03 NTC1,8k 150.08	351676	56,50
SFK03 NTC1,8k 200.08	351683	58,60
SFK03 NTC1,8k 250.08	351706	61,60

Immersion sensor -50..+120 °C – passive LM235Z		TP1
Item description	Item No.	€
SFK03 LM235Z 100.08	71468	57,10
SFK03 LM235Z 150.08	71475	59,10
SFK03 LM235Z 200.08	71482	61,20
SFK03 LM235Z 250.08	71499	64,20

Options	
Item description	€
Neck pipe 70.15 (for applications with insulation materials)	21,00
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Temperature -80..+260 °C (T260)	11,20
Add to price of NTC10k for sensor NTC5k	NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

Accessories – bonded pockets					AS1
Item description	Length	Pocket length	Item No.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	⊜	46,10
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	⊜	52,80
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	⊜	59,50
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	⊜	65,40

SFK03 active

Immersion sensor in the enclosure form B with an integrated thermowell for temperature measurement of liquids in HVAC applications (e.g. water lines or water tanks). Designed for connection to superior control systems. The type SFKH03 with a 70 mm neck pipe is designed for applications using insulation materials.

SFK03 active

SFKH03 active

0..10 V / 4..20 mA   SI-Protection

TECHNICAL DATA	
Measured values	temperature
Medium	gases, fluids
Output voltage	TRV: 1x 0..10 V
Output current	TRA: 1x 4..20 mA
Power supply	TRV: 15..35 V = or 15..26 V ~ SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 1 W (24 V =) | 1,4 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Output signal range temp.	Scaling analog output, type-dependent: TRV1 | TRA1: -50..+50 °C TRV2 | TRA2: -10..+120 °C TRV3 | TRA3: 0..+50 °C TRV4 | TRA4: 0..+160 °C TRV5 | TRA5: 0..+300 °C
Operating temperature range	permissible working temperature pocket -50..+160 °C, optional -80..+260 °C (T260) enclosure: -35..+70 °C
Accuracy temperature	±0,2 K ±0,1% of measured value (typ. at 21 °C)
Enclosure	shape B, aluminium
Protection (IP)	IP66 according to EN 60529, SI-Protection
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Neck pipe	optionally (types SFKH03), stainless steel V2A, Ø=15 mm, L=70 mm
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2" mounting length: 100 | 150 | 200 | 250 mm
Ambient condition	max. 85% rH short term condensation

SFK03 active

Item description: product | TRVx / TRAx | pocket (length.Ø)

Immersion sensor -50..+50 °C – active TRV1 0..10 V		TP1
Item description	Item No.	€
SFK03 TRV1 100.08	318853	142,90
SFK03 TRV1 150.08	352024	144,20
SFK03 TRV1 200.08	352062	145,60
SFK03 TRV1 250.08	352109	147,70

Immersion sensor -10..+120 °C – active TRV2 0..10 V		TP1
Item description	Item No.	€
SFK03 TRV2 100.08	335744	142,90
SFK03 TRV2 150.08	352031	144,20
SFK03 TRV2 200.08	246958	145,60
SFK03 TRV2 250.08	352253	147,70

Immersion sensor 0..+50 °C – active TRV3 0..10 V		TP1
Item description	Item No.	€
SFK03 TRV3 100.08	281775	142,90
SFK03 TRV3 150.08	352048	144,20
SFK03 TRV3 200.08	352079	145,60
SFK03 TRV3 250.08	352260	147,70

Immersion sensor 0..+160 °C – active TRV4 0..10 V		TP1
Item description	Item No.	€
SFK03 TRV4 100.08	298414	142,90
SFK03 TRV4 150.08	292115	144,20
SFK03 TRV4 200.08	324403	145,60
SFK03 TRV4 250.08	352277	147,70

Immersion sensor 0..+300 °C – active TRV5 0..10 V		TP1
Item description	Item No.	€
SFK03 TRV5 100.08	243933	150,70
SFK03 TRV5 150.08	295314	152,00
SFK03 TRV5 200.08	297509	153,40
SFK03 TRV5 250.08	306607	155,60

Immersion sensor -50..+50 °C – active TRA1 4..20 mA		TP1
Item description	Item No.	€
SFK03 TRA1 100.08	194440	142,90
SFK03 TRA1 150.08	200899	144,20
SFK03 TRA1 200.08	352055	145,60
SFK03 TRA1 250.08	254908	147,70

Immersion sensor -10..+120 °C – active TRA2 4..20 mA		TP1
Item description	Item No.	€
SFK03 TRA2 100.08	189316	142,90
SFK03 TRA2 150.08	344166	144,20
SFK03 TRA2 200.08	315746	145,60
SFK03 TRA2 250.08	352086	147,70

Immersion sensor 0..+50 °C – active TRA3 4..20 mA		TP1
Item description	Item No.	€
SFK03 TRA3 100.08	132220	142,90
SFK03 TRA3 150.08	165044	144,20
SFK03 TRA3 200.08	165280	145,60
SFK03 TRA3 250.08	303835	147,70

Immersion sensor 0..+160 °C – active TRA4 4..20 mA		TP1
Item description	Item No.	€
SFK03 TRA4 100.08	293051	142,90
SFK03 TRA4 150.08	295024	144,20
SFK03 TRA4 200.08	239226	145,60
SFK03 TRA4 250.08	352093	147,70

Immersion sensor 0..+300 °C – active TRA5 4..20 mA		TP1
Item description	Item No.	€
SFK03 TRA5 100.08	131674	150,70
SFK03 TRA5 150.08	146821	152,00
SFK03 TRA5 200.08	152884	153,40
SFK03 TRA5 250.08	157421	155,60

Options	
Item description	€
Neck pipe 70.15 (for applications with insulation materials)	21,00

Temperature

RGS03 passive

Immersion sensor (high temperature) with an integrated thermowell for temperature measurement of liquids in HVAC applications. Also suitable for exhaust systems. Designed for connection to superior control systems.

TECHNICAL DATA	
Measured values	temperature
Medium	gases, fluids
Output passive	PT100	PT1000
Measuring range temp.	max. +600 °C
Operating temperature range	permissible working temperature, pocket 0..+500 °C
Accuracy temperature	depending on used sensor PT100	PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	3-wire
Enclosure	shape B, aluminium
Protection (IP)	IP66 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Neck pipe	stainless steel V2A
Pocket	stainless steel V4A, Ø=9 mm, thread G 1/2" mounting length: 250	500 mm
Ambient condition	max. 85% rH short term condensation

Item description: product | sensor | pocket (length.Ø)

Immersion sensor 0..+600 °C – passive PT100/PT1000		TP1
Item description	Item No.	€
RGS03 PT100 250.09 3-wire	79297	148,40
RGS03 PT100 500.09 3-wire	385190	150,90
RGS03 PT1000 250.09 3-wire	79310	148,40
RGS03 PT1000 500.09 3-wire	79327	150,90

RGS03 active

Immersion sensor (high temperature) with an integrated thermowell pocket for temperature measurement of liquids in HVAC applications. Also suited to be installed in exhausts. Designed for connection to superior control systems.

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	temperature
Medium	gases, fluids
Output voltage	TRV: 1x 0..10 V
Output current	TRA: 1x 4..20 mA
Power supply	TRV: 15..35 V = or 15..26 V ~ SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 1 W (24 V =) | 1,4 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Output signal range temp.	Scaling analog output, type-dependent: TRV6 | TRA6: 0..+400 °C, TRV7 | TRA7: 0..+600 °C
Operating temperature range	permissible working temperature, pocket 0..+500 °C, temporarily up to +600 °C
Accuracy temperature	±0,2 K ±0,1% of measured value (typ. at 21 °C)
Enclosure	shape B, aluminium
Protection (IP)	IP66 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Neck pipe	stainless steel V2A
Pocket	stainless steel V4A, Ø=9 mm, thread G 1/2", mounting length: 250 | 500 mm
Ambient condition	max. 85% rH short term condensation

Item description: product | TRVx/TRAx | pocket (length.Ø)

Immersion sensor temperature 0..+400 °C – active TRV6 0..10 V | TRA6 4..20 mA		TP1
Item description	Item No.	€
RGS03 TRV6 250.09	223942	242,70
RGS03 TRV6 500.09	351959	245,20
RGS03 TRA6 250.09	164115	242,70
RGS03 TRA6 500.09	155281	245,20

Immersion sensor temperature 0..+600 °C – active TRV7 0..10 V | TRA7 4..20 mA		TP1
Item description	Item No.	€
RGS03 TRV7 250.09	351935	242,70
RGS03 TRV7 500.09	244824	245,20
RGS03 TRA7 250.09	79334	242,70
RGS03 TRA7 500.09	79341	245,20

Temperature

AGS54+

Passive sensor for temperature measurement in oudoor areas, cold rooms, greenhouses, production plants and warehouses. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k LM235Z | DS18B20 1-wire KTY81-110 | KTY81-121 | KTY81-122 | KTY81-210
Measuring range temp.	depending on used sensor
Operating temperature range	permissible working temperature, enclosure: -35..+90 °C
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-S pure white
Notes	other temperature sensors on request

AGS54+

Item description: product | sensor

Outdoor sensor -35..+90 °C – passive			TP2
Item description	Item No.	On stock	€
AGS54+ without sensor	622776		11,30
AGS54+ PT100	622837	⊜	15,30
AGS54+ PT100 1/3 DIN	622844		19,30
AGS54+ PT1000	622851	⊜	17,50
AGS54+ PT1000 1/3 DIN	622783		20,80
AGS54+ Ni1000	622806	⊜	17,20
AGS54+ Ni1000TK5000	622813	⊜	20,80
AGS54+ NTC10k	622790	⊜	14,00
AGS54+ NTC10k Precon	622868		14,00
AGS54+ NTC5k	624275		14,00
AGS54+ NTC20k	622875	⊜	14,00
AGS54+ NTC1,8k	643825	⊜	14,00
AGS54+ LM235Z	622820	⊜	15,80
AGS54+ KTY81-110	622899		11,80
AGS54+ KTY81-121	622905		11,80
AGS54+ KTY81-122	622912		11,80
AGS54+ KTY81-210	622929		11,80

Options	
Item description	€
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Add to price of NTC10k for sensor NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

Order example for different items:

AGS54+ | FeT

AGS54+ = product
FeT = sensor

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Sun/rain protection RS150	103329	⊜	23,30
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

AGS55+

Outdoor temperature sensor with external stainless steel probe (fast response) for measuring temperature in outdoor areas, cold rooms, greenhouses, production plants and warehouses. Depending on the model, the AGS55+ can be individually configured via Thermokon USEapp e.g. as a 2-point controller. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

AGS55+   AGS55+ relay / BUS   AGS55+ LCD

0..10 V / 4..20 mA   SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V or 0..5 V
Output current	TRA: 1x 4..20 mA
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k LM235Z KTY81-110 | KTY81-121 | KTY81-122 | KTY81-210
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =)
Measuring range temp.	passive: depending on used sensor
Output signal range temp.	TRV | TRA: Scaling analog output: -50..+50 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C adjustable at the transducer
Operating temperature range	permissible working temperature: enclosure active: -35..+70 °C, enclosure passive: -35..+90 °C
Accuracy temperature	passive: depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B), Ni1000: ±0,4 K (typ. at 0 °C), Ni1000TK5000: ±0,4 K (typ. at 0 °C), NTC10K: ±0,22 K (typ. at 25 °C) TRV/TRA: ±0,5 K (typ. at 21 °C within default measuring range)
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection (not possible for electronic Sensors)
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pocket	stainless steel V2A, Ø=6 mm, L=25 mm
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-S pure white
Notes	other temperature sensors on request

USEapp | Modbus | BACnet | LON
LOCAL OPERATING NETWORK

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 5 kΩ
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, TRA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =)	4,3 VA (24 V ~)
Output signal range temp.	Scaling analog output -50..+50 °C (default setting), selectable from 8 temperature ranges -50..+50	-20..+80	-15..+35	-10..+120	0..+50	0..+100	0..+160	0..+250 °C adjustable at the transducer, optionally configurable via app or uConfig
Operating temperature range	permissible working temperature: enclosure: -35..+70 °C, LCD: -20..+70 °C
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white, LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm²
Delivery content	incl. mounting base enclosure USE-M pure white

Temperature (side tab)

AGS55+ *passive*

Item description: product | sensor

Outdoor sensor -35..+90 °C – passive			TP2
Item description	Item No.	On stock	€
AGS55+ PT100	622998	⊜	33,40
AGS55+ PT100 1/3 DIN	623001		37,40
AGS55+ PT1000	623018	⊜	35,60
AGS55+ PT1000 1/3 DIN	622943		38,90
AGS55+ Ni1000	622967	⊜	35,30
AGS55+ Ni1000TK5000	622974	⊜	38,90
AGS55+ NTC10k	622950	⊜	32,10
AGS55+ NTC10k Precon	623025		32,10
AGS55+ NTC5k	624268		32,10
AGS55+ NTC20k	623032	⊜	32,10
AGS55+ NTC1,8k	645812	⊜	32,10
AGS55+ LM235Z	622981	⊜	33,90
AGS55+ KTY81-110	623049		29,90
AGS55+ KTY81-121	623056		29,90
AGS55+ KTY81-122	623063		29,90
AGS55+ KTY81-210	623070		29,90

AGS55+ passive

Options	
Item description	€
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Add to price of NTC10k for sensor NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

AGS55+ active

Item description: product | TRV/TRA MultiRange

Outdoor sensor -35..+70 °C – active 0..10 V | 4..20 mA			TP2
Item description	Item No.	On stock	€
AGS55+ TRV MultiRange	623087	⬤	77,30
AGS55+ TRA MultiRange	623094	⬤	77,30

AGS55+ LCD_Relais

Item description: product | TRV/TRA MultiRange

Outdoor sensor -35..+70 °C – active 0..10 V + relay			TP2
Item description	USEapp	Item No.	€
AGS55+ TRV MultiRange relay	✓	663069	117,40
AGS55+ LCD TRV MultiRange relay	✓	663076	158,80

Outdoor sensor -35..+70 °C – active 0..10 V | 4..20 mA			TP2
Item description	USEapp	Item No.	€
AGS55+ LCD TRV MultiRange	✓	658614	118,10
AGS55+ LCD TRA MultiRange	✓	658621	118,10

AGS55+ BUS

Item description: product | BUS

Modbus

Outdoor sensor -35..+70 °C – active RS485 Modbus			TP2
Item description	USEapp	Item No.	€
AGS55+ RS485 Modbus	✓	658584	108,10
AGS55+ LCD RS485 Modbus	✓	658607	149,30

BACnet

Outdoor sensor -35..+70 °C – active RS485 BACnet			TP2
Item description	USEapp	Item No.	€
AGS55+ RS485 BACnet (MS/TP)	✓	699686	108,10
AGS55+ LCD RS485 BACnet (MS/TP)	✓	699693	149,30

AGS55+ BUS

LON
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Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES – *AGS55+ passive / AGS55+ active*

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65

ACCESSORIES – *AGS55+ LCD_Relais / AGS55+ BUS*

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Sun/rain protection RS150	103329	⊜	23,30
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

AGS55+ UNI Modbus

Outdoor temperature sensor with external stainless steel probe (fast response) and Modbus RS485 interface for measuring temperature in outdoor areas, cold rooms, greenhouses, production plants and warehouses. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

TECHNICAL DATA	
Measured values	temperature
Network technology	RS485 Modbus, RTU or ASCII, half-duplex baud rate 9.600, 19.200, 38.400 or 57.600 parity none, even or odd
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 0,7 W (24 V =) | 1,8 VA (24 V ~)
Measuring range temp.	-35..+70 °C
Operating temperature range	permissible working temperature: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529 SI-Protection (not possible for electronic Sensors)
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pocket	stainless steel V2A, Ø=6 mm, L=25 mm
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-S pure white

Outdoor sensor -35..+70 °C – active UNI Modbus RTU		TP2
Item description	Item No.	€
AGS55+ UNI Modbus RTU	747844	77,30

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Sun/rain protection RS150	103329	⊜	23,30
For cable entries and sealing inserts please refer to chapter "Accessories"			

VFG54+

Contact sensor for temperature measurement (cold or hot water) on pipes and other curved surfaces. Spring-loaded brass contact sensor for a fast response. Models with a relay output for a 2-point controller or a 2-stage 2-point controller and color-changing LCD allow for a wide range of applications. Depending on the model, the VFG54+ can be individually configured via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.
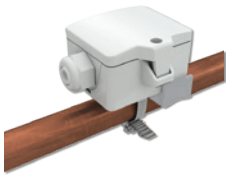
VFG54+

VFG54+ relay / BUS

VFG54+ LCD

0..10 V / 4..20 mA

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V or 0..5 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k LM235Z | DS18B20 1-wire KTY81-110 | KTY81-121 | KTY81-122 | KTY81-210
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,42 W (24 V =) | 0,84 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	passive: -35..+90 °C
Output signal range temp.	TRV | TRA: Scaling analog output: 0..+100 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer
Operating temperature range	permissible working temperature: sensor pocket | holder -35..+120 °C enclosure active: -35..+70 °C, enclosure passive: -35..+90 °C
Accuracy temperature	passive: depending on used sensor, measured current typ. <1 mA ±0,5 K (typ. at 21 °C within default measuring range)
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529 SI-Protection (not possible for electronic Sensors)
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pocket	brass, spring loaded sensor
Ambient condition	max. 85% rH short term condensation
Mounting	along the pipe or sideways
Notes	other temperature sensors on request

Temperature

USEapp Modbus BACnet **LON** *LOCAL OPERATING NETWORK*

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 5 kΩ
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, TRA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Output signal range temp.	Scaling analog output 0..+100 °C (default setting), selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer, optionally configurable via app or uConfig
Operating temperature range	permissible working temperature: sensor pocket | holder -35..+120 °C, enclosure: -35..+70 °C, LCD: -20..+70 °C
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm²

VFG54+ passive

Item description: product | sensor

Contact sensor -35..+90 °C – passive			TP3
Item description	Item No.	On stock	€
VFG54+ PT100	620642	⊜	20,10
VFG54+ PT100 1/3 DIN	620659		24,10
VFG54+ PT1000	620666	⊜	22,30
VFG54+ PT1000 1/3 DIN	620598		25,60
VFG54+ Ni1000	620611	⊜	22,00
VFG54+ Ni1000TK5000	620628	⊜	25,60
VFG54+ NTC10k	620604	⊜	18,80
VFG54+ NTC10k Precon	620673		18,80
VFG54+ NTC5k	624244		18,80
VFG54+ NTC20k	620680	⊜	18,80
VFG54+ NTC1,8k	643832	⊜	18,80
VFG54+ LM235Z	620635	⊜	21,40
VFG54+ KTY81-110	620697		16,60
VFG54+ KTY81-121	620703		16,60
VFG54+ KTY81-122	620710		16,60
VFG54+ KTY81-210	620727		16,60

Options	
Item description	€
3-wire connection (3-wire)	2,00
4-wire connection (4-wire)	5,60
Add to price of NTC10k for sensor NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	22,40

VFG54+ active

Item description: product | TRV/TRA MultiRange

Contact sensors -35..+70 °C – active 0..10 V	4..20 mA			TP2
Item description	Item No.	On stock	€
VFG54+ TRV MultiRange	620741	⊜	73,60
VFG54+ TRA MultiRange	620758	⊜	73,60

VFG54+ LCD_Relais

Item description: product | TRV/TRA MultiRange

Contact sensors -35..+70 °C – active 0..10 V + relay			TP2
Item description	USEapp	Item No.	€
VFG54+ TRV MultiRange relay	✓	662994	116,70

Contact sensors -35..+70 °C – active 0..10 V	4..20 mA	relay			TP2
Item description	USEapp	Item No.	€
VFG54+ LCD TRV MultiRange	✓	663014	114,40
VFG54+ LCD TRA MultiRange	✓	663021	114,40
VFG54+ LCD TRV MultiRange relay	✓	663038	145,60

Item description: product | BUS

VFG54+ BUS

Modbus

Contact sensors -35..+70 °C – active RS485 Modbus			TP2
Item description	USEapp	Item No.	€
VFG54+ RS485 Modbus	✓	663045	116,70
VFG54+ LCD RS485 Modbus	✓	663052	170,10

BACnet

Contact sensors -35..+70 °C – active RS485 BACnet			TP2
Item description	USEapp	Item No.	€
VFG54+ RS485 BACnet (MS/TP)	✓	699709	116,70
VFG54+ LCD RS485 BACnet (MS/TP)	✓	699716	170,10

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

Temperature

ACCESSORIES – *VFG54+ LCD_Relais / VFG54+ BUS*

Accessories			AS1
Item description	Item No.	On stock	€
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75
For cable entries and sealing inserts please refer to chapter "Accessories"			

VFG54+ UNI Modbus

DATA SHEETS

Contact sensor with Modbus RS485 interface for temperature measurement (cold or hot water) on pipes and other curved surfaces. Designed for connection to superior controls systems. Spring-loaded brass contact sensor for a fast response. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

Modbus   SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

Temperature

TECHNICAL DATA	
Measured values	temperature
Network technology	RS485 Modbus, RTU or ASCII, half-duplex baud rate 9.600, 19.200, 38.400 or 57.600 parity none, even or odd
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 0,7 W (24 V =)	1,8 VA (24 V ~)
Measuring range temp.	-35..+120 °C
Operating temperature range	permissible working temperature: sensor pocket	holder -35..+120 °C enclosure: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529 SI-Protection (not possible for electronic Sensors)
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pocket	brass, spring loaded sensor
Ambient condition	max. 85% rH short term condensation
Mounting	along the pipe or sideways

Contact sensors -35..+70 °C – UNI Modbus RTU		TP2
Item description	Item No.	€
VFG54+ UNI Modbus RTU	747806	73,60

Accessories			AS1
Item description	Item No.	On stock	€
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75
For cable entries and sealing inserts please refer to chapter "Accessories"			

AF25 passive

Contact sensor with connection cable and brass strap for surface temperature measurement (cold or hot water) on pipes and other curved surfaces.

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k
Measuring range temp.	-35..+100 °C, optionally: -50..+135 °C (T135)
Operating temperature range	permissible working temperature: -35..+100 °C optionally: -50..+135 °C (T135)
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C) depending on length of connection wire
Sensor	2-wire (standard), 3-wire or 4-wire
Protection (IP)	IP65 according to EN 60529, SI-Protection
Pocket	brass, Ø=6 mm, mounting length 35 mm
Ambient condition	max. 85% rH short term condensation
Notes	other sensors and cable lengths on request

AF25 passive

Item description: product | sensor | temperaure | cable length (L)

Contact sensor -35..+100 °C – passive		TP3
Item description	Item No.	€
AF25 PT100 T100 L1000	81610	13,20
AF25 PT100 1/3 DIN T100 L1000	46411	17,20
AF25 PT1000 T100 L1000	54263	15,40
AF25 PT1000 1/3 DIN T100 L1000	54300	18,70
AF25 Ni1000 T100 L1000	54348	15,10
AF25 Ni1000TK5000 T100 L1000	54386	18,70
AF25 NTC10k T100 L1000	92005	11,90
AF25 NTC10k Precon T100 L1000	92043	11,90
AF25 NTC5k T100 L1000	54461	11,90
AF25 NTC20k T100 L1000	141994	11,90
AF25 NTC1,8k T100 L1000	241687	11,90
AF25 LM235Z T100 L1000	715270	13,70

Options	
Item description	€
3-wire connection -35..+100 °C (3-wire)	1,80
4-wire connection -35..+100 °C (4-wire)	5,60
Add per meter of connection cable 2-wire -35..+100 °C	1,00
Add per meter of connection cable 3-wire -35..+100 °C	1,20
Add per meter of connection cable 4-wire -35..+100 °C	1,40
Temperature -50..+135 °C	3,90
3-wire connection -50..+135 °C (3-wire)	2,00
4-wire connection -50..+135 °C (4-wire)	5,60

Accessories			AS1
Item description	Item No.	On stock	€
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75

Temperature

AF25+ active

Contact sensor in the USE-S enclosure with connection cable and brass lug for surface temperature measurement (cold or hot water) on pipes and other curved surfaces.

0..10 V / 4..20 mA

SI-Protection

PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Output signal range temp.	TRV | TRA: Scaling analog output: 0..+160 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer
Operating temperature range	permissible working temperature: pocket -50..+135 °C enclosure: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² sensor wire active silicone, Ø=25 mm 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Pocket	brass, Ø=6 mm, mounting length 35 mm
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-S pure white
Notes	other cable lengths on request

AF25+ active

Item description: product | TRV/TRA MultiRange | temperature | cable length (L)

Contact sensors -50..+135 °C – active 0..10 V	4..20 mA		TP2
Item description	Item No.	€
AF25+ TRV MultiRange T135 L1000	658751	72,70
AF25+ TRA MultiRange T135 L1000	658768	72,70

Options	
Item description	€
Add per meter of connection cable -50..+135 °C	1,80

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

PR25 passive

Contact sensor with connection cable and aluminum prism for temperature measurement (cold or hot water) on pipes and other suitable surfaces.

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k LM235Z KTY81-110 | KTY81-121 | KTY81-210
Measuring range temp.	-35..+100 °C optionally: PT / Ni: -50..+180 °C (T180), NTC / KTY: -50..+150 °C (T150), LM235Z: -50..+120 °C (T120)
Operating temperature range	permissible working temperature: -35..+100 °C optionally: -50..+180 | +150 | +120 °C, depending on used sensor
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C) depending on length of connection wire
Sensor	2-wire (standard), 3-wire or 4-wire
Protection (IP)	IP65 according to EN 60529, SI-Protection
Pocket	aluminium, Ø=11 mm, mounting length 28 mm
Ambient condition	-35..+100 °C, optionally: -50..+180 | +150 | +120 °C max. 85% rH short term condensation
Notes	other sensors and cable lengths on request

PR25 passive

Item description: product | sensor | cable length (L)

Sensor for pipes and round surfaces -35..+100 °C – passive		TP2
Item description	Item No.	€
PR25 PT100 T100 L1000	81696	18,70
PR25 PT100 1/3 DIN T100 L1000	94771	22,70
PR25 PT1000 T100 L1000	94894	20,90
PR25 PT1000 1/3 DIN T100 L1000	94931	24,20
PR25 Ni1000 T100 L1000	94979	20,60
PR25 Ni1000TK5000 T100 L1000	95686	24,20
PR25 NTC10k T100 L1000	95808	17,40
PR25 NTC10k Precon T100 L1000	95846	17,40
PR25 NTC5k T100 L1000	95761	17,40
PR25 NTC20k T100 L1000	362641	17,40
PR25 NTC1,8k T100 L1000	287128	17,40
PR25 LM235Z T100 L1000	96089	19,20
PR25 KTY81-110 T100 L1000	95884	15,20
PR25 KTY81-121 T100 L1000	95921	15,20
PR25 KTY81-210 T100 L1000	96003	15,20

Options	
Item description	€
3-wire connection -35..+100 °C (3-wire)	1,80
4-wire connection -35..+100 °C (4-wire)	5,60
Add per meter of connection cable 2-wire -35..+100 °C	1,00
Add per meter of connection cable 3-wire -35..+100 °C	1,20
Add per meter of connection cable 4-wire -35..+100 °C	1,40
Temperature -50..+180 °C	3,90
3-wire connection -50..+180 °C (3-wire)	2,00
4-wire connection -50..+180 °C (4-wire)	5,60

Accessories			AS1
Item description	Item No.	On stock	€
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75

Temperature

PR25+ active

Contact sensor in the USE-S enclosure with connection cable and aluminum prism for temperature measurement (cold or hot water) on pipes and other suitable surfaces.

0..10 V / 4..20 mA   SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Output signal range temp.	Scaling analog output: 0..+160 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer
Operating temperature range	permissible working temperature: pocket -50..+180 °C enclosure: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² sensor wire active silicone, Ø=25 mm 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Pocket	aluminium, Ø=11 mm, mounting length 28 mm
Ambient condition	enclosure: -35..+70 °C, max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-S pure white
Notes	other cable lengths on request

PR25+ active

Item description: product | TRV/TRA | cable length (L)

Contact sensors -50..+180 °C – active 0..10 V	4..20 mA		TP2
Item description	Item No.	€
PR25+ TRV MultiRange T180 L1000	658782	76,20
PR25+ TRA MultiRange T180 L1000	658799	76,20

Options	
Item description	€
Add per meter of connection cable -50..+180 °C	1,80

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

OF14 passive

Surface-mounted sensor for temperature measurement on glass or similar surfaces. Designed for connecting to controls and display systems.

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k LM235Z
Measuring range temp.	-35..+70 °C
Operating temperature range	permissible working temperature: -35..+70 °C
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C) depending on length of connection wire
Sensor	2-wire (standard), 3-wire or 4-wire
Protection (IP)	IP65 according to EN 60529, SI-Protection (not possible for electronic Sensors)
Pocket	aluminium dimensions: 35x10x6 mm
Ambient condition	-35..+70 °C, max. 85% rH short term condensation
Mounting	surface mounting due to self-adhesive sensor surface
Notes	other sensors and cable lengths on request

OF14 passive

Item description: product | sensor | cable length (L)

Contact sensor -35..+70 °C – passive		TP2
Item description	Item No.	€
OF14 PT100 L1000	132596	32,20
OF14 PT100 1/3 DIN L1000	167307	36,20
OF14 PT1000 L1000	114851	34,40
OF14 PT1000 1/3 DIN L1000	219303	37,70
OF14 Ni1000 L1000	113922	34,10
OF14 Ni1000TK5000 L1000	141864	37,70
OF14 NTC10k L1000	190367	30,90
OF14 NTC10k Precon L1000	165006	30,90
OF14 NTC5k L1000	351263	30,90
OF14 NTC20k L1000	147736	30,90
OF14 NTC1,8k L1000	356541	30,90
OF14 LM235Z L1000	216760	32,70

Options	
Item description	€
Add per meter of connection cable -35..+100 °C	1,00
Add to price of NTC10k for sensor NTC10k Carel	0,00
Connection box USE-S	14,50

Temperature

thermokon®

OF14+ active

Surface-mounted sensor for temperature measurement on glass or similar surfaces. Designed for connecting to controls and display systems.

0..10 V / 4..20 mA

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	TRV: 15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Output signal range temp.	Scaling analog output: 0..+50 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer
Operating temperature range	permissible working temperature: pocket 0..+50 °C enclosure: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² connection wire PVC, 2x Ø=0,25 mm², grey 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Pocket	aluminium dimensions: 35x10x6 mm
Ambient condition	max. 85% rH short term condensation
Mounting	surface mounting due to self-adhesive sensor surface
Delivery content	incl. mounting base enclosure USE-S pure white
Notes	other cable lengths on request

OF14+ active

Item description: product | TRV3/TRA3 | cable length (L)

Contact sensors 0..+50 °C – active 0..10 V	4..20 mA		TP2
Item description	Item No.	€
OF14+ TRV3 L1000	658812	90,40
OF14+ TRA3 L1000	658836	90,40

Options	
Item description	€
Add per meter of connection cable -35..+100 °C	1,00

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

TF14 passive

Cable sensor for temperature measurement in HVAC applications. Depending on the application requirements, different PVC, silicone and PTFE cables are available. The TF14 with its 4 mm diameter pocket is well suited for fast response applications.

SI-Protection

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k
Measuring range temp.	-35..+100 °C, PT / Ni: -50..180 °C | -80..+250 °C, NTC: -50..+150 °C
Operating temperature range	permissible working temperature connection wire: PVC -35..+100 °C, silicone -50..+180 °C, PTFE -80..+250 °C
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Protection (IP)	IP65 according to EN 60529, 16-point pressed Rolled: IP67 according to EN 60529, with SI-Protection
Pocket	stainless steel V4A, Ø=4 mm mounting length: 50 | 100 | 150 | 200 | 400 mm
Notes	other temperature sensors on request other probe lengths on request

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

TF14 passive 100 °C

Cable sensors -35..+100 °C – PT100		TP3
Item description	Item No.	€
TF14 PT100 T100 050.04 L1000	64347	12,60
TF14 PT100 T100 100.04 L1000	57554	13,70
TF14 PT100 T100 150.04 L1000	57561	14,10

Cable sensors -35..+100 °C PT100 1/3 DIN		TP3
Item description	Item No.	€
TF14 PT100 1/3 DIN T100 050.04 L1000	69106	16,60
TF14 PT100 1/3 DIN T100 100.04 L1000	69113	17,70
TF14 PT100 1/3 DIN T100 150.04 L1000	69120	18,10

Cable sensors -35..+100 °C – PT1000		TP3
Item description	Item No.	€
TF14 PT1000 T100 050.04 L1000	69267	14,80
TF14 PT1000 T100 100.04 L1000	69274	15,90
TF14 PT1000 T100 150.04 L1000	69281	16,30

Cable sensors -35..+100 °C – PT1000 1/3 DIN		TP3
Item description	Item No.	€
TF14 PT1000 1/3 DIN T100 050.04 L1000	69427	18,10
TF14 PT1000 1/3 DIN T100 100.04 L1000	69434	19,20
TF14 PT1000 1/3 DIN T100 150.04 L1000	69441	19,60

Cable sensors -35..+100 °C – Ni1000		TP3
Item description	Item No.	€
TF14 Ni1000 T100 050.04 L1000	73080	14,50
TF14 Ni1000 T100 100.04 L1000	73097	15,60
TF14 Ni1000 T100 150.04 L1000	73103	16,00

Cable sensors -35..+100 °C – Ni1000TK5000		TP3
Item description	Item No.	€
TF14 Ni1000TK5000 T100 050.04 L1000	73240	18,10
TF14 Ni1000TK5000 T100 100.04 L1000	73257	19,20
TF14 Ni1000TK5000 T100 150.04 L1000	73264	19,60

Cable sensors -35..+100 °C – NTC10k		TP3
Item description	Item No.	€
TF14 NTC10k T100 050.04 L1000	73844	11,30
TF14 NTC10k T100 100.04 L1000	73851	12,40
TF14 NTC10k T100 150.04 L1000	73868	12,80

Cable sensors -35..+100 °C – NTC10k Precon		TP3
Item description	Item No.	€
TF14 NTC10k Precon T100 050.04 L1000	77002	11,30
TF14 NTC10k Precon T100 100.04 L1000	77019	12,40
TF14 NTC10k Precon T100 150.04 L1000	77026	12,80

Cable sensors -35..+100 °C – NTC5k		TP3
Item description	Item No.	€
TF14 NTC5k T100 050.04 L1000	73806	11,30
TF14 NTC5k T100 100.04 L1000	73813	12,40
TF14 NTC5k T100 150.04 L1000	73820	12,80

Cable sensors -35..+100 °C – NTC20k		TP3
Item description	Item No.	€
TF14 NTC20k T100 050.04 L1000	73899	11,30
TF14 NTC20k T100 100.04 L1000	73905	12,40
TF14 NTC20k T100 150.04 L1000	73912	12,80

Cable sensors -35..+100 °C – NTC1,8k		TP3
Item description	Item No.	€
TF14 NTC1,8k T100 050.04 L1000	270687	11,30
TF14 NTC1,8k T100 100.04 L1000	355797	12,40
TF14 NTC1,8k T100 150.04 L1000	233293	12,80

Options	
Item description	€
Add per meter of connection cable 2-wire -35..+100 °C	1,00
Protection class IP67	2,10
Add to price of NTC10k for sensor NTC10k Carel	0,00
Connection box USE-S	14,50

Temperature

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

TF14 passive 150 | 180 °C

Cable sensors -50..+180 °C – PT100		TP3
Item description	Item No.	€
TF14 PT100 T180 050.04 L1000	64354	17,40
TF14 PT100 T180 100.04 L1000	78009	18,50
TF14 PT100 T180 150.04 L1000	78016	18,80

Cable sensors -50..+180 °C – PT100 1/3 DIN		TP3
Item description	Item No.	€
TF14 PT100 1/3 DIN T180 050.04 L1000	78207	21,40
TF14 PT100 1/3 DIN T180 100.04 L1000	78214	22,50
TF14 PT100 1/3 DIN T180 150.04 L1000	78221	22,80

Cable sensors -50..+180 °C – PT1000		TP3
Item description	Item No.	€
TF14 PT1000 T180 050.04 L1000	78405	19,60
TF14 PT1000 T180 100.04 L1000	78443	20,70
TF14 PT1000 T180 150.04 L1000	78481	21,00

Cable sensors -50..+180 °C – PT1000 1/3 DIN		TP3
Item description	Item No.	€
TF14 PT1000 1/3 DIN T180 050.04 L1000	78603	22,90
TF14 PT1000 1/3 DIN T180 100.04 L1000	78641	24,00
TF14 PT1000 1/3 DIN T180 150.04 L1000	78689	24,30

Cable sensors -50..+180 °C – Ni1000		TP3
Item description	Item No.	€
TF14 Ni1000 T180 050.04 L1000	78795	19,30
TF14 Ni1000 T180 100.04 L1000	78832	20,40
TF14 Ni1000 T180 150.04 L1000	78870	20,70

Cable sensors -50..+180 °C – Ni1000TK5000		TP3
Item description	Item No.	€
TF14 Ni1000TK5000 T180 050.04 L1000	78993	22,90
TF14 Ni1000TK5000 T180 100.04 L1000	79037	24,00
TF14 Ni1000TK5000 T180 150.04 L1000	79075	24,30

Cable sensors -50..+150 °C – NTC10k		TP3
Item description	Item No.	€
TF14 NTC10k T150 050.04 L1000	80408	16,10
TF14 NTC10k T150 100.04 L1000	81443	17,20
TF14 NTC10k T150 150.04 L1000	80484	17,50

Cable sensors -50..+150 °C – NTC10k Precon		TP3
Item description	Item No.	€
TF14 NTC10k Precon T150 050.04 L1000	76807	16,10
TF14 NTC10k Precon T150 100.04 L1000	76845	17,20
TF14 NTC10k Precon T150 150.04 L1000	76883	17,50

Cable sensors -50..+150 °C – NTC5k		TP3
Item description	Item No.	€
TF14 NTC5k T150 050.04 L1000	80200	16,10
TF14 NTC5k T150 100.04 L1000	80248	17,20
TF14 NTC5k T150 150.04 L1000	76975	17,50

Cable sensors -50..+150 °C – NTC20k		TP3
Item description	Item No.	€
TF14 NTC20k T150 050.04 L1000	80606	16,10
TF14 NTC20k T150 100.04 L1000	80644	17,20
TF14 NTC20k T150 150.04 L1000	80682	17,50

Cable sensors -50..+150 °C – NTC1,8k		TP3
Item description	Item No.	€
TF14 NTC1,8k T150 050.04 L1000	256131	16,10
TF14 NTC1,8k T150 100.04 L1000	352307	17,20
TF14 NTC1,8k T150 150.04 L1000	352291	17,50

Options	
Item description	€
Add per meter of connection cable -50..+180 °C	1,80
Protection class IP67	2,10
Add to price of NTC10k for sensor NTC10k Carel	0,00
Connection box USE-S	14,50

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

TF14 passive 250 °C

Cable sensors -80..+250 °C – PT100		TP3
Item description	Item No.	€
TF14 PT100 T250 050.04 L1000	95563	20,10
TF14 PT100 T250 100.04 L1000	96126	20,80
TF14 PT100 T250 150.04 L1000	96195	21,10

Cable sensors -80..+250 °C – PT100 1/3 DIN		TP3
Item description	Item No.	€
TF14 PT100 1/3 DIN T250 050.04 L1000	96775	24,10
TF14 PT100 1/3 DIN T250 100.04 L1000	96805	24,80
TF14 PT100 1/3 DIN T250 150.04 L1000	96843	25,10

Cable sensors -80..+250 °C – PT1000		TP3
Item description	Item No.	€
TF14 PT1000 T250 050.04 L1000	97185	22,30
TF14 PT1000 T250 100.04 L1000	97239	23,00
TF14 PT1000 T250 150.04 L1000	91510	23,30

Cable sensors -80..+250 °C – PT1000 1/3 DIN		TP3
Item description	Item No.	€
TF14 PT1000 1/3 DIN T250 050.04 L1000	91633	25,60
TF14 PT1000 1/3 DIN T250 100.04 L1000	91671	26,30
TF14 PT1000 1/3 DIN T250 150.04 L1000	91718	26,60

Cable sensors -80..+250 °C – Ni1000		TP3
Item description	Item No.	€
TF14 Ni1000 T250 050.04 L1000	91831	22,00
TF14 Ni1000 T250 100.04 L1000	91879	22,70
TF14 Ni1000 T250 150.04 L1000	91916	23,00

Cable sensors -80..+250 °C – Ni1000TK5000		TP3
Item description	Item No.	€
TF14 Ni1000TK5000 T250 050.04 L1000	97338	25,60
TF14 Ni1000TK5000 T250 100.04 L1000	97376	26,30
TF14 Ni1000TK5000 T250 150.04 L1000	97413	26,60

Options	
Item description	€
3-wire connection -80..+250 °C (3-wire)	2,90
4-wire connection -80..+250 °C (4-wire)	6,50
Add per meter of connection cable 2-wire -80..+250 °C	5,60
Add per meter of connection cable 3-wire -80..+250 °C	6,30
Add per meter of connection cable 4-wire -80..+250 °C	7,20
Protection class IP67	2,10
Connection box USE-S	14,50

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Mounting flange MF6 flexible (suitable for Ø=4 | 6 | 7 mm; AS2)	399098	⊜	6,50
Mounting flange MF4 (brass)	102438	⊜	5,25
KL4VA – Compression fittings G 1/4" for Ø=4 mm with cutting ring VA, stainless steel	103206	⊜	13,10
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

TF14+ active

Cable sensor for temperature measurement in HVAC applications. Depending on the application requirements, different PVC, silicone and PTFE cables are available. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation. The TF14 with its 4 mm diameter pocket is well suited for fast response applications.

0..10 V / 4..20 mA SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V or 0..5 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	TRV: 15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Output signal range temp.	Scaling analog output: 0..+160 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer
Operating temperature range	pocket -50..+180 °C optional -50..+250 °C (T250) enclosure: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection, 16-point pressed Rolled: IP67 according to EN 60529, with SI-Protection enclosure (active): IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pocket	stainless steel V4A, Ø=4 mm mounting length: 50 | 100 | 150 | 200 | 400 mm
Ambient condition	max. 85% rH short term condensation, with connection wire: PVC -35..+100 °C, silicone -50..+180 °C, PTFE -50..+250 °C
Delivery content	incl. mounting base enclosure USE-S pure white
Notes	other probe lengths on request

Item description: product | TRV/TRA MultiRange | temperature | pocket (length.Ø) | cable length (L)

TF14+ active

Cable sensors -50..+180 °C – active TRV 0..10 V		TP2
Item description	Item No.	€
TF14+ TRV MultiRange T180 050.04 L1000	658850	70,50
TF14+ TRV MultiRange T180 100.04 L1000	658867	72,00
TF14+ TRV MultiRange T180 150.04 L1000	658874	72,40

Cable sensors -50..+180 °C – active TRA 4..20 mA		TP2
Item description	Item No.	€
TF14+ TRA MultiRange T180 050.04 L1000	658881	70,50
TF14+ TRA MultiRange T180 100.04 L1000	658898	72,00
TF14+ TRA MultiRange T180 150.04 L1000	658904	72,40

Options	
Item description	€
TRV/TRA: Temperature -50..+250 °C (T250)	11,20
Protection class IP67	2,10
TRV/TRA: Add per meter of connection for measuring range up to 180 °C	1,80
TRV/TRA: Add per meter of connection for measuring range up to 250 °C	5,60

Accessories			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Mounting flange MF6 flexible (suitable for Ø=4 | 6 | 7 mm; AS2)	399098	⊜	6,50
Mounting flange MF4 (brass)	102438	⊜	5,25
KL4VA – Compression fittings G 1/4" for Ø=4 mm with cutting ring VA, stainless steel	103206	⊜	13,10
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75
For cable entries and sealing inserts please refer to chapter "Accessories"			

Temperature

TF25 passive

Cable sensor for temperature measurement in HVAC or refrigeration applications. In combination with a thermowell, the TF25 can also be used for temperature measurement in liquid media. Depending on the application requirements, different PVC, silicone, high-temperature silicone and fibreglass cables are available.

SI-Protection
PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k LM235Z | DS18B20 1-wire KTY81-110 | KTY81-121 | KTY81-122 | KTY81-210
Measuring range temp.	-35..+100 °C, PT / Ni: -50..180 °C | -50..+250 °C, NTC / KTY: -50..+150 °C, PT: -50..+400 °C
Operating temperature range	permissible working temperature connection wire: PVC -35..+100 °C, silicone -50..+180 °C, HT- silicone -50..+250 °C, GI/GI-V2A: -50..+400 °C
Accuracy temperature	depending on used sensor PT100 | PT1000: ±0,3 K (typ. at 0 °C, Kl.B) Ni1000: ±0,4 K (typ. at 0 °C) Ni1000TK5000: ±0,4 K (typ. at 0 °C) NTC10K: ±0,22 K (typ. at 25 °C)
Sensor	2-wire (standard), 3-wire or 4-wire sensor cable: 1 | 2 | 4 | 6 m
Protection (IP)	IP65 according to EN 60529, 16-point pressed Rolled: IP67 according to EN 60529, with SI-Protection
Pocket	stainless steel V4A, Ø=6 mm mounting length: 50 | 100 | 150 | 200 | 250 mm pocket 6x50 and T100: 16-point pressed; IP67 rolled tension spring (optional)
Notes	cable ends with conductor sleeves as standard other sensors and cable lengths on request PE connection wire available (please request)

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

TF25 passive 100 °C

Cable sensors -35..+100 °C – PT100		TP3
Item description	Item No.	€
TF25 PT100 T100 050.06 L1000	35019	12,20
TF25 PT100 T100 100.06 L1000	35026	13,60
TF25 PT100 T100 150.06 L1000	35033	14,00

Cable sensors -35..+100 °C PT100 1/3 DIN		TP3
Item description	Item No.	€
TF25 PT100 1/3 DIN T100 050.06 L1000	25799	16,20
TF25 PT100 1/3 DIN T100 100.06 L1000	35255	17,60
TF25 PT100 1/3 DIN T100 150.06 L1000	35262	18,00

Cable sensors -35..+100 °C – PT1000		TP3
Item description	Item No.	€
TF25 PT1000 T100 050.06 L1000	35484	14,40
TF25 PT1000 T100 100.06 L1000	35491	15,80
TF25 PT1000 T100 150.06 L1000	35507	16,20

Cable sensors -35..+100 °C – PT1000 1/3 DIN		TP3
Item description	Item No.	€
TF25 PT1000 1/3 DIN T100 050.06 L1000	35729	17,70
TF25 PT1000 1/3 DIN T100 100.06 L1000	35736	19,10
TF25 PT1000 1/3 DIN T100 150.06 L1000	35743	19,50

Cable sensors -35..+100 °C – Ni1000		TP3
Item description	Item No.	€
TF25 Ni1000 T100 050.06 L1000	26116	14,10
TF25 Ni1000 T100 100.06 L1000	26154	15,50
TF25 Ni1000 T100 150.06 L1000	26192	15,90

Cable sensors -35..+100 °C – Ni1000TK5000		TP3
Item description	Item No.	€
TF25 Ni1000TK5000 T100 050.06 L1000	26352	17,70
TF25 Ni1000TK5000 T100 100.06 L1000	26390	19,10
TF25 Ni1000TK5000 T100 150.06 L1000	388238	19,50

Cable sensors -35..+100 °C – NTC10k		TP3
Item description	Item No.	€
TF25 NTC10k T100 050.06 L1000	41539	10,90
TF25 NTC10k T100 100.06 L1000	41812	12,30
TF25 NTC10k T100 150.06 L1000	40723	12,70

Cable sensors -35..+100 °C – NTC10k Precon		TP3
Item description	Item No.	€
TF25 NTC10k Precon T100 050.06 L1000	41300	10,90
TF25 NTC10k Precon T100 100.06 L1000	41348	12,30
TF25 NTC10k Precon T100 150.06 L1000	41386	12,70

Cable sensors -35..+100 °C – NTC5k		TP3
Item description	Item No.	€
TF25 NTC5k T100 050.06 L1000	41522	10,90
TF25 NTC5k T100 100.06 L1000	41805	12,30
TF25 NTC5k T100 150.06 L1000	40716	12,70

Cable sensors -35..+100 °C – NTC20k		TP3
Item description	Item No.	€
TF25 NTC20k T100 050.06 L1000	41546	10,90
TF25 NTC20k T100 100.06 L1000	41829	12,30
TF25 NTC20k T100 150.06 L1000	40730	12,70

Cable sensors -35..+100 °C – NTC1,8k		TP3
Item description	Item No.	€
TF25 NTC1,8k T100 050.06 L1000	233309	10,90
TF25 NTC1,8k T100 100.06 L1000	258272	12,30
TF25 NTC1,8k T100 150.06 L1000	319201	12,70

Cable sensors -35..+100 °C – LM235Z		TP3
Item description	Item No.	€
TF25 LM235Z T100 050.06 L1000	43786	13,50
TF25 LM235Z T100 100.06 L1000	43823	14,90
TF25 LM235Z T100 150.06 L1000	43861	15,30

Cable sensors -35..+100 °C – KTY81-110		TP3
Item description	Item No.	€
TF25 KTY81-110 T100 050.06 L1000	42819	8,60
TF25 KTY81-110 T100 100.06 L1000	42857	10,10
TF25 KTY81-110 T100 150.06 L1000	42895	10,40

Cable sensors -35..+100 °C – KTY81-121		TP3
Item description	Item No.	€
TF25 KTY81-121 T100 050.06 L1000	42826	8,60
TF25 KTY81-121 T100 100.06 L1000	42864	10,10
TF25 KTY81-121 T100 150.06 L1000	42901	10,40

Temperature

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

TF25 passive 100 °C

Cable sensors -35..+100 °C – KTY81-122		TP3
Item description	Item No.	€
TF25 KTY81-122 T100 050.06 L1000	42833	8,60
TF25 KTY81-122 T100 100.06 L1000	42871	10,10
TF25 KTY81-122 T100 150.06 L1000	42918	10,40

Cable sensors -35..+100 °C – KTY81-210		TP3
Item description	Item No.	€
TF25 KTY81-210 T100 050.06 L1000	42840	8,60
TF25 KTY81-210 T100 100.06 L1000	42888	10,10
TF25 KTY81-210 T100 150.06 L1000	42925	10,40

Options	
Item description	€
3-wire connection -35..+100 °C (3-wire)	1,80
4-wire connection -35..+100 °C (4-wire)	5,60
Add per meter of connection cable 2-wire -35..+100 °C	1,00
Add per meter of connection cable 3-wire -35..+100 °C	1,20
Add per meter of connection cable 4-wire -35..+100 °C	1,40
Protection class IP67	2,10
Tension spring (tensp)	1,40
Connection box USE-S	14,50

TF25 passive 125 | 150 | 180 °C

Cable sensors -50..+180 °C – PT100		TP3
Item description	Item No.	€
TF25 PT100 T180 050.06 L1000	52771	16,00
TF25 PT100 T180 100.06 L1000	52788	17,40
TF25 PT100 T180 150.06 L1000	52795	17,70

Cable sensors -50..+180 °C – PT100 1/3 DIN		TP3
Item description	Item No.	€
TF25 PT100 1/3 DIN T180 050.06 L1000	57493	20,00
TF25 PT100 1/3 DIN T180 100.06 L1000	57509	21,40
TF25 PT100 1/3 DIN T180 150.06 L1000	57516	21,70

Cable sensors -50..+180 °C – PT1000		TP3
Item description	Item No.	€
TF25 PT1000 T180 050.06 L1000	58247	18,20
TF25 PT1000 T180 100.06 L1000	58254	19,60
TF25 PT1000 T180 150.06 L1000	58261	19,90

Cable sensors -50..+180 °C – PT1000 1/3 DIN		TP3
Item description	Item No.	€
TF25 PT1000 1/3 DIN T180 050.06 L1000	58483	21,50
TF25 PT1000 1/3 DIN T180 100.06 L1000	58490	22,90
TF25 PT1000 1/3 DIN T180 150.06 L1000	58506	23,20

Cable sensors -50..+180 °C – Ni1000		TP3
Item description	Item No.	€
TF25 Ni1000 T180 050.06 L1000	58728	17,90
TF25 Ni1000 T180 100.06 L1000	58735	19,30
TF25 Ni1000 T180 150.06 L1000	58742	19,60

Cable sensors -50..+180 °C – Ni1000TK5000		TP3
Item description	Item No.	€
TF25 Ni1000TK5000 T180 050.06 L1000	58964	21,50
TF25 Ni1000TK5000 T180 100.06 L1000	58971	22,90
TF25 Ni1000TK5000 T180 150.06 L1000	58988	23,20

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

TF25 passive 125 | 150 | 180 °C

Cable sensors -50..+150 °C – NTC10k		TP3
Item description	Item No.	€
TF25 NTC10k T150 050.06 L1000	59466	14,70
TF25 NTC10k T150 100.06 L1000	59473	16,10
TF25 NTC10k T150 150.06 L1000	59480	16,40

Cable sensors -50..+150 °C – NTC10k Precon		TP3
Item description	Item No.	€
TF25 NTC10k Precon T150 050.06 L1000	59718	14,70
TF25 NTC10k Precon T150 100.06 L1000	59725	16,10
TF25 NTC10k Precon T150 150.06 L1000	59732	16,40

Cable sensors -50..+150 °C – NTC5k		TP3
Item description	Item No.	€
TF25 NTC5k T150 050.06 L1000	59404	14,70
TF25 NTC5k T150 100.06 L1000	59411	16,10
TF25 NTC5k T150 150.06 L1000	59428	16,40

Cable sensors -50..+150 °C – NTC20k		TP3
Item description	Item No.	€
TF25 NTC20k T150 050.06 L1000	59527	14,70
TF25 NTC20k T150 100.06 L1000	59534	16,10
TF25 NTC20k T150 150.06 L1000	59541	16,40

Cable sensors -50..+150 °C – NTC1,8k		TP3
Item description	Item No.	€
TF25 NTC1,8k T150 050.06 L1000	259484	14,70
TF25 NTC1,8k T150 100.06 L1000	282611	16,10
TF25 NTC1,8k T150 150.06 L1000	388252	16,40

Cable sensors -50..+125 °C – LM235Z		TP3
Item description	Item No.	€
TF25 LM235Z T125 050.06 L1000	143042	16,50
TF25 LM235Z T125 100.06 L1000	141024	17,90
TF25 LM235Z T125 150.06 L1000	387521	18,20

Cable sensors -50..+150 °C – KTY81-110		TP3
Item description	Item No.	€
TF25 KTY81-110 T150 050.06 L1000	68031	12,50
TF25 KTY81-110 T150 100.06 L1000	68048	14,00
TF25 KTY81-110 T150 150.06 L1000	68055	14,30

Cable sensors -50..+150 °C – KTY81-121		TP3
Item description	Item No.	€
TF25 KTY81-121 T150 050.06 L1000	68093	12,50
TF25 KTY81-121 T150 100.06 L1000	68109	14,00
TF25 KTY81-121 T150 150.06 L1000	68116	14,30

Cable sensors -50..+150 °C – KTY81-122		TP3
Item description	Item No.	€
TF25 KTY81-122 T150 050.06 L1000	68154	12,50
TF25 KTY81-122 T150 100.06 L1000	68161	14,00
TF25 KTY81-122 T150 150.06 L1000	68178	14,30

Cable sensors -50..+150 °C – KTY81-210		TP3
Item description	Item No.	€
TF25 KTY81-210 T150 050.06 L1000	68215	12,50
TF25 KTY81-210 T150 100.06 L1000	68222	14,00
TF25 KTY81-210 T150 150.06 L1000	68239	14,30

Options	
Item description	€
3-wire connection -50..+180 °C (3-wire)	2,00
4-wire connection -50..+180 °C (4-wire)	5,60
Add per meter of connection cable 2-wire -50..+180 °C	1,80
Add per meter of connection cable 3-wire -50..+180 °C	2,60
Add per meter of connection cable 4-wire -50..+180 °C	3,10
Protection class IP67	2,10
Tension spring (tensp)	1,40
Connection box USE-S	14,50

Temperature

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

TF25 passive 250 °C

Cable sensors -50..+250 °C – PT100		TP3
Item description	Item No.	€
TF25 PT100 T250 050.06 L1000	167406	20,10
TF25 PT100 T250 100.06 L1000	209731	20,80
TF25 PT100 T250 150.06 L1000	205658	21,10

Cable sensors -50..+250 °C – PT100 1/3 DIN		TP3
Item description	Item No.	€
TF25 PT100 1/3 DIN T250 050.06 L1000	195478	24,10
TF25 PT100 1/3 DIN T250 100.06 L1000	345835	24,80
TF25 PT100 1/3 DIN T250 150.06 L1000	388276	25,10

Cable sensors -50..+250 °C – PT1000		TP3
Item description	Item No.	€
TF25 PT1000 T250 050.06 L1000	168717	22,30
TF25 PT1000 T250 100.06 L1000	209724	23,00
TF25 PT1000 T250 150.06 L1000	388283	23,30

Cable sensors -50..+250 °C – PT1000 1/3 DIN		TP3
Item description	Item No.	€
TF25 PT1000 1/3 DIN T250 050.06 L1000	356749	25,60
TF25 PT1000 1/3 DIN T250 100.06 L1000	356756	26,30
TF25 PT1000 1/3 DIN T250 150.06 L1000	388290	26,60

Cable sensors -50..+250 °C – Ni1000		TP3
Item description	Item No.	€
TF25 Ni1000 T250 050.06 L1000	151863	22,00
TF25 Ni1000 T250 100.06 L1000	182430	22,70
TF25 Ni1000 T250 150.06 L1000	388306	23,00

Cable sensors -50..+250 °C – Ni1000TK5000		TP3
Item description	Item No.	€
TF25 Ni1000TK5000 T250 050.06 L1000	150781	25,60
TF25 Ni1000TK5000 T250 100.06 L1000	157018	26,30
TF25 Ni1000TK5000 T250 150.06 L1000	388313	26,60

Options	
Item description	€
Add per meter of connection cable 2-wire -50..+250 °C	3,00
Protection class IP67	2,10
Tension spring (tensp)	1,40
Connection box USE-S	14,50

TF25 passive 400 °C

Cable sensors -50..+400 °C – PT100/PT1000		TP3
Item description	Item No.	€
TF25 PT100 T400 050.06 L2000	166195	34,70
TF25 PT1000 T400 050.06 L2000	166201	36,90

Options	
Item description	€
Add per meter of connection cable 2-wire -80..+400 °C	5,00
Protection class IP67	2,10
Tension spring (tensp)	1,40
Connection box USE-S	14,50

TF25+ active

Cable sensor for temperature measurement in HVAC or refrigeration applications. In combination with a thermowell, also suitable for liquid media. Depending on the application requirements, different PVC, silicone, high-temperature silicone and fibreglass cables are available. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

TF25+ active

TF25+ relay / BUS

Temperature

0..10 V / 4..20 mA   USEapp   Modbus   BACnet   LON LOCAL OPERATING NETWORK   SI-Protection PROTECTION AGAINST VIBRATION AND HUMIDITY

TECHNICAL DATA	
Measured values	temperature
Output voltage	TRV: 1x 0..10 V or 0..5 V, min. load 5 kΩ
Output current	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV TRA: 15..24 V = (±10%) SELV
Power consumption	TRV: max. 0,45 W (24 V =) | 0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =)
Output signal range temp.	TRV | TRA: Scaling analog output: 0..+160 °C (default setting) selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer
Operating temperature range	permissible working temperature: pocket -50..+180 °C, optional -50..+250 °C (T250) enclosure: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529, SI-Protection, 16-point pressed Rolled: IP67 according to EN 60529, with SI-Protection enclosure: IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pocket	stainless steel V4A, Ø=6 mm mounting length: 50 | 100 | 150 | 200 | 250 mm pocket 6x50 and T100: 16-point pressed; IP67 rolled tension spring (optional)
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-S pure white
Notes	other cable lengths on request PE connection wire available (please request)

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 5 kΩ
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =)	4,3 VA (24 V ~)
Output signal range temp.	Scaling analog output: -20..+80 °C (default setting), selectable from 8 temperature ranges -50..+50	-20..+80	-15..+35	-10..+120	0..+50	0..+100	0..+160	0..+250 °C adjustable at the transducer, optionally configurable via app or uConfig
Operating temperature range	permissible working temperature: pocket -50..+160 °C, optional -50..+250 °C (T250) enclosure: -35..+70 °C, LCD: -20..+70 °C
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm²
Delivery content	incl. mounting base enclosure USE-M pure white

Item description: product | TRV / TRA | temperature | pocket (length.Ø) | cable length (L)

TF25+ active

Cable sensors -50..+180 °C – active TRV 0..10 V		TP2
Item description	Item No.	€
TF25+ TRV MultiRange T180 050.06 L1000	658959	71,80
TF25+ TRV MultiRange T180 100.06 L1000	658966	73,20
TF25+ TRV MultiRange T180 150.06 L1000	658973	73,60

Cable sensors -50..+180 °C – active TRA 4..20 mA		TP2
Item description	Item No.	€
TF25+ TRA MultiRange T180 050.06 L1000	658980	71,80
TF25+ TRA MultiRange T180 100.06 L1000	658997	73,20
TF25+ TRA MultiRange T180 150.06 L1000	659000	73,60

Options	
Item description	€
Protection class IP67 (rolled)	2,10
LCD	40,80
Add per meter of connection cable -50..+180 °C	1,80
Add per meter of connection cable -50..+250 °C	3,00
Tension spring (tensp)	1,40
Temperature -50..+250 °C (T250)	11,20

Item description: product | BUS | temperature | pocket (length.Ø) | cable length (L)

TF25+ LCD

Cable sensors -50..+160 °C – active TRV 0..10 V			TP2
Item description	**USE**app	Item No.	€
TF25+ LCD TRV MultiRange T160 050.06 L1000	✓	707039	112,60
TF25+ LCD TRV MultiRange T160 100.06 L1000	✓	693806	114,00

Item description: product | BUS | temperature | pocket (length.Ø) | cable length (L)

TF25+ BUS

Modbus

Cable sensors -50..+160 °C – active RS485 Modbus			TP2
Item description	**USE**app	Item No.	€
TF25+ RS485 Modbus T160 050.06 L1000	✓	659024	106,80
TF25+ RS485 Modbus T160 100.06 L1000	✓	668255	108,20

BACnet

Cable sensors -50..+160 °C – active RS485 BACnet			TP2
Item description	**USE**app	Item No.	€
TF25+ RS485 BACnet (MS/TP) T160 050.06 L1000	✓	699723	106,80
TF25+ RS485 BACnet (MS/TP) T160 100.06 L1000	✓	699730	108,20

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Protection class IP67	2,10
Tension spring (tensp)	1,40
Add per meter of connection for measuring range up to 160 °C	1,80
Add to price of RS485 Modbus for LON FT	74,00
LCD	40,80

Temperature

ACCESSORIES – *TF25+ active*

Zubehör			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65

ACCESSORIES – *TF25+ LCD / TF25+ BUS*

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting flange MF6DS flexible (suitable for Ø=6 mm; AS2)	669016	⊜	6,50
Mounting flange MF6 (brass)	3407	⊜	6,50
KL6VA – Compression fittings G 1/4" for Ø=6 mm with cutting ring VA, stainless steel	103213	⊜	13,10
For cable entries and sealing inserts please refer to chapter "Accessories"			

Accessories – thermowells stainless steel for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	⊜	17,60
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⊜	19,40
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824	⊜	20,90
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848	⊜	22,00
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862	⊜	27,30
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879	⊜	28,60
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893	⊜	29,50
VA-thermowell pocket 600 mm type THVADS600	600 mm	586 mm	611923	⊜	36,20
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	⊜	18,70

Accessories – thermowells brass for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	⊜	8,10
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⊜	9,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015	⊜	9,70
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022	⊜	10,10
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985	⊜	11,60
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039	⊜	12,00
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046	⊜	12,20

Humidity

Humidity sensor for reliable detection of relative humidity and temperature in residential and commercial buildings, outdoor resp. in gaseous media of heating, ventilation and air conditioning systems.

Humidity

thermokon®   325

» BENEFITS

» Reliable measurement of relative humidity
» High Accuracy
» Optional temperature sensor

FTK+

Duct humidity/temperature sensor, available outputs: 0..10 V or 4..20 mA

NOVOS 3 rH

Room humidity/temperature sensor, available with RGB display (NOVOS 5 rH)

novos

BACnet | KNX | LON LOCAL OPERATING NETWORK | enocean® | Modbus | digitalSTROM
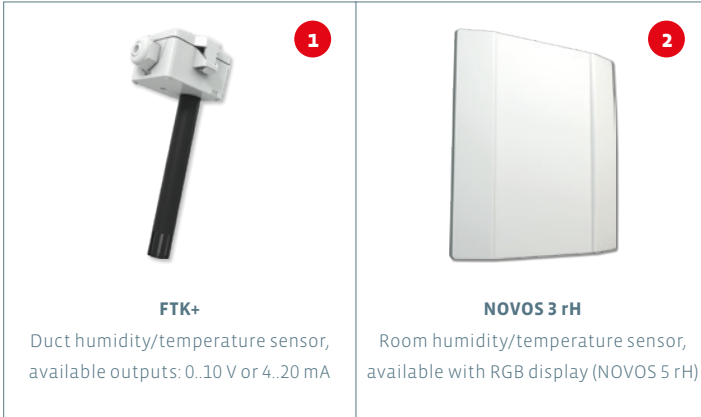
ALREADY WET HANDS?

Whether room or duct: Highest precision in relative humidity is of paramount importance. Not only for creating comfortable working conditions, a consistent and accurate monitoring of humidity is necessary. In increasingly insulated buildings, hazardous mold formations get observance to the sustainable protection of humans and the building. In order to act precautionary and to control this risk, humidity sensors are additionally equipped with temperature sensors and designed for communication in BUS systems, for wireless EnOcean communication and for direct hook-up.

Humidity

NOVOS 5 rH

Room sensor with LCD for measuring relative and absolute humidity, enthalpy, dew point and temperature. The maintenance-free sensor is especially designed for schools, office buildings, hotels, cinemas and similar applications. Threshold values and display settings can be individually configured via Thermokon NOVOSapp. For models with set point and fan stage adjustment, please refer to the ‚NOVOS 5 x' model in the chapter ‚Room Operating Units'.

NOVOS 5 rH white LCD

NOVOS 5 rH white Design LCD with design cover black

NOVOS 5 rH white Design LCD with design cover alu

0..10 V / 4..20 mA   Modbus   BACnet

TECHNICAL DATA	
Measured values	humidity, temperature
Output voltage	VV: 2x 0..10 V or 0..5 V, (live-zero configuration via app or uConfig) max. load 10 kΩ
Output current	AA: 2x 4..20 mA, max. load 500 Ω
Network technology	RS485 BACnet (MS/TP), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, A: 15..35 V = SELV
Power consumption	typ. 0,6 W (24 V =) | 1,0 VA (24 V ~)
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting), selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable via app or uConfig
Operating temperature range	-20..+70 °C
Measuring range humidity	0..100% rH non-condensing, enthalpy: 0..85 KJ/kg, absolute humidity: 0..50 | 0..80 g/m³, dew point: 0..+50 | -20..+80 °C, optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Inputs	RS485 Modbus:, 1x input for floating contact
Display	LCD 29x35 mm with RGB backlight Display and colours optionally configurable via app, uConfig or BUS
Colour	pure white, black or aluminium
Enclosure	PC V0, design cover pure white, black or aluminium
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories)

NOVOS 5 rH

Room sensor humidity + temperature – active 2x 0..10 V	2x 4..20 mA		HU1
Item description	Item No.	€
NOVOS 5 Temp_rH white LCD VV	733595	160,00
NOVOS 5 Temp_rH white LCD AA	733601	160,00

Room sensor humidity + temperature design – active 2x 0..10 V	2x 4..20 mA (please specify desired design cover)		HU1
Item description	Item No.	€
NOVOS 5 Temp_rH white design LCD VV	733618	160,00
NOVOS 5 Temp_rH white design LCD AA	733625	160,00

NOVOS 5 rH BUS

Room sensor humidity + temperature – BUS		HU1
Item description	Item No.	€
NOVOS 5 Temp_rH white LCD RS485 Modbus	733649	197,00
NOVOS 5 Temp_rH white LCD RS485 BACnet (MS/TP)	754842	197,00

Room sensor humidity + temperature design – BUS (please specify desired design cover)		HU1
Item description	Item No.	€
NOVOS 5 Temp_rH white design LCD RS485 Modbus	733656	197,00
NOVOS 5 Temp_rH white design LCD RS485 BACnet (MS/TP)	754859	197,00

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Humidity

NOVOS 3 rH

Room sensor for measuring relative and absolute humidity, enthalpy, dew point and temperature. The maintenance-free sensor is especially designed for schools, office buildings, hotels, cinemas and similar applications. Threshold values can be individually configured via the Thermokon NOVOSapp. For models with set point for room and office applications, please refer to the ‚NOVOS 3 x‘ model in the chapter ‚Room Operating Units‘.

NOVOS 3 rH white

NOVOS 3 rH white
with design cover black

NOVOS 3 rH white
with design cover alu

0..10 V / 4..20 mA   Modbus   BACnet

TECHNICAL DATA	
Measured values	humidity, temperature
Output voltage	VV: 2x 0..10 V or 0..5 V, (live-zero configuration via app or uConfig) min. load 10 kΩ
Output current	AA: 2x 4..20 mA, max. load 500 Ω
Network technology	RS485 BACnet (MS/TP), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, TRA: 15..35 V = SELV
Power consumption	typ. 0,6 W (24 V =) | 1,0 VA (24 V ~)
Measuring range temp.	-35..+70 °C
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting), selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing, enthalpy: 0..85 KJ/kg, absolute humidity: 0..50 | 0..80 g/m³, dew point: 0..+50 | -20..+80 °C, optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Inputs	RS485 Modbus:, 1x input for floating contact
Colour	pure white, black or aluminium
Enclosure	PC V0, optionally with design cover black or aluminium
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories)

NOVOS 3 rH active

Room sensor humidity + temperature – active 2x 0..10 V | 2x 4..20 mA			HU2
Item description	Item No.	On stock	€
NOVOS 3 Temp_rH white VV	731904	⊜	106,30
NOVOS 3 Temp_rH white AA	731911	⊜	106,30

Room sensor humidity + temperature design – active 2x 0..10 V | 2x 4..20 mA (please specify desired design cover)		HU2
Item description	Item No.	€
NOVOS 3 Temp_rH white design VV	733472	106,30
NOVOS 3 Temp_rH white design AA	733489	106,30

NOVOS 3 rH BUS

Room sensor humidity + temperature – BUS			HU2
Item description	Item No.	On stock	€
NOVOS 3 Temp_rH white RS485 Modbus	733496	⊜	142,00
NOVOS 3 Temp_rH white RS485 BACnet (MS/TP)	754866		142,00

Room sensor humidity + temperature design – BUS (please specify desired design cover)		HU2
Item description	Item No.	€
NOVOS 3 Temp_rH white design RS485 Modbus	733502	142,00
NOVOS 3 Temp_rH white design RS485 BACnet (MS/TP)	754897	142,00

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Humidity

FTW04 dS

Room sensor for measuring temperature and relative humidity. The measured values are directly transmitted to the digitalSTROM system for a precise and comfortable control of the room climate. The device can be directly mounted on the wall, in a flush-mounted standard EU box or an optional surface-mounted frame.

digitalSTROM

TECHNICAL DATA	
Measured values	humidity, temperature
Network technology	digitalSTROM (dS)
Power supply	230 V ~ (±10%)
Power consumption	typ. 0,5 VA (230 V ~)
Measuring range temp.	0..+40 °C
Measuring range humidity	0..95% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Enclosure	PC, pure white
Protection (IP)	IP30 according to EN 60529
Cable entry	breaking points top/bottom, rear entry
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws, with frame for surface mounting (accessory) or directly on the wall, base part can be mounted and wired separately
Notes	special painting available on request

digitalSTROM

Room sensor temperature + humidity – digitalSTROM		DS1
Item description	Item No.	€
FTW04 dS	619219	173,40

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
Ball stroke protection BS150, transparent (for series NOVOS 3/WRF04)	647007	⊜	23,30

Humidity

FTW06

Room sensor for humidity and temperature measurement, available in the design and colors of various switch frame manufacturers. The FTW06 is especially designed for application in hotels, offices, living spaces and meeting rooms. A comfortable room climate is ensured and mold formation can be prevented. The accuracy of the humidity sensor is 2%. The sensor can be flush-mounted in a standard EU box.

FTW06
Gira E2 pure white matt

0..10 V / 4..20 mA   Modbus

TECHNICAL DATA	
Measured values	temperature, humidity
Output voltage	VV | VVS: 2x 0..10 V (min. load 10 kΩ)
Output passive	PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000 NTC10k | NTC 10k Precon | NTC5k | NTC20k | NTC1,8k
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV BUS: 15..35 V = or 19..29 V ~ SELV
Power consumption	VV | VVS: max. 0,3 W (24 V =) | 0,5 VA (24 V ~)
Measuring range temp.	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 25 °C), passive: depending on used sensor
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Switch range Berker	S.1, B.3 aluminum, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, M-Pure, 1-M, Atelier-M, Artec *, Artec stainless steel *, Antik *
Switch range Peha	AURA, AURA glass
Protection (IP)	IP30 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², pluggable
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	* in switch program with intermediate frame, please specify frame design when ordering, additional passive sensor available (please specify in order), e.g.: PT100, PT1000, NI1000, NI1000TK5000, NTCxx, LM235Z, other sensors on request

FTW06

Item description: product | VV/BUS | switch range | colour

Room sensor humidity + temperature – active VV 2x 0..10 V		HU1
Item description	Item No.	€
FTW06 VV pure white matt without frame	482721	209,00
FTW06 VV pure white brilliant without frame	732161	209,00
FTW06 VV aluminium without frame	732178	209,00
FTW06 VV Jung aluminium without frame	732185	209,00
FTW06 VV anthracite without frame	732192	209,00

Modbus

Room sensor humidity + temperature – BUS		HU1
Item description	Item No.	€
FTW06 RS485 Modbus pure white matt without frame	732208	229,50
FTW06 RS485 Modbus pure white brilliant without frame	732215	229,50
FTW06 RS485 Modbus aluminium without frame	732222	229,50
FTW06 RS485 Modbus Jung aluminium without frame	732239	229,50
FTW06 RS485 Modbus anthracite without frame	732246	229,50

Options	
Item description	€
Additional passive temperature sensor	14,70

ACCESSORIES

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass, stainless steel, aluminium (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

Accessories			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10

Humidity

FTW06 dS

Room sensor for measuring temperature and relative humidity. The measured data are directly transmitted to the digitalSTROM system for a precise and comfortable control of the room climate. The sensor meets highest design requirements and is available in the design and colors of various switch frame manufacturers. The sensor can be flush-mounted in a standard EU box.

DATA SHEETS

FTW06 dS
Gira E2 pure white matt

digitalSTROM

TECHNICAL DATA	
Measured values	humidity, temperature
Network technology	digitalSTROM (dS)
Power supply	230 V ~ (±10%)
Power consumption	typ. 1 W | max. 0,04 A (230 V ~)
Measuring range temp.	0..+40 °C
Measuring range humidity	0..95% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 25 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Switch range Berker	S.1, B.3 aluminum, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec *, Artec stainless steel *, Antik *
Switch range Peha	AURA, AURA glass
Protection (IP)	IP20 according to EN 60529
Electrical connection	plug-in terminal, max. 2,5 mm²,
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	* in switch program with intermediate frame please specify frame design when ordering

Room sensor humidity + temperature – digitalSTROM		DS1
Item description	Item No.	€
FTW06 dS pure white matt without frame	732253	221,30
FTW06 dS pure white brilliant without frame	732260	221,30
FTW06 dS aluminium without frame	732277	221,30
FTW06 dS Jung aluminium without frame	732284	221,30
FTW06 dS anthracite without frame	732291	221,30

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass, stainless steel, aluminium (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

FTP+

Room pendulum sensor for sectional measurement of relative humidity and temperature in large and high spaces (e.g. exhibition halls, churches and similar applications). Alternatively, the output can also be set to measure absolute humidity, enthalpy or dew point rather than relative humidity. The design ensures optimal installation and precise measurements. The accuracy of the humidity sensor is 2%.

0..10 V / 4..20 mA

Humidity

TECHNICAL DATA	
Measured values	humidity, temperature
Output voltage	VV: 2x 0..10 V or 0..5 V (adjustable via jumper), min. load 10 kΩ
Output current	AA: 2x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV AA: 15..24 V = (±10%) SELV
Power consumption	typ. 0,4 W (24 V =) | 0,8 VA (24 V ~) AA: max. 1 W (24 V =)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, adjustable at the transducer, default setting: -20..+80 °C
Measuring range humidity	0..100% rH non-condensing, enthalpy: 0..85 KJ/kg, absolute humidity: 0..50 | 0..80 g/m³, dew point: 0..+50 | -20..+80 °C, adjustable at the transducer
Accuracy temperature	±0,3 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Enclosure	enclosure USE-M, PC, pure white
Protection (IP)	enclosure: IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², sensor wire length=2 m or 4 m
Pipe	PA6, with stainless steel weight, black, Ø=20 mm, length 210 mm
Filter	stainless steel wire mesh
Ambient condition	-20..+70 °C, max. 85% rH non-condensing
Delivery content	incl. mounting base enclosure USE-M pure white

Room pendulum sensor humidity + temperature – active 2x 0..10 V | 2x 4..20 mA		HU1
Item description	Item No.	€
FTP+ VV L2000	699952	169,30
FTP+ VV L4000	699983	174,50
FTP+ AA L2000	699976	169,30
FTP+ AA L4000	700016	174,50

FT-RDF18+

Ceiling sensor for measuring relative humidity and temperature in rooms. The ideal solution for an inconspicuous, architectural integration into ceiling slabs or hollow walls. Especially designed for use in museums or showrooms. The precise measurements provided to a BMS system contribute to a comfortable room climate and prevent mold formation.

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	humidity, temperature
Output voltage	VV: 2x 0..10 V, min. load 5 kΩ
Output current	AA: 2x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV AA: 15..24 V = (±10%) SELV
Power consumption	VV: max. 0,45 W (24 V =) | 0,8 VA (24 V ~) AA: max. 1 W (24 V =)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, adjustable at the transducer default setting: 0..+50 °C
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C adjustable at the transducer
Accuracy temperature	±0,3 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529 sensor head: IP30 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² connection wire sensor head to plug RJ12: PVC 0,15 m connection wire bush RJ12 to enclosure: PVC 3 m
Sensor head	ABS, white, Ø=30 mm
Ambient condition	-35..+70 °C, max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-S pure white

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	2x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig)
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Output signal range temp.	Scaling analog output: -20..+80 °C (default setting), selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable via app or uConfig
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm², connection wire sensor head to plug RJ12: PVC 0,15 m, connection wire bush RJ12 to enclosure: PVC 3 m
Delivery content	incl. mounting base enclosure USE-M pure white

Ceiling sensor humidity + temperature – active 2x 0..10 V | 2x 4..20 mA		HU1
Item description	Item No.	€
FT-RDF18+ VV	659031	304,90
FT-RDF18+ AA	659055	304,90

Options	
Item description	€
LCD	40,80
RS485 Modbus (with enclosure USE-M)	45,00
Add to price of RS485 Modbus for LON FT	74,00
Add to price of RS485 Modbus for RS485 BACnet (MS/TP)	0,00

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter „Accessories"			

Humidity

FTB+

Wall-mounted sensor for measuring relative humidity and temperature in a high quality and inconspicious stainless steel design. For plastering into flush-mounted boxes or installations in hollow walls. Especially designed for museums and exhibitions, where measuring accuracy and almost invisible sensors have to be installed due to architectural design. The precise measurements provided to a BMS system contribute to a comfortable room climate and prevent mold formation.

34,4 mm   66,4 mm

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	humidity, temperature
Output voltage	VV: 2x 0..10 V or 0..5 V (adjustable via jumper), min. load 10 kΩ
Output current	AA: 2x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV AA: 15..24 V = (±10%) SELV
Power consumption	AA: max. 1 W (24 V =)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, adjustable at the transducer default setting: -20..+80 °C
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C adjustable at the transducer
Accuracy temperature	±0,3 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Enclosure	enclosure USE-M, PC, pure white
Protection (IP)	enclosure: IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² sensor wire PVC 15 m
Sensor head	stainless steel V2A, Ø=13 mm, length=34,4 | 66,4 mm
Ambient condition	-35..+70 °C, sensor: -40..+120 °C max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-M pure white

FTB+

Wall-mounted sensor humidity + temperature – active 2x 0..10 V | 2x 4..20 mA		HU1
Item description	Item No.	€
FTB+ VV 34.06 L15m	689205	502,80
FTB+ VV 66.06 L15m	689083	543,80
FTB+ AA 34.06 L15m	700108	502,80
FTB+ AA 66.06 L15m	700115	543,80

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
Mounting kit universal for enclosure USE	698511	⊜	9,05
For cable entries and sealing inserts please refer to chapter „Accessories"			

Humidity

thermokon®

FTK+

Duct sensor for measuring relative and absolute humidity, enthalpy, dew point and temperature in gaseous media of heating, ventilation and air-conditioning systems as well as clean rooms. The optional features, such as relay outputs for 2-point controllers or 2-stage 2-point controllers and color-changing LCD allow for a wide range of applications. Depending on the model, the FTK+ can be individually configured via Thermokon USEapp. The accuracy of the humidity sensor is 2%. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

FTK+

FTK+ relay / BUS

FTK+ LCD

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	humidity, temperature
Output voltage	VV | VVS: 2x 0..10 V or 0..5 V (adjustable via jumper, min. load 10 kΩ)
Output current	AA | AAS: 2x 4..20 mA (max. load 500 Ω)
Output passive	VVS | AAS: passive temperature sensor
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV AA: 15..24 V = (±10%) SELV
Power consumption	VV | VVS: max. 0,4 W (24 V =) | 0,8 VA (24 V ~) AA | AAS: max. 1 W (24 V =)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, adjustable at the transducer default setting: -20..+80 °C passive: depending on used sensor
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C adjustable at the transducer
Accuracy temperature	±0,3 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Air speed	max. 12 m/s
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pipe	PA6, black, Ø=19,5 mm length 140 | 270 | 400 mm
Filter	stainless steel wire mesh
Ambient condition	-20..+70 °C, max. 85% rH short term condensation
Delivery content	incl. mounting flange
Notes	additional passive temperature sensor available (type VVS/AAS)

DIFFERENT DATA FOR VERSIONS WITH RELAY / LCD / BUS	
Output voltage	2x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 10 kΩ
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, AA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, adjustable at the transducer, default setting: -20..+80 °C, optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing, enthalpy: 0..85 KJ/kg, absolute humidity: 0..50 | 0..80 g/m³, dew point: 0..+50 | -20..+80 °C, adjustable at the transducer, optionally configurable via app or uConfig
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white, LCD: cover PC, transparent
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm²

FTK+ active

Item description: product | pipe (length) | output (VV/AA)

Duct sensor humidity + temperature – active 2x 0..10 V			HU2
Item description	Item No.	On stock	€
FTK+ 140 VV incl. MF20	626347	⊜	163,90
FTK+ 270 VV incl. MF20	626354	⊜	171,20
FTK+ 400 VV incl. MF20	626361	⊜	178,50

Duct sensor humidity + temperature – active 2x 4..20 mA			HU2
Item description	Item No.	On stock	€
FTK+ 140 AA incl. MF20	626378	⊜	163,90
FTK+ 270 AA incl. MF20	626385	⊜	171,20
FTK+ 400 AA incl. MF20	626392	⊜	178,50

Options	
Item description	€
Additional passive temperature sensor	14,70

Humidity

FTK+ relay / LCD

Item description: product | pipe (length) | output (VV/AA)

Duct sensor humidity + temperature – active 2x 0..10 V			HU1
Item description	USEapp	Item No.	€
FTK+ 140 LCD VV incl. MF20	✓	663083	211,40
FTK+ 270 LCD VV incl. MF20	✓	663090	218,70
FTK+ 400 LCD VV incl. MF20	✓	663113	226,00

Duct sensor humidity + temperature – active 2x 4..20 mA			HU1
Item description	USEapp	Item No.	€
FTK+ 140 LCD AA incl. MF20	✓	663120	211,40
FTK+ 270 LCD AA incl. MF20	✓	663137	218,70
FTK+ 400 LCD AA incl. MF20	✓	663144	226,00

Duct sensor humidity + temperature – active 2x 0..10 V + relay			HU1
Item description	USEapp	Item No.	€
FTK+ 140 VV relay incl. MF20	✓	663151	208,90
FTK+ 270 VV relay incl. MF20	✓	663168	216,20
FTK+ 400 VV relay incl. MF20	✓	663175	223,50
FTK+ 140 LCD VV relay incl. MF20	✓	663205	235,90
FTK+ 270 LCD VV relay incl. MF20	✓	663229	243,20
FTK+ 400 LCD VV relay incl. MF20	✓	663236	250,50

Options	
Item description	€
Additional passive temperature sensor	14,70

FTK+ BUS

Item description: product | pipe (length) | BUS

Modbus

Duct sensor humidity + temperature – RS485 Modbus			HU1
Item description	USEapp	Item No.	€
FTK+ 140 RS485 Modbus incl. MF20	✓	659093	208,90
FTK+ 270 RS485 Modbus incl. MF20	✓	659109	216,20
FTK+ 400 RS485 Modbus incl. MF20	✓	659116	223,50
FTK+ 140 LCD RS485 Modbus incl. MF20	✓	663243	256,90
FTK+ 270 LCD RS485 Modbus incl. MF20	✓	663250	264,20
FTK+ 400 LCD RS485 Modbus incl. MF20	✓	663267	271,50

FTK+ BUS

BACnet

Duct sensor humidity + temperature – RS485 BACnet (MS/TP)			HU1
Item description	**USE**app	Item No.	€
FTK+ 140 RS485 BACnet (MS/TP) incl. MF20	✓	700122	208,90
FTK+ 270 RS485 BACnet (MS/TP) incl. MF20	✓	700139	216,20
FTK+ 400 RS485 BACnet (MS/TP) incl. MF20	✓	700146	223,50
FTK+ 140 LCD RS485 BACnet (MS/TP) incl. MF20	✓	700153	256,90
FTK+ 270 LCD RS485 BACnet (MS/TP) incl. MF20	✓	692878	264,20
FTK+ 400 LCD RS485 BACnet (MS/TP) incl. MF20	✓	700177	271,50

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES – FTK+ active

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65

ACCESSORIES – FTK+ relay / LCD / FTK+ BUS

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Filter stainless steel, wire mesh (spare part)	231169	⊜	9,05
Mounting flange MF20	612562	⊜	12,10
Weather protection for FTK+, WSA (replacement)	625241	⊜	70,00
For cable entries and sealing inserts please refer to chapter „Accessories"			

Humidity

FTK+ UNI Modbus RTU

Duct sensor with Modbus RS485 interface for measuring relative and absolute humidity, enthalpy, dew point and temperature in gaseous media of heating, ventilation and air-conditioning systems as well as clean rooms. The accuracy of the humidity sensor is 2%. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

TECHNICAL DATA	
Measured values	humidity, temperature
Network technology	RS485 Modbus, RTU or ASCII, half-duplex baud rate 9.600, 19.200, 38.400 or 57.600 parity none, even or odd
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 0,7 W (24 V =) | 1,8 VA (24 V ~)
Measuring range temp.	-20..+80 °C
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C adjustable at the transducer
Accuracy temperature	±0,3 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Air speed	max. 12 m/s
Enclosure	enclosure USE-S, PC, pure white
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Pipe	PA6, black, Ø=19,5 mm length 140 | 270 | 400 mm
Filter	stainless steel wire mesh
Ambient condition	-20..+70 °C, max. 85% rH short term condensation
Delivery content	incl. mounting flange

Item description: product | pipe (length) | BUS

FTK+ UNI Modbus RTU

Modbus

Duct sensor humidity + temperature – UNI Modbus RTU		HU1
Item description	Item No.	€
FTK+ 140 UNI Modbus RTU incl. MF20	747738	163,90
FTK+ 270 UNI Modbus RTU incl. MF20	747745	171,20
FTK+ 400 UNI Modbus RTU incl. MF20	756037	178,50

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Filter stainless steel, wire mesh (spare part)	231169	⊜	9,05
Mounting flange MF20	612562	⊜	12,10
Weather protection for FTK+, WSA (replacement)	625241	⊜	70,00
For cable entries and sealing inserts please refer to chapter „Accessories"			

Humidity

WSA

Weatherproof humidity and temperature sensor for outdoor applications. The radiation shield protects the sensors from rain, hail and radiated heat. The curved shape of the plates ensure that air can move across the sensors to keep radiated temperature from rooftops and other surrounding surfaces away and guarantee proper measurement. Typical applications are meteorology, greenhouses and industrial environments.

0..10 V / 4..20 mA   USEapp   Modbus   BACnet   **LON** *LOCAL OPERATING NETWORK*

TECHNICAL DATA	
Measured values	humidity, temperature
Output voltage	VV: 2x 0..10 V, min. load 10 kΩ
Output current	AA: 2x 4..20 mA, max. load 500 Ω
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV AA: 15..24 V = (±10%) SELV BUS: 15..35 V = or 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~) VV: max. 0,4 W (24 V =) | 0,8 VA (24 V ~) AA: max. 1 W (24 V =)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, VV | AA: adjustable at the transducer default setting: -20..+80 °C
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app or uConfig
Accuracy temperature	±0,3 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Enclosure	enclosure USE-S BUS: enclosure USE-M, PC, pure white
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²
Pipe	PA6, black, Ø=19,5 mm
Filter	stainless steel wire mesh
Ambient condition	-20..+70 °C, max. 85% rH short term condensation
Mounting	mounting at the wall or at a pole

WSA

Weather protection outdoor sensor humidity + temperature – active 2x 0..10 V | 2x 4..20 mA		HU2
Item description	Item No.	€
WSA VV	626408	265,50
WSA AA	626415	265,50

Weather protection outdoor sensor humidity + temperature – BUS			HU1
Item description	**USE**app	Item No.	€
WSA RS485 Modbus	✓	626439	305,50
WSA RS485 BACnet (MS/TP)	✓	700184	305,50

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

Accessories			AS1
Item description	Item No.	On stock	€
Filter stainless steel, wire mesh (spare part)	231169	⊜	9,05
Weather protection for FTK+, WSA (replacement)	625241	⊜	70,00
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter „Accessories"			

Humidity

FTA54+

Outdoor sensor for measuring relative humidity and temperature in HVAC applications, greenhouses, industrial halls and in meteorology. The output can also be configured to measure absolute humidity, enthalpy or dew point. The optional features, such as relay outputs for 2-point controllers or 2-stage 2-point controllers and an LCD with traffic light indication enable a wide range of applications. Depending on the model, the FTA54+ can be configured individually via Thermokon USEapp. The accuracy of the humidity sensor is 2%. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

FTA54+

FTA54+ LCD

0..10 V / 4..20 mA USEapp Modbus BACnet LON *LOCAL OPERATING NETWORK*

TECHNICAL DATA	
Measured values	humidity, temperature
Output voltage	VV | VVS: 2x 0..10 V (min. load 10 kΩ)
Output current	AA | AAS: 2x 4..20 mA (max. load 500 Ω)
Output passive	VVS | AAS: passive temperature sensor
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV AA | AAS: 15..24 V = (±10%) SELV LCD/relay/BUS: 15..35 V = or 19..29 V ~ SELV
Power consumption	VV | VVS: max. 0,3 W (24 V =) | 0,5 VA (24 V ~) AA | AAS: max. 40 mA (24 V =) LCD/relay/BUS: max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, adjustable at the transducer LCD/relay/RS485 Modbus: optionally configurable via app or uConfig default setting: -20..+80 °C passive: depending on used sensor
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C adjustable at the transducer LCD/relay/RS485 Modbus: optionally configurable via app or uConfig
Accuracy temperature	passive: depending on used sensor ±0,3 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Display	LCD 29x35 mm with RGB backlight, optional
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent

Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²
Pipe	PC, pure white
Filter	stainless steel wire mesh
Ambient condition	-20..+70 °C, max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-M pure white, incl. rain protection PA6, white
Notes	other temperature sensors on request

FTA54+ active

Item description: product | VV / AA / BUS

Outdoor sensor humidity + temperature – active 2x 0..10 V	2x 4..20 mA	relay				HU1
Item description	USEapp	Item No.	On stock	€
FTA54+ VV	✓	659147	⊜	164,20
FTA54+ AA	✓	659154	⊜	164,20
FTA54+ VV relay	✓	661003		209,20
FTA54+ LCD VV	✓	660983		211,70
FTA54+ LCD AA	✓	660990		211,70
FTA54+ LCD VV relay	✓	661010		257,20

FTA54+ BUS

Modbus   **BACnet**

Outdoor sensor humidity + temperature – BUS			HU1
Item description	USEapp	Item No.	€
FTA54+ RS485 Modbus	✓	659178	204,20
FTA54+ LCD RS485 Modbus	✓	661034	254,50
FTA54+ RS485 BACnet (MS/TP)	✓	700191	204,20
FTA54+ LCD RS485 BACnet (MS/TP)	✓	700214	254,50

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Additional passive temperature sensor	14,70
Add to price of RS485 Modbus for LON FT	74,00

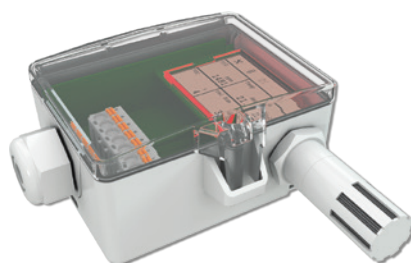| Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Filter stainless steel, wire mesh (spare part)	231169	⊜	9,05
Sun/rain protection PA6 white for outdoor humidity sensors	587709	⊜	6,00
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter „Accessories"			

Humidity

FSR01

Hygrostat for ON/OFF control of ventilation and air conditioning, humidification and dehumidification equipment in rooms and office spaces, data centers, warehouses and similar applications.

FSR01
standard labelling for outside adjustment

TECHNICAL DATA	
Measured values	humidity
Medium	air
Output switch contact	changeover contact, floating dehumidify, max. 250 V, 5 (1) A, min. 100mA, humidify, max. 250 V, 3 (1) A, min. 100mA
Measuring range humidity	30..100% rH non-condensing
Working range humidity	35..95% rH
Accuracy humidity	±3% rH (typ. at 50% rH), average temperature coefficient -0,2% / K, typ at 20 °C, 50% rH
Sensor	Polyga® measuring element, water resistant, washable
Enclosure	PC, pure white
Protection (IP)	IP30 according to EN 60529
Cable entry	breaking points top/bottom, rear entry
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+60 °C
Mounting	flush-mounted on standard EU box (Ø=60 mm) to be mounted flat onto the surface using adhesive foil or screws with frame for surface mounting (accessory) or directly on the wall base part can be mounted and wired separately
Notes	threshold adjustment via potentiometer or internal adjuster

Room hygrostat			HU1
Item description	Item No.	On stock	€
FSR01	427623	⊜	82,10
FSR01 internal adjuster	450607		82,10

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80

FSK01

Hygrostat for ON/OFF control of ventilation and air conditioning, humidification and dehumidification equipment. Designed for applications, where humidity has to be closely controlled or monitored, e.g. in office spaces, data centers, food stores, cooling rooms for fruits and vegetables, greenhouses, the textile industry, paper and printing industries, the film industry, hospitals and similar applications.

FSK01

FSK01 internal adjuster

Humidity

TECHNICAL DATA	
Measured values	humidity
Medium	air
Output switch contact	switching difference, 4% rH (at 50% rH), changeover contact, floating, max. 250V, 15 (2) A
Measuring range humidity	30..100% rH non-condensing
Working range humidity	35..95% rH
Accuracy humidity	typ. ±3,5% (>50% rH), ±4% (<50% rH) average temperature coefficient -0,2% / K, typ at 20 °C, 50% rH
Air speed	max. 8 m/s, with sensor protection max. 15 m/s
Sensor	Polyga® measuring element, water resistant, washable
Enclosure	ABS, pure white, light grey
Protection (IP)	IP54 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Pipe	stainless steel, Ø=16 mm, length 220 mm
Ambient condition	0..+60 °C

Duct hygrostat			HU1
Item description	Item No.	On stock	€
FSK01	427593	⊜	225,80
FSK01 internal adjuster	708517		225,80

Accessories			AS1
Item description	Item No.	On stock	€
PTFE filter	429054	⊜	42,80
Mounting flange MF19	527705	⊜	12,10
Sensor protection (wire mash) for fan speeds 8..15 m/s	429047	⊜	23,10
Wall mounting for duct hygrostat	429030	⊜	39,00

WK01+

Condensation sensor with an LED signal and a relay output for condensation detection on chilled surfaces. For control and monitoring applications or connection to cooling valves to stop the flow of chilled water upon condensation detection. The 'ext.' model uses a 2 m remote sensor for a more flexible installation.

WK01+ 24 V
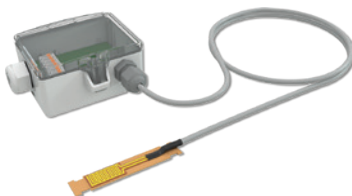
WK01+ ext. 230 V

WK01 UP

TECHNICAL DATA	
Measured values	Conductivity
Output switch contact	changeover contact 24 V: max. 24 V / 1,0 A (resistive, floating) 230 V: max. 230 V ~ / 0,5 A (resistive, floating)
Power supply	24 V: 15..24 V = (±10%) or 24 V ~ (±10%) SELV 230 V: 230 V ~ (±10%)
Power consumption	24 V: typ. 0,8 W (24 V =) | 1,6 VA (24 V ~) 230 V: typ. 3,5 VA
Display	LED green – power supply OK LED red – condensation
Enclosure	WK01+ 24 V: enclosure USE-S, PC, pure white WK01+ 230 V: enclosure USE-L, PC, pure white cover, transparent
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH short term condensation
Delivery content	1x syringe with terminal contact fluid
Notes	WK01 UP: type flush-mounted Berker K1 polar white brilliant, other switch programmes on request WK01 ext.: with external sensor (PVC, diameter 0,25 mm², L=2 m)

WK01+ 24 V

Condensation sensor – 24 V			HU2
Item description	Item No.	On stock	€
WK01+ 24 V	659215	⊜	96,80
WK01+ ext. 24 V L2000	659222	⊜	111,70

WK01+ 230 V

Condensation sensor – 230 V		HU2
Item description	Item No.	€
WK01+ ext. 230 V L2000	659246	153,90

WK01 UP 24V

Item description: product | switch range | colour | volt

Condensation sensor flush-mounted – 24 V		HU2
Item description	Item No.	€
WK01 UP L2500 Berker K.1 polar white brilliant 24 V	446624	137,20

Humidity

thermokon®

WK02+

Condensation sensor with an LED signal and a relay output to prevent condensation on chilled surfaces. For control and monitoring applications or connection to cooling valves to stop the flow of chilled water flow upon condensation. The ‚ext.' model uses a 2m remote sensor for a more flexible installation.
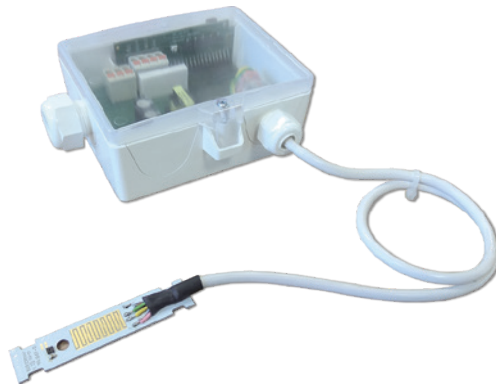
WK02+

TECHNICAL DATA	
Measured values	humidity, temperature, Conductivity
Output voltage	24 V / 230 V: 2x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig)
Output switch contact	changeover contact 24 V: max. 24 V / 1,0 A (resistive, floating) 230 V: max. 230 V ~ / 0,5 A (resistive, floating)
Power supply	24 V: 15..24 V = (±10%) or 24 V ~ (±10%) SELV 230 V: 230 V ~ (±10%)
Power consumption	24 V: typ. 0,8 W (24 V =) | 1,6 VA (24 V ~) 230 V: typ. 3,5 VA
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing, enthalpy: 0..85 KJ/kg, absolute humidity: 0..50 | 0..80 g/m³, dew point: 0..+50 | -20..+80 °C, optionally configurable via app or uConfig
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Display	LED green – power supply OK, LED red – condensation
Enclosure	enclosure USE-L, PC, pure white cover PC, transparent
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Delivery content	1x syringe with terminal contact fluid, incl. mounting base enclosure USE-L pure white
Notes	other cable lengths on request

WK02+ 24 V

Condensation sensor – 24 V		HU2
Item description	Item No.	€
WK02+ ext. 24 V L2000	737180	146,70

WK02+ 230 V

Condensation sensor – 230 V		HU2
Item description	Item No.	€
WK02+ ext. 230 V L2000	737197	159,80

Options	
Item description	€
RS485 BACnet (MS/TP)	45,00
RS485 Modbus	45,00
RS485 BACnet (MS/TP)/RS485 Modbus with 2x input for NTC10k or floating contact (2IN)	55,50

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-L pure white	668361	⊜	11,30
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Humidity

LS02+ / LS02+ ext.

Leakage detector with relay output and two signalling LEDs designed for alarm, control and monitoring applications of containers, false floors, suspended ceilings or rooms for preventing unintended ingress of water. The sensor can be adjusted to different heights so that the response time of the sensor can be adapted to the water level that is to be detected.

TECHNICAL DATA	
Measured values	Conductivity
Output switch contact	changeover contact 24 V: max. 24 V / 1,0 A (resistive, floating)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,6 W (24 V =) | 1,5 VA (24 V ~)
Sensor	detector electrodes stainless steel V2A
Display	LED green – power supply OK LED red – alarm, humidity detected
Enclosure	enclosure USE-S, PC, pure white cover PC, transparent
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm²
Ambient condition	-35..+90 °C, max. 85% rH short term condensation
Mounting	Level compensation by adjustable contacts
Notes	LS02+ ext.: with external sensor (L=5 m), Height/response behaviour can be changed via a conical spiral on the sensor element

Leakage sensor		HU2
Item description	Item No.	€
LS02+	659253	90,20
LS02+ ext. L5000	765725	105,10

Accessories	AS1
Item description	
For cable entries and sealing inserts please refer to chapter „Accessories"	

Pressure & Velocity

Pressure and air flow sensors for cooling and air conditioning must resist extreme conditions. Therefore our products are customized to withstand even the harshest environments.

Pa

» BENEFITS

» Reliable detection of pressure, differential pressure & velocity
» High protection
» Highest accuracies for a precise monitoring
» Selectable measuring ranges for flexibility

DPA+
Differential pressure and
volume flow transducer
with 8 selectable measuring ranges

DLF
Pressure transmitter for detecting
pressure in liquid media

DPL
Differential pressure transducer for
detecting differential pressure
in liquid media

PS
Adjustable differential pressure switch
for detecting differential air pressure

DPG
Differential pressure manometer for
monitoring differential pressure

BACnet

KNX

LON
LOCAL OPERATING NETWORK

enocean

Modbus

Pressure &
Velocity

THE CORRECT PRESSURE

Our customized pressure and flow rate sensors are used for monitoring of pressure, differential pressure, flow rate of liquids
and non-flammable gases in air filters, industrial air cooling cycles and ventilation ducts.

DPA+

Differential pressure transmitter for measuring and monitoring overpressure, underpressure, differential pressure and flow vo-lume of air and other non-aggressive gases in fan and filter systems in duct applications. 8 adjustable pressure and flow volume ranges permit use in HVAC applications of clean rooms, process measurement and controls systems. The optional features, such as relay outputs for 2-point controllers or 2-stage 2-point controllers, an LCD with traffic light indication allow for a wide range of applications. Depending on the model, the DPA+ can be individually configured via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation. ‚Dual' versions with 2 independent sensors for up to 2x differential pressures or 2x flow volume in a single enclosure are available. The mounting base (included in the delivery content) can be used to mount the DPA+ on a flat surface or on DIN rail TS35 (35x7,5 mm) in accordance with EN 60715.

DPA+
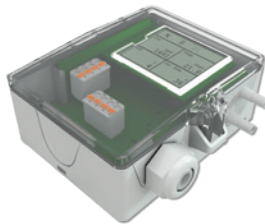
DPA+ LCD

DPA+
with additional cable entry
(refer to mounting accessories USE)

DPA+ Dual

DPA+ LCD Dual

0..10 V / 4..20 mA USEapp Modbus BACnet LON
LOCAL OPERATING NETWORK

TECHNICAL DATA	
Measured values	differential pressure, volume flow
Medium	air or other non-flammable/non-aggressive gases
Output voltage	2x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), Dual: 2x 0..10 V (differential pressure) or 4x 0..10 V (differential pressure and volume flow), min. load 10 kΩ
Output current	2x 4..20 mA, max. load 500 Ω
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology)
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range pressure	type 250: 0..+25 | 0..+50 | 0..+100 | 0..+250 | -25..+25 | -50..+50 | -100..+100 | -150..+150 Pa, type 2500: -100..+100 | 0..+100 | 0..+250 | 0..+500 | 0..+1000 | 0..+1500 | 0..+2000 | 0..+2500 Pa, type 7000: 0..+1000 | 0..+1500 | 0..+2000 | 0..+2500 | 0..+3000 | 0..+4000 | 0..+5000 | 0..+7000 Pa, selectable at the device, Volume flow 0..750.000 m³/h, optionally configurable via Thermokon USEapp
Accuracy pressure	type 250: ±1 Pa at range ‹250 Pa, type 2500: ±5 Pa at range ‹500 Pa, ±10 Pa at range ›500 Pa, type 7000: ±10 Pa at range ‹2000 Pa, ±25 Pa at range ›2000 Pa, deviation from calibration reference device (calibrator)
Max. working overpressure	40 kPa
Calibration	AZ: Automatic zero point calibration (optional)
Sensor	piezo measuring element
Inputs	RS485 BACnet (MS/TP)/RS485 Modbus: 2x input for NTC10k or floating contact (2IN), optional
Display	LCD 29x35 mm with RGB backlight, optional measured values: pressure in Pa or inchWC, volume flow in m3/h oder cfm, configurable via app or uConfig
Enclosure	enclosure USE-L, PC, pure white
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm², BUS terminal: removable plug-in terminal, max. 1,5 mm²
Connection mechanical	pressure connection male Ø=5,0 mm / Ø=6,3 mm, connection tube: PVC, soft
Ambient condition	-10..+50 °C, max. 85% rH short term condensation
Mounting	screw mounted onto flat surface, prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	2 mounting screws, 2 plastic duct flanges, 2 m PVC connection tube, Dual: 2x2 each, incl. mounting base enclosure USE-L pure white

Pressure & Velocity

DPA+ active

Differential pressure and volume flow transducer – 2x 0..10 V				PR2
Item description	USEapp	Item No.	On stock	€
DPA250+ VV MultiRange	✓	659321	⊜	131,90
DPA2500+ VV MultiRange	✓	659369	⊜	131,90
DPA7000+ VV MultiRange	✓	659376	⊜	131,90
DPA250+ VV AZ MultiRange	✓	692397		187,40
DPA2500+ VV AZ MultiRange	✓	675970		187,40
DPA7000+ VV AZ MultiRange	✓	675994		187,40

Differential pressure and volume flow transducer – 2x 4..20 mA				PR2
Item description	USEapp	Item No.	On stock	€
DPA250+ AA MultiRange	✓	666978	⊜	131,90
DPA2500+ AA MultiRange	✓	666985	⊜	131,90
DPA7000+ AA MultiRange	✓	666992	⊜	131,90
DPA250+ AA AZ MultiRange	✓	691598		187,40
DPA2500+ AA AZ MultiRange	✓	693981		187,40
DPA7000+ AA AZ MultiRange	✓	705325		187,40

Differential pressure and volume flow transducer – 2x 0..10 V + relay			PR1
Item description	USEapp	Item No.	€
DPA250+ VV MultiRange relay	✓	663687	172,00
DPA2500+ VV MultiRange relay	✓	663694	172,00
DPA7000+ VV MultiRange relay	✓	663700	172,00

Differential pressure and volume flow transducer – 2x 0..10 V				PR1
Item description	USEapp	Item No.	On stock	€
DPA250+ LCD VV MultiRange	✓	659383	⊜	175,80
DPA2500+ LCD VV MultiRange	✓	659390	⊜	175,80
DPA7000+ LCD VV MultiRange	✓	659406	⊜	175,80
DPA250+ LCD VV AZ MultiRange	✓	688420		231,30
DPA2500+ LCD VV AZ MultiRange	✓	676007		231,30
DPA7000+ LCD VV AZ MultiRange	✓	676021		231,30

Differential pressure and volume flow transducer – 2x 4..20 mA				PR1
Item description	USEapp	Item No.	On stock	€
DPA250+ LCD AA MultiRange	✓	667104	⊜	175,80
DPA2500+ LCD AA MultiRange	✓	667111	⊜	175,80
DPA7000+ LCD AA MultiRange	✓	667128	⊜	175,80
DPA250+ LCD AA AZ MultiRange	✓	700962		231,30
DPA2500+ LCD AA AZ MultiRange	✓	679725		231,30
DPA7000+ LCD AA AZ MultiRange	✓	703147		231,30

Differential pressure and volume flow transducer – 2x 0..10 V + relay			PR1
Item description	USEapp	Item No.	€
DPA250+ LCD VV MultiRange relay	✓	663724	202,80
DPA2500+ LCD VV MultiRange relay	✓	663748	202,80
DPA7000+ LCD VV MultiRange relay	✓	663755	202,80

DPA+ BUS

Item description: product | BUS | AZ (automatic zero-point calibration) | MultiRange

Modbus

Differential pressure and volume flow transducer – RS485 Modbus			PR1
Item description	USEapp	Item No.	€
DPA250+ RS485 Modbus MultiRange	✓	659413	136,20
DPA2500+ RS485 Modbus MultiRange	✓	659420	136,20
DPA7000+ RS485 Modbus MultiRange	✓	659437	136,20
DPA250+ RS485 Modbus AZ MultiRange	✓	693745	191,70
DPA2500+ RS485 Modbus AZ MultiRange	✓	676083	191,70
DPA7000+ RS485 Modbus AZ MultiRange	✓	676090	191,70

Modbus

Differential pressure and volume flow transducer – RS485 Modbus			PR1
Item description	USEapp	Item No.	€
DPA250+ LCD RS485 Modbus MultiRange	✓	659444	180,10
DPA2500+ LCD RS485 Modbus MultiRange	✓	659451	180,10
DPA7000+ LCD RS485 Modbus MultiRange	✓	659468	180,10
DPA250+ LCD RS485 Modbus AZ MultiRange	✓	697767	235,60
DPA2500+ LCD RS485 Modbus AZ MultiRange	✓	676106	235,60
DPA7000+ LCD RS485 Modbus AZ MultiRange	✓	676113	235,60

ASHRAE BACnet

Differential pressure and volume flow transducer – RS485 BACnet (MS/TP)			PR1
Item description	USEapp	Item No.	€
DPA250+ RS485 BACnet (MS/TP) MultiRange	✓	700221	136,20
DPA2500+ RS485 BACnet (MS/TP) MultiRange	✓	700238	136,20
DPA7000+ RS485 BACnet (MS/TP) MultiRange	✓	700252	136,20
DPA250+ RS485 BACnet (MS/TP) AZ MultiRange	✓	705387	191,70
DPA2500+ RS485 BACnet (MS/TP) AZ MultiRange	✓	700306	191,70
DPA7000+ RS485 BACnet (MS/TP) AZ MultiRange	✓	700313	191,70

ASHRAE BACnet

Differential pressure and volume flow transducer – RS485 BACnet (MS/TP)			PR1
Item description	USEapp	Item No.	€
DPA250+ LCD RS485 BACnet (MS/TP) MultiRange	✓	700269	180,10
DPA2500+ LCD RS485 BACnet (MS/TP) MultiRange	✓	682855	180,10
DPA7000+ LCD RS485 BACnet (MS/TP) MultiRange	✓	683463	180,10
DPA250+ LCD RS485 BACnet (MS/TP) AZ MultiRange	✓	705370	235,60
DPA2500+ LCD RS485 BACnet (MS/TP) AZ MultiRange	✓	700320	235,60
DPA7000+ LCD RS485 BACnet (MS/TP) AZ MultiRange	✓	700337	235,60

OPTIONS

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Options	
Item description	€
RS485 BACnet (MS/TP)/RS485 Modbus with 2x input for NTC10k or floating contact (2IN)	55,50
Add to price of RS485 Modbus for LON FT	74,00

Pressure & Velocity

DPA+ Dual active

Item description: product | VV/4xV | MultiRange

Dual differential pressure transducer – active 2x 0..10 V	2x 4..20 mA			PR1
Item description	USEapp	Item No.	€
DPA2500+ Dual VV MultiRange	✓	700344	197,00
DPA2500+ Dual AA MultiRange	✓	702898	197,00
DPA2500+ LCD Dual VV MultiRange	✓	705417	240,90
DPA2500+ LCD Dual AA MultiRange	✓	705431	240,90

Dual differential pressure and volume flow transducer – active 4x 0..10 V			PR1
Item description	USEapp	Item No.	€
DPA2500+ Dual 4xV MultiRange	✓	705448	209,70
DPA2500+ LCD Dual 4xV MultiRange	✓	700351	253,60

DPA+ Dual BUS

Item description: product | BUS | MultiRange

Modbus   BACnet

Dual differential pressure and volume flow transducer – BUS			PR1
Item description	USEapp	Item No.	€
DPA2500+ Dual RS485 Modbus	✓	703000	219,60
DPA2500+ Dual RS485 BACnet (MS/TP)	✓	703017	219,60
DPA2500+ LCD Dual RS485 Modbus	✓	705455	263,50
DPA2500+ LCD Dual RS485 BACnet (MS/TP)	✓	705462	263,50

LON
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Options	€
Item description	€
Automatic zero-point calibration dual (2x AZ)	111,00
RS485 BACnet (MS/TP)/RS485 Modbus Dual with 2x input for NTC10k or floating contact (2IN)	30,80
Add to price of RS485 Modbus for LON FT	74,00

Accessories				AS1
Item description	Length	Item No.	On stock	€
T-hose connector for pressure hoses Ø=4 mm (10 pcs)		668323	⊜	30,70
Adapter 90° angle for pressure hoses Ø=4 mm		668330	⊜	8,25
Mounting base enclosure USE-L pure white		668361	⊜	11,30
Metal duct connector MKS40	40 mm	265138	⊜	4,15
Metal duct connector MKS100	100 mm	302531	⊜	4,95
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)		668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)		597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter „Accessories"				

PS

Adjustable differential pressure switch for air and other non-flammable and non-aggressive gases. Designed for monitoring air filters, fans, damper actuators and other industrial processes. Mounting accessories are included in the delivery content.

TECHNICAL DATA	
Measured values	differential pressure
Medium	air, non-aggressive gases, non-flammable gases
Output switch contact	NO/NC circuit, switching difference, 20 Pa, PS1500: 80 Pa, PS4500: 180 Pa
Measuring range pressure	PS300: 30..300 Pa, PS500: 30..500 Pa, PS1500: 100..1500 Pa, PS4500: 500..4500 Pa
Accuracy pressure	typ. ±5 Pa, PS1500 typ. ±10 Pa, PS4500 typ. ±50 Pa
Max. working overpressure	50 kPa
Switching values	switching capacity max. 3 A resistive load, 2 A inductive load, max. 250 V ~, miniature switches with silver contacts, service life: >1.000.000 switching operations
Enclosure	ABS, cover PC, membrane silicone
Protection (IP)	IP54 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Electrical connection	terminal block, max. 1,5 mm²
Connection mechanical	pressure connection: ABS, connection tube: PVC, soft
Ambient condition	-20..+60 °C, max. 85% rH short term condensation
Delivery content	2 mounting screws, 2 plastic duct flanges, 2 m PVC connection tube soft, Ø=4/7 mm

Differential pressure switch			PR2
Item description	Item No.	On stock	€
PS300	269971	⊜	30,20
PS500	269995	⊜	30,20
PS1500	255202	⊜	30,20
PS4500	273138	⊜	30,20

Accessories				AS1
Item description	Length	Item No.	On stock	€
T-hose connector for pressure hoses Ø=4 mm (10 pcs)		668323	⊜	30,70
Adapter 90° angle for pressure hoses Ø=4 mm		668330	⊜	8,25
Metal duct connector MKS40	40 mm	265138	⊜	4,15
Metal duct connector MKS100	100 mm	302531	⊜	4,95
Mounting bracket differential pressure switch 110x80x20 mm		669009	⊜	3,60

Pressure & Velocity

AVT

Air velocity transmitter with 3 field-selectable measuring ranges for measuring and monitoring air velocities in ventilation systems in order to control regulation flaps or damper actuators. An integrated LCD and relay contacts for limiting the air volume are available as options.

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	air velocity, temperature
Medium	air or other non-flammable/non-aggressive gases
Output voltage	2x 0..10 V, min. load 1 kΩ
Output current	2x 4..20 mA, max. load 400 Ω
Output switch contact	AVT LCD relay: relay with change-over contact (volt free contact), 250 V ~ / 6 A, 30 V = / 6 A
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 2 W, AVT-R LCD: max. 2,4 W
Measuring range temp.	0..+50 °C
Measuring range velocity	0..2 m/s, 0..10 m/s, 0..20 m/s, selectable at the device
Accuracy temperature	‹0,5 K (v› 0,5 m/s), ±0,5 K (typ. at 21 °C)
Accuracy velocity	0..2 m/s: ‹0,2 m/s + 5% of measuring value, 0..10 m/s: ‹0,5 m/s + 5% of measuring value, 0..20 m/s: ‹1,0 m/s + 5% of measuring value (typ. at 21 °C)
Sensor	calorimetric measuring principle
Display	LCD 3,5", 45.7 x 12.7 mm, optional, for indication of measured values
Enclosure	ABS, cover PC
Protection (IP)	IP54 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm, AVT-R LCD: 2x M16
Electrical connection	terminal block, max. 1,5 mm²
Pocket	stainless steel V2A, L=210 mm
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Delivery content	incl. mounting flange
Notes	optional with display „LCD", optional with relay, Adjustable Immersion length: 50..180 mm, using mounting flange, adjustable switching threshold and hysteresis

Air velocity transmitter – 2x 0..10 V | 2x 4..20 mA			PR1
Item description	Item No.	On stock	€
AVT	430005	⊜	150,70
AVT LCD	430036	⊜	193,30
AVT LCD relay	430067	⊜	213,60

MM

Compact inclined tube manometer for displaying and monitoring differential air pressure in HVAC applications. Mounting accessories are included in the delivery content.

TECHNICAL DATA	
Measured values	differential pressure
Medium	air, non-aggressive gases non-flammable gases
Operating temperature range	-40..+60 °C MM PS: -20..+60 °C
Measuring range pressure	MM50: -50..50 Pa, MM100: -20..100 Pa, MM500: -100..500 Pa, MM600: 0..600 Pa
Accuracy pressure	MM50 | MM100: 1 Pa, MM500: 5 Pa (-100..0 Pa) / 25 Pa (1..500 Pa), MM600: 5 Pa (0..200 Pa) / 25 Pa (201..600 pA)
Max. working overpressure	200 kPa, MM PS: 50 kPa
Switching values	MM PS: switching capacity max. 3 A resistive load, 2 A inductive load
Enclosure	ABS, cover PMMA, MM PS: cover PC, membrane silicone
Protection (IP)	IP54 according to EN 60529
Cable entry	MM PS: M16 for wire max. Ø=8 mm
Electrical connection	MM PS: terminal, max. 1,5 mm²
Connection mechanical	connection tube: PVC, soft, MM PS: pressure connection ABS
Ambient condition	MM PS: -40..+85 °C, max. 85% rH short term condensation
Delivery content	2 mounting screws, 2 plastic duct flanges, 2 m PVC connection tube soft, Ø=4/7 mm, 30 ml gauge fluid, 2 indication stickers (red/green)

Differential pressure inclined tube manometer			PR1
Item description	Item No.	On stock	€
MM50 (-50..+50 Pa)	268912	⊜	46,90
MM100 (-20..100 Pa)	284516	⊜	46,90
MM500 (-100..500 Pa)	384452	⊜	46,90
MM600 (0..600 Pa)	255240	⊜	46,90

Differential pressure inclined tube manometer with switch contact			PR1
Item description	Item No.	On stock	€
MM600/PS600 (0..600 Pa)	255257	⊜	118,10

Pressure & Velocity

DPG

Compact manometer for displaying and monitoring differential air pressure in HVAC applications. Mounting accessories are included in the delivery content.

TECHNICAL DATA	
Measured values	differential pressure
Medium	air, non-aggressive gases, non-flammable gases
Operating temperature range	-20..+60 °C
Measuring range pressure	DPG60: 0..60 Pa DPG100: 0..100 Pa DPG250: 0..250 Pa DPG500: 0..500 Pa DPG1500: 0..1500 Pa DPG2500: 0..2500 Pa
Accuracy pressure	‹±2% of measuring range DPG60: ‹±5% of measuring range DPG100: ‹±4% of measuring range
Display	display Ø=100 mm
Enclosure	aluminium cover PC, transparent
Protection (IP)	IP65 (mounted) according to EN 60529
Connection mechanical	connection tube: PVC, soft
Ambient condition	max. 85% rH short term condensation
Delivery content	2 mounting screws, 2 plastic duct flanges, 2 m PVC connection tube, 2 m PVC connection tube soft, Ø=4/7 mm
Notes	please contact us for other ranges

Differential pressure gauge			PR1
Item description	Item No.	On stock	€
DPG60	718493	⊜	99,20
DPG100	718509	⊜	99,20
DPG250	718516	⊜	99,20
DPG500	718523	⊜	99,20
DPG1500	718530	⊜	99,20
DPG2500	718547	⊜	99,20

Accessories				AS1
Item description	Length	Item No.	On stock	€
T-hose connector for pressure hoses Ø=4 mm (10 pcs)		668323	⊜	30,70
Adapter 90° angle for pressure hoses Ø=4 mm		668330	⊜	8,25
Metal duct connector MKS40	40 mm	265138	⊜	4,15
Metal duct connector MKS100	100 mm	302531	⊜	4,95

DPGe

Compact electronic differential pressure manometer for displaying and monitoring differential air pressure in HVAC applications. Easy to retrofit in existing installations as the DPGe uses a AAA battery as a power supply.

TECHNICAL DATA	
Measured values	differential pressure
Medium	air, non-aggressive gases, non-flammable gases
Operating temperature range	-10..+50 °C
Measuring range pressure	0..2500 Pa
Display	LCD 29x35 mm with RGB backlight
Enclosure	enclosure USE-M, PC, pure white, cover PC, transparent
Protection (IP)	IP65 according to EN 60529
Connection mechanical	connection tube: PVC, soft
Ambient condition	max. 85% rH short term condensation
Delivery content	incl. battery (type AAA), 2 plastic duct flanges, 2 m PVC connection tube, incl. mounting base enclosure USE-M pure white, incl. universal mounting set (cover screw, self-drilling screws, dowels, spax screws and screw cover)

Electronic differential pressure indicator		PR1
Item description	Item No.	€
DPGe	736176	117,60

Accessories				AS1
Item description	Length	Item No.	On stock	€
Mounting base enclosure USE-M pure white		668354	⊜	8,10
T-hose connector for pressure hoses Ø=4 mm (10 pcs)		668323	⊜	30,70
Adapter 90° angle for pressure hoses Ø=4 mm		668330	⊜	8,25
Metal duct connector MKS40	40 mm	265138	⊜	4,15
Metal duct connector MKS100	100 mm	302531	⊜	4,95

Pressure & Velocity

DLF

Pressure transmitter for measuring absolute pressure of liquids, air or non-aggressive gases. Designed for use in refrigeration, hydraulics, production plants and processes. The dense stainless steel membrane makes the sensor suitable for use with refrigerants as well. For a quick & easy connection, a 5 m cable with a pre-installed connector is available (see ‚Accessories‘). The DLF can be optionally equipped with a 4-digit LED display (see ‚UD-A‘ - 4..20 mA versions only).

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	pressure
Medium	fluids, air or other non-flammable/non-aggressive gases
Output voltage	0..10 V, min. load 5 kΩ
Output current	4..20 mA, max. load 600 Ω
Power supply	V: 15..24 V = (±10%) or 24 V ~ (±10%) SELV, A: 15..24 V = (±10%) SELV
Power consumption	V: typ. 0,15 W	0,3 VA, A: max. 0,5 W
Operating temperature range	-40..+125 °C
Measuring range pressure	depending on device
Accuracy pressure	±0,5% (typ. at +25 °C)
Max. working overpressure	2 nominal pressure
Enclosure	wetted parts stainless steel V2A
Protection (IP)	IP65 according to EN 60529
Electrical connection	plug MVS according to DIN EN175301-803
Connection mechanical	G 1/2“, G 1/4“
Ambient condition	-40..+105 °C
Notes	please contact us for other ranges

Accessories			AS1
Item description	Item No.	On stock	€
Connection wire DLF/DPL – connection plug and wire 5 m	668309	⊜	12,90
UD-A – universal display for 4..20 mA	718189	⊜	89,00

Pressure transmitter G1/4“ – 0..10 V			PR1
Item description	Item No.	On stock	€
DLF-1..0 V G1/4“	665070		108,10
DLF1 V G1/4“	665087	⊜	108,10
DLF1,6 V G1/4“	665094		108,10
DLF2 V G1/4“	665100		108,10
DLF2,5 V G1/4“	665117	⊜	108,10
DLF4 V G1/4“	665124	⊜	108,10
DLF6 V G1/4“	665131	⊜	108,10
DLF10 V G1/4“	665148	⊜	108,10
DLF16 V G1/4“	665155	⊜	108,10
DLF25 V G1/4“	665162	⊜	108,10
DLF40 V G1/4“	665179		108,10
DLF60 V G1/4“	665186		108,10
DLF100 V G1/4“	665193		108,10

DLF

Item description: product | V/A | thread

Pressure transmitter G1/2" – 0..10 V			PR1
Item description	Item No.	On stock	€
DLF-1..0 V G1/2"	682541		114,80
DLF1 V G1/2"	681193	⊜	114,80
DLF1,6 V G1/2"	682558		114,80
DLF2 V G1/2"	682565		114,80
DLF2,5 V G1/2"	681209	⊜	114,80
DLF4 V G1/2"	681216	⊜	114,80
DLF6 V G1/2"	681223	⊜	114,80
DLF10 V G1/2"	681230	⊜	114,80
DLF16 V G1/2"	681247	⊜	114,80
DLF25 V G1/2"	681254	⊜	114,80
DLF40 V G1/2"	682572		114,80
DLF60 V G1/2"	682589		114,80
DLF100 V G1/2"	682596		114,80

Pressure transmitter G1/4" – 4..20 mA			PR1
Item description	Item No.	On stock	€
DLF-1..0 A G1/4"	665209		102,20
DLF1 A G1/4"	665216	⊜	102,20
DLF1,6 A G1/4"	665223		102,20
DLF2 A G1/4"	665230		102,20
DLF2,5 A G1/4"	665247	⊜	102,20
DLF4 A G1/4"	665254	⊜	102,20
DLF6 A G1/4"	665261	⊜	102,20
DLF10 A G1/4"	665278	⊜	102,20
DLF16 A G1/4"	665285	⊜	102,20
DLF25 A G1/4"	665292	⊜	102,20
DLF40 A G1/4"	665308		102,20
DLF60 A G1/4"	665315		102,20
DLF100 A G1/4"	665322		102,20

Pressure transmitter G1/2" – 4..20 mA			PR1
Item description	Item No.	On stock	€
DLF-1..0 A G1/2"	682602		108,90
DLF1 A G1/2"	681261	⊜	108,90
DLF1,6 A G1/2"	682619		108,90
DLF2 A G1/2"	682626		108,90
DLF2,5 A G1/2"	681278	⊜	108,90
DLF4 A G1/2"	681285	⊜	108,90
DLF6 A G1/2"	681292	⊜	108,90
DLF10 A G1/2"	681308	⊜	108,90
DLF16 A G1/2"	681315	⊜	108,90
DLF25 A G1/2"	681322	⊜	108,90
DLF40 A G1/2"	682633		108,90
DLF60 A G1/2"	682640		108,90
DLF100 A G1/2"	682657		108,90

Pressure & Velocity

DPL

Differential pressure transmitter for measuring differential pressure in liquids. Typical areas of application include supply and return liquid flows in HVAC systems and process engineering as well as the monitoring of filters and compressors. For a quick & easy connection, a 5 m cable with pre-installed connector is available (see ‚Accessories'). The DPL can be optionally equipped with a 4-digit LED display (see ‚UD-A' - 4..20 mA versions only).

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	differential pressure
Medium	fluids
Output voltage	0..10 V, min. load 2 kΩ
Output current	4..20 mA, max. load 900 Ω
Power supply	V: 15..24 V = (±10%) or 24 V ~ (±10%) SELV, A: 15..24 V = (±10%) SELV
Power consumption	V: typ. 0,37 W (24 V =) | 0,9 VA (24 V ~), A: max. 0,5 W
Operating temperature range	-10..+80 °C
Measuring range pressure	DPL1: 0..+1 bar, DPL2,5: 0..+2,5 bar, DPL4: 0..+4 bar, DPL6: 0..+6 bar
Accuracy pressure	‹±1% of measuring range (typ. at -5..+75 °C)
Enclosure	stainless steel V2A, cover: aluminium pressure die casting, measuring cell ceramic
Protection (IP)	IP65 according to EN 60529
Electrical connection	angle plug according to DIN 43650
Connection mechanical	G 1/4"
Ambient condition	-10..+50 °C
Notes	please contact us for other ranges

Differential pressure transmitter – 0..10 V			PR1
Item description	Item No.	On stock	€
DPL1 V	346580	⊜	314,00
DPL2,5 V	346665	⊜	314,00
DPL4 V	346672	⊜	314,00
DPL6 V	346689	⊜	314,00

Differential pressure transmitter – 4..20 mA			PR1
Item description	Item No.	On stock	€
DPL1 A	346597	⊜	314,00
DPL2,5 A	346696	⊜	314,00
DPL4 A	346702	⊜	314,00
DPL6 A	346719	⊜	314,00

Accessories			AS1
Item description	Item No.	On stock	€
Connection wire DLF/DPL – connection plug and wire 5 m	668309	⊜	12,90
UD-A – universal display for 4..20 mA	718189	⊜	89,00
Mounting bracket differential pressure transmitter 40x40x60 mm	663892	⊜	9,15
Screw connection set Ø=6 mm stainless steel (2 pcs.)	373388	⊜	58,00
Screw connection set Ø=6 mm brass (2 pcs.)	373401	⊜	13,70
Screw connection set Ø=8 mm stainless steel (2 pcs.)	373395	⊜	66,60
Screw connection set Ø=8 mm brass (2 pcs.)	373418	⊜	13,80

Air Quality

Mixed gas and CO2 sensors provide for an individual and demand-controlled fresh air supply. In modern buildings the use of these sensors is essential in order to increase energy savings and care for highest comfort levels in living and working spaces.

Air Quality

ASHRAE **BACnet**   **KNX**®   **LON** LOCAL OPERATING NETWORK   **enocean**®   **Modbus**

» ALL CO2 SENSORS WITH AUTOMATIC SELF CALIBRATION

LK+
Duct sensor
CO_2/VOC/temperature/rH

NOVOS 3 CO2 TLF
Room sensor CO2/temp./rH,
available with display (NOVOS 5 CO2)
and traffic light indication (TLF)

» BENEFITS

» Reliable detection of CO2 and mixed gases (VOC)
» Physical and emotional well-being through demand-controlled fresh air supply
» Automatic self-calibration for CO_2 using intelligent "Dual Channel" technology
» Optional temperature and humidity integrated

Function overview duct sensors

Page: starting from 408

Duct sensors — legend: ■ standard, □ optional

Output / function	CO2+VOC VV	CO2+VOC AA	CO2+VOC VV relay	CO2+VOC Temp 3xV	CO2+VOC Temp_rH 4xV	CO2 V	CO2 Temp VV	CO2 Temp AA	CO2 Temp VV relay	CO2 Temp_rH 3xV	CO2 100 V	CO2 100 Temp VV	CO2 100 Temp AA	CO2 100 Temp VV relay	CO2 100 Temp_rH 3xV	VOC V	VOC Temp VV	VOC Temp AA	VOC Temp VV relay	VOC Temp_rH 3xV
CO2 0..10 V	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					
CO2 4..20 mA		■						■					■							
VOC 0..10 V	■	■	■	■	■											■	■	■	■	■
VOC 4..20 mA		■																■		
Temp. 0..10 V				■	■		■	■	■	■		■	■	■	■		■	■	■	■
Temp. 4..20 mA								■					■					■		
Humidity 0..10 V					■					■					■					■
BUS RS485 Modbus	□			□	□		□			□		□			□		□			□
BUS RS485 BACnet	□			□	□		□			□		□			□		□			□
Pipe length 180 mm				■	■		■	■	■	■							■	■	■	■
Pipe length 150 mm	■	■	■			■										■				
Pipe length 100 mm												■	■	■	■					
Pipe length 70 mm											■									
additional pass. Sensor		□	□					□	□				□	□				□	□	
Cable entry M20	■	■		■	■	■	■	■		■	■	■	■		■	■	■	■		■
Cable entry M25			■						■					■					■	
Relay configurable			■						■					■					■	
LCD	□	□	□	□	□		□	□	□	□		□	□	□	□	□	□	□	□	□
TLF Traffic Light Function	□	□	□	□	□		□	□	□	□		□	□	□	□	□	□	□	□	□

Explanation: ■ standard   □ optional

Air Quality

NOVOS 5 CO2+VOC

Room sensor in the NOVOS design for measuring CO2, mixed gas (VOC), temperature and humidity (relative, absolute, enthalpy, dew point) and displaying measured values through an integrated LCD with traffic light indication. The maintenance-free sensor forms the basis for a pleasant room climate and well-being. Especially designed for use in schools, office buildings, hotels, cinemas and similar applications. Threshold values and display settings can be configured individually via Thermokon NOVOSapp. For models with set point and fan stage adjustment, please refer to the 'NOVOS 5 x' in the chapter 'Room Operating Units'.

NOVOS 5 CO2+VOC white LCD

NOVOS 5 CO2+VOC white design LCD with design cover black

NOVOS 5 CO2+VOC white design LCD with design cover alu

0..10 V / 4..20 mA   **Modbus**   **BACnet**

TECHNICAL DATA	
Measured values	CO2, VOC, temperature + humidity (depending on the device) each output can be set to get a variable mix of CO2 and VOC by configuration
Output voltage	VV: 2x 0..10 V 3xV: 3x 0..10 V 4xV: 4x 0..10 V 0..10 V or 0..5 V (live-zero can be configured via app or uConfig) min. load 10 kΩ
Output current	AA: 2x 4..20 mA max. load 500 Ω
Network technology	RS485 BACnet (MS/TP) RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV
Measuring range temp.	0..+50 °C
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app, uConfig or BUS
Measuring range CO2	0..2000 ppm | 0..5000 ppm, optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	self-calibration CO2: Dual Channel
Sensor	VOC sensor (heated metal oxide semiconductor) CO2: NDIR (non-dispersive, infrared)
Inputs	RS485 Modbus: 1x input for floating contact
Display	LCD 29x35 mm with RGB backlight indicating air quality by switching display color (traffic light function 'TLF')
Colour	pure white, black or aluminium
Enclosure	PC V0, design cover pure white, black or aluminium
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories) mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue …)

Air Quality

NOVOS 5 CO2+VOC active

Room sensor CO2 + VOC or mix – active 2x 0..10 V | 2x 4..20 mA		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white LCD VV	735599	320,80
NOVOS 5 CO2+VOC white LCD AA	735667	320,80

Room sensor CO2 + VOC or mix design – active 2x 0..10 V | 2x 4..20 mA (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white design LCD VV	735605	320,80
NOVOS 5 CO2+VOC white design LCD AA	735674	320,80

Room sensor CO2 + VOC or mix + temperature – active 3x 0..10 V		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white Temp LCD 3xV	735629	340,80

Room sensor CO2 + VOC or mix + temperature design – active 3x 0..10 V (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white Temp design LCD 3xV	735636	340,80

Room sensor CO2 + VOC or mix + temperature + humidity – active 4x 0..10 V		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white Temp_rH LCD 4xV	735643	380,80

Room sensor CO2 + VOC or mix + temperature + humidity design – active 4x 0..10 V (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white Temp_rH design LCD 4xV	735650	380,80

NOVOS 5 CO2+VOC BUS

Room sensor CO2 + VOC or mix – BUS		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white LCD RS485 Modbus	735513	357,80
NOVOS 5 CO2+VOC white LCD RS485 BACnet (MS/TP)	755559	357,80

Room sensor CO2 + VOC or mix design – BUS (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white design LCD RS485 Modbus	735520	357,80
NOVOS 5 CO2+VOC white design LCD RS485 BACnet (MS/TP)	755580	357,80

NOVOS 5 CO2+VOC BUS

Room sensor CO2 + VOC or mix + temperature – BUS		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white Temp LCD RS485 Modbus	735728	377,80
NOVOS 5 CO2+VOC white Temp LCD RS485 BACnet (MS/TP)	755597	377,80

Room sensor CO2 + VOC or mix + temperature design – BUS (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white Temp design LCD RS485 Modbus	735735	377,80
NOVOS 5 CO2+VOC white Temp design LCD RS485 BACnet (MS/TP)	755634	377,80

Room sensor CO2 + VOC or mix + temperature + humidity – BUS		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white Temp_rH LCD RS485 Modbus	735742	417,80
NOVOS 5 CO2+VOC white Temp_rH LCD RS485 BACnet (MS/TP)		417,80

Room sensor CO2 + VOC or mix + temperature + humidity design – BUS (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2+VOC white Temp_rH design LCD RS485 Modbus	735759	417,80
NOVOS 5 CO2+VOC white Temp_rH design LCD RS485 BACnet (MS/TP)	755665	417,80

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

NOVOS 5 CO2

Room sensor in the NOVOS design for measuring CO_2, temperature and humidity (relative, absolute, enthalpy, dew point) and displaying measured values through an integrated LCD with traffic light indication. The maintenance-free sensor forms the basis for a pleasant room climate and well-being. Especially designed for use in schools, office buildings, hotels, cinemas and similar applications. Threshold values and display settings can be configured individually via Thermokon NOVOSapp. For models with set point and fan stage adjustment, please refer to the 'NOVOS 5 x' in the chapter 'Room Operating Units'.

NOVOS 5 CO2 white LCD

NOVOS 5 CO2 white design LCD
with design cover black

NOVOS 5 CO2 white design LCD
with design cover alu

0..10 V / 4..20 mA   Modbus   BACnet

TECHNICAL DATA	
Measured values	CO2, temperature + humidity (depending on the device)
Output voltage	V: 1x 0..10 V VV: 2x 0..10 V 3xV: 3x 0..10 V 0..10 V or 0..5 V (live-zero can be configured via app or uConfig) min. load 10 kΩ
Output current	A: 1x 4..20 mA AA: 2x 4..20 mA 3xA: 3x 4..20 mA max. load 500 Ω
Network technology	RS485 BACnet (MS/TP) RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV
Measuring range temp.	0..+50 °C
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app, uConfig or BUS
Measuring range CO2	0..2000 ppm | 0..5000 ppm, optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	self-calibration, Dual Channel
Sensor	NDIR (non-dispersive, infrared)
Inputs	RS485 Modbus: 1x input for floating contact
Display	LCD 29x35 mm with RGB backlight indicating air quality by switching display color (traffic light function 'TLF')
Colour	pure white, black or aluminium
Enclosure	PC V0, design cover pure white, black or aluminium
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories)

Air Quality

NOVOS 5 CO2 active

Room sensor CO2 + temperature – active 2x 0..10 V | 2x 4..20 mA		AQ1
Item description	Item No.	€
NOVOS 5 CO2 white Temp LCD VV	734202	265,80
NOVOS 5 CO2 white Temp LCD AA	734240	265,80

Room sensor CO2 + temperature design – active 2x 0..10 V | 2x 4..20 mA (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2 white Temp design LCD VV	734219	265,80
NOVOS 5 CO2 white Temp design LCD AA	734257	265,80

Room sensor CO2 + temperature + humidity – active 3x 0..10 V | 3x 4..20 mA		AQ1
Item description	Item No.	€
NOVOS 5 CO2 white Temp_rH LCD 3xV	734226	305,80
NOVOS 5 CO2 white Temp_rH LCD 3xA	734264	325,80

Room sensor CO2 + temperature + humidity design – active 3x 0..10 V | 3x 4..20 mA (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2 white Temp_rH design LCD 3xV	734233	305,80
NOVOS 5 CO2 white Temp_rH design LCD 3xA	734271	325,80

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

NOVOS 5 CO2 BUS

BACnet **Modbus**

Room sensor CO2 + temperature – BUS		AQ1
Item description	Item No.	€
NOVOS 5 CO2 white Temp LCD RS485 Modbus	734295	302,80
NOVOS 5 CO2 white Temp LCD RS485 BACnet	755672	302,80

Room sensor CO2 + temperature design – BUS (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2 white Temp design LCD RS485 Modbus	734301	302,80
NOVOS 5 CO2 white Temp design LCD RS485 BACnet (MS/TP)	755689	302,80

Room sensor CO2 + temperature + humidity – BUS		AQ1
Item description	Item No.	€
NOVOS 5 CO2 white Temp_rH LCD RS485 Modbus	734639	342,80
NOVOS 5 CO2 white Temp_rH LCD RS485 BACnet (MS/TP)	755696	342,80

Room sensor CO2 + temperature + humidity design – BUS (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 CO2 white Temp_rH design LCD RS485 Modbus	734646	342,80
NOVOS 5 CO2 white Temp_rH design LCD RS485 BACnet (MS/TP)	755702	342,80

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Air Quality

NOVOS 5 VOC

Room sensor in the NOVOS design for measuring mixed gas (VOC), temperature and humidity (relative, absolute, enthalpy, dew point) and displaying measured values through an integrated LCD with traffic light indication. The maintenance-free sensor forms the basis for a pleasant room climate and well-being. Especially designed for use in schools, office buildings, hotels, cinemas and similar applications. Threshold values and display settings can be configured individually via the Thermokon NOVOSapp. For models with set point and fan stage adjustment, please refer to the 'NOVOS 5 x' in the chapter 'Room Operating Units'.

NOVOS 5 VOC white LCD

NOVOS 5 VOC white design LCD
with design cover black

NOVOS 5 VOC white design LCD
with design cover alu

0..10 V / 4..20 mA   Modbus   BACnet

TECHNICAL DATA	
Measured values	VOC, temperature + humidity (depending on the device)
Output voltage	V: 1x 0..10 V VV: 2x 0..10 V 3xV: 3x 0..10 V 0..10 V or 0..5 V (live-zero can be configured via app or uConfig) min. load 10 kΩ
Output current	A: 1x 4..20 mA AA: 2x 4..20 mA 3xA: 3x 4..20 mA max. load 500 Ω
Network technology	RS485 BACnet (MS/TP) RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV
Measuring range temp.	0..+50 °C
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Calibration	self-calibration
Sensor	VOC sensor (heated metal oxide semiconductor)
Inputs	RS485 Modbus: 1x input for floating contact
Display	LCD 29x35 mm with RGB backlight indicating air quality by switching display color (traffic light function 'TLF')
Colour	pure white, black or aluminium
Enclosure	PC V0, design cover pure white, black or aluminium
Protection (IP)	IP30 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories) mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

Air Quality

NOVOS 5 VOC active

Room sensor VOC + temperature – active 2x 0..10 V | 2x 4..20 mA		AQ1
Item description	Item No.	€
NOVOS 5 VOC white Temp LCD VV	735209	225,80
NOVOS 5 VOC white Temp LCD AA	735247	225,80

Room sensor VOC + temperature design – active 2x 0..10 V | 2x 4..20 mA (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 VOC white Temp design LCD VV	735216	225,80
NOVOS 5 VOC white Temp design LCD AA	735254	225,80

Room sensor VOC + temperature + humidity – active 3x 0..10 V | 3x 4..20 mA		AQ1
Item description	Item No.	€
NOVOS 5 VOC white Temp_rH LCD 3xV	735223	265,80
NOVOS 5 VOC white Temp_rH LCD 3xA	735261	285,80

Room sensor VOC + temperature + humidity design – active 3x 0..10 V | 3x 4..20 mA (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 VOC white Temp_rH design LCD 3xV	735230	265,80
NOVOS 5 VOC white Temp_rH design LCD 3xA	735278	285,80

Options	
Item description	€
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

NOVOS 5 VOC active

Room sensor VOC + temperature – BUS		AQ1
Item description	Item No.	€
NOVOS 5 VOC white Temp LCD RS485 Modbus	735292	262,80
NOVOS 5 VOC white Temp LCD RS485 BACnet (MS/TP)	755719	262,80

Room sensor VOC + temperature design – BUS (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 VOC white Temp design LCD RS485 Modbus	735315	262,80
NOVOS 5 VOC white Temp design LCD RS485 BACnet (MS/TP)	755726	262,80

Room sensor VOC + temperature + humidity – BUS		AQ1
Item description	Item No.	€
NOVOS 5 VOC white Temp_rH LCD RS485 Modbus	735322	302,80
NOVOS 5 VOC white Temp_rH LCD RS485 BACnet (MS/TP)	755733	302,80

Room sensor VOC + temperature + humidity design – BUS (please specify desired design cover)		AQ1
Item description	Item No.	€
NOVOS 5 VOC white Temp_rH design LCD RS485 Modbus	735346	302,80
NOVOS 5 VOC white Temp_rH design LCD RS485 BACnet (MS/TP)	755757	302,80

Options	
Item description	€
TLF – traffic light function, RGB-LED indicating air quality	15,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 5 alu	⊜	12,00
Design cover NOVOS 5 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Air Quality

NOVOS 3 CO2+VOC

Room sensor in the NOVOS design for measuring CO_2 , mixed gas (VOC), optionally temperature and humidity (relative, absolute, enthalpy, dew point) and traffic light indication with a 7-color LED. The maintenance-free sensor forms the basis for a pleasant room climate and well-being. Especially designed for use in schools, office buildings, hotels, cinemas and similar applications. Threshold values can be individually configured via Thermokon NOVOSapp. For models with set point and occupancy button, please refer to the 'NOVOS 3 x' in the chapter 'Room Operating Units'.

NOVOS 3 CO2+VOC white

NOVOS 3 CO2+VOC white design
with design cover black

NOVOS 3 CO2+VOC white design
with design cover alu

NOVOS 3 CO2+VOC white TLF

NOVOS 3 CO2+VOC white design TLF
with design cover black

NOVOS 3 CO2+VOC white design TLF
with design cover alu

0..10 V / 4..20 mA Modbus BACnet

TECHNICAL DATA	
Measured values	CO2, VOC, temperature + humidity (depending on the device) each output can be set to get a variable mix of CO2 and VOC by configuration
Output voltage	VV: 2x 0..10 V 3xV: 3x 0..10 V 4xV: 4x 0..10 V 0..10 V or 0..5 V (live-zero can be configured via app or uConfig) min. load 10 kΩ
Output current	AA: 2x 4..20 mA 3xA: 3x 4..20 mA 4xA: 4x 4..20 mA max. load 500 Ω
Network technology	RS485 BACnet (MS/TP) RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV AA | 3xA | 4xA: 15..35 V = SELV
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app, uConfig or BUS
Measuring range CO2	0..2000 ppm | 0..5000 ppm, optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	self-calibration CO2: Dual Channel
Sensor	VOC sensor (heated metal oxide semiconductor) CO2: NDIR (non-dispersive, infrared)
Inputs	RS485 Modbus: 1x input for floating contact
Display	RGB-LED indicating air quality (traffic light function 'TLF'), optional
Colour	pure white, black or aluminium
Enclosure	PC V0, optionally with design cover black or aluminium
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories) mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

Air Quality

NOVOS 3 CO2+VOC active

Room sensor CO2 + VOC or mix – active 2x 0..10 V | 2x 4..20 mA		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white VV	735353	280,00
NOVOS 3 CO2+VOC white AA	735421	280,00

Room sensor CO2 + VOC or mix design – active 2x 0..10 V | 2x 4..20 mA (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white design VV	735391	280,00
NOVOS 3 CO2+VOC white design AA	735452	280,00

Room sensor CO2 + VOC or mix + temperature – active 3x 0..10 V | 3x 4..20 mA		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white Temp 3xV	735360	300,00
NOVOS 3 CO2+VOC white Temp 3xA	735438	320,00

Room sensor CO2 + VOC or mix + temperature design – active 3x 0..10 V | 3x 4..20 mA (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white Temp design 3xV	735407	300,00
NOVOS 3 CO2+VOC white Temp design 3xA	735469	320,00

Room sensor CO2 + VOC or mix + temperature + humidity – active 4x 0..10 V | 4x 4..20 mA		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white Temp_rH 4xV	735377	340,00
NOVOS 3 CO2+VOC white Temp_rH 4xA	735445	380,00

Room sensor CO2 + VOC or mix + temperature + humidity design – active 4x 0..10 V | 4x 4..20 mA (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white Temp_rH design 4xV	735414	340,00
NOVOS 3 CO2+VOC white Temp_rH design 4xA	735476	380,00

Options	
Item description	€
TLF – traffic light function, RGB-LED indicating air quality	15,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

NOVOS 3 CO2+VOC BUS

BACnet   Modbus

Room sensor CO2 + VOC or mix – BUS		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white RS485 Modbus	735483	317,00
NOVOS 3 CO2+VOC white RS485 BACnet (MS/TP)	755771	317,00

NOVOS 3 CO2+VOC BUS

Room sensor CO2 + VOC or mix design – BUS (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white design RS485 Modbus	735490	317,00
NOVOS 3 CO2+VOC white design RS485 BACnet (MS/TP)	755788	317,00

Room sensor CO2 + VOC or mix + temperature – BUS		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white Temp RS485 Modbus	735544	337,00
NOVOS 3 CO2+VOC white Temp RS485 BACnet (MS/TP)	755795	337,00

Room sensor CO2 + VOC or mix + temperature design – BUS (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white Temp design RS485 Modbus	735575	337,00
NOVOS 3 CO2+VOC white Temp design RS485 BACnet (MS/TP)	755801	337,00

Room sensor CO2 + VOC or mix + temperature + humidity – BUS		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white Temp_rH RS485 Modbus	735568	377,00
NOVOS 3 CO2+VOC white Temp_rH RS485 BACnet (MS/TP)	755818	377,00

Room sensor CO2 + VOC or mix + temperature + humidity design – BUS (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2+VOC white Temp_rH design RS485 Modbus	735582	377,00
NOVOS 3 CO2+VOC white Temp_rH design RS485 BACnet (MS/TP)	755825	377,00

Options	
Item description	€
TLF – traffic light function, RGB-LED indicating air quality	15,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Air Quality

NOVOS 3 CO2

Room sensor in the NOVOS design for measuring CO_2, optionally temperature and humidity (relative, absolute, enthalpy, dew point) and traffic light indication with a 7-color LED. The maintenance-free sensor forms the basis for a pleasant room climate and well-being. Especially designed for schools, office buildings, hotels, cinemas and similar applications. Threshold values can be individually configured via Thermokon NOVOSapp. For models with set point and occupancy button, please refer to the 'NOVOS 3 x' in the chapter 'Room Operating Units'.

NOVOS 3 CO2 white

NOVOS 3 CO2 white design with design cover black

NOVOS 3 CO2 white design with design cover alu

NOVOS 3 CO2 white TLF

NOVOS 3 CO2 white design TLF with design cover black

NOVOS 3 CO2 white design TLF with design cover alu

0..10 V / 4..20 mA   Modbus   BACnet

TECHNICAL DATA	
Measured values	CO2, temperature + humidity (depending on the device)
Output voltage	V: 1x 0..10 V VV: 2x 0..10 V 3xV: 3x 0..10 V 0..10 V or 0..5 V (live-zero can be configured via app or uConfig) min. load 10 kΩ
Output current	A: 1x 4..20 mA AA: 2x 4..20 mA 3xA: 3x 4..20 mA max. load 500 Ω
Network technology	BACnet MS/TP RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV A | AA | 3xA: 15..35 V = SELV
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app, uConfig or BUS
Measuring range CO2	0..2000 ppm | 0..5000 ppm, optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	self-calibration, Dual Channel
Sensor	NDIR (non-dispersive, infrared)
Inputs	RS485 Modbus: 1x input for floating contact
Display	RGB-LED indicating air quality (traffic light function 'TLF'), optional
Colour	pure white, black or aluminium
Enclosure	PC V0, optionally with design cover black or aluminium
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories)

Air Quality

NOVOS 3 CO2 active

Room sensor CO2 – active 0..10 V | 4..20 mA		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white V	733663	180,00
NOVOS 3 CO2 white A	733724	180,00

Room sensor CO2 design – active 0..10 V | 4..20 mA (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white design V	733694	180,00
NOVOS 3 CO2 white design A	733755	180,00

Room sensor CO2 + temperature – active 2x 0..10 V | 2x 4..20 mA		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white Temp VV	733670	225,00
NOVOS 3 CO2 white Temp AA	733731	225,00

Room sensor CO2 + temperature design – active 2x 0..10 V | 2x 4..20 mA (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white Temp design VV	733700	225,00
NOVOS 3 CO2 white Temp design AA	733762	225,00

Room sensor CO2 + temperature + humidity – active 3x 0..10 V | 3x 4..20 mA		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white Temp_rH 3xV	733687	265,00
NOVOS 3 CO2 white Temp_rH 3xA	733748	285,00

Room sensor CO2 + temperature + humidity design – active 2x 0..10 V | 2x 4..20 mA (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white Temp_rH design 3xV	733717	265,00
NOVOS 3 CO2 white Temp_rH design 3xA	733779	285,00

Options	
Item description	€
TLF – traffic light function, RGB-LED indicating air quality	15,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

NOVOS 3 CO2 BUS

Room sensor CO2 + temperature – BUS		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white Temp RS485 Modbus	734165	262,00
NOVOS 3 CO2 white Temp RS485 BACnet (MS/TP)	755856	262,00

Room sensor CO2 + temperature design – BUS (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white Temp design RS485 Modbus	734189	262,00
NOVOS 3 CO2 white Temp design RS485 BACnet (MS/TP)	755863	262,00

Room sensor CO2 + temperature + humidity – BUS		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white Temp_rH RS485 Modbus	734172	302,00
NOVOS 3 CO2 white Temp_rH RS485 BACnet (MS/TP)	755870	302,00

Room sensor CO2 + temperature + humidity design – BUS (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 CO2 white Temp_rH design RS485 Modbus	734196	302,00
NOVOS 3 CO2 white Temp_rH design RS485 BACnet (MS/TP)	755894	302,00

Options	
Item description	€
TLF – traffic light function, RGB-LED indicating air quality	15,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)		AS1
Item description	On stock	€
Design cover NOVOS 3 alu	⊜	12,00
Design cover NOVOS 3 black	⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Air Quality

NOVOS 3 VOC

Room sensor in the NOVOS design for measuring mixed gas (VOC), optionally temperature and humidity (relative, absolute, enthalpy, dew point) and traffic light indication with a 7-color LED. The maintenance-free sensor forms the basis for a pleasant room climate and well-being. Especially designed for use in schools, office buildings, hotels, cinemas and similar applications. Threshold values can be individually configured via Thermokon NOVOSapp. For models with set point and occupancy button, please refer to the 'NOVOS 3 x' in the chapter 'Room Operating Units'.

NOVOS 3 VOC white

NOVOS 3 VOC white design
with design cover black

NOVOS 3 VOC white design
with design cover alu

NOVOS 3 VOC white TLF

NOVOS 3 VOC white design TLF
with design cover black

NOVOS 3 VOC white design TLF
with design cover alu

0..10 V / 4..20 mA **Modbus** **BACnet**

TECHNICAL DATA	
Measured values	VOC, temperature + humidity (depending on the device)
Output voltage	V: 1x 0..10 V VV: 2x 0..10 V 3xV: 3x 0..10 V 0..10 V or 0..5 V (live-zero can be configured via app or uConfig) min. load 10 kΩ
Output current	A: 1x 4..20 mA AA: 2x 4..20 mA 3xA: 3x 4..20 mA max. load 500 Ω
Network technology	RS485 BACnet (MS/TP) RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV A | AA | 3xA: 15..35 V = SELV
Output signal range temp.	Scaling analog output, 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app, uConfig or BUS
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Calibration	self-calibration
Sensor	VOC sensor (heated metal oxide semiconductor)
Inputs	RS485 Modbus: 1x input for floating contact
Display	RGB-LED indicating air quality (traffic light function 'TLF'), optional
Colour	pure white, black or aluminium
Enclosure	PC V0, optionally with design cover black or aluminium
Protection (IP)	IP20 according to EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Electrical connection	tool-free mountable spring clamp, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws base part can be mounted and wired separately
Notes	for configuration an optional programming dongle (Bluetooth) is available (refer to accessories) mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

Air Quality

NOVOS 3 VOC active

Room sensor VOC – active 0..10 V	4..20 mA		AQ2
Item description	Item No.	€
NOVOS 3 VOC white V	734653	165,00
NOVOS 3 VOC white A	734738	165,00

Room sensor VOC design – active 0..10 V	4..20 mA (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 VOC white design V	734684	165,00
NOVOS 3 VOC white design A	734769	165,00

Room sensor VOC + temperature – active 2x 0..10 V	2x 4..20 mA		AQ2
Item description	Item No.	€
NOVOS 3 VOC white Temp VV	734660	185,00
NOVOS 3 VOC white Temp AA	734745	185,00

Room sensor VOC + temperature design – active 2x 0..10 V	2x 4..20 mA (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 VOC white Temp design VV	734707	185,00
NOVOS 3 VOC white Temp design AA	734783	185,00

Room sensor VOC + temperature + humidity – active 3x 0..10 V	3x 4..20 mA		AQ2
Item description	Item No.	€
NOVOS 3 VOC white Temp_rH 3xV	734677	225,00
NOVOS 3 VOC white Temp_rH 3xA	734752	245,00

Room sensor VOC + temperature + humidity design – active 3x 0..10 V	3x 4..20 mA (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 VOC white Temp_rH design 3xV	734721	225,00
NOVOS 3 VOC white Temp_rH design 3xA	734790	245,00

Options	
Item description	€
TLF – traffic light function, RGB-LED indicating air quality	15,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)			AS1
Item description	Item No.	On stock	€
Design cover NOVOS 3 alu		⊜	12,00
Design cover NOVOS 3 black		⊜	12,00

NOVOS 3 VOC BUS

Room sensor VOC + temperature – BUS		AQ2
Item description	Item No.	€
NOVOS 3 VOC white Temp RS485 Modbus	734813	222,00
NOVOS 3 VOC white Temp RS485 BACnet (MS/TP)	755900	222,00

Room sensor VOC + temperature design – BUS (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 VOC white Temp design RS485 Modbus	734868	222,00
NOVOS 3 VOC white Temp design RS485 BACnet (MS/TP)	755924	222,00

Room sensor VOC + temperature + humidity – BUS		AQ2
Item description	Item No.	€
NOVOS 3 VOC white Temp_rH RS485 Modbus	734820	262,00
NOVOS 3 VOC white Temp_rH RS485 BACnet (MS/TP)	755948	262,00

Room sensor VOC + temperature + humidity design – BUS (please specify desired design cover)		AQ2
Item description	Item No.	€
NOVOS 3 VOC white Temp_rH design RS485 Modbus	734875	262,00
NOVOS 3 VOC white Temp_rH design RS485 BACnet (MS/TP)	755955	262,00

Options	€
Item description	€
TLF – traffic light function, RGB-LED indicating air quality	15,00
NOVOS enclosure in aluminium	12,00
NOVOS enclosure in black	12,00

Design cover (please order additionally with items design)			AS1
Item description	Item No.	On stock	€
Design cover NOVOS 3 alu		⊜	12,00
Design cover NOVOS 3 black		⊜	12,00

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80

Air Quality

WRF06 AQ

Air quality sensor for measuring CO2 and/or mixed gas (VOC), optionally temperature and humidity. The sensor meets highest design requirements and is available in different designs and colors of various switch frame manufacturers. Typical applications are offices, living spaces and hotels. The maintenance-free sensor forms the basis for a pleasant room climate and increased well-being. The device is also available with the traffic light indication.

WRF06 CO2 3xV,
Gira E2 pure white matt

WRF06 CO2 3xV TLF,
Gira E2 pure white matt

0..10 V   Modbus

TECHNICAL DATA	
Measured values	CO2, VOC, humidity, temperature, depending on the device
Output voltage	V: 1x 0..10 V, VV: 2x 0..10 V, 3xV: 3x 0..10 V, 4xV: 4x 0..10 V, max. load 10 kΩ
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 1,6 W (24 V =) | 3,9 VA (24 V ~)
Measuring range temp.	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..2000 ppm, BUS: 0..5000 ppm
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	self-calibration, CO2: Dual Channel
Sensor	VOC sensor (heated metal oxide semiconductor), CO2: NDIR (non-dispersive, infrared)
Switch range Berker	S.1, B.3 aluminum, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo® *, future® linear *, Busch-axcent® *
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec *
Switch range Peha	AURA, AURA glass
Display	3 LEDs indicating air quality (CO2, traffic light function 'TLF'), optional
Protection (IP)	IP30 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Notes	* in switch program with intermediate frame optional with traffic light function "TLF" please specify frame design when ordering

WRF06 AQ active

Room sensor CO2 + VOC – active 2x 0..10 V		AQ1
Item description	Item No.	€
WRF06 CO2+VOC VV pure white matt without frame	732420	338,20
WRF06 CO2+VOC VV pure white brilliant without frame	732437	338,20
WRF06 CO2+VOC VV aluminium without frame	732444	338,20
WRF06 CO2+VOC VV Jung aluminium without frame	732451	338,20
WRF06 CO2+VOC VV anthracite without frame	732468	338,20

Room sensor CO2 + VOC + temperature + relative humidity – active 4x 0..10 V		AQ1
Item description	Item No.	€
WRF06 CO2+VOC Temp_rH 4xV pure white matt without frame	732475	342,30
WRF06 CO2+VOC Temp_rH 4xV pure white brilliant without frame	732482	342,30
WRF06 CO2+VOC Temp_rH 4xV aluminium without frame	732499	342,30
WRF06 CO2+VOC Temp_rH 4xV Jung aluminium without frame	732505	342,30
WRF06 CO2+VOC Temp_rH 4xV anthracite without frame	732512	342,30

Room sensor CO2 – active 0..10 V		AQ1
Item description	Item No.	€
WRF06 CO2 V pure white matt without frame	732529	289,00
WRF06 CO2 V pure white brilliant without frame	731515	289,00
WRF06 CO2 V aluminium without frame	732536	289,00
WRF06 CO2 V Jung aluminium without frame	732543	289,00
WRF06 CO2 V anthracite without frame	725828	289,00

Room sensor CO2 + temperature – active 2x 0..10 V		AQ1
Item description	Item No.	€
WRF06 CO2 Temp VV pure white matt without frame	728492	293,10
WRF06 CO2 Temp VV pure white brilliant without frame	724555	293,10
WRF06 CO2 Temp VV aluminium without frame	732550	293,10
WRF06 CO2 Temp VV Jung aluminium without frame	732567	293,10
WRF06 CO2 Temp VV anthracite without frame	732123	293,10

Room sensor CO2 + temperature + relative humidity – active 3x 0..10 V		AQ1
Item description	Item No.	€
WRF06 CO2 Temp_rH 3xV pure white matt without frame	732598	313,60
WRF06 CO2 Temp_rH 3xV pure white brilliant without frame	726641	313,60
WRF06 CO2 Temp_rH 3xV aluminium without frame	732611	313,60
WRF06 CO2 Temp_rH 3xV Jung aluminium without frame	726634	313,60
WRF06 CO2 Temp_rH 3xV anthracite without frame	732628	313,60

Room sensor VOC + temperature – active 2x 0..10 V		AQ1
Item description	Item No.	€
WRF06 VOC Temp VV pure white matt without frame	732635	282,80
WRF06 VOC Temp VV pure white brilliant without frame	731522	282,80
WRF06 VOC Temp VV aluminium without frame	727358	282,80
WRF06 VOC Temp VV Jung aluminium without frame	732659	282,80
WRF06 VOC Temp VV anthracite without frame	732666	282,80

Air Quality

WRF06 AQ BUS

Modbus

Room sensor CO2 + VOC – BUS		AQ1
Item description	Item No.	€
WRF06 CO2+VOC RS485 Modbus pure white matt without frame	732680	346,40
WRF06 CO2+VOC RS485 Modbus pure white brilliant without frame	732697	346,40
WRF06 CO2+VOC RS485 Modbus aluminium without frame	732703	346,40
WRF06 CO2+VOC RS485 Modbus Jung aluminium without frame	732710	346,40
WRF06 CO2+VOC RS485 Modbus anthracite without frame	732727	346,40

Room sensor CO2 + VOC + temperature + relative humidity – BUS		AQ1
Item description	Item No.	€
WRF06 CO2+VOC Temp_rH RS485 Modbus pure white matt without frame	732734	371,10
WRF06 CO2+VOC Temp_rH RS485 Modbus pure white brilliant without frame	732741	371,10
WRF06 CO2+VOC Temp_rH RS485 Modbus aluminium without frame	732758	371,10
WRF06 CO2+VOC Temp_rH RS485 Modbus Jung aluminium without frame	732765	371,10
WRF06 CO2+VOC Temp_rH RS485 Modbus anthracite without frame	732772	371,10

Room sensor CO2 – BUS		AQ1
Item description	Item No.	€
WRF06 CO2 RS485 Modbus pure white matt without frame	732796	297,20
WRF06 CO2 RS485 Modbus pure white brilliant without frame	732802	297,20
WRF06 CO2 RS485 Modbus aluminium without frame	732819	297,20
WRF06 CO2 RS485 Modbus Jung aluminium without frame	732826	297,20
WRF06 CO2 RS485 Modbus anthracite without frame	732833	297,20

Room sensor CO2 + temperature – BUS		AQ1
Item description	Item No.	€
WRF06 CO2 Temp RS485 Modbus pure white matt without frame	732840	301,30
WRF06 CO2 Temp RS485 Modbus pure white brilliant without frame	732857	301,30
WRF06 CO2 Temp RS485 Modbus aluminium without frame	732864	301,30
WRF06 CO2 Temp RS485 Modbus Jung aluminium without frame	732871	301,30
WRF06 CO2 Temp RS485 Modbus anthracite without frame	732321	301,30

Room sensor CO2 + temperature + relative humidity – BUS		AQ1
Item description	Item No.	€
WRF06 CO2 Temp_rH RS485 Modbus pure white matt without frame	732888	321,80
WRF06 CO2 Temp_rH RS485 Modbus pure white brilliant without frame	732895	321,80
WRF06 CO2 Temp_rH RS485 Modbus aluminium without frame	732901	321,80
WRF06 CO2 Temp_rH RS485 Modbus Jung aluminium without frame	732918	321,80
WRF06 CO2 Temp_rH RS485 Modbus anthracite without frame	728676	321,80

Room sensor VOC + temperature – BUS		AQ1
Item description	Item No.	€
WRF06 VOC Temp RS485 Modbus pure white matt without frame	732925	291,00
WRF06 VOC Temp RS485 Modbus pure white brilliant without frame	732932	291,00
WRF06 VOC Temp RS485 Modbus aluminium without frame	732949	291,00
WRF06 VOC Temp RS485 Modbus Jung aluminium without frame	732963	291,00
WRF06 VOC Temp RS485 Modbus anthracite without frame	732970	291,00

WRF06 AQ

Options	
Item description	€
TLF – traffic light function, 3 LEDs indicating air quality	7,40

ACCESSORIES

Switch ranges (please order additionally)	AS1
Item description	€
Switch ranges plastic: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	4,50
Switch ranges plastic in further colours and/or with intermediate frame (various manufacturers)	12,50
Switch ranges glass, stainless steel, aluminium (various manufacturers)	40,00
Manufacturer and colour variants on the fold-out page at the end of the catalogue	

Accessories			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10

LP+

Room pendulum sensor for measuring CO2 in large rooms (exhibition halls, factories, museums etc.). The LP+ comes with an analogue 0..10 V output for connecting to a BMS or monitoring system.

0..10 V

TECHNICAL DATA	
Measured values	CO2
Output voltage	0..10 V or 0..5 V (adjustable via jumper), min. load 10 kΩ
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range CO2	0..2000 ppm
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	self-calibration, Dual Channel
Sensor	NDIR (non-dispersive, infrared)
Enclosure	enclosure USE-L, PC, pure white
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm, removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² sensor wire white 5 m or 10 m
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-L pure white incl. universal mounting set (cover screw, self-drilling screws, dowels, spax screws and screw cover)

Room pendulum sensor CO2 – active 0..10 V		AQ1
Item description	Item No.	€
LP+ CO2 V L5000	690331	256,50
LP+ CO2 V L10m	706704	261,50

Options	
Item description	€
Measuring element separable from housing via plug contact	77,00

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-L pure white	668361	⊜	11,30
Mounting kit universal for enclosure USE	698511	⊜	9,05
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

Air Quality

LK+ CO2+VOC

The maintenance-free and multi-functional duct air quality sensor measures CO2, mixed gas (VOC), temperature and humidity (relative, absolute, enthalpy, dew point). Optional features, such as a relay output for a 2-point controller or a 2-stage 2-point controller, LCD and traffic light function allow for a wide range of applications. Depending on the model, the sensor can be configured individually via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

LK+ CO2+VOC

LK+ CO2+VOC LCD

Function overview on page 377   0..10 V / 4..20 mA   USEapp   Modbus   BACnet   LON *LOCAL OPERATING NETWORK*

TECHNICAL DATA	
Measured values	CO2, VOC, temperature + humidity (depending on the device) each output can be set to get a variable mix of CO2 and VOC by configuration
Output voltage	2..4x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 10 kΩ
Output current	AA: 2x 4..20 mA, max. load 500 Ω
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV AA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, default setting: 0..+50 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app or uConfig
Measuring range CO2	0..2000 ppm, BUS: 0..5000 ppm
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Air speed	min. 0,3 m/s, max. 12 m/s
Calibration	self-calibration, CO2: Dual Channel
Sensor	VOC sensor (heated metal oxide semiconductor) CO2: NDIR (non-dispersive, infrared)
Display	LCD 29x35 mm with RGB backlight, optional indicating air quality by switching display color (traffic light function 'TLF')

Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²
Pipe	PA6, black, Ø=19,5 mm, length 180 mm type VV|AA: length 150 mm
Filter	stainless steel wire mesh
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Mounting	installation is also possible using mounting base
Delivery content	MF20 flange included
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

LK+ CO2+VOC active

Item description: product | measuring values | output

Duct sensor CO2 + VOC or mix – active 2x 0..10 V | 2x 4..20 mA				AQ2
Item description	USEapp	Item No.	On stock	€
LK+ CO2+VOC VV	✔	662024	⊜	348,20
LK+ CO2+VOC AA	✔	662031		348,20

Duct sensor CO2 + VOC or mix – active 2x 0..10 V | 2x 4..20 mA | relay			AQ1
Item description	USEapp	Item No.	€
LK+ CO2+VOC VV relay	✔	662062	393,20
LK+ CO2+VOC LCD VV	✔	662079	395,70
LK+ CO2+VOC LCD AA	✔	662086	395,70
LK+ CO2+VOC LCD VV relay	✔	662093	420,20

Duct sensor CO2 + VOC or mix + temperature – active 3x 0..10 V			AQ2
Item description	USEapp	Item No.	€
LK+ CO2+VOC Temp 3xV	✔	662130	367,20
LK+ CO2+VOC LCD Temp 3xV	✔	662147	414,70

Air Quality

LK+ CO2+VOC active

Item description: product | measuring values | output

Duct sensor CO2 + VOC or mix + temperature + humidity – active 4x 0..10 V			AQ2
Item description	**USE**app	Item No.	€
LK+ CO2+VOC Temp_rH 4xV	✓	662154	416,70
LK+ CO2+VOC LCD Temp_rH 4xV	✓	662161	464,20

Options	
Item description	€
NOVOS enclosure in aluminium	12,00

LK+ CO2+VOC BUS

Item description: product | measuring values | output (BUS)

BACnet　　**Modbus**

Duct sensor CO2 + VOC or mix – BUS			AQ1
Item description	**USE**app	Item No.	€
LK+ CO2+VOC RS485 Modbus	✓	662109	391,30
LK+ CO2+VOC LCD RS485 Modbus	✓	662116	441,60
LK+ CO2+VOC RS485 BACnet (MS/TP)	✓	700368	391,30
LK+ CO2+VOC LCD RS485 BACnet (MS/TP)	✓	700382	441,60

Duct sensor CO2 + VOC or mix + temperature – BUS			AQ1
Item description	**USE**app	Item No.	€
LK+ CO2+VOC Temp RS485 Modbus	✓	662178	410,20
LK+ CO2+VOC LCD Temp RS485 Modbus	✓	662185	460,50
LK+ CO2+VOC Temp RS485 BACnet (MS/TP)	✓	700429	410,20
LK+ CO2+VOC LCD Temp RS485 BACnet (MS/TP)	✓	700450	460,50

Duct sensor CO2 + VOC or mix + temperature + humidity – BUS			AQ1
Item description	**USE**app	Item No.	€
LK+ CO2+VOC Temp_rH RS485 Modbus	✓	662192	459,80
LK+ CO2+VOC LCD Temp_rH RS485 Modbus	✓	662208	510,10
LK+ CO2+VOC Temp_rH RS485 BACnet (MS/TP)	✓	682862	459,80
LK+ CO2+VOC LCD Temp_rH RS485 BACnet (MS/TP)	✓	700528	510,10

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

Air Quality

LK+ CO2

The maintenance-free, multi-functional duct air quality sensor measures CO2, temperature and humidity (relative, absolute, enthalpy, dew point, optional). Optional features, such as a relay output for a 2-point controller or a 2-stage 2-point controller, LCD and traffic light indication allow for a wide range of applications. Depending on the model, the sensor can be configured individually via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

LK+ CO2 (100)

LK+ CO2 (100) LCD

Function overview on page 377　　0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	CO2, temperature + humidity (depending on the device)
Output voltage	2x/3x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig) V: 1x 0..10 V min. load 10 kΩ
Output current	AA: 2x 4..20 mA, max. load 500 Ω
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	BACnet MS/TP, LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, AA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, default setting: 0..+50 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app or uConfig
Measuring range CO2	0..2000 ppm BUS: 0..5000 ppm
Accuracy temperature	VV | AA | 3xV: ±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Air speed	min. 0,3 m/s, max. 12 m/s
Calibration	self-calibration, Dual Channel
Sensor	CO2: NDIR (non-dispersive, infrared)
Display	LCD 29x35 mm with RGB backlight, optional indicating air quality by switching display color (traffic light function 'TLF')

Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²
Pipe	PA6, black, Ø=19,5 mm, length 180 mm types 100: length 100 mm types without temperature: length 150 mm; types 100: 70 mm
Filter	stainless steel wire mesh type V without filter
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Mounting	installation is also possible using mounting base
Delivery content	MF20 flange included

LK+ CO2 active

Item description: product | measuring values | output

Duct sensor CO2 – active 0..10 V			AQ2
Item description	Item No.	On stock	€
LK+ CO2 V	662253	⊜	217,40
LK+ CO2 100 V	670418		217,40

Duct sensor CO2 + temperature – active 2x 0..10 V | 2x 4..20 mA				AQ2
Item description	USEapp	Item No.	On stock	€
LK+ CO2 Temp VV	✔	662260	⊜	274,30
LK+ CO2 100 Temp VV	✔	670432		274,30
LK+ CO2 Temp AA	✔	662277		274,30
LK+ CO2 100 Temp AA	✔	670449		274,30

Duct sensor CO2 + temperature – active 2x 0..10 V | 2x 4..20 mA | relay				AQ1
Item description	USEapp	Item No.	On stock	€
LK+ CO2 Temp VV relay	✔	662307		319,30
LK+ CO2 100 Temp VV relay	✔	670456		319,30
LK+ CO2 LCD Temp VV	✔	662284	⊜	315,30
LK+ CO2 100 LCD Temp VV	✔	670463		315,30
LK+ CO2 LCD Temp AA	✔	662291		315,30
LK+ CO2 100 LCD Temp AA	✔	670470		315,30
LK+ CO2 LCD Temp VV relay	✔	662314		346,30
LK+ CO2 100 LCD Temp VV relay	✔	670487		346,30

Air Quality

LK+ CO2 active

Item description: product | measuring values | output

Duct sensor CO2 + temperature + humidity – active 3x 0..10 V			AQ2
Item description	**USE**app	Item No.	€
LK+ CO2 Temp_rH 3xV	✓	662321	327,00
LK+ CO2 100 Temp_rH 3xV	✓	670494	327,00

Duct sensor CO2 + temperature + humidity – active 3x 0..10 V			AQ1
Item description	**USE**app	Item No.	€
LK+ CO2 LCD Temp_rH 3xV	✓	662338	368,00
LK+ CO2 100 LCD Temp_rH 3xV	✓	670500	368,00

Options	
Item description	€
Additional passive temperature sensor (for AA|VV)	14,70

LK+ CO2 BUS

Item description: product | measuring values | output (BUS)

Duct sensor CO2 + temperature – BUS			AQ1
Item description	**USE**app	Item No.	€
LK+ CO2 Temp RS485 Modbus	✓	662345	317,40
LK+ CO2 100 Temp RS485 Modbus	✓	670555	317,40
LK+ CO2 LCD Temp RS485 Modbus	✓	662352	358,40
LK+ CO2 100 LCD Temp RS485 Modbus	✓	670562	358,40
LK+ CO2 Temp RS485 BACnet (MS/TP)	✓	700405	317,40
LK+ CO2 100 Temp RS485 BACnet (MS/TP)	✓	704120	317,40
LK+ CO2 LCD Temp RS485 BACnet (MS/TP)	✓	700436	358,40
LK+ CO2 100 LCD Temp RS485 BACnet (MS/TP)	✓	704137	358,40

Duct sensor CO2 + temperature + humidity – BUS			AQ1
Item description	**USE**app	Item No.	€
LK+ CO2 Temp_rH RS485 Modbus	✓	662376	370,10
LK+ CO2 100 Temp_rH RS485 Modbus	✓	670579	370,10
LK+ CO2 LCD Temp_rH RS485 Modbus	✓	662383	411,10
LK+ CO2 100 LCD Temp_rH RS485 Modbus	✓	670586	411,10
LK+ CO2 Temp_rH RS485 BACnet (MS/TP)	✓	700467	370,10
LK+ CO2 100 Temp_rH RS485 BACnet (MS/TP)	✓	704144	370,10
LK+ CO2 LCD Temp_rH RS485 BACnet (MS/TP)	✓	700504	411,10
LK+ CO2 100 LCD Temp_rH RS485 BACnet (MS/TP)	✓	704151	411,10

LK+ CO2 BUS

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

Air Quality

LK+ VOC

The maintenance-free and multifunctional duct air quality sensor measures mixed gas (VOC), optionally temperature and humidity (relative, absolute, enthalpy, dew point). Further possible features, such as a relay output for a 2-point controller or a 2-stage 2-point controller, LCD with traffic light indication allow for a wide range of applications. Depending on the model, the sensor can be configured individually via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

LK+ VOC

LK+ VOC LCD

Function overview on page 377   0..10 V / 4..20 mA   USEapp Modbus BACnet LON LOCAL OPERATING NETWORK

TECHNICAL DATA	
Measured values	VOC, temperature + humidity (depending on the device)
Output voltage	2x/3x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig) V: 1x 0..10 V min. load 10 kΩ
Output current	AA: 2x 4..20 mA, max. load 500 Ω
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, AA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C, default setting: 0..+50 °C, optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app or uConfig
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Air speed	min. 0,3 m/s, max. 12 m/s
Calibration	self-calibration
Sensor	VOC sensor (heated metal oxide semiconductor)
Display	LCD 29x35 mm with RGB backlight, optional indicating air quality by switching display color (traffic light function 'TLF')
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Protection (IP)	IP65 according to EN 60529

Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²
Pipe	PA6, black, Ø=19,5 mm, length 180 mm type V: length 150 mm
Filter	stainless steel wire mesh type V without filter
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Mounting	installation is also possible using mounting base
Delivery content	MF20 flange included
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue …)

LK+ VOC active

Item description: product | measuring values | output

Duct sensor VOC – active 0..10 V				AQ2
Item description	**USE**app	Item No.	On stock	€
LK+ VOC V	✔	662413	⊜	198,40

Duct sensor VOC + temperature – active 2x 0..10 V | 2x 4..20 mA				AQ2
Item description	**USE**app	Item No.	On stock	€
LK+ VOC Temp VV	✔	662437	⊜	255,30
LK+ VOC Temp AA	✔	662444		255,30

Duct sensor VOC + temperature – active 2x 0..10 V | 2x 4..20 mA | relay			AQ1
Item description	**USE**app	Item No.	€
LK+ VOC Temp VV relay	✔	662475	300,30
LK+ VOC LCD Temp VV	✔	662468	296,30
LK+ VOC LCD Temp AA	✔	662482	296,30
LK+ VOC LCD Temp VV relay	✔	662499	327,30

Duct sensor VOC + temperature + humidity – active 3x 0..10 V			AQ2
Item description	**USE**app	Item No.	€
LK+ VOC Temp_rH 3xV	✔	662505	308,10
LK+ VOC LCD Temp_rH 3xV	✔	662529	349,10

Air Quality

LK+ VOC active

Options	
Item description	€
Additional passive temperature sensor (for AA|VV)	14,70

LK+ VOC BUS

Item description: product | measuring values | output (BUS)

BACnet   **Modbus**

Duct sensor VOC + temperature – BUS			AQ1
Item description	**USE**app	Item No.	€
LK+ VOC Temp RS485 Modbus	✓	662536	298,40
LK+ VOC LCD Temp RS485 Modbus	✓	662550	339,40
LK+ VOC Temp RS485 BACnet (MS/TP)	✓	700412	298,40
LK+ VOC LCD Temp RS485 BACnet (MS/TP)	✓	700443	339,40

Duct sensor VOC + temperature + humidity – BUS			AQ1
Item description	**USE**app	Item No.	€
LK+ VOC Temp_rH RS485 Modbus	✓	662574	351,10
LK+ VOC LCD Temp_rH RS485 Modbus	✓	662581	392,10
LK+ VOC Temp_rH RS485 BACnet (MS/TP)	✓	700481	351,10
LK+ VOC LCD Temp_rH RS485 BACnet (MS/TP)	✓	700511	392,10

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⬒	8,10
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⬒	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⬒	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

LA+ CO2+VOC

Air quality sensor for measuring CO2, mixed gas (VOC), optionally temperature and humidity outdoors and in areas requiring high IP protection class (e.g. underground stations, tunnels, exhibition halls, cold chains and greenhouses as well as in production halls and warehouses). Default values can be indiviudally adjusted via Thermokon USEapp. For devices with CO2 and VOC, every output can be configured to be a mixed output (selectable ratio between CO2 and VOC). Devices with a relay option can be used as 2-point controllers or 2-stage controllers.

LA+ CO2+VOC

LA+ CO2+VOC Temp+rH LCD

0..10 V / 4..20 mA   USEapp   Modbus   BACnet   LON LOCAL OPERATING NETWORK

TECHNICAL DATA	
Measured values	CO2, VOC, temperature + humidity (depending on the device) each output can be set to get a variable mix of CO2 and VOC by configuration
Output voltage	2..4x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig)
Output current	AA: 2x 4..20 mA max. load 500 Ω
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV AA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C default setting: 0..+50 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app or uConfig
Measuring range CO2	0..2000 ppm BUS: 0..5000 ppm
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	self-calibration CO2: Dual Channel
Sensor	VOC sensor (heated metal oxide semiconductor) CO2: NDIR (non-dispersive, infrared)

Air Quality

Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-M pure white incl. universal mounting set (cover screw, self-drilling screws, dowels, spax screws and screw cover)
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue …)

LA+ CO2+VOC aktiv

Item description: product | measuring values | output

Outdoor sensor CO2 + VOC or mix – active 2x 0..10 V	2x 4..20 mA	relay			AQ1
Item description	USEapp	Item No.	€
LA+ CO2+VOC VV	✓	698993	355,60
LA+ CO2+VOC AA	✓	699006	355,60
LA+ CO2+VOC VV relay	✓	700535	400,60

Options	
Item description	€
LCD	40,80

LA+ CO2+VOC BUS

Item description: product | measuring values | output (BUS)

BACnet Modbus

Outdoor sensor CO2 + VOC – BUS			AQ1
Item description	USEapp	Item No.	€
LA+ CO2+VOC RS485 Modbus	✓	700610	374,50
LA+ CO2+VOC RS485 BACnet (MS/TP)	✓	700627	374,50

Outdoor sensor CO2 + VOC + temperature + humidity – BUS			AQ1
Item description	USEapp	Item No.	€
LA+ CO2+VOC Temp_rH RS485 Modbus	✓	700658	402,20
LA+ CO2+VOC Temp_rH RS485 BACnet (MS/TP)	✓	700665	402,20

LA+ CO2+VOC BUS

Options	
Item description	€
LCD	40,80
Add to price of RS485 Modbus for LON FT	74,00

Accessories

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
Mounting kit universal for enclosure USE	698511	⊜	9,05
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

Air Quality

LA+ CO2

Air quality sensor for measuring CO2, temperature and humidity outdoors and in areas requiring a high IP class (e.g. subway stations, tunnels, exhibition halls, cold chains and greenhouses as well as in production halls and warehouses). Default values can be adjusted via Thermokon USEapp. Devices with a relay option can be used as 2-point controllers or 2-stage controllers.

LA+ CO2

LA+ CO2 Temp+rH LCD

0..10 V / 4..20 mA

TECHNICAL DATA	
Measured values	CO2, temperature + humidity (depending on the device)
Output voltage	1..3x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig) min. load 10 kΩ
Output current	A: 1x 4..20 mA AA: 2x 4..20 mA
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV A: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C default setting: 0..+50 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app or uConfig
Measuring range CO2	0..2000 ppm BUS: 0..5000 ppm
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO2	±50 ppm +3% of measured value (typ. at 21 °C, 50% rH, 1015 hPa)
Calibration	self-calibration, CO2: Dual Channel
Sensor	CO2: NDIR (non-dispersive, infrared)
Enclosure	enclosure USE-M, PC, pure white

	LCD: cover PC, transparent
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-M pure white incl. universal mounting set (cover screw, self-drilling screws, dowels, spax screws and screw cover)

LA+ CO2 aktiv

Item description: product | measuring values | output

Outdoor sensor CO2 – active 0..10 V | 4..20 mA			AQ1
Item description	USEapp	Item No.	€
LA+ CO2 V		690171	224,70
LA+ CO2 A	✓	693424	224,70

Outdoor sensor CO2 + temperature – 2x 0..10 V | 2x 4..20 mA | relay			AQ1
Item description	USEapp	Item No.	€
LA+ CO2 Temp VV	✓	700542	281,70
LA+ CO2 Temp AA	✓	700559	281,70
LA+ CO2 Temp VV relay	✓	700566	326,70

Outdoor sensor CO2 + temperature + humidity – 3x 0..10 V			AQ1
Item description	USEapp	Item No.	€
LA+ CO2 Temp_rH 3xV	✓	700573	334,40

Options	
Item description	€
LCD	40,80

Air Quality

LA+ CO2 BUS

Item description: product | measuring values | output (BUS)

BACnet **Modbus**

Outdoor sensor CO2 – BUS			AQ1
Item description	**USE**app	Item No.	€
LA+ CO2 RS485 Modbus	✓	698719	275,00
LA+ CO2 RS485 BACnet (MS/TP)	✓	700580	275,00

Outdoor sensor CO2 + temperature – BUS			AQ1
Item description	**USE**app	Item No.	€
LA+ CO2 Temp RS485 Modbus	✓	700634	324,80
LA+ CO2 Temp RS485 BACnet (MS/TP)	✓	700641	324,80

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
LCD	40,80
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⬓	8,10
Mounting kit universal for enclosure USE	698511	⬓	9,05
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⬓	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⬓	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

LA+ VOC

Air quality sensor for measuring mixed gas (VOC), temperature and humidity in outdoor applications and in areas requiring a high IP class (e.g. underground stations, tunnels, exhibition halls, cold chains and greenhouses as well as in production halls and warehouses). Depending on the model, the sensor can be configured individually via Thermokon USEapp. Devices with a relay option can be used as 2-point controllers or 2-stage controllers.

LA+ VOC

LA+ VOC Temp+rH LCD

0..10 V / 4..20 mA   USEapp   Modbus   BACnet   LON LOCAL OPERATING NETWORK

TECHNICAL DATA	
Measured values	VOC, temperature + humidity (depending on the device) each output can be set to get a variable mix of CO2 and VOC by configuration
Output voltage	1..3x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 10 kΩ
Output current	A: 1x 4..20 mA AA: 2x 4..20 mA
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV, AA: 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)
Measuring range temp.	-40..+60 °C | 0..+50 °C | -20..+80 °C | -15..+35 °C default setting: 0..+50 °C optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50 | 0..80 g/m³ dew point: 0..+50 | -20..+80 °C optionally configurable via app or uConfig
Accuracy temperature	±0,5 K (typ. at 21 °C within default measuring range)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Calibration	self-calibration
Sensor	VOC sensor (heated metal oxide semiconductor)
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable

Air Quality

Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Delivery content	incl. mounting base enclosure USE-M pure white incl. universal mounting set (cover screw, self-drilling screws, dowels, spax screws and screw cover)
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue …)

LA+ VOC aktiv

Item description: product | measuring values | output

Outdoor sensor VOC – active 0..10 V	4..20 mA			AQ1
Item description	**USE**app	Item No.	€
LA+ VOC V	✓	698405	205,80
LA+ VOC A	✓	698412	205,80

Outdoor sensor VOC + temperature – 2x 0..10 V	2x 4..20 mA	relay			AQ1
Item description	**USE**app	Item No.	€
LA+ VOC Temp VV	✓	698399	262,70
LA+ VOC Temp AA	✓	698429	262,70
LA+ VOC Temp VV relay	✓	703086	307,70

Outdoor sensor VOC + temperature + humidity – 3x 0..10 V			AQ1
Item description	**USE**app	Item No.	€
LA+ VOC Temp_rH 3xV	✓	703093	315,40

Options	
Item description	€
LCD	40,80

LA+ VOC BUS

Item description: product | measuring values | output (BUS)
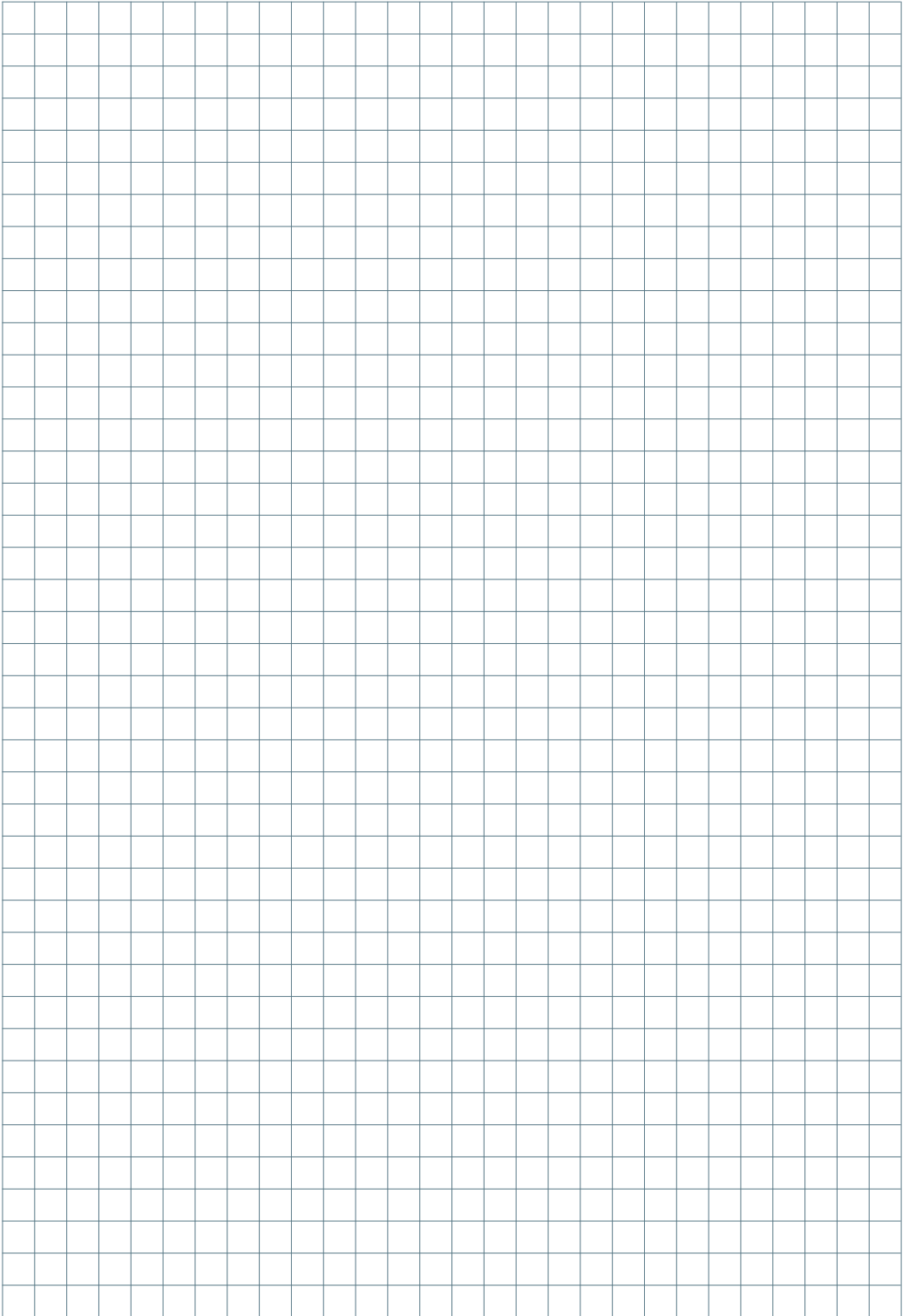
BACnet   **Modbus**

Outdoor sensor VOC – BUS			AQ1
Item description	USEapp	Item No.	€
LA+ VOC RS485 Modbus	✓	700597	254,50
LA+ VOC RS485 BACnet (MS/TP)	✓	700603	254,50

Outdoor sensor VOC + temperature – BUS			AQ1
Item description	USEapp	Item No.	€
LA+ VOC Temp RS485 Modbus	✓	703154	305,80
LA+ VOC Temp RS485 BACnet (MS/TP)	✓	703161	305,80

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
LCD	40,80
Add to price of RS485 Modbus for LON FT	74,00

ACCESSORIES

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
Mounting kit universal for enclosure USE	698511	⊜	9,05
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

Air Quality

thermokon®

Light & Motion

Our intelligent sensors provide for a physical and emotional well-being of people in rooms. Motion and brightness are detected reliably: For individual, comfortable and increased energy-saving.

» BENEFITS

» Energy savings due to demand lighting control
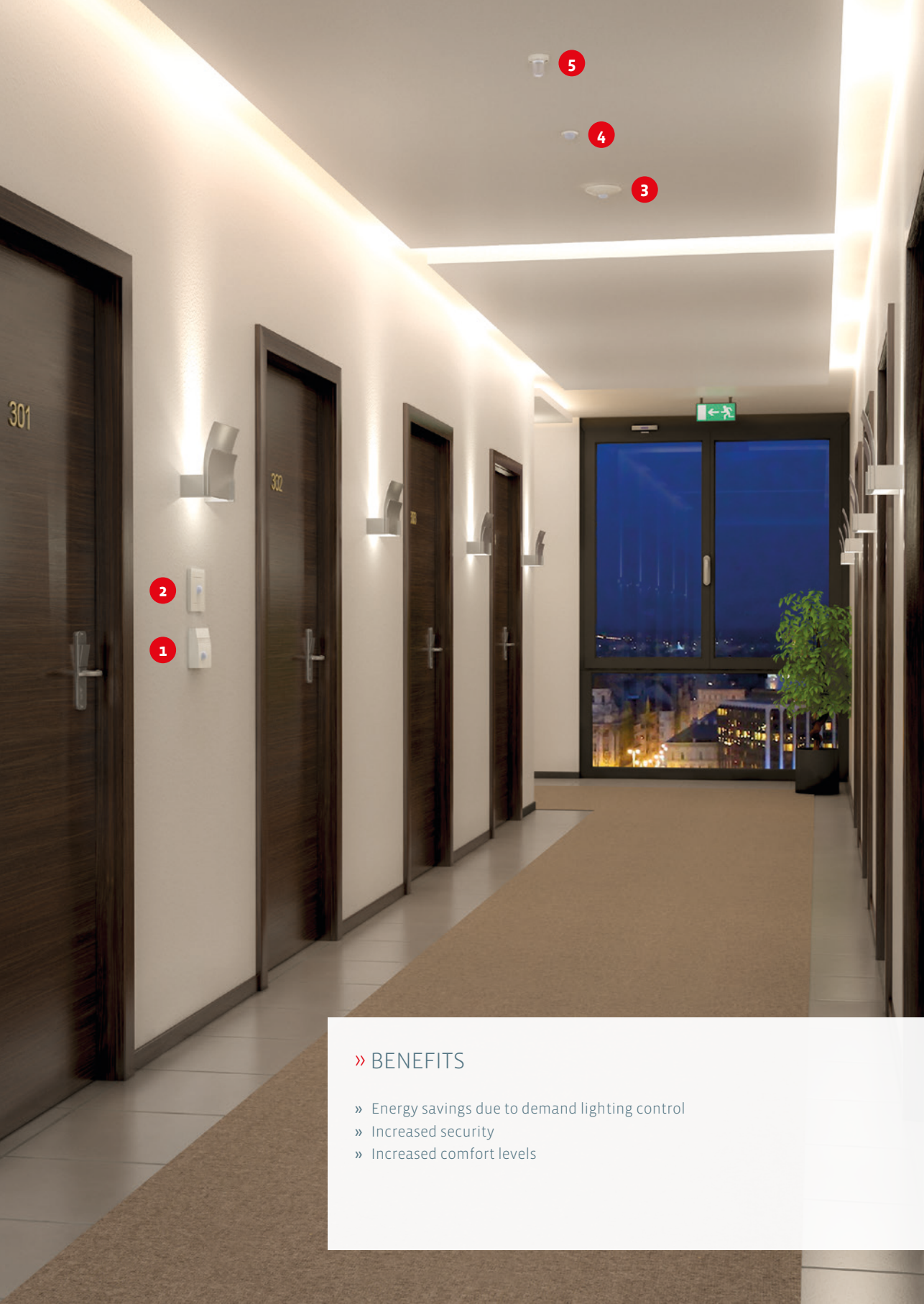» Increased security
» Increased comfort levels

1 WRF04I
Surface-mounted motion sensor, available with LON interface

2 WRF06I
Flush-mounted motion sensor, compatible with switch frames 55x55 mm

3 MDS
Ceiling-mounted multi sensor light/ motion, available with LON interface

4 RDI
Ceiling-mounted motion sensor, available with various detection ranges

5 LDF+
Ceiling-mounted light sensor, available with Modbus and BACnet interface

ASHRAE **BACnet**

KNX

LON
LOCAL OPERATING NETWORK

enocean

Modbus

HOTEL SECURITY AND ENERGY-EFFICIENCY

Intelligent light, motion and multi sensors reliably detect light and motion and define the lighting control conditions. The guest feels safe and comfortable, the hotel owner saves energy.

Light & Motion

MDS

Ceiling-mounted multi-sensor for detection of light and motion in rooms and office spaces. Energy-efficiency can be optimized through connecting the MDS to an automated constant light control and temperature reduction in unoccupied rooms. The flat design makes up for an inconspicuous installation in e.g. suspended ceilings. For mounting on concrete ceilings, a surface-mounted frame is available.

TECHNICAL DATA	
Measured values	luminosity, motion
Output voltage	Standard: 1x 0..10 V
Output switch contact	Standard: floating contact NO selectable at the device, with follow-up time 1 second..30 minutes
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 1,5 W (24 V =) | 4 VA (24 V ~)
Measuring range light	0..1 kLux
Accuracy Light	±50 Lux
Dectection range	Cone-shaped detection range, angle 105°, range › 5 m, 444 detection zones. With an installation height of 2,7 m circular detection range will have a R= 7 m.
Sensor	PIR (passive infrared)
Enclosure	ABS, pure white
Protection (IP)	IP20 according to EN 60529
Electrical connection	terminal block, max. 1,5 mm², pluggable
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Notes	Enclosure for surface mounting available

Ceiling multi sensor light + motion – active 0..10 V (light), relay (motion)					LM2
Item description	0..10 V	Relay	Item No.	On stock	€
MDS Standard	1	1	271318	⬤	183,40

Accessories			AS1
Item description	Item No.	On stock	€
Enclosure for surface mounting MDS pure white	448512	⬤	49,50

Li65+

Outdoor sensor for measuring light, temperature, humidity and atmospheric pressure in outdoor areas, greenhouses, warehouses or industrial halls. The device has an integrated ambient light sensor with a precise optical filter adapted to the spectral sensitivity of human eyes. Relay outputs for a 2-point controller or a 2-stage 2-point controller allow for a wide range of applications. Depending on the model, the sensor can be configured individually via Thermokon USEapp. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

0..10 V / 4..20 mA USEapp Modbus BACnet LON *LOCAL OPERATING NETWORK*

TECHNICAL DATA	
Measured values	luminosity, temperature, humidity, atmospheric pressure
Output voltage	1..4x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 10 kΩ
Output current	1x/2x 4..20 mA, max. load 500 Ω
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	typ. 0,6 W (24 V =)	1,5 VA (24 V ~)
Measuring range temp.	-40..+60 °C	0..+50 °C	-20..+80 °C	-15..+35 °C, adjustable at the transducer, default setting: -20..+80 °C, optional
Measuring range humidity	0..100% rH non-condensing, optional
Measuring range light	0..200 Lux	0..1000 Lux	0..2 kLux	0..10 kLux	0..20 kLux	0..50 kLux, selectable at the device
Measuring range atm. pressure	500..1500 hPa, optional
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy Light	±5% of measuring range
Accuracy atmospheric pressure	±0,5% of measured value
Sensor	Ambient light sensor with precise optical filtering appropriate to the human eye
Enclosure	enclosure USE-M, PC, pure white cover PC, translucent
Protection (IP)	IP65 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm²
Ambient condition	-30..+70 °C, max. 85% rH non-condensing
Delivery content	incl. mounting base enclosure USE-M pure white

Light & Motion

Li65+ active

Item description: product | output (V/A)

Outdoor sensor light – active 0..10 V	4..20 mA				LM2
Item description	USEapp	Item No.	On stock	€
Li65+ V	✓	662680	⊜	130,20
Li65+ A	✓	662697	⊜	130,20

Outdoor sensor light + temperature – active 2x 0..10 V	2x 4..20 mA	relay			LM1
Item description	USEapp	Item No.	€
Li65+ Temp VV	✓	700672	148,70
Li65+ Temp AA	✓	700689	148,70
Li65+ Temp VV relay	✓	707305	188,80

Outdoor sensor light + temperature + humidity + atmospheric pressure (opt.) – active 3x/4x 0..10 V			LM1
Item description	USEapp	Item No.	€
Li65+ Temp_rH 3xV	✓	700696	201,50
Li65+ Temp_rH_hPa 4xV	✓	700702	222,00

Li65+ BUS

Item description: product | measuring values | BUS

Modbus · BACnet

Outdoor sensor light + temperature – BUS			LM1
Item description	USEapp	Item No.	€
Li65+ Temp RS485 Modbus	✓	700733	176,90
Li65+ Temp RS485 BACnet (MS/TP)	✓	700740	176,90

Outdoor sensor light + temperature + humidity – BUS			LM1
Item description	USEapp	Item No.	€
Li65+ Temp_rH RS485 Modbus	✓	700757	229,70
Li65+ Temp_rH RS485 BACnet (MS/TP)	✓	700764	229,70

Outdoor sensor light + temperature + humidity + atmospheric pressure – BUS			LM1
Item description	USEapp	Item No.	€
Li65+ Temp_rH_hPa RS485 Modbus	✓	700771	250,20
Li65+ Temp_rH_hPa RS485 BACnet (MS/TP)	✓	700788	250,20

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
BLE dongle with micro-USB – communication between USEapp	NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			

RDI

Ceiling-mounted sensor for motion detection in rooms. The small design (d=30mm) permits an inconspicuous installation in suspended ceilings. Available with 3 detection ranges (standard, small range, spot). The RDI can be used e.g. for an occupancy-based switching of lights or temperature reduction if unoccupied, which in return increases energy-efficiency.

RDI Standard

RDI Small Range

RDI Spot

TECHNICAL DATA	
Measured values	motion
Output switch contact	floating contact NO for 24 V, load max. 1 A (resistive) with follow-up time 8 seconds
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,5 W (24 V =) | 1,1 VA (24 V ~)
Dectection range	Standard: max. range 10 m, with an installation height of 2,5 m range detection will be 7,1x5,3 m, Cone-shaped detection range, angle 110°/93° (H/V)
	Small Range: max. range 5 m, with an installation height of 2,5 m range detection will be 6x4,3 m, Cone-shaped detection range, angle 100°/82° (H/V)
	Spot: max. range 5 m, with an installation height of 2,5 m range detection will be 1,7x1 m, Cone-shaped detection range, angle 38°/22° (H/V)
Sensor	PIR (passive infrared)
Enclosure	ABS, pure white
Protection (IP)	IP20 according to EN 60529
Electrical connection	plug-in terminal, max. 1,5 mm² connection wire PVC, 2x Ø=0,25 mm², grey, length=15 cm
Ambient condition	-20..+50 °C, max. 85% rH non-condensing

Ceiling sensor motion – active relay			LM2
Item description	Item No.	On stock	€
RDI Standard	187060	⊜	90,00
RDI Small Range	426503		90,00
RDI Spot	436670		90,00

Light & Motion

WRF04I

Wall-mounted sensor for motion detection in rooms. The WRF04I provides a relay contact for efficient light control or temperature reduction in unoccupied rooms. Especially designed for application in residential and commercial buildings, offices and corridors. The sensor can be directly mounted on the wall, in a flush-mounted standard EU box or a surface-mounted frame (see 'Accessories').

TECHNICAL DATA	
Measured values	motion
Output switch contact	floating contact NO for 24 V, load max. 1 A (resistive) with follow-up time 8 seconds
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	typ. 0,5 W (24 V =) | 1,1 VA (24 V ~)
Dectection range	Cone-shaped detection range, angle 110°/93° (H/V), range 10 m, 80 detection zones. With an installation height of 2,8 m range detection will be 7x5 m.
Sensor	PIR (passive infrared)
Enclosure	PC, pure white
Protection (IP)	IP30 according to EN 60529
Cable entry	breaking points top/bottom, rear entry
Electrical connection	terminal block, max. 1,5 mm²
Ambient condition	-20..+50 °C, max. 85% rH non-condensing
Mounting	flush-mounted on standard EU box (Ø=60 mm) or to be mounted flat onto the surface using screws with frame for surface mounting (accessory) or directly on the wall, base part can be mounted and wired separately

Wall sensor motion – active relay | BUS				LM1
Item description	Relay	Item No.	On stock	€
WRF04I Relay	1	195812	⊜	94,20

Accessories			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⊜	0,85
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10
Frame for surface mounting NOVOS 3/WRF04	111584	⊜	12,80

WRF06I

Flush-mounted sensor for motion detection in rooms. The WRF06I provides a relay contact for efficient light control or temperature reduction in unoccupied rooms. Especially designed for applications in residential and commercial buildings, offices and corridors. Available in different designs and colors of various switch frame manufacturers. The device is mounted in a flush-mounted standard EU box.

WRF06I,
Gira E2 pure white matt

WRF06I,
Jung AS 500 alpine white

TECHNICAL DATA	
Measured values	motion
Output switch contact	floating contact NO for 24 V, load max. 1 A (resistive) with follow-up time 8 seconds
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV
Power consumption	max. 0,5 W (24 V =) | 1,1 VA (24 V ~)
Dectection range	range max. 10 m horizontal 110° vertical 93° 80 zones
Sensor	PIR (passive infrared)
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.5 aluminum | stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo® *, future® linear *, impuls
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100 *
Switch range Jung	LS 990 *, A 500, AS 500, A plus, A creation, CD 500 *
Switch range Merten	M-Smart, M-Plan, 1-M, Atelier-M, M-Pure, Artec *, Artec stainless steel *, Antik *
Switch range Peha	AURA, AURA glass
Enclosure	Central disc in switch manufacturer's design (appearance may vary)
Protection (IP)	IP30 according to EN 60529
Electrical connection	plug-in terminal, max. 1,5 mm²
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush-mounted in standard EU box (Ø=60 mm, min. depth=45 mm)
Notes	* in switch program with intermediate frame

Light & Motion

WRF06I

Item description: product | switch range | colour

Wall sensor motion – active relay		LM2
Item description	Item No.	€
WRF06I Gira E2 pure white matt	187183	107,10
WRF06I Berker S.1 polar white	223997	107,10
WRF06I Busch-Jaeger Busch-balance® SI alpine white	630405	107,10
WRF06I Busch-Jaeger Reflex SI alpine white	413350	107,10
WRF06I Jung A 500 alpine white	630412	107,10
WRF06I Merten M-Smart polar white brilliant	630429	107,10

Options	
Item description	€
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in further colours and/or ›55 mm (various manufacturers)	12,50
Switch ranges stainless steel	glass	aluminium (different manufacturers)	40,00

Accessories			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⊜	43,10

LDF+

DATA SHEETS

Ceiling-mounted sensor used for the measurement of brightness or ambient light levels. Depending on the prism (straight or diagonal), light levels can be detected reliably and selectively in living rooms, offices and work spaces. The sensor is adapted to the spectral sensitivity of human eyes and contributes to a demand-based efficient control of light and sunblinds/shading systems. The remote sensor can be connected to the enclosure with a conventional RJ45 cable, allowing for an easy installation even in hardly accessible locations. If two sensors are used, the average, minimum or maximal value of both brightness signals can be provided in addtion to the independent measurements of each sensor (configurable via Thermokon USEapp).

LDF+ straight prism

LDF+ diagonal prism

0..10 V / 4..20 mA   USEapp   Modbus   BACnet   LON
LOCAL OPERATING NETWORK

TECHNICAL DATA	
Measured values	luminosity
Output voltage	1x/2x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via app or uConfig), min. load 10 kΩ
Output current	1x/2x 4..20 mA, max. load 500 Ω
Output switch contact	Relay: 2x floating contact NO for 24 V ~ or 24 V = / 3 A, optional
Network technology	RS485 BACnet (MS/TP), LON FT (free topology), RS485 Modbus
Power supply	15..35 V = or 19..29 V ~ SELV A: 15..35 V = SELV
Power consumption	typ. 0,6 W (24 V =) | 1,5 VA (24 V ~) A: max. 20 mA (24 V =) AA: max. 40 mA (24 V =)
Measuring range light	0..200 Lux | 0..1000 Lux | 0..2 kLux | 0..10 kLux | 0..20 kLux | 0..50 kLux, selectable at the device
Accuracy Light	±5% of measuring range, calibration via Thermokon USEapp
Sensor	Ambient light sensor with precise optical filtering appropriate to the human eye
Prism	acrylic glass clear straight, diagonal
Enclosure	enclosure USE-M, PC, pure white
Protection (IP)	IP30 according to EN 60529
Cable entry	Flextherm M20 for wire Ø=4,5..9 mm Relay/BUS: M25 with fourfold cable entry for wire with max. Ø=7 mm removable
Electrical connection	removable plug-in terminal, max. 2,5 mm² BUS terminal: removable plug-in terminal, max. 1,5 mm² sensor wire (patch cable) length=1,5 m (default), max. 10 m, plug RJ45
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Delivery content	incl. mounting base enclosure USE-M pure white

Light & Motion

LDF+ active

Ceiling sensor light – active 0..10 V	4..20 mA	relay			LM2
Item description	USEapp	Item No.	€
LDF+ V L1500 straight prism	✓	662604	157,00
LDF+ V L1500 diagonal prism	✓	662628	157,00
LDF+ A L1500 straight prism	✓	662635	157,00
LDF+ A L1500 diagonal prism	✓	662642	157,00
LDF+ V L1500 straight prism relay	✓	707336	197,10
LDF+ V L1500 diagonal prism relay	✓	707350	197,10

Dual ceiling sensor light – active 2x 0..10 V	2x 4..20 mA	relay			LM1
Item description	USEapp	Item No.	€
LDF+ Dual VV 2xL1500 straight prism	✓	700849	204,20
LDF+ Dual VV 2xL1500 diagonal prism	✓	700856	204,20
LDF+ Dual AA 2xL1500 straight prism	✓	700863	204,20
LDF+ Dual AA 2xL1500 diagonal prism	✓	700870	204,20
LDF+ Dual VV 2xL1500 straight prism relay	✓	707374	244,30
LDF+ Dual VV 2xL1500 diagonal prism relay	✓	707381	244,30

LDF+ BUS

Modbus   **BACnet**

Ceiling sensor light – BUS			LM1
Item description	USEapp	Item No.	€
LDF+ RS485 Modbus L1500 straight prism	✓	700887	185,20
LDF+ RS485 Modbus L1500 diagonal prism	✓	700894	185,20
LDF+ RS485 BACnet (MS/TP) L1500 straight prism	✓	700900	185,20
LDF+ RS485 BACnet (MS/TP) L1500 diagonal prism	✓	700917	185,20

| Dual ceiling sensor light – BUS			LM1
Item description	USEapp	Item No.	€
LDF+ Dual RS485 Modbus 2xL1500 straight prism	✓	700924	232,40
LDF+ Dual RS485 Modbus 2xL1500 diagonal prism	✓	700931	232,40
LDF+ Dual RS485 BACnet (MS/TP) 2xL1500 straight prism	✓	700948	232,40
LDF+ Dual RS485 BACnet (MS/TP) 2xL1500 diagonal prism	✓	700955	232,40

LON
LOCAL OPERATING NETWORK

Options	
Item description	€
Add to price of RS485 Modbus for LON FT	74,00

LDF+

| Accessories			AS1
Item description	Item No.	On stock	€
Mounting base enclosure USE-M pure white	668354	⊜	8,10
Sensor wire 1,5 m with RJ45 connector	628785	⊜	5,75
Sensor wire 3 m with RJ45 connector	708852	⊜	7,40
Sensor wire 7,5 m with RJ45 connector	708869	⊜	13,80
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
For cable entries and sealing inserts please refer to chapter "Accessories"			
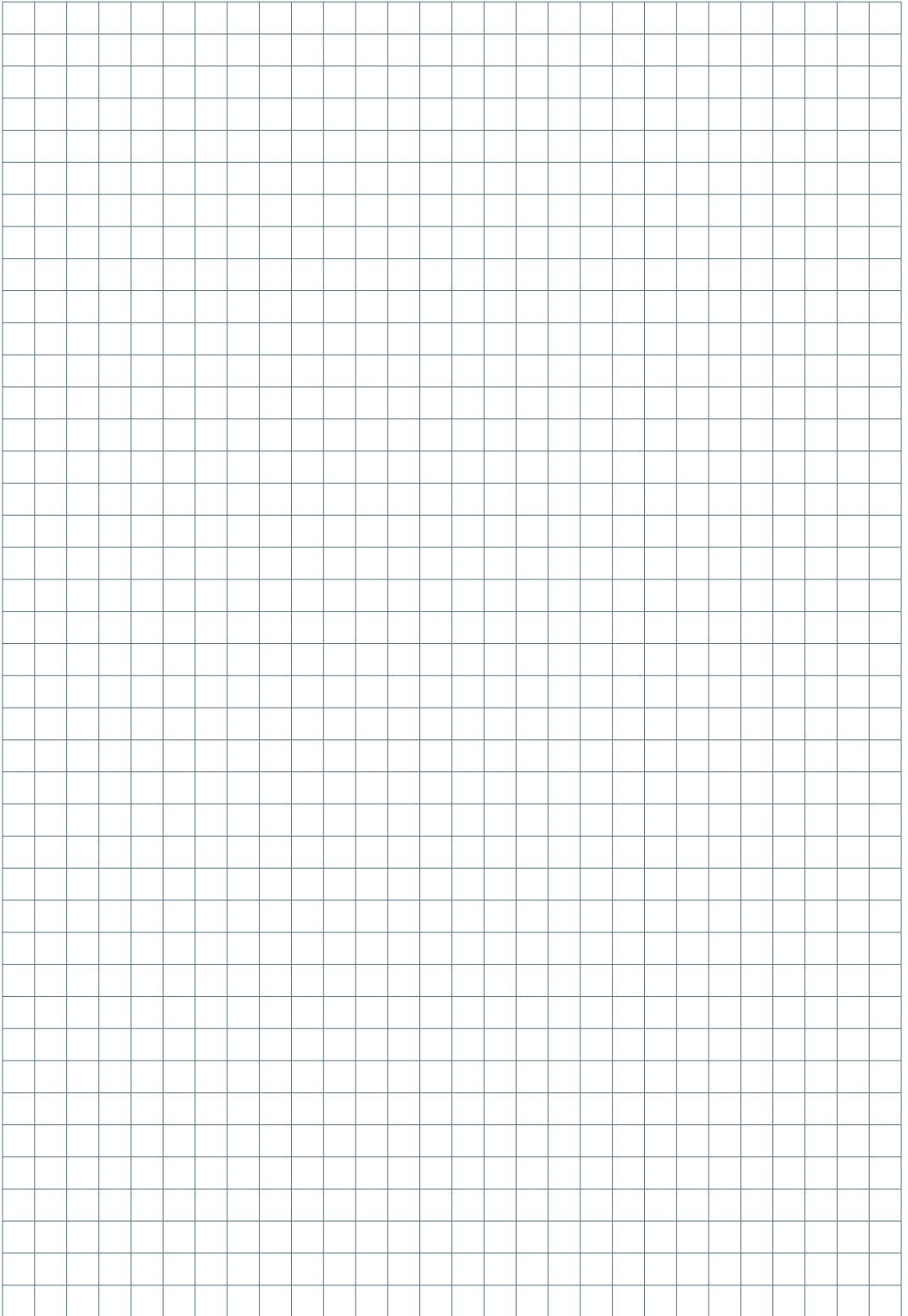
Power Thyristors

Power thyristors can more and more be found where ohmic and inductive loads must be controlled (e.g. in industrial furnaces ...) By means of the modular and compact construction and control with a continuous control signal power thyristors become the perfect actuators for industrial power control.
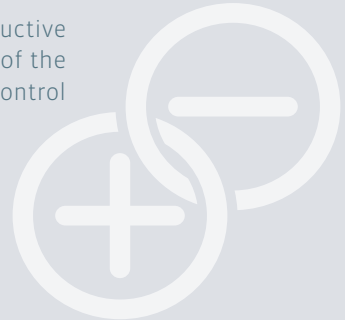
Power Thyristors

Single-phase

Three-phase

Phase angle control

The phase angle control can be used for almost any ohmic and inductive consumers and is the most common way to control the power consumption of a consumer. The consumer is connected to the supply network via the power thyristor. The thyristors are controlled in such a way, that the consumer is not supplied with the complete sinusoidal oscillation but only a part (depending on the steering angle), whereas the voltage average value can be adjusted continuously.
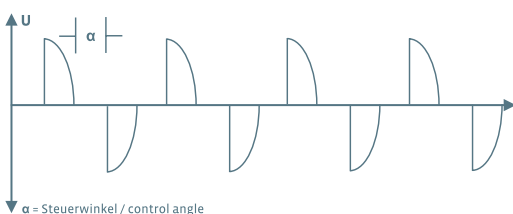
Oscillation control

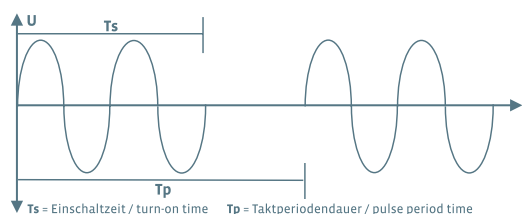The oscillation control is used with inert consumers such as heaters. Contrary to the phase angle control, complete sinusoidal waves are switched through to the consumer with the oscillation control. The control of the average voltage value is made by switching through a certain number of oscillations (depending on the switch-on time) within a certain time slot (clock cycle). Thus convertor feedback effects to the power supply network in form of harmonic components are avoided.

α = Steuerwinkel / control angle

Ts = Einschaltzeit / turn-on time Tp = Taktperiodendauer / pulse period time

TS1 1-phase

The TS1 single-phase power thyristor controller is used to control the load or power of industrial load applications (e.g. fans, pumps, lamps, heating coils, industrial ovens). Its solid and compact design permit seamless installation and a wear-free control with a high degree of efficiency.

TECHNICAL DATA	
Power output	output for ohmic and inductive loads: 2 A: 0,46 kW (230 V ~ / 2 A) 4 A: 0,92 kW (230 V ~ / 4 A) 6 A: 1,38 kW (230 V ~ / 6 A) 8 A: 1,84 kW (230 V ~ / 8 A) 10 A: 2,3 kW (230 V ~ / 10 A) 12 A: 2,76 kW (230 V ~ / 12 A)
Output voltage	reference voltage for potentiometer: 10 V =
Output switch contact	signal contact at 100% Ua, floating contact NO for 250 V ~ / 3 A or 24 V = / 3 A
Power supply	L1, N: 230 V ~ 48..62 Hz self-synchronizing
Inputs	electrical activation via setpoint signal 0..10 V = or 0..20 mA (selectable via DIP switches), input for potentiometer 2,5..10 kΩ
Functions	phase angel, optional oscillation
Display	LED – power supply OK, LED – modulation amplitude 100%
Enclosure	PA
Protection (IP)	IP40 according to EN 60529, screw terminals IP23 according to DIN EN 60529
Electrical connection	terminal block, max. 2,5 mm²
Ambient condition	0..+45 °C
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Notes	versions up to 4 A with heat sink, version 6 A with heat sink, versions 8 A and higher with heat sink and fan

Power thyristor – phase angel		TR1
Item description	Item No.	€
TS1 1-phase 1-ph 2A 0,46 kW	229678	188,20
TS1 1-phase 1-ph 4A 0,92 kW	226639	219,40
TS1 1-phase 1-ph 6A 1,38 kW	224000	255,20
TS1 1-phase 1-ph 8A 1,84 kW	236980	281,70
TS1 1-phase 1-ph 10A 2,3 kW	223874	303,60
TS1 1-phase 1-ph 12 A 2,76 kW	230605	330,20

Power thyristor – oscillation		TR1
Item description	Item No.	€
TS1 1-phase SP 1-ph 2A 0,46 kW	283137	188,20
TS1 1-phase SP 1-ph 4 A 0,92 kW	226622	219,40
TS1 1-phase SP 1-ph 6 A 1,38 kW	238885	255,20
TS1 1-phase SP 1-ph 8 A 1,84 kW	255189	281,70
TS1 1-phase SP 1-ph 10 A 2,3 kW	266109	303,60
TS1 1-phase SP 1-ph 12 A 2,76 kW	233712	330,20

TS3 1-phase

The TS3 single-phase power thyristor controller is used to control the load or power of industrial load applications (e.g. fans, pumps, lamps, heating coils, industrial ovens). Its solid and compact design permit seamless installation and a wear-free control with a high degree of efficiency.

TECHNICAL DATA	
Power output	output for ohmic and inductive loads: 15 A: 3,5 kW (230 V ~ / 15 A) 25 A: 5,75 kW (230 V ~ / 25 A) 35 A: 8,05 kW (230 V ~ / 35 A) 50 A: 11,5 kW (230 V ~ / 50 A)
Output voltage	reference voltage for potentiometer: 10 V =
Output switch contact	signal contact in case of fault state, floating contact NO for 230 V ~ / 2 A
Power supply	L1, N: 230 V ~ 45..65 Hz self-synchronizing
Inputs	electrical activation via setpoint signal 0..10 V =, 0..20 mA or 4..20 mA (selectable via DIP switches), input for potentiometer 2,5..10 kΩ
Functions	phase angel, optional oscillation
Display	4 LEDs for showing state of device
Enclosure	aluminium
Protection (IP)	IP40 according to EN 60529
Electrical connection	screw terminal, max. 1,5..10 mm² (depending on type)
Ambient condition	0..+50 °C
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715

Power thyristor – phase angel		TR1
Item description	Item No.	€
TS3 1-phase 1-ph 15A 3,45 kW	237161	362,50
TS3 1-phase 1-ph 25A 5,75 kW	241649	514,90
TS3 1-phase 1-ph 35A 8,05 kW	238489	544,90
TS3 1-phase 1-ph 50A 11,5 kW	361200	631,50

Power thyristor – oscillation		TR1
Item description	Item No.	€
TS3 1-phase SP 1-ph 15A 3,45 kW	245500	362,50
TS3 1-phase SP 1-ph 25A 5,75 kW	231091	514,90
TS3 1-phase SP 1-ph 35A 8,05 kW	270977	544,90
TS3 1-phase SP 1-ph 50A 11,5 kW	344333	631,50

Power Thyristors

TS1 3-phase

The TS1 three-phase power thyristor controller is used to control the load or power of industrial load applications (e.g. fans, pumps, lamps, heating coils, industrial ovens). Its solid and compact design permit seamless installation and a wear-free control with a high degree of efficiency.

TECHNICAL DATA	
Power output	output for ohmic and inductive loads: 2 A: 1,2 kW (400 V ~ / 2 A) 4 A: 2,5 kW (400 V ~ / 4 A) 6 A: 4,0 kW (400 V ~ / 6 A) 8 A: 5,0 kW (400 V ~ / 8 A) 10 A: 6,5 kW (400 V ~ / 10 A)
Output voltage	reference voltage for potentiometer: 10 V =
Output switch contact	signal contact at 100% Ua, floating contact NO for 250 V ~ / 3 A or 24 V = / 3 A
Power supply	L1, L2, L3, N: 400 V ~ 48..62 Hz self-synchronizing
Inputs	electrical activation via setpoint signal 0..10 V = or 0..20 mA (selectable via DIP switches), input for potentiometer 2,5..10 kΩ
Functions	phase angel, optional oscillation
Display	LED – power supply OK, LED – modulation amplitude 100%
Enclosure	PA
Protection (IP)	IP40 according to EN 60529, screw terminals IP23 according to DIN EN 60529
Electrical connection	terminal block, max. 2,5 mm²
Ambient condition	0..+45 °C
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Notes	versions up to 4 A with heat sink, version 6 A with heat sink, versions 8 A and higher with heat sink and fan

Power thyristor – phase angel		TR1
Item description	Item No.	€
TS1 3-phase 3-ph 2A 1,2 kW	230148	214,80
TS1 3-phase 3-ph 4A 2,5 kW	246514	236,70
TS1 3-phase 3-ph 6A 4,0 kW	224260	263,20
TS1 3-phase 3-ph 8A 5,0 kW	233736	290,90
TS1 3-phase 3-ph 10A 6,5 kW	224314	322,10

Power thyristor – oscillation		TR1
Item description	Item No.	€
TS1 3-phase SP 3-ph 2A 1,2 kW	273558	214,80
TS1 3-phase SP 3-ph 4A 2,5 kW	268226	236,70
TS1 3-phase SP 3-ph 6A 4,0 kW	275910	263,20
TS1 3-phase SP 3-ph 8A 5,0 kW	275927	290,90
TS1 3-phase SP 3-ph 10A 6,5 kW	241182	322,10

TS3 3-phase

DATA SHEETS

The TS3 three-phase power thyristor controller is used to control the load or power of industrial load applications (e.g. fans, pumps, lamps, heating coils, industrial ovens). Its solid and compact design permit seamless installation and a wear-free control with a high degree of efficiency.

TECHNICAL DATA	
Power output	output for ohmic and inductive loads: 15 A: 10 kW (400 V ~ / 15 A) 25 A: 16 kW (400 V ~ / 25 A) 35 A: 23 kW (400 V ~ / 35 A) 50 A: 33 kW (400 V ~ / 50 A)
Output voltage	reference voltage for potentiometer: 10 V =
Output switch contact	signal contact in case of fault state, changeover contact floating for 230 V ~ / 2 A, signal contact at 100% Ua, changeover contact floating for 230 V ~ / 2 A, operation signal, changeover contact floating for 230 V ~ / 2 A
Power supply	L1, L2, L3: 400 V ~ 45..65 Hz self-synchronizing
Inputs	electrical activation via setpoint signal 0..10 V = or 0..20 mA (selectable via DIP switches), input for potentiometer 2,5..10 kΩ, PWM input 5 V / 5..10 kHz, input for PTC according to DIN 44081, input for reset
Functions	phase angel, optional oscillation, start-up period adjustable (0..10 sec.)
Display	4 LEDs for showing state of device
Enclosure	aluminium
Protection (IP)	IP40 according to EN 60529
Electrical connection	screw terminal, max. 1,5..10 mm² (depending on type)
Ambient condition	0..+50 °C
Mounting	4 mounting holes Ø=8 mm for mounting on galvanized mounting plates (control cabinet)

Power thyristor – phase angel		TR1
Item description	Item No.	€
TS3 3-phase 3-ph 15A 10 kW	224796	705,30
TS3 3-phase 3-ph 25A 16 kW	225649	805,80
TS3 3-phase 3-ph 35A 23 kW	225656	940,80
TS3 3-phase 3-ph 50A 33 kW	256353	1049,30

Power thyristor – oscillation		TR1
Item description	Item No.	€
TS3 3-phase SP 3-ph 15A 10 kW	225236	705,30
TS3 3-phase SP 3-ph 25A 16 kW	240970	805,80
TS3 3-phase SP 3-ph 35A 23 kW	241014	940,80
TS3 3-phase SP 3-ph 50A 33 kW	223836	1049,30

Power Thyristors

TS2 3-phase

The TS2 three-phase power thyristor controller is used to control the load or power of industrial load applications (e.g. fans, pumps, lamps, heating coils, industrial ovens). Its solid and compact design permit seamless installation and a wear-free control with a high degree of efficiency.

TECHNICAL DATA	
Power output	output for ohmic and inductive loads: 75 A: 50 kW (400 V ~ / 75 A) 90 A: 60 kW (400 V ~ / 90 A) 120 A: 78 kW (400 V ~ / 120 A)
Output voltage	reference voltage for potentiometer: 10 V =
Output switch contact	signal contact in case of fault state, changeover contact floating for 230 V ~ / 2 A, signal contact at 100% Ua, changeover contact floating for 230 V ~ / 2 A, operation signal, changeover contact floating for 230 V ~ / 2 A
Power supply	L1, L2, L3: 400 V ~ (± 15%) 48..62 Hz self-synchronizing
Inputs	electrical activation via setpoint signal 0..10 V =, 0..20 mA or 4..20 mA (selectable via DIP switches), input for potentiometer 2,5..10 kΩ, input for PTC according to DIN 44081
Functions	phase angel, optional oscillation
Display	9 LEDs for showing state of device
Enclosure	aluminium with plexiglas cover
Protection (IP)	IP23 according to DIN EN 60529
Electrical connection	Power connections, M8 connection screw for cable lug, connection control electronics, max. 1.5 mm²
Ambient condition	0..+55 °C
Mounting	4 mounting holes Ø=8 mm for mounting on galvanized mounting plates (control cabinet)

Power thyristor – phase angel		TR1
Item description	Item No.	€
TS2 3-phase 3-ph 75A 50 kW	236522	1719,90
TS2 3-phase 3-ph 90A 60 kW	260190	2024,70
TS2 3-phase 3-ph 120A 78 kW	304719	2316,70

Power thyristor – oscillation		TR1
Item description	Item No.	€
TS2 3-phase SP 3-ph 75 A 50 kW	339094	1719,90
TS2 3-phase SP 3-ph 90 A 60 kW	326926	2024,70
TS2 3-phase SP 3-ph 120 A 78 kW	336482	2316,70

Accessories
Information

Special labelling/painting

Customized labeling - customize your device with our special printings, special engravings or lasering.

With a customized paint/printing finish, your device can be perfectly integrated into your project not only technically but also optically.

Special printing (minimum order amount 20 pcs.)	
Item description	€
Special printing – order quantity 20..49 pcs. (each per colour)	16,00
Special printing – order quantity 50..99 pcs. (each per colour)	12,00
Special printing – order quantity from 100 pcs. (each per colour)	6,00
Special printing setup and tool costs (once for one-colour print – net price)	164,20

Special painting	
Item description	€
Special painting – prices on request	
Special painting setup costs (once per colour – net price)	164,20

Special engraving / special lasering	
Item description	€
Engraving/lasering – order quantity 1..5 pcs. (each)	50,60
Engraving/lasering – order quantity 6..10 pcs. (each)	36,90
Engraving/lasering – order quantity 11..19 pcs. (each)	27,60
Engraving/lasering setup and tool costs (once – net price)	82,10

Communication interfaces

Bluetooth® dongle for parametization of USE or NOVOS devices and compatible with both USEapp and NOVOSapp – all Thermokon devices with an app logo (USEapp or NOVOSapp) can be easily customized individually via Bluetooth® by using a mobile end device (e.g. measuring ranges, measured values, limit values, BUS settings, ...).

Thermokon USB interface – all Thermokon devices of the USE and NOVOS product lines as well as thanos EVO can be customized with a PC/Laptop using the free uConfig software (extensive configuration options).

USB-to-RS485 Modbus converter – used to make Modbus signals readable to your PC with any Modbus software.

Communication interface			
Item description	Item No.	On stock	€
BLE dongle with micro-USB – communication between USEapp | NOVOSapp and devices USE-M / USE-L / NOVOS (net price)	668262	⊜	29,80
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
Converter RS485 Modbus – USB incl. driver CD for connection to a computer (net price)	668293	⊜	55,50

Inspection certificate 3.1 according to EN 10204

The Inspection Certificate 3.1 acc. to EN10204 provides information on the traceability of a device, taking into consideration and complying with national standards. Test reference equipment and procedures for the measurement of physical units in accordance with the International System of Units (SI) are applied and certified. The inspection certificate includes two defined measured values in accordance with customer requirements. The certificates are assigned to one sensor each and can be issued for the following measurements:

- Temperature range: -30 to +150 °C

- Humidity range: 5..95% rH.

| Inspection certificate (please specify 2 measuring points)		
Item description	Item No.	€
Inspection certificate 3.1 (EN 10204) temperature – 2 values within range -30..+150 °C (net price)	119030	46,20
Inspection certificate 3.1 (EN 10204) humidity – 2 values within range 15..90% (net price)	665407	46,20
Additional measuring point		23,10

Mounting accessories enclosure USE

We offer a variety of application-specific changeable sealing inserts, cable glands and mounting solutions for a quick and easy installation of our sensors in the USE enclosures. A quick-release fitting is used to connect a protection sleeve. Typically required standard accessories are already included in the respective delivery content of each sensor.

M20 (Ø 4,5..9 mm)

M25 (Ø 4x 7 mm)

Fl**e**xtherm
Ø 4,5..9 mm

Ø 2x 7 mm

Replacement articles – mounting accessories USE			AS1
Item description	Item No.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊜	4,75
Mounting base enclosure USE-S pure white	667722	⊜	5,65
Mounting base enclosure USE-M pure white	668354	⊜	8,10
Mounting base enclosure USE-L pure white	668361	⊜	11,30
Mounting kit AKF10+ for enclosure USE-S without cable entry	748551	⊜	7,00
Mounting kit universal for enclosure USE	698511	⊜	9,05
Sensor wire 1,5 m with RJ45 connector	628785	⊜	5,75
Sensor wire 3 m with RJ45 connector	708852	⊜	7,40
Sensor wire 7,5 m with RJ45 connector	708869	⊜	13,80

Accessories – cable entry and sealing inserts M20 | M25			AS1
Item description	Item No.	On stock	€
Cable entry M20 USE white, sealing insert Flextherm M20 Ø=4,5..9 mm (4 pcs)	752626	⊜	10,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	⊜	10,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	⊜	10,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	⊜	10,30
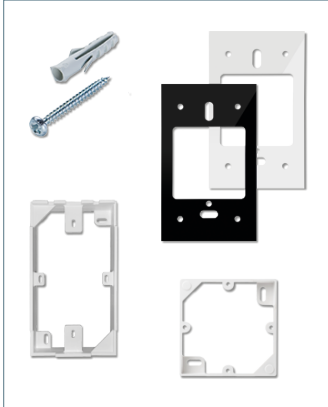
Mounting accessories general

We offer suitable plugs and screws for easy mounting of sensors.

A surface-mounted frame for the WRF04 as well as NOVOS and JOY is optionally available to provide additional space for connection wires.

Rawlplugs and screws			AS1
Item description	Item No.	On stock	€
Fixing kit rawlplugs and screws (2x each)	660945	⬒	0,85

Frame for surface mounting			AS1
Item description	Item No.	On stock	€
Frame for surface mounting NOVOS 3/WRF04	111584	⬒	12,80
Decorative frame pure white for JOY	681452	⬒	12,40
Decorative frame black for JOY	740951	⬒	12,40
Frame for surface mounting JOY, pure white with installation set	760201	⬒	24,80
Frame for surface mounting JOY, jet black with installation set	760195	⬒	24,80

Power supply

If only 230 V power supply is available at the installation site, the PSU adapter can transform mains voltage to 24 V = to power 24 V devices. The PSU can be flush-mounted into a standard EU box.

Power supply			AS1
Item description	Item No.	On stock	€
PSU-UP24 – flush-mounted power supply 24 V (100..240 V ~ -> 24 V =, 0,5 A)	645737	⬒	43,10

Accessories
Information

Enclosure protection/enclosures

In order to protect devices from damage or vandalism or other external impacts, we offer compatible protection cases:

- Ball stroke protection BS150 - suitable for enclosure series NOVOS 3/WRF04
- Sun/rain protection RS150

For alternative mounting we offer the following accessories:

- Enclosure for surface mounting MDS – suitable for MDS
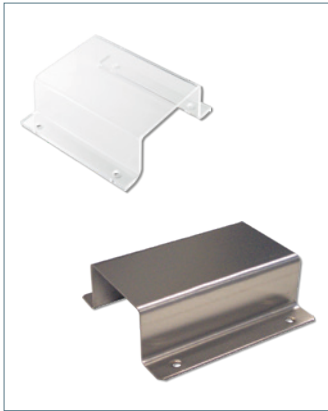
Enclosure Protection			AS1
Item description	Item No.	On stock	€
Ball stroke protection BS150, transparent (for series NOVOS 3/WRF04)	647007	⊜	23,30
Sun/rain protection RS150	103329	⊜	23,30

Enclosures			AS1
Item description	Item No.	On stock	€
Enclosure for surface mounting MDS pure white	448512	⊜	49,50

airScan

Thermokon's airScan tool consists of a USB transceiver and the free airScan software, which turns your PC or Mac easily into a field strength measuring device. This tool is used to measure transmission ranges and locate optimal installation spots for EnOcean transmitters/receivers/gateways. airScan provides a quick overview of EnOcean telegrams, device status, EnOcean ID, field strength and manufacturer of the product.

A 3 m USB extension cable for optimal positioning of the USB stick (even on the ceiling) is available as an accessory.

Accessories airScan			
Item description	Item No.	On stock	€
EnOcean USB transceiver for airConfig/airScan (incl. license – net price)	566704	⊜	103,50
USB extension 3 m (net price)	574044	⊜	13,80

Accessories for antennas

Antenna extensions (10 m or 20 m) for a more flexible and convenient positioning of the antenna, to be connected to the receiver/gateway.

Magnetic antenna mounting plate for installing in an optimal location.

Accessories for antennas			AS1
Item description	Item No.	On stock	€
Antenna extension 10 m	257206	⊜	57,60
Antenna extension 20 m	257213	⊜	70,10
Antenna holder AHA180, galvanized, form L, 180x180x90 mm (net price)	255097	⊜	14,70

Power supply

If the average brightness is not sufficient, many EasySens® wireless transmitters can be equipped with an additional backup battery/coin cell.

Battery			AS1
Item description	Item No.	On stock	€
Battery LS14250	315098	⊜	4,15
Coin cell CR1225	727310	⊜	4,15
Coin cell CR1632	597814	⊜	4,15
Coin cell CR2032	347013	⊜	4,15

Software/Configuration

For the SR06 LCD, a programming interface is available for configuring the device and charging the energy capacitor if needed at low light installations.

All Thermokon units with an airConfig logo can be wirelessly configured via airConfig software (free of charge). An EnOcean-compatible USB transceiver is required to transmit the configuration data from your PC or Mac to the device (bidirectional communication).

The latest software version can be downloaded from the Downloadcenter free of charge.

Software/Configuration			AS1
Item description	Item No.	On stock	€
Thermokon USB interface – To configure USE, NOVOS via uConfig, SR06 LCD with its own software (+ charge)	597838	⊜	35,80
airConfig (freeware via www.thermokon.com)			0,00
Software/Plug-In for configuration (free via www. thermokon.com)			0,00
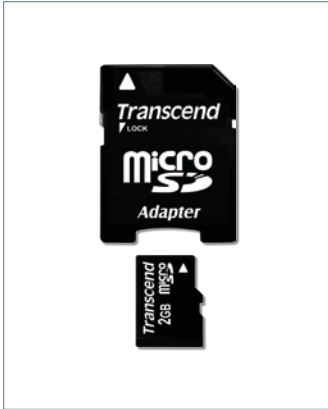
Storage media

The thanos SR wireless room thermostat as well as the JOY have various configuration options and can even display graphics like screensavers or logos (thanos SR only). The required data can be stored on a compatible SD card, which is included in the delivery content.

Storage media			AS1
Item description	Item No.	On stock	€
SD card (2 GB)	500098	⊜	11,60

Mounting

Mounting accessories for the radio multi-sensor SR-MDS for false ceiling installations.

Connection plug for adding the STC-PLUS 4DO extension module to the STC-DO8.

Mounting			AS1
Item description	Item No.	On stock	€
Enclosure for surface mounting SR-MDS pure white	514439	⊜	49,50
Mounting ring for hollow ceiling with retaining clips to be used with SR-MDS	627825	⊜	6,70
Connector STC-DO8 to STC-PLUS 4DO	517577	⊜	7,70

Accessories Information

Valve adapters/enclosure protection SAB

Various valve adapters are available for adapting SAB+ and SAB05 to valves from different manufacturers. Additional types available on request. In order to protect the SAB wireless valve actuator from dismounting or vandalism, we recommend the SAB Lock and a safety lock. For the SAB05, an additional battery protection kit is available.

Valve adapters			
Item description	Item No.	On stock	€
Valve adapter SAB for Giacomini Z810 (22,6 mm)	634724		24,70
Valve adapter SAB for Oventrop Z809 (M30x1,0)	611978		24,70
Valve adapter SAB for Herz Z807 (M28 X 1,5 mm)	595070		24,70
Valve adapter SAB for Danfoss RA2000 Z802	589093		24,70
Valve adapter SAB for Danfoss RAV Z803	589109		24,70
Valve adapter SAB for Danfoss RAV-L Z804	589116		24,70
Valve adapter SAB for Danfoss Z800	589079		24,70
Valve adapter SAB for Danfoss Z801	589086		24,70
Valve adapter SAB for Danfoss Z805	615181		24,70
Further valve adapters on request			

Enclosure protection			AS1
Item description	Item No.	On stock	€
SAB Lock – dismounting protection SAB	688611	⊜	6,20
Safety lock dismounting protection SAB	706148	⊜	10,70
Battery protection SAB05	595612	⊜	19,00

Mounting

An extensive range of accessories simplifies the installation of our sensors even further. It includes mounting flanges for various thermowell diameters, clamp connections for cable sensors, mounting installation sets for average temperature sensors and frost-protection thermostats as well as tightening straps with thermal contact fluid.

Mounting flanges			AS1
Item description	Item No.	On stock	€
Mounting flange MF2 (for frost protection thermostats)	435642	⊜	6,50
Mounting flange MF6DS flexible (suitable for Ø=6 mm; AS2)	669016	⊜	6,50
Mounting flange MF6 flexible (suitable for Ø=4 | 6 | 7 mm; AS2)	399098	⊜	6,50
Mounting flange MF4 (brass)	102438	⊜	5,25
Mounting flange MF6 (brass)	3407	⊜	6,50
Mounting flange MF7 (brass)	102360	⊜	6,50
Mounting flange MF8 (VA)	103305	⊜	19,30

Compression fittings			AS1
Item description	Item No.	On stock	€
KL4VA – Compression fittings G 1/4" for Ø=4 mm with cutting ring VA, stainless steel	103206	⊜	13,10
KL6VA – Compression fittings G 1/4" for Ø=6 mm with cutting ring VA, stainless steel	103213	⊜	13,10

Installation sets			AS1
Item description	Item No.	On stock	€
Installation set TFR/MWF	458399	⊜	8,65
Mounting bracket with cable gland for duct sensors Ø=6 mm	670593	⊜	12,40

Tightening strap with contact fluid			AS1
Item description	Item No.	On stock	€
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊜	2,75
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊜	4,25
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊜	2,75
Syringe thermal contact fluid	102308	⊜	1,45

Accessories
Information

Thermowells

Thermowells in different lengths are available to install our duct sensors even in liquid media. The thermowells are available in brass and stainless steel as well as silicone-free (on request).

length

pocket length

Accessories – thermowells brass for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	⊜	8,10
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⊜	9,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015	⊜	9,70
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022	⊜	10,10
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985	⊜	11,60
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039	⊜	12,00
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046	⊜	12,20

Accessories – thermowells stainless steel for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item No.	On stock	€
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	⊜	17,60
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⊜	19,40
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824	⊜	20,90
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848	⊜	22,00
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862	⊜	27,30
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879	⊜	28,60
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893	⊜	29,50
VA-thermowell pocket 600 mm type THVADS600	600 mm	586 mm	611923	⊜	36,20
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	⊜	18,70

Accessories – thermowells stainless steel for sensors with pocket Ø=8 mm				AS2
Item description	Length	Item No.	On stock	€
VA thermowell 100 mm type THVA100 (KFK03)	100 mm	584180	⊜	27,80
VA thermowell 150 mm type THVA150 (KFK03)	150 mm	584197	⊜	29,10
VA thermowell 200 mm type THVA200 (KFK03)	200 mm	584203	⊜	30,70
VA thermowell 250 mm type THVA250 (KFK03)	250 mm	594738	⊜	32,30

Bonded pockets

Bonded pockets for immersion sensors are available for installations with high duct pressures/volume flows.

Accessories – bonded pockets					AS1
Item description	Length	Pocket length	Item No.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	⊜	46,10
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	⊜	52,80
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	⊜	59,50
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	⊜	65,40

Mounting

Our installation accessories simplify the installation of our sensors even further. Compatible mounting flanges for our humidity sensors as well as wall-mount angles for duct hygrostats are available.

Mounting flanges			AS1
Item description	Item No.	On stock	€
Mounting flange MF20	612562	⬒	12,10

Enclosure Protection			AS1
Item description	Item No.	On stock	€
Sun/rain protection PA6 white for outdoor humidity sensors	587709	⬒	6,00
Sensor protection (wire mash) for fan speeds 8..15 m/s	429047	⬒	23,10
Weather protection for FTK+, WSA (replacement)	625241	⬒	70,00

Wall mounting			AS1
Item description	Item No.	On stock	€
Wall mounting for duct hygrostat	429030	⬒	39,00

Protection filters

The following replacement filters are available:

- Stainless steel, wire mesh – suitable for FTK +, FTA54 +
- PTFE – suitable for FSK01

Filter elements			AS1
Item description	Item No.	On stock	€
Filter stainless steel, wire mesh (spare part)	231169	⊜	9,05
PTFE filter	429054	⊜	42,80

Accessories Information

Gases

We offer following accessories for our air pressure sensors:

- Metal duct connectors – suitable for connection to air ducts
- Adapter 90° angle – suitable for all pressure hoses Ø=4 mm
- T-hose connector – suitable for the connection of several devices (pressure hoses Ø = 4 mm)
- Mounting bracket differential pressure switch – suitable for PS

Duct connectors				AS1
Item description	Length	Item No.	On stock	€
Adapter 90° angle for pressure hoses Ø=4 mm		668330	⊜	8,25
Metal duct connector MKS40	40 mm	265138	⊜	4,15
Metal duct connector MKS100	100 mm	302531	⊜	4,95

Pressure hoses			AS1
Item description	Item No.	On stock	€
T-hose connector for pressure hoses Ø=4 mm (10 pcs)	668323	⊜	30,70

Mounting bracket			AS1
Item description	Item No.	On stock	€
Mounting bracket differential pressure switch 110x80x20 mm	669009	⊜	3,60

Fluids

We offer following accessories for our water pressure sensors:

- Connection wire 5 m with plug – suitable for DLF/DPL
- UD-A - Universal Display for 4..20 mA output models – suitable for DLF/DPL
- Stainless steel and brass fitting sets – suitable for DPL
- Connection adapter G1/4" to G1/2" – suitable for DLF
- Mounting bracket differential pressure transmitter – suitable for DPL

Screw Connection Kit			AS1
Item description	Item No.	On stock	€
Screw connection set Ø=6 mm stainless steel (2 pcs.)	373388	⊜	58,00
Screw connection set Ø=6 mm brass (2 pcs.)	373401	⊜	13,70
Screw connection set Ø=8 mm stainless steel (2 pcs.)	373395	⊜	66,60
Screw connection set Ø=8 mm brass (2 pcs.)	373418	⊜	13,80

Connections			AS1
Item description	Item No.	On stock	€
Connection adapter G 1/4" to G 1/2"	277068	⊜	9,15
Connection wire DLF/DPL – connection plug and wire 5 m	668309	⊜	12,90
UD-A – universal display for 4..20 mA	718189	⊜	89,00

Mounting bracket			AS1
Item description	Item No.	On stock	€
Mounting bracket differential pressure transmitter 40x40x60 mm	663892	⊜	9,15

Temp. °C	PT100 Ohm	PT1000 Ohm	Ni1000 Ohm	Ni1000 TK5000 Ohm	KTY81-110 Ohm	KTY81-121 Ohm	KTY81-122 Ohm
-50	80,31	803,10	743,00	790,88	515	505	525
-40	84,27	842,70	791,00	830,83	567	557	577
-30	88,22	882,20	842,00	871,69	624	614	634
-20	92,16	921,60	893,00	913,48	684	674	694
-10	96,09	960,90	946,00	956,24	747	737	757
0	100,00	1.000,00	1.000,00	1.000,00	815	805	825
10	103,90	1.039,00	1.056,00	1.044,79	886	876	896
20	107,79	1.077,90	1.112,00	1.090,65	961	951	971
25	109,74	1.097,40	1.141,00	1.113,99	1.000	990	1.010
30	111,67	1.116,70	1.171,00	1.137,61	1.040	1.030	1.050
40	115,54	1.155,40	1.230,00	1.185,71	1.122	1.112	1.132
50	119,40	1.194,00	1.291,00	1.234,97	1.209	1.199	1.219
60	123,24	1.232,40	1.353,00	1.285,44	1.299	1.289	1.309
70	127,07	1.270,00	1.417,00	1.337,14	1.392	1.382	1.402
80	130,89	1.308,90	1.483,00	1.390,12	1.490	1.480	1.500
90	134,70	1.347,00	1.549,00	1.444,39	1.591	1.581	1.601
100	138,50	1.385,00	1.618,00	1.500,00	1.696	1.686	1.706
110	142,29	1.422,00	1.688,00	1.556,98	1.805	1.795	1.815
120	146,06	1.460,60	1.760,00	1.615,36	1.915	1.905	1.925
130	149,82	1.498,20	1.853,00	1.675,18	2.023	2.013	2.033
140	153,58	1.535,80	1.909,00	1.736,47	2.124	2.114	2.134
150	157,31	1.573,10	1.987,00	1.799,26	2.211	2.201	2.221

Temp. °C	KTY81-210 Ohm	FeT Ohm	LM235Z mVolt	BALCO 500 OHM	NTC 1,6K OHM	NTC1,8k Ohm	NTC2,2K OHM
-50	1.030	–		382,1	–	–	–
-40	1.135	–	2.332	399,8	53.370	40.375	73.060
-30	1.247	1.934,70	2.432	418,0	28.173	22.906	38.550
-20	1.367	2.030,41	2.532	435,6	15.489	13.477	21.200
-10	1.495	2.127,68	2.632	453,3	8.840	8.198	12.110
0	1.630	2.226,53	2.732	471,0	5.222	5.141	7.162
10	1.772	2.327,01	2.832	488,7	3.184	3.315	4.372
20	1.922	2.429,15	2.932	497,3	1.999	2.193	2.747
25	2.000	2.480,86	2.982	506,3	1.600	1.800	2.200
30	2.080	2.533,00	3.032	523,6	1.289	1.486	1.773
40	2.245	2.638,60	3.132	541,3	851,9	1.028	1.173
50	2.417	2.745,99	3.232	558,5	576,1	726	793
60	2.597	2.855,23	3.332	576,2	397,9	522	548
70	2.785	2.966,36	3.432	593,4	280,2	382	386
80	2.980	3.079,42	3.532	610,6	200,9	284	276
90	3.182	3.194,47	3.632	627,8	146,5	214	201
100	3.392	3.311,56	3.732	645,1	108,5	164	149
110	3.607	3.430,75	3.832	662,3	81,5	127	112
120	3.817	3.552,09	3.932	679,1	62,1	99	85
130	4.008	3.675,65	–	696,3	47,9	–	66
140	4.166	3.801,48	–	713,1	37,4	–	51
150	4.280	3.929,65	–	–	29,5	–	40

Temp. °C	NTC3K OHM	NTC 3,3K OHM	NTC 5K OHM	NTC 5,369 OHM	NTC-SAT OHM	NTC 10K kOHM	NTC 10K PRE kOHM
-50	–	–	333.914,00	–	–	667,83	–
-40	102.690	109.600	167.835,50	116.300	9.709	335,67	239,80
-30	53.730	57.820	88.341,50	66.190	9.462	176,68	135,20
-20	29.346	31.800	48.487,00	39.100	9.063	96,97	78,91
-10	16.674	18.160	27.649,00	23.890	8.468	55,30	47,54
0	9.822	10.740	16.325,40	15.060	7.658	32,65	29,49
10	5.976	6.558	9.951,75	9.778	6.665	19,90	18,79
20	3.750	4.121	6.246,85	6.517	5.573	12,49	12,26
25	3.000	3.300	5.000,00	5.369	5.025	10,00	10,00
30	2.417	2.660	4.028,00	4.449	4.493	8,06	8,19
40	1.598	1.759	2.662,45	3.104	3.519	5,32	5,59
50	1.081	1.190	1.800,50	2.209	2.704	3,60	3,89
60	747,3	822	1.243,55	1.600	2.059	2,49	2,76
70	526,8	579	875,80	1.178	1.566	1,75	1,99
80	378,3	415	628,09	880,5	1.198	1,26	1,46
90	276,3	302	458,06	666,6	925	0,92	1,08
100	204,9	224	339,32	510,3	725	0,68	0,82
110	154,2	168	255,03	393,6	577	0,51	0,62
120	117,7	128	194,30	305,2	468	0,39	0,48
130	90,9	98	149,91	238,9	386	0,30	0,38
140	71,1	77	117,04	188,4	325	0,23	0,30
150	56,2	60	92,40	150,2	278	0,18	0,24

Temp. °C	NTC10-CAREL OHM	NTC12K OHM	NTC20k kOhm	NTC30K OHM	NTC50K OHM	NTC100K OHM
-50	–	–	1.490,40	–	4.168.934	–
-40	186.796	396.422,72	803,20	1.219.114	2.033.606	3.216.000
-30	110.881	204.948,28	412,80	622.924	1.038.697	1.721.000
-20	67.683	111.626,16	220,60	331.871	553.243	955.400
-10	42.431	63.671,20	122,40	183.696	306.183	548.800
0	27.280	37.841,88	70,20	105.305	175.508	325.500
10	17.961	23.332,63	41,60	62.343	103.903	198.900
20	12.092	14.869,02	25,34	38.019	63.364	125.000
25	10.000	12.000	20,00	30.000	50.000	100.000
30	8.312	9.761,37	15,88	23.828	39.714	80.530
40	5.826	6.582,83	10,21	15.317	25.529	53.140
50	4.159	4.548,87	6,71	10.079	16.799	35.860
60	3.020	3.213,88	4,51	6.778	11.297	24.690
70	2.228	2.317,13	3,10	4.651	7.750,9	17.330
80	1.668	1.701,83	1,82	3.251	5.418,7	12.830
90	1.266	1.271,35	1,54	2.313	3.854,8	8.996
100	974	964,72	1,11	1.673	2.787,2	6.636
110	758	742,67	0,81	1.228	2.046,1	4.966
120	597	579,39	0,60	915	1.523,4	3.766
130	475	457,60	0,45	–	1.149,5	2.892
140	382	365,57	0,34	–	878,2	2.247
150	310	–	0,27	–	678,8	1.766

Notes

USE
Product Overview

Accessories Information

TEMPERATURE

			USE-S	USE-M	USE-M (LCD)	USEapp
Room sensors	RPF40+	RPF40+ active	✓			
	RPF100+	RPF100+ active	✓			
	RDF-IR	V/VV		✓		✓
Duct sensors	AKF10+	passive	✓			
		TRV/TRA	✓			
		LCD TRV/TRA			✓	✓
		TRV relay		✓		✓
		LCD TRV relay			✓	✓
		BUS		✓		✓
		LCD BUS			✓	✓
	MWF+	passive	✓			
		TRV/TRA	✓			
		LCD TRV/TRA			✓	✓
		TRV relay		✓		✓
		LCD TRV relay			✓	✓
		BUS		✓		✓
		LCD BUS			✓	✓
	MWF400+	passive	✓			
		TRV/TRA	✓			
		LCD TRV/TRA			✓	✓
		TRV relay		✓		✓
		LCD TRV relay			✓	✓
		BUS		✓		✓
		LCD BUS			✓	✓

Explanation: ■ included in delivery ☐ optional – not compatible

thermokon®

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
■	☐	☐	M20	SET 1
■	☐	☐	M20	SET 1
–	☐	■	M20	SET 2
–	☐	■	M25	SET 2
–	☐	■	M25	SET 2
–	☐	■	M25	SET 2
–	☐	■	M25	SET 2
–	–	■	M20	SET 2
–	–	■	M20	SET 2
–	☐	■	M20	SET 2
–	☐	■	M25	SET 2
–	☐	■	M25	SET 2
–	☐	■	M25	SET 2
–	☐	■	M25	SET 2
■	☐	☐	M20	SET 1
■	☐	☐	M20	SET 1
–	☐	■	M20	SET 2
–	☐	■	M25	SET 2
–	☐	■	M25	SET 2
–	☐	■	M25	SET 2
–	☐	■	M25	SET 2

ACCESSORIES (included in delivery)

SET 1	Cover screw	1x
	Mounting clip	1x
	Sealing insert (rubber based)	1x
	Screws (countersunk head)	2x
	Screw cover	1x
SET 2	Cover screw	1x
	Screws (rounded head)	2x
	Rawlplugs	2x
	Screws (countersunk head)	2x
	Screw cover	1x

TEMPERATURE 🌡			USE-S	USE-M	USE-M (LCD)	USEapp
Immersion sensors	SFK02+/ SFKH02+	passive	✔			
		TRV/TRA	✔			
		LCD TRV/TRA			✔	✔
		TRV relay		✔		✔
		LCD TRV relay			✔	✔
		BUS		✔		✔
		LCD BUS			✔	✔
	SFK02+ FR	passive	✔			
		TRV/TRA	✔			
		LCD TRV/TRA			✔	✔
		TRV relay		✔		✔
		LCD TRV relay			✔	✔
		BUS		✔		✔
		LCD BUS			✔	✔

Explanation: ■ included in delivery ☐ optional – not compatible

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
–	–	–	M20	SET 2
–	–	–	M20	SET 2
–	–	–	M20	SET 2
–	–	–	M25	SET 2
–	–	–	M25	SET 2
–	–	–	M25	SET 2
–	–	–	M25	SET 2
–	–	–	M20	SET 2
–	–	–	M20	SET 2
–	–	–	M20	SET 2
–	–	–	M25	SET 2
–	–	–	M25	SET 2
–	–	–	M25	SET 2
–	–	–	M25	SET 2

ACCESSORIES (included in delivery)

SET 1	Cover screw Mounting clip Sealing insert (rubber based) Screws (countersunk head) Screw cover	1x 1x 1x 2x 1x
SET 2	Cover screw Screws (rounded head) Rawlplugs Screws (countersunk head) Screw cover	1x 2x 2x 2x 1x

TEMPERATURE 🌡

			USE-S	USE-M	USE-M (LCD)	USEapp
Outdoor sensors	AGS54+	passive	✓			
	AGS55+	passive	✓			
		TRV/TRA	✓			
		LCD TRV/TRA			✓	✓
		TRV relay		✓		✓
		LCD TRV relay			✓	✓
		BUS		✓		✓
		LCD BUS			✓	✓
Contact sensors	VFG54+	passive	✓			
		TRV/TRA	✓			
		LCD TRV/TRA			✓	✓
		TRV relay		✓		✓
		LCD TRV relay			✓	✓
		BUS		✓		✓
		LCD BUS			✓	✓
	AF25+	TRV/TRA	✓			
		LCD TRV/TRA			✓	✓
		TRV relay		✓		✓
		LCD TRV relay			✓	✓
		BUS		✓		✓
		LCD BUS			✓	✓

Explanation: ■ included in delivery   ☐ optional   – not compatible

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
☐	■	–	M20	SET 2
☐	■	–	M20	SET 2
☐	■	–	M20	SET 2
☐	■	–	M20	SET 2
☐	■	–	M25	SET 2
☐	■	–	M25	SET 2
☐	■	–	M25	SET 2
☐	■	–	M25	SET 2
–	–	–	M20	SET 2
–	–	–	M20	SET 2
–	–	–	M20	SET 2
–	–	–	M25	SET 2
–	–	–	M25	SET 2
–	–	–	M25	SET 2
–	–	–	M25	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2

ACCESSORIES (included in delivery)

SET 1	Cover screw	1x
	Mounting clip	1x
	Sealing insert (rubber based)	1x
	Screws (countersunk head)	2x
	Screw cover	1x

SET 2	Cover screw	1x
	Screws (rounded head)	2x
	Rawlplugs	2x
	Screws (countersunk head)	2x
	Screw cover	1x

TEMPERATURE 🌡			USE-S	USE-M	USE-M (LCD)	USEapp
Contact sensors	PR25+	TRV/TRA	✔			
		LCD TRV/TRA			✔	✔
		TRV relay		✔		✔
		LCD TRV relay			✔	✔
		BUS		✔		✔
		LCD BUS			✔	✔
	OF14+	TRV/TRA	✔			
		LCD TRV/TRA			✔	✔
		TRV relay		✔		✔
		LCD TRV relay			✔	✔
		BUS		✔		✔
		LCD BUS			✔	✔
Cable sensors	TF14+	TRV/TRA	✔			
	TF25+	TRV/TRA	✔			
		LCD TRV/TRA			✔	✔
		TRV relay		✔		✔
		LCD TRV relay			✔	✔
		BUS		✔		✔
		LCD BUS			✔	✔

Explanation: ■ included in delivery   ☐ optional   – not compatible

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	□	M20	SET 2
–	■	□	M20	SET 2
–	■	□	M20	SET 2
–	■	□	M25	SET 2
–	■	□	M25	SET 2
–	■	□	M25	SET 2
–	■	□	M25	SET 2

ACCESSORIES (included in delivery)

SET 1	Cover screw	1x
	Mounting clip	1x
	Sealing insert (rubber based)	1x
	Screws (countersunk head)	2x
	Screw cover	1x

SET 2	Cover screw	1x
	Screws (rounded head)	2x
	Rawlplugs	2x
	Screws (countersunk head)	2x
	Screw cover	1x

Accessories Information

HUMIDITY			USE-S	USE-M	USE-M (LCD)	USEapp
Room sensors	FTP+	VV/AA		✓		
	FT-RDF18+	VV/AA	✓			
	FTB+	VV/AA		✓		
Duct sensors	FTK+	VV/AA	✓			
		LCD VV/AA			✓	✓
		VV relay		✓		✓
		LCD VV relay			✓	✓
		BUS		✓		✓
		LCD BUS			✓	✓
Outdoor sensors	WSA	VV/AA	✓			
		BUS		✓		✓
	FTA54+	VV		✓		
		AA		✓		
		LCD VV/AA			✓	✓
		VV relay		✓		✓
		LCD VV relay			✓	✓
		BUS		✓		✓
		LCD BUS			✓	✓
Condensation/ Leakage	LS02+	LS02+ / LS02+ ext.	✓			
	WK01+	24 V	✓			
		ext. 24 V	✓			
		ext. 230 V	USE-L			✓
	WK02+	ext. 24 V	USE-L			✓
		ext. 230 V	USE-L			✓

Explanation: ■ included in delivery   ☐ optional   – not compatible

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	□	■	M20	SET 2
–	□	■	M20	SET 2
–	□	■	M25	SET 2
–	□	■	M25	SET 2
–	□	■	M25	SET 2
–	□	■	M25	SET 2
–	–	–	M20	SET 2
–	–	–	M25	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	–	–	M20	SET 2
–	–	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2

ACCESSORIES (included in delivery)

SET 1		
Cover screw	1x
Mounting clip	1x
Sealing insert (rubber based)	1x
Screws (countersunk head)	2x
Screw cover	1x

SET 2		
Cover screw	1x
Screws (rounded head)	2x
Rawlplugs	2x
Screws (countersunk head)	2x
Screw cover	1x

PRESSURE & VELOCITY

			USE-L	USE-L (LCD)	USEapp
Differential pressure transducer	DPA+	VV	✔		
		AA Dual VV/AA	✔		✔
		LCD VV/AA LCD Dual VV/AA		✔	✔
		VV relay	✔		✔
		LCD VV relay LCD Dual 4xV		✔	✔
		BUS Dual BUS	✔		✔
		LCD BUS LCD Dual BUS		✔	✔

Explanation: ■ included in delivery   ☐ optional   − not compatible

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M25	SET 2
–	■	–	M25 M20	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2

ACCESSORIES (included in delivery)

SET 1	Cover screw	1x
	Mounting clip	1x
	Sealing insert (rubber based)	1x
	Screws (countersunk head)	2x
	Screw cover	1x
SET 2	Cover screw	1x
	Screws (rounded head)	2x
	Rawlplugs	2x
	Screws (countersunk head)	2x
	Screw cover	1x

Accessories Information

AIR QUALITY			USE-M	USE-M (LCD)	USE-L	USEapp
Room sensors	LP+	V			✓	
Duct sensors	LK+	V/VV	✓			
		AA	✓			✓
		LCD VV/AA		✓		✓
		3xV/4xV	✓			✓
		LCD 3xV/4xV		✓		✓
		VV relay	✓			✓
		LCD VV relay		✓		✓
		BUS	✓			✓
		LCD BUS		✓		✓
		Temp BUS	✓			✓
		LCD Temp BUS		✓		✓
		Temp_rH BUS	✓			✓
		LCD Temp_rH BUS		✓		✓

Explanation: ■ included in delivery □ optional – not compatible

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
–	■	–	M20	SET 2
–	–	■	M20	SET 2
–	–	■	M20	SET 2
–	–	■	M20	SET 2
–	–	■	M20	SET 2
–	–	■	M20	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2

ACCESSORIES (included in delivery)

SET 1	Cover screw	1x
	Mounting clip	1x
	Sealing insert (rubber based)	1x
	Screws (countersunk head)	2x
	Screw cover	1x
SET 2	Cover screw	1x
	Screws (rounded head)	2x
	Rawlplugs	2x
	Screws (countersunk head)	2x
	Screw cover	1x

Accessories Information

AIR QUALITY			USE-M	USE-M (LCD)	USEapp
Duct sensors	LK+ CO2 100	V/VV	✔		
		AA	✔		✔
		LCD VV/AA		✔	✔
		3xV	✔		✔
		LCD 3xV		✔	✔
		VV relay	✔		✔
		LCD VV relay		✔	✔
		Temp BUS	✔		✔
		LCD Temp BUS		✔	✔
		Temp_rH BUS	✔		✔
		LCD Temp_rH BUS		✔	✔

Explanation: ■ included in delivery ☐ optional – not compatible

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
–	–	■	M20	SET 2
–	–	■	M20	SET 2
–	–	■	M20	SET 2
–	–	■	M20	SET 2
–	–	■	M20	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2
–	–	■	M25	SET 2

ACCESSORIES (included in delivery)

SET 1	Cover screw	1x
	Mounting clip	1x
	Sealing insert (rubber based)	1x
	Screws (countersunk head)	2x
	Screw cover	1x

SET 2	Cover screw	1x
	Screws (rounded head)	2x
	Rawlplugs	2x
	Screws (countersunk head)	2x
	Screw cover	1x

AIR QUALITY			USE-M	USE-M (LCD)	USEapp
Outdoor sensors	LA+	V	✔		
		VV/A/AA	✔		✔
		LCD VV/AA		✔	✔
		3xV	✔		✔
		LCD 3xV		✔	✔
		VV relay	✔		✔
		LCD VV relay		✔	✔
		BUS	✔		✔
		LCD BUS		✔	✔
		Temp BUS	✔		✔
		LCD Temp BUS		✔	✔
		Temp_rH BUS	✔		✔
		LCD Temp_rH BUS		✔	✔

Explanation: ■ included in delivery ☐ optional – not compatible

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2

ACCESSORIES (included in delivery)

SET 1	Cover screw	1x
	Mounting clip	1x
	Sealing insert (rubber based)	1x
	Screws (countersunk head)	2x
	Screw cover	1x
SET 2	Cover screw	1x
	Screws (rounded head)	2x
	Rawlplugs	2x
	Screws (countersunk head)	2x
	Screw cover	1x

LIGHT & MOTION

			USE-M	USEapp
Multi sensors	Li65+	V/VV	✔	
		A/AA	✔	✔
		3xV/4xV	✔	✔
		Temp BUS	✔	✔
		Temp_rH BUS	✔	✔
		Temp_rH_hPa BUS	✔	✔
Light sensors	LDF+	V/Dual VV	✔	
		A/Dual AA	✔	✔
		BUS	✔	✔
		Dual BUS	✔	✔

Explanation: ■ included in delivery ☐ optional – not compatible

Mounting clip	Mounting base	Mounting flange	Cable entry	Accessories
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2
–	■	–	M20	SET 2
–	■	–	M20	SET 2
–	■	–	M25	SET 2
–	■	–	M25	SET 2

ACCESSORIES (included in delivery)

SET 1	Cover screw	1x
	Mounting clip	1x
	Sealing insert (rubber based)	1x
	Screws (countersunk head)	2x
	Screw cover	1x
SET 2	Cover screw	1x
	Screws (rounded head)	2x
	Rawlplugs	2x
	Screws (countersunk head)	2x
	Screw cover	1x

Glossary

OUTPUTS

A, AA, 2A	1 resp. 2 outputs 4..20 mA; output values depending on product
V, VV, 3xV, 4xV or 2V, 3V, 4V	1, 2, 3, 4 outputs 0..10 V; output values depending on product
AS, AAS, VS, VVS	1 resp. 2 active outputs + 1 passivee output temperature (S)
TRA	output 4..20 mA, digit for measuring range temperature following
TRV	output 0..10 V, digit for measuring range temperature following
TRA1/TRV1	range -50..+50 °C
TRA2/TRV2	range -10..+120 °C
TRA3/TRV3	range 0..+50 °C
TRA4/TRV4	range 0..+160 °C
TRA5/TRV5	range 0..+250 °C
TRA6/TRV6	range 0..+400 °C
TRA7/TRV7	range 0..+600 °C
TRA8/TRV8	range -15..+35 °C
MultiRange	range adjustable at the device

SI-PROTECTION

Changes in temperature are causing formation of humidity. Thus, there is a risk that the humidity can permeate in the contact point of the sensor. As a result, the sensor would corrode and oxygenate. Thus, the contact point would become unreliable.

The SI-Protection procedure provides the contact point with epoxy gum and a fluidized bed coating which unites with the insulation material of the wire. Thus, a complete unit is built protecting the sensor against vibrations and humidity.

PROTECTION AGAINST VIBRATION AND HUMIDITY
SI-Protection

DUAL CHANNEL – SELF CALIBRATION

Dual Channel self calibration utilizes an independent 2nd optical beam to compare and reference the measuring beam. Because the 2nd beam is used only once a day it will wear off much less resulting in a negligible error. Contrary to products using the commonly used ABC-Logic™, dual channel sensors can be used for all applications including hospitals, casinos, horticulture and livestock etc, which are in use 24/7.

COMMUNICATION

EasySens®	Thermokon radio based on EnOcean IEC 14543-3-10
BACnet	RS485 BACnet (MS/TP), communication protocol specifically designed for building automation; BACnet IP, if mentioned in catalogue
KNX	EIB-KNX interface
LON	LON FTX, communication protocol specifically designed for building automation; other standards, if mentioned in catalogue
Modbus	RS485 Modbus RTU
dS	digitalSTROM

ROOM OPERATING UNITS OPERATING ELEMENTS

P	potentiometer (setpoint adjustment)
MS	slide switch
S	switch (e.g. for fan stages)
T	button (e.g. for occupancy status)
D	LED
LCD	inclusive display
TLF	traffic light function indicating air quality via LED(s)
AZ	Automatic zero-point calibration

PRICE OVERVIEW OF ONE-FOLD SWITCH FRAMES

Note: Prices for frames only valid in connection with basic device, discount group: depending on device

Manufact.	Switch range	Dimensions (WxH)	Colour	Price (€)	WRF07	WRF06 x	WRF06	WRF06i
Berker	Berker S.1	55x55	polar white (g/m), white (g)	0,00	■			
	Berker B.3	55x55	Aluminium, Aluminium black anodized	40,00	■			
	Berker B.7	55x55	polar white (m), anthracite, alu (m)	0,00	■			
Busch-Jaeger	Busch-balance® SI	55x55	alpine white	0,00	■			
	solo®	63x63	studio white (m), chrome (g/m)	12,50	■			
	future® linear	63x63	studio white (g/m), anthracite, alu silver, ivory white	12,50	■			
	Busch-axcent®	63x63	studio white (g)	12,50	■			
Gira	E2	55x55	pure white (g/m), alu, anthracite	0,00	■			
	E3	55x55	pure white (g)	0,00	■			
	Standard 55	55x55	pure white (g/m), creme white (g)	0,00	■			
	Esprit	55x55	different colours and materials	40,00	■			
	Event	55x55	pure white (g/m), alu, anthracite	0,00	■			
	Flächenschalter	71x71	pure white (g)	12,50	■			
Jung	LS 990 plastic	70x70	white, alpine white (g)	12,50	■			
	A 500	55x55	alpine white, aluminium	0,00	■			
	AS 500/AS 500 antibac.	55x55	white, alpine white	0,00	■			
	A plus	55x55	alpine white, aluminium, anthracite	0,00	■			
	A creation plastic	55x55	alpine white, aluminium, anthracite (m)	0,00	■			
	CD 500	67x67	white, alpine white	12,50	■			
Merten	M-Smart	55x55	white (g/m), polar white (g/m), active white (g)	0,00	■			
	M-Plan	55x55	white (g/m), polar white (g/m), active white (g), aluminium, anthracite	0,00	■			
	1-M	55x55	white (g), polar white (g), active white (g)	0,00	■			
	Atelier-M	55x55	white (g), polar white (g), active white (g)	0,00	■			
	M-Pure	55x55	polar white (m), active white (m), aluminium, anthracite	0,00	■			
	Antik	66x66	white (m), polar white (m)	0,00	■			

Explanation: ■ without intermediate frame   ■ with intermediate frame   — not available   g = glossy   m = matt

OTHER SWITCH RANGES, COLOURS AND MATERIALS ON REQUEST

PRICE OVERVIEW OF ONE-FOLD SWITCH FRAMES

Note: Prices for frames only valid in connection with basic device, discount group: AS1

Manufact.	Switch range	Dim. (WxH)	Colour	Price (€)	SR06 LCD / SR07 x / SR07 / SR07 rH	WRF06 LCD / FTW06 LCD dS / FTW06 / FTW06 dS / WRF06 AQ	Radio switches
Berker	Berker S.1	55x55	polar white (g/m), white (g)	4,50	■	■	▣
	Berker B.3	55x55	Aluminium, Aluminium black anodized	40,00	–	■	–
	Berker B.7	55x55	polar white (m), anthracite, alu (m)	4,50	■	■	▣
Busch-Jaeger	Busch-balance® SI	55x55	alpine white	4,50	■	■	▣
	solo®	63x63	studio white (m)	12,50	▣	▣	–
				4,50	–	–	■
	future® linear	63x63	studio white (g/m), anthracite, alu silver, ivory white	12,50	▣	▣	–
				4,50	–	–	■
	Busch-axcent®	63x63	studio white (g)	12,50	▣	▣	–
				4,50	–	–	■
Gira	E2	55x55	pure white (g/m), alu, anthracite	4,50	■	■	▣
	E3	55x55	pure white (g)	4,50	■	■	▣
	Standard 55	55x55	pure white (g/m), creme white (g)	4,50	■	■	▣
	Esprit	55x55	different colours and materials	40,00	■	■	▣
	Event	55x55	pure white (g/m), alu, anthracite	4,50	■	■	▣
	Flächenschalter	71x71	pure white (g)	12,50	▣	▣	■
Jung	LS 990 plastic	70x70	white, alpine white (g)	12,50	▣	▣	■
	A 500	55x55	alpine white, aluminium	4,50	■	■	▣
	AS 500/AS 500 antib.	55x55	white, alpine white	4,50	■	■	▣
	A plus	55x55	alpine white, aluminium, anthracite	4,50	■	■	▣
	A creation plastic	55x55	alpine white, aluminium, anthracite (m)	4,50	■	■	▣
	CD 500	67x67	white, alpine white	12,50	–	▣	–
Merten	M-Smart	55x55	white (g/m), polar white (g/m), active white (g)	4,50	■	■	▣
	M-Plan	55x55	white (g/m), polar white (g/m), active white (g), aluminium, anthracite	4,50	■	■	▣
	1-M	55x55	white (g), polar white (g), active white (g)	4,50	▣	■	▣
	Atelier-M	55x55	white (g), polar white (g), active white (g)	4,50	–	■	▣
	M-Pure	55x55	polar white (m), active white (m), aluminium, anthracite	4,50	■	■	▣
	Antik	66x66	white (m), polar white (m)	4,50	–	▣	▣

Explanation: ■ without intermediate frame   ▣ with intermediate frame   – not available   g = glossy   m = matt

OTHER SWITCH RANGES, COLOURS AND MATERIALS ON REQUEST