thermokon®

HOME OF SENSOR TECHNOLOGY

PRODUCTS

VALID FROM 1ST JANUARY 2025

SENSORS MADE IN GERMANY

THERMOKON AT A GLANCE

USE

SR06 LCD

JOY

NOVOS Touch

Headquarters (5.300 m²)
in Mittenaar-Offenbach
(Administration and Sales)

Production and Warehouse
(11.000 m²) in Bischoffen

SMD Assembly Lines

» 2025

2024 **Investment** into injection moulding machines
2023 **Construction** of a new production and storage facility (11,000 m²)
2022 **Extension** of the product portfolio to sensors with LoRaWAN® interface
2021 **Relaunch** thermokon.de and direct.thermokon.de becoming one
2020 **Establishing** a further SMD assembly line in Mittenaar-Bicken
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 **Launch** of the solar-powered room operating unit SR06 LCD
2015 **Investment** into a new SMD assembly line
2013 **New Company Headquarters** in Mittenaar-Offenbach
2013 **Establishing** Thermokon Sensortechnik Switzerland AG
2012 **A reason to celebrate:** 25 Years Thermokon Sensortechnik GmbH
2011 **Launch of the** high-end touch room operating unit thanos

» 2010

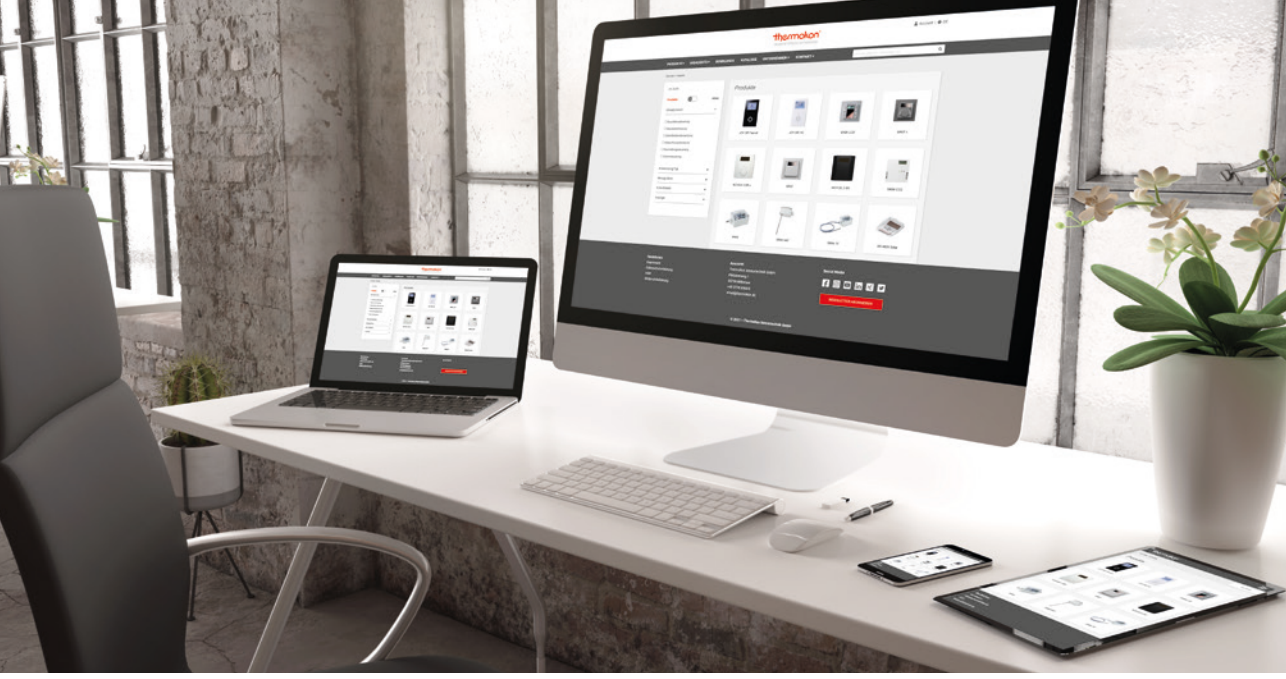
2009 **Extension** of the product portfolio to sensors with BACnet interface
2007 **Further extension** of the company building by 600 m²
2005 **Extension** of the product portfolio to sensors with Modbus interface
2004 **Launch** of the innovative wireless sensor system EasySens®
2002 **Launch** of 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 m²

» 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



thermokon® HOME OF SENSOR TECHNOLOGY | DIRECT easy for you

OUR WEBSITE – **YOUR ADVANTAGE!**

In addition to our new catalogue, we launch our new website with an extended range of functions. In order to give you an even better user experience, we have integrated the functionality of ThermokonDIRECT into our main page – you can now find all products and items directly on the main page. Use the convenient filter function and get the right item for your application in the blink of an eye.

The practical project management function allows you to quickly and conveniently select your required items at any time. Further you can order all items directly once you have registered and are eligible to order online*. Registering different billing and delivery addresses offers you enormous flexibility in order placement and saves you time in daily business.

» Your advantages:

- » Portfolio with more than 5000 online items
- » Project management for a flexible planning
- » Intelligent search via predefined filters or free text (e.g. item number or description)
- » Download of item-specific data sheets and media (BIM files, pictures, software, declarations of conformity, etc.)
- » Comparison function of multiple items or products

Additional functions for existing corporate customers:

- » Online ordering possiblity (24/7)*
- » Online package tracking*
- » View list and net prices*

REGISTER NOW:

www.thermokon.com

** The additional functions will be activated after checking eligibility*

Table of Contents

Thermokon: Home of Sensor Technology 8
USEapp / NOVOSapp 10
JOY Custom 12
LoRaWAN® 14
EasySens® 18
airConfig 20
airScan 21
Individual 22
Casambi 26
References 28
Warranty / SI Protection 30

EasySens®

Room Operating Units

JOY SR Fancoil	Temperature, rel. humidity	32
JOY SR HC	Temperature, rel. humidity	35
SR06 LCD	Temperature, rel. humidity	38
SR07 x	Temperature, rel. humidity	42
NOVOS 3 SR x	Temperature, rel. humidity	45

Room Sensors

SR07	Temperature, rel. humidity	47
NOVOS 3 SR	Temperature, rel. humidity, CO2	49
MCS SR	Light, motion, temperature, rel. hum.	51
SR-MDS	Light, motion, temperature	52
SR-MDS Solar	Light, motion	53

Outdoor / Cable / Duct / Contact Sensors

SR65	Outdoor sensor temperature	54
SR65 TF	Cable sensor temperature	56
SR65 AKF	Duct sensor temperature	56
SR65 VFG	Contact sensor temperature	56

Gateways

STC65+ RS485 Modbus	58
STC65+ RS485 EVC	59
STC-BACnet IP	60
SRC65-BACnet MS/TP	61
STC-IoT	62
STC-KNX	63
STC-KNX UP	64

Repeater

SRE-Repeater	66
SRE-Repeater UP	67

Window Contacts / Door Contacts

SRG02	Window handle (battery-free)	68
SRW03	Window / door contact (battery-free)	69

Actuators

STC-MSG Server	70
STC-MSG Server UP	71
SAB+	72
SAB05	74

Switches

Mini	76
55x55	78
BJ 63x63	80
Jung LS990	82
Hand-held	84
SR-KCS	85

I/O Systems

STC-DO	86
STC-DO Light	87
STC-DO Blind	88
SRC-AO Climate	89
SRC-AO Dim	90
SRC-AO Multi	91
STC-DO8	92
SR65 DI	94

LoRaWAN®

Room Operating Units

NOVOS 3 x LRW	Temperature, rel. humidity, CO2	98

Room Sensors

NOVOS 3 INC LRW	Temperature, rel. humidity, CO2	98
NOVOS 3 LRW	Temperature, rel. humidity, CO2	100
MCS LRW	Light, motion, temperature, rel. hum.	102

Actuators

SAB07 LRW	Temperature, rel. humidity	103

Outdoor Sensors

AGS55+ LRW	Temperature	104
FTA54+ LRW	Temperature, humidity	106
WSA LRW	Temperature, humidity	108
LA+ LRW	CO2, VOC, temperature, humidity	110
Li65+ LRW	Light, air pressure, temp., humidity	112

Duct Sensors

AKF10+ LRW	Temperature	114
FTK+ LRW	Temperature, humidity	116
LK+ LRW	CO2, VOC, temperature, humidity	118
MWF+ LRW	Temperature	120

Condensation Sensors

WK02+ LRW	Condensation, temp., humidity	122

Leakage Sensors

LS02+ ext. LRW	Leakage	124
LS02+ flex LRW	Leakage	126

Pressure / Flow Sensors

DPA+ LRW	Differential pressue, volume flow	128

Gateways

Gateway LRW Indoor RAK 7268V2	131
Gateway LRW Outdoor LORIX One	132
Converter LRW NBnano	133

Table of Contents

Bluetooth®

BLE Switches (Bluetooth® Low Energy)

Mini	BLE switch (battery-free)	**136**
55x55	BLE switch (battery-free)	**138**
Busch-Jaeger	BLE switch (battery-free)	**140**
SR-KCS BLE	BLE key-card switch (battery-free)	**142**

Room Application

Room Operating Units

thanos EVO	Temperature, humidity, CO2, VOC	**144**
NOVOS Touch	Temperature, humidity, CO2, VOC	**150**
NOVOS 7	Temperature, humidity, CO2, VOC	**154**
NOVOS 5 x	Temperature, humidity, CO2, VOC	**158**
NOVOS 3 x	Temperature, humidity, CO2, VOC	**162**
NOVOS 3 INC	Temperature, humidity	**168**
WRF07 x	Temperature, rel. humidity, CO2, VOC	**172**
WRF07 INC	Temperature, rel. humidity	**176**
WRF06 LCD	Temperature, rel. humidity	**178**
WRF06 x	Temperature	**180**
WRF06 INC	Temperature, rel. humidity	**182**
LCR Touch	Temperature, humidity, VOC	**184**

Room Controller

JOY Fancoil	Temperature, rel. humidity	**186**
JOY HC	Temperature, rel. humidity	**190**
LCF02 Touch	Temperature	**194**
LCF02 QTouch	Temperature, rel. humidity, CO2	**196**
LCF02	Temperature	**198**
LCF Touch	Temperature	**200**
LCF	Temperature	**201**
WRF07 RC x	Temperature, rel. humidity	**202**
WRF06 LCD RC	Temperature, rel. humidity	**205**
WRF06 RC x	Temperature	**210**
WRF06 RC	Temperature	**212**
WRF04 RC x	Temperature	**215**
LCA	Temperature	**218**
FSR01	Rel. humidity	**219**

Room Sensors

NOVOS 5	Temperature, humidity, CO2, VOC	**220**
NOVOS 3	Temperature, humidity, CO2, VOC	**224**
NOVOS 3 IR	Radiation temperature	**229**
NOVOS 7 move	Temperature, rel. humidity, CO2	**230**
NOVOS 5 move	Temperature, CO2	**232**
NOVOS 3 move	CO2	**234**
WRF06	Temperature, rel. humidity, CO2, VOC	**236**
FTB+	Temperature, humidity	**242**
WRF06I	Motion	**244**
WRF04I	Motion	**246**

Pendulum Sensors

RPF40/40+	Temperature, radiation temp.	**247/248**
RPF100/100+	Temperature	**250/251**
FTP+	Temperature, humidity	**253**
LP+	CO2, Temperature, humidity	**255**

Ceiling Sensors

RDF18	Temperature	**257**
RDF18+	Temperature, humidity	**258**

RDF-IR	Radiation temperature	260
MDS	Light, motion, temperature	262
RDI	Motion	263
LDF+	Light	264

Outdoor Application

Outdoor Sensors

AGS54+	Temperature	268
AGS55+	Temperature	270
FTA54+	Temperature, humidity	274
WSA	Temperature, humidity	276
LA+	Temperature, humidity, CO2, VOC	278
Li65+	Light, air pressure, temp., humidity	282

Duct Application

Duct Sensors

AKF10+	Temperature	286
FTK+	Temperature, humidity	294
LK+	CO2, VOC, temperature, humidity	298
FSK01	Humidity	306
AVT	Air flow, temperature	307

Average Duct Sensors

MWF+	Temperature	308
MWF400+	Temperature	311

Screw-in Duct Sensors

SFK02+	Temperature	314
SFK02+ FR	Temperature	321
SFK01	Temperature	325
SFK03	Temperature	327

High Temperature Duct Sensors

KFK01	Temperature	331
KFK03	Temperature	334

Cable Sensors / Contact Sensors

Cable Sensors

TF25	Temperature	340
TF25+	Temperature	344
TF14	Temperature	348
TF14+	Temperature	351

Surface Sensors

PR25	Temperature	353
PR25+	Temperature	355
OF14	Temperature	357
OF14+	Temperature	358

Contact Sensors

VFG54+	Temperature	360
AF25	Temperature	363
AF25+	Temperature	365

Table of Contents

Frost Protection / Condensation / Leakage

Condensation Sensors

WK02+	Condensation, temperature, humidity	368
WK01+	Condensation	370

Leakage Detectors

LS02+	Leakage	372
LS02+ ext.	Leakage	373
LS02+ flex	Leakage	375

Frost Protection Thermostats

TFR	Temperature	377
TFRe	Temperature	378

Pressure and Velocity

Gaseous Media

DPA+	Differential pressure, volume flow	380
PS	Differential pressure	386
DPG	Differential pressure	387
MM	Differential pressure	388

Liquid Media

DLF	Pressure	390
DPL	Differential pressure	393

Power Thyristors

Single-Phase

TS1 1-phase	Power thyristor	396
TS3 1-phase	Power thyristor	398

Three-Phase

TS1 3-phase	Power thyristor	400
TS3 3-phase	Power thyristor	402
TS2 3-phase	Power thyristor	404

Accessories / Information

Mounting Accessories

Fastening and screwing	406
Mounting accessories USE	408
Thermowell pockets	409
Bonded pockets	410
Mounting flanges	411
Connections	412
Wires / Cables	412
Frames and enclosures	413
Valve adapters	414

Safety and Protection

Enclosure protection / Anti-theft protection	415
Filters	415

Power supply

Power supplies **416**
Batteries **416**

Configuration

Hardware **417**
Storage media **417**

Miscellaneous

Displays (DLF / DPL) **418**
Special printing **418**
Special painting **418**
Special engraving/Special lasering **418**
Material test report **419**

General Information

Sensor characteristics **420**
Glossary **422**

OUR EXPERTISE – YOUR SUCCESS

Since 1987, 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 sophisticated 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, customised solutions and engineering. Our complete range of products is designed to energy-efficient buildings.

FROM MITTENAAR ACROSS THE GLOBE

Trend-setting sensors and sensor systems are developed and produced at our headquarters in Mittenaar-Offenbach with currently 280 employees. Besides our core values – safety, openness to new technologies and sustainability as well as our daily motivation striving for excellence in sensors, we established an own R&D department, an in-house test laboratory, a climatic chamber 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.

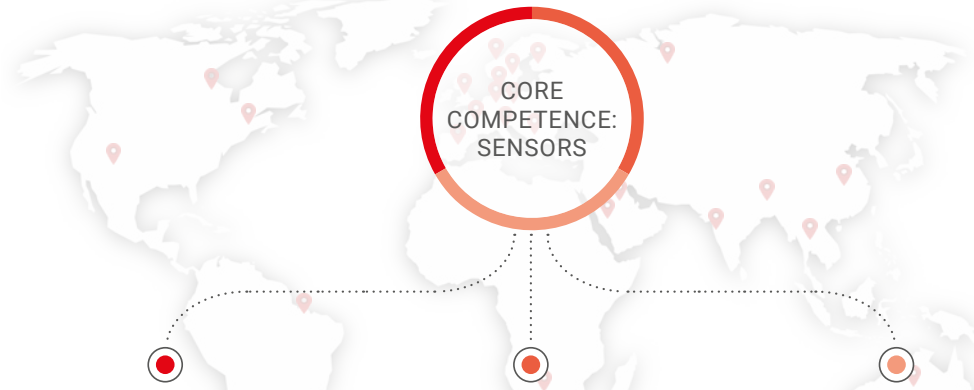
REPRESENTED IN MORE THAN 80 COUNTRIES

Our clients are manufacturers, system integrators, controller 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. Due to a complementary cooperation with distributors in many parts of the world our product portfolio is available in more than 80 countries.

MADE IN GERMANY

FOR A SUSTAINABLE AND ECONOMICAL PARTNERSHIP



APPLICATION KNOW-HOW

We know and understand your applications. Thus we also understand your challenges and can interact with you on the same level.

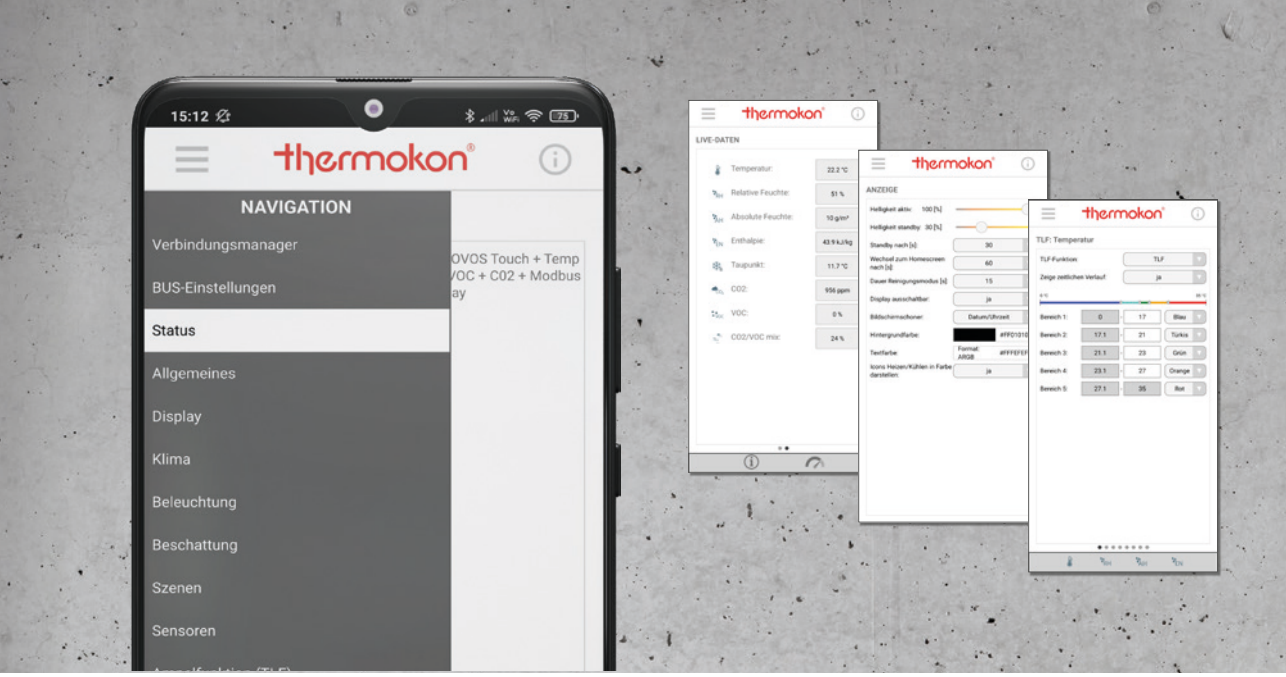
PROCESS KNOW-HOW

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

TECHNOLOGY KNOW-HOW

We have the required technical know-how to deliver you customized and efficient sensor solutions as well as services.

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.



THERMOKON® APPS – FOR INDIVIDUAL CONFIGURATION

All „**USE**app“, “**NOVOS**app” and “**LRW**app” based products are supplied with a fully functional standard configuration for direct mounting/installation.

Via the app it is feasible to extend the range of use and to adapt the configuration individually to application requirements.

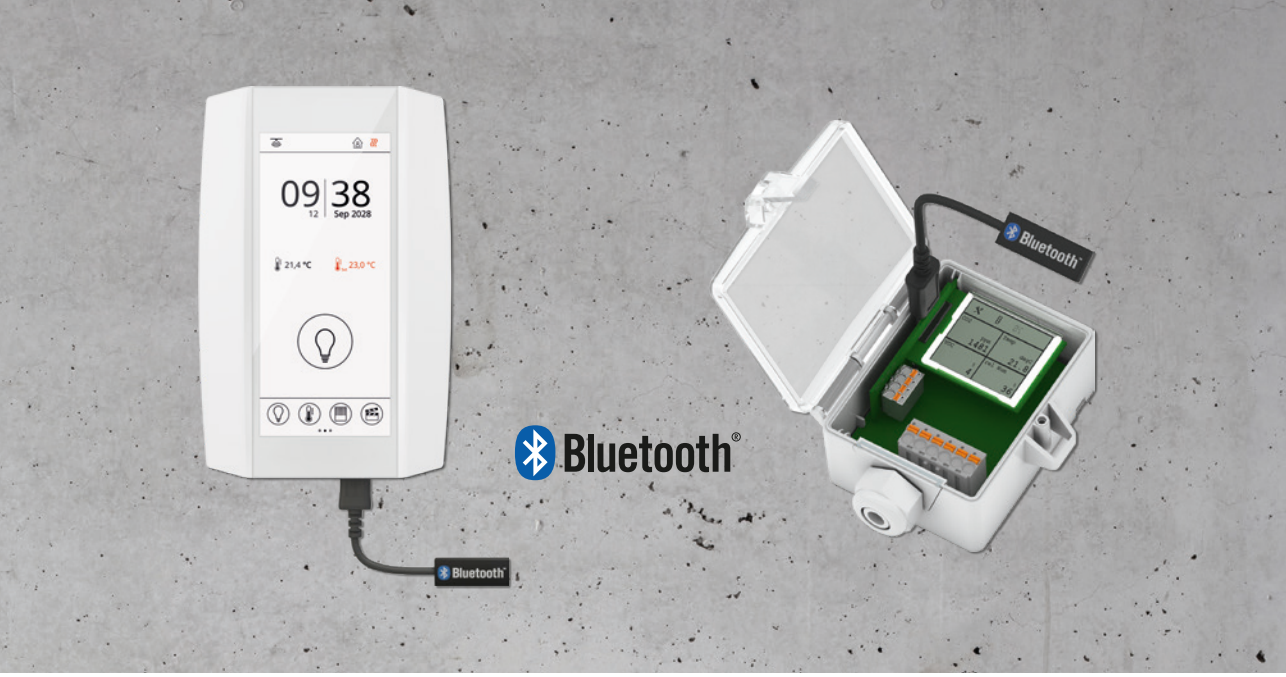
» **USE**app / **NOVOS**app / **LRW**app – HIGHLIGHTS AND FEATURES

» 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

Hardware			
Item description	**Item No.**	**Group**	**€**
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10



USE

*USE*app

Download on the App Store

GET IT ON Google Play

rVS

*NOVOS*app

Download on the App Store

GET IT ON Google Play

LRW

*LRW*app

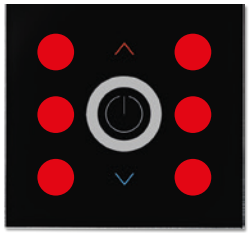
Download on the App Store

GET IT ON Google Play

JOY CUSTOM – FUNCTIONAL INDIVIDUALISM

With the **JOY Custom*** you will get an individual room controller, that is optimally adapted to your requirements and desires. In addition to the classic functionality for controlling the setpoint temperature and adjusting fan speeds, our customized variants have four (JOY Fancoil) or six (JOY HC) additional, freely configurable buttons. Possible areas of application for the additional buttons would be e.g. switching lighting or controlling blinds or shades – the choice is yours! Graphical and customizable icons for the respective buttons as well as the possibility of having your own logo lasered into the real glass surface make the JOY Custom a unique user experience.

JOY Fancoil Custom with four customizable touch buttons



JOY HC Custom with six customizable touch buttons

» ADVANTAGES AND HIGHLIGHTS

- Elegant, flat design – high-quality finishing
- Flexibility due to different versions and master OFF button
- Available with EasySens® EnOcean wireless interface transmitting instantaneous telegrams at the touch of a button
- Demand-optimised control by setting up different user profiles
- Bidirectional controls using BACnet or Modbus thorugh a BMS system is possible
- **Now available with an integrated relative humidity sensor**

INSPIRATIONS

JOY Fancoil Custom

JOY HC Custom

** Minimum order quantity 100 pieces*

LoRaWAN® – LONG RANGE WIDE AREA NETWORK

Long Range Wide Area Network – short LoRaWAN®* – is a radio technology that is capable of transmitting data over a long distance and even from remote and hard-to-reach locations in an energy-efficient, cost-effective and secure manner. Due to the low energy consumption, the batteries of the sensors are extremely durable and can last for several years.

LoRaWAN® uses the so-called ISM frequency band around 868 MHz in Europe, for which no licence fees and no cellular costs are incurred. LoRaWAN® is heavily involved in the development of so-called „smart cities“. In Germany for example, cities and municipalities in particular are building a sustainable and process-optimised infrastructure for building security and monitoring or controlling street lighting.

In Switzerland, France and the Netherlands, telecommunications providers operate a nationwide network of gateways. In addition to the public networks, companies can also set up their own networks (private networks).

» ADVANTAGES

- Defined standard of the LoRa Alliance® with a broad ecosystem of members, products and world-wide references of active networks
- Location-independent access to all measured values through the Cloud
- Interference-resistant radio frequency range sub 1 GHz
- Configuring the device from virtually everywhere (Remote Configuration)
- Wide range of applications indoors and outdoors

Thermokon® is an official member of the LoRa Alliance®

LoRa Alliance® Member

» LONG DISTANCES

LoRa® provides long radio transmission ranges and a thorough signal penetration.

» OPEN STANDARD

Guaranteed high security and interoperability due to LoRaWAN® network protocol.

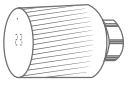
» HIGH ENERGY EFFICIENCY

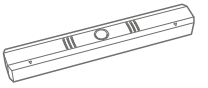
Intelligent LoRaWAN® sensors reach up to 10 years lifetime battery-operated.

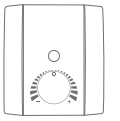
» BIDIRECTIONAL COMMUNICATION

LoRaWAN® enables bidirectional communication between sensors and network servers.

**LoRaWAN® is a registered trademark of the LoRa Alliance®*







Sensor value acquisition and bidirectional transmission

LoRaWAN®

Receiving and forwarding data

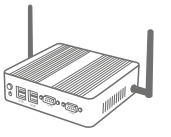
SYSTEM ARCHITECTURE CLOUD

Network management and data routing

DATACAKE Widgelix

Data processing through IoT platforms,
e.g. visualisation (Datacake, Widgelix etc.)

SYSTEM ARCHITECTURE BMS



Network server integrated in gateway

Integration into building management systems
e.g. via BACnet IP, Modbus TCP/IP, ...

BACnet Modbus

TEMPERATURE
LIGHT
AIR QUALITY
LoRa®
MOTION
PRESSURE
HUMIDITY
SURVEILLANCE

EasySens®

The Self-Powered, Intelligent Wireless System

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.

» ADVANTAGES

- Cost saving thanks to Energy Harvesting
  Energy generation through motion, light and temperature
- Flexibility with sensor location – quick and easy mounting and commissioning
- Reduction of fire load
- Easy, wireless integration in existing buildings as well as retrofit adaptions to changed room layouts
- Direct mounting to representative measuring points
- Compatibility different manufacturers by using international standards (IEC 14543-3-10)
- **airConfig:**
  Convenient parameterization of the devices using special remote commissioning commands
- **airScan:**
  Field strength measuring system for evaluation and ideal placement of transmitters and receivers

TRANSMITTERS

RECEIVERS (TRANSCEIVER)

airConfig airScan

TOOLBOX

INTEROPERABLE SYSTEM INTEGRATION

BACnet enocean ETHERNET

KNX LON Modbus

airConfig

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.

» ADVANTAGES

- 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
- Transparent and central availability of relevant system information
- Uncomplicated handling of maintenance and support works
- Configuration of measured values (EEP) and sensor parameters
- Learning-in of sensors via Drag and Drop (Remote Management)
- Saving time resources (configuration via Copy and Paste)
- Remote access to product and project information
- 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

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.

» ADVANTAGES

- Find the best location for your device
- Monitoring function for easy evaluation of radio frequency telegrams
- Logging, repeater function and possibility of remote maintenance
- Data export 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
- 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
- Translation of various available measuring values
- Reliable information on signal quality or RSSI value of telegrams by colour indicator (traffic light system) or graphs
- 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

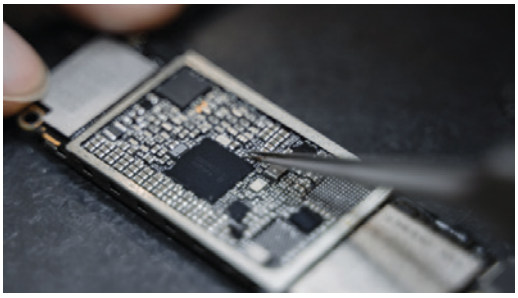
thermokon INDI

INDIVIDUAL REQUIREMENTS

DEMAND CUSTOMISED SOLUTIONS

With Thermokon INDIVIDUAL, we offer you specifically the uniqueness that you need. Whether we work together and create an innovative serial product or create added value for your project business.

Discover the different possibilities of Thermokon INDIVIDUAL!



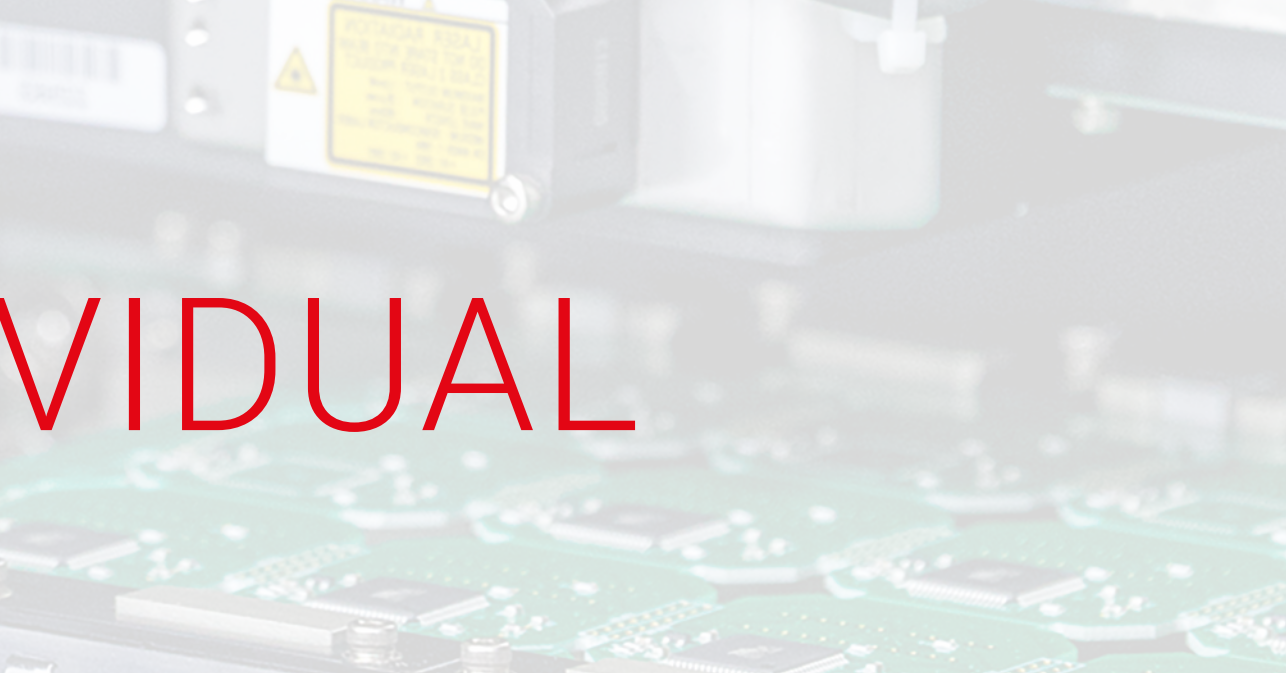
» CUSTOMER-SPECIFIC PRODUCT SOLUTIONS

- » Hard-/Software Development
- » Construction, Engineering
- » Setting maintenance intervals

» PROJECT-SPECIFIC SERVICES

- » Configuration
- » Labelling
- » Packaging

MORE INFORMATION ON: **THERMOKON.DE/EN-GB/INDIVIDUAL**



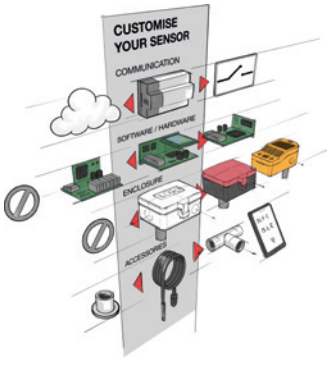
VIDUAL

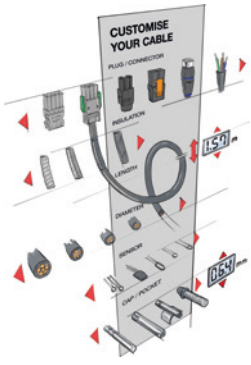
CUSTOMISED PRODUCT SOLUTIONS:

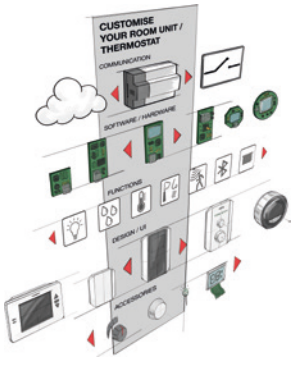
EXPERTISE FROM THE INITIAL CONTACT TO SERIES PRODUCTION

With customer-specific product solutions, we expand our comprehensive product range in order to match your requirements entirely. From conception to series delivery, our focus is your added value. Benefit from our expertise and knowledge as well as our powerful and flexible partnership package. Starting with your ideas and design, we take you through the whole journey until series production. Additionally, we provide transparent processes and cost-optimized solutions along the way.

WE STAND BY YOUR SIDE AS A POWERFUL AND EXPERIENCED PARTNER DURING THE COMPLETE PROJECT!







PROJECT-SPECIFIC SERVICES:

SIMPLE. PROFESSIONAL. INDIVIDUAL.

In order to be able to respond even better to your requirements, we offer customised products ex-works, suiting your project needs. Ever shorter project lead times and decreasing installation staff and skilled electricians are increasingly becoming a challenge in daily project business. In order to offer our customers a decisive added value in terms of saving time and costs, we deliver project-specific solutions for you – starting from one piece. Whether it is project-specific configurations, norm-compliant labelling or pre-assembled connector solutions for a plug & play installation – Thermokon supports you with project-specific services in order to make your project implementation easier, safer and cost-saving. Our quality promise with a five-year warranty certainly remains.

VIDUAL

» PARAMETERISATION / PRE-CONFIGURATION

For our customers, we can take over the configuration and parameterisation of room control units, thermostats as well as sensors. Typical applications are the parameterisation of BUS parameters or the pre-setting of measuring ranges. In addition, we further enable the address or pre-configuration of parameters for room control units, so that our customers receive a “ready-to-install” product. For a quick installation on project site, each device is given a unique identification according to your needs and wishes.

» Pre-configuration of products
» Adjustment of parameters
» Teach-in / Integration of wireless products (plug & play solution)

» LABELLING / IDENTIFICATION

We gladly offer to take over part of your field device labelling / identification. Robust labels or innovative NFC tags are e.g. part of our offering. You provide us the content – we implement it during production process.

» Labels, barcodes, QR, Datamatrix and NFC tags for field devices
» Cable tags / flags / identifiers

» WIRING / CONNECTORS

Thermokon products stand for fast and intuitive commissioning. In order to be able to reduce the installation time even further, we offer our customers pre-assembled devices with either open cable ends or even connector solutions. The focus here is on”plug & play”.

» Individual cable types, specifications and cable lengths
» Pre-assembly of connection cables with plugs/connectors
» Connector solutions or open cable ends

LIGHTING CONTROL WITH HIGHEST DESIGN ASPIRATIONS

Expectations for full-featured professional lighting control solutions are high. Together with Casambi®, the thanos EVO provides all these features in just one device.

The room control units are already characterized by their outstanding performance for the detection of temperature, humidity and optional CO2 and VOC. Further available is an ECO function for an increased energy-efficiency and convenient blind controls.

Classical lighting controls (on/off/dimming) are extended through setting light temperature and an RGB colour picker. Wireless communication between the Casambi® peripherals and the thanos EVO open up maximum flexibility in lighting control.

The BUS interface allows to display even external sensor values. Easy to install: All device parameters can be adjusted through a BUS interface or via mobile App.

CASAMBI + thermokon®

- » Leading platform for lighting control systems in buildings
- » Based on Bluetooth® Low Energy technology
- » Self-organizing wireless mesh network
- » Ecosystems with more than 3 mio. active operating nodes

- » 35 years experience in building automation
- » First room operating unit using Casambi® technology
- » Highlight: Interface between Casambi® and BMS
- » Integrated sensors and multiple control functions

CO_2 | VOC | TEMP | RH

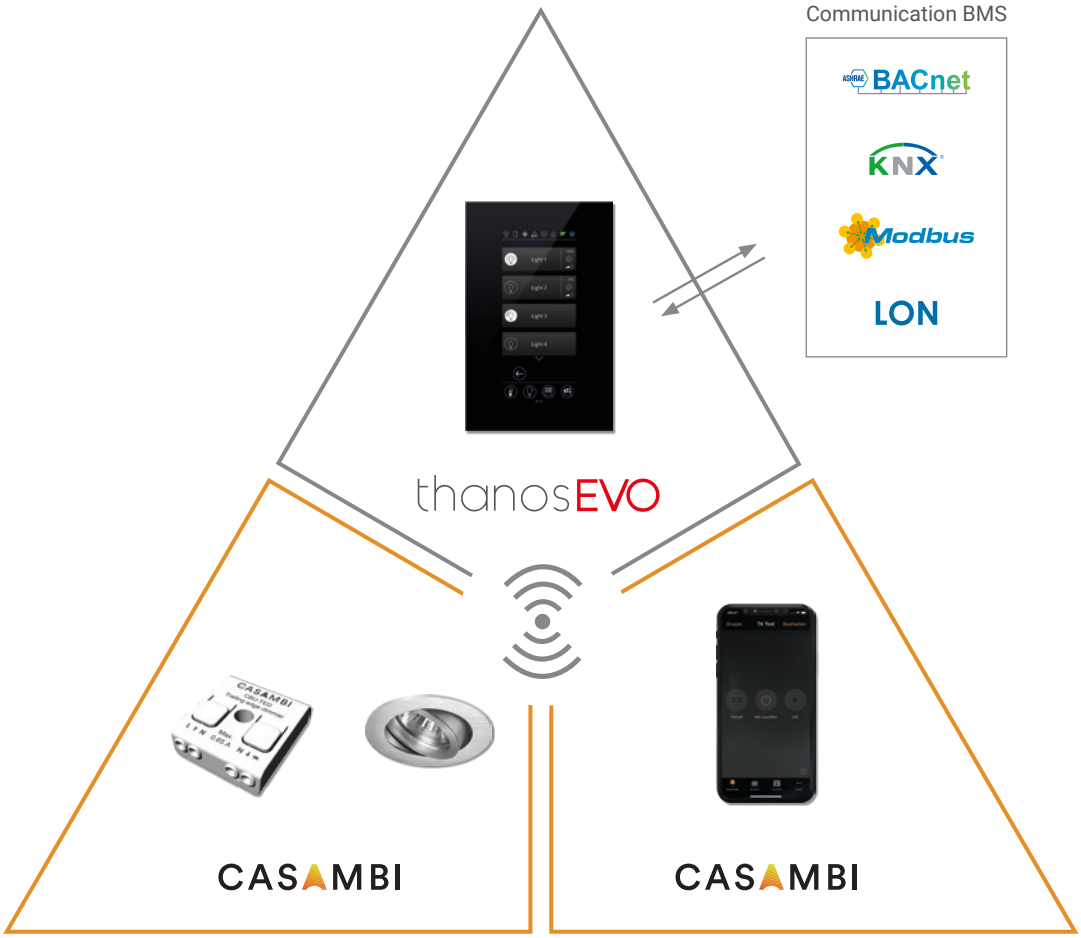
CLIMATE

SHADES/BLINDS

MONITORING

LIGHTING

SCENES


Communication BMS
BACnet
KNX
Modbus
LON
thanosEVO
CASAMBI
CASAMBI

EUROPEAN CENTRAL BANK
FRANKFURT, GERMANY
MORE THAN 13.000 DEVICES

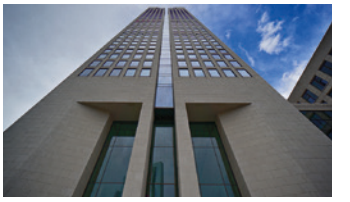
REFERENCES

Star Arctic Hotel
Saariselkä, Finland

Shell Global Headquarters
The Hague, Netherlands

Prime Tower
Zurich, Switzerland

Fondation Louis Vuitton
Paris, France



Opernturm
Frankfurt, Germany

Tomson Riviera Apartment Towers
Shanghai, China

KaDeWe
Berlin, Germany

Semperoper
Dresden, Germany

Grand Hyatt
Dubai, UAE

HAMAD INTERNATIONAL AIRPORT
DOHA, QATAR

Sheikh Abdullah Al Salem
Cultural Center, Kuwait City

Fairmont Hotel Four Seasons
Hamburg, Germany

University Oslo
Oslo, Norway

Generali Insurance, Headquarters
Trieste, Italy

State Opera
Vienna, Austria

Konica Minolta
Milan, Italy

The National Gallery of Art
Washington D.C., USA

Ascot Racecourse
Ascot, England

European Patent Office
Munich, Germany

5 YEARS 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-gb/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: Humidity 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 corrosion 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 protecting the sensor reliably against vibration and humidity. This effect is additionally supported by the rolled pocket.

SI-Protection

16-point pressed
(protection class IP65)

rolled
(protection class IP67)

EasySens®

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®.

Room Operating Units

JOY SR Fancoil	Temperature, rel. humidity	**32**
JOY SR HC	Temperature, rel. humidity	**35**
SR06 LCD	Temperature, rel. humidity	**38**
SR07 x	Temperature, rel. humidity	**42**
NOVOS 3 SR x	Temperature, rel. humidity	**45**

Room Sensors

SR07	Temperature, rel. humidity	**47**
NOVOS 3 SR	Temperature, rel. humidity, CO2	**49**
MCS SR	Light, motion, temperature, rel. hum.	**51**
SR-MDS	Light, motion, temperature	**52**
SR-MDS Solar	Light, motion	**53**

Outdoor / Cable / Duct / Contact Sensors

SR65	Outdoor sensor temperature	**54**
SR65 TF	Cable sensor temperature	**56**
SR65 AKF	Duct sensor temperature	**56**
SR65 VFG	Contact sensor temperature	**56**

Gateways

STC65+ RS485 Modbus	**58**
STC65+ RS485 EVC	**59**
STC-BACnet IP	**60**
SRC65-BACnet MS/TP	**61**
STC-IoT	**62**
STC-KNX	**63**
STC-KNX UP	**64**

Repeater

SRE-Repeater	**66**
SRE-Repeater UP	**67**

Window Contacts / Door Contacts

SRG02	Window handle (battery-free)	**68**
SRW03	Window / door contact (battery-free)	**69**

Actuators

STC-MSG Server	**70**
STC-MSG Server UP	**71**
SAB+	**72**
SAB05	**74**

Switches

Mini	**76**
55x55	**78**
BJ 63x63	**80**
Jung LS990	**82**
Hand-held	**84**
SR-KCS	**85**

I/O Systems

STC-DO	**86**
STC-DO Light	**87**
STC-DO Blind	**88**
SRC-AO Climate	**89**
SRC-AO Dim	**90**
SRC-AO Multi	**91**
STC-DO8	**92**
SR65 DI	**94**

JOY SR Fancoil

Fancoil thermostat with EnOcean radio interface in high-quality design for individual singleroom temperature- and fan control. A glass surface with intuitive touch control buttons and display combine design, feel and functionality in an outstanding way. The internal controller of the JOY calculates control values for fans and heating/cooling applications, which are provided via analog or digital outputs (depending on type). The integrated EnOcean interface also allows the control of a second heating circuit (e.g. using a radiator valve). The integration of various external sensors (e.g. window contacts, change-over, condensation sensors, etc.) is possible through a hard-wired connection or the EnOcean interface. These sensors enable temperature- and fan control tailored to the application. The device can be mounted in a standard flush-mounted box.

NEW: With additional, customisable touch buttons (see page 12)

Outputs	5DO (230 V)	EC AO2DO (230 V)	EC 3AO (24 V)
Fan (Relay)	3	–	–
EC Fan (0..10 V)	–	1	1
Heating/Cooling (Relay)	2	2	–
Heating/Cooling (0..10 V)	–	–	2
6-Way-Valve (0..10 V)	–	–	1*
Inputs	**5DO (230 V)**	**EC AO2DO (230 V)**	**EC 3AO (24 V)**
Universal (configurable)	3 / BUS: 2	3 / BUS: 2	3 / BUS: 2

** Instead of 2x 0..10 V (heating/cooling)*

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment temperature, fan stage adjustment, standby/presence detection
Operating elements	5 touch buttons
Configuration	uConfig, BUS
Input	1x input for NTC10k or floating contact **5DO/AO2DO:** 1x input for potential contact (230 V ~) 1x input for floating contact **3AO:** 2x input for floating contact
Network technology	RS485 Modbus
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Output signal temperature	scaling according EEP: 0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Power supply	**5DO/AO2DO:** 85..260 V ~ **3AO:** 24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	**5DO:** max. 2,5 VA (260 V ~) **AO2DO:** max. 3 VA (260 V ~) **3AO:** typ. 2,5 W (24 V =)
Display	LCD 60x44 mm, 240x160 px, backlight cold white
Enclosure	PC, cover glass
Colour	pure white, black
Operating range temperature	0..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm², inputs max. 1,0 mm²
Mounting	in standard EU box (Ø=60 mm, depth min. 45 mm)

Fan coil thermostat with radio interface temperature – RS485 Modbus – 85..260 V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY SR FC 5DO temp RS485 Modbus white MVolt	✓	793117	E1	260,00
JOY SR FC 5DO temp RS485 Modbus black MVolt	✓	799072	E1	273,00
JOY SR EC AO2DO temp RS485 Modbus white MVolt	✓	763776	E1	260,00
JOY SR EC AO2DO temp RS485 Modbus black MVolt	✓	793902	E1	273,00

Fan coil thermostat with radio interface temperature – RS485 Modbus – 24 V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY SR EC 3AO temp RS485 Modbus white 24 V	✓	701020	E1	260,00
JOY SR EC 3AO temp RS485 Modbus black 24 V	✓	701037	E1	273,00

Options	
Description	**€**
Add to price of RS485 Modbus for RS485 BACnet (MS/TP)	0,00
Add for additional humidity sensor	43,00
RS485 Modbus: Add for additional CO2 sensor	64,50
Change-over sensor NTC10k (model and price on request)	

Accessories			
Item description	**Item No.**	**Group**	**€**
microSD card 2 GB	500098	A1	13,80
USB Interface RS485 (incl. driver CD)	668293		63,50
Decorative frame JOY white	681452	A1	14,80
Decorative frame JOY black	740951	A1	14,80
Frame for surface mounting JOY white	760201	A1	29,30
Frame for surface mounting JOY black	760195	A1	29,30

JOY SR HC

Room thermostat with EnOcean wireless interface in high-quality design for individual temperature control, e.g. in hotel rooms or offices. A glass surface with intuitive touch control buttons and display combine design, feel and functionality in an outstanding way. The internal controller of the JOY calculates control values for fans and heating/cooling applications, which are provided via analog or digital outputs (depending on type). The integrated EnOcean interface also allows the control of a second heating circuit (e.g. using a radiator valve). The integration of various external sensors (e.g. window contacts, change-over, condensation sensors, etc.) is possible through a hard-wired connection or the EnOcean interface. These sensors enable temperature control tailored to the application. The device can be mounted in a standard flush-mounted box.

NEW: With additional, customisable touch buttons (see page 12)

Outputs	AO2DO (230 V)	3AO (24 V)
Heating/Cooling (Relay)	2	–
Heating/Cooling (0..10 V)	–	2
6-Way-Valve (0..10 V)	1	1*
Inputs	**AO2DO (230 V)**	**3AO (24 V)**
Universal (configurable)	2	2

** Instead of 2x 0..10 V (heating/cooling)*

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment temperature, standby/presence detection
Operating elements	3 touch buttons
Configuration	uConfig, BUS
Input	1x input for NTC10k or floating contact **AO2DO:** 1x input for potential contact (230 V ~) 1x input for floating contact **3AO:** 2x input for floating contact
Network technology	RS485 Modbus
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Output signal temperature	scaling according EEP, 0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Power supply	**AO2DO:** 85..260 V ~ **3AO:** 24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Display	LCD 60x44 mm, 240x160 px, backlight cold white
Enclosure	PC, cover glass
Colour	pure white, black
Operating range temperature	0..50 °C
Connection	terminal block, max. 1,5 mm², inputs max. 1,0 mm²
Mounting	in standard EU box (Ø=60 mm, depth min. 45 mm)

Room thermostat heating/cooling with radio interface temperature – RS485 Modbus – 85..260 V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY SR HC AO2DO temp RS485 Modbus white MVolt	✓	756914	E1	260,00
JOY SR HC AO2DO temp RS485 Modbus black MVolt	✓	756938	E1	273,00

Room thermostat heating/cooling with radio interface temperature – RS485 Modbus – 24 V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY SR HC 3AO temp RS485 Modbus white 24 V	✓	700993	E1	260,00
JOY SR HC 3AO temp RS485 Modbus black 24 V	✓	701006	E1	273,00

Options	
Description	**€**
Add to price of RS485 Modbus for RS485 BACnet (MS/TP)	0,00
Add for additional humidity sensor	43,00
RS485 Modbus: Add for additional CO2 sensor	64,50
Change-over sensor NTC10k (model and price on request)	

Accessories			
Item description	**Item No.**	**Group**	**€**
microSD card 2 GB	500098	A1	13,80
USB Interface RS485 (incl. driver CD)	668293		63,50
Decorative frame JOY white	681452	A1	14,80
Decorative frame JOY black	740951	A1	14,80
Frame for surface mounting JOY white	760201	A1	29,30
Frame for surface mounting JOY black	760195	A1	29,30

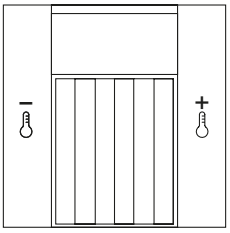
SR06 LCD

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.

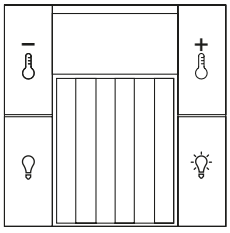
SR06 LCD 4T pure white brilliant, switch range Gira E2 pure white

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

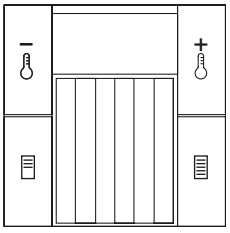
SR06 LCD 2T+Blind anthracite, switch range Gira E2 anthracite



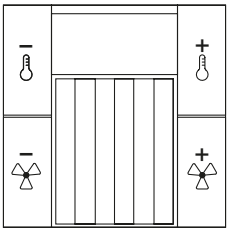
2T



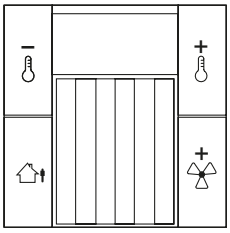
2T+Light



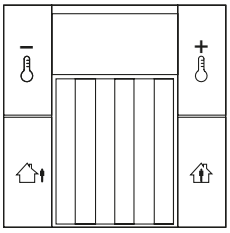
2T+Blind



4T Itype1



4T Itype2



4T Itype3

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment fan stage adjustment presence detection light ON/OFF blind UP/DOWN
Operating elements	2 buttons 4 buttons
Configuration	airConfig, Software/Plug-In for configuration
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Output signal temperature	scaling according EEP, 0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Power supply	solar cell, maintenance-free LiPo-battery use of back-up battery possible for insufficiently lit environments, coin cell CR1632
Display	LCD 29x12 mm, monochrome
Enclosure	PC V0
Colour	pure white brilliant, aluminium, Jung aluminium, anthracite
Operating range temperature	0..+40 °C
Protection (IP)	IP20, according to EN 60529
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten (please specify the desired frame when ordering)
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting
Notes	minimum illuminance at standard setting: 200 lx for 8 hours, for configuration an optional programming interface is available 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) (refer to accessories)

Wireless room operating unit temperature 2T			
Item description	**Item No.**	**Group**	**€**
SR06 LCD 2T temp pure white brilliant	728843	E2	223,50
SR06 LCD 2T temp aluminium	728881	E2	223,50
SR06 LCD 2T temp Jung aluminium	728966	E2	223,50
SR06 LCD 2T temp anthracite	728928	E2	223,50

Wireless room operating unit temperature 2T+light			
Item description	**Item No.**	**Group**	**€**
SR06 LCD 2T+Light temp pure white brilliant	728850	E2	245,70
SR06 LCD 2T+Light temp aluminium	728898	E2	245,70
SR06 LCD 2T+Light temp Jung aluminium	729000	E2	245,70
SR06 LCD 2T+Light temp anthracite	728935	E2	245,70

Wireless room operating unit temperature 2T+blind			
Item description	**Item No.**	**Group**	**€**
SR06 LCD 2T+Blind temp pure white brilliant	731836	E2	245,70
SR06 LCD 2T+Blind temp aluminium	728904	E2	245,70
SR06 LCD 2T+Blind temp Jung aluminium	729017	E2	245,70
SR06 LCD 2T+Blind temp anthracite	728942	E2	245,70

Wireless room operating unit temperature 4T			
Item description	**Item No.**	**Group**	**€**
SR06 LCD 4T ltype1 temp pure white brilliant	728874	E2	240,90
SR06 LCD 4T ltype1 temp aluminium	728911	E2	240,90
SR06 LCD 4T ltype1 temp Jung aluminium	729024	E2	240,90
SR06 LCD 4T ltype1 temp anthracite	728959	E2	240,90

Wireless room operating unit humidity + temperature 2T			
Item description	**Item No.**	**Group**	**€**
SR06 LCD 2T temp_rH pure white brilliant	729031	E2	266,50
SR06 LCD 2T temp_rH aluminium	729062	E2	266,50
SR06 LCD 2T temp_rH Jung aluminium	729109	E2	266,50
SR06 LCD 2T temp_rH anthracite	729147	E2	266,50

Wireless room operating unit humidity + temperature 2T+light			
Item description	**Item No.**	**Group**	**€**
SR06 LCD 2T+Light temp_rH pure white brilliant	693035	E2	288,70
SR06 LCD 2T+Light temp_rH aluminium	729079	E2	288,70
SR06 LCD 2T+Light temp_rH Jung aluminium	729116	E2	288,70
SR06 LCD 2T+Light temp_rH anthracite	729154	E2	288,70

Wireless room operating unit humidity + temperature 2T+blind			
Item description	**Item No.**	**Group**	**€**
SR06 LCD 2T+Blind temp_rH pure white brilliant	729048	E2	288,70
SR06 LCD 2T+Blind temp_rH aluminium	729086	E2	288,70
SR06 LCD 2T+Blind temp_rH Jung aluminium	729123	E2	288,70
SR06 LCD 2T+Blind temp_rH anthracite	729161	E2	288,70

Wireless room operating unit humidity + temperature 4T			
Item description	**Item No.**	**Group**	**€**
SR06 LCD 4T ltype1 temp_rH pure white brilliant	729055	E2	283,90
SR06 LCD 4T ltype1 temp_rH aluminium	729093	E2	283,90
SR06 LCD 4T ltype1 temp_rH Jung aluminium	729130	E2	283,90
SR06 LCD 4T ltype1 temp_rH anthracite	729178	E2	283,90

Options	Switch ranges on page 423/424
Description	**€**
Labelling type 2 (ltype2)	0,00
Labelling type 3 (ltype3)	0,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Coin cell CR1632	597814	A1	5,00
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90
USB extension 3 m	574044		16,30
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

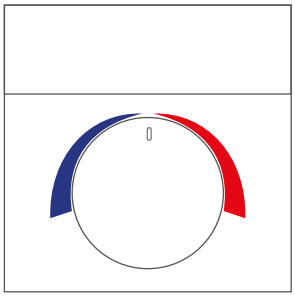
SR07 x

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.

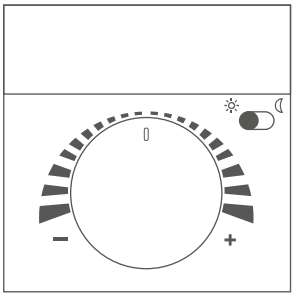
SR07 P aluminium,
switch range Gira E2

SR07 PT pure white brilliant,
switch range Gira E2

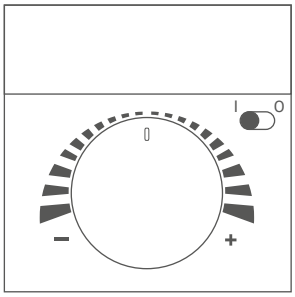
SR07 PMS (day/night) anthracite,
switch range Gira E2



BTypSF



PMS (day/night)



PMS (I / 0)

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment temperature presence detection day/night operation operation I/0
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Output signal temperature	scaling according EEP, 0..+40 °C
Measuring range humidity	0..100% rH non-condensing

Technical Data	
Power supply	solar cell, maintenance-free internal super cap use of back-up battery possible for insufficiently lit environments, coin cell CR1632
Enclosure	PC
Colour	white, pure white brilliant, aluminium, Jung aluminium
Operating range temperature	0..+40 °C
Protection (IP)	IP20, according to EN 60529
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten (please specify the desired frame when ordering)
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting

Wireless room operating unit temperature P

Item description	Item No.	Group	€
SR07 P temp pure white brilliant	634113	E2	182,40
SR07 P temp aluminium	729246	E2	182,40
SR07 P temp Jung aluminium	729314	E2	182,40
SR07 P temp anthracite	729376	E2	182,40

Wireless room operating unit temperature PT

Item description	Item No.	Group	€
SR07 PT temp pure white brilliant	729185	E2	192,50
SR07 PT temp aluminium	729260	E2	192,50
SR07 PT temp Jung aluminium	729321	E2	192,50
SR07 PT temp anthracite	729383	E2	192,50

Wireless room operating unit temperature PMS

Item description	Item No.	Group	€
SR07 PMS (day/night) temp pure white brilliant	729192	E2	192,50
SR07 PMS (day/night) temp aluminium	729277	E2	192,50
SR07 PMS (day/night) temp Jung aluminium	729338	E2	192,50
SR07 PMS (day/night) temp anthracite	729390	E2	192,50

Wireless room operating unit humidity + temperature P			
Item description	**Item No.**	**Group**	**€**
SR07 P temp_rH pure white brilliant	729208	E2	225,40
SR07 P temp_rH aluminium	729284	E2	225,40
SR07 P temp_rH Jung aluminium	729345	E2	225,40
SR07 P temp_rH anthracite	729406	E2	225,40

Wireless room operating unit humidity + temperature PT			
Item description	**Item No.**	**Group**	**€**
SR07 PT temp_rH pure white brilliant	729215	E2	235,50
SR07 PT temp_rH aluminium	729291	E2	235,50
SR07 PT temp_rH Jung aluminium	729352	E2	235,50
SR07 PT temp_rH anthracite	729413	E2	235,50

Wireless room operating unit humidity + temperature PMS			
Item description	**Item No.**	**Group**	**€**
SR07 PMS (day/night) temp_rH pure white brilliant	729239	E2	235,50
SR07 PMS (day/night) temp_rH aluminium	729307	E2	235,50
SR07 PMS (day/night) temp_rH Jung aluminium	729369	E2	235,50
SR07 PMS (day/night) temp_rH anthracite	729420	E2	235,50

Options	Switch ranges on page 423/424
Description	**€**
Default labelling P colour red+blue (ltypeSF)	7,00
Default labelling I/0 for slide switch (MS)	0,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Coin cell CR1632	597814	A1	5,00

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

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment temperature presence detection
Operating elements	potentiometer (P) button (T)
Configuration	DIP switches
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Output signal temperature	scaling according EEP, 0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Power supply	solar cell, maintenance-free internal super cap use of back-up battery possible for insufficiently lit environments, battery LS14250 (3,6 V)
Enclosure	PC V0
Colour	pure white, black
Protection (IP)	IP20, according to EN 60529
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting

Wireless room operating unit temperature			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 SR P white temp	754064	E2	158,60
NOVOS 3 SR T white temp	754071	E2	163,90
NOVOS 3 SR PT white temp	754095	E2	180,20

Wireless room operating unit humidity + temperature			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 SR P white temp_rH	754101	E2	201,60
NOVOS 3 SR T white temp_rH	754118	E2	206,90
NOVOS 3 SR PT white temp_rH	754125	E2	223,20

Options	
Description	**€**
Enclosure in black	13,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
Battery AA 3.6 V lithium ER14505	759182	A1	8,40
Adhesive foil for NOVOS 3 SR with inner cut-outs	773386	A1	2,40

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, relative humidity
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Output signal temperature	scaling according EEP, 0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Power supply	solar cell, maintenance-free internal super cap use of back-up battery possible for insufficiently lit environments, coin cell CR1632
Enclosure	PC
Colour	white, pure white brilliant, aluminium, Jung aluminium
Operating range temperature	0..+40 °C
Protection (IP)	IP20, according to EN 60529
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten (please specify the desired frame when ordering)
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting

Wireless room sensor temperature			
Item description	**Item No.**	**Group**	**€**
SR07 temp pure white brilliant	729437	E2	162,70
SR07 temp aluminium	729444	E2	162,70
SR07 temp Jung aluminium	729451	E2	162,70
SR07 temp anthracite	729468	E2	162,70

Wireless room sensor humidity + temperature			
Item description	**Item No.**	**Group**	**€**
SR07 temp_rH pure white brilliant	729550	E2	205,70
SR07 temp_rH aluminium	729567	E2	205,70
SR07 temp_rH Jung aluminium	729581	E2	205,70
SR07 temp_rH anthracite	729598	E2	205,70

Options	Switch ranges on page 423/424
Description	**€**
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Coin cell CR1632	597814	A1	5,00

NOVOS 3 SR

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

NOVOS 3 SR CO2

Technical Data	
Measured values	temperature, relative humidity, CO2
Configuration	DIP switches
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Output signal temperature	scaling according EEP: 0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Power supply	solar cell, maintenance-free internal super cap use of back-up battery possible for insufficiently lit environments, battery ER14505 (3,6 V)
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	0..+40 °C
Protection (IP)	IP20, according to EN 60529
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting

Wireless room sensor CO2 + temperature + humidity				
Item description	**Item No.**	**In stock**	**Group**	**€**
NOVOS 3 SR temp white	754040	⛀	E2	142,40
NOVOS 3 SR temp_rH white	754057		E2	185,40
NOVOS 3 SR CO2 temp white	789790		E2	290,90
NOVOS 3 SR CO2 temp_rH white	789820		E2	333,90

Options	
Description	**€**
Enclosure in black	13,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
Battery AA 3.6 V lithium ER14505	759182	A1	8,40
Adhesive foil for NOVOS 3 SR with inner cut-outs	773386	A1	2,40

MCS SR

Multi compact sensor with EnOcean interface for measuring temperature, humidity and motion.

MCS SR Temp_rH

MCS SR Occ

MCS SR Occ Lum

Technical Data	
Measured values	**Temp_rH:** temperature, relative humidity **Lum:** luminosity **Occ:** motion, presence,
Sensor	integrated digital temperature transmitter, PIR (passive infrared)
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	battery type AAA
Enclosure	PC V0
Colour	pure white, anthracite
Operating range temperature	0..+40 °C
Protection (IP)	IP20, according to EN 60529
Mounting	surface-mounted flat on base using included adhesive pad or screws
Delivery content	incl. adhesive foil for mounting incl. battery type AAA

Wireless room sensor motion EnOcean (868 MHz)

Item description	Item No.	Group	€
MCS SR Occ white	792424	E2	158,20
MCS SR Occ anthracite	792448	E2	164,70
MCS SR temp_rH white	799058	E2	147,20
MCS SR temp_rH anthracite	799065	E2	153,70
MCS SR Occ Lum white	814768	E2	172,90
MCS SR Occ Lum anthracite	814775	E2	179,40

Accessories

Item description	Item No.	Group	€
Battery AAA 1,5 V Alkaline VARTA 4003	739351	A1	5,00

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	temperature, luminosity, motion
Configuration	jumper
Sensor	PIR (passive infrared) dectection range: 360 °, Ø=5 m at a sensor height of approx. 2,5 m
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Output signal temperature	scaling according EEP, 0..+51 °C
Measuring range light	0..510 lux
Power supply	flex. 15..240 V =/~, battery LS14250 (3,6 V), (3x)
Power consumption	typ. 0,8 W (24 V =), 1,2 VA (24 V ~)
Enclosure	ABS
Colour	pure white
Operating range temperature	-10..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	removable terminal block, max. 2,5 mm²
Notes	designed for constant light control applications

Wireless ceiling sensor light + motion (+ temperature)			
Item description	**Item No.**	**Group**	**€**
SR-MDS	396486	E2	275,40
SR-MDS BAT	396462	E2	275,40

Accessories			
Item description	**Item No.**	**Group**	**€**
Battery 1/2AA 3.6V Lithium LS14250	315098	A1	5,00
Enclosure for surface mounting SR-MDS pure white	514439	A1	58,20
Mounting ring for hollow ceiling with retaining clips to be used with SR-MDS	627825	A1	8,00

SR-MDS Solar

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.

Technical Data	
Measured values	luminosity, motion
Configuration	airConfig
Sensor	PIR (passive infrared) dectection range: 102 °x92 °, Ø=5 m at a sensor height of approx. 2,8 m
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Measuring range light	0..510 lux (default setting) 0..1000 lux (10 bit) 0..1020 lux optionally configurable
Power supply	solar cell, maintenance-free internal super cap use of back-up battery possible for insufficiently lit environments: battery LS14250 (3,6 V)
Enclosure	PC, ABS
Colour	pure white
Operating range temperature	0..50 °C
Protection (IP)	IP20, according to EN 60529
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. fixing kit rawlplugs and screws (2x each)
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 ceiling sensor light + motion			
Item description	**Item No.**	**Group**	**€**
SR-MDS Solar	591577	E2	259,10

Accessories			
Item description	**Item No.**	**Group**	**€**
Battery 1/2AA 3.6V Lithium LS14250	315098	A1	5,00
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90

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.

SR65 Temp

SR65 Temp_rH

Technical Data	
Measured values	temperature, relative humidity
Configuration	airConfig
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Output signal temperature	scaling according EEP: -20..+60 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing
Power supply	solar cell, maintenance-free internal super cap, use of back-up battery possible for insufficiently lit environments, battery LS14250 (3,6 V)
Material in touch with media	**Temp:** Sensor probe: Ø=6 mm, stainless steel V4A (1.4571) **rH:** Pipe: Ø=19 mm, PC, length 50 mm, with filter stainless steel wire mesh
Enclosure	PA6.6, with quick lock screws
Colour	pure white, transparent cover
Operating range temperature	-25..+65 °C
Protection (IP)	IP65, according to EN 60529
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) (refer to accessories)

Wireless outdoor sensor			
Item description	**Item No.**	**Group**	**€**
SR65 temp	230001	E2	163,60
SR65 temp_rH	540391	E2	206,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Battery 1/2AA 3.6V Lithium LS14250	315098	A1	5,00
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90

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.

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.

SR65 VFG

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.

Technical Data	
Measured values	temperature
Configuration	airConfig
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Output signal temperature	**SR65 TF:** scaling according EEP: -20..+60 °C, optionally configurable **SR65 AKF/VFG:** scaling according EEP: +10..+90 °C, optionally configurable
Power supply	solar cell, maintenance-free internal super cap use of back-up battery possible for insufficiently lit environments battery LS14250 (3,6 V)
Material in touch with media	**SR65 TF:** Sensor probe: Ø=6 mm, stainless steel V4A (1.4571), rolled (IP67) **SR65 AKF:** Sensor probe: Ø=6 mm, stainless steel V4A (1.4571) **SR65 VFG:** Sensor probe: brass, spring loaded sensor
Enclosure	PA6.6, with quick lock screws
Colour	pure white, transparent cover
Operating range temperature	-25..+65 °C
Protection (IP)	IP65, according to EN 60529
Connection cable	**SR65 TF:** silicone, 0,25 mm², 2-wire
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) (refer to accessories)

SR65 TF

Wireless cable sensor temperature				
Item description	**Item No.**	**In stock**	**Group**	**€**
SR65 TF 050.06 L1000	245647	⛃	E2	165,90

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+180 °C	2,30

SR65 AKF

Wireless duct/immersion sensor temperature			
Item description	**Item No.**	**Group**	**€**
SR65 AKF 100.06	630566	E2	173,70

SR65 VFG

Wireless contact sensor temperature			
Item description	**Item No.**	**Group**	**€**
SR65 VFG	239615	E2	163,60

Thermowells brass for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	⛃	A2	9,90
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⛃	A2	11,20

Thermowells stainless steel for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	⛃	A2	23,10
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⛃	A2	25,30
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS			666473	⛃	A2	22,20

Accessories			
Item description	**Item No.**	**Group**	**€**
Battery 1/2AA 3.6V Lithium LS14250	315098	A1	5,00
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	A2	7,80
Mounting flange MF6 brass (suitable for Ø=6 mm)	3407	A1	7,80
Compression fittings KL6VA for Ø=6 mm with cutting ring, stainless steel	103213	A1	15,60
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90

STC65+ RS485 Modbus

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).

Technical Data	
Configuration	Software/Plug-In for configuration, BUS, jumper, DIP switches
Network technology	RS485 Modbus
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Data transmission	bidirectional, transmitting/receiving channels: 32 (Rx) + 32 (Tx) + 32 (VA)
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,8 W (24 V =), 2 VA (24 V ~)
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	-20..+60 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, plug-in terminal, max. 1,5 mm²
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories) incl. external receiving/transmitting antenna (2,5 m) with magnetic base
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), communication with up to 15 SmartACK devices, magnetic antenna plate for the external antenna recommended to improve radio coverage (see accessories)

Gateway EnOcean <-> BUS

Item description	Item No.	In stock	Group	€
STC65+ RS485 Modbus	657372	⛃	E2	290,90

Accessories

Item description	Item No.	Group	€
Antenna extension 10 m	257206	A1	67,70
Antenna extension 20 m	257213	A1	82,40
L-shaped magnetic antenna holder, 180x180 mm	255097	A1	17,50
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70

STC65+ RS485 EVC

Bidirectional gateway with serial RS485 interface and IP65 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).

Technical Data	
Configuration	Software/Plug-In for configuration, BUS, jumper, DIP switches
Network technology	RS485 EVC
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Data transmission	bidirectional, transmitting/receiving channels: in filter mode 64 (Rx) + 128 (Tx), in gateway mode ∞ (Rx) + 128 (Tx)
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,8 W (24 V =), 2 VA (24 V ~)
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	-20..+60 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, plug-in terminal, max. 1,5 mm²
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories) incl. external receiving/transmitting antenna (2,5 m) with magnetic base
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), communication with up to 15 SmartACK devices, magnetic antenna plate for the external antenna recommended to improve radio coverage (see accessories)

Gateway EnOcean <-> BUS

Item description	Item No.	In stock	Group	€
STC65+ RS485 EVC	657396	⛃	E2	290,90

Accessories

Item description	Item No.	Group	€
Antenna extension 10 m	257206	A1	67,70
Antenna extension 20 m	257213	A1	82,40
L-shaped magnetic antenna holder, 180x180 mm	255097	A1	17,50
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70

STC-BACnet IP

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.

Technical Data	
Configuration	airConfig, BUS
Network technology	BACnet IP
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Data transmission	bidirectional, transmitting/receiving channels: ∞ (Rx) + 128 (Tx)
Power supply	24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 3 W (24 V =), 5 VA (24 V ~)
Enclosure	ABS
Colour	light grey
Operating range temperature	0..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external receiving/transmitting antenna (2,5 m) with magnetic base
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) for network connection use a shielded standard Ethernet cable CAT 5 magnetic antenna plate for the external antenna recommended to improve radio coverage (see accessories)

Gateway EnOcean <-> BUS

Item description	Item No.	In stock	Group	€
STC-BACnet IP V3	773843	⛀	E1	513,10
STC-BACnet IP V4	804462		E1	552,00

Accessories

Item description	Item No.	Group	€
Antenna extension 10 m	257206	A1	67,70
Antenna extension 20 m	257213	A1	82,40
L-shaped magnetic antenna holder, 180x180 mm	255097	A1	17,50
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90

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	
Configuration	BUS, jumper, DIP switches
Network technology	RS485 BACnet (MS/TP)
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Data transmission	unidirectional, receiving channels: 32 (Rx)
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 1 W (24 V =), 1,3 VA (24 V ~)
Enclosure	PA6.6, with quick lock screws
Colour	pure white, transparent cover PC
Operating range temperature	-20..+60 °C
Protection (IP)	IP42, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Delivery content	incl. external receiving/transmitting antenna (2,5 m) with magnetic base
Notes	magnetic antenna plate for the external antenna recommended to improve radio coverage (see accessories)

Gateway EnOcean -> BUS

Item description	Item No.	Group	€
SRC65-BACnet MS/TP	396431	E1	316,10

Accessories

Item description	Item No.	Group	€
Antenna extension 10 m	257206	A1	67,70
Antenna extension 20 m	257213	A1	82,40
L-shaped magnetic antenna holder, 180x180 mm	255097	A1	17,50

STC-IoT

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	
Configuration	web interface
Network technology	TCP/IP
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Data transmission	unidirectional, receiving channels: ∞ (Rx)
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 3 W (24 V =), 5 VA (24 V ~)
Enclosure	ABS
Colour	light grey
Operating range temperature	0..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm²
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external receiving/transmitting antenna (2,5 m) with magnetic base
Notes	magnetic antenna plate for the external antenna recommended to improve radio coverage (see accessories) local documentation via web browser interface

Gateway EnOcean -> BUS			
Item description	**Item No.**	**Group**	**€**
STC-IoT	669320	E1	474,80

Accessories			
Item description	**Item No.**	**Group**	**€**
Antenna extension 10 m	257206	A1	67,70
Antenna extension 20 m	257213	A1	82,40
L-shaped magnetic antenna holder, 180x180 mm	255097	A1	17,50

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	
Configuration	BUS, ETS (KNX)
Network technology	KNX (TP1)
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Data transmission	bidirectional, transmitting/receiving channels: 32 (Rx) + 32 (Tx)
Power supply	supply via BUS: 29 V = SELV
Power consumption	max. 12 mA
Display	graphic display monochrome (internal)
Enclosure	PC
Colour	white
Operating range temperature	-5..+45 °C
Protection (IP)	IP20, according to EN 60529
Connection	removable plug-in terminal, max. Ø=0,8 mm cable entry via rear opening
Mounting	flush-mounted on standard EU box (Ø=60 mm)
Notes	product database (freeware via download)

Gateway EnOcean <-> BUS

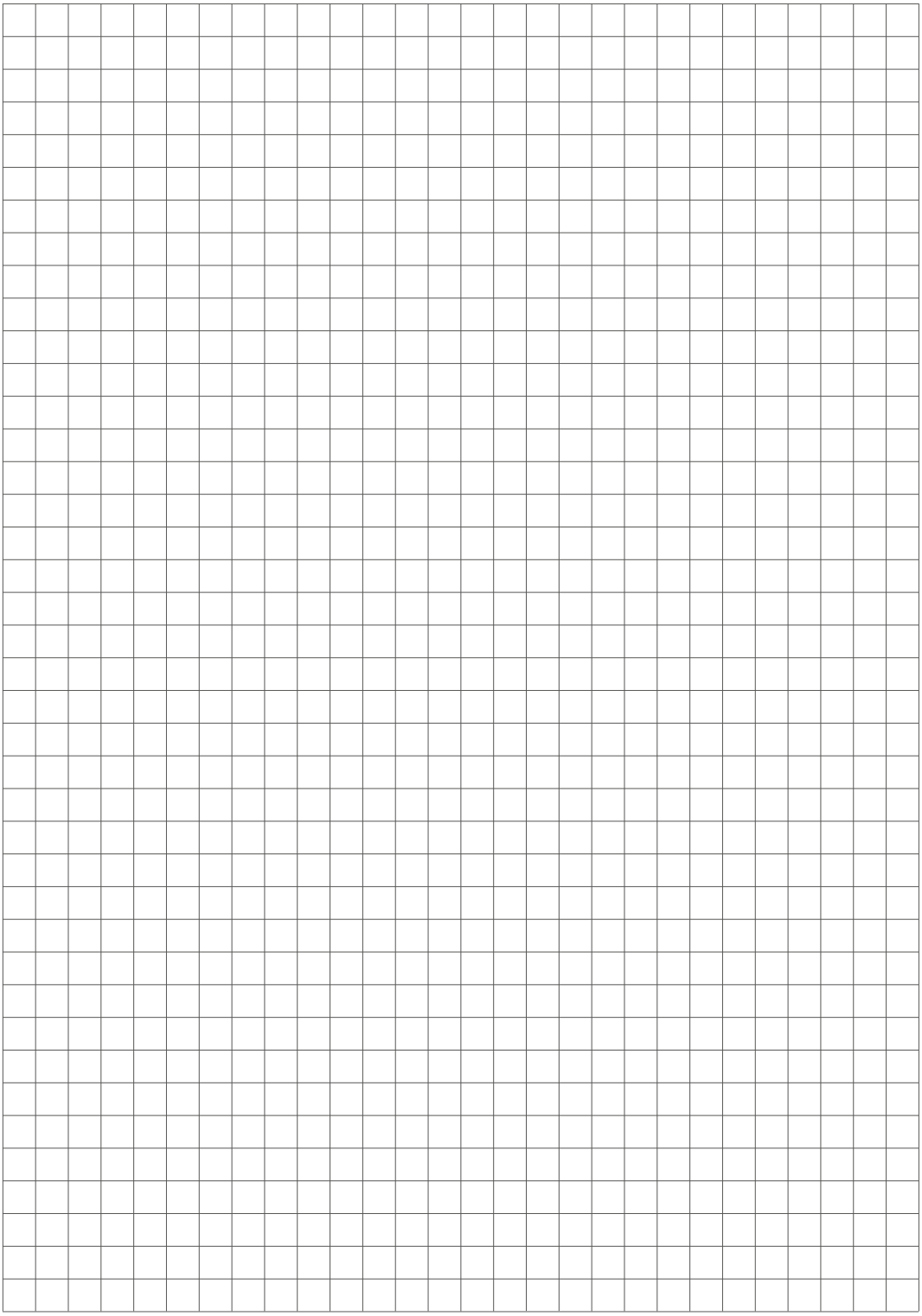
Item description	Item No.	In stock	Group	€
STC-KNX	698948	●	E1	445,20

STC-KNX UP

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	
Configuration	BUS, ETS (KNX)
Network technology	KNX (TP1)
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Data transmission	bidirectional, transmitting/receiving channels: 8 (Rx) + 8 (Tx)
Power supply	supply via BUS: 29 V = SELV
Power consumption	max. 12 mA
Enclosure	ABS
Colour	blue
Operating range temperature	-5..+45 °C
Protection (IP)	IP20, according to EN 60529
Connection	removable plug-in terminal, max. Ø=0,8 mm
Mounting	flush-mounted in standard EU box (Ø=60 mm)
Notes	product database (freeware via download)

Gateway EnOcean <-> BUS			
Item description	**Item No.**	**Group**	**€**
STC-KNX UP	725132	E1	328,00



SRE-Repeater

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.

Technical Data	
Configuration	airConfig
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	flex. 15..240 V =/~
Power consumption	typ. 1 VA (15..240 V =/~)
Enclosure	PA6.6, with quick lock screws
Colour	pure white, transparent cover PC
Operating range temperature	-20..+60 °C
Protection (IP)	IP65, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Delivery content	incl. external receiving/transmitting antenna (2,5 m) with magnetic base
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 (see accessories)

Wireless repeater				
Item description	**Item No.**	**In stock**	**Group**	**€**
SRE-Repeater MultiLevel internal antenna	593809		E2	160,80
SRE-Repeater MultiLevel external antenna	593830	●	E2	184,40

Accessories			
Item description	**Item No.**	**Group**	**€**
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90

SRE-Repeater UP

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.

Technical Data	
Configuration	airConfig
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	100..240 V ~
Power consumption	typ. 0,5 VA (230 V ~)
Enclosure	ABS
Colour	red
Operating range temperature	-20..+60 °C
Protection (IP)	IP20, according to EN 60529
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 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

Item description	Item No.	Group	€
SRE-Repeater UP MultiLevel	556736	E2	135,00

Accessories

Item description	Item No.	Group	€
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90

SRG02

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.

aluminium pure white

aluminium steel grey

stainless steel

Technical Data	
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	maintenance-free electrodynamic energy generator
Enclosure	aluminium (locking cylinder optional), stainless steel
Colour	pure white painted, steel grey painted
Operating range temperature	+5..+40 °C
Mounting	square spindle, variable lengths (for tread depth 32..42 mm)
Notes	lateral detent with precise detent position

Wireless window handle			
Item description	**Item No.**	**Group**	**€**
SRG02 aluminium pure white	730747	E1	151,40
SRG02 aluminium steel grey	730730	E1	151,40
SRG02 stainless steel	730723	E1	254,10
SRG02 lockable aluminium pure white	730716	E1	217,20
SRG02 lockable aluminium steel grey	730709	E1	217,20

SRW03

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.

SRW03 / SRW03 BAT

SRW03 Dual BAT

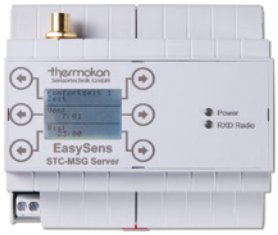
Technical Data	
Sensor	reed contact and magnet
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	solar cell, maintenance-free internal super cap use of back-up battery possible for insufficiently lit environments: **SRW03 BAT:** coin cell CR1225 **SRW03 Dual BAT:** battery type AAA
Enclosure	PC V0
Colour	pure white, anthracite
Operating range temperature	-20..+60 °C
Protection (IP)	IP20, according to EN 60529
Mounting	surface-mounted flat on base using included adhesive pad or screws
Delivery content	incl. adhesive foil for mounting **SRW03 BAT:** incl. coin cell type CR1225 **SRW03 Dual BAT:** incl. battery type AAA
Notes	**SRW03 Dual BAT:** for 1 or 2-leaf windows

Wireless window/door contact

Item description	Item No.	Group	€
SRW03 white	778534	E1	81,70
SRW03 anthracite	778541	E1	88,20
SRW03 BAT white	793728	E1	87,50
SRW03 BAT anthracite	793735	E1	94,00
SRW03 Dual BAT white	778558	E1	90,60
SRW03 Dual BAT anthracite	778565	E1	97,10

Accessories

Item description	Item No.	Group	€
SRW03 BAT: Coin cell CR1225	727310	A1	5,00
SRW03 Dual BAT: Battery AAA 1,5 V Alkaline VARTA 4003	739351	A1	5,00



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	
Configuration	buttons
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	100..240 V ~
Power consumption	3,5 VA
Display	graphic display monochrome
Enclosure	ABS
Colour	light grey
Operating range temperature	0..+50 °C
Protection (IP)	IP20, according to EN 60529
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external receiving/transmitting antenna (2,5 m) with magnetic base
Notes	per channel 1 SAB + 1 room operating unit + 10 digital input modules, switches or presence detectors + 20 window contacts or window handles can be learned in, magnetic antenna plate for the external antenna recommended to improve radio coverage (see accessories)

Wireless controller heating/cooling				
Item description	**Contr.**	**Item No.**	**Group**	**€**
STC-MSG Server 8-channel	✓	501590	E2	324,00
STC-MSG Server 16-channel	✓	507080	E2	368,40

Accessories			
Item description	**Item No.**	**Group**	**€**
Antenna extension 10 m	257206	A1	67,70
Antenna extension 20 m	257213	A1	82,40
L-shaped magnetic antenna holder, 180x180 mm	255097	A1	17,50

STC-MSG Server UP

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. NOVOS 3 SR 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.

Technical Data	
Configuration	airConfig
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	100..240 V ~, ,
Power consumption	typ. 0,5 VA (230 V ~)
Enclosure	ABS
Colour	red
Operating range temperature	-20..+60 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 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) 5 SAB + 1 room operating unit + 10 digital input modules + 20 window contacts or window handles can be learned in

Wireless controller heating/cooling

Item description	Contr.	Item No.	Group	€
STC-MSG Server UP 24 V	✓	688222	E2	159,80
STC-MSG Server UP 100..240 V	✓	550048	E2	159,80

Accessories

Item description	Item No.	Group	€
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90

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.

Technical Data	
Measured values	temperature
Configuration	airConfig
Sensor	integrated digital temperature transmitter
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	maintenance-free thermal energy harvesting, maintenance-free LiPo-battery
Display	LED for status feedback, red
Enclosure	PC
Colour	pure white, aluminium
Operating range temperature	0..+50 °C
Protection (IP)	IP40, according to EN 60529
Connection	USB micro (power supply)
Mounting	screw mounting M30x1,5
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) operating noise <35 dB(A), nominal stroke 3,8 mm, automatically adjusting, regulation time 0,24 mm/s, pulling load >100 N the Micro-USB connection allows charging of the internal battery directly at the socket using an USB power supply

Radio valve actuator				
Item description	**Contr.**	**Item No.**	**Group**	**€**
SAB+ (Heating)	✓	669108	E2	214,90

Accessories			
Item description	**Item No.**	**Group**	**€**
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90
Safety lock dismounting protection SAB	706148	A1	12,70

Accessories			
Item description	**Item No.**	**Group**	**€**
Valve adapter SAB for Giacomini Z810 (22,6 mm)	634724	A1	29,20
Valve adapter SAB for Oventrop Z809 (M30x1,0)	611978	A1	29,20
Valve adapter SAB for Herz Z807 (M28 X 1,5 mm)	595070	A1	29,20
Valve adapter SAB for Danfoss RA2000 Z802	589093	A1	29,20
Valve adapter SAB for Danfoss RAV Z803	589109	A1	29,20
Valve adapter SAB for Danfoss RAV-L Z804	589116	A1	29,20
Valve adapter SAB for Danfoss Z800	589079	A1	29,20
Valve adapter SAB for Danfoss Z801	589086	A1	29,20
Valve adapter SAB for Vaillant Z805	615181	A1	29,20

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.

Technical Data	
Measured values	temperature
Configuration	airConfig
Sensor	integrated digital temperature transmitter
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	battery type AA (3x)
Display	LED for status feedback, multicoloured
Enclosure	PC, latching battery compartment lid
Colour	pure white, light grey
Operating range temperature	0..+50 °C
Protection (IP)	IP40, according to EN 60529
Mounting	screw mounting M30x1,5
Delivery content	incl. battery type AA (3x)
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) operating noise <35 dB(A), nominal stroke 3,8 mm, automatically adjusting, regulation time 0,24 mm/s, pulling load >100 N

Radio valve actuator				
Item description	**Contr.**	**Item No.**	**Group**	**€**
SAB05 EnOcean	✓	513753	E2	172,30

Accessories			
Item description	**Item No.**	**Group**	**€**
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90
Safety lock dismounting protection SAB	706148	A1	12,70
Battery protection SAB05	595612	A1	22,50

Accessories			
Item description	**Item No.**	**Group**	**€**
Valve adapter SAB for Giacomini Z810 (22,6 mm)	634724	A1	29,20
Valve adapter SAB for Oventrop Z809 (M30x1,0)	611978	A1	29,20
Valve adapter SAB for Herz Z807 (M28 X 1,5 mm)	595070	A1	29,20
Valve adapter SAB for Danfoss RA2000 Z802	589093	A1	29,20
Valve adapter SAB for Danfoss RAV Z803	589109	A1	29,20
Valve adapter SAB for Danfoss RAV-L Z804	589116	A1	29,20
Valve adapter SAB for Danfoss Z800	589079	A1	29,20
Valve adapter SAB for Danfoss Z801	589086	A1	29,20
Valve adapter SAB for Vaillant Z805	615181	A1	29,20
Valve adapter SAB05/07 for Danfoss RA-02	836333	A1	9,20
Valve adapter SAB05/07 for Danfoss RAV-02	836326	A1	9,20
Valve adapter SAB05/07 for Danfoss RAVL-02	836319	A1	9,20
Valve adapter SAB05/07 for Herz (M28 X 1,5 mm)	836302	A1	9,20

Wireless Switches 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	
Operating functions	light ON/OFF blind UP/DOWN
Operating elements	**2-channel:** 1 switch **4-channel:** 2 switches
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	maintenance-free electrodynamic energy generator
Enclosure	PC
Colour	pure white brilliant, aluminium painted, anthracite
Operating range temperature	-25..+65 °C
Switch ranges	Thermokon mini
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting
Notes	price including frame actuation force 7 N, actuation range 2 mm, operating cycle quantity > 50.000

Wireless switch 2-channel light			
Item description	**Item No.**	**Group**	**€**
Switch Mini 2-channel light pure white brilliant	430647	E2	77,90
Switch Mini 2-channel light aluminium painted	430661	E2	77,90
Switch Mini 2-channel light anthracite	430623	E2	77,90

Wireless switch 4-channel light			
Item description	**Item No.**	**Group**	**€**
Switch Mini 4-channel light pure white brilliant	430838	E2	80,50
Switch Mini 4-channel light aluminium painted	430852	E2	80,50
Switch Mini 4-channel light anthracite	430814	E2	80,50

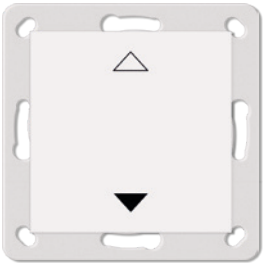
Wireless switch 2-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch Mini 2-channel blind pure white brilliant	430630	E2	77,90
Switch Mini 2-channel blind aluminium painted	430654	E2	77,90
Switch Mini 2-channel blind anthracite	430302	E2	77,90

Wireless switch 4-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch Mini 4-channel blind pure white brilliant	430821	E2	80,50
Switch Mini 4-channel blind aluminium painted	430845	E2	80,50
Switch Mini 4-channel blind anthracite	430807	E2	80,50

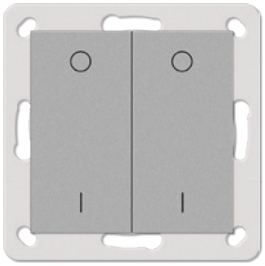
Options	
Description	**€**
Special printing on request	
Without printing on request	

Wireless Switches 55x55

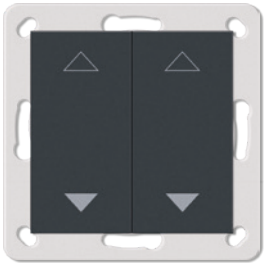
Energy-harvesting wireless switch for adjusting the (dimming) status of lights and blinds. The EasySens® radio technology offers flexible attachment to glass and plasterboard walls using the adhesive pad or screws.



2-channel blinds pure white



4-channel light aluminium



4-channel blinds anthracite

Technical Data	
Operating functions	light ON/OFF blind UP/DOWN
Operating elements	**2-channel:** 1 switch **4-channel:** 2 switches
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	maintenance-free electrodynamic energy generator
Enclosure	PC
Colour	pure white brilliant, pure white matt, aluminium, anthracite
Operating range temperature	-25..+65 °C
Switch ranges	Berker, Busch-Jaeger, Gira, Jung, Merten, Peha (please specify the desired frame when ordering)
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting
Notes	actuation force 7 N, actuation range 2 mm, operating cycle quantity > 50.000

Wireless switch 2-channel light				
Item description	**Item No.**	**In stock**	**Group**	**€**
Switch 2-channel light 55x55 pure white matt	839440		E1	84,50
Switch 2-channel light 55x55 pure white brilliant	839457	⛃	E1	84,50
Switch 2-channel light 55x55 aluminium	839464		E1	84,50
Switch 2-channel light 55x55 anthracite	839471		E1	84,50

Wireless switch 4-channel light			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel light 55x55 pure white matt	839488	E1	87,10
Switch 4-channel light 55x55 pure white brilliant	839495	E1	87,10
Switch 4-channel light 55x55 aluminium	839518	E1	87,10
Switch 4-channel light 55x55 anthracite	839525	E1	87,10

Wireless switch 2-channel blind				
Item description	**Item No.**	**In stock**	**Group**	**€**
Switch 2-channel blind 55x55 pure white matt	839532		E1	84,50
Switch 2-channel blind 55x55 pure white brilliant	839549	⛃	E1	84,50
Switch 2-channel blind 55x55 aluminium	839556		E1	84,50
Switch 2-channel blind 55x55 anthracite	839570		E1	84,50

Wireless switch 4-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel blind 55x55 pure white matt	839587	E1	87,10
Switch 4-channel blind 55x55 pure white brilliant	839594	E1	87,10
Switch 4-channel blind 55x55 aluminium	839600	E1	87,10
Switch 4-channel blind 55x55 anthracite	839617	E1	87,10

Options	Switch ranges on page 423/424
Description	**€**
Special printing on request	
Without printing on request	
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

Wireless Switches 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	
Operating functions	light ON/OFF blind UP/DOWN
Operating elements	**2-channel:** 1 switch **4-channel:** 2 switches
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	maintenance-free electrodynamic energy generator
Enclosure	PC
Colour	anthracite, studio white, studio white matt available on request, ivory white alu silver, black matt available on request
Operating range temperature	-25..+65 °C
Switch range Busch-Jaeger	Busch-axcent®, carat®, future® linear, solo® (please specify the desired frame when ordering)
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting
Notes	actuation force 7 N, actuation range 2 mm, operating cycle quantity > 50.000, frame designs Busch-Jaeger solo®, future® linear and Busch-axcent® at the same price, please ask for carat® Busch-balance® SI see Wireless Switches 55x55

Wireless switch 2-channel light			
Item description	**Item No.**	**Group**	**€**
Switch 2-channel light BJ63x63 studio white	730532	E1	87,10
Switch 2-channel light BJ63x63 ivory white	730570	E1	87,10
Switch 2-channel light BJ63x63 alu silver	730631	E1	87,10
Switch 2-channel light BJ63x63 anthracite	730754	E1	87,10

Wireless switch 4-channel light			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel light BJ63x63 studio white	730549	E1	89,90
Switch 4-channel light BJ63x63 ivory white	730587	E1	89,90
Switch 4-channel light BJ63x63 alu silver	730648	E1	89,90
Switch 4-channel light BJ63x63 anthracite	730761	E1	89,90

Wireless switch 2-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch 2-channel blind BJ63x63 studio white	730556	E1	87,10
Switch 2-channel blind BJ63x63 ivory white	730594	E1	87,10
Switch 2-channel blind BJ63x63 alu silver	730655	E1	87,10
Switch 2-channel blind BJ63x63 anthracite	730778	E1	87,10

Wireless switch 4-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel blind BJ63x63 studio white	730563	E1	89,90
Switch 4-channel blind BJ63x63 ivory white	730600	E1	89,90
Switch 4-channel blind BJ63x63 alu silver	730693	E1	89,90
Switch 4-channel blind BJ63x63 anthracite	730785	E1	89,90

Options	
Description	**€**
Special printing on request	
Without printing on request	
Switch ranges Busch-Jaeger future® linear | solo® | Busch-axcent®	5,80

Wireless Switches 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.

2-channel light,
LS 990 light grey

4-channel light,
LS 990 alpin white

4-channel blinds,
LS 990 white

Technical Data	
Operating functions	light ON/OFF blind UP/DOWN
Operating elements	**2-channel:** 1 switch **4-channel:** 2 switches
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	maintenance-free electrodynamic energy generator
Enclosure	PC
Colour	white, light grey, alpin white
Operating range temperature	-25..+65 °C
Switch range Jung	LS 990
Delivery content	incl. adhesive foil for mounting
Notes	price including frame actuation force 7 N, actuation range 2 mm, operating cycle quantity > 50.000

Wireless switch 2-channel light			
Item description	**Item No.**	**Group**	**€**
Switch 2-channel light Jung LS 990 white	435390	E1	131,00
Switch 2-channel light Jung LS 990 alpin white	435376	E1	131,00
Switch 2-channel light Jung LS 990 light grey	435413	E1	131,00

Wireless switch 4-channel light			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel light Jung LS 990 white	435475	E1	135,80
Switch 4-channel light Jung LS 990 alpin white	435451	E1	135,80
Switch 4-channel light Jung LS 990 light grey	435499	E1	135,80

Wireless switch 2-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch 2-channel blind Jung LS 990 white	435406	E1	131,00
Switch 2-channel blind Jung LS 990 alpin white	435383	E1	131,00
Switch 2-channel blind Jung LS 990 light grey	435420	E1	131,00

Wireless switch 4-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel blind Jung LS 990 white	435482	E1	135,80
Switch 4-channel blind Jung LS 990 alpin white	435468	E1	135,80
Switch 4-channel blind Jung LS 990 light grey	435505	E1	135,80

Options	
Description	**€**
Special printing on request	
Without printing on request	

Hand-helds

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	
Operating elements	4 buttons
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	maintenance-free electrodynamic energy generator
Operating range temperature	-25..+65 °C
Notes	actuation force 7 N, actuation range 2 mm, operating cycle quantity > 50.000

Hand-held			
Item description	**Item No.**	**Group**	**€**
Hand-held switch 4-channel	314602	E1	118,80

SR-KCS

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) 868 MHz, 902 MHz
Power supply	maintenance-free electrodynamic energy generator
Enclosure	PC
Colour	pure white
Operating ranges temperature	0..+40
Protection (IP)	IP20, according to EN 60529
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting

Wireless switch EnOcean (868 MHz)			
Item description	**Item No.**	**Group**	**€**
SR-KCS	573573	E2	97,90

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.

Technical Data	
Configuration	airConfig
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV, 100..240 V ~
Power consumption	typ. 1,5 W (24 V =), 3,4 VA (24 V ~), typ. 0,5 VA (230 V ~)
Enclosure	ABS
Colour	red
Operating range temperature	-20..+60 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

Radio multi-function actuator

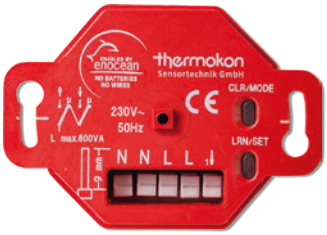
Item description	Contr.	Item No.	In stock	Group	€
STC-DO airConfig 24 V	✓	593731	●	E2	168,00
STC-DO airConfig 100..240 V	✓	593748		E2	168,00

Accessories

Item description	Item No.	Group	€
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90

STC-DO Light

Bidirectional flush-mounted receiving actuator using EnOcean switch telegrams for lighting applications (e.g. light on/off, staircase function, twilight switch, etc.). The functions can be parameterised via a programming button.



Technical Data	
Configuration	buttons
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	100..240 V ~
Power consumption	max. 0,5 mW (standby)
Enclosure	ABS
Colour	red
Operating range temperature	-20..+40 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

Radio lighting actuator				
Item description	**Contr.**	**Item No.**	**Group**	**€**
STC-DO Light 230 V	✓	568371	E2	175,60

STC-DO Blind

Bidirectional flush-mounted receiving actuator for blind applications compatible with EasySens® wireless switches and room operating units. The functions can be parameterised via programming button.

Technical Data	
Configuration	buttons
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	100..240 V ~
Power consumption	max. 0,5 mW (standby)
Enclosure	ABS
Colour	red
Operating range temperature	-20..+40 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

Radio shading actuator				
Item description	**Contr.**	**Item No.**	**Group**	**€**
STC-DO Blind 230 V	✓	568364	E2	175,60

SRC-AO Climate

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	
Configuration	buttons
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 1 W (24 V =), 1,5 VA (24 V ~)
Enclosure	ABS
Colour	red
Operating range temperature	-20..+60 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
Notes	up to 32 devices can be learned in, per channel 1 room operating unit + 1 input module for night-time reduction + up to 10 window contacts or window handles can be learned in

Radio climate actuator

Item description	Contr.	Item No.	Group	€
SRC-AO Climate V	✓	508278	E2	168,00
SRC-AO Climate 6WV	✓	530255	E2	168,00
SRC-AO Climate VV	✓	508285	E2	196,20

SRC-AO Dim

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	
Configuration	buttons
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 1 W (24 V =), 1,5 VA (24 V ~)
Enclosure	ABS
Colour	red
Operating range temperature	-20..+60 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
Notes	up to 32 devices can be learned in

Radio dimming actuator				
Item description	**Contr.**	**Item No.**	**Group**	**€**
SRC-AO Dim V	✓	499606	E2	168,00
SRC-AO Dim VV	✓	502931	E2	196,20

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.

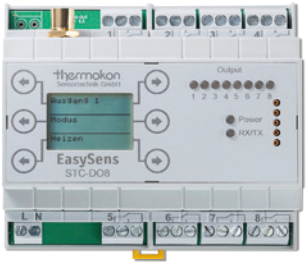
Technical Data	
Configuration	buttons
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 1 W (24 V =), 1,5 VA (24 V ~)
Enclosure	ABS
Colour	red
Operating range temperature	-20..+60 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
Notes	per channel 1 transmitter can be learned in

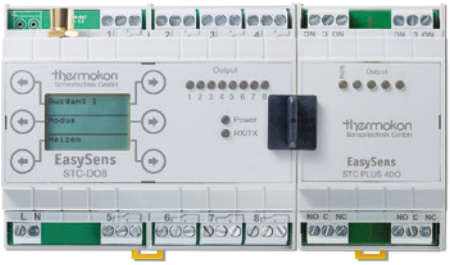
Radio multi-function actuator

Item description	Contr.	Item No.	Group	€
SRC-AO Multi V	✓	508315	E2	168,00
SRC-AO Multi VV	✓	508322	E2	196,20

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.





Technical Data	
Configuration	buttons
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz
Power supply	18..24 V = SELV, 24 V ~ (±10%) SELV 100..240 V ~
Power consumption	typ. 2 W (24 V =), 3,5 VA (24 V ~) 3,5 VA
Display	LCD 37,5x31,6 mm
Enclosure	ABS
Colour	light grey
Operating range temperature	0..+60 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. external receiving/transmitting antenna (2,5 m) with magnetic base
Notes	magnetic antenna plate for the external antenna recommended to improve radio coverage (see accessories) for inductive and/or capacitive loads, a suitable protective circuit must be provided (varistor, RC element, inrush current limitation, ...)

Radio multi-relay actuator 100..240 V			
Item description	**Item No.**	**Group**	**€**
STC-DO8 100..240 V type1 heating/cooling	490030	E2	389,70
STC-DO8 100..240 V type2 fancoil, heating/cooling	490047	E2	389,70
STC-DO8 100..240 V type3 switch actuator	490054	E2	389,70

Radio multi-relay actuator 24 V			
Item description	**Item No.**	**Group**	**€**
STC-DO8 24 V type1 heating/cooling	564458	E2	389,70
STC-DO8 24 V type2 fancoil, heating/cooling	631495	E2	426,20
STC-DO8 24 V type3 switch actuator	561273	E2	389,70

Extension module			
Item description	**Item No.**	**Group**	**€**
STC-PLUS 4DO	517690	E2	174,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Antenna extension 10 m	257206	A1	67,70
Antenna extension 20 m	257213	A1	82,40
L-shaped magnetic antenna holder, 180x180 mm	255097	A1	17,50
Connector STC-DO8 to STC-PLUS 4DO	517577	A1	9,10

SR65-DI

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.

Technical Data	
Configuration	airConfig
Input	1x input for floating contact, contact resistance max. 1000 Ω
Radio technology	EnOcean (IEC 14543-3-10) 868 MHz, 902 MHz
Power supply	solar cell, maintenance-free internal super cap, battery LS14250 (3,6 V)
Enclosure	PA6.6, with quick lock screws
Colour	pure white, transparent cover
Operating range temperature	-25..+65 °C
Protection (IP)	IP65, according to EN 60529
Connection	cable entry M16 for wire Ø=8 mm, terminal block, max. 1,5 mm²
Delivery content	incl. battery LS14250 (3,6 V)
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) (refer to accessories)

Wireless binary module			
Item description	**Item No.**	**Group**	**€**
SR65-DI	267731	E2	163,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Battery 1/2AA 3.6V Lithium LS14250	315098	A1	5,00
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704		113,90

LoRaWAN®

LoRaWAN® is a radio technology that is capable of transmitting data over a long distance and even from remote and hard-to-reach locations in an energy-efficient, cost-effective and secure manner. Due to the low energy consumption, the batteries of the sensors are extremely durable and can last for several years.

Room Operating Units

NOVOS 3 x LRW	Temperature, rel. humidity, CO2	**98**

Room Sensors

NOVOS 3 INC LRW	Temperature, rel. humidity, CO2	**98**
NOVOS 3 LRW	Temperature, rel. humidity, CO2	**100**
MCS LRW	Light, motion, temperature, rel. hum.	**102**

Actuators

SAB07 LRW	Temperature, rel. humidity	**103**

Outdoor Sensors

AGS55+ LRW	Temperature	**104**
FTA54+ LRW	Temperature, humidity	**106**
WSA LRW	Temperature, humidity	**108**
LA+ LRW	CO2, VOC, temperature, humidity	**110**
Li65+ LRW	Light, air pressure, temp., humidity	**112**

Duct Sensors

AKF10+ LRW	Temperature	**114**
FTK+ LRW	Temperature, humidity	**116**
LK+ LRW	CO2, VOC, temperature, humidity	**118**
MWF+ LRW	Temperature	**120**

Condensation Sensors

WK02+ LRW	Condensation, temp., humidity	**122**

Leakage Sensors

LS02+ ext. LRW	Leakage	**124**
LS02+ flex LRW	Leakage	**126**

Pressure / Flow Sensors

DPA+ LRW	Differential pressue, volume flow	**128**

Gateways

Gateway LRW Indoor RAK 7268V2	**131**
Gateway LRW Outdoor LORIX One	**132**
Converter LRW NBnano	**133**

NOVOS 3 x LRW

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 LRW P | T | PTD

NOVOS 3 LRW P | T | PTD ePaper (EPD)

Technical Data	
Measured values	temperature, relative humidity, CO2
Operating functions	setpoint adjustment temperature, presence detection
Operating elements	potentiometer (P)
Configuration	App, uConfig, LoRaWAN® Downlink
Radio technology	LoRaWAN® (868 MHz)
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..5000 ppm
Power supply	battery type AA (1x)
Display	**EPD:** ePaper Display 44x24 mm
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	-35..+70 °C
Protection (IP)	IP20, according to EN 60529
Mounting	flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting

Wireless room operating unit humidity + temperature – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
NOVOS 3 P white Temp_rH LRW	✓	811217	W1	94,80
NOVOS 3 T white CO2 Temp_rH LRW	✓	824255	W1	202,80
NOVOS 3 PT white CO2 Temp_rH LRW	✓	824248	W1	210,00

Options	
Description	**€**
EPD: ePaper Display 44x24 mm	30,30
Enclosure in black	13,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Battery AA 3.6 V lithium ER14505	759182	A1	8,40
Battery AA 1,5 V lithium L91	819640	A1	8,10
Battery AA 1,5 V Alkaline VARTA 4906	459099	A1	5,00
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
Frame for surface mounting NOVOS 3 / WRF04 black	795074	A1	55,30

NOVOS 3 INC LRW

Room operating unit with LoRaWAN® interface in NOVOS 3 design with temperature, humidity and CO2 sensor (depending on variant) as well as various control elements, e.g. for transmitting a setpoint. Different housing colors allow the room operating unit to be adapted to design-oriented interiors such as hotels, schools or office buildings.

NOVOS 3 INC LRW

NOVOS 3 INC T LRW

Technical Data	
Measured values	temperature, relative humidity, CO2
Operating functions	setpoint adjustment temperature **T:** presence detection
Operating elements	rotary encoder/push button for setpoint adjustment/ECO function **T:** button (T)
Configuration	App, uConfig, LoRaWAN® Downlink
Radio technology	LoRaWAN® (868 MHz)
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..5000 ppm
Power supply	battery type AA (1x)
Display	ePaper Display 44x24 mm
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	-35..+70 °C
Protection (IP)	IP20, according to EN 60529
Mounting	flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws
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 ...)

Room operating unit with up to 3 measured values LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
NOVOS 3 INC white Temp_rH EPD LRW	✓	835657	W1	145,50
NOVOS 3 INC white CO2 Temp_rH EPD LRW	✓	835664	W1	260,70
NOVOS 3 INC T white Temp_rH EPD LRW	✓	835640	W1	150,60
NOVOS 3 INC T white CO2 Temp_rH EPD LRW	✓	835633	W1	265,80

Options	
Description	**€**
Enclosure in black	13,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Battery AA 3.6 V lithium ER14505	759182	A1	8,40
Battery AA 1,5 V lithium L91	819640	A1	8,10
Battery AA 1,5 V Alkaline VARTA 4906	459099	A1	5,00
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
Frame for surface mounting NOVOS 3 / WRF04 black	795074	A1	55,30
Adhesive foil for NOVOS 3 SR with inner cut-outs	773386	A1	2,40

NOVOS 3 LRW

Room sensor in the NOVOS 3 enclosure for measurement of temperature (also available with passive temperature output), humidity (relative and absolute humidity, enthalpy, dew point), CO2 and mixed gas (VOC) depending on the variant. The maintenance-free sensor contributes to a pleasant room climate and well-being. Typical applications include schools, office buildings, hotels or cinemas. Different parameters can be individually configured via Thermokon NOVOSapp or uConfig. Optionally, operating elements for controlling HVAC systems can be added (see product NOVOS 3 x in the chapter 'Room Operating Units').

NOVOS 3 LRW

NOVOS 3 LRW ePaper (EPD)

NOVOS 3 LRW Occ Lum

Technical Data	
Measured values	temperature, relative humidity, CO2, luminosity, motion / presence
Configuration	App, uConfig, LoRaWAN® Downlink
Sensor	**Occ:** PIR (passive infrared) **Lum:** ambient light sensor with precise optical filtering appropriate to the human eye
Radio technology	LoRaWAN® (868 MHz)
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..5000 ppm
Measuring range light	**Lum:** selectable from 6 ranges 0..200 lux | 0..1000 lux | 0..2 klux | 0..10 klux | 0..20 klux | 0..50 klux
Dectection range	**Occ:** detection range, angle 110°/110°, 32 detection zones – at a distance of 2,5 m the detection area will be about 5x5 m max. range 5 m
Power supply	battery type AA (1x)
Display	**EPD:** ePaper Display 44x24 mm
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	0..+50 °C
Protection (IP)	IP20, according to EN 60529
Mounting	flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting

Room sensor with up to 5 measured values – LoRaWAN® (868 MHz)				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 Temp_rH white LRW	✓	811187	W1	64,00
NOVOS 3 Temp_rH white EPD LRW	✓	828918	W1	94,30
NOVOS 3 CO2 Temp_rH white LRW	✓	811170	W1	179,20
NOVOS 3 CO2 Temp_rH white EPD LRW	✓	828901	W1	209,50
NOVOS 3 Occ Temp_rH white LRW	✓	838931	W1	160,40
NOVOS 3 Occ Lum Temp_rH white LRW	✓	838955	W1	173,20
NOVOS 3 Occ Lum CO2 Temp_rH white LRW	✓	838948	W1	228,40

Options	
Description	**€**
Enclosure in black	13,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Battery AA 3.6 V lithium ER14505	759182	A1	8,40
Battery AA 1,5 V lithium L91	819640	A1	8,10
Battery AA 1,5 V Alkaline VARTA 4906	459099	A1	5,00
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
Frame for surface mounting NOVOS 3 / WRF04 black	795074	A1	55,30

MCS LRW

LoRaWAN® multi compact sensor for condition monitoring of up to 2 windows or doors and measurement of temperature, humidity, motion and brightness.

MCS LRW
(State / Temp_rH)

MCS LRW
(Lum)

MCS LRW
(Occ)

MCS LRW
(Lum / Occ)

LoRaWAN®

Technical Data	
Measured values	**State:** status **Temp_rH:** temperature, relative humidity **Lum:** luminosity **Occ:** motion, presence
Configuration	App, uConfig
Radio technology	LoRaWAN® (868 MHz)
Power supply	battery type AAA
Enclosure	PC V0
Colour	pure white, anthracite
Operating range temperature	0..+40 °C
Protection (IP)	IP20, according to EN 60529
Mounting	surface-mounted flat on base using included adhesive pad or screws
Delivery content	incl. adhesive foil for mounting incl. battery type AAA

Radio compact room sensor – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
MCS State white LRW	✓	798204	W1	60,20
MCS State temp_rH white LRW	✓	798792	W1	74,30
MCS temp_rH white LRW	✓	798211	W1	70,20
MCS Lum temp_rH white LRW	✓	798808	W1	81,50
MCS Occ temp_rH white LRW	✓	798228	W1	88,10
MCS LRW Occ Lum temp_rH white	✓	798815	W1	100,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Battery AAA 1,5 V Alkaline VARTA 4003	739351	A1	5,00

SAB07 LRW

Radio-controlled valve actuator with LoRaWAN® technology. The SAB07 has a manual setpoint adjustment as well as an additional override option via LoRaWAN®. Power is supplied via 2x AA batteries. Connection thread M30x1.5. Adapters are available for numerous valve manufacturers.

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment temperature
Operating elements	rotary button
Radio technology	LoRaWAN® (868 MHz)
Power supply	battery type AA (2x)
Display	graphic display monochrome (internal)
Enclosure	PC, ABS
Colour	pure white
Operating range temperature	0..+60 °C
Protection (IP)	IP30, according to EN 60529
Mounting	screw mounting M30x1,5
Delivery content	incl. battery type AA (2x)

Radio valve actuator – LoRaWAN® (868 MHz)				
Item description	**Contr.**	**Item No.**	**Group**	**€**
SAB07 LRW	✓	819619	W1	97,10

Accessories			
Item description	**Item No.**	**Group**	**€**
Valve Adapters on page XXX			
Safety lock dismounting protection SAB	706148	A1	12,70
Battery AA 1,5 V lithium L91	819640	A1	8,10

AGS55+ LRW

Outdoor temperature sensor with external stainless steel probe (fast response) for measuring temperature in outdoor areas, cold rooms, greenhouses, production plants and warehouses. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

0..10 V LoRaWAN®

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, jumper, LoRaWAN® Downlink
Output voltage	0..10 V or 0..5 V, adjustable via jumper, live-zero configuration via app or uConfig, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output, -20..+80 °C (default setting) selectable from 4 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, optionally configurable
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor probe, Ø=6 mm, stainless steel V2A (1.4305)
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-35..+70, °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories)
Notes	external antenna available on request

Outdoor sensor temperature – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
AGS55+ LRW	✓	797627	W2	156,80

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Housing protection BS150, transparent	730075	A1	27,50
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

FTA54+ LRW

Outdoor sensor for measuring relative humidity and temperature in HVAC applications, greenhouses, industrial halls and in meteorology. The accuracy of the humidity sensor is 2%. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

0..10 V LoRaWAN®

Technical Data	
Measured values	temperature, relative humidity,
Configuration	USEapp, App, BUS, DIP switches
Output voltage	2x 0..10 V or 0..5 V, adjustable via jumper, live-zero configuration via app or uConfig, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing
Power supply	15..35 V = SELV, 19..29 V ~ SELV **BAT:** battery type AA (2x)
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Pipe, PC, pure white, with filter stainless steel wire mesh
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-20..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories) incl. sun/rain protection PC, white **BAT:** incl. battery type AA (2x)
Notes	external antenna available on request

Outdoor sensor humidity + temperature – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
FTA54+ LRW	✓	797634	W2	269,40
FTA54+ BAT LRW	✓	816625	W2	179,40

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
Filter stainless steel, wire mesh FTK+ / FTA54+ / FTP+ (spare part)	231169	A1	11,90
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

WSA LRW

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. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces.

0..10 V LoRaWAN®

Technical Data	
Measured values	temperature, relative humidity
Configuration	USEapp, uConfig, jumper, LoRaWAN® Downlink
Output voltage	2x 0..10 V or 0..5 V, adjustable via jumper, live-zero configuration via app or uConfig, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Pipe, Ø=19,5 mm, PA6, with filter stainless steel wire mesh weather protection PC, stainless steel
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-20..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Mounting	mounting at the wall or at a pole
Delivery content	incl. mounting set (screws and accessories)

Weather protected outdoor sensor humidity + temperature – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
WSA temp_rH LRW	✓	797801	W2	387,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Filter stainless steel, wire mesh FTK+ / FTA54+ / FTP+ (spare part)	231169	A1	11,90
Weather protection for FTK+, WSA (replacement)	625241	A1	82,20
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

LA+ LRW

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). In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway.

LA+

LA+ (Temp)

LA+ (Temp_rH)

0..10 V LoRaWAN®

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC, CO2/VOC mix
Configuration	USEapp, uConfig, jumper, LoRaWAN® Downlink **CO2+VOC:** each output can be set to get a variable mix of CO2 and VOC by configuration via app or uConfig
Output voltage	2x 0..10 V or 0..5 V, adjustable via jumper, live-zero configuration via app or uConfig, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output: 0..+50 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor, self-calibration
Power supply	15..35 V = SELV, 19..29 V ~ SELV **BAT:** battery type AA (2x)
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	**Temp:** Sensor probe, stainless steel V2A (1.4305) **Temp+rH:** Pipe, PC, with filter stainless steel wire mesh
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	0..+50 °C
Protection (IP)	IP65, according to EN 60529

Technical Data	
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories) **Temp+rH:** incl. sun/rain protection PC, white **BAT:** incl. battery type AA (2x)
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 ...) external antenna available on request

Outdoor sensor CO2 – LoRaWAN® (868 MHz)

Item description	App	Item No.	Group	€
LA+ CO2 temp LRW	✓	797641	W2	392,30
LA+ CO2 temp_rH LRW	✓	797658	W2	435,30
LA+ VOC temp LRW	✓	797665	W2	370,20
LA+ VOC temp_rH LRW	✓	797672	W2	413,20
LA+ CO2+VOC LRW	✓	797764	W2	467,80
LA+ CO2+VOC temp LRW	✓	797771	W2	515,20
LA+ CO2+VOC temp_rH LRW	✓	797788	W2	558,20
LA+ CO2 Temp_rH BAT LRW	✓	816601	W2	345,30

Accessories

Item description	Item No.	Group	€
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

Li65+ LRW

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. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway.

Li65+

Li65+ Temp_rH

0..10 V LoRaWAN®

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, luminosity, atmospheric pressure
Configuration	USEapp, App, BUS, DIP switches
Output voltage	0..10 V or 0..5 V, 2x 0..10 V or 0..5 V, 3x 0..10 V or 0..5 V, 4x 0..10 V or 0..5 V, adjustable via jumper
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, adjustable at the transducer, optionally configurable
Measuring range humidity	0..100% rH non-condensing
Measuring range light	0..1000 lux (default setting), selectable from 6 ranges 0..200 lux | 0..1000 lux | 0..2 klux | 0..10 klux | 0..20 klux | 0..50 klux
Measuring range atm. pressure	500..1500 hPa
Power supply	15..35 V = SELV, 19..29 V ~ SELV | **BAT:** battery type AA (2x)
Power consumption	typ. 0,6 W (24 V =), 1,5 VA (24 V ~)
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, translucent cover PC
Operating range temperature	-30..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories) **BAT:** incl. battery type AA (2x)
Notes	external antenna available on request

Outdoor sensor light – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
Li65+ LRW	✓	797795	W2	259,00
Li65+ temp_rH LRW	✓	800181	W2	302,00
Li65+ temp_rH_hPa LRW	✓	800198	W2	345,00
Li65+ Temp_rH BAT LRW	✓	816618	W2	212,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

AKF10+ LRW

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. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway.

0..10 V LoRaWAN®

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, jumper, LoRaWAN® Downlink
Output voltage	0..10 V or 0..5 V, adjustable via jumper, live-zero configuration via app or uConfig, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, optionally configurable
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor probe, Ø=6 mm, stainless steel V4A (1.4571) suitable for usage in aggressive media
Installation length	50 mm, 100 mm, 150 mm, 200 mm, 250 mm, 300 mm, 450 mm
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-50..+160 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Mounting	when used as duct sensors: please use mounting flange MF6DS flexible (+90..+120 °C) or MF6 (brass, +120..+260 °C) for use as immersion sensors please use immersion pocket THVADS / THMSDS
Delivery content	incl. mounting flange MF6DS flexible incl. mounting set (screws and accessories)
Notes	external antenna available on request

Duct/immersion sensor -50..+160 °C – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
AKF10+ LRW 050.06	✓	797818	W2	157,90
AKF10+ LRW 100.06	✓	797825	W2	159,00
AKF10+ LRW 150.06	✓	797832	W2	160,20

Duct/immersion sensor -50..+160 °C – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
AKF10+ LRW 200.06	✓	797849	W2	160,60
AKF10+ LRW 250.06	✓	797856	W2	162,10
AKF10+ LRW 300.06	✓	797863	W2	163,20
AKF10+ LRW 450.06	✓	797870	W2	164,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	A2	7,80
Mounting flange MF6 brass (suitable for Ø=6 mm)	3407	A1	7,80
Syringe thermal contact fluid	102308	A1	1,80
Mounting bracket with cable gland for duct sensors Ø=6 mm	670593	A1	14,80

Thermowells brass for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	⛁	A2	9,90
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⛁	A2	11,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015	⛁	A2	11,80
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022	⛁	A2	12,30
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985	⛁	A2	14,10
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039	⛁	A2	14,60
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046	⛁	A2	14,90

Thermowells stainless steel for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	⛁	A2	23,10
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⛁	A2	25,30
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824	⛁	A2	27,40
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848	⛁	A2	28,70
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862	⛁	A2	35,60
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879	⛁	A2	37,30
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893	⛁	A2	38,60
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS			666473	⛁	A2	22,20

FTK+ LRW

Duct sensor for measuring relative humidity 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. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway.

FTK+ LRW

0..10 V LoRaWAN®

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point
Configuration	USEapp, uConfig, jumper, LoRaWAN® Downlink
Output voltage	2x 0..10 V or 0..5 V, adjustable via jumper, live-zero configuration via app or uConfig, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Power supply	15..35 V = SELV, 19..29 V ~ SELV | **BAT:** battery type AA (2x)
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Pipe, PA6, with filter stainless steel wire mesh, black, Ø=19,5 mm
Installation length	140 mm, 270 mm, 400 mm
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-20..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Delivery content	incl. mounting flange, incl. mounting set (screws and accessories) **BAT:** incl. battery type AA (2x)
Notes	air speed max. 12 m/s external antenna available on request

Duct sensor humidity + temperature – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
FTK+ 140 LRW	✓	797924	W2	273,60
FTK+ 270 LRW	✓	797931	W2	282,30
FTK+ 400 LRW	✓	797948	W2	290,80
FTK+ 140 BAT LRW	✓	821827	W2	183,60

Accessories			
Item description	**Item No.**	**Group**	**€**
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Filter stainless steel, wire mesh FTK+ / FTA54+ / FTP+ (spare part)	231169	A1	11,90
Mounting flange MF20	612562	A1	14,40
Weather protection for FTK+, WSA (replacement)	625241	A1	82,20
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

LK+ LRW

The maintenance-free and multi-functional duct air quality sensor measures CO2, mixed gas (VOC), temperature and humidity. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway.

LK+ LRW

0..10 V LoRaWAN®

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC, CO2/VOC mix
Configuration	USEapp, uConfig, jumper, LoRaWAN® Downlink **CO2+VOC:** each output can be set to get a variable mix of CO2 and VOC by configuration via app or uConfig
Output voltage	2x 0..10 V or 0..5 V, adjustable via jumper, live-zero configuration via app or uConfig, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output: 0..+50 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor
Power supply	15..35 V = SELV, 19..29 V ~ SELV | **BAT:** battery type AA (2x)
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Pipe, Ø=19,5 mm, black, with filter stainless steel wire mesh
Installation length	180 mm, **models without temperature:** 150 mm
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	0..+50 °C

Technical Data	
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Delivery content	incl. mounting flange incl. mounting set (screws and accessories) **BAT:** incl. battery type AA (2x)
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 ...) air speed 0,3..12 m/s external antenna available on request

Duct sensor CO2 – LoRaWAN® (868 MHz)

Item description	App	Item No.	Group	€
LK+ CO2+VOC LRW	✓	797993	W2	459,20
LK+ CO2+VOC temp LRW	✓	798006	W2	506,60
LK+ CO2+VOC temp_rH LRW	✓	798013	W2	549,60
LK+ CO2 temp LRW	✓	797955	W2	383,70
LK+ CO2 temp_rH LRW	✓	797962	W2	426,70
LK+ VOC temp LRW	✓	797979	W2	361,50
LK+ VOC temp_rH LRW	✓	797986	W2	404,50
LK+ CO2 Temp_rH BAT LRW	✓	821841	W2	336,70

Accessories

Item description	Item No.	Group	€
Mounting flange MF20	612562	A1	14,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

MWF+ LRW

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. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway.

MWF+ LRW

0..10 V LoRaWAN®

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, jumper, LoRaWAN® Downlink
Output voltage	0..10 V or 0..5 V, adjustable via jumper, live-zero configuration via app or uConfig, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 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
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Installation length	3000 mm, 6000 mm
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-30..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Delivery content	incl. mounting flange incl. mounting set (screws and accessories) incl. installation set
Notes	external antenna available on request

Duct averaging sensor -50..+80 °C LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
MWF+ LRW L3000	✓	798020	W2	245,90
MWF+ LRW L6000	✓	798037	W2	255,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Installation set TFR / MWF+	679466	A1	10,30
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

WK02+ LRW

Condensation sensor with LoRaWAN® interface as well as 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. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway.

LoRaWAN®

Technical Data	
Measured values	temperature, relative humidity, condensation
Configuration	USEapp, LoRaWAN® Downlink
Output voltage	2x 0..10 V or 0..5 V, adjustable via Thermokon app, live-zero configuration via app, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Output signal temperature	scaling analogue output: 0..+50 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing
Power supply	**24 V:** 15..24 V = (±10%) SELV, 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 W (230 V ~)
Display	LED green – power supply OK, LED red – condensation
Enclosure	USE-L, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	0..+50 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm²
Connection cable	PVC, 0,25 mm², white
Length connection wire	2 m
Delivery content	incl. mounting base enclosure USE-L pure white incl. mounting set (screws and accessories) incl. cable tie 140x3,6 mm incl. syringe thermal contact fluid 1 ml
Notes	external antenna available on request

Condensation sensor – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
WK02+ ext LRW 24 V L2000	✓	798181	W2	292,80
WK02+ ext LRW 230 V L2000	✓	798198	W2	318,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-L pure white	668361	A1	13,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

LS02+ ext. LRW

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 remote sensor element enables flexible mounting. This allows the leakage detector to be individually adapted to the existing installation situation or leakage height to be detected. A potential-free switching contact is used for communication with the higher-level control system.

Technical Data	
Measured values	leakage
Configuration	USEapp, LoRaWAN® Downlink
Radio technology	LoRaWAN® (868 MHz)
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,8 W (24 V =), 1,5 VA (24 V ~)
Material in touch with media	stainless steel V4A (1.4401)
Display	LED green – power supply OK, LED red – alarm, leakage detected
Enclosure	USE-L, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	-20..+60 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry flextherm M20 for wire Ø=4,5..9 mm removable plug-in terminal, max. 2,5 mm²
Connection cable	PVC, 0,25 mm²
Length connection wire	5 m
Mounting	level compensation through spring contacts
Delivery content	incl. mounting base enclosure USE-L pure white incl. mounting set (screws and accessories) incl. fixing kit rawlplugs and screws (2x each)
Notes	external antenna available on request

Leakage detector – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
LS02+ ext LRW L5000	✓	798136	W2	204,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-L pure white	668361	A1	13,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

LS02+ flex LRW

Leakage detector LS02+ flex 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 type flex detects water or liquid intrusion over the entire length of the sensor rod. A potential-free switching contact is used for communication with the higher-level control system. Thanks to the compact design of the sensor rod, the sensor can be mounted in a variety of places (floors, ceilings, etc.) to save space. The sophisticated and highly flexible insulation braiding also allows direct mounting on water-bearing pipe systems. The sensor rod can easily be shortened on site.

Technical Data	
Measured values	leakage
Configuration	USEapp, LoRaWAN® Downlink
Radio technology	LoRaWAN® (868 MHz)
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,6 W (24 V =), 1,6 VA (24 V ~)
Material in touch with media	Sensor rod, Twisted PVC cable
Installation length	2000 mm, 5000 mm, 20000 mm, 30000 mm
Display	LED green – power supply OK, LED red – alarm, leakage detected
Enclosure	USE-L, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	-20..+60 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry flextherm M20 for wire Ø=4,5..9 mm removable plug-in terminal, max. 2,5 mm²
Mounting	additional fixation of the sensor rod possible with adhesive pads (see accessories)
Delivery content	incl. mounting base enclosure USE-L pure white incl. mounting set (screws and accessories) incl. fixing kit rawlplugs and screws (2x each)
Notes	external antenna available on request

Leakage detector – LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
LS02+ flex LRW L2000	✓	798143	W2	263,50
LS02+ flex LRW L5000	✓	798150	W2	292,90
LS02+ flex LRW L20m	✓	798167	W2	439,90
LS02+ flex LRW L30m	✓	798174	W2	537,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-L pure white	668361	A1	13,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
C-clip adhesive pads (5 pieces) – mounting accessories for LS02+ flex	778596	A1	10,30
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

DPA+ LRW

Differential pressure transmitter for measuring and monitoring overpressure, underpressure, differential pressure and flow volume 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. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway. 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+ Dual

DPA+
with additional cable entry
(refer to mounting accessories USE)

Technical Data	
Measured values	differential pressure, volume flow pressure in Pa or inchWC, volume flow in m³/h or cfm optionally configurable via app or uConfig
Configuration	USEapp, DIP switches, LoRaWAN® Downlink
Input	2x input for NTC10k or floating contact (2IN)
Output voltage	2x 0..10 V or 0..5 V, adjustable via jumper, live-zero configuration via app or uConfig, min. load 10 kΩ
Radio technology	LoRaWAN® (868 MHz)
Measuring range pressure	**DPA250+:** 0..+25 | 0..+50 | 0..+100 | 0..+250 | -25..+25 | -50..+50 | -100..+100 | -150..+150 Pa, 0..+250 Pa (default setting), **DPA2500+:** -100..+100 | 0..+100 | 0..+250 | 0..+500 | 0..+1000 | 0..+1500 | 0..+2000 | 0..+2500 Pa, 0..+2500 Pa (default setting) **DPA7000+:** 0..+1000 | 0..+1500 | 0..+2000 | 0..+2500 | 0..+3000 | 0..+4000 | 0..+5000 | 0..+7000 Pa, 0..+7000 Pa (default setting) selectable at the device
Measuring range velocity	0..750.000 m³/h, optionally configurable
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Enclosure	USE-L, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-10..+50 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm, removable plug-in terminal, max. 2,5 mm², inputs max. 1,0 mm² pressure connection male Ø=5,0 mm / Ø=6,3 mm connection tube: PVC, soft
Mounting	surface-mounted flat on base using screws prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. mounting base enclosure USE-L pure white incl. mounting set (screws and accessories) incl. pressure connection set and 2 m PVC connection hose
Notes	output protection circuit (reverse polarity protected) external antenna available on request

Differential pressure and volume flow transducer LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
DPA250+ LRW MultiRange	✓	798099	W2	189,80
DPA2500+ LRW MultiRange	✓	798105	W2	189,80
DPA7000+ LRW MultiRange	✓	798112	W2	189,80

Dual differential pressure and volume flow transducer LoRaWAN® (868 MHz)				
Item description	**App**	**Item No.**	**Group**	**€**
DPA2500+ Dual LRW	✓	798129	W2	287,30

Options	
Description	**€**
Automatic zero-point calibration (AZ)	61,20
Automatic zero-point calibration dual (2x AZ)	122,20

Accessories			
Item description	**Item No.**	**Group**	**€**
T-hose connector for pressure hoses Ø=4 mm (10 pcs)	668323	A1	36,60
Adapter 90° angle for pressure hoses Ø=4 mm	668330	A1	9,80
Metal duct connector MKS40 (Ø=4 mm, L=40 mm)	265138	A1	5,00
Metal duct connector MKS100 (Ø=5 mm, L=100 mm)	302531	A1	5,90
Mounting base enclosure USE-L pure white	668361	A1	13,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

Gateway LRW Indoor RAK 7268V2

LoRaWAN® indoor gateway with external antenna and integrated network/application server. An MQTT interface (client) enables a direct connection to higher-level systems. Alternatively, the gateway can be connected to an external network server. Configuration is intuitive via an integrated web interface.

Technical Data	
Configuration	web interface
Network technology	TCP/IP, MQTT
Radio technology	**CV2:** LoRaWAN® (868 MHz), Cellular radio (LTE), WLAN **V2:** LoRaWAN® (868 MHz), WLAN
Power supply	12 V =, PoE
Display	LED for status feedback, multicoloured
Enclosure	PC, ABS
Colour	white
Operating range temperature	-10..55 °C
Protection (IP)	IP30
Delivery content	incl. external power supply

Gateway LoRaWAN® -> IP			
Item description	**Item No.**	**Group**	**€**
Gateway LRW Indoor RAK 7268CV2	827898	W1	303,20
Gateway LRW Indoor RAK 7268V2	832359	W1	261,20

Gateway LRW Outdoor LORIX One

Professional and compact LoRaWAN® outdoor gateway with external antenna. Thanks to the passive PoE connection, the gateway requires only one line for power supply and connection to an external network server. The configuration is done intuitively via an integrated web interface. Various mounting options are available, e.g. for wall or pole mounting.

Technical Data	
Configuration	web interface
Network technology	TCP/IP
Radio technology	LoRaWAN® (868 MHz)
Power supply	24 V =, passive PoE
Power consumption	typ. 3 W (24 V =)
Colour	light grey
Operating range temperature	-30..+55 °C
Protection (IP)	IP65, according to EN 60529
Connection	RJ45 socket (8P8C) 10/100 MBit/s Ethernet
Mounting	mounting at the wall or at a pole
Delivery content	incl. external power supply incl. passive PoE splitter

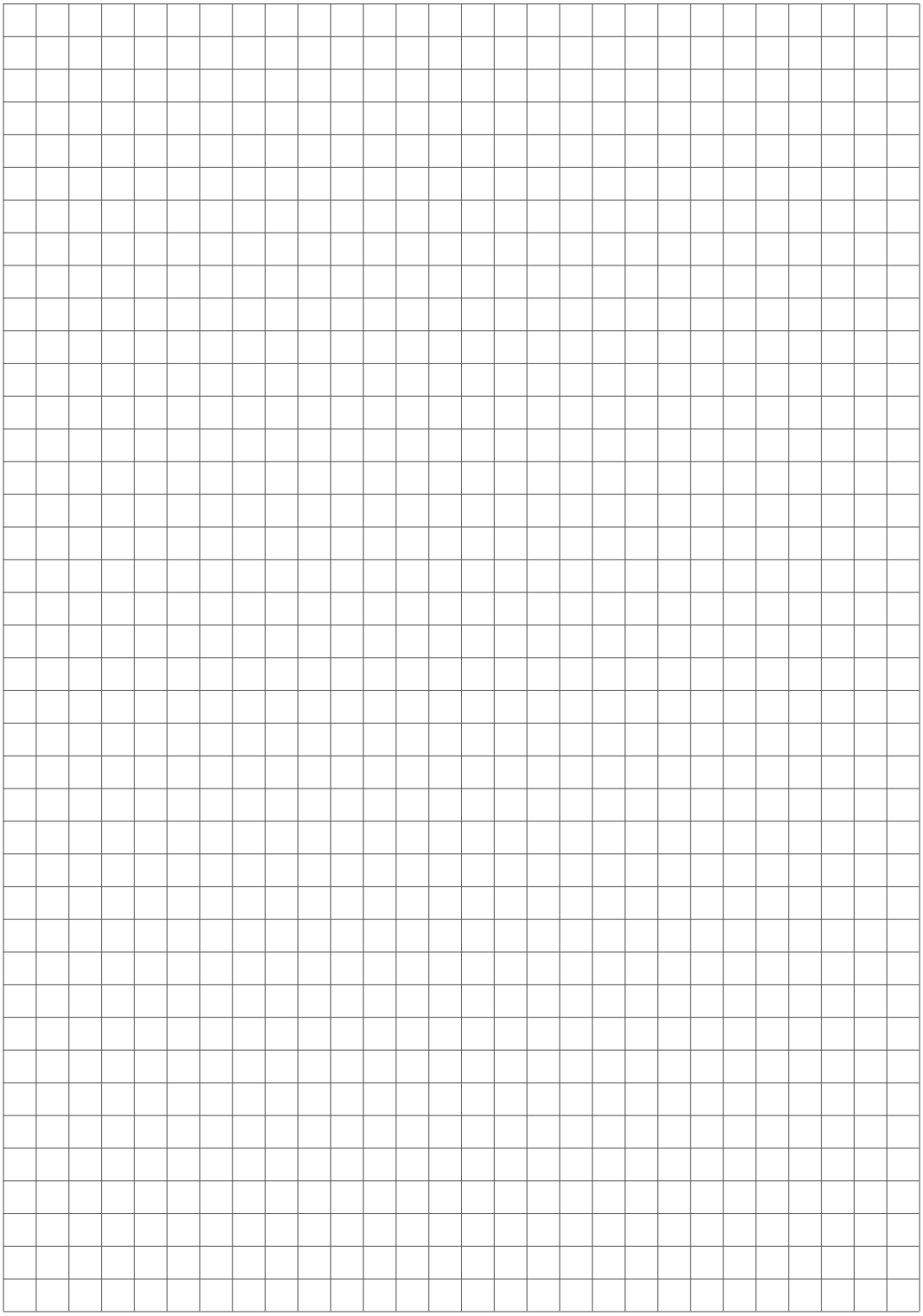
Gateway LoRaWAN® -> IP			
Item description	**Item No.**	**Group**	**€**
Gateway LRW Outdoor LORIX One	806619	W1	1167,60

Converter LRW NBnano

Converter for LoRaWAN® data to BACnet IP and Modbus TCP/IP. The NBnano contains a LoRaWAN® network/application server and allows conversion to BACnet IP or Modbus TCP/IP for direct connection to a buildling management system. External LoRaWAN® gateways (e.g. indoor Femto), which arc connected to the NBnano, serve as radio receivers.

Technical Data	
Configuration	web interface
Network technology	Modbus TCP/IP, BACnet IP
Radio technology	LoRaWAN® (868 MHz)
Power supply	12 V =
Operating range temperature	-20..+60 °C
Connection	2x RJ45 socket
Delivery content	incl. external power supply
Notes	optional extension of the possible number of devices (50 | 200 | 1000 | 2000) available

Gateway LoRaWAN® -> IP			
Item description	**Item No.**	**Group**	**€**
Converter LRW NBnano	809160	W1	1190,00



Bluetooth®

Bluetooth® solutions gain more and more importance for modern lighting controls. Thanks to the wireless and batteryless switches of Thermokon 2,4 GHZ-BLE lighting systems can be controlled easily. The switches are ideal for switching and dimming of lights and for the call of lighting scenes.

BLE Switches (Bluetooth® Low Energy)

Mini	BLE switch (battery-free)	**136**
55x55	BLE switch (battery-free)	**138**
Busch-Jaeger	BLE switch (battery-free)	**140**
SR-KCS BLE	BLE key-card switch (battery-free)	**142**

Wireless Switches 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

Bluetooth®

Technical Data	
Operating functions	light ON/OFF, blind UP/DOWN
Operating elements	**2-channel:** 1 switch **4-channel:** 2 switches
Configuration	NFC-based / DMC
Radio technology	Bluetooth® Low Energy (BLE), Beacon
Power supply	maintenance-free electrodynamic energy generator
Enclosure	PC
Colour	pure white brilliant, aluminium painted, anthracite
Operating range temperature	-25..+65 °C
Switch ranges	Thermokon mini
Mounting	surface-mounted flat on base using adhesive foil or screws
Notes	price including frame actuation force 7 N, actuation range 2 mm, operating cycle quantity > 50.000 configuration interface NFC forum type 2 tag (ISO/IEC 14443 parts 2 and 3) Data Matrix Code (DMC) on the back of the unit for commissioning

Wireless switch 2-channel light			
Item description	**Item No.**	**Group**	**€**
Switch Mini 2-channel BLE light pure white brilliant	731065	E2	77,90
Switch Mini 2-channel BLE light aluminium painted	733946	E2	77,90
Switch Mini 2-channel BLE light anthracite	733953	E2	77,90

Wireless switch 4-channel light			
Item description	**Item No.**	**Group**	**€**
Switch Mini 4-channel BLE light pure white brilliant	708425	E2	80,50
Switch Mini 4-channel BLE light aluminium painted	733960	E2	80,50
Switch Mini 4-channel BLE light anthracite	733977	E2	80,50

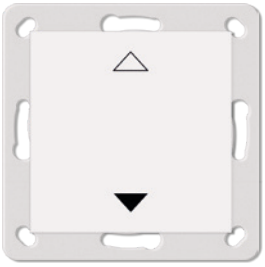
Wireless switch 2-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch Mini 2-channel BLE blind pure white brilliant	733984	E2	77,90
Switch Mini 2-channel BLE blind aluminium painted	733991	E2	77,90
Switch Mini 2-channel BLE blind anthracite	734004	E2	77,90

Wireless switch 4-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch Mini 4-channel BLE blind pure white brilliant	734011	E2	80,50
Switch Mini 4-channel BLE blind aluminium painted	734028	E2	80,50
Switch Mini 4-channel BLE blind anthracite	734035	E2	80,50

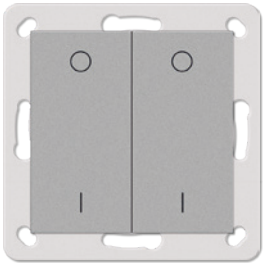
Options	
Description	**€**
Special printing on request	
Without printing on request	

Wireless Switches 55x55

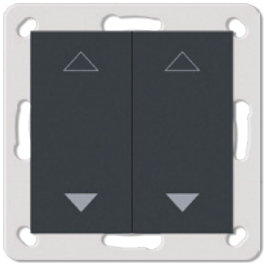
Energy-harvesting wireless switch for adjusting the (dimming) status of lights and blinds. The EasySens® radio technology offers flexible attachment to glass and plasterboard walls using the adhesive pad or screws.



2-channel blinds pure white



4-channel light aluminium



4-channel blinds anthracite

Bluetooth®

Technical Data	
Operating functions	light ON/OFF, blind UP/DOWN
Operating elements	**2-channel:** 1 switch **4-channel:** 2 switches
Configuration	NFC-based / DMC
Radio technology	Bluetooth® Low Energy (BLE), Beacon
Power supply	maintenance-free electrodynamic energy generator
Enclosure	PC
Colour	pure white brilliant, pure white matt, aluminium, anthracite
Operating range temperature	-25..+65 °C
Switch ranges	Berker, Busch-Jaeger, Gira, Jung, Merten, Peha (please specify the desired frame when ordering)
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting
Notes	actuation force 7 N, actuation range 2 mm, operating cycle quantity > 50.000, configuration interface NFC forum type 2 tag (ISO/IEC 14443 parts 2 and 3) Data Matrix Code (DMC) on the back of the unit for commissioning

Wireless switch 2-channel light			
Item description	**Item No.**	**Group**	**€**
Switch 2-channel BLE light 55x55 pure white matt	839624	E1	84,50
Switch 2-channel BLE light 55x55 pure white brilliant	839631	E1	84,50
Switch 2-channel BLE light 55x55 aluminium	839648	E1	84,50
Switch 2-channel BLE light 55x55 anthracite	839662	E1	84,50

Wireless switch 4-channel light			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel BLE light 55x55 pure white matt	839679	E1	87,10
Switch 4-channel BLE light 55x55 pure white brilliant	839686	E1	87,10
Switch 4-channel BLE light 55x55 aluminium	839693	E1	87,10
Switch 4-channel BLE light 55x55 anthracite	839709	E1	87,10

Wireless switch 2-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch 2-channel BLE blind 55x55 pure white matt	839716	E1	84,50
Switch 2-channel BLE blind 55x55 pure white brilliant	839723	E1	84,50
Switch 2-channel BLE blind 55x55 aluminium	839730	E1	84,50
Switch 2-channel BLE blind 55x55 anthracite	839747	E1	84,50

Wireless switch 4-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel BLE blind 55x55 pure white matt	839761	E1	87,10
Switch 4-channel BLE blind 55x55 pure white brilliant	839778	E1	87,10
Switch 4-channel BLE blind 55x55 aluminium	839785	E1	87,10
Switch 4-channel BLE blind 55x55 anthracite	839792	E1	87,10

Options	Switch ranges on page 423/424
Description	**€**
Special printing on request	
Without printing on request	
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

Wireless Switches 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

Bluetooth®

Technical Data	
Operating functions	light ON/OFF, blind UP/DOWN
Operating elements	**2-channel:** 1 switch **4-channel:** 2 switches
Configuration	NFC-based / DMC
Radio technology	Bluetooth® Low Energy (BLE), Beacon
Power supply	maintenance-free electrodynamic energy generator
Enclosure	PC
Colour	anthracite, studio white, studio white matt available on request, ivory white, alu silver black matt available on request
Operating range temperature	-25..+65 °C
Switch range Busch-Jaeger	Busch-axcent®, carat®, future® linear, solo® (please specify the desired frame when ordering)
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting
Notes	actuation force 7 N, actuation range 2 mm, operating cycle quantity > 50.000 frame designs Busch-Jaeger solo®, future® linear and Busch-axcent® at the same price, please ask for carat® Busch-balance® SI see Wireless Switches 55x55 configuration interface NFC forum type 2 tag (ISO/IEC 14443 parts 2 and 3) Data Matrix Code (DMC) on the back of the unit for commissioning

Wireless switch 2-channel light			
Item description	**Item No.**	**Group**	**€**
Switch 2-channel BLE light BJ63x63 studio white	734516	E1	87,10
Switch 2-channel BLE light BJ63x63 ivory white	734547	E1	87,10
Switch 2-channel BLE light BJ63x63 alu silver	734554	E1	87,10
Switch 2-channel BLE light BJ63x63 anthracite	734561	E1	87,10

Wireless switch 4-channel light			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel BLE light BJ63x63 studio white	734509	E1	89,90
Switch 4-channel BLE light BJ63x63 ivory white	734578	E1	89,90
Switch 4-channel BLE light BJ63x63 alu silver	734585	E1	89,90
Switch 4-channel BLE light BJ63x63 anthracite	734592	E1	89,90

Wireless switch 2-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch 2-channel BLE blind BJ63x63 studio white	734615	E1	87,10
Switch 2-channel BLE blind BJ63x63 ivory white	734622	E1	87,10
Switch 2-channel BLE blind BJ63x63 alu silver	735049	E1	87,10
Switch 2-channel BLE blind BJ63x63 anthracite	735056	E1	87,10

Wireless switch 4-channel blind			
Item description	**Item No.**	**Group**	**€**
Switch 4-channel BLE blind BJ63x63 studio white	734608	E1	89,90
Switch 4-channel BLE blind BJ63x63 ivory white	735070	E1	89,90
Switch 4-channel BLE blind BJ63x63 alu silver	735087	E1	89,90
Switch 4-channel BLE blind BJ63x63 anthracite	735100	E1	89,90

Options	
Description	**€**
Special printing on request	
Without printing on request	
Switch ranges Busch-Jaeger future® linear | solo® | Busch-axcent®	5,80

SR-KCS BLE

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.

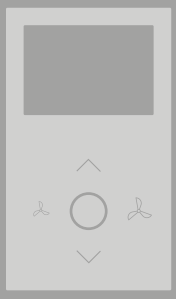
Bluetooth®

Technical Data	
Radio technology	Bluetooth® Low Energy (BLE)
Power supply	maintenance-free electrodynamic energy generator
Enclosure	PC
Colour	pure white
Operating range temperature	-20..+60 °C
Protection (IP)	IP20, according to EN 60529
Mounting	surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting

Wireless switch			
Item description	**Item No.**	**Group**	**€**
SR-KCS BLE	728126	E2	97,90

Room Application

Our room operating units and room sensors enable the measured value acquisition and/or integrated operation of HVAC, lighting and shading in individual room control. Due to the sophisticated appearance and a variety of design options, the devices are particularly suitable for design-oriented facilities.



Room Operating Units

thanos EVO	Temperature, humidity, CO2, VOC	144
NOVOS Touch	Temperature, humidity, CO2, VOC	150
NOVOS 7	Temperature, humidity, CO2, VOC	154
NOVOS 5 x	Temperature, humidity, CO2, VOC	158
NOVOS 3 x	Temperature, humidity, CO2, VOC	162
NOVOS 3 INC	Temperature, humidity	168
WRF07 x	Temperature, rel. humidity, CO2, VOC	172
WRF07 INC	Temperature, rel. humidity	176
WRF06 LCD	Temperature, rel. humidity	178
WRF06 x	Temperature	180
WRF06 INC	Temperature, rel. humidity	182
LCR Touch	Temperature, humidity, VOC	184

Room Controller

JOY Fancoil	Temperature, rel. humidity	186
JOY HC	Temperature, rel. humidity	190
LCF02 Touch	Temperature	194
LCF02 QTouch	Temperature, rel. humidity, CO2	196
LCF02	Temperature	198
LCF Touch	Temperature	200
LCF	Temperature	201
WRF07 RC x	Temperature, rel. humidity	202
WRF06 LCD RC	Temperature, rel. humidity	205
WRF06 RC x	Temperature	210
WRF06 RC	Temperature	212
WRF04 RC x	Temperature	215
LCA	Temperature	218
FSR01	Rel. humidity	219

Room Sensors

NOVOS 5	Temperature, humidity, CO2, VOC	220
NOVOS 3	Temperature, humidity, CO2, VOC	224
NOVOS 3 IR	Radiation temperature	229
NOVOS 7 move	Temperature, rel. humidity, CO2	230
NOVOS 5 move	Temperature, CO2	232
NOVOS 3 move	CO2	234
WRF06	Temperature, rel. humidity, CO2, VOC	236
FTB+	Temperature, humidity	242
WRF06I	Motion	244
WRF04I	Motion	246

Pendulum Sensors

RPF40/40+	Temperature, radiation temp.	247/248
RPF100/100+	Temperature	250/251
FTP+	Temperature, humidity	253
LP+	CO2, Temperature, humidity	255

Ceiling Sensors

RDF18/18+	Temperature	257/258
RDF-IR	Radiation temperature	260
MDS	Light, motion, temperature	262
RDI	Motion	263
LDF+	Light	264

thanos EVO

The high-grade materials and sophisticated design of the thanos EVO make it an outstanding room unit for high-end residential or commercial 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.

thanosEVO

thanosEVO design

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC
Operating functions	setpoint adjustment temperature, fan stage adjustment, presence detection, light ON/OFF/DIM, blind UP/DOWN/SET, setup scenarios, ECO function, showing measured value and history
Operating elements	touch screen
Configuration	NOVOSapp, uConfig, BUS, ETS (KNX) (depending on type)
Input	**BACnet/Modbus:** 1x input for floating contact **KNX:** 1x input for NTC10k or floating contact 2x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), KNX (TP1)
Radio technology	Casambi (BLE), BlueRange (BLE)
Output signal temperature	0..+50 °C (default setting), selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor
Power supply	24 V = (±10%) SELV, 24 V ~ (±10%) SELV **KNX:** 24 V = (±10%) SELV
Power consumption	typ. 2,5 W (24 V =), 5 VA (24 V ~) **KNX:** typ. 2,5 W (24 V =)
Display	TFT 4,8“, 1120x480 px, capacitive touch technology
Enclosure	with thermal separation and sensor channel, PC V0
Colour	pure white, black, design frame anodised aluminium available
Operating range temperature	0..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	cable entry via rear opening **BACnet/Modbus/BlueRange:** tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top) **KNX:** removable plug-in terminal, max. Ø=0,8 mm
Mounting	base part can be mounted and wired separately **BACnet/Modbus/BlueRange:** flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws **KNX:** flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
Notes	**thanos EVO Design:** + surcharge for design frame (mandatory), please select colour mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

BACnet

Touchscreen room operating unit with up to 4 measured values – RS485 BACnet (MS/TP) – thanos EVO white				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO white temp RS485 BACnet (MS/TP)	✓	766630	R1	460,80
thanos EVO white temp_rH RS485 BACnet (MS/TP)	✓	780339	R1	503,80
thanos EVO white CO2 temp_rH RS485 BACnet (MS/TP)	✓	775434	R1	568,30
thanos EVO white VOC temp_rH RS485 BACnet (MS/TP)	✓	780353	R1	557,50
thanos EVO white CO2+VOC temp_rH RS485 BACnet (MS/TP)	✓	771368	R1	622,00

Touchscreen room operating unit with up to 4 measured values – RS485 BACnet (MS/TP) – thanos EVO black				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO black temp RS485 BACnet (MS/TP)	✓	774352	R1	473,80
thanos EVO black temp_rH RS485 BACnet (MS/TP)	✓	780360	R1	516,80
thanos EVO black CO2 temp_rH RS485 BACnet (MS/TP)	✓	780377	R1	581,30
thanos EVO black VOC temp_rH RS485 BACnet (MS/TP)	✓	780384	R1	570,50
thanos EVO black CO2+VOC temp_rH RS485 BACnet (MS/TP)	✓	771351	R1	635,00

Touchscreen room operating unit with up to 4 measured values – RS485 BACnet (MS/TP) – thanos EVO Design				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO design black temp RS485 BACnet (MS/TP)	✓	807418	R1	473,80 *
thanos EVO design black temp_rH RS485 BACnet (MS/TP)	✓	807401	R1	516,80 *
thanos EVO design black CO2 temp_rH RS485 BACnet (MS/TP)	✓	807395	R1	581,30 *
thanos EVO design black VOC temp_rH RS485 BACnet (MS/TP)	✓	807388	R1	570,50 *
thanos EVO design black CO2+VOC temp_rH RS485 BACnet (MS/TP)	✓	807371	R1	635,00 *

*

+ surcharge for design frame (mandatory), please select colour	
Description	**€**
Design frame anodised aluminium (gold, graphite, black or silver)	51,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

Modbus

Touchscreen room operating unit with up to 4 measured values – RS485 Modbus – thanos EVO white				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO white temp RS485 Modbus	✓	753913	R1	460,80
thanos EVO white temp_rH RS485 Modbus	✓	753944	R1	503,80
thanos EVO white CO2 temp_rH RS485 Modbus	✓	753968	R1	568,30
thanos EVO white VOC temp_rH RS485 Modbus	✓	753982	R1	557,50
thanos EVO white CO2+VOC temp_rH RS485 Modbus	✓	754002	R1	622,00

Touchscreen room operating unit with up to 4 measured values – RS485 Modbus – thanos EVO black				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO black temp RS485 Modbus	✓	753920	R1	473,80
thanos EVO black temp_rH RS485 Modbus	✓	753951	R1	516,80
thanos EVO black CO2 temp_rH RS485 Modbus	✓	753975	R1	581,30
thanos EVO black VOC temp_rH RS485 Modbus	✓	753999	R1	570,50
thanos EVO black CO2+VOC temp_rH RS485 Modbus	✓	754019	R1	635,00

Touchscreen room operating unit with up to 4 measured values – RS485 Modbus – thanos EVO Design				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO design black temp RS485 Modbus	✓	792639	R1	473,80 *
thanos EVO design black temp_rH RS485 Modbus	✓	795814	R1	516,80 *
thanos EVO design black CO2 temp_rH RS485 Modbus	✓	807340	R1	581,30 *
thanos EVO design black VOC temp_rH RS485 Modbus	✓	807357	R1	570,50 *
thanos EVO design black CO2+VOC temp_rH RS485 Modbus	✓	801560	R1	635,00 *

*

+ surcharge for design frame (mandatory), please select colour	
Description	**€**
Design frame anodised aluminium (gold, graphite, black or silver)	51,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

KNX

Touchscreen room operating unit with up to 4 measured values – KNX – thanos EVO white				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO white temp KNX	✓	780506	R1	529,50
thanos EVO white temp_rH KNX	✓	780513	R1	572,50
thanos EVO white CO2 temp_rH KNX	✓	780520	R1	637,00
thanos EVO white VOC temp_rH KNX	✓	780605	R1	626,20
thanos EVO white CO2+VOC temp_rH KNX	✓	780551	R1	690,70

Touchscreen room operating unit with up to 4 measured values – KNX – thanos EVO black				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO black temp KNX	✓	780568	R1	542,50
thanos EVO black temp_rH KNX	✓	780575	R1	585,50
thanos EVO black CO2 temp_rH KNX	✓	780599	R1	650,00
thanos EVO black VOC temp_rH KNX	✓	780537	R1	639,20
thanos EVO black CO2+VOC temp_rH KNX	✓	780612	R1	703,70

Touchscreen room operating unit with up to 4 measured values – KNX – thanos EVO Design				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO design black temp KNX	✓	805650	R1	542,50 *
thanos EVO design black temp_rH KNX	✓	807449	R1	585,50 *
thanos EVO design black CO2 temp_rH KNX	✓	807432	R1	650,00 *
thanos EVO design black VOC temp_rH KNX	✓	807425	R1	639,20 *
thanos EVO design black CO2+VOC temp_rH KNX	✓	805667	R1	703,70 *

*

+ surcharge for design frame (mandatory), please select colour	
Description	**€**
Design frame anodised aluminium (gold, graphite, black or silver)	51,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

CASAMBI

Wireless room operating unit temperature – CASAMBI				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO white temp RS485 BACnet (MS/TP) Casambi	✓	826464	R1	645,20
thanos EVO white temp RS485 Modbus Casambi	✓	817233	R1	645,20
thanos EVO white temp KNX Casambi	✓	819541	R1	713,90

Wireless room operating unit CO2 + humidity + temperature – CASAMBI				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO white CO2 temp_rH RS485 BACnet (MS/TP) Casambi	✓	826471	R1	752,70
thanos EVO white CO2 temp_rH RS485 Modbus Casambi	✓	817257	R1	752,70
thanos EVO white CO2 temp_rH KNX Casambi	✓	817264	R1	821,40

BlueRange

Touchscreen room operating unit with up to 4 measured values – BlueRange				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO white temp BlueRange	✓	836340	R1	490,00
thanos EVO white temp_rH BlueRange	✓	836357	R1	533,00
thanos EVO white CO2 temp_rH BlueRange	✓	836364	R1	597,50
thanos EVO white CO2+VOC temp_rH BlueRange	✓	836371	R1	651,20

Touchscreen room operating unit with up to 4 measured values – BlueRange				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
thanos EVO black temp BlueRange	✓	836388	R1	503,00
thanos EVO black temp_rH BlueRange	✓	836395	R1	546,00
thanos EVO black CO2 temp_rH BlueRange	✓	836401	R1	610,50
thanos EVO black CO2+VOC temp_rH BlueRange	✓	836418	R1	664,20

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

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. Multiple design options and colors provide individualism for the most diverse applications.

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC
Operating functions	setpoint adjustment temperature, fan stage adjustment, presence detection, light ON/OFF/DIM, blind UP/DOWN/SET, setup scenarios, ECO function, showing measured value and history
Operating elements	touch screen
Configuration	App, uConfig, BUS, ETS (KNX) (depending on type)
Input	**BACnet/Modbus:** 1x input for floating contact **KNX/LON:** 1x input for NTC10k or floating contact 2x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), KNX (TP1)
Output signal temperature	0..+50 °C (default setting), selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing 0..85 KJ/kg enthalpy 0..50 | 0..80 g/m³ absolute humidity 0..+50 | -20..+80 °C dew point optionally configurable
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor
Power supply	24 V = (±10%) SELV, 24 V ~ (±10%) SELV **KNX/LON:** 24 V = (±10%) SELV
Power consumption	typ. 2,5 W (24 V =), 5 VA (24 V ~) **KNX/LON:** typ. 2,5 W (24 V =)
Display	TFT 4,8“, 1120x480 px, capacitive touch technology
Enclosure	with thermal separation and sensor channel, PC V0
Colour	pure white, black
Operating range temperature	0..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	cable entry via rear opening **BACnet/Modbus:** tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top) **KNX/LON:** removable plug-in terminal, max. Ø=0,8 mm
Mounting	base part can be mounted and wired separately **BACnet/Modbus:** flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws **KNX/LON:** flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
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 ...)

Touchscreen room operating unit with up to 4 measured values RS485 BACnet (MS/TP)				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS Touch white temp RS485 BACnet (MS/TP)	✓	778312	R1	427,90
NOVOS Touch white temp_rH RS485 BACnet (MS/TP)	✓	780704	R1	470,90
NOVOS Touch white CO2 temp_rH RS485 BACnet (MS/TP)	✓	780735	R1	535,40
NOVOS Touch white VOC temp_rH RS485 BACnet (MS/TP)	✓	780766	R1	524,60
NOVOS Touch white CO2+VOC temp_rH RS485 BACnet (MS/TP)	✓	780797	R1	589,10

Touchscreen room operating unit with up to 4 measured values RS485 Modbus				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS Touch white temp RS485 Modbus	✓	761802	R1	427,90
NOVOS Touch white temp_rH RS485 Modbus	✓	761819	R1	470,90
NOVOS Touch white CO2 temp_rH RS485 Modbus	✓	761826	R1	535,40
NOVOS Touch white VOC temp_rH RS485 Modbus	✓	761833	R1	524,60
NOVOS Touch white CO2+VOC temp_rH RS485 Modbus	✓	761840	R1	589,10

Touchscreen room operating unit with up to 4 measured values KNX				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS Touch white temp KNX	✓	780681	R1	496,60
NOVOS Touch white temp_rH KNX	✓	780711	R1	539,60
NOVOS Touch white CO2 temp_rH KNX	✓	780742	R1	604,10
NOVOS Touch white VOC temp_rH KNX	✓	780773	R1	593,30
NOVOS Touch white CO2+VOC temp_rH KNX	✓	780803	R1	657,80

Options	
Description	**€**
Enclosure in black	13,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

CASAMBI

Wireless room operating unit temperature – CASAMBI				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS Touch white temp RS485 BACnet (MS/TP) Casambi	✓	826549	R1	612,30
NOVOS Touch white temp RS485 Modbus Casambi	✓	826532	R1	612,30
NOVOS Touch white temp KNX Casambi	✓	826556	R1	681,00

Wireless room operating unit CO2 + humidity + temperature – CASAMBI				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS Touch white CO2 temp_rH RS485 BACnet (MS/TP) Casambi	✓	826570	R1	719,80
NOVOS Touch white CO2 temp_rH RS485 Modbus Casambi	✓	826563	R1	719,80
NOVOS Touch white CO2 temp_rH KNX Casambi	✓	826600	R1	788,50

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

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.

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC
Operating functions	setpoint adjustment temperature, fan stage adjustment, presence detection, light ON/OFF/DIM, blind UP/DOWN/SET, setup scenarios, ECO function, showing measured value and history
Operating elements	rotary push button, 4 favourite buttons
Configuration	App, uConfig, BUS, ETS (KNX) (depending on type)
Input	**BACnet/Modbus:** 1x input for floating contact **KNX/LON:** 1x input for NTC10k or floating contact 2x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), KNX (TP1)
Output signal temperature	0..+50 °C (default setting), selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing 0..85 KJ/kg enthalpy 0..50 | 0..80 g/m³ absolute humidity 0..+50 | -20..+80 °C dew point optionally configurable
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor
Power supply	24 V = (±10%) SELV, 24 V ~ (±10%) SELV **KNX/LON:** 24 V = (±10%) SELV
Power consumption	typ. 2 W (24 V =), 4 VA (24 V ~) **KNX/LON:** typ. 2 W (24 V =)
Display	TFT 3,5“, 320x480 px
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	0..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	cable entry via rear opening **BACnet/Modbus:** tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top) **KNX/LON:** removable plug-in terminal, max. Ø=0,8 mm
Mounting	base part can be mounted and wired separately **BACnet/Modbus:** flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws **KNX/LON:** flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
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 ...)

Room operating unit with up to 4 measured values RS485 BACnet (MS/TP)				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 7 white temp RS485 BACnet (MS/TP)	✓	778329	R1	304,90
NOVOS 7 white temp_rH RS485 BACnet (MS/TP)	✓	780841	R1	347,90
NOVOS 7 white CO2 temp_rH RS485 BACnet (MS/TP)	✓	769037	R1	412,40
NOVOS 7 white VOC temp_rH RS485 BACnet (MS/TP)	✓	780896	R1	401,60
NOVOS 7 white CO2+VOC temp_rH RS485 BACnet (MS/TP)	✓	780926	R1	466,10

Room operating unit with up to 4 measured values RS485 Modbus				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 7 white temp RS485 Modbus	✓	735018	R1	304,90
NOVOS 7 white temp_rH RS485 Modbus	✓	735025	R1	347,90
NOVOS 7 white CO2 temp_rH RS485 Modbus	✓	735032	R1	412,40
NOVOS 7 white VOC temp_rH RS485 Modbus	✓	735063	R1	401,60
NOVOS 7 white CO2+VOC temp_rH RS485 Modbus	✓	735094	R1	466,10

Room operating unit with up to 4 measured values KNX				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 7 white temp KNX	✓	780827	R1	373,60
NOVOS 7 white temp_rH KNX	✓	780858	R1	416,60
NOVOS 7 white CO2 temp_rH KNX	✓	780872	R1	481,10
NOVOS 7 white VOC temp_rH KNX	✓	780902	R1	470,30
NOVOS 7 white CO2+VOC temp_rH KNX	✓	780933	R1	534,80

Options	
Description	**€**
Colour black	25,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

CASAMBI

Wireless room operating unit temperature – CASAMBI				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 7 white temp RS485 BACnet (MS/TP) Casambi	✓	826624	R1	489,30
NOVOS 7 white temp RS485 Modbus Casambi	✓	826617	R1	489,30
NOVOS 7 white temp KNX Casambi	✓	826631	R1	558,00

Wireless room operating unit CO2 + humidity + temperature – CASAMBI				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 7 white CO2 temp_rH RS485 BACnet (MS/TP) Casambi	✓	826662	R1	596,80
NOVOS 7 white CO2 temp_rH RS485 Modbus Casambi	✓	826655	R1	596,80
NOVOS 7 white CO2 temp_rH KNX Casambi	✓	826679	R1	665,50

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

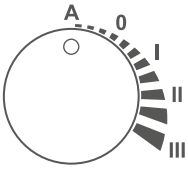
NOVOS 5 x

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.

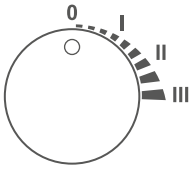
NOVOS 5 S

NOVOS 5 PSTD

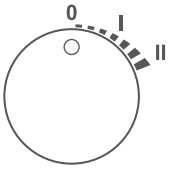
Labelling fan stages (FSx)



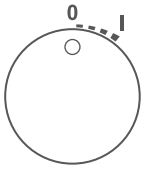
Auto – 0 – 1 – 2 – 3
(FS5)



0 – 1 – 2 – 3
(FS4)



0 – 1 – 2
(FS3)



0 – 1
(FS2)

passive / 0..10 V BACnet Modbus

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC
Operating functions	**S:** fan stage adjustment, max. 5 stages **PSTD:** setpoint adjustment temperature, fan stage adjustment, max. 5 stages, presence detection
Operating elements	**S:** rotary switch (S) **PSTD:** potentiometer (P), rotary switch (S), button (T) with LED 24 V =
Configuration	NOVOSapp, uConfig, BUS, jumper (depending on type)
Input	**BACnet/Modbus:** 1x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP)
Output signal temperature	0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C
Measuring range humidity	0..100% rH non-condensing 0..85 KJ/kg enthalpy 0..50 | 0..80 g/m³ absolute humidity 0..+50 | -20..+80 °C dew point optionally configurable
Measuring range CO2	0..2000 ppm 0..5000 ppm optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	typ. 0,4 W (24 V =), 0,8 VA (24 V ~)
Display	LCD 29x35 mm, RGB backlight with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	-35..+70 °C
Protection (IP)	IP30, according to EN 60529
Connection	cable entry via rear opening tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top)
Mounting	base part can be mounted and wired separately flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws

Room operating unit temperature – passive – S			
Item description	**Item No.**	**Group**	**€**
NOVOS 5 S white without sensor, FS5	730082	R3	88,80
NOVOS 5 S white temp Pt100, FS5	730129	R3	97,60
NOVOS 5 S white temp Pt1000, FS5	730150	R3	99,80
NOVOS 5 S white temp Pt1000 1/3 DIN, FS5	730204	R3	104,10
NOVOS 5 S white temp Ni1000, FS5	730273	R3	99,80
NOVOS 5 S white temp Ni1000TK5000, FS5	730303	R3	104,10
NOVOS 5 S white temp NTC10k, FS5	730334	R3	96,00

Room operating unit temperature – passive – PSTD			
Item description	**Item No.**	**Group**	**€**
NOVOS 5 PSTD white without sensor, 10 kOhm, FS5	730112	R3	116,90
NOVOS 5 PSTD white temp Pt100, 10 kOhm, FS5	730143	R3	125,70
NOVOS 5 PSTD white temp Pt1000, 10 kOhm, FS5	730198	R3	127,90
NOVOS 5 PSTD white temp Pt1000 1/3 DIN, 10 kOhm, FS5	730228	R3	132,20
NOVOS 5 PSTD white temp Ni1000, 10 kOhm, FS5	730297	R3	127,90
NOVOS 5 PSTD white temp Ni1000TK5000, 10 kOhm, FS5	730327	R3	132,20
NOVOS 5 PSTD white temp NTC10k, 10 kOhm, FS5	730358	R3	124,10

Options	Labelling fan stages on page 158
Description	**€**
Rotary switch S with 2/3/4 fan stages (FS2/FS3/FS4)	13,90
Colour black	25,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10

NOVOS 5 x TRV

Room operating unit temperature – active – 0..10 (0..5) V				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 S white temp TRV, FS5	✓	734936	R3	181,70
NOVOS 5 PSTD white temp TRV, pot_active, FS5	✓	734943	R3	209,80

NOVOS 5 x BUS

Room operating unit temperature – RS485 BACnet (MS/TP)				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 S white temp RS485 BACnet (MS/TP), FS5	✓	754217	R2	225,00
NOVOS 5 PSTD white temp RS485 BACnet (MS/TP), FS5	✓	754255	R2	253,10

Room operating unit temperature – RS485 Modbus				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 S white temp RS485 Modbus, FS5	✓	734974	R2	225,00
NOVOS 5 PSTD white temp RS485 Modbus, FS5	✓	734981	R2	253,10

Options	Labelling fan stages on page 158
Description	**€**
Rotary switch S with 2/3/4 fan stages (FS2/FS3/FS4)	13,90
LCD 29x35 mm, RGB backlight	46,20
Colour black	25,90
Add for additional humidity sensor	43,00
Add for additional CO2+VOC sensor	193,20
Add for additional CO2 sensor	139,50
Add for additional VOC sensor	128,80

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

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

NOVOS 3 P ePaper (EPD)

NOVOS 3 TD ePaper (EPD)

NOVOS 3 PTD ePaper (EPD)

passive / 0..10 V BACnet Modbus

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC
Operating functions	**P:** setpoint adjustment temperature **TD:** presence detection **PTD:** setpoint adjustment temperature, presence detection
Operating elements	**P:** potentiometer (P) **TD:** button (T) with LED 24 V = **PTD:** potentiometer (P), button (T) with LED 24 V =
Configuration	NOVOSapp, uConfig, BUS, jumper (depending on type)
Input	**BACnet/Modbus:** 1x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP)
Output signal temperature	0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C
Measuring range humidity	0..100% rH non-condensing 0..85 KJ/kg enthalpy 0..50 | 0..80 g/m³ absolute humidity 0..+50 | -20..+80 °C dew point optionally configurable
Measuring range CO2	0..2000 ppm 0..5000 ppm optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	typ. 0,4 W (24 V =), 0,8 VA (24 V ~)
Display	**TD / PTD:** RGB LED **EPD:** ePaper Display 44x24 mm
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	-35..+70 °C
Protection (IP)	IP20, according to EN 60529
Connection	cable entry via rear opening **passive/TRV/BACnet/Modbus:** tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top)
Mounting	base part can be mounted and wired separately flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws
Delivery content	incl. adhesive foil for mounting

Room operating unit temperature – passive – without sensor			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 P white without sensor, 10 kOhm	729574	R3	40,10
NOVOS 3 TD white without sensor	729604	R3	45,90
NOVOS 3 PTD white without sensor, 10 kOhm	729611	R3	61,70

Room operating unit temperature – passive – Pt100 DIN cl. B			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 P white temp Pt100, 10 kOhm	729659	R3	48,90
NOVOS 3 TD white temp Pt100	729666	R3	54,70
NOVOS 3 PTD white temp Pt100, 10 kOhm	729673	R3	70,50

Room operating unit temperature – passive – Pt1000 DIN cl. B			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 P white temp Pt1000, 10 kOhm	729727	R3	51,10
NOVOS 3 TD white temp Pt1000	729734	R3	56,90
NOVOS 3 PTD white temp Pt1000, 10 kOhm	729741	R3	72,70

Room operating unit temperature – passive – Pt1000 1/3 DIN			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 P white temp Pt1000 1/3 DIN, 10 kOhm	729789	R3	55,40
NOVOS 3 TD white temp Pt1000 1/3 DIN	729796	R3	61,20
NOVOS 3 PTD white temp Pt1000 1/3 DIN, 10 kOhm	729802	R3	77,00

Room operating unit temperature – passive – Ni1000 DIN cl. B			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 P white temp Ni1000, 10 kOhm	729864	R3	51,10
NOVOS 3 TD white temp Ni1000	729871	R3	56,90
NOVOS 3 PTD white temp Ni1000, 10 kOhm	729895	R3	72,70

Room operating unit temperature – passive – Ni1000TK5000			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 P white temp Ni1000TK5000, 10 kOhm	729932	R3	55,40
NOVOS 3 TD white temp Ni1000TK5000	729949	R3	61,20
NOVOS 3 PTD white temp Ni1000TK5000, 10 kOhm	729956	R3	77,00

Room operating unit temperature – passive – NTC10k			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 P white temp NTC10k, 10 kOhm	729994	R3	47,30
NOVOS 3 TD white temp NTC10k	730013	R3	53,10
NOVOS 3 PTD white temp NTC10k, 10 kOhm	730020	R3	68,90

Options	
Description	**€**
EPD: ePaper Display 44x24 mm	30,30
Passive potentiometer 1 kΩ (poti_1k) or 5 kΩ (Poti_5k), for other values please request	0,00
Active potentiometer 0..10 V (poti_active)	28,00
Enclosure in black	13,00
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30

NOVOS 3 x TRV

Room operating unit temperature active 0..10 (0..5) V				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 P white temp TRV, pot_active	✓	734691	R3	115,80
NOVOS 3 TD white temp TRV	✓	734714	R3	121,60
NOVOS 3 PTD white temp TRV, pot_active	✓	734776	R3	137,40

Options	
Description	**€**
EPD: ePaper Display 44x24 mm	30,30
Enclosure in black	13,00
Add for additional humidity sensor	43,00
Add for additional CO2+VOC sensor	225,40
Add for additional CO2 sensor	171,70
Add for additional VOC sensor	161,00

NOVOS 3 x BUS

Room operating unit temperature RS485 BACnet (MS/TP)				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 P white temp RS485 BACnet (MS/TP)	✓	754453	R2	133,00
NOVOS 3 TD white temp RS485 BACnet (MS/TP)	✓	754460	R2	138,80
NOVOS 3 PTD white temp RS485 BACnet (MS/TP)	✓	754477	R2	154,60

Room operating unit temperature RS485 Modbus				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 P white temp RS485 Modbus	✓	734851	R2	133,00
NOVOS 3 TD white temp RS485 Modbus	✓	734882	R2	138,80
NOVOS 3 PTD white temp RS485 Modbus	✓	734899	R2	154,60

Options	
Description	**€**
EPD: ePaper Display 44x24 mm	30,30
Enclosure in black	13,00
Add for additional humidity sensor	43,00
Add for additional CO2+VOC sensor	225,40
Add for additional CO2 sensor	171,70
Add for additional VOC sensor	161,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

NOVOS 3 INC

Room operating unit in the Thermokon NOVOS 3 enclosure with integrated temperature sensor. The unit is operated via a push-and-rotary switch and, depending on the version, has an additional button for presence detection or for adjusting fan stages. Coloured LEDs provide feedback on the currently set setpoint status (heating/cooling) or the respective fan stage. The connection terminal in the lower part of the enclosure allows wiring in advance. The threshold values can be individually configured via the Thermokon NOVOSapp.

NOVOS 3 INC ECO

NOVOS 3 INC TD ECO

NOVOS 3 INC FS5 ECO

NOVOS 3 INC ECO ePaper (EPD)

NOVOS 3 INC TD ECO ePaper (EPD)

NOVOS 3 INC FS5 ECO ePaper (EPD)

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point
Operating functions	setpoint adjustment temperature, ECO function **TD:** presence detection **FSx:** fan stage adjustment (max. 5 stages)
Operating elements	rotary encoder/push button for setpoint adjustment/ECO function **TD:** button (T) with LED 24 V =, colour configurable via jumpers (7 colours) **FSx:** button for fan stage adjustment with up to 5 stages
Configuration	NOVOSapp, uConfig, BUS, ETS (KNX) – (depending on type)
Input	**BACnet/Modbus:** 1x input for floating contact **KNX:** 1x input for NTC10k or floating contact 2x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), KNX (TP1)
Output signal temperature	0..+50 °C (default setting), selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Power supply	**BACnet/Modbus:** 15..35 V = SELV, 19..29 V ~ SELV **KNX:** 24 V = (±10%) SELV
Power consumption	typ. 0,4 W (24 V =), 0,8 VA (24 V ~)
Display	7 LEDs for displaying setpoint adjustment **TD:** LED for status feedback **FS5:** 4 LEDs showing fan stage **EPD:** ePaper Display 44x24 mm
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	-35..+70 °C
Protection (IP)	IP20, according to EN 60529
Connection	cable entry via rear opening **BACnet/Modbus:** tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top) **KNX:** removable plug-in terminal, max. Ø=0,8 mm
Mounting	base part can be mounted and wired separately **BACnet/Modbus:** flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws **KNX:** flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm),

Room operating unit temperature – RS485 BACnet (MS/TP)				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 INC white temp RS485 BACnet (MS/TP)	✓	840781	R2	204,00
NOVOS 3 INC ECO white temp RS485 BACnet (MS/TP)	✓	781657	R2	153,40
NOVOS 3 INC TD white temp RS485 BACnet (MS/TP)	✓	840798	R2	211,10
NOVOS 3 INC TD ECO white temp RS485 BACnet (MS/TP)	✓	781664	R2	160,50
NOVOS 3 INC FS5 white temp RS485 BACnet (MS/TP)	✓	840804	R2	225,60
NOVOS 3 INC FS5 ECO white temp RS485 BACnet (MS/TP)	✓	781671	R2	175,00

Room operating unit temperature – RS485 Modbus				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 INC white temp RS485 Modbus	✓	795272	R2	153,40
NOVOS 3 INC ECO white temp RS485 Modbus	✓	781626	R2	153,40
NOVOS 3 INC TD white temp RS485 Modbus	✓	839235	R2	160,50
NOVOS 3 INC TD ECO white temp RS485 Modbus	✓	781633	R2	160,50
NOVOS 3 INC FS5 white temp RS485 Modbus	✓	790604	R2	175,00
NOVOS 3 INC FS5 ECO white temp RS485 Modbus	✓	781640	R2	175,00

Room thermostat temperature – KNX				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 INC white temp KNX	✓	839808	R2	222,10
NOVOS 3 INC ECO white temp KNX	✓	781688	R2	222,10
NOVOS 3 INC TD white temp KNX	✓	839815	R2	229,20
NOVOS 3 INC TD ECO white temp KNX	✓	781695	R2	229,20
NOVOS 3 INC FS5 white temp KNX	✓	839822	R2	243,70
NOVOS 3 INC FS5 ECO white temp KNX	✓	781701	R2	243,70

Options	
Description	**€**
EPD: ePaper Display 44x24 mm	30,30
Enclosure in black	13,00
Add for additional humidity sensor	43,00

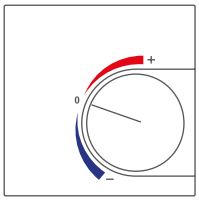
Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

WRF07 x

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, LEDs, buttons and rocker switches. An integrated temperature sensor is optional. The removable terminal allows for pre-wiring.

WRF07 P ltype2,
Gira E2 pure white matt

WRF07 PTD ltype2,
Gira E2 pure white matt



ltype6

passive / 0..10 V Modbus

Technical Data	
Measured values	temperature, relative humidity, CO2, VOC
Operating functions	setpoint adjustment temperature, fan stage adjustment, presence detection, status feedback via LED
Operating elements	potentiometer (P) Rotary switch for fan stage adjustment with up to 5 stages rocker switch (S): 2 fan stages, 3 fan stages button (T)
Configuration	BUS, DIP switches
Input	**Modbus:** 2x input digital for floating switch contact
Network technology	RS485 Modbus
Output signal temperature	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..2000 ppm
Power supply	**TRV3:** 24 V = (±10%) SELV, 24 V ~ (±10%) SELV **Modbus:** 15..35 V = SELV, 19..29 V ~ SELV

Technical Data	
Power consumption	**TRV3:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **Modbus:** max. 1,6 W (24 V =), 3,9 VA (24 V ~)
Display	LED for status feedback
Operating range temperature	-35..+70 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
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 ...)

WRF07 x passive

Room operating unit temperature – passive – P			
Item description	**Item No.**	**Group**	**€**
WRF07 P without sensor ltype2 pure white, 10 kOhm	819107	R2	89,40
WRF07 P NTC10k ltype2 pure white, 10 kOhm	819206	R2	96,60
WRF07 P Pt100 ltype2 pure white, 10 kOhm	819138	R2	98,20
WRF07 P Pt100 1/3 DIN ltype2 pure white, 10 kOhm	819145	R2	102,80
WRF07 P Pt1000 ltype2 pure white, 10 kOhm	819152	R2	100,70
WRF07 P Pt1000 1/3 DIN ltype2 pure white, 10 kOhm	819169	R2	104,70
WRF07 P Ni1000 ltype2 pure white, 10 kOhm	819183	R2	100,40
WRF07 P Ni1000TK5000 ltype2 pure white, 10 kOhm	819190	R2	104,70

Room operating unit temperature – passive – PTD			
Item description	**Item No.**	**Group**	**€**
WRF07 PTD without sensor ltype2 pure white, 10 kOhm, LED green	819312	R2	125,40
WRF07 PTD NTC10k ltype2 pure white, 10 kOhm, LED green	819381	R2	132,60
WRF07 PTD Pt100 ltype2 pure white, 10 kOhm, LED green	819329	R2	134,20
WRF07 PTD Pt100 1/3 DIN ltype2 pure white, 10 kOhm, LED green	819336	R2	138,80
WRF07 PTD Pt1000 ltype2 pure white, 10 kOhm, LED green	819343	R2	136,70
WRF07 PTD Pt1000 1/3 DIN ltype2 pure white, 10 kOhm, LED green	819350	R2	140,70
WRF07 PTD Ni1000 ltype2 pure white, 10 kOhm, LED green	819367	R2	136,40
WRF07 PTD Ni1000TK5000 ltype2 pure white, 10 kOhm, LED green	819374	R2	140,70

Options	Switch ranges on page 423/424
Description	**€**
Passive potentiometer 1 kΩ (poti_1k) or 5 kΩ (Poti_5k), for other values please request	0,00
Active potentiometer 0..10 V (poti_active)	28,00
Rocker switch S with 2 or 3 fan stages on request	
Additional button	27,60
Additional diode (LED)	22,60
Rotary switch for fan stage adjustment with up to 5 stages	on request
Labelling type 6 colour red+blue (ltype6)	7,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
Enclosure in anthracite	0,00

WRF07 x active 0..10 V

Room operating unit temperature – active			
Item description	**Item No.**	**Group**	**€**
WRF07 P temp TRV3 ltype2 pure white, pot_active	819213	R2	227,50
WRF07 PTD temp TRV3 ltype2 pure white, pot_active, LED green	819398	R2	263,50

Options	Switch ranges on page 423/424
Description	**€**
Rocker switch S with 2 or 3 fan stages on request	
Additional button	27,60
Additional diode (LED)	22,60
Labelling type 6 colour red+blue (ltype6)	7,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
Enclosure in anthracite	0,00
P: Add for additional humidity sensor	43,00
P: Add for additional CO2 sensor	64,50
P: Add for additional VOC sensor	53,70

WRF07 x BUS

Room operating unit with up to 4 measured values – RS485 Modbus – P			
Item description	**Item No.**	**Group**	**€**
WRF07 P temp RS485 Modbus ltype2 pure white	839204	R2	155,70
WRF07 P temp_rH RS485 Modbus ltype2 pure white	839211	R2	198,60
WRF07 P CO2 temp_rH RS485 Modbus ltype2 pure white	819220	R2	347,10
WRF07 P VOC temp_rH RS485 Modbus ltype2 pure white	819244	R2	374,80
WRF07 P CO2+VOC temp_rH RS485 Modbus ltype2 pure white	819251	R2	326,60

Room operating unit with up to 4 measured values – RS485 Modbus – PTD			
Item description	**Item No.**	**Group**	**€**
WRF07 PTD temp RS485 Modbus ltype2 pure white, LED green	839228	R2	
WRF07 PTD temp_rH RS485 Modbus ltype2 pure white, LED green	822343	R2	211,30
WRF07 PTD CO2 temp_rH RS485 Modbus ltype2 pure white, LED green	819435	R2	359,80
WRF07 PTD VOC temp_rH RS485 Modbus ltype2 pure white, LED green	819442	R2	339,30
WRF07 PTD CO2+VOC temp_rH RS485 Modbus ltype2 pure white, LED green	819459	R2	411,00

Options	Switch ranges on page 423/424
Description	**€**
Add to price of RS485 Modbus for RS485 BACnet (MS/TP)	0,00
Additional button	27,60
Additional diode (LED)	22,60
Labelling type 6 colour red+blue (ltype6)	7,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
Enclosure in anthracite	0,00

Accessories			
Item description	**Item No.**	**Group**	**€**
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60

WRF07 INC

The flush-mounted room operating unit with an interface for RS485 Modbus or KNX 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.

WRF07 INC
Gira E2 pure white matt

WRF07 INC FS5
Gira E2 pure white matt

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment temperature, fan stage adjustment, standby/presence detection, ECO function, status feedback via LED
Operating elements	rotary encoder/push button for setpoint adjustment/ECO function **FS5:** button for fan stage adjustment
Configuration	ETS (KNX)
Input	1x input for NTC10k or floating contact
Network technology	KNX (TP1)
Output signal temperature	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Power supply	supply via BUS, 29 V = SELV
Power consumption	typ. 0,3 W (24 V =), 0,9 VA (24 V ~)
Display	7 LEDs for displaying setpoint adjustment LED for displaying the ECO mode function **FS5:** 4 LEDs showing fan stage
Enclosure	PA6.6
Colour	pure white brilliant, pure white matt
Operating range temperature	-10..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	removable plug-in terminal, max. Ø=0,8 mm cable entry via rear opening
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten (please specify the desired frame when ordering)
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
Notes	KNX certification: pending

Room operating unit humidity + temperature – KNX			
Item description	**Item No.**	**Group**	**€**
WRF07 INC temp_rH KNX pure white matt	823838	R2	228,90
WRF07 INC temp_rH KNX pure white brilliant	823845	R2	228,90
WRF07 INC FS5 temp_rH KNX pure white matt	781527	R2	250,40
WRF07 INC FS5 temp_rH KNX pure white brilliant	781503	R2	250,40

Options	
Description	**€**
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

WRF06 LCD

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 ltype3 pure white, frame Gira E2 pure white matt

WRF06 LCD ltype1 anthracite, frame Peha Aura Glas

0..10 V

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment temperature setpoint adjustment OK/cancel presence detection
Operating elements	4 buttons
Configuration	buttons
Input	2x input digital for floating contact to activate messages on the LCD display
Output signal temperature	0..+50 °C
Measuring range humidity	0..95% rH non-condensing
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,8 W (24 V =), 2,5 VA (24 V ~)
Display	LCD 34x21 mm, monochrome
Enclosure	PC
Colour	white, pure white brilliant, pure white matt, aluminium, Jung aluminium, anthracite
Operating range temperature	0..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm², pluggable
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten, Peha (please specify the desired frame when ordering)
Mounting	flush-mounted in standard EU box (Ø=60 mm)

Room operating unit temperature active			
Item description	**Item No.**	**Group**	**€**
WRF06 LCD temp VV ltype1 pure white matt	378062	R2	223,20
WRF06 LCD temp VV ltype1 pure white brilliant	748513	R2	223,20
WRF06 LCD temp VV ltype1 aluminium	748568	R2	223,20
WRF06 LCD temp VV ltype1 Jung aluminium	748582	R2	223,20
WRF06 LCD temp VV ltype1 anthracite	748599	R2	223,20

Room operating unit temperature active			
Item description	**Item No.**	**Group**	**€**
WRF06 LCD temp VV ltype3 pure white matt	731089	R2	223,20
WRF06 LCD temp VV ltype3 pure white brilliant	731102	R2	223,20
WRF06 LCD temp VV ltype3 aluminium	731119	R2	223,20
WRF06 LCD temp VV ltype3 Jung aluminium	731126	R2	223,20
WRF06 LCD temp VV ltype3 anthracite	731133	R2	223,20

Options	Switch ranges on page 423/424
Description	**€**
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
Add for additional humidity sensor	43,00

Accessories			
Item description	**Item No.**	**Group**	**€**
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60

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 TD
Gira E2 pure white matt

passive

Technical Data	
Measured values	temperature
Operating functions	fan stage adjustment, presence detection, status feedback via LED
Operating elements	button (T)
Display	LED for status feedback
Enclosure	central disc in design of the manufacturer (varies depending on switch range)
Operating range temperature	-35..+70 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm², pluggable
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
Delivery content	incl. frame

Room operating unit temperature without sensor			
Item description	**Item No.**	**Group**	**€**
WRF06 S without sensor Gira E2 pure white matt, FS5	629201	R2	100,20
WRF06 TD without sensor Gira E2 pure white matt, LED green	285964	R2	77,40

Room operating unit temperature passive			
Item description	**Item No.**	**Group**	**€**
WRF06 TD Pt100 Gira E2 pure white matt, LED green	564441	R2	86,20
WRF06 TD Pt100 1/3 DIN Gira E2 pure white matt, LED green	629409	R2	90,80
WRF06 TD Pt1000 Gira E2 pure white matt, LED green	629423	R2	88,70
WRF06 TD Pt1000 1/3 DIN Gira E2 pure white matt, LED green	629447	R2	92,70
WRF06 TD Ni1000 Gira E2 pure white matt, LED green	195379	R2	88,40
WRF06 TD Ni1000TK5000 Gira E2 pure white matt, LED green	629461	R2	92,70
WRF06 TD NTC10k Gira E2 pure white matt, LED green	629324	R2	84,60

Options	Switch ranges on page 423/424
Description	**€**
Additional button	27,60
Additional diode (LED)	22,60
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor FeT/Staefa	27,80

WRF06 INC

The flush-mounted room operating unit with an interface for RS485 Modbus or KNX 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.

WRF06 INC RS485 Modbus
Merten M-Smart polar white brilliant

Technical Data	
Measured values	temperature
Operating functions	setpoint adjustment temperature, fan stage adjustment, standby/presence detection, ECO function, status feedback via LED
Operating elements	rotary encoder/push button for setpoint adjustment/ECO function
Configuration	BUS, DIP switches
Network technology	RS485 Modbus
Output signal temperature	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,3 W (24 V =), 0,9 VA (24 V ~)
Display	7 LEDs for displaying setpoint adjustment LED for displaying the ECO mode function
Enclosure	PA6.6
Operating range temperature	-10..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm², pluggable
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
Notes	price including frame (Berker S.1, Merten M-Smart or Merten M-Plan)

Room operating unit temperature RS485 Modbus			
Item description	**Item No.**	**Group**	**€**
WRF06 INC temp RS485 Modbus Merten M-Smart polar white brilliant	698214	R2	204,40

Accessories			
Item description	**Item No.**	**Group**	**€**
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
USB Interface RS485 (incl. driver CD)	668293		63,50

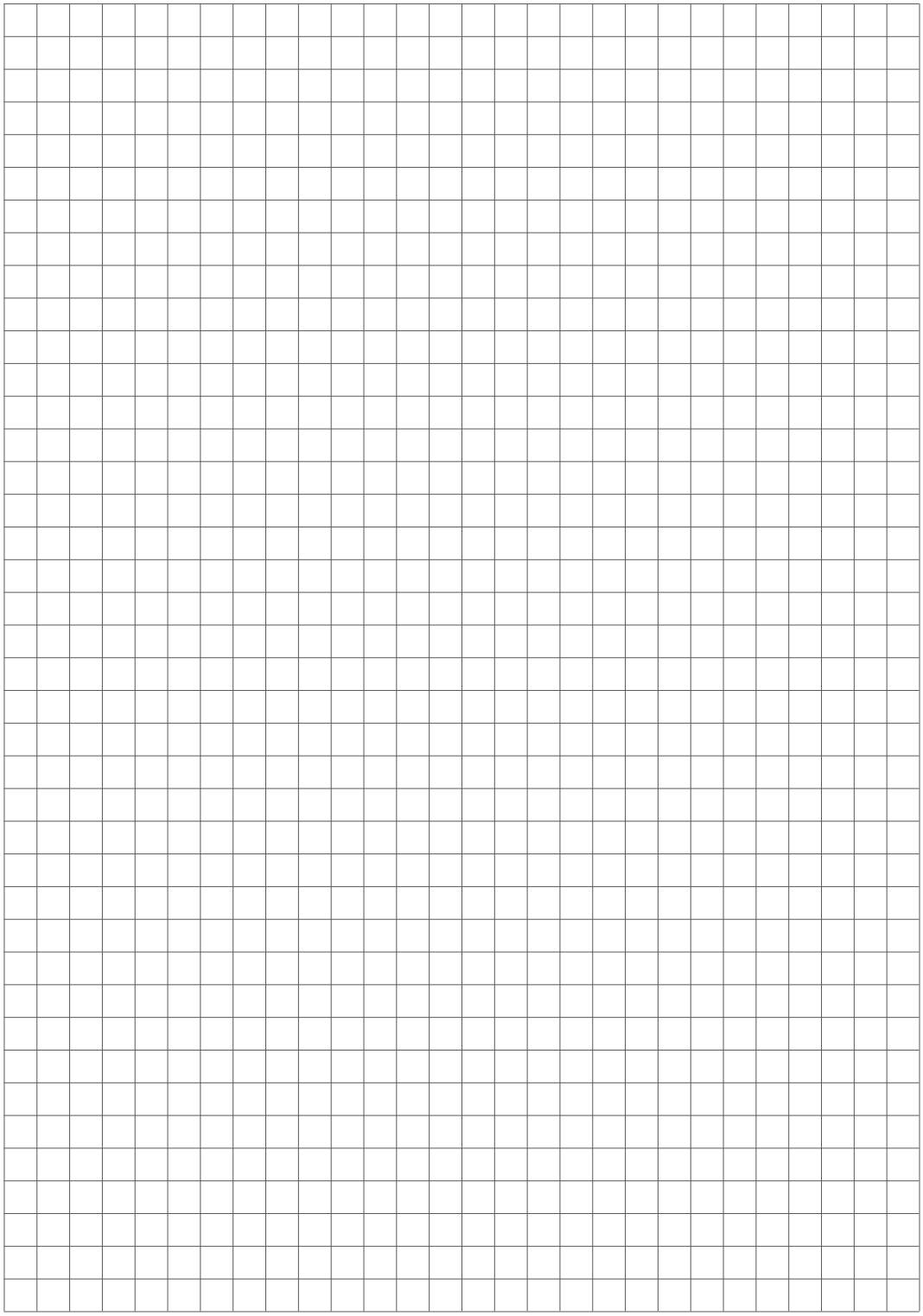
LCR Touch

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.

Technical Data	
Measured values	temperature, relative humidity,
Operating functions	setpoint adjustment 0..+50 °C, fan stage adjustment, light ON/OFF/DIM, blind UP/DOWN, ECO function, status displays
Operating elements	5 touch buttons
Input	1x input for change-over sensor NTC10k 2x input digital for floating contact 1x ESI for window contact, dew point 1x OCC for presence detection, key card switch
Network technology	RS485 Modbus
Measuring range humidity	0..100% rH non-condensing
Power supply	24 V = (±20%) SELV, 24 V ~ (±20%) SELV
Power consumption	typ. 0,3 W (24 V =), 5 VA (24 V ~)
Display	LCD 64x41 mm, backlight white
Enclosure	ABS
Colour	pure white, frame silver
Operating range temperature	-10..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm², cable entry via rear opening
Mounting	flush-mounted in standard EU box (Ø=60 mm)

Room operating unit temperature and optionally humidity RS485 Modbus			
Item description	**Item No.**	**Group**	**€**
LCR Touch white temp RS485 Modbus	754323	R1	135,40
LCR Touch white temp_rH RS485 Modbus	754347	R1	169,70

Accessories			
Item description	**Item No.**	**Group**	**€**
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10



JOY Fancoil

Fancoil thermostat in high-quality design for individual single-room temperature- and fan control. A glass surface with intuitive touch control buttons and display combine design, feel and functionality in an outstanding way. The internal controller of the JOY calculates control values for fans and heating/cooling applications, which are provided via analog or digital outputs (depending on type). The possible integration of various external sensors (e.g. window contacts, change-over, condensation sensors, etc.) allows temperature and fan control tailored to the application. The device can be mounted in a standard flush-mounted box.

NEW: With additional, customisable touch buttons (see page 12)

Technical Data	
Measured values	temperature **BACnet/RS485 Modbus:** temperature, relative humidity **KNX:** temperature, relative humidity, CO2
Operating functions	setpoint adjustment temperature fan stage adjustment standby/presence detection
Operating elements	5 touch buttons
Configuration	uConfig, BUS, ETS (KNX)
Input	1x input for NTC10k or floating contact **5DO/AO2DO:** 1x input for potential contact (230 V ~) 1x input for floating contact **3AO:** 2x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), KNX (TP1)
Output signal temperature	0..+50 °C
Measuring range humidity (BUS)	0..100% rH non-condensing
Power supply	**5DO/AO2DO:** 85..260 V ~ **3AO:** 24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	**5DO:** max. 2,5 VA (260 V ~) **AO2DO:** max. 3 VA (260 V ~) **3AO:** typ. 2,5 W (24 V =)
Display	LCD 60x44 mm, 240x160 px, backlight cold white
Enclosure	PC, cover glass
Colour	pure white, black
Operating range temperature	0..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm² inputs max. 1,0 mm²
Mounting	in standard EU box (Ø=60 mm, depth min. 45 mm)

Outputs	5DO (230 V)	EC AO2DO (230 V)	EC 3AO (24 V)
Fan (Relay)	3	–	–
EC Fan (0..10 V)	–	1	1
Heating/Cooling (Relay)	2	2	–
Heating/Cooling (0..10 V)	–	–	2
6-Way-Valve (0..10 V)	–	–	1*
Inputs	**5DO (230 V)**	**EC AO2DO (230 V)**	**EC 3AO (24 V)**
Universal (configurable)	3 / BUS: 2	3 / BUS: 2	3 / BUS: 2

** Instead of 2x 0..10 V (heating/cooling)*

Fan coil thermostat temperature active				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY Fancoil 5DO temp white	✓	751940	R1	201,80
JOY Fancoil 5DO temp black	✓	751957	R1	214,80
JOY Fancoil EC AO2DO temp white	✓	751988	R1	201,80
JOY Fancoil EC AO2DO temp black	✓	751995	R1	214,80
JOY Fancoil EC 3AO temp white	✓	724975	R1	201,80
JOY Fancoil EC 3AO temp black	✓	724982	R1	214,80

Fan coil thermostat temperature RS485 BACnet (MS/TP)				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY Fancoil 5DO temp RS485 BACnet (MS/TP) white	✓	778749	R1	209,20
JOY Fancoil 5DO temp RS485 BACnet (MS/TP) black	✓	778732	R1	222,20
JOY Fancoil EC AO2DO temp RS485 BACnet (MS/TP) white	✓	778725	R1	209,20
JOY Fancoil EC AO2DO temp RS485 BACnet (MS/TP) black	✓	778718	R1	222,20
JOY Fancoil EC 3AO temp RS485 BACnet (MS/TP) white	✓	778817	R1	209,20
JOY Fancoil EC 3AO temp RS485 BACnet (MS/TP) black	✓	778800	R1	222,20

Fan coil thermostat temperature RS485 Modbus				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY Fancoil 5DO temp RS485 Modbus white	✓	751933	R1	209,20
JOY Fancoil 5DO temp RS485 Modbus black	✓	751964	R1	222,20
JOY Fancoil EC AO2DO temp RS485 Modbus white	✓	752015	R1	209,20
JOY Fancoil EC AO2DO temp RS485 Modbus black	✓	752022	R1	222,20
JOY Fancoil EC 3AO temp RS485 Modbus white	✓	723817	R1	209,20
JOY Fancoil EC 3AO temp RS485 Modbus black	✓	724999	R1	222,20

Options	
Description	**€**
BACnet / Modbus: Add for additional humidity sensor	43,00
Change-over sensor NTC10k (model and price on request)	

Fan coil thermostat temperature KNX				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY Fancoil 5DO Temp_rH KNX white	✓	831482	R1	270,60
JOY Fancoil 5DO Temp_rH KNX black	✓	831543	R1	283,50
JOY Fancoil 5DO CO2 Temp_rH KNX white	✓	831604	R1	352,50
JOY Fancoil 5DO CO2 Temp_rH KNX black	✓	831659	R1	365,40
JOY Fancoil EC AO2DO Temp_rH KNX white	✓	831499	R1	270,60
JOY Fancoil EC AO2DO Temp_rH KNX black	✓	831550	R1	283,50
JOY Fancoil EC AO2DO CO2 Temp_rH KNX white	✓	831611	R1	352,50
JOY Fancoil EC AO2DO CO2 Temp_rH KNX black	✓	831666	R1	365,40
JOY Fancoil EC 3AO Temp_rH KNX white	✓	831505	R1	270,60
JOY Fancoil EC 3AO Temp_rH KNX black	✓	831567	R1	283,50
JOY Fancoil EC 3AO CO2 Temp_rH KNX white	✓	831628	R1	352,50
JOY Fancoil EC 3AO CO2 Temp_rH KNX black	✓	831673	R1	365,40

Options	
Description	**€**
Change-over sensor NTC10k (model and price on request)	

Accessories			
Item description	**Item No.**	**Group**	**€**
microSD card 2 GB	500098	A1	13,80
BACnet / Modbus: USB Interface RS485 (incl. driver CD)	668293		63,50
KNX: USB interface KNX	806190	A1	194,20
Decorative frame JOY white	681452	A1	14,80
Decorative frame JOY black	740951	A1	14,80
Frame for surface mounting JOY white	760201	A1	29,30
Frame for surface mounting JOY black	760195	A1	29,30

JOY HC

Room thermostat in high-quality design for individual temperature control, e.g. in hotel rooms or offices. A glass surface with intuitive touch control buttons and display combine design, feel and functionality in an outstanding way. The internal controller of the JOY calculates control values for heating/cooling applications, which are provided via analog or digital outputs (depending on type). The possible integration of various external sensors (e.g. window contacts, change-over, condensation sensors, etc.) allows temperature control tailored to the application. The device can be mounted in a standard flush-mounted box.

NEW: With additional, customisable touch buttons (see page 12)

Technical Data	
Measured values	temperature **BACnet/Modbus:** temperature, relative humidity **KNX:** temperature, relative humidity, CO2
Operating functions	setpoint adjustment temperature standby/presence detection
Configuration	uConfig, BUS, ETS (KNX)
Input	1x input for NTC10k or floating contact **AO2DO:** 1x input for potential contact (230 V ~) 1x input for floating contact **3AO:** 2x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), KNX (TP1)
Output signal temperature	0..+50 °C
Measuring range humidity (BUS)	0..100% rH non-condensing
Power supply	**AO2DO:** 85..260 V ~ **3AO:** 24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 2,5 W (24 V =), max. 3 VA (260 V ~)
Display	LCD 60x44 mm, 240x160 px, backlight cold white
Enclosure	PC, cover glass
Colour	pure white, black
Operating range temperature	0..50 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm² inputs max. 1,0 mm²
Mounting	in standard EU box (Ø=60 mm, depth min. 45 mm)

Outputs	AO2DO (230 V)	3AO (24 V)
Heating/Cooling (Relay)	2	–
Heating/Cooling (0..10 V)	–	2
6-Way-Valve (0..10 V)	1	1*
Inputs	**AO2DO (230 V)**	**3AO (24 V)**
Universal (configurable)	3 / BUS: 2	3 / BUS: 2

** Instead of 2x 0..10 V (heating/cooling)*

Room thermostat heating/cooling active				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY HC AO2DO temp white	✓	748995	R1	201,80
JOY HC AO2DO temp black	✓	752039	R1	214,80
JOY HC 3AO temp white	✓	725002	R1	201,80
JOY HC 3AO temp black	✓	725019	R1	214,80

Room thermostat heating/cooling RS485 BACnet (MS/TP)				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY HC AO2DO temp RS485 BACnet (MS/TP) white	✓	778701	R1	209,20
JOY HC AO2DO temp RS485 BACnet (MS/TP) black	✓	778695	R1	222,20
JOY HC 3AO temp RS485 BACnet (MS/TP) white	✓	778770	R1	209,20
JOY HC 3AO temp RS485 BACnet (MS/TP) black	✓	778756	R1	222,20

Room thermostat heating/cooling RS485 Modbus				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY HC AO2DO temp RS485 Modbus white	✓	752046	R1	209,20
JOY HC AO2DO temp RS485 Modbus black	✓	752053	R1	222,20
JOY HC 3AO temp RS485 Modbus white	✓	723732	R1	209,20
JOY HC 3AO temp RS485 Modbus black	✓	725026	R1	222,20

Options	
Description	**€**
BACnet / Modbus: Add for additional humidity sensor	43,00
Change-over sensor NTC10k (model and price on request)	

Room thermostat heating/cooling KNX				
Item description	**Contr.**	**Item No.**	**Group**	**€**
JOY HC AO2DO Temp_rH KNX white	✓	831512	R1	270,60
JOY HC AO2DO Temp_rH KNX black	✓	831574	R1	283,50
JOY HC AO2DO CO2 Temp_rH KNX white	✓	831635	R1	352,50
JOY HC AO2DO CO2 Temp_rH KNX black	✓	831680	R1	365,40
JOY HC 3AO Temp_rH KNX white	✓	831529	R1	270,60
JOY HC 3AO Temp_rH KNX black	✓	831581	R1	283,50
JOY HC 3AO CO2 Temp_rH KNX white	✓	831642	R1	352,50
JOY HC 3AO CO2 Temp_rH KNX black	✓	831697	R1	365,40

Options	
Description	**€**
Change-over sensor NTC10k (model and price on request)	

Accessories			
Item description	**Item No.**	**Group**	**€**
microSD card 2 GB	500098	A1	13,80
BACnet / Modbus: USB Interface RS485 (incl. driver CD)	668293		63,50
KNX: USB interface KNX	806190	A1	194,20
Decorative frame JOY white	681452	A1	14,80
Decorative frame JOY black	740951	A1	14,80
Frame for surface mounting JOY white	760201	A1	29,30
Frame for surface mounting JOY black	760195	A1	29,30

LCF02 Touch

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.

Technical Data	
Measured values	temperature
Operating functions	setpoint adjustment temperature, fan stage adjustment, status displays
Operating elements	touch screen
Configuration	BUS
Input	1x input for additional external NTC10k 1x ESI for window contact, dew point 1x OCC for presence detection, key card switch
Network technology	RS485 Modbus
Power supply	24 V = (±10%) SELV, 24 V ~ (±20%) SELV
Power consumption	typ. 3 W (24 V =)
Display	LCD 64x64 mm, backlight white LCD 64x64 mm, backlight black touch technology
Enclosure	ABS, glass
Colour	pure white, black
Operating range temperature	-10..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm², cable entry via rear opening
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

Outputs	5DO	2AO3DO	3AO2DO
Fan (Relay)	3	3	–
EC Fan (0..10 V)	–	–	1
Heating/Cooling (Relay)	2	–	2**
Heating/Cooling (0..10 V)	–	2	2
6-Way-Valve (0..10 V)	–	1*	1*
Inputs	**5DO**	**2AO3DO**	**3AO2DO**
Universal (configurable)	3	3	3

** Instead of 2x 0..10 V (heating/cooling)*
*** Additional heating register (3 stages)*

Fan coil thermostat temperature BUS

Item description	Contr.	Item No.	Group	€
LCF02 Touch 5DO RS485 Modbus 24 V white	✓	721035	R1	191,70
LCF02 Touch 5DO RS485 Modbus 24 V black	✓	721004	R1	191,70
LCF02 Touch 2AO3DO RS485 Modbus 24 V white	✓	721011	R1	191,70
LCF02 Touch 2AO3DO RS485 Modbus 24 V black	✓	720984	R1	191,70
LCF02 Touch 3AO2DO RS485 Modbus 24 V white	✓	721028	R1	191,70
LCF02 Touch 3AO2DO RS485 Modbus 24 V black	✓	720991	R1	191,70

Options

Description	€
Change-over sensor NTC10k (model and price on request)	

Accessories

Item description	Item No.	Group	€
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60

LCF02 QTouch

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.

Technical Data	
Measured values	temperature, relative humidity, CO2
Operating functions	setpoint adjustment temperature, fan stage adjustment, status displays
Operating elements	touch screen
Configuration	BUS
Input	1x input for additional external NTC10k 1x ESI for window contact, dew point 1x OCC for presence detection, key card switch
Network technology	RS485 Modbus
Measuring range CO2	0..5000 ppm
Power supply	100..240 V ~
Power consumption	max. 5 VA (230 V ~)
Display	LCD 102x56 mm, backlight black LCD 102x56 mm, backlight white
Enclosure	ABS, glass
Colour	pure white, black
Operating range temperature	-10..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

Fan coil thermostat temperature BUS				
Item description	**Contr.**	**Item No.**	**Group**	**€**
LCF02 QTouch rH AO5DO RS485 Modbus white	✓	817691	R1	231,50
LCF02 QTouch rH AO5DO RS485 Modbus black	✓	817707	R1	231,50
LCF02 QTouch CO2 rH AO5DO RS485 Modbus white	✓	817714	R1	274,00
LCF02 QTouch CO2 rH AO5DO RS485 Modbus black	✓	817721	R1	274,00

Options	
Description	**€**
Change-over sensor NTC10k (model and price on request)	

LCF02

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

Technical Data	
Measured values	temperature
Operating functions	setpoint adjustment temperature, fan stage adjustment, status displays
Operating elements	5 touch buttons
Input	1x ESI for window contact, dew point 1x OCC for presence detection, key card switch **5DO/2AO3DO/3AO2DO:** 1x input for additional external NTC10k
Network technology	RS485 Modbus
Power supply	24 V = (±10%) SELV, 24 V ~ (±20%) SELV
Power consumption	typ. 0,3 W (24 V =)
Display	LCD 64x41 mm, backlight white
Enclosure	ABS
Colour	pure white
Operating range temperature	-10..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm², cable entry via rear opening
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

Outputs	C	6WV	5DO	2AO3DO	3AO2DO
Fan (Relay)	3	3	3	3	–
EC Fan (0..10 V)	–	–	–	–	1
Heating/Cooling (Relay)	1***	–	2	–	2**
Heating/Cooling (0..10 V)	1***	–	–	2	2
6-Way-Valve (0..10 V)	–	1	–	1*	1*
Inputs	**C**	**6WV**	**5DO**	**2AO3DO**	**3AO2DO**
Universal (configurable)	2	2	3	3	3

Fan coil thermostat temperature active				
Item description	**Contr.**	**Item No.**	**Group**	**€**
LCF02 C fan coil	✓	684606	R1	73,50
LCF02 6WV fan coil	✓	684613	R1	73,50

Fan coil thermostat temperature BUS				
Item description	**Contr.**	**Item No.**	**Group**	**€**
LCF02 5DO RS485 Modbus 24 V	✓	703307	R1	109,60
LCF02 2AO3DO RS485 Modbus 24 V	✓	703314	R1	121,60
LCF02 3AO2DO RS485 Modbus 24 V	✓	703321	R1	133,60

Options	
Description	**€**
Change-over sensor NTC10k (model and price on request)	

Accessories			
Item description	**Item No.**	**Group**	**€**
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10

** Instead of 2x 0..10 V (heating/cooling)*
*** Additional heating register (3 stages)*
**** Only cooling*

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.

Modbus

Technical Data	
Measured values	temperature
Operating functions	setpoint adjustment temperature, fan stage adjustment, status displays
Operating elements	touch screen
Output switch contact	2x contact NO, 1x heating, 1x cooling 3x contact NO, fan stages
Input	1x input for change-over sensor NTC10k
Network technology	RS485 Modbus
Power supply	90..265 V ~
Power consumption	0,9 VA (265 V ~)
Display	LCD 64x64 mm, backlight white, touch technology
Enclosure	ABS, glass
Colour	black
Operating range temperature	-10..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

Fan coil thermostat temperature active

Item description	Contr.	Item No.	Group	€
LCF Touch	✓	575768	R1	147,00

Fan coil thermostat temperature BUS

Item description	Contr.	Item No.	Group	€
LCF Touch RS485 Modbus	✓	575775	R1	164,00

Options

Description	€
Change-over sensor NTC10k (model and price on request)	

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
Operating functions	setpoint adjustment temperature, status displays
Operating elements	5 touch buttons
Output switch contact	2x contact NO, 1x heating, 1x cooling 3x contact NO, fan stages
Input	1x input for NTC10k or floating contact (optionally)
Power supply	90..265 V ~
Power consumption	max. 0,9 W
Display	LCD 36x49 mm, backlight white
Enclosure	ABS, scratch-resistant acrylic glass
Colour	pure white
Operating range temperature	-10..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm², cable entry via rear opening
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

Fan coil thermostat temperature active

Item description	Contr.	Item No.	Group	€
LCF	✓	575751	R1	48,40

Options

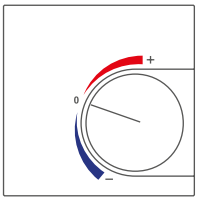
Description	€
Change-over sensor NTC10k (model and price on request)	

WRF07 RC x

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, LEDs, buttons and rocker switches. An integrated temperature sensor is optional. The removable terminal allows for pre-wiring.

WRF07 P ltype2,
Gira E2 pure white matt

WRF07 PTD ltype2,
Gira E2 pure white matt



ltype6

BACnet Modbus

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment temperature, presence detection, status feedback via LED
Operating elements	potentiometer (P), button (T)
Configuration	BUS, DIP switches
Input	**DI4:** 4x input digital for floating switch contact **AO2V:** 2x input digital for floating switch contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP)
Output signal temperature	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Power supply	24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,9 W (24 V =), 1 VA (24 V ~)
Display	LED for status feedback, green
Colour	white

Technical Data	
Operating range temperature	0..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm²
Switch ranges	Berker, Busch-Jaeger, Gira, Jung, Merten
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

WRF07 RC x DI4

Room thermostat temperature RS485 BACnet (MS/TP) DI4				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF07 RC P DI4 temp RS485 BACnet (MS/TP) ltype2 pure white	✓	820523	R2	203,80
WRF07 RC PTD DI4 temp RS485 BACnet (MS/TP) ltype2 pure white, LED green	✓	820530	R2	216,50

Room thermostat temperature RS485 Modbus DI4				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF07 RC P DI4 temp RS485 Modbus ltype2 pure white	✓	820509	R2	203,80
WRF07 RC PTD DI4 temp RS485 Modbus ltype2 pure white, LED green	✓	820516	R2	216,50

WRF07 RC x AO2V

Room thermostat heating/cooling RS485 BACnet (MS/TP) AO2V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF07 RC P AO2V temp RS485 BACnet (MS/TP) ltype2 pure white	✓	820462	R2	203,80
WRF07 RC PTD AO2V temp RS485 BACnet (MS/TP) ltype2 pure white, LED green	✓	820479	R2	216,50

Room thermostat heating/cooling RS485 Modbus AO2V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF07 RC P AO2V temp RS485 Modbus ltype2 pure white	✓	820486	R2	203,80
WRF07 RC PTD AO2V temp RS485 Modbus ltype2 pure white, LED green	✓	820493	R2	216,50

Options	Switch ranges on page 423/424
Description	**€**
Additional button	27,60
Additional diode (LED)	22,60
Labelling type 6 colour red+blue (ltype6)	7,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
Add for additional humidity sensor	43,00

Accessories			
Item description	**Item No.**	**Group**	**€**
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60

WRF06 LCD RC

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.

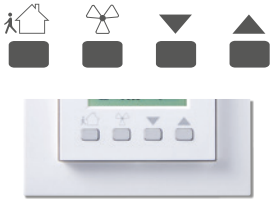
WRF06 LCD ltype1 pure white,
frame Gira E2 pure white matt

WRF06 LCD ltype1 anthracite,
frame Peha Aura Glas

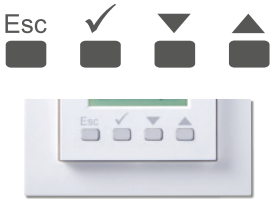
WRF06 LCD LON ltype2 aluminium,
frame Merten M-Plan aluminium

WRF06 LCD (DO2R/DO2T/OVR/OVT) ltype1 pure white,
frame two-fold with blind cover

labelling type 1 (ltype1)



labelling type 2 (ltype2)



labelling type 3 (ltype3)

Technical Data	
Measured values	temperature, relative humidity
Operating functions	setpoint adjustment temperature, setpoint adjustment OK/cancel, fan stage adjustment, presence detection
Operating elements	4 buttons
Configuration	BUS, buttons, DIP switches
Input	**DI4:** 4x input digital for floating switch contact **AO2V/DO2R/DO2T/OVR/OVT:** 2x input digital for floating switch contact
Network technology	RS485 Modbus, LON FT (free topology)
Output signal temperature	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,9 W (24 V =), 1 VA (24 V ~)
Display	LCD 34x21 mm, monochrome
Enclosure	PC
Colour	white, pure white brilliant, pure white matt, aluminium, Jung aluminium, anthracite
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm², pluggable
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten, Peha (please specify the desired frame when ordering)
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 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)

Outputs	AO2V	DO2R	DO2T	OVR	OVT
0..10 V	2	–	–	1	1
Relay	–	2	–	1	–
Triac	–	–	2	–	1
Inputs	**AO2V**	**DO2R**	**DO2T**	**OVR**	**OVT**
Universal (configurable)	2	2	2	2	2

Room thermostat temperature RS485 Modbus DI4				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 LCD RC DI4 temp RS485 Modbus ltype1 pure white matt	✓	731140	R2	223,20
WRF06 LCD RC DI4 temp RS485 Modbus ltype1 pure white brilliant	✓	730068	R2	223,20
WRF06 LCD RC DI4 temp RS485 Modbus ltype1 aluminium	✓	731164	R2	223,20
WRF06 LCD RC DI4 temp RS485 Modbus ltype1 Jung aluminium	✓	731195	R2	223,20
WRF06 LCD RC DI4 temp RS485 Modbus ltype1 anthracite	✓	731201	R2	223,20

Room thermostat heating/cooling RS485 Modbus AO2V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 LCD RC AO2V temp RS485 Modbus ltype1 pure white matt	✓	415125	R2	223,20
WRF06 LCD RC AO2V temp RS485 Modbus ltype1 pure white brilliant	✓	731379	R2	223,20
WRF06 LCD RC AO2V temp RS485 Modbus ltype1 aluminium	✓	731386	R2	223,20
WRF06 LCD RC AO2V temp RS485 Modbus ltype1 Jung aluminium	✓	731393	R2	223,20
WRF06 LCD RC AO2V temp RS485 Modbus ltype1 anthracite	✓	731409	R2	223,20

Room thermostat heating/cooling RS485 Modbus IO				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 LCD RC DO2R temp RS485 Modbus ltype1 pure white matt	✓	731416	R2	255,50
WRF06 LCD RC DO2T temp RS485 Modbus ltype1 pure white matt	✓	731423	R2	255,50
WRF06 LCD RC OVR temp RS485 Modbus ltype1 pure white matt	✓	731430	R2	255,50
WRF06 LCD RC OVT temp RS485 Modbus ltype1 pure white matt	✓	731447	R2	255,50

Options	Switch ranges on page 423/424
Description	**€**
Labelling type 2 (ltype2)	0,00
Labelling type 3 (ltype3)	0,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
Switch ranges plastic 55x55: frame 2x with blind cover alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	9,40
IO: Switch ranges plastic in further colours and/or >55 mm: frame 2x with blind cover (various manufacturers)	22,60
IO: Switch ranges stainless steel | glass | aluminium: frame 2x with blind cover (various manufacturers)	71,70
Add for additional humidity sensor	43,00

Room thermostat temperature LON DI4				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 LCD RC DI4 temp LON ltype1 pure white matt	✓	731218	R2	321,50
WRF06 LCD RC DI4 temp LON ltype1 pure white brilliant	✓	731232	R2	321,50
WRF06 LCD RC DI4 temp LON ltype1 aluminium	✓	731249	R2	321,50
WRF06 LCD RC DI4 temp LON ltype1 Jung aluminium	✓	731256	R2	321,50
WRF06 LCD RC DI4 temp LON ltype1 anthracite	✓	731263	R2	321,50

Room thermostat heating/cooling LON AO2V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 LCD RC AO2V temp LON ltype1 pure white matt	✓	731454	R2	321,50
WRF06 LCD RC AO2V temp LON ltype1 pure white brilliant	✓	731461	R2	321,50
WRF06 LCD RC AO2V temp LON ltype1 aluminium	✓	731478	R2	321,50
WRF06 LCD RC AO2V temp LON ltype1 Jung aluminium	✓	731485	R2	321,50
WRF06 LCD RC AO2V temp LON ltype1 anthracite	✓	731492	R2	321,50

Room thermostat heating/cooling LON IO				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 LCD RC DO2R temp LON ltype1 pure white matt	✓	731577	R2	353,70
WRF06 LCD RC DO2T temp LON ltype1 pure white matt	✓	731584	R2	353,70
WRF06 LCD RC OVR temp LON ltype1 pure white matt	✓	731607	R2	353,70
WRF06 LCD RC OVT temp LON ltype1 pure white matt	✓	731676	R2	353,70

Options	Switch ranges on page 423/424
Description	**€**
Labelling type 2 (ltype2)	0,00
Labelling type 3 (ltype3)	0,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
Switch ranges plastic 55x55: frame 2x with blind cover alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	9,40
IO: Switch ranges plastic in further colours and/or >55 mm: frame 2x with blind cover (various manufacturers)	22,60
IO: Switch ranges stainless steel | glass | aluminium: frame 2x with blind cover (various manufacturers)	71,70
Add for additional humidity sensor	43,00

Accessories			
Item description	**Item No.**	**Group**	**€**
USB Interface RS485 (incl. driver CD)	668293		63,50
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60

WRF06 RC 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 TD Gira E2 pure white matt

Modbus LON

Technical Data	
Measured values	temperature
Operating functions	presence detection, status feedback via LED
Operating elements	button (T)
Input	**AO2V:** 2x input digital for floating switch contact, **DI4:** 4x input digital for floating switch contact
Network technology	RS485 Modbus, LON FT (free topology)
Power supply	24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,9 W (24 V =), 1 VA (24 V ~)
Display	LED for status feedback, green
Enclosure	central disc in design of the manufacturer, (varies depending on switch range)
Operating range temperature	-35..+70 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm², pluggable
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
Delivery content	incl. frame

Room thermostat temperature BUS				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 RC TD DI4 RS485 Modbus Gira E2 pure white matt, LED green	✓	696487	R2	246,40
WRF06 RC TD DI4 LON Gira E2 pure white matt, LED green	✓	696555	R2	274,70
WRF06 RC TD AO2V LON Gira E2 pure white matt, LED green	✓	696531	R2	274,70

Options	Switch ranges on page 423/424
Description	**€**
Additional button	27,60
Additional diode (LED)	22,60
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

WRF06 RC

Flush-mounted room sensor for temperature, humidity and air quality measurement in living rooms, offices etc. Designed for connection to controller and display systems. Due to the visual appearance and the matching design frames from various switch range manufacturers, 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 from the device. Stainless steel versions are available on request.

WRF06 pure white,
frame Gira E2 pure white matt

Modbus LON

Technical Data	
Measured values	temperature
Configuration	Software/Plug-In for configuration, BUS, jumper, DIP switches (depending on type)
Input	**AO2V:** 2x input digital for floating switch contact **DI4:** 4x input digital for floating switch contact
Network technology	RS485 Modbus, LON FT (free topology)
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,9 W (24 V =), 1 VA (24 V ~)
Enclosure	PC, central disc Thermokon (frame selectable)
Colour	white, pure white brilliant, pure white matt, aluminium, Jung aluminium, anthracite
Operating range temperature	0..+50 °C
Protection (IP)	**BACnet/Modbus:** IP30, according to EN 60529 **LON:** IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm², pluggable
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten, Peha (please specify the desired frame when ordering)
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)

Room sensor temperature with control function RS485 Modbus DI4				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 RC DI4 temp RS485 Modbus pure white matt	✓	781916	T1	192,70
WRF06 RC DI4 temp RS485 Modbus pure white brilliant	✓	781909	T1	192,70
WRF06 RC DI4 temp RS485 Modbus aluminium	✓	781893	T1	192,70
WRF06 RC DI4 temp RS485 Modbus Jung aluminium	✓	781886	T1	192,70
WRF06 RC DI4 temp RS485 Modbus anthracite	✓	781879	T1	192,70

Room sensor temperature with control function RS485 Modbus AO2V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 RC AO2V temp RS485 Modbus pure white matt	✓	762601	T1	192,70
WRF06 RC AO2V temp RS485 Modbus pure white brilliant	✓	746359	T1	192,70
WRF06 RC AO2V temp RS485 Modbus aluminium	✓	762625	T1	192,70
WRF06 RC AO2V temp RS485 Modbus Jung aluminium	✓	762632	T1	192,70
WRF06 RC AO2V temp RS485 Modbus anthracite	✓	762656	T1	192,70

Room sensor temperature with control function LON DI4				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 RC DI4 temp LON pure white matt	✓	781466	T1	220,90
WRF06 RC DI4 temp LON pure white brilliant	✓	781459	T1	220,90
WRF06 RC DI4 temp LON aluminium	✓	781442	T1	220,90
WRF06 RC DI4 temp LON Jung aluminium	✓	781435	T1	220,90
WRF06 RC DI4 temp LON anthracite	✓	781428	T1	220,90

Room sensor temperature with control function LON AO2V				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF06 RC AO2V temp LON pure white matt	✓	781411	T1	220,90
WRF06 RC AO2V temp LON pure white brilliant	✓	781404	T1	220,90
WRF06 RC AO2V temp LON aluminium	✓	781398	T1	220,90
WRF06 RC AO2V temp LON Jung aluminium	✓	781381	T1	220,90
WRF06 RC AO2V temp LON anthracite	✓	781374	T1	220,90

Options	Switch ranges on page 423/424
Description	**€**
Add to price of RS485 Modbus for RS485 BACnet (MS/TP)	0,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

Accessories			
Item description	**Item No.**	**Group**	**€**
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60

WRF04 RC x

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 LCD P

WRF04 LCD PTD

WRF04 LCD PSD

WRF04 LCD PSTD

Modbus

Technical Data	
Measured values	temperature
Operating functions	setpoint adjustment temperature, fan stage adjustment, max. 5 stages, presence detection, status feedback via LED
Operating elements	potentiometer (P), rotary switch (S), button (T)
Configuration	BUS, DIP switches
Input	2x input for floating contact
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,4 W (24 V =), 0,6 VA (24 V ~)
Display	LCD 29x12 mm, monochrome LED for status feedback
Enclosure	PC
Colour	pure white
Operating range temperature	-35..+70 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm² cable entry via rear opening, predetermined breaking point (bottom und top)
Mounting	flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using screws or with frame for surface mounting (see accessories) base part can be mounted and wired separately

Outputs	AO2V	DO2R	DO2T	OVR	OVT
0..10 V	2	–	–	1	1
Relay	–	2	–	1	–
Triac	–	–	2	–	1
Inputs	**AO2V**	**DO2R**	**DO2T**	**OVR**	**OVT**
Universal (configurable)	2	2	2	2	2

Room thermostat heating/cooling RS485 Modbus AO2V

Item description	Contr.	Item No.	Group	€
WRF04 RC P AO2V temp RS485 Modbus	✓	419956	R2	185,60
WRF04 RC PTD AO2V temp RS485 Modbus, LED green	✓	415613	R2	194,80
WRF04 RC PSD AO2V temp RS485 Modbus, FS5, LED green	✓	419949	R2	215,80
WRF04 RC PSTD AO2V temp RS485 Modbus, FS5, LED green	✓	480505	R2	235,10
WRF04 RC LCD P AO2V temp RS485 Modbus	✓	420020	R2	231,80
WRF04 RC LCD PTD AO2V temp RS485 Modbus, LED green	✓	415620	R2	241,00
WRF04 RC LCD PSD AO2V temp RS485 Modbus, FS5, LED green	✓	419987	R2	262,00
WRF04 RC LCD PSTD AO2V temp RS485 Modbus, FS5, LED green	✓	538442	R2	281,30

Room thermostat heating/cooling RS485 Modbus IO DO2R

Item description	Contr.	Item No.	Group	€
WRF04 RC P DO2R temp RS485 Modbus, IO	✓	420266	R2	235,50
WRF04 RC PTD DO2R temp RS485 Modbus, LED green, IO	✓	420273	R2	244,70
WRF04 RC PSD DO2R temp RS485 Modbus, FS5, LED green, IO	✓	420280	R2	265,80
WRF04 RC LCD P DO2R temp RS485 Modbus, IO	✓	420327	R2	281,70
WRF04 RC LCD PTD DO2R temp RS485 Modbus, LED green, IO	✓	420334	R2	290,90
WRF04 RC LCD PSD DO2R temp RS485 Modbus, FS5, LED green, IO	✓	628822	R2	312,00

Room thermostat heating/cooling RS485 Modbus IO DO2T

Item description	Contr.	Item No.	Group	€
WRF04 RC P DO2T temp RS485 Modbus, IO	✓	420617	R2	235,50
WRF04 RC PTD DO2T temp RS485 Modbus, LED green, IO	✓	420624	R2	244,70
WRF04 RC PSD DO2T temp RS485 Modbus, FS5, LED green, IO	✓	420631	R2	265,80
WRF04 RC LCD P DO2T temp RS485 Modbus, IO	✓	420815	R2	281,70
WRF04 RC LCD PTD DO2T temp RS485 Modbus, LED green, IO	✓	628846	R2	290,90
WRF04 RC LCD PSD DO2T temp RS485 Modbus, FS5, LED green, IO	✓	628839	R2	312,00

Room thermostat heating/cooling RS485 Modbus IO OVR				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF04 RC P OVR temp RS485 Modbus, IO	✓	420679	R2	235,50
WRF04 RC PTD OVR temp RS485 Modbus, LED green, IO	✓	420686	R2	244,70
WRF04 RC PSD OVR temp RS485 Modbus, FS5, LED green, IO	✓	420693	R2	265,80
WRF04 RC LCD P OVR temp RS485 Modbus, IO	✓	420891	R2	281,70
WRF04 RC LCD PTD OVR temp RS485 Modbus, LED green, IO	✓	420907	R2	290,90
WRF04 RC LCD PSD OVR temp RS485 Modbus, FS5, LED green, IO	✓	420914	R2	312,00

Room thermostat heating/cooling RS485 Modbus IO OVT				
Item description	**Contr.**	**Item No.**	**Group**	**€**
WRF04 RC P OVT temp RS485 Modbus, IO	✓	420747	R2	235,50
WRF04 RC PTD OVT temp RS485 Modbus, LED green, IO	✓	420754	R2	244,70
WRF04 RC PSD OVT temp RS485 Modbus, FS5, LED green, IO	✓	420761	R2	265,80
WRF04 RC LCD P OVT temp RS485 Modbus, IO	✓	420952	R2	281,70
WRF04 RC LCD PTD OVT temp RS485 Modbus, LED green, IO	✓	630122	R2	290,90
WRF04 RC LCD PSD OVT temp RS485 Modbus, FS5, LED green, IO	✓	628877	R2	312,00

Options	
Description	**€**
Rotary switch S with 2/3/4 fan stages (FS2/FS3/FS4)	13,90
Labelling type 6 colour red+blue (ltype6)	7,00
Special printing on request	
Special painting available	

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting WRF04 pure white	111584	A1	15,30
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
Special painting – prices on request			
Special painting setup costs (once per colour)	114998		390,00
Special printing – order quantity 20..49 pcs. (each per colour)	–		18,90
Special printing – order quantity 50..99 pcs. (each per colour)	–		14,20
Special printing setup and tool costs (once for one-colour print)	115049		221,30

LCA

The flat surface-mounted bi-metallic room thermostat LCA 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.
The flat surface-mounted bimetallic room controller LCA-D 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.

LCA

LCA D

Technical Data	
Measured values	temperature
Operating functions	setpoint adjustment +5..+30 °C, day/night operation
Operating elements	rotary knob
Input	input for night setback -3 K, 230 V ~, floating
Power supply	230 V ~
Display	LED – heating ON
Enclosure	ABS
Colour	pure white brilliant
Operating range temperature	0..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm², cable entry via rear opening
Mounting	flush-mounted on standard EU box (Ø=60 mm)

Room thermostat on surface active				
Item description	**Contr.**	**Item No.**	**Group**	**€**
LCA	✓	660822	R1	42,80
LCA D	✓	660815	R1	45,40

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.

Technical Data	
Measured values	relative humidity
Operating functions	threshold adjustment
Operating elements	rotary button
Measuring range humidity	30..100% rH non-condensing
Enclosure	PC
Colour	pure white
Operating range temperature	0..+60 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm² cable entry via rear opening, predetermined breaking point (bottom und top)
Mounting	flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using screws or with frame for surface mounting (see accessories) base part can be mounted and wired separately

Room hygrostat on surface

Item description	Item No.	Group	€
FSR01	835336	H1	100,20
FSR01 internal adjuster	836777	H1	100,20

Accessories

Item description	Item No.	Group	€
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30

NOVOS 5

Active room sensor in the NOVOS 5 enclosure for measurement of temperature, humidity (relative and absolute humidity, enthalpy, dew point), CO2 and mixed gas (VOC) depending on the variant. 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').

0..10 V / 4..20 mA BACnet Modbus

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC
Configuration	NOVOSapp, uConfig, BUS (depending on type)
Input	**BACnet/Modbus:** 1x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP)
Output signal temperature	0..+50 °C (default setting), selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	typ. 0,4 W (24 V =), 0,8 VA (24 V ~)
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	0..+50 °C

Technical Data	
Protection (IP)	IP30, according to EN 60529
Connection	cable entry via rear opening tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top)
Mounting	flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base 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 ...)

NOVOS 5 – temperature

Room sensor temperature – active				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 temp white LCD TRV	✓	733519	T1	140,60
NOVOS 5 temp white LCD TRA	✓	733557	T1	140,60

Room sensor temperature – BUS				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 temp white LCD RS485 BACnet (MS/TP)	✓	754712	T1	180,40
NOVOS 5 temp white LCD RS485 Modbus	✓	733571	T1	180,40

NOVOS 5 – temperature + relative humidity

Room sensor humidity + temperature – active				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 temp_rH white LCD VV	✓	733595	H1	183,60
NOVOS 5 temp_rH white LCD AA	✓	733601	H1	183,60

Room sensor humidity + temperature – BUS				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 temp_rH white LCD RS485 BACnet (MS/TP)	✓	754842	H1	223,40
NOVOS 5 temp_rH white LCD RS485 Modbus	✓	733649	H1	223,40

NOVOS 5 – CO2 + temperature + relative humidity

Room sensor CO2 with up to 3 measured values – active				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 CO2 temp white LCD VV	✓	734202	Q1	309,90
NOVOS 5 CO2 temp white LCD AA	✓	734240	Q1	309,90
NOVOS 5 CO2 temp_rH white LCD 3xV	✓	734226	Q1	352,90
NOVOS 5 CO2 temp_rH white LCD 3xA	✓	734264	Q1	375,90

Room sensor CO2 with up to 3 measured values – RS485 BACnet (MS/TP)				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 CO2 temp white LCD RS485 BACnet (MS/TP)	✓	755672	Q1	349,60
NOVOS 5 CO2 temp_rH white LCD RS485 BACnet (MS/TP)	✓	755696	Q1	392,60

Room sensor CO2 with up to 3 measured values – RS485 Modbus				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 CO2 temp white LCD RS485 Modbus	✓	734295	Q1	349,60
NOVOS 5 CO2 temp_rH white LCD RS485 Modbus	✓	734639	Q1	392,60

NOVOS 5 – VOC + temperature + relative humidity

Room sensor VOC with up to 3 measured values – active				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 VOC temp white LCD VV	✓	735209	Q1	263,10
NOVOS 5 VOC temp white LCD AA	✓	735247	Q1	263,10
NOVOS 5 VOC temp_rH white LCD 3xV	✓	735223	Q1	306,10
NOVOS 5 VOC temp_rH white LCD 3xA	✓	735261	Q1	329,10

Room sensor VOC with up to 3 measured values – RS485 BACnet (MS/TP)				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 VOC temp white LCD RS485 BACnet (MS/TP)	✓	755719	Q1	302,80
NOVOS 5 VOC temp_rH white LCD RS485 BACnet (MS/TP)	✓	755733	Q1	345,80

Room sensor VOC with up to 3 measured values – RS485 Modbus				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 VOC temp white LCD RS485 Modbus	✓	735292	Q1	302,80
NOVOS 5 VOC temp_rH white LCD RS485 Modbus	✓	735322	Q1	345,80

NOVOS 5 – CO2 + VOC + temperature + relative humidity

Room sensor CO2 + VOC with up to 4 measured values – active				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 CO2+VOC white LCD VV	✓	735599	Q1	363,60
NOVOS 5 CO2+VOC white LCD AA	✓	735667	Q1	363,60
NOVOS 5 CO2+VOC temp white LCD 3xV	✓	735629	Q1	385,20
NOVOS 5 CO2+VOC temp_rH white LCD 4xV	✓	735643	Q1	428,20

Room sensor CO2 + VOC with up to 4 measured values – RS485 BACnet (MS/TP)				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 CO2+VOC white LCD RS485 BACnet (MS/TP)	✓	755559	Q1	403,30
NOVOS 5 CO2+VOC temp white LCD RS485 BACnet (MS/TP)	✓	755597	Q1	424,90
NOVOS 5 CO2+VOC temp_rH white LCD RS485 BACnet (MS/TP)	✓	755658	Q1	467,90

Room sensor CO2 + VOC with up to 4 measured values – RS485 Modbus				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 CO2+VOC white LCD RS485 Modbus	✓	735513	Q1	403,30
NOVOS 5 CO2+VOC temp white LCD RS485 Modbus	✓	735728	Q1	424,90
NOVOS 5 CO2+VOC temp_rH white LCD RS485 Modbus	✓	735742	Q1	467,90

Options	
Description	**€**
Colour black	25,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

NOVOS 3

Room sensor in the NOVOS 3 enclosure for measurement of temperature (also available with passive temperature output), humidity (relative and absolute humidity, enthalpy, dew point), CO2 and mixed gas (VOC) depending on the variant. The maintenance-free sensor contributes to a pleasant room climate and well-being. Typical applications include schools, office buildings, hotels or cinemas. Different parameters can be individually configured via Thermokon NOVOSapp or uConfig. Optionally, operating elements for controlling HVAC systems can be added (see product NOVOS 3 x in the chapter ‚Room Operating Units').

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

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC
Configuration	NOVOSapp, uConfig, BUS, jumper, ETS (KNX) (depending on type) **CO2+VOC:** each output can be set to get a variable mix of CO2 and VOC by configuration via app or uConfig
Input	**BACnet/Modbus:** 1x input for floating contact **KNX:** 1x input for NTC10k or floating contact 2x input for floating contact
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), KNX (TP1)
Output signal temperature	0..+50 °C (default setting), selectable from 4 temperature ranges -50..+50 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor
Power supply	15..35 V = SELV, 19..29 V ~ SELV **KNX:** 24 V = (±10%) SELV, supply via BUS, 29 V = SELV
Power consumption	typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **KNX:** typ. 0,4 W (24 V =)
Display	ePaper Display 44x24 mm, RGB LED, with traffic light function, threshold values configurable optionally configurable via app or uConfig

Technical Data	
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	-35..+70 °C
Protection (IP)	IP20, according to EN 60529
Connection	cable entry via rear opening tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top) **KNX:** removable plug-in terminal, max. Ø=0,8 mm
Mounting	flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws base part can be mounted and wired separately **KNX:** flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
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 3 – temperature

Room sensor temperature – passive					
Item description	**NOVOSapp**	**Item No.**	**In stock**	**Group**	**€**
NOVOS 3 temp white Pt100	✓	728256		T3	24,30
NOVOS 3 temp white Pt100 1/3 DIN	✓	755283		T3	28,90
NOVOS 3 temp white Pt1000	✓	728386	⛃	T3	26,50
NOVOS 3 temp white Pt1000 1/3 DIN	✓	728393		T3	30,80
NOVOS 3 temp white Ni1000	✓	728409	⛃	T3	26,50
NOVOS 3 temp white Ni1000TK5000	✓	728416		T3	30,80
NOVOS 3 temp white NTC10k	✓	728423	⛃	T3	22,70

Options	
Description	**€**
4-wire connection (4-wire)	6,70
Enclosure in black	13,00
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10

Room sensor temperature – active					
Item description	**NOVOSapp**	**Item No.**	**In stock**	**Group**	**€**
NOVOS 3 temp white TRV	✓	731614		T2	77,90
NOVOS 3 temp white TRA	✓	731621	⛃	T2	77,90

Room sensor temperature – BUS				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 temp white RS485 BACnet (MS/TP)	✓	754736	T2	119,70
NOVOS 3 temp white RS485 Modbus	✓	731652	T2	119,70
NOVOS 3 temp white KNX	✓	782241	T2	188,40

Options	
Description	**€**
EPD: ePaper Display 44x24 mm	30,30
Enclosure in black	13,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

NOVOS 3 – temperature + relative humidity

Room sensor humidity + temperature – active					
Item description	**NOVOSapp**	**Item No.**	**In stock**	**Group**	**€**
NOVOS 3 temp_rH white VV	✓	731904	⛃	H2	120,90
NOVOS 3 temp_rH white AA	✓	731911	⛃	H2	120,90

Room sensor humidity + temperature – BUS				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 temp_rH white RS485 BACnet (MS/TP)	✓	754866	H2	162,70
NOVOS 3 temp_rH white RS485 Modbus	✓	733496	H2	162,70
NOVOS 3 temp_rH white KNX	✓	782203	H2	231,40

NOVOS 3 – CO2 + temperature + relative humidity

Room sensor CO2 with up to 3 measured values – active					
Item description	**NOVOSapp**	**Item No.**	**In stock**	**Group**	**€**
NOVOS 3 CO2 white V	✓	733663	⛃	Q2	210,90
NOVOS 3 CO2 white A	✓	733724		Q2	210,90
NOVOS 3 CO2 temp white VV	✓	733670	⛃	Q2	232,40
NOVOS 3 CO2 temp white AA	✓	733731		Q2	232,40
NOVOS 3 CO2 temp_rH white 3xV	✓	733687		Q2	275,40

Room sensor CO2 with up to 3 measured values – BUS				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 CO2 temp white RS485 BACnet (MS/TP)	✓	755856	Q2	272,10
NOVOS 3 CO2 temp_rH white RS485 BACnet (MS/TP)	✓	755870	Q2	315,10
NOVOS 3 CO2 temp white RS485 Modbus	✓	734165	Q2	272,10
NOVOS 3 CO2 temp_rH white RS485 Modbus	✓	734172	Q2	315,10
NOVOS 3 CO2 temp white KNX	✓	782050	Q2	340,80
NOVOS 3 CO2 temp_rH white KNX	✓	782036	Q2	383,80

NOVOS 3 – VOC + temperature + relative humidity

Room sensor VOC with up to 3 measured values – active				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 VOC white V	✓	734653	Q2	200,10
NOVOS 3 VOC white A	✓	734738	Q2	200,10
NOVOS 3 VOC temp white VV	✓	734660	Q2	221,60
NOVOS 3 VOC temp white AA	✓	734745	Q2	221,60
NOVOS 3 VOC temp_rH white 3xV	✓	734677	Q2	264,60

Room sensor VOC with up to 3 measured values – BUS				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 VOC temp white RS485 BACnet (MS/TP)	✓	755900	Q2	261,40
NOVOS 3 VOC temp_rH white RS485 BACnet (MS/TP)	✓	755948	Q2	304,40
NOVOS 3 VOC temp white RS485 Modbus	✓	734813	Q2	261,40
NOVOS 3 VOC temp_rH white RS485 Modbus	✓	734820	Q2	304,40
NOVOS 3 VOC temp white KNX	✓	781978	Q2	330,10
NOVOS 3 VOC temp_rH white KNX	✓	781961	Q2	373,10

NOVOS 3 – CO2 + VOC + temperature + relative humidity

Room sensor CO2 + VOC with up to 4 measured values – active				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 CO2+VOC white VV	✓	735353	Q2	264,50
NOVOS 3 CO2+VOC white AA	✓	735421	Q2	264,50
NOVOS 3 CO2+VOC temp white 3xV	✓	735360	Q2	286,10
NOVOS 3 CO2+VOC temp_rH white 4xV	✓	735377	Q2	329,10

Room sensor CO2 + VOC with up to 4 measured values – BUS					
Item description	**NOVOSapp**	**Item No.**	**In stock**	**Group**	**€**
NOVOS 3 CO2+VOC white RS485 BACnet (MS/TP)	✓	755771		Q2	304,30
NOVOS 3 CO2+VOC temp white RS485 BACnet (MS/TP)	✓	755795		Q2	325,90
NOVOS 3 CO2+VOC temp_rH white RS485 BACnet (MS/TP)	✓	755818		Q2	368,90
NOVOS 3 CO2+VOC white RS485 Modbus	✓	735483		Q2	304,30
NOVOS 3 CO2+VOC temp white RS485 Modbus	✓	735544		Q2	325,90
NOVOS 3 CO2+VOC temp_rH white RS485 Modbus	✓	735568	⛀	Q2	368,90
NOVOS 3 CO2+VOC white KNX	✓	782159		Q2	373,00
NOVOS 3 CO2+VOC temp white KNX	✓	782135		Q2	394,60
NOVOS 3 CO2+VOC temp_rH white KNX	✓	782111		Q2	437,60

Options	
Description	**€**
EPD: ePaper Display 44x24 mm	30,30
TLF – traffic light function, RGB-LED indicating air quality	16,20
Enclosure in black	13,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

NOVOS 3 IR

Surface-mounted room sensor for measuring the effective radiation in living rooms and offices. 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 housing.

Technical Data	
Measured values	radiation temperature
Material in touch with media	hemispherical ball, Ø=37 mm, aluminium, black
Enclosure	PC V0
Colour	pure white, black
Operating range temperature	-35..+70 °C
Protection (IP)	IP20, according to EN 60529
Connection	tool-free mountable spring clamp, max. 1,5 mm² cable entry via rear opening predetermined breaking point (bottom) or drilling mark (top)
Connection cable	2-wire
Mounting	flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws base part can be mounted and wired separately

Room sensor radiation temperature passive

Item description	Item No.	Group	€
NOVOS 3 IR white Pt1000	799164	T2	90,30
NOVOS 3 IR white Ni1000	799171	T2	90,30
NOVOS 3 IR white NTC10k	799188	T2	86,50

Options

Description	€
Enclosure in black	13,00

Accessories

Item description	Item No.	Group	€
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30

NOVOS 7 move

The portable stand-alone solution of NOVOS 7 move simplifies the monitoring of indoor air quality and is able to initiate necessary measures improving the air quality. The practical desk display and the connected power supply unit make it possible to use the NOVOS 7 for CO2 measurement as a “plug & monitor” solution. The intelligent traffic light function uses a TFT display and an acoustic signal to indicate when it is time to take appropriate action. For example, the yellow or red background indicates, that the CO2 concentration in the ambient air is too high and the room should be ventilated.

Technical Data	
Measured values	temperature, relative humidity, CO2
Operating elements	4 favourite buttons
Configuration	NOVOSapp, uConfig
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..5000 ppm
Power supply	**NOVOS 7 move:** mains adapter 100..230 V (50/60 Hz), max. 0,4A **NOVOS 7 move AP:** 15..35 V = SELV, 19..29 V ~ SELV **NOVOS 7 move UP:** Flush-mounted power supply 230 V (±10%, 50/60 Hz), max. 0.4 A
Display	TFT 3,5“, 320x480 px, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	PC V0
Colour	pure white
Operating range temperature	0..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	**NOVOS 7 move AP/NOVOS 7 move UP:** cable entry via rear opening tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top)
Mounting	**NOVOS 7 move AP:** flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws, base part can be mounted and wired separately **NOVOS 7 move UP:** flush-mounted on standard EU box (Ø=60 mm), base part can be mounted and wired separately
Delivery content	**NOVOS 7 move:** incl. stand and power supply unit

Portable room sensor CO2 + temperature + humidity				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 7 move CO2 temp_rH white	✓	779876	Q1	374,70
NOVOS 7 move AP CO2 temp_rH white	✓	780117	Q1	334,90
NOVOS 7 move UP CO2 temp_rH white	✓	780087	Q1	366,90

Accessories			
Item description	**Item No.**	**Group**	**€**
NOVOS 7 move AP: Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
NOVOS 7 move AP: PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

NOVOS 5 move

Active room sensor in the NOVOS 5 enclosure for measurement of temperature, humidity (relative and absolute humidity, enthalpy, dew point), CO2 and mixed gas (VOC) depending on the variant. 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').

Technical Data	
Measured values	temperature, CO2
Configuration	NOVOSapp, uConfig
Measuring range CO2	0..5000 ppm, optionally configurable
Power supply	**NOVOS 5 move:** mains adapter 100..230 V (50/60 Hz), max. 0,4A, **NOVOS 5 move AP:** 15..35 V = SELV, 19..29 V ~ SELV, **NOVOS 5 move UP:** Flush-mounted power supply 230 V (±10%, 50/60 Hz), max. 0.4 A
Power consumption	typ. 0,4 W (24 V =), 0,8 VA (24 V ~), max. 0,5 W (24 V =)
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Operating range temperature	0..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	**NOVOS 5 move AP/NOVOS 5 move UP:** cable entry via rear opening tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top)
Mounting	**NOVOS 5 move AP:** flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws, base part can be mounted and wired separately **NOVOS 5 move UP:** flush-mounted on standard EU box (Ø=60 mm), base part can be mounted and wired separately
Delivery content	**NOVOS 5 move:** incl. stand and power supply unit

Portable room sensor CO2 + temperature				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 5 move CO2 temp white LCD	✓	777636	Q1	344,90
NOVOS 5 move AP CO2 temp white LCD	✓	780100	Q1	303,90
NOVOS 5 move UP CO2 temp white LCD	✓	780070	Q1	336,90

Accessories			
Item description	**Item No.**	**Group**	**€**
NOVOS 5 move AP: Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
NOVOS 5 move AP: PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

NOVOS 3 move

Room sensor in the NOVOS 3 enclosure for measurement of temperature (also available with passive temperature output), humidity (relative and absolute humidity, enthalpy, dew point), CO2 and mixed gas (VOC) depending on the variant. The maintenance-free sensor contributes to a pleasant room climate and well-being. Typical applications include schools, office buildings, hotels or cinemas. Different parameters can be individually configured via Thermokon NOVOSapp or uConfig. Optionally, operating elements for controlling HVAC systems can be added (see product NOVOS 3 x in the chapter ‚Room Operating Units').

Technical Data	
Measured values	CO2
Configuration	uConfig
Measuring range CO2	0..5000 ppm, optionally configurable
Power supply	**NOVOS 3 move:** mains adapter 100..230 V (50/60 Hz), max. 0,4A **NOVOS 3 move AP:** 15..35 V = SELV, 19..29 V ~ SELV **NOVOS 3 move UP:** Flush-mounted power supply 230 V (±10%, 50/60 Hz), max. 0.4 A
Power consumption	typ. 0,4 W (24 V =), max. 0,5 W (24 V =), 0,8 VA (24 V ~)
Display	RGB LED, with traffic light function, threshold values configurable, for example to display the air quality, optionally configurable via app or uConfig
Operating range temperature	0..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	**NOVOS 3 move AP/NOVOS 3 move UP:** cable entry via rear opening tool-free mountable spring clamp, max. 1,5 mm² predetermined breaking point (bottom) or drilling mark (top)
Mounting	**NOVOS 3 move AP:** flush-mounted on standard EU box (Ø=60 mm), surface-mounted flat on base using adhesive foil or screws, base part can be mounted and wired separately **NOVOS 3 move UP:** flush-mounted on standard EU box (Ø=60 mm), base part can be mounted and wired separately
Delivery content	**NOVOS 3 move:** incl. stand and power supply unit

Portable room sensor CO2				
Item description	**NOVOSapp**	**Item No.**	**Group**	**€**
NOVOS 3 move CO2 white TLF	✓	774314	Q2	298,20
NOVOS 3 move AP CO2 white TLF	✓	780094	Q2	257,20
NOVOS 3 move UP CO2 white TLF	✓	780063	Q2	290,30

Accessories			
Item description	**Item No.**	**Group**	**€**
NOVOS 3 move AP: Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
NOVOS 3 move AP: Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30
NOVOS 3 move AP: Frame for surface mounting NOVOS 3 / WRF04 black	795074	A1	55,30
NOVOS 3 move AP: PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

WRF06

Flush-mounted room sensor for temperature, humidity and air quality measurement in living rooms, offices etc. Designed for connection to controller and display systems. Due to the visual appearance and the matching design frames from various switch range manufacturers, 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 from the device. Stainless steel versions are available on request.

WRF06 pure white,
frame Gira E2 pure white matt

FTW06 / WRF06 CO2/VOC pure white,
frame Gira E2 pure white matt

WRF06 CO2/VOC TLF pure white,
frame Gira E2 pure white matt

passive / 0..10 V BACnet Modbus

Technical Data	
Measured values	temperature, relative humidity, CO2, VOC
Configuration	Software/Plug-In for configuration, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP)
Output signal temperature	0..+50 °C, scaling analogue output
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..2000 ppm
Measuring VOC (mixed gas)	heated metal oxide semiconductor, self-calibration
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **WRF06 rH BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**WRF06 TRV3:** typ. 0,4 W (24 V =), 1 VA (24 V ~) **WRF06 BUS:** typ. 0,9 W (24 V =), 0,5 VA (24 V ~) **WRF06 CO2/VOC:** max. 1,6 W (24 V =), 3,9 VA (24 V ~) **WRF06 VV:** typ. 0,3 W (24 V =), 0,8 VA (24 V ~) **WRF06 rH Modbus:** max. 1,6 W (24 V =), 3,9 VA (24 V ~)
Display	3 LEDs for displaying air quality (traffic light function – TLF)
Enclosure	PC, central disc in design of the manufacturer (varies depending on switch range)
Operating range temperature	-35..+70 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm², pluggable
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten, Peha (please specify the desired frame when ordering)
Mounting	flush-mounted in standard EU box (Ø=60 mm, depth min. 45 mm)
Delivery content	**passive/TRV3:** incl. frame

WRF06 temperature passive

Room sensor temperature passive			
Item description	**Item No.**	**Group**	**€**
WRF06 without sensor Gira E2 pure white matt	626194	T1	44,20
WRF06 Pt100 Gira E2 pure white matt	128933	T1	52,70
WRF06 Pt100 1/3 DIN Gira E2 pure white matt	137768	T1	57,60
WRF06 Pt1000 Gira E2 pure white matt	158299	T1	55,50
WRF06 Pt1000 1/3 DIN Gira E2 pure white matt	160773	T1	59,50
WRF06 Ni1000 Gira E2 pure white matt	138314	T1	55,20
WRF06 Ni1000TK5000 Gira E2 pure white matt	121866	T1	59,50
WRF06 NTC10k Gira E2 pure white matt	191050	T1	51,40

Options	Switch ranges on page 423/424
Description	**€**
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor FeT/Staefa	27,80

WRF06 temperature active 0..10 V

Room sensor temperature – active			
Item description	**Item No.**	**Group**	**€**
WRF06 TRV3 Gira E2 pure white matt	627160	T1	129,40
WRF06 TRV3 Berker S.1 polar white brilliant	582865	T1	129,40
WRF06 TRV3 Busch-Jaeger Busch-balance® SI alpin white	703925	T1	129,40
WRF06 TRV3 Busch-Jaeger Reflex SI alpin white	172028	T1	129,40
WRF06 TRV3 Jung A 500 alpin white	703949	T1	129,40
WRF06 TRV3 Merten M-Smart polar white brilliant	703956	T1	129,40

Options	Switch ranges on page 423/424
Description	**€**
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

WRF06 temperature BUS

Room sensor temperature – BUS			
Item description	**Item No.**	**Group**	**€**
WRF06 temp RS485 Modbus pure white matt	726825	T1	169,10
WRF06 temp RS485 Modbus pure white brilliant	726801	T1	169,10
WRF06 temp RS485 Modbus aluminium	726856	T1	169,10
WRF06 temp RS485 Modbus Jung aluminium	726832	T1	169,10
WRF06 temp RS485 Modbus anthracite	726818	T1	169,10

WRF06 temperature + relative humidity active 2x 0..10 V

Room sensor humidity + temperature – active			
Item description	**Item No.**	**Group**	**€**
WRF06 temp_rH VV pure white matt	482721	H1	172,30
WRF06 temp_rH temp_rH VV pure white brilliant	732161	H1	172,30
WRF06 temp_rH VV anthracite	732192	H1	172,30
WRF06 temp_rH VV Jung aluminium	732185	H1	172,30
WRF06 temp_rH VV aluminium	732178	H1	172,30

WRF06 temperature + relative humidity BUS

Room sensor humidity + temperature – BUS			
Item description	**Item No.**	**Group**	**€**
WRF06 temp_rH RS485 Modbus pure white matt	732208	H1	212,00
WRF06 temp_rH RS485 Modbus pure white brilliant	732215	H1	212,00
WRF06 temp_rH RS485 Modbus aluminium	732222	H1	212,00
WRF06 temp_rH RS485 Modbus anthracite	732246	H1	212,00
WRF06 temp_rH RS485 Modbus Jung aluminium	732239	H1	212,00

WRF06 CO2 + temperature active 2x 0..10 V

Room sensor CO2 + temperature – active			
Item description	**Item No.**	**Group**	**€**
WRF06 CO2 temp VV pure white matt	728492	Q1	267,10
WRF06 CO2 temp VV pure white brilliant	724555	Q1	267,10
WRF06 CO2 temp VV aluminium	732550	Q1	267,10
WRF06 CO2 temp VV Jung aluminium	732567	Q1	267,10
WRF06 CO2 temp VV anthracite	732123	Q1	267,10

WRF06 CO2 + temperature + relative humidity active 3x 0..10 V

Room sensor CO2 + temperature + humidity – active			
Item description	**Item No.**	**Group**	**€**
WRF06 CO2 temp_rH 3xV pure white matt	732598	Q1	310,00
WRF06 CO2 temp_rH 3xV pure white brilliant	726641	Q1	310,00
WRF06 CO2 temp_rH 3xV aluminium	732611	Q1	310,00
WRF06 CO2 temp_rH 3xV Jung aluminium	726634	Q1	310,00
WRF06 CO2 temp_rH 3xV anthracite	732628	Q1	310,00

WRF06 CO2 + temperature BUS

Room sensor CO2 + temperature – BUS			
Item description	**Item No.**	**Group**	**€**
WRF06 CO2 temp RS485 Modbus pure white matt	732840	Q1	306,80
WRF06 CO2 temp RS485 Modbus pure white brilliant	732857	Q1	306,80
WRF06 CO2 temp RS485 Modbus aluminium	732864	Q1	306,80
WRF06 CO2 temp RS485 Modbus Jung aluminium	732871	Q1	306,80
WRF06 CO2 temp RS485 Modbus anthracite	732321	Q1	306,80

WRF06 CO2 + temperature + relative humidity BUS

Room sensor CO2 + temperature + humidity – BUS			
Item description	**Item No.**	**Group**	**€**
WRF06 CO2 temp_rH RS485 Modbus pure white matt	732888	Q1	349,70
WRF06 CO2 temp_rH RS485 Modbus pure white brilliant	732895	Q1	349,70
WRF06 CO2 temp_rH RS485 Modbus aluminium	732901	Q1	349,70
WRF06 CO2 temp_rH RS485 Modbus Jung aluminium	732918	Q1	349,70
WRF06 CO2 temp_rH RS485 Modbus anthracite	728676	Q1	349,70

WRF06 VOC + temperature active 2x 0..10 V

Room sensor VOC + temperature – active			
Item description	**Item No.**	**Group**	**€**
WRF06 VOC temp VV pure white matt	732635	Q1	256,40
WRF06 VOC temp VV pure white brilliant	731522	Q1	256,40
WRF06 VOC temp VV aluminium	727358	Q1	256,40
WRF06 VOC temp VV Jung aluminium	732659	Q1	256,40
WRF06 VOC temp VV anthracite	732666	Q1	256,40

WRF06 VOC + temperature BUS

Room sensor VOC + temperature – BUS			
Item description	**Item No.**	**Group**	**€**
WRF06 VOC temp RS485 Modbus pure white matt	732925	Q1	296,10
WRF06 VOC temp RS485 Modbus pure white brilliant	732932	Q1	296,10
WRF06 VOC temp RS485 Modbus aluminium	732949	Q1	296,10
WRF06 VOC temp RS485 Modbus Jung aluminium	732963	Q1	296,10
WRF06 VOC temp RS485 Modbus anthracite	732970	Q1	296,10

WRF06 CO2 + VOC active 2x 0..10 V

Room sensor CO2 + VOC – active			
Item description	**Item No.**	**Group**	**€**
WRF06 CO2+VOC VV pure white matt	732420	Q1	299,30
WRF06 CO2+VOC VV pure white brilliant	732437	Q1	299,30
WRF06 CO2+VOC VV aluminium	732444	Q1	299,30
WRF06 CO2+VOC VV Jung aluminium	732451	Q1	299,30
WRF06 CO2+VOC VV anthracite	732468	Q1	299,30

WRF06 CO2 + VOC + temperature + relative humidity active 4x 0..10 V

Room sensor CO2 + VOC + temperature + humidity – active			
Item description	**Item No.**	**Group**	**€**
WRF06 CO2+VOC temp_rH 4xV pure white matt	732475	Q1	363,70
WRF06 CO2+VOC temp_rH 4xV pure white brilliant	732482	Q1	363,70
WRF06 CO2+VOC temp_rH 4xV aluminium	732499	Q1	363,70
WRF06 CO2+VOC temp_rH 4xV Jung aluminium	732505	Q1	363,70
WRF06 CO2+VOC temp_rH 4xV anthracite	732512	Q1	363,70

WRF06 CO2 + VOC BUS

Room sensor CO2 + VOC – BUS			
Item description	**Item No.**	**Group**	**€**
WRF06 CO2+VOC RS485 Modbus pure white matt	732680	Q1	339,00
WRF06 CO2+VOC RS485 Modbus pure white brilliant	732697	Q1	339,00
WRF06 CO2+VOC RS485 Modbus aluminium	732703	Q1	339,00
WRF06 CO2+VOC RS485 Modbus Jung aluminium	732710	Q1	339,00
WRF06 CO2+VOC RS485 Modbus anthracite	732727	Q1	339,00

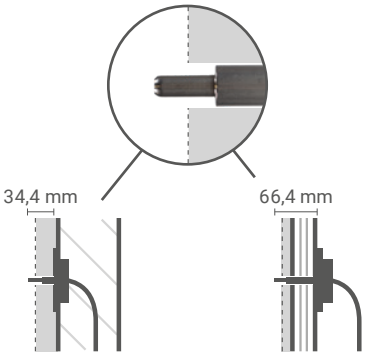
WRF06 CO2 + VOC + temperature + relative humidity BUS

Room sensor CO2 + VOC + temperature + humidity – BUS			
Item description	**Item No.**	**Group**	**€**
WRF06 CO2+VOC temp_rH RS485 Modbus pure white matt	732734	Q1	403,40
WRF06 CO2+VOC temp_rH RS485 Modbus pure white brilliant	732741	Q1	403,40
WRF06 CO2+VOC temp_rH RS485 Modbus aluminium	732758	Q1	403,40
WRF06 CO2+VOC temp_rH RS485 Modbus Jung aluminium	732765	Q1	403,40
WRF06 CO2+VOC temp_rH RS485 Modbus anthracite	732772	Q1	403,40

Options	Switch ranges on page 423/424
Description	**€**
Add to price of RS485 Modbus for RS485 BACnet (MS/TP)	0,00
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	5,80
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60
TLF – traffic light function, 3 LEDs indicating air quality	16,20

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.



0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting), selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C adjustable at the transducer, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, adjustable at the transducer, optionally configurable
Power supply	**VV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **AA:** 15..24 V = (±10%) SELV **LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**VV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **AA:** max. 1 W (24 V =) **LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor head Ø=13 mm, end of sensor Ø=7 mm, stainless steel V2A (1.4305)
Installation length	35, 67
Display	LCD 29x35 mm, RGB backlight
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	-40..+120 °C
Protection (IP)	enclosure IP65, according to EN 60529

Technical Data	
Connection	removable plug-in terminal, max. 2,5 mm², BUS max. 1,5 mm² **VV/AA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	PVC, 0,14 mm², grey
Length connection wire	15 m
Mounting	plastering or installation in hollow wall
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories)

Wall-mounted sensor humidity + temperature active

Item description	USEapp	Item No.	Group	€
FTB+ VV 34.06 L15m	✓	689205	H1	332,70
FTB+ VV 66.06 L15m	✓	689083	H1	359,80
FTB+ AA 34.06 L15m	✓	700108	H1	351,90
FTB+ AA 66.06 L15m	✓	700115	H1	379,00

Options

Description	€
RS485 Modbus	51,60
RS485 BACnet (MS/TP)	51,60
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO for 24 V ~ or 24 V = / 3 A	48,40
LCD 29x35 mm, RGB backlight	46,20

Accessories

Item description	Item No.	Group	€
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

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	1x contact NO, load max. 1 A for 24 V =/~, floating with follow-up time 8 seconds
Dectection range	cone-shaped, detection range, angle 110°/93°, 80 detection zones – at a distance of 2,8 m the detection area will be about 7x5 m
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	max. 0,5 W (24 V =), 1,1 VA (24 V ~)
Enclosure	central disc in design of the manufacturer (varies depending on switch range)
Operating range temperature	-20..+60 °C
Protection (IP)	IP20, according to EN 60529
Connection	plug-in terminal, max. 1,5 mm²
Switch ranges	Berker, Busch-Jaeger, Feller, Gira, Jung, Merten,
Mounting	flush-mounted in standard EU box (Ø=60 mm)
Delivery content	incl. frame

Wall sensor motion relay			
Item description	**Item No.**	**Group**	**€**
WRF06I Gira E2 pure white matt	187183	L2	126,00
WRF06I Berker S.1 polar white	223997	L2	126,00
WRF06I Busch-Jaeger Busch-balance® SI alpin white	630405	L2	126,00
WRF06I Busch-Jaeger Reflex SI alpin white	413350	L2	126,00
WRF06I Jung A 500 alpin white	630412	L2	126,00
WRF06I Merten M-Smart polar white brilliant	630429	L2	126,00

Options	Switch ranges on page 423/424
Description	**€**
Switch ranges plastic 55x55: alpin white/polar white/pure white/studio white, anthracite, aluminium (various manufacturers)	0,00
Switch ranges plastic in other colours or dimensions (various manufacturers)	15,30
Switch ranges stainless steel | glass | aluminium (various manufacturers)	48,60

Accessories			
Item description	**Item No.**	**Group**	**€**
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60

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	1x contact NO, load max. 1 A for 24 V =/~, floating with follow-up time 8 seconds
Dectection range	cone-shaped, detection range, angle 110°/93°, 80 detection zones – at a distance of 2,8 m the detection area will be about 7x5 m
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	max. 0,5 W (24 V =), 1,1 VA (24 V ~)
Enclosure	PC
Colour	pure white
Operating range temperature	-20..+50 °C
Protection (IP)	IP30, according to EN 60529
Connection	terminal block, max. 1,5 mm², cable entry via rear opening, predetermined breaking point (bottom und top)
Mounting	flush-mounted on standard EU box (Ø=60 mm) surface-mounted flat on base using screws, or with frame for surface mounting (see accessories) base part can be mounted and wired separately

Wall sensor motion – relay			
Item description	**Item No.**	**Group**	**€**
WRF04I relay	195812	L1	110,40

Accessories			
Item description	**Item No.**	**Group**	**€**
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
PSU-UP24 – flush-mounted power supply 24 V	645737	A1	50,60
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30

RPF40

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.

Technical Data	
Measured values	temperature, radiation temperature
Material in touch with media	Sensor head, PF31, white, black, Ø=40 mm
Operating range temperature	-35..+90 °C
Protection (IP)	IP30, according to EN 60529
Connection cable	PVC, 0,25 mm²

Room pendulum sensor temperature – passive

Item description	Item No.	Group	€
RPF40 Pt100 white L1000	350006	T2	61,60
RPF40 Pt100 1/3 DIN white L1000	265621	T2	66,50
RPF40 Pt1000 white L1000	321068	T2	64,40
RPF40 Pt1000 1/3 DIN white L1000	329569	T2	68,40
RPF40 Ni1000 white L1000	329279	T2	64,10
RPF40 Ni1000TK5000 white L1000	144193	T2	68,40
RPF40 NTC10k white L1000	351980	T2	60,30

Options

Description	€
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
Add per meter of connection cable 2-wire -35..+100 °C	1,40
Add per meter of connection cable 3-wire -35..+100 °C	1,60
Add per meter of connection cable 4-wire -35..+100 °C	1,90
Connection enclosure USE-S incl. mounting base pure white	17,30
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor FeT/Staefa	27,80
Sensor head black (radiation sensor)	0,00

Accessories

Item description	Item No.	Group	€
Mounting base enclosure USE-S pure white	667722	A1	6,70

RPF40+

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 BACnet Modbus LON

Technical Data	
Measured values	temperature, radiation temperature
Configuration	USEapp, uConfig, BUS, jumper
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: selectable from 4 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 **TRV/TRA:** 0..+160 °C (default setting) **LCD/BUS/Relay:** -20..+80 °C (default setting),
Power supply	**TRV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 24 V ~ (±10%) SELV **LCD/BUS/Relay:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~), **TRA:** typ. 0,5 W (24 V =) **LCD/BUS/Relay:** typ. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor head, PF31, white, Ø=40 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**TRV/TRA:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **LCD/BUS/Relay:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Operating range temperature	-35..+70 °C
Protection (IP)	IP30, enclosure IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **TRV/TRA/Relay:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	PVC, 0,25 mm², white
Delivery content	incl. mounting set (screws and accessories) **TRV/TRA:** incl. mounting base enclosure USE-S pure white, **LCD/BUS:** incl. mounting base enclosure USE-M pure white

Room pendulum sensor temperature – active – 0..10 (0..5) V			
Item description	**Item No.**	**Group**	**€**
RPF40+ TRV MultiRange white L1000	658409	T2	136,50
RPF40+ TRA MultiRange white L1000	658416	T2	136,50

Options	
Description	**€**
Add per meter of connection cable 2-wire -35..+100 °C	1,40
RS485 Modbus in enclosure USE-M with option board	87,00
RS485 BACnet (MS/TP) in enclosure USE-M with option board	87,00
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO in enclosure USE-M with option board for 24 V ~ or 24 V = / 3 A	81,70
LCD 29x35 mm, RGB backlight in enclosure USE-M with option board	79,50
Sensor head black (radiation sensor)	0,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting kit universal for enclosure USE	698511	A1	10,70
TRV/TRA: Mounting base enclosure USE-S pure white	667722	A1	6,70
LCD/BUS/Relay: Mounting base enclosure USE-M pure white	668354	A1	9,60
LCD/BUS/Relay: BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
LCD/BUS/Relay: USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

RPF100

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.

Technical Data	
Measured values	temperature
Material in touch with media	Sensor probe: Ø=15 mm, stainless steel V2A (1.4305), length 100 mm, hex pressed (IP65)
Operating range temperature	-35..+90 °C
Protection (IP)	IP65, according to EN 60529
Connection cable	PVC, 0,25 mm², 2-wire, white

Room pendulum sensor temperature – passive

Item description	Item No.	Group	€
RPF100 Pt100 L1000	81566	T2	80,00
RPF100 Pt100 1/3 DIN L1000	90780	T2	84,90
RPF100 Pt1000 L1000	90827	T2	82,80
RPF100 Pt1000 1/3 DIN L1000	90865	T2	86,80
RPF100 Ni1000 L1000	90902	T2	82,50
RPF100 Ni1000TK5000 L1000	160612	T2	86,80
RPF100 NTC10k L1000	91060	T2	78,70

Options

Description	€
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
Add per meter of connection cable 2-wire -35..+100 °C	1,40
Add per meter of connection cable 3-wire -35..+100 °C	1,60
Add per meter of connection cable 4-wire -35..+100 °C	1,90
Connection enclosure USE-S incl. mounting base pure white	17,30
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor FeT/Staefa	27,80

Accessories

Item description	Item No.	Group	€
Mounting base enclosure USE-S pure white	667722	A1	6,70

RPF100+

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 BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: selectable from 4 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 **TRV/TRA/Relay:** 0..+160 °C (default setting) **LCD/BUS:** -20..+80 °C (default setting)
Power supply	**TRV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 24 V ~ (±10%) SELV **LCD/BUS/Relay:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** typ. 0,5 W (24 V =) **LCD/BUS/Relay:** typ. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor probe: Ø=15 mm, stainless steel V2A (1.4305), length 100 mm, hex pressed (IP65)
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**TRV/TRA:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **LCD/BUS/Relay:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-35..+70 °C
Protection (IP)	IP65, according to EN 60529

Technical Data	
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **TRV/TRA/Relay:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	PVC, 0,25 mm², white
Delivery content	incl. mounting set (screws and accessories) **TRV/TRA:** incl. mounting base enclosure USE-S pure white **LCD/BUS/Relay:** incl. mounting base enclosure USE-M pure white

Room pendulum sensor temperature active

Item description	Item No.	Group	€
RPF100+ TRV MultiRange L1000	658423	T2	155,00
RPF100+ TRA MultiRange L1000	658430	T2	155,00

Options

Description	€
Add per meter of connection cable PVC	1,40
RS485 Modbus in enclosure USE-M with option board	87,00
RS485 BACnet (MS/TP) in enclosure USE-M with option board	87,00
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO in enclosure USE-M with option board for 24 V ~ or 24 V = / 3 A	81,70
LCD 29x35 mm, RGB backlight in enclosure USE-M with option board	79,50

Accessories

Item description	Item No.	Group	€
Mounting kit universal for enclosure USE	698511	A1	10,70
TRV/TRA: Mounting base enclosure USE-S pure white	667722	A1	6,70
LCD/BUS/Relay: Mounting base enclosure USE-M pure white	668354	A1	9,60
LCD/BUS/Relay: BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
LCD/BUS/Relay: USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

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 BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	-20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C adjustable at the transducer, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point adjustable at the transducer, optionally configurable
Power supply	**VV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **AA:** 15..24 V = (±10%) SELV **LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**VV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **AA:** typ. 1 W (24 V =), **LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Pipe: Ø=20 mm, PA6, black, length 210 mm, with filter stainless steel wire mesh
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white **LCD:** transparent cover
Operating range temperature	-20..+70 °C
Protection (IP)	IP20, according to EN 60529 enclosure IP65, according to EN 60529

Technical Data	
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm² **VV/AA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	PVC, 0,14 mm², grey
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories)

Room pendulum sensor humidity + temperature active

Item description	Item No.	Group	€
FTP+ VV L2000	699952	H1	198,50
FTP+ VV L4000	699983	H1	204,40
FTP+ AA L2000	699976	H1	217,70
FTP+ AA L4000	700016	H1	223,60

Options

Description	€
Add per meter of connection cable PVC (4-wire)	1,90
RS485 Modbus	51,60
RS485 BACnet (MS/TP)	51,60
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO for 24 V ~ or 24 V = / 3 A	48,40
LCD 29x35 mm, RGB backlight	46,20

Accessories

Item description	Item No.	Group	€
Filter stainless steel, wire mesh FTK+ / FTA54+ / FTP+ (spare part)	231169	A1	11,90
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
LCD/BUS/Relay: BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
LCD/BUS/Relay: USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

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 BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor head, black, length 126 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white **LCD:** transparent cover
Operating range temperature	0..+50 °C
Protection (IP)	IP20, enclosure IP65
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm² **VV:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm, **LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	PVC, 0,25 mm², black
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories)

Room pendulum sensor CO2 + temperature active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LP+ CO2 temp VV L5000		690331	Q1	323,40
LP+ CO2 LCD temp VV L5000	✓	764957	Q1	369,60

Room pendulum sensor CO2 + temperature BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LP+ CO2 temp_rH RS485 Modbus L5000	✓	776233	Q1	418,00
LP+ CO2 LCD temp_rH RS485 Modbus L5000	✓	774376	Q1	464,20

Options	
Description	**€**
RS485 BACnet (MS/TP)	51,60
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO for 24 V ~ or 24 V = / 3 A	48,40
LCD 29x35 mm, RGB backlight	46,20
VV: Add for additional humidity sensor	43,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

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
Material in touch with media	Sensor head, Ø=30 mm, ABS, white
Operating range temperature	-35..+70 °C
Protection (IP)	IP30, according to EN 60529
Connection cable	PVC, 0,25 mm², 2-wire, grey
Mounting	facet mounting
Notes	active types for temperature and humidity available (FT-RDF18+)

Ceiling flush mount sensor temperature passive

Item description	Item No.	Group	€
RDF18 Pt100 L1000	471237	T2	41,70
RDF18 Pt100 1/3 DIN L1000	471244	T2	46,60
RDF18 Pt1000 L1000	459235	T2	44,50
RDF18 Pt1000 1/3 DIN L1000	458276	T2	48,50
RDF18 Ni1000 L1000	463669	T2	44,20
RDF18 Ni1000TK5000 L1000	471251	T2	48,50
RDF18 NTC10k L1000	457828	T2	40,40

Options

Description	€
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
Add per meter of connection cable 2-wire -35..+100 °C	1,40
Add per meter of connection cable 3-wire -35..+100 °C	1,60
Add per meter of connection cable 4-wire -35..+100 °C	1,90
Connection enclosure USE-S incl. mounting base pure white	17,30
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor FeT/Staefa	27,80

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 BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: **VV/AA:** 0..+50 °C (default setting) **LCD/BUS:** -20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C adjustable at the transducer, optionally configurable via app or uConfig
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point adjustable at the transducer, optionally configurable
Power supply	**VV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **AA:** 15..24 V = (±10%) SELV **LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**VV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **AA:** max. 1 W (24 V =) **LCD/BUS:** typ. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor head, Ø=30 mm, ABS, white
Display	LCD 29x35 mm, RGB backlight
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white **LCD:** transparent cover
Operating range temperature	-35..+70 °C
Protection (IP)	IP30, according to EN 60529 enclosure IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm² **VV/AA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	flat ribbon cable, for mounting 15 mm from the sensor head, separable by means of RJ12 socket and plug, black
Mounting	facet mounting
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories)

Ceiling flush mount sensor temperature + humidity active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
RDF18+ temp_rH VV	✓	659031	H1	357,20
RDF18+ temp_rH AA	✓	659055	H1	376,40

Options	
Description	**€**
RS485 Modbus	51,60
RS485 BACnet (MS/TP)	51,60
Add to price of RS485 Modbus for LON FT	86,90
LCD 29x35 mm, RGB backlight in enclosure USE-M with option board	79,50

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70

RDF-IR

Ceiling flush-mounted sensor for surface temperature measurement in rooms, office spaces and other workplaces. Using the infrared 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

RDF-IR Dual

0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	radiation temperature
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	0..+50 °C (default setting), selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, adjustable at the transducer
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	typ. 0,6 W (24 V =), 1,5 VA (24 V ~)
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-20..+70 °C
Protection (IP)	IP30, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm² **V/VV:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm, **LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	patch cable, RJ45 plug, **Dual:** 2x patch cable, RJ45 plug
Delivery content	incl. mounting base enclosure USE-M pure white

Ceiling flush mount sensor radiation temperature active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
RDF-IR V L1500	✓	699150	T1	174,40
RDF-IR Dual VV 2xL1500	✓	699167	T1	228,50

Ceiling flush mount sensor radiation temperature BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
RDF-IR RS485 BACnet (MS/TP) L1500	✓	732604	T1	226,00
RDF-IR Dual RS485 BACnet (MS/TP) 2xL1500	✓	748087	T1	280,10
RDF-IR RS485 Modbus L1500	✓	774789	T1	226,00
RDF-IR Dual RS485 Modbus 2xL1500	✓	774796	T1	280,10

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90
LCD 29x35 mm, RGB backlight	46,20

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Sensor wire 1,5 m with RJ45 connector	628785	A1	6,90
Sensor wire 3 m with RJ45 connector	708852	A1	8,80
Sensor wire 7,5 m with RJ45 connector	708869	A1	16,30

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	temperature, luminosity, motion
Configuration	potentiometer
Output switch contact	1x contact NO, load max. 1 A for 24 V =/~, floating with follow-up time 1 second..30 minutes, selectable at the device
Output signal temperature	0..+50 °C
Measuring range light	0..1000 lux (10 bit)
Dectection range	cone-shaped, detection range, angle 105°, 444 detection zones – with an installation height of 2,7 m circular detection range will have a Ø=7 m
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 1,5 W (24 V =), 4 VA (24 V ~)
Enclosure	ABS
Colour	pure white
Operating range temperature	0..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	terminal block, max. 1,5 mm², pluggable
Mounting	ceiling flush mount or with enclosure for surface mounting

Ceiling flush mount sensor luminosity/motion active			
Item description	**Item No.**	**Group**	**€**
MDS Standard V	271318	L2	215,00
MDS Standard temp VV	280433	L2	233,40

Accessories			
Item description	**Item No.**	**Group**	**€**
Enclosure for surface mounting MDS pure white	448512	A1	58,20

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	1x contact NO, load max. 1 A for 24 V =/~, floating with follow-up time 8 seconds
Dectection range	**Standard:** detection range, angle 110°/93° (H/V) – with an installation height of 2,5 m range detection will be 7,1x5,3 m **Small Range:** detection range, angle 100°/82° (H/V) – with an installation height of 2,5 m range detection will be 6x4,3 m **Spot:** detection range, angle 38°/22° (H/V) – with an installation height of 2,5 m range detection will be 1,7x1 m
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,5 W (24 V =), 1,1 VA (24 V ~)
Enclosure	ABS
Operating range temperature	-20..+50 °C
Protection (IP)	IP20, according to EN 60529
Connection	plug-in terminal, max. 1,5 mm²
Connection cable	PVC, 0,25 mm²
Mounting	ceiling flush mount

Ceiling flush mount sensor motion relay

Item description	Item No.	In stock	Group	€
RDI Standard	187060	⛃	L2	111,90
RDI Small Range	426503		L2	111,90
RDI Spot	436670		L2	111,90

LDF+

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).

straight prism

Dual

diagonal prism

Dual

0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	luminosity
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Output switch contact	**Relay:** 2x floating contact NO for 24 V ~ or 24 V = / 3 A
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Measuring range light	selectable from 6 ranges 0..200 lux | 0..1000 lux | 0..2 klux | 0..10 klux | 0..20 klux | 0..50 klux, optionally configurable
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	typ. 0,6 W (24 V =), , max. 40 mA, 1,5 VA (24 V ~)
Material in touch with media	prism: acrylic glass clear straight (mainly for interior lighting) diagonal (mainly for outdoor lighting)
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-25..+65 °C
Protection (IP)	IP30, enclosure IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **V/VV/A/AA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm, **Relay/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	patch cable, RJ45 plug, 2x patch cable, RJ45 plug
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories)

LDF+ active 0..10 V

Ceiling flush mount sensor luminosity active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LDF+ V L1500 staight prism	✓	662604	L2	184,10
LDF+ V L1500 diagonal prism	✓	662628	L2	184,10
LDF+ A L1500 staight prism	✓	662635	L2	184,10
LDF+ A L1500 diagonal prism	✓	662642	L2	184,10
LDF+ V L1500 staight prism relay	✓	707336	L2	228,40
LDF+ V L1500 diagonal prism relay	✓	707350	L2	228,40

LDF+ Dual active 2x0..10 V

Dual ceiling flush mount sensor luminosity active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LDF+ Dual VV 2xL1500 staight prism	✓	700849	L1	239,40
LDF+ Dual VV 2xL1500 diagonal prism	✓	700856	L1	239,40
LDF+ Dual AA 2xL1500 staight prism	✓	700863	L1	258,60
LDF+ Dual AA 2xL1500 diagonal prism	✓	700870	L1	258,60
LDF+ Dual VV 2xL1500 staight prism relay	✓	707374	L1	283,70
LDF+ Dual VV 2xL1500 diagonal prism relay	✓	707381	L1	283,70

LDF+ BUS

Ceiling flush mount sensor luminosity BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LDF+ RS485 BACnet (MS/TP) L1500 staight prism	✓	700900	L1	217,10
LDF+ RS485 BACnet (MS/TP) L1500 diagonal prism	✓	700917	L1	217,10
LDF+ RS485 Modbus L1500 staight prism	✓	700887	L1	217,10
LDF+ RS485 Modbus L1500 diagonal prism	✓	700894	L1	217,10

LDF+ Dual BUS

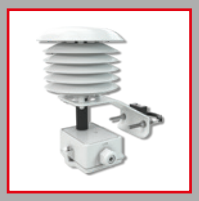
Dual ceiling flush mount sensor luminosity BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LDF+ Dual RS485 BACnet (MS/TP) 2xL1500 staight prism	✓	700948	L1	272,40
LDF+ Dual RS485 BACnet (MS/TP) 2xL1500 diagonal prism	✓	700955	L1	272,40
LDF+ Dual RS485 Modbus 2xL1500 staight prism	✓	700924	L1	272,40
LDF+ Dual RS485 Modbus 2xL1500 diagonal prism	✓	700931	L1	272,40

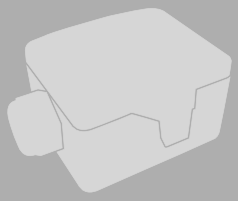
Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO for 24 V ~ or 24 V = / 3 A	48,40
LCD 29x35 mm, RGB backlight	46,20

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Sensor wire 1,5 m with RJ45 connector	628785	A1	6,90
Sensor wire 3 m with RJ45 connector	708852	A1	8,80
Sensor wire 7,5 m with RJ45 connector	708869	A1	16,30
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

Outdoor Application

With our outdoor sensors, you always get the optimal solution for your application. Depending on type, the integrated sensor technology measures temperature, humidity, enthalpy, dew point, CO2 and VOC content, brightness or atmospheric air pressure and makes our products incomparably flexible.





Outdoor Sensors

AGS54+	Temperature	**268**
AGS55+	Temperature	**270**
FTA54+	Temperature, humidity	**274**
WSA	Temperature, humidity	**276**
LA+	Temperature, humidity, CO2, VOC	**278**
Li65+	Light, air pressure, temp., humidity	**282**

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
Configuration	jumper
Enclosure	USE-S, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-35..+90 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry flextherm M20 for wire Ø=4,5..9 mm, removable plug-in terminal, max. 2,5 mm²
Delivery content	incl. mounting base enclosure USE-S pure white, incl. mounting set (screws and accessories)

Outdoor sensor temperature – passive				
Item description	**Item No.**	**In stock**	**Group**	**€**
AGS54+ Pt100	622837		T2	18,10
AGS54+ Pt100 1/3 DIN	622844		T2	23,00
AGS54+ Pt1000	622851	●	T2	20,90
AGS54+ Pt1000 1/3 DIN	622783		T2	24,90
AGS54+ Ni1000	622806		T2	20,60
AGS54+ Ni1000TK5000	622813	●	T2	24,90
AGS54+ NTC10k	622790	●	T2	16,80
AGS54+ NTC10k Precon	622868		T2	16,80
AGS54+ NTC5k	624275		T2	16,80
AGS54+ NTC20k	622875		T2	16,80
AGS54+ NTC1,8k	643825		T2	16,80
AGS54+ LM235Z	622820		T2	18,90
AGS54+ KTY81-110	622899		T2	24,90
AGS54+ KTY81-121	622905		T2	24,90
AGS54+ KTY81-122	622912		T2	24,90
AGS54+ KTY81-210	622929		T2	24,90

Options	
Description	**€**
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
Add to price of NTC10k for sensor NTC10k Carel	0,00
Add to price of NTC10k for sensor FeT/Staefa	27,80

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Housing protection BS150, transparent	730075	A1	27,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

AGS55+

Outdoor temperature sensor with external stainless steel probe (fast response) 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.

AGS55+

AGS55+ relay / BUS

AGS55+ LCD

passive / 0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: selectable from 4 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 **TRV/TRA/Basic:** -20..+80 °C (default setting) **Relay/LCD/BUS:** -50..+50 °C (default setting)
Power supply	**TRV/Basic:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV, **TRA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** typ. 0,5 W (24 V =) **Basic:** max. 0,7 W (24 V =), 1,8 VA (24 V ~) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor probe, Ø=6 mm, stainless steel V2A (1.4305)
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**passive/TRV/TRA/Basic:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, **LCD:** transparent cover
Operating range temperature	-35..+90 °C
Protection (IP)	IP65, according to EN 60529

Technical Data	
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **passive/TRV/TRA/Basic:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm, **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting set (screws and accessories) **passive/TRV/TRA/Basic:** incl. mounting base enclosure USE-S pure white **Relay/LCD/BUS:** incl. mounting base enclosure USE-M pure white

AGS55+ passive

Outdoor sensor temperature – passive				
Item description	**Item No.**	**In stock**	**Group**	**€**
AGS55+ Pt100	622998		T2	39,40
AGS55+ Pt100 1/3 DIN	623001		T2	44,30
AGS55+ Pt1000	623018	⛃	T2	42,20
AGS55+ Pt1000 1/3 DIN	622943		T2	46,20
AGS55+ Ni1000	622967		T2	41,90
AGS55+ Ni1000TK5000	622974		T2	46,20
AGS55+ NTC10k	622950		T2	38,10
AGS55+ NTC10k Precon	623025		T2	38,10
AGS55+ NTC5k	624268		T2	38,10
AGS55+ NTC20k	623032		T2	38,10
AGS55+ NTC1,8k	645812		T2	38,10
AGS55+ LM235Z	622981		T2	40,20
AGS55+ KTY81-110	623049		T2	46,20
AGS55+ KTY81-121	623056		T2	46,20
AGS55+ KTY81-122	623063		T2	46,20
AGS55+ KTY81-210	623070		T2	46,20

Options	
Description	**€**
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
Add to price of NTC10k for sensor NTC10k Carel	0,00
Add to price of NTC10k for sensor FeT/Staefa	27,80

AGS55+ active

Outdoor sensor temperature – active				
Item description	**Item No.**	**In stock**	**Group**	**€**
AGS55+ TRV MultiRange	623087		T2	90,80
AGS55+ TRA MultiRange	623094	⛀	T2	90,80

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Housing protection BS150, transparent	730075	A1	27,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

AGS55+ Relay / LCD

Outdoor sensor temperature – active – 0..10 (0..5) V + relay				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AGS55+ TRV MultiRange Relais	✓	663069	T2	139,20

Outdoor sensor temperature – LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AGS55+ LCD TRV MultiRange	✓	658614	T2	137,00
AGS55+ LCD TRA MultiRange	✓	658621	T2	137,00
AGS55+ LCD TRV MultiRange Relais	✓	663076	T2	185,40

AGS55+ BUS

Outdoor sensor temperature – BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AGS55+ Basic RS485 Modbus		747844	T2	90,80
AGS55+ RS485 BACnet (MS/TP)	✓	699686	T2	126,80
AGS55+ LCD RS485 BACnet (MS/TP)	✓	699693	T2	173,00
AGS55+ RS485 Modbus	✓	658584	T2	126,80
AGS55+ LCD RS485 Modbus	✓	658607	T2	173,00
AGS55+ LON	✓	658577	T2	213,70

Accessories			
Item description	**Item No.**	**Group**	**€**
Basic RS485 Modbus: Mounting clip enclosure USE-S pure white	667739	A1	5,70
Basic RS485 Modbus: Mounting base enclosure USE-S pure white	667722	A1	6,70
Mounting base enclosure USE-M pure white	668354	A1	9,60
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Housing protection BS150, transparent	730075	A1	27,50
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

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. 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 BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point
Configuration	USEapp, App, uConfig, BUS, jumper LoRaWAN® Downlink
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C adjustable at the transducer, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Power supply	**TRV/Basic:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** typ. 1 W (24 V =) **Basic:** max. 0,7 W (24 V =), 1,8 VA (24 V ~), **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Pipe, PC, pure white, with filter stainless steel wire mesh
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Operating range temperature	-20..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **TRV/TRA/Basic:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm, **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm

Technical Data	
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories) incl. sun/rain protection PC, white

Outdoor sensor humidity + temperature – active

Item description	USEapp	Item No.	In stock	Group	€
FTA54+ VV		659147	⛀	H1	192,50
FTA54+ AA		659154	⛀	H1	211,70
FTA54+ VV relay	✓	661003		H1	240,90
FTA54+ LCD VV	✓	660983		H1	238,70
FTA54+ LCD AA	✓	660990		H1	257,90
FTA54+ LCD VV relay	✓	661010		H1	287,10

Outdoor sensor humidity + temperature – BUS

Item description	USEapp	Item No.	Group	€
FTA54+ Basic RS485 Modbus		747752	H1	219,80
FTA54+ RS485 BACnet (MS/TP)	✓	700191	H1	239,40
FTA54+ LCD RS485 BACnet (MS/TP)	✓	700214	H1	285,60
FTA54+ RS485 Modbus	✓	659178	H1	239,40
FTA54+ LCD RS485 Modbus	✓	661034	H1	285,60

Options

Description	€
Add for additional passive temperature sensor	16,30
Add to price of RS485 Modbus for LON FT	86,90

Accessories

Item description	Item No.	Group	€
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
Filter stainless steel, wire mesh FTK+ / FTA54+ / FTP+ (spare part)	231169	A1	11,90
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

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 BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output, -20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C adjustable at the transducer, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point
Power supply	**VV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **AA:** 15..24 V = (±10%) SELV **BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**VV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **AA:** max. 1 W (24 V =) **BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Pipe, Ø=19,5 mm, PA6, with filter stainless steel wire mesh weather protection PC, stainless steel
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**VV/AA:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Operating range temperature	-20..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **VV/AA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Mounting	mounting at the wall or at a pole
Delivery content	incl. mounting set (screws and accessories)

WSA active

Weather protected outdoor sensor humidity + temperature – active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
WSA VV	✓	626408	H2	311,10
WSA AA	✓	626415	H2	330,30

Options	
Description	**€**
LCD 29x35 mm, RGB backlight in enclosure USE-M with option board	79,50
Add for additional passive temperature sensor	16,30

WSA BUS

Weather protected outdoor sensor humidity + temperature – BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
WSA temp_rH RS485 BACnet (MS/TP)	✓	700184	H1	357,90
WSA temp_rH RS485 Modbus	✓	626439	H1	357,90

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90
LCD 29x35 mm, RGB backlight	46,20

Accessories			
Item description	**Item No.**	**Group**	**€**
Filter stainless steel, wire mesh FTK+ / FTA54+ / FTP+ (spare part)	231169	A1	11,90
Weather protection for FTK+, WSA (replacement)	625241	A1	82,20
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

LA+

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). 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+

LA+ (Temp)

LA+ (Temp_rH)

0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type) each output can be set to get a variable mix of CO2 and VOC by configuration via app or uConfig
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: 0..+50 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor, self-calibration
Power supply	15..35 V = SELV, 19..29 V ~ SELV **A/AA:** 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~) **A/AA:** max. 2,5 W (24 V =)
Material in touch with media	**Temp:** Sensor probe, stainless steel V2A (1.4305) **Temp+rH:** Pipe, PC, with filter stainless steel wire mesh
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, for example to display the air quality optionally configurable via app or uConfig
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, **LCD:** transparent cover

Technical Data	
Operating range temperature	0..+50 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **V/VV/3xV/A/AA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **Relay/BUS/LCD:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories) incl. sun/rain protection PC, white
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

Outdoor sensor CO2 – active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LA+ CO2 V		690171	Q1	263,30
LA+ CO2 A	✓	693424	Q1	263,30
LA+ CO2 temp VV	✓	700542	Q1	310,70
LA+ CO2 temp AA	✓	700559	Q1	329,90
LA+ CO2 temp VV relay	✓	700566	Q1	359,10
LA+ CO2 temp_rH 3xV	✓	700573	Q1	367,40

Options	
Description	**€**
LCD 29x35 mm, RGB backlight	46,20

Outdoor sensor CO2 – BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LA+ CO2 RS485 BACnet (MS/TP)	✓	700580	Q1	314,90
LA+ CO2 temp RS485 BACnet (MS/TP)	✓	700641	Q1	362,30
LA+ CO2 RS485 Modbus	✓	698719	Q1	314,90
LA+ CO2 temp RS485 Modbus	✓	700634	Q1	362,30

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90
LCD 29x35 mm, RGB backlight	46,20
Add for additional outdoor humidity sensor	56,70

LA+ VOC

Outdoor sensor VOC – active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LA+ VOC V	✓	698405	Q1	241,20
LA+ VOC A	✓	698412	Q1	241,20
LA+ VOC temp VV	✓	698399	Q1	288,60
LA+ VOC temp AA	✓	698429	Q1	307,80
LA+ VOC temp VV relay	✓	703086	Q1	337,00
LA+ VOC temp_rH 3xV	✓	703093	Q1	345,30

Options	
Description	**€**
LCD 29x35 mm, RGB backlight	46,20

Outdoor sensor VOC – BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LA+ VOC RS485 BACnet (MS/TP)	✓	700603	Q1	292,80
LA+ VOC temp RS485 BACnet (MS/TP)	✓	703161	Q1	340,20
LA+ VOC RS485 Modbus	✓	700597	Q1	292,80
LA+ VOC temp RS485 Modbus	✓	703154	Q1	340,20

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90
LCD 29x35 mm, RGB backlight	46,20
Add for additional outdoor humidity sensor	56,70

LA+ CO2+VOC

Outdoor sensor CO2 + VOC or mix – active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LA+ CO2+VOC VV	✓	698993	Q1	386,20
LA+ CO2+VOC AA	✓	699006	Q1	405,40
LA+ CO2+VOC VV relay	✓	700535	Q1	434,60

Options	
Description	**€**
LCD 29x35 mm, RGB backlight	46,20
Add for additional passive temperature sensor	16,30
Add for additional temperature sensor	21,60
Add for additional outdoor humidity sensor	56,70

Outdoor sensor CO2 + VOC or mix – BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LA+ CO2+VOC RS485 BACnet (MS/TP)	✓	700627	Q1	437,80
LA+ CO2+VOC temp_rH RS485 BACnet (MS/TP)	✓	700665	Q1	528,20
LA+ CO2+VOC RS485 Modbus	✓	700610	Q1	437,80
LA+ CO2+VOC temp_rH RS485 Modbus	✓	700658	Q1	528,20

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90
LCD 29x35 mm, RGB backlight	46,20
Add for additional temperature sensor	21,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

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. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

Li65+

Li65+ Temp

Li65+ Temp_rH

0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, luminosity, atmospheric pressure
Configuration	USEapp, App, uConfig, BUS, jumper LoRaWAN® Downlink
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C adjustable at the transducer, optionally configurable
Measuring range humidity	0..100% rH non-condensing
Measuring range light	0..1000 lux (default setting) selectable from 6 ranges 0..200 lux | 0..1000 lux | 0..2 klux | 0..10 klux | 0..20 klux | 0..50 klux
Measuring range atm. pressure	500..1500 hPa
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	typ. 0,6 W (24 V =), 1,5 VA (24 V ~)
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, translucent cover PC
Operating range temperature	-30..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **V/VV/3xV/4xV/A/AA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories)

Li65+ active

Outdoor sensor light – active					
Item description	**USEapp**	**Item No.**	**In stock**	**Group**	**€**
Li65+ V	✓	662680	⛃	L2	152,60
Li65+ A	✓	662697	⛃	L2	152,60

Outdoor sensor light + temperature – active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
Li65+ temp VV	✓	700672	L1	178,20
Li65+ temp AA	✓	700689	L1	197,40
Li65+ temp VV relay	✓	707305	L1	222,50

Outdoor sensor light + temperature + humidity + atmospheric pressure – active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
Li65+ temp_rH 3xV	✓	700696	L1	221,20
Li65+ temp_rH_hPa 4xV	✓	700702	L1	264,20

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

Li65+ BUS

Outdoor sensor light + temperature – BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
Li65+ temp RS485 BACnet (MS/TP)	✓	700740	L1	229,00
Li65+ temp RS485 Modbus	✓	700733	L1	229,00

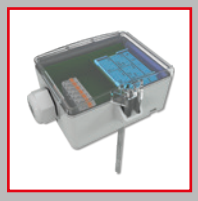
Outdoor sensor light + temperature + humidity + atmospheric pressure – BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
Li65+ temp_rH RS485 BACnet (MS/TP)	✓	700764	L1	272,00
Li65+ temp_rH_hPa RS485 BACnet (MS/TP)	✓	700788	L1	315,00
Li65+ temp_rH RS485 Modbus	✓	700757	L1	272,00
Li65+ temp_rH_hPa RS485 Modbus	✓	700771	L1	315,00

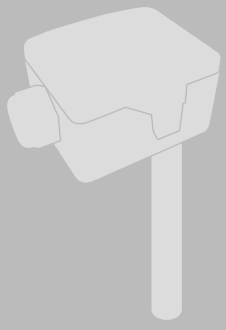
Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

Duct Application

Our duct and immersion sensors reliably measure and monitor temperature, humidity content or air quality in ducts or pipes of heating, ventilation and air conditioning systems.





Duct Sensors

AKF10+	Temperature	**286**
FTK+	Temperature, humidity	**294**
LK+	CO2, VOC, temperature, humidity	**298**
FSK01	Humidity	**306**
AVT	Air flow, temperature	**307**

Average Duct Sensors

MWF+	Temperature	**308**
MWF400+	Temperature	**311**

Screw-in Duct Sensors

SFK02+	Temperature	**314**
SFK02+ FR	Temperature	**321**
SFK01	Temperature	**325**
SFK03	Temperature	**327**

High Temperature Duct Sensors

KFK01	Temperature	**331**
KFK03	Temperature	**334**

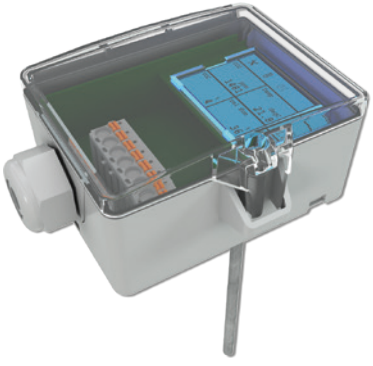
AKF10+

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. 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

passive / 0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: selectable from 4 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C **TRV/TRA:** 0..+160 °C (default setting) **Relay/LCD/BUS:** -20..+80 °C (default setting)
Power supply	**TRV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV/Basic:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** typ. 0,5 W (24 V =) **Basic:** max. 0,7 W (24 V =), 1,8 VA (24 V ~) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor probe: Ø=6 mm, stainless steel V4A (1.4571) suitable for usage in aggressive media
Installation length	50 mm, 100 mm, 150 mm, 200 mm, 250 mm, 300 mm, 450 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**passive/TRV/TRA/Basic:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, **LCD:** transparent cover
Operating range temperature	-50..+160 °C | **NTC10k:** -50..+150 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **passive/TRV/TRA/Basic:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting set (screws and accessories) **passive/TRV/TRA/Basic:** incl. mounting clip enclosure USE-S pure white **Relay/LCD/BUS:** incl. mounting flange MF6DS flexible

AKF10+ passive

Duct/immersion sensor -50..+150 °C – NTC10k			T3
Item description	Item No.		€
AKF10+ NTC10k 050.06	620864		37,50
AKF10+ NTC10k 100.06	620871	≡	38,80
AKF10+ NTC10k 150.06	620888	≡	40,30
AKF10+ NTC10k 200.06	620895		41,00
AKF10+ NTC10k 250.06	620901		43,00
AKF10+ NTC10k 300.06	620918		44,30
AKF10+ NTC10k 450.06	620925		46,40

Duct/immersion sensor -50..+160 °C – Pt100 DIN cl. B		T3
Item description	Item No.	€
AKF10+ Pt100 050.06	621175	38,80
AKF10+ Pt100 100.06	621182	40,10
AKF10+ Pt100 150.06	621199	41,60
AKF10+ Pt100 200.06	621205	42,30
AKF10+ Pt100 250.06	621212	44,30
AKF10+ Pt100 300.06	621229	45,60
AKF10+ Pt100 450.06	621236	47,70

Duct/immersion sensor -50..+160 °C – Pt100 1/3 DIN		T3
Item description	Item No.	€
AKF10+ Pt100 1/3 DIN 050.06	621243	43,70
AKF10+ Pt100 1/3 DIN 100.06	621250	45,00
AKF10+ Pt100 1/3 DIN 150.06	621267	46,50
AKF10+ Pt100 1/3 DIN 200.06	621274	47,20
AKF10+ Pt100 1/3 DIN 250.06	621281	49,20
AKF10+ Pt100 1/3 DIN 300.06	621298	50,50
AKF10+ Pt100 1/3 DIN 450.06	621304	52,60

Duct/immersion sensor -50..+160 °C – Pt1000 DIN cl. B			T3
Item description	Item No.		€
AKF10+ Pt1000 050.06	621311	≡	41,60
AKF10+ Pt1000 100.06	621328	≡	42,90
AKF10+ Pt1000 150.06	621335	≡	44,40
AKF10+ Pt1000 200.06	621342	≡	45,10
AKF10+ Pt1000 250.06	621359	≡	47,10
AKF10+ Pt1000 300.06	621366		48,40
AKF10+ Pt1000 450.06	621373		50,50

Duct/immersion sensor -50..+160 °C – Pt1000 1/3 DIN		T3
Item description	Item No.	€
AKF10+ Pt1000 1/3 DIN 050.06	620796	45,60
AKF10+ Pt1000 1/3 DIN 100.06	620802	46,90
AKF10+ Pt1000 1/3 DIN 150.06	620819	48,40
AKF10+ Pt1000 1/3 DIN 200.06	620826	49,10
AKF10+ Pt1000 1/3 DIN 250.06	620833	51,10
AKF10+ Pt1000 1/3 DIN 300.06	620840	52,40
AKF10+ Pt1000 1/3 DIN 450.06	620857	54,50

Duct/immersion sensor -50..+160 °C – Ni1000 DIN cl. B			T3
Item description	Item No.		€
AKF10+ Ni1000 050.06	620932		41,30
AKF10+ Ni1000 100.06	620949	≡	42,60
AKF10+ Ni1000 150.06	620956	≡	44,10
AKF10+ Ni1000 200.06	620963	≡	44,80
AKF10+ Ni1000 250.06	620970	≡	46,80
AKF10+ Ni1000 300.06	620987		48,10
AKF10+ Ni1000 450.06	620994		50,20

Duct/immersion sensor -50..+160 °C – Ni1000TK5000			T3
Item description	Item No.		€
AKF10+ Ni1000TK5000 050.06	621007		45,60
AKF10+ Ni1000TK5000 100.06	621014	≡	46,90
AKF10+ Ni1000TK5000 150.06	621021	≡	48,40
AKF10+ Ni1000TK5000 200.06	621038	≡	49,10
AKF10+ Ni1000TK5000 250.06	621045		51,10
AKF10+ Ni1000TK5000 300.06	621052		52,40
AKF10+ Ni1000TK5000 450.06	621069		54,50

Options	
Description	**€**
3-wire connection -50..+160 °C (3-wire)	2,50
4-wire connection -50..+160 °C (4-wire)	6,70
PT100 (1/3 DIN) | PT1000 (1/3 DIN) | Ni1000 | Ni1000TK5000: Temperature -80..+260 °C (T260)	13,30
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor DS18B20 1-wire	1,60
Add to price of NTC10k for sensor FeT/Staefa	27,80

AKF10+ active

Duct/immersion sensor -50..+160 °C active 0..10 (0..5) V			
Item description	**Item No.**	**Group**	**€**
AKF10+ TRV MultiRange 050.06	621595	T3	89,50
AKF10+ TRV MultiRange 100.06	621601	T3	90,60
AKF10+ TRV MultiRange 150.06	621618	T3	91,70
AKF10+ TRV MultiRange 200.06	621625	T3	92,10
AKF10+ TRV MultiRange 250.06	621632	T3	93,60
AKF10+ TRV MultiRange 300.06	621649	T3	94,80
AKF10+ TRV MultiRange 450.06	621656	T3	96,10

Duct/immersion sensor -50..+160 °C active 4..20 mA				
Item description	**Item No.**	**In stock**	**Group**	**€**
AKF10+ TRA MultiRange 050.06	621663		T3	89,50
AKF10+ TRA MultiRange 100.06	621670	⛃	T3	90,60
AKF10+ TRA MultiRange 150.06	621687	⛃	T3	91,70
AKF10+ TRA MultiRange 200.06	621694		T3	92,10
AKF10+ TRA MultiRange 250.06	621700		T3	93,60
AKF10+ TRA MultiRange 300.06	621717		T3	94,80
AKF10+ TRA MultiRange 450.06	621724		T3	96,10

Duct/immersion sensor -50..+160 °C active 0..10 (0..5) V + relay			
Item description	**Item No.**	**Group**	**€**
AKF10+ TRV MultiRange 050.06 relay	663304	T2	167,40
AKF10+ TRV MultiRange 100.06 relay	663311	T2	168,50
AKF10+ TRV MultiRange 150.06 relay	663328	T2	169,60
AKF10+ TRV MultiRange 200.06 relay	663335	T2	170,00
AKF10+ TRV MultiRange 250.06 relay	663342	T2	171,50
AKF10+ TRV MultiRange 300.06 relay	663359	T2	172,70
AKF10+ TRV MultiRange 450.06 relay	663366	T2	174,00

Duct/immersion sensor -50..+160 °C active 0..10 (0..5) V LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AKF10+ LCD TRV MultiRange 050.06	✓	663380	T2	169,00
AKF10+ LCD TRV MultiRange 100.06	✓	663397	T2	170,10
AKF10+ LCD TRV MultiRange 150.06	✓	663403	T2	171,20
AKF10+ LCD TRV MultiRange 200.06	✓	663410	T2	171,60
AKF10+ LCD TRV MultiRange 250.06	✓	663427	T2	173,10
AKF10+ LCD TRV MultiRange 300.06	✓	663434	T2	174,30
AKF10+ LCD TRV MultiRange 450.06	✓	663441	T2	175,60

Duct/immersion sensor -50..+160 °C active 4..20 mA LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AKF10+ LCD TRA MultiRange 050.06	✓	663526	T2	169,00
AKF10+ LCD TRA MultiRange 100.06	✓	663533	T2	170,10
AKF10+ LCD TRA MultiRange 150.06	✓	663540	T2	171,20
AKF10+ LCD TRA MultiRange 200.06	✓	663557	T2	171,60
AKF10+ LCD TRA MultiRange 250.06	✓	663564	T2	173,10
AKF10+ LCD TRA MultiRange 300.06	✓	663571	T2	174,30
AKF10+ LCD TRA MultiRange 450.06	✓	663588	T2	175,60

Duct/immersion sensor -50..+160 °C active 0..10 (0..5) V + relay LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AKF10+ LCD TRV MultiRange 050.06 relay	✓	663458	T2	201,40
AKF10+ LCD TRV MultiRange 100.06 relay	✓	663465	T2	202,50
AKF10+ LCD TRV MultiRange 150.06 relay	✓	663472	T2	203,60
AKF10+ LCD TRV MultiRange 200.06 relay	✓	663489	T2	204,00
AKF10+ LCD TRV MultiRange 250.06 relay	✓	663496	T2	205,50
AKF10+ LCD TRV MultiRange 300.06 relay	✓	663502	T2	206,70
AKF10+ LCD TRV MultiRange 450.06 relay	✓	663519	T2	208,00

Options	
Description	**€**
Temperature -80..+260 °C (T260)	13,30

AKF10+ BUS

Duct/immersion sensor -50..+160 °C Basic RS485 Modbus			
Item description	**Item No.**	**Group**	**€**
AKF10+ Basic RS485 Modbus 050.06	747783	T2	89,50
AKF10+ Basic RS485 Modbus 100.06	748032	T2	90,60
AKF10+ Basic RS485 Modbus 150.06	747769	T2	91,70
AKF10+ Basic RS485 Modbus 200.06	747790	T2	92,10
AKF10+ Basic RS485 Modbus 250.06	748049	T2	93,60
AKF10+ Basic RS485 Modbus 300.06	747776	T2	94,80
AKF10+ Basic RS485 Modbus 450.06	748056	T2	96,10

Duct/immersion sensor -50..+160 °C RS485 BACnet (MS/TP)				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AKF10+ RS485 BACnet 050.06	✓	699174	T2	127,90
AKF10+ RS485 BACnet 100.06	✓	699181	T2	129,00
AKF10+ RS485 BACnet 150.06	✓	683838	T2	130,20
AKF10+ RS485 BACnet 200.06	✓	699198	T2	130,60
AKF10+ RS485 BACnet 250.06	✓	699204	T2	132,10
AKF10+ RS485 BACnet 300.06	✓	699211	T2	133,20
AKF10+ RS485 BACnet 450.06	✓	699228	T2	134,60

Duct/immersion sensor -50..+160 °C RS485 BACnet (MS/TP) LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AKF10+ LCD RS485 BACnet 050.06	✓	699235	T2	174,10
AKF10+ LCD RS485 BACnet 100.06	✓	699242	T2	175,20
AKF10+ LCD RS485 BACnet 150.06	✓	682848	T2	176,40
AKF10+ LCD RS485 BACnet 200.06	✓	699259	T2	176,80
AKF10+ LCD RS485 BACnet 250.06	✓	699266	T2	178,30
AKF10+ LCD RS485 BACnet 300.06	✓	699273	T2	179,40
AKF10+ LCD RS485 BACnet 450.06	✓	699280	T2	180,80

Duct/immersion sensor -50..+160 °C RS485 Modbus				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AKF10+ RS485 Modbus 050.06	✓	621823	T2	127,90
AKF10+ RS485 Modbus 100.06	✓	621830	T2	129,00
AKF10+ RS485 Modbus 150.06	✓	621847	T2	130,20
AKF10+ RS485 Modbus 200.06	✓	621854	T2	130,60
AKF10+ RS485 Modbus 250.06	✓	621861	T2	132,10
AKF10+ RS485 Modbus 300.06	✓	621878	T2	133,20
AKF10+ RS485 Modbus 450.06	✓	621885	T2	134,60

Duct/immersion sensor -50..+160 °C RS485 Modbus LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
AKF10+ LCD RS485 Modbus 050.06	✓	663618	T2	174,10
AKF10+ LCD RS485 Modbus 100.06	✓	663625	T2	175,20
AKF10+ LCD RS485 Modbus 150.06	✓	663632	T2	176,40
AKF10+ LCD RS485 Modbus 200.06	✓	663649	T2	176,80
AKF10+ LCD RS485 Modbus 250.06	✓	663656	T2	178,30
AKF10+ LCD RS485 Modbus 300.06	✓	663663	T2	179,40
AKF10+ LCD RS485 Modbus 450.06	✓	663670	T2	180,80

Options	
Description	**€**
Temperature -80..+260 °C (T260)	13,30

Accessories – passive / TRV / TRA

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70
Mounting kit AKF10+ for enclosure USE-S	748551	A1	8,30

Accessories – Relay / LCD / BUS

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

Accessories

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	A2	7,80
Mounting flange MF6 brass (suitable for Ø=6 mm)	3407	A1	7,80
Syringe thermal contact fluid	102308	A1	1,80
Mounting bracket with cable gland for duct sensors Ø=6 mm	670593	A1	14,80
Compression fittings KL6VA for Ø=6 mm with cutting ring, stainless steel	103213	A1	15,60

Thermowells brass for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	●	A2	9,90
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	●	A2	11,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015	●	A2	11,80
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022	●	A2	12,30
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985	●	A2	14,10
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039	●	A2	14,60
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046	●	A2	14,90

Thermowells stainless steel for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	●	A2	23,10
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	●	A2	25,30
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824	●	A2	27,40
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848	●	A2	28,70
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862	●	A2	35,60
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879	●	A2	37,30
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893	●	A2	38,60
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS			666473	●	A2	22,20

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. 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 BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C adjustable at the transducer, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Power supply	**VV/Basic:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **AA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**VV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **AA:** max. 1 W (24 V =) **Basic:** max. 0,7 W (24 V =), 1,8 VA (24 V ~) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Pipe, PA6, with filter stainless steel wire mesh, black, Ø=19,5 mm
Installation length	140 mm, 270 mm, 400 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**VV/AA/Basic:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC, **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC

Technical Data	
Colour	pure white, **LCD:** transparent cover
Operating range temperature	-20..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **VV/AA/Basic:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm, **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting flange incl. mounting set (screws and accessories)
Notes	air speed max. 12 m/s

FTK+ VV / AA

Duct sensor humidity + temperature active 0..10 (0..5) V				
Item description	**Item No.**	**In stock**	**Group**	**€**
FTK+ 140 VV	626347	⛃	H2	192,00
FTK+ 270 VV	626354	⛃	H2	200,70
FTK+ 400 VV	626361		H2	209,20

Duct sensor humidity + temperature active 4..20 mA			
Item description	**Item No.**	**Group**	**€**
FTK+ 140 AA	626378	H2	211,20
FTK+ 270 AA	626385	H2	219,90
FTK+ 400 AA	626392	H2	228,40

Options	
Description	**€**
Add for additional passive temperature sensor	16,30

FTK+ Relay / LCD

Duct sensor humidity + temperature active 0..10 (0..5) V + relay				
Item description	**USEapp**	**Item No.**	**Group**	**€**
FTK+ 140 VV Relais	✓	663151	H1	240,40
FTK+ 270 VV Relais	✓	663168	H1	249,10
FTK+ 400 VV Relais	✓	663175	H1	257,60

Duct sensor humidity + temperature active 0..10 (0..5) V LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
FTK+ 140 LCD VV	✓	663083	H1	271,50
FTK+ 270 LCD VV	✓	663090	H1	280,20
FTK+ 400 LCD VV	✓	663113	H1	288,70

Duct sensor humidity + temperature active 4..20 mA LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
FTK+ 140 LCD AA	✓	663120	H1	290,70
FTK+ 270 LCD AA	✓	663137	H1	299,40
FTK+ 400 LCD AA	✓	663144	H1	307,90

Duct sensor humidity + temperature active 0..10 (0..5) V + relay LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
FTK+ 140 LCD VV Relais	✓	663205	H1	286,60
FTK+ 270 LCD VV Relais	✓	663229	H1	295,30
FTK+ 400 LCD VV Relais	✓	663236	H1	303,80

Options	
Description	**€**
Add for additional passive temperature sensor	16,30

FTK+ BUS

Duct sensor humidity + temperature Basic RS485 Modbus			
Item description	**Item No.**	**Group**	**€**
FTK+ 140 Basic RS485 Modbus	747738	H1	192,00
FTK+ 270 Basic RS485 Modbus	747745	H1	200,70
FTK+ 400 Basic RS485 Modbus	756037	H1	209,20

Duct sensor humidity + temperature RS485 BACnet (MS/TP)				
Item description	**USEapp**	**Item No.**	**Group**	**€**
FTK+ 140 RS485 BACnet (MS/TP)	✓	700122	H1	243,60
FTK+ 270 RS485 BACnet (MS/TP)	✓	700139	H1	252,30
FTK+ 400 RS485 BACnet (MS/TP)	✓	700146	H1	260,80
FTK+ 140 LCD RS485 BACnet (MS/TP)	✓	700153	H1	289,80
FTK+ 270 LCD RS485 BACnet (MS/TP)	✓	692878	H1	298,50
FTK+ 400 LCD RS485 BACnet (MS/TP)	✓	700177	H1	307,00

Duct sensor humidity + temperature RS485 Modbus				
Item description	**USEapp**	**Item No.**	**Group**	**€**
FTK+ 140 RS485 Modbus	✓	659093	H1	243,60
FTK+ 270 RS485 Modbus	✓	659109	H1	252,30
FTK+ 400 RS485 Modbus	✓	659116	H1	260,80
FTK+ 140 LCD RS485 Modbus	✓	663243	H1	289,80
FTK+ 270 LCD RS485 Modbus	✓	663250	H1	298,50
FTK+ 400 LCD RS485 Modbus	✓	663267	H1	307,00

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90

Accessories – Relay / LCD / BUS

Accessories			
Item description	**Item No.**	**Group**	**€**
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

Accessories

Accessories			
Item description	**Item No.**	**Group**	**€**
Filter stainless steel, wire mesh FTK+ / FTA54+ / FTP+ (spare part)	231169	A1	11,90
Mounting flange MF20	612562	A1	14,40
Weather protection for FTK+, WSA (replacement)	625241	A1	82,20

LK+

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. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

LK+

LK+ LCD

0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, CO2, VOC
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type) **CO2+VOC:** each output can be set to get a variable mix of CO2 and VOC by configuration via app or uConfig
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: 0..+50 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C, optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Measuring range CO2	0..2000 ppm, 0..5000 ppm, optionally configurable
Measuring VOC (mixed gas)	heated metal oxide semiconductor
Power supply	15..35 V = SELV, 19..29 V ~ SELV
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	with filter stainless steel wire mesh, **types V:** without filter Pipe: Ø=19,5 mm, black
Installation length	180 mm **models without temperature:** 150 mm **types 100:** 100 **models 100 without temperature:** 70

Technical Data	
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Operating range temperature	0..+50 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **VV/AA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm, **Relay/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting flange incl. mounting set (screws and accessories)
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 ...) air speed 0,3..12 m/s

LK+ CO2 – active / Relay / LCD

Duct sensor CO2 active				
Item description	**Item No.**	**In stock**	**Group**	**€**
LK+ CO2 V	662253	⛀	Q2	254,70

Duct sensor CO2 + temperature active					
Item description	**USEapp**	**Item No.**	**In stock**	**Group**	**€**
LK+ CO2 temp VV		662260	⛀	Q2	302,10
LK+ CO2 temp AA	✓	662277		Q2	321,30
LK+ CO2 temp VV relay	✓	662307		Q1	350,50
LK+ CO2 LCD temp VV	✓	662284		Q1	348,30
LK+ CO2 LCD temp AA	✓	662291		Q1	367,50
LK+ CO2 LCD temp VV relay	✓	662314		Q1	396,70

Duct sensor CO2 + temperature + humidity active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2 temp_rH 3xV	✓	662321	Q2	345,10
LK+ CO2 LCD temp_rH 3xV	✓	662338	Q1	391,30

Options	
Description	**€**
Add for additional passive temperature sensor	16,30

LK+ CO2 – BUS

Duct sensor CO2 + temperature BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2 temp RS485 BACnet (MS/TP)	✓	700405	Q1	353,70
LK+ CO2 LCD temp RS485 BACnet (MS/TP)	✓	700436	Q1	399,90
LK+ CO2 temp RS485 Modbus	✓	662345	Q1	353,70
LK+ CO2 LCD temp RS485 Modbus	✓	662352	Q1	399,90

Duct sensor CO2 + temperature + humidity BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2 temp_rH RS485 BACnet (MS/TP)	✓	700467	Q1	396,70
LK+ CO2 LCD temp_rH RS485 BACnet (MS/TP)	✓	700504	Q1	442,90
LK+ CO2 temp_rH RS485 Modbus	✓	662376	Q1	396,70
LK+ CO2 LCD temp_rH RS485 Modbus	✓	662383	Q1	442,90

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF20	612562	A1	14,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

LK+ CO2 100 – active / Relay / LCD

Duct sensor CO2 active			
Item description	**Item No.**	**Group**	**€**
LK+ CO2 100 V	670418	Q2	254,70

Duct sensor CO2 + temperature active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2 100 temp VV		670432	Q2	302,10
LK+ CO2 100 temp AA	✓	670449	Q2	321,30
LK+ CO2 100 temp VV relay	✓	670456	Q1	350,50
LK+ CO2 100 LCD temp VV	✓	670463	Q1	348,30
LK+ CO2 100 LCD temp AA	✓	670470	Q1	367,50
LK+ CO2 100 LCD temp VV relay	✓	670487	Q1	396,70

Duct sensor CO2 + temperature + humidity active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2 100 temp_rH 3xV	✓	670494	Q2	345,10
LK+ CO2 100 LCD temp_rH 3xV	✓	670500	Q1	391,30

Options	
Description	**€**
Add for additional passive temperature sensor	16,30

LK+ CO2 100 – BUS

Duct sensor CO2 + temperature BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2 100 temp RS485 BACnet (MS/TP)	✓	704120	Q1	353,70
LK+ CO2 100 LCD temp RS485 BACnet (MS/TP)	✓	704137	Q1	399,90
LK+ CO2 100 temp RS485 Modbus	✓	670555	Q1	353,70
LK+ CO2 100 LCD temp RS485 Modbus	✓	670562	Q1	399,90

Duct sensor CO2 + temperature + humidity BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2 100 temp_rH RS485 BACnet (MS/TP)	✓	704144	Q1	396,70
LK+ CO2 100 LCD temp_rH RS485 BACnet (MS/TP)	✓	704151	Q1	442,90
LK+ CO2 100 temp_rH RS485 Modbus	✓	670579	Q1	396,70
LK+ CO2 100 LCD temp_rH RS485 Modbus	✓	670586	Q1	442,90

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF20	612562	A1	14,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

LK+ VOC – active / Relay / LCD

Duct sensor VOC active			
Item description	**Item No.**	**Group**	**€**
LK+ VOC V	662413	Q2	232,50

Duct sensor VOC + temperature active				
Item description		**Item No.**	**Group**	**€**
LK+ VOC temp VV		662437	Q2	279,90
LK+ VOC temp AA	✓	662444	Q2	299,10
LK+ VOC temp VV relay	✓	662475	Q1	328,30
LK+ VOC LCD temp VV	✓	662468	Q1	326,10
LK+ VOC LCD temp AA	✓	662482	Q1	345,30
LK+ VOC LCD temp VV relay	✓	662499	Q1	374,50

Duct sensor VOC + temperature + humidity active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ VOC temp_rH 3xV	✓	662505	Q2	322,90
LK+ VOC LCD temp_rH 3xV	✓	662529	Q1	369,10

Options	
Description	**€**
Add for additional passive temperature sensor	16,30

LK+ VOC – BUS

Duct sensor VOC + temperature BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ VOC temp RS485 BACnet (MS/TP)	✓	700412	Q1	331,50
LK+ VOC LCD temp RS485 BACnet (MS/TP)	✓	700443	Q1	377,70
LK+ VOC temp RS485 Modbus	✓	662536	Q1	331,50
LK+ VOC LCD temp RS485 Modbus	✓	662550	Q1	377,70

Duct sensor VOC + temperature + humidity BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ VOC temp_rH RS485 BACnet (MS/TP)	✓	700481	Q1	374,50
LK+ VOC LCD temp_rH RS485 BACnet (MS/TP)	✓	700511	Q1	420,70
LK+ VOC temp_rH RS485 Modbus	✓	662574	Q1	374,50
LK+ VOC LCD temp_rH RS485 Modbus	✓	662581	Q1	420,70

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF20	612562	A1	14,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

LK+ CO2+VOC – active / Relay / LCD

Duct sensor CO2 + VOC or mix active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2+VOC VV		662024	Q2	377,60
LK+ CO2+VOC AA	✓	662031	Q2	396,80
LK+ CO2+VOC VV relay	✓	662062	Q1	426,00
LK+ CO2+VOC LCD VV	✓	662079	Q1	423,80
LK+ CO2+VOC LCD AA	✓	662086	Q1	443,00
LK+ CO2+VOC LCD VV relay	✓	662093	Q1	472,20

Options	
Description	**€**
Add for additional passive temperature sensor	16,30

Duct sensor CO2 + VOC or mix + temperature active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2+VOC temp 3xV	✓	662130	Q2	425,00
LK+ CO2+VOC LCD temp 3xV	✓	662147	Q1	471,20

Duct sensor CO2 + VOC or mix + temperature + humidity active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2+VOC temp_rH 4xV	✓	662154	Q2	468,00
LK+ CO2+VOC LCD temp_rH 4xV	✓	662161	Q1	514,20

LK+ CO2+VOC – BUS

Duct sensor CO2 + VOC or mix BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2+VOC RS485 BACnet (MS/TP)	✓	700368	Q1	429,20
LK+ CO2+VOC LCD RS485 BACnet (MS/TP)	✓	700382	Q1	475,40
LK+ CO2+VOC RS485 Modbus	✓	662109	Q1	429,20
LK+ CO2+VOC LCD RS485 Modbus	✓	662116	Q1	475,40

Duct sensor CO2 + VOC or mix + temperature BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2+VOC temp RS485 BACnet (MS/TP)	✓	700429	Q1	476,60
LK+ CO2+VOC LCD temp RS485 BACnet (MS/TP)	✓	700450	Q1	522,80
LK+ CO2+VOC temp RS485 Modbus	✓	662178	Q1	476,60
LK+ CO2+VOC LCD temp RS485 Modbus	✓	662185	Q1	522,80

Duct sensor CO2 + VOC or mix + temperature + humidity BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LK+ CO2+VOC temp_rH RS485 BACnet (MS/TP)	✓	682862	Q1	519,60
LK+ CO2+VOC LCD temp_rH RS485 BACnet (MS/TP)	✓	700528	Q1	565,80
LK+ CO2+VOC temp_rH RS485 Modbus	✓	662192	Q1	519,60
LK+ CO2+VOC LCD temp_rH RS485 Modbus	✓	662208	Q1	565,80

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF20	612562	A1	14,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

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.

Technical Data	
Measured values	relative humidity
Operating functions	threshold adjustment
Operating elements	rotary button
Measuring range humidity	30..100% rH non-condensing
Material in touch with media	Pipe, Ø=16 mm, stainless steel, length 220 mm
Installation length	220 mm
Enclosure	ABS
Operating range temperature	0..+60 °C
Protection (IP)	IP54, IP64, according to EN 60529
Connection	cable entry M20 for wire Ø=8 mm, terminal block, max. 1,5 mm²
Notes	air speed max. 8 m/s with stainless steel filter, wire mesh (see accessories) max. 15 m/s with filter PTFE (see accessories) >15 m/s

Duct hygrostat

Item description	Item No.	Group	€
FSK01	427593	H1	264,50
FSK01 internal adjuster	708517	H1	264,50

Accessories

Item description	Item No.	Group	€
Mounting flange MF19	527705	A1	14,40
Wall mounting for duct hygrostat	429030	A1	45,80
Filter stainless steel, wire mesh FSK01 (spare part)	429047	A1	30,20

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.

Technical Data	
Measured values	temperature, Air velocity
Configuration	jumper
Output signal temperature	0..+50 °C
Measuring range velocity	0..2, 0..10, 0..20 m/s, optionally configurable
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	**AVT** | **AVT LCD:** max. 2 W **AVT LCD Relay:** max. 2,4 W
Material in touch with media	Sensor probe, Ø=10 mm, stainless steel V2A (1.4305), length 210 mm
Installation length	195 mm
Display	LCD 3.5“, 45.7x12.7 mm to show measured value
Enclosure	ABS, cover PC
Colour	light grey
Operating range temperature	0..+50 °C
Protection (IP)	IP54, according to EN 60529
Connection	terminal block, max. 1,5 mm² cable entry M16 for wire Ø=8 mm **Relay:**2x cable entry M16 for wire Ø=8 mm
Delivery content	incl. mounting flange
Notes	adjustable immersion length using mounting flange 50..180 mm adjustable switching threshold and hysteresis

Air velocity and temperature transmitter

Item description	Item No.	Group	€
AVT	831130	P1	176,70
AVT LCD	831147	P1	226,70
AVT LCD relay	831154	P1	250,40

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. 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

passive / 0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 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
Power supply	**TRV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** typ. 0,5 W (24 V =) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Installation length	3000 mm, 6000 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**passive/TRV/TRA:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, **LCD:** transparent cover
Operating range temperature	-30..+70 °C
Protection (IP)	IP65, according to EN 60529

Technical Data	
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **passive/TRV/TRA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting flange incl. mounting set (screws and accessories) incl. installation set

Duct averaging sensor -50..+80 °C		*T1*
Item description	**Item No.**	**€**
MWF+ Pt1000 L3000	620413	98,80
MWF+ Pt1000 L6000	620420	110,00
MWF+ Ni1000 L3000	620437	98,80
MWF+ Ni1000 L6000	620444	110,00
MWF+ Ni1000TK5000 L3000	675888	98,80
MWF+ Ni1000TK5000 L6000	674324	110,00
MWF+ Ni891 L3000	699297	139,70
MWF+ Ni891 L6000	699303	179,20

Duct averaging sensor 0..+50 °C		*T1*
Item description	**Item No.**	**€**
MWF+ NTC10k L3000	670128	136,20
MWF+ NTC10k L6000	670135	154,80
MWF+ NTC10k Precon L3000	670142	136,20
MWF+ NTC10k Precon L6000	670159	154,80
MWF+ NTC20k L3000	670166	136,20
MWF+ NTC20k L6000	670173	154,80

Duct averaging sensor temperature active 0..10 (0..5) V | 4..20 mA			
Item description	**Item No.**	**Group**	**€**
MWF+ TRV MultiRange L3000	620475	T1	164,30
MWF+ TRV MultiRange L6000	620482	T1	174,30
MWF+ TRA MultiRange L3000	620499	T1	164,30
MWF+ TRA MultiRange L6000	620505	T1	174,30

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-S pure white	667722	A1	6,70
Mounting kit universal for enclosure USE	698511	A1	10,70
Installation set TFR / MWF+	679466	A1	10,30

Duct averaging sensor temperature active 0..10 (0..5) V + relay				
Item description	**USEapp**	**Item No.**	**Group**	**€**
MWF+ TRV MultiRange relay L3000	✓	662758	T1	212,70
MWF+ TRV MultiRange relay L6000	✓	662765	T1	222,70

Duct averaging sensor temperature active 0..10 (0..5) V | 4..20 mA				
Item description	**USEapp**	**Item No.**	**Group**	**€**
MWF+ LCD TRV MultiRange L3000	✓	662772	T1	210,50
MWF+ LCD TRV MultiRange L6000	✓	662789	T1	220,50
MWF+ LCD TRA MultiRange L3000	✓	662796	T1	210,50
MWF+ LCD TRA MultiRange L6000	✓	662802	T1	220,50

Duct averaging sensor temperature active 0..10 (0..5) V + relay				
Item description	**USEapp**	**Item No.**	**Group**	**€**
MWF+ LCD TRV MultiRange relay L3000	✓	662819	T1	258,90
MWF+ LCD TRV MultiRange relay L6000	✓	662826	T1	268,90

Duct averaging sensor temperature RS485 BACnet (MS/TP)				
Item description	**USEapp**	**Item No.**	**Group**	**€**
MWF+ RS485 BACnet (MS/TP) L3000	✓	699310	T1	215,90
MWF+ RS485 BACnet (MS/TP) L6000	✓	699327	T1	225,90
MWF+ LCD RS485 BACnet (MS/TP) L3000	✓	699334	T1	262,10
MWF+ LCD RS485 BACnet (MS/TP) L6000	✓	699341	T1	272,10

Duct averaging sensor temperature RS485 Modbus				
Item description	**USEapp**	**Item No.**	**Group**	**€**
MWF+ RS485 Modbus L3000	✓	662833	T1	215,90
MWF+ RS485 Modbus L6000	✓	662840	T1	225,90
MWF+ LCD RS485 Modbus L3000	✓	662857	T1	262,10
MWF+ LCD RS485 Modbus L6000	✓	662864	T1	272,10

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Installation set TFR / MWF+	679466	A1	10,30

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. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation.

MWF400+

MWF400+ relay / BUS

passive / 0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: -20..+80 °C (default setting) selectable from 4 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
Power supply	**TRV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** max. 0,5 W (24 V =) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor rod, copper, bendable, Ø=4 mm Sensor neck, stainless steel V4A (1.4571), Ø=6 mm
Installation length	400 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**passive/TRV/TRA:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC

Technical Data	
Colour	pure white, **LCD:** transparent cover
Operating range temperature	-30..+80 °C
Operating range temperature enclosure	-20..+70
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **passive/TRV/TRA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting flange MF6DS flexible incl. mounting clip enclosure USE-S pure white incl. fixing kit rawlplugs and screws (2x each)

Duct averaging sensor -30..+80 °C passive			
Item description	**Item No.**	**Group**	**€**
MWF400+ Pt100	654166	T1	84,10
MWF400+ Pt1000	660518	T1	84,10
MWF400+ Ni1000	641395	T1	84,10
MWF400+ Ni1000TK5000	641425	T1	84,10
MWF400+ Ni891	699358	T1	84,10
MWF400+ NTC10k	641449	T1	82,00
MWF400+ NTC20k	670319	T1	82,00
MWF400+ NTC1,8k	670333	T1	82,00

Duct averaging sensor -30..+80 °C active			
Item description	**Item No.**	**Group**	**€**
MWF400+ TRV MultiRange	642088	T1	147,60
MWF400+ TRA MultiRange	642095	T1	147,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	A2	7,80
Mounting flange MF7 brass (suitable for MWF+ and Ø=7 mm)	102360	A1	7,80
Mounting kit universal for enclosure USE	698511	A1	10,70

Duct averaging sensor -30..+80 °C active 0..10 (0..5) V + relay				
Item description	**USEapp**	**Item No.**	**Group**	**€**
MWF400+ TRV MultiRange Relais	✓	662871	T1	196,00

Duct averaging sensor -30..+80 °C active LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
MWF400+ LCD TRV MultiRange	✓	662925	T1	193,80
MWF400+ LCD TRA MultiRange	✓	662956	T1	193,80

Duct averaging sensor -30..+80 °C 0..10 (0..5) V + relay				
Item description	**USEapp**	**Item No.**	**Group**	**€**
MWF400+ LCD TRV MultiRange Relais	✓	662963	T1	242,20

Duct averaging sensor -30..+80 °C BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
MWF400+ RS485 BACnet (MS/TP)	✓	699365	T1	244,90
MWF400+ LCD RS485 BACnet (MS/TP)	✓	699372	T1	291,10
MWF400+ RS485 Modbus	✓	662970	T1	244,90
MWF400+ LCD RS485 Modbus	✓	662987	T1	291,10

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	A2	7,80
Mounting flange MF7 brass (suitable for MWF+ and Ø=7 mm)	102360	A1	7,80
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

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. 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

passive / 0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: **TRV/TRA:** 0..+160 °C (default setting), **Relay/LCD/BUS:** -20..+80 °C (default setting) selectable from 4 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
Power supply	**TRV/Basic:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** max. 0,5 W (24 V =) **Basic:** typ. 0,7 W (24 V =), 1,8 VA (24 V ~) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	suitable for usage in aggressive media Sensor probe: Ø=8 mm, stainless steel V4A (1.4571), G1/2" Neck pipe (optionally): stainless steel V2A (1.4305), Ø=12 mm, length 70 mm
Installation length	50 mm, 100 mm, 150 mm, 200 mm, 250 mm, 450 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**passive/TRV/TRA/Basic:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, **LCD:** transparent cover
Operating range temperature	-50..+160 °C | **NTC10k:** -50..+150 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **passive/TRV/TRA/Basic:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting set (screws and accessories)

Immersion sensor -50..+150 °C – NTC10k		T2
Item description	Item No.	€
SFK02+ NTC10k 050.08	622004	48,50
SFK02+ NTC10k 100.08	622011	49,50
SFK02+ NTC10k 150.08	622028	51,50
SFK02+ NTC10k 200.08	622035	53,80
SFK02+ NTC10k 250.08	622042	55,70
SFK02+ NTC10k 450.08	622059	58,70

Immersion sensor -50..+160 °C – Pt100 DIN cl. B		T2
Item description	Item No.	€
SFK02+ Pt100 050.08	622295	49,80
SFK02+ Pt100 100.08	622301	50,80
SFK02+ Pt100 150.08	622318	52,80
SFK02+ Pt100 200.08	622325	55,10
SFK02+ Pt100 250.08	622332	57,00
SFK02+ Pt100 450.08	622349	60,00

Immersion sensor -50..+160 °C – Pt100 1/3 DIN		T2
Item description	Item No.	€
SFK02+ Pt100 1/3 DIN 050.08	622356	54,70
SFK02+ Pt100 1/3 DIN 100.08	622363	55,70
SFK02+ Pt100 1/3 DIN 150.08	622370	57,70
SFK02+ Pt100 1/3 DIN 200.08	622387	60,00
SFK02+ Pt100 1/3 DIN 250.08	622394	61,90
SFK02+ Pt100 1/3 DIN 450.08	622400	64,90

Immersion sensor -50..+160 °C – Pt1000 DIN cl. B		T2
Item description	Item No.	€
SFK02+ Pt1000 050.08	622417	52,60
SFK02+ Pt1000 100.08	622424	53,60
SFK02+ Pt1000 150.08	622431	55,60
SFK02+ Pt1000 200.08	622448	57,90
SFK02+ Pt1000 250.08	622455	59,80
SFK02+ Pt1000 450.08	622462	62,80

Immersion sensor -50..+160 °C – Pt1000 1/3 DIN		T2
Item description	Item No.	€
SFK02+ Pt1000 1/3 DIN 050.08	621946	56,60
SFK02+ Pt1000 1/3 DIN 100.08	621953	57,60
SFK02+ Pt1000 1/3 DIN 150.08	621960	59,60
SFK02+ Pt1000 1/3 DIN 200.08	621977	61,90
SFK02+ Pt1000 1/3 DIN 250.08	621984	63,80
SFK02+ Pt1000 1/3 DIN 450.08	621991	66,80

Immersion sensor -50..+160 °C – Ni1000 DIN cl. B		T2
Item description	Item No.	€
SFK02+ Ni1000 050.08	622080	52,30
SFK02+ Ni1000 100.08	622097	53,30
SFK02+ Ni1000 150.08	622103	55,30
SFK02+ Ni1000 200.08	622110	57,60
SFK02+ Ni1000 250.08	622127	59,50
SFK02+ Ni1000 450.08	622141	62,50

Immersion sensor -50..+160 °C – Ni1000TK5000		T2
Item description	Item No.	€
SFK02+ Ni1000TK5000 050.08	622158	56,60
SFK02+ Ni1000TK5000 100.08	622165	57,60
SFK02+ Ni1000TK5000 150.08	622189	59,60
SFK02+ Ni1000TK5000 200.08	622196	61,90
SFK02+ Ni1000TK5000 250.08	622202	63,80
SFK02+ Ni1000TK5000 450.08	622219	66,80

Options	
Description	**€**
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
PT100 (1/3 DIN) | PT1000 (1/3 DIN) | Ni1000 | Ni1000TK5000: Temperature -80..+260 °C (T260)	13,30
Neck pipe 70.12 (for applications with insulation materials)	24,80
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor KTY81-110 | KTY81-121 | KTY81-122 | KTY81-210	2,80

Immersion sensor -50..+160 °C active 0..10 (0..5) V			
Item description	**Item No.**	**Group**	**€**
SFK02+ TRV MultiRange 050.08	622592	T2	103,00
SFK02+ TRV MultiRange 100.08	622608	T2	103,80
SFK02+ TRV MultiRange 150.08	622615	T2	105,20
SFK02+ TRV MultiRange 200.08	622622	T2	107,30
SFK02+ TRV MultiRange 250.08	622639	T2	108,60
SFK02+ TRV MultiRange 450.08	622646	T2	110,90

Immersion sensor -50..+160 °C active 4..20 mA			
Item description	**Item No.**	**Group**	**€**
SFK02+ TRA MultiRange 050.08	622653	T2	103,00
SFK02+ TRA MultiRange 100.08	622660	T2	103,80
SFK02+ TRA MultiRange 150.08	622677	T2	105,20
SFK02+ TRA MultiRange 200.08	622684	T2	107,30
SFK02+ TRA MultiRange 250.08	622691	T2	108,60
SFK02+ TRA MultiRange 450.08	622707	T2	110,90

Immersion sensor -50..+160 °C active 0..10 (0..5) V + relay				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ TRV MultiRange 050.08 relay	✓	665568	T2	151,40
SFK02+ TRV MultiRange 100.08 relay	✓	665575	T2	152,20
SFK02+ TRV MultiRange 150.08 relay	✓	665582	T2	153,60
SFK02+ TRV MultiRange 200.08 relay	✓	665599	T2	155,70
SFK02+ TRV MultiRange 250.08 relay	✓	665605	T2	157,00
SFK02+ TRV MultiRange 450.08 relay	✓	665612	T2	159,30

Immersion sensor -50..+160 °C active 0..10 (0..5) V LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ LCD TRV MultiRange 050.08	✓	665476	T2	149,20
SFK02+ LCD TRV MultiRange 100.08	✓	665483	T2	150,00
SFK02+ LCD TRV MultiRange 150.08	✓	665490	T2	151,40
SFK02+ LCD TRV MultiRange 200.08	✓	665506	T2	153,50
SFK02+ LCD TRV MultiRange 250.08	✓	665513	T2	154,80
SFK02+ LCD TRV MultiRange 450.08	✓	665520	T2	157,10

Immersion sensor -50..+160 °C active 4..20 mA LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ LCD TRA MultiRange 050.08	✓	665681	T2	149,20
SFK02+ LCD TRA MultiRange 100.08	✓	665698	T2	150,00
SFK02+ LCD TRA MultiRange 150.08	✓	665704	T2	151,40
SFK02+ LCD TRA MultiRange 200.08	✓	665711	T2	153,50
SFK02+ LCD TRA MultiRange 250.08	✓	665728	T2	154,80
SFK02+ LCD TRA MultiRange 450.08	✓	665735	T2	157,10

Immersion sensor -50..+160 °C active 0..10 (0..5) V + relay LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ LCD TRV MultiRange 050.08 relay	✓	665629	T2	197,60
SFK02+ LCD TRV MultiRange 100.08 relay	✓	665636	T2	198,40
SFK02+ LCD TRV MultiRange 150.08 relay	✓	665643	T2	199,80
SFK02+ LCD TRV MultiRange 200.08 relay	✓	665650	T2	201,90
SFK02+ LCD TRV MultiRange 250.08 relay	✓	665667	T2	203,20
SFK02+ LCD TRV MultiRange 450.08 relay	✓	665674	T2	205,50

Options	
Description	**€**
Temperature -80..+260 °C (T260)	13,30
Neck pipe 70.12 (for applications with insulation materials)	24,80

Immersion sensor -50..+160 °C RS485 BACnet (MS/TP)				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ RS485 BACnet (MS/TP) 050.08	✓	699389	T2	142,30
SFK02+ RS485 BACnet (MS/TP) 100.08	✓	699396	T2	143,00
SFK02+ RS485 BACnet (MS/TP) 150.08	✓	699402	T2	144,60
SFK02+ RS485 BACnet (MS/TP) 200.08	✓	699419	T2	146,60
SFK02+ RS485 BACnet (MS/TP) 250.08	✓	699426	T2	147,80
SFK02+ RS485 BACnet (MS/TP) 450.08	✓	699433	T2	150,30

Immersion sensor -50..+160 °C RS485 BACnet (MS/TP) LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ LCD RS485 BACnet (MS/TP) 050.08	✓	699440	T2	188,50
SFK02+ LCD RS485 BACnet (MS/TP) 100.08	✓	699457	T2	189,20
SFK02+ LCD RS485 BACnet (MS/TP) 150.08	✓	699464	T2	190,80
SFK02+ LCD RS485 BACnet (MS/TP) 200.08	✓	699471	T2	192,80
SFK02+ LCD RS485 BACnet (MS/TP) 250.08	✓	699488	T2	194,00
SFK02+ LCD RS485 BACnet (MS/TP) 450.08	✓	699495	T2	196,50

Immersion sensor -50..+160 °C RS485 Modbus				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ RS485 Modbus 050.08	✓	665742	T2	142,30
SFK02+ RS485 Modbus 100.08	✓	665759	T2	143,00
SFK02+ RS485 Modbus 150.08	✓	665766	T2	144,60
SFK02+ RS485 Modbus 200.08	✓	665773	T2	146,60
SFK02+ RS485 Modbus 250.08	✓	665780	T2	147,80
SFK02+ RS485 Modbus 450.08	✓	665797	T2	150,30

Immersion sensor -50..+160 °C RS485 Modbus LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ LCD RS485 Modbus 050.08	✓	665803	T2	188,50
SFK02+ LCD RS485 Modbus 100.08	✓	665810	T2	189,20
SFK02+ LCD RS485 Modbus 150.08	✓	665827	T2	190,80
SFK02+ LCD RS485 Modbus 200.08	✓	665834	T2	192,80
SFK02+ LCD RS485 Modbus 250.08	✓	665841	T2	194,00
SFK02+ LCD RS485 Modbus 450.08	✓	665858	T2	196,50

Immersion sensor -50..+160 °C Basic RS485 Modbus				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ Basic RS485 Modbus 050.08	✓	755986	T2	103,00
SFK02+ Basic RS485 Modbus 100.08	✓	747837	T2	103,80
SFK02+ Basic RS485 Modbus 150.08	✓	755993	T2	105,20
SFK02+ Basic RS485 Modbus 200.08	✓	756006	T2	107,30
SFK02+ Basic RS485 Modbus 250.08	✓	756013	T2	108,60
SFK02+ Basic RS485 Modbus 450.08	✓	756020	T2	110,90

Options	
Description	**€**
Temperature -80..+260 °C (T260)	13,30
Neck pipe 70.12 (for applications with insulation materials)	24,80

Accessories			
Item description	**Item No.**	**Group**	**€**
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

Bonded pockets						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
Bonded pocket St52-3 Typ ESH110	110 mm	105 mm	103459	⛀	A1	60,10
Bonded pocket St52-3 Typ ESH160	160 mm	155 mm	103466	⛀	A1	68,80
Bonded pocket St52-3 Typ ESH210	210 mm	205 mm	103473	⛀	A1	77,40
Bonded pocket St52-3 Typ ESH260	260 mm	255 mm	173247	⛀	A1	85,00

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. 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

passive / 0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: **TRV/TRA:** 0..+160 °C (default setting) **Relay/LCD/BUS:** -20..+80 °C (default setting) selectable from 4 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
Power supply	**TRV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** max. 0,5 W (24 V =) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor probe 50 mm: Ø=4 mm Sensor probe 100/200 mm: Ø=6 mm, end of sensor Ø=4 mm, stainless steel V4A (1.4571), G1/2" suitable for usage in aggressive media
Installation length	50 mm, 100 mm, 200 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**passive/TRV/TRA:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC

Technical Data	
Colour	pure white, **LCD:** transparent cover
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **passive/TRV/TRA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Delivery content	incl. mounting set (screws and accessories)

Immersion sensor -50..+150 °C – NTC10k		*T2*
Item description	**Item No.**	**€**
SFK02+ FR NTC10k 050.04	655545	52,20
SFK02+ FR NTC10k 100.06/04	640725	53,10
SFK02+ FR NTC10k 200.06/04	640763	57,60

Immersion sensor -50..+160 °C – Pt100 DIN cl. B		*T2*
Item description	**Item No.**	**€**
SFK02+ FR Pt100 050.04	665926	53,50
SFK02+ FR Pt100 100.06/04	665933	54,40
SFK02+ FR Pt100 200.06/04	665940	58,90

Immersion sensor -50..+160 °C – Pt100 1/3 DIN		*T2*
Item description	**Item No.**	**€**
SFK02+ FR Pt100 1/3 DIN 050.04	665957	58,40
SFK02+ FR Pt100 1/3 DIN 100.06/04	665964	59,30
SFK02+ FR Pt100 1/3 DIN 200.06/04	665971	63,80

Immersion sensor -50..+160 °C – Pt1000 DIN cl. B		*T2*
Item description	**Item No.**	**€**
SFK02+ FR Pt1000 050.04	655583	56,30
SFK02+ FR Pt1000 100.06/04	638807	57,20
SFK02+ FR Pt1000 200.06/04	640749	61,70

Immersion sensor -50..+160 °C – Pt1000 1/3 DIN		*T2*
Item description	**Item No.**	**€**
SFK02+ FR Pt1000 1/3 DIN 050.04	665988	60,30
SFK02+ FR Pt1000 1/3 DIN 100.06/04	665995	61,20
SFK02+ FR Pt1000 1/3 DIN 200.06/04	666008	65,70

Immersion sensor -50..+160 °C – Ni1000 DIN cl. B		*T2*
Item description	**Item No.**	**€**
SFK02+ FR Ni1000 050.04	666015	56,00
SFK02+ FR Ni1000 100.06/04	657280	56,90
SFK02+ FR Ni1000 200.06/04	666022	61,40

Immersion sensor -50..+160 °C – Ni1000TK5000		*T2*
Item description	**Item No.**	**€**
SFK02+ FR Ni1000TK5000 050.04	655590	60,30
SFK02+ FR Ni1000TK5000 100.06/04	640732	61,20
SFK02+ FR Ni1000TK5000 200.06/04	640770	65,70

Options	
Description	**€**
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10

Immersion sensor -50..+160 °C active 0..10 (0..5) V			
Item description	**Item No.**	**Group**	**€**
SFK02+ FR TRV MultiRange 050.04	655620	T2	106,60
SFK02+ FR TRV MultiRange 100.06/04	645881	T2	107,30
SFK02+ FR TRV MultiRange 200.06/04	655637	T2	110,90

Immersion sensor -50..+160 °C active 4..20 mA			
Item description	**Item No.**	**Group**	**€**
SFK02+ FR TRA MultiRange 050.04	655606	T2	106,60
SFK02+ FR TRA MultiRange 100.06/04	645867	T2	107,30
SFK02+ FR TRA MultiRange 200.06/04	655613	T2	110,90

Immersion sensor -50..+160 °C active 0..10 (0..5) V + relay				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ FR TRV MultiRange 050.04 relay	✓	666169	T2	155,00
SFK02+ FR TRV MultiRange 100.06/04 relay	✓	666176	T2	155,70
SFK02+ FR TRV MultiRange 200.06/04 relay	✓	666183	T2	159,30

Immersion sensor -50..+160 °C active 0..10 (0..5) V LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ FR LCD TRV MultiRange 050.04	✓	666091	T2	152,80
SFK02+ FR LCD TRV MultiRange 100.06/04	✓	666107	T2	153,50
SFK02+ FR LCD TRV MultiRange 200.06/04	✓	666114	T2	157,10

Immersion sensor -50..+160 °C active 4..20 mA LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ FR LCD TRA MultiRange 050.04	✓	666121	T2	152,80
SFK02+ FR LCD TRA MultiRange 100.06/04	✓	666138	T2	153,50
SFK02+ FR LCD TRA MultiRange 200.06/04	✓	666145	T2	157,10

Immersion sensor -50..+160 °C active 0..10 (0..5) V + relay LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ FR LCD TRV MultiRange 050.04 relay	✓	666190	T2	201,20
SFK02+ FR LCD TRV MultiRange 100.06/04 relay	✓	666206	T2	201,90
SFK02+ FR LCD TRV MultiRange 200.06/04 relay	✓	666213	T2	205,50

Immersion sensor -50..+160 °C RS485 BACnet (MS/TP)				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ FR RS485 BACnet (MS/TP) 050.04	✓	699501	T2	158,20
SFK02+ FR RS485 BACnet (MS/TP) 100.06/04	✓	699518	T2	158,90
SFK02+ FR RS485 BACnet (MS/TP) 200.06/04	✓	699525	T2	162,50

Immersion sensor -50..+160 °C RS485 BACnet (MS/TP) LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ FR LCD RS485 BACnet (MS/TP) 050.04	✓	699532	T2	204,40
SFK02+ FR LCD RS485 BACnet (MS/TP) 100.06/04	✓	699549	T2	205,10
SFK02+ FR LCD RS485 BACnet (MS/TP) 200.06/04	✓	699556	T2	208,70

Immersion sensor -50..+160 °C RS485 Modbus				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ FR RS485 Modbus 050.04	✓	666220	T2	158,20
SFK02+ FR RS485 Modbus 100.06/04	✓	666237	T2	158,90
SFK02+ FR RS485 Modbus 200.06/04	✓	666244	T2	162,50

Immersion sensor -50..+160 °C RS485 Modbus LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
SFK02+ FR LCD RS485 Modbus 050.04	✓	666251	T2	204,40
SFK02+ FR LCD RS485 Modbus 100.06/04	✓	666268	T2	205,10
SFK02+ FR LCD RS485 Modbus 200.06/04	✓	666275	T2	208,70

Options	
Description	**€**
Add to price of RS485 Modbus for LON FT	86,90

Accessories			
Item description	**Item No.**	**Group**	**€**
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

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').

Technical Data	
Measured values	temperature
Material in touch with media	suitable for usage in aggressive media Sensor probe: Ø=8 mm, stainless steel V4A (1.4571), SW24, G1/2" Neck pipe (optionally): stainless steel V2A (1.4305), Ø=12 mm, length 70 mm
Installation length	50 mm, 100 mm, 150 mm, 200 mm, 250 mm, 450 mm
Enclosure	shape J, aluminium
Operating range temperature	-50..+160 °C | **NTC10k:** -50..+150 °C
Protection (IP)	IP65, according to EN 60529
Connection	cable entry M16 for wire Ø=8 mm terminal block, max. 1,5 mm²

Immersion sensor -50..+150 °C – NTC10k			*T1*
Item description	**Item No.**	**€**	
SFK01 NTC10k 050.08	45421	53,90	
SFK01 NTC10k 100.08	45438	55,30	
SFK01 NTC10k 150.08	45445	57,00	
SFK01 NTC10k 200.08	45452	59,30	
SFK01 NTC10k 250.08	45469	59,80	
SFK01 NTC10k 450.08	45476	63,30	

Immersion sensor -50..+160 °C – Pt100 DIN cl. B			*T1*
Item description	**Item No.**	**€**	
SFK01 Pt100 050.08	37662	55,20	
SFK01 Pt100 100.08	27717	56,60	
SFK01 Pt100 150.08	27724	58,30	
SFK01 Pt100 200.08	27731	60,60	
SFK01 Pt100 250.08	27748	61,10	
SFK01 Pt100 450.08	27755	64,60	

Immersion sensor -50..+160 °C – Pt100 1/3 DIN			*T1*
Item description	**Item No.**	**€**	
SFK01 Pt100 1/3 DIN 050.08	27762	60,10	
SFK01 Pt100 1/3 DIN 100.08	27779	61,50	
SFK01 Pt100 1/3 DIN 150.08	27786	63,20	
SFK01 Pt100 1/3 DIN 200.08	27793	65,50	
SFK01 Pt100 1/3 DIN 250.08	27809	66,00	
SFK01 Pt100 1/3 DIN 450.08	27816	69,50	

Immersion sensor -50..+160 °C – Pt1000 DIN cl. B			*T1*
Item description	**Item No.**	**€**	
SFK01 Pt1000 050.08	27823	58,00	
SFK01 Pt1000 100.08	27830	59,40	
SFK01 Pt1000 150.08	27847	61,10	
SFK01 Pt1000 200.08	27854	63,40	
SFK01 Pt1000 250.08	27861	63,90	
SFK01 Pt1000 450.08	27878	67,40	

Immersion sensor -50..+160 °C – Pt1000 1/3 DIN		*T1*
Item description	**Item No.**	**€**
SFK01 Pt1000 1/3 DIN 050.08	27885	62,00
SFK01 Pt1000 1/3 DIN 100.08	27892	63,40
SFK01 Pt1000 1/3 DIN 150.08	36740	65,10
SFK01 Pt1000 1/3 DIN 200.08	36757	67,40
SFK01 Pt1000 1/3 DIN 250.08	36764	67,90
SFK01 Pt1000 1/3 DIN 450.08	36771	71,40

Immersion sensor -50..+160 °C – Ni1000 DIN cl. B		*T1*
Item description	**Item No.**	**€**
SFK01 Ni1000 050.08	36788	57,70
SFK01 Ni1000 100.08	36795	59,10
SFK01 Ni1000 150.08	36801	60,80
SFK01 Ni1000 200.08	36818	63,10
SFK01 Ni1000 250.08	36825	63,60
SFK01 Ni1000 450.08	45292	67,10

Immersion sensor -50..+160 °C – Ni1000TK5000		*T1*
Item description	**Item No.**	**€**
SFK01 Ni1000TK5000 050.08	45308	62,00
SFK01 Ni1000TK5000 100.08	45315	63,40
SFK01 Ni1000TK5000 150.08	45322	65,10
SFK01 Ni1000TK5000 200.08	45339	67,40
SFK01 Ni1000TK5000 250.08	45346	67,90
SFK01 Ni1000TK5000 450.08	45353	71,40

Options	
Description	**€**
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
PT100 (1/3 DIN) | PT1000 (1/3 DIN) | Ni1000 | Ni1000TK5000: Temperature -80..+260 °C (T260)	13,30
Neck pipe 70.12 (for applications with insulation materials)	24,80
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor DS18B20 1-wire	1,60

Bonded pockets						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
Bonded pocket St52-3 Typ ESH110	110 mm	105 mm	103459	⛁	A1	60,10
Bonded pocket St52-3 Typ ESH160	160 mm	155 mm	103466	⛁	A1	68,80
Bonded pocket St52-3 Typ ESH210	210 mm	205 mm	103473	⛁	A1	77,40
Bonded pocket St52-3 Typ ESH260	260 mm	255 mm	173247	⛁	A1	85,00

SFK03

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.

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

Technical Data	
Measured values	temperature
Output signal temperature	scaling analogue output: **TRV1/TRA1:** 0..+50 °C **TRV2/TRA2:** -50..+50 °C **TRV3/TRA3:** -10..+120 °C **TRV4/TRA4:** 0..+160 °C **TRV5/TRA5:** 0..+300 °C
Power supply	**TRV:** 15..24 V = (±10%) SELV, 15..26 V ~ SELV **TRA:** 15..35 V = SELV,
Power consumption	**TRV:** typ. 1 W (24 V =), 1,4 VA (24 V ~) **TRA:** typ. 0,5 W (24 V =)
Material in touch with media	suitable for usage in aggressive media Sensor probe: Ø=8 mm, stainless steel V4A (1.4571), SW24, G1/2" Neck pipe (optionally): stainless steel V2A (1.4305), Ø=15 mm, length 70 mm
Installation length	100 mm, 150 mm, 200 mm, 250 mm
Enclosure	shape B, aluminium
Operating range temperature	-50..+160 °C | **NTC10k:** -50..+150 °C
Protection (IP)	IP66, according to EN 60529
Connection	cable entry M20 for wire Ø=7 mm terminal block, max. 1,5 mm²

Immersion sensor -50..+150 °C – NTC10k		*T1*
Item description	**Item No.**	**€**
SFK03 NTC10k 100.08	71345	64,20
SFK03 NTC10k 150.08	71352	66,60
SFK03 NTC10k 200.08	71369	69,00
SFK03 NTC10k 250.08	71376	72,50

Immersion sensor -50..+160 °C – Pt100 DIN cl. B		*T1*
Item description	**Item No.**	**€**
SFK03 Pt100 100.08	64309	65,50
SFK03 Pt100 150.08	71079	67,90
SFK03 Pt100 200.08	71086	70,30
SFK03 Pt100 250.08	71093	73,80

Immersion sensor -50..+160 °C – Pt100 1/3 DIN		*T1*
Item description	**Item No.**	**€**
SFK03 Pt100 1/3 DIN 100.08	71109	70,40
SFK03 Pt100 1/3 DIN 150.08	71116	72,80
SFK03 Pt100 1/3 DIN 200.08	71123	75,20
SFK03 Pt100 1/3 DIN 250.08	71130	78,70

Immersion sensor -50..+160 °C – Pt1000 DIN cl. B		*T1*
Item description	**Item No.**	**€**
SFK03 Pt1000 100.08	71147	68,30
SFK03 Pt1000 150.08	71154	70,70
SFK03 Pt1000 200.08	71161	73,10
SFK03 Pt1000 250.08	71178	76,60

Immersion sensor -50..+160 °C – Pt1000 1/3 DIN		*T1*
Item description	**Item No.**	**€**
SFK03 Pt1000 1/3 DIN 100.08	71185	72,30
SFK03 Pt1000 1/3 DIN 150.08	71192	74,70
SFK03 Pt1000 1/3 DIN 200.08	71208	77,10
SFK03 Pt1000 1/3 DIN 250.08	71215	80,60

Immersion sensor -50..+160 °C – Ni1000 DIN cl. B		*T1*
Item description	**Item No.**	**€**
SFK03 Ni1000 100.08	71222	68,00
SFK03 Ni1000 150.08	71239	70,40
SFK03 Ni1000 200.08	71246	72,80
SFK03 Ni1000 250.08	71253	76,30

Immersion sensor -50..+160 °C – Ni1000TK5000		*T1*
Item description	**Item No.**	**€**
SFK03 Ni1000TK5000 100.08	71260	72,30
SFK03 Ni1000TK5000 150.08	71277	74,70
SFK03 Ni1000TK5000 200.08	71284	77,10
SFK03 Ni1000TK5000 250.08	71291	80,60

Options	
Description	**€**
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
PT100 (1/3 DIN) | PT1000 (1/3 DIN) | Ni1000 | Ni1000TK5000: Temperature -80..+260 °C (T260)	13,30
Neck pipe 70.15 (for applications with insulation materials)	24,80
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor DS18B20 1-wire	1,60

Bonded pockets						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
Bonded pocket St52-3 Typ ESH110	110 mm	105 mm	103459	⛁	A1	60,10
Bonded pocket St52-3 Typ ESH160	160 mm	155 mm	103466	⛁	A1	68,80
Bonded pocket St52-3 Typ ESH210	210 mm	205 mm	103473	⛁	A1	77,40
Bonded pocket St52-3 Typ ESH260	260 mm	255 mm	173247	⛁	A1	85,00

Immersion sensor -50..+50 °C		T1
Item description	Item No.	€
SFK03 TRV1 100.08	318853	167,50
SFK03 TRV1 150.08	352024	169,10
SFK03 TRV1 200.08	352062	170,60
SFK03 TRV1 250.08	352109	173,10

Immersion sensor -10..+120 °C		T1
Item description	Item No.	€
SFK03 TRV2 100.08	335744	167,50
SFK03 TRV2 150.08	352031	169,10
SFK03 TRV2 200.08	246958	170,60
SFK03 TRV2 250.08	352253	173,10

Immersion sensor 0..+50 °C		T1
Item description	Item No.	€
SFK03 TRV3 100.08	281775	167,50
SFK03 TRV3 150.08	352048	169,10
SFK03 TRV3 200.08	352079	170,60
SFK03 TRV3 250.08	352260	173,10

Immersion sensor 0..+160 °C		T1
Item description	Item No.	€
SFK03 TRV4 100.08	298414	167,50
SFK03 TRV4 150.08	292115	169,10
SFK03 TRV4 200.08	324403	170,60
SFK03 TRV4 250.08	352277	173,10

Immersion sensor 0..+300 °C		T1
Item description	Item No.	€
SFK03 TRV5 100.08	243933	176,70
SFK03 TRV5 150.08	295314	178,20
SFK03 TRV5 200.08	297509	179,90
SFK03 TRV5 250.08	306607	182,30

Immersion sensor -50..+50 °C		T1
Item description	Item No.	€
SFK03 TRA1 100.08	194440	167,50
SFK03 TRA1 150.08	200899	169,10
SFK03 TRA1 200.08	352055	170,60
SFK03 TRA1 250.08	254908	173,10

Immersion sensor -10..+120 °C		T1
Item description	Item No.	€
SFK03 TRA2 100.08	189316	167,50
SFK03 TRA2 150.08	344166	169,10
SFK03 TRA2 200.08	315746	170,60
SFK03 TRA2 250.08	352086	173,10

Immersion sensor 0..+50 °C		T1
Item description	Item No.	€
SFK03 TRA3 100.08	132220	167,50
SFK03 TRA3 150.08	165044	169,10
SFK03 TRA3 200.08	165280	170,60
SFK03 TRA3 250.08	303835	173,10

Immersion sensor 0..+160 °C		T1
Item description	Item No.	€
SFK03 TRA4 100.08	293051	167,50
SFK03 TRA4 150.08	295024	169,10
SFK03 TRA4 200.08	239226	170,60
SFK03 TRA4 250.08	352093	173,10

Immersion sensor 0..+300 °C		T1
Item description	Item No.	€
SFK03 TRA5 100.08	131674	176,70
SFK03 TRA5 150.08	146821	178,20
SFK03 TRA5 200.08	152884	179,90
SFK03 TRA5 250.08	157421	182,30

Options	
Description	**€**
Neck pipe 70.15 (for applications with insulation materials)	24,80

Bonded pockets						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
Bonded pocket St52-3 Typ ESH110	110 mm	105 mm	103459	⛃	A1	60,10
Bonded pocket St52-3 Typ ESH160	160 mm	155 mm	103466	⛃	A1	68,80
Bonded pocket St52-3 Typ ESH210	210 mm	205 mm	103473	⛃	A1	77,40
Bonded pocket St52-3 Typ ESH260	260 mm	255 mm	173247	⛃	A1	85,00

KFK01

Passive duct sensor for measuring air temperature and other gaseous media of HVAC applications (e.g. supply and exhaust ducts). 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.

Technical Data	
Measured values	temperature
Material in touch with media	Sensor probe, Ø=6 mm, stainless steel V4A (1.4401)
Installation length	50 mm, 100 mm, 150 mm, 200 mm, 250 mm, 300 mm, 450 mm
Enclosure	shape J, aluminium
Operating range temperature	-50..+160 °C | **NTC10k:** -50..+150 °C
Protection (IP)	IP65, according to EN 60529
Connection	cable entry M16 for wire Ø=8 mm, terminal block, max. 1,5 mm²
Mounting	when used as duct sensors: please use mounting flange MF6DS flexible (+90..+120 °C) or MF6 (brass, +120..+260 °C), for use as immersion sensors please use immersion pocket THVADS / THMSDS

Duct/immersion sensor -50..+150 °C – NTC10k		*T1*
Item description	**Item No.**	**€**
KFK01 NTC10k 050.06	626880	50,60
KFK01 NTC10k 100.06	626897	51,60
KFK01 NTC10k 150.06	626903	53,40
KFK01 NTC10k 200.06	626910	55,30
KFK01 NTC10k 250.06	626927	58,20
KFK01 NTC10k 300.06	626934	60,70
KFK01 NTC10k 450.06	626941	64,80

Duct/immersion sensor -50..+160 °C – Pt100 DIN cl. B		*T1*
Item description	**Item No.**	**€**
KFK01 Pt100 050.06	626446	51,90
KFK01 Pt100 100.06	626453	52,90
KFK01 Pt100 150.06	626477	54,70
KFK01 Pt100 200.06	626484	56,60
KFK01 Pt100 250.06	626491	59,50
KFK01 Pt100 300.06	626507	62,00
KFK01 Pt100 450.06	626514	66,10

Duct/immersion sensor -50..+160 °C – Pt100 1/3 DIN		*T1*
Item description	**Item No.**	**€**
KFK01 Pt100 1/3 DIN 050.06	626521	56,80
KFK01 Pt100 1/3 DIN 100.06	626538	57,80
KFK01 Pt100 1/3 DIN 150.06	626545	59,60
KFK01 Pt100 1/3 DIN 200.06	626552	61,50
KFK01 Pt100 1/3 DIN 250.06	626569	64,40
KFK01 Pt100 1/3 DIN 300.06	626576	66,90
KFK01 Pt100 1/3 DIN 450.06	626583	71,00

Duct/immersion sensor -50..+160 °C – Pt1000 DIN cl. B		*T1*
Item description	**Item No.**	**€**
KFK01 Pt1000 050.06	626590	54,70
KFK01 Pt1000 100.06	626606	55,70
KFK01 Pt1000 150.06	626613	57,50
KFK01 Pt1000 200.06	626620	59,40
KFK01 Pt1000 250.06	626637	62,30
KFK01 Pt1000 300.06	626644	64,80
KFK01 Pt1000 450.06	626651	68,90

Duct/immersion sensor -50..+160 °C – Pt1000 1/3 DIN		T1
Item description	**Item No.**	**€**
KFK01 Pt1000 1/3 DIN 050.06	626675	58,70
KFK01 Pt1000 1/3 DIN 100.06	626682	59,70
KFK01 Pt1000 1/3 DIN 150.06	626699	61,50
KFK01 Pt1000 1/3 DIN 200.06	626705	63,40
KFK01 Pt1000 1/3 DIN 250.06	626712	66,30
KFK01 Pt1000 1/3 DIN 300.06	626729	68,80
KFK01 Pt1000 1/3 DIN 450.06	626736	72,90

Duct/immersion sensor -50..+160 °C – Ni1000 DIN cl. B		T1
Item description	**Item No.**	**€**
KFK01 Ni1000 050.06	626743	54,40
KFK01 Ni1000 100.06	626750	55,40
KFK01 Ni1000 150.06	626767	57,20
KFK01 Ni1000 200.06	626774	59,10
KFK01 Ni1000 250.06	626781	62,00
KFK01 Ni1000 300.06	626798	64,50
KFK01 Ni1000 450.06	626804	68,60

Duct/immersion sensor -50..+160 °C – Ni1000TK5000		T1
Item description	**Item No.**	**€**
KFK01 Ni1000TK5000 050.06	626811	58,70
KFK01 Ni1000TK5000 100.06	626828	59,70
KFK01 Ni1000TK5000 150.06	626835	61,50
KFK01 Ni1000TK5000 200.06	626842	63,40
KFK01 Ni1000TK5000 250.06	626859	66,30
KFK01 Ni1000TK5000 300.06	626866	68,80
KFK01 Ni1000TK5000 450.06	626873	72,90

Options	
Description	**€**
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
PT100 (1/3 DIN) | **PT1000 (1/3 DIN)** | **Ni1000** | **Ni1000TK5000:** Temperature -80..+260 °C (T260)	13,30
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor DS18B20 1-wire	1,60
Add to price of NTC10k for sensor FeT/Staefa	27,80

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	A2	7,80
Mounting flange MF6 brass (suitable for Ø=6 mm)	3407	A1	7,80

Thermowells brass for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995		A2	9,90
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008		A2	11,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015		A2	11,80
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022		A2	12,30
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985		A2	14,10
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039		A2	14,60
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046		A2	14,90

Thermowells stainless steel for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152		A2	23,10
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817		A2	25,30
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824		A2	27,40
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848		A2	28,70
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862		A2	35,60
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879		A2	37,30
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893		A2	38,60
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS			666473		A2	22,20

KFK03

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.

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

Technical Data	
Measured values	temperature
Output signal temperature	scaling analogue output: **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
Power supply	**TRV:** 15..24 V = (±10%) SELV, 15..26 V ~ SELV **TRA:** 15..35 V = SELV
Power consumption	**TRV:** max. 1 W (24 V =), 0,8 VA (24 V ~) **TRA:** max. 0,5 W (24 V =)
Material in touch with media	Sensor probe, Ø=8 mm, stainless steel V4A (1.4571)
Installation length	100 mm, 150 mm, 200 mm, 250 mm
Enclosure	shape B, aluminium
Operating range temperature	-50..+160 °C | **NTC10k:** -50..+150 °C
Protection (IP)	IP66, according to EN 60529
Connection	cable entry M20 for wire Ø=7 mm terminal block, max. 1,5 mm²
Mounting	when used as duct sensors: please use mounting flange MF8 stainless steel for use as immersion sensors please use immersion pocket THVA

KFK03 – passive

Duct/immersion sensor -50..+150 °C – NTC10k		T1
Item description	**Item No.**	**€**
KFK03 NTC10k 100.08	39918	63,00
KFK03 NTC10k 150.08	39925	65,30
KFK03 NTC10k 200.08	39932	67,50
KFK03 NTC10k 250.08	39949	70,10

Duct/immersion sensor -50..+160 °C – Pt100 DIN cl. B		T1
Item description	**Item No.**	**€**
KFK03 Pt100 100.08	37877	64,30
KFK03 Pt100 150.08	37884	66,60
KFK03 Pt100 200.08	37891	68,80
KFK03 Pt100 250.08	37907	71,40

Duct/immersion sensor -50..+160 °C – Pt100 1/3 DIN		T1
Item description	**Item No.**	**€**
KFK03 Pt100 1/3 DIN 100.08	37914	69,20
KFK03 Pt100 1/3 DIN 150.08	37921	71,50
KFK03 Pt100 1/3 DIN 200.08	37938	73,70
KFK03 Pt100 1/3 DIN 250.08	37945	76,30

Duct/immersion sensor -50..+160 °C – Pt1000 DIN cl. B		T1
Item description	**Item No.**	**€**
KFK03 Pt1000 100.08	37952	67,10
KFK03 Pt1000 150.08	37969	69,40
KFK03 Pt1000 200.08	37976	71,60
KFK03 Pt1000 250.08	37983	74,20

Duct/immersion sensor -50..+160 °C – Pt1000 1/3 DIN		T1
Item description	**Item No.**	**€**
KFK03 Pt1000 1/3 DIN 100.08	37990	71,10
KFK03 Pt1000 1/3 DIN 150.08	39765	73,40
KFK03 Pt1000 1/3 DIN 200.08	39772	75,60
KFK03 Pt1000 1/3 DIN 250.08	39789	78,20

Duct/immersion sensor -50..+160 °C – Ni1000 DIN cl. B		T1
Item description	**Item No.**	**€**
KFK03 Ni1000 100.08	39796	66,80
KFK03 Ni1000 150.08	39802	69,10
KFK03 Ni1000 200.08	39819	71,30
KFK03 Ni1000 250.08	39826	73,90

Duct/immersion sensor -50..+160 °C – Ni1000TK5000		T1
Item description	**Item No.**	**€**
KFK03 Ni1000TK5000 100.08	39833	71,10
KFK03 Ni1000TK5000 150.08	39840	73,40
KFK03 Ni1000TK5000 200.08	39857	75,60
KFK03 Ni1000TK5000 250.08	39864	78,20

Options	
Description	**€**
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
PT100 (1/3 DIN) | PT1000 (1/3 DIN) | Ni1000 | Ni1000TK5000: Temperature -80..+260 °C (T260)	13,30
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10

KFK03 – active

Duct/immersion sensor -50..+50 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRV1 100.08	350983	T1	155,50
KFK03 TRV1 150.08	351010	T1	157,00
KFK03 TRV1 200.08	277860	T1	158,70
KFK03 TRV1 250.08	286879	T1	160,40

Duct/immersion sensor -10..+120 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRV2 100.08	332453	T1	155,50
KFK03 TRV2 150.08	326711	T1	157,00
KFK03 TRV2 200.08	351096	T1	158,70
KFK03 TRV2 250.08	347242	T1	160,40

Duct/immersion sensor 0..+50 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRV3 100.08	272315	T1	155,50
KFK03 TRV3 150.08	351027	T1	157,00
KFK03 TRV3 200.08	284905	T1	158,70
KFK03 TRV3 250.08	285094	T1	160,40

Duct/immersion sensor 0..+160 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRV4 100.08	351003	T1	155,50
KFK03 TRV4 150.08	261418	T1	157,00
KFK03 TRV4 200.08	351102	T1	158,70
KFK03 TRV4 250.08	347969	T1	160,40

Duct/immersion sensor 0..+250 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRV5 100.08	350990	T1	164,70
KFK03 TRV5 150.08	309127	T1	166,30
KFK03 TRV5 200.08	351119	T1	167,80
KFK03 TRV5 250.08	335607	T1	169,60

Duct/immersion sensor -50..+50 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRA1 100.08	152464	T1	155,50
KFK03 TRA1 150.08	165334	T1	157,00
KFK03 TRA1 200.08	232166	T1	158,70
KFK03 TRA1 250.08	204668	T1	160,40

Duct/immersion sensor -10..+120 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRA2 100.08	242639	T1	155,50
KFK03 TRA2 150.08	351034	T1	157,00
KFK03 TRA2 200.08	351041	T1	158,70
KFK03 TRA2 250.08	351133	T1	160,40

Duct/immersion sensor 0..+50 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRA3 100.08	338585	T1	155,50
KFK03 TRA3 150.08	170239	T1	157,00
KFK03 TRA3 200.08	161909	T1	158,70
KFK03 TRA3 250.08	134804	T1	160,40

Duct/immersion sensor 0..+160 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRA4 100.08	315920	T1	155,50
KFK03 TRA4 150.08	338981	T1	157,00
KFK03 TRA4 200.08	337380	T1	158,70
KFK03 TRA4 250.08	303057	T1	160,40

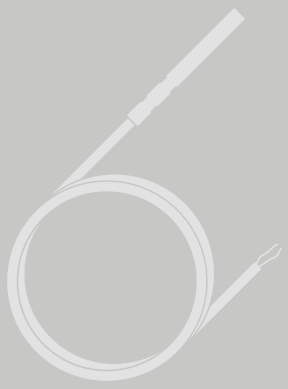
Duct/immersion sensor 0..+250 °C active			
Item description	**Item No.**	**Group**	**€**
KFK03 TRA5 100.08	239080	T1	164,70
KFK03 TRA5 150.08	320948	T1	166,30
KFK03 TRA5 200.08	404792	T1	167,80
KFK03 TRA5 250.08	281577	T1	169,60

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF8 stainless steel (suitable for Ø=8 mm)	103305	A1	27,60

Thermowells stainless steel for sensors with pocket Ø=8 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
VA-thermowell 100 mm type THVA100 (KFK03)	100 mm	87 mm	584180	⛀	A2	36,20
VA-thermowell 150 mm type THVA150 (KFK03)	150 mm	137 mm	584197	⛀	A2	38,00
VA-thermowell 200 mm type THVA200 (KFK03)	200 mm	187 mm	584203	⛀	A2	40,00
VA-thermowell 250 mm type THVA250 (KFK03)	250 mm	237 mm	594738	⛀	A2	42,10

Cable Sensors
Contact Sensors

Durable materials and state-of-the-art pressing and rolling processes guarantee the quality and durability of our cable and contact sensors. This makes them the first choice in building, heating, ventilation and air conditioning technology.



Cable Sensors

TF25	Temperature	**340**
TF25+	Temperature	**344**
TF14	Temperature	**348**
TF14+	Temperature	**351**

Surface Sensors

PR25	Temperature	**353**
PR25+	Temperature	**355**
OF14	Temperature	**357**
OF14+	Temperature	**358**

Contact Sensors

VFG54+	Temperature	**360**
AF25	Temperature	**363**
AF25+	Temperature	**365**

TF25

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.

Technical Data	
Measured values	temperature
Material in touch with media	Sensor probe, Ø=6 mm, stainless steel V4A (1.4571) 16-point pressed (IP65)
Installation length	50 mm, 100 mm, 150 mm
Operating range temperature	-50..+400 °C
Protection (IP)	IP65, according to EN 60529
Connection cable	0,22 mm², **T400:** 0,25 mm² **T100:** PVC, **T125/T150/T180:** silicone, **T250:** HT-silicone, **T400:** GI/GI-V2A cable ends with conductor sleeves as standard
Length connection wire	1 m
Notes	PE connection wire available (please request)

TF25 (-35..+100 °C)

Cable sensor -35..+100 °C – NTC10k		*T3*
Item description	**Item No.**	**€**
TF25 NTC10k T100 050.06 L1000	41539	13,20
TF25 NTC10k T100 100.06 L1000	41812	14,80
TF25 NTC10k T100 150.06 L1000	40723	15,20

Cable sensor -35..+100 °C – Pt100 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF25 Pt100 T100 050.06 L1000	35019	14,50
TF25 Pt100 T100 100.06 L1000	35026	16,10
TF25 Pt100 T100 150.06 L1000	35033	16,50

Cable sensor -35..+100 °C – Pt100 1/3 DIN		*T3*
Item description	**Item No.**	**€**
TF25 Pt100 1/3 DIN T100 050.06 L1000	25799	19,40
TF25 Pt100 1/3 DIN T100 100.06 L1000	35255	21,00
TF25 Pt100 1/3 DIN T100 150.06 L1000	35262	21,40

Cable sensor -35..+100 °C – Pt1000 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF25 Pt1000 T100 050.06 L1000	35484	17,30
TF25 Pt1000 T100 100.06 L1000	35491	18,90
TF25 Pt1000 T100 150.06 L1000	35507	19,30

Cable sensor -35..+100 °C – Pt1000 1/3 DIN		*T3*
Item description	**Item No.**	**€**
TF25 Pt1000 1/3 DIN T100 050.06 L1000	35729	21,30
TF25 Pt1000 1/3 DIN T100 100.06 L1000	35736	22,90
TF25 Pt1000 1/3 DIN T100 150.06 L1000	35743	23,30

Cable sensor -35..+100 °C – Ni1000 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF25 Ni1000 T100 050.06 L1000	26116	17,00
TF25 Ni1000 T100 100.06 L1000	26154	18,60
TF25 Ni1000 T100 150.06 L1000	26192	19,00

Cable sensor -35..+100 °C – Ni1000TK5000		T3
Item description	**Item No.**	**€**
TF25 Ni1000TK5000 T100 050.06 L1000	26352	21,30
TF25 Ni1000TK5000 T100 100.06 L1000	26390	22,90
TF25 Ni1000TK5000 T100 150.06 L1000	388238	23,30

Options	
Description	**€**
Add per meter of connection cable 2-wire -35..+100 °C	1,40
3-wire connection -35..+100 °C (3-wire)	2,30
Add per meter of connection cable 3-wire -35..+100 °C	1,60
4-wire connection -35..+100 °C (4-wire)	6,70
Add per meter of connection cable 4-wire -35..+100 °C	1,90
Connection enclosure USE-S incl. mounting base pure white	17,30
Protection class IP67 (rolled)	2,70
Tension spring (tensp)	1,90
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor KTY81-110 | KTY81-121 | KTY81-122 | KTY81-210	2,80

TF25 (-50..+150 °C / -50..+180 °C)

Cable sensor -50..+150 °C – NTC10k		T3
Item description	**Item No.**	**€**
TF25 NTC10k T150 050.06 L1000	59466	17,60
TF25 NTC10k T150 100.06 L1000	59473	19,30
TF25 NTC10k T150 150.06 L1000	59480	19,60

Cable sensor -50..+180 °C – Pt100 DIN cl. B		T3
Item description	**Item No.**	**€**
TF25 Pt100 T180 050.06 L1000	52771	18,90
TF25 Pt100 T180 100.06 L1000	52788	20,60
TF25 Pt100 T180 150.06 L1000	52795	20,90

Cable sensor -50..+180 °C – Pt100 1/3 DIN		T3
Item description	**Item No.**	**€**
TF25 Pt100 1/3 DIN T180 050.06 L1000	57493	23,80
TF25 Pt100 1/3 DIN T180 100.06 L1000	57509	25,50
TF25 Pt100 1/3 DIN T180 150.06 L1000	57516	25,80

Cable sensor -50..+180 °C – Pt1000 DIN cl. B		T3
Item description	**Item No.**	**€**
TF25 Pt1000 T180 050.06 L1000	58247	21,70
TF25 Pt1000 T180 100.06 L1000	58254	23,40
TF25 Pt1000 T180 150.06 L1000	58261	23,70

Cable sensor -50..+180 °C – Pt1000 1/3 DIN		T3
Item description	**Item No.**	**€**
TF25 Pt1000 1/3 DIN T180 050.06 L1000	58483	25,70
TF25 Pt1000 1/3 DIN T180 100.06 L1000	58490	27,40
TF25 Pt1000 1/3 DIN T180 150.06 L1000	58506	27,70

Cable sensor -50..+180 °C – Ni1000 DIN cl. B		T3
Item description	**Item No.**	**€**
TF25 Ni1000 T180 050.06 L1000	58728	21,40
TF25 Ni1000 T180 100.06 L1000	58735	23,10
TF25 Ni1000 T180 150.06 L1000	58742	23,40

Cable sensor -50..+180 °C – Ni1000TK5000		T3
Item description	**Item No.**	**€**
TF25 Ni1000TK5000 T180 050.06 L1000	58964	25,70
TF25 Ni1000TK5000 T180 100.06 L1000	58971	27,40
TF25 Ni1000TK5000 T180 150.06 L1000	58988	27,70

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+180 °C	2,30
3-wire connection -50..+180 °C (3-wire)	2,50
Add per meter of connection cable 3-wire -50..+180 °C	3,20
4-wire connection -50..+180 °C (4-wire)	6,70
Add per meter of connection cable 4-wire -50..+180 °C	3,80
Connection enclosure USE-S incl. mounting base pure white	17,30
Protection class IP67 (rolled)	2,70
Tension spring (tensp)	1,90
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor LM235Z	2,10
Add to price of NTC10k for sensor KTY81-110 | KTY81-121 | KTY81-122 | KTY81-210	2,80

TF25 (-50..+250 °C)

Cable sensor -50..+250 °C – Pt100 DIN cl. B		T3
Item description	**Item No.**	**€**
TF25 Pt100 T250 050.06 L1000	167406	23,80
TF25 Pt100 T250 100.06 L1000	209731	24,60
TF25 Pt100 T250 150.06 L1000	205658	24,90

Cable sensor -50..+250 °C – Pt100 1/3 DIN		T3
Item description	**Item No.**	**€**
TF25 Pt100 1/3 DIN T250 050.06 L1000	195478	28,70
TF25 Pt100 1/3 DIN T250 100.06 L1000	345835	29,50
TF25 Pt100 1/3 DIN T250 150.06 L1000	388276	29,80

Cable sensor -50..+250 °C – Pt1000 DIN cl. B		T3
Item description	**Item No.**	**€**
TF25 Pt1000 T250 050.06 L1000	168717	26,60
TF25 Pt1000 T250 100.06 L1000	209724	27,40
TF25 Pt1000 T250 150.06 L1000	388283	27,70

Cable sensor -50..+250 °C – Pt1000 1/3 DIN		T3
Item description	**Item No.**	**€**
TF25 Pt1000 1/3 DIN T250 050.06 L1000	356749	30,60
TF25 Pt1000 1/3 DIN T250 100.06 L1000	356756	31,40
TF25 Pt1000 1/3 DIN T250 150.06 L1000	388290	31,70

Cable sensor -50..+250 °C – Ni1000 DIN cl. B		T3
Item description	**Item No.**	**€**
TF25 Ni1000 T250 050.06 L1000	151863	26,30
TF25 Ni1000 T250 100.06 L1000	182430	27,10
TF25 Ni1000 T250 150.06 L1000	388306	27,40

Cable sensor -50..+250 °C – Ni1000TK5000		T3
Item description	**Item No.**	**€**
TF25 Ni1000TK5000 T250 050.06 L1000	150781	30,60
TF25 Ni1000TK5000 T250 100.06 L1000	157018	31,40
TF25 Ni1000TK5000 T250 150.06 L1000	388313	31,70

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+250 °C	3,70
3-wire connection -50..+250 °C (3-wire)	3,60
Add per meter of connection cable 3-wire -50..+250 °C	7,60
Connection enclosure USE-S incl. mounting base pure white	17,30
Protection class IP67 (rolled)	2,70
Tension spring (tensp)	1,90

TF25 (-50..+400°C)

Cable sensor -50..+400 °C – Pt100 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF25 Pt100 T400 050.06 L2000	799645	40,80
TF25 Pt1000 T400 050.06 L2000	166201	43,60

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+400 °C	6,10
Connection enclosure USE-S incl. mounting base pure white	17,30
Protection class IP67 (rolled)	2,70
Tension spring (tensp)	1,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	A2	7,80
Mounting flange MF6 brass (suitable for Ø=6 mm)	3407	A1	7,80
Compression fittings KL6VA for Ø=6 mm with cutting ring, stainless steel	103213	A1	15,60
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30

TF25+

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.

TF25+

TF25+ BUS

0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP)
Output signal temperature	scaling analogue output: 0..+160 °C (default setting) selectable from 4 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
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV 15..24 V = (±10%) SELV 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** max. 0,5 W (24 V =) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor probe, Ø=6 mm, stainless steel V4A (1.4571) 16-point pressed (IP65)
Installation length	50 mm, 100 mm, 150 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**TRV/TRA:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, **LCD:** transparent cover
Operating range temperature	-50..+250 °C
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **TRV/TRA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	0,25 mm², silicone, **T250:** HT-silicone
Length connection wire	1 m

Technical Data	
Delivery content	incl. mounting set (screws and accessories) **TRV/TRA:** incl. mounting base enclosure USE-S pure white **Relay/LCD/BUS:** incl. mounting base enclosure USE-M pure white
Notes	PE connection wire available (please request)

TF25+ 0..10 V (TRV) / 4..20 mA (TRA)

Cable sensor -50..+180 °C – active – 0..10 (0..5) V			
Item description	**Item No.**	**Group**	**€**
TF25+ TRV MultiRange T180 050.06 L1000	658959	T2	84,20
TF25+ TRV MultiRange T180 100.06 L1000	658966	T2	86,00
TF25+ TRV MultiRange T180 150.06 L1000	658973	T2	86,40

Cable sensor -50..+180 °C – active – 4..20 mA			
Item description	**Item No.**	**Group**	**€**
TF25+ TRA MultiRange T180 050.06 L1000	658980	T2	84,20
TF25+ TRA MultiRange T180 100.06 L1000	658997	T2	86,00
TF25+ TRA MultiRange T180 150.06 L1000	659000	T2	86,40

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+180 °C	2,30
Temperature -50..+250 °C (T250)	13,30
Add per meter of connection cable 2-wire -50..+250 °C	3,70

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	A2	7,80
Mounting flange MF6 brass (suitable for Ø=6 mm)	3407	A1	7,80
Compression fittings KL6VA for Ø=6 mm with cutting ring, stainless steel	103213	A1	15,60
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70

TF25+ LCD / BUS

Cable sensor -50..+160 °C – active – LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
TF25+ LCD TRV MultiRange T160 050.06 L1000	✓	707039	T2	163,70
TF25+ LCD TRV MultiRange T160 100.06 L1000	✓	693806	T2	165,50

Cable sensor -50..+160 °C – RS485 BACnet (MS/TP)				
Item description	**USEapp**	**Item No.**	**Group**	**€**
TF25+ RS485 BACnet (MS/TP) T160 050.06 L1000	✓	699723	T2	125,30
TF25+ RS485 BACnet (MS/TP) T160 100.06 L1000	✓	699730	T2	126,90

Cable sensor -50..+160 °C – RS485 Modbus				
Item description	**USEapp**	**Item No.**	**Group**	**€**
TF25+ RS485 Modbus T160 050.06 L1000	✓	659024	T2	125,30
TF25+ RS485 Modbus T160 100.06 L1000	✓	668255	T2	126,90

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+180 °C	2,30
Temperature -50..+250 °C (T250)	13,30
Add per meter of connection cable 2-wire -50..+250 °C	3,70
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO in enclosure USE-M with option board for 24 V ~ or 24 V = / 3 A	81,70
LCD 29x35 mm, RGB backlight in enclosure USE-M with option board	79,50

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	A2	7,80
Mounting flange MF6 brass (suitable for Ø=6 mm)	3407	A1	7,80
Compression fittings KL6VA for Ø=6 mm with cutting ring, stainless steel	103213	A1	15,60
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30
Mounting base enclosure USE-M pure white	668354	A1	9,60
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50

Thermowells brass for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995		A2	9,90
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008		A2	11,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015		A2	11,80
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022		A2	12,30
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985		A2	14,10
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039		A2	14,60
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046		A2	14,90

Thermowells stainless steel for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152		A2	23,10
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817		A2	25,30
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824		A2	27,40
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848		A2	28,70
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862		A2	35,60
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879		A2	37,30
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893		A2	38,60
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS			666473		A2	22,20

TF14

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.

Technical Data	
Measured values	temperature
Material in touch with media	Sensor probe, Ø=4 mm, stainless steel V4A (1.4571) 16-point pressed (IP65), rolled (IP67)
Installation length	50 mm, 100 mm, 150 mm
Connection cable	0,14 mm² **T100:** PVC, **T150/T180:** silicone, **T250:** PTFE
Length connection wire	1 m

TF14 (-35..+100 °C)

Cable sensor -35..+100 °C – NTC10k		*T3*
Item description	**Item No.**	**€**
TF14 NTC10k T100 050.04 L1000	73844	13,70
TF14 NTC10k T100 100.04 L1000	73851	14,90
TF14 NTC10k T100 150.04 L1000	73868	15,30

Cable sensor -35..+100 °C – Pt100 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF14 Pt100 T100 050.04 L1000	64347	15,00
TF14 Pt100 T100 100.04 L1000	57554	16,20
TF14 Pt100 T100 150.04 L1000	57561	16,60

Cable sensor -35..+100 °C – Pt100 1/3 DIN		*T3*
Item description	**Item No.**	**€**
TF14 Pt100 1/3 DIN T100 050.04 L1000	69106	19,90
TF14 Pt100 1/3 DIN T100 100.04 L1000	69113	21,10
TF14 Pt100 1/3 DIN T100 150.04 L1000	69120	21,50

Cable sensor -35..+100 °C – Pt1000 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF14 Pt1000 T100 050.04 L1000	69267	17,80
TF14 Pt1000 T100 100.04 L1000	69274	19,00
TF14 Pt1000 T100 150.04 L1000	69281	19,40

Cable sensor -35..+100 °C – Pt1000 1/3 DIN		*T3*
Item description	**Item No.**	**€**
TF14 Pt1000 1/3 DIN T100 050.04 L1000	69427	21,80
TF14 Pt1000 1/3 DIN T100 100.04 L1000	69434	23,00
TF14 Pt1000 1/3 DIN T100 150.04 L1000	69441	23,40

Cable sensor -35..+100 °C – Ni1000 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF14 Ni1000 T100 050.04 L1000	73080	17,50
TF14 Ni1000 T100 100.04 L1000	73097	18,70
TF14 Ni1000 T100 150.04 L1000	73103	19,10

Cable sensor -35..+100 °C – Ni1000TK5000		*T3*
Item description	**Item No.**	**€**
TF14 Ni1000TK5000 T100 050.04 L1000	73240	21,80
TF14 Ni1000TK5000 T100 100.04 L1000	73257	23,00
TF14 Ni1000TK5000 T100 150.04 L1000	73264	23,40

Options	
Description	**€**
Add per meter of connection cable 2-wire -35..+100 °C	1,40
Connection enclosure USE-S incl. mounting base pure white	17,30
Protection class IP67 (rolled)	2,70
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00
Add to price of NTC10k for sensor Pt100 1/3 DIN	6,20

TF14 (-50..+150 °C / -50..+180 °C)

Cable sensor -50..+150 °C – NTC10k		*T3*
Item description	**Item No.**	**€**
TF14 NTC10k T150 050.04 L1000	80408	19,30
TF14 NTC10k T150 100.04 L1000	81443	20,60
TF14 NTC10k T150 150.04 L1000	80484	21,00

Cable sensor -50..+180 °C – Pt100 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF14 Pt100 T180 050.04 L1000	64354	20,60
TF14 Pt100 T180 100.04 L1000	78009	21,90
TF14 Pt100 T180 150.04 L1000	78016	22,30

Cable sensor -50..+180 °C – Pt100 1/3 DIN		*T3*
Item description	**Item No.**	**€**
TF14 Pt100 1/3 DIN T180 050.04 L1000	78207	25,50
TF14 Pt100 1/3 DIN T180 100.04 L1000	78214	26,80
TF14 Pt100 1/3 DIN T180 150.04 L1000	78221	27,20

Cable sensor -50..+180 °C – Pt1000 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF14 Pt1000 T180 050.04 L1000	78405	23,40
TF14 Pt1000 T180 100.04 L1000	78443	24,70
TF14 Pt1000 T180 150.04 L1000	78481	25,10

Cable sensor -50..+180 °C – Pt1000 1/3 DIN		*T3*
Item description	**Item No.**	**€**
TF14 Pt1000 1/3 DIN T180 050.04 L1000	78603	27,40
TF14 Pt1000 1/3 DIN T180 100.04 L1000	78641	28,70
TF14 Pt1000 1/3 DIN T180 150.04 L1000	78689	29,10

Cable sensor -50..+180 °C – Ni1000 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF14 Ni1000 T180 050.04 L1000	78795	23,10
TF14 Ni1000 T180 100.04 L1000	78832	24,40
TF14 Ni1000 T180 150.04 L1000	78870	24,80

Cable sensor -50..+180 °C – Ni1000TK5000		*T3*
Item description	**Item No.**	**€**
TF14 Ni1000TK5000 T180 050.04 L1000	78993	27,40
TF14 Ni1000TK5000 T180 100.04 L1000	79037	28,70
TF14 Ni1000TK5000 T180 150.04 L1000	79075	29,10

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+180 °C	2,30
Connection enclosure USE-S incl. mounting base pure white	17,30
Protection class IP67 (rolled)	2,70
Add to price of NTC10k for sensor NTC10k Precon | NTC10k Carel | NTC1,8k | NTC5k | NTC20k	0,00

TF14 (-80..+250 °C)

Cable sensor -80..+250 °C – Pt100 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF14 Pt100 T250 050.04 L1000	95563	23,80
TF14 Pt100 T250 100.04 L1000	96126	24,60
TF14 Pt100 T250 150.04 L1000	96195	24,90

Cable sensor -80..+250 °C – Pt100 1/3 DIN		*T3*
Item description	**Item No.**	**€**
TF14 Pt100 1/3 DIN T250 050.04 L1000	96775	28,70
TF14 Pt100 1/3 DIN T250 100.04 L1000	96805	29,50
TF14 Pt100 1/3 DIN T250 150.04 L1000	96843	29,80

Cable sensor -80..+250 °C – Pt1000 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF14 Pt1000 T250 050.04 L1000	97185	26,60
TF14 Pt1000 T250 100.04 L1000	97239	27,40
TF14 Pt1000 T250 150.04 L1000	91510	27,70

Cable sensor -80..+250 °C – Pt1000 1/3 DIN		*T3*
Item description	**Item No.**	**€**
TF14 Pt1000 1/3 DIN T250 050.04 L1000	91633	30,60
TF14 Pt1000 1/3 DIN T250 100.04 L1000	91671	31,40
TF14 Pt1000 1/3 DIN T250 150.04 L1000	91718	31,70

Cable sensor -80..+250 °C – Ni1000 DIN cl. B		*T3*
Item description	**Item No.**	**€**
TF14 Ni1000 T250 050.04 L1000	91831	26,30
TF14 Ni1000 T250 100.04 L1000	91879	27,10
TF14 Ni1000 T250 150.04 L1000	91916	27,40

Cable sensor -80..+250 °C – Ni1000TK5000		*T3*
Item description	**Item No.**	**€**
TF14 Ni1000TK5000 T250 050.04 L1000	97338	30,60
TF14 Ni1000TK5000 T250 100.04 L1000	97376	31,40
TF14 Ni1000TK5000 T250 150.04 L1000	97413	31,70

Options	
Description	**€**
Add per meter of connection cable 2-wire -80..+250 °C	6,70
3-wire connection -80..+250 °C (3-wire)	3,60
Add per meter of connection cable 3-wire -80..+250 °C	7,60
4-wire connection -80..+250 °C (4-wire)	7,80
Add per meter of connection cable 4-wire -80..+250 °C	8,70
Connection enclosure USE-S incl. mounting base pure white	17,30
Protection class IP67 (rolled)	2,70

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF6 flexible (suitable for Ø=4 / 6 / 7 mm)	399098	A2	7,80
Mounting flange MF4 brass (suitable for Ø=4 mm)	102438	A1	6,30
Compression fittings KL4VA for Ø=4 mm with cutting ring, stainless steel	103206	A1	15,60
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30

TF14+

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 BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	jumper
Output signal temperature	scaling analogue output: 0..+160 °C (default setting) selectable from 4 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C adjustable at the transducer
Power supply	**TRV:** 15..24 V = (±10%) SELV, 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 =)
Material in touch with media	Sensor probe, Ø=4 mm, stainless steel V4A (1.4571) 16-point pressed (IP65)
Installation length	50 mm, 100 mm, 150 mm
Enclosure	USE-S, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-50..+250 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² removable cable entry flextherm M20 for wire Ø=4,5..9 mm
Connection cable	0,14 mm², **T180:** silicone, **T250:** PTFE
Length connection wire	1 m
Delivery content	incl. mounting base enclosure USE-S pure white incl. mounting set (screws and accessories)

Cable sensor -50..+180 °C – active			
Item description	**Item No.**	**Group**	**€**
TF14+ TRV MultiRange T180 050.04 L1000	658850	T2	82,80
TF14+ TRV MultiRange T180 100.04 L1000	658867	T2	84,50
TF14+ TRV MultiRange T180 150.04 L1000	658874	T2	85,00
TF14+ TRA MultiRange T180 050.04 L1000	658881	T2	82,80
TF14+ TRA MultiRange T180 100.04 L1000	658898	T2	84,50
TF14+ TRA MultiRange T180 150.04 L1000	658904	T2	85,00

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+180 °C	2,30
Temperature -50..+250 °C (T250)	13,30
Add per meter of connection cable 2-wire -50..+250 °C	3,70
RS485 Modbus in enclosure USE-M with option board	87,00
RS485 BACnet (MS/TP) in enclosure USE-M with option board	87,00
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO in enclosure USE-M with option board for 24 V ~ or 24 V = / 3 A	81,70
LCD 29x35 mm, RGB backlight in enclosure USE-M with option board	79,50
Protection class IP67 (rolled)	2,70

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting flange MF6 flexible (suitable for Ø=4 / 6 / 7 mm)	399098	A2	7,80
Mounting flange MF4 brass (suitable for Ø=4 mm)	102438	A1	6,30
Compression fittings KL4VA for Ø=4 mm with cutting ring, stainless steel	103206	A1	15,60
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

PR25

Contact sensor with connection cable and aluminum prism for temperature measurement (cold or hot water) on pipes and other suitable surfaces.

Technical Data	
Measured values	temperature
Material in touch with media	Sensor probe, Ø=11/15 mm, aluminium, hex pressed (IP65)
Installation length	28 mm
Protection (IP)	IP65, according to EN 60529
Connection cable	0,25 mm², **T100:** PVC, **T180:** silicone
Length connection wire	1 m

Contact Sensor -35..+100 °C – passive

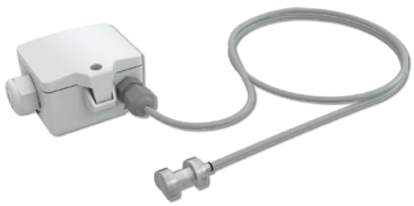
Item description	Item No.	Group	€
PR25 Pt100 T100 L1000	81696	T2	22,20
PR25 Pt100 1/3 DIN T100 L1000	94771	T2	27,10
PR25 Pt1000 T100 L1000	94894	T2	25,00
PR25 Pt1000 1/3 DIN T100 L1000	94931	T2	29,00
PR25 Ni1000 T100 L1000	94979	T2	24,70
PR25 Ni1000TK5000 T100 L1000	95686	T2	29,00
PR25 NTC10k T100 L1000	95808	T2	20,90
PR25 NTC10k Precon T100 L1000	95846	T2	20,90
PR25 NTC5k T100 L1000	95761	T2	20,90
PR25 NTC20k T100 L1000	362641	T2	20,90
PR25 NTC1,8k T100 L1000	287128	T2	20,90
PR25 KTY81-110 T100 L1000	95884	T2	29,00
PR25 KTY81-121 T100 L1000	95921	T2	29,00
PR25 KTY81-210 T100 L1000	96003	T2	29,00
PR25 LM235Z T100 L1000	96089	T2	23,00

Options	
Description	**€**
Add per meter of connection cable 2-wire -35..+100 °C	1,40
3-wire connection -35..+100 °C (3-wire)	2,30
Add per meter of connection cable 3-wire -35..+100 °C	1,60
4-wire connection -35..+100 °C (4-wire)	6,70
Add per meter of connection cable 4-wire -35..+100 °C	1,90
Temperature -50..+180 °C (T180)	4,70
Add per meter of connection cable 2-wire -50..+180 °C	2,30
3-wire connection -50..+180 °C (3-wire)	2,50
Add per meter of connection cable 3-wire -50..+180 °C	3,20
4-wire connection -50..+180 °C (4-wire)	6,70
Add per meter of connection cable 4-wire -50..+180 °C	3,80
Connection enclosure USE-S incl. mounting base pure white	17,30
Add to price of NTC10k for sensor NTC10k Carel	0,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Syringe thermal contact fluid	102308	A1	1,80
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30

PR25+

Contact sensor 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 BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	jumper
Output signal temperature	scaling analogue output: 0..+160 °C (default setting) selectable from 4 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C adjustable at the transducer
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,4 W (24 V =), 0,8 VA (24 V ~) max. 0,5 W (24 V =)
Material in touch with media	Sensor probe, Ø=11/15 mm, aluminium, hex pressed (IP65)
Installation length	28 mm
Enclosure	USE-S, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-50..+180 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² removable cable entry flextherm M20 for wire Ø=4,5..9 mm
Connection cable	PVC, silicone, 0,25 mm²
Length connection wire	1 m
Delivery content	incl. mounting base enclosure USE-S pure white incl. fixing kit rawlplugs and screws (2x each)

Contact Sensor -50..+180 °C – active			
Item description	**Item No.**	**Group**	**€**
PR25+ TRV MultiRange T180 L1000	658782	T2	89,50
PR25+ TRA MultiRange T180 L1000	658799	T2	89,50

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+180 °C	2,30
RS485 Modbus in enclosure USE-M with option board	87,00
RS485 BACnet (MS/TP) in enclosure USE-M with option board	87,00
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO in enclosure USE-M with option board for 24 V ~ or 24 V = / 3 A	81,70
LCD 29x35 mm, RGB backlight in enclosure USE-M with option board	79,50

Accessories			
Item description	**Item No.**	**Group**	**€**
Syringe thermal contact fluid	102308	A1	1,80
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

OF14

Surface-mounted sensor for temperature measurement on glass or similar surfaces.
Designed for connecting to controls and display systems.

Technical Data	
Measured values	temperature
Material in touch with media	Sensor probe, aluminium, 35x10x6 mm
Installation length	35 mm
Operating range temperature	-35..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection cable	PVC, 0,25 mm²
Length connection wire	1 m
Mounting	surface mounting due to self-adhesive sensor surface

Contact Sensor -35..+70 °C – passive

Item description	Item No.	Group	€
OF14 Pt100 L1000	132596	T2	37,90
OF14 Pt100 1/3 DIN L1000	167307	T2	42,80
OF14 Pt1000 L1000	114851	T2	40,70
OF14 Pt1000 1/3 DIN L1000	219303	T2	44,70
OF14 Ni1000 L1000	113922	T2	40,40
OF14 Ni1000TK5000 L1000	141864	T2	44,70
OF14 NTC10k L1000	190367	T2	36,60
OF14 NTC10k Precon L1000	165006	T2	36,60
OF14 NTC5k L1000	351263	T2	36,60
OF14 NTC20k L1000	147736	T2	36,60
OF14 NTC1,8k L1000	356541	T2	36,60
OF14 LM235Z L1000	216760	T2	38,70

Options

Description	€
Add per meter of connection cable 2-wire -35..+100 °C	1,40
Connection enclosure USE-S incl. mounting base pure white	17,30
Add to price of NTC10k for sensor NTC10k Carel	0,00

OF14+

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 BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	jumper
Output signal temperature	scaling analogue output: 0..+50 °C (default setting) selectable from 4 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C adjustable at the transducer
Power supply	**TRV:** 15..24 V = (±10%) SELV, 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 =)
Material in touch with media	Sensor probe, aluminium, 35x10x6 mm
Installation length	35 mm
Enclosure	USE-S, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white
Operating range temperature	-35..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry flextherm M20 for wire Ø=4,5..9 mm, removable plug-in terminal, max. 2,5 mm²
Connection cable	PVC, 0,25 mm²
Length connection wire	1 m
Mounting	surface mounting due to self-adhesive sensor surface
Delivery content	incl. mounting base enclosure USE-S pure white incl. mounting set (screws and accessories)

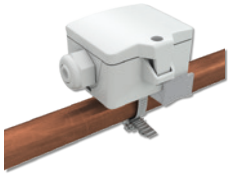
Contact Sensor -35..+70 °C – active			
Item description	**Item No.**	**Group**	**€**
OF14+ TRV3 L1000	658812	T2	106,10
OF14+ TRA3 L1000	658836	T2	106,10

Options	
Description	**€**
Add per meter of connection cable 2-wire -35..+100 °C	1,40
RS485 Modbus in enclosure USE-M with option board	87,00
RS485 BACnet (MS/TP) in enclosure USE-M with option board	87,00
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO in enclosure USE-M with option board for 24 V ~ or 24 V = / 3 A	81,70
LCD 29x35 mm, RGB backlight in enclosure USE-M with option board	79,50

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70
Mounting kit universal for enclosure USE	698511	A1	10,70

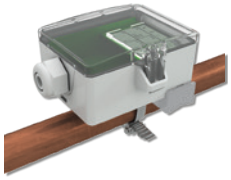
VFG54+

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. 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

passive / 0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: **TRV/TRA:** 0..+100 °C (default setting) **Relay/LCD/BUS:** -20..+80 °C (default setting) selectable from 4 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
Power supply	**TRV/Basic:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** typ. 0,5 W (24 V =) **Basic:** max. 0,7 W (24 V =), 1,8 VA (24 V ~) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor probe, brass, spring loaded sensor
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**TRV/TRA/Basic:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	-35..+120 °C
Protection (IP)	IP65, according to EN 60529

Technical Data	
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² **TRV/TRA/Basic:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Mounting	along the pipe or sideways

Contact Sensor -35..+120 °C – passive

Item description	Item No.	In stock	Group	€
VFG54+ Pt100	620642		T3	23,80
VFG54+ Pt100 1/3 DIN	620659		T3	28,70
VFG54+ Pt1000	620666	●	T3	26,60
VFG54+ Pt1000 1/3 DIN	620598		T3	30,60
VFG54+ Ni1000	620611	●	T3	26,30
VFG54+ Ni1000TK5000	620628	●	T3	30,60
VFG54+ NTC10k	620604	●	T3	22,50
VFG54+ NTC10k Precon	620673		T3	22,50
VFG54+ NTC5k	624244		T3	22,50
VFG54+ NTC20k	620680		T3	22,50
VFG54+ NTC1,8k	643832		T3	22,50
VFG54+ LM235Z	620635		T3	24,30
VFG54+ KTY81-110	620697		T3	30,60
VFG54+ KTY81-121	620703		T3	30,60
VFG54+ KTY81-122	620710		T3	30,60
VFG54+ KTY81-210	620727		T3	30,60

Options

Description	€
3-wire connection (3-wire)	2,50
4-wire connection (4-wire)	6,70
Add to price of NTC10k for sensor NTC10k Carel	0,00

Accessories

Item description	Item No.	Group	€
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30

VFG54+ active

Contact sensor temperature – active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
VFG54+ TRV MultiRange		620741	T2	86,40
VFG54+ TRA MultiRange		620758	T2	86,40
VFG54+ TRV MultiRange relay	✓	662994	T2	134,80

Contact sensor temperature – active – LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
VFG54+ LCD TRV MultiRange	✓	663014	T2	132,60
VFG54+ LCD TRA MultiRange	✓	663021	T2	132,60
VFG54+ LCD TRV MultiRange relay	✓	663038	T2	181,00

VFG54+ BUS

Contact sensor temperature – BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
VFG54+ Basic RS485 Modbus		747806	T2	86,40
VFG54+ RS485 BACnet (MS/TP)	✓	699709	T2	138,00
VFG54+ LCD RS485 BACnet (MS/TP)	✓	699716	T2	184,20
VFG54+ RS485 Modbus	✓	663045	T2	138,00
VFG54+ LCD RS485 Modbus	✓	663052	T2	184,20

Accessories			
Item description	**Item No.**	**Group**	**€**
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

AF25

Contact sensor with connection cable and brass strap for surface temperature measurement (cold or hot water) on pipes and other curved surfaces.

Technical Data	
Measured values	temperature
Material in touch with media	Sensor probe, Ø=6 mm, brass, with contact tongue 16-point pressed (IP65)
Installation length	35
Operating range temperature	-50..+135 °C
Protection (IP)	IP65, according to EN 60529
Connection cable	0,25 mm², **T100:** PVC, **T135:** silicone
Length connection wire	1 m

Contact Sensor -35..+100 °C – passive

Item description	Item No.	Group	€
AF25 Pt100 T100 L1000	81610	T3	15,70
AF25 Pt100 1/3 DIN T100 L1000	46411	T3	20,60
AF25 Pt1000 T100 L1000	54263	T3	18,50
AF25 Pt1000 1/3 DIN T100 L1000	54300	T3	22,50
AF25 Ni1000 T100 L1000	54348	T3	18,20
AF25 Ni1000TK5000 T100 L1000	54386	T3	22,50
AF25 NTC10k T100 L1000	92005	T3	14,40
AF25 NTC10k Precon T100 L1000	92043	T3	14,40
AF25 NTC5k T100 L1000	54461	T3	14,40
AF25 NTC20k T100 L1000	141994	T3	14,40
AF25 NTC1,8k T100 L1000	241687	T3	14,40
AF25 LM235Z T100 L1000	715270	T3	16,50

Options	
Description	**€**
Add per meter of connection cable 2-wire -35..+100 °C	1,40
3-wire connection -35..+100 °C (3-wire)	2,30
Add per meter of connection cable 3-wire -35..+100 °C	1,60
4-wire connection -35..+100 °C (4-wire)	6,70
Add per meter of connection cable 4-wire -35..+100 °C	1,90
Temperature -50..+135 °C (T135)	4,70
Add per meter of connection cable 2-wire -50..+135 °C	2,30
3-wire connection -50..+135 °C (3-wire)	2,50
Add per meter of connection cable 3-wire -50..+135 °C	3,20
4-wire connection -50..+135 °C (4-wire)	6,70
Add per meter of connection cable 4-wire -50..+135 °C	3,80
Connection enclosure USE-S incl. mounting base pure white	17,30
Add to price of NTC10k for sensor NTC10k Carel	0,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70

AF25+

Contact sensor in the USE 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 BACnet Modbus LON

Technical Data	
Measured values	temperature
Configuration	USEapp, uConfig, BUS, jumper (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output: 0..+160 °C (default setting) selectable from 4 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
Power supply	**TRV:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **TRA:** 15..24 V = (±10%) SELV **Relay/LCD/BUS:** 15..35 V = SELV, 19..29 V ~ SELV
Power consumption	**TRV:** typ. 0,4 W (24 V =), 0,8 VA (24 V ~) **TRA:** typ. 0,5 W (24 V =) **Relay/LCD/BUS:** max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Material in touch with media	Sensor probe, Ø=6 mm, brass, with contact tongue 16-point pressed (IP65)
Installation length	35 mm
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	**TRV/TRA:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **Relay/LCD/BUS:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, **LCD:** transparent cover
Operating range temperature	-50..+135 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm², BUS max. 1,5 mm² **TRV/TRA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm **Relay/LCD/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	PVC, 0,25 mm²
Length connection wire	1 m
Delivery content	incl. mounting set (screws and accessories) **TRV/TRA:** incl. mounting base enclosure USE-S pure white **Relay/LCD/BUS:** incl. mounting base enclosure USE-M pure white

Contact sensor temperature – active – 0..10 (0..5) V | 4..20 mA			
Item description	**Item No.**	**Group**	**€**
AF25+ TRV MultiRange T135 L1000	658751	T2	85,30
AF25+ TRA MultiRange T135 L1000	658768	T2	85,30

Options	
Description	**€**
Add per meter of connection cable 2-wire -50..+135 °C	2,30
RS485 Modbus in enclosure USE-M with option board	87,00
RS485 BACnet (MS/TP) in enclosure USE-M with option board	87,00
Add to price of RS485 Modbus for LON FT	86,90
2x floating contact NO in enclosure USE-M with option board for 24 V ~ or 24 V = / 3 A	81,70
LCD 29x35 mm, RGB backlight in enclosure USE-M with option board	79,50

Accessories			
Item description	**Item No.**	**Group**	**€**
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	A1	3,30
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	A1	5,20
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071	A1	3,30
Mounting clip enclosure USE-S pure white	667739	A1	5,70
Mounting base enclosure USE-S pure white	667722	A1	6,70
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

Condensation
Leakage
Frost Protection

Our condensation sensors, leakage sensors and frost protection thermostats protect sensitive electronics from leakage damages, which often result in expensive system failures or even dropouts.

Condensation Sensors

WK02+	Condensation, temperature, humidity	**368**
WK01+	Condensation	**370**

Leakage Detectors

LS02+	Leakage	**372**
LS02+ ext.	Leakage	**373**
LS02+ flex	Leakage	**375**

Frost Protection Thermostats

TFR	Temperature	**377**
TFRe	Temperature	**378**

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.

BACnet Modbus LON

Technical Data	
Measured values	temperature, relative humidity, absolute humidity, enthalpy, dew point, condensation
Configuration	USEapp, BUS, DIP switches (depending on type)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Output signal temperature	scaling analogue output, 0..+50 °C (default setting) selectable from 4 temperature ranges -40..+60 | 0..+50 | -20..+80 | -15..+35 °C optionally configurable
Measuring range humidity	0..100% rH non-condensing, 0..85 KJ/kg enthalpy, 0..50 | 0..80 g/m³ absolute humidity, 0..+50 | -20..+80 °C dew point, optionally configurable
Power supply	**24 V:** 15..24 V = (±10%) SELV, 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 W (230 V ~)
Display	LCD 29x35 mm, RGB backlight LED green – power supply OK, LED red – condensation
Enclosure	USE-L, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	0..+50 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm², BUS max. 1,5 mm² removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm
Connection cable	PVC, 0,25 mm², white

Technical Data	
Length connection wire	2 m
Delivery content	incl. mounting base enclosure USE-L pure white incl. mounting set (screws and accessories) incl. cable tie 140x3,6 mm incl. syringe thermal contact fluid 1 ml

Condensation sensor – active – 24 V

Item description	USEapp	Item No.	Group	€
WK02+ ext. 24 V L2000	✓	737180	H2	211,20

Condensation sensor – active – 230 V

Item description	USEapp	Item No.	Group	€
WK02+ ext. 230 V L2000	✓	737197	H2	229,90

Condensation sensor – RS485 Modbus – 24 V

Item description	USEapp	Item No.	Group	€
WK02+ ext. 24 V L2000 RS485 Modbus	✓	744355	H2	262,80

Options

Description	€
RS485 BACnet (MS/TP)	51,60
Add to price of RS485 Modbus for LON FT	86,90
LCD 29x35 mm, RGB backlight	46,20

Accessories

Item description	Item No.	Group	€
Mounting base enclosure USE-L pure white	668361	A1	13,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

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

Technical Data	
Measured values	condensation
Power supply	**24 V:** 15..24 V = (±10%) SELV, 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 W (230 V ~)
Display	LED green – power supply OK, LED red – condensation
Enclosure	**24 V:** USE-S, impact- and shock-resistant enclosure with quick-release cover, PC **230 V:** USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	**24 V:** 0..+50 °C **230 V:** -20..+60 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry flextherm M20 for wire Ø=4,5..9 mm removable plug-in terminal, max. 2,5 mm²
Connection cable	PVC, 0,25 mm², grey
Length connection wire	2 m
Delivery content	incl. mounting set (screws and accessories) incl. cable tie 140x3,6 mm incl. syringe thermal contact fluid 1 ml **ext. 24 V:** incl. mounting base enclosure USE-S pure white **ext. 230 V:** incl. mounting base enclosure USE-M pure white

Condensation sensor			
Item description	**Item No.**	**Group**	**€**
WK01+ 24 V	659215	H2	113,60
WK01+ 230 V	839839	H2	110,90

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting kit universal for enclosure USE	698511	A1	10,70
Syringe thermal contact fluid	102308	A1	1,80
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

Condensation sensor			
Item description	**Item No.**	**Group**	**€**
WK01+ ext. 24 V L2000	659222	H2	130,90
WK01+ ext. 230 V L2000	837774	H2	180,40

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-S pure white	667722	A1	6,70
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
Syringe thermal contact fluid	102308	A1	1,80
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

LS02+

LS02+

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	leakage
Output switch contact	changeover contact, 1 A resisitve load, max. 24 V, floating
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,6 W (24 V =), 1,5 VA (24 V ~)
Material in touch with media	stainless steel V2A (1.4305)
Display	LED green – power supply OK, LED red – alarm, leakage detected
Enclosure	USE-S, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	-35..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry flextherm M20 for wire Ø=4,5..9 mm removable plug-in terminal, max. 2,5 mm²
Mounting	level compensation through adjustable contacts
Delivery content	incl. mounting base enclosure USE-S pure white incl. fixing kit rawlplugs and screws (2x each)

Leakage detector detector electrodes

Item description	Item No.	Group	€
LS02+	659253	H2	105,70

Accessories

Item description	Item No.	Group	€
Mounting base enclosure USE-S pure white	667722	A1	6,70
Mounting kit universal for enclosure USE	698511	A1	10,70
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

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 remote sensor element enables flexible mounting. This allows the leakage detector to be individually adapted to the existing installation situation or leakage height to be detected. A potential-free switching contact is used for communication with the higher-level control system.

LS02+ ext.

Technical Data	
Measured values	leakage
Configuration	USEapp
Output switch contact	changeover contact, 1 A resisitve load, max. 24 V, floating
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,8 W (24 V =), 1,5 VA (24 V ~)
Material in touch with media	stainless steel V4A (1.4401)
Display	LED green – power supply OK LED red – alarm, leakage detected
Enclosure	USE-S, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	-20..+60 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry flextherm M20 for wire Ø=4,5..9 mm removable plug-in terminal, max. 2,5 mm²
Connection cable	PVC, 0,25 mm²
Length connection wire	5 m
Mounting	level compensation through spring contacts
Delivery content	incl. mounting base enclosure USE-S pure white incl. mounting set (screws and accessories) incl. fixing kit rawlplugs and screws (2x each)

Leakage detector detector electrodes				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LS02+ ext. L5000	✓	765725	H2	123,30

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-S pure white	667722	A1	6,70
Mounting kit universal for enclosure USE	698511	A1	10,70
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

LS02+ flex

Leakage detector LS02+ flex 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 type flex detects water or liquid intrusion over the entire length of the sensor rod. A potential-free switching contact is used for communication with the higher-level control system. Thanks to the compact design of the sensor rod, the sensor can be mounted in a variety of places (floors, ceilings, etc.) to save space. The sophisticated and highly flexible insulation braiding also allows direct mounting on water-bearing pipe systems. The sensor rod can easily be shortened on site.

Technical Data	
Measured values	leakage
Configuration	USEapp
Output switch contact	changeover contact, 1 A resisitve load, max. 24 V, floating
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	typ. 0,6 W (24 V =), 1,6 VA (24 V ~)
Material in touch with media	Sensor rod, Twisted PVC cable
Installation length	2000 mm, 5000 mm, 20000 mm, 30000 mm
Display	LED green – power supply OK LED red – alarm, leakage detected
Enclosure	USE-M, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, transparent cover
Operating range temperature	-20..+60 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable cable entry flextherm M20 for wire Ø=4,5..9 mm removable plug-in terminal, max. 2,5 mm²
Mounting	additional fixation of the sensor rod possible with adhesive pads (see accessories)
Delivery content	incl. mounting base enclosure USE-M pure white incl. mounting set (screws and accessories) incl. fixing kit rawlplugs and screws (2x each)

Leakage detector flexible rod				
Item description	**USEapp**	**Item No.**	**Group**	**€**
LS02+ flex L2000	✓	819749	H2	162,00
LS02+ flex L5000	✓	819770	H2	191,40
LS02+ flex L20m	✓	819756	H2	338,40
LS02+ flex L30m	✓	819763	H2	436,40

Accessories			
Item description	**Item No.**	**Group**	**€**
Mounting base enclosure USE-M pure white	668354	A1	9,60
Mounting kit universal for enclosure USE	698511	A1	10,70
Fixing kit rawlplugs and screws (2x each)	660945	A1	1,10
C-clip adhesive pads (5 pieces) – mounting accessories for LS02+ flex	778596	A1	10,30
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30

TFR

Frost protection thermostat for downstream temperature monitoring of e.g. heat exchangers in ventilation and air-conditioning systems. The product offers 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
Operating elements	rotary knob, reset button
Material in touch with media	Capillary pipe, copper with tube filling R507 sensor operating length approx. 600 mm contact material Ag/Ni (90%/10%), gold plated (3 µm)
Installation length	1800 mm, 3000 mm, 6000 mm, 12000 mm
Enclosure	PA6 GK30
Operating range temperature	-35..+70 °C
Protection (IP)	IP65, according to EN 60529
Connection	cable entry M16 for wire Ø=8 mm, terminal block, max. 2,5 mm²
Delivery content	incl. installation set
Notes	mounting flange MF2 useable from installation length 3000 mm

Frost protection thermostat automatic reset

Item description	Item No.	Group	€
TFR 1800	426435	T1	86,10
TFR 3000	430371	T1	86,60
TFR 6000	430395	T1	89,90
TFR 12000	541916	T1	104,70

Frost protection thermostat manual reset

Item description	Item No.	Group	€
TFR-R 1800	430364	T1	103,00
TFR-R 3000	430388	T1	107,70
TFR-R 6000	430401	T1	110,90
TFR-R 12000	656061	T1	134,90

Accessories

Item description	Item No.	Group	€
Mounting flange MF2 (suitable for TFR)	435642	A1	7,80
Installation set TFR / MWF+	679466	A1	10,30

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
Operating elements	2 rotary knobs (Talarm and Xp)
Configuration	DIP switches
Input	1x input sensor PT1000 (default), NTC10K, Ni1000, Ni1000TK5000 1x input for external controller for defining set point 1x input for floating contact
Output signal temperature	0..+100 °C
Power supply	15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV
Power consumption	max. 2 VA (24 V ~)
Display	LED green – indicator valve OUT LED red – alarm LED yellow – fan
Enclosure	ABS
Colour	white
Operating range temperature	-40..+70 °C
Protection (IP)	IP20, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm²
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715

Electronic frost protection thermostat			
Item description	**Item No.**	**Group**	**€**
TFRe	667203	T1	150,10

Pressure and 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.

Gaseous Media

DPA+	Differential pressure, volume flow	**380**
PS	Differential pressure	**386**
DPG	Differential pressure	**387**
MM	Differential pressure	**388**

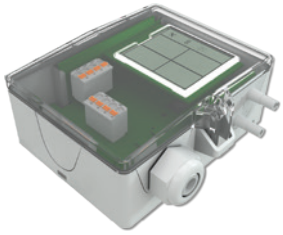
Liquid Media

DLF	Pressure	**390**
DPL	Differential pressure	**393**

DPA+

Differential pressure transmitter for measuring and monitoring overpressure, underpressure, differential pressure and flow volume 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. 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.

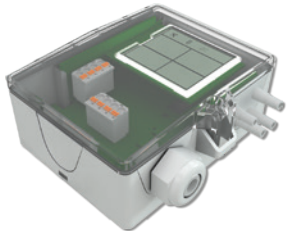
DPA+



DPA+ LCD

DPA+
with additional cable entry
(refer to mounting accessories USE)

DPA+ Dual



DPA+ Dual LCD

0..10 V / 4..20 mA BACnet Modbus LON

Technical Data	
Measured values	differential pressure, volume flow pressure in Pa or inchWC, volume flow in m³/h or cfm optionally configurable via app or uConfig
Configuration	USEapp, uConfig, BUS, jumper, DIP switches (depending on type)
Input	2x input for NTC10k or floating contact (2IN)
Network technology	RS485 Modbus, RS485 BACnet (MS/TP), LON FT (free topology)
Measuring range pressure	**DPA250+:** 0..+25 | 0..+50 | 0..+100 | 0..+250 | -25..+25 | -50..+50 | -100..+100 | -150..+150 Pa, 0..+250 Pa (default setting), **DPA2500+:** -100..+100 | 0..+100 | 0..+250 | 0..+500 | 0..+1000 | 0..+1500 | 0..+2000 | 0..+2500 Pa, 0..+2500 Pa (default setting) **DPA7000+:** 0..+1000 | 0..+1500 | 0..+2000 | 0..+2500 | 0..+3000 | 0..+4000 | 0..+5000 | 0..+7000 Pa, 0..+7000 Pa (default setting) selectable at the device
Measuring range velocity	0..750.000 m³/h, optionally configurable
Power supply	15..35 V = SELV, 19..29 V ~ SELV **AA:** 15..35 V = SELV
Power consumption	max. 2,5 W (24 V =), 4,3 VA (24 V ~)
Display	LCD 29x35 mm, RGB backlight, with traffic light function, threshold values configurable, optionally configurable via app or uConfig
Enclosure	USE-L, impact- and shock-resistant enclosure with quick-release cover, PC
Colour	pure white, **LCD:** transparent cover
Operating range temperature	-10..+50 °C
Protection (IP)	IP65, according to EN 60529
Connection	removable plug-in terminal, max. 2,5 mm² BUS max. 1,5 mm², relay max. 1,5 mm² inputs max. 1,0 mm² pressure connection male Ø=5,0 mm / Ø=6,3 mm connection tube: PVC, soft **VV/4xV/AA:** removable cable entry flextherm M20 for wire Ø=4,5..9 mm, **Relay/BUS:** removable cable entry M25 with fourfold cable entry for wire with max. Ø=7 mm,
Mounting	surface-mounted flat on base using screws prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content	incl. mounting base enclosure USE-L pure white incl. mounting set (screws and accessories) incl. pressure connection set and 2 m PVC connection hose
Notes	output protection circuit (reverse polarity protected)

DPA+ VV / AA

Differential pressure and volume flow transducer active 0..10 (0..5) V					
Item description	**USEapp**	**Item No.**	**In stock**	**Group**	**€**
DPA2500+ VV MultiRange	✓	659369	⛁	P2	154,70
DPA7000+ VV MultiRange	✓	659376		P2	154,70
DPA250+ VV AZ MultiRange	✓	692397		P2	185,90
DPA2500+ VV AZ MultiRange	✓	675970		P2	215,90
DPA7000+ VV AZ MultiRange	✓	675994		P2	215,90

Differential pressure and volume flow transducer active 4..20 mA					
Item description	**USEapp**	**Item No.**	**In stock**	**Group**	**€**
DPA2500+ AA MultiRange	✓	666985	⛁	P2	173,90
DPA7000+ AA MultiRange	✓	666992		P2	173,90
DPA250+ AA AZ MultiRange	✓	691598		P2	205,10
DPA2500+ AA AZ MultiRange	✓	693981		P2	235,10
DPA7000+ AA AZ MultiRange	✓	705325		P2	235,10

Differential pressure and volume flow transducer active 0..10 (0..5) V + relay				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ VV MultiRange relay	✓	663694	P1	203,10
DPA7000+ VV MultiRange relay	✓	663700	P1	203,10

Options	
Description	**€**
Relay: Automatic zero-point calibration (AZ)	61,20

DPA+ VV LCD / AA LCD

Differential pressure and volume flow transducer active 0..10 (0..5) V LCD					
Item description	**USEapp**	**Item No.**	**In stock**	**Group**	**€**
DPA2500+ LCD VV MultiRange	✓	659390	⛁	P1	200,90
DPA7000+ LCD VV MultiRange	✓	659406		P1	200,90
DPA250+ LCD VV AZ MultiRange	✓	688420		P1	232,10
DPA2500+ LCD VV AZ MultiRange	✓	676007		P1	262,10
DPA7000+ LCD VV AZ MultiRange	✓	676021		P1	262,10

Differential pressure and volume flow transducer active 4..20 mA LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ LCD AA MultiRange	✓	667111	P1	220,10
DPA7000+ LCD AA MultiRange	✓	667128	P1	220,10
DPA250+ LCD AA AZ MultiRange	✓	700962	P1	251,30
DPA2500+ LCD AA AZ MultiRange	✓	679725	P1	281,30
DPA7000+ LCD AA AZ MultiRange	✓	703147	P1	281,30

Differential pressure and volume flow transducer active 0..10 (0..5) V + relay LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ LCD VV MultiRange relay	✓	663748	P1	249,30
DPA7000+ LCD VV MultiRange relay	✓	663755	P1	249,30

Options	
Description	**€**
Relay: Automatic zero-point calibration (AZ)	61,20

DPA+ BUS

Differential pressure and volume flow transducer RS485 BACnet (MS/TP)				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ RS485 BACnet (MS/TP) MultiRange	✓	700238	P1	159,80
DPA7000+ RS485 BACnet (MS/TP) MultiRange	✓	700252	P1	159,80
DPA250+ RS485 BACnet (MS/TP) AZ MultiRange	✓	705387	P1	191,00
DPA2500+ RS485 BACnet (MS/TP) AZ MultiRange	✓	700306	P1	221,00
DPA7000+ RS485 BACnet (MS/TP) AZ MultiRange	✓	700313	P1	221,00

Differential pressure and volume flow transducer RS485 Modbus				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ RS485 Modbus MultiRange	✓	659420	P1	159,80
DPA7000+ RS485 Modbus MultiRange	✓	659437	P1	159,80
DPA250+ RS485 Modbus AZ MultiRange	✓	693745	P1	191,00
DPA2500+ RS485 Modbus AZ MultiRange	✓	676083	P1	221,00
DPA7000+ RS485 Modbus AZ MultiRange	✓	676090	P1	221,00

DPA+ BUS LCD

Differential pressure and volume flow transducer RS485 BACnet (MS/TP) LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ LCD RS485 BACnet (MS/TP) MultiRange	✓	682855	P1	206,00
DPA7000+ LCD RS485 BACnet (MS/TP) MultiRange	✓	683463	P1	206,00
DPA250+ LCD RS485 BACnet (MS/TP) AZ MultiRange	✓	705370	P1	237,20
DPA2500+ LCD RS485 BACnet (MS/TP) AZ MultiRange	✓	700320	P1	267,20
DPA7000+ LCD RS485 BACnet (MS/TP) AZ MultiRange	✓	700337	P1	267,20

Differential pressure and volume flow transducer RS485 Modbus LCD				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ LCD RS485 Modbus MultiRange	✓	659451	P1	206,00
DPA7000+ LCD RS485 Modbus MultiRange	✓	659468	P1	206,00
DPA250+ LCD RS485 Modbus AZ MultiRange	✓	697767	P1	237,20
DPA2500+ LCD RS485 Modbus AZ MultiRange	✓	676106	P1	267,20
DPA7000+ LCD RS485 Modbus AZ MultiRange	✓	676113	P1	267,20

Options	
Description	**€**
2x input for NTC10k or floating contact (2IN)	35,30
Add to price of RS485 Modbus for LON FT	86,90
LON: Automatic zero-point calibration (AZ)	61,20

DPA+ Dual VV / 4xV / AA (LCD)

Dual differential pressure transducer active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ Dual VV MultiRange	✓	700344	P1	230,90
DPA2500+ Dual AA MultiRange	✓	702898	P1	250,10
DPA2500+ LCD Dual VV MultiRange	✓	705417	P1	277,10
DPA2500+ LCD Dual AA MultiRange	✓	705431	P1	296,30

Dual differential pressure and volume flow transducer active				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ Dual 4xV MultiRange	✓	705448	P1	245,80
DPA2500+ LCD Dual 4xV MultiRange	✓	700351	P1	292,00

Options	
Description	**€**
Automatic zero-point calibration dual (2x AZ)	122,20

DPA+ Dual BUS (LCD)

Dual differential pressure and volume flow transducer BUS				
Item description	**USEapp**	**Item No.**	**Group**	**€**
DPA2500+ Dual RS485 BACnet (MS/TP)	✓	703017	P1	257,30
DPA2500+ LCD Dual RS485 BACnet (MS/TP)	✓	705462	P1	303,50
DPA2500+ Dual RS485 Modbus	✓	703000	P1	257,30
DPA2500+ LCD Dual RS485 Modbus	✓	705455	P1	303,50

Options	
Description	**€**
2x input for NTC10k or floating contact (2IN)	35,30
Add to price of RS485 Modbus for LON FT	86,90
Automatic zero-point calibration dual (2x AZ)	122,20

Accessories

Accessories			
Item description	**Item No.**	**Group**	**€**
T-hose connector for pressure hoses Ø=4 mm (10 pcs)	668323	A1	36,60
Adapter 90° angle for pressure hoses Ø=4 mm	668330	A1	9,80
Metal duct connector MKS40 (Ø=4 mm, L=40 mm)	265138	A1	5,00
Metal duct connector MKS100 (Ø=5 mm, L=100 mm)	302531	A1	5,90
Mounting base enclosure USE-L pure white	668361	A1	13,40
Mounting kit universal for enclosure USE	698511	A1	10,70
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262		32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838	A1	39,50
Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30
Protective enclosure TAP+	782739	A1	40,00

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
Measuring range pressure	**PS300:** 30..300 Pa **PS500:** 30..500 Pa **PS1500:** 100..1500 Pa **PS4500:** 500..4500 Pa
Enclosure	ABS, membrane silicone
Colour	pure white, translucent cover PC
Operating range temperature	-20..+60 °C
Protection (IP)	IP54, according to EN 60529
Connection	cable entry M16 for wire Ø=8 mm terminal block, max. 1,5 mm² pressure connection male Ø=5,0 mm / Ø=6,3 mm connection tube: PVC, soft
Delivery content	incl. fixing screws (2x) incl. pressure connection set and 2 m PVC connection hose

Differential pressure switch

Item description	Item No.	In stock	Group	€
PS300	269971	●	P2	35,60
PS500	269995	●	P2	35,60
PS1500	255202	●	P2	35,60
PS4500	273138		P2	35,60

Accessories

Item description	Item No.	Group	€
Mounting bracket kit for differential pressure switch 135x74x60 mm	669009	A1	10,20
T-hose connector for pressure hoses Ø=4 mm (10 pcs)	668323	A1	36,60
Adapter 90° angle for pressure hoses Ø=4 mm	668330	A1	9,80
Metal duct connector MKS40 (Ø=4 mm, L=40 mm)	265138	A1	5,00
Metal duct connector MKS100 (Ø=5 mm, L=100 mm)	302531	A1	5,90

DPG

Compact manometer for displaying and monitoring differential air pressure in HVAC applications. Mounting accessories are included in the delivery content.

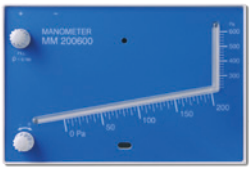
Technical Data	
Measured values	differential pressure
Measuring range pressure	**DPG60:** 0..60 Pa **DPG100:** 0..100 Pa **DPG250:** 0..250 Pa **DPG500:** 0..500 Pa **DPG1500:** 0..1500 Pa **DPG2500:** 0..2500 Pa
Display	display Ø=100 mm
Enclosure	aluminium alloy
Colour	aluminium, transparent cover PC
Operating range temperature	-20..+60 °C
Protection (IP)	IP65, according to EN 60529
Connection	connection tube: PVC, soft
Delivery content	incl. fixing screws (4x) incl. pressure connection set and 2 m PVC connection hose

Differential pressure gauge

Item description	Item No.	Group	€
DPG60	718493	P1	116,40
DPG100	718509	P1	116,40
DPG250	718516	P1	116,40
DPG500	718523	P1	116,40
DPG1500	718530	P1	116,40
DPG2500	718547	P1	116,40

Accessories

Item description	Item No.	Group	€
T-hose connector for pressure hoses Ø=4 mm (10 pcs)	668323	A1	36,60
Adapter 90° angle for pressure hoses Ø=4 mm	668330	A1	9,80
Metal duct connector MKS40 (Ø=4 mm, L=40 mm)	265138	A1	5,00
Metal duct connector MKS100 (Ø=5 mm, L=100 mm)	302531	A1	5,90



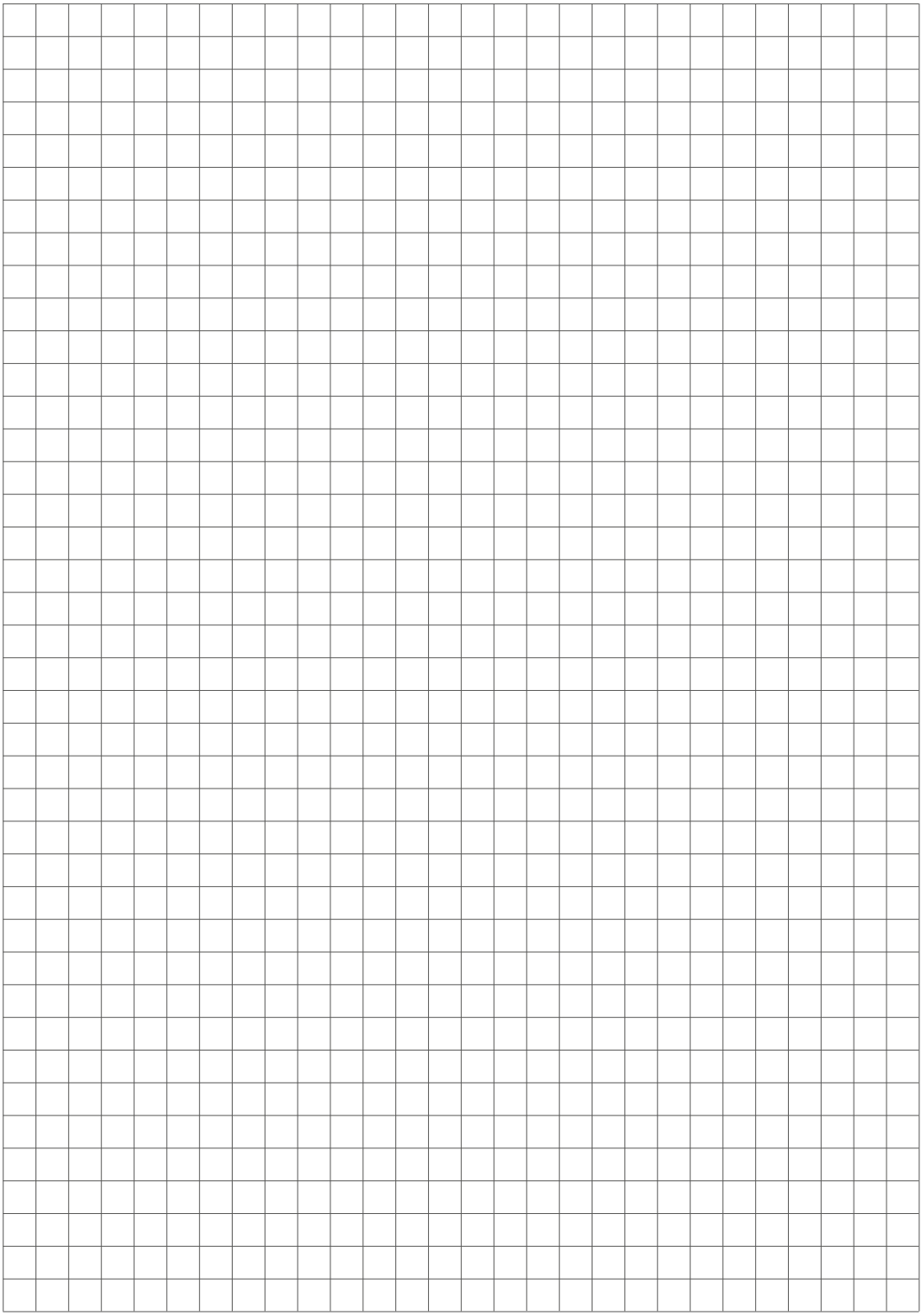
MM

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
Measuring range pressure	**MM500:** -100..+500 Pa **MM600:** 0..+600 Pa
Display	liquid indicator
Enclosure	ABS, cover PMMA
Colour	blue
Operating range temperature	-40..+60 °C
Protection (IP)	IP54, according to EN 60529
Connection	cable entry M16 for wire Ø=8 mm terminal block, max. 1,5 mm² pressure connection ABS connection tube: PVC, soft
Delivery content	incl. fixing screws (2x) incl. pressure connection set and 2 m PVC connection hose incl. 30 ml gauge fluid incl. 2 indication stickers (red/green)

Differential pressure inclined tube manometer

Item description	Item No.	Group	€
MM500 (-100..500 Pa)	384452	P1	55,00
MM600 (0..600 Pa)	255240	P1	55,00



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.

DLF

DLF UD-V / DLF UD-A

0..10 V / 4..20 mA

Technical Data	
Measured values	pressure
Measuring range pressure	**DLF-1..0:** -1..0 bar **DLF1:** 0..1 bar **DLF2,5:** 0..2,5 bar **DLF4:** 0..4 bar **DLF6:** 0..6 bar **DLF10:** 0..10 bar **DLF16:** 0..16 bar **DLF25:** 0..25 bar
Power supply	**V:** 15..24 V = (±10%) SELV, 24 V ~ (±10%) SELV **A:** 15..24 V = (±10%) SELV
Power consumption	**V:** typ. 0,15 W (24 V =), 0,3 VA (24 V ~) **A:** typ. 0,5 W (24 V =)
Material in touch with media	stainless steel V2A (1.4305), G1/2", G1/4"
Operating range temperature	-40..+125 °C
Protection (IP)	IP65, according to EN 60529
Connection	cable gland for wires with Ø=8 mm max. plug MVS according to DIN 175301-803

Pressure transducer 0..10 V | G1/4“				
Item description	**Item No.**	**In stock**	**Group**	**€**
DLF-1..0 V G1/4“	665070		P1	131,30
DLF1 V G1/4“	665087		P1	131,30
DLF2,5 V G1/4“	665117		P1	131,30
DLF4 V G1/4“	665124		P1	131,30
DLF6 V G1/4“	665131	●	P1	131,30
DLF10 V G1/4“	665148		P1	131,30
DLF16 V G1/4“	665155		P1	131,30
DLF25 V G1/4“	665162		P1	131,30

Pressure transducer 0..10 V | G1/2“				
Item description	**Item No.**	**In stock**	**Group**	**€**
DLF-1..0 V G1/2“	682541		P1	139,30
DLF1 V G1/2“	681193		P1	139,30
DLF2,5 V G1/2“	681209		P1	139,30
DLF4 V G1/2“	681216		P1	139,30
DLF6 V G1/2“	681223	●	P1	139,30
DLF10 V G1/2“	681230	●	P1	139,30
DLF16 V G1/2“	681247	●	P1	139,30
DLF25 V G1/2“	681254		P1	139,30

Accessories			
Item description	**Item No.**	**Group**	**€**
Connection wire DLF/DPL – connection plug and wire 5 m	668309	A1	15,40
UD-V – universal display for 0..10 V	775113	A1	101,80

Pressure transducer 4..20 mA | G1/4“			
Item description	**Item No.**	**Group**	**€**
DLF-1..0 A G1/4“	665209	P1	125,40
DLF1 A G1/4“	665216	P1	125,40
DLF2,5 A G1/4“	665247	P1	125,40
DLF4 A G1/4“	665254	P1	125,40
DLF6 A G1/4“	665261	P1	125,40
DLF10 A G1/4“	665278	P1	125,40
DLF16 A G1/4“	665285	P1	125,40
DLF25 A G1/4“	665292	P1	125,40

Pressure transducer 4..20 mA | G1/2“				
Item description	**Item No.**	**In stock**	**Group**	**€**
DLF-1..0 A G1/2“	682602		P1	133,40
DLF1 A G1/2“	681261		P1	133,40
DLF2,5 A G1/2“	681278		P1	133,40
DLF4 A G1/2“	681285		P1	133,40
DLF6 A G1/2“	681292	●	P1	133,40
DLF10 A G1/2“	681308		P1	133,40
DLF16 A G1/2“	681315		P1	133,40
DLF25 A G1/2“	681322		P1	133,40

Accessories			
Item description	**Item No.**	**Group**	**€**
Connection wire DLF/DPL – connection plug and wire 5 m	668309	A1	15,40
UD-A – universal display for 4..20 mA	718189	A1	101,80

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').

0..10 V / 4..20 mA

Technical Data	
Measured values	differential pressure
Measuring range pressure	**DPL1:** 0..1 bar **DPL2,5:** 0..2,5 bar **DPL4:** 0..4 bar **DPL6:** 0..6 bar
Power supply	**V:** 15..24 V = (±10%) SELV, 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 (24 V =),
Material in touch with media	stainless steel, G1/4“
Enclosure	stainless steel V2A (1.4305) lid die-cast aluminium measuring cell ceramic
Colour	black
Operating range temperature	-20..+80 °C
Protection (IP)	IP54, according to EN 60529
Connection	angle plug DIN 43650, type A

Differential pressure transducer 0..10 V				
Item description	**Item No.**	**In stock**	**Group**	**€**
DPL1 V	346580		P1	393,00
DPL2,5 V	346665	⛀	P1	393,00
DPL4 V	346672		P1	393,00
DPL6 V	346689		P1	393,00

Differential pressure transducer 4..20 mA			
Item description	**Item No.**	**Group**	**€**
DPL1 A	346597	P1	393,00
DPL2,5 A	346696	PR1	383,70
DPL4 A	346702	P1	393,00
DPL6 A	346719	P1	393,00

Accessories			
Item description	**Item No.**	**Group**	**€**
Connection wire DLF/DPL – connection plug and wire 5 m	668309	A1	15,40
UD-V – universal display for 0..10 V	775113	A1	101,80
UD-A – universal display for 4..20 mA	718189	A1	101,80
Mounting bracket kit for differential pressure transducer 40x60x40 mm	663892	A1	10,80
Screw connection set Ø=6 mm stainless steel (2 pcs.)	373388	A1	75,50
Screw connection set Ø=6 mm brass (2 pcs.)	373401	A1	16,70
Screw connection set Ø=8 mm stainless steel (2 pcs.)	373395	A1	86,60
Screw connection set Ø=8 mm brass (2 pcs.)	373418	A1	27,10

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.

Single-Phase

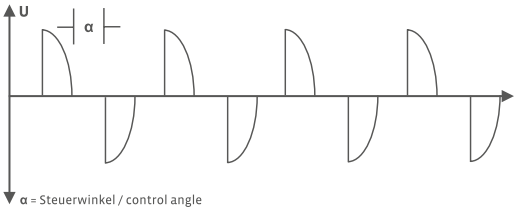
TS1 1-phase	Power thyristor	**396**
TS3 1-phase	Power thyristor	**398**

Three-Phase

TS1 3-phase	Power thyristor	**400**
TS3 3-phase	Power thyristor	**402**
TS2 3-phase	Power thyristor	**404**

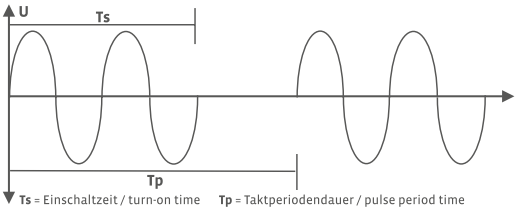
Phase angle control

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.



TS1 single-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	
Configuration	DIP switches
Output switch contact	signal contact at 100% Ua 1x contact NO 3A for 250 V ~ or 24 V =, floating
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)
Input	input for potentiometer 2,5..10 kΩ electrical activation via setpoint signal 0..10 V = or 0..20 mA optionally configurable
Power supply	L1, N: 230 V ~ 48..62 Hz, self-synchronizing
Power consumption	**2 A:** typ. 2,5 W **4 A:** typ. 4,5 W **6 A:** typ. 6,5 W **8 A:** typ. 9 W **10 A:** typ. 11 W **12 A:** typ. 13 W
Display	LED – power supply OK, LED – modulation amplitude 100%
Enclosure	PA
Operating range temperature	0..+45 °C
Protection (IP)	IP40, terminal blocks IP23, according to EN 60529
Connection	terminal block, max. 2,5 mm²
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Notes	types up to 4 A with cooling plate types 6 A with heat sink types 8 A and higher with heat sink and fan

Power thyristors – Phase angle			
Item description	**Item No.**	**Group**	**€**
TS1 single-phase 1-ph 2 A 0,46 kW	229678	Y1	241,10
TS1 single-phase 1-ph 4 A 0,92 kW	226639	Y1	280,90
TS1 single-phase 1-ph 6 A 1,38 kW	224000	Y1	326,90
TS1 single-phase 1-ph 8 A 1,84 kW	236980	Y1	360,80
TS1 single-phase 1-ph 10 A 2,3 kW	223874	Y1	388,90
TS1 single-phase 1-ph 12 A 2,76 kW	230605	Y1	422,80

Power thyristors – Oscillation			
Item description	**Item No.**	**Group**	**€**
TS1 single-phase SP 1-ph 2 A 0,46 kW	283137	Y1	241,10
TS1 single-phase SP 1-ph 4 A 0,92 kW	226622	Y1	280,90
TS1 single-phase SP 1-ph 6 A 1,38 kW	238885	Y1	326,90
TS1 single-phase SP 1-ph 8 A 1,84 kW	255189	Y1	360,80
TS1 single-phase SP 1-ph 10 A 2,3 kW	266109	Y1	388,90
TS1 single-phase SP 1-ph 12 A 2,76 kW	233712	Y1	422,80

TS3 single-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	
Configuration	DIP switches
Output switch contact	signal contact in case of fault state 1x contact NO 2A for 230 V ~, floating
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)
Input	input for potentiometer 2,5..10 kΩ electrical activation via setpoint signal 0..10 V =, 0..20 or 4..20 mA optionally configurable
Power supply	L1, N: 230 V ~ 45..65 Hz, self-synchronizing
Power consumption	**15 A:** typ. 13 W **25 A:** typ. 22 W **35 A:** typ. 31 W **50 A:** typ. 45 W
Display	4 LEDs showing status of the device
Enclosure	aluminium
Operating range temperature	0..+50 °C
Protection (IP)	IP40, according to EN 60529
Connection	terminal block
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715

Power thyristors – Phase angle			
Item description	**Item No.**	**Group**	**€**
TS3 single-phase 1-ph 15 A 3,45 kW	237161	Y1	464,10
TS3 single-phase 1-ph 25 A 5,75 kW	241649	Y1	659,30
TS3 single-phase 1-ph 35 A 8,05 kW	238489	Y1	697,60
TS3 single-phase 1-ph 50 A 11,5 kW	361200	Y1	808,30

Power thyristors – Oscillation			
Item description	**Item No.**	**Group**	**€**
TS3 single-phase SP 1-ph 15 A 3,45 kW	245500	Y1	464,10
TS3 single-phase SP 1-ph 25 A 5,75 kW	231091	Y1	659,30
TS3 single-phase SP 1-ph 35 A 8,05 kW	270977	Y1	697,60
TS3 single-phase SP 1-ph 50 A 11,5 kW	344333	Y1	808,30

TS1 three-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	
Configuration	DIP switches
Output switch contact	signal contact at 100% Ua 1x contact NO 3A for 250 V ~ or 24 V =,floating
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 kW (400 V ~ / 6 A) **8 A:** 5 kW (400 V ~ / 8 A) **10 A:** 6,5 kW (400 V ~ / 10 A)
Input	input for potentiometer 2,5..10 kΩ electrical activation via setpoint signal 0..10 V = or 0..20 mA optionally configurable
Power supply	L1, L2, L3, N: 400 V ~ 48..62 Hz, self-synchronizing
Power consumption	**2 A:** typ. 7 W **4 A:** typ. 13 W **6 A:** typ. 19 W **8 A:** typ. 25 W **10 A:** typ. 31 W
Display	LED – power supply OK, LED – modulation amplitude 100%
Enclosure	PA
Operating range temperature	0..+45 °C
Protection (IP)	IP40, terminal blocks IP23, according to EN 60529
Connection	terminal block, max. 2,5 mm²
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Notes	types up to 4 A with cooling plate types 6 A with heat sink types 8 A and higher with heat sink and fan

Power thyristors – Phase angle			
Item description	**Item No.**	**Group**	**€**
TS1 three-phase 3-ph 2 A 1,2 kW	230148	Y1	275,20
TS1 three-phase 3-ph 4 A 2,5 kW	246514	Y1	303,40
TS1 three-phase 3-ph 6 A 4,0 kW	224260	Y1	337,00
TS1 three-phase 3-ph 8 A 5,0 kW	233736	Y1	372,60
TS1 three-phase 3-ph 10 A 6,5 kW	224314	Y1	412,40

Power thyristors – Oscillation			
Item description	**Item No.**	**Group**	**€**
TS1 three-phase SP 3-ph 2 A 1,2 kW	273558	Y1	275,20
TS1 three-phase SP 3-ph 4 A 2,5 kW	268226	Y1	303,40
TS1 three-phase SP 3-ph 6 A 4,0 kW	275910	Y1	337,00
TS1 three-phase SP 3-ph 8 A 5,0 kW	275927	Y1	372,60
TS1 three-phase SP 3-ph 10 A 6,5 kW	241182	Y1	412,40

TS3 three-phase

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	
Configuration	DIP switches
Output switch contact	signal contact at 100% Ua signal contact in case of fault state changeover contacts 2A for 230 V ~
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)
Input	input for potentiometer 2,5..10 kΩ PWM input 5 V / 5..10 kHz input for PTC according to DIN 44081 input for reset electrical activation via setpoint signal 0..10 V = or 0..20 mA optionally configurable
Power supply	L1, L2, L3, N: 400 V ~ 45..65 Hz, self-synchronizing
Power consumption	**15 A:** typ. 40 W **25 A:** typ. 67 W **35 A:** typ. 94 W **50 A:** typ. 135 W
Display	4 LEDs showing status of the device
Enclosure	aluminium
Operating range temperature	0..+50 °C
Protection (IP)	IP40, according to EN 60529
Connection	terminal block
Mounting	4 mounting holes Ø=8 mm for mounting on galvanized mounting plates (control cabinet)

Power thyristors – Phase angle			
Item description	**Item No.**	**Group**	**€**
TS3 three-phase 3-ph 15 A 10 kW	224796	Y1	902,80
TS3 three-phase 3-ph 25 A 16 kW	225649	Y1	1031,40
TS3 three-phase 3-ph 35 A 23 kW	225656	Y1	1204,10
TS3 three-phase 3-ph 50 A 33 kW	256353	Y1	1343,00

Power thyristors – Oscillation			
Item description	**Item No.**	**Group**	**€**
TS3 three-phase SP 3-ph 15 A 10 kW	225236	Y1	902,80
TS3 three-phase SP 3-ph 25 A 16 kW	240970	Y1	1031,40
TS3 three-phase SP 3-ph 35 A 23 kW	241014	Y1	1204,10
TS3 three-phase SP 3-ph 50 A 33 kW	223836	Y1	1343,00

TS2 three-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	
Configuration	jumper, DIP switches
Output switch contact	signal contact at 100% Ua, signal contact in case of fault state changeover contacts 2A for 230 V ~, floating
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)
Input	input for potentiometer 2,5..10 kΩ input for PTC according to DIN 44081 electrical activation via setpoint signal 0..10 V =, 0..20 or 4..20 mA optionally configurable
Power supply	L1, L2, L3, N: 400 V ~ 48..62 Hz, self-synchronizing
Power consumption	**75 A:** typ. 202 W **90 A:** typ. 243 W **120 A:** typ. 324 W
Display	9 LEDs showing status of the device
Enclosure	aluminium, cover plexiglass
Operating range temperature	0..+55 °C
Protection (IP)	IP23,
Connection	power connections, M8 connection screw for cable lug, connection control electronics, max. 1.5 mm²
Mounting	4 mounting holes Ø=8 mm for mounting on galvanized mounting plates (control cabinet)

Power thyristors – Phase angle

Item description	Item No.	Group	€
TS2 three-phase 3-ph 75 A 50 kW	236522	Y1	2201,10
TS2 three-phase 3-ph 90 A 60 kW	260190	Y1	2591,20
TS2 three-phase 3-ph 120 A 78 kW	304719	Y1	2964,80

Power thyristors – Oscillation

Item description	Item No.	Group	€
TS2 three-phase SP 3-ph 75 A 50 kW	339094	Y1	2201,10
TS2 three-phase SP 3-ph 90 A 60 kW	326926	Y1	2591,20
TS2 three-phase SP 3-ph 120 A 78 kW	336482	Y1	2964,80

Accessories Information

Mounting Accessories

Fastening and screwing **406**
Mounting accessories USE **408**
Thermowell pockets **409**
Bonded pockets **410**
Mounting flanges **411**
Connections **412**
Wires / Cables **412**
Frames and enclosures **413**
Valve adapters **414**

Safety and Protection

Enclosure protection / Anti-theft protection **415**
Filters **415**

Power supply

Power supplies **416**
Batteries **416**

Configuration

Hardware **417**
Storage media **417**

Miscellaneous

Displays (DLF / DPL) **418**
Special printing **418**
Special painting **418**
Special engraving/Special lasering **418**
Material test report **419**

General Information

Sensor characteristics **420**
Glossary **422**

	Fastening and screwing			
	Item description	**Item No.**	**Group**	**€**
1	Mounting bracket kit for differential pressure switch 135x74x60 mm	669009	A1	10,20
2	Mounting bracket kit for differential pressure transducer 40x60x40 mm	663892	A1	10,80
3	Installation set TFR / MWF+	679466	A1	10,30
4	Mounting bracket with cable gland for duct sensors Ø=6 mm	670593	A1	14,80
5	Mounting ring for hollow ceiling with retaining clips to be used with SR-MDS	627825	A1	8,00
6	Connector STC-DO8 to STC-PLUS 4DO	517577	A1	9,10
7	Wall mounting for duct hygrostat	429030	A1	45,80
8	L-shaped magnetic antenna holder, 180x180 mm	255097	A1	17,50

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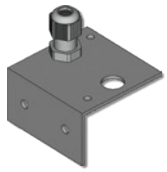

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Fastening and screwing					
Item description	**Item No.**		**Group**	**€**	
Fixing kit rawlplugs and screws (2x each)	660945		A1	1,10	1
Syringe thermal contact fluid	102308		A1	1,80	2
Compression fittings KL4VA for Ø=4 mm with cutting ring, stainless steel	103206		A1	15,60	3
Compression fittings KL6VA for Ø=6 mm with cutting ring, stainless steel	103213		A1	15,60	4
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911		A1	3,30	5
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103		A1	5,20	6
Tightening strap PA (max. 85 °C) for pipes Ø up to 100 mm with contact fluid	668071		A1	3,30	7
C-clip adhesive pads (5 pieces) – mounting accessories for LS02+ flex	778596		A1	10,30	8
Screw connection set Ø=6 mm stainless steel (2 pcs.)	373388		A1	75,50	9
Screw connection set Ø=8 mm stainless steel (2 pcs.)	373395		A1	86,60	10
Screw connection set Ø=6 mm brass (2 pcs.)	373401		A1	16,70	11
Screw connection set Ø=8 mm brass (2 pcs.)	373418		A1	27,10	12

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	Mounting accessories USE			
	Item description	**Item No.**	**Group**	**€**
1	Mounting clip enclosure USE-S pure white	667739	A1	5,70
2	Mounting base enclosure USE-S pure white	667722	A1	6,70
3	Mounting base enclosure USE-M pure white	668354	A1	9,60
4	Mounting base enclosure USE-L pure white	668361	A1	13,40
5	Mounting kit AKF10+ for enclosure USE-S	748551	A1	8,30
6	Mounting kit universal for enclosure USE	698511	A1	10,70
7	Cable entry M20 USE white, sealing insert Flextherm Ø=4,5..9 mm (4 pcs)	752626	A1	12,30
8	Sealing insert M20 USE white, Flextherm Ø=4,5..9 mm (10 pcs)	752206	A1	12,30
9	Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	A1	12,30
10	Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	A1	12,30
11	Sealing insert M25 USE white, 2x Ø=9 mm (10 pcs)	797573	A1	12,30

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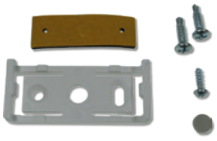

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Thermowells brass for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
MS-thermowell 50 mm type THMSDS50	50 mm	36 mm	610995	⛁	A2	9,90
MS-thermowell 100 mm type THMSDS100	100 mm	86 mm	611008	⛁	A2	11,20
MS-thermowell 150 mm type THMSDS150	150 mm	136 mm	611015	⛁	A2	11,80
MS-thermowell 200 mm type THMSDS200	200 mm	186 mm	611022	⛁	A2	12,30
MS-thermowell 250 mm type THMSDS250	250 mm	236 mm	611985	⛁	A2	14,10
MS-thermowell 300 mm type THMSDS300	300 mm	286 mm	611039	⛁	A2	14,60
MS-thermowell 450 mm type THMSDS450	450 mm	436 mm	611046	⛁	A2	14,90

Thermowells stainless steel for sensors with pocket Ø=6 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
VA-thermowell 50 mm type THVADS50	50 mm	36 mm	611152	⛁	A2	23,10
VA-thermowell 100 mm type THVADS100	100 mm	86 mm	611817	⛁	A2	25,30
VA-thermowell 150 mm type THVADS150	150 mm	136 mm	611824	⛁	A2	27,40
VA-thermowell 200 mm type THVADS200	200 mm	186 mm	611848	⛁	A2	28,70
VA-thermowell 250 mm type THVADS250	250 mm	236 mm	611862	⛁	A2	35,60
VA-thermowell 300 mm type THVADS300	300 mm	286 mm	611879	⛁	A2	37,30
VA-thermowell 450 mm type THVADS450	450 mm	436 mm	611893	⛁	A2	38,60
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS			666473	⛁	A2	22,20

THMSDS

THVADS

Thermowells stainless steel for sensors with pocket Ø=8 mm						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
VA-thermowell 100 mm type THVA100 (KFK03)	100 mm	87 mm	584180	⛁	A2	36,20
VA-thermowell 150 mm type THVA150 (KFK03)	150 mm	137 mm	584197	⛁	A2	38,00
VA-thermowell 200 mm type THVA200 (KFK03)	200 mm	187 mm	584203	⛁	A2	40,00
VA-thermowell 250 mm type THVA250 (KFK03)	250 mm	237 mm	594738	⛁	A2	42,10

Bonded pockets						
Item description	**Length**	**Inst. length**	**Item No.**	**In stock**	**Group**	**€**
Bonded pocket St52-3 Typ ESH110	110 mm	105 mm	103459	⛁	A1	60,10
Bonded pocket St52-3 Typ ESH160	160 mm	155 mm	103466	⛁	A1	68,80
Bonded pocket St52-3 Typ ESH210	210 mm	205 mm	103473	⛁	A1	77,40
Bonded pocket St52-3 Typ ESH260	260 mm	255 mm	173247	⛁	A1	85,00

Mounting flanges					
Item description	**Item No.**	**In stock**	**Group**	**€**	
Mounting flange MF2 (suitable for TFR)	435642		A1	7,80	1
Mounting flange MF6 flexible (suitable for Ø=4 / 6 / 7 mm)	399098	⛁	A2	7,80	2
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	⛁	A2	7,80	3
Mounting flange MF4 brass (suitable for Ø=4 mm)	102438		A1	6,30	4
Mounting flange MF6 brass (suitable for Ø=6 mm)	3407	⛁	A1	7,80	5
Mounting flange MF7 brass (suitable for MWF+ and Ø=7 mm)	102360		A1	7,80	6
Mounting flange MF8 stainless steel (suitable for Ø=8 mm)	103305		A1	27,60	7
Mounting flange MF19	527705		A1	14,40	8
Mounting flange MF20	612562		A1	14,40	9

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	Connections			
	Item description	**Item No.**	**Group**	**€**
1	Metal duct connector MKS40 (Ø=4 mm, L=40 mm)	265138	A1	5,00
2	Metal duct connector MKS100 (Ø=5 mm, L=100 mm)	302531	A1	5,90
3	T-hose connector for pressure hoses Ø=4 mm (10 pcs)	668323	A1	36,60
4	Adapter 90° angle for pressure hoses Ø=4 mm	668330	A1	9,80

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	Wires / Cables			
	Item description	**Item No.**	**Group**	**€**
1	Connection wire DLF/DPL – connection plug and wire 5 m	668309	A1	15,40
2	Sensor wire 1,5 m with RJ45 connector	628785	A1	6,90
3	Sensor wire 3 m with RJ45 connector	708852	A1	8,80
4	Sensor wire 5 m with RJ45 connector	794886	A1	12,70
5	Sensor wire 7,5 m with RJ45 connector	708869	A1	16,30
6	Antenna extension 10 m	257206	A1	67,70
7	Antenna extension 20 m	257213	A1	82,40
8	USB extension 3 m	574044		16,30

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Frames and enclosures				
Item description	**Item No.**	**Group**	**€**	
Frame for surface mounting JOY white	760201	A1	29,30	1
Frame for surface mounting JOY black	760195	A1	29,30	2
Decorative frame JOY white	681452	A1	14,80	3
Decorative frame JOY black	740951	A1	14,80	4
Frame for surface mounting NOVOS 3 / WRF04 pure white	795050	A1	15,30	5
Frame for surface mounting NOVOS 3 / WRF04 black	795074	A1	55,30	6
Enclosure for surface mounting MDS pure white	448512	A1	58,20	7
Enclosure for surface mounting SR-MDS pure white	514439	A1	58,20	8

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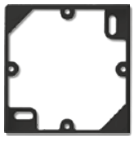

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	Valve Adapters			
	Item description	**Item No.**	**Group**	**€**
1	Valve adapter SAB for Giacomini Z810 (22,6 mm)	634724	A1	29,20
2	Valve adapter SAB for Oventrop Z809 (M30x1,0)	611978	A1	29,20
3	Valve adapter SAB for Herz Z807 (M28 X 1,5 mm)	595070	A1	29,20
4	Valve adapter SAB for Danfoss RA2000 Z802	589093	A1	29,20
5	Valve adapter SAB for Danfoss RAV Z803	589109	A1	29,20
6	Valve adapter SAB for Danfoss RAV-L Z804	589116	A1	29,20
7	Valve adapter SAB for Danfoss Z800	589079	A1	29,20
8	Valve adapter SAB for Danfoss Z801	589086	A1	29,20
9	Valve adapter SAB for Vaillant Z805	615181	A1	29,20

	Valve Adapters			
	Item description	**Item No.**	**Group**	**€**
10	Valve adapter SAB05/07 for Herz (M28 X 1,5 mm)	836302	A1	9,20
11	Valve adapter SAB05/07 for Danfoss RA-02	836333	A1	9,20
12	Valve adapter SAB05/07 for Danfoss RAV-02	836326	A1	9,20
13	Valve adapter SAB05/07 for Danfoss RAVL-02	836319	A1	9,20

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Enclosure protection / Anti-theft protection					
Item description	**Item No.**	**In stock**	**Group**	**€**	
Housing protection BS150, transparent	730075	●	A1	27,50	1
Weather protection for FTK+, WSA (replacement)	625241		A1	82,20	2
Battery protection SAB05	595612		A1	22,50	3
Safety lock dismounting protection SAB	706148	●	A1	12,70	4
Protective enclosure TAP+	782739		A1	40,00	5

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Filters				
Item description	**Item No.**	**Group**	**€**	
Filter stainless steel, wire mesh FTK+ / FTA54+ / FTP+ (spare part)	231169	A1	11,90	1
Filter stainless steel, wire mesh FSK01 (spare part)	429047	A1	30,20	2
Filter PTFE (for air velocities >15 m/s)	429054	A1	50,20	3

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	Power supplies				
	Item description	**Item No.**	**In stock**	**Group**	**€**
1	PSU-UP24 – flush-mounted power supply 24 V	645737	⛀	A1	50,60
2	PSU-HS24 – power supply unit 24 V for DIN rail mounting	764742	⛀	A1	129,80

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	Batteries			
	Item description	**Item No.**	**Group**	**€**
1	Battery AA 1,5 V lithium L91	819640	A1	8,10
2	Battery 1/2AA 3.6V Lithium LS14250	315098	A1	5,00
3	Battery AA 3.6 V lithium ER14505	759182	A1	8,40
4	Battery AAA 3.6 V lithium ER10450	794756	A1	6,70
5	Battery AA 1,5 V Alkaline VARTA 4906	459099	A1	5,00
6	Battery AAA 1,5 V Alkaline VARTA 4003	739351	A1	5,00
7	Coin cell CR1225	727310	A1	5,00
	Coin cell CR1632	597814	A1	5,00
	Coin cell CR2032	347013	A1	5,00

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Hardware				
Item description	**Item No.**		**Group**	**€**
EnOcean USB transceiver for airConfig/airScan (incl. airScan license)	566704			113,90
BLE dongle with micro-USB for devices USE-M / USE-L / NOVOS / thanos EVO	668262			32,10
USB interface for devices USE-M / USE-L / NOVOS / thanos EVO / SR06 LCD	597838		A1	39,50
USB interface RS485 (Modbus RTU Logger Software + licence)	809917			121,90
USB Interface RS485 (incl. driver CD)	668293			63,50
USB interface KNX	806190		A1	194,20

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Storage Media			
Item description	**Item No.**	**Group**	**€**
microSD card 2 GB	500098	A1	13,80

Displays (DLF / DPL)			
Item description	**Item No.**	**Group**	**€**
UD-A – universal display for 4..20 mA	718189	A1	101,80
UD-V – universal display for 0..10 V	775113	A1	101,80

Special printing			
Item description	**Item No.**	**Group**	**€**
Special printing – order quantity 20..49 pcs. (each per colour)			18,90
Special printing – order quantity 50..99 pcs. (each per colour)			14,20
Special printing setup and tool costs (once for one-colour print)	115049		221,30

Special painting			
Item description	**Item No.**	**Group**	**€**
Special painting – prices on request			
Special painting setup costs (once per colour)	114998		390,00

Special engraving / special lasering
Item description
Engraving/lasering – prices on request

Inspection certificate 3.1 according to EN 10204

Depending on the application and the field of use, calibration certificates are becoming increasingly important in modern building automation as well as HVAC. Reasoned by physical characteristics, sensors are exposed to and wear off due to mechanical, chemical or thermal stress. Due to these external influences, the initial technical specifications can vary over the lifespan of a sensor. Calibration as a measuring process serves to determine and document the deviation of a sensor at the time of its calibration test compared to a certified reference device. Each device is issued its individual certificate according to DIN EN 10204 with the measured deviations. This document certifies, that the sensor complies with the accuracies defined in the data sheet at the time of manufacture/delivery. An adjustment/offset of the detected deviation is not conducted.

Measured value	Calibration range
Temperature:	-20..+90 °C
rH (relative humidity):	10..90% rH
Pressure (gases): Pressure (liquids):	-100..+7000 Pa on request
Thermowells:	on request on request

Material test reports		
Item description	**Item No.**	**€**
Inspection certificate 3.1 (EN 10204) temperature – 2 values	119030	on request
Inspection certificate 3.1 (EN 10204) humidity – 2 values	665407	on request
Inspection certificate 3.1 (EN 10204) pressure – 2 values	696647	on request
Additional measuring point		on request

Note:
Calibration certificates according to DIN EN 10204 cannot be issued for the following products / measured variables:
EasySens (EnOcean) | CO2 sensors | Temperature 1/10 DIN Class B | Room operating units / Thermostats

Temp. °C	Pt100	Pt1000	Ni1000	Ni1000 Tk5000	KTY81-110	KTY81-121	KTY81-122
-50	80,31	803,10	743,00	790,88	515,00	505,00	525,00
-40	84,27	842,70	791,00	830,83	567,00	557,00	577,00
-30	88,22	882,20	842,00	871,69	624,00	614,00	634,00
-20	92,16	921,60	893,00	913,48	684,00	674,00	694,00
-10	96,09	960,90	946,00	956,24	747,00	737,00	757,00
0	100,00	1.000,00	1.000,00	1.000,00	815,00	805,00	825,00
10	103,90	1.039,00	1.056,00	1.044,79	886,00	876,00	896,00
20	107,79	1.077,90	1.112,00	1.090,65	961,00	951,00	971,00
25	109,74	1.097,40	1.141,00	1.113,99	1.000,00	990,00	1.010,00
30	111,67	1.116,70	1.171,00	1.137,61	1.040,00	1.030,00	1.050,00
40	115,54	1.155,40	1.230,00	1.185,71	1.122,00	1.112,00	1.132,00
50	119,40	1.194,00	1.291,00	1.234,97	1.209,00	1.199,00	1.219,00
60	123,24	1.232,40	1.353,00	1.285,44	1.299,00	1.289,00	1.309,00
70	127,07	1.270,00	1.417,00	1.337,14	1.392,00	1.382,00	1.402,00
80	130,89	1.308,90	1.483,00	1.390,12	1.490,00	1.480,00	1.500,00
90	134,70	1.347,00	1.549,00	1.444,39	1.591,00	1.581,00	1.601,00
100	138,50	1.385,00	1.618,00	1.500,00	1.696,00	1.686,00	1.706,00
110	142,29	1.422,00	1.688,00	1.556,98	1.805,00	1.795,00	1.815,00
120	146,06	1.460,60	1.760,00	1.615,36	1.915,00	1.905,00	1.925,00
130	149,82	1.498,20	1.853,00	1.675,18	2.023,00	2.013,00	2.033,00
140	153,58	1.535,80	1.909,00	1.736,47	2.124,00	2.114,00	2.134,00
150	157,31	1.573,10	1.987,00	1.799,26	2.211,00	2.201,00	2.221,00

Temp. °C	KTY81-210	FeT	LM235Z (mVolt)	BALCO 500	NTC1,6k	NTC1,8k	NTC2,2k
-50	1.030,00	–		382,10	–	–	–
-40	1.135,00	–	2.332,00	399,80	53.370,00	40.375,00	73.060,00
-30	1.247,00	1.934,70	2.432,00	418,00	28.173,00	22.906,00	38.550,00
-20	1.367,00	2.030,41	2.532,00	435,60	15.489,00	13.477,00	21.200,00
-10	1.495,00	2.127,68	2.632,00	453,30	8.840,00	8.198,00	12.110,00
0	1.630,00	2.226,53	2.732,00	471,00	5.222,00	5.141,00	7.162,00
10	1.772,00	2.327,01	2.832,00	488,70	3.184,00	3.315,00	4.372,00
20	1.922,00	2.429,15	2.932,00	497,30	1.999,00	2.193,00	2.747,00
25	2.000,00	2.480,86	2.982,00	506,30	1.600,00	1.800,00	2.200,00
30	2.080,00	2.533,00	3.032,00	523,60	1.289,00	1.486,00	1.773,00
40	2.245,00	2.638,60	3.132,00	541,30	851,90	1.028,00	1.173,00
50	2.417,00	2.745,99	3.232,00	558,50	576,10	726,00	793,00
60	2.597,00	2.855,23	3.332,00	576,20	397,90	522,00	548,00
70	2.785,00	2.966,36	3.432,00	593,40	280,20	382,00	386,00
80	2.980,00	3.079,42	3.532,00	610,60	200,90	284,00	276,00
90	3.182,00	3.194,47	3.632,00	627,80	146,50	214,00	201,00
100	3.392,00	3.311,56	3.732,00	645,10	108,50	164,00	149,00
110	3.607,00	3.430,75	3.832,00	662,30	81,50	127,00	112,00
120	3.817,00	3.552,09	3.932,00	679,10	62,10	99,00	85,00
130	4.008,00	3.675,65	–	696,30	47,90	–	66,00
140	4.166,00	3.801,48	–	713,10	37,40	–	51,00
150	4.280,00	3.929,65	–	–	29,50	–	40,00

Temp. °C	NTC3k	NTC3,3k	NTC5k	NTC5,369k	NTC-SAT	NTC10k	NTC10k PRE
-50	–	–	333.914,00	–	–	–	–
-40	102.690,00	109.600,00	167.835,50	116.300,00	9.709,00	333.110,00	243.625,00
-30	53.730,00	57.820,00	88.341,50	66.190,00	9.462,00	175.794,00	136.866,00
-20	29.346,00	31.800,00	48.487,00	39.100,00	9.063,00	96.645,00	79.603,00
-10	16.674,00	18.160,00	27.649,00	23.890,00	8.468,00	55.169,00	47.812,00
0	9.822,00	10.740,00	16.325,40	15.060,00	7.658,00	32.600,00	29.584,00
10	5.976,00	6.558,00	9.951,75	9.778,00	6.665,00	19.886,00	18.814,00
20	3.750,00	4.121,00	6.246,85	6.517,00	5.573,00	12.490,00	12.272,00
25	3.000,00	3.300,00	5.000,00	5.369,00	5.025,00	10.000,00	10.000,00
30	2.417,00	2.660,00	4.028,00	4.449,00	4.493,00	8.058,40	8.194,40
40	1.598,00	1.759,00	2.662,45	3.104,00	3.519,00	5.329,70	5.591,20
50	1.081,00	1.190,00	1.800,50	2.209,00	2.704,00	3.606,50	3.892,30
60	747,30	822,00	1.243,55	1.600,00	2.059,00	2.492,50	2.760,40
70	526,80	579,00	875,80	1.178,00	1.566,00	1.756,50	1.991,80
80	378,30	415,00	628,09	880,50	1.198,00	1.260,50	1.460,60
90	276,30	302,00	458,06	666,60	925,00	919,80	1.087,20
100	204,90	224 ,00	339,32	510,30	725,00	681,80	820,70
110	154,20	168,00	255,03	393,60	577,00	512,70	627,70
120	117,70	128,00	194,30	305,20	468,00	390,80	486,00
130	90,90	98,00	149,91	238,90	386,00	301,70	380,70
140	71,10	77,00	117,04	188,40	325,00	235,60	301,40
150	56,20	60,00	92,40	150,20	278,00	186,00	241,10

Temp. °C	NTC10-CAREL	NTC12k	NTC20k	NTC30k	NTC50k	NTC100k
-50	–	–	1.490.400,00	–	4.168.934,00	–
-40	186.796,00	396.422,72	803.200,00	1.219.114,00	2.033.606,00	3.216.000,00
-30	110.881,00	204.948,28	412.800,00	622.924,00	1.038.697,00	1.721.000,00
-20	67.683,00	111.626,16	220.600,00	331.871,00	553.243,00	955.400,00
-10	42.431,00	63.671,20	122.400,00	183.696,00	306.183,00	548.800,00
0	27.280,00	37.841,88	70.204,00	105.305,00	175.508,00	325.500,00
10	17.961,00	23.332,63	41.560,00	62.343,00	103.903,00	198.900,00
20	12.092,00	14.869,02	25.346,00	38.019,00	63.364,00	125.000,00
25	10.000,00	12.000,00	20.000,00	30.000,00	50.000,00	100.000,00
30	8.312,00	9.761,37	15.886,00	23.828,00	39.714,00	80.530,00
40	5.826,00	6.582,83	10.212,00	15.317,00	25.529,00	53.140,00
50	4.159,00	4.548,87	6.719,00	10.079,00	16.799,00	35.860,00
60	3.020,00	3.213,88	4.518,00	6.778,00	11.297,00	24.690,00
70	2.228,00	2.317,13	3.100,00	4.651,00	7.750,90	17.330,00
80	1.668,00	1.701,83	2.168,00	3.251,00	5.418,70	12.830,00
90	1.266,00	1.271,35	1.542,00	2.313,00	3.854,80	8.996,00
100	974,00	964,72	1.114,00	1.673,00	2.787,20	6.636,00
110	758,00	742,67	816,00	1.228,00	2.046,10	4.966,00
120	597,00	579,39	606,00	915,00	1.523,40	3.766,00
130	475,00	457,60	456,00	–	1.149,50	2.892,00
140	382,00	365,57	346,00	–	878,20	2.247,00
150	310,00	–	–	–	678,80	1.766,00

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
Casambi®	Casambi® interface (BLE 2,4 GHz)
KNX	EIB-KNX interface
LON	LON FTX, communication protocol specifically designed for building automation; other standards, if mentioned in catalogue
LoRaWAN®	LoRaWAN® interface (868 MHz)
Modbus	RS485 Modbus RTU

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 SINGLE-FOLD SWITCH FRAMES

Note: Prices for frames only valid in connection with basic device, discount group: depending on device

Manufact.	Switch range	Dim. (WxH)	Colour	Price (€)	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	48,60	■
	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)	15,30	■
	future® linear	63x63	studio white (g/m), anthracite, alu silver, ivory white	15,30	■
	Busch-axcent®	63x63	studio white (g)	15,30	■
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	48,60	■
	Event	55x55	pure white (g/m), alu, anthracite	0,00	■
	Flächenschalter	71x71	pure white (g)	15,30	■
Jung	LS 990 plastic	70x70	white, alpine white (g)	15,30	■
	A 500	55x55	alpine white, aluminium	0,00	■
	AS 500/AS 500 antib.	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	15,30	■
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 (g), active white (g), aluminium, anthracite	0,00	■
	Antik	66x66	white (m), polar white (m)	0,00	■

Explanation: g = glossy m = matt

OTHER SWITCH RANGES, COLOURS AND MATERIALS ON REQUEST

PRICE OVERVIEW OF SINGLE-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	WRF07 (RC) x WRF06 LCD FTW06 WRF06	Radio switchtes
Berker	Berker S.1	55x55	polar white (g/m), white (g)	5,80	■	■	■
	Berker B.3	55x55	Aluminium, Aluminium black anodized	48,60	–	■	–
	Berker B.7	55x55	polar white (m), anthracite, alu (m)	5,80	■	■	■
Busch-Jaeger	Busch-balance® SI	55x55	alpine white	5,80	■	■	■
	solo®	63x63	studio white (m)	15,30	▣	▣	–
				5,80	–	–	■
	future® linear	63x63	studio white (g/m), anthracite, alu silver, ivory white	15,30	▣	▣	–
				5,80	–	–	■
	Busch-axcent®	63x63	studio white (g)	15,30	▣	▣	–
				5,80	–	–	■
Gira	E2	55x55	pure white (g/m), alu, anthracite	5,80	■	■	■
	E3	55x55	pure white (g)	5,80	■	■	■
	Standard 55	55x55	pure white (g/m), creme white (g)	5,80	■	■	■
	Esprit	55x55	different colours and materials	48,60	■	■	■
	Event	55x55	pure white (g/m), alu, anthracite	5,80	■	■	■
	Flächenschalter	71x71	pure white (g)	15,30	▣	▣	■
Jung	LS 990 plastic	70x70	white, alpine white (g)	15,30	▣	▣	■
	A 500	55x55	alpine white, aluminium	5,80	■	■	■
	AS 500/AS 500 antib.	55x55	white, alpine white	5,80	■	■	■
	A plus	55x55	alpine white, aluminium, anthracite	5,80	■	■	■
	A creation plastic	55x55	alpine white, aluminium, anthracite (m)	5,80	■	■	■
	CD 500	67x67	white, alpine white	15,30	–	▣	–
Merten	M-Smart	55x55	white (g/m), polar white (g/m), active white (g)	5,80	■	■	■
	M-Plan	55x55	white (g/m), polar white (g/m), active white (g), aluminium, anthracite	5,80	■	■	■
	1-M	55x55	white (g), polar white (g), active white (g)	5,80	▣	■	■
	Atelier-M	55x55	white (g), polar white (g), active white (g)	5,80	–	■	■
	M-Pure	55x55	polar white (g), active white (g), aluminium, anthracite	5,80	■	■	■
	Antik	66x66	white (m), polar white (m)	5,80	–	▣	▣

Explanation: ■ without intermediate frame ▣ with intermediate frame – not available g = glossy m = matt

OTHER SWITCH RANGES, COLOURS AND MATERIALS ON REQUEST

TERMS AND CONDITIONS

Orders
We will gladly take your order by phone, email or faxsimile, using either the product name or item number from the catalogue. Please do not hesitate to contact us for technical support or support with specific applications or sensor technology.

Delivery Time
We keep stock of a large number of standard sensors, so that we can provide an excellent and quick lead time. Products are often shipped immediately after receipt of order. Delivery times for larger quantities or custom designs are available on request.

Pricing
All prices are list prices in € and do not include value added tax. Prices are valid from 1st January 2025.
All previous prices become obsolete.

Delivery Conditions
Our standard delivery terms are ex-works (EXW) by parcel services or forwarders, excluding costs for insurance.

Product return
Thermokon stock products can be returned within a period of 6 months after delivery for 2/3 credit of the initial purchase price. Only unused products in original packing will be accepted. Custom manufactured products such as room sensors with control elements, custom engraving, custom varnish or custom printing can not be returned.

Our general terms & conditions as well as warranty conditions can be sent to you upon request. The entire catalogue is subject to technical and price changes; no responsibility is taken for the accuracy of these information. Illustrations may vary.

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HOME OF SENSOR TECHNOLOGY

CONTACT

Thermokon Sensortechnik GmbH
Platanenweg 1 | 35756 Mittenaar | GERMANY
Phone: +49 2778 6960-0 | Fax: +49 2778 6960-400
email@thermokon.de | www.thermokon.com

AUSTRIA
Thermokon Components GmbH
Ausstellungsstraße 6 | 2020 Hollabrunn
Phone: +43 2952 50407 0
info@thermokon.at | www.thermokon.at

FINLAND
Thermokon Sensor Technology Finland OY
Edelfeltinkatu 13 | 48200 Kotka
Phone: +358 45 230 7141
info@thermokon.fi | www.thermokon.fi

FRANCE
Thermokon Sensor Technology France S.A.S.
38 Rue des Mathurins | 75008 Paris
Phone: +33 6 40 16 62 25
contact@thermokon.fr | www.thermokon.fr

ITALY
Thermokon Sensor Technology S.r.l.
Via XXV Aprile, 2/H | 20030 Senago (MI)
Phone: +39 347 9679018
contatti@thermokon.de | www.thermokon.com

NETHERLANDS
Thermokon Sensor Technology Nederland B.V.
Schieland 18 | 1948 RM Beverwijk
Phone: +31 6 1531 1685
email@thermokon.nl | www.thermokon.nl

SWITZERLAND
Thermokon Sensortechnik Schweiz AG
Zürichstraße 46 | 8303 Bassersdorf
Phone: +41 44 752 50 00 | Fax: +41 44 752 50 01
info@thermokon.ch | www.thermokon.ch

POLAND
Thermokon Sensor Technology Polska
Phone: +48 604 784 706
kontakt@thermokon.pl | www.thermokon.pl

SPAIN
Thermokon Sensor Technology Ibérica S.L.U.
Agustín de Foxá, 4 – Edificio Aqua | 28036 Madrid
Phone: +34 621 006 027
info@thermokon.es | www.thermokon.es

SWEDEN
Thermokon-Danelko Elektronik AB
Girovägen 13 | 17562 Järfälla
Phone: +46 10 212 10 30
info@thermokon.se | www.thermokon.se