Reliable measurements for building automation • 35+ years

Catalogue



PRODUAL

measure-be sure.

Embrace tomorrow's building automation, today

Produal is your reliable partner for building automation field devices. We share your goal of optimal building performance, comfort and health, and we want to make working together easy and convenient for you. With these needs in mind, we offer products and services that will yield excellent results for your building automation projects.

First up, we've been working hard to increase interoperability in building automation systems for better communication, connectivity and data sharing. Thanks to our wide variety of Modbus products, expanding range of BACnet devices, and further development in the field of communication protocols, we'll help you grasp the amazing opportunities of rapidly digitalising building automation.

Of course, interoperability also benefits from wireless functionality, a megatrend born by a need for greater efficiency and flexibility. Our Produal Proxima® MESH solution has become increasingly popular in building automation projects, offering you battery-powered reliability, scalability, and energy efficiency. We can also provide you with wireless Modbus communication and measurements for your long-range wireless LoRaWAN network – i.e., a wide range of wireless solutions that are easy to adapt to both renovations and new constructions. We bring you the latest in wireless innovations.

We're keen to help you take advantage of the best building automation room controller solutions for whatever your needs are. Our portfolio caters for all budgets, design preferences and functionality requirements, including both mobile commissioning and cloud services. The choice is yours, but our experts are always at your service.

It's clear that building automation has a significant impact on buildings and their occupants, and we want to do our share in safeguarding its success. Our smart measurement products from transmitters to sensors, complete with actuators and other system components, support the growing need for reliable measurements and data collection about everything from CO_2 and humidity to differential pressure and ventilation solutions for indoor air quality.

In short, we have everything necessary to ensure the ideal outcome for your building automation projects – easily and effectively. Let's find the best way forward together.

Measure – be sure.



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Produal Oy reserves the right to change the specifications without prior notification.

PRODUAL – working with you for efficient building automation projects and services

As a high-quality partner for building automation measurement and control, we work with you for effective BA projects and services. Versatile, precise and reliable measurements lay the foundation for the evolving building automation. Our wide product offering includes over 1000 products, a complete range of measurement products for any need from room, duct and structure to exterior, and from temperature, pressure, air velocity and quality to humidity – wired or wirelessly. The range is complemented with multifunctional room controllers enabling intelligent control in all types of building automation applications and covers both analog and bus products.

We provide 5 years' warranty for the products we manufacture. Our products bear the CE and UKCA markings, and our quality system is ISO 9001 and ISO 14001 certified. Our accurate, multifunctional and easy-to-install products, over 35 years of expertise and local service and passion for customer satisfaction provide you with reliable delivery, trust and advice. The ultimate result is cost efficiency and time savings during the whole lifecycle of the building automation system – and comfort, energy efficiency and return on investment for building owners and users.

Measure – be sure.



SOLID EXPERTISE IN BUILDING AUTOMATION MEASUREMENT AND CONTROL

35+ years **170** cross-border experts **7 000** customers **50 000** buildings

PASSION FOR CUSTOMER SATISFACTION

Working together • Looking to the future • Being flexible and attentive • Operating professionally with high standards

measure-be sure.

Helsinki Central Library Oodi, Finland – the world-class, energy-efficient library and award-winning architectural building in the heart of the city offers both active and peaceful atmospheres with a wide range of services. As part of the building automation, Produal's wide range of measurement and control devices fulfill the strict, demand-based requirements for indoor conditions serving up to 10,000 visitors a day.



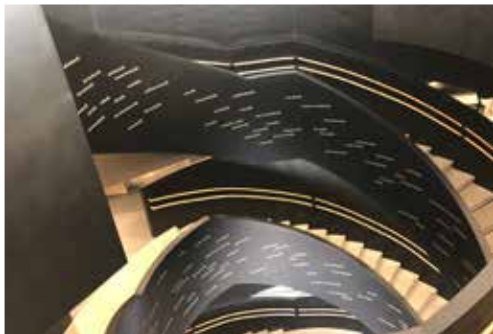












Photos: Vetrospace

Healthy and safe Vetrospace workspaces from Finland – multi-purpose office pods and phone booths offer peaceful, clean, and safe working environments, for example, in offices, at industrial sites, and hospitals worldwide. Produal's customized TRC touchscreen room controllers ensure sufficient amounts of fresh and clean air according to pod usage. The patented virus-, particle- and microbe-free spaces with industry-leading soundproofing and smart ventilation control are designed for 24/7 professional use.





Scandic Hamburger Börs, Turku, Finland – comfortable indoor air and energy efficiency are ensured with the stylish TRC touchscreen room controllers in Turku's most iconic hotel. Now thoroughly renovated, it has been serving guests since 1894. The hotel building, added on in the 1970s to the protected old Art Nouveau part, was demolished and replaced with a completely new, period-style building. Reliable and timely deliveries were also crucial for the renovation site in a dense urban center with scarce storage space.

Photos: Aston Martin Residences

Aston Martin Residences, Miami, USA – Produal's TRC touchscreen room controllers offer design and functionality for the nearly 400 premium-level apartments in what may be the tallest all-residential skyscraper south of New York City. This one-of-a-kind building representing the pinnacle of elegant living features is also a full-service marina that can accommodate superyachts.



Photos: Kankaan Arkki

Office solution building Kankaan Arkki, Jyväskylä, Finland – a characteristic 7-story office building built on an idyllic, former paper mill site offers adaptable, multi-purpose space for businesses. The modern building automation system pays particular attention to indoor air quality and energy efficiency, and temperature, CO_2, and humidity measurements are conveniently implemented with wireless, fully battery-powered Proxima transmitters.



MESH



Lifestyle store MUJI, Helsinki, Finland – the minimalist Japanese retailer stocks a wide variety of high-quality products on the entire 4th floor of the Kamppi shopping center, making it the largest MUJI store in Europe. With the help of wireless Proxima transmitters, it is possible to maintain stable indoor conditions and benefit from the freedom of adaptable space required to display the extensive MUJI product range.

Photos: Palazzo Nuovo

Palazzo Nuovo, University of Turin, Italy – founded in 1404, the University of Turin is one of the largest and most prestigious Italian universities. Air conditioning for the 8 main auditoriums was improved with only one day's installation and programming work with wireless Proxima temperature and humidity transmitters, without visually impacting the impressive building or disturbing the lectures.

MESH

Valserena Abbey, Parma, Italy – the former abbey, founded in 1298, has been extended and modified several times and nowadays serves as the Study Centre and Communication Archive of the University of Parma. The delicate preserved materials require constant temperature and humidity monitoring, achieved reliably with the wireless Proxima MESH platform, with full respect for the building's historical and architectural heritage.

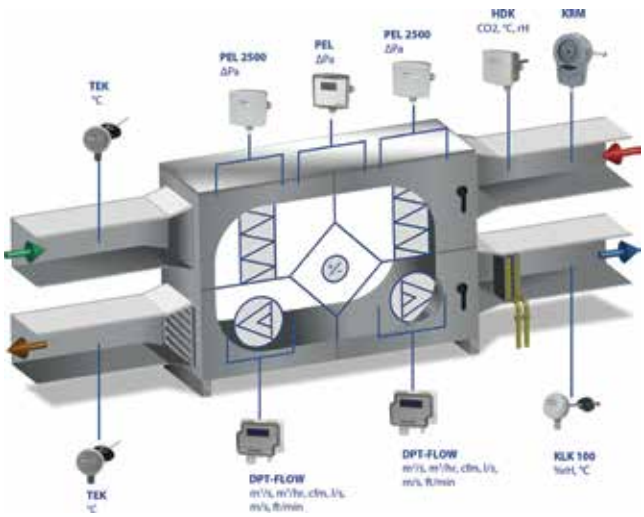
Reliable partner for measurement and control

We continuously develop our product portfolio to stay ahead of the evolving demands of building automation and to be a reliable partner for measurement and control for all our customers both today and in the future. We also want to support our customers in new opportunities enabled by digitalization, IoT and data analytics. Our aim is that the customer always finds a suitable set of products for its specific building automation application – whether it is new building or renovation, traditional HVAC application or something totally new. The current product range is illustrated in the picture below.



OEM and white-label solutions for device manufacturers

For air handling units



For room units



This product catalogue shows merely the foremost features of our products. We are engaged in constant development of our products and the current details may be viewed on our website: www.produal.com

Reliable local service for delivery, trust and advice

Our customers need more than products – they need reliable delivery, trust and advice. We have developed our service range to support and assist our customers during all phases of the building automation lifecycle. Our competent and reliable local service provides them with rapid and flexible delivery, advice for product selection, configuration and problem solving, and training for maximum product performance. Product adaptation and pre-configurations are offered for special needs and fast commissioning. Our online services with versatile search functions, filtering options, product comparison tools and application descriptions support our local operations. You can find the summary of the services in the picture below.



Building automation lifecycle

The Adaptation Service includes a wide range of services to speed up your building automation projects, to match the visual appearance of products to specific requirements, or to add additional logos or markings to products. The following Adaptation Services are available:

- Customer logo printed on the product, additional stickers and markings (e.g. position marking)
- Pre-configuration of controllers and bus products, pre-setting of valves
- Adjustment of cable or probe length
- Calibration certificates
- Modification of the software functionality
- Special colouring of the products - see examples in the picture

Adaptation Services are implemented at Produal's factory with high quality and efficiency. A separate service-specific fee is charged, which is typically on a price-per-product basis and includes a minimum order quantity. In addition to standard classroom training dealing with applications, products, and technologies, our Training Services also offer an option for modified training modules to match your specific competence development needs. Training Services also offer certificates to support you in becoming a certified Produal distributor or solution provider.



NEW



We have added occupancy detection to our **battery-powered Proxima wireless transmitters**. The **Proxima WTR-PIR model** includes PIR and temperature measurement, and you can order the display, CO_2 measurement, humidity measurement, and advanced setpoint knob as additional options. The movement is transmitted without delay to the BMS system, supporting applications that demand low-latency communication, such as lights and blinds. With wireless occupancy detection, you can effortlessly optimize factors such as space utilization and energy efficiency. *Page 85*

The setpoint knob on the Proxima transmitter allows you to use all room controls wirelessly via BMS. The **advanced Proxima WTR-AK display version** can be used to implement the room interface for demanding control needs, including plenty of ready-made functions from temperature setpoint and fan controls to the extra time function. In addition, a **Proxima WTR-PK transmitter with a basic setpoint knob** is now also available. *Page 85*

With Proxima's wide range of functionalities, we can provide one of the most comprehensive wireless portfolios on the market!



Wireless Modbus is now available! With the **W-Modbus wireless bridge**, you can convert any Modbus RTU device to wireless and forget about the cabling. It is now possible to create a wireless Modbus RTU network that maintains the standardization of the protocol. By converting the Modbus signals into MiraMesh, you can send the Modbus messages wirelessly with low latency. *Page 88*

LoRaWAN

LoRaWAN is the latest addition to our range of wireless technologies, as we now offer transmitters for your long-range wireless network. The LoRaWAN network is suitable for transmitting small-size payloads over long distances and is a beneficial technology, especially in various IoT solutions. *Page 89*



With our **MLB Modbus LoRaWAN bridge**, you can convert Modbus RTU messages to wireless LoRaWAN messages, and vice versa, to be used in your long-range wireless network. The MLB bridge is available with an internal or external antenna and is designed to read and write 32 freely configured Modbus RTU registers. Set-up is easy using the Produal MyTool® Android application. MyTool enables the use of various ready-made device profiles and description files in configuration, making register configuration and commissioning quick and easy. *Page 90*



Wireless ERS LoRaWAN® room transmitters offer battery-powered measurement of temperature, humidity, CO_2, VOC, light, and sound, as well as occupancy detection for your LoRaWAN® network. *Page 91*

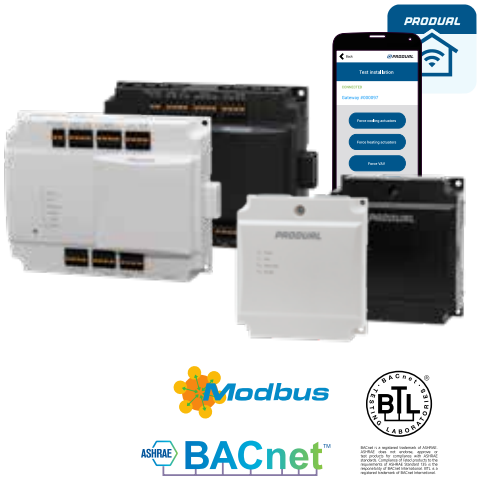
NEW PRODUCTS



The new **Proxima RS room temperature sensor** is our first wired room product to get a new look and feel. The black or white IP30 class housing provides an elegant solution for public spaces, for example, including an expanded temperature measurement range from -30...+70 °C and improved measurement accuracy via a 4-wire connection. *Page 123*



Our wide selection of **TRC touchscreen room controllers** now includes an option to show consumption details. The new **TRC-A-3A-CD apartment controller model** shows consumption meter data through the BMS system on the device display. The TRC controller family provides simplicity of touch for all types of room control and measurement applications and is available in both Modbus and BACnet models and in black and white designs. *Pages 20-23*



We have added new functions to the **Proxima CU and Proxima CU-LH controllers**, so that they now serve various building automation application needs even better than before.

You can now implement **change-over status control** between summer and winter mode either with a temperature input, the digital input's on/off switch, or input override by the BMS system.

Also, **on/off outputs with hysteresis** are now possible by configuring them as thermostatic outputs for cooling or heating. This way, the controller functions normally with PWM-controlled outputs, and you can simultaneously have one or more thermostatic on/off outputs. *Pages 31 and 33*



DPT differential pressure transmitters and controllers are now available for monitoring and regulating HVAC systems. The **DPT-Flow air flow transmitter** is the ideal instrument for measuring the air flow rate of centrifugal fans or regulating the air flow in a duct or a specific fan or blower. The multifunctional **DPT-Ctrl differential pressure or air flow controller** enables the control of constant pressure or flow in fans, VAV systems or dampers to maintain a constant vacuum or a steady air flow. The latest **DPT-Ctrl-MOD model** now provides also a Modbus connection. *Pages 52–55*



New Siro indoor air quality room transmitters bring a PM2.5 (PM1, PM10) measurement and CO_2 + VOC combination transmitters to Produal's product range. The Siro series devices are available with or without a user interface that includes an LCD display and push-buttons, making use and configuration of the device quick and easy. *Page 72*

PRODUAL CLASSICS

For more than 30 years, we have been active in technical development of building automation measurement and control, together with our customers. The goal has always been to support the customers in achieving excellent outcomes in the evolving business of building automation. Our wide product offering includes over 1000 products for controlling, measuring, actuating and commissioning, completed with system components. These traditional Produal products, as an example of our extensive portfolio, are helping in many ways in the customer projects, making the installation easy and saving costs.



RY 1-U is a **voltage controlled relay** with 0...10 V input, converting an analogue signal to digital. Useful for e.g. alarms and step-controls. *Page 150*



Relay units RYM 8-KK and RYM 8-KK-0 have eight relay outputs that can be controlled manually or by using 24 Vdc or 0 V input signal. The manual control helps, for example, in commissioning and in fault situations. *Page 151*



Isolator ISO 10 is a brilliant device for signal conversions and galvanic isolation. It is very useful for e.g solving ground loop problems. *Page 146*



LA 14E and LA 15E are **occupancy sensors** for controlling ventilation and lighting. Intelligent, processor based, logic prevents false detections being at the same time very responsive. Relay function is quiet and the release delay is adjustable. LA 15E is especially designed for lighting control because of extra output relay for lighting. *Page 138*



Condensation switches KA 10 and KA 10-EXT are very powerful products for detecting water condensation in cooling systems, for example in cooling beams. With the condensation switch it is possible to control the cooling water supply when the water starts to condensate on the pipe. *Page 134*



HDH-AL3 and HDH-N-AL3 transmitters provide information about the current indoor CO_2 level via the display and/or leds. Traffic light leds are a great way to get the user's attention when air quality needs improvement. *Page 68*

PRODUAL CLASSICS



TH 5 is a very useful product when controller's output for the load is not powerful enough. TH 5 is a **surface mounted driver** that can drive several parallel connected thermal actuators. The driver input signal can be any 5...30 V signal (time proportional) that is intended for thermal actuator control. *Page 152*



AO 2 / AO 3 signal dividers are used for splitting one signal in to 2 or 3 separate signals. It is used for example for adding controlled stages from 1 stage to 2 or 3 stages. *Page 148*



The **switch mode power supply JY** is a multifunction AC/DC to DC converter – it is basically all the DC power supply you need. Useful as a power supply for current loops. *Page 153*



Timers ETT6 and LAP 5E are designed for energy saving and boosting functions in ventilation applications. Because of exceptional working hours, the enhanced ventilation may also be necessary outside the normal working hours. Proxima ETT6 timer offers modern design for surface mounted applications and improved functionalities such as illustrative indicator lights, providing timer status information. For flush mounting purposes we offer LAP 5E timer. *Pages 159-160*



Control relay FCRY 3 for 3-speed motors has an input of 0...10 V and is especially useful for combining analogue control with digitally controlled motors. *Page 151*



The **MIO 12 I/O module** is the perfect product for reading multiple digital or analogue inputs and for controlling thermal or 3-point actuators and 0...10 V outputs using Modbus communication. *Page 161*



Frost protection thermostats JVA 24 and JVS 24 are an excellent way to prevent heating coils from freezing in the air handling units. Protection is based on proactive valve control by temperature measurement. *Page 132*

CONTROLLERS

A wide range of multifunctional and reliable controllers is available for all types of building automation applications, from chilled beams, radiators and fan coils to VAV and beyond. Our range covers single-room or zone control, integration with intelligent building automation systems and interoperability with overall smart building management in larger or smaller scale applications. Our selection and designs cater for all budgets, covering both bus and stand-alone products.

The room controllers include all the intelligence and connections in the same unit, covering various controller types for different requirements, with an add-on sensor, button capability and full-screen touch display. Touchscreen controllers have additional light and blinds control interface.

Our control units cover controllers for false ceiling mounting or other hidden installation, minimizing the need for cables through the walls, and universal controllers for a wide range of applications in heating, ventilation, pressure, or humidity control.

The user-friendly room units are available for various needs and budgets, from high-class applications to simple yet stylish solutions. Add-on capabilities for the desired functions in one housing remove the need for separate sensors in the room and make the system flexible and future-proof.

Please note that most of our transmitters are equipped with control output and can be used as single-sequence controllers for heating/cooling or ventilation.



ROOM CONTROLLERS

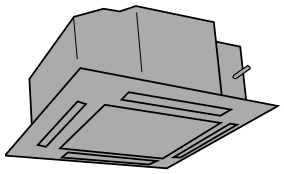
Produal offers complete solutions for different applications. Our room controllers are suitable for many various applications such as hotel rooms, office rooms, waiting areas, conference rooms, and more. HLS 44 and TRC room controller families can both handle different output and input types, with simple touch buttons or with an intuitive full-screen touch display.



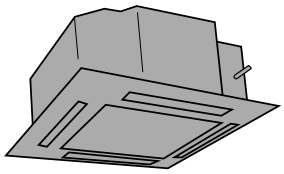
HLS 44 room controller family *(Page 24)*



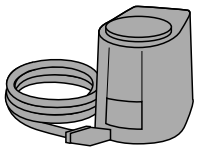
TRC room controller family *(Page 20)*



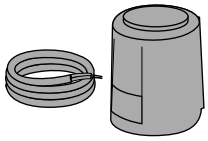
0...10 V EC fan control



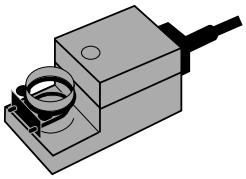
3-step fan control



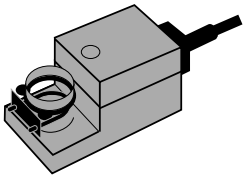
0...10 V actuators *(Page 142)*



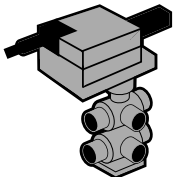
24 Vac actuators (on/off or PWM) *(Page 142)*



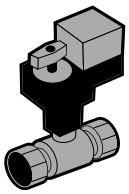
0...10 V damper motors



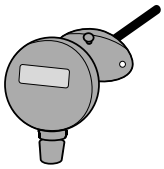
24 V damper motors



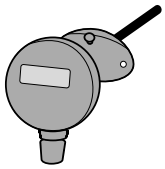
0...10 V 6-way valve control



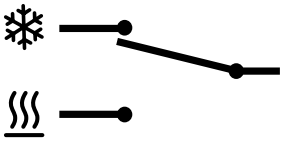
3-point actuators



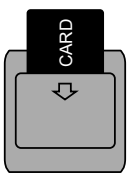
External passive sensors *(Page 92)*



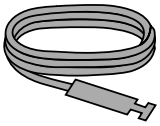
External 0...10 V active sensors *(Page 92)*



Change-over input



Key card input



Condensation input *(Page 134)*

ROOM CONTROLLER INPUTS AND OUTPUTS

Product	Page	Supply voltage	Analogue inputs	Digital inputs	Analogue outputs	Digital outputs
TRC-A-3A	20	24 V	2[2)]	1	3	0
TRC(-P)-3A	20, 22	24 V	2[2)]	1	3	0
TRC(-P)-H-2A3R	20, 22	230 V	1[2)]	1	2	3[1)]
TRC(-P)-1A2T	20, 22	24 V	2[2)]	1	1	2
TRC(-P)-H-3R2T	20, 22	24 V	2[2)]	1	0	2 + 3[1)]
TRC(-P)-H-1A2R	20, 22	230 V	2[2)]	1	1	2[1)]
HLS 44-SE	24	24 V	1	2	4	2
HLS 44-V	24	24 V	1	2	2	4
HLS 44-CO2	24	24 V	1	2	4	2
HLS 44-3P	24	24 V	1	2	2	4
HLS 45	24	24 V	1	2	4	2
HLS 33	26	24 V	1 (HLS 33-EXT)	1	2	2

[1)] Relay outputs

[2)] These inputs can also be configured to work as digital inputs.



In conference rooms, HLS 44-CO2 (page 24) can control chilled beams with cooling and a damper actuator for ventilation if the CO_2 values are too high, or if cooling is required. Heating is controlled with radiators.



HLS 45 (page 24) can be used to control fan coil units with 2-pipe systems with summer and winter change-over. It is also suitable for controlling heated floors with a return water temperature limit. HLS 45 controls EC fan speed directly via 0...10 V output. The 3-speed fan can be controlled by using FCRY 3 (page 151). HLS 45 can be connected to Modbus RTU.

ROOM CONTROLLER SELECTION GUIDE

NOTE: Check the product pages for more information.		Room controller families											
		HLS 33	HLS 44-SE	HLS 44-V	HLS 44-CO2	HLS 44-3P	HLS 45	TRC	TRC-P	TRC-A	TRC-A-3A with -CD option	TRT-1R	TRT-P-1R
	230 V supply voltage and output							•	•				
Application	4-pipe fan coil unit control	•	•	•	•	•		•	•				
	2-pipe fan coil unit control						•	•	•			•	•
	Heating or cooling	•	•	•	•	•	•	•	•	•	•	•	•
	Heating and cooling	•	•	•	•	•	•	•	•	•	•		
	Floor heating						•	•	•	•	•	•	•
	Floor heating/cooling						•	•	•	•	•	•	•
	Chilled beam	•	•	•	•	•	•	•	•	•	•		
	Heating radiator control	•	•	•	•	•	•	•	•	•	•	•	•
	6-way valve control		•					•	•				
	On/off thermostat mode		•	•	•	•	•	•	•			•	•
Actuator	Thermal	•	•	•	•	•	•	•	•	•	•		
	3-point	•				•	•						
	0...10 V	•	•	•	•	•	•	•	•	•	•		
	On/off		•	•	•	•	•	•	•			•	•
Function	Control stages	2/3	2/3	2/3	2/3	2/3	1/2	2/2	2/2	2/2	2/2	1	1
	Control modes	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	Stat	Stat
	230 V 3-speed fan control							•	•				
	3-speed fan control with FCRY 3		•	•	•	•	•	•	•				
	EC fan control		•	•	•	•	•	•	•				
	VAV control	•	•	•	•	•	•	•	•	•	•		
	Changeover functionality						•	•	•	•	•	•	•
	CO_2 based ventilation control		•	•	•	•	•	•	•	•	•		
	Lighting control on/off			•				•	•	•	•	•	•
	Key card input		•	•	•	•	•	•	•	•	•	•	•
	Door / window switch input		•	•	•	•	•	•	•	•	•	•	•
	Condensation switch input	•	•	•	•	•	•	•	•	•	•	•	•
	Condensation sensor input							•		•			
	Display	o	•	•	•	•	•	•	•	•	•	•	•
	Touchscreen							•	•	•	•	•	•
	Consumption data screen										•		
	Setpoint potentiometer	•											
	Setpoint buttons		•	•	•	•	•						
	Occupancy input (PIR)		•	•	•	•	•	•	•	•	•	•	•
	Occupancy button (man in house)		•	•	•	•	•	•	•	•	•	•	•
	External temperature sensor input	•	•	•	•	•	•	•	•	•	•	•	•
	Temperature transmitter input		•	•	•	•	•	•	•				
	7-day time schedule								•				•
	Modbus RTU		•	•	•	•	•	•	•	•	•	•	•
	BACnet MS/TP							•	•	•	•	•	•
	Page	26	24	24	24	24	24	20	22	20	20	27	27

• standard o optional

ROOM CONTROLLERS

1

room °C, %rH, CO_2

TRC touchscreen room controllers have been designed for climate control in room spaces. The controllers have up to two heating and cooling temperature control stages, fan speed control, optional CO_2 level control and humidity control. The units can be used in various climate control applications, fan coil units, chilled ceilings and zone heating/cooling systems. Light and blinds control are also available. The devices provide accurate energy saving PI control and an intuitive, slim line 3.5" colour touchscreen interface.



Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C (25 °C)
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on a flush mounting box (60 mm hole distance)
Materials	PC plastic

Ordering guide		Type	0	1	2	3	4	5	6
0 Touchscreen room controllers			6001						
1 Device type	Apartment controller, 2RI/DI, 1DI, 3AO	TRC-A-3A		B					
	Room controller, 2RI/DI, 1DI, 3AO	TRC-3A		C					
	Room controller, 1RI/DI, 1DI, 2AO, 3RO, 7A	TRC-H-2A3R		E					
	Room controller, 2RI/DI, 1DI, 1AO, 2DO	TRC-1A2T		F					
	Room controller, 2RI/DI, 1DI, 3RO, 2DO, 7A	TRC-H-3R2T		H					
	Room controller, 2RI/DI, 1DI, 1AO, 2RO, 7A	TRC-H-1A2R		V					
2 Communication	Modbus RTU	-MOD			M				
	BACnet MS/TP	-BAC			B				
3 Power supply	24 Vac/dc (not available for TRC-H-1A2R)	-24				2			
	90...250 Vac (only TRC-H-1A2R)	-230				M			
4 Additional measurements	No additional measurement						0		
	Relative humidity	-RH					1		
	CO_2	-CO2					2		
	Relative humidity and CO_2	-RH-CO2					3		
5 Advanced options	No advanced options							0	
	0...10 Vdc input(s) (replaces existing RI input(s))	-AI						1	
	Control extension (not available for TRC-A-3A)	-CE						2	
	0...10 Vdc input(s) (replaces existing RI input(s)) + Control extension (not available for TRC-A-3A)	-AI-CE						3	
	Consumption data screen (only for TRC-A-3A)	-CD						5	
6 Body colour	White (RAL 9010)	-W							W
	Black (RAL 8022)	-B							B

TOOLS

SW-DCT-USB	1139040	configuration cable

Ordering guide explanation:

RI/DI — *External NTC 10 temperature input (optional, selectable function, control, limit control, measurement, heating/cooling changeover, high/low limit, aux control loop, 0...10 V external CO_2 and temperature, 0...10 V pressure measurement). These inputs can be configured also to work as digital inputs.*

DI — *Voltage free digital input (optional, selectable function e.g. occupancy, night mode, condensation, alarm, summer/winter)*

RO — *230 V relay output for 230 V actuators (typically 3-speed fan, optional heating/cooling stat)*

AO — *0...10 Vdc analogue output (selectable function e.g heating, cooling, max VAV, EC fan, lights control, blinds control, humidity control, alarm output)*

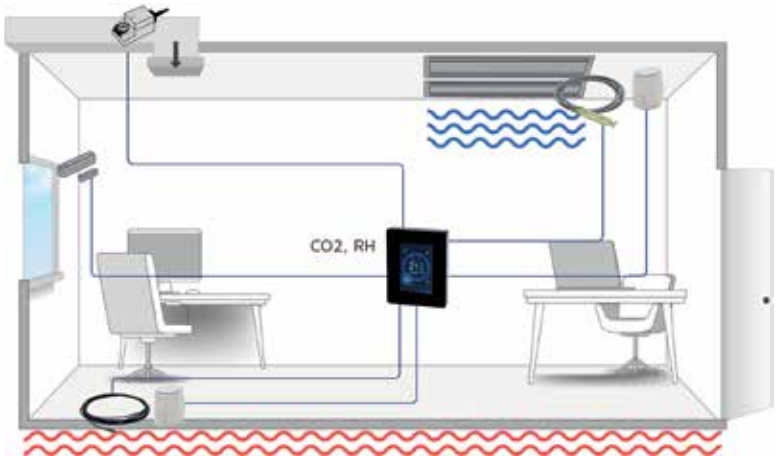
DO — *24 Vac PWM output (thermal actuator heating/cooling control, requires 24 Vac supply)*

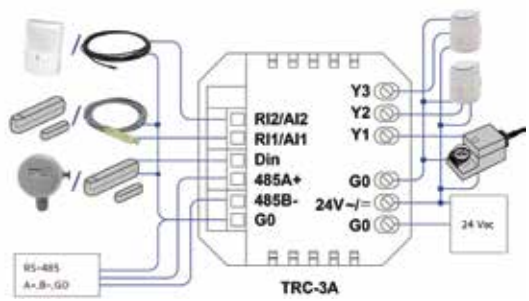
CE — *Control extension. The extension provides control for lights and blinds and extension override function.*

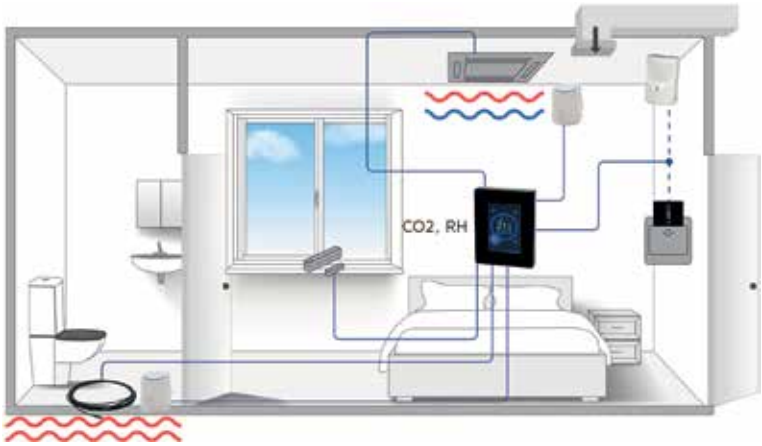
***TRC-A-3A** is designed for apartment control with pressure balancing of the supply and extract flows, interlinks to the kitchen extractor, heating/cooling control and simple Home/Away/Boost selection screens. **TRC-3A** is an advanced room temperature and CO_2 controller where the analogue outputs can be configured for wide range of functions (e.g. heating, cooling, EC fan, maximum of CO_2 and cooling stages, humidity control, change-over control).*

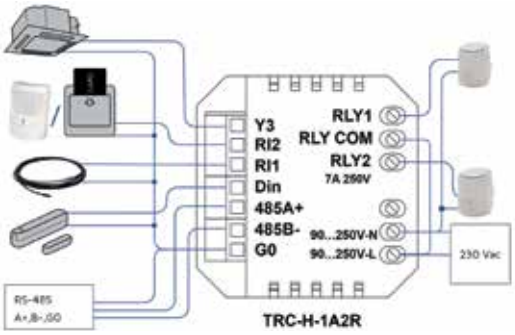
***NOTE:** You can select also Fahrenheit for temperature unit during commissioning.*

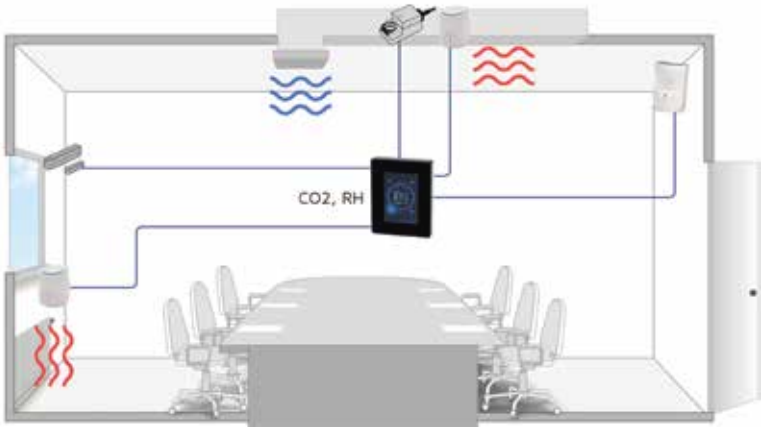
ROOM CONTROLLERS

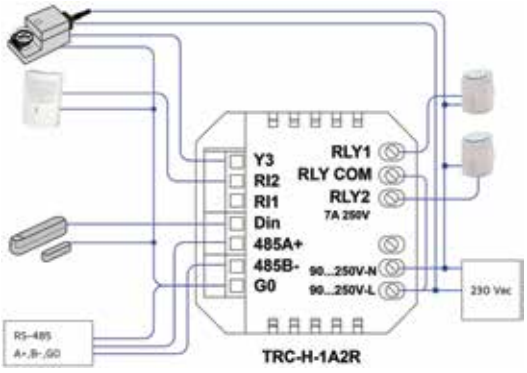


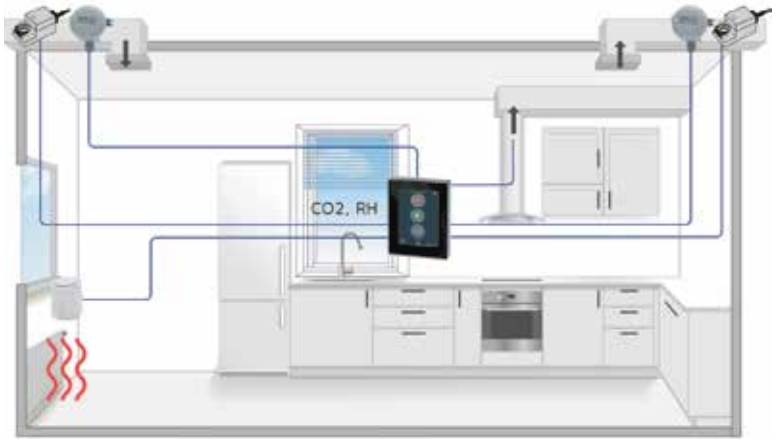


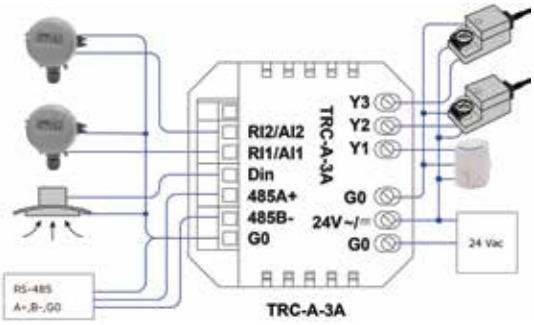












ROOM CONTROLLERS

1

TRC-P touchscreen room controllers have been designed for climate control in room spaces. The controllers have up to two heating and cooling temperature control stages, fan speed control, optional CO_2 level control and humidity control, and 7-day clock for scheduling operation modes. The units can be used in various climate control applications, fan coil units, chilled ceilings and zone heating/cooling systems. Light and blinds control are also available. The devices provide accurate energy saving PI control and an intuitive, slim line 3.5" colour touchscreen interface.

room °C, %rH, CO_2



Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C (25 °C)
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on a flush mounting box (60 mm hole distance)
Materials	PC plastic

Ordering guide		Type	0	1	2	3	4	5	6
0 Touchscreen room controllers			6001						
1 Device type	Room controller, 2RI/DI, 1DI, 3AO, schedule	TRC-P-3A		N					
	Room controller, 1RI/DI, 1DI, 2AO, 3RO, 7A, schedule	TRC-P-H-2A3R		Q					
	Room controller, 2RI/DI, 1DI, 1AO, 2DO, schedule	TRC-P-1A2T		R					
	Room controller, 2RI/DI, 1DI, 3RO, 2DO, 7A, schedule	TRC-P-H-3R2T		T					
	Room controller, 2RI/DI, 1DI, 1AO, 2RO, 7A, schedule	TRC-P-H-1A2R		X					
2 Communication	Modbus RTU	-MOD			M				
	BACnet MS/TP	-BAC			B				
3 Power supply	24 Vac/dc (not available for TRC-P-H-1A2R)	-24				2			
	90...250 Vac (only TRC-P-H-1A2R)	-230				M			
4 Additional measurements	No additional measurement						0		
	Relative humidity	-RH					1		
	CO_2	-CO2					2		
	Relative humidity and CO_2	-RH-CO2					3		
5 Advanced options	No advanced options							0	
	0...10 Vdc input(s) (replaces existing RI input(s))	-AI						1	
6 Body colour	White (RAL 9010)	-W							W
	Black (RAL 8022)	-B							B

TOOLS

SW-DCT-USB	1139040	configuration cable

Ordering guide explanation:

RI/DI — *External NTC 10 temperature input (optional, selectable function, control, limit control, measurement, heating/cooling changeover, high/low limit, aux control loop, 0...10 V external CO_2 and temperature, 0...10 V pressure measurement)*
These inputs can be configured also to work as digital inputs.

DI — *Voltage free digital input (optional, selectable function e.g. occupancy, night mode, condensation, alarm, summer/winter)*

RO — *230 V relay output for 230 V actuators (typically 3-speed fan, optional heating/cooling stat)*

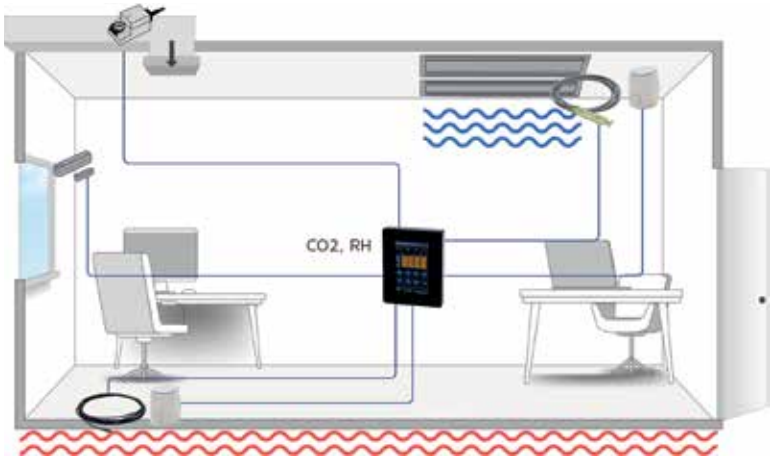
AO — *0...10 Vdc analogue output (selectable function e.g heating, cooling, max VAV, EC fan, lights control, blinds control, humidity control, alarm output)*

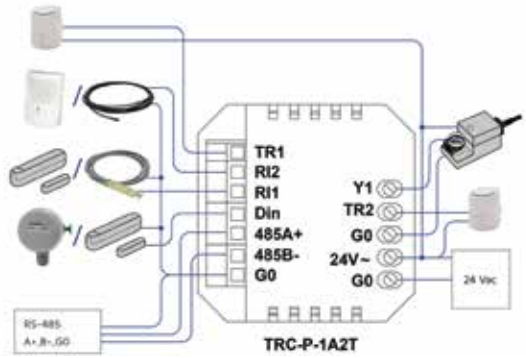
DO — *24 Vac PWM output (thermal actuator heating/cooling control, requires 24 Vac supply)*

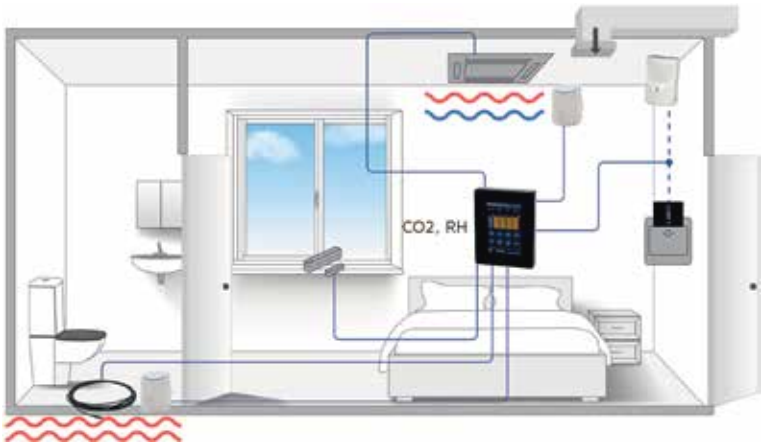
TRC-P-3A is an advanced room temperature and CO_2 controller where the analogue outputs can be configured for wide range of functions (e.g. heating, cooling, EC fan, maximum of CO_2 and cooling stages, humidity control, change-over control).

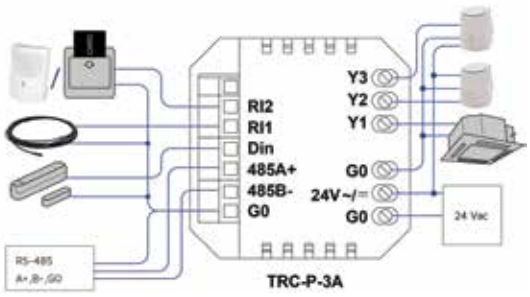
NOTE: *You can select also Fahrenheit for temperature unit during commissioning.*

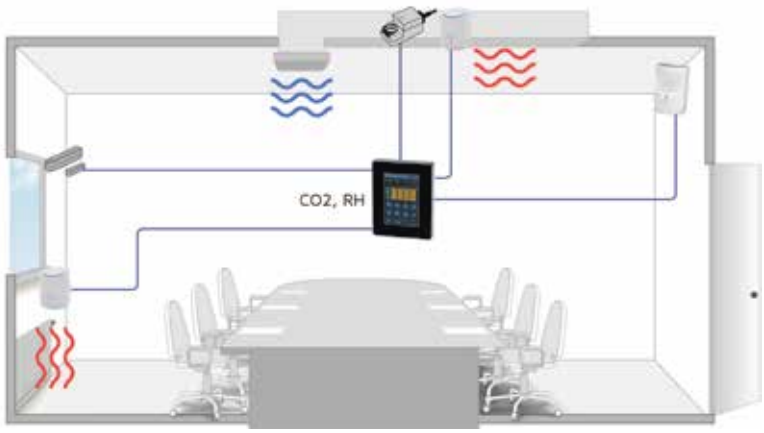
ROOM CONTROLLERS

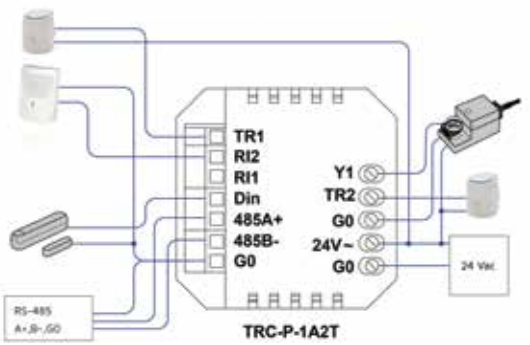


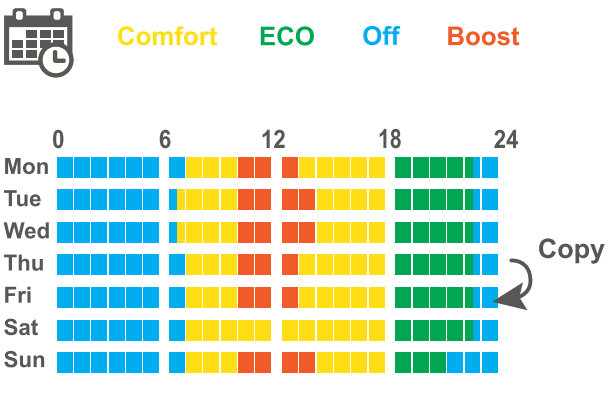














ROOM CONTROLLERS

1

room °C

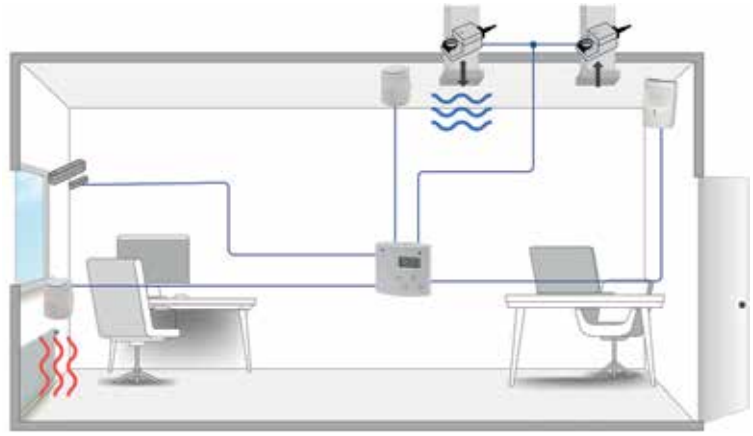
HLS 44 multifunctional controller family is specifically designed for individual room temperature and zone control applications. All controllers include the basic control functionalities, such as temperature, VAV, and fan control. The controllers have a built-in, galvanic isolated RS-485 channel for Modbus RTU communication.
HLS 44-SE is the latest and most advanced release of HLS 44. The advanced functionalities of HLS 44-SE include e.g., 6-way valve control, adjustable 3-speed fan voltages, dimming the display with a timer, and changing the display to show + and - instead of the set temperature (relative setpoint adjustment).
All product variants can be ordered with our adaptation service. With the service you can order the product preconfigured with all the settings that are required by the application.

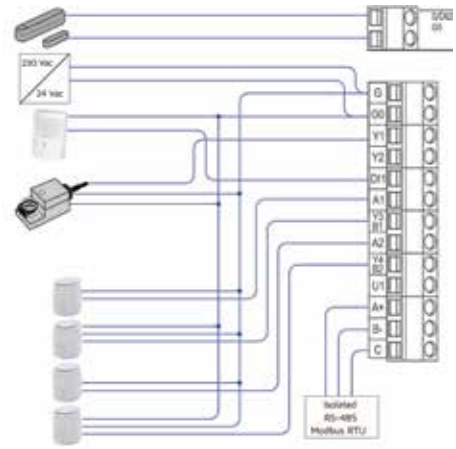


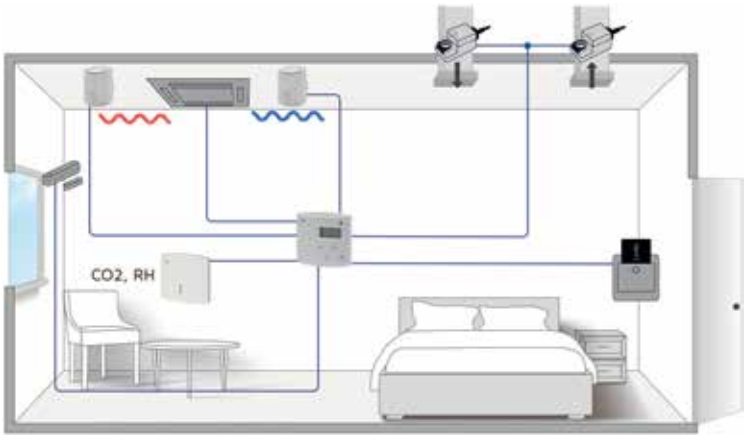
Power supply	24 Vac/dc, < 1 VA
Temperature measurement accuracy	±0.5 °C
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	with screws on wall or on a junction box (hole distance 60 mm)
Materials	ABS plastic
Product dimensions	87 x 86 x 32 mm

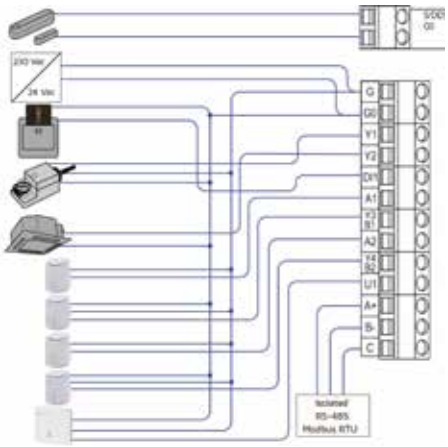
TYPE	ART. NO.	
HLS 44-V	1150260	room temperature controller, Modbus communication, lighting control
HLS 45	1150270	room temperature controller, Modbus communication, floor heating and cooling control
HLS 44-3P	1150280	room temperature controller, Modbus communication, 3-point actuator control
HLS 44-CO2	1150370	room temperature controller, Modbus communication, built-in CO_2 sensor
HLS 44-SE	1150400	room temperature controller, Modbus communication
OPTIONS		
RYVA 16	1183060	relay for fluorescent lamps, 10 A (inrush current < 80 A, < 2,5 ms)
FCRY 3	1183070	fan coil relay, input 0...10 Vdc
TH 5	1183090	driver for thermal actuators, 5 outputs
TOOLS		
HLS 44-SER	1150251	configuration tool for HLS 44-V
HLS 45-SER	1150271	configuration tool for HLS 45
HLS 44-3P-SER	1150281	configuration tool for HLS 44-3P
HLS 44-CO2-SER	1150371	configuration tool for HLS 44-CO2
HLS 44-SE-SER	1150401	configuration tool for HLS 44-SE

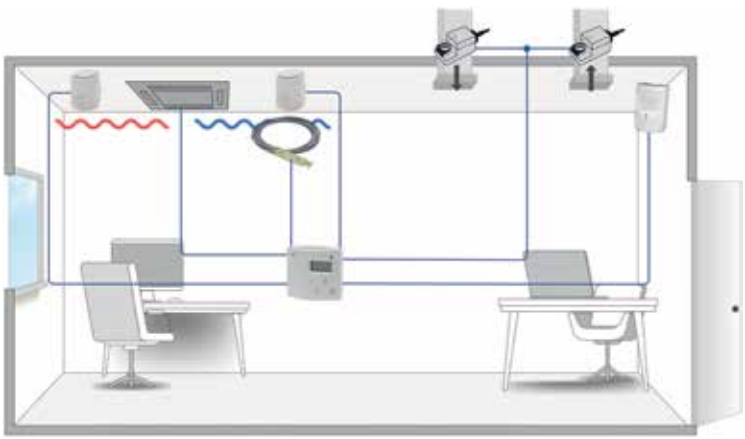
ROOM CONTROLLERS

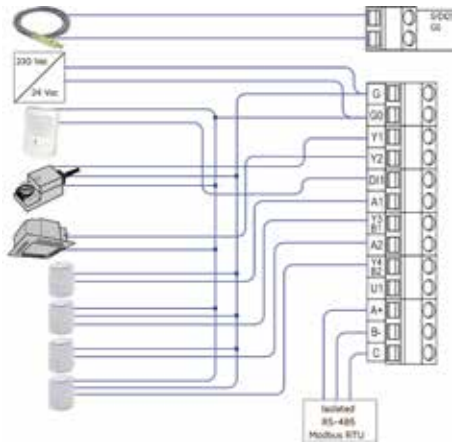


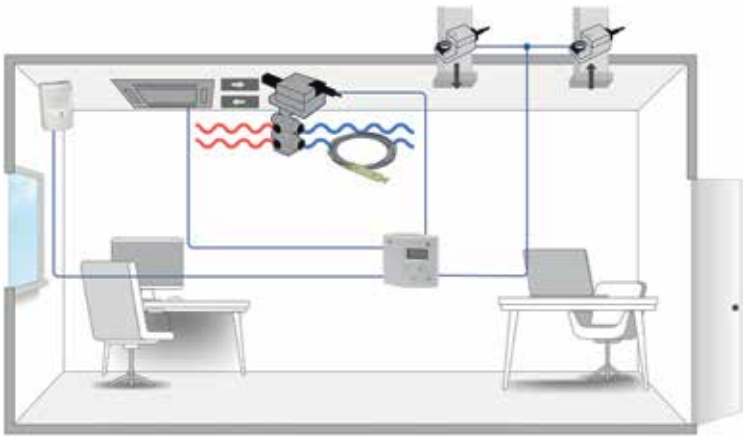


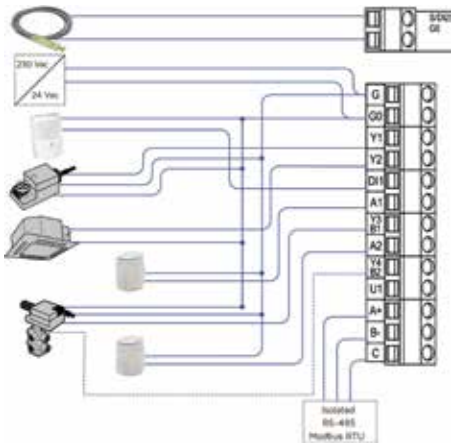












ROOM CONTROLLERS

1

HLS 33 is a room temperature controller with 2 or 3 stages. One stage is for heating and up to two stages for cooling. The controllers can be used with 0...10 V, 3-point or thermal (PWM) actuators.

room °C



Power supply	24 Vac, < 2 VA
Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C
Voltage output	2 x 0...10 Vdc, 2 mA, for heating and cooling
Triac output	2 x 24 Vac, 1 A, 0,6 A cont. / 1 A max, for heating and cooling
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	86 x 86 x 32 mm

TYPE	ART. NO.	
HLS 33	1150090	room controller, internal temperature sensor
HLS 33-N	1150091	room controller with display, internal temperature sensor
HLS 33-EXT	1150092	room controller, for an external NTC10 temperature sensor
HLS 33-N-EXT	1150093	room controller with display, for an external NTC10 temperature sensor
OPTIONS		
TH 5	1183090	driver for thermal actuators, 5 outputs

SMART THERMOSTATS

room °C, %rH

The slim design of the flush-mounted TRT smart thermostat gives a modern look and feel to heating or cooling control applications. TRT series thermostats have a 3.5" backlit colour touchscreen and provide a wide range of power options. The MOD models have built-in Modbus RTU communication. The BAC models provide BACnet MS/TP communication. TRT smart thermostat can also be used as lighting and/or air conditioning interfaces. The thermostats are also available with 7-day schedule with multiple setpoints.



Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C (25 °C)
Digital input	1 x potential free input
Resistive input	2 x NTC 10 or potential free digital input
Relay output	230 Vac, 7 A (res.) / 1.3 A (inductive) or 115 Vac, 7 A (res.) / 2.2 A (inductive)
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on a flush mounting box (60 mm hole distance)
Materials	PC plastic
Product dimensions	88 x 112 x 43 mm

Ordering guide		Type	0	1	2	3	4	5	6
0 Touchscreen room thermostats			6001					0	
1 Device type	Room thermostat, 2RI/DI, 1DI, 1RO	TRT-1R		1					
	Room thermostat, 2RI/DI, 1DI, 1RO, 7-days schedule	TRT-P-1R		2					
2 Communication	Modbus RTU	-MOD			M				
	BACnet MS/TP	-BAC			B				
3 Power supply	24 Vac/dc	-24				2			
	90...250 Vac	-230				M			
4 Additional measurements	No additional measurement						0		
	Relative humidity	-RH					1		
5 Reserved								0	
6 Body colour	White (RAL 9010)	-W							W
	Black (RAL 8022)	-B							B

TOOLS

SW-DCT-USB	1139040	configuration cable

TRT ordering guide explanation:

RI/DI *External NTC 10 temperature input (selectable e.g. for control, high/low limit control)*
These inputs can be configured also to work as digital inputs.

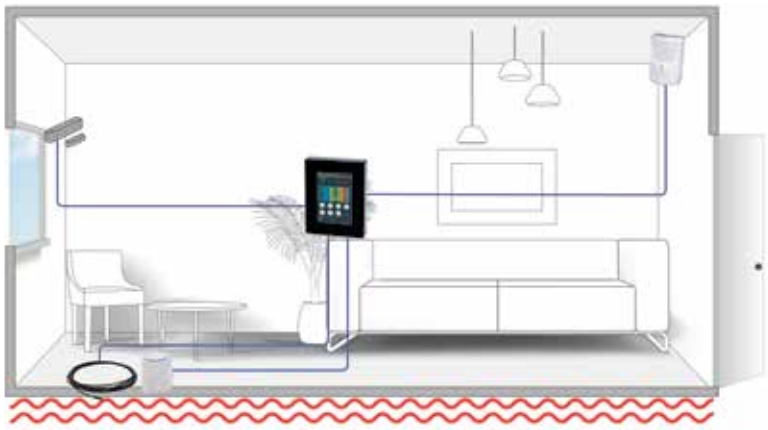
DI *Voltage free digital input (selectable for e.g ECO override, OFF override, heating/cooling mode, alarm)*

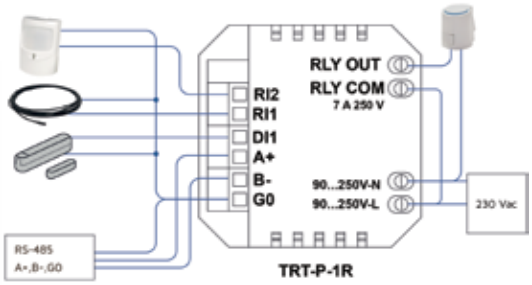
RO *230 Vac SPST relay, 7 A resistive (for heating/cooling control, zone 2 heating control)*

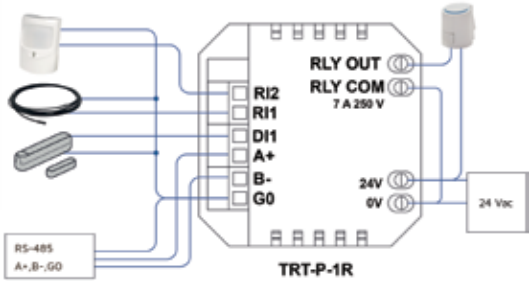
NOTE: *You can select also Fahrenheit for temperature unit during commissioning.*

SMART THERMOSTATS

1





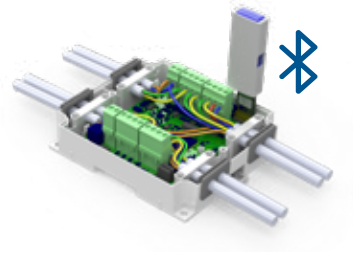


CONTROL UNITS

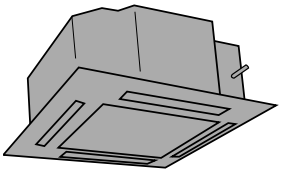
The multifunctionality of our control units offers plenty of possibilities for your larger or smaller scale room and zone control applications. Furthermore, configurable control parameters in the advanced controller models make them highly adaptable also for your future needs.



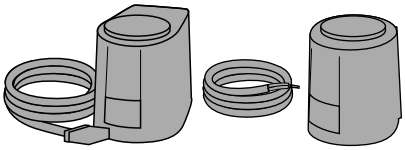
Proxima CU-LH control unit
(Page 33)



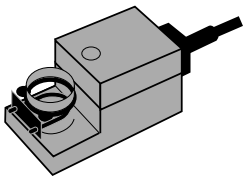
Wireless confirguration via MyTool
(Page 166)



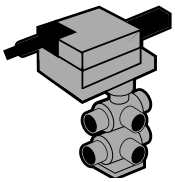
0...10 V EC fan control
3-step fan control



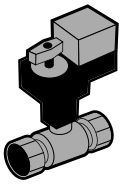
0...10 V actuators *(Page 142)*
24 Vac actuators (on/off or PWM) *(Page 142)*



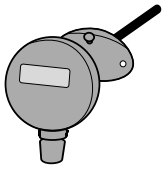
0...10 V damper motors
24 V damper motors
24V AC on/off damper motors



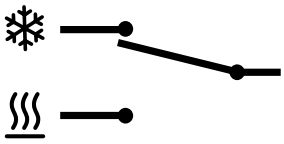
0...10 V 6-way valve control



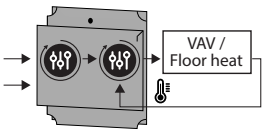
3-point actuators



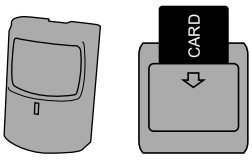
External passive NTC 10-K / 0...10 V
active sensors *(Page 92)*



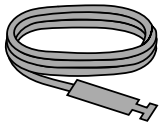
Change-over input



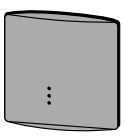
Cascade control



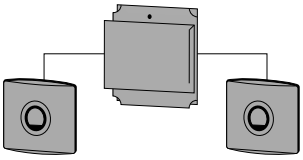
PIR sensor input
Key card input



Condensation input *(Page 134)*



Support for external active
transmitters (CO_2, %rH,
temperature, setpoint)



2-room control

CONTROL UNIT INPUTS AND OUTPUTS

Product	Page	Analogue inputs	Digital inputs	Analogue outputs	Digital outputs	Note
CU	31	6	6	6	4	Universal inputs (6 pcs) and outputs (6 pcs).
CU-LH	33	3	3	4	2	Multifunctional inputs (3 pcs) and outputs (4 pcs)
PDS 2.2	35	2	0	2	2	
HS 2.2-M	36	1	2	4	1	

CONTROL UNIT SELECTION GUIDE

NOTE: Check the product pages for more information.		Control unit			
		PDS 2.2	HS 2.2-M	CU-LH	CU
Application	4-pipe fan coil unit control			•	•
	2-pipe fan coil unit control			•	•
	Floor heating			•	•
	Floor heating/cooling			•	•
	Chilled beam			•	•
	Heating radiator control			•	•
	6-way valve control			•	•
	On/off thermostat mode			•	•
	Universal controller	•	•	•	•
	Middle roof installation			•	•
Actuator	Thermal	•	•	•	•
	3-point	•	•	•	•
	0...10 V	•	•	•	•
Function	Control stages	1	1	2/2	2/2
	Control modes	P/PI	P/PI	P/PI	P/PI
	Cascade control			•	•
	3-speed fan control with FCRY 3			•	•
	EC fan control			•	•
	VAV control			•	•
	2-pipe change-over / summer/winter			•	•
	Key card input			•	•
	CO_2 based ventilation control			•	•
	Thermostatic ON/OFF mode			•	•
	Dedicated room unit input			•	•
	CO_2 transmitter input			•	•
	Humidity transmitter input			•	•
	Temperature transmitter input			•	•
	Potentiometer input			•	•
	External temperature sensor input			•	•
	Condensation sensor input			•	•
	Modbus RTU	•	•	•	•
	Modbus TCP				•
	BACnet MS/TP			•	•
	BACnet IP				•
	Page	35	36	33	31

CONTROL UNITS

Produal Proxima® CU is a multifunctional control unit designed especially for room and zone control applications. The control unit supports the following communication protocols: Modbus RTU, Modbus TCP, BACnet MS/TP and BACnet IP. Two rooms can be controlled with one control unit by connecting two room units.



Power supply	24 Vac/dc (22...26 V), < 7 VA
Multifunctional input	6 x NTC 10 / Pt1000 / Resistive / Digital / 0...10 Vdc
Multifunctional output	4 x 0...10 Vdc, 2 mA / 24 Vac, 1 A (PWM) and 2 x 0...10 Vdc, 2 mA / 0...20 mA, 700 Ω
Supply output	2 x 24 Vac, total load < 8 A
IP protection class	IP22
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	on the wall surface or on 35 mm DIN rail
Materials	PC plastic
Product dimensions	186 x 136 x 55 mm

TYPE	ART. NO.	
CU	5201010000	multifunctional control unit, white
CUB	5201010003	multifunctional control unit, black
OPTIONS		
TH 5	1183090	driver for thermal actuators, 5 outputs
CUCC	5201010400	cable covers for Proxima CU and WBU (includes two covers and four fixing screws)
TOOLS		
MYT-Andr	5100010000	Free Android application for configuring and commissioning of Produal PUMP® devices.

The control unit can be used in many different room control applications with several Produal products. Here are some examples for connecting a room unit to the control unit:

TRI (page 40)

The versatile and customizable touchscreen room unit can be connected to the room unit port on the control unit.

ROU (page 43)

The advanced touchscreen room unit can be connected to the room unit port on the control unit.

RU (page 42)

The customizable room unit can be connected to the room unit port on the control unit.

TEHR NTC 10-P (page 125)

Room temperature sensor with passive potentiometer can be connected to input terminals on the control unit for setpoint and temperature.

You may need to adjust the potentiometer resistance levels in the control unit.

TEHR LU-PU (page 126)

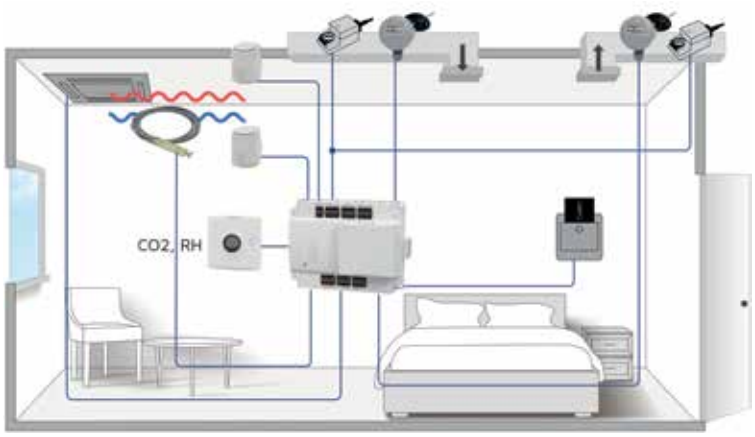
Room temperature transmitter with active potentiometer can be connected to input terminals on the control unit for setpoint and temperature.

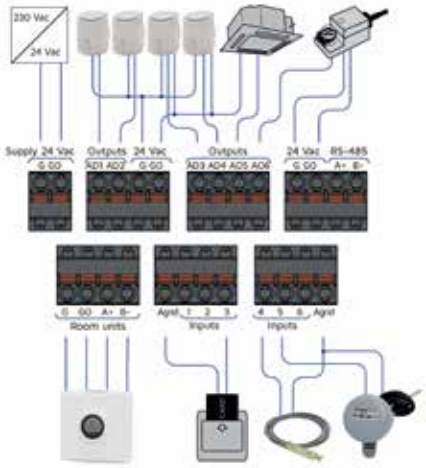
HDH-PU (page 68)

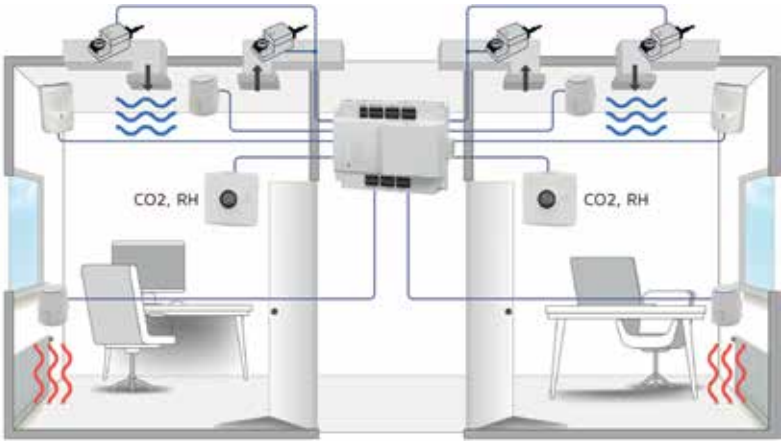
Room CO_2 transmitter with active potentiometer can be connected to input terminals on the control unit for setpoint, temperature and CO_2.

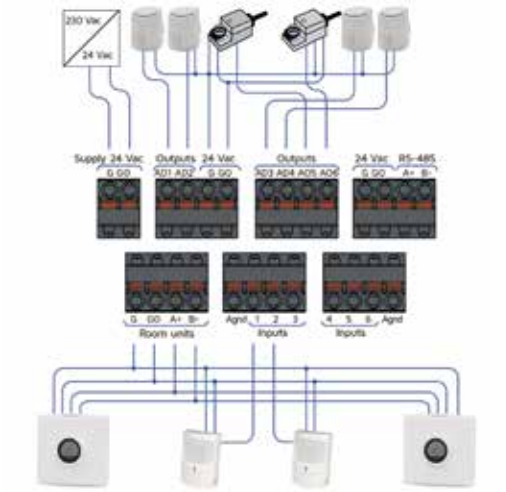
CONTROL UNITS

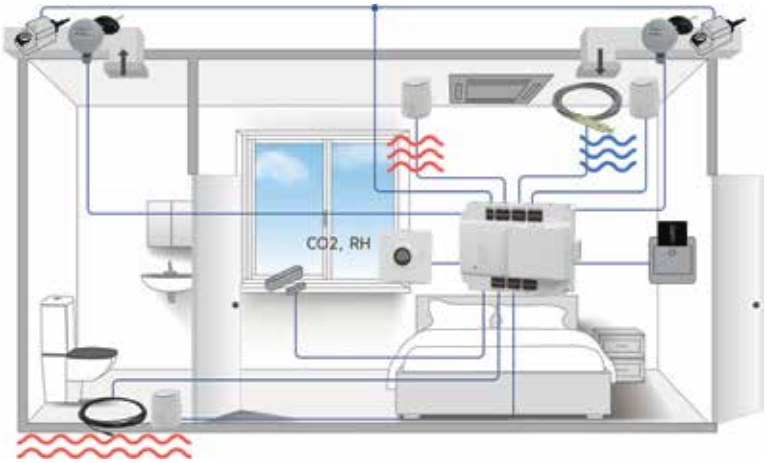
1

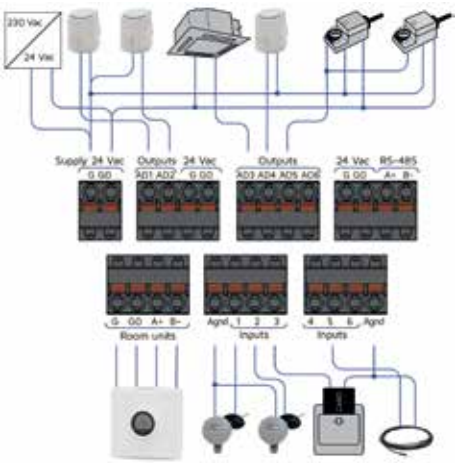












CONTROL UNITS

Produal Proxima® CU-LH control unit combines all the flexibility and power of Produal Proxima CU into a compact package, especially optimized for individual room temperature, VAV and zone control applications. The control unit supports the following communication protocols: Modbus RTU (MOD models) and BACnet MS/TP (BAC models). The BAC models also support Modbus RTU. The control unit is equipped with two separate control loops and a cascade controller loop. The unit has three operation modes for energy saving control functions. The outputs, setpoints and the controller dead zone can be configured separately for each operation mode.



Power supply	24 Vac/dc (22...26 V), < 2 VA
Multifunctional input	3 x NTC 10 / Resistive / Potential free contact / 0...10 Vdc
Multifunctional output	2 x 0...10 Vdc, 2 mA / 24 Vac, 1 A (PWM) and 2 x 0...10 Vdc, 2 mA
Supply output	2 x 24 Vac, total load < 6 A
IP protection class	IP44
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	on the wall surface or on 35 mm DIN rail
Materials	PC plastic
Product dimensions	116 x 128 x 47 mm

TYPE	ART. NO.	
CU-LHB-MOD	52011B1000	control unit, black, Modbus RTU
CU-LHB-BAC	52011B2000	control unit, black, Modbus RTU/BACnet MS/TP
CU-LH-MOD	52011W1000	control unit, white, Modbus RTU
CU-LH-BAC	52011W2000	control unit, white, Modbus RTU/BACnet MS/TP
OPTIONS		
TH 5	1183090	driver for thermal actuators, 5 outputs
CA-SR	5201A00S00	cable strain relief set
TOOLS		
MYT-Andr	5100010000	Free Android application for configuring and commissioning of Produal PUMP® devices.
MYT-CON	5100020000	MyTool Connect, a Bluetooth dongle for Produal MyTool® connection

The control unit can be used in many different room control applications with several Produal products. Here are some examples for connecting a room unit to the control unit:

TRI (page 40)
The versatile and customizable touchscreen room unit can be connected to the room unit port on the control unit.

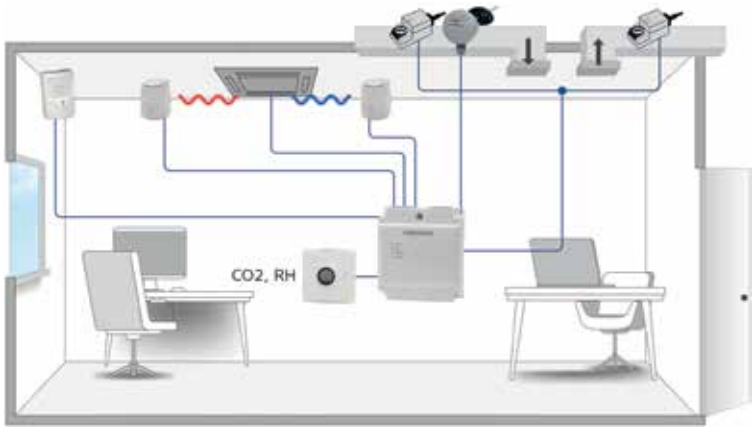
ROU (page 43)
The advanced touchscreen room unit can be connected to the room unit port on the control unit.

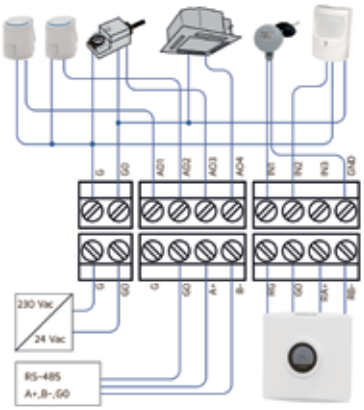
RU (page 42)
The customizable room unit can be connected to the room unit port on the control unit.

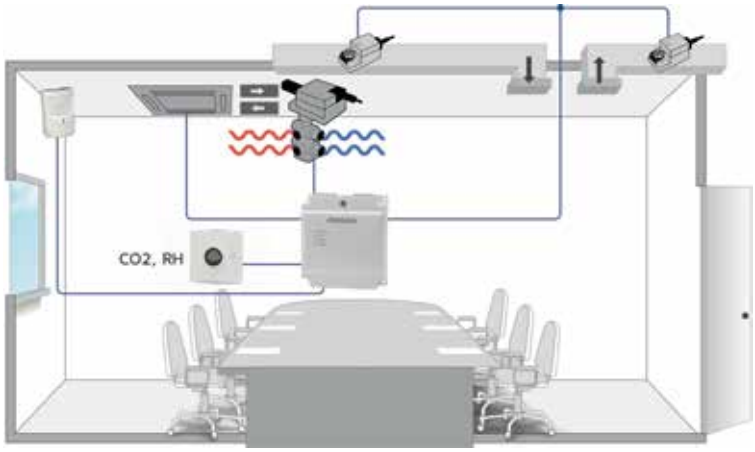
TEHR NTC 10-P (page 125)
Room temperature sensor with passive potentiometer can be connected to input terminals on the control unit for setpoint and temperature.
You may need to adjust the potentiometer resistance levels in the control unit.

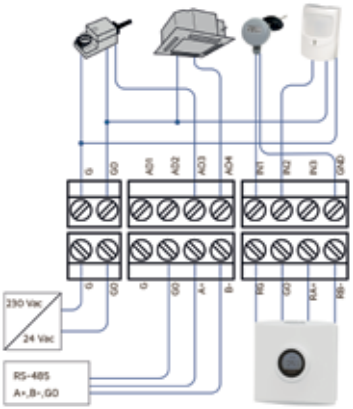
TEHR LU-PU (page 126)
Room temperature transmitter with active potentiometer can be connected to input terminals on the control unit for setpoint and temperature.

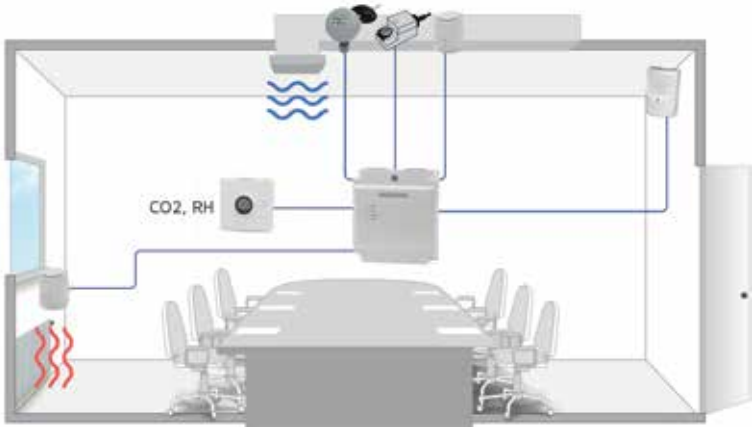
CONTROL UNITS

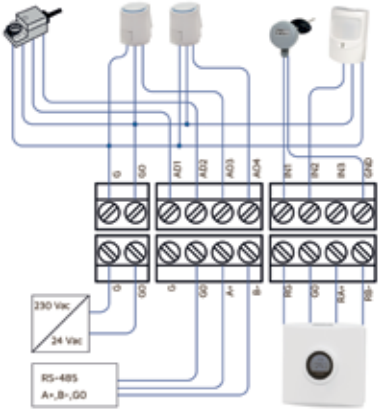


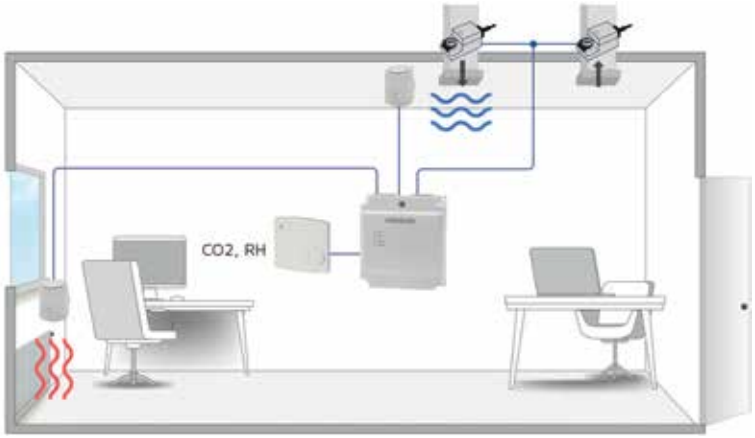


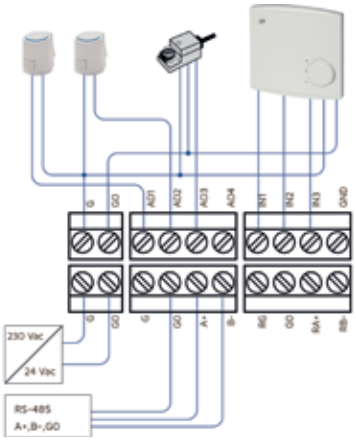












CONTROL UNITS

°C, %rH, Pa, bar, CO, CO_2, m/s, lx

PDS 2.2 universal controller can be used for controlling e.g. pressure, humidity or temperature. The controller supports 0...10 V controlled, 3-point controlled or thermal actuators. The controller has RS-485 connection for Modbus RTU communication.



Power supply	24 Vac/dc (20...28 V), < 1 VA. NOTE: Only the 0...10 V outputs and Modbus work when using DC supply voltage.
Voltage input	2 x 0...10 Vdc
Voltage output	1 x 0...10 Vdc, 2 mA and 1 x 10 Vdc, for 4.7...220 kΩ potentiometer
Triac output	2 x 24 Vac, 1 A, for thermal actuators or 3-point actuators
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on 35 mm DIN rail
Product dimensions	53 x 90 x 58 mm

TYPE	ART. NO.	
PDS 2.2	1150150	universal controller
OPTIONS		
TH 5	1183090	driver for thermal actuators, 5 outputs

1

HS 2.2-M is a universal controller designed for HVAC applications. It can be used for controlling e.g. pressure, differential pressure, temperature or illumination level. Display is possible to scale according to the measurement. Controller has a galvanically isolated RS-485 connection for Modbus RTU communication.

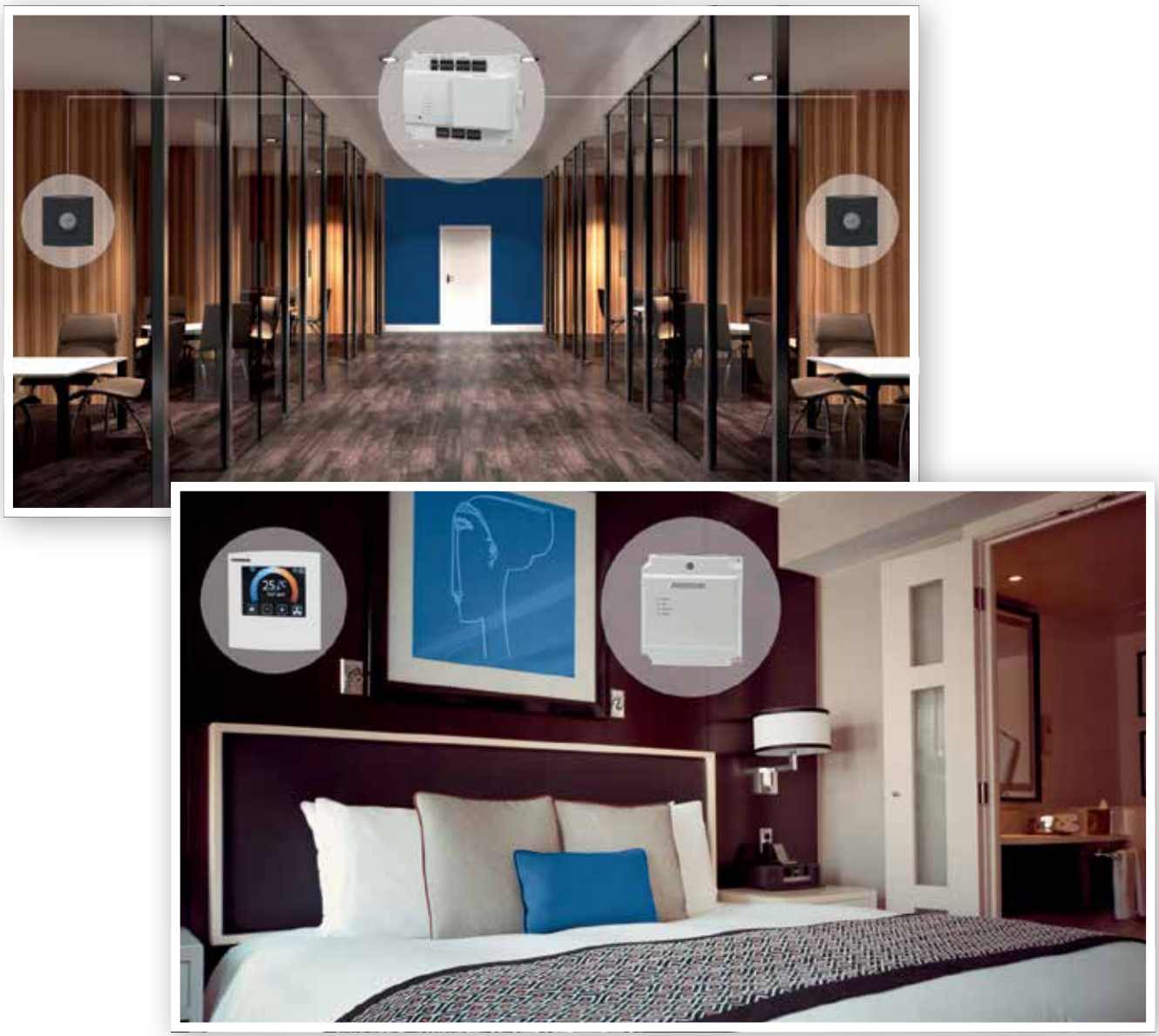
°C, %rH, Pa, bar, CO, CO_2, m/s, lx



Power supply	24 Vac/dc, < 1 A. NOTE: Only the 0...10 V outputs and Modbus work when using DC supply voltage.
Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C
Voltage input	0...10 Vdc, 10 kΩ
Digital input	2 x potential free contact
Voltage output	3 x 0...10 Vdc, 2 mA
Triac output	24 Vac, 1 A, for thermal actuator or 3-point actuator
Output	10 Vdc, error signal
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	86 x 86 x 32 mm

TYPE	ART. NO.	
HS 2.2-M	1150290	universal controller, room housing
OPTIONS		
TH 5	1183090	driver for thermal actuators, 5 outputs

The Produal Proxima® CU control unit can be used to control two rooms at the same time with its two built-in control loops. Two room units can be installed into CU's room unit port. This can greatly reduce the system cost. In this case, the installer can choose which inputs and outputs are available in Proxima CU, and easily assign them to each control loop. The configuration is carried out using the Produal MyTool® Android application. In this illustration, Proxima CU is controlling two conference rooms with the RU room unit.



With Proxima CU-LH's inputs and outputs, it can control a wide range of system scenarios. In this case, CU-LH controls a hotel room with cooling, heating, and EC fan (0...10 V) in 3 steps. Even the bathroom floor heating is controlled by CU-LH with its integrated cascade controller. With Produal MyTool®, created configuration files can be stored in the cloud and on the local Android device. Configuration files can easily be sent by e-mail to Produal, to get fast support when configuring complex system and functions. Produal also provides ready-made configuration files for different applications. See the application files on our website www.produal.com and browse under Produal Proxima® CU-LH product.

ROOM UNITS

Our selection of room units allows the implementation of easy-to-use, premium class applications, or simple yet stylish room solutions in various commercial and public facilities. Versatile models with user-friendly touchscreens, graphical displays, or touch-button interfaces offer a wide range of functionalities – you can simply select the suitable product variant for your purposes.

- temperature, relative humidity, CO_2, occupancy detection
- light and blinds control
- weekly time programme
- fan speed control, temporary day mode with man-in-house, continuously rotating setpoint knob enabling setpoint reset via Modbus
- RS-485 Modbus RTU communication
- BACnet MS/TP communication



The Proxima RU, Proxima RU-D, and ROU room units can either be connected to the Proxima CU or Proxima CU-LH control unit or operate stand-alone as a general room interface option when connected via Modbus RTU directly to the BMS or PLC system. With an intuitive touchscreen interface, the ROU unit is a versatile and adaptaple room interface solutions.

The TRI room unit can be connected to Proxima CU or Proxima CU-LH control unit, or via Modbus and BACnet communications to most BMS and PLC systems, providing an attractive user interface to these systems. With a full-screen touch display, with a clear and visible layout and intuitive control, the TRI is a versatile and adaptable room interface solution.





A simple, local room solution can also be implemented with the help of TEHR NTC 10-P temperature sensor by reading analogue signals to PLC system. The temperature sensor TEHR-M is also directly connectable to BMS system.

ROOM UNIT SELECTION GUIDE

NOTE: Check the product pages for more information.	Room unit families		
	TRI	RU	ROU
Temperature measurement	•	•	•
External temperature sensor input	•		
Humidity measurement	o	o	o
CO_2 measurement	o	o	o
Display	•	o	•
Touchscreen	•		•
7-day schedule	o		
Timer	•		
Digital input	•		
Relay output	o		
0...10 Vdc setpoint output	o[1)]		
0...10 Vdc temperature output	o[1)]		
0...10 Vdc humidity output	o[1)]		
0...10 Vdc CO_2 output	o[1)]		
0...10 Vdc fan output	o[1)]		
0...10 Vdc network value	o[1)]		
Temperature setpoint	•	•	•
Temperature setpoint knob		•	
Continuously rotating setpoint knob		•	
Occupancy button	•	o	•
Occupancy sensor			o
Surface mounting		•	•
Flush mounting	•		o
Modbus RTU	o	•	•
BACnet MS/TP	o		
Page	**40**	**42**	**43**

• standard
o optional

[1)] a total of three outputs

ROOM UNITS

1

TRI touchscreen room units provide an intuitive user interface and a sensor for room control applications. The devices are connected to CU or CU-LH control units, or linked to BMS via Modbus or BACnet communication interfaces. The 320 x 480 pixel 255K colour touchscreen displays the control status information. Users can change the control settings, including the setpoint, fan speed, and operation mode. They can switch lights and air conditioning units on/off, or activate the Boost mode to improve ventilation.
All TRI units have additional measurement inputs/outputs that can be used as inputs/outputs in the BMS (can be controlled over the network).

room °C, %rH, CO_2



Power supply	24 Vac/dc (22...28 V) < 80 mA
Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C (25 °C)
Digital input	1 x potential free input
Resistive input	2 x NTC 10
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on a flush mounting box (60 mm hole distance)
Materials	PC plastic
Product dimensions	88 x 112 x 43 mm

Ordering guide		Type	0	1	2	3	4	5	6
0 Touchscreen room units			6001					0	
1 Device type	Room unit, 2RI, 1DI, 1RO	TRI-1R		6					
	Room unit, 2RI, 1DI, 1RO, 7-days schedule	TRI-P-1R		7					
	Room unit, 2RI, 1DI, 3AO	TRI-3A		8					
2 Communication	Modbus RTU	-MOD			M				
	BACnet MS/TP	-BAC			B				
3 Power supply	24 Vac/dc	-24				2			
4 Additional measurements	No additional measurement						0		
	Relative humidity	-RH					1		
	CO_2	-CO2					2		
	Relative humidity and CO_2	-RH-CO2					3		
5 Reserved								0	
6 Body colour	White (RAL 9010)	-W							W
	Black (RAL 8022)	-B							B

TOOLS

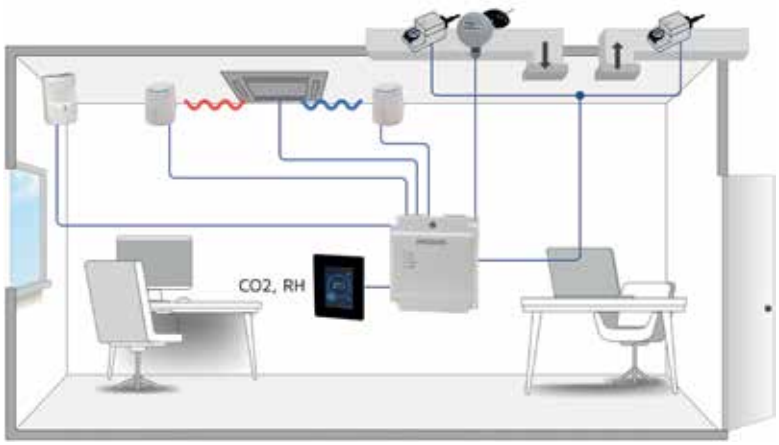
SW-DCT-USB	1139040	configuration cable

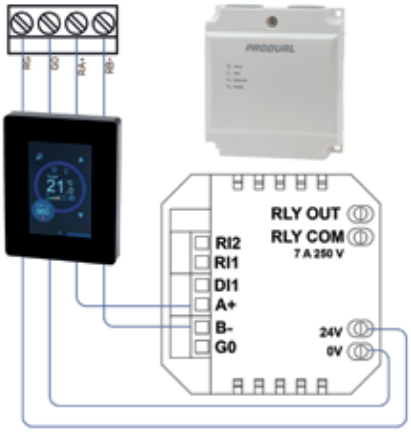
TRI ordering guide explanation:

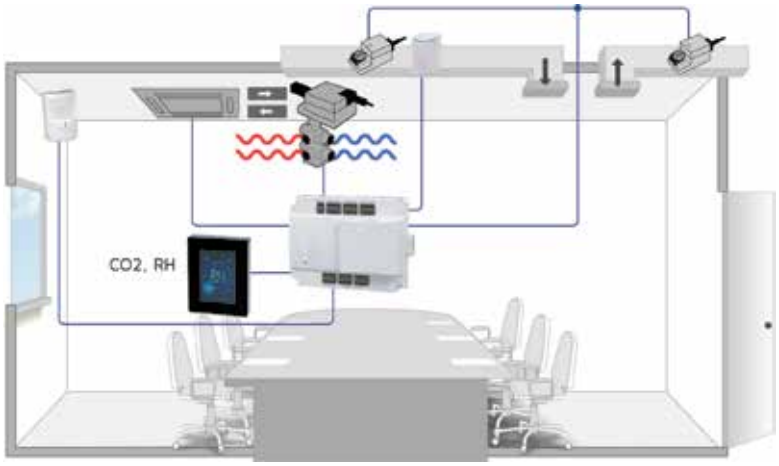
RI External NTC 10 temperature input
DI Voltage free digital input (for measurement and override)
RO 230 Vac SPST relay, 7 A resistive (for network/schedule switching)

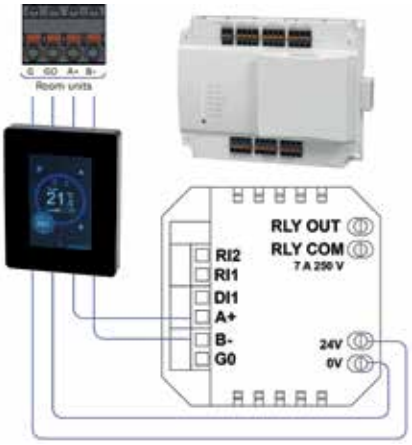
***NOTE:** You can select also Fahrenheit for temperature unit during commissioning.*

ROOM UNITS


CO2, RH


RLY OUT
RLY COM
7 A 250 V
RI2
RI1
DI1
A+
B-
G0
24V
0V


CO2, RH


Room units
RLY OUT
RLY COM
7 A 250 V
RI2
RI1
DI1
A+
B-
G0
24V
0V


BMS
Modbus
BACnet

ROOM UNITS

1

Modbus

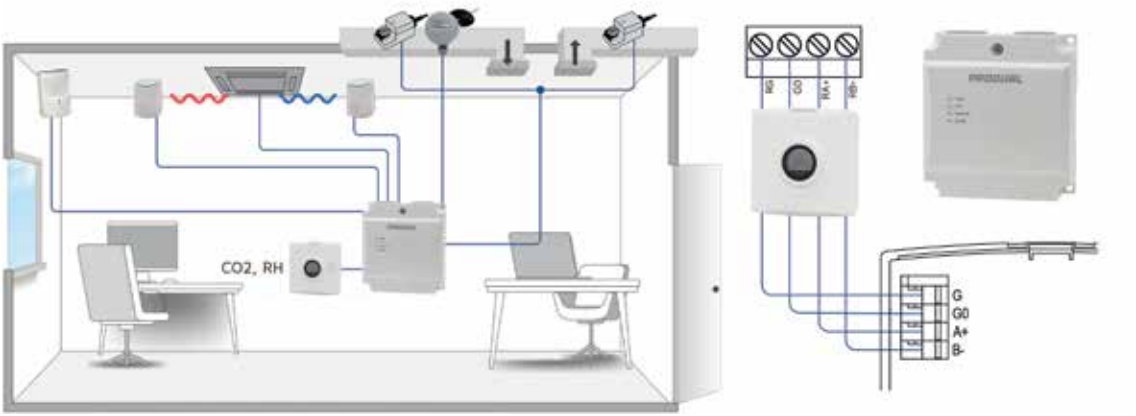
room °C, %rH, CO_2

Produal Proxima® RU is a simple Modbus room unit designed to be used with Proxima control units or other control units. It has a built-in temperature sensor and a continuously rotating setpoint knob. The unit is also available with fan control and a man-in-house button. The indicator lights indicate the temperature setpoint and fan speed.



Power supply	24 Vac/dc, < 1 VA (< 2 VA in CO2 models)
Set point	18...26 °C
Temperature meas. range	0...50 °C
Temperature meas. accuracy	±0.5 °C (18...26 °C)
IP protection class	IP30
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	PC plastic
Product dimensions	97 x 97 x 33 mm

Ordering guide		Type	0	1	2	3	4	5	6
0 Room unit			5202					0	0
1 Body colour	White	RU		W					
	Black	RUB		B					
2 Buttons	No buttons				0				
	1 button (fan speed)	1F			1				
	1 button (man in house)	1M			2				
	2 buttons (fan speed and man in house)	2FM			3				
3 Display	No display (indicator lights only)					0			
	Display (indicator lights are also included)	-D				D			
4 Additional measurements	No additional measurements						0		
	Relative humidity	-RH					1		
	CO_2	-CO2					3		
	Relative humidity and CO_2	-RH-CO2					5		





BMS

ROOM UNITS

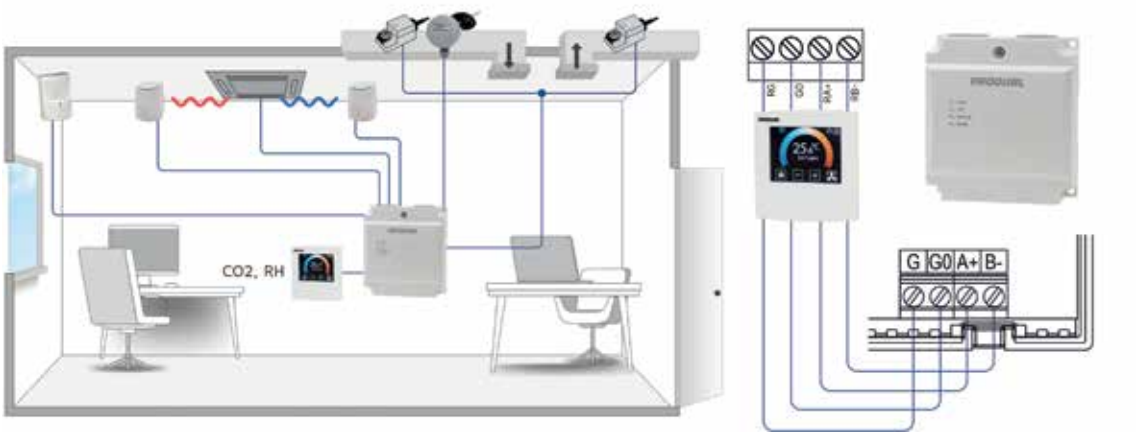
room °C, %rH, CO_2, PIR

ROU is an advanced room unit with an easy-to-use touchscreen. It is designed for above-the-ceiling control units. The basic model includes temperature measurement. Other measurements, including CO_2, RH and PIR, are available as options. ROU can be used as a room unit for CU and CU-LH, or as a Modbus slave unit.



Power supply	24 Vac/dc, < 2.5 VA
Set point	18...26 °C
Temperature meas. range	0...50 °C
Temperature meas. accuracy	±0.5 °C
IP protection class	IP20
Ambient temperature	5...40 °C
Ambient humidity	0...85 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	100 x 105 x 20 mm

Ordering guide		Type	0	1	2	3	4
0 Room unit			115038			0	0
1 Body colour	White	ROU-S		0			
	Black	ROU-S-B		4			
2 Additional measurements	No additional measurements				0		
	Relative humidity	-RH			1		
	Occupancy detection	-PIR			2		
	CO_2	-CO2			3		
	Relative humidity and occupancy detection	-RH-PIR			4		
	Relative humidity and CO_2	-RH-CO2			5		
	Occupancy detection and CO_2	-PIR-CO2			6		
	Relative humidity, occupancy detection and CO_2	-RH-PIR-CO2			7		





BMS

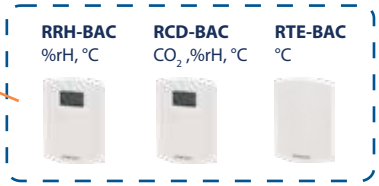
TRANSMITTERS

Versatile high-quality transmitters for measuring a wide range of parameters in different demanding HVAC applications: accurate measurement of differential pressure, air quality, temperature, humidity, water pressure, air velocity, illuminance or wind speed etc. Several measured properties are also possible with one device. The devices are available with different measurement ranges and with or without a display.

- Wide range of measured properties
- Several measurements with one device
- 0...10 V, 4...20 mA
- Wide range of Modbus and BACnet products for interoperability
- Control output on selected products

Note: Temperature transmitters are in the Temperature measurement section (page 92)

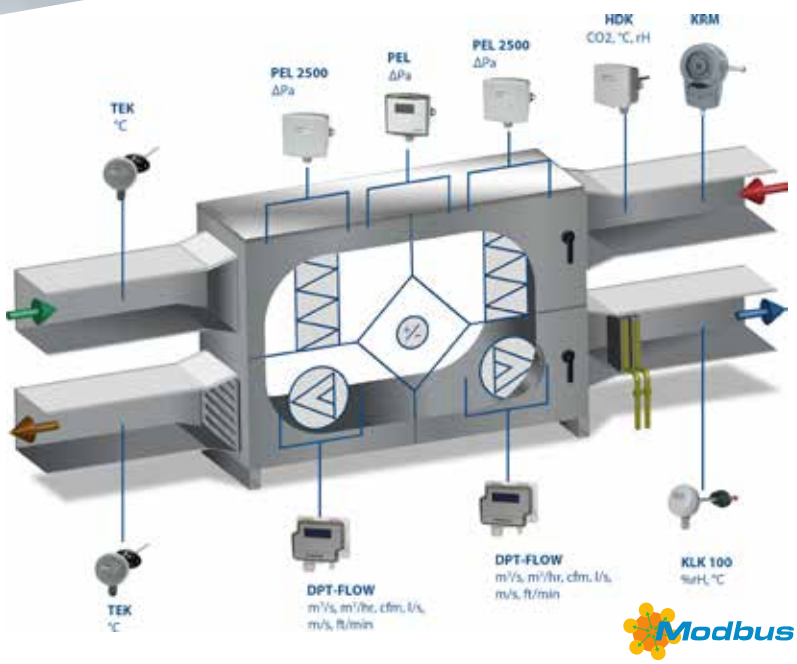




BACnet



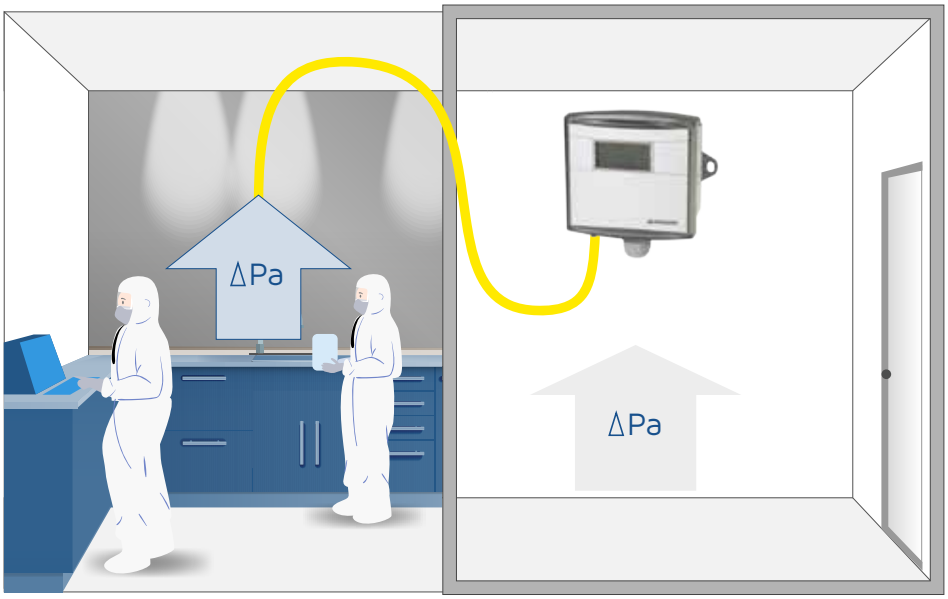
Modbus

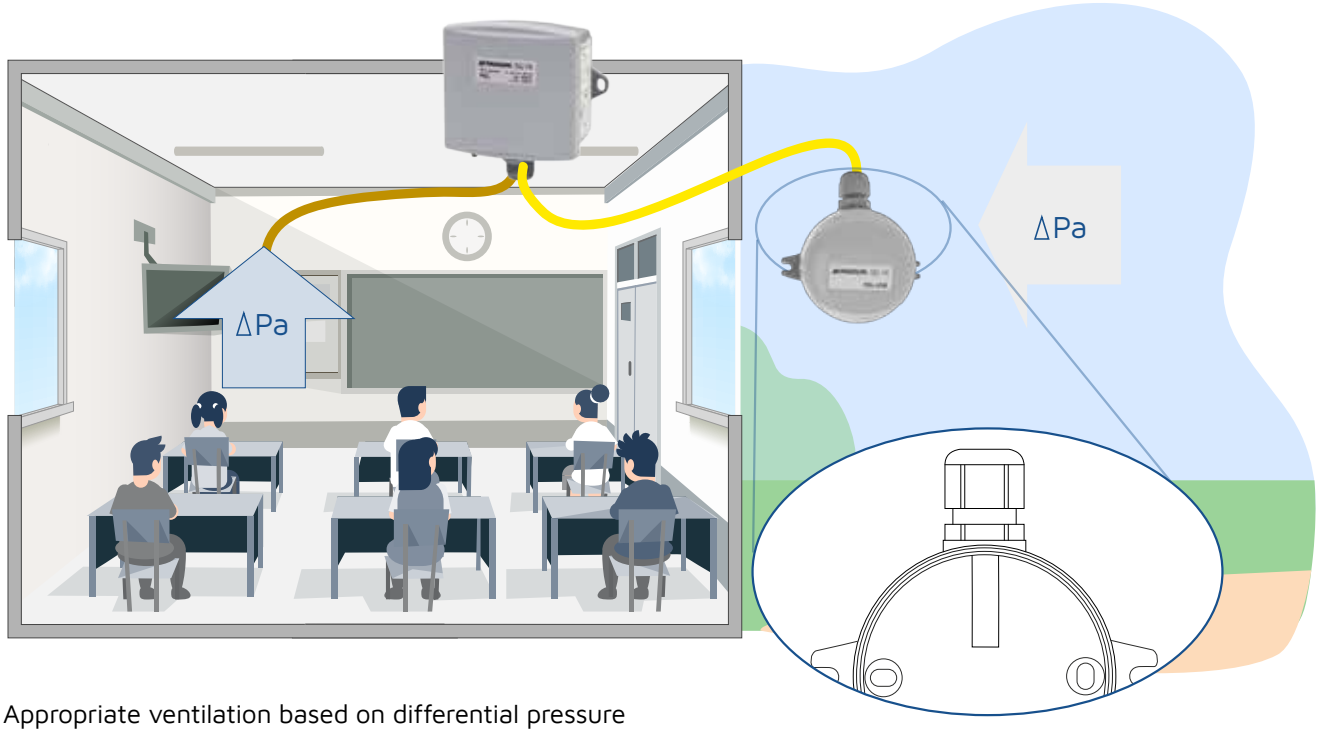


Modbus

The high-accuracy air pressure transmitter PEL is an optimal solution for applications requiring high precision and reliability

The automatic zero-element regularly calibrates the 0-point, eliminating possible long-term and temperature drift of the sensor in **differential pressure transmitter PEL-N**. This also makes the transmitter temperature-compensated in the ambient temperature.





Appropriate ventilation based on differential pressure measurement through the building envelope ensures healthy indoor air quality. The **protective cover PEL-USK**, installed in the outer measuring hose of **pressure transmitter PEL**, prevents the hose from pressure impacts or contamination.

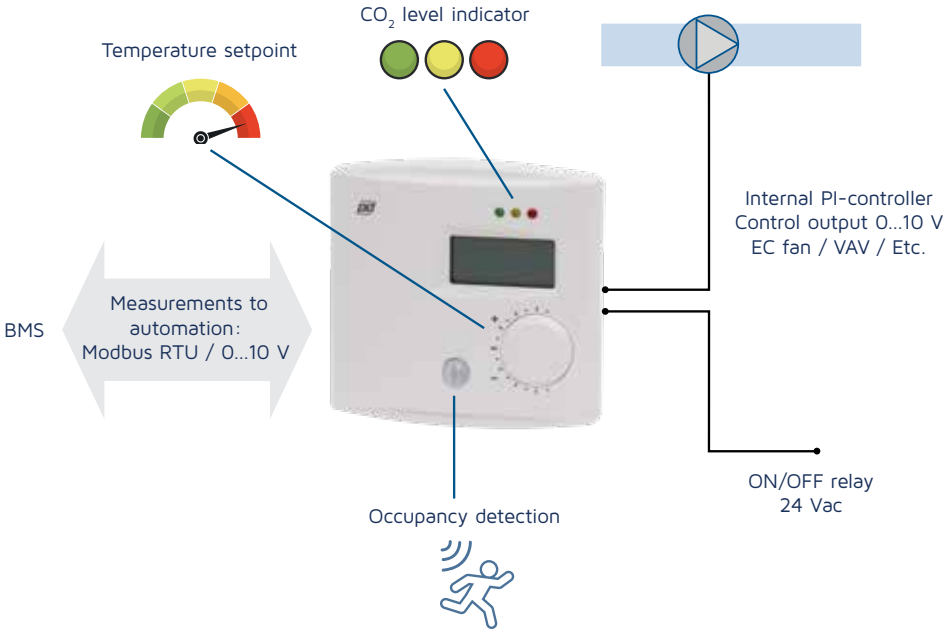
2

Many Produal transmitters are equipped with a control output and can be used as single-sequence controllers for heating/cooling or ventilation

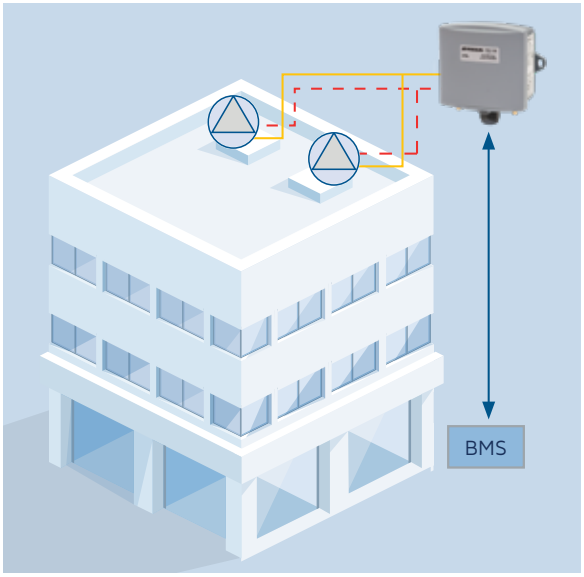
By using the 0...10 V controller output, a built-in, stand-alone PI-controller in the **CO_2 transmitter HDH** can be used to control, for example, an EC FAN or VAV system. Measurements can be read to BMS by using Modbus RTU or an 0...10 V output.

There are also various options available for our HDH transmitter:

- Humidity measurement
- Occupancy sensor
- CO_2 level indicator
- Temperature setpoint
- Relay output



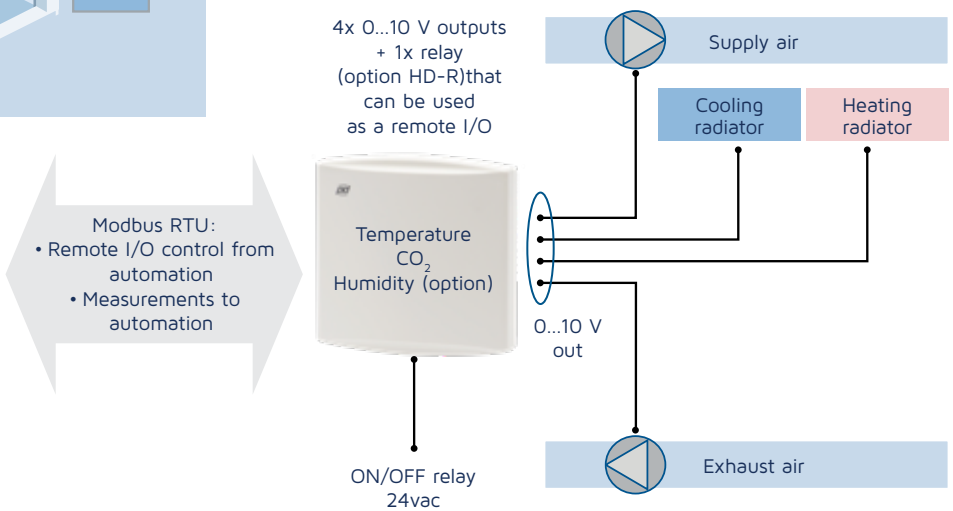
Several Produal transmitters can be used as an external I/O unit for flexibility and cost savings



The **differential pressure transmitter KPEL-M** works as an external I/O unit, for example, for controlling supply air fans, by overwriting 0...10 V outputs via the BMS system.

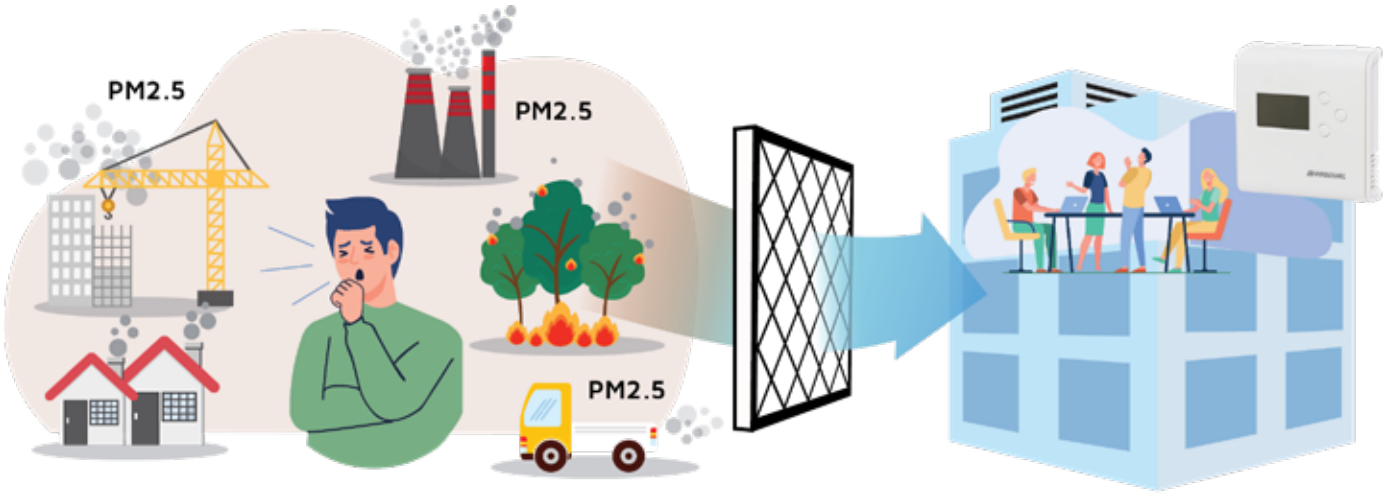
- 0...10 V control signal
- Pressure hose from duct to KPEL-M
- Modbus RTU bus from BMS to KPEL-M

The **CO_2 transmitter HDH-M** operates as a remote I/O unit by controlling four 0...10 V outputs remotely from the BMS and reading the values to the system by using the Modbus RTU field bus.



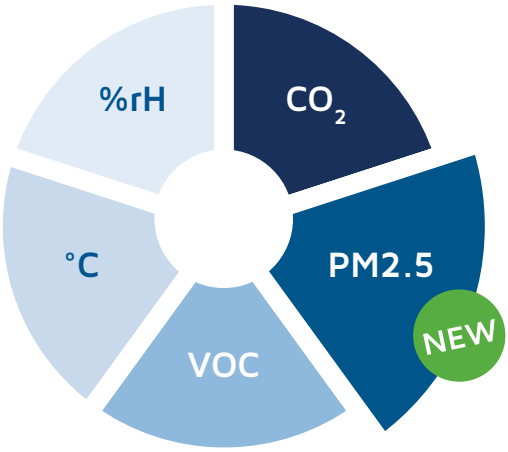
Fine dust measurement is an important addition to building indoor air monitoring and control to prevent hazardous health effects

Good indoor air quality is the sum of many different factors. Traditionally, temperature, humidity, CO_2, and VOC gases have been measured in indoor air. Standards, regulations and recommendations are focusing more and more on comprehensive IAQ, including particulate matter monitoring, for building occupier health and wellbeing. With t**he Siro indoor air quality transmitter**, you can measure PM2.5 particles in addition to temperature and humidity to make sure that the filtration in your building is working at the required level and air handling can react to possible small particles in the air.



We help you to provide healthy and comfortable indoor air quality through measurements and to address indoor risk factors through on-demand ventilation control.

- Temperature to ensure comfortable and stable conditions, and to maintain an optimal balance with humidity
- Humidity to ensure comfort, to fight against airborne viruses and to prevent water damage and mould problems
- Carbon dioxide for fresh air to increase focus, productivity and learning skills
- Volatile organic compounds for detecting hazardous gas emissions, to prevent health hazards, and unpleasant smells
- PM2.5 fine particles to detect fine dust and reduce the risk of lung and heart diseases (PM1 and PM10 particles are calculated based on PM2.5 measurement using a default particle size distribution)



TRANSMITTER SELECTION GUIDE

Product family		Measured property														
Type	Page	°C	RH	CO_2	VOC	PM	CO	Pa	bar	m/s	↖	m^3/s	lux	W/m^2	H_2O	PIR
DPT-Ctrl	52							•				•				
DPT-Ctrl-MOD	51							•				•				
DPT-Flow	54							•				•				
DPT-Flow-MOD	53							•				•				
HDH	68	•	O	•												O
HDK	70	•	O	•												
HDU	71	•		•												
HML	75						•									
ILK	74	•	O		•											
IVL	59	•								•						
KLH 100 / KLH-M	61	•	•													
KLH 420	62		•													
KLHJ	64	•	•													
KLK	66	•	•													
KLU	65	•	•													
KPEL	50							•								
LUX	76	•											•			
MMSP1	76													•		
PEL	50							•								
RCD-BAC	67	•	O	•									O			O
RRH-BAC	63	•	•										O			O
Siro	72	•	O	O	O	O										
TUNA 20	79									•						
UV7+UV7-VV	78									•	•					
VPEL	77								•							
VPL	77								•							
VS 3000	79									•	•					

Product family		Outputs							Commissioning tool
Type	Page	V	mA	relay	Modbus	Modbus override	BACnet	controller	
DPT-Ctrl	52	•	•					•	
DPT-Ctrl-MOD	51				•	•		•	
DPT-Flow	54	•	•						
DPT-Flow-MOD	53				•	•			
HDH	68	•		O	O	O		•	ML-SER
HDK	70	•		O	O	O		•	ML-SER
HDU	71	•		O	O	O		•	ML-SER
HML	75	•	•						
ILK	74	•		O	O	O		•	ML-SER
IVL	59	•	•						
KLH 100 / KLH-M	61	•		O	O	O		•	ML-SER
KLH 420	62		•						
KLHJ	64	•	•						
KLK	66	•	•	O	O	O		•	ML-SER
KLU	65	•	•						
KPEL	50	•	•		O	O		•	ML-SER
LUX	76	•	•						
MMSP1	76	•	•						
PEL	50	•	•		O			•	ML-SER
RCD-BAC	67	•					•	•	SW-DCT-USB
RRH-BAC	63	•					•		SW-DCT-USB
Siro	72	•	O		O				Siro-CT
TUNA 20	79	•	•						
UV7+UV7-VV	78	•			O				
VPEL	77	•	•						
VPL	77	•	•						
VS 3000	79	•							

• standard
O optional

Note: Temperature transmitters are found under the Temperature measurement section (page 92).

TRANSMITTERS WITH CONTROL OUTPUT

NOTE: See the product pages for more information.		Transmitter product families										
		DPT-Ctrl	DPT-Ctrl-MOD	HDH	HDK, HDU	ILK	KLH	KLK	KPEL, KPEL 9K	PEL 1000	RCD-BAC	RRH-BAC
Control output	4...20 mA	•						•	•			
	0...10 V	•	•	•	•	•	•	•	•	•	•	•
	Relay			•	•	•	•	•				
Function	Control stages	1	1	1	1	1	1	1	1	1	1	1
	Control modes	P/PI/PID	P/PI/PID	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI
	Cooling control			•	•	•	•	•			•	•
	Heating control			•	•	•	•	•			•	•
	CO_2 control			•	•						•	
	VOC control					•						
	Humidity control			•	•	•	•	•			•	•
	Pressure control	•	•						•	•		
	Maximun selection control	•	•	•	•	•	•	•			•	
	Modbus RTU		•	•	•	•	•	•	•	•		
	Modbus override			•	•	•	•	•	•			
	BACnet MS/TP										•	•
	Page	**52**	**51**	**68**	**70-71**	**74**	**61**	**66**	**50**	**50**	**67**	**63**

AIR FLOW PRODUCT SELECTION GUIDE

Application		Air flow measurement products				
		IVL	PEL 2500 [3]	DPT-Flow	PEL 2500 [3] + PP-PK/PP-SK	DPT-Flow + PP-PK/PP-SK
Fan flow (fan with measuring inlets)	The fan K-value is known			• [1]		
	The fan K-value is unknown		•			
Flow in duct	Customer's probe for which the K-value is known			•		
	Customer's probe for which the K-value is unknown		•			
	Probe not available (air velocity and temperature measurement)	•				
	Probe not available (air volume measurement)	• [2]			• [4]	•
	Page	**59**	**50**	**54**	**50 and 57-58**	**54 and 57-58**

[1] Supported fan manufacturers: Fläkt Woods, Rosenberg, Comefri, Ziehl-Abegg, ebm-papst, Nicotra and Gebhardt. Universal formula available for other manufacturer's fans.

[2] Air volume = air velocity x duct cross section area.

[3] PEL 2500 with flow linear output (Q).

[4] Flow linear output can be used for air volume calculation in BMS.

DIFFERENTIAL PRESSURE TRANSMITTERS FOR AIR

Produal offers wide selection of differential pressure transmitters for air. The possible applications include clean / isolation room control, air handling unit control and filter monitoring, for example. Controller output available in selected transmitters

Product family	Measuring inlets	Measuring ranges																Accuracy / zeroing			Outputs / inputs						Display
		±50 Pa	±100 Pa	±250 Pa	±500 Pa	0...100 Pa	0...200 Pa	0...500 Pa	0...1000 Pa	0...1500 Pa	0...2000 Pa	0...2500 Pa	0...3000 Pa	0...4000 Pa	0...5000 Pa	0...8000 Pa	Custom [1]	Accuracy	Automatic	Manual	0...10 V	4...20 mA	Modbus	Flow linear	Controller output	Analogue inputs	
PEL	1	•	•	•	•	•	•	•	•								•	±0,5 Pa +1 %	•		•	•	○				○
PEL 2500	1		•			•	•	•	•	•	•	•					•	±3 Pa +1 %	•		•	•	○	•			○
PEL 2500-MZ	1		•			•	•	•	•	•	•	•					•	±3 Pa +1 %		•	•	•	○	•			○
PEL 8K	1								•	•	•	•	•	•	•	•	•	±10 Pa +1 %	•		•	•		•			○
PEL 1000	1							•	•								•	±3 Pa +1 %		•	•		○		•		○
KPEL	2		•			•	•	•	•	•	•	•					•	±3 Pa +1,25 %		•	•	•	○		•	○	○

• Standard ○ Optional

[1] The custom pressure range can be adjusted with ML-SER tool (or via Modbus) within the transmitter's normal pressure ranges.

PEL, PEL 2500, PEL 2500-MZ, PEL 8K, PEL 1000

Supply	24 Vac/dc, < 2 VA (PEL 1000: 1 VA)
Outputs	0...10 Vdc / 2...10 Vdc / 0...5 Vdc < 2 mA or 0...20 mA / 4...20 mA < 700 Ω PEL 1000: 0...10 Vdc / 2...10 Vdc / 0...5 Vdc < 2 mA
Ambient temperature	0...+45 °C (PEL 1000: 0...50 °C)
Housing	IP54, cable gland downwards
Mounting	with screws, external lugs



KPEL

Supply	24 Vac/dc, < 2.5 VA
Outputs*	2 x 0...10 Vdc < 2 mA or 2 x 4...20 mA < 700 Ω
Inputs (M models)*	2 x 0...10 Vdc / DI / temperature
Ambient temperature	0...+50 °C
Housing	IP54, cable downwards
Mounting	with screws, external lugs
	* = Two terminals for outputs/inputs



ORDERING INFORMATION

Options	Basic version	Display	Modbus	Modbus & Display
PEL	1131110 (PEL)	1131111 (PEL-N)	1131360 (PEL-M)	1131361 (PEL-M-N)
PEL 2500	1131210 (PEL 2500)	1131211 (PEL 2500-N)	1131370 (PEL 2500-M)	1131371 (PEL 2500-M-N)
PEL 2500-MZ	1131460 (PEL 2500-MZ)	1131461 (PEL 2500-MZ-N)	1131470 (PEL 2500-M-MZ)	1131471 (PEL 2500-M-MZ-N)
PEL 8K	1131350 (PEL 8K)	1131351 (PEL 8K-N)	-	-
PEL 1000	1131140 (PEL 1000)	1131141 (PEL 1000-N)	1131380 (PEL 1000-M)	1131381 (PEL 1000-M-N)
KPEL	1131310 (KPEL)	1131311 (KPEL-N)	1131260 (KPEL-M)	1131261 (KPEL-M-N)

DIFFERENTIAL PRESSURE TRANSMITTERS FOR AIR

NEW

Modbus

m^3/s, m^3/h, l/s, Pa

DPT-Ctrl-MOD Modbus differential pressure or airflow controllers are designed for building automation systems. Controller can control constant pressure or flow of fans, VAV systems or dampers. When controlling air flow, it is possible to select a fan manufacturer or a common measuring probe that has a K-value.

DPT-Ctrl-MOD includes an Input terminal that enables the reading of multiple signals, such as temperature or control relays over Modbus. The Input terminal has one input channel designed to accept 0–10 V, NTC10k, Pt1000, Ni1000/(-LG), and BIN IN (potential free contact) signals.



Power supply	24 Vac/dc (22...26 V), < 1 VA
Time constant	1...20 s
Control output	0...10 Vdc
IP protection class	IP54
Cable gland	M16
Ambient temperature	-20...50 °C
Ambient humidity	0...95 %rH
Mounting	with screws, external lugs
Materials	ABS, PC
Product dimensions	102 x 72 x 36 mm

TYPE	ART. NO.	
DPT-Ctrl-MOD-2500-D	114.003.020	differential pressure or airflow transmitter/controller, Modbus, range 0...2500 Pa, manual zeroing
DPT-Ctrl-MOD-7000-D	114.009.010	differential pressure or airflow transmitter/controller, Modbus, range 0...7000 Pa, manual zeroing

DIFFERENTIAL PRESSURE TRANSMITTERS FOR AIR

DPT-Ctrl differential pressure or airflow controllers are designed for building automation systems. Controller can control constant pressure or flow of fans, VAV systems or dampers. When controlling air flow, it is possible to select a fan manufacturer or a common measuring probe that has a K-value.

Pa



Power supply	24 Vac/dc (22...26 V), < 1 VA
Time constant	1...20 s
Voltage output	0...10 V / 2...10 V, R > 1 kΩ
Current output	4...20 mA, 20 Ω < R < 500 Ω
IP protection class	IP54
Cable gland	M16
Ambient temperature	-20...50 °C
Mounting	with screws, external lugs
Materials	ABS, PC
Product dimensions	90 x 95 x 36 mm

TYPE	ART. NO.	
DPT-Ctrl-2500-D	103.007.232	differential pressure or airflow transmitter/controller, range 0...2500 Pa, manual zeroing
DPT-Ctrl-2500-AZ-D	103.007.233	differential pressure or airflow transmitter/controller, range 0...2500 Pa, automatic zeroing
DPT-Ctrl-2500-D-40C	103.007.234	differential pressure or airflow transmitter/controller, range 0...2500 Pa, manual zeroing, extended ambient temperature range (-40...50 °C)
DPT-Ctrl-7000-D	103.016.108	differential pressure or airflow transmitter/controller, range 0...7000 Pa, manual zeroing
DPT-Ctrl-7000-AZ-D	103.016.109	differential pressure or airflow transmitter/controller, range 0...7000 Pa, automatic zeroing
DPT-Ctrl-7000-D-40C	103.016.110	differential pressure or airflow transmitter/controller, range 0...7000 Pa, manual zeroing, extended ambient temperature range (-40...50 °C)

AIR FLOW TRANSMITTERS

m^3/s, m^3/h, l/s, Pa

DPT-Flow-MOD air flow transmitters are designed for building automation systems. These technologically advanced transmitters can measure volume flow, velocity, and static and differential pressure. The transmitters can be connected directly to the pressure measurement points of a centrifugal fan, providing accurate flow measurement. The user interface enables easy selection of settings according to the selected fan or measurement probe. The transmitters have an RS-485 channel for Modbus RTU communication.



Power supply	24 Vac/dc (22...26 V), < 1 VA
Time constant	1...20 s
IP protection class	IP54
Cable gland	M16
Ambient temperature	-20...50 °C
Mounting	with screws, external lugs
Materials	ABS, PC
Product dimensions	90 x 95 x 36 mm

TYPE	ART. NO.	
DPT-Flow-MOD-2500-D	102.011.033	air flow transmitter, Modbus, range 0...2500 Pa, manual zeroing
DPT-Flow-MOD-2500-AZ-D	102.011.034	air flow transmitter, Modbus, range 0...2500 Pa, automatic zeroing
DPT-Flow-MOD-2500-D-40C	102.011.035	air flow transmitter, Modbus, range 0...2500 Pa, manual zeroing, extended ambient temperature range (-40...50 °C)
DPT-Flow-MOD-7000-D	102.006.072	air flow transmitter, Modbus, range 0...7000 Pa, manual zeroing
DPT-Flow-MOD-7000-AZ-D	102.006.073	air flow transmitter, Modbus, range 0...7000 Pa, automatic zeroing
DPT-Flow-MOD-7000-D-40C	102.006.074	air flow transmitter, Modbus, range 0...7000 Pa, manual zeroing, extended ambient temperature range (-40...50 °C)

AIR FLOW TRANSMITTERS

2

m^3/s, m^3/h, l/s, Pa

DPT-Flow air flow transmitters are designed for building automation systems. These technologically advanced transmitters can measure volume flow, velocity, and static and differential pressure. The transmitters can be connected directly to the pressure measurement points of a centrifugal fan, providing accurate flow measurement. The user interface enables easy selection of settings according to the selected fan or measurement probe.



Power supply	24 Vac/dc (22...26 V), < 1 VA
Differential air pressure measurement ranges	0...1000 Pa, Custom
Time constant	1...20 s
Voltage output	0...10 V / 2...10 V, R > 1 kΩ
Current output	4...20 mA, 20 Ω < R < 500 Ω
IP protection class	IP54
Cable gland	M16
Ambient temperature	-20...50 °C
Mounting	with screws, external lugs
Materials	ABS, PC
Product dimensions	90 x 95 x 36 mm

TYPE	ART. NO.	
DPT-Flow-1000-D	102.001.067	air flow transmitter, range 0...1000 Pa, manual zeroing
DPT-Flow-1000-AZ-D	102.001.068	air flow transmitter, range 0...1000 Pa, automatic zeroing
DPT-Flow-1000-D-40C	102.001.069	air flow transmitter, range 0...1000 Pa, manual zeroing, extended ambient temperature range (-40...50 °C)
DPT-Flow-2000-D	102.002.056	air flow transmitter, range 0...2000 Pa, manual zeroing
DPT-Flow-2000-AZ-D	102.002.057	air flow transmitter, range 0...2000 Pa, automatic zeroing
DPT-Flow-2000-D-40C	102.002.058	air flow transmitter, range 0...2000 Pa, manual zeroing, extended ambient temperature range (-40...50 °C)
DPT-Flow-5000-D	102.004.061	air flow transmitter, range 0...5000 Pa, manual zeroing
DPT-Flow-5000-AZ-D	102.004.062	air flow transmitter, range 0...5000 Pa, automatic zeroing
DPT-Flow-5000-D-40C	102.004.063	air flow transmitter, range 0...5000 Pa, manual zeroing, extended ambient temperature range (-40...50 °C)
DPT-Flow-7000-D	102.006.067	air flow transmitter, range 0...7000 Pa, manual zeroing
DPT-Flow-7000-AZ-D	102.006.068	air flow transmitter, range 0...7000 Pa, automatic zeroing
DPT-Flow-7000-D-40C	102.006.069	air flow transmitter, range 0...7000 Pa, manual zeroing, extended ambient temperature range (-40...50 °C)

FILTER GUARD

PEL 2500-SV filter guard is designed for filter monitoring in systems that handle air and other non-flammable gases. The device has three indicator lights that indicate the filter status.



Power supply	24 Vac/dc, < 2 VA
Differential air pressure measurement ranges	0...100 Pa, 0...1000 Pa, 0...1500 Pa, 0...200 Pa, 0...2000 Pa, 0...2500 Pa, 0...500 Pa, ±100 Pa
Time constant	2 s or *8 s
Voltage output	0...10 / 2...10 / 0...5 Vdc, < 2 mA (pressure)
Current output	4...20 / 0...20 mA, 700 Ω (pressure)
Output	3 x potential free contact (filter status)
Zeroing	automatic; regularly eliminates the possible zero point drifting
IP protection class	IP54, cable downwards
Ambient temperature	0...45 °C
Mounting	with screws, external lugs
Materials	polycarbonate
Product dimensions	105 x 102 x 46 mm

TYPE	ART. NO.	
PEL 2500-SV	2240170	filter guard
OPTIONS		
PEK-AS	1240300	accessory kit for differential pressure products

PRESSURE TRANSMITTER ACCESSORIES

PEK-AS is an accessory kit that can be used for transmitter process connections.

ML-SER commissioning tool is designed for easy commission and configuration of the Produal transmitter products. The ML-SER shows device-specific configuration menus when the connector is plugged in the master device.

PEL-USK is designed to protect pressure measurement hose from pressure shocks caused by wind and other outdoor environmental influences.



TYPE	ART. NO.	
PEL-USK	1131020	protective cover for pressure hose
ML-SER	1139010	transmitter commissioning tool
PEK-AS	1240300	accessory kit for differential pressure products
OPTIONS		
T-CON	1240301	T connector
T-CON 100	1240302	T connector, 100 pcs
Y-CON	1240303	Y connector
Y-CON 100	1240304	Y connector, 100 pcs
PVC-HOSE	1240305	PVC hose (4/7), 200 m
PEK-DCP	1240306	duct connector, plastic
PEK-KIT 90	1240390	accessory kit with 90° metal tubes



PEK-DCP



PEK-KIT 90



PVC-HOSE



T-CON



T-CON 100



Y-CON



Y-CON 100

AIR FLOW PROBES

PP-PK air flow probes measure air flow in air handling systems. They are designed for circular air ducts. Different models with fixed Kv values are available for a wide range of duct sizes.

l/s



Air flow measurement accuracy	±2 %, air speed > 1 m/s
Process connection	with Ø 7.5 mm hoses
Ambient temperature	5...95 °C

TYPE	ART. NO.	
PP-PK R100	1250010	air flow volume probe for a circular 100 mm duct
PP-PK R125	1250020	air flow volume probe for a circular 125 mm duct
PP-PK R160	1250030	air flow volume probe for a circular 160 mm duct
PP-PK R200	1250040	air flow volume probe for a circular 200 mm duct
PP-PK R250	1250050	air flow volume probe for a circular 250 mm duct
PP-PK R300	1250059	air flow volume probe for a circular 300 mm duct
PP-PK R315	1250060	air flow volume probe for a circular 315 mm duct
PP-PK R355	1250065	air flow volume probe for a circular 355 mm duct
PP-PK R400	1250070	air flow volume probe for a circular 400 mm duct
PP-PK R450	1250073	air flow volume probe for a circular 450 mm duct
PP-PK R500	1250075	air flow volume probe for a circular 500 mm duct
PP-PK R550	1250076	air flow volume probe for a circular 550 mm duct
PP-PK R600	1250008	air flow volume probe for a circular 600 mm duct
PP-PK R630	1250078	air flow volume probe for a circular 630 mm duct
PP-PK R650	1250074	air flow volume probe for a circular 650 mm duct
PP-PK R700	1250077	air flow volume probe for a circular 700 mm duct
PP-PK R800	1250079	air flow volume probe for a circular 800 mm duct
PP-PK R900	1250001	air flow volume probe for a circular 900 mm duct
PP-PK R1000	1250009	air flow volume probe for a circular 1000 mm duct
PP-PK R1100	1250003	air flow volume probe for a circular 1100 mm duct
PP-PK R1200	1250007	air flow volume probe for a circular 1200 mm duct
PP-PK R1250	1250310	air flow volume probe for a circular 1250 mm duct
PP-PK R1300	1250002	air flow volume probe for a circular 1300 mm duct
PP-PK R1500	1250311	air flow volume probe for a circular 1500 mm duct

Longer than 1500 mm probes are available with centre bracket on request.

AIR FLOW PROBES

PP-SK air flow probes measure air flow in air handling systems. They are designed for rectangular air ducts. Different models with fixed Kv values are available for a wide range of duct sizes.

Air flow measurement accuracy	±2 %, air speed > 1 m/s
Process connection	with Ø 7.5 mm hoses
Ambient temperature	5...95 °C

l/s



TYPE	ART. NO.	
PP-SK L200	1250080	air flow volume probe for a 200 mm rectangular duct
PP-SK L250	1250090	air flow volume probe for a 250 mm rectangular duct
PP-SK L300	1250100	air flow volume probe for a 300 mm rectangular duct
PP-SK L350	1250110	air flow volume probe for a 350 mm rectangular duct
PP-SK L400	1250120	air flow volume probe for a 400 mm rectangular duct
PP-SK L450	1250130	air flow volume probe for a 450 mm rectangular duct
PP-SK L500	1250140	air flow volume probe for a 500 mm rectangular duct
PP-SK L550	1250150	air flow volume probe for a 550 mm rectangular duct
PP-SK L600	1250160	air flow volume probe for a 600 mm rectangular duct
PP-SK L650	1250170	air flow volume probe for a 650 mm rectangular duct
PP-SK L700	1250180	air flow volume probe for a 700 mm rectangular duct
PP-SK L750	1250190	air flow volume probe for a 750 mm rectangular duct
PP-SK L800	1250200	air flow volume probe for a 800 mm rectangular duct
PP-SK L850	1250210	air flow volume probe for a 850 mm rectangular duct
PP-SK L900	1250220	air flow volume probe for a 900 mm rectangular duct
PP-SK L950	1250230	air flow volume probe for a 950 mm rectangular duct
PP-SK L1000	1250240	air flow volume probe for a 1000 mm rectangular duct
PP-SK L1050	1250250	air flow volume probe for a 1050 mm rectangular duct
PP-SK L1100	1250260	air flow volume probe for a 1100 mm rectangular duct
PP-SK L1150	1250270	air flow volume probe for a 1150 mm rectangular duct
PP-SK L1200	1250280	air flow volume probe for a 1200 mm rectangular duct
PP-SK L1250	1250283	air flow volume probe for a 1250 mm rectangular duct
PP-SK L1300	1250288	air flow volume probe for a 1300 mm rectangular duct
PP-SK L1350	1250290	air flow volume probe for a 1350 mm rectangular duct
PP-SK L1400	1250295	air flow volume probe for a 1400 mm rectangular duct
PP-SK L1450	1250298	air flow volume probe for a 1450 mm rectangular duct
PP-SK L1500	1250300	air flow volume probe for a 1500 mm rectangular duct

Longer than 1500 mm probes are available with centre bracket on request.

AIR VELOCITY TRANSMITTERS

m/s, °C

IVL air velocity transmitters are designed for measuring air velocity and temperature inside air ducts.

The minimum installation depth in the duct is 50 mm for all probe lengths. The maximum installation depth is 10 mm less than the probe length. For example, if the probe length is 200 mm, the installation depth is 50...190 mm.



Power supply	24 Vac/dc, < 1.5 VA
Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C
Temperature output	0...10 Vdc, 2 mA / 4...20 mA < 600 Ω
Air velocity output	0...10 Vdc, 2 mA / 4...20 mA, 600 Ω
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Ambient temperature	0...50 °C
Mounting	with flange, adjustable probe depth
Materials	PBT, PC, PA and stainless steel

TYPE	ART. NO.	
IVL 10	1130010	air velocity transmitter 0...10 m/s, probe Ø 10 x 200 mm
IVL 10-100	1130014	air velocity transmitter, 0...10 m/s, probe Ø 10 x 100 mm
IVL 10-400	1130011	air velocity transmitter, 0...10 m/s, probe Ø 10 x 400 mm
IVL 10-N	1130012	air velocity transmitter with display, 0...10 m/s, probe Ø 10 x 200 mm
IVL 10-100-N	1130017	air velocity transmitter with display, 0...10 m/s, probe Ø 10 x 100 mm
IVL 10-400-N	1130016	air velocity transmitter with display, 0...10 m/s, probe Ø 10 x 400 mm
IVL 02	1130030	air velocity transmitter 0...2 m/s, probe Ø 10 x 200 mm
IVL 02-100	1130034	air velocity transmitter, 0...2 m/s, probe Ø 10 x 100 mm
IVL 02-400	1130031	air velocity transmitter, 0...2 m/s, probe Ø 10 x 400 mm
IVL 02-N	1130032	air velocity transmitter with display, 0...2 m/s, probe Ø 10 x 200 mm
IVL 02-100-N	1130033	air velocity transmitter with display, 0...2 m/s, probe Ø 10 x 100 mm
IVL 20	1130050	air velocity transmitter 0...20 m/s, probe Ø 10 x 200 mm
IVL 20-100	1130054	air velocity transmitter, 0...20 m/s, probe Ø 10 x 100 mm
IVL 20-400	1130052	air velocity transmitter, 0...20 m/s, probe Ø 10 x 400 mm
IVL 20-N	1130053	air velocity transmitter with display, 0...20 m/s, probe Ø 10 x 200 mm
IVL 20-100-N	1130055	air velocity transmitter with display, 0...20 m/s, probe Ø 10 x 100 mm
IVL 20-400-N	1130056	air velocity transmitter with display, 0...20 m/s, probe Ø 10 x 400 mm

AIR VELOCITY TRANSMITTERS

m/s, °C

IVLJ air velocity transmitters are designed for measuring air velocity and temperature inside air ducts. The probe is attached to a cable for more flexible positioning on the duct.

The minimum installation depth in the duct is 50 mm for all probe lengths. The maximum installation depth is 10 mm less than the probe length. For example, if the probe length is 200 mm, the installation depth is 50...190 mm.



Power supply	24 Vac/dc, < 1.5 VA
Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C
Temperature output	0...10 Vdc, 2 mA / 4...20 mA < 600 Ω
Air velocity output	0...10 Vdc, 2 mA / 4...20 mA, 600 Ω
IP protection class	IP54, cable downwards (transmitter)
Cable gland	2 X M16
Ambient temperature	0...50 °C
Mounting	probe: by a flange, adjustable depth; transmitter: with screws, external lugs
Materials	PBT, PC, PA and stainless steel
Cable length	2,0 m

TYPE	ART. NO.	
IVLJ 02	1130040	air velocity transmitter 0...2 m/s, probe Ø 10 x 200 mm
IVLJ 02-400	1130042	air velocity transmitter, 0...20 m/s, probe Ø 10 x 400 mm
IVLJ 02-N	1130044	air velocity transmitter with display, 0...2 m/s, probe Ø 10 x 200 mm
IVLJ 02-400-N	1130043	air velocity transmitter with display, 0...20 m/s, probe Ø 10 x 400 mm
IVLJ 10	1130090	air velocity transmitter 0...10 m/s, probe Ø 10 x 200 mm
IVLJ 10-400	1130095	air velocity transmitter, 0...10 m/s, probe Ø 10 x 400 mm
IVLJ 10-N	1130096	air velocity transmitter with display, 0...10 m/s, probe Ø 10 x 200 mm
IVLJ 10-400-N	1130093	air velocity transmitter with display, 0...10 m/s, probe Ø 10 x 400 mm
IVLJ 20	1130100	air velocity transmitter 0...20 m/s, probe Ø 10 x 200 mm
IVLJ 20-400	1130103	air velocity transmitter, 0...20 m/s, probe Ø 10 x 400 mm
IVLJ 20-N	1130101	air velocity transmitter with display, 0...20 m/s, probe Ø 10 x 200 mm
IVLJ 20-400-N	1130104	air velocity transmitter with display, 0...20 m/s, probe Ø 10 x 400 mm

HUMIDITY TRANSMITTERS

KLH room humidity transmitters are designed for measuring and controlling indoor relative humidity and temperature.

room %rH, °C



Power supply	24 Vac/dc, < 1 VA
Temperature measurement range	0...50 °C
Humidity measurement range	0...100 %rH
Temperature measurement accuracy	±0.5 °C
Humidity measurement accuracy	±2 %rH
Control output	0...10 Vdc, 2 mA
Temperature output	0...10 Vdc, 2 mA
Humidity output	0...10 Vdc, 2 mA
IP protection class	IP20
Ambient temperature	0...50 °C
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	87 x 86 x 30 mm

TYPE	ART. NO.	
KLH 100	1132210	room humidity transmitter
KLH 100-R	1132210010	room humidity transmitter, relay output (24 Vac 1 A)
KLH 100-N	1132211	room transmitter with display
KLH 100-N-R	1132211010	room transmitter with display, relay output (24 Vac 1 A)
KLH 100-N-PU	1132211A00	room transmitter with display, 0...10 V potentiometer
KLH 100-N-PU-R	1132211A10	room transmitter with display, 0...10 V potentiometer, relay output (24 Vac 1 A)
KLH 100-NTC 10	1132230	room humidity transmitter, NTC 10 sensor
KLH 100-NTC 20	1132310	room humidity transmitter, NTC 20 sensor
KLH-M	1132600	Modbus room humidity transmitter
KLH-M-R	1132600010	Modbus room humidity transmitter, relay output (24 Vac 1 A)
KLH-M-N	1132601	Modbus room humidity transmitter with display (humidity and/or temperature display)
KLH 100-5V-PT 1000	1132620	room humidity transmitter, Pt1000 sensor, 0...5 V outputs
OPTIONS		
HD-P	1135001	passive potentiometer (not available for Modbus models)
TOOLS		
ML-SER	1139010	transmitter commissioning tool

HUMIDITY TRANSMITTERS

2

KLH 420 is a 2-wire humidity transmitter designed for measuring indoor relative humidity.

room %rH

Power supply	24 Vdc (12...35 Vdc)
Humidity measurement range	0...100 %rH
Humidity measurement accuracy	±3 %rH
Humidity output	4...20 mA < 500 Ω (24 Vdc)
IP protection class	IP20
Ambient temperature	0...50 °C
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	87 x 86 x 30 mm



TYPE	ART. NO.	
KLH 420	1132280	room humidity transmitter
KLH 420-N	1132281	room humidity transmitter with display

HUMIDITY TRANSMITTERS

room °C, %rH

RRH-BAC transmitters are designed for measuring and controlling temperature and humidity in dry room spaces. The transmitters have built-in single stage heating/cooling and humidity control loops. The transmitters have a RS-485 channel for BACnet MS/TP communication. The transmitter inputs and outputs can also be controlled from the BACnet network making the device an effective I/O module.



Power supply	24 Vac/dc, < 1 VA
Temperature meas. range	0...50 °C
Humidity measurement range	0...100 %rH
Temperature meas. accuracy	±0.5 °C (25 °C)
Humidity meas. accuracy	±2 %rH
Output	3 x 0...10 Vdc, 5 mA, incl. control output
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic, self-extinguishing
Product dimensions	86 x 120 x 29 mm

Ordering guide		Type	0	1	2	3	4	5	6
0 BACnet room transmitter			6041						
1 Device type	Room humidity transmitter, 1RI, 1DI, 3AO, 2DO	RRH-BAC		H					
2 Display	No display				0				
	Display	-LCD			1				
	Red, yellow and green indicator lights	-AL			2				
3 Setpoint knob / occupancy detection	No setpoint knob or occupancy detection					0			
	Active setpoint knob	-SP				1			
	Passive setpoint knob	-SPR				2			
	Occupancy detection and light level sensor (replaces RI1)	-LL				3			
4 Push buttons	No push buttons						0		
	One push button	-PB					1		
	Two push buttons	-PB2					2		
	Three push buttons	-PB3					3		
	Four push buttons	-PB4					4		
	Push buttons for setpoint	-SPB					5		
	Push buttons for setpoint and one push button	-SPB-PB					6		
	Push buttons for setpoint and two push buttons	-SPB-PB2					7		
5 Inputs / outputs	No inputs / outputs							0	
	Second digital input	-DI2						1	
	Second resistive input (not available with SP/SPR options)	-RI2						2	
	Second digital input and second resistive input (not available with SP/SPR options)	-DI2-RI2						3	
	Two 0...10 Vdc inputs (replaces resistive input)	-AI						5	
	Second digital input and two 0...10 Vdc inputs (replaces resistive input)	-DI2-AI						6	
	Passive temperature sensor (NTC 10)	-TE-NTC10						7	
6 Body colour	White (RAL 9010)								0
	Anthracite grey (RAL 7015)	-GR							B

TOOLS

SW-DCT-USB	1139040	configuration cable

HUMIDITY TRANSMITTERS

room/duct %rH, °C

KLHJ 100 transmitters are designed for measuring relative humidity and temperature. The probe cable length is 2 m.

Power supply	24 Vac/dc, < 1 VA
Temperature meas. range	-50...50 °C
Humidity measurement range	0...100 %rH
Temperature meas. accuracy	±0.5 °C
Humidity meas. accuracy	±2 %rH
Temperature output	0...10 Vdc, 2 mA / 4...20 mA < 600 Ω
Humidity output	0...10 Vdc, 2 mA / 4...20 mA < 600 Ω
IP protection class	IP54, cable downwards
Cable gland	M16
Ambient temperature	-50...50 °C
Mounting	transmitter with screws (external lugs), sensor with flange, adjustable probe depth < 150 mm
Materials	PBT, PC, PA and stainless steel
Cable length	2,0 m



TYPE	ART. NO.	
KLHJ 100	1132260	humidity and temperature transmitter
KLHJ 100-N	1132261	humidity and temperature transmitter with display

HUMIDITY TRANSMITTERS

KLU 100 humidity and temperature transmitters are designed for outdoor applications.

outdoor %rH, °C

Power supply	24 Vac/dc, < 1 VA
Temperature meas. range	-50...50 °C
Humidity measurement range	0...100 %rH
Temperature meas. accuracy	±0.5 °C
Humidity meas. accuracy	±2 %rH
Temperature output	0...10 Vdc, 2 mA / 4...20 mA < 600 Ω
Humidity output	0...10 Vdc, 2 mA / 4...20 mA < 600 Ω
IP protection class	IP54, cable downwards
Cable gland	M16
Ambient temperature	-50...50 °C
Mounting	with screws, external lugs
Materials	PC plastic



TYPE	ART. NO.	
KLU 100	1132250	outdoor humidity transmitter
KLU 100-N	1132251	outdoor humidity transmitter with display

HUMIDITY TRANSMITTERS

KLK duct humidity transmitters are designed for measuring relative humidity and temperature inside ventilation ducts.

duct %rH, °C



Power supply	24 Vac/dc, < 1 VA
Temperature measurement range	-50...50 °C
Humidity measurement range	0...100 %rH
Temperature measurement accuracy	±0.5 °C
Humidity measurement accuracy	typ. ±2 %rH (20...80 %rH), max. ±3 %rH
Control output	humidity or temperature output can be configured to control output
Temperature output	0...10 Vdc, 2 mA / 4...20 mA < 600 Ω
Humidity output	0...10 Vdc, 2 mA / 4...20 mA < 600 Ω
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Ambient temperature	-50...50 °C
Mounting	with flange, probe depth adjustable < 150 mm
Materials	PBT and stainless steel

TYPE	ART. NO.	
KLK 100	1132240	duct humidity transmitter
KLK 100-R	1132240A00	duct humidity transmitter, relay (24 Vac 1 A)
KLK 100-N	1132241	duct humidity transmitter with display
KLK-M	1132610	Modbus duct humidity transmitter
KLK-M-N	1132611	Modbus duct humidity transmitter with display
TOOLS		
ML-SER	1139010	transmitter commissioning tool

CO_2 TRANSMITTERS

room ppm CO_2, °C, %rH

RCD-BAC transmitters can measure and control CO_2, temperature and humidity in dry room spaces. Automatic self-calibration eliminates any long-term drift. The transmitters have a built-in single stage heating/cooling, humidity, CO_2 and maximum VAV control loops. Transmitters have an RS-485 channel for BACnet MS/TP communication. Transmitter inputs and outputs can also be controlled from the BACnet network making the device an effective I/O module.



Power supply	24 Vac/dc, < 1 VA
Temperature meas. range	0...50 °C
CO_2 measurement range	0...5000 ppm
Temperature meas. accuracy	±0.5 °C (25 °C)
CO_2 measurement accuracy	typ. ±50 ppm +3 % of value (25 °C)
Output	3 x 0...10 Vdc, 5 mA, incl. control output
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic, self-extinguishing
Product dimensions	86 x 120 x 29 mm

Ordering guide		Type	0	1	2	3	4	5	6
0 BACnet room transmitter			6041						
1 Device type	Room CO_2 transmitter, 1RI, 1DI, 3AO, 2DO	RCD-BAC		9					
	Room CO_2 and humidity transmitter, 1RI, 1DI, 3AO, 2DO	RCD-BAC-RH		B					
2 Display	No display				0				
	Display	-LCD			1				
	Red, yellow and green indicator lights	-AL			2				
3 Setpoint knob / occupancy detection	No setpoint knob or occupancy detection					0			
	Active setpoint knob	-SP				1			
	Passive setpoint knob	-SPR				2			
	Occupancy detection and light level sensor (replaces RI1)	-LL				3			
4 Push buttons	No push buttons						0		
	One push button	-PB					1		
	Two push buttons	-PB2					2		
	Three push buttons	-PB3					3		
	Four push buttons	-PB4					4		
	Push buttons for setpoint	-SPB					5		
	Push buttons for setpoint and one push button	-SPB-PB					6		
	Push buttons for setpoint and two push buttons	-SPB-PB2					7		
5 Inputs / outputs	No inputs / outputs							0	
	Second digital input	-DI2						1	
	Second resistive input (not available with SP/SPR options)	-RI2						2	
	Second digital input and second resistive input (not available with SP/SPR options)	-DI2-RI2						3	
	Two 0...10 Vdc inputs (replaces resistive input)	-AI						5	
	Second digital input and two 0...10 Vdc inputs (replaces resistive input)	-DI2-AI						6	
	Passive temperature sensor (NTC 10)	-TE-NTC10						7	
6 Body colour	White (RAL 9010)								0
	Anthracite grey (RAL 7015)	-GR							B

TOOLS

SW-DCT-USB	1139040	configuration cable

CO_2 TRANSMITTERS

2

HDH transmitters are designed for measuring and controlling CO_2, temperature and humidity in dry room spaces. ABCLogic™ self-calibration method eliminates the possible long term drift.

Power supply	24 Vac/dc (22...28 V), < 2 VA
Temperature measurement range	0...50 °C
Time constant	< 2 min
Temperature measurement accuracy	±0.5 °C
CO_2 measurement accuracy	typ. ±40 ppm +3 % of value
Control output	0...10 Vdc, 2 mA
Temperature output	0...10 Vdc, 2 mA
CO_2 output	0...10 Vdc, 2 mA
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	87 x 86 x 30 mm

room ppm CO_2, °C, %rH



Ordering guide		Type	0	1	2	3	4	5	6
0 Room transmitter			1135						
1 Device type	Room transmitter, CO_2 and °C, range 0...2000 ppm	HDH		0	4	0			
	Room transmitter, display, CO_2 and °C, 0...2000 ppm	HDH-N		0	4	1			
	Room transmitter, CO_2, °C and %rH, 0...2000 ppm	HDH-RH		0	4	4			
	Room transmitter, display, CO_2, °C and %rH, 0...2000 ppm	HDH-RH-N		0	4	5			
	Modbus room transmitter, CO_2 and °C, 0...2000 ppm	HDH-M		1	0	0			
	Modbus room transmitter, display, CO_2 and °C, 0...2000 ppm	HDH-M-N		1	0	1			
	Modbus room transmitter, CO_2, °C and %rH, 0...2000 ppm	HDH-M-RH		1	0	2			
	Modbus room transmitter, display, CO_2, °C,%rH, 0...2000 ppm	HDH-M-RH-N		1	0	3			
	Room transmitter, CO_2 and °C, 0...10000 ppm	HDH 10K		1	1	0			
	Room transmitter, display, CO_2 and °C, 0...10000 ppm	HDH 10K-N		1	1	1			
	Room transmitter, CO_2, °C and %rH, 0...10000 ppm	HDH 10K-RH		1	1	2			
	Room transmitter, display, CO_2, °C, %rH, 0...10000 ppm	HDH 10K-RH-N		1	1	3			
	Room transmitter, CO_2 and °C, NTC 10 sensor, 0...2000 ppm	HDH-NTC 10		1	8	0			
	Room transmitter, CO_2, °C and %rH, NTC 10 sensor, 0...2000	HDH-NTC 10-RH		1	8	2			
	Room transmitter, CO_2 and °C, 0...5 V outputs, 0...2000 ppm	HDH-5V		1	9	0			
	Room transmitter, display, CO_2,°C, 0...5 V outputs, 0...2000 ppm	HDH-5V-N		1	9	1			
	Room transmitter, CO_2, °C, %rH, 0...5 V outputs, 0...2000 ppm	HDH-5V-RH		1	9	2			
	Room transmitter, display, CO_2, °C, %rH, 0...5 V outputs	HDH-5V-RH-N		1	9	3			
	Room transmitter, CO_2 and °C, PIR, range 0...2000 ppm	HDH-PIR		2	4	0			
	Room transmitter, display, CO_2 and °C, PIR, 0...2000 ppm	HDH-PIR-N		2	4	1			
	Room transmitter, CO_2,°C and %rH, PIR, 0...2000 ppm	HDH-RH-PIR		2	5	0			
	Room transmitter, display, CO_2,°C and %rH, PIR, 0...2000 ppm	HDH-RH-PIR-N		2	5	1			
	Modbus room transmitter, CO_2,°C and PIR, 0...2000 ppm	HDH-M-PIR		2	6	0			
	Modbus room transmitter, display, CO_2,°C and PIR, 0...2000 ppm	HDH-M-PIR-N		2	6	1			
	Modbus room transmitter, CO_2,°C and %rH, PIR, 0...2000 ppm	HDH-M-RH-PIR		2	7	0			
	Modbus room transmitter, display, CO_2,°C and %rH, PIR, 0...2000 ppm	HDH-M-RH-PIR-N		2	7	1			
	Room transmitter, CO_2 and °C, PT 1000 sensor, 0...2000 ppm	HDH-PT 1000		2	8	0			
	Room transmitter, display, CO_2,°C, PT 1000 sensor, 0...2000	HDH-PT 1000-N		2	8	1			
	Room transmitter, CO_2 and °C, NTC 1.8 sensor, 0...2000 ppm	HDH-NTC 1.8		6	5	0			
	Room transmitter, display, CO_2,°C, NTC 1.8 sensor, 0...2000 ppm	HDH-NTC 1.8-N		6	5	1			
2 Potentiometer options	No potentiometer						0		
	Active potentiometer (0...10 V)	-PU					A		
	Potentiometer 10 kΩ (not on -M models)	-P10K					B		
	Potentiometer 10 kΩ with resistors (not on -M models)	-P10KR					C		
	Potentiometer 1 kΩ (not on -M models)	-P1K					D		
	Potentiometer 1 kΩ with resistors (not on -M models)	-P1KR					E		
	Potentiometer 4.7 kΩ (not on -M models)	-P4K7					F		
	Potentiometer 4.7 kΩ with resistors (not on -M models)	-P4K7R					G		
	Potentiometer 22 kΩ (not on -M models)	-P22K					H		
	Potentiometer 22 kΩ with resistors (not on -M models)	-P22KR					J		
	Custom potentiometer with resistors (not on -M models)	-PC					K		
3 Additional options	No additional options							0	
	Relay 24 Vac 1 A	-R						1	
	Indicator light, 3 pcs	-AL3						2	
	Relay 24 Vac 1 A + Indicator light, 3 pcs	-R-AL3						3	
4 Body colour	White (RAL 9010)								0
	Grey Light (RAL 7004)								1
	Grey Dark (RAL 7012)								2
	Black (RAL 9005) painted								B
	Custom painted color								C

TOOLS

ML-SER	1139010	transmitter commissioning tool

CO_2 TRANSMITTERS

duct ppm CO_2, °C, %rH

HDK transmitters are designed for measuring and controlling CO_2, temperature and humidity inside ventilation ducts. Automatic self-calibration method eliminates the possible long term drift.



Power supply	24 Vac/dc, < 2 VA
Temperature measurement range	0...50 °C
Time constant	< 2 min
Temperature measurement accuracy	±0.5 °C
CO_2 measurement accuracy	typ. ±40 ppm +3 % of value
Control output	0...10 Vdc, 2 mA
Temperature output	0...10 Vdc, 2 mA
CO_2 output	0...10 Vdc, 2 mA
IP protection class	IP54
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	in a Ø 10 mm hole, with screws, external lugs
Materials	PC plastic
Product dimensions	105 x 104 x 155 mm

TYPE	ART. NO.	
HDK	1135050	duct transmitter, CO_2 and °C measurement, range 0...2000 ppm
HDK-R	1135050A00	duct transmitter, CO_2 and °C measurement, range 0...2000 ppm, relay (24 Vac 1 A)
HDK-N	1135051	duct transmitter with display, CO_2 and °C measurement, range 0...2000 ppm
HDK-RH	1135054	duct transmitter, CO_2, °C and %rH measurement, range 0...2000 ppm
HDK-RH-N	1135055	duct transmitter with display, CO_2, °C and %rH measurement, range 0...2000 ppm
HDK-M	1135120	Modbus duct transmitter, CO_2 and °C measurement, range 0...2000 ppm
HDK-M-N	1135121	Modbus duct transmitter with display, CO_2 and °C measurement, range 0...2000 ppm
HDK-M-RH	1135122	Modbus duct transmitter, CO_2, °C and %rH measurement, range 0...2000 ppm
HDK-M-RH-N	1135123	Modbus duct transmitter with display, CO_2, °C and %rH measurement, range 0...2000 ppm
HDK 10K	1135130	duct transmitter, CO_2 and °C measurement, range 0...10000 ppm
HDK 10K-N	1135131	duct transmitter with display, CO_2 and °C measurement, range 0...10000 ppm
HDK 10K-RH	1135132	duct transmitter, CO_2, °C and %rH measurement, range 0...10000 ppm
HDK 10K-RH-N	1135133	duct transmitter with display, CO_2, °C and %rH measurement, range 0...10000 ppm
HDK 10K-M	1135140	Modbus duct transmitter, CO_2 and °C measurement, range 0...10000 ppm
HDK 10K-M-N	1135141	Modbus duct transmitter with display, CO_2 and °C measurement, range 0...10000 ppm
HDK 10K-M-RH	1135142	Modbus duct transmitter, CO_2, °C and %rH measurement, range 0...10000 ppm
HDK 10K-M-RH-N	1135143	Modbus duct transmitter with display, CO_2, °C and %rH measurement, range 0...10000 ppm
OPTIONS		
HD-R	1135003	relay, 24 Vac 1 A
TOOLS		
ML-SER	1139010	transmitter commissioning tool

CO_2 TRANSMITTERS

outdoor ppm CO_2, °C, %rH

HDU transmitters are designed for measuring and controlling CO_2 concentration and temperature in underground parking garages and parking halls (NOTE: limited UV resistance in outdoor environment). Automatic self-calibration method eliminates the possible long term drift.



Power supply	24 Vac/dc, < 10 VA
Temperature measurement range	-50...50 °C
Temperature measurement accuracy	±0.5 °C
CO_2 measurement accuracy	typ. ±40 ppm +3 % of value
Temperature output	0...10 Vdc, 2 mA
CO_2 output	0...10 Vdc, 2 mA
IP protection class	IP54, cable downwards
Cable gland	M16
Ambient temperature	-30...50 °C
Ambient humidity	0...85 %rH
Mounting	with screws, external lugs
Materials	PC plastic
Product dimensions	105 x 110 x 46 mm

TYPE	ART. NO.	
HDU	1135090	CO_2 transmitter for cold spaces, range 0...2000 ppm
HDU-R	1135090A00	CO_2 transmitter for cold spaces, range 0...2000 ppm, relay (24 Vac 1 A)
HDU-N	1135091	CO_2 transmitter with display, range 0...2000 ppm
HDU-M	1135150	Modbus CO_2 transmitter for cold spaces, range 0...2000 ppm
HDU-M-N	1135151	Modbus CO_2 transmitter with display, range 0...2000 ppm
HDU 5K	1135160	CO_2 transmitter for cold spaces, range 0...5000 ppm
HDU 5K-R	1135160A00	CO_2 transmitter for cold spaces, range 0...2000 ppm, relay (24 Vac 1 A)
HDU 5K-N	1135161	CO_2 transmitter with display, range 0...5000 ppm
HDU 5K-M	1135170	Modbus CO_2 transmitter for cold spaces, range 0...5000 ppm
HDU 5K-M-N	1135171	Modbus CO_2 transmitter with display, range 0...5000 ppm
HDU 10K	1135220	CO_2 transmitter for cold spaces, range 0...10000 ppm
HDU 10K-N	1135221	CO_2 transmitter with display, range 0...10000 ppm
HDU 10K-M	1135290	Modbus CO_2 transmitter for cold spaces, range 0...10000 ppm
HDU 10K-M-N	1135291	Modbus CO_2 transmitter with display, range 0...10000 ppm
OPTIONS		
HD-R	1135003	relay, 24 Vac 1 A
TOOLS		
ML-SER	1139010	transmitter commissioning tool

AIR QUALITY TRANSMITTERS

2

room CO_2, °C, %rH, VOC, PM



Siro is an indoor air quality transmitter with a modern design. The modular device can be equipped with CO_2 concentration and VOC (Volatile Organic Compounds) measurements or alternatively PM (Particulate Matter, PM2.5 (PM1, PM10) measurement and in addition temperature and humidity measurements. It offers easy installation and adjustment, several different model options and various output signals that are configurable separately for each measurement. The devices are available with user interface that includes a display and buttons making the configuration of the device quick and easy. A configuration tool is available for devices without user interface.

Power supply	24 Vac/dc (22...26 V)
CO_2 measurement accuracy	typ. ±43 ppm +3 % of value (-MOD: typ. ±40 ppm +3 % of value)
Voltage output	4 x 0...10 V / 2...10 V / 0...5 V
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	95 x 103 x 30 mm

TYPE	ART NO.	TYPE	ART NO.	TYPE	ART NO.
Siro-CO2	304.001.017	Siro-PM-T-A	304.003.022	Siro-MOD-CO2-VOC-rH-T-D-B	304.005.040
Siro-CO2-A	304.001.018	Siro-PM-T-D	304.003.023	Siro-MOD-CO2-VOC-rH-T-A-D-B	304.005.041
Siro-CO2-D	304.001.019	Siro-PM-T-A-D	304.003.024	Siro-MOD-VOC-rH-T	304.006.005
Siro-CO2-A-D	304.001.020	Siro-PM-B	304.003.025	Siro-MOD-VOC-rH-T-A	304.006.006
Siro-CO2-VOC-rH-T	304.001.021	Siro-PM-A-B	304.003.026	Siro-MOD-VOC-rH-T-D	304.006.007
Siro-CO2-VOC-rH-T-A	304.001.022	Siro-PM-D-B	304.003.027	Siro-MOD-VOC-rH-T-A-D	304.006.008
Siro-CO2-VOC-rH-T-D	304.001.023	Siro-PM-A-D-B	304.003.028	Siro-MOD-VOC-rH-T-B	304.006.009
Siro-CO2-VOC-rH-T-A-D	304.001.024	Siro-PM-rH-T-B	304.003.029	Siro-MOD-VOC-rH-T-A-B	304.006.010
Siro-CO2-rH-T	304.001.025	Siro-PM-rH-T-A-B	304.003.030	Siro-MOD-VOC-rH-T-D-B	304.006.011
Siro-CO2-rH-T-A	304.001.026	Siro-PM-rH-T-D-B	304.003.031	Siro-MOD-VOC-rH-T-A-D-B	304.006.012
Siro-CO2-rH-T-D	304.001.027	Siro-PM-rH-T-A-D-B	304.003.032	Siro-MOD-PM	304.007.013
Siro-CO2-rH-T-A-D	304.001.028	Siro-PM-T-B	304.003.033	Siro-MOD-PM-A	304.007.014
Siro-CO2-T	304.001.029	Siro-PM-T-A-B	304.003.034	Siro-MOD-PM-D	304.007.015
Siro-CO2-T-A	304.001.030	Siro-PM-T-D-B	304.003.035	Siro-MOD-PM-A-D	304.007.016
Siro-CO2-T-D	304.001.031	Siro-PM-T-A-D-B	304.003.036	Siro-MOD-PM-rH-T	304.007.017
Siro-CO2-T-A-D	304.001.032	Siro-rH-T	304.004.009	Siro-MOD-PM-rH-T-A	304.007.018
Siro-CO2-B	304.001.033	Siro-rH-T-A	304.004.010	Siro-MOD-PM-rH-T-D	304.007.019
Siro-CO2-A-B	304.001.034	Siro-rH-T-D	304.004.011	Siro-MOD-PM-rH-T-A-D	304.007.020
Siro-CO2-D-B	304.001.035	Siro-rH-T-A-D	304.004.012	Siro-MOD-PM-T	304.007.021
Siro-CO2-A-D-B	304.001.036	Siro-T	304.004.013	Siro-MOD-PM-T-A	304.007.022
Siro-CO2-VOC-rH-T-B	304.001.037	Siro-T-A	304.004.014	Siro-MOD-PM-T-D	304.007.023
Siro-CO2-VOC-rH-T-A-B	304.001.038	Siro-T-D	304.004.015	Siro-MOD-PM-T-A-D	304.007.024
Siro-CO2-VOC-rH-T-D-B	304.001.039	Siro-T-A-D	304.004.016	Siro-MOD-PM-B	304.007.025
Siro-CO2-VOC-rH-T-A-D-B	304.001.040	Siro-MOD-CO2	304.005.018	Siro-MOD-PM-A-B	304.007.026
Siro-VOC-rH-T	304.002.005	Siro-MOD-CO2-A	304.005.019	Siro-MOD-PM-D-B	304.007.027
Siro-VOC-rH-T-A	304.002.006	Siro-MOD-CO2-D	304.005.020	Siro-MOD-PM-rH-T-B	304.007.029
Siro-VOC-rH-T-D	304.002.007	Siro-MOD-CO2-A-D	304.005.021	Siro-MOD-PM-rH-T-A-B	304.007.030
Siro-VOC-rH-T-A-D	304.002.008	Siro-MOD-CO2-VOC-rH-T	304.005.022	Siro-MOD-PM-rH-T-D-B	304.007.031
Siro-VOC-rH-T-B	304.002.009	Siro-MOD-CO2-VOC-rH-T-A	304.005.023	Siro-MOD-PM-rH-T-A-D-B	304.007.032
Siro-VOC-rH-T-A-B	304.002.010	Siro-MOD-CO2-VOC-rH-T-D	304.005.024	Siro-MOD-PM-T-B	304.007.033
Siro-VOC-rH-T-D-B	304.002.011	Siro-MOD-CO2-VOC-rH-T-A-D	304.005.025	Siro-MOD-PM-T-A-B	304.007.034
Siro-VOC-rH-T-A-D-B	304.002.012	Siro-MOD-CO2-rH-T	304.005.026	Siro-MOD-PM-T-D-B	304.007.035
Siro-PM	304.003.013	Siro-MOD-CO2-rH-T-A	304.005.027	Siro-MOD-PM-T-A-D-B	304.007.036
Siro-PM-A	304.003.014	Siro-MOD-CO2-rH-T-D	304.005.028	Siro-MOD-rH-T	304.008.009
Siro-PM-D	304.003.015	Siro-MOD-CO2-rH-T-A-D	304.005.029	Siro-MOD-rH-T-A	304.008.010
Siro-PM-A-D	304.003.016	Siro-MOD-CO2-T	304.005.030	Siro-MOD-rH-T-D	304.008.011
Siro-PM-rH-T	304.003.017	Siro-MOD-CO2-T-A	304.005.031	Siro-MOD-rH-T-A-D	304.008.012
Siro-PM-rH-T-A	304.003.018	Siro-MOD-CO2-T-D	304.005.032	Siro-MOD-T	304.008.013
Siro-PM-rH-T-D	304.003.019	Siro-MOD-CO2-T-A-D	304.005.033	Siro-MOD-T-A	304.008.014
Siro-PM-rH-T-A-D	304.003.020	Siro-MOD-CO2-VOC-rH-T-B	304.005.038	Siro-MOD-T-D	304.008.015
Siro-PM-T	304.003.021	Siro-MOD-CO2-VOC-rH-T-A-B	304.005.039	Siro-MOD-T-A-D	304.008.016

MOD Modbus RTU
CO2 Carbon dioxide sensor
VOC Volatile Organic Compounds sensor
PM Particulate Matter sensor
rH Humidity sensor
T Temperature sensor
A mA output
D Display
B Black body color

TOOLS

Siro-CT	304.009.002	commissioning tool for Siro transmitters

AIR QUALITY TRANSMITTERS

2

duct VOC, °C, %rH

ILK transmitters are designed for measuring and controlling VOC (Volatile Organic Compound) level, temperature and humidity inside ventilation ducts. MEMS sensing technology ensures accurate and durable VOC measurement that is related to the CO_2 level.



Power supply	24 Vac/dc, < 2 VA
VOC measurement range	450...2000 ppm (CO_2 equivalent)
Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C
Voltage output	0...10 Vdc, 2 mA (VOC)
Relay output	None
Control output	0...10 Vdc, 2 mA
Temperature output	0...10 Vdc, 2 mA
IP protection class	IP54, cable downwards
Cable gland	M16
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	in a Ø 10 mm hole, with screws, external lugs
Materials	PC plastic
Product dimensions	105 x 104 x 155 mm

TYPE	ART. NO.	
ILK	1135630	duct transmitter
ILK-N	1135631	duct transmitter with display
ILK-RH	1135632	duct transmitter with humidity measurement
ILK-RH-N	1135633	duct transmitter with humidity measurement and display
ILK-M	1135640	Modbus duct transmitter
ILK-M-N	1135641	Modbus duct transmitter with display
ILK-M-RH	1135642	Modbus duct transmitter with humidity measurement
ILK-M-RH-N	1135643	Modbus duct transmitter with humidity measurement and display
OPTIONS		
HD-R	1135003	relay, 24 Vac 1 A
TOOLS		
ML-SER	1139010	transmitter commissioning tool

CARBON MONOXIDE TRANSMITTERS

outdoor ppm CO

HML transmitters are designed for measuring carbon monoxide concentration in underground parking garages and parking halls. The measuring is based on electro-chemical cell. The transmitter measuring range is 0...100 or 0...300 ppm.



Power supply	24 Vac/dc, < 2 VA
CO measurement range	0...100 ppm / 0...300 ppm
Time constant	1.5 min
CO measurement accuracy	± 10 ppm for < 70 ppm value; ± 15 % of value for > 70 ppm value
Output	0...10 Vdc, 1 mA / 4...20 mA, < 500 Ω
IP protection class	IP54, cable downwards
Cable gland	M16
Ambient temperature	-30...40 °C
Mounting	with screws, external lugs
Materials	PC plastic
Product dimensions	100 x 113 x 46 mm

TYPE	ART. NO.	
HML	1135520	CO transmitter
HML-N	1135521	CO transmitter with display
OPTIONS		
HMV	1135510	exchange kit for HML

LIGHT LEVEL TRANSMITTERS

2

LUX 34 is designed for measuring outdoor light level and temperature. Measured values can be used for controlling lighting and heating.

outdoor lx, °C



Power supply	24 Vac/dc, < 0.1 VA
Temperature measurement range	-50...50 °C
Temperature output	0...10 Vdc, 1 mA
Light level output	0...10 Vdc, 1 mA
IP protection class	IP54, cable downwards
Cable gland	M16
Ambient temperature	-40...40 °C
Mounting	with screws, external lugs
Materials	PBT, PC, PA
Product dimensions	90 x 94 x 44 mm

TYPE	ART. NO.	
LUX 34	1133310	light level transmitter, selectable range 0...1000 lx or 0...10000 lx
LUX 34-100	1133311	light level transmitter, selectable range 0...100 lx or 0...500 lx

OPTIONS		
WS-1	9000520	weather shield

LIGHT INTENSITY TRANSMITTER

MMSP1 is designed for measuring sun light intensity.

outdoor W/m²



Power supply	24 Vdc, < 0.03 W (5...30 Vdc)
Light level range	0...1500 W/m²
Light level accuracy	±5 % (annual mean)
Voltage output	0...10 Vdc / 0...3.125 Vdc / 0...150 mVdc, the supply voltage must be at least 12 V
Current output	4...20 mA
IP protection class	IP65
Cable gland	M16
Product dimensions	80 x 150 x 60 mm

TYPE	ART. NO.	
MMSP1	1133360	sun light intensity transmitter

DIFFERENTIAL PRESSURE TRANSMITTERS FOR WATER

VPEL differential pressure transmitter is designed for measuring water/glycol pressures in heating and cooling systems.

bar



Power supply	24 Vac/dc, < 1 VA
Measurement accuracy	±2.5 % from the full scale
Voltage output	0...10 Vdc, 5 mA
Current output	4...20 mA, < 500 Ω
Zeroing	manually by using the push button
Process connection	8 mm compression fittings for copper pipes
IP protection class	IP54
Cable gland	M16
Ambient temperature	-20...70 °C
Mounting	with screws, external lugs, position allowed only process connectors downwards
Materials	PC plastic
Product dimensions	118 x 113 x 46 mm

TYPE	ART. NO.	
VPEL 1.0/2.5	1134060	differential water pressure transmitter, range 0...1.0 or 0...2.5 bar
VPEL 1.0/2.5-N	1134061	differential water pressure transmitter with display, range 0...1.0 or 0...2.5 bar
VPEL 4.0/6.0	1134070	differential water pressure transmitter, range 0...4.0 or 0...6.0 bar
VPEL 4.0/6.0-N	1134071	differential water pressure transmitter with display, range 0...4.0 or 0...6.0 bar

PRESSURE TRANSMITTERS FOR WATER

VPL pressure transmitter (3-wire) is designed for measuring fluid pressures in heating and cooling systems.

bar



Power supply	24 Vac/dc, < 1 VA
Voltage output	0...10 Vdc, 2 mA
Current output	4...20 mA, 800 Ω
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Ambient temperature	0...60 °C
Mounting	R½"
Materials	PBT, PC, PA and stainless steel
Product dimensions	70 x 95 x 81 mm

TYPE	ART. NO.	
VPL 60	1134030	water pressure transmitter, range 0...16, 0...25, 0...40 or 0...60 bar
VPL 60-N	1134031	water pressure transmitter with display, range 0...16, 0...25, 0...40 or 0...60 bar
VPL 16	1134050	water pressure transmitter, range 0...2.5, 0...6, 0...10 or 0...16 bar
VPL 16-N	1134051	water pressure transmitter with display, range 0...2.5, 0...6, 0...10 or 0...16 bar

RAIN SENSOR

RV2-24 is a rain sensor designed for HVAC and building automation systems to detect precipitation (rain/snow).

Power supply	24 Vac/dc, < 2 VA
Rain output	relay, max. 230 Vac, 3 A
IP protection class	IP65
Cable gland	1 X M16
Ambient temperature	-35...50 °C
Product dimensions	80 x 82 x 55 mm



TYPE	ART. NO.	
RV2-24	1136070	rain sensor

WIND SENSORS

UV7+UV7-VV ultrasonic wind transmitter is designed for measuring wind speed and direction in HVAC applications. The sensor is robust and stable.

m/s, °

Power supply	24 Vac/dc, < 0.75 A
Air direction measurement range	0...359 degrees
Air velocity measurement range	0...15 m/s / 0...40 m/s
Time constant	1, 2, 4, 8, 16 s
Air direction measurement accuracy	±1°
Voltage output	3 x 0...10 Vdc
Output	RS232 NMEA0183®
IP protection class	IP65
Ambient temperature	-15...55 °C
Cable	25 m



TYPE	ART. NO.	
UV7	1136030	wind sensor
UV7-VV	1136032	transmitter module for wind sensor
UV7+UV7-VV	1136033	wind sensor and transmitter module

WIND SENSORS

VS 3000 wind sensor is designed for measuring wind speed and direction in HVAC applications.

m/s, °



Power supply	24 Vac/dc, < 2 VA
Air direction measurement range	0...359 degrees
Air velocity measurement range	0...35 m/s
Air direction measurement accuracy	±1°
Air velocity measurement accuracy	±1 m/s
Air direction measurement output	0...10 Vdc
Air velocity output	0...10 Vdc
IP protection class	IP65
Ambient temperature	-35...70 °C
Mounting	< Ø 50 mm
Cable	10 m

TYPE	ART. NO.	
VS 3000	1136040	wind speed and direction sensor
VH 1000	1136050	wind speed sensor
VR 1000	1136060	wind direction sensor

WIND SPEED DETECTOR

TUNA 20 is designed for measuring wind speed and outside air temperature.

m/s, °C



Power supply	24 Vac/dc, < 1.5 VA
Temperature measurement range	-50...50 °C
Air velocity measurement range	0...20 m/s
Voltage output	0...10 Vdc, 2 mA
Current output	4...20 mA, 600 Ω
IP protection class	IP54
Cable gland	M16
Ambient temperature	-50...50 °C
Mounting	with screws on wall
Materials	PBT, PC, PA, painted steel

TYPE	ART. NO.	
TUNA 20	1136010	wind speed detector

SMOKE DETECTORS

2

KRM-X-2 duct smoke detector is designed for smoke detection in ventilation ducts. The detector is a combination of a smoke detector and an adapter system. The adapter system has been specially designed for optimal air flow through the smoke detector. KRM-X-2 detectors are for 24 Vac/dc supply voltage.

Power supply	24 Vac/dc
Probe	160 mm
Sensor	Optical RM3.3-X (ALN-E)
Alarm output	250 Vac / 24 Vdc, 8 A, change-over contact and 250 Vac / 24 Vdc, 8 A, NC contact
Contamination output	250 Vac / 24 Vdc, 6 A, NC contact
IP protection class	IP54
Cable gland	3 X M16
Ambient temperature	-20...50 °C
Materials	ABS plastic, aluminium
Product dimensions	172 x 271 x 85 mm



TYPE	ART. NO.	
KRM-X-2-0,16	1137060	duct smoke detector
KRM-X-2-MOD-0,16	1137070	Modbus duct smoke detector
KRM-X-2-BAC-0,16	1137080	BACnet duct smoke detector

OPTIONS		
KS-X	1137093	mounting plate for round or insulated ducts
WDG-X	1137094	protective insulating housing with alarm display for outdoor installation
KS-WDG-X	1137095	mounting plate for round or insulated ducts (with WDG-X)
ASR-A10	1137096	test gas
KRM-RM3.3-X	1137097	smoke sensor (spare part)

SMOKE DETECTORS

KRM-X-1 duct smoke detector is designed for smoke detection in ventilation ducts. The detector is a combination of a smoke detector and an adapter system. The adapter system has been specially designed for optimal air flow through the smoke detector. KRM-X-1 detector is for 230 Vac supply voltage.



Power supply	230 Vac
Probe	160 mm
Sensor	Optical RM3.3-X (ALN-E)
Alarm output	250 Vac / 24 Vdc, 8 A, change-over contact and 250 Vac / 24 Vdc, 8 A, NC contact
Contamination output	250 Vac / 24 Vdc, 6 A, NC contact
IP protection class	IP65
Cable gland	M16
Ambient temperature	-20...50 °C
Materials	ABS plastic, aluminium
Product dimensions	172 x 271 x 85 mm

TYPE	ART. NO.	
KRM-X-1-0,16	1137050	duct smoke detector
OPTIONS		
KS-X	1137093	mounting plate for round or insulated ducts
WDG-X	1137094	protective insulating housing with alarm display for outdoor installation
KS-WDG-X	1137095	mounting plate for round or insulated ducts (with WDG-X)
ASR-A10	1137096	test gas
KRM-RM3.3-X	1137097	smoke sensor (spare part)

WIRELESS TRANSMITTERS

Wireless functionality is one of the fastest-growing trends globally – and this is also the case in building automation. Produal has been a pioneer in offering wireless solutions for this market ever since 2006.

Our reliable, fully battery-operated Produal Proxima® MESH 2.4 GHz solution offers unparalleled reliability for wireless building automation. It is based on the intelligent and self-healing MESH network, using the best available communication frequencies dynamically in the building. The patented technology minimizes the likelihood of interference by or with other wireless systems. The wireless Produal MESH allows you to share the network connection across a wider area than ever before, and dedicated wireless applications can be built and commissioned easily.

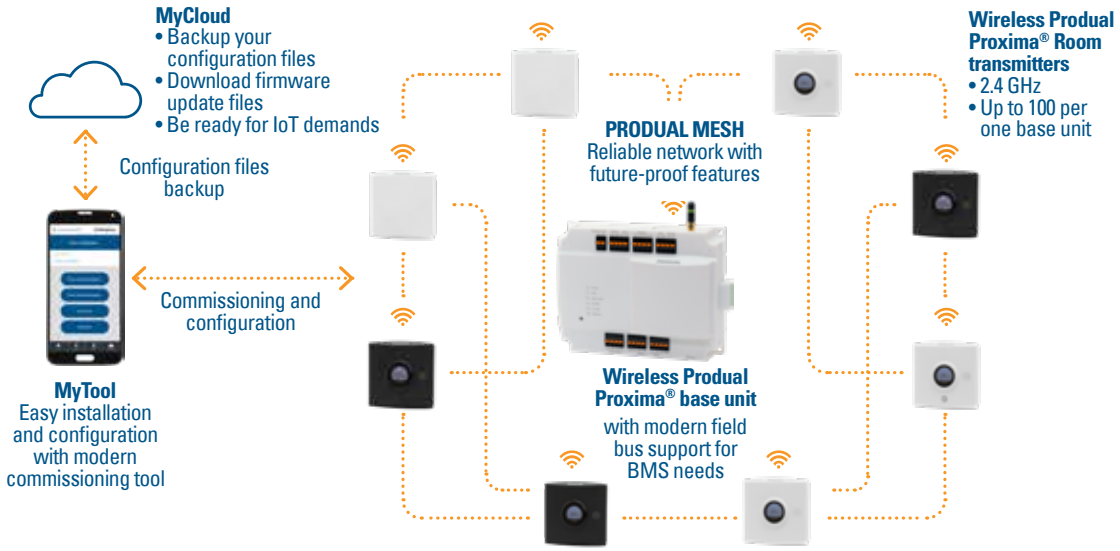
Wireless Modbus MiraMesh technology allows the creation of a wireless Modbus RTU network that maintains the standardization of the protocol. As a result, you can reduce materials and workload by converting any Modbus RTU device to a wireless MiraMesh network and sending your Modbus measurement messages wirelessly with low latency.

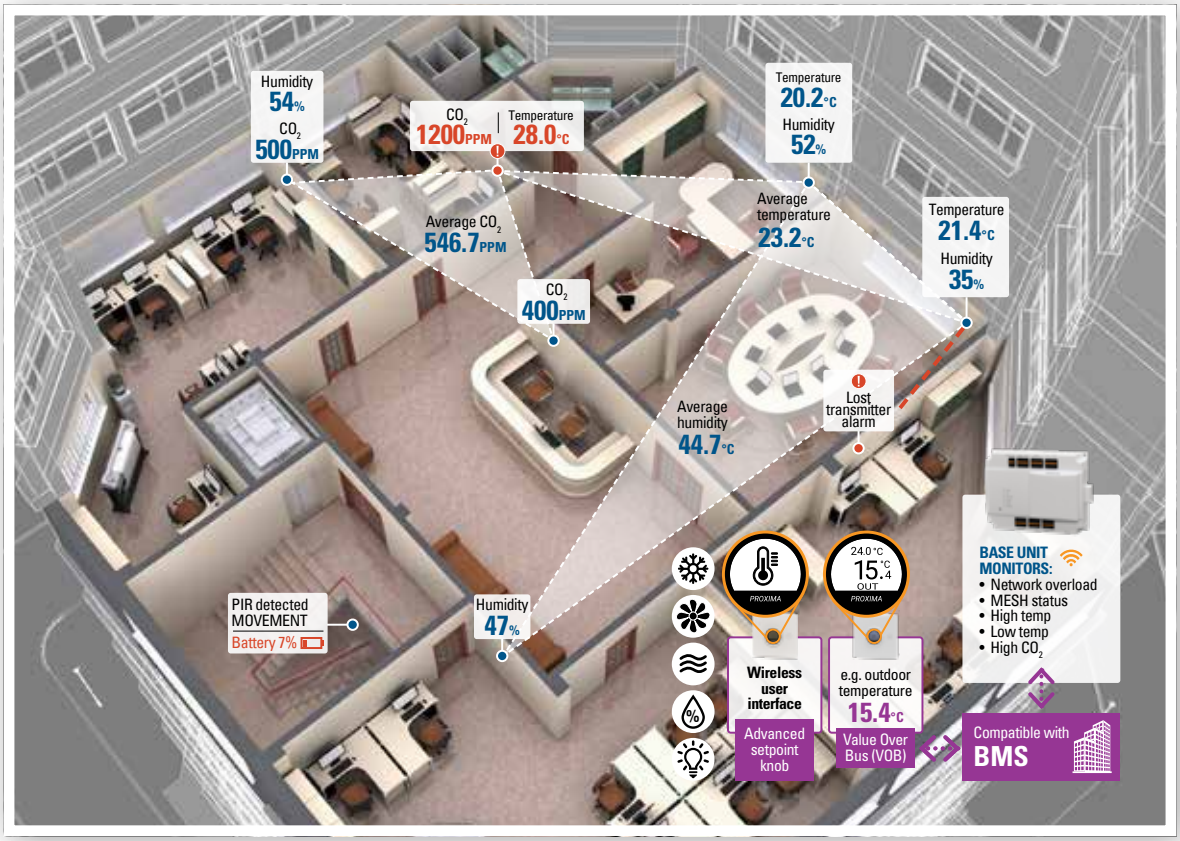
We also offer transmitters for your long-range wireless LoRaWAN network. Our range makes it possible to convert Modbus RTU device communications to wireless LoRaWAN network communications, as well as to measure a wide range of properties and transmit the measurements as small-size payloads over long distances. LoRaWAN is a beneficial technology, especially in various IoT solutions.



WIRELESS PRODUAL PROXIMA® MESH

Wireless Produal Proxima® is a fully battery-operated MESH platform, featuring an impressive battery life of up to 8 years on "always-on" wireless transmitters. The network utilizes the latest wireless technology innovations, ensuring extreme reliability even in the most challenging radio environments. We offer a wide range of measurements and options, including products for converting digital contacts, NTC 10 temperature measurement, and 0...10 V inputs to wireless messages. This allows for almost unlimited application possibilities from building automation to environment monitoring and IoT applications. Wireless Produal Proxima® is designed to be future-proof, aiming to offer one of the most comprehensive and multifunctional wireless portfolios on the market.





Operates on the globally accepted frequency of 2.4 GHz, which is acknowledged in various environments. Its stunning multifunctionality offers broad possibilities and options for system integrators. The mobile MyTool app allows easy network commissioning, monitoring, and updating. All the network messages are encrypted at the AES-128 level.

WIRELESS PRODUCT SELECTION GUIDE

Wireless Produal Proxima® MESH 2,4 GHz			
Property	**WTR**	**WTR24**	**WTR-IM**
Battery	•		•
24 V power supply		•	•
Display	o	o	
Temperature measurement	•	•	•
Humidity measurement	o	o	•
CO_2 measurement	o	o	
Occupancy detection / PIR	o	o	
Setpoint knob	o		
Advanced setpoint knob with display	o	o	
Digital input			3 [1]
Temperature input (NTC 10)			3 [1]
0...10 V input			3 [1]
Protection class	IP20	IP20	IP20
Page	**85**	**86**	**87**

- • standard
- o optional
- [1] 3 inputs total

WIRELESS BASE UNIT

WBU is a base station for wireless Produal Proxima® MESH network transmitters and input modules. The transmitter information can be read via Modbus or through the 6 analogue outputs. The base unit supports Modbus RTU and Modbus TCP.

Power supply	24 Vac/dc (22...26 V), < 7 VA
Frequency	2,4 GHz
Input	100 wireless transmitters and 6 analogue inputs
Supply output	2 x 24 Vac, total load < 8 A
Output	6 x analogue output
IP protection class	IP22
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	with screws on wall or on 35 mm DIN rail
Materials	PC plastic
Product dimensions	186 x 136 x 55 mm



TYPE	ART. NO.	
WBUB	54011B0000	wireless base unit, black
WBU	54011W0000	wireless base unit, white
OPTIONS		
CUCC	5201010400	cable covers for Proxima CU and WBU (includes two covers and four fixing screws)
WA-AS1	5401900010	extension cable and base for WBU antenna, 3 m cable
TOOLS		
MYT-Andr	5100010000	Free Android application for configuring and commissioning of Produal PUMP® devices.

WIRELESS ROOM TRANSMITTERS

WTR battery operated wireless transmitters are designed for measuring indoor temperature and humidity. Transmitters are compatible with the wireless Produal Proxima® MESH network.

room °C, %rH



Power supply	3.6 V lithium battery
Frequency	2,4 GHz
Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C
IP protection class	IP30
Ambient temperature	0...50 °C
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	PC plastic
Product dimensions	97 x 97 x 30 mm

Ordering guide		Type	0	1	2	3	4	5	6
0 Wireless room transmitter			5401	3				0	0
1 Device type	Battery powered wireless transmitter	WTR		3					
2 Body colour	White				W				
	Black	B			B				
3 Display	No display					0			
	Advanced setpoint knob with display, menu button	-AK				1			
	Setpoint knob	-PK				2			
	Setpoint knob with custom print	-PKC				P			
	Display, menu button	-D				3			
4 Additional measurements	No additional measurement						0		
	CO_2 (not with -PK)	-CO2					C		
	Relative humidity	-RH					H		
	Occupancy detection (not with -PK)	-PIR					P		
	Relative humidity and occupancy detection (not with -PK)	-RH-PIR					1		
	CO_2 and relative humidity (not with -PK)	-CO2-RH					2		
	CO_2 and occupancy detection (not with -PK)	-CO2-PIR					3		
	CO_2, relative humidity and occupancy detection (not with -PK)	-CO2-RH-PIR					4		

OPTIONS / ACCESSORIES

		lithium battery, 3.6 V / 3600 mAh
VP-PROX	9000460	protective casing for Proxima room products
WA-STIC	5401900050	bottom housing with sticker mounting
WA-MAG	5401900060	bottom housing with magnet mounting

TOOLS

MyTool	Free Android application for configuring and commissioning of Produal PUMP® devices.

WIRELESS ROOM TRANSMITTERS

WTR24 wireless transmitters are designed for measuring indoor temperature and humidity. Transmitters are compatible with the wireless Produal Proxima® MESH network.

room °C, %rH



Power supply	24 Vac/dc
Frequency	2,4 GHz
Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0,5 °C (25 °C) or ±1 °C (25 °C, CO_2 models)
IP protection class	IP30
Ambient temperature	0...50 °C
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	PC plastic
Product dimensions	97 x 97 x 30 mm

Ordering guide		Type	0	1	2	3	4	5	6
0 Wireless room transmitter			5401					0	0
1 Device type	Wireless transmitter, 24 Vac supply	WTR24		4					
2 Body colour	White				W				
	Black	B			B				
3 Display	No display					0			
	Advanced setpoint knob with display, menu button	-AK				1			
	Display, menu button	-D				3			
4 Additional measurements	No additional measurement						0		
	Relative humidity	-RH					H		
	Occupancy detection	-PIR					P		
	CO_2	-CO2					C		
	Relative humidity and occupancy detection	-RH-PIR					1		
	CO_2 and relative humidity	-CO2-RH					2		
	CO_2 and occupancy detection	-CO2-PIR					3		
	CO_2, relative humidity and occupancy detection	-CO2-RH-PIR					4		

OPTIONS / ACCESSORIES

VP-PROX	9000460	protective casing for Proxima room products

TOOLS

MyTool	Free Android application for configuring and commissioning of Produal PUMP® devices.

WIRELESS INPUT MODULE

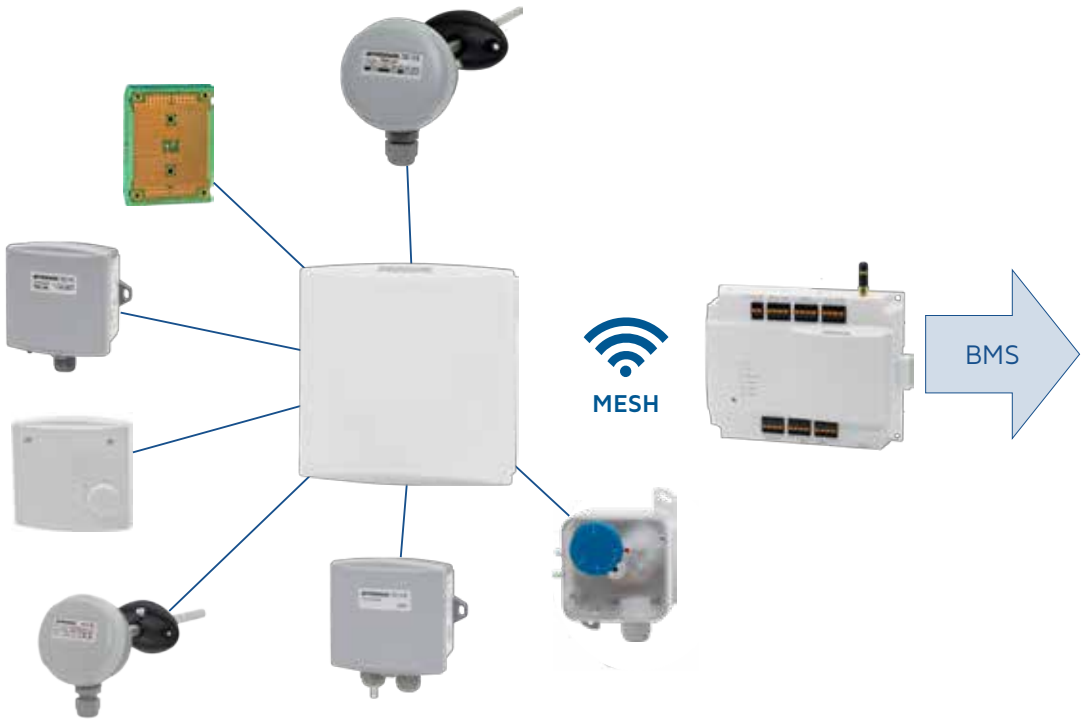
WTR-IM is a wireless input module that reads values from three inputs. The input module includes also temperature and humidity measurements. The module is compatible with the wireless Produal Proxima® MESH network.



Power supply	3.6 V lithium battery or 10...30 Vdc / 12...28 Vac
Frequency	2,4 GHz
Temperature measurement range	0...50 °C
Humidity measurement range	0...100 %rH
Temperature measurement accuracy	±0.5 °C (25 °C)
Humidity measurement accuracy	±3 %rH (25 °C)
Input	3 x 0...10 V or NTC 10 or resistive or digital
IP protection class	IP30
Ambient temperature	0...50 °C
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	PC plastic
Product dimensions	97 x 97 x 26 mm

TYPE	ART. NO.	
WTR-IM	54015W0000	wireless input module
TOOLS		
MYT-Andr	5100010000	Free Android application for configuring and commissioning of Produal PUMP® devices.

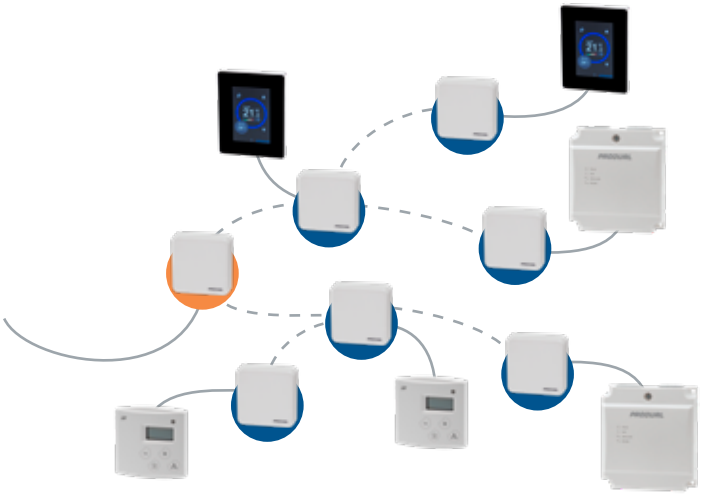
Convert the wired measurements to wireless messages for almost unlimited application possibilities.



WIRELESS MODBUS MIRAMESH

Wireless Modbus technology allows the creation of a wireless Modbus RTU network that maintains the standardization of the protocol. By converting the Modbus signals to a wireless MiraMesh network, it is possible to send your range of Modbus measurement messages wirelessly with low latency. This option significantly reduces the need for control cables in your Modbus installations, saving valuable time and costs in installation planning, cabling work, daisy-chaining, and troubleshooting. A wireless Modbus system is also an excellent choice for Modbus projects where cables are not wanted or are impossible to use.

MiraMesh network utilizes the latest wireless technology innovations for extreme reliability even in the most challenging radio environments. The wireless Modbus bridge, used for conversion, can be configured either as a gateway connected to the Modbus client or as a node connected to the Modbus server with cables. The Wireless Modbus network can consist of up to 100 nodes, and it utilizes the international license-free ISM band at 2.4 GHz.



MiraMesh

Modbus

WIRELESS MODBUS BRIDGE

Modbus

W-Modbus is designed to convert the communication of Modbus RTU devices to wireless communication. The device supports up to 100 devices in one Modbus network.

Power supply	24 Vac/dc, < 2.5 VA
Frequency	2.45 GHz, ISM band (2400...2483 MHz)
Supply output	24 Vac/dc, < 10 VA
IP protection class	IP40
Ambient temperature	-20...55 °C
Ambient humidity	10...95 %rH
Product dimensions	86 x 86 x 26 mm



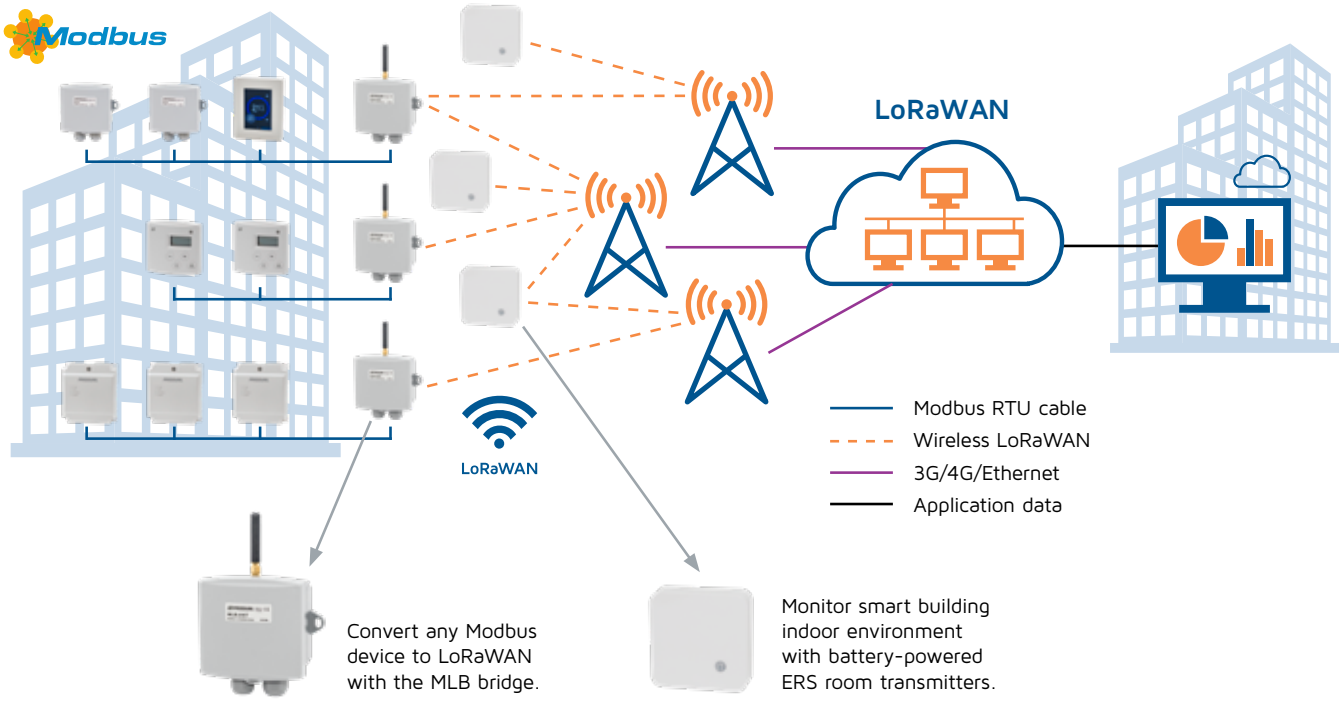
TYPE	ART. NO.	
W-Modbus	50201W0000	wireless Modbus bridge

WIRELESS LoRaWAN

Produal's wireless LoRaWAN selection offers transmitters for your long-range wireless network. LoRaWAN is a Low Power, Wide Area (LPWA) networking protocol designed to wirelessly connect all kinds of devices to the internet in regional, national, or global networks. It is one of the leading IoT (Internet of Things) technologies for wireless communication.

With our Modbus LoRaWAN bridge, it is easy to connect Produal or 3rd party Modbus measurement and control devices to the LoRaWAN network by converting Modbus RTU messages to wireless LoRaWAN communication, and vice versa. The MLB bridge acts as a Modbus master device and can read and write 32 freely configured Modbus registers via Modbus RTU bus, supporting two-direction communication. Commissioning is done conveniently with the Produal MyTool® mobile application, where you'll find ready description files of the most common Produal Modbus devices.

Additionally, the wireless LoRaWAN room transmitter selection fully covers your various battery-powered measurement needs for humidity, CO_2, light, and sound, as well as occupancy detection.



WIRELESS MODBUS LORAWAN BRIDGE

LoRaWAN Modbus

3

MLB is a Class A LoRaWAN device that can operate in a public or private network. MLB is designed for converting Modbus RTU messages to wireless LoRaWAN messages and vice versa. The device functions as a Modbus master and it can read and write up to 32 registers via Modbus RTU bus. The slave device registers can be configured freely. Up to 16 Modbus slave devices can be connected to MLB and up to 32 registers can be read and written in total. MLB can be connected to any Modbus RTU slave device, and it supports two-way communication.



Power supply	10...30 Vac/dc, 30 mA
Frequency	863...870 MHz (868 MHz)
IP protection class	IP54, cable downwards
Cable gland	2 X M16
Ambient temperature	-5...50 °C
Ambient humidity	0...95 %rH
Product dimensions	106 x 102 x 46 mm

TYPE	ART. NO.	
MLB	5010100000	wireless Modbus LoRaWAN bridge, internal antenna
MLB-ANT	5010200000	wireless Modbus LoRaWAN bridge, external antenna
TOOLS		
MYT-Andr	5100010000	Free Android application for configuring and commissioning of Produal PUMP® devices.

WIRELESS LORAWAN ROOM TRANSMITTERS

LoRaWAN

Battery-operated wireless ERS LoRaWAN transmitters are designed for measuring indoor temperature, humidity, CO_2, light, sound and occupancy.



Power supply	2 x 3.6 V lithium battery
Frequency	863...870 MHz (868 MHz)
Temperature measurement range	0...50 °C
Humidity measurement range	0...100 %rH
Light level range	4...2000 lx
Temperature measurement accuracy	±0.2 °C
Humidity measurement accuracy	±2 %rH (10...90 %rH, 25 °C)
Light level accuracy	±10 lx
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Product dimensions	86 x 86 x 27 mm

TYPE	ART. NO.	
ERS2	50301W0L00	wireless LoRaWAN transmitter, °C, %rH and light measurement, PIR
ERS2 Lite	50301W0M00	wireless LoRaWAN transmitter, °C and %rH
ERS2 Eye	50301W0K00	wireless LoRaWAN transmitter, °C, %rH and light measurement, PIR and infrared
ERS2 CO2	50301W0I00	wireless LoRaWAN transmitter, °C, %rH, CO_2 and light measurement, PIR
ERS2 Sound	50301W0J00	wireless LoRaWAN transmitter, °C, %rH, sound level and light measurement, PIR
ERS Voc	50301W0600	wireless LoRaWAN transmitter, °C, %rH, VOC and light measurement, PIR

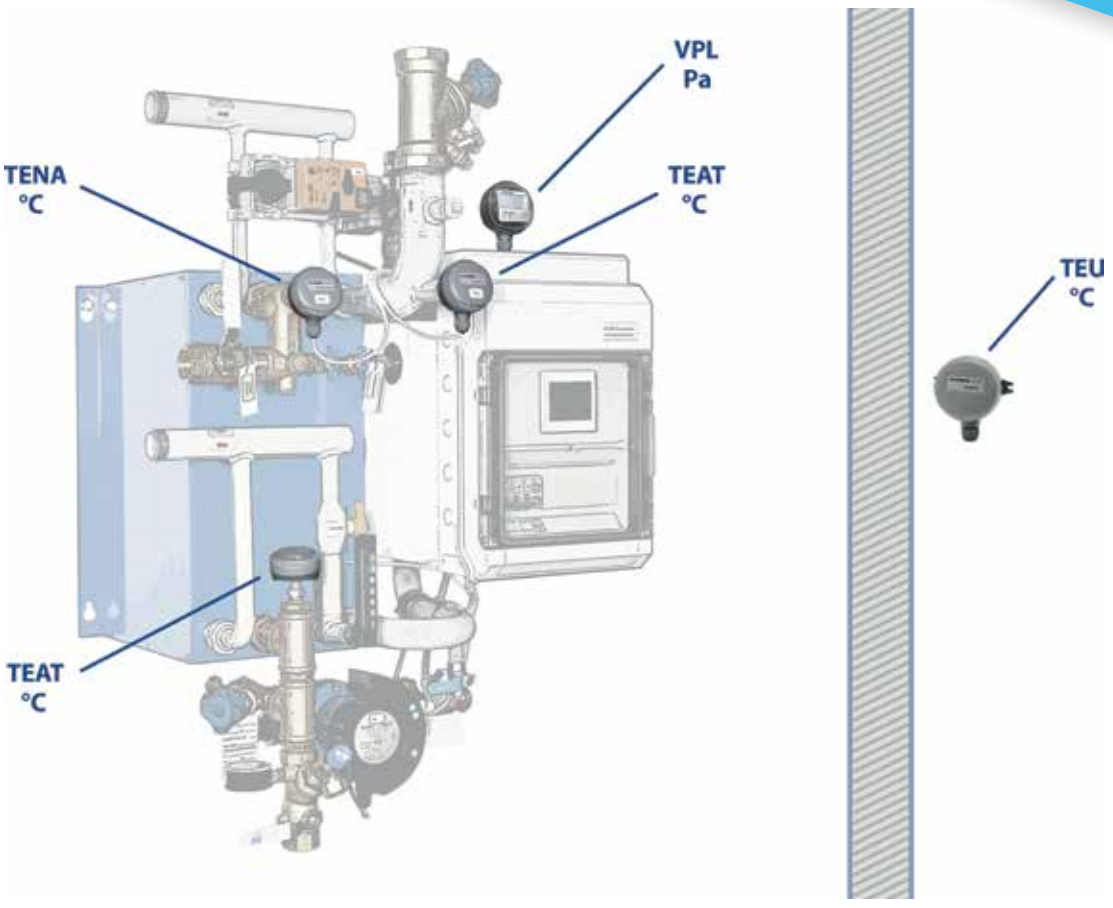
Contact our sales for other LoRAWAN products.

TEMPERATURE MEASUREMENT

Comprehensive range of temperature sensors for different applications in buildings' control and heating, cooling and air-conditioning systems. Thanks to the unique housing design, the sensors are easy to install, which offers major advantages during commissioning. Our sensor range covers the most commonly used passive temperature sensor elements and transmitters. Versatile installation options covering ducts, pipes, construction, ground, room and exterior.

- Wide range of HVAC temperature measurements
- Sensor element options include PT, NTC and NI series
- On transmitters 0...10 V, 4...20 mA
- Heating / cooling control
- Modbus communication with override feature





TEMPERATURE SENSOR SELECTION GUIDE

Product family		Measurement point									
Type	Page	Room	Ventilation duct	Surface	Cable sensor	Water pipe	Outdoor	Combustion gases	Floor	Ground	IP class
TEAT	95		• [1]			• [2]					IP54
TEHR	124...125	•									IP20
TEIK	122			•							IP20
TEK	108		•								IP54
TEKA	110		•								IP54
TEKHA	107		•								IP67
TEKV	99					•					IP54
TEKY	115...119				•						IP67
TEL	121				•				•		IP54
TEL-5M	121				•				•		IP68
TEM	122				•					•	IP54
TENA	97					•					IP54
TEP	103			•							IP54
TEPK	105			•							IP54
TES [3]	130	•					•				IP67
TESK	113							•			IP54
TEU	128						•				IP54
TEV	101					•					IP54

[1] Duct flange (MT4270) needed

[2] Sensor pocket (e.g. AT 80) needed

[3] Rugged temperature sensor specifically designed for harsh environment, e.g. sauna, cold rooms and dirty or dusty industrial environment

TEMPERATURE TRANSMITTERS WITH CONTROL OUTPUT

NOTE: Check the product pages for more information.		Product families														
		LLK, LUK	RTE-BAC	TEAT	TEHR	TEK	TEKA	TEKV	TEKY4	TEKY6S	TEKY6	TENA	TEP	TEPK	TEU	TEV
Control output	4...20 mA	•		•	•	•	•	•	•	•	•	•	•	•	•	•
	0...10 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Function	Control stages	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Control modes	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI	P/PI
	Cooling control	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Heating control	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Light level control															
	Modbus RTU			•	•	•	•	•	•	•	•	•	•	•	•	
	Modbus override			•	•	•	•	•	•	•	•	•	•	•	•	
	BACnet MS/TP		•													
	Page	131	127	96	126	109	111	100	116	118	120	98	104	106	129	102

TEMPERATURE TRANSMITTER SELECTION GUIDE

Product		Measurement point								Outputs				
Type	Page	Room	Ventilation duct	Surface	Cable sensor	Water pipe	Outdoor	Combustion gases	IP class	V	mA	Modbus	BACnet	controller
LLK V2	131	Depends on the connected external sensor.							IP54		•			•
LUK V2	131	Depends on the connected external sensor.							IP54	•				•
RTE-BAC	127	•							IP20	•			•	•
TEAT LU	96		• [1]			• [2]			IP54	•				•
TEAT LL	96		• [1]			• [2]			IP54		•			•
TEAT-M	96		• [1]			• [2]			IP54	•		•		•
TEHR LU	126	•							IP20	•				•
TEHR LL	126	•							IP20		•			•
TEHR-M	126	•							IP20	•		•		•
TEK LU	109		•						IP54	•				•
TEK LL	109		•						IP54		•			•
TEK-M	109		•						IP54	•		•		•
TEKA LU	111		•						IP54	•				•
TEKA LL	111		•						IP54		•			•
TEKA-M	111		•						IP54	•		•		•
TEKV LU	100					•			IP54	•				•
TEKV LL	100					•			IP54		•			•
TEKV-M	100					•			IP54	•		•		•
TEKYx LU	116				•				IP54/IP67	•				•
TEKYx LL	116				•				IP54/IP67		•			•
TEKYx-M	116				•				IP54/IP67	•		•		•
TENA LU	98					•			IP54	•				•
TENA LL	98					•			IP54		•			•
TENA-M	98					•			IP54	•		•		•
TEP LU	104			•					IP54	•				•
TEP LL	104			•					IP54		•			•
TEP-M	104			•					IP54	•		•		•
TEPK LU	106			•					IP54	•				•
TEPK LL	106			•					IP54		•			•
TEPK-M	106			•					IP54	•		•		•
TESK LU	114							•	IP54	•				
TESK LL	114							•	IP54		•			
TEU LU	129						•		IP54	•				•
TEU LL	129						•		IP54		•			•
TEU-M	129						•		IP54	•		•		•
TEV LU	102					•			IP54	•				•
TEV LL	102					•			IP54		•			•

[1] Duct flange (MT4270) needed

[2] Sensor pocket (e.g. AT 80) needed

HEATING/COOLING WATER SENSORS

TEAT temperature sensors are designed for measuring heating and cooling water temperatures in HVAC automation systems. The sensors can also be used for air temperature measurements from ventilation ducts, for example.

°C



Temperature measurement response time	5.0 s
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Ambient temperature	0...60 °C
Mounting	water applications: with Produal pocket (R½"), air applications: with MT4270 flange
Mounting depth	80 mm; 50, 100, 150, 200, 250, 300, 350 and 450 mm mounting depths also available. To order these sensors, add the depth to the product type (e.g. TEAT PT 100-300).
Materials	PBT, PC, PA, acid proof steel

TYPE	ART. NO.	
TEAT PT 100	1173070	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEAT PT 1000	1174070	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEAT NTC 1.8	117E070	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEAT NTC 10	1175070	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEAT NTC 10-C	117M070	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEAT NTC 20	1176070	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEAT NI 1000	117C070	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEAT NI 1000-LG	1178070	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEAT KP 10	117J070	LM235Z, 10 mV/K, 2,98 V / 25 °C
OPTIONS		
MT4270	MT4270	duct flange (6 mm)

POCKETS (PRESSURE RATING = PN16)

	TEAT mounting depth								
Pocket material	**50**	**80**	**100**	**150**	**200**	**250**	**300**	**350**	**450**
Stainless steel AISI 300	**AT 50** 1170011	**AT 80** 1170010							
Brass MS 362	**ATM 50** 1170031	**ATM 80** 1170030	**ATM 100** 1170037	**ATM 150** 1170032	**ATM 200** 1170033	**ATM 250** 1170034	**ATM 300** 1170038	**ATM 350** 1170035	**ATM 450** 1170036
Acid proof steel AISI 316L		**ATH 80** 1170020	**ATH 100** 1170027	**ATH 150** 1170022	**ATH 200** 1170023	**ATH 250** 1170024	**ATH 300** 1170021	**ATH 350** 1170025	**ATH 450** 1170026

HEATING/COOLING WATER TRANSMITTERS

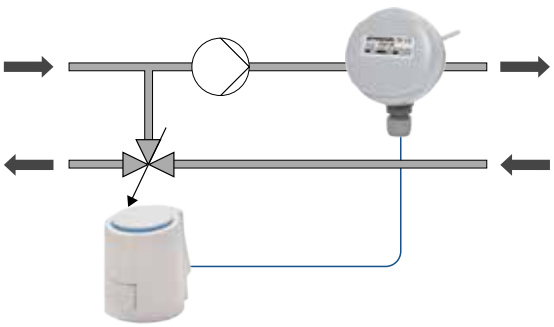
TEAT temperature transmitters are designed for measuring and controlling the temperature of heating and cooling water. The transmitters can also be used for air temperature measurements from ventilation ducts, for example.

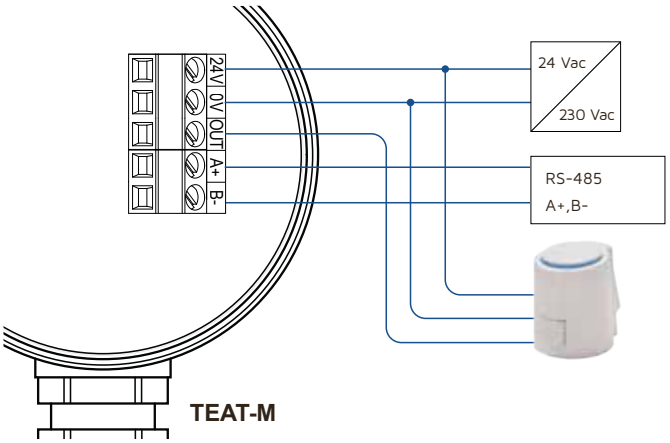
°C



Power supply	15...35 Vdc
Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Ambient temperature	0...60 °C
Mounting	water applications: with Produal pocket (R½"), air applications: with MT4270 flange
Mounting depth	80 mm; 50, 100, 150, 200, 250, 300, 350 and 450 mm mounting depths also available. To order these sensors, add the depth to the product type (e.g. TEAT-M-300)
Materials	PBT, PC, PA, acid proof steel

TYPE	ART. NO.	
TEAT LL	1177070	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEAT LU	1179070	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEAT-M	117Z070	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TE-N V2	1170250	display option for the transmitters
MT4270	MT4270	duct flange (6 mm)
TOOLS		
ML-SER	1139010	transmitter commissioning tool





HOT DOMESTIC WATER SENSORS

TENA sensors are designed for measuring hot domestic water temperatures with fast response.

°C

Temperature measurement response time	2.5 s
Probe	Ø 4.1 x 80 / 50 / 210 mm
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	R ½"
Mounting depth	80 mm. 50 and 210 mm mounting depths also available. To order these sensors, add the depth to the product type (e.g. TENA PT 100-210).
Pressure rating	PN16
Materials	PBT, PC, PA, stainless steel



TYPE	ART. NO.	
TENA PT 100	1173050	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, probe 80 mm
TENA PT 100-50	1173051	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, probe 50 mm
TENA PT 100-210	1173052	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, probe 210 mm
TENA PT 1000	1174050	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, probe 80 mm
TENA PT 1000-50	1174051	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, probe 50 mm
TENA PT 1000-210	1174052	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, probe 210 mm
TENA NTC 1.8	117E050	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C, probe 80 mm
TENA NTC 1.8-50	117E051	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C, probe 50 mm
TENA NTC 1.8-210	117E052	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C, probe 210 mm
TENA NTC 2.2	1172050	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C, probe 80 mm
TENA NTC 10	1175050	10 kΩ / 25 °C, accuracy ±0,2 °C / 25 °C, probe 80 mm
TENA NTC 10-50	1175051	10 kΩ / 25 °C, accuracy ±0,2 °C / 25 °C, probe 50 mm
TENA NTC 10-210	1175052	10 kΩ / 25 °C, accuracy ±0,2 °C / 25 °C, probe 210 mm
TENA NTC 10-AN	117H050	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C, probe 80 mm
TENA NTC 10-AN-50	117H051	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C, probe 50 mm
TENA NTC 10-C	117M050	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C, probe 80 mm
TENA NTC 10-KB	117B050	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C, probe 80 mm
TENA NTC 20	1176050	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, probe 80 mm
TENA NTC 20-50	1176051	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, probe 50 mm
TENA NTC 20-210	1176052	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, probe 210 mm
TENA NI 1000	117C050	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C, probe 80 mm
TENA NI 1000-LG	1178050	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C, probe 80 mm
TENA NI 1000-LG-50	1178051	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C, probe 50 mm
TENA NI 1000-LG-210	1178052	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C, probe 210 mm
TENA T1	117V050	2226 Ω / 0 °C, accuracy ±0.4 °C / 0 °C, probe 80 mm
TENA T1-50	117V051	2226 Ω / 0 °C, accuracy ±0.4 °C / 0 °C, probe 50 mm

HOT DOMESTIC WATER TRANSMITTERS

TENA temperature transmitters are designed for measuring and controlling hot domestic water temperature.

°C

Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Probe	Ø 4.1 x 80 / 50 / 120 / 210 mm
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	R ½"
Materials	PBT, PC, PA, acid proof steel



TYPE	ART. NO.	
TENA LL	1177050	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA, probe 80 mm
TENA LL-50	1177051	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA, probe 50 mm
TENA LL-50-N	1177051N00	2-wire transmitter/controller with display, supply 15...35 Vdc, output 4...20 mA, probe 50 mm
TENA LL-120	1177052	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA, probe 120 mm
TENA LL-210	1177053	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA, probe 210 mm
TENA LU	1179050	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TENA LU-N	1179050N00	3-wire transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA
TENA LU-50	1179051	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA, probe 50 mm
TENA LU-50-N	1179051N00	3-wire transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA
TENA LU-120	1179052	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA, probe 120 mm
TENA LU-210	1179053	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA, probe 210 mm
TENA-M	117Z050	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA, probe 80 mm
TENA-M-50	117Z051	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA, probe 50 mm
TENA-M-210	117Z052	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA, probe 210 mm

TOOLS

ML-SER	1139010	transmitter commissioning tool

FROST GUARD SENSORS

TEKV sensors are designed for frost protection and for applications with fast response.

°C

Temperature measurement response time	2.5 s
Probe	Ø 4 x 200 / 400 mm
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	R ¼"
Mounting depth	< 200 mm (also available < 400 mm)
Pressure rating	PN16
Materials	PBT, PC, PA, stainless steel, brass



TYPE	ART. NO.	
TEKV PT 100	1173120	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C
TEKV PT 1000	1174120	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C
TEKV PT 1000-400	1174121	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, probe 400 mm
TEKV NTC 1.8	117E120	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C
TEKV NTC 2.2	1172120	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C
TEKV NTC 10	1175120	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C
TEKV NTC 10-400	1175121	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, probe 400 mm
TEKV NTC 10-AN	117H120	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C
TEKV NTC 10-C	117M120	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C
TEKV NTC 10-KB	117B120	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C
TEKV NTC 20	1176120	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C
TEKV NI 1000	117C120	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C
TEKV NI 1000-LG	1178120	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C

FROST GUARD TRANSMITTERS

TEKV temperature transmitters are designed for measuring and controlling air heater radiator temperature in frost protection applications.

°C



Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Probe	Ø 4 x 200 / 400 mm
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable downwards
Cable gland	M16
Mounting	R ¼"
Pressure rating	PN16
Materials	PBT, PC, PA, stainless steel, brass

TYPE	ART. NO.	
TEKV LL	1177120	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEKV LU	1179120	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEKV LU-N	1179120N00	3-wire transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA
TEKV-M	117Z120	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TE-N V2	1170250	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool

FROST GUARD SENSORS

TEV sensors are designed for frost protection and for applications with fast response.

°C

Temperature measurement response time	2.5 s
Probe	Ø 4 x 200 / 400 mm
Mounting	R ¼"
Mounting depth	< 200 mm (also available < 400 mm)
Pressure rating	PN16
Materials	acid proof steel, brass
Cable	Ø 3.2 mm x 2 m (LIYY 2 x 0.14 mm²)



TYPE	ART. NO.	
TEV PT 100	1173020	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEV PT 1000	1174020	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEV PT 1000-400	1174021	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, probe 400 mm, (Honeywell, Danfoss equivalent)
TEV NTC 1.8	117E020	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEV NTC 1.8-400	117E021	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C, probe 400 mm, (TAC/Schneider equivalent)
TEV NTC 2.2	1172020	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEV NTC 10	1175020	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEV NTC 10-400	1175021	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, probe 400 mm, (Trend, Distech equivalent)
TEV NTC 10-KB	117B020	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEV NTC 10-AN	117H020	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEV NTC 10-C	117M020	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEV NTC 20	1176020	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEV NTC 20-400	1176021	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, probe 400 mm, (Honeywell equivalent)
TEV NI 1000	117C020	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEV NI 1000-LG	1178020	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEV NI 1000-LG-400	1178024	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C, probe 400 mm, (Siemens equivalent)

FROST GUARD TRANSMITTERS

°C

TEV temperature transmitters are designed for measuring and controlling air heater radiator temperature in frost protection applications. The transmitters are suitable also for domestic water applications due the short time constant.

Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Probe	Ø 4 x 200 / 400 mm
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable downwards
Cable gland	M16
Mounting	probe: R ¼", housing: with screws
Pressure rating	PN16
Materials	acid proof steel, brass, PC plastic



TYPE	ART. NO.	
TEV LL	1177020	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEV LU	1179020	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TEU-N V2	1170270	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool

STRAP-ON SENSORS

TEP sensors are designed for pipe strap-on installations.

°C

Temperature measurement range	-50...120 °C
Probe	41 x 16 x 6 mm
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	by a band on the pipe (diam. 40...90 mm)
Materials	PBT, PC, PA, zink casting



TYPE	ART. NO.	
TEP PT 100	1173080	100 Ω / 0 °C, accuracy ±0,3 °C / 0 °C, EN 60751/B
TEP PT 1000	1174080	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEP NTC 1.8	117E080	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEP NTC 2.2	1172080	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEP NTC 10	1175080	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEP NTC 10-AN	117H080	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEP NTC 10-C	117M080	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C
TEP NTC 10-KB	117B080	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEP NTC 20	1176080	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEP NI 1000	117C080	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEP NI1000-LG	1178080	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEP KP 10	117J080	LM235Z, 10 mV/K, 2.98 V / 25 °C
TEP T1	117V080	2226 Ω / 0 °C, accuracy ±0.4 °C / 0 °C

STRAP-ON TRANSMITTERS

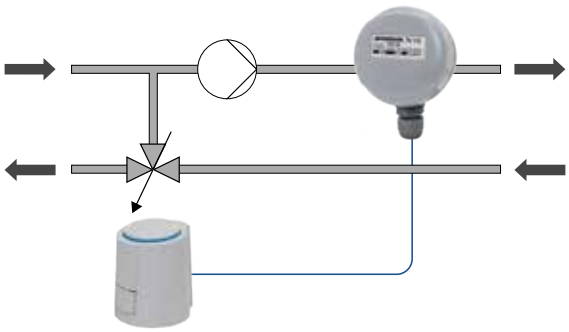
°C

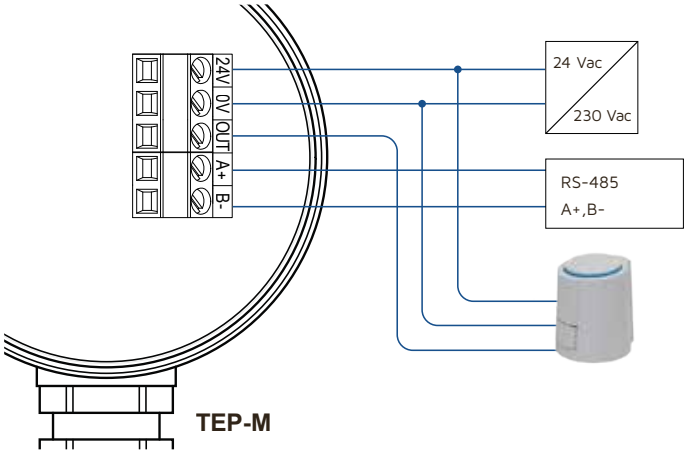
TEP temperature transmitters are designed for pipe strap-on installations. Transmitters can be used for measuring and controlling temperature.

Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Probe	41 x 15 x 6 mm
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	by a band on the pipe (diam. 40...90 mm)
Materials	PBT, PC, PA, zink casting



TYPE	ART. NO.	
TEP LL	1177080	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEP LU	1179080	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEP-M	117Z080	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TE-N V2	1170250	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool





STRAP-ON SENSORS

TEPK sensors are designed for pipe strap-on installations.

°C

Temperature measurement range	-20...80 °C
Probe	41 x 15 x 6 mm
IP protection class	IP54
Mounting	by a plastic band on the pipe (Ø10...100 mm)
Materials	probe: zinc casting
Cable	Ø 3.2 mm x 2 m (LIYY 2 x 0.14 mm²)



TYPE	ART. NO.	
TEPK PT 100	1173240	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEPK PT 1000	1174240	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEPK NTC 1.8	117E240	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEPK NTC 2.2	1172240	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEPK NTC 10	1175240	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEPK NTC 10-AN	117H240	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEPK NTC 10-C	117M240	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEPK NTC 10-KB	117B240	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEPK NTC 20	1176240	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEPK NI 1000	117C240	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEPK NI 1000-LG	1178240	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEPK T1	117V240	2226 Ω / 0 °C, accuracy ±0.4 °C / 0 °C

STRAP-ON TRANSMITTERS

4

TEPK temperature transmitters are designed for pipe strap-on installations. Transmitters can be used for measuring and controlling temperature.

°C



Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Probe	41 x 15 x 6 mm
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable downwards
Cable gland	M16
Mounting	probe: by a plastic band on the pipe (Ø10...100 mm), housing: by screws
Materials	PBT, PC, PA, zink casting

TYPE	ART. NO.	
TEPK LL	1177240	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEPK LU	1179240	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEPK-M	117Z240	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TEU-N V2	1170270	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool

DUCT SENSORS

TEKHA sensors are designed for measuring temperatures inside small ventilation ducts.

°C



Temperature measurement range	-50...70 °C
Probe	Ø 6 mm x 100 mm, acid proof steel
IP protection class	IP67
Mounting	with flange, adjustable < 90 mm
Mounting depth	< 90 mm
Materials	probe: acid proof steel
Cable	Ø 4.7 mm x 2 m (LIYY 2 x 0.5 mm²), other lengths also available

TYPE	ART. NO.	
TEKHA PT 100	1173290	100 Ω / 0 °C, accuracy ±0,3 °C / 0 °C, EN 60751/B
TEKHA PT 1000	1174290	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEKHA NTC 1.8	117E290	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEKHA NTC 2.2	1172290	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEKHA NTC 10	1175290	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEKHA NTC 10-AN	117H290	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEKHA NTC 10-C	117M290	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEKHA NTC 20	1176290	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEKHA NI 1000	117C290	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEKHA NI 1000-LG	1178290	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEKHA KP 10	117J290	LM235Z, 10 mV/K, 2,98 V / 25 °C

DUCT SENSORS

TEK sensors are designed for measuring temperatures inside ventilation ducts.

°C

Temperature measurement range	-50...70 °C
Probe	Ø 8 x 200 / 500 mm
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	with flange
Mounting depth	adjustable < 200 mm, other mounting depths also available
Materials	PBT, PC, PA, stainless steel



TYPE	ART. NO.	
TEK PT 100	1173040	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEK PT 1000	1174040	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEK PT 1000-500	1174041	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, probe length is 500 mm
TEK NTC 1.8	117E040	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEK NTC 2.2	1172040	2252 Ω / 25 °C, accuracy ±0,25 °C / 25 °C (Johnson equivalent)
TEK NTC 10	1175040	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEK NTC 10-500	1175041	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, probe length is 500 mm
TEK NTC 10-AN	117H040	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEK NTC 10-C	117M040	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEK NTC 10-KB	117B040	5025 Ω / 25 °C, accuracy ±0,5 °C / 25 °C
TEK NTC 20	1176040	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEK NI 1000	117C040	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEK NI 1000-LG	1178040	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEK KP 10	117J040	LM235Z, 10 mV/K, 2,98 V / 25 °C
TEK T1	117V040	2226 Ω / 0 °C, accuracy ±0.4 °C / 0 °C

DUCT TRANSMITTERS

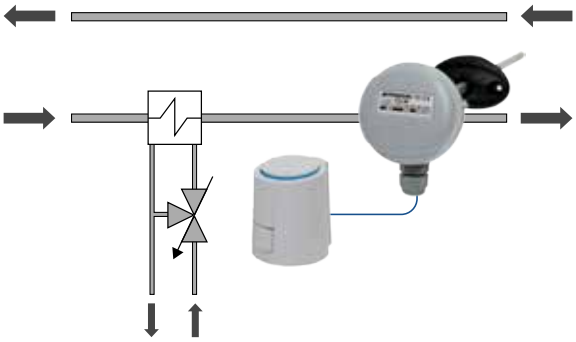
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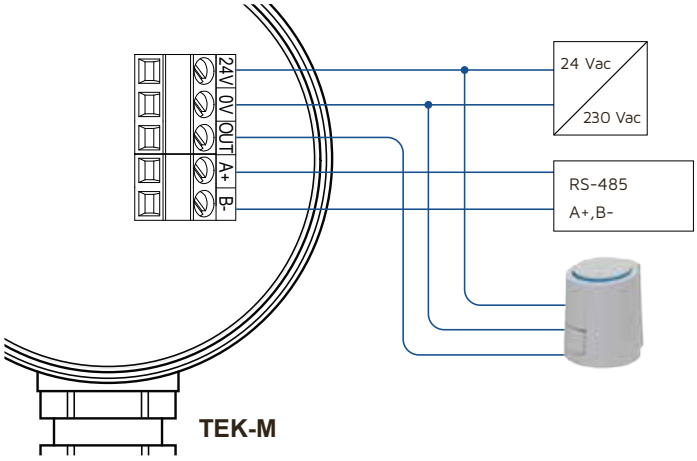
TEK temperature transmitters are designed for automatic ventilating systems to measure and control duct temperatures.

Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Probe	Ø 8 x 200 mm
Probe length	200 mm
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	with flange
Materials	PBT, PC, PA, stainless steel



TYPE	ART. NO.	
TEK LL	1177040	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEK LL-N	1177040N00	2-wire transmitter/controller with display, supply 15...35 Vdc, output 4...20 mA
TEK LU	1179040	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEK LU-N	1179040N00	3-wire transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA
TEK-M	117Z040	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEK-M-N	117Z040N00	Modbus transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TE-N V2	1170250	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool





DUCT SENSORS

TEKA sensors are designed for detecting temperatures inside large ducts. Sensor's mechanical construction ensures accurate average temperature measurement.

°C



Temperature measurement range	-50...70 °C
Probe	Ø 10 x 3000 mm
Probe length	3 m
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	with flange and springs
Materials	PBT, PC, PA, stainless steel

TYPE	ART. NO.	
TEKA PT 100	1173130	100 Ω / 0 °C, accuracy ±0,3 °C / 0 °C, EN 60751/B
TEKA PT 1000	1174130	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEKA NTC 1.8	117E130	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEKA NTC 2.2	1172130	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEKA NTC 10	1175130	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEKA NTC 10-AN	117H130	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEKA NTC 10-C	117M130	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEKA NTC 10-KB	117B130	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEKA NTC 20	1176130	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEKA NI 1000	117C130	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEKA NI 1000-LG	1178130	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)

DUCT TRANSMITTERS

°C

TEKA averaging temperature transmitters are designed for measuring and controlling large air duct temperatures. Transmitter's mechanical construction ensures accurate average temperature measurement.

Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Probe	Ø 10 x 3000 mm
Probe length	3 m
Sensor	Pt1000 EN 60751/B
Current output	4...20 mA (temperature or contoller)
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	with flange and springs
Materials	PBT, PC, PA, stainless steel



TYPE	ART. NO.	
TEKA LL	1177130	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEKA LU	1179130	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEKA-M	117Z130	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TE-N V2	1170250	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool

DUCT SENSORS

TEKA-500 sensors are designed for detecting temperatures inside ventilation ducts. Sensor detects the average temperature with 4 sensor elements.

°C



Temperature measurement range	-50...70 °C
Probe	Ø 8.2 x 497 mm
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	with flange
Materials	PBT, PC, PA, stainless steel

TYPE	ART. NO.	
TEKA PT 100-500	1173170	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEKA PT 1000-500	1174170	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEKA NTC 1.8-500	117E170	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEKA NTC 2.2-500	1172170	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEKA NTC 10-500	1175170	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEKA NTC 10-AN-500	117H170	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEKA NTC 10-C-500	117M170	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEKA NTC 10-KB-500	117B170	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEKA NTC 20-500	1176170	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEKA NI 1000-500	117C170	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEKA NI 1000-LG-500	1178170	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)

DUCT TRANSMITTERS

°C

TEKA-500 transmitters are designed for measuring and controlling temperatures inside ventilation ducts. The transmitter measures the average temperature with 4 sensor elements.



Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Probe	Ø 8.2 x 497 mm
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable or probe downwards
Cable gland	M16
Mounting	with flange
Materials	PBT, PC, PA, stainless steel

TYPE	ART. NO.	
TEKA LL-500	1177170	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEKA LU-500	1179170	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEKA-M-500	117Z170	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TE-N V2	1170250	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool

COMBUSTION GAS SENSORS

°C

TESK sensors are designed for measuring combustion gas temperatures.



Temperature measurement range	0...400 °C
Probe	Ø 10 x 265 mm
IP protection class	IP54, cable or probe downwards
Cable gland	PG16
Mounting	R ½" or with flange on order
Mounting depth	< 265 mm
Pressure rating	PN16
Materials	silumin cast

TYPE	ART. NO.	
TESK PT 100	1173160	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TESK PT 1000	1174160	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
OPTIONS		
MT4357	MT4357	duct flange, brass, 10 mm

COMBUSTION GAS TRANSMITTERS

°C

TESK temperature transmitters are designed for temperature measurement in combustion gas from boilers and boiler plants.

Temperature measurement range	0...400 °C
Temperature measurement accuracy	±0.5 °C
Probe	Ø 10 x 265 mm
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable or probe downwards
Cable gland	PG16
Mounting	R ½" or with flange on order
Pressure rating	PN16
Materials	silumin cast



TYPE	ART. NO.	
TESK LL 0/400	1177160	2-wire transmitter, supply 15...35 Vdc, output 4...20 mA
TESK LU 0/400	1179160	3-wire transmitter, supply 24 Vac/dc, output 0...10 V < 2 mA

OPTIONS

MT4357	MT4357	duct flange, brass, 10 mm

CABLE TEMPERATURE SENSORS

TEKY4 temperature sensors are designed for measuring temperatures in automatic HVAC systems. The rolled stainless steel sleeve provides good protection against water and dust.

°C

Temperature measurement range	-30...80 °C
Probe	Ø 4 mm x 30 mm, stainless steel
IP protection class	IP67
Materials	PVC, stainless steel
Cable	Ø 3.2 mm x 2.3 m (LIYY 2 x 0.14 mm²)
Cable length	2,3 m



TYPE	ART. NO.	
TEKY4 PT 100	1173330	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEKY4 PT 1000	1174330	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEKY4 NTC 1.8	117E330	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEKY4 NTC 2.2	1172330	2252 Ω / 25 °C, accuracy ±0,25 °C / 25 °C (Johnson equivalent)
TEKY4 NTC 10	1175330	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEKY4 NTC 10-5m	1175331	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, cable 5 m (Trend, Distech equivalent)
TEKY4 NTC 10-AN	117H330	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEKY4 NTC 10-C	117M330	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEKY4 NTC 10-KB	117B330	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEKY4 NTC 20	1176330	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEKY4 NI 1000	117C330	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEKY4 NI 1000-LG	1178330	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEKY4 T1	117V330	2226 Ω / 0 °C, accuracy ±0.4 °C / 0 °C

CABLE TEMPERATURE TRANSMITTERS

°C

TEKY4 temperature transmitters are designed for measuring and controlling temperatures in automatic HVAC systems. The rolled stainless steel sleeve provides good protection against water and dust for the sensor.

Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C (0 °C)
Probe	Ø 4 mm x 30 mm, stainless steel
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable downwards
Cable gland	M16
Mounting	housing: with screws on wall, external lugs
Materials	PBT, PC, PA



TYPE	ART. NO.	
TEKY4 LL	1177330	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEKY4 LU	1179330	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEKY4-M	117Z330	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TEU-N V2	1170270	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool

CABLE TEMPERATURE SENSORS

°C

TEKY6S temperature sensors are designed for detecting temperatures in automatic HVAC systems. The rolled stainless steel sleeve provides good protection against water and dust.

Temperature measurement range	-50...150 °C
Probe	Ø 6 mm x 45 mm, stainless steel
IP protection class	IP67
Materials	silicone, stainless steel
Cable	Ø 4.8 mm x 2.3 m (SIHF 2 x 0.25 mm²)
Cable length	2,3 m



TYPE	ART. NO.	
TEKY6S PT 100	1173340	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEKY6S PT 1000	1174340	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEKY6S NTC 1.8	117E340	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEKY6S NTC 2.2	1172340	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEKY6S NTC 10	1175340	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEKY6S NTC 10-AN	117H340	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEKY6S NTC 10-C	117M340	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEKY6S NTC 10-KB	117B340	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEKY6S NTC 20	1176340	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEKY6S NI 1000	117C340	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEKY6S NI 1000-LG	1178340	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)

CABLE TEMPERATURE TRANSMITTERS

TEKY6S temperature transmitters are designed for measuring and controlling temperatures in automatic HVAC systems. The rolled stainless steel sleeve provides good protection against water and dust for the sensor.

°C



Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Probe	Ø 6 mm x 45 mm, stainless steel
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable downwards
Cable gland	M16
Mounting	housing: with screws on wall, external lugs
Materials	PBT, PC, PA

TYPE	ART. NO.	
TEKY6S LL	1177340	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEKY6S LU	1179340	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEKY6S-M	117Z340	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TEU-N V2	1170270	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool

CABLE TEMPERATURE SENSORS

TEKY6 temperature sensors are designed for detecting temperatures in automatic HVAC systems. The rolled stainless steel sleeve provides good protection against water and dust. Cable length is 2.3 m, some models also available with 5 m cable.

°C



Temperature measurement range	-30...80 °C
Probe	Ø 6 mm x 45 mm, stainless steel
IP protection class	IP67
Materials	PVC, stainless steel

TYPE	ART. NO.	
TEKY6 PT 100	1173320	100 Ω / 0 °C, accuracy ±0,3 °C / 0 °C, EN 60751/B
TEKY6 PT 100-5m	1173320-5M	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B, cable 5 m
TEKY6 PT 1000	1174320	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEKY6 NTC 1.8	117E320	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEKY6 NTC 2.2	1172320	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEKY6 NTC 10	1175320	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEKY6 NTC 10-5m	1175321	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, cable 5 m (Trend, Distech equivalent)
TEKY6 NTC 10-AN	117H320	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEKY6 NTC 10-C	117M320	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEKY6 NTC 10-KB	117B320	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEKY6 NTC 20	1176320	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEKY6 NI 1000	117C320	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEKY6 NI 1000-LG	1178320	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEKY6 KP 10	117J320	LM335Z, 2,98 V / 25 °C, 10 mV/K, accuracy ±0.5 °C / 25 °C
TEKY6 T1	117V320	2226 Ω / 0 °C, accuracy ±0.4 °C / 0 °C

CABLE TEMPERATURE TRANSMITTERS

TEKY6 temperature transmitters are designed for measuring and controlling temperatures in automatic HVAC systems. The rolled stainless steel sleeve provides good protection against water and dust for the sensor.

°C



Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C (0 °C)
Probe	Ø 6 mm x 45 mm, stainless steel
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable downwards
Cable gland	M16
Mounting	housing: with screws on wall, external lugs
Materials	PBT, PC, PA

TYPE	ART. NO.	
TEKY6 LL	1177320	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEKY6 LU	1179320	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEKY6-M	117Z320	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TEU-N V2	1170270	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool

CABLE TEMPERATURE SENSORS

TE cable temperature sensors are designed for measuring temperatures in automatic HVAC systems. The sensor can be used in dry, non-condensing surroundings.

°C



Temperature measurement range	-30...80 °C
Ambient humidity	0...85 %rH
Cable	NTC: 0.05 mm² x 300 mm; PT: 0.08 mm² x 300 mm

TYPE	ART. NO.	
TE PT 100	1173000	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C
TE PT 1000	1174000	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C
TE NTC 10	1175000	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C
TE NTC 20	1176000	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C

CABLE TEMPERATURE SENSORS

°C

TEL sensors are designed for measuring floor temperatures. The sensor is installed in the cable duct inside the floor construction.

Temperature measurement range	-30...80 °C
Probe	Ø 7 mm x 28 mm
IP protection class	IP54
Cable	Ø 4.7 mm x 2.3 m (LIYY 2 x 0,5 mm²)



TYPE	ART. NO.	
TEL PT 100	1173280	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEL PT 1000	1174280	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEL NTC 1.8	117E280	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEL NTC 2.2	1172280	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEL NTC 10-AN	117H280	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEL NTC 10-C	117M280	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEL NI 1000	117C280	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEL NI 1000-LG	11782800	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)

CABLE TEMPERATURE SENSORS

°C

TEL 5M sensors are designed for measuring floor temperatures. The sensor is installed in the cable duct inside the floor construction.

Temperature measurement range	-50...105 °C
Probe	Ø 5 mm x 20 mm
IP protection class	IP68, 1.5 m / 30 min
Cable	Ø 3 mm x 5 m, 2 x AWG24
Cable length	5,0 m



TYPE	ART. NO.	
TEL NTC 10-5m	1175281	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, cable 5 m (Trend, Distech equivalent)
TEL NTC 20-5m	1176281	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, cable 5 m (Honeywell equivalent)

CABLE TEMPERATURE SENSORS

°C

TEM sensors are designed for measuring temperatures in road ramps and street constructions. The sensor must be protected against mechanical stress.

Temperature measurement range	-30...80 °C
Probe	Ø 9 mm
IP protection class	IP54
Cable	Ø 6 mm x 5 m (PUR 2 x 0,75 mm²), other lengths also available



TYPE	ART. NO.	
TEM PT 100	1173310	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEM PT 1000	1174310	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEM NTC 1.8	117E310	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEM NTC 2.2	1172310	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEM NTC 10	1175310	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEM NTC 10-AN	117H310	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEM NTC 10-C	117M310	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEM NTC 20	1176310	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEM NI 1000	117C310	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEM NI 1000-LG	1178310	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)

WINDOW TEMPERATURE SENSOR

°C

TEIK temperature sensor are made for automatic HVAC systems to detect window surface temperatures.

Temperature measurement range	-20...80 °C
Probe	50 x 20 x 8 mm
IP protection class	IP20
Mounting	by adhesive paste
Materials	probe: aluminum
Cable	Ø 3.2 mm x 2 m (LIYY 2 x 0.14 mm²)



TYPE	ART. NO.	
TEIK PT 100	1173220	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEIK PT 1000	1174220	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEIK NTC 1.8	117E220	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEIK NTC 10	1175220	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEIK NTC 20	1176220	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEIK NI 1000-LG	1178220	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)

ROOM TEMPERATURE SENSORS

NEW

room °C

RS room temperature sensor is designed for measuring room temperature in indoor conditions. The sensor is built in a modern design plastic housing with a smooth snap-on cover. The sensor is suitable for surface installation and on a flush mounting box.



Temperature measurement range	-30...70 °C
IP protection class	IP30
Ambient temperature	-30...70 °C
Ambient humidity	0...95 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	PC plastic
Product dimensions	97 x 97 x 26 mm

TYPE	ART. NO.	
RSB-PT 1000	5501B00000	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, black
RSB-PT 1000F015	5501B30000	1000 Ω / 0 °C, accuracy ±0.15 °C / 0 °C, black
RSB-NTC 10	5501B10000	10 kΩ / 25 °C, accuracy ±0.23 °C / 25 °C, black
RSB-NTC 20	5501B20000	20 kΩ / 25 °C, accuracy ±0.21 °C / 25 °C, black
RSB-NI 1000 LG	5501B40000	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Siemens equivalent), black
RS-PT 1000	5501W00000	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, white
RS-PT 1000F015	5501W30000	1000 Ω / 0 °C, accuracy ±0.15 °C / 0 °C, white
RS-NTC 10	5501W10000	10 kΩ / 25 °C, accuracy ±0.23 °C / 25 °C, white
RS-NTC 20	5501W20000	20 kΩ / 25 °C, accuracy ±0.21 °C / 25 °C, white
RS-NI 1000 LG	5501W40000	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Siemens equivalent), white

ROOM TEMPERATURE SENSORS

TEHR sensors are designed for measuring room temperatures.

°C

Temperature measurement range	0...50 °C
IP protection class	IP20
Ambient temperature	0...50 °C
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	87 x 86 x 30 mm



TYPE	ART. NO.	
TEHR PT 100	1173190	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEHR PT 1000	1174190	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEHR NTC 1.8	117E190	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEHR NTC 2.2	1172190	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEHR NTC 10	1175190	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEHR NTC 20	1176190	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEHR NTC 10-AN	117H190	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEHR NTC 10-C	117M190	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEHR NTC 10-KB	117B190	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEHR NI 1000	117C190	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEHR NI 1000-LG	1178190	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEHR KP 10	117J190	LM235Z, 10 mV/K, 2.98 V / 25 °C
TEHR T1	117V190	2226 Ω / 0 °C, accuracy ±0.4 °C / 0 °C

OPTIONS		
TEHR-S	1170080	push button (no / nc) 24 Vac/dc
TEHR-L	1170100	LED 24 V
TEHR-N	1170140	digital display, input 0...10 V = 0...50 °C
TEHR-K5	1170240	5-position rotary switch (1, 2 ,3, 0, A) 24 Vac/dc

ROOM TEMPERATURE SENSORS

°C

TEHR-P sensors are designed for measuring room temperatures and adjusting the temperature setpoint. The potentiometer value and the fitting resistor values can be defined in the order.

Temperature measurement range	0...50 °C
IP protection class	IP20
Ambient temperature	0...50 °C
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	87 x 86 x 32 mm



TYPE	ART. NO.	
TEHR PT 100-P	1173230	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEHR PT 1000-P	1174230	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEHR NTC 1.8-P	117E230	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEHR NTC 2.2-P	1172230	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TEHR NTC 10-P	1175230	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEHR NTC 10-PU	1175350	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C, 0...10 V potentiometer
TEHR NTC 10-AN-P	117H230	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEHR NTC 10-C-P	117M230	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEHR NTC 20-P	1176230	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEHR NI 1000-P	117C230	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEHR NI 1000-LG-P	1178230	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEHR KP 10-P	117J230	LM235Z, 10 mV/K, 2,98 V / 25 °C

OPTIONS		
TEHR-S	1170080	push button (no / nc) 24 Vac/dc
TEHR-L	1170100	LED 24 V
TEHR-N	1170140	digital display, input 0...10 V = 0...50 °C
TEHR-K5	1170240	5-position rotary switch (1, 2 ,3, 0, A) 24 Vac/dc

ROOM TEMPERATURE TRANSMITTERS

°C

TEHR LL (2-wire, 4...20 mA) and TEHR LU (3-wire, 0...10 V) are temperature transmitters for dry room spaces. The output range is selectable. TEHR-M output is available via Modbus and as a 0...10 V signal.



Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Sensor	Pt1000 EN 60751/B
Current output	4...20 mA (temperature or contoller)
IP protection class	IP20
Ambient temperature	0...50 °C
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	87 x 86 x 30 mm

TYPE	ART. NO.	
TEHR LL	1177190	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA
TEHR LL-N	1177191	2-wire transmitter/controller with display, supply 15...35 Vdc, output 4...20 mA
TEHR LL-P	1177230	2-wire transmitter/controller, supply 15...35 Vdc, output 4...20 mA, passive potentiometer
TEHR LU	1179190	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEHR LU-N	1179191	3-wire transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA
TEHR LU-N-P	1179191300	3-wire transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA, passive potentiometer
TEHR LU-P	1179230	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA, passive potentiometer
TEHR LU-PU	1179350	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA, 0...10 V potentiometer
TEHR LU-PU-N	1179351	3-wire transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA, 0...10 V potentiometer
TEHR-M	117Z190	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEHR-M-N	117Z191	Modbus transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA, 0...10 V potentiometer
TEHR-M-PU	117Z350	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA, 0...10 V potentiometer
TEHR-M-PU-N	117Z351	Modbus transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA, 0...10 V potentiometer
OPTIONS		
TEHR-K5	1170240	5-position rotary switch (1, 2 ,3, 0, A) 24 Vac/dc
TEHR-K5R	1170241	5-position rotary switch with resistance output
TOOLS		
ML-SER	1139010	transmitter commissioning tool

ROOM TEMPERATURE TRANSMITTERS

RTE-BAC transmitters are designed for measuring and controlling temperature in dry room spaces. Transmitters have built-in single stage heating/cooling control loops. The transmitters have a RS-485 channel for BACnet MS/TP communication. The transmitter inputs and outputs can also be controlled from the BACnet network making the device an effective I/O module.

°C



Power supply	24 Vac/dc, < 1 VA
Temperature measurement range	0...50 °C
Temperature measurement accuracy	±0.5 °C (25 °C)
Output	3 x 0...10 Vdc, 5 mA, control output included
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic, self-extinguishing
Product dimensions	86 x 120 x 29 mm

Ordering guide		Type	0	1	2	3	4	5	6
0 BACnet room transmitter			6041						
1 Device type	Room temperature transmitter, 1RI, 1DI, 3AO, 2DO	RTE-BAC		M					
2 Display	No display				0				
	Display	-LCD			1				
	Red, yellow and green indicator lights	-AL			2				
3 Setpoint knob / occupancy detection	No setpoint knob or occupancy detection					0			
	Active setpoint knob	-SP				1			
	Passive setpoint knob	-SPR				2			
	Occupancy detection and light level sensor (replaces RI1)	-LL				3			
4 Push buttons	No push buttons						0		
	One push button	-PB					1		
	Two push buttons	-PB2					2		
	Three push buttons	-PB3					3		
	Four push buttons	-PB4					4		
	Push buttons for setpoint	-SPB					5		
	Push buttons for setpoint and one push button	-SPB-PB					6		
	Push buttons for setpoint and two push buttons	-SPB-PB2					7		
5 Inputs / outputs	No inputs / outputs							0	
	Second digital input	-DI2						1	
	Second resistive input (not available with SP/SPR options)	-RI2						2	
	Second digital input and second resistive input (not available with SP/SPR options)	-DI2-RI2						3	
	Two 0...10 Vdc inputs (replaces resistive input)	-AI						5	
	Second digital input and two 0...10 Vdc inputs (replaces resistive input)	-DI2-AI						6	
	Passive temperature sensor (NTC 10)	-TE-NTC10						7	
6 Body colour	White (RAL 9010)								0
	Anthracite grey (RAL 7015)	-GR							B

TOOLS

SW-DCT-USB	1139040	configuration cable

OUTDOOR TEMPERATURE SENSORS

TEU sensors are designed for measuring outdoor temperatures.

°C

Temperature measurement range	-50...50 °C
IP protection class	IP54, cable downwards
Cable gland	M16
Ambient temperature	-50...50 °C
Mounting	with screws on wall, external lugs
Materials	PBT, PC, PA
Product dimensions	89 x 95 x 44 mm



TYPE	ART. NO.	
TEU PT 100	1173090	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TEU PT 1000	1174090	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEU NTC 1.8	117E090	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TEU NTC 2.2	1172090	2252 Ω / 25 °C, accuracy ±0,25 °C / 25 °C (Johnson equivalent)
TEU NTC 10	1175090	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TEU NTC 10-AN	117H090	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TEU NTC 10-C	117M090	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TEU NTC 10-KB	117B090	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TEU NTC 20	1176090	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TEU NI 1000	117C090	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TEU NI 1000-LG	1178090	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TEU KP 10	117J090	LM235Z, 10 mV/K, 2.98 V / 25 °C
TEU T1	117V090	2226 Ω / 0 °C, accuracy ±0.4 °C / 0 °C

OUTDOOR TEMPERATURE TRANSMITTERS

°C

TEU transmitters are designed for measuring outdoor temperatures.

Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Sensor	Pt1000 EN 60751/B
IP protection class	IP54, cable downwards
Cable gland	M16
Ambient temperature	-30...60 °C
Mounting	with screws on wall, external lugs
Materials	PBT, PC, PA
Product dimensions	115 x 115 x 45 mm



TYPE	ART. NO.	
TEU LL	1177090	2-wire transmitter, supply 22...35 Vdc, output 4...20 mA, accuracy ±0,5 °C
TEU LU	1179090	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
TEU-M	117Z090	Modbus transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
OPTIONS		
TEU-N V2	1170270	display option for the transmitters
TOOLS		
ML-SER	1139010	transmitter commissioning tool

INDUSTRIAL TEMPERATURE SENSORS

TES sensors are designed for measuring temperatures in dusty, hot and wet (industrial) spaces.

IP67, °C

Temperature measurement range	-50...120 °C
IP protection class	IP67
Cable gland	PG11
Ambient temperature	-50...120 °C
Mounting	with screws on wall
Materials	Silumin cast
Product dimensions	98 x 90 x 36 mm



TYPE	ART. NO.	
TES PT 100	1173100	100 Ω / 0 °C, accuracy ±0.3 °C / 0 °C, EN 60751/B
TES PT 1000	1174100	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TES NTC 1.8	117E100	1800 Ω / 25 °C, accuracy ±0.3 °C / 25 °C (TAC/Schneider equivalent)
TES NTC 2.2	1172100	2252 Ω / 25 °C, accuracy ±0.25 °C / 25 °C (Johnson equivalent)
TES NTC 10	1175100	10 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Trend, Distech equivalent)
TES NTC 10-AN	117H100	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Schneider/Andover equivalent)
TES NTC 10-C	117M100	10 kΩ / 25 °C, accuracy ±0.25 °C / 25 °C (Carel equivalent)
TES NTC 10-KB	117B100	5025 Ω / 25 °C, accuracy ±0.5 °C / 25 °C (Satchwell equivalent)
TES NTC 20	1176100	20 kΩ / 25 °C, accuracy ±0.2 °C / 25 °C (Honeywell equivalent)
TES NI 1000	117C100	1000 Ω / 0 °C, accuracy ±0.4 °C / 0 °C (Sauter equivalent)
TES NI 1000-LG	1178100	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)
TES KP 10	117J100	LM235Z, 10 mV/K, 2.98 V / 25 °C

TEMPERATURE TRANSMITTERS

°C

LLK V2 and LUK V2 are transmitters for temperature measuring. LLK V2 is a 2-wire transmitter converting the sensor resistance to the 4...20 mA signal. LUK V2 is a 3-wire transmitter converting the sensor signal to the 0...10 V signal. The transmitter needs a separate Pt1000 sensor.



Temperature measurement range	-50...150 °C, -50...50 °C, 0...100 °C, 0...50 °C
Temperature measurement accuracy	±0.5 °C
Sensor	PT 1000 EN60751/B (not included)
IP protection class	IP54, cable downwards
Cable gland	2 X M16
Ambient temperature	-30...60 °C
Product dimensions	106 x 102 x 46 mm

TYPE	ART. NO.	
LLK V2	1182230	2-wire transmitter/controller, supply 22...35 Vdc, output 4...20 mA
LLK-N V2	1182231	2-wire transmitter/controller with display, supply 22...35 Vdc, output 4...20 mA
LUK V2	1182240	3-wire transmitter/controller, supply 24 Vac/dc, output 0...10 V < 2 mA
LUK-N V2	1182241	3-wire transmitter/controller with display, supply 24 Vac/dc, output 0...10 V < 2 mA
TOOLS		
ML-SER	1139010	transmitter commissioning tool

TEMPERATURE SENSOR SIMULATOR

TESIM sensor simulators are designed for simulating temperature sensor when testing a control system.



Temperature measurement range	5 selectable temperature values (-50, -20, 0, 20, 50 °C)
Temperature measurement accuracy	±0.15 °C
IP protection class	IP54
Cable	0,9 m, banana jacks

TYPE	ART. NO.	
TESIM PT 1000	1170220	Pt1000 simulator
TESIM NTC 10	1170230	NTC 10 simulator

SPECIAL MEASUREMENT AND DETECTION

The special measurement and detection products cover protective thermostats for heating coils' freezing protection, safety components for water leakage monitoring, thermometers, differential pressure switches, filter guards and occupancy sensors. With these components, you can complete your installation to secure air conditioning heaters, avoid water leakage damage, save energy with occupancy sensors and schedule the replacement of filters.

- Protection units
- Adjustable limits
- Mechanical measurements



FROST PROTECTION THERMOSTATS

Frost protection thermostats are protective devices for preventing heating coils from freezing in the air handling units.

DIN housing

Power supply	24 Vac/dc, < 2 VA
Temperature meas. range	0...100 °C
Voltage input	1 x 0...10 Vdc
Control output	230 Vac, 8 A, res.
Alarm output	60 Vdc, 1 A
Actuator output	0...10 Vdc, 10 mA
IP protection class	IP20
Mounting	For 35 mm DIN rail
Product dimensions	53 x 90 x 59 mm



TYPE	ART. NO.	
JVA 24-en	1110111	forecasting, regulating; selectable sensor type (Pt1000, Ni1000-LG, PTC 1000/2000)
JVS 24-en	1110121	adjustable forecasting, regulating; selectable sensor type (Pt1000, Ni1000-LG, PTC 1000/2000)
OPTIONS		
TEV PT 1000	1174020	1000 Ω / 0 °C, accuracy ±0.3 °C / 0 °C (Honeywell, Danfoss equivalent)
TEV NI 1000-LG	1178020	1000 Ω / 0 °C, accuracy ±0.5 °C / 0 °C (Siemens equivalent)

FROST PROTECTION THERMOSTATS

Frost protection thermostats are protective devices for preventing heating coils from freezing in the air handling units.

11-pole relay housing

Power supply	24 Vac, < 2 VA
Temperature measurement range	0...100 °C
Voltage input	0...10 V / 2...10 V, 10 mA
Control output	50 Vac, 6 A, res.
Alarm output	24 Vdc, 1 A
Actuator output	0...10 Vdc, 10 mA
IP protection class	IP20
Mounting	11-pole relay housing
Product dimensions	35 x 79 x 95 mm



TYPE	ART. NO.	
EJV 24-PT-en	1110081	for Pt1000 sensor (1000 Ω / 0 °C), AR 1 relay included
JV 24-PT-en	1110091	for Pt1000 sensor (1000 Ω / 0 °C), contact output 50 Vac 6 A res.

THERMOSTATS

TF capillary thermostats are protective devices for preventing heating coils from freezing in the air handling units.

Temperature measurement range	-10...10 °C
Temperature measurement accuracy	±1 °C
Alarm output	24...250 Vac, 15 A
IP protection class	IP65
Ambient temperature	max. 55 °C
Ambient humidity	10...90 %rH
Product dimensions	65 x 140 x 62 mm



TYPE	ART. NO.	
TF 60	1240210	thermostat, capillary element length 6 m, automatic reset
TF 60R	1240211	thermostat, capillary element length 6 m, manual reset
TF 30	1240220	thermostat, capillary element length 3 m, automatic reset
TF 30R	1240221	thermostat, capillary element length 3 m, manual reset
TF 18	1240230	thermostat, capillary element length 1.8 m, automatic reset
TF 18R	1240231	thermostat, capillary element length 1.8 m, manual reset

OPTIONS		
DBZ-05	1240200	capillary element mounting bracket

CONDENSATION SWITCH

0...10 V output, relay output

Condensation switch KA 10 is designed for detecting water condensation in cooling systems, for example in cooling beams. With the condensation switch it is possible to control the cooling water supply when the water starts to condensate on the pipe. The KA 10-EXT model has an external condensation sensor.

Power supply	24 Vac/dc, < 1 VA
Relay output	24 Vac/dc, 1 A
Condensation output	0...10 Vdc
IP protection class	IP54, cable downwards
Cable gland	M16
Ambient temperature	0...50 °C
Mounting	with two cable ties on the side or under the pipe (Ø10...100 mm)



TYPE	ART. NO.	
KA 10	1187030	condensation switch
KA 10-EXT	1187031	condensation switch with external sensor, cable length 2 m

CONDENSATION SENSOR

KEK 1 condensation sensor is designed for detecting water condensation in cooling systems, for example in cooling beams.

Probe	84 x 15 x 2 mm
Nominal resistance	approx. 100 kΩ at condensation point
Mounting	with two cable ties on the side or under the pipe (Ø10...100 mm)



TYPE	ART. NO.	
KEK 1	1187040	condensation sensor, 2 m cable
KEK 1-3m	1187041	condensation sensor, 3 m cable
KEK 1-5m	1187042	condensation sensor, 5 m cable
KEK 1-10m	1187043	condensation sensor, 10 m cable
KEK 1-1m	1187044	condensation sensor, 1 m cable

WATER LEAKAGE RELAY

VVK 2 monitors the status of the water leakage sensors connected to the relay. When the sensor becomes wet the resistance decreases and the alarm relay will be activated. Also the sensor circuit is monitored (alarms if R > 330 kΩ).

Power supply	24 Vac/dc, < 2 VA
Relay output	60 Vdc, 2 A, res.|Changeover
IP protection class	IP20
Mounting	For 35 mm DIN rail
Product dimensions	53 x 90 x 61 mm



TYPE	ART. NO.	
VVK 2	1187024	water leakage relay

WATER LEAKAGE RELAY

LPH 10 monitors the resistance of the connected sensor. When the sensor becomes wet the resistance decreases. If the resistance decreases below the alarm limit, the alarm relay, indicator light and buzzer activate. The buzzer can be muted by pressing the button, but the relay and indicator light stay active until the sensor resistance increases over the alarm limit.

Power supply	24 Vac/dc, < 2 VA
Set point	approx. 10 kΩ
Relay output	Changeover
Alarm output	60 Vdc, 300 mA, res. change-over contact. Alarm is also indicated with an indicator light and buzzer.
IP protection class	IP20
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	ABS plastic
Product dimensions	87 x 86 x 32 mm



TYPE	ART. NO.	
LPH 10	1187010	water leakage relay

WATER LEAKAGE SENSORS

5

VVA and VVN sensors will be used with VVK 2 and LPH 10. The sensors can be installed on the floor and VVN also e.g. on the side of the pipe monitoring possible condensation.

Nominal resistance	approx. 300 kΩ when dry



TYPE	ART. NO.	
VVA 1	1187020	sensor with connection box, e.g. on floor and dip tray
VVA 2	1187021	sensor with 2 m cable
VVN 2	1187023	sensor, 2 m sensor band and 2 m cable
VVN 1	1187025	sensor, 1 m sensor band and 2 m cable
VVA 3	1187026	sensor (25 x 200 mm) with 2 m cable and adhesive tape

THERMOMETERS

DTM is a mechanical thermometer for duct installation. Two scales are available. The meters are factory-calibrated.

°C

Temperature measurement accuracy	±2 °C
Probe	Ø 9 x 200 mm
IP protection class	IP40
Ambient temperature	-20...60 °C
Ambient humidity	35...85 %rH
Mounting	by a flange
Product dimensions	100 x 100 x 230 mm



TYPE	ART. NO.	
DTM -40/40	1240050	duct thermometer -40...40 °C
DTM 0/60	1240060	duct thermometer 0...60 °C

THERMOMETERS

DTM-S is a mechanical thermometer for a duct installation. The thermometer can be used for indoor applications. Two scales are available. The thermometers have an adjustment screw for tuning.

°C



Temperature measurement accuracy	±2 °C
Probe	Ø 9 x 200 mm
IP protection class	IP40
Ambient temperature	-20...60 °C
Ambient humidity	35...85 %rH
Mounting	by a flange
Product dimensions	100 x 100 x 230 mm

TYPE	ART. NO.	
DTM-S -40/40	1240070	duct thermometer -40...40 °C
DTM-S 0/60	1240080	duct thermometer 0...60 °C

DIFFERENTIAL PRESSURE SWITCHES

PS differential pressure switches are designed for monitoring over and under pressures and pressure differences in systems that handle air and other non-aggressive gases. PS switches offer a cost-effective solution for filter, fan and duct pressure monitoring for building automation systems. The switching point can be adjusted manually.



Switching accuracy	max. ±15 %
Output	250 Vac, 3 A, res. (0.1 A, res. in PS200)
IP protection class	IP54
Cable gland	M16
Ambient temperature	-20...60 °C
Ambient humidity	0...95 %rH
Product dimensions	90 x 105 x 63 mm

TYPE	ART. NO.	
PS200	105.001.061	differential pressure switch 20...200 Pa
PS300	105.002.065	differential pressure switch 30...300 Pa
PS500	105.003.070	differential pressure switch 30...500 Pa
PS600	105.004.063	differential pressure switch 40...600 Pa
PS1500	105.005.068	differential pressure switch 100...1500 Pa
PS4500	105.006.050	differential pressure switch 500...4500 Pa

FILTER GUARDS

NEW

DPG/PS filter guards are designed for filter monitoring in systems that handle air and other non-flammable gases. The guards include a pressure gauge and a differential pressure switch. The differential pressure switch switching point is adjustable.



Gauge accuracy	±2 % from the full scale
Relay output	250 Vac, 0.1 A, res.|Changeover
IP protection class	IP54
Cable gland	M16
Ambient temperature	-5...60 °C
Ambient humidity	0...95 %rH
Mounting	vertically (with screws)
Product dimensions	219 x 136 x 68 mm

TYPE	ART. NO.	
DPG200/PS200	109.001.005	filter guard, 200 Pa
DPG600/PS600	109.002.010	filter guard, 600 Pa
DPG1,5K/PS1500	109.003.007	filter guard, 1500 Pa
DPG500/PS500	109.004.008	filter guard, 500 Pa
DPG300/PS300	109.005.005	filter guard, 300 Pa

OCCUPANCY SENSORS

LA 14E is an occupancy sensor for controlling ventilation and lighting. Intelligent, processor based, logic prevents false functions being at the same time very sensible. Relay function is quiet and the release delay is adjustable.



Power supply	24 Vac/dc, < 0.5 VA
Relay output	60 Vdc, 100 mA, delay is selectable (2 s, 2 min, 10 min or 20 min)|NC or NO
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	flush (surface mounting casing optional)
Materials	white plastic
Product dimensions	85 x 85 x 34 mm

TYPE	ART. NO.	
LA 14E	1185130	occupancy sensor
OPTIONS		
LA-RAJ	1185070	180° area guard for occupancy sensor
SMB 1E	9000470	casing for surface mounting

OCCUPANCY SENSORS

LA 15E is designed for controlling lighting. Up to 1.5 A continuous fluorescent lighting load is allowed.

Power supply	24 Vac/dc, < 0.5 VA
Relay output	60 Vdc, 100 mA, delay 2 s.|NC or NO
Lighting output	250 Vac, 1.5 VA, hold on time is selectable (2 s, 2 min, 10 min or 20 min)
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	flush (surface mounting casing optional)
Materials	white plastic
Product dimensions	85 x 85 x 34 mm



TYPE	ART. NO.	
LA 15E	1185140	movement / occupancy sensor for switching lighting on/off

OPTIONS

LA-RAJ	1185070	180° area guard for occupancy sensor
SMB 1E	9000470	casing for surface mounting

OCCUPANCY SENSORS

PLT 24 is a detector for monitoring occupancy through body heat and movements. The passive infrared PIR detector reacts to temperature changes in the range of the detection beams. Mounting bracket and screws are included to the delivery.

Power supply	24 Vac/dc, 10 mA
Relay output	60 Vdc, 100 mA, delay is selectable (2 s, 2 min, 10 min or 20 min)|NC or NO
IP protection class	IP20
Ambient temperature	-10...45 °C
Product dimensions	64 x 95 x 50 mm



TYPE	ART. NO.	
PLT 24	1185040	occupancy detector
PLT 24-K	1185045	occupancy detector, ceiling mounting

OCCUPANCY SENSORS

PLT 12 is a detector for monitoring occupancy through body heat and movements. The passive infrared PIR detector reacts to temperature changes in the range of the detection beams. Mounting bracket and screws are included to the delivery.

Power supply	12 Vdc
Relay output	12 Vdc, 100 mA|NC
IP protection class	IP20
Ambient temperature	-10...40 °C
Product dimensions	64 x 95 x 50 mm



TYPE	ART. NO.	
PLT 12	1185080	occupancy detector

THERMAL ACTUATORS AND CONTROL VALVES

Thermal actuators, control valves and solenoid valves designed for building automation needs complement our wide product offering for automated HVAC management systems.

- Complementary products for all HVAC systems
- Valves for heating and cooling applications
- Adapters for almost all manufacturers' valves



CONTROL VALVES

2-way valves with different sizes and with different Kvs values for HVAC applications are available. Valves can be used for controlling heating and cooling. A VA 80 adapter is needed for connecting a NV valve with a thermal actuator.

Ambient temperature	max. 120 °C
Mounting	inner thread ISO 7/1; outer thread ISO 228/1
Pressure rating	PN 10
Materials	CW617N (brass parts), peroxide-cured EPDM (seals)



TYPE	ART. NO.	
NV2D10	1230100	valve 3/8" (DN10) fixed Kvs 1.20
NV2D10V	1230101	valve 3/8" (DN10) adjustable Kvs 0,09...0,77
NV2D10F	1230102	valve 3/8" (DN10) adjustable Kvs 0,05...0,35
NV2D15	1230150	valve 1/2" (DN15) fixed Kvs 1,20
NV2D15V	1230151	valve 1/2" (DN15) adjustable Kvs 0,09...0,85
NV2D15F	1230152	valve 1/2" (DN15) adjustable Kvs 0,05...0,35
NV2D20	1230200	valve 3/4" (DN20) fixed Kvs 1,20
NV2D20V	1230201	valve 3/4" (DN20) adjustable Kvs 0,09...0,85
OPTIONS		
VA 80	1220010	adapter for Produal NV valves

THERMAL ACTUATORS

Valve actuators are available for 24 Vac/dc and for 230 Vac supply with a NC or NO function. Control signal may be a PWM or a 0...10 Vdc signal. Connection cables may be fixed or removable. Different lengths of removable cables are available. An adapter between the valve and the actuator is always needed.

IP protection class	IP65
Ambient temperature	0...65 °C



TYPE	ART. NO.	
A 20405-00N00-1S	1210027	thermal actuator 230 V NC, fixed cable 1 m
A 21405-10N00-1S	1210028	thermal actuator 230 V NO, fixed cable 1 m
A 40405-00N00-1S	1210011	thermal actuator 24 V, NC, fixed cable (1 m)
A 40405-00N00-3S	1210012	thermal actuator 24 V, NC, fixed cable (3 m)
A 40505-00N00-1S	1210070	thermal actuator 24 V, NC, 5 mm stroke, fixed cable (1 m)
A 41405-10N00-1S	1210021	thermal actuator 24 V, NO, fixed cable (1 m)
A 41405-10N00-3S	1210022	thermal actuator 24 V, NO, fixed cable (3 m)
A 41505-10N00-1S	1210071	thermal actuator 24 V, NO, 5 mm stroke, fixed cable (1 m)
AST 20405-00N00-0	1210031	thermal actuator 230 V NC, removable cable (sold separately)
AST 21405-10N00-0	1210032	thermal actuator 230 V NO, removable cable (sold separately)
AST 40405-00N00-0	1210041	thermal actuator 24 V NC, removable cable (sold separately)
AST 41405-10N00-0	1210046	thermal actuator 24 V N0, removable cable (sold separately)
APR 40405-01N00-0	1210052	thermal actuator 2...10 Vdc, NC, removable cable (sold separately)
APR 42405-00N00-0	1210053	thermal actuator 0...10 Vdc, NC, removable cable (sold separately)
APR 40405-00N00-0	1210061	thermal actuator 0...10 Vdc, NC, removable cable (sold separately)
APR 40625-20N00-1S	1210081	thermal actuator 0...10 Vac, NC, 6.5 mm stroke, 1 m cable
APV 41405-10N00-0	1210090	thermal actuator 0...10 Vdc NO, valve stem travel detection, removable cable (sold separately)
OPTIONS		
VA 80	1220010	adapter for Produal NV valves
AA.SK.1004.N	1220090	protection cover for thermal actuator

Other models also available on request.

Actuator	Cable order numbers						
	1 m	2 m	3 m	5 m	10 m	15 m	20 m
AST	1220021	1220022	1220023	1220025	1220026	1220027	1220028
APR/APV/MPV/M3P	1220031	1220032	1220033	1220035	1220036	1220037	1220038

To connect a thermal actuator to control valve, a special adapter ring is needed. Thermal actuators can be mounted to the Produal NV2 control valves by using a VA 80 adapter ring.

The adapter rings are also available for other manufacturers' valves. See the following table for more information.

***NOTE:** If you can't find the needed valve from the table, you can fill in the form on our website (scan the QR code on the right to open the PDF or browse to Product selection guides / Valve measuring guide) and send the dimensions to Produal customer support. The customer support will determine the correct adapter ring.*

Valve manufacturer	Valve type	Adapter	Product number	Adapter description	Notes
Produal		VA 80	1220010	M30x1,5, light grey	
Comap		VA 70H	1220006	M28x1,5, grey	
Danfoss	RTD-N	VA 76	1220007	M30x1,5, white	
	RTD-G	VA 79	1220008	M30x1,5, white	
	RA-N 10/15	VA 78	1220013	white	
	RA-C				
	RA-U 10				
	FHF-6				
	RAV	VA 72H	1220057	M30x1,5, light grey	
	TWA-K	VA 80	1220010	M30x1,5, light grey	
Flowcon	EVC	VA 41	1220016	M30x1,5, dark green	
Giacomini		VA 26	1220017	M30x1,5, grey	
Honeywell	V2020EVS10	VA 80	1220010	M30x1,5, light grey	
	V2020DSL				
	V2000VS				
Johnson Controls	VG5200CC	VA 53H	1220002	M28x1,5, grey	
	VG5400CC	VA 55H	1220003	M28x1,5, grey	
	VG5410EC				
	VG5800CC				
LK		VA 02	1220005	M30x1,5, grey	
MMA	FVXR 15	VA 55H	1220003	M28x1,5, grey	
	FVR 10	VA 54	1220014	M28x1,5, dark blue	
	EKV 15				
Oras		VA 35H	1220004	M26x1,5, grey	
Oventrop	Cocon	VA 10	1220012	M30x1,5, light grey	
	F series				
	AV6				
	before 1998	VA 39	1220019	M30x1, white	
Siemens	VXP	VA 10	1220012	M30x1,5, light grey	
	VD115	VA 80	1220010	M30x1,5, light grey	
Tour & Andersson	TRV-2	VA 80	1220010	M30x1,5, light grey	
	TBV-C				
	TBV-CM	VA 90	1220011	M30x1,5, crimson	With 4,5 mm stroke actuator.
		VA 10	1220012	M30x1,5, light grey	With 4 mm stroke actuator.
		VA 32	1220015	M28x1,5, light green	
	RVT 40	VA 31H	1220001	M28x1,5, grey	
	COMPACT-P	VA 10	1220012	M30x1,5, light grey	Select a thermal actuator with 5 mm stroke.
Universa	before 1999	VA 70H	1220006	M28x1,5, grey	
Uponor / Velta	proVario	VA 02	1220005	M30x1,5, grey	
Uponor	Magna				
	Pro 1"				Q&E plastic manifold
	WGF	VA 32	1220015	M28x1,5, light green	
Wehofloor	manifold	VA 80	1220010	M30x1,5, light grey	
Wirsbo	manifold	VA 17	1220009	M28x1,5, white	

MOTORIZED VALVE ACTUATORS

The motorized valve actuators are designed for applications that need short response time for the valve control. The actuators are equipped with removable cable (1 m) and they available for 3-point control and 0...10 V control. An adapter between the valve and the actuator is always needed.



Power supply	24 Vac/dc, < 2.6 VA
IP protection class	IP54
Running time	15 s/mm
Ambient temperature	0...50 °C
Cable	1 m, 3 x 0,22 m² (PVC)
Product dimensions	45 x 65 x 90 mm

TYPE	ART. NO.	
MPV-46845-30N00-1S	1210111	motorized valve actuator, 0...10 V control, running time 15 s/mm
M3P-46845-20N00-1S	1210120	motorized valve actuator, 3-point control, running time 30 s/mm

SOLENOID VALVES

MV solenoid valves are designed for building automation needs of the water control, for example in heating and cooling systems with closed circuit (valves are not suitable for domestic water circuit). Solenoid valves work in zero pressure difference and the valves are either normally closed (NC) or normally open (NO). Standard coils are for 230 Vac supply and 24 Vac or 24 Vdc coils are available as options. The valve coils are not designed for continuously energized applications.



Power supply	230 Vac
IP protection class	IP65
Ambient temperature	-5...90 °C
Materials	brass

TYPE	ART. NO.	
MV 1/2 NC 230	1260220	1/2" solenoid valve (NC, DN15)
MV 3/4 NC 230	1260230	3/4" solenoid valve (NC, DN20)
MV 1 NC 230	1260240	1" solenoid valve (NC, DN25)
MV 1/2 NO 230	1260250	1/2" solenoid valve (NO, DN15)
MV 3/4 NO 230	1260260	3/4" solenoid valve (NC, DN20)
MV 1 NO 230V	1260270	1" solenoid valve (NC, DN25)
MV 1 1/4 NC 230	1260290	1 1/4" solenoid valve (NC, DN32)
MV 1 1/2 NC 230	1260300	1 1/2" solenoid valve (NC, DN40)
OPTIONS		
MV-VK 24 VAC-8W	1260280	changeable coil 24 Vac for the solenoid valves (sizes 1/2" - 1")
MV-VK 24 VDC-8W	1260281	changeable coil 24 Vac for the solenoid valves (sizes 1/2" - 1")
MV-VK 24 VDC-14W	1260282	changeable coil 24 Vac for the solenoid valves (sizes 1/2" - 1")

TRANSDUCERS AND ACCESSORIES

Our wide selection of transducers and accessories helps you finalize regulation and control solutions. For example, I/O modules, dividers and transducers allow various signal type changes between Modbus, digital, analogue and 3-point signals. Transformers and electric power regulators with relay modules and solid state relays are useful for voltage supply and control load power. Our wide range of input signals and adjustable setpoints on relay modules enable applications like control fan coils, heaters and actuators.

- Useful devices for finalizing building automation projects
- Galvanic isolation
- Inputs 0...10 V, 2...10 V, 0...20 mA, 4...20 mA
- Outputs 0...10 V, 2...10 V, 0...20 mA, 4...20 mA, relay





CONVERTERS

DA 6 converts 1...6 digital (contact) inputs into one analogue 0...10 V or 4...20 mA output. The state of each contact can be identified by the control system software.

Power supply	24 Vac/dc, < 1 VA
Digital input	6 x potential free input
Voltage output	0...10 Vdc, 2 mA
Current output	4...20 mA, 500 Ω
IP protection class	IP20
Mounting	for 35 mm DIN rail
Product dimensions	68 x 77 x 42 mm



TYPE	ART. NO.	
DA 6	1182040	DI/AO converter

CONVERTERS

signal isolator

ISO 10 provides galvanic isolation between input and output signals and supply. Signal can also be converted, e.g. a 0...10 V signal into a 4...20 mA signal.

Power supply	24 Vac/dc, < 2 VA
Voltage input	0...1 Vdc / 0...10 Vdc / 2...10 Vdc
Voltage output	0...10 Vdc, 2 mA / 2...10 Vdc, 2 mA
Current output	0...20 mA, 500 Ω / 4...20 mA, 500 Ω
IP protection class	IP20
Ambient temperature	0...50 °C
Mounting	for 35 mm DIN rail
Product dimensions	12.5 x 90 x 112 mm



TYPE	ART. NO.	
ISO 10	1182060	signal isolator

CONVERTERS

0...10 V -> 3-point control

PMU 3 converts a 0...10 Vdc signal into a 24 Vac 3-point control signal.

Power supply	24 Vac, < 1 VA
Voltage input	0...10 Vdc, 1 mA
Actuator output	24 Vac, 2 A, 3-speed actuator
IP protection class	IP20
Running time	adjustable, 15...240 s
Mounting	11-pole relay housing
Product dimensions	35 x 78 x 103 mm



TYPE	ART. NO.	
PMU 3	1182120	from 0...10 V to 3-point converter

CONVERTERS

3-point control -> 0...10 V

UMP 3 converts a 3-point control signal into a 0...10 Vdc signal.

Power supply	24 Vac, < 1 VA
Voltage input	10...40 Vac/dc
Voltage output	0...10 Vdc, 1 mA
Output change speed	adjustable, 15...240 s
IP protection class	IP20
Mounting	11-pole relay housing
Product dimensions	35 x 78 x 103 mm



TYPE	ART. NO.	
UMP 3	1182150	from 3-point to 0...10 V converter

CONVERTERS

0...10 V -> 0...10 V (10...0 V)

UV 10 is an amplifier and inverter for 0...10 V signals. UV 10 can also be used for controlling fluorescent lamps with electronic transformers.

Power supply	24 Vac/dc, < 2 VA
Voltage input	0...10 V / 2...10 V, 0.5 mA
Voltage output	0...10 V / 2...10 V / 10...0 V / 10...2 V, < 20 mA
IP protection class	IP20
Mounting	for 35 mm DIN rail
Product dimensions	23 x 77 x 42 mm



TYPE	ART. NO.	
UV 10	1182160	signal amplifier

CONVERTERS

AO 2 and AO 3 are signal converters designed for HVAC applications. The converters divide one 0...10 V signal to two (AO 2) or three (AO 3) 0...10 V signals.

Power supply	24 Vac/dc, < 0.5 VA
Voltage input	0...10 Vdc, 0.2 mA
IP protection class	IP20
Mounting	for 35 mm DIN rail
Product dimensions	23 x 77 x 41 mm

0...10 V -> 2 x 0...10 V/3 x 0...10 V



TYPE	ART. NO.	
AO 3	1182210	signal divider, 3 outputs
AO 2	1182220	signal divider, 2 outputs

ELECTRIC POWER REGULATION

BAK 64 binary step controller is designed for controlling electric heating power. It can be used with all systems with 0...10 V outputs. Relays like AR 1 or RY 1 are needed for contact outputs. Power steps must be in binary sequence e.g. 1, 2, 4, 8, 16, 32 kW.

Power supply	24 Vac, < 3 VA
Voltage input	0...10 Vdc or 10...0 Vdc
Voltage output	40 Vdc, 100 mA, for AR 1 and RY 1 relays
Step delay	adjustable, 0.7...60 s
IP protection class	IP20
Mounting	11-pole relay housing
Product dimensions	39 x 78 x 103 mm



TYPE	ART. NO.	
BAK 64	1140010	binary step controller

OPTIONS

AR 1	1183010	relay with normally open (NO) contact, width 13 mm
RY 1	1183020	relay with change-over contact, width 23 mm

ELECTRIC POWER REGULATION

STS 4 converts 0...10 V signal to one time proportional and up to 3 contact outputs. Each step must be identical in power.

Power supply	24 Vac/dc, < 1 VA
Voltage input	0...10 Vdc, 1 mA
Voltage output	3 x 35 Vdc, 100 mA, for AR 1 and RY 1 relays
Relay output	25 Vdc, 50 mA, for solid state relay, time proportional
Number of steps	selectable, 1...4 pcs
IP protection class	IP20
Mounting	11-pole relay housing
Product dimensions	39 x 78 x 103 mm



TYPE	ART. NO.	
STS 4	1140020	electric power controller
OPTIONS		
PR 50/440	1140030	solid state relay 230...400 Vac, < 25 A, input 3...32 Vdc
PRMK	1140070	solid state relay control signal converter, Vac -> Vdc
AR 1	1183010	relay with normally open (NO) contact, width 13 mm
RY 1	1183020	relay with change-over contact, width 23 mm

RELAY MODULES

coil 24 Vac/dc

RY 1 and AR 1 are relays with a 24 Vac/dc coil voltage. RYVA 16 can be used for lighting control because it withstands a short-term inrush current peak.

Control signal	24 Vac/dc, 0.5 VA
Relay output	250 Vac, 10 A, res.|NO
IP protection class	IP20
Mounting	on 35 mm DIN rail



TYPE	ART. NO.	
AR 1	1183010	relay with normally open (NO) contact, width 13 mm
RY 1	1183020	relay with change-over contact, width 23 mm
RY 1-K	1183021	relay with change-over contact, width 23 mm
RYVA 16	1183060	relay for fluorescent lamps, 10 A (inrush current < 80 A, < 2,5 ms)

RELAY MODULES

input 0...10 Vdc

RY 1-U and RY 1-U-K are voltage controlled relays with 0...10 V input.

Power supply	24 Vac/dc, < 1 VA
Set point	adjustable, 0...10 V
Control signal	0...10 Vdc, 0.2 mA
Relay output	250 Vac, 8 A, res.|Changeover
IP protection class	IP20
Mounting	on 35 mm DIN rail
Product dimensions	23 x 77 x 41 mm



TYPE	ART. NO.	
RY 1-U	1183040	voltage controlled relay
RY 1-U-K	1183041	voltage controlled relay

RELAY MODULES

for fan coil controls

FCRY 3 is a 3 speed fan coil control relay, with 0..10 Vdc control input.

Power supply	24 Vac/dc, < 1.5 VA
Set point	adjustable, factory settings 2,5 V, 5,0 V and 7,5 V
Control signal	0...10 Vdc, 0.2 mA
Relay output	3 x 230 Vac, 8 A, res. NO (interlocked)
IP protection class	IP20
Mounting	on 35 mm DIN rail
Product dimensions	45 x 90 x 48 mm



TYPE	ART. NO.	
FCRY 3	1183070	fan coil relay, input 0...10 Vdc

RELAY MODULES

RYM 8-KK is a relay module with eight relay outputs that can be controlled manually (switch in OFF or ON position) or by using control signal (switch in A position). The manual control is useful for example in commissioning and in fault situations.

Power supply	24 Vdc
Input type	24 V
Control signal	8 x 24 Vdc
Relay output	8 x 230 Vac, 4 A res.|Changeover
IP protection class	IP20
Mounting	on 35 mm DIN rail
Product dimensions	136 x 90 x 65 mm



TYPE	ART. NO.	
RYM 8-KK	1181110	relay module, 8 outputs, 24 Vdc control
RYM 8-KK-0	1181111	relay module, 8 outputs, 24 Vdc control

RELAY MODULES

driver for thermal actuators

TH 5 is a surface mounted driver that can drive several parallel connected thermal actuators.

Power supply	24 Vac
Control signal	5...30 Vac/dc, 10 mA
Output	5 x 24 Vac, 0.6 A, total load max. 3 A
IP protection class	IP66
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	PP plastic
Product dimensions	76 x 76 x 52 mm



TYPE	ART. NO.	
TH 5	1183090	driver for thermal actuators, 5 outputs

SET POINT SELECTORS

The setpoint selector is designed to control for example temperature, humidity, lights or ventilation. The device can be mounted in a splash water proof surface mounted housing or on a flush mounting box. The selector provides a proportional 0...10 Vdc output signal that can be adjusted with internal trimmers. The selector has also off position.

Power supply	24 Vac/dc, ≤20 mA
Setpoint scale	0...100 %
Voltage output	0...10 Vdc
IP protection class	IP44/IP54, Flush mounting IP44, surface mounting IP54
Ambient temperature	0...40 °C
Ambient humidity	0...95 %rH
Mounting	On a flush mounting box or surface mounting
Product dimensions	82 x 82 x 65 mm



TYPE	ART. NO.	
LC-P24-P	1182250	set point selector, scale 0...100 %

TRANSFORMERS

JY is a switch mode power supply converting a 24 Vac/dc supply into a lower DC voltage supply. Electronic protection for overloading.

24 Vac/dc -> 3.6...24 Vdc



Voltage input	24 Vac/dc, < 30 VA
Voltage output	3.6...24 Vdc, 1 A (0...12 V); 0.5 A (12...24 V)
IP protection class	IP20
Mounting	on 35 mm DIN rail
Product dimensions	45 x 90 x 58 mm

TYPE	ART. NO.	
JY	1184020	AC/DC to DC transformer

TRANSFORMERS

M230/24-15 transforms 230 Vac supply to 12/24 Vac supply.

230 Vac -> 12/24 Vac, 15 VA



Voltage input	230 Vac, < 15 VA
Voltage output	24 Vac, 15 VA, / 12 Vac, 7.5 VA
IP protection class	IP20
Ambient temperature	0...40 °C
Mounting	on 35 mm DIN rail
Product dimensions	35 x 87 x 60 mm

TYPE	ART. NO.	
M 230/24-15	1184090	transformer

TRANSFORMERS

M230/24-30 transforms 230 Vac supply to 12/24 Vac supply.

230 Vac -> 12/24 Vac, 30 VA

Voltage input	230 Vac, < 30 VA
Voltage output	24 Vac, 30 VA, / 12 Vac, 15 VA
IP protection class	IP20
Ambient temperature	0...40 °C
Mounting	on 35 mm DIN rail
Product dimensions	54 x 87 x 60 mm



TYPE	ART. NO.	
M 230/24-30	1184050	transformer

TRANSFORMERS

M230/24-12 transforms 230 Vac supply to 24 Vdc 12 VA supply.

230 Vac -> 24 Vdc, 12 VA

Voltage input	230 Vac, < 12 VA
Voltage output	24 Vdc, 12 VA
IP protection class	IP20
Cable	2 m



TYPE	ART. NO.	
M230/24-12	1184160	230 Vac/24 Vdc 12 VA power supply

TRANSFORMERS

M230/12-4 transforms 230 Vac supply to 12 Vdc 4 VA supply.

230 Vac -> 12 Vdc, 4 VA

Voltage input	230 Vac, < 4 VA
Voltage output	12 Vdc, 250 mA
IP protection class	IP20
Cable	2 m



TYPE	ART. NO.	
M 230/12-4	1184080	230 Vac/12 Vdc 4 VA power supply

TRANSFORMERS

T20 transforms 230 Vac supply to 24 Vac supply.

230 Vac -> 24 Vac

Voltage input	230 Vac, < 20 VA
Voltage output	24 Vac, 20 VA
IP protection class	IP33
Ambient temperature	0...40 °C
Cable	3 m, AMP connector (cable delivered with the transformer)
Product dimensions	61 x 85 x 50 mm



TYPE	ART. NO.	
T20	1184100	transformer

TRANSFORMERS

T35 transforms 230 Vac supply to 24 Vac supply.

230 Vac -> 24 Vac

Voltage input	230 Vac, < 35 VA
Voltage output	24 Vac, 35 VA
IP protection class	IP44
Ambient temperature	0...40 °C
Mounting	with screws
Cable	300 mm on both sides
Product dimensions	63 x 103 x 55 mm



TYPE	ART. NO.	
T35	1184111	transformer

TRANSFORMERS

T40 transforms 230 Vac supply to 24 Vac supply.

230 Vac -> 24 Vac

Voltage input	230 Vac, < 38 VA
Voltage output	24 Vac, 38 VA
IP protection class	IP54
Ambient temperature	0...40 °C
Mounting	with screws
Product dimensions	77 x 123 x 70 mm



TYPE	ART. NO.	
T40	1184120	transformer

TRANSFORMERS

T60 transforms 230 Vac supply to 24 Vac supply.

230 Vac -> 24 Vac

Voltage input	230 Vac, < 60 VA
Voltage output	24 Vac, 60 VA
IP protection class	IP54
Ambient temperature	0...40 °C
Mounting	with screws
Product dimensions	77 x 123 x 70 mm



TYPE	ART. NO.	
T60	1184130	transformer

TRANSFORMERS

T120 transforms 230 Vac supply to 24 Vac supply.

230 Vac -> 24 Vac

Voltage input	230 Vac, < 120 VA
Voltage output	24 Vac, 120 VA
IP protection class	IP54
Ambient temperature	0...40 °C
Mounting	with screws
Product dimensions	89 x 174 x 92 mm



TYPE	ART. NO.	
T120	1184140	transformer

TRANSFORMERS

T220 transforms 230 Vac supply to 24 Vac supply.

230 Vac -> 24 Vac

Voltage input	230 Vac, < 220 VA
Voltage output	24 Vac, 220 VA
IP protection class	IP54
Ambient temperature	0...40 °C
Mounting	with screws
Product dimensions	104 x 168 x 105 mm



TYPE	ART. NO.	
T220	1184150	transformer

INDICATOR LIGHTS

LEKA 24E is an indicator light device with green and red light.

24 Vac/dc

Power supply	24 Vac/dc, < 0.5 VA
Control signal	2 x 24 Vac/dc
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	flush (surface mounting casing optional)
Product dimensions	85 x 85 x 28 mm



TYPE	ART. NO.	
LEKA 24E	1185150	indicator light

OPTIONS		
SMB 1E	9000470	casing for surface mounting

TIMERS

ETT electronic timers are designed for energy saving and boosting functions in ventilation and lighting applications. The timer functions can be used for example in office applications, if enhanced ventilation is needed outside the normal working hours.



Power supply	24 Vac/dc (22...26 V) or 230 Vac (207...253 V)
Timer accuracy	±10 s/h
Relay output	250 Vac, 10 A|Changeover
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	5...95 %rH
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Materials	PC plastic
Product dimensions	97 x 97 x 27 mm

TYPE	ART. NO.	
ETT1B	560011B000	electronic timer, black, 10...60 min
ETT1	560011W000	electronic timer, white, 10...60 min
ETT6B	560012B000	electronic timer, black, 1...6 h
ETT6	560012W000	electronic timer, white, 1...6 h
ETT12B	560013B000	electronic timer, black, 2...12 h
ETT12	560013W000	electronic timer, white, 2...12 h

TIMERS

LAP timers are designed for extending plant operating hours by pushing a button. The selected time is indicated by an indicator light.

Power supply	24 Vac/dc or 230 Vac, 2 VA
Timer accuracy	±10 s/h
Relay output	250 Vac, 8 A, res.|Changeover
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	flush (surface mounting casing optional)
Product dimensions	85 x 85 x 30 mm



TYPE	ART. NO.	
LAP 1E	1185110	12...60 minutes (max. time can be restricted to 12...36 minutes)
LAP 5E	1185111	1...5 hours (max. time can be restricted to 1...3 hours)
LAP 10E	1185112	2...10 hours (max. time can be restricted to 2...6 hours)

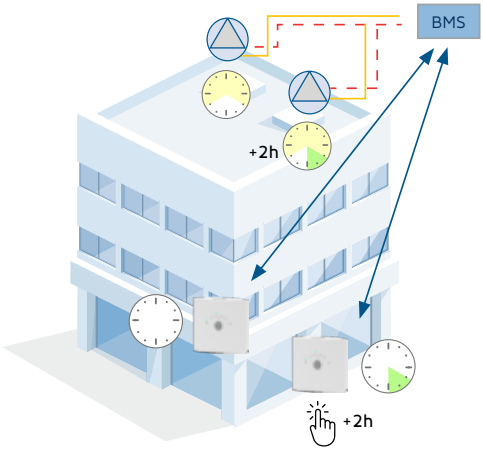
OPTIONS		
SMB 1E	9000470	casing for surface mounting

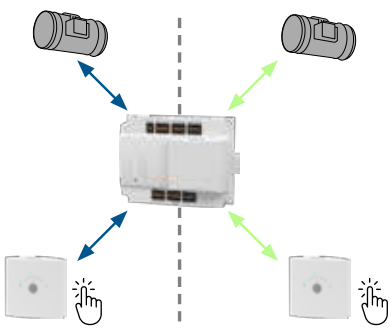
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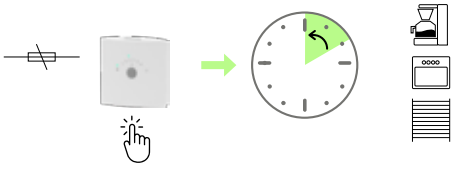


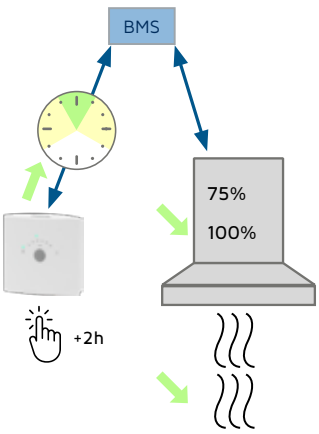


1 h (10, 20, 30, 40, 50, 60 min) 6 h (1, 2, 3, 4, 5, 6 h) 12h (2, 4, 6, 8, 10, 12 h)		60min (12, 24, 36, 48, 60 min) 5 h (1, 2, 3, 4, 5 h) 10 h (2, 4, 6, 8, 10 h)
230 Vac / 24 Vac/dc		230 Vac / 24 Vac/dc
10A res. / 230 Vac		8A res. / 230 Vac
max. /		max. /





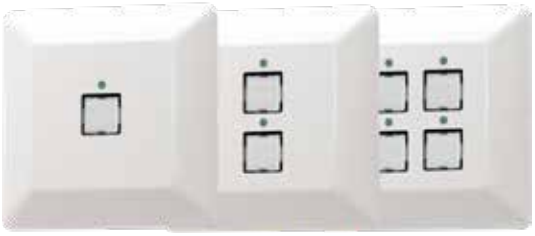




PUSH BUTTONS

PJP is a low voltage push button device with 1, 2 or 4 buttons and indicator lights. The indicator lights are controlled externally.

IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...85 %rH
Mounting	flush (surface mounting casing optional)
Product dimensions	85 x 85 x 30 mm



TYPE	ART. NO.	
PJP 1E	1185120	1 push button and 1 indicator light
PJP 2E	1185121	2 push buttons and 2 indicator lights
PJP 4E	1185122	4 push buttons and 4 indicator lights

OPTIONS

SMB 1E	9000470	casing for surface mounting

I/O MODULES

MIO 12 I/O modules can read analogue and/or digital inputs, and control thermal or 3-point actuators and also 0...10 V analogue outputs. The module has RS-485 connection for Modbus RTU communication.

Power supply	24 Vac, < 2 VA
Voltage output	4 x 0...10 Vdc, 2 mA
Triac output	4 x 24 Vac, 1 A, for thermal actuators or two 3-point actuators
IP protection class	IP20
Ambient temperature	5...40 °C
Mounting	on 35 mm DIN rail
Product dimensions	53 x 90 x 58 mm



TYPE	ART. NO.	
MIO 12-PT	1181300	Modbus I/O, 4 analogue inputs (Pt1000) or potential free digital inputs
MIO 12-V	1181310	Modbus I/O, 4 analogue inputs (0...10 V) or potential free digital inputs
MIO 12-NILG	1181320	Modbus I/O, 4 analogue inputs (Ni1000-LG) or potential free digital inputs

I/O MODULES

DIO4-BAC-DIN is designed to be a compact DIN-rail mounted BACnet MS/TP input and output module. The module has two potential free contact inputs and two digital outputs (24 Vac triac).



Power supply	24 Vac, < 2 VA
Digital input	2 x potential free contact, impedance <1 kΩ. Pulse counting: max 25 Hz, min pulse length 20 ms (volatile)
Triac output	2 x 24 Vac, 1 A
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on 35 mm DIN rail
Materials	ABS plastic, self extinguishing
Product dimensions	106 x 97 x 38 mm

TYPE	ART. NO.	
DIO4-BAC-DIN	6011A00000	BACnet I/O module, 2DI, 2DO

I/O MODULES

IO10-BAC-DIN is designed to be compact DIN-rail mounted BACnet MS/TP input and output module. The module has two potential free contact inputs, two resistive inputs, two digital outputs and four analogue outputs. The resistive inputs can also operate as potential free contact inputs.



Power supply	24 Vac, < 2 VA
Digital input	2 x potential free input
Resistive input	2 x NTC 10 / resistive / potential free digital input
Voltage output	4 x 0...10 Vdc, 5 mA
Triac output	2 x 24 Vac, 1 A
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on 35 mm DIN rail
Materials	ABS plastic, self extinguishing
Product dimensions	106 x 97 x 38 mm

TYPE	ART. NO.	
IO10-BAC-DIN	6011B00000	BACnet I/O module, 2RI/DI, 2DI, 2DO, 4AO

I/O MODULES

IO10-BAC-DIN-AI is designed to be compact DIN-rail mounted BACnet MS/TP input and output module. The module has two analogue inputs, two potential free contact inputs, two digital outputs and four analogue outputs.

Power supply	24 Vac, < 2 VA
Voltage input	2 x 0...10 Vdc
Digital input	2 x potential free input
Voltage output	4 x 0...10 Vdc, 5 mA
Triac output	2 x 24 Vac, 1 A
IP protection class	IP20
Ambient temperature	0...50 °C
Ambient humidity	0...95 %rH
Mounting	on 35 mm DIN rail
Materials	ABS plastic, self extinguishing
Product dimensions	106 x 97 x 38 mm



TYPE	ART. NO.	
IO10-BAC-DIN-AI	6011C00000	BACnet I/O module, 2AI, 2DI, 2DO, 4AO

CASINGS

KO IVS and VP-PROX are protective casings for room products in spaces like sports halls. Casing is transparent and with a lock.

Ambient temperature	0...50 °C
Mounting	with screws (included)
Materials	PC plastic
Product dimensions	136 x 136 x 40 mm



TYPE	ART. NO.	
VP-PROX	9000460	protective casing for Proxima room products
KO IVS	KO5239	protective casing for room products

CASINGS

NEW

WS-1 weather shield is designed to protect Produal's outdoor products from sun, rain and snow.

Materials	Stainless steel, AISI 304 (1.4301)
Product dimensions	171 x 170 x 80 mm



TYPE	ART. NO.
WS-1	9000520

TABLE STAND

A table stand for Produal’s room products. Fixing screws (2 pcs) are included in the delivery.

Materials	stainless steel
Product dimensions	78 x 90 x 52 mm



TYPE	ART. NO.	
TMS	9000480	table stand for room products

SENSOR CHARACTERISTICS

Sensor element	Pt100	Pt1000	Ni1000	Ni1000-LG	NTC 1.8 $\beta_{25/85}$= 3500	NTC 2.2 $\beta_{25/85}$= 3947	NTC 10 $\beta_{25/85}$= 3977	NTC 20 $\beta_{25/85}$= 4262	NTC 10-AN $\beta_{25/70}$= 3670	NTC 10-C $\beta_{25/85}$= 3435	NTC 10-KB	KP 10	T1
Tol.	±0.3°C / 0°C ±0.15 °C / 0 °C EN60751 B	±0.3°C / 0°C ±0.15 °C / 0 °C EN60751 B	±0.4°C / 0°C DIN43760	±0.4°C / 0°C tcr 5000ppm Siemens	±0.3°C / 25°C TAC / Schneider	±0.25°C / 25°C Johnson	±0.25°C / 25°C Trend / Distech	±0.25°C / 25°C Honeywell	±0.25°C / 25°C Schneider Andover	±0.25°C / 25°C Carel	±0.5°C / 25°C Satchwell	LM235Z 10 mV/K	±0.4°C / 0°C
Temp. °C	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	**V**	Ω
140	153.38	1533.8	1909	1737	66	53	235	351	298	381	324		
130	149.82	1498.2	1833	1675	82	68	301	459	377	474	385		3675
120	146.06	1460.6	1760	1615	103	90	389	609	483	597	467		3552
110	142.29	1422.9	1688	1557	131	115	511	818	624	758	576		3430
100	138.50	1385	1618	1500	168	153	679	1114	817	973	723	3,73	3311
95	136.60	1366	1583	1472	192	178	787	1307	940	1108	815	3,68	3252
90	134.70	1347	1549	1444	219	207	916	1541	1084	1266	923	3,63	3194
85	132.80	1328	1516	1417	252	241	1071	1823	1255	1451	1048	3,58	3136
80	130.89	1308.9	1483	1390	290	283	1256	2166	1458	1668	1194	3,53	3079
75	128.98	1289.8	1450	1364	335	334	1480	2585	1700	1924	1364	3,48	3022
70	127.07	1270.7	1417	1337	389	395	1751	3099	1990	2228	1562	3,43	2966
65	125.16	1251.6	1385	1311	453	469	2082	3732	2339	2588	1791	3,38	2910
60	123.24	1232.4	1353	1285	529	560	2488	4517	2760	3020	2056	3,33	2855
55	121.32	1213.2	1322	1260	622	673	2986	5494	3271	3536	2358	3,28	2800
50	119.40	1194	1291	1235	733	811	3600	6718	3893	4160	2702	3,23	2745
45	117.47	1174.7	1260	1210	869	984	4365	8259	4656	4911	3088	3,18	2692
40	115.54	1155.4	1230	1186	1034	1200	5323	10211	5594	5827	3517	3,13	2638
35	113.61	1136.1	1200	1162	1238	1471	6528	12698	6754	6940	3987	3,08	2585
30	111.67	1116.7	1171	1138	1489	1814	8054	15887	8197	8313	4492	3,03	2532
29	111.28	1112.8	1165	1132	1546	1893	8408	16628	8525	8622	4597	3,02	2522
28	110.90	1109	1159	1128	1605	1977	8777	17407	8869	8944	4703	3,01	2512
27	110.51	1105.1	1153	1123	1667	2064	9165	18228	9229	9281	4809	3,00	2501
26	110.12	1101.2	1147	1119	1732	2156	9572	19092	9606	9632	4917	2,99	2491
25	**109.73**	**1097.3**	**1141**	**1114**	**1800**	**2252**	**10000**	**20000**	**10000**	**10000**	**5025**	**2,98**	**2480**
24	109.35	1093.5	1136	1109	1871	2353	10452	20962	10413	10380	5134	2,97	2470
23	108.96	1089.6	1130	1105	1945	2458	10923	21973	10845	10780	5243	2,96	2460
22	108.57	1085.7	1124	1100	2023	2572	11417	23039	11297	11200	5353	2,95	2449
21	108.18	1081.8	1118	1095	2104	2689	11938	24164	11771	11630	5462	2,94	2439
20	107.79	1077.9	1112	1091	2189	2813	12490	25350	12268	12090	5573	2,93	2429
15	105.85	1058.5	1084	1068	2678	3538	15710	32346	15136	14690	6126	2,88	2377
10	103.90	1039	1056	1045	3296	4482	19900	41567	18787	17960	6667	2,83	2326
5	101.95	1019.5	1028	1022	4081	5718	25400	53812	23462	22050	7183	2,78	2276
0	**100.00**	**1000**	**1000**	**1000**	**5087**	**7353**	**32660**	**70203**	**29490**	**27280**	**7661**	**2,73**	**2226**
-5	98.04	980.4	973	978	6386	9533	42340	92322	37316	33900	8093	2,68	2176
-10	96.09	960.9	946	956	8076	12460	55340	122431	47549	42470	8472	2,63	2127
-15	94.12	941.2	919	935	10291	16428	72980	163777	61030	53410	8796	2,58	2078
-20	92.16	921.6	893	914	13218	21860	97120	221088	78930	67770	9067	2,53	2030
-25	90.19	901.9	867	893	17120	29398	130400	301297	102890	86430	9288	2,48	1982
-30	88.22	882.2	842	872	22357	39908	177000	414698	135233	111300	9466	2,43	1934
-35	86.25	862.5	816	851	29496	54751	243120	576763	179280		9605	2,38	
-40	84.27	842.7	791	831	39247	75953	337270	810861	239831		9712	2,33	
-45	82.29	822.9	767	811		106603	473370	1152992	323859		9793		
-50	80.31	803.1	743	791		151470	672600	1659082	441667		9854		

PRODUAL MyTool® APPLICATION

An ideal single commissioning tool on your mobile phone or tablet

- Free Android application for commissioning and configuration of all the Produal PUMP® platform-based products
- Ease of use and a unified user experience on your mobile phone or tablet, with wireless connection via Bluetooth
- Produal MyCloud cloud service to help keep configuration and project information secured, and minimizing the risk of human error with parameters





Firmware updates

With a couple of button presses, you can update the firmware in Produal PUMP® products. This enables you to update all devices with new options and features in the future.



Easy and fast configurations

Reach all parameters of a Produal PUMP® device from the configuration menu in Produal MyTool® application. Configuration menus are easy to navigate and simple to understand.



Test installations

With the test installation menu, you can read real-time measurement data.



Store configurations

You can store and reuse the configurations you create in Produal MyCloud, your personal storage space. Or you can store a configuration on the local file system on an Android device.



Wireless network installation

With the Produal MyTool® application you can set up the whole wireless network. Installation is done completely wirelessly, MyTool makes network building and monitoring easy and clear.

ML-SER

Easy and quick tool for commissioning on the field

Configuration tool for Produal transmitters

- Easy to configure the settings or execute a one-point field calibration when required
- Configuration of one device at a time
    - Activation of built-in controller option
    - Modbus addressing
    - Factory settings restore

Examples:

1 Easy configuration of the controller functions for the CO_2 room transmitter

2 Easy tuning of the duct sensor's temperature measurement

3 Easy configuration of the differential pressure transmitter's user selectable measurement and output ranges

See the transmitter selection guide (page 48)







OTHER USEFUL CONFIGURATION TOOLS

- Configuration cable SW-DCT-USB for backup and replication of TRC room controllers (pages 20 and 22), TRT smart thermostats (page 27), TRI room units (page 40) , RRH-BAC (page 63) and RCD-BAC (page 67) transmitters, and RTE temperature transmitters (page 127).
- Configuration tools for HLS temperature controllers: HLS 44-SE-SER (page 24), HLS 44-SER (page 24), HLS 44-CO2-SER (page 24), HLS 44-3P-SER (page 24), HLS 45-SER (page 24).
- Configuration tool Siro-CT for Siro transmitters (page 73).

PRODUAL ACADEMY

Welcome to Produal Academy! Scan the QR codes to learn more about our wireless products, Produal Proxima Wireless MESH system and designing wireless networks.



Produal academy, Episode 1:
Introduction to Produal Proxima Wireless MESH system



Produal academy, Episode 2:
In-depth review of WTR and WBU



Produal academy, Episode 3:
Proxima MESH Wireless Network Features and Functions Part 1



Produal academy, Episode 4:
Using MLB, Modbus LoRaWAN Bridge



Produal Academy, episode 5:
How to design a wireless network

PRODUCT VIDEOS

Watch these videos on TRC, HLS, HDH, PEL and DPT-Flow for useful tips.



Produal Product Overview Episode 1: Introduction and basic functions of TRC



Multifunctional Produal Room Controllers for Building Automation

Featuring HLS 44, HLS 44-CO2, HLS 44-SE and HLS 44-3P



Configuration of HDH CO2 transmitter controller functions



Tuning of HDH transmitter CO2 measurement



Configuration of Produal PEL pressure transmitter user selectable ranges with ML SER tool



Configuration of Produal DPT-Flow airflow transmitter



Configuration of Produal DPT-Flow-MOD airflow transmitter

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PRODUAL

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Reliable measurements for building automation

QUALITY SYSTEM CERTIFICATION

DNV·GL

ISO 9001

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| working together |