



Product catalog

Precision at first Hand



No matter where or when you have to measure low pressure, temperature, flow or relative humidity among other measuring quantities - You will encounter Grillo measuring devices in any case.

Many decades of experience and a clear commitment to first-grade workmanship make our measuring devices more precise, durable and thus extremely cost-effective.

Above all in the field of low-pressure measuring the measuring devices made by Grillo keep the promises they make and thus live up to their good reputation. Innovative technology requirements are handled with individual feeling, ensuring that each pressure engineering problem is reliably solved.

In this process a close cooperation with partners and customers is indispensable for us. We know what is important in planning and design and manufacture our equipment accordingly, ensuring that our devices are tuned to planner, operator and user requirements. Our quality standard: The long life of our products, because it is your satisfaction that counts.

WE OFFER

- the perfect solution for every problem
- top know-how in teh field of low-pressure
- first-grade workmanship
- · innovative technology handled with individual feeling

YOU BUY

- · long-lasting, reliable and efficient products
- · devices which are optimally tuned to planning, operator and user requirements
- a manufacturer and partner with international connections keeping your requirements in mind at all times

THE HISTORY OF ARTHUR GRILLO GMBH

- **2014** After more than 10 years, the **DA2000** is proving itself more and more at the market. Different designs with analog output, switch contact, and weatherproof protective housing continuously expand the areas of application.
- **2012** With the new differential pressure controller **DPC200**, fans can now be efficiently controlled via differential pressure or volume flow. Arthur Grillo is responding to the increasing demand for controllable ventilation systems with respect to the new ErP Directive 2015.
- **2009** Additional modern low-pressure devices with own developed housing technology, **DS85-P** and **DS200**, are developed. Furthermore, the family of humidity transducers is expanded with the **PFT28** type and offers now an alphanumerical LCD display
- **2005** New transmitter **PFT25** for the metries dew point, absolute, wet bulb temperature and enthalpy was developed.
- **2002 PFT22**, a new transmitter for relative humidity and temperature with a fast sensor and microcontroller unit conquers the market.
- **2000 PERITACT 2000** and the **DA2000** display unit as a further development of differential pressure controllers are launched on the market.
- 1995 Arthur Grillo GmbH cooperates with the Swedish company AB REGIN; the product range in the sector of control devices for air-conditioning technology is drastically expanded.
- 1992 Company headquarters move from Düsseldorf-Oberkassel to Ratingen.
- 1985 Analysis devices and heat volume calculators are furnished with modern microcontroller units.
- 1980 PERITACT 80 with membrane movement replaces the product series of ring balance measuring devices; contact devices for minimal differential pressures of up to 10 Pa as well as a low-pressure sensor are manufactured for the very first time
- 1974 Egon Grillo retires from management. From this point of time on a team of two managers takes over management.
- **60s** The range of products offered by Arthur Grillo KG is expanded drastically with the boost in electronics; and the first contact devices with integrated operation amplifiers are manufactured.
- 1951 Arthur Grillo KG starts off manufacturing ring balances to measure small differential pressures, and developing flue gas analysis devices under the brand name **CODIMETER** in addition to remote thermometers.
- 1946 Egon Grillo opens a repair store for measuring devices in control units in cooperation with Arthur Grillo KG in Düsseldorf-Oberkassel.
- 1936 Egon Grillo, his son, starts off selling equipment for measurement and control technology, among others volume and level measuring devices, gas density recorders, pneumatic and oil-controlled regulators.
- 1901 Arthur Grillo, nephew of the industrialist Wilhelm Grillo, establishes a commercial enterprise for supplying industrial components to the heavy industry.

TABLE OF CONTENT

PRESSURE		Page 3
	Modbus Differential pressure / volume flow controlller - DPC200-MOD	4
up to 10.000 Pa	Multi range differential pressure / volume flow controlller DPC310	6
	Differential pressure / Volume flow controlller DPC200	8
	Differential pressure / Volume flow controlller DPC200-R	10
	Differential pressure sensor DS85	12
	Differential pressure sensor	14
	with selectable measurement ranges DS85-P	14
	Differential pressure sensor DS85-PE	16
	Differential pressure sensor	18
	with selectable measurement range DS200	10
	Differential pressure manometer DA85	20
	Differential pressure manometer DA2000	21
	Differential pressure manometer DA2000-A	22
	Differential pressure manometer DA2000-K	23
	Differential pressure manometer DA2000-S / DA2000-K-S / DA2000-A-S	24
	Differential pressure gauge PERITACT 80	26
	Low pressure transmitter PERITACT 2000	28
	Low pressure transmitter PERITACT 2000-K	29
	Low pressure transmitter PERITACT 2000-K10	30
	Pressure switch DS	31
up to 25 bar	Process transmitter (DIFFERNTIAL PRESSURE) GPM	32
up to 100 bar	Pressure transmitter (RELATIV PRESSURE) PU21, PI21	33
	Pressure transmitter MKM	34
TEMPERATURE		Page 35
	Temperature sensor KF1, RF1, AF1, ATF, ETF	37
	Screw-In temperature sensor WBV	38
	Flue-gas temperature sensor RGF	39
	Temperature sensor / thermocouples NICR-NI TYP K	40
	Temperature sensor / thermocouples PtRh-Pt TYPS	41
	Temperature transducer MINI90	42
	Temperature transducer MINI72	43
	Temperature transducer MTA90	44
	Multi range measuring transducer MINI90-P	45
	Multi range measuring transducer MTA90-P	46
HUMIDITY		Seite 48
Temperature- /	Temperature- / Humidity transmitter flora II	49

TABLE OF CONTENT

Humidity transformer	Humidity- / Temperature transmitter PFT22	50
Climate converter	Climate transmitter PFT25	52
	Climate transmitter PFT28	54
	Climate transmitter PFT28Ka	56
	Climate transmitter PFT30	58
FLOW		Page 60
Measurement orifice	Ring Chamer orifice plate MBR acc. DIN EN ISO 5167	61
	Measuring section MBS acc. DIN 19205	62
	Orifices plates MBT acc. DIN 19206	63
Tube	Cylinder pitot tube MBZ	64
	Measuring grid SGI	65
Venturi	Venturi nozzle MVR / FVR for air volume measurement	68
	Venturi nozzle VMD for air volume measurement	69
	Venturi flow meter EVR2000	70
Magnetic-inductive	Flow meter MID	72
Liquids	Flow meter with measuring orifice	73
	Heat quantity measurement liquids (water)	75
Steam	Heat quantity measurement steam	77
Heat meter	Heat meter WR200-F for liquid	78
	Heat meter WR200-D for steam	80
Accessories	Accessories flow measurement with orifice	82
DISPLAY		Page 83
	Analog display AQD / AQ72	84
	Touchscreen Display	85
	Digital display AD72P	86
	Digital display AD96TF	87
SPECIAL APPLICATION	ON	Page 88
CO2-Measurement	CO ₂ -Monitor CM2	89
Refrigeration technique	Ice thickness controller EDR	90
O2-Measurement	Flue gas tester O2T	91
Measuring transducer	Transmitter WT225 - VT225 - WF225	92
Transmitter DIN-rail	Supply unit and supply converter ST225	93
Supply unit	Multiple-supply SP225	94
Isolating amplifier	Isolation amplifier TR225	95
Limit switch	Limit switch GS225	96
	General terms and conditions	
	Notes	



a diaphragm measuring element replacing the ring balance measuring technology standard of many years. A display with diaphragm measuring element for displaying, monitoring and measured value transmission of pressure, vacuum pressure or differential pressure of non-aggressive gases. Even 35 years later, the device is as up-to-date as ever and still enjoys a respectable demand.

The basic technology has remained the same since the eighties, however the inside has been continuously further developed. Our low-pressure measuring devices capture differential pressures in the following ranges: 0...10 Pa to 0...10,000 Pa.

We can guarantee and certify a maximum deviation of • Low pressure transmitter up to 0.5 % of the measured value.

- Robust design
- High durability
- Custom production according to individual customer needs possible (e.g. special measuring ranges)

Areas of application:

Fan control, filter monitoring, room pressure measurement, volume flow measurement

Included in this product category are:

- Differential pressure controller
- Differential pressure sensor with or without selectable measurement range
- Differential pressure indicator

Depending on the area of application, we offer our display units, sensors and measuring transducers with analog or digital display and analog output signal or with switch contacts.



DIFFERENTIAL PRESSURE & VOLUME FLOW CONTROLLER - DPC200-MOD



- ☐ Electromechanical diaphragm measuring system
- ☐ Configuration via Modbus communication
- ☐ Selectable measurements (differential pressure or volume flow)
- ☐ Selectable units (Pa / InH₂0 or m³/h or cfm)
- ☐ Selectable control mode or measuring mode
- ☐ Control mode with adjustable: setpoint, maximum output voltage, P and I parameterd for PI-algorithm, direct or inverse sense
- Adjustable k-factor for volume flow calculation
- Analog output 0...10 V
- □ Alphanumeric LCD-display
- ☐ Supply voltage 22...26 Vdc; 24 Vac (+/-10%)
- □ Compact plastic housing IP 54



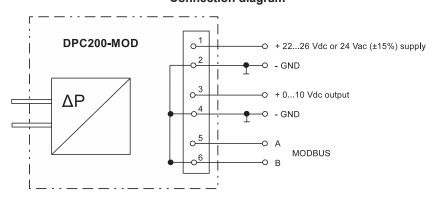
The **DPC200-MOD** has been developed to bundle functions needed in the **HVAC** industry into one device. As a precise differential pressure sensor it can transmit measurements for both pressure and air flow. The integrated **PI control logic** is an important component in decentralized closed loop control systems, where pressure and air flow have to be **constantly controlled**.

The additional **Modbus RTU interface** is intended for the digitalisation of industrial processes. All device parameters can be read and written with the Modbus RTU interface.

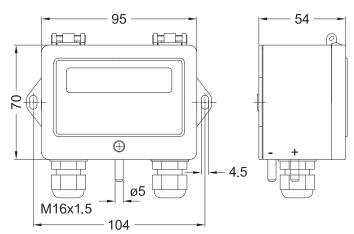
For direct **analog** processing, a **0** ... **10 V signal output** is available. This signal can be configured as a **linear / square root** measuring signal, or as a manipulated variable of the closed loop controller.

It can be used, for example, in air-conditioning technology for controlling fans, monitoring room pressure or controlling filters.

Connection diagram



Dimensions (mm)



DIFFERENTIAL PRESSURE & VOLUME FLOW CONTROLLER - DPC200-MOD



PERFORMANCE:

Overpressure protection: Static pressure: Zero point calibration: Reaction time:

0.2 bar max. 0.2 bar

Adjustable by REEDcontact, no cyclic zero-point calibration required

ACCURACY / ERROR LIMIT:

Zero drift: Sum of linearity and hysteresis: Temperature drift zero point: Temperature drift measuring range:

± 0.75 % ± 0.5 % ... ± 1 % ± 0.3 % / 10 K ± 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle: Measuring unit: Smallest measuring range: Measuring mode or control mode Air or non-aggressive gases

Electromechanical diaphragm measuring system Pa / InH₂0 or m³/h or cfm

Largest measuring range: Measuring range:

0...50 Pa (0.5 mbar) 0...6000 Pa (60 mbar)

0...50 Pa (0.5 mbar), 0...100 Pa (1 mbar), 0...500 Pa (5 mbar), 0...1000 Pa (10 mbar),

0...2000 Pa (20 mbar), 0...4000 Pa (40 mbar), 0...6000 Pa (60 mbar)

Factory preset

Measuring range selection: Adjustable controlling parameters: Characteristic: Ambient temperature: Storage temperature: Control characteristic:

P/I - parameter, k-factor, maximum output voltage, normal/ inverse control linear for pressure measurement, radiated for volume flow measurement

-10...+50 °C -25...+60 °C PI - algorithm

can be set via software

MODBUS COMMUNICATION:

Protocol: Baud rate: device adress / ID: Parity check: Telegram structure:

Setpoint setting:

Modbus RTU selectable in menu, 7200...57600 selectable in menu, 1...247

selectable in menu, none, even, odd, none2stopbits 8 Bit ID; 8 Bit FC; 16 Bit DA; 16 Bit D; 16 Bit CRC

PHYSICALLY:

Housing: Dimensions: Weight: UL 94 HB; Ultramid with hinged lid of ABS

95 x 70 x 54 mm (w x h x d)

approx. 250 g

Protection class:

IP 54 according EN 60529

Display:

EMC:

Two-line alphanumeric LCD display, 2 x 16 characters

Electrical connections: Pressure connections:

Cable entry M16x1.5, screw terminals, electronics protected against incorrect polarity

Hose connections 5 mm ø and 6 mm ø

Vertical, position dependence when rotated through 90 ° approx. 25 Pa Operational position:

ELECTRONIC:

Power supply: Power consumption: Output:

22...26 Vdc; 24 Vac (±10%) approx. 50 mA @ 24 Vdc; < 2 W Power 0...10 V; I_{max} = 1.0 mA, R_{min} = 10 kΩ

CONFORMITY:

EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: According RoHS-directive 2011/65/EU

Item no.

Differential pressure controller DPC200-MOD

Supply voltage 22...26 Vdc; 24 Vac (±10%)

Output: 0...10V, Measuring range (Pa): Customer specific presetting required!

ACCESSORIES

Mounting set M-DS with screws, bleeders and 2m plastic tube (4 x 1.5 mm)



DIFFERENTIAL PRESSURE & VOLUME FLOW MULTI RANGE CONTROLLER DPC310

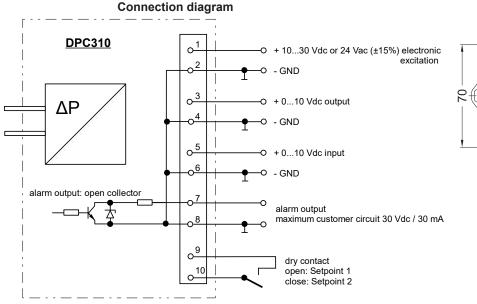


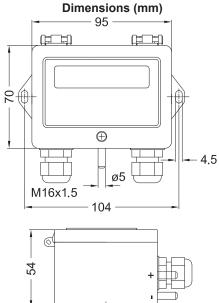
- ☐ Switchable operating modes (measuring or controlling)
- ☐ Switchable measured variables (differential pressure or volume flow)
- ☐ Switchable measuring units (Pa and m3 / h or InH2O and cfm)
- 4 application-oriented preset measuring ranges
- ☐ Analog output 0 ... 10 V
- ☐ Adjustable k-factor for volume flow calculation
- Measuring mode with adjustable limit
- □ Control mode with adjustable:
 - □ 2 setpoints
 - ☐ Setpoint configurable via external signal input option:
 - 10 V DC signal or temperature sensor
 - □ PI parameters for PI algorithm
 - Maximum output voltage
 - ☐ Control effect positive / heat or negative / cool

The DPC310 is based on the DPC200, but extends its functionality and thus has more dynamics than the DPC200.

In control mode, the DPC310 now actively switches to the setpoint setting, by externally inputting a 10 V DC signal or in combination with a temperature sensor, the setpoint can be set dynamically. Pressure and flow are thus no longer solely responsible for the fan control, but other factors, such as the outside temperature can play a role. An additional improvement is the four preset measuring ranges. In each case, four important measuring ranges were combined in an application-oriented manner. Which increases the field of application and simplifies the ordering and storage.

In addition, the DPC310 has all the functions of the DPC200.





PERFORMANCE:

Overpressure protection: Static pressure: Zero point calibration: Reaction time: 0.2 bar max. 0.2 bar

Adjustable by REEDcontact, no cyclic zero-point calibration required

direct

ACCURACY / ERROR LIMIT:

Zero drift: Sum of linearity and hysteresis:

± 0.75 % ± 1 %

Temperature drift zero point: Temperature drift measuring range:

± 0.3 % / 10 K ± 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle: Measuring mode or control mode Air or non-aggressive gases

Electromechanical diaphragm measuring system

DIFFERENTIAL PRESSURE & VOLUME FLOW MULTI RANGE CONTROLLER DPC310



Measuring unit: | Pa / inH₂O or m³/h or cfm

Smallest measuring range: 0...50 Pa (0.5 mbar) / 0.2 InH20 Largest measuring range: 0...6000 Pa (60 mbar) / 24 InH20

Measuring range selection: 4 preselected measuring ranges, switchable via software

Adjustable controlling parameters: P/I - parameter, k-factor, maximum output voltage, normal/ inverse control

Characteristic: linear or square root

Ambient temperature: -10...+50 °C
Storage temperature: -25...+60 °C
Control characteristic: PI - algorithm

Setpoint settings: 2 setpoints adjustable within software,

Setpoints are selectable with floating contact input

Signal input: 0...10 V, multifunctional input

extern setpoint: 0...10 V input is related to measuring range

temp. compensated setpoint: 0...10 V input is related to -30.0...+70.0°C

Limit signal Output / alarm output: Open Collector, max. 30 V / 30 mA

Alarm delay time: Freely adjustable in the range of 0 ... 60 seconds - 2 ... 15 minutes

PHYSICALLY:

Housing: UL 94 HB; Ultramid with hinged lid of ABS

Dimensions: $95 \times 70 \times 54 \text{ mm } (\text{w x h x d})$

Weight: approx. 250 g

Protection class: IP 54 according EN 60529

Display: Two-line alphanumeric LCD display, 2 x 16 characters

Electrical connections: Cable entry M16 x 1.5, screw terminals, electronics protected against

incorrect polarity

Pressure connections: Hose connections 5 mm ø and 6 mm ø

Operational position: Vertical, position dependence when rotated through 90 ° approx. 25 Pa

ELECTRONIC:

Power supply: 10...30 Vdc; 24 Vac (±15%)

Power consumption: approx. 8 mA @ 10 Vdc, approx. 10 mA @ 24 Vdc

Output: 0...10 V;

10 Vdc: I_{max} = 0.5 mA, R_{max} = 20 k Ω 24 Vdc: I_{max} = 4.0 mA, R_{max} = 2.5 k Ω

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: According RoHS-directive 2011/65/EU

	Item no.
Differential pressure controller DPC310-200: Supply voltage 1030 Vdc; 24 Vac (±15%) / Output: 010V	2542
Measuring range 1: 0 200 Pa or 0 0,8 InH2O Measuring range 2: 0 150 Pa or 0 0,6 InH2O Measuring range 3: 0 100 Pa or 0 0,4 InH2O Measuring range 4: 0 50 Pa or 0 0,2 InH2O	
Differential pressure controller DPC310-1000: Supply voltage 1030 Vdc; 24 Vac (±15%) / Output: 010V	2543
Measuring range 1: 0 1000 Pa or 0 4.0 InH2O Measuring range 2: 0 750 Pa or 0 3.0 InH2O Measuring range 3: 0 500 Pa or 0 2.0 InH2O Measuring range 4: 0 250 Pa or 0 1.0 InH2O	
Differential pressure controller DPC310-6000: Supply voltage 1030 Vdc; 24 Vac (±15%) / Output: 010V	2544
Measuring range 1: 0 6000 Pa or 0 24.0 InH2O Measuring range 2: 0 4000 Pa or 0 16.0 InH2O Measuring range 3: 0 3000 Pa or 0 12.0 InH2O Measuring range 4: 0 2000 Pa or 0 8.0 InH2O	

Mounting set M-DS with screws, bleeders and 2m plastic tube (4 x 1.5 mm)



DIFFERENTIAL PRESSURE / VOLUME FLOW CONTROLLER DPC200

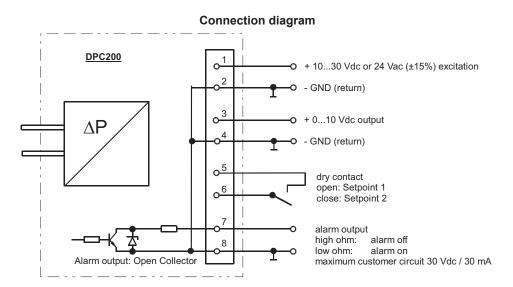


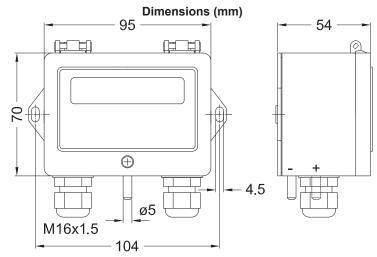
- ☐ Electromechanical diaphragm measuring system
- ☐ Measuring range from 0...50 Pa (0.5 mbar) up to 0...6000 Pa (60 mbar)
- □ Alphanumeric LCD-display
- Analog output 0...10 V
- □ Selectable measurements (differential pressure or volume flow)
- ☐ Selectable units (metric or imperial)
- ☐ Adjustable k-factor for volume flow calculation
- □ Controlling mode or measuring mode selectable
- Measuring mode with adjustable limit value
 - Control mode with adjustable:
 - 2 setpoints
 - PI parameters for PI algorithm
 - maximum output voltage
- Supply voltage 10...30 Vdc; 24 Vac (+/-15%)
- ☐ Compact plastic housing IP 54

The DPCs are electromechanical differential pressure / volume flow controllers with a diaphragm measuring system and a comprehensive evaluation software. They are used to measure and control the smallest differential pressures of non-aggressive gases, in particular of air.

Their optimal application area can be found in the field of climatic technology for controlling fans, room pressure monitoring or filter control. The devices allow controlling of air flow or keeping up a constant pressure in a closed environment.

In addition to the analog output, an additional alarm output (open collector, max. 30 V / 30 mA or relay 250 Vac / 10 A) is available for limit monitoring or filter monitoring. The device provides a radiated output signal as a volumetric flow sensor. In the case of the pressure or volume flow control, the output signal is the manipulated variable of the PI control.





DIFFERENTIAL PRESSURE / VOLUME FLOW CONTROLLER DPC200



PERFORMANCE:

Overpressure protection: Static pressure: Zero point calibration: Reaction time:

0.2 bar max. 0.2 bar

Adjustable by REEDcontact, no cyclic zero-point calibration required

ACCURACY / ERROR LIMIT:

Zero drift: Sum of linearity and hysteresis: Temperature drift zero point: Temperature drift measuring range: ± 0.75 % ± 0.5 % ... ± 1 % ± 0.3 % / 10 K ± 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle: Measuring unit: Measuring mode or control mode Air or non-aggressive gases

Smallest measuring range:

Electromechanical diaphragm measuring system Pa / InH20 or m3/h or cfm

Largest measuring range:

0...50 Pa (0.5 mbar) 0...6000 Pa (60 mbar)

Measuring range:

0...50 Pa (0.5 mbar), 0...100 Pa (1 mbar), 0...500 Pa (5 mbar), 0...1000 Pa (10 mbar), 0...2000 Pa (20 mbar), 0...4000 Pa (40 mbar), 0...6000 Pa (60 mbar)

Factory preset

Measuring range selection: Adjustable controlling parameters: Characteristic:

P/I - parameter, k-factor, maximum output voltage, normal/ inverse control linear for pressure measurement, radiated for volume flow measurement -10...+50 °C

Ambient temperature: Storage temperature: Control characteristic:

-25...+60 °C PI - algorithm

Setpoint settings:

2 setpoints can be set via keys, selection of setpoints via potential free contact Open Collector, max. 30 V / 30 mA

Limit signal Output / alarm output: Alarm delay time:

12 seconds

PHYSICALLY:

Housing: Dimensions: Weight: UL 94 HB; Ultramid with hinged lid of ABS

95 x 70 x 54 mm (w x h x d)

Protection class:

approx. 250 g

IP 54 according EN 60529

Display: Electrical connections:

Two-line alphanumeric LCD display, 2 x 16 characters

Cable entry M16x1.5, screw terminals, electronics protected against incorrect polarity

Pressure connections: Operational position: Hose connections 5 mm ø and 6 mm ø

Vertical, position dependence when rotated through 90 ° approx. 25 Pa

ELECTRONIC:

Power supply: Power consumption: Output: 10...30 Vdc; 24 Vac (±15%)

approx. 10 mA @ 10 Vdc, ca. 12 mA @ 24 Vdc

0...10 V (Imax = 0.4 mA @ 10 Vdc, Imax = 2 mA @ 20 Vdc)

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark According RoHS-directive 2011/65/EU

Item no.

Differential pressure controller DPC200

2566

Supply voltage 10...30 Vdc; 24 Vac (±15%)

Output: 0...10V, Measuring range (Pa): Customer specific presetting required!

ACCESSORIES

Mounting set M-DS with screws, bleeders and 2m plastic tube (4 x 1.5 mm)



DIFFERENTIAL PRESSURE / VOLUME FLOW CONTROLLER DPC200-R

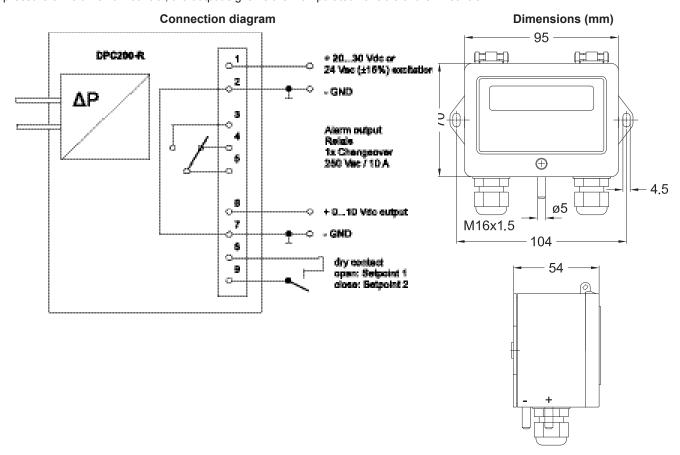


- Electromechanical diaphragm measuring system
- ☐ Measuring range from 0...50 Pa (0.5 mbar) up to 0...6000 Pa (60 mbar)
- □ Alphanumeric LCD-display
- □ Analog output 0...10 V
- ☐ Relay alarm output for measuring and control mode
- ☐ Selectable measurements (differential pressure or volume flow)
- ☐ Selectable units (metric or imperial)
- Adjustable k-factor for volume flow calculation
- □ Controlling mode or measuring mode selectable
- ☐ Measuring mode with adjustable limit value
- ☐ Supply voltage 20...30 Vdc; 24 Vac (+/-15%)
- ☐ Compact plastic housing IP 54
- ☐ Control mode with adjustable:
 - 2 setpoints
 - PI parameters for PI algorithm
 - maximum output voltage
 - Control action: positive / heat or negative / cool

The DPCs are electromechanical differential pressure / volume flow controllers with a diaphragm measuring system and a comprehensive evaluation software. They are used to measure and control the smallest differential pressures of non-aggressive gases, in particular of air.

Their optimal application area can be found in the field of climatic technology for controlling fans, room pressure monitoring or filter control. The devices allow controlling of air flow or keeping up a constant pressure in a closed environment.

In addition to the analog output, an additional alarm output (open collector, max. 30 V / 30 mA or relay 250 Vac / 10 A) is available for limit monitoring or filter monitoring. The device provides a radiated output signal as a volumetric flow sensor. In the case of the pressure or volume flow control, the output signal is the manipulated variable of the PI control.



DIFFERENTIAL PRESSURE / VOLUME FLOW CONTROLLER DPC200-R



PERFORMANCE:

Overpressure protection: Static pressure: Zero point calibration: Reaction time:

0.2 bar max. 0.2 bar

Adjustable by REEDcontact, no cyclic zero-point calibration required

ACCURACY / ERROR LIMIT:

Zero drift:

Sum of linearity and hysteresis: Temperature drift zero point: Temperature drift measuring range:

± 0.75 % ± 0.5 % ... ± 1 %

± 0.3 % / 10 K ± 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle:

Measuring unit:

Smallest measuring range: Largest measuring range:

Measuring range:

Measuring range selection: Adjustable controlling parameters:

> Characteristic: Ambient temperature: Storage temperature: Control characteristic: Setpoint settings:

Limit signal Output / alarm output: Alarm delay time: Measuring mode or control mode

Air or non-aggressive gases

Electromechanical diaphragm measuring system

Pa / InH20 or m3/h / I/s 0...50 Pa (0.5 mbar)

0...6000 Pa (60 mbar)

0...50 Pa (0.5 mbar), 0...100 Pa (1 mbar), 0...500 Pa (5 mbar), 0...1000 Pa (10 mbar), 0...2000 Pa (20 mbar), 0...4000 Pa (40 mbar), 0...6000 Pa (60 mbar)

Factory preset

P/I - parameter, k-factor, maximum output voltage, normal/ inverse control linear for pressure measurement, radiated for volume flow measurement

-10...+50 °C -25...+60 °C PI - algorithm

2 setpoints can be set via keys, selection of setpoints via potential free contact

Relay 250 Vac / 10 A

Freely adjustable in the range of 0 ... 60 seconds - 2 ... 15 minutes

PHYSICALLY:

UL 94 HB; Ultramid with hinged lid of ABS Housing: Dimensions: Weight:

95 x 70 x 54 mm (w x h x d) approx. 250 g

Protection class: Display: IP 54 according EN 60529

Electrical connections: Pressure connections: Two-line alphanumeric LCD display, 2x16 characters

Cable entry M16x1.5, screw terminals, electronics protected against incorrect polarity Hose connections 5 mm ø and 6 mm ø

Operational position: Vertical, position dependence when rotated through 90 ° approx. 25 Pa

ELECTRONIC:

Power supply: Power consumption: Output:

20...30 Vdc; 24 Vac (±15%)

approx. 10 mA @ 24 Vdc, and approx 20 mA with relay 0...10 V (Imax = 0.4 mA @ 10 Vdc, Imax = 2 mA @ 20 Vdc)

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark According RoHS-directive 2011/65/EU RoHS:

Item no.

Differential pressure controller DPC200-R

2590

Supply voltage 20...30 Vdc; 24 Vac (±15%)

Output: 0...10V, Measuring range (Pa): Customer specific presetting required!

ACCESSORIES

Mounting set M-DS with screws, bleeders and 2m plastic tube (4 x 1.5 mm)



DIFFERENTIAL PRESSURE SENSOR DS85



□ Diaphragm element

☐ Smallest measuring range 0...50 Pa

☐ Analog output 0...10 V or 4...20 mA

☐ Supply voltage 24 Vac or 24 Vdc

☐ Version with 3-digit LCD-Display (DS85-A)

☐ Version with adjustable contact (DS85-GS)

□ Square root output signal possible

☐ Compact size of about ca. 70 mm

☐ Protection class IP 65

Sensor with diaphragm element for transmission of measured values of pressure, vacuum or differential pressure of non-aggressive gases.



Overload protection: 0.2 bar Static pressure: max. 0.2 bar

Zero point calibration: Adjustable b

Adjustable by REEDcontact, no cyclic zero-point

calibration required

Reaction time: direct

ACCURACY / ERROR LIMIT:

Zero drift:
Sum of linearity and hysteresis:
Temperature drift zero point:
Temperature drift measuring range:

± 0.5 % ± 0.3 % / 10 K ± 0.2 % / 10 K

± 0.75 %

TECHNICAL SPECIFICATIONS:

Measuring mode

Operating mode: Measuring medium: Measuring principle: Measuring unit:

Air or non-aggressive gases
Electromechanical diaphragm measuring system

Smallest measuring range:

0...50 Pa (0.5 mbar) 0...10000 Pa (100 mbar)

Largest measuring range: Measuring range:

0...50 Pa (0.5 mbar), 0...100 Pa (1 mbar), 0...200 Pa (2 mbar), 0...500 Pa (5 mbar),

0...1000 Pa (10 mbar), 0...2000 Pa (20 mbar), 0...4000 Pa (40 mbar), 0...6000 Pa (60 mbar),

0...10000 Pa (100 mbar)

Measuring range selection:
Characteristic:
Ambient temperature:
Storage temperature:
Limit signal Output / alarm output:

factory preset linear or radiated -10...50 °C

-25...+60 °C

open Collector, max 50 mA



PHYSICALLY:

Housing: Ultramid

Dimensions: diameter 70 mm, depth 50 mm

Weight: approx. 90 g

Protection class: IP65 according EN 60529

Display: only in combination with three-wire system

3-digit LCD display, character height 9 mm,

indications in pressure units

Electrical connections: 3- or 4-wires cable, 50 cm length, colour coded,

electronic protected against false polarity

Pressure connections: Hose connections 5 mm ø

Operational position: Vertical, position dependence when rotated

through 90° approx. 25 Pa

ELECTRONIC:

Power supply: 15...30 Vdc; 24 Vac (+/-15%)

12 ... 30 Vdc with two-wire circuit

Power consumption: approx. 10 mA (@ 24 Vdc) two-wire circuit: 4...20 mA

three-wire circuit: 0...10 V

(Output square root possible at extra charge)

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: According RoHS-directive 2011/65/EU

DIFFERENTIAL PRESSURE SENSOR DS85



Special feature DS85 with limit switch

Setpoint setting: Limit signal output / alarm output: Time delay: Switching function:

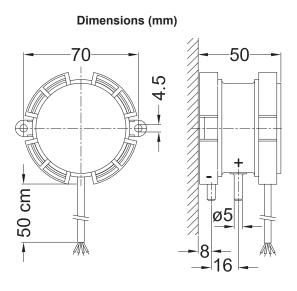
TECHNICAL SPECIFICATIONS:

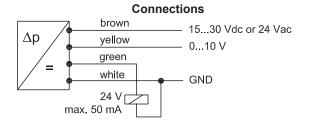
Poti with scale 0 ... 100%

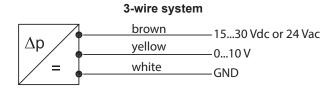
Open collector, max 50 mA

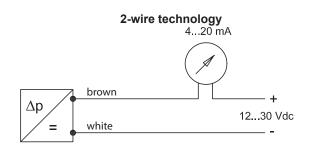
Adjustable via potentiometer 0 ... 7 s

Min. or max. (Please specify when ordering!)









		ltem no.
Differential pressure sensor DS85		2510
Measurement range: Customer-specific Output: 010 V, 3-wire technology; suppl		
Differential pressure sensor DS85Z		2511
Measurement range: Customer-specific Output: 420 mA, 2-wire technology; sup		
	ACCESSORIES	
Mounting set M-DS with screws, hose lin	ners and 2 m plastic hose (4 x 1.5 mm)	25110
	SURCHARGE	
Digital display (only for 3-wire technology - 2510)		25101
Limit-contact min. or max. (only for 3-wire technology - 2510)	Min. or max.: Customer-specific presetting required!	25102
Special measuring range as far as poss	ible	25103
Output square root 010 V or 4 20 m	A version	25107
Test certificate		25108



DIFFERENTIAL PRESSURE SENSOR with selectable measurement range DS85-P



□ Diaphragm element

■ Measuring range from 0...50 Pa to 0...6000 Pa

☐ Analog output 0...10 V or 4...20 mA

□ Supply voltage 24 Vac or 24 Vdc

☐ 4 calibrated measuring ranges selectable via DIP-Switch

☐ Compact size of about ca. 70 mm

□ Protection class IP 65

Sensor for measuring small differential pressure of non-aggressive gases, preferably of air. Ranges from 50 Pa up to 6000 Pa are covered by three units, up to four calibrated ranges are selectable by DIP-switch in each unit.

PERFORMANCE:

Overload protection: 0.2 bar Static pressure: max. 0.2 bar

Zero point calibration: Adjustable by REEDcontact, no cyclic zero-point calibration required

Reaction time: direction

ACCURACY / ERROR LIMIT:

Zero drift: See table: Error limits
Sum of linearity and hysteresis: See table: Error limits

Temperature drift measuring range: | Because 4 measuring ranges in 3 measuring groups

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode

Measuring medium: Air or non-aggressive gases

Measuring principle: Electromechanical diaphragm measuring system

Measuring unit: Pa

Smallest measuring range: 0...50 Pa (0.5 mbar)
Largest measuring range: 0...6000 Pa (60 mbar)

Measuring range: 0...50 Pa (0.5 mbar), 0...200 Pa (2 mbar), 0...500 Pa (5 mbar), 0...1000 Pa (10

mbar), 0...2000 Pa (20 mbar), 0...4000 Pa (40 mbar), 0...6000 Pa (60 mbar)

Measuring range selection: yes via 2-pole DIP switch

Characteristic: linear

Ambient temperature: -10...+50 °C Storage temperature: -25...+60 °C

PHYSICALLY:

Housing: Ultramid

Dimensions: diameter 70 mm, depth 50 mm

Weight: approx. 90 g

Protection class: IP65 according EN 60529

Electrical connections: 3- or 4-wires cable, 50 cm length, colour coded, electronic protected against

false polarity

Pressure connections: Hose connections 5 mm ø

Operational position: Vertical, position dependence when rotated through 90 ° approx. 25 Pa

ELECTRONIC:

Power supply: 15...30 Vdc or 24 Vac ± 15 % approx. 10 mA (@ 24 Vdc)
Output: 0...10 V three-wire circuit

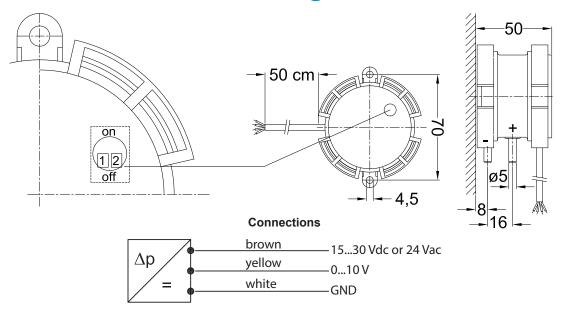
CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: According RoHS-directive 2011/65/EU

Gerätetypen	DS85-P200	DS85-P1000	DS85-P6000
Measuring range			
MB 1:	0200 Pa	01000 Pa	06000 Pa
MB 2:	0150 Pa	0500 Pa	04000 Pa
MB 3:	0100 Pa	0300 Pa	03000 Pa
MB 4:	050 Pa	0200 Pa	02000 Pa

DIFFERENTIAL PRESSURE SENSOR with selectable measurement range **DS85-P**





Error limits (related to the actual range)

	Zero deviation	Final value deviation	Linearity	Resolution	Hysteresis
DS85-P200					
0200 Pa	± 0.5 %	± 0.5 %	± 0.25 %	0.1 %	1 %
0150 Pa	± 0.75 %	± 0.6 %	± 0.4 %	0.2 %	0.7 %
0100 Pa	± 1 %	± 0.7 %	± 0.5 %	0.2 %	0.5 %
050 Pa	± 2 %	± 1 %	± 1 %	0.3 %	0.5 %
DS85-P1000					
01000 Pa	± 0.5 %	± 0.5 %	± 0.25 %	0.1 %	0.2 %
0500 Pa	± 0.7 %	± 0.7 %	± 0.5 %	0.2 %	0.2 %
0300 Pa	± 0.9 %	± 0.9 %	± 0.9 %	0.3 %	0.2 %
0200 Pa	± 1 %	± 1 %	± 1.25 %	0.3 %	0.2 %
DS85-P6000					
06000 Pa	± 0.5 %	± 0.5 %	± 0.25 %	0.1 %	0.2 %
04000 Pa	± 0.7 %	± 0.7 %	± 0.4 %	0.15 %	0.2 %
03000 Pa	± 0.9 %	± 0.9 %	± 0.6 %	0.2 %	0.2 %
02000 Pa	± 1 %	± 1 %	± 0.75 %	0.25 %	0.2 %

	Item no.
Differential pressure sensor DS85-P200	2550
Output: 010 V, 3-wire technology Supply voltage: 1530 Vdc, 24 Vac Range: 0200, 0150, 0100 and 050 Pa	
Differential pressure sensor DS85-P1000	2551
Output: 010 V, 3-wire technology Supply voltage: 1530 Vdc, 24 Vac Range: 01000, 0500, 0300 and 0200 Pa	
Differential pressure sensor DS85-P6000	2552
Output: 010 V, 3-wire technology Supply voltage: 1530 Vdc, 24 Vac Range: 06000, 04000, 03000 and 02000 Pa	
	ACCESSORIES

ACCESSORIES	
Mounting set M-DS with screws, hose liners and 2 m plastic hose (4 x 1.5 mm)	25110
SURCHARGE	
Test certificate	25108



DIFFERENTIAL PRESSURE SENSOR DS85-P...E



□ Diaphragm element

☐ Measuring range 0...50 Pa to 0...6000 Pa

□ 4 calibrated measuring ranges selectable via DIP-switch

□ Analog output signal 0...10 V

☐ Supply voltage 15...30 Vdc or 24 Vac (±15%)

☐ Compact plastic housing IP 54; UL 94 HB

The differential pressure sensor DS85-P...E is used to measure small differential pressures in ventilation and air conditioning.

The measurement range from 0...50 Pa up to 0...6000 Pa is divided in three measurement groups. Each group has four calibrated measurement ranges, which are selectable by two DIP-Switches.

PERFORMANCE:

Overload protection: Static pressure:

max. 0.2 bar

Zero point calibration:
Reaction time:

Adjustable by REEDcontact, no cyclic zero-point calibration required

direct

0.2 bar

ACCURACY / ERROR LIMIT:

Zero drift: See table: Error limits Sum of linearity and hysteresis: See table: Error limits

Temperature drift measuring range: Because 4 measuring ranges in 3 measuring groups

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode

Measuring medium: Air or non-aggressive gases

Measuring principle: Electromechanical diaphragm measuring system

Measuring unit: Pa

Smallest measuring range: 0...50 Pa (0.5 mbar)
Largest measuring range: 0...6000 Pa (60 mbar)

Measuring range: 0...50 Pa (0.5 mbar), 0...200 Pa (2 mbar), 0...500 Pa (5 mbar), 0...1000 Pa (10

mbar), 0...2000 Pa (20 mbar), 0...4000 Pa (40 mbar), 0...6000 Pa (60 mbar)

Measuring range selection: yes via 2-pole DIP switch

Characteristic: linear

Ambient temperature: -10...+50 °C Storage temperature: -25...+60 °C

PHYSICALLY:

Housing: UL 94 HB; Ultramid with hinged lid of ABS

Dimensions: $95 \times 70 \times 54 \text{ mm}$ (w x h x d)

Weight: approx. 250 g

Protection class: IP 54 according EN 60529

Electrical connections: cable entry M16x1.5, screw terminals, electronics protected against incorrect

polarity

Pressure connections: hose connections 5 mm ø and 6 mm ø

Operational position: | vertical, position dependence when rotated through 90° approx. 25 Pa

ELECTRONIC:

Power supply: 15...30 Vdc or 24 Vac ± 15 %

Power consumption: approx. 5 mA at 15 Vdc; approx. 12 mA at 30 Vdc

Output: 0...10 V three-wire circuit

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: According RoHS-directive 2011/65/EU

DIFFERENTIAL PRESSURE SENSOR DS85-P...E



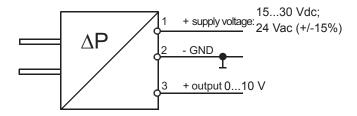
Error limits (related to the actual range)

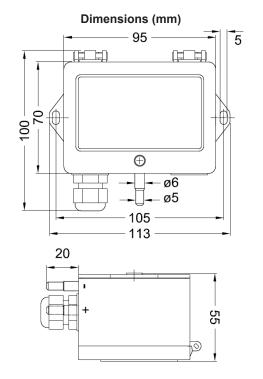
	Zero deviation	Final value deviation	Linearity	Resolution	Hysteresis
DS85-P200E					
0200 Pa	± 0.5 %	± 0.5 %	± 0.25 %	0.1 %	1 %
0150 Pa	± 0.75 %	± 0.6 %	± 0.4 %	0.2 %	0.7 %
0100 Pa	± 1 %	± 0.7 %	± 0.5 %	0.2 %	0.5 %
050 Pa	± 2 %	± 1 %	± 1 %	0.3 %	0.5 %
DS85-P1000E					
01000 Pa	± 0.5 %	± 0.5 %	± 0.25 %	0.1 %	0.2 %
0500 Pa	± 0.7 %	± 0.7 %	± 0.5 %	0.2 %	0.2 %
0300 Pa	± 0.9 %	± 0.9 %	± 0.9 %	0.3 %	0.2 %
0200 Pa	± 1 %	± 1 %	± 1.25 %	0.3 %	0.2 %
DS85-P6000E					
06000 Pa	± 0.5 %	± 0.5 %	± 0.25 %	0.1 %	0.2 %
04000 Pa	± 0.7 %	± 0.7 %	± 0.4 %	0.15 %	0.2 %
03000 Pa	± 0.9 %	± 0.9 %	± 0.6 %	0.2 %	0.2 %
02000 Pa	± 1 %	± 1 %	± 0.75 %	0.25 %	0.2 %

Temperature drift (based on the highest measuring span)

Zero point	± 0.2 % / K
End value	± 0.3 % / K

Connections





	Item no.
Differential pressure sensor DS85-P200E	2555
Output: 010V, 3-wire technology Range: 0200, 0150, 0100, 050 Pa	
Differential pressure sensor DS85-P1000E	2556
Output: 010V, 3-wire technology Range: 01000, 0500, 0300, 0200 Pa	
Differential pressure sensor DS85-P6000E	2557
Output: 010V, 3-wire technology Range: 06000, 04000, 03000, 02000 Pa	
ACCESSORIES	

ACCESSORIES

Mounting set M-DS with screws, bleeder Connections and 2 m plastic hose (4 x 1.5 mm)



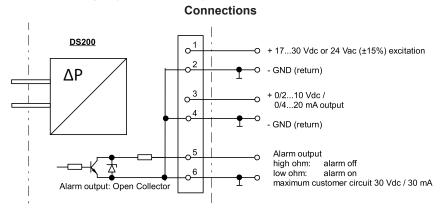
DIFFERENTIAL PRESSURE SENSOR with selectable measurment range DS200

- ☐ MENSIO measuring system
- Sensor for differential pressure or volume flow
- Measuring range from 0...50 Pa (0.5 mbar) up to 0...6000 Pa (60 mbar)
- Software menu for parameterization
 - Switchable measuring variables (differential pressure or volume flow)
 - Selectable units (metric or imperial)
 - k-factor (input range k-factor up to 10,000) Setting for volumetric flow
 - 4 calibrated measuring ranges selectable via DIP-switch
 - Characteristic adjustment: Linear / radiated
 - Analog output signal 0/2...10 V or 0/4...20 mA
 - Measuring mode with adjustable limit value
 - Alarm delay time (switching delay) 1 sec. to 15 minutes adjustable
 - Switching and contact logic for 4 different states
- Open collector alarm output (max. 30 V / 30 mA)
- Damping of the output signal adjustable via DIP switch
- □ Supply voltage 17...30 Vdc; 24 Vac (+/-15%)
- Compact plastic housing IP 54

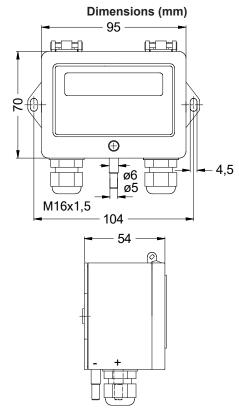
The DS200 differential pressure sensor is used to measure small differential pressures in ventilation and air conditioning systems. In combination with an effective pressure transducer (for example, a venturi nozzle, a venturi tube, a measuring diaphragm), suitable for the calculation of the volumetric flow.

Known fields of application are: Ventilation systems, room pressure monitoring, filter monitoring process, environmental, clean room technology, fan technology, pump technology, suction technology, pressure switch.

All our differential pressure transducers of the DS series have our optimized mechanical measuring system MENSIO. The MENSIO has been steadily developed over many years and has always proved itself against all adversities. It is particularly characterized by its precision, longevity and insensitivity to external influences.



Error limits (related to the actual range)					
	Zero devi- ation	Final value deviation	Linearity	Resolution	Hysteresis
DS200-2					
0200 Pa	± 0.5 %	± 0.5 %	± 0.25 %	0.1 %	1 %
0150 Pa	± 0.75 %	± 0.6 %	± 0.4 %	0.2 %	0.7 %
0100 Pa	± 1 %	± 0.7 %	± 0.5 %	0.2 %	0.5 %
050 Pa	± 2 %	± 1 %	± 1 %	0.3 %	0.5 %
DS200-10					
01000 Pa	± 0.5 %	± 0.5 %	± 0.25 %	0.1 %	0.2 %
0500 Pa	± 0.7 %	± 0.7 %	± 0.5 %	0.2 %	0.2 %
0300 Pa	± 0.9 %	± 0.9 %	± 0.9 %	0.3 %	0.2 %
0200 Pa	± 1 %	± 1 %	± 1.25 %	0.3 %	0.2 %
DS200-60					
06000 Pa	± 0.5 %	± 0.5 %	± 0.25 %	0.1 %	0.2 %
04000 Pa	± 0.7 %	± 0.7 %	± 0.4 %	0.15 %	0.2 %
03000 Pa	± 0.9 %	± 0.9 %	± 0.6 %	0.2 %	0.2 %
02000 Pa	± 1 %	± 1 %	± 0.75 %	0.25 %	0.2 %



Unit type	DS200-2	DS200-10	DS200-60
Measu	ring range		
MB 1:	0200 Pa	01000 Pa	06000 Pa
MB 2:	0150 Pa	0500 Pa	04000 Pa
MB 3:	0100 Pa	0300 Pa	03000 Pa
MB 4:	050 Pa	0200 Pa	02000 Pa

DIFFERENTIAL PRESSURE SENSOR with selectable measurment range DS200



PERFORMANCE:

Overpressure protection: 0.2 bar Static pressure: max. 0.2 bar

Zero point calibration: adjustable by REEDcontact, no cyclic zero-point calibration required

Response time:

ACCURACY / ERROR LIMIT:

Zero drift: are specified below Sum of linearity and hysteresis: are specified below

Temperature drift measuring range: 4 measuring ranges in 3 measuring groups

TECHNICAL SPECIFICATIONS:

Operating mode: measuring mode

Measuring medium: air or non-aggressive gases

Measuring principle: electromechanical diaphragm measuring system

Measuring unit: Pa / InH20 or m3/h or cfm Smallest measuring range: 0...50 Pa (0.5 mbar) Largest measuring range: 0...6000 Pa (60 mbar)

Measuring range: DS200-P2: 0...200 Pa (2 mbar), 0...150 Pa, 0...100 Pa, 0...50 Pa (0.5 mbar) DS200-P10: 0...1000 Pa (10mbar), 0...500 Pa, 0...300 Pa, 0...200 Pa (2 mbar)

DS200-P60: 0...6000 Pa (60 mbar), 0...4000 Pa, 0...3000 Pa, 0...2000 Pa (20 mbar)

Measuring range selection: by software menu

> linear or radiated selectable by software menu Characteristic:

Damping: adjustable in 3 steps

Ambient temperature: -10...+50 °C Storage temperature: -25...+60 °C

Setpoint settings: 1 limit can be set via software menu Limit signal Output / alarm output: open collector, max 30 V / 30 mA

freely adjustable in the range of 0 ... 60 seconds - 2 ... 15 minutes Alarm delay time:

Switching logic: MIN or MAX

active high or active low Contact logic:

PHYSICALLY:

Housing: UL 94 HB; Ultramid with hinged lid of ABS

Dimensions: 95 x 70 x 54 mm (w x h x d)

> Weight: approx. 250 g

Protection class: IP 54 according EN 60529

> Display: two-line alphanumeric LCD display, 2 x 16 characters

cable entry M16x1.5, screw terminals, electronics protected against incorrect polarity Electrical connections:

Pressure connections: hose connections 5 mm ø and 6 mm ø

Operational position: vertical, position dependence when rotated through 90° approx. 25 Pa

ELECTRONIC:

17...30 Vdc or 24 Vac \pm 15 %Power supply:

approx. 6 mA @ 17 Vdc and 0...10 V output Power consumption:

approx. 19 mA @ 30 Vdc and 0...10 V output

Output: 0/2...10 V(Imax = 10 mA @ 20 Vdc, Imax = 17 mA @ 30 Vdc)

0/4...20 mA, max load 200 Ω

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: | according RoHS-directive 2011/65/EU

Item no.

Differential pressure sensor DS200-2

2560

Output: 0/2...10 V, 0/4...20 mA, 3-wire technology

Output: 0/2...10 V, 0/4...20 mA, 3-wire technology

Supply voltage: 17...30 Vdc, 24 Vac I Measurement range: 0...200, 0...150, 0...100 and 0...50 Pa

Differential pressure sensor DS200-10

2561

Supply voltage: 17...30 Vdc, 24 Vac I Measurement range: 0...1000, 0...500, 0...300 and 0...200 Pa

Differential pressure sensor DS200-60

2562

Output: 0/2...10 V, 0/4...20 mA, 3-wire technology Supply voltage: 17...30 Vdc, 24 Vac I Measurement range: 0...6000, 0...4000, 0...3000 and 0...2000 Pa

ACCESSORIES

Mounting set M-DS with screws, bleeder Connections and 2 m plastic hose (4 x 1.5 mm)



DIFFERENTIAL PRESSURE MANOMETER



- Diaphragm element
- Smallest measuring range 0...200 Pa
- Analog scale
- Compact size of about ca. 70 mm

Manometer with diaphragm element for indication of pressure, under pressure or differential pressure of non-aggressive gas.

PERFORMANCE:

Overload protection: 0.2 bar Static pressure: max. 0.2 bar

Zero point calibration: Adjustable by REEDcontact, no cyclic zero-point calibra-

tion required

Reaction time: direct

ACCURACY / ERROR LIMIT:

± 0.75 % Zero drift:

Sum of linearity and hysteresis: < 400 Pa \pm 3 %; > 400 Pa \pm 2 %

Temperature drift zero point: ± 0.3 % / 10 K Temperature drift measuring range: ± 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode

Measuring medium: Air or non-aggressive gases Measuring principle: diaphragm measuring system

Measuring unit:

Smallest measuring range: 0...200 Pa (2 mbar) Largest measuring range:

0...6000 Pa (60 mbar)

0...200 Pa (2 mbar), 0...400 Pa (4 mbar), Measuring range: 0...1000 Pa (10 mbar), 0...2000 Pa (20 mbar),

0...4000 Pa (40 mbar), 0...6000 Pa (60 mbar)

Measuring range selection: factory preset Ambient temperature: -10...+50 °C

Storage temperature: -25...+60 °C

PHYSICALLY:

Housing: **ABS**

diameter 70 mm, depth 50 mm Dimensions: approx. 90 g Weight:

IP65 according EN 60529 Protection class: Pointer display with scale Display:

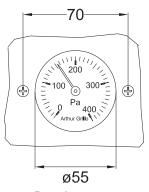
Scaling: Scale length 300° = approx. 130 mm

Pressure connections: Hose connections 5 mm ø

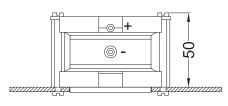
CONFORMITY:

RoHS: | according RoHS-directive 2011/65/EU

Dimensions (mm)



Panel cut-out



Item no. **DA85** 2520

Measurement range: Customer-specific presetting required!

Probe measuring range ± on request

ACCESSORIES

Mounting set with screws, bleeder Connections and 2 m plastic hose (4 x 1.5 mm)

25111

1. Limit value pointer red or green - Please choose!

DIFFERENTIAL PRESSURE MANOMETER **DA2000**





Diaphragm element

Smallest measuring range 0...100 Pa

Wide 270° analog display - scale length ca. 250 mm

■ No supply voltage needed

☐ Scaling in m3/h possible

Manometer with a diaphragm element for indication of pressure, under pressure or differential pressure of non aggressive gas. The Manometer is delivered with accessories for mounting in front or behind a panel or wall installation. Optional are:

- Two limit value pointers red or green
- Manometer with analog output signal
- Combination of indicator and pressure switch fitted in a wall mounting bracket

PERFORMANCE:

Overload protection: Static pressure: Zero point calibration:

max. 0.2 bar Adjustable by REEDcontact, no cyclic zero-point calibration required direct

Reaction time:

Zero drift:

ACCURACY / ERROR LIMIT:

min. up to 10 times the span

± 0.75 %

± 2 % of measuring range

 \pm 0.3 % / 10 K

± 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle:

Measuring unit:

Smallest measuring range: Largest measuring range:

Sum of linearity and hysteresis:

Temperature drift zero point: Temperature drift measuring range:

Measuring range:

Measuring range selection:

Ambient temperature: Storage temperature:

Measuring mode

Air or non-aggressive gases diaphragm measuring system

Pa

0...100 Pa (1 mbar)

0...5000 Pa (50 mbar)

0...100 Pa (1 mbar), 0...200 Pa (2 mbar),

0...500 Pa (5 mbar), 0...1000 Pa (10 mbar),

0...2000 Pa (20 mbar), 0...5000 Pa (50 mbar)

factory preset -10...+50 °C

-25...+60 °C

PHYSICALLY:

Housing: Dimensions:

Weight: Protection class:

Display:

Scaling: Pressure connections: round -> outside 134 mm ø approx. 400 g IP65 according EN 60529

ultramid/ABS, black, transparent cover

pointer display with scale

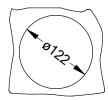
Scale length 270° = ca. 250 mm Hose connections 5 mm ø

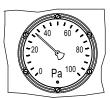
CONFORMITY:

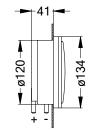
EMC:

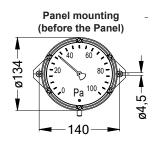
EN 61000-6-2, EN 61000-6-3, CE-mark

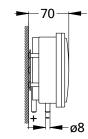
Dimensions (mm) - wall construction











Item no. 2532

RoHS:

according RoHS-directive 2011/65/EU

Differential pressure manometer DA2000 Measurement range: Customer-specific presetting required!

Accessories for mounting in front or benind a panel or wall installation.			
ACCESSORIES			
Mounting set M-DA2000 with screws, metal-pressure taps, sealing and 2 m plastic hose (7 x 1.5 mm)	25304		
1. Limit value pointer red or green - Please choose!	25301		
2. Limit value pointer red or green - Please choose!	25302		
SURCHARGE			
Probe measuring range e.g200+80 Pa	25303		
Scale in m³/h	25306		
Double scale DA2000 (e.g. m³/h and Pa)	25311		

22



DIFFERENTIAL PRESSURE MANOMETER **DA2000-A**



Special features DA2000-A

PERFORMANCE:

Adjustable by REEDcontact, no cyclic zero-point calibration required, scale fine adjustment via screw

ACCURACY / ERROR LIMIT:

± 0.75 %

Nullpunktabweichung: Summe von Linearität und Hysterese:

Nullpunkt-Kalibration:

Temperaturdrift Nullpunkt: Temperaturdrift Messspanne: ± 2 % of measuring range

± 0.3 % / 10 K

 \pm 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

linear or square root Characteristics:

PHYSICALLY:

Rectangular connector 16 mm or color coded cable, approx. 50 cm long

ELECTRONIC:

Power supply:

Electrical connections:

two-wire circuit: 12...30 Vdc

three-wire circuit: 15...30 Vdc or 24 Vac Output:

two-wire circuit: 4...20 mA

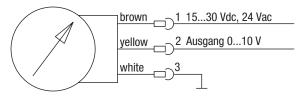
three-wire circuit: 0...10 V

CONFORMITY:

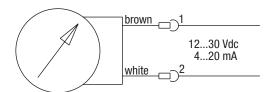
EMC: RoHS:

EN 61000-6-2, EN 61000-6-3, CE-mark according RoHS-directive 2011/65/EU

DA2000-A **Connections 3-wire technology**



DA2000-A Connections 2-wire technology



Item no.

25307

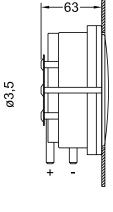
Differential pressure manometer with analog output - DA2000-A

Panel mounting

(before the Panel)

40

-140



Differential control of the control
Differential pressure manometer with analog output DA2000-A
•
Electrical connection via rectangular connectors

Measurement range: Customer-specific presetting required! Output: 0...10 V, 3-wire technology 2533 Measurement range: Customer-specific presetting required! Output: 4...20 mA, 2-wire technology 2536

Differential pressure manometer with analog output DA2000-A Electrical connection via cable, 50 cm long, colour-coded

2534 Measurement range: Customer-specific presetting required! Output: 0...1a0 V, 3-wire technology Measurement range: Customer-specific presetting required! Output: 4...20 mA, 2-wire technology 2537

ACCESSORIES

Mounting set M-DA2000 with screws, plastic-pressure taps, 2 m plastic hose (7 x 1.5 mm) 25304 1. Limit value pointer red or green - Please choose! 25301

2. Limit value pointer red or green - Please choose!

Output square root rad-DA2000 at output 0...10 V and 4...20 mA possible

25302 **SURCHARGE** Probe measuring range e.g. -20...0...+80 Pa 25303 25306 Scale in m3/h

Item no.

DIFFERENTIAL PRESSURE MANOMETER DA2000-K





-081

4,5

Special features DA2000-K

TECHNICAL SPECIFICATIONS:

Switching function: Adjustable switching ranges:

Tolerance on upper and lower Lower switching point:

Switching capacity:
Setpoint setting:
Limit signal / alarm output:

yes 20...300 Pa, 30...400 Pa, 50...500 Pa, 200...1000 Pa, 500...2500 Pa, 1000...5000 Pa

± 15 %

max. 1.5 A / 250 Vac Poti mit Skala Über Druckschalter

Differential pressure manometer with pressure switch- DA2000-K

Connections pressure switch 3 2

Dimensions (mm) DA2000-K

255 -20 80 --20 Pa 100 --

PG13,5

ø6

Differential pressure manometer with pressure switch DA2000-K	2535		
Measurement range: Customer-specific presetting required! Combination of manometer and pressure switch installed in a wall bracket			
ACCESSORIES			
Mounting set M-DA2000-K with screws, plastic-pressure taps, 2 m plastic hose (5 x 1.5 mm)	25305		
1. Limit value pointer red or green - Please choose!	25301		
2. Limit value pointer red or green - Please choose!	25302		
SURCHARGE			
Probe measuring range e.g200+80 Pa	25303		
Scale in m³/h	25306		
Output square root rad-DA2000 at output 010 V and 420 mA possible	25307		



DIFFERENTIAL PRESSURE MANOMETER DA2000-S / DA2000-K-S / DA2000-A-S



- □ Diaphragm element
 - Smallest measuring range 0...100 Pa
- ☐ Wide 270° analog display scale length ca. 250 mm
- No supply voltage needed
- ☐ Scaling in m3/h possible
- ☐ Protection class IP 66
- ☐ Analog output 0...10 V or 4...20 mA possible
- ☐ Combination with pressure switch available (1.5 A / 250 Vac)

Manometer with diaphragm element for indication of pressure, under pressure or differential pressure of non aggressive gas. The Manometer is delivered with accessories for mounting in front or behind a panel or wall installation. Optional are:

- Two limit value pointers red or green
- Manometer with analog output signal
- Combination of indicator and pressure switch fitted in a wall mounting bracket

PERFORMANCE:

Overload protection: min. up to 10-times the measuring range Static pressure:

max. 0.2 bar

Zero point calibration:

scale fine adjustment via screw

Reaction time: direct

ACCURACY / ERROR LIMIT:

Zero drift: ± 0.75 %

Sum of linearity and hysteresis: Temperature drift zero point:

± 2 % of measuring range

 \pm 0.3 % / 10 K ± 0.2 % / 10 K

Temperature drift measuring range:

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode

Measuring medium: Measuring principle:

Air or non-aggressive gases diaphragm measuring system

Measuring unit:

Smallest measuring range: Largest measuring range: 0...100 Pa (1 mbar) 0...5000 Pa (50 mbar)

Measuring range:

0...100 Pa (1 mbar), 0...200 Pa (2 mbar), 0...500 Pa (5 mbar),

0...1000 Pa (10 mbar), 0...2000 Pa (20 mbar), 0...5000 Pa (50 mbar) factory preset

Measuring range selection: Ambient temperature:

-10...+50 °C

Storage temperature: -25...+60 °C

PHYSICALLY:

Housing: Dimensions:

Ultramid/ABS, transparent cover 164 x 194 x 110 mm (w x h x d)

Weight:

approx. 1460 g

Protection class:

IP66 according EN 60529

Display:

pointer display with scale

Scaling:

Scale length 270° = ca. 250 mm

Pressure connections:

Hose connections 5 mm ø

CONFORMITY:

FMC:

EN 61000-6-2. EN 61000-6-3. CE-mark

RoHS:

according RoHS-directive 2011/65/EU

Special features DA2000-A

Nullpunkt-Kalibration:

Adjustable by REEDcontact, no cyclic zero-point calibration required, scale

fine adjustment via screw

Characteristics:

linear or sqaure root

Electrical connections: Power supply:

rectangular connector 16 mm or color coded cable, approx. 50 cm long two-wire circuit: 12...30 Vdc / three-wire circuit: 15...30 Vdc or 24 Vac

Output:

two-wire circuit: 4...20 mA / three-wire circuit: 0...10 V

Special features DA2000-K

Switching function: Adjustable switching ranges:

20...300Pa, 30...400Pa, 50...500Pa, 200...1000Pa, 500...2500Pa, 1000...5000Pa

Tolerance on upper and lower switching point:

+ 15 %

Switching capacity: Setpoint setting: max. 1.5 A / 250 Vac

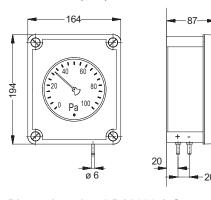
Poti with scale Limit signal / alarm output: | via pressure switch

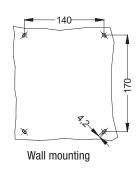
DIFFERENTIAL PRESSURE MANOMETER DA2000-S / DA2000-K-S / DA2000-A-S





Dimensions (mm) DA2000-S

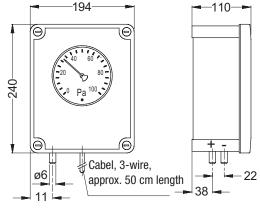


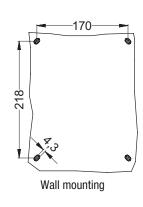


DA2000-A-S



Dimensions (mm) DA2000-A-S

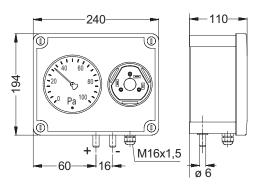


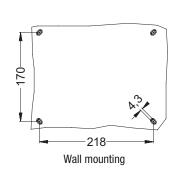


DA2000-K-S



Dimensions (mm) DA2000-K-S





	Item no.
Differential pressure manometer DA2000-S	25308
Measurement range: Customer-specific presetting required!	
Differential pressure manometer DA2000-K-S	25309
Measurement range: Customer-specific presetting required!	
Differential pressure manometer DA2000-A-S	25310
Measurement range: Customer-specific presetting required!	
ACCESSORIES	
Mounting set M-DA2000 with screws, plastic-pressure taps, 2 m plastic hose (5 x 1.5 mm)	25305
1. Limit value pointer red or green - Please choose!	25301
2. Limit value pointer red or green - Please choose!	25302
SURCHARGE	
Special measuring range e.g200+80 Pa	25303
Scale in m³/h	25306
Output square root rad-DA2000 at output 010 V and 420 mA possible	25307
Double scale DA2000 (m³/h and Pa) possible	25311



DIFFERENTIAL PRESSURE GAUGE PERITACT 80



Diaphragm element
Smallest measuring range 050 Pa
Analog output 010 V or 420 mA
Large analog scale

☐ Min. and max. contact possible

☐ Also two-wire transmitter MZP80 available

□ Protection class IP 65

Manometer with diaphragm element for indication of pressure, under pressure or differential pressure of non aggressive gas.

For flow measurements, by the differential pressure method, versions are available with a square graduation.

PERFORMANCE:

Overload protection: min. up to 10-times the measuring range Static pressure: max. 0.2 bar

ACCURACY / ERROR LIMIT:

Zero drift: ± 0.75 %

Sum of linearity and hysteresis: ± 1.5 % of measuring range

Temperature drift zero point: \pm 0.3 % / 10 K Temperature drift measuring range: \pm 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode

Measuring medium: Air or non-aggressive gases
Measuring principle: diaphragm measuring system

Measuring unit: P

Smallest measuring range: 0...50 Pa (0.5 mbar)
Largest measuring range: 0...6000 Pa (60 mbar)

Measuring range: 0...50 Pa (0.5 mbar), 0...100 Pa (1 mbar), 0...200 Pa (2 mbar), 0...400 Pa (4 mbar),

0...500 Pa (5 mbar), 0...1000 Pa (10 mbar), 0...2000 Pa (20 mbar), 0...4000 Pa (40 mbar), 0...5000 Pa (50 mbar), 0...6000 Pa (60 mbar)

Measuring range selection: factory preset

Ambient temperature: -10...+50 °C

Storage temperature: -25...+60 °C

Setpoint setting: 2
Contact load: v

2 Setpoint pointer adjustable over the full scale range, per limit value 1 Output relay

with potential-free change-over contact

250 Vac, 6A, induction-free load

PHYSICALLY:

Housing: ABS, transparent cover

Dimensions: 134 x 170 x 137 mm (w x h x d)

Weight: approx. 1500 g

Protection class: IP65 according EN 60529
Display: pointer display with scale

Electrical connections: screw terminal

Pressure connections: hose connections 5 mm ø

ELECKTRONIC:

Power supply: 230 Vac, 24 Vac or 24 Vdc, @ two-wire circuit 13...30 Vdc

Output: via power supply 0/4...20 mA or 0...10 V or 4...20 mA in two-wire circuit

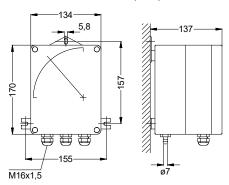
CONFORMITY:

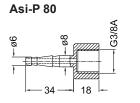
EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

DIFFERENTIAL PRESSURE GAUGE PERITACT 80

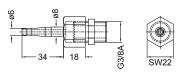


Dimensions (mm)

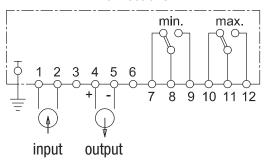




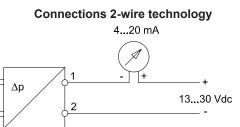
Asa-P 80







Special measuring range as far as possible



	ltem no.
Differential pressure gauge PERITACT 80	2415
Wall mount device Measurement range: Customer-specific presetting required!	
Differential pressure gauge PERITACT 80 with min. and max. contacts	2425
Supply voltage 230 Vac or 24 Vac or 24 Vdc, wall mount device Measurement range & supply Voltage: Customer-specific presetting required!	
Differential pressure gauge PERITACT 80 with electrical output signal	2435
0/420 mA or 010 V, supply voltage 230 Vac or 24 Vac, wall mount device Measurement range & signal output: Customer-specific presetting required!	
Differential pressure gauge PERITACT 80 with electrical output signal and min. / max. contacts	2445
0/420 mA or 010 V; supply voltage 230 Vac or 24 Vac or 24 Vdc, wall mount device Measurement range & supply voltage & signal output: Customer-specific presetting required!	
2-wire technology MZP 80	7320
Output 420 mA, supply voltage 1330 Vdc, wall mount device Measurement range: Customer-specific presetting required!	
ACCESSORIES	
Mounting set P80 with screws, plastic-pressure taps, 2 m plastic hose (7 x 1.5 mm)	24003
Plastic hose 7 x 1.5 mm	24004
Damping throttle for installation in a hose	24005
Connecting piece Asi-P 80, internal thread R 3/8"	24006
Connecting piece Asa-P 80, external thread R 3/8"	24008
SURCHARGE	



LOW PRESSURE TRANSMITTER **PERITACT 2000**



□ Diaphragm element

☐ Smallest measuring range 0...50 Pa

☐ Digital display 3 1/2 digits

min. up to 10-times the measuring range

☐ Analog output 0...10 V and 4...20 mA

☐ Supply voltage 230 Vac, 24 Vac or 24 Vdc

□ Protection class IP 65

□ Also available as two-wire-transmitter (PERITACT 2000-2L)

Manometer with diaphragm element for indication of pressure, under pressure or differential pressure of non aggressive gas.

Overload protection: Static pressure:

Measuring medium:

Measuring principle:

Measuring unit:

Measuring range:

max. 0.2 bar **ACCURACY / ERROR LIMIT:**

± 0.75 %

PERFORMANCE:

Zero drift:

Sum of linearity and hysteresis: ± 1% of measuring range Temperature drift zero point: ± 0.3 % / 10 K

Temperature drift measuring range: ± 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode

Air or non-aggressive gases diaphragm measuring system

Smallest measuring range: 0...50 Pa (0.5 mbar) 0...10000 Pa (100 mbar) Largest measuring range:

> 0...50 Pa (0.5 mbar), 0...100 Pa (1 mbar), 0...200 Pa (2 mbar), 0...400 Pa (4 mbar), 0...500 Pa (5 mbar), 0...1000 Pa (10 mbar), 0...2000 Pa (20 mbar), 0...4000 Pa (40 mbar), 0...5000 Pa (50 mbar), 0...6000 Pa (60 mbar), 0...10000 Pa (100 mbar)

factory preset Measuring range selection:

Damping: adjustable in 3 steps

Ambient temperature: -10...+50 °C Storage temperature: -25...+60 °C

Setpoint setting: 2 Setpoint pointer adjustable over the full scale range,

per limit value 1 Output relay with potential-free change-over contact

Contact load: 250 Vac, 6A, induction-free load

PHYSICALLY:

Ultramid/ABS, black / grey Housing: Dimensions: 122 x 120 x 85 mm (wxhxd)

Weight: approx. 900 g

Protection class: IP65 according EN 60529

> Display: 3 1/2-digit digital LCD display, digit height 13 mm Scaling: Screw terminals, cable entry: 2 x M16 x 1.5

Pressure connections: Hose connections 8 mm ø

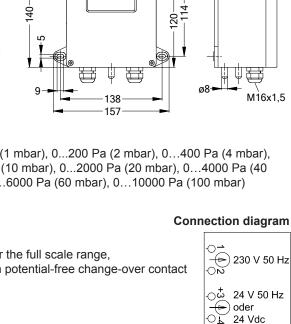
ELECTRONIC:

230 Vac, 24 Vac or 24 Vdc Power supply:

> 0...10 V and 0...20 mA via DIP switch switchable to 4...20 mA Output:

> > **CONFORMITY:**

EN 61000-6-2, EN 61000-6-3, CE-mark EMC: RoHS: according RoHS-directive 2011/65/EU



Dimensions (mm)

85

Item no. 2460

2470

0/2...10 V

max. 5 mA

0/4...20 mA

max. 600 Ω

Low pressure transmitter Peritact 2000

2-wire transmitter Peritact 2000-2L

Test certificate

Measurement range & signal output: Customer-specific presetting required!

Output: 0...10 V, 0/4...20 mA, supply voltage: 230 Vac, 24 Vac or 24 Vdc

Measurement range: Customer-specific presetting required!

Output: 4...20 mA, supply voltage 13...30 Vdc

_	ECC	EC
Α Α	 	

Mounting set with screws, plastic-pressure taps, 2 m plastic hose (7 x 1.5 mm) 24602 Assembly frame for panel mounting incl. all mounting hardware 24605

SURCHARGE

Special measuring range e.g. -20...0...+80 Pa

24601

LOW PRESSURE TRANSMITTER PERITACT 2000-K



85

M16x15

Connection diagram

-0-1-0

-0=

013

⊘ ,

Netz

230 V 50

Hz

24 V 50 Hz

24 V =

0/2...10 V

max. 5 mA

0/4...20 mA max. 600 Ω

Kontakt 1

250 V, 8 A

Kontakt 2

250 V, 8A



Diaphragm element

Smallest measuring range 0...50 Pa

Backlit LCD display with 4 lines of 20 characters

Analog output 0...10 V and 4...20 mA

2 switching output signals potential free

Switching function min. or max.

Supply voltage 230 Vac, 24 Vac or 24 Vdc

Protection class IP 65

Manometer with diaphragm element for indication of pressure, under pressure or differential pressure of non aggressive gas. Also for air flow measurement according to the Differential Pressure or dynamic pressure method with square-root characteristic.

Dimensions (mm)

Overload protection: Static pressure:

Zero drift: Sum of linearity and hysteresis: Temperature drift zero point: Temperature drift measuring range:

> Operating mode: Measuring medium: Measuring principle: Measuring unit: Smallest measuring range: Largest measuring range:

> > Measuring range:

Measuring range selection:

Damping: Ambient temperature: Storage temperature: Switching function: Adjustable switching ranges: Switching outputs:

Switching delay: Contact load:

Housing: Dimensions: Weight: Protection class: Display:

Scaling: Pressure connections:

Power supply: Power consumption:

Output:

CONFORMITY: EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

PERFORMANCE:

min. up to 10-times the measuring range max. 0.2 bar

ACCURACY / ERROR LIMIT:

± 0.75 %

± 1% of measuring range

 \pm 0.3 % / 10 K

± 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Measuring mode with limit contacts Air or non-aggressive gases diaphragm measuring system

Pa

0...50 Pa (0.5 mbar)

0...10000 Pa (100 mbar)

0...50 Pa, 0...100 Pa, 0...200 Pa, 0...400 Pa, 0...500 Pa, 0...1000 Pa, 0...2000 Pa,

140

0...4000 Pa, 0...5000 Pa, 0...6000 Pa, 0...10000 Pa

factory preset

pressure - linear, volume - square rooted

-10...+50 °C -25...+60 °C

min. or max. for each contact

0 ... 100% measuring range

2 potential-free change-over contacts

adjustable 0 ... 20 s

250 Vac, 8 A induction-free load

PHYSICALLY:

Ultramid/ABS, black / grey 122 x 120 x 85 mm (wxhxd) approx. 900 g

IP65 according EN 60529

Illuminated LCD display - 4 lines, 20 characters Screw terminals, cable entry: 2 x M16 x 1.5

Hose connections 8 mm ø

ELECTRONIC:

230 Vac, 24 Vac or 24 Vdc approx. 1.5 VA

0...10 V and 0...20 mA via DIP switch switchable to 4...20 mA

Item no.

2480

Measurement range & signal output: Customer-specific presetting required!

Output: 0/2...10 V and 0/4...20 mA, 2 changeover contacts 250 Vac, 8 A non-inductive

Supply voltage: 230 Vac, 24 Vac or 24 Vdc

Low pressure transmitter Peritact 2000-K

ACCESSORIES		
Mounting set with screws, plastic-pressure taps, 2 m plastic hose (7 x 1.5 mm)	24602	
Assembly frame for panel mounting incl. all mounting hardware	24605	
Test certificate	24603	

SURCHARGE

Special measuring range e.g. -20...0...+80 Pa

24601



LOW PRESSURE TRANSMITTER PERITACT 2000-KI0



- Dynamic micro flow sensor
- ☐ Smallest measuring range 0...10 Pa
- Analog output 0...10 V and 0/4...20 mA
- ☐ 2 outputs with change-over contacts 250V, 8A
- ☐ Characteristic linear or square-rooted
- ☐ LCD-Display with 4 lines of 20 characters
- ☐ Contact function min. or max.
- ☐ Supply voltage 230 Vac, 24 Vac or 24 Vdc
- **Protection class IP 65**

Manometer with diaphragm element for indication of pressure, under pressure or differential pressure of non aggressive gas. Thanks to the measuring principle, the device is irrespective of position and has an extremely high zero-point security with the smallest measuring ranges. Thereby, it is particularly suitable for air flow measurement according to the "Differential pressure" or "dynamic pressure" method with square-root characteristic. No negative pressure measurement possible.

PERFORMANCE:

Overload protection: Static pressure:

Operating mode:

Measuring unit:

Measuring medium:

Measuring principle:

Smallest measuring range:

Largest measuring range: Measuring range: min. up to 10-times the measuring range max. 0.2 bar

ACCURACY / ERROR LIMIT:

Zero drift: Sum of linearity and hysteresis: Temperature drift zero point: Temperature drift measuring range:

+ 0.75 % ± 1% of measuring range ± 0.3 % / 10 K

± 0.2 % / 10 K

TECHNICAL SPECIFICATIONS:

Measuring mode with limit contacts Air or non-aggressive gases diaphragm measuring system Pa or m³/h

0...50 Pa (0.5 mbar), resolution 11 Pa 0...3500 Pa (35 mbar), resolution 11 Pa

0...10 Pa, 0...20 Pa, 0...50 Pa, 0...100 Pa, 0...200 Pa, 0...400 Pa, 0...500 Pa, 0...1000 Pa,

0...2000 Pa, 0...3000 Pa, 0...3500 Pa

Measuring range selection: factory preset

Characteristics: Damping: Ambient temperature:

Storage temperature: Switching function: Adjustable switching ranges:

Switching outputs: Switching delay: Contact load: linear or square rooted selectable 0, 1, 2, 4, 8, 16, 32 s

-10...+50 °C

-25...+60 °C

min. or max. for each contact 0 ... 100% measuring range

2 potential-free change-over contacts

adjustable 0 ... 20 s

250 Vac, 8 A induction-free load

PHYSICALLY:

Housing: Dimensions: Weight:

Protection class: Display: Scaling:

Pressure connections:

Power supply: Power consumption: Output:

Ultramid/ABS, black / grey 122 x 120 x 85 mm (wxhxd) approx. 900 g

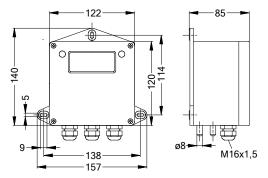
IP65 according EN 60529

Illuminated LCD display - 4 lines, 20 characters Screw terminals, cable entry: 2 x M16 x 1.5

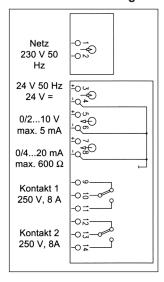
Hose connections 8 mm ø

ELECTRONIC:

230 Vac, 24 Vac or 24 Vdc approx. 1.5 VA 0/2...10 V and 0/4...20 mA



Connection diagram



Item no.

2490

Low pressure transmitter PERITACT 2000-K10

Measurement range & signal output: Customer-specific presetting required! Output: 0/2...10 V and 0/4...20 mA, 2 changeover contacts 250 Vac, 8 A non-inductive

Supply voltage: 230 Vac and 24 Vdc

Supply voltage. 250 vac and 24 vac			
ACCESSORIES			
Mounting set with screws, plastic-pressure taps, 2 m plastic hose (7 x 1.5 mm)	24602		
Assembly frame for panel mounting incl. all mounting hardware	24605		
Test certificate	24603		
SURCHARGE			

Special measuring range e.g. 0...6000 Pa (no negative pressure measurement possible)

DIFFERENTIAL PRESSURE SWITCH DS





□ Diaphragm element

Smallest setting range 20...300 Pa

■ Adjuster with scale benchmark

■ With a change-over-contact

□ Protection class IP54

Adjustable differential pressure switch for control of non-aggressive gases. Control button with guide value scale.

Specifications

Adjustable range: 20 to 300 Pa, switching differential 10 Pa

30 to 400 Pa, switching differential 15 Pa 50 to 500 Pa, switching differential 20 Pa 200 to 1000 Pa, switching differential 100 Pa 500 to 2500 Pa, switching differential 150 Pa

1000 to 5000 Pa, switching differential 250 Pa

Tolerance on upper and

lowest switching pressure: ± 15 % for vertical mounting

Electrical Connections: AMP-flat plug 6,3 mm x 0.8 mm

Contact type: changer

Housing: polycarbonate housing with transparent cover

grey similar RAL 7035 for wall mounting; ø 85

mm, 58 mm deep

Switching capacity: up to max. 1,0 A (0.4) / 250 Vac

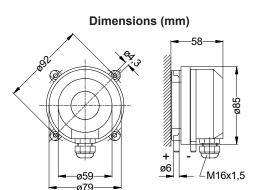
Protection class: IP 54

Pressure Connections: hose liners 6 mm ø, 16 mm length

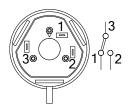
Cable entry: M 16 x1.5

Ambient temperature: -20 °C bis +85 °C

Weight: approx. 160 g



Connection diagram



Differential pressure switch DS

Item no.

Adjustable range: Customer-specific presetting required!

2541

ACCESSORIES

Mounting set with screws, plastic-pressure taps, 2 m plastic hose (5 x 1.5 mm)



PROCESS TRANSMITTER GPM

The GPM series is used for differential pressure measurement in liquids, gases or vapours. Transmitters are especially used for flow measurement with transducers for the differential pressure or dynamic pressure method.

The output of the transmitter in 2-wire technology in 4 ... 20 mA.

A multi way with zero compensation can be mounted directly to the transmitter.

Specifications

Smallest measurement range: 0...1.25 mbar (NMS) Largest measurement range: 0...25 bar (NMS)

Selected measuring

Range value:

Measurement span:

Nominal pressure:

-NMS to + 0.975 x NMS

0,025 x NMS to 1 x NMS

to 50 mbar PN63

above 50 mbar PN125

Medium: gas, liquids, steam

Separation membranes: 1.4404

Venting-/

Drain-valve screw: 1.4401

Flange: C22, galvanized, yellow chromatic

O-Ring: buna N, Viton or PTFE

Filling: silicon oil

Housing: aluminium pressure die-casting painted

Protection class: IP 67 according EN 60529

Output: 4...20 mA, 2-wire technology

Supply voltage: 12...45 Vdc, polarity protection

Ex-protection: intrinsic safety EEx ia IIC T4/T5/T6

Process connection: 1/4 - 18 NPT Absorption: 0...32 s

damping of measuring cell 200 ms

Medium temperature: -25...0...+100 °C
Ambient temperature: -25...0...+75 °C

Measuring accuracy: $\pm 0.1 \%$ at measuring span < 0.1 x NMS

 \pm 0.25 % at measuring span 0,025 x NMS

EMC: tested according EN 61000-6-2, EN 61000-6-3,

CE mark

	ltem no.	
Prozess transmitter GPM		
2-wire technology, output 420 mA Measurement range: Customer-specific presetting required!		
GPM - D1 measuring span 01.25 mbar to 050 mbar, PN63	7610	
GPM - D2 measuring span 012,5 mbar to 0500 mbar, PN125	7611	
GPM - D3 measuring span 00.0625 bar to 02,5 bar, PN125	7612	
GPM - D4 measuring span 00.625 bar to 025 bar, PN125	7613	
GPM - M measuring span 0250 mbar, PN125	7616	
ACCESSORIES		
LCD-Digitalanzeige, built-in	76004	
Mounting plate MPL-GPM-D4 - only required for aD4 - For connecting transducer to changeover valve	76003	

PRESSURE TRANSMITTER PU21, PI21





- □ Ceramic measuring cell
- ☐ Pressure range 0...1 bar to 0...100 bar relative
- ☐ Process connection G1/2"
- Excellent long term stability
- □ Compact design with connector
- ☐ Output 0...10 V in three-wire or 4...20 mA two-wire
- ☐ 13...30 Vdc power supply

The pressure transmitter PU21 or PI21 are designed to measure relative pressures in the range from 0 ... 1 bar to 0 ... 100 bar.

Media contacting parts are ceramic (Al2O3), Viton and stainless steel. The transmitter PU21 is ... 10 V performed in three-wire technology with output signal 0, the transmitter PI21 has an output of 4 ... 20 mA two-wire technology.

The electrical connection is made in both versions over an angular connector according to DIN 43650, the pressure port has a thread G 1/2 ".

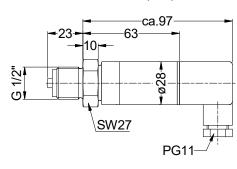
Zero drift: < 0.5 %

Sum of linearity and hysteresis:
Temperature drift zero point:
Temperature drift measuring range:

< 0.5 % < 0.2 %

< 0.15 %

Dimensions (mm)



Operating mode:
Measuring medium:
Measuring principle:
Smallest measuring range:
Largest measuring range:
Measuring range:

Measuring range selection:
Characteristic:
Ambient temperature:
Storage temperature:

Electrical connections:

TECHNICAL SPECIFICATIONS:

ACCURACY / ERROR LIMIT:

Measuring mode Relative pressure

Monolithic ceramic technology

0...1 bar

0...100 bar

0...1 bar, 0...1,6 bar, 0...2,5 bar, 0...4 bar, 0...6 bar, 0...10 bar, 0...16 bar, 0...25 bar, 0...40 bar, 0...60 bar, 0...100 bar

factory preset

linear

-40...+85 °C

-25...+60 °C

PHYSICALLY:

Dimensions: ø 28 mm, ca. 97 mm lang (incl. plug)
Weight: approx. 220 g
Protection class: IP65 according EN 60529

IP65 according EN 60529
Angel connector according DIN 43650

Pressure connections: G1/2", SW 27

ELECTRONIC:

Power supply: 13...30 Vdc

Output: 0...10 V, three-wire circuit

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

Item no.

Pressure transmitter PU21

7720

Measurement range: Customer-specific presetting required! Output: 0...10 V, 3-wire technology; supply voltage: 13...30 Vdc

Pressure transmitter PI21

7730

Relative pressure measurement

Relative pressure measurement

Measurement range: Customer-specific presetting required! Output: 4...20 mA, 2-wire technology; supply voltage: 13...30 Vdc



DIFFERENTIAL PRESSURE TRANSMITTER



- Diaphragm element
- Smallest setting range 0...10 Pa
- Analog output 0...10 V and 0/4...20 mA
- Supply voltage 230 Vac, 24 Vac or 24 Vdc

Precision transmitters with diaphragm element for transmission of measured values of pressure, vacuum or differential pressure of non-aggressive gases. The transmitter is suitable for smallest spans from 10 Pa, it operates according to the force compensation principle. Areview of calibration is easily possible with weights.

Dimensions (mm)



Overload protection:

(0......10 Pa till 0......60 Pa / 0......50 Pa till 0.....300 Pa) -

1000 Pa max. 0.2 bar

PERFORMANCE:

Measuring mode

Static pressure:

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle: Measuring unit:

Air or non-aggressive gases diaphragm measuring system

Smallest measuring range: Largest measuring range:

0......10 Pa to 0......60 Pa

Measuring range:

0...1000 Pa to 0...6000 Pa 0......10 Pa to 0......60 Pa, 0......50 Pa to 0.....300 Pa,

Measuring range selection: Ambient temperature: 0.....200 Pa to 0...1200 Pa, 0...1000 Pa to 0...6000 Pa factory preset

76004

Characteristics:

linear or square root -10...+50 °C -25...+60 °C

Storage temperature:

PHYSICALLY:

Housing: ABS Dimensions:

280 x 165 x 210 mm (BxHxT)

Weight: Protection class:

approx. 7 kg IP65 according EN 60529

Display:

Pointer display with scale

Electrical connections: Pressure connections:

Screw terminals Hose connections 8 mm ø

ELECTRONIC:

Power supply:

230 Vac or 24 Vac

Output:

0...10 V or 4...20 mA or 0...20 mA

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark according RoHS-directive 2011/65/EU RoHS:

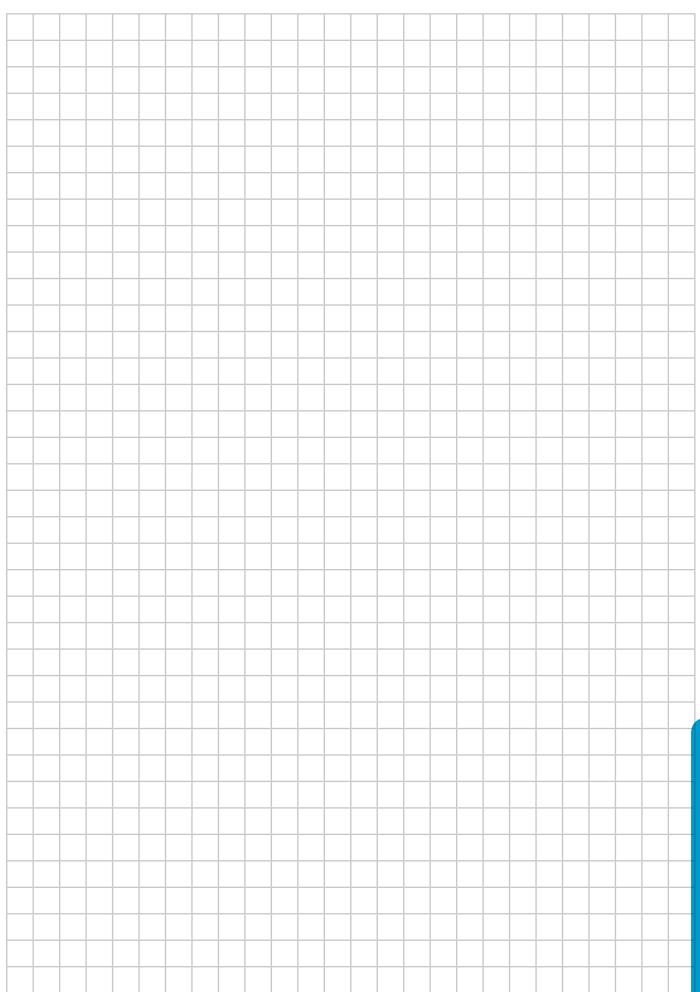
210 ത (\bigcirc) 65

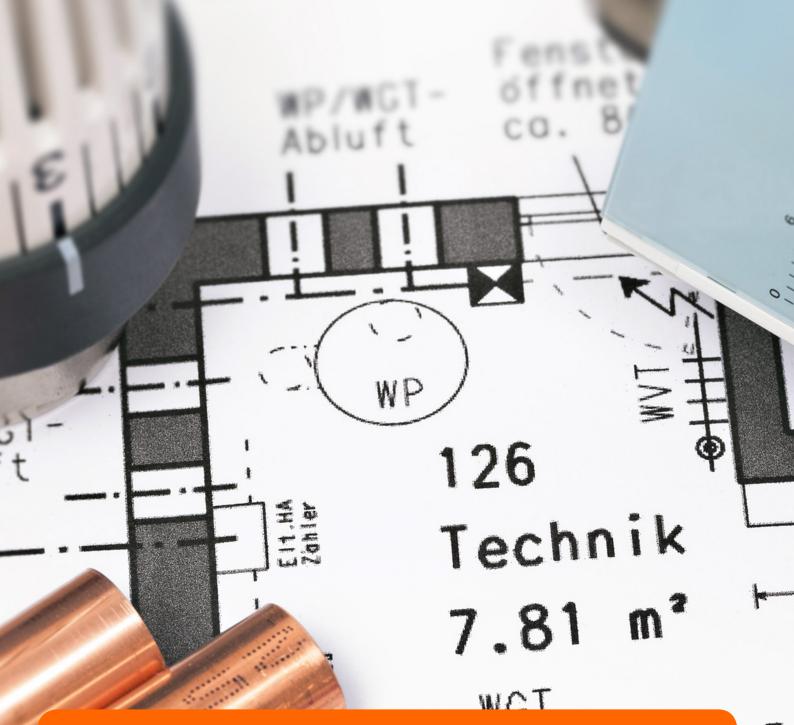
		Item no.	
Pressure transmitter MKM, measuring range	010 Pa to 060 Pa		
Characteristic line - linear Characteristic line - square rooted	Measurement range: Customer-specific presetting required! Measurement range: Customer-specific presetting required!	2610 2620	
Pressure transmitter MKM, measuring range	050 Pa to 0300 Pa		
Characteristic line - linear Characteristic line - square rooted	Measurement range: Customer-specific presetting required! Measurement range: Customer-specific presetting required!	2611 2621	
Pressure transmitter MKM, measuring range 0200 Pa to 01200 Pa			
Characteristic line - linear Characteristic line - square rooted	Measurement range: Customer-specific presetting required! Measurement range: Customer-specific presetting required!	2612 2622	
Pressure transmitter MKM, measuring range 01000 Pa to 06000 Pa			
Characteristic line - linear Characteristic line - square rooted	Measurement range: Customer-specific presetting required! Measurement range: Customer-specific presetting required!	2613 2623	
	ACCESSORIES		
Calibrating weight calibrated to a fix pressure value		26002	
Plastic hose KS 7 x 1.5 mm		26003	
Throttle nozzle compared to pressure value		26010	
	SURCHARGE		

Supply voltage 24 Vdc

NOTES







As oldest German manufacturer of temperature measuring devices, we design and produce high-quality devices for the international market. In addition to our standard products, we can individually address your needs as well. All of our measuring devices meet all international standards and are built according to DIN EN 60751.

The measuring devices made by us distinguish themselves by their simply but very robust design and are very well suited for industrial use.

Our temperature sensors cover all ranges of industrial temperature measurement up to 1.500 °C. In addition to resistance thermometers, we produce a variety of temperature and humidity transducers with analog output signal.

Areas of application:

Heating, ventilation and air-conditioning technology in machine, plant, container, pipeline and apparatus engineering as well as chemical and petrochemical industry.

Included in this product category are:

- Temperature sensor
- Screw-in temperature sensor
- Flue gas temperature sensor
- Temperature sensor / thermal elements
- Sensor with selectable measurement range
- Room sensor

TEMPERATURE SENSOR up to 160 °c





- ☐ Resistance element Pt100 class A DIN EN 60751
- ☐ Sensor tube plain or perforated (ventilation applications)
- ☐ Tube 9 mm stainless steel (1.4571)
- □ Connection head plastic ABS
- Special length available
- Sliding mounting flange
- Different protection sleeves available

ACCURACY / ERROR LIMIT:

Measurement tolerance: Long-term stability: $< 0.25 \% \pm 0.15 °C$ Max. R0-Drift 0,05 % / year

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle: Measuring unit:

Measuring mode Temperature

Pt100 or PT1000 classes A according DIN EN 60751

Measuring range: Max. 0...160 °C

PHYSICALLY:

Protective tube: Connection head:

X10CrNiMoTi 1810, 9 mm ø, material-no. 1.4571; V4A

plastic

CONFORMITY:

EMC:

EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

			Item no.
Duct temperature sensor KF1 sensor tube smooth, 250 mm length			6710
Duct temperature sensor KF1 probe tip perforated pipe, 250 mm length			6711
	ACCESSOR	RIES	
Mounting flange MF-KF1			67101
Screw protection sleeve brass ESH-M			67102
Screw protection sleeve stainless steel ESH-VA			67103
ETF	RF1	AF1	ATF
		U	

	Item no.
Screw-in temperature sensor ETF with G1/2A-screw, material 1.4571, V4A	
ETF1 immersion depth 50 mm	6750
ETF2 immersion depth 100 mm	6751
ETF3 immersion depth 150 mm	6752
ETF4 immersion depth 200 mm	6753
ETF5 immersion depth 250 mm	6754
ETF6 immersion depth 450 mm	6755
Room temperature sensor RF1 For dry areas, wall construction, white plastic case, for mounting on 55 mm switch box, use the range 0 50 °C	
Outdoor temperature sensor AF1 IP 65, with sun protection and mounting clips for wall construction, range: -30 0 +60 ° C	6730
Contact temperature sensor ATF1 Range up to 100 ° C, 4-wire circuit with 3 m cable and pipe clamp for pipes from 10 to 150 mm	6760
Contact temperature sensor ATF2 Range up to 200 °C, 4-wire-circuit with 3 m cable and pipe clamp for pipes from 10 up to 150 mm	6761
SURCHARGE	
Special fittings with temperature sensor Pt1000	67110
Special fittings with two Pt100 elements, if technically possible	



TEMPERATURE SENSOR up to 400 °C



Resistance element Pt100 class A DIN EN 60751

Connection head alloy Type B with screw connection G1/2A

Sensor tube 15 mm stainless steel 1.4571

Various head transmitter (4...20 mA, HART, Profibus) available

☐ WBV1R / WBV2R with PTB-approval

ACCURACY / ERROR LIMIT: Measurement tolerance: Long-term stability:

< 0,25 % ± 0,15 °C

Max. R0-Drift 0,05 % / year

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle: Measuring unit: Measuring mode Temperature

Pt100 class A according DIN EN 60751

°C

-70 °C - 400 °C Measuring range:

PHYSICALLY:

CONFORMITY:

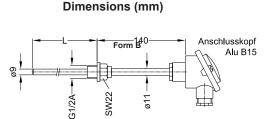
Protective tube: X10CrNiMoTi 1810, 9 mm ø, material-no. 1.4571 Connection head: Light metal head type B

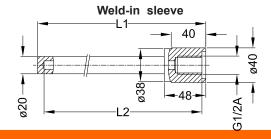
> Montage | G1 / 2A screw connection

EMC:

EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

	ltem no.
Threaded thermoresistance element WBV with G1/2A in screw, material 1.4571, V4A, terminal head light alloy typ B, temperature max. 400 °C	
WBV05 immersion depth 50 mm	6235
WBV10 immersion depth 100 mm	6236
WBV15 immersion depth 150 mm	6237
WBV20 immersion depth 200 mm	6238
WBV25 immersion depth 250 mm	6239
WBV45 immersion depth 450 mm	6240
SURCHARGE	
Optional - Measuring element Pt1000	67110
Optional - Two measuring elements Pt1000, as far as technical possible	67111
High cap	67112
Transmitter MU-WBV output 420 mA	62304
Transmitter MU-WBV-H with HART protocol	62305
Transmitter MU-WBV-P profibus PA	62306





Item no.

Threaded thermoresistance element WBV-R

with screw G1/2A, measuring element Pt100, DIN 60751, class A, grouped and numbered in pairs, fast setting, max. temperature 250 °C, PTB-licence up to 160 °C, PTB-certificate no. 22.30, 80.06, max. measuring current 5 mA, particular for differential temperature measurements e.g. on calorimetry

WBV1R - nominal length 160 mm	6248
WBV2R - nominal length 250 mm	6249
Weld-in sleeve material: Steel St37.2, D = 31 mm, d = G1/2A	
B150 - nominal length 150 mm, L1 = 164 mm, L2 = 156 mm	62004
B160 - nominal length 160 mm, L1 = 174 mm, L2 = 166 mm	62001
B250 - nominal length 250 mm, L1 = 264 mm, L2 = 256 mm	62002

Weld-in sleeve made by stainless steel on request

FLUE GAS TEMPERATURE SENSOR up to 400 °C





- Measuring element Pt100 class A according DIN 43760
- Sensor tube stainless steel, ø 15 mm
- Connection head alloy form B

Thermoresistance elements for temperature measuring max. 400 °C. The measuring element is a precision resistance element Pt100 class A, according to DIN EN 60751.

Measurement tolerance: Long-term stability: **ACCURACY / ERROR LIMIT:** $< 0.25 \% \pm 0.15 °C$

Max. R0-Drift 0,05 % / year

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle: Measuring unit: Measuring range:

Measuring mode Temperature

Pt100 class A according DIN EN 60751

°C

-70 °C - 400 °C

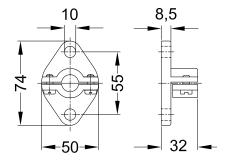
PHYSICALLY:

Protective tube: Connection head: X10CrNiMoTi 1810, 15 mm ø, material-no. 1.4571

Light metal head type B

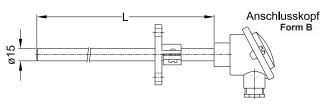
CONFORMITY:

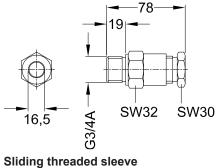
EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU



Movable flange







RGF-E Anschlusskopf Form B SW22 ø15-G1/2A-

	ltem no.	
	item no.	
Flue gas temperature sensor RGF		
Straight tube with slidable flange, terminal head light alloy typ B, temperature max 400 °C		
RGF1 - nominal length 250 mm	6740	
RGF2 - nominal length 500 mm	6741	
RGF3 - nominal length 750 mm as screw-in temperature-sensor with G1/2A in screw	6742	
RGF1E - nominal length 250 mm	6745	
RGF2E - nominal length 500 mm	6746	
RGF3E - nominal length 750 mm	6747	
SURCHARGE		
Threaded sleeve, slidable, M15, R 3/4"	62011	
Optional - Measuring element Pt1000	67110	
Optional - Two measuring elements Pt1000, as far as technical possible	67111	



THERMOCOUPLES up to 1150 °C



- ☐ Temperature measurement up to 1150 °C
- ☐ The production is based on the following DIN-standards: 43710, 43 720, 43 724, 43 729, 43 732, 43733, 43 734

Thermocouples for temperature measurement, especially at higher temperatures, e.g. in flue gases, in salt- and metal smelting, in annealing, tempering and hardening furnaces, etc.

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode Measuring medium: Temperature Measuring unit: °C

Measuring range: -70 °C - +1150 °C (2102 °F)

PHYSICALLY:

Protective tube: Chrome steel X10CrAl24, material no. 1.4762, 22

mm ø, longitudinally welded, closed on one side

Connection head: Light metal head type A22

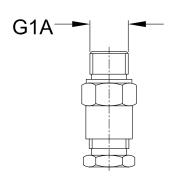
CONFORMITY:

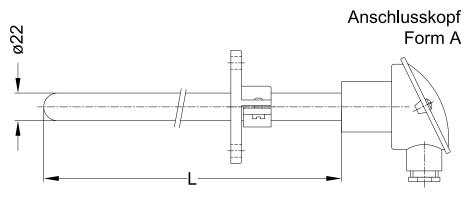
EN 61000-6-2, EN 61000-6-3, CE-mark EMC: RoHS: according RoHS-directive 2011/65/EU

Threaded sleeve









	ltem no.
Straight thermocouple with a sliding stop flange for thermocouple NiCr-Ni (fitting) Type K, max temperature 1150 °C	
NiH5, Nominal length 500 mm	6140
NiH6, Nominal length 710 mm	6141
NiH7, Nominal length 1000 mm	6142
NiH8, Nominal length 1400 mm	6143
Second thermocouple NiCr-Ni, Typ J	
Nominal length 500 mm	61030
Nominal length 710 mm	61031
Nominal length 1000 mm	61032
Nominal length 1400 mm	61033

ACCESSORIES

Threaded sleeve, slidable, M22, G1A

THERMOCOUPLES up to 1500 °C





☐ Temperature measurement up to 1500 °C

☐ The production is based on the following DIN-standards: 43710, 43 720, 43 724, 43 729, 43 732, 43733, 43 734

Thermocouples for temperature measurement, especially at higher temperatures, e.g. in flue gases, in salt- and metal smelting, in annealing, tempering and hardening furnaces, etc.

TECHNICAL SPECIFICATIONS:

Operating mode:
Measuring medium:
Sensor:
Measuring unit:

Measuring mode Temperature see below °C

PHYSICALLY:

Protective tube: Ceramic type 530, 26 mm ø
Gas-tight ceramic type 610
32 mm ø, 300 mm long
Connection head: Light metal A32

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

	ltem no.
Straight thermocouple with a sliding stop flange for PtRh-Pt thermocouple (fitting) Type S, max. temperature 1500 °C	
PtK5, Nominal length 500 mm	6150
PtK6, Nominal length 710 mm	6151
PtK7, Nominal length 1000 mm	6152
PtK8, Nominal length 1400 mm	6153

Second thermocouple PtRh-Pt, Typ S	
Nominal length 500 mm	61050
Nominal length 710 mm	61051
Nominal length 1000 mm	61052
Nominal length 1400 mm	61053

ACCESSORIES

..... m bonding conductor for dry areas with chemically pure atmosphere, stranded wire 1.5 mm², with temperature-and humidity-resistant fibreglass insulation, braid with a tracer, dimensions 5 x 7.2 mm, weight approx. 64 g / m

FeA3 iron-constantan, colour blue, 0.410 Ω / m	61060
NiA3 Nickel-chromium-nickel, colour green, 0.420 Ω / m	61061
PtA3 Platinum rhodium-platinum, colour white, 0.064 Ω / m	61062

..... m bonding conductor for dry areas with harsh operating conditions, stranded wire 1.5 mm^2 , with temperature-and humidity-resistant fibreglass insulation, braid with a tracer, dimensions $5 \times 7.2 \text{ mm}$, also braided with galvanized steel wire, weight approx. 87 g / m

FeA3 iron-constantan, colour blue, 0.410 Ω / m	61070
NiA3 nickel chromium-nickel, colour green, 0.420 Ω / m	61071
PtA3 platinrhodium-platin, characteristic colour white, 0,064 Ω/m	61072



TRANSMITTER MINI90



- ☐ Temperature transmitter with Pt100 according DIN EN 60751
- Analog outputs 0...10 V or 4...20 mA
- Plastic case with protection class IP 65
- Sensor tube from 9 mm stainless steel 1.4571

The MINI90 series is used for temperature measurement in pipes or ducts. Three versions are available: smooth probe tube for use in protective sleeves, perforated pipe probe tip for measurement in air ducts and pipes with G1/2A-screwing sensor for measurements in liquids. In the G1/2A-version the measuring insert can be replaced with the electronic, without demounting the tube. The sensor tube is made of stainless steel 1.4571, the head of ABS plastic.

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode Measuring medium: Temperature

Measuring principle: Pt100 class A according DIN EN 60751

Measuring range: 0...400 °C

Measuring unit: °C

PHYSICALLY:

Protective tube: 9 mm stainless steel, w. 1.4571 Connection head: Plastic ABS, light gray

Sleeve:

Screw-in protective sleeve SHS-M90, brass, brazed; Welding protection sleeve SHE-M90, St37 PN40

Protection class: IP 65 according to EN 60529 Electrical connection: Two-wire, three-wire technology Installation:

Mounting flange Weight: Approx. 250 g

ELECTRONIC:

13 ... 30 Vdc, any polarity or 24 Vdc or 24 Vac, ± 25% Output:

Supply voltage: 0...10 V or 4...20 mA

flow 10 m/s

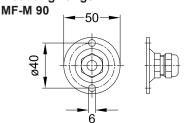
CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: | according RoHS-directive 2011/65/EU

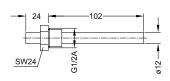
(L1) M16x1 5 9

Mounting flange

Dimensions (mm)



threaded protection sleeve SHS-M90

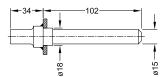


Threaded protection sleeve SHS-M 90, brass, brass, brazed

Weld-in protection sleeve SHE-M 90 St37 PN40

Special length L1 / L2

weld-in protection sleeve **SHE-M 90**



Time constants at different conditions:

	time constant
Medium: Water	sec.
no flow	37
flow 2 m/s	33
with protection sleeve, brass	73
with protection sleeve, brass oil-filled	50
with protection sleeve, steel	85
with protection sleeve, steel oil-filled	45
Medium: Air	
no flow	416

75

71202

71203 71204

		Item no.
Duct temperature transmitter MINI90	plan tube	
2-wire technology, output: 420 mA	Measurement range: Customer-specific presetting required!	7120
3-wire technology, output: 010 V	Measurement range: Customer-specific presetting required!	7125
Duct temperature transmitter MINI90	tube end perforated	
2-wire technology, output: 420 mA	Measurement range: Customer-specific presetting required!	7121
3-wire technology, output: 010 V	Measurement range: Customer-specific presetting required!	7126
Duct temperature transmitter MINI90	welded screwing G1/2A, mounting length 100 mm	
2-wire technology, output: 420 mA	Measurement range: Customer-specific presetting required!	7122
3-wire technology, output: 010 V	Measurement range: Customer-specific presetting required!	7127
	ACCESSORIES	
Mounting flange MF-M 90 for air ducts		71201

Customer-specific presetting required!

TRANSMITTER MINI72





- ☐ Resistant element Pt100 class A DIN EN 60751
- ☐ Analog output 0...10 V or 4...20 mA
- Plastic housing for wall mounting

The Transmitter MINI72 for measuring temperature in a dry location, mounting on a wall or directly on a flush-mounted switch box.

ACCURACY / ERROR LIMIT:

Measurement tolerance: < 0
Long-term stability: Ma

< 0,25 % ± 0,15 °C Max. R0-Drift 0,05 % / year

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode

Measuring medium: Temperature

Measuring principle: Pt100 class A acc

Measuring principle: Pt100 class A according DIN EN 60751

Measuring unit: °C
Measuring range: 0...400 °C
Ambient temperature: -10...+70 °C

PHYSICALLY:

Housing: Plastic 75 x 75 mm
Connection: Protection class: IP 65 according to EN 60529
Electrical connection: Two-wire, three-wire technology

Installation: Wall mounting Weight: Approx. 70 g

ELECTRONIC:

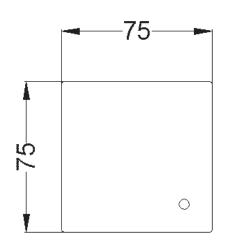
Output: 13 ... 30 Vdc, any polarity or 24 Vdc or 24 Vac, ± 25%

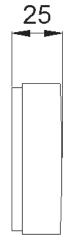
Supply voltage: 0...10 V or 4...20 mA

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

Dimensions (mm)





Item no.

Room temperature transmitter MINI72

2-wire technology, output: 4..20 mA 3-wire technology, output: 0...10 V

Measurement range: Customer-specific presetting required!
Measurement range: Customer-specific presetting required!

7180 7185



TRANSMITTER MTA90



- ☐ Resistance element Pt100 class A DIN EN 60751
- Double-wall sensor tube as weather protection
- ☐ Analog output 0...10 V or 4...20 mA

The Transmitter MTA90 for temperature in moist environments or outdoors. The housing has IP 65 protection, the sensor tube is double walled as rain and run-radiation protection.

ACCURACY / ERROR LIMIT:

Measurement tolerance: Long-term stability: $< 0.25 \% \pm 0.15 ^{\circ}\text{C}$ Max. R0-Drift 0.05 % / year

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle: Measuring unit: Measuring mode Temperature Pt100 class A according DIN EN 60751

°C

Max. temperature: M

Max. 60 °C

Measuring ranges: Ambient temperature:

-30...0...+40 °C or -20...0...+60 °C

-10...+70 °C

PHYSISCH:

Protective tube: Connection head: Protection class: Electrical connection: 9 mm stainless steel, w. 1.4571 Plastic ABS, light gray IP 65 according to EN 60529 Two-wire, three-wire technology

Weight: Approx. 200 g

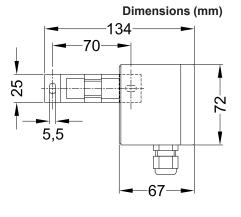
ELECTRONIC:

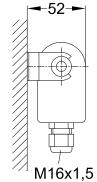
Output: Supply voltage:

13 ... 30 Vdc, any polarity or 24 Vdc or 24 Vac, \pm 25% 0...10 V or 4...20 mA

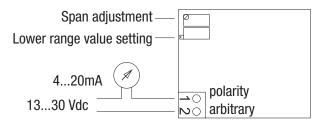
CONFORMITY:

EMC: RoHS: EN 61000-6-2, EN 61000-6-3, CE-mark according RoHS-directive 2011/65/EU

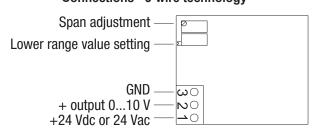




Connections - 2-wire technology



Connections - 3-wire technology



Item no.

Outdoor temperature transmitter MTA90

2-wire technology, output: 4..20 mA 3-wire technology, output: 0...10 V Measurement range: Customer-specific presetting required!

Measurement range: Customer-specific presetting required!

7130 7135

7135

MULTI RANGE TRANSMITTER MINI90-P





- Resistant element Pt100 class A DIN EN 60751
- 8 calibrated measuring ranges selectable via DIP-switches
- ☐ Sensor tube 9 mm stainless steel 1.4571
- □ Analog output 4...20 mA
- □ Plastic housing with protection class IP 65

The MINI90-P series is designed for temperature measurement in pipes or channels. Three versions are available:

- Straight sensor tube for use in protective sleeves
- Perforated sensor tube tip for measurements in air ducts
- Sensor tube with G1 / 2A screw for measurements in liquids

In the G1 / 2A version of the measuring insert, together with electronics can be replaced without that the sensor tube must be screwed out of the pipeline.

Measurement tolerance: Long-term stability:

ACCURACY / ERROR LIMIT:

< 0,25 % ± 0,15 °C Max. R0-Drift 0,05 % / year

TECHNICAL SPECIFICATIONS:

Operating mode:
Measuring medium:
Measuring principle:
Measuring unit:
Max. temperature:
Measuring ranges:
Ambient temperature:

Measuring mode Temperature Pt100 class A according DIN EN 60751 °C

Max. 400 °C

8 calibrated measuring ranges can be selected via DIP switches -10...+70 $^{\circ}\text{C}$

PHYSICALLY:

Protective tube: Connection head: Sleeve: 9 mm stainless steel, w. 1.4571 Plastic ABS, light gray

Plastic ABS, light gray Screw-in protective sleeve SHS-M90, brass, brazed;

Welding protection sleeve SHE-M90, St37 PN40 IP 65 according to EN 60529

Protection class: Electrical connection: Installation: Weight:

Two-wire, three-wire technology Mounting flange

Approx. 250 g

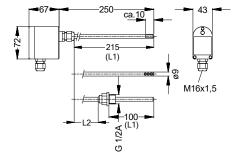
Output: Supply voltage:

ELECTRONIC: 13 ... 30 Vdc, any polarity or 24 Vdc or 24 Vac, ± 25%

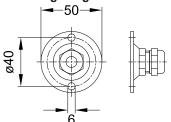
0...10 V or 4...20 mA

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

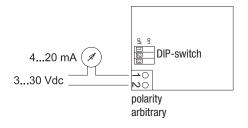


Mounting flange MF-M90



Connections - 2-wire technology

Special length L1 / L2



Measurement range:

	Mea	asurement group 1	Me	asurement group 2			
Solution 0.2 °C		Sol	Solution 0.4 °C DIP1		DIP3		
	1.	-500+150 °C	1.	0400 °C	off	off	off
	2.	-300+ 40 °C	2.	0350 °C	on	off	off
	3.	-200+ 60 °C	3.	0300 °C	off	on	off
	4.	-200+100 °C	4.	0250 °C	on	on	off
	5.	0 50 °C	5.	0200 °C	off	off	on
	6.	0100 °C	6.	50150 °C	on	off	on
	7.	0150 °C	7.	100300 °C	off	on	on
	8.	20120 °C	8.	100400 °C	on	on	on

		ltem no.
Multiple range transmitter MINI 90-P	sensor tube smooth, 8 selectable range	
2-wire technology, output: 420 mA,	Measurement range: Customer-specific presetting required!	7123
Multiple range transmitter MINI 90-P	sensor tube perforated, 8 selectable range	
2-wire technology, output: 420 mA,	Measurement range: Customer-specific presetting required!	7124
Multiple range transmitter MINI 90-P	sensor tube with G1/2A, 8 selectable range	
2-wire technology, output: 420 mA,	Measurement range: Customer-specific presetting required!	7129
	ACCESSORIES	
Mounting flange MF-M90 for air ducts		71201
Screw-in sleeve SHS-M90, brass, brazed		71202
Protective sleeve SHE-M90, St37 PN40		71203

71204

Customer-specific presetting required!



MULTI RANGE TRANSMITTER ΜΤΔ90-P



- ☐ Resistance element Pt100 class A DIN EN 60751
- □ 4 calibrated measuring ranges selectable via DIP-Switch
- Double-wall sensor tube as weather protection
- □ Analog output 4...20 mA
- ☐ Plastic housing ABS, protection class IP 65

The series MTA90-P is designed for temperature measurement in moist environments or outdoors. The case has IP 65 protection, the sensor tube is double walled as rain and run-radiation protection. Electronics running in microcontroller technology with 4 calibrated measuring ranges that can be selected via DIP switches.

ACCURACY / ERROR LIMIT:

Measurement tolerance: Long-term stability:

 $< 0.25 \% \pm 0.15 °C$ Max. R0-Drift 0,05 % / year

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Measuring principle: Measuring unit: Max. temperature: Measuring ranges:

Temperature Pt100 class A according DIN EN 60751 °C

Max. 60 °C

-30...0...+40 °C or -20...0...+60 °C

Ambient temperature:

-10...+70 °C

PHYSICALLY:

Measuring mode

Protective tube: Connection head: Protection class: Electrical connection:

9 mm stainless steel, w. 1.4571 Plastic ABS, light gray IP 65 according to EN 60529 Two-wire, three-wire technology

Approx. 200 g Weight:

ELECTRONIC:

Output: Supply voltage:

13 ... 30 Vdc, any polarity or 24 Vdc or 24 Vac, ± 25% 0...10 V or 4...20 mA

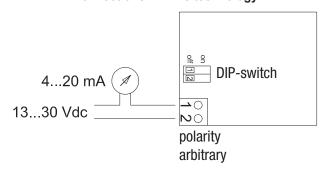
CONFORMITY:

EMC:

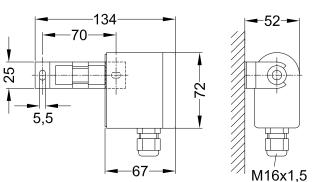
EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

Measurement range Solution 0.1 °C		DIP 1	DIP 2	
1.	-300+70 °C	off	off	
2.	-300+40 °C	on	off	
3.	-200+60 °C	off	on	
4	0 +50 °C	on	on	

Connections - 2-wire technology



Dimensions (mm)



Item no.

Outdoor temperature transmitter MTA 90-P

2-wire technology, output: 4..20 mA,

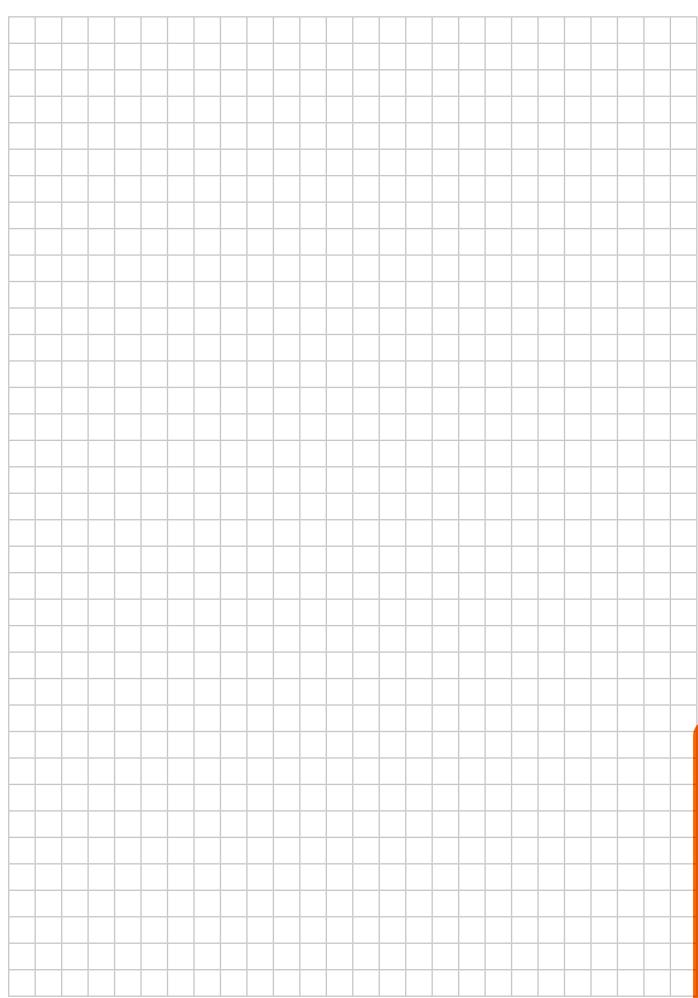
Measurement range: Customer-specific presetting required!

Temperature measuring outdoors or in moist environments, 4 selectable ranges

7131

NOTES





Temperature and humidity are of quality-deciding im-Areas of application: portance for many processes. Temperature and humid-**Industry** ity monitoring enables storing of sensitive goods, such Greenhouses as food, materials or even pieces of art. Productivity Storage: and durability or shelf life are ensured in different in-Pieces of art e.g. in churches and libraries dustry branches from food to science and art. Included in this product category are: Temperature- / humidity transmitter Regardless of the area of application, our humidity measuring devices distinguish themselves by their sim-Climate transmitter ple, but robust design. We can also design custom solutions for your area of application, which do not differ from our standard products with respect to cost efficiency and quality.

MEASURING INDICATOR flora II for climate monitoring





Dimensions (mm)

Plug connection

ø50

Connections

rel. humidity

√ -2

IP65

ø120

55

- ☐ Temperature and relative humidity supervision
- Ventilated single-chip-sensor with digital analysis
- Exchange of the sensor without re-calibration
- Best rain- and radiation protection
- Output signals for temperature, relative humidity
- ☐ Large, wide visible 20 mm LED-indicator
- ☐ Short response time

The measuring indicator flora II with digital display for continuous monitoring and remote monitoring of temperature and relative humidity. The output signals of the measured variables are 0...10 V or 0/4...20 mA. A built-in fan ensures continuous supply of fresh air, a double-walled pipe ensures effective protection and rain-radiation protection.

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring medium: Sensor:

Measuring unit:

Measuring mode Temperature and humidity

Single-Chip-sensor

Temperature in °C; relative humidity in %

Response time: Tolerance: Measuring ranges: Measuring range selection:

TEMPERATURE FEATURES:

Approx. 20 seconds (63 %-time) ±0,5 °C at 25 °C, ±1,5 °C bei -30 °C and +100 °C,

narrower tolerance possible

-30...0...+70 °C, 0...100 °C, 0...50 °C

Factroy preset

HUMIDITY FEATURES:

Response time: Tolerance:

Approx. 4 seconds (63 %-time) ±3 % r.h. in the area 30...70 % r.h.;

 $\pm 5~\%$ r.h. in the area 0...30 and 70...100 % r.h., narrower tolerance (±2 %, ±4 %) possible

50 mm ø with attached electronics housing 120 mm ø, built-in fan

Measuring ranges:

0...100 % relative humidity

PHYSICALLY: Housina:

Double-walled white plastic pipe (PP).

Dimensions: See data sheet

Red 4-digit LED display, digit height 20 mm, Display: Automatic switching to the measured values every 3 seconds

Protection class: IP 65 according to EN 60529

Electrical connection: Water protected connector

Weight: Approx. 600 g

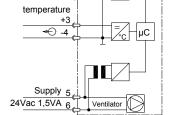
ELECTRONIC: 24 Vac

Power supply: Power consumption: Output Current:

Approx. 1,5 VA 0...10 V or 0/4...20 mA

CONFORMITY:

EN 61000-6-2, EN 61000-6-3, CE-mark EMC: RoHS: according RoHS-directive 2011/65/EU



Display

-/%

Application

For a profitable breeding of plants, besides of plants specific fertilizing and best solarization, especially the climate of the ambient air is of great importance. First of all climate means here air temperature and relative humidity.

The measuring device Flora II got developed for the correct inclusion of those climate values under the circumstances as one can find especially in greenhouses. This measuring device gets hanged directly over the plant beds.

Description

A single-chip sensor for temperature and relative humidity is arranged inside a double-walled protective tube. A built-in protective tube above this fan continuously over the air to be measured at the sensor. This arrangement ensures optimum rainfall and radiation protection, which is the white version of the device additionally improved. A large, highly visible LED digital display shows a change of approx. 3 seconds consecutively temperature and relative humidity on. For controlling the air conditioner output signal of 0...10 V or 0/4...20 mA are measured for both sizes. The supply to the traffic light is measured with 24 Vac. Using a plug-in device, the device is easy to put into operation, is still the single-chip sensor also pluggable and can be easily re-placed without having to recalibrate the measurement of traffic lights.

Item

Measuring indicator flora II

7280

For display and remote temperature and relative humidity on transmission with built-in digital display

Measurement range: Customer-specific presetting required!

Output: Customer-specific presetting required!

Rel. humidity: 0...100 % r.h., supply voltage: 24 Vac



HUMIDITY & TEMPERATURE TRANSMITTER



Transmitter PFT22K as duct-mounting

- Measuring temperature and relative humidity with a "single-chip"-sensor
- Digital transmission from sensor to the evaluation electronics
- Operational use temperature -40...+120 °C
- ☐ Operational use humidity 0...100 %
- ☐ Analog outputs 0...10 V or 4...20 mA
- Sensor interchangeability without need for re-calibration

Humidity-/temperature transmitter in three different cases: for duct-mounting, as outdoor-sensor or room sensor. Output signals 0...10 V in 3-wire technology or 4...20 mA in 2-wire technology.

TECHNICAL SPECIFICATIONS:

Operating mode:

Measuring mode Temperature and humidity

Measured material:

Sensor: Single-chip sensor for humidity and temperature with digital

signal transmission and calibration memory on the chip Temperature in ° C; relative humidity in %

Measuring unit: Output signal 1: Temperature

Output signal 2: Relative humidity



Resolution: Response time:

Tolerance:

Approx. 20 Sekunden

Reproducibility: ± 0,1 °C

Measuring ranges:

±0,5 °C at 25 °C; ±2 °C at -40 °C, ±3 °C at +120 °C; narrower tolerance possible

Measuring range selection: Characteristics:

-40...0...+120 °C; -30...0...+70 °C; 0...100 °C; 0...50 °C 4 selectable measuring ranges via DIP switch

Linear

HUMIDITY FEATURES:

Resolution:

12 bit Response time:

Aprrox. 4 seconds (63 %-time, slightly moving air)

Reproducibility: Typical < 1 % r.h. / Jahr

± 0,1 % r.h.

Tolerance: Measuring range: 0...100 % relative humidity Characteristics: Linear (digital linearization)

PHYSICALLY:

Dimensions: Connection head: Electrical connection:

See drawings Plastic ABS

7 Connection terminals

Channel sensor

Sensor tube: stainless steel, 11 mm ø

Protection class: IP 65 according to EN 60529

Cable gland: M16 x 1.5

Outdoor sensor

Sensor tube: double-walled sensor tube with wall holder

Protection class: IP 65 according to EN 60529

Cable gland: M16x1.5

Plastic housing for mounting on a flush-mounted switch box Room sensor

or surface-mounted wall mounting

ELECTRONIC:

Power supply:

15 ... 30 Vdc or 24 Vac in three-wire circuit; 13 ... 30 Vdc in two-wire circuit

Output current: 2 x 0 ... 10 V in three-wire circuit;

2 x 4 ... 20 mA in two-wire circuit

CONFORMITY:

EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU



Transmitter PFT22R as room sensor with 2 x 0...10 V output

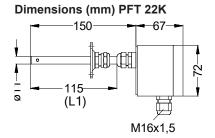


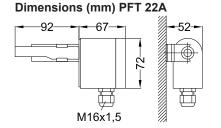
Transmitter PFT22R as room sensor with 2 x 4...20 mA output

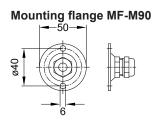
7294

HUMIDITY & TEMPERATURE TRANSMITTER PFT22

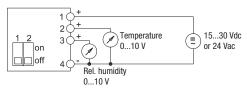


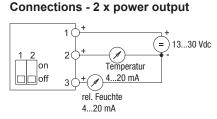




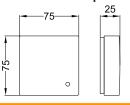


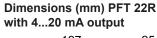
Connections - 2 x supply voltage

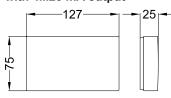




Dimensions (mm) PFT 22R with 0...10 V output







Selectable temperature measuring range

DIP-switch		Range
	2off 2off	-400+120 °C -300+ 70 °C
	2on	-300+ 70 °C
1on	2on	050 °C

7290

Humidity & temperature transmitter PFT22K as duct sensor

Measuring range humidity: 0...100 % relative humidity

Measuring range temperature: -40...0...+120 °C, -30...0...+70 °C, 0...100 °C, 0...50 °C selectable via

DIP-switch (Customer-specific presetting required!)

Housing: plastic ABS light grey, protection class IP 65 according EN 60529, tube stainless steel

Accessories: mounting flange

Output: 2 x 0...10 V, 3-wire technology

Supply voltage: 15...30 Vdc or 24 Vac

Output: 2 x 4...20 mA, 2-wire technology 7291

Supply voltage: 13...30 Vdc **Humidity & temperature transmitter PFT22A** as outdoor sensor

Measuring range humidity: 0...100 % RH

Measuring range temperature: -40...0...+120 °C, -30...0...+70 °C, 0...100 °C, 0...50 °C selectable via

DIP-switch (Customer-specific presetting required!)

Housing: plastic ABS light grey, protection class IP 65 according EN 60529, tube stainless steel

Accessories: wall bracket

Output: 2 x 0...10 V, 3-wire technology

7292 Supply voltage: 15...30 Vdc or 24 Vac

Output: 2 x 4...20 mA, 2-wire technology

7293 Supply voltage: 13...30 Vdc

Humidity & temperature transmitter PFT22R as room sensor

Measuring range humidity: 0...100 % RH

Measuring range temperature: -40...0...+120 °C, -30...0...+70 °C, 0...100 °C, 0...50 °C selectable via

DIP-switch (Customer-specific presetting required!)

Output: 2 x 0...10 V, 3-wire technology

Supply voltage: 15...30 Vdc or 24 Vac;

Housing: plastic 72 x 72 mm for wall mounting or mounting on a flush-mounting box

Output: 2 x 4...20 mA, 2-wire technology

7295 Supply voltage: 13...30 Vdc

Housing: plastic 72 x 72 mm for wall mounting or mounting on a flush-mounting box

SURCHARGE				
Calibrated replacement sensor plugged, read	dy	72190		
Replacement sensor with a narrow tolerance				
Extra charge for sensor with a narrow tolerance		72192		
Special lenght L1	Customer-specific presetting required!	72193		



IMATE TRANSMITTER PFT



Transmitter PFT25K as duct sensor

Transmitter PFT25R

as door sensor with

2 x 4...20 mA output

- Measuring temperature and relative humidity with a "single-chip"-sensor
- ☐ Fast response time
- □ Digital transmission from sensor to the evaluation electronics
- Additional computed values: dew point temperature, absolute humidity, wet bulb temperature and enthalpy
- Analog outputs 0...10 V or 4...20 mA
- Sensor interchangeability without need for re-calibration
- **Protection class IP 65**

The climate transmitter PFT25 converts the directly measured values temperature and relative humidity into often used climatic values dew point temperature, absolute humidity, wet bulb temperature and enthalpy by digital calculation. The device has two analog outputs, output 1 is always set to temperature, whilst the second output can be set to 4 further values by a two stage dip-switch. The design of the PFT25 corresponds to the transmitter PFT22.

All measured and calculated values are shown with a resolution of 12 bits. For the calculation, a mean air pressure of 1000 hPa is used. To achieve maximum accuracy, the location of medium height and air pressure are given on the spot.

TECHNICAL SPECIFICATIONS:

Operating Mode: Measured material:

Measuring mode

Temperature and humidity

Sensor:

Single-chip sensor for humidity and temperature with digital signal transmission and calibration memory on the chip

Temperature in ° C; relative humidity in %

Measuring unit: Temperature

Output signal 1: Output signal 2:

Relative humidity, Dew point, wet bulb temperature, enthalpy;

(Special range - absolute humidity)

Output 1: TEMPERATURE

Resolution: 14 bit Response time:

Approx. 20 seconds

Reproducibility:

± 0,1 °C

Tolerance:

±0,5 °C at 25 °C; ±2 °C at -40 °C, ±3 °C at +120 °C; narrower

tolerance possible -30...+50 °C

Measuring ranges: Characteristics:

Linear

Output 2: SELECTABLE

Resolution:

12 bit

Response time:

Aprox. 4 seconds (63 %-time, slightly moving air)

Reproducibility:

Typical < 1 % r.h. / year

Tolerance: Measuring ranges ± 0,1 % r.h. Temperature: T = -30...+50°C, 0...50°C, 0...100°C; Relative

humidity: r.h. = 0...100%;

Dew point: $dp = -30...+50^{\circ}C$;

Wet bulb temperature: tf = -30...+50°C;

Enthalpy: E = 0...200 kJ/kg;

Measuring range selection: Absolute humidity: a.h. = 0...50g/kg

4 selectable measuring ranges via DIP switch

Linear (digital linearization)



as door sensor with 2 x 0...10 V output

Characteristics:

PHYSICALLY:

See drawings Dimensions: Connections head: Plastic ABS

7 Connection terminals Electrical connection:

> Channel sensor Sensor tube: stainless steel, 11 mm ø

> > Protection class: IP 65 according to EN 60529

Cable gland: M16 x 1.5

Outdoor sensor Sensor tube: double-walled sensor tube with wall holder

Protection class: IP 65 according to EN 60529

Cable gland: M16x1.5

Room sensor Plastic housing for mounting on a flush-mounted switch box or

surface-mounted wall mounting

ELECTRONIC:

15 ... 30 Vdc or 24 Vac in three-wire circuit; Power supply:

13 ... 30 Vdc in two-wire circuit

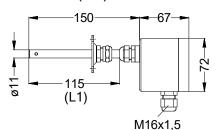
Output current: 2 x 0 ... 10 V in three-wire circuit;

2 x 4 ... 20 mA in two-wire circuit

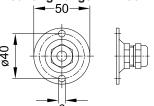
CLIMATE TRANSMITTER PFT25



Dimensions (mm) PFT25K



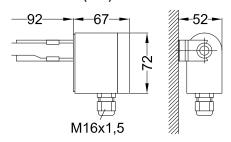
Mounting flange MF-M90



Output 2 - selectable values

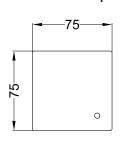
DIP-switch Output 1off 2off relative humidity 0...100 % 1on 2off dew point -30...0...+50 °C 1off 2on Wet bulb temperature -30...0...+50 °C 1on 2on Enthalpy 0...200 kJ/kg

Dimensions (mm) PFT25A

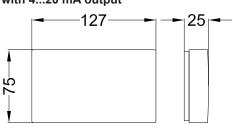


Dimensions (mm) PFT25R with 0...10 V output

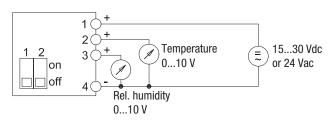
25



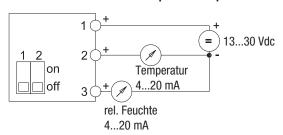
Dimensions (mm) PFT25R with 4...20 mA output



Connections - 2 x supply voltage



Connections - 2 x power output



Item no.

Humidity & temperature transmitter PFT25K as duct sensor

Output 1: Temperature -30...0...+50 °C

Output 2: Customer-specific presetting required!

Housing: pastic ABS light grey, protection class IP 65 according EN 60529, tube stainless steel

Accessories: mounting flange

Output: 2 x 0...10 V, 3-wire technology Supply voltage: 15...30 Vdc or 24 Vac

7390

Output: 2 x 4...20 mA, 2-wire technology

Supply voltage: 13...30 Vdc

7391

Humidity & temperature transmitter PFT25A as outdoor sensor

Output 1: Temperature -30...0...+50 °C

Output 2: Customer-specific presetting required!

Housing: plastic ABS light grey, protection class IP 65 according EN 60529, tube stainless steel

Accessories: wall bracket

Output: 2 x 0...10 V, 3-wire technology Supply voltage: 15...30 Vdc or 24 Vac Output: 2 x 4...20 mA, 2-wire technology Supply voltage: 13...30 Vdc

7392 7393

Humidity & temperature transmitter PFT25R as room sensor

Output 1: Temperature -30...0...+50 °C

Output 2: Customer-specific presetting required!

Output: 2 x 0...10 V, 3-wire technology

7394 Supply voltage: 15...30 Vdc or 24 Vac; Housing: plastic 72 x 72 mm

Output: 2 x 4...20 mA, 2-wire technology

Supply voltage: 13...30 Vdc; Housing: plastic 72 x 72 mm

7395

Special lenght L1 **Customer-specific presetting required!**

72193

Special configuration of measured variables to output 2

7399

Customer-specific presetting of output 1 & output 2 are required!



LIMATE TRANSMITTER PFT28



Wall-mounted version

- Measuring temperature and relative humidity with a "singlechip"-sensor
- Calculation and display of dew point temperature, enthalpy, wet bulb temperature and absolute humidity
- ☐ Digital transmission from sensor to the evaluation electronics
- □ Fast response time
- Exchange ability of sensor without recalibration
- ☐ Alphanumeric LCD-indicator for: temperature, relative humidity, dew point temperature, absolute humidity, wet bulb temperature and enthalpy
- □ Analog outputs 0/2...10 V or 0/4...20 mA
- Supply voltage 15...30 Vdc or 24 Vac
- □ Operational use humidity 0...100 % (transient condensation possible)
- Operational use temperature -30...+50 °C
- Plastic housing, protection class IP 54; UL 94 HB

The transmitter PFT28 converts the measured variables temperature and relative humidity into the measured variables: dew point temperature, absolute humidity, wet bulb temperature and enthalpy.

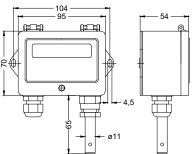
Output 1 supplies the temperature signal while Output 2 can be assigned to one of four other measured variables. The second measured variable is selected by a two-pole DIP switch.

Measured variable, measured value and unit are displayed on a two-line alphanumeric display.

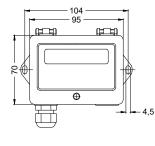
Two PFT28 versions are available:

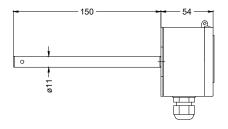
A room sensor for wall mounting and a duct sensor for installation in a ventilation duct. In both versions, the sensor tube is mounted directly to the chassis. With a jumper, the output signals can be switched from 0/2...10 V to 0/4...20 mA. The device is powered with 15...30 Vdc or 24 Vac.

Dimensions (mm) PFT28R as room sensor

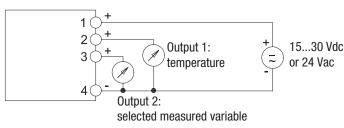


Dimensions (mm) PFT28K as duct sensor

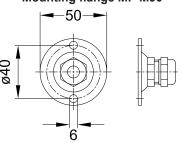




Connections



Mounting flange MF-M90



Connecting terminal:

- 1+4-Supply voltage 15...30 Vdc or 24 Vac (±15%)
- 2+ 4-Output 1: 0/2...10 V or 0/4...20 mA
- 3+4-Output 2: 0/2...10 V or 0/4...20 mA

CLIMATE TRANSMITTER PFT28



| Output 1: TEMPERATURE

Resolution: 14 bit

Response time: Approx. 20 seconds

Characteristics: Linear

<u>Standard Sensor:</u> <u>Sensor with narrower tolerance:</u>

Tolerance: $\pm 0,1$ °C $\pm 0,1$ °C Reproducibility: $\pm 0,1$ °C $\pm 0,1$ °C $\pm 0,1$ °C

±0,5 °C at 25 °C ±2,0 °C at -40 °C ±3,0 °C at +120 °C ±2.0 °C at +120 °C

Measuring ranges: -30...+50 °C

Output 2: SELECTABLE

Resolution: 12 bit

Response time: Approx. 4 seconds (63 %-time, slightly moving air)

Characteristics: Linear (digital linearization)
Long-term stability: Typical < 1 % r.h. / year

Tolerance: <u>Standard Sensor:</u> <u>Sensor with narrower tolerance:</u>

> ±3,5 % r.h. at 30...70 % r.h. ±5,0 % r.h. at 0...29 % r.h. ±5,0 % r.h. at 71...100 % r.h. ±4,0 % r.h. at 91...100 % r.h. ±4,0 % r.h. at 91...100 % r.h.

Measuring ranges: ±5,0 % r.h. at 71...100 % r.h. ±4,0 % r.h. at 91. Temperature: T = -30...+50 °C, 0...50 °C, 0...100 °C;

Relative humidity: r.h. = 0...100%; Dew point: dp = -30...+50 °C;

Wet bulb temperature: tf = -30...+50 °C;

Enthalpy: E = 0...200 kJ/kg;

Special measuring range: Absolute humidity: a.h. = 0...50 g/kg

Measuring range selection: 4 selectable measuring ranges via DIP switch

PHYSICALLY:

Housing: Ultramid with hinged ABS cover; Attached sensor tube for recording the sensor

Protection class: IP 54 according to EN 60529; UL 94 HB

Dimensions: 95 x 70 x 54 [mm] (WxHxD)

Storage temperature: -25 ... + 60 ° C

Operating temperature: Sensor: -40 ... + 120 ° C

Electronics: -10 ... + 50 ° C

Weight: Approx. 300 g
Connection head: Plastic ABS

Electrical connection: 7 Connection terminals

Weight: Approx. 300 g

Channel sensor | Sensor tube: stainless steel, 11 mm ø

Cable gland: M16 x 1.5

Mounting flange for attachment to the duct

Outdoor sensor Sensor tube: double-walled sensor tube with wall holder

Cable gland: M16 x 1.5 Mounting on the wall

Room sensor | Plastic housing for mounting on a flush-mounted switch box or surface-mounted wall mounting

| ELECTRONIC:

Power supply: 15...30 Vdc; 24 Vac (±15%)

Output current: 0/2...10 V or 0/4...20 mA with DIP switch and jumper

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

	ltem no.
Climate transmitter PFT28K as duct sensor with montage flange	7400
Climate transmitter PFT28R as room sensor	7410
Special assignment of the measured variables to output 2	7399
Output 1 & Output 2 are pretended in case of order by customer!	
Climate transmitter PFT28K as cable sensor	7422
Exchangeable sensor, pluggable, permanently calibrated	72190
Exchange sensor with restricted tolerance	72191
Surcharge for sensor with restricted tolerance	72192
Special length of the sensor tube	72193
Optional sensor protection with sinter filter	72194



CLIMATE TRANSMITTER PFT28Ka



- Measurement of temperature and relative humidity
- □ Digital signal transmission from the sensor to the evaluation electronics
- Response time of a few seconds
- □ Easy interchangeability of the sensor
- □ Alphanumeric LCD display
- ☐ Analog outputs 0/2...10 V or 0/4...20 mA
- ☐ Supply voltage 15...30 Vdc or 24 Vac (± 15%)
- ☐ Compact plastic housing Protection class IP54; UL 94 HB
- Measuring range relative humidity 0 ... 100% (short term condensation possible)
- ☐ Measuring range temperature -30...+ 50 °C, 0...50 °C, 0...100 °C
- ☐ Calculation and display of dew point temperature, enthalpy wet bulb temperature and absolute humidity

The transducer PFT28Ka converts the measured variables of temperature and relative humidity into the following parameters: dewpoint temperature, absolute humidity, moisture ball temperature and enthalpy.

The device has two analog outputs: Output 1 supplies the temperature signal and one of four further measured variables can be applied to output 2 via two-pole DIP switches.

For direct display of the measured value, measured value and unit, the device has a two-line alphanumeric display.

Different versions are available:

A room sensor for wall mounting, a duct sensor for installation in a ventilation duct and a cable management variant with 2 m cable. In both versions, the sensor tube is installed directly on the housing. The output signals can be switched from 0/2 ... 10 V to 0/4 ... 20 mA with a plug-in bridge. The device is supplied with 15 ... 30 Vdc or 24 Vac.

Connections 1 + 2 + 15...30 Vdc 3 + 15...30 Vdc temperature or 24 Vac Output 2:

selected measured variable

Connecting terminal:

1+ 4- Supply voltage 15...30 Vdc or 24 Vac (±15%)

2+ 4- Output 1: 0/2...10 V or 0/4...20 mA 3+ 4- Output 2: 0/2...10 V or 0/4...20 mA

Mounting flange MF-M90

LIMATE TRANSMITTER PFT28Ka



PERFORMANCE / ACCURACY / ERROR LIMIT:

Relative Humidity:

Resolution:

Characteristic: linear (digital linearization)

approx. 4 seconds (63% time, slightly moved air) Response time:

Long term stability: typical < 1 % RH per year

Standard sensor: Sensor with narrowed tolerance: Reproducibility:

± 0.1 % RH ± 0.1 % RH

Tolerance: ± 3.5 % RH at 30...70 % RH ± 2.0 % RH at 10...90 % RH ± 5,0 % RH at 00...29 % RH ± 4,0 % RH at 00...09% RH

> ± 5,0 % RH at 71...100 % RH ± 4,0 % RH at 91...100 % RH

Temperature:

Resolution: 14 Bit Characteristic: linear

Response time: approx. 20 seconds

Standard sensor: Sensor with narrowed tolerance:

Reproducibility: ± 0.1 °C ± 0.1 °C

± 0.5 °C at 25 °C \pm 0.3 °C at 25 °C Tolerance: ± 2,0 °C at -40 °C ± 1.5 °C at -40 °C ± 3,0 °C at +120 °C ± 2,0 °C at +120 °C

TECHNICAL SPECIFICATIONS:

Operating mode: Measuring mode

Humidity and temperature Measuring medium:

> Sensor: single-Chip sensor for relative humidity and temperature with digital signal converting and

> > chip calibration memory

Measuring range: temperature $T = -30...+50 \, ^{\circ}C$

RH= 0...100 % relative humidity: dew point temperature: $td = -30...+50 \, ^{\circ}C$ wet bulb temperature: $tf = -30...+50 \, ^{\circ}C$ E = 0...200 kJ/kgenthalpy:

Special measuring range: absolute humidity: a.F. = 0...50 g/kg

Operation temperature range: sensor: -40...+120 °C

electronic: -10...+50 °C

-25...+60 °C Storage temperature:

PHYSICALLY:

Housing: Ultra mid with folding ABS cover, directly mounted sensor cable (2 m length, Ø 5 mm)

Dimensions: 95 x 70 x 54 mm (WxHxD)

Weight: approx. 300 q

IP 54 according EN 60529; UL 94 HB Schutzart:

Display: two-line alphanumeric LCD display, 2x16 digit

Electrical connections: Cable entry M16x1.5, screw terminals, electronics protected against incorrect polarity

ELECTRONIC:

Supply voltage: 15...30 Vdc; 24 Vac (±15%)

Power consumption: approx. 14 mA @ 24 Vdc at 0...10 V output

> Outputs: 0/2...10 V or 0/4...20 mA switchable via DIP-switch and jumper

Output 1:

Output 2: one of four other measured variables selectable by a two-pole DIP-switch

CONFORMITY:

EMV: tested according EN 61000-6-2, EN 61000-6-3, CE mark

RoHS: According RoHS-directive 2011/65/EU

	ltem no.
Climate transmitter PFT28K as cable sensor	7422
Special assignment of the measured variables to output 2	73999
Output 1 & Output 2 are pretended in case of order by customer!	
Exchangeable sensor, pluggable, permanently calibrated	72190
Exchange sensor with restricted tolerance	72191
Surcharge for sensor with restricted tolerance	72192
Special length of the sensor tube	72193
Optional sensor protection with sinter filter	72194



CLIMATE TRANSMITTER PFT30

Measurement - Display - Transmission - Controlling of:

Temperature - Relative Humidity - Dew Point - Wet Ball Temperature - Enthalpy - Absolute Moisture



■ Measurement of temperature and relative humidity

- ☐ Digital signal transmission from the sensor to the evaluation electronics
- □ Response time of few seconds
- Easy interchangeability of the sensor
- □ Alphanumeric LCD display
- ☐ Two freely configurable measuring control channels with 0 ... 10 V output
- ☐ Temperature measuring range -40 ... +120 °C, span freely selectable
- ☐ Measuring range rel. Humidity 0 ... 100% (short-term condensation possible)
- ☐ Calculation of the climatic parameters dew point, absolute humidity, entalpha, wet bulb temperature
- ☐ Supply voltage 18 ... 30 Vdc or 24 Vac (± 15%)
- ☐ Compact plastic housing Protection class IP54; UL 94 HB

The climate converter PFT30 is a versatile sensor controller.

The sensor controller calculates, from the directly measured values of temperature and relative humidity, the measured values of dew point temperature, wet bulb temperature, absolute humidity and enthalpy, which are frequently used in climatic engineering.

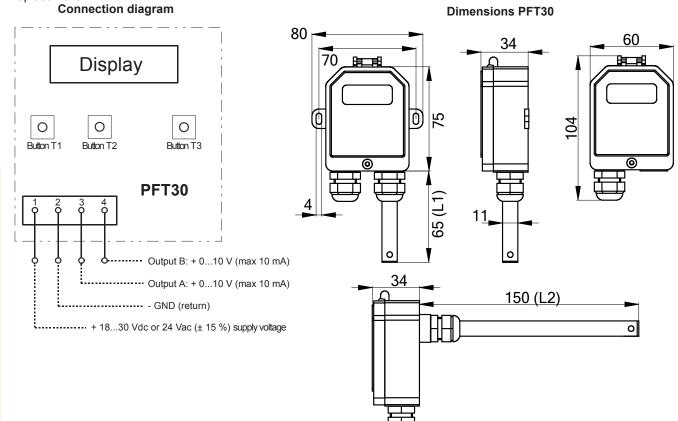
The device has two independent channels each with analog output 0 ... 10 V and a display line. The measured values can be freely assigned to a channel and scaled. Each channel can be used with measurement or control functions.

For the PID control the setpoints and parameters can be set in the device, as is the possibility to use the PFT30 as a binary controller.

An exchangeable sensor chip is used for measuring the relative humidity and temperature. Two sensors (capacitive measuring principle for relative humidity and semiconductor principle for temperature), a signal amplification, a 14-bit A / D converter and a digital two-wire interface are located on the sensor chip.

Furthermore, the calibration data of the two knife holders are stored in an OTP memory, which is also located on the sensor chip. The signal transmission from the sensor to the evaluation electronics in the housing takes place digitally.

The sensor itself can be exchanged without any problems, since readjustment of the electronics is not necessary after the replacement.



CLIMATETRANSMITTER PFT30

Measurement - Display - Transmission - Controlling of:

Temperature - Relative Humidity - Dew Point - Wet Ball Temperature - Enthalpy - Absolute Moisture



PERFORMANCE / ACCURACY / ERROR LIMIT:

Relative Humidity: Resolution:

12 Rit

Characteristic: linear (digital linearization)

Response time: approx. 4 seconds (63% time, slightly moved air)

typical < 1 % RH per year Long term stability:

> Standard sensor: Sensor with narrowed tolerance:

± 0.1 % RH ± 0.1 % RH

Tolerance: ± 3,5 % RH at 30...70 % RH ± 2,0 % RH at 10...90 % RH ± 5,0 % RH at 00...29 % RH ± 4,0 % RH at 00...09% RH ± 5,0 % RH at 71...100 % RH ± 4,0 % RH at 91...100 % RH

Temperature:

Reproducibility:

Resolution: Characteristic:

14 Bit linear

Response time: approx. 20 seconds

Standard sensor: Sensor with narrowed tolerance:

Reproducibility: ± 0.1 °C ± 0.1 °C Tolerance:

± 0.5 °C at 25 °C ± 0.3 °C at 25 °C ± 2,0 °C at -40 °C ± 1.5 °C at -40 °C ± 3,0 °C at +120 °C ± 2,0 °C at +120 °C

TECHNICAL SPECIFICATIONS:

Operating Mode: Measured material: Selectable measuring mode, PID control mode or binary control

Humidity and temperature

Measuring transducer: Single-chip sensor for relative humidity and temperature with digital signal transmission and calibrati-

on memory on the chip.

Measuring ranges: Measuring span: Freely scalable within the maximum span Temperature T [C] -40 ... +120 °C

Temperature T [F] -40 ... +257 °F -0 ... 100% Rel. Humidity H [%] Dew Point D [C] -99 ... +120 °C Dew point D [F] -99 ... +248 °F Wet bulb temperature W [C] -39 ... +119 °C Wet bulb temperature W [F] 38 ... +248 °F Absolute humidity A [g] -0 ... 957 g / kg -99 ... 989 kJ / kg Entalphie E[J]

3 buttons and software menu for entering all parameters

Application sensor: Temperature: -40 ... + 120 ° C

0 ... 100%, short-term condensation possible (internal heating element) Humidity:

-10 ... + 50 ° C, non-condensing Application Electronics:

Storage temperature:

Operation:

-25 ... + 60 ° C

Ultramid with hinged ABS cover; Attached sensor tube for recording the sensor Casing:

Dimensions: 60 x 75 x 34 [mm] (W x H x D)

Mass: About 200 g

Protection class: IP 54 according to EN 60529; UL 94 HB

Display: Two-line alphanumeric LCD display, 2x16 characters

Electrical connections: Cable entry M16x1.5, screw terminal, electronics protected against incorrect polarity Operating position:

Duct sensor: stainless steel sensor tube, 11 mm \varnothing at the rear, mounting flange with gasket Room sensor: stainless steel sensor tube, 11 mm Ø at the front, mounting on the wall

ELECTRONIC:

Power supply: Power consumption: Output Current:

18...30 Vdc; 24 Vac (±15%) Approx. 18 mA @ 24 Vdc 2 x 0...10 V (max. 10 mA)

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

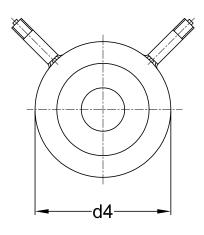
	Art. Nr.
Climate transmitter PFT30R as room sensor	74XX
Climate transmitter PFT30K as duct sensor with montage flange	74XY
Exchangeable sensor, pluggable, permanently calibrated	72190
Exchange sensor with restricted tolerance	72191
Surcharge for sensor with restricted tolerance	72192
Special length of the sensor tube	72193
Optional sensor protection with sinter filter	72194

Our range of flow measuring devices comprises all components for the volume measurement of liquids, gases and steam. We also offer temperature sensors, pressure sensors and computing units for a complete calorimetric measurement.

- Volume flow measurement in ventilation ducts and pipelines
- Steam volume monitoring / calculation in production systems
- Flow measurement in compressors, heat pumps and chillers

Included in this product category are:

- · Ring chamber orifice plate
- · Measuring section
- Metering orifice
- Orifice plates
- Measuring grid
- Venturi
- · Accessories flow measurement
- Heat meter measurement



☐ Pressure sensor in flow measurements of liquids

☐ Calculation of the orifice according to DIN EN ISO 5167

Use at higher temperatures and aggressive media

☐ Material steel (St37) or stainless steel (1.4301)

□ Pressure socket integrated

☐ Installation length 65 mm

□ Pressure stages up to PN40

□ Special versions available on request

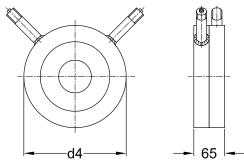
Orifice plates as differential pressure for flow measurement of liquids, gases or vapors. Installation in the pipeline between flanges with smooth sealing strips, the length 65 mm. The calculation of orifice plates according to DIN EN ISO 5167.

The straight pipe should be as $10 \times D$ (D = pipe inside diameter), the outlet section may be 5 times D.

The choice of materials is based on temperature, pressure and aggressiveness of the medium.

Special versions for higher pressures, higher temperatures or larger sizes may be requested, in accordance with the technical opportunities are made.





TECHNICAL SPECIFICATIONS:

Operating mode:
Measuring medium:
Measuring principle:
Measuring unit:
Max. temperature:

Effective pressure transmitter
Liquids, gases and vapors
Measuring diaphragm
Flow rate
400 ° C

PHYSICALLY:

Materials: Ring (St37), Removing socket (St37) and cover plate

made of stainless steel 1.4301

Construction: Standard diaphragm with two-part mounting ring Mate-

rial Steel St37

Execution: A with annular chamber removal

B with single bore removal

Shutter discs: Interchangeable, Material Stainless steel 1.4301

Overall length: 65 mm

Pressure stages:

Pressure connections: G1 / 2A, 100 mm long, steel St35.8

PN1 ... PN40

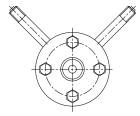
Prices for stainless steel on request

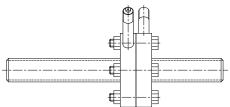
In case of order please specify the pressure stage PN!

Туре	Nominal diameter	Weight approx. in kg	ltem no.
MBR50	DN 50	3.0	6310
MBR65	DN 65	3.5	6311
MBR80	DN 80	4.0	6312
MBR100	DN100	5.5	6313
MBR125	DN125	6.5	6314
MBR150	DN150	8.0	6315
MBR200	DN200	10.0	6316
MBR250	DN250	13.0	6317
MBR300	DN300	20.0	6318
MBR350	DN350	22.0	6319
MBR400	DN400	25.0	6320
MBR500	DN500	33.0	6321
MBR600	DN600	42.0	6322
MBR700	DN700	80.0	6323



MEASURING SECTION according to DIN 19205





Form E for welding

Type

- □ Pressure sensor in flow measurements of liquids ☐ Calculation of the orifice according to DIN EN ISO 5167 19205
- Use at higher temperatures and aggressive media
- ☐ Material steel (St37) or stainless steel (1.4301)
- □ Pressure socket integrated
- ☐ Installation to weld in (form E) or with flanges (form F)
- □ Pressure stages up to PN40
- □ Special versions available on request

Measuring section and orifice plates with ring chamber fixed attached to the inlet pipe piece- and outlet page.

These are run for the size range DN15 ... DN40.

Operating mode: Measuring medium: Measuring principle: Measuring unit: Max. temperature:

TECHNICAL SPECIFICATIONS:

Effective pressure transmitter Liquids, gases and vapors Measuring diaphragm Flow rate 400 ° C



Construction:

Shutter discs: Overall length: Pressure connections: Pressure stages:

LI mm

PHYSICALLY:

C22

Standard diaphragm with two-part mounting ring Material Steel St37

Interchangeable, Material Stainless steel 1.4301 See table

G1 / 2A, 100 mm long, steel St35.8

PN100

L2 mm

Form F with flange	L3

南山

Nominal diameter

-/PC	rvommar alamoter				1001111101		
Form E for welding							
MBS15	DN 15	550	380	170	6350		
MBS20	DN 20	700	500	200	6351		
MBS25	DN 25	900	650	250	6352		
MBS32	DN 32	1100	800	300	6353		
MBS40	DN 40	1300	1000	300	6354		
Form F with flange up to PN 100							
MBS15	DN 15	550	380	170	6360		
MBS20	DN 20	700	500	200	6361		
MBS25	DN 25	900	650	250	6362		
MBS32	DN 32	1100	800	300	6363		
MBS40	DN 40	1300	1000	300	6364		

ACCESSORIES

Orifice calculation without supply contract		

MAV valves, PN 100, C22 material G1/2A with input flange and counter flange output, 12 mm Ermeto-screw

63005 63007

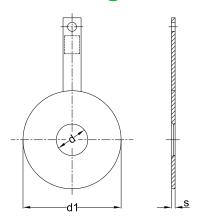
Item no.

Condensate vessel MS, PN100, material C22

Volume of approx. 90 cc, with input flange and counter flange G1/2A output, G1/2A

ORIFICE according to DIN 19206





Orifice plates with circular cross-section can be used for flow measurement of gases. The installation in the pipe between flanges with smooth sealing strips. The pressure tap is on the pipeline in a form Stand D upstream of the orifice plate (positive-pressure extraction) and D / 2 from current downward (negative pressure sampling) is attached.

The calculation of orifice plates according to DIN EN ISO 5167.

Operating mode:
Measuring medium:
Measuring principle:
Measuring unit:
Max. temperature:

TECHNICAL SPECIFICATIONS:
Effective pressure transmitter
Liquids, gases and vapors
Measuring diaphragm
Flow rate
300 ° C

PHYSICALLY:

Materials: Construction:

Steel St.37 Form G according to DIN 19206

For installation between flanges according to DIN

Type of seal: Overall length: Smooth on both sides, form C G1 / 2A, 100 mm long, steel St35.8

Max. pressure: | 1000 mbar

essure tab	<u> </u>	flow pattern
essi		-

MBT100 MBT125 MBT150 MBT200 MBT250	37. max. temperature 3 DN100 DN125 DN150 DN200	4 4 4	0.6 0.8	6410 6411
MBT125 MBT150 MBT200	DN125 DN150 DN200	4 4	0.8	
MBT150 MBT200	DN150 DN200	4		6411
MBT200	DN200		4.6	
			1.0	6412
MBT250		4	1.8	6413
	DN250	4	2.6	6414
MBT300	DN300	4	3.4	6415
MBT350	DN350	4	4.4	6416
MBT400	DN400	4	5.0	6417
MBT500	DN500	6	10.0	6418
MBT600	DN600	6	14.0	6419
MBT700	DN700	8	18.0	6420
MBT800	DN800	8	23.0	6421
MBT900	DN900	8	38.0	6422
laterial: Stainless	s steel CrNiTi180; mate	rial no. 1.4541. max	k. temperature 300 °C	
MBT100	DN100	4	0.6	6430
MBT125	DN125	4	0.8	6431
MBT150	DN150	4	1.0	6432
MBT200	DN200	4	1.8	6433
MBT250	DN250	4	2.6	6434
MBT300	DN300	4	3.4	6435
MBT350	DN350	4	4.4	6436
MBT400	DN400	4	5.0	6437
MBT500	DN500	6	10.0	6438
MBT600	DN600	6	14.0	6439
MBT700	DN700	8	18.0	6440
		ACCESS	ORIES	

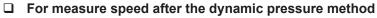
Weld-on, steel pipe, G1/2A, 150 mm long

64001



CYLINDER PITOT TUBE MBZ

for velocity measurement in pipelines



☐ Material brass (up to 100 °C) or stainless steel (up to 450 °C)

□ Pressure connection 6mm

☐ Diameter 24 mm, length 500 mm

□ Special length on request

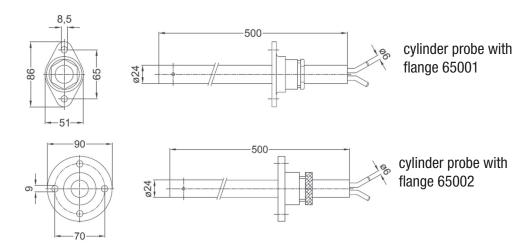
☐ 2 different mounting flange available

The cylindrical probe is a primary element for measuring speed similar to the known Prandtl pitot tube. Dictated by the particular design, the cylinder has a constant probe, in large Boundaries of the Reynolds number independent coefficient C = 2, that means they are at a certain speed twice as much back pressure as the Prandtl pitot tube from.

Specifications

Construction: tube 24 mm ø, 500 mm long

Pressure taps: 6 mm ø for connection of plastic tube



	ltem no.
Cylinder pitot tube MBZ Material brass, max temperature 100 °C	6500
Cylinder pitot tube MBZ Material stainless steel CrNiMoTi1810 Material no. 1.4571, max. temperature 450 °C	6510
ACCESSORIES	
Mounting flange MBZ , easy version use to 100 °C	65001
Mounting flange MBZ, heavy version use to 100 °C	65002

MEASURING GRID SGI

for air measurement in pipelines



☐ For measure speed after the dynamic pressure method

Arrangement of several cylinder pitot tube

☐ Central tubes with laterally attached probe tubes

☐ Material brass (up to 100 °C) or stainless steel (up to 450 °C)

□ Pressure connection 6mm

■ Mounting parts available

The SGI is a special lattice arrangement of a plurality of cylinder probes, which are distributed over a cross section that can be at different flow distribution in a pipe found in a canal or a mean flow.

The probe is connected to the grid and each pipe or channel dimensions can be customized. It can be made for the edge or square channel cross-sections.

For larger sizes is usually required a thrust bearing.

Specifications

Construction: central tubes with laterally attached probe tubes

Pressure taps: 6 mm ø plastic tubing for connection

Comment:

The use of the differential Peritact 80 (\pm 1.5%) with the smallest range of 0...1 mbar results as a range for the lowest velocity 0...8 m/s.

The transmitter MKM (\pm 0.2%) and 2000-K10 Peritact (\pm 1%) with the smallest ranking of 0... 0.1 mbar as a result, the lowest range for velocity 0...3 m/s.

Larger ranges are possible by adjusting the transmitter.

Grand calculation for cylinder position sensor and sensor grids:

$$w = \sqrt{\frac{200 \times \Delta p}{C \times \rho}}$$

$$\Delta p = (w^2 \times \rho \times C)$$
200

w = velocity in m/s

 Δp = differential pressure in mbar

 ρ = density at actual conditions in kg/m³

C = coefficient for cylindrical probe = 2

for Prandtl-pitot tube = 1

			Item no.
Measuring grid	SGI		
Dimensions	material	max. temperature	
DN200 round	brass	100 °C	6520
DN200 round	stainless steel 1.4571	200 °C	6550
DN500 round	stainless steel 1.4571	200 °C	6551

Other dimensions on request.

ACCESSORIES

Camp GL-SGI for fixing the measuring grid

65501

VENTURI NOZZLE MVR / FVR

for air measurement in pipelines



☐ Material PPs

Threaded or flanged version made short and long version available

■ Manufactured to DIN ISO 5167

☐ Inexpensive local display for all ventilation applications

Combination with our differential pressure gauges and transmitters possible

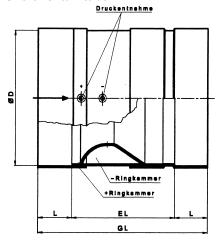
The venturi tube is a primary element for flow metering in tubings. The principle of the venturi tube allows for meterings with all media. The venturi tube described here is especially designed for air flow metering in ventilation channels. Mounting of the venturi tube in the installation has to be made using plug sockets with the corresponding lip seals. A version with flange connection can also be supplied. The venturi tube is a one-piece extruded housing made of PP. High accuracy of fit and optimum centering is guaranteed with socket or flange connection on both sides. The venturi nozzle is made with an inlet profile as per ISA according to DIN EN ISO 5167. The flow which is important and favorable for meterin is achieved through the specific deformation process of the thermoplastic material. It allows for an exact fitting as well as for extremely smooth surfaces for ideal flow conditions without any costly rework.

The pressure relief valves have 4-5 individual bore holes in the cylindrical neck which open out into a ring chamber.

For further evaluation, indicators (DA2000) with a scale in m³/h or measuring transducers (DS85 or DS200) for remote transmission of the measuring signal are available. The exact design of the indicators or the measuring transducers depends on the design data which are to be clarified beforehand.



Short venturi tube



Design:

Specifications

plastic tubes, grey, made of PPs,

accurate of fit with thermal deformation and welding

Discharge nozzle: 8 mm ø for connection of plastic hose

Mounting: socket connection, the counterparts are equipped

with the corresponding lip seals

Ambient temperature: 0...+80 °C

Tubes with lip seals are available on request

Dimensions (mm)

DN	øD	EL	GL	L
160	160	110	190	40
200	200	110	210	50
250	250	130	230	50

Mounting bracket for DA2000, DS200 or DS85

When ordering, please indicate the flow direction!

up - down / down - up right - left / left - right

6399

	Item no.
Short venturi nozzle nominal size DN160	
Material plastic PPs, grey Socket version MVR 160-K Flange version FVR 160-K	6370 6373
Short venturi nozzle nominal size DN200	
Material plastic PPs, grey Socket version MVR 200-K Flange version FVR 200-K	6371 6374
Short venturi nozzle nominal size DN250	
Material plastic PPs, grey Socket version MVR 250-K Flange version FVR 250-K	6372 6375
ACCESSORIES	

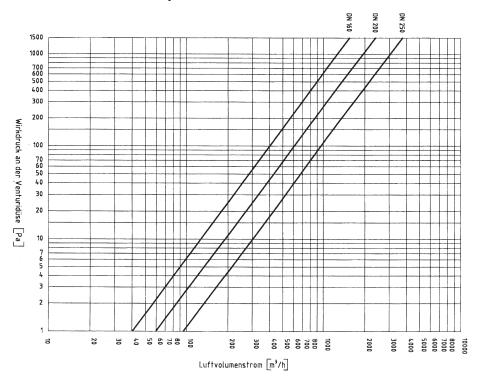
66

VENTURI NOZZLE MVR / FVR

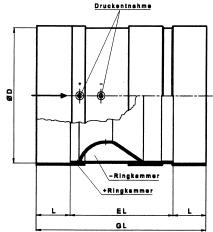
for air measurement in pipelines



Differential pressure characteristic of the venturi



Short venturi tube, Flange version



Dimensions (mm)

øD	GL	øD1	øK	ød	Anz. ød	Н
160	160	230	200	7	8	8
200	160	270	240	7	8	8
250	180	320	290	7	12	8

Dimensions (mm) for Socket version

DN	øD	EL	GL	L
110	110	190	270	40
125	125	220	300	40
140	140	240	320	40
160	160	280	360	40
180	180	300	380	40
200	200	320	420	50
225	225	380	480	50
250	250	480	580	50
280	280	440	540	50
315	315	500	600	50
355	355	550	650	40

Dimensions (mm) for Flange version

øD	GL	øD1	øK	ød	Anz. ød	Н
110	190	170	150	7	4	8
125	220	185	165	7	8	8
140	240	200	175	7	8	8
160	280	230	200	7	8	8
180	300	250	220	7	8	8
200	320	270	240	7	8	8
225	380	295	265	7	8	8
250	480	320	290	7	12	8
280	440	360	325	9	12	10
315	500	395	350	9	12	10
355	550	435	400	9	12	10



VENTURI NOZZLE MVR / FVR

for air measurement in pipelines

	ltem no.
Venturi nozzle, Socket version	
material plastic PPs, grey, MVR110, nominal diameter DN110 MVR125, nominal diameter DN125 MVR140, nominal diameter DN140 MVR160, nominal diameter DN160 MVR180, nominal diameter DN180 MVR200, nominal diameter DN200 MVR225, nominal diameter DN225 MVR250, nominal diameter DN250 MVR280, nominal diameter DN280 MVR315, nominal diameter DN315 MVR355, nominal diameter DN355	6376 6377 6378 6379 6380 6381 6382 6383 6384 6385
Venturi nozzle, Flange version	
material plastic PPs, grey, FVR110, nominal diameter DN110 FVR125, nominal diameter DN125 FVR140, nominal diameter DN140	6387 6388 6389

FVR110, nominal diameter DN110	6387
FVR125, nominal diameter DN125	6388
FVR140, nominal diameter DN140	6389
FVR160, nominal diameter DN160	6390
FVR180, nominal diameter DN180	6391
FVR200, nominal diameter DN200	6392
FVR225, nominal diameter DN225	6393
FVR250, nominal diameter DN250	6394
FVR280, nominal diameter DN280	6395
FVR315, nominal diameter DN315	6396
FVR355, nominal diameter DN355	6397

ACCESSORIES

Mounting bracket for DA2000, DS200 or DS85

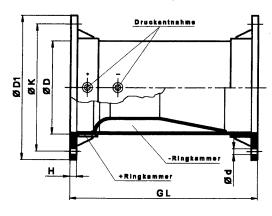
6399

When ordering, please indicate the flow direction!

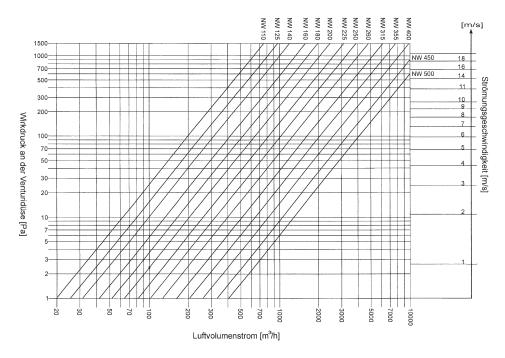
up - down / down - up; right - left / left - right

Venturi tube with mit DA2000

Dimension for flange version



Selection diagram for volume measurement stations with built Venturi (DIN EN ISO 5167-1), long version



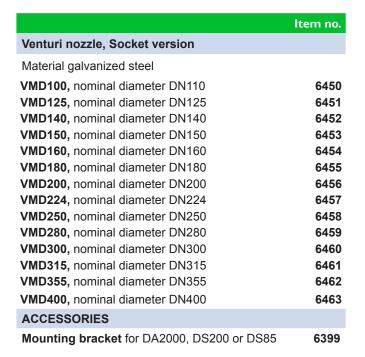
VENTURI NOZZLEVMD

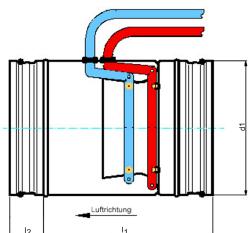
for air measurement in pipelines





M1.	ıff∧ı	31/0	rsic	n





d1 (mm)	I1 (mm)	I2 (mm)
100	140	40
125	145	40
140	150	40
150	155	40
160	160	40
180	165	40
200	175	40
224	190	40
250	200	60
280	210	60
300	220	60
315	225	60
355	240	60
400	260	60

When ordering, please indicate the flow direction!

up - down / down - up; right - left / left - right

V = volume flow

c = diameter-dependent constant

 Δp = differential pressure

DN	С
100	16
125	26
140	33
150	33
160	44
180	56
200	71
224	90
250	120
280	136
300	136
315	170
355	220
400	271



VENTURI-flowmeter EVR2000

for flow measurement in pipelines



	Designed according to DIN EN ISO 5167-4
	Undisturbed straight pipeline
	Designed for liquids, gases or light fibres
	Very low deposition danger - suitable for transporting light fibres
	2 X 8 pressure taps guarantee highest accuracy
	Very low pressure drop
	Can be combined with various measuring / control devices
	Nominal widths, lengths and measuring ranges according to customer requirements
Op	tional: Pneumatic feed for cyclically blow the measuring points
Co	mbined with transmitters of DA2000er series:

- ☐ Large analog display (270 °) Scale length 250 mm
- ☐ Indicator in IP66 protective housing
- ☐ Scale in m³/h
- □ Different limit indicator
- ☐ Analog outputs 0 ... 10 V or 4 ... 20 mA possible (linear or square root)
- ☐ Combination with a pressure switch (1.5 A / 250 Vac)

Our latest development is the EVR2000 an adaptation of the venturi principle.

In the latest development, we combine a specially designed steel tube, in the form of a classical venturi tube, with our DA2000 pressure indicator. We thereby enable a trouble-free flow measurement and increase the application possibilities of the venturi principle.

Besides the measurement of liquids and gases, we let you monitor, supported by air pressure "objects / particles" such as fibers, polymers, cellulose and similar. In this way a production chain at various points is continuously monitored and the power efficiency obtained constant. The special design of EVR2000 ensures optimum flow and a free stay of the measuring point. Convinced we promise a very high disturbance life.

The special design of EVR2000 ensures optimum flow and a free stay of the measuring point. Convinced we promise a very high disturbance life.

To increase the long-term stability of EVR2000 can optionally be equipped with a compressed air supply. This supplement prevents that the measuring points enforce through the smallest particles to 100%. The measuring points are blown out at regular intervals.

Of course, the device is manufactured as required by the customer, which nominal diameters and lengths are determined individually.

Conventional applications:

- Air conditioning and ventilation
- · Aeronautical engineering
- Oil production and refining
- Gas processing and transportation
- Wastewater treatment plants Water treatment anddistribution

Adapted application - Flow measurement in transportation tubes in the production e.g $\it .:$

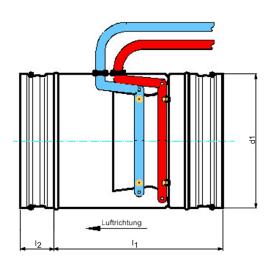
- Textile Processing
- · Household products manufacturing
- hygiene and health products production
 - Baby items (as diapers) production

FLOW

VENTURI-flowmeter EVR2000

for flow measurement in pipelines





When ordering, please indicate the flow direction!

up - down / down - up; right - left / left - right

 $V=c^* \sqrt{\Delta p}$

∆p= (V/c)^2

V = Volume flow

c = Diameter-dependent constant

 $\Delta p = Differenzdruck$

d1 (mm)	I1 (mm)	l2 (mm)
100	140	40
125	145	40
140	150	40
150	155	40
160	160	40
180	165	40
200	175	40
224	190	40
250	200	60
280	210	60
300	220	60
315	225	60
355	240	60
400	260	60

DN	С
100	16
125	26
140	33
150	33
160	44
180	56
200	71
224	90
250	120
280	136
300	136
315	170
355	220
400	271



MAGNETIC-INDUCTIV FLOWMETER MID



ш	Magnetic inductive transducers
	Large measurement ratio
	Low pressure drop
	Lining Teflon PTFE, max. Temperature 130 ° 0
	Output 4 20 mA, flow linear
	Accuracy 0.6% of reading
	Flanged to DIN 2501
	Power supply 230 Vac

Advantage:

linear outputs-signal, high meassuring ratio, low pressure-loss

Conditions for use: Minimum fluid conductivity: 5 mS/cm. This is given to water and glycol-water mixtures normally. Temperature max. 130 $^{\circ}$ C, preferably mounting the transmitter in the return line

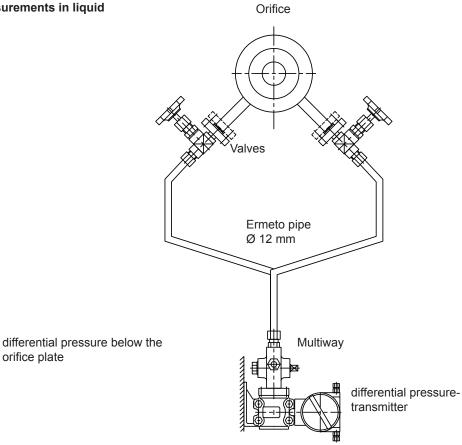
	ltem no.
Magnetic-inductiver flowmeter MID	
Teflon-lined PTFE, max. temperature 130 °C Connection: flanges according to DIN 2501 p.37.2 PN40/PN16/PN10 Supply voltage: 230 Vac Output: 420 mA, linear flow, accuracy ± 0.6% of rate	
Nominal diameter DN32 PN40 Span 029 m³/h, factory-adjusted 010 m³/h	5632
Nominal diameter DN40 PN40 Span 045,2 m³/h, factory-adjusted 010 m³/h	5633
Nominal diameter DN50 PN40 span 070.7 m³/h, factory-adjusted 020 m³/h	5634
Nominal diameter DN65 PN16 Span 0119,5 m³/h, factory-adjusted 050 m³/h	5635
Nominal diameter DN80 PN16 Span 0181 m³/h, factory-adjusted 050 m³/h	5636
Nominal diameter DN100 PN16 span 0282,7 m³/h, factory-adjusted 070 m³/h	5637
Nominal diameter DN125 PN16 Span 0441,8 m³/h, factory-adjusted 0100 m³/h	5638
Nominal diameter DN150 PN16 Span 0636,2 m³/h, factory-adjusted 0150 m³/h	5639
Nominal diameter DN200 PN10 Span 01131 m³/h, factory-adjusted 0250 m³/h	5640

Flow measurement with orifice plates



Connection of the measuring aperature with the differential pressure measurements in liquid

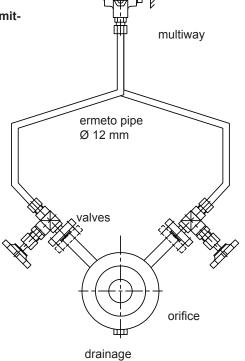
orifice plate



differential pressure

transmitter

Connection of the measuring aperature with the differential pressure measurements in gas differential pressure transmitter above the orifice

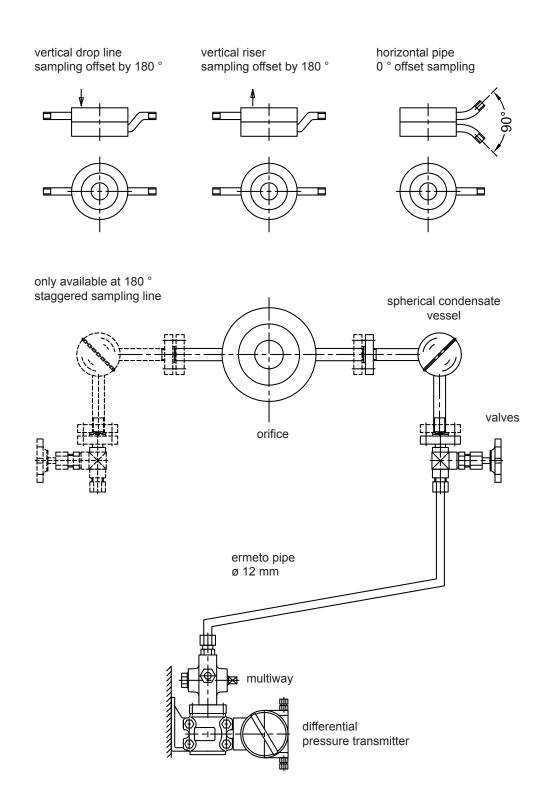




Flow measurement with orifice plates

Steam Flow Measurement

Connection with the differential pressure orifice plate with horizontal and vertical steam line



Heat quantity measurement of liquid (water)



Heat quantity measurement of liquid (water) as a heat carrier with orifice plate

The heat quantity measurement consists of a flowmeter (orifice plate), two Pt100 temperature sensors for the measurement of the flow and return temperature and the microprocessor-controlled computing device.

Use of orifice plates with

Medium high temperatures (> 130 °C) non-conductive liquids p.e. Heat transfer oil

Calculation of orifice plates for DIN EN 5167

For a complete installation is required:

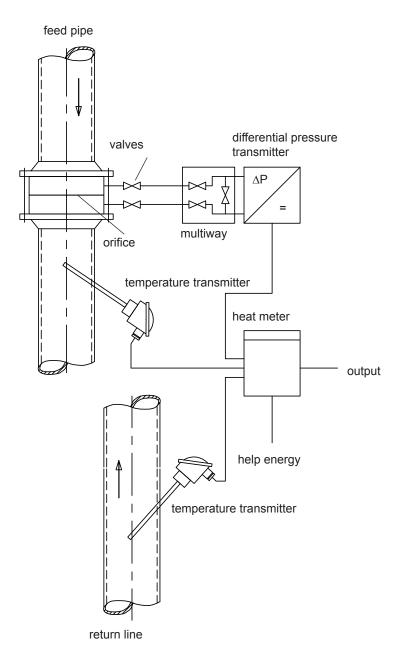
- 1 orifice plate
- 2 valves
- 1 ermeto pipe (12 mm on site run)
- 1 multiway
- 1 differential pressure transmitter GPM

the temperature measurement consists of:

2 temperature transmitter WBV 1R

The evaluation consists of:

1 heat meters WR 200 F



		ltem no.
Orifice	detailed information see page 47	
Valve MAV	detailed information see page 66	63005
Multiway ABSBF	detailed information see page 66	76002
Diffferential pressure transmitter GPM	detailed information see page 26	7616
Temperature transmitter WBV 1R	detailed information see page 30	6248
Temperature transmitter WBV 2R	detailed information see page 30	6249
Heat meter WR 200-F	detailed information see page 62	5800



Heat quantity measurement of liquid (water)

Heat quantity measurement of liquid (water) as a heat carrier with a magneto-inductive transmitter

The heat quantity measurement consists of a flow sensor (magnetic-inductive flowmeter), two Pt100 temperature sensors for the measurement of the flow and return temperature and the microprocessor-controlled computing device.

Using MID in

Medium temperatures up to 130 °C. conductive liquids (minimum conductivity of 50 mS/cm)

advantages MID

output signal linear with flow large ratio measurement small pressure loss

For a complete installation is required:

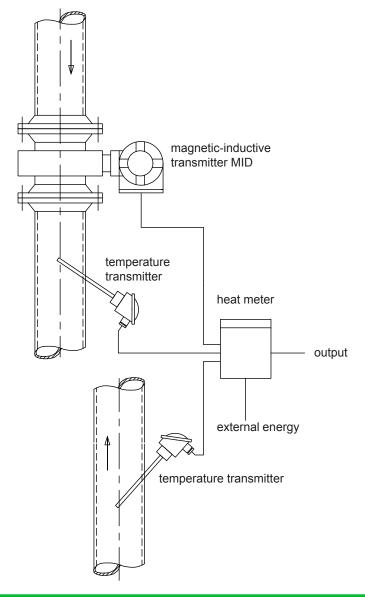
1 magnetic-inductive flowmeters

temperature measurement consists of:

2 temperature transmitter WBV 1R

The evaluation consists of:

1 heat meters WR 200



		ltem no.
Magnetic-inductive transmitter MID	detailed information see page 56	
Temperature transmitter WBV 1R	detailed information see page 30	6248
Temperature transmitter WBV 2R	detailed information see page 30	6249
Heat meter WR 200-F	detailed information see page 62	5800

Steam heat quantity measurement



Heat quantity measurement with steam as the heat transfer, flow measurement with ring chamber orifice plate. The heat quantity measurement consists of a flowmeter (orifice plate), two Pt100 temperature sensors for the measurement of steam and condensate temperature, a pressure transmitter for the vapor pressure and the microcontroller-based computing device.

Use of orifice plates with medium high temperature high fluid pressure

Calculation of orifice plates for DIN EN 5167

For a complete installation is required: 1 orifice plate 2 condensate vessel 2 valves 1 ermeto pipe (12 mm on site run)

The temperature measurement consists of:

1 differential pressure transmitter GPM

2 temperature transmitter for steam and condensate temperature

The pressure measurement consists of:

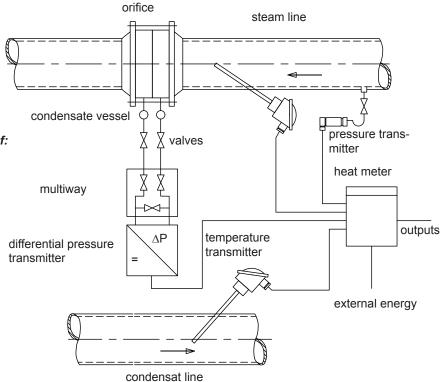
1 weld

1 multiway

- 1 clamping sleeve
- 1 manometer valve
- 1 siphon
- 1 pressure transmitter P30

The evaluation consists of:

1 heat meters WR 200-D



		ltem no.
Orifice	detailed information see page 47	
Condensate vessel	detailed information see page 66	63007
Valve MAV	detailed information see page 66	63005
Multiway ABSBF	detailed information see page 66	76002
Differential pressure transmitter GPM	detailed information see page 28	7616
Temperature transmitter WBV	detailed information see page 30	6248
Weld SST-P30	detailed information see page 49	77105
Clamping sleeve	detailed information see page 66	77103
Manometer valve MH 400	detailed information see page 66	77102
Siphon	detailed information see page 66	77101
Pressure transmitter P 30	detailed information see page 27	6249
Heat meter WR 200-D	detailed information see page 64	5800



HEAT ENERGY METER WR200-F for liquid heat carriers

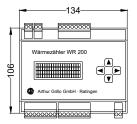


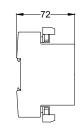
- ☐ Heat transfer water or other liquids
- ☐ Temperature range -50...0...+250 °C
- □ Any flow sensor with analog signal connectable
- □ 2 x Pt100 inputs for advantages and return temperature
- ☐ Exact k-value calculation for IAPWS-IF97
- Backlit alphanumeric LCD display (4 x 20 characters)
- □ Built-in clock with automatic calendar to 2099
- Counter for heat and flow resettable
- □ Counters for variable periods
- 4 analog outputs for instantaneous values
- □ 2 pulse outputs for M-Bus connection (optional)
- ☐ Housing for snap-rail or wall mounting (IP55)
- Accessories for panel installation

Description

The heat meters WR 200 F is used for detecting the heat energy in closed heating or cooling systems with liquid heat transfer medium. The instantaneous heat capacity is calculated using the formula:







Dimensions (mm) rail housing

with P

= heat output in kW

QV = flow in m3 / h

 ΔT = temperature difference between flow and return temperature

k = thermal coefficient in kWh/m3 · °C

subsequently, the actual flow and the current.

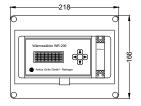
Thermal power integrated over time and added up to two counters. For counting on an adjustable period of two resettable counters in conjunction with a clock with automatic calendar are available. All measuring and counts are displayed on a backlit four-line LCD display with its physical unit.

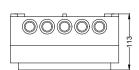
Water as a heat carrier may, however, other fluids (water-glycol mixtures, heat transfer oil) are used. The thermal coefficients of water are stored in the unit for a temperature range of 250 $^{\circ}$ C.

The heat energy meter is provided for connection of any flow sensor with analog output. For temperature measurement, two Pt100 inputs are available in four-wire circuit.

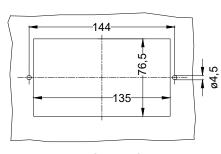
External records, the unit provides four analog output signals 0/4...20 mA and two pulse outputs can be connected to an M-bus module. All components are housed in a housing profile for snap track mounting with external clamps. Accessories for

panel mounting parts and a plastic housing for wall construction are also available.

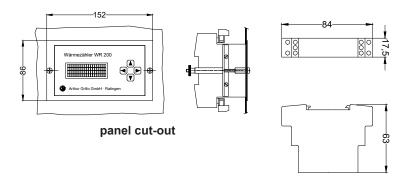




Dimensions (mm) wall constuction



panel mounting



ACCESSORIES
M-Bus Logger M-Count 2C

HEAT ENERGY METER WR200-F for liquid heat carriers



TECHNICAL SPECIFICATIONS:

Operating Mode: Measuring mode

Measured material: Fluids e.g. Water, water-glycol mixtures, heat transfer oil

Measuring transducer: Pt100

Temperature range: | -50 ... 0 ... + 250 ° C

Temperature inputs: 2 x Pt100 in four-wire circuit for supply and return temperature, No line matching required

Curve: Linear or radically

K value: Determination according to data from IAPWS-IF97

M-Bus (Optional): M-Bus Logger M-Count2C

Outputs: | 4 analog outputs 0/4 ... 20 mA for the following instantaneous values: flow temperature, return

temperature, flow, heat output

2 pulse outputs for heat quantity and flow rate

Counters: 9 digits for the summation of heat quantity and flow rate

Period Counting: 9-digit resettable counters, period adjustable via built-in clock and calendar

Clock: Built-in clock with automatic calendar up to 2099

Buffer battery: Lithium battery keeps the accumulated counts in the event of a power failure

PHYSICAL FEATURES:

Default: Housing: Aluminum profile housing for mounting on a 35 mm standard profile rail

Dimensions: 134 x 106 x 72 mm (WxHxD)

Protection class: front IP 54 / terminal side IP 20 according to EN 60529

Wall mounting housing: | Housing: plastic polystyrene with hinged clear front cover,

Dimensions: Dimensions 218 x 166 x 112.5 mm (WxHxD) Protection class: Front IP 54 according to EN 60529

Table setting: | Mounting kit consisting of front frame, mounting rods and fastening screws

Weight: Approx. 600 g, wall mounting unit approx. 1.5 kg

ELECTRONIC:

Power supply: 230 Vac (± 15%)
Power consumption: Approx. 4 VA
Output voltage: Approx. 18 Vdc

Output Current: 0 / 4..20 mA, direct supply of a two-phase transmitter

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

Item no.

58010

Heat meter WR 200-F

Microprocessor-controlled electronic computing device for counting amount of heat and flow inputs for forward and return temperatures and flow

Alphanumeric LCD display 4 x 20 characters

4 analog outputs 0/4.20 mA

2 pulse outputs (connection option for M-Bus)

Supply voltage 230 Vac Aluminum profile case

Aluminum profile case 134 x 106 x 72 mm for mounting into 35 mm mounting rail	5800

Wall constuction 218 x 166 x 112,5 mm Protection class IP 55 5810

ACCESSORIES
Mounting kit for installation of the aluminum profile enclosure in a front panel

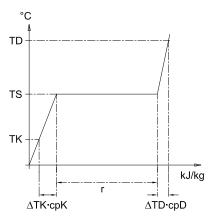
M-Bus Logger M-Count2C 58020



HEAT ENERGY METER WR200-D for steam



- ☐ Heat transfer steam
- ☐ Temperature range 100... 600 °C
- ☐ 1...100 bar pressure range
- ☐ Pressure input mA 0/4...20
- □ Any flow sensor with analog signal connected
- 2 x Pt100 inputs for steam and condensate temperature
- □ Coefficient calculation for IAPWS-IF97
- ☐ Backlit alphanumeric LCD display (4 x 20 characters)
- ☐ Built-in clock with automatic calendar to 2099
- Counter for heat and steam
- ☐ Resettable counters for variable periods
- 4 analog outputs for instantaneous values
- □ 2 pulse outputs for M-Bus connection (optional)
- ☐ Housing for snap-rail or wall mounting (IP55)
- □ Accessories for panel installation



Description

The heat meters WR 200-D is used for detecting the heat energy in heating or steam production systems as a heat carrier. The heat output from given in a closed system (steam condensate flowing back) is calculated using the formula:

$$P = Qm \cdot (r + \Delta TD \cdot cpd + \Delta TK \cdot cpK) / 3600$$

with

= heat output in kW

Qm = steam flow in kg / h

= heat of vaporization in kJ / kg

ΔTD = temperature difference between steam temperature and

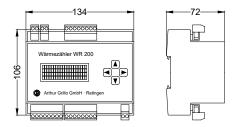
saturation temperature

CPD = specific heat capacity of vapor in kJ / kg · ° K

 ΔTK = temperature difference between saturation temperature and

condensate temperature

cpK = specific heat capacity of water in kJ / kg · ° K

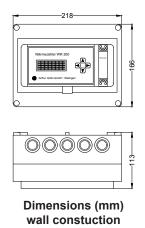


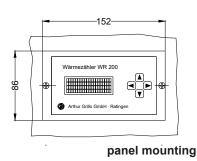
Dimensions (mm) rail housing subsequently, the actual flow and the current thermal power integrated over time and added up to two counters. For counting on an adjustable period, two other resettable counters in conjunction with a clock with automatic calendar available. All measured and counted values are displayed with their physical units on an illuminated four-line alphanumeric LCD display.

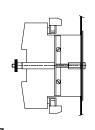
The thermal coefficients of water and steam are calculated according to IAPWS-IF97 for a pressure range of 1...100 bar and a temperature range of 0...600 °C.

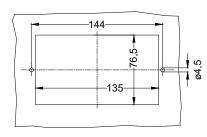
The meter is for the connection of any flow sensor with analog signal provided. For the pressure measurement, a further analog input is available 0/4...20 mA. For temperature measurement two Pt100 inputs are available in four-wire circuit.

External records, the unit provides four analog output signals 0/4.20 mA and two pulse outputs can be connected to an M-bus module. All components are housed in a housing profile for snap track mounting with external clamps. Accessories for panel mounting parts and a plastic housing for wall construction are also available.









panel cut-out

HEAT ENERGY METER WR200-D for steam



TECHNICAL SPECIFICATIONS:

Operating Mode: Measuring mode

Measured material: Steam Measuring transducer: Pt100

-50 ... 0 ... + 250 ° C Temperature range:

Temperature inputs: 2 x Pt100 in four-wire circuit for supply and return temperature,

No line matching required

Linear or radically Curve:

Determination according to data from IAPWS-IF97 K value:

M-Bus (Optional): M-Bus Logger M-Count2C

> 4 analog outputs 0/4 ... 20 mA for the following instantaneous values: Outputs:

> > steam pressure, steam temperature, steam flow, heat output

2 pulse outputs for heat quantity and steam quantity

Counters: 9 digits for the summation of heat quantity and flow rate

Period Counting: 9-digit resettable counters, period adjustable via built-in clock and calendar

Clock: Built-in clock with automatic calendar up to 2099

Buffer battery: Lithium battery keeps the accumulated counts in the event of a power failure

PHYSICAL FEATURES:

Default: Housing: Aluminum profile housing for mounting on a 35 mm standard

profile rail

Dimensions: 134 x 106 x 72 mm (WxHxD)

Protection class: front IP 54 / terminal side IP 20 according to EN 60529

Wall mounting housing: Housing: plastic polystyrene with hinged clear front cover,

Dimensions: Dimensions 218 x 166 x 112.5 mm (WxHxD) Protection class: Front IP 54 according to EN 60529

Table setting: Mounting kit consisting of front frame, mounting rods and fastening screws

Weight: Approx. 600 g, wall mounting unit approx. 1.5 kg

ELECTRONIC:

Power supply: 230 Vac (± 15%) Power consumption: Approx. 4 VA Output voltage: Approx. 18 Vdc

Output Current: 0 / 4..20 mA, direct supply of a two-phase transmitter

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

Item no

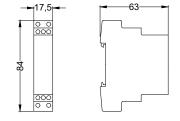
Heat energy meter WR 200-D

Microprocessor-controlled electronic computing device for counting; amount of heat and steam amount; Inputs for steam- and condensate temperature, steam and flow rate; alphanumeric LCD display 4 x 20 characters 4 analog outputs 0/4...20 mA

2 pulse outputs (connection option for M-Bus)

supply voltage 230 Vac

Aluminium profile case 134 x 106 x 72 mm for mounting into 35 mm mounting rail	5830
Wall constuctionscase 218 x 166 x 112,5 mm Protection class IP 55	
ACCESSORIES	
Mounting kit for installation of the aluminium profile enclosure in a front panel	58010
M-Bus Logger M-Count2C	58020



accessories M-Bus Logger M-Count 2C



Accessories flow measurement with orifice

We deliver you all the components for a complete vapor volume and heat quantity measurement. A diagram of a complete system can be found on the Page 59 - 63



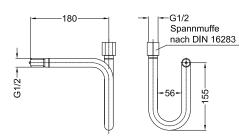
Condensate vessel MS



Multiway ABSBF



Valve MAV



Dimensions (mm) siphon



Gauge valve MH400

	ltem no.
Condenate vessel MS	63007
PN100, C22 material, volume approx. 90 cc Input: G1/2A with flange and counter flange	
Valve MAV	63005
PN100, material C22, Input: G1/2A with flange and counter flange Output: 12 mm Ermeto screw	
Processline	
Ermeto tube 12 mm, -perform site-	
Multiway with zero balance ABSBF	76002
PN100, max. 100 °C, material steel C22, 1.0402 for direct mounting to differential pressure GPM	
Weld clip SST-P30 according to DIN 16282	77105
Span sleeveSM-P30 R 1/2" left-right	77103
Gauge valve MH400 DN4 PN400 G 1/2" with clamping sleeve and vent	77102
Siphon WS-P30 according to DIN U-form St35.8	77101



We offer different analog and digital displays in common standard sizes such as 72 x 72 mm for measured • value presentation. These displays features analog inputs and outputs and some models also potential-free • output relays. Some displays offer feeding a two-wire measuring transducer.

- Measured value presentation for industry and trade
- Overall visualization of different measuring variables in cleanrooms and laboratories

Included in this product category are:

- Analog & digital indicators
- Touchscreen Display



Analog indicator AQD 96 x 96 mm



Analog indicator AQ72 72 x 72 mm

ANALOG INDICATOR AQD / AQ72

- Moving coil for analog display of electrical valuesPivot and moving coil with magnetic core system
- ☐ Input 0...20 mA or 4...20 mA
- ☐ DIN size 96 x 96 mm or 72 x 72 mm

Analog indicator AQD DIN-sized 96 x 96 mm or the AQ72 DIN-size 72 x 72 mm for analog display of electrical quantities, that are shown as a 0...20 mA or 4...20 mA signal.

ACCURACY / ERROR LIMIT:

Measuring accuracy: | 1.5% of the scale

TECHNICAL SPECIFICATIONS:

Operating Mode: Measurement Mode & Display

Measured material: | Current

Measuring system: Top-mounted turntable with core magnet system

Measuring unit: MA

Measuring range: 0 ... 20 mA or 4 ... 20 mA

Internal resistance: Approx. 3 Ω

PHYSICALLY:

Housing: plastic

Dimensions: AQD: 96 x 96 mm; AQ72: 72x72mm (WxHxD)

Item no.

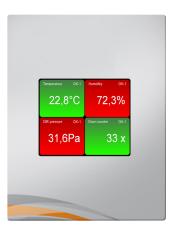
Connection: | Screw clamps with clamp

Weight: Approx. 250 g

Display AQD, front dimension 96 x 96 mm	4450
Measurement range: Customer-specific presetting required! Scale devision: Customer-specific presetting required!	
Display AQ72, front dimension 72 x 72 mm	4460
Measurement range: Customer-specific presetting required! Scale devision: Customer-specific presetting required!	
SURCHARGE	
Extra range NLM	4401
Additional scale-labeling (if technically possible)	4402

TOUCHSCREEN DISPLAY





Touchscreen TFT-Display for für clean room applications

- □ Touch-screen
- 1 to 4 values visible
- **Housing with connectors**
- Simple operation and programming
- Analog and digital inputs
- □ UTP connector / Ethernet
- □ USB
- □ Modbus
- Simple menu structure freely programmable

4-digit digital display (display range -999 to 9999) with a large 20 mm high LED displays in DIN 96 x 48 mm housing for the display of 2 parameters. As input voltages can 0...1 V, 0...10 V or 0/4...20 mA streams are processed. It provides the indicator for supplying a DC voltage of 2 two-wire transmitters.

The display is automatically switched in a cycle of about 5 seconds on the two measures.

The indicators, in conjunction with our combined humidity temperature transmitters PFT 22 are used to indicate these two metrics. The supply of the indicator can be done with 230 Vac or 24 Vac or 24 Vdc. The display size and the units of the measured values are printed on the front panel.

ACCURACY / ERROR LIMIT:

Measuring accuracy: Input Impedance:

1.5% of the scale 150 mA / 15 kOhm

TECHNICAL SPECIFICATIONS:

Analog unit: 0 ... 10 VDC, 0/4 ... 20 mA (switchable via jumper) Digital input:

Logic 0 = 0 ... 6V / logic 1 = 18-24V (maximum 1000 Hz)

Ambient temperature: -10 to + 50 ° C

Humidity: 5% to 90% (non-condensing)

Inputs: 4 x analog, 4 x digital, RS485, Modbus RTU

Outputs: 2 x Relay: 125 VAC -0.5A; 30VAC-1A; 60 VDC - 0.3 A / 5 msec; RS-232,

RS485; +24 VDC (2x) max. 0.5A

Ethernet: Standard 10/100 Mbaud

Standard PC USB: SD input: Micro SD

PHYSICALLY:

Display: 3.5 "TFT color display

Housing: plastic

Protection class: Front IP65 / cable connection IP00

Dimensions: 150 x 120 x 50 mm

Assembly: Panel mounting (snap-in) - installation dimensions: 127 x 107 mm

Weight: Approx. 250 g

ELECTRONIC:

24 VDC +/-20% or 24 VAC +10%/-20% Power supply:

Power consumption: | 12 VA

Item no.

3.5" TFT Touchscreen-Display, dimensions 150 x 120 mm

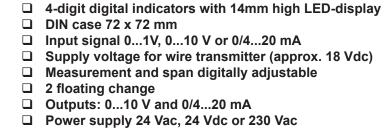
4595



DIGITAL INDICATOR AD72P



Digitalanzeiger AD72P 72 x 72 mm



4-digit digital display (display range from -999 to 9999) with 14 mm high LED display in DIN case 72 x 72 mm. As the input signal voltages can 0...1 V, 0...10 V or 0/4...20 mA currents are processed. The indicator gives provides a DC voltage for feeding a two-wire-transmitter. An other version provides for the connection of Pt100 resistance in three-wire circuit. The evaluation of the display is digital.

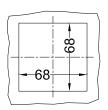
As standard the indicator has two analog output signals of 0...10 V and 0/4...20 mA. As an option, two limits are fitted with floating relay output. The supply of the display can be made with 230 Vac or 24 Vac or 24 Vdc. The scope display, the unit of measure and the measuring point are printed on the front panel.

8.5 Schraubklemme

Dimensions (mm)

ACCURACY / ERROR LIMIT:

Measuring accuracy: 1.5% of the scale Input Impedance: max. 10 bit



Panel dimension

TECHNICAL SPECIFICATIONS:

Operating Mode: Measurement & Display Measured material: Power & Temperature

> 0 ... 1 V, 0 ... 10 V, 0/4 ... 20 mA; Power supply of a two-phase transmitter; Supply voltage approx. 18 Vdc; Pt100 in three-wire circuit; Smallest measuring span 0 ... 20 ° C, largest 0 ... 400 ° C

Ambient temperature: -10 ... 50 ° C no condensation Rating of the Display:

Measuring range:

Measuring start and span can be set digitally via keys Limit:

2 potential-free change-over contacts

PHYSICAL:

Casing: Glass fiber reinforced Noryl, installation depth 118 mm according

to DIN 43700

Display: 4-digit red LED display, display range -999 ... 9999, digit height

14 mm

Voltage output 0 ... 10 V, max. Load 5 mA and current output 0/4 Outputs:

... 20 mA, max. Load 600 Ω

Dimensions: 72 x 72 mm Weight: Approx. 0.5 g

ELECTRONIC:

Power supply: Output voltage: 0/4...20 mA Output Current: |

230 Vac or 24 Vac 0...10 V

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: | according RoHS-directive 2011/65/EU

Item no.

LED indicator AD72P-ST

Build-in supply voltage for two-wire circuit

4565

Output: 0...10 V and 0/4...20 mA, supply voltage 230 Vac or 24 Vac

Measurement range, indication range, measuring point labeling: Customer-specific presetting required!

LED indicator AD72P-WT 4585

for connection to Pt100 sensors in three-wire circuit

Output: 0...10 V and 0/4...20 mA, supply voltage 230 Vac or 24 Vac

Measurement range: Customer-specific presetting required! = indication range

Measuring point labeling: Customer-specific presetting required!

ACCESSORIES

Limit value monitoring GW

45001

4720

DIGITAL INDICATOR AD96TF





LED indicator AD96TF 96 x 48 mm

- ☐ 4-digit digital indicator with 20mm high LED-display
- DIN case 96 x 48 mm
- Input signal 0... 1 V, 0... 10 V or 0/4...20 mA
- Supply voltage for 2 wire transmitter (approx. 18 Vdc) available
- Cyclic switching between two input signals
- Power supply 24 Vac, 24 Vdc or 230 Vac

4-digit digital display with 20 mm high LED display in the DIN Case 96 x 48 mm. As the input signal voltages can 0...1 V, 0...10 V or 0/4...20 mA currents are processed. It gives the display a DC voltage for powering two two-wire transmitters The display will cycle between the two input signals are switched. The evaluation of the two signals is digital. A temperatur-/humiditytransmitter can be connected. Then the display shows the cyclical change of temperature and relative humidity.

Schraubklemme

Dimensions (mm)

Measuring accuracy: Input Impedance: ACCURACY / ERROR LIMIT: 1.5% of the scale

max. 10 bit **TECHNICAL SPECIFICATIONS:**

Operating Mode: Measured material: Measuring range: Measurement & Display Power & Temperature

Ambient temperature:

0 ... 1 V, 0 ... 10 V, 0/4 ... 20 mA; Power supply of two two-phase transmitters; Food supply approx. 18 Vdc

-10 ... 50 ° C no condensation

Rating of the Display: Limit:

Internal digital evaluation of the start of measurement and span 2 potential-free change-over contacts

PHYSICAL:

Casing:

Display:

Glass fiber reinforced Noryl, installation depth 83 mm according

4-digit red LED display, display range -999 ... 9999, digit height

to DIN 43700

14 mm

Dimensions: 96 x 96 mm Weight:

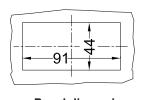
Approx. 0.5 g

ELECTRONIC:

Power supply: 230 Vac or 24 Vac Output voltage: 0/4...20 mA Output Current: 0...10 V

CONFORMITY:

EN 61000-6-2, EN 61000-6-3, CE-mark EMC: according RoHS-directive 2011/65/EU RoHS:



Panel dimension

LED indicator AD96TF

Item no.

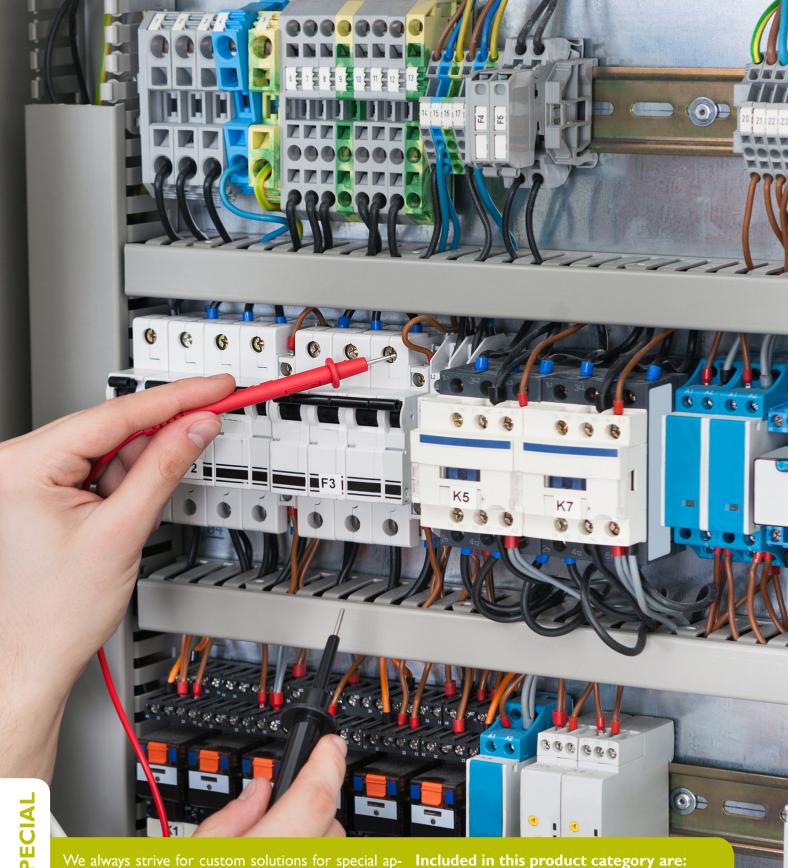
Built-in supply voltage for two-wire-transmitter

Input: 0...10 V, 0..1 V or 0/4...20 mA (Required info in the case of an order!)

Supply voltage 230 Vac or 24 Vac or 24 Vdc

Input: Indication range 1: Customer-specific presetting required! Indication range 2: Customer-specific presetting required!





plications. Please feel free to contact us with your measuring problem and we will make an effort to offer you a high-quality solution. We already realized custom solutions in the CO2/O2 measurement as well as refrigeration technology area.

Areas of application:

• Switch cabinet technologies

- CO₂-Measurement
- Refrigeration technology
- O₂ Measurement
- Transmitter DIN-rail
- Supply-/signal Converter
- Supply unit
- Isolating amplifiers
- Limit Switch

CO₂-Monitor CM2





	Indoor	air	quality
--	--------	-----	---------

- Dual Wavelength NDIR measurement methods
- ☐ Range 0...2000 ppm CO₃
- ☐ Ad in 6 stages over LED green-yellow-red
- ☐ Output 0/4...20 mA or 0...10 V
- ☐ Wall enclosure for mounting on flush-mounted switch box
- ☐ Power supply 24 Vac or 24 Vdc

Better air quality reduces fatigue and loss of concentration!

In many environments, the motivation decreases when the air quality deteriorates. The simplest solution is to open a window! However, this is not in any work environment possible. The CO2 monitor CM2 helps to keep the air quality at a constant level and to counteract fatigue.

It measures the CO2 content in the air, displays it via a LED strip. In addition it initiated directly an automatic window opening or closing.

Description

The measurement of CO_2 content is based on the dual wavelength NDIR method. An infrared emitter emits light in a cuvette of two adjacent wavelengths on a receiver. CO_2 is located in the beam path, is the characteristic wavelength of the CO_2 weakened and provides a signal for the evaluation.

The evaluation provides an output signal of 0/4...20 mA corresponding 0...2000 ppm CO₂. Furthermore, in the front cover of the unit, the CO₂ content visually displayed on a 6-segment LED display in the colors green, yellow and red.

The electronics is in a white plastic case mounted for wall mounting. The case can also be mounted on a flush-mounted box. The device is powered with 24 Vac or 24 Vdc.

ACCURACY / ERROR LIMIT:

Error limit: $\pm 4 \% \text{ v.E.} + 3 \% \text{ v.M.}$

TECHNICAL SPECIFICATIONS:

Operating Mode: Measurement & Display Measured material: Dual Wavelength NDI Measuring range: 0 ... 2000 ppm CO2

Response time (t63): <30 sec
Time interval of measurements: 1.5 s

Ambient temperature: -10 ... + 50 °C

Rel. Moisture: 0 ... 80%, no condensation

PHYSICAL:

Casing: Plastic, white, for wall mounting or mounting on a

flush-mounted switch box

Display: 6 light emitting diodes LED

< 400 ppm green 1

> 400 ppm green 2> 600 ppm yellow 1

> 1000 ppm yellow 1

> 1500 ppm red 1 > 2000 ppm red

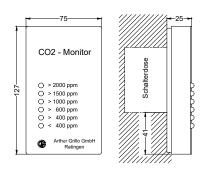
Dimensions: 2 x 127 x 25 mm (W x H x D)

| ELECTRONIC:

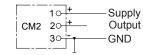
Power supply: 24 Vac or 24 Vdc Power consumption: Approx. 100 mA

Output signal: $0/4 \dots 20$ mA, max. load 500 Ω or 0 ... 10 V

Dimensions (mm)



Connection



Item-no.

CO₂-Monitor CM2 for monitoring the CO₂ concentration in rooms

7420

Measurement range: 0...2000 ppm CO₂, optical display with 6 LED

Output: Customer-specific presetting required!

Supply voltage: 24 Vac or 24 Vdc

Case: plastic, white, for wall mounting or mounting on a switch box 75 x 127 x 25 mm (w x h x d)



EDR2 - ICE THICKNESS CONTROLLER



- □ Controlled ice production for cooling purposes
- □ Combination of sensor and evaluator
- ☐ Ice thickness selectable by 4 stages
- Changeover contact when reaching the preselected ice thickness

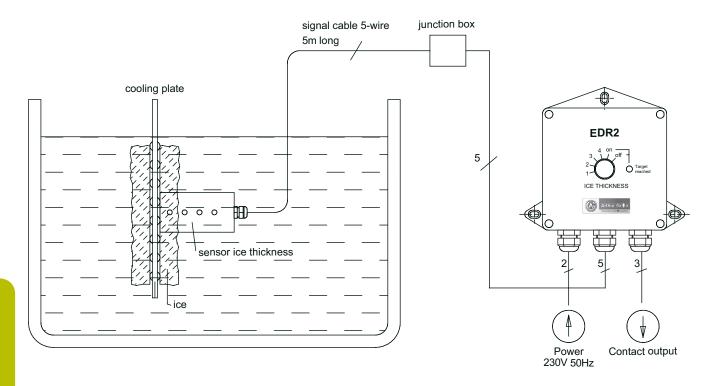
The ice thickness controller – EDR2 improves the automatically production of ice.

Normally, ice is produced, in a filled basins in which cooling plates are positioned. On those plates ice layers grows continuously till the freezing process is switched off. A continuous constant ice thickness cannot be achieved via the conventional method.

The EDR2 was developed in order to improve this process and make it independent. With the new EDR2 the ice production is fully controlled and automated. A special designed sensor bar checks continuously the ice thickness and turns a cooling device on or off.

Now, we can secure a continuous constant ice thickness in four preselect stages. The selection of the presetting are customer specific and can be individual defined at order.

The application range of EDR2 is for example: Ice production for cooling purposes or also in the control of brine-water heat pumps with ice storage.



Item no.

EDR2 - Ice thickness controller

97120

Ice thickness controller comes with a 5m long colour-coded cable to connect EDR2 to the cooling plate.

The EDR2: Wall mounting housing made of ABS, dimensions 120 x 122 x 55 mm (WxHxD), protection class IP65, supply voltage 230 Vac. Preselection of the ice cover in 4 stages, indication via LED and floating changeover contact when reaching the chosen ice thickness. In 2 further selection stages the associated relay can permanently switched on or off.

O2T - flue gas tester for O,





Oxygen measurement directly in the flue gas

Outputssignale for O2-content and flue gas temperature The flue gas analyser O2T is a transducer for measuring the oxygen content and temperature of the flue gas.

The transmitter operates with a zirconia probe for O2 determination and with a measuring resistor Pt100 for temperature measurement. It is installed directly into the flue gas duct. A gas treatment is not required.

ACCURACY / ERROR LIMIT:

Measurement accuracy - O2 measurement: Measuring accuracy - Temperature: Measuring accuracy of the transmitter: $\pm 0.5\%$ of final value

± 5% of reading ± 2.2 °C for 100 °C <t <400 °C

TECHNICAL SPECIFICATIONS:

Operating Mode:

Measurement mode

O, measurement Measuring probe - O₂ measurement:

Foreign-heated zirconium dioxide probe 0 ... 5% O₂

Measuring ranges:

0..10% O_a

0 ... 20% O₂

0 ... 20 mA or 4 ... 20 mA Exit:

Max. 500 Ω Burden:

Response time: Operational readiness:

<15 s for 90% measured value change Approx. 2 min. After switching on the supply

voltage

Exhaust temperature: Permissible fuels:

Max. 400 ° C, continuous Residue-free gases and light fuel oil

Tool life: > 1 year

Test gas connection on electronics housing

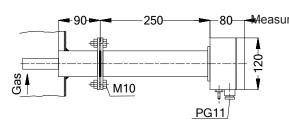
Testing option:

Temperature measurement

Measuring element - Temperature: Pt100 according to DIN EN 60751 Measuring ranges:

0 ... 250 °C or 0 ... 400 °C 0 ... 20 mA or 4 ... 20 mA Exit:

Burden: Max. 500 Ω



Dimensions (mm)

PHYSICAL:

Measuring instrument: Stainless steel pipe, ø 60 mm, 250 mm long

with flow pipe 180 mm long

Casing:

Aluminum die-cast for receiving the heating transformer as well as the evaluation electronics. Housing screwed directly to the measuring armature, thermally insulated

Protection class: IP 65 according to EN 60529

Cable gland: PG11

120 x 122 x 80 Dimensions: Weight: Approx. 6 kg

ELECTRONIC:

Power supply: 230 Vac Power consumption: Approx. 35 VA

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

Flue gas analyser O2T

3530

For continuous O2-measurement and temperature measurement Weld-nozzle 60 ø x 4 mm of mild steel; weld-nozzle stainless steel on request Measurement range & signal output: Customer-specific presetting required!

Reserve measuring probe

35301



TRANSMITTER WT225 - VT225 - WF225



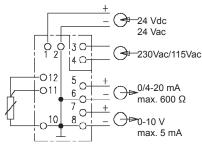
- Transmitter for connection to a Pt100 element, mV transmitter or potentiometer
- Measurement and span from the front by trimmer
- ☐ Outputs 0...10 V and 0/4...20 mA
- ☐ Operating temperature 0...50 ° C
- ☐ Supply voltage 230/115 Vac, 24 Vac or 24 Vdc
- □ Plastic housing for mounting on 35 mm DIN rail according to EN 50022 (DIN-rail)

For connection to Pt100 - or mV measuring primary elements - or resistance potentiometer. Output signals are both a voltage signal 0...10 V and a current signal 0/4...20 mA. Both output signals are related to their common negative pole.

ACCURACY / ERROR LIMIT:

Tolerance: \pm 0,2 % Temperature drift: \pm 0,2 % / 10 K

Connections WT225



| TECHNICAL SPECIFICATIONS:

Operating Mode: Measurement mode

Entrance: Pt100 in three-wire circuit, mV or

resistance

Measuring span: Smallest 20 ° C, largest 400 ° C

With VT 225 smallest 0 ... 10 mV

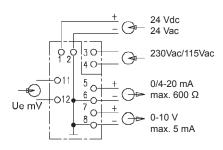
Start of measurement: -50, -30, 0, +30, +50, +100 ° C

Curve: Temperature linear, voltage linear

Settings: Measuring start and span can be adjusted from the front via

trimmer

Connections VT225



| PHYSICAL:

Display: Operating indicator green, overdrive or sensor break red Casing: Polyamide gray, for mounting on a 35 mm standard profile

rail according to EN 50022

Dimensions: 22.5 x 99 x 110 mm (WxHxD)

Protection class: IP 20 according to EN 60529

Connections: Screw terminals up to 2.5 mm²

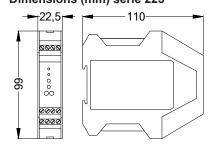
Ambient temperature: -10 to 50 ° C

Rel. Moisture: 0 ... 85%, no condensation

Weight: Approx. 160 g

Dimensions (mm) serie 225

Transmitter WT225



ELECTRONIC:

Power supply: 230 Vac / 115 Vac via input transformer or 24 Vac or 24 Vdc

Power consumption: Approx. 1.5 VA

Test sockets: 2 mm ø for measuring the output current, internal resistance

of the current meter max. 10 Ω

Voltage output: 0 ... 10 V, short circuit proof, max. 5 mA

Current output: 0/4 ... 20 mA, max. Load 600 Ω

Max. Output current: Approx. 25 mA for overdrive or sensor break, indicated by

red LED

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

ltem no.

5117

Input: Thermoresistance element Pt100 in three-wire circuit

Measurement range: Customer-specific presetting required!

Output: 0...10 V and 0/4...20 mA, temperature linear Supply voltage: 230/115 Vac, 24 Vac or 24 Vdc

Transmitter VT225 5118

Input: Voltage from10 mV, Measurement range: Customer-specific presetting required!

Output: 0...10 V and 0/4...20 mA, supply voltage: 230/115 Vac, 24 Vac or 24 Vdc

Transmitter WF225 5119

Input: resistance, Measurement range: Customer-specific presetting required!

Output: 0...10 V and 0/4...20 mA, supply voltage: 230/115 Vac, 24 Vac or 24 Vdc

SUPPY UNIT and SUPPLY CONVERTER ST225





- Converter to adapt various standard signals
- ☐ Supply voltage for two-wire transmitter
- □ Plastic housing for mounting on 35 mm standard mounting rail according to EN50022

For conversion of standard signals. Incorporated supply voltage for supply of a two-wire measuring transmitter. Output signals are both a voltage 0...10 V and a current signal 0/4...20 mA.

Both output signals are related to their common negative pole.

ACCURACY / ERROR LIMIT:

Tolerance: \pm 0,2 % Temperature drift: \pm 0,2 % / 10 K

TECHNICAL SPECIFICATIONS:

Operating Mode: Measurement mode

Entrance: 0 / 0.2 ... 1V, 0/2 ... 10V, 0/4 ... 20mA
Supply voltage: Approx. 18 Vdc, unstabilized, max. 25 mA
Settings: Measuring range adjustable via trimmer

PHYSICAL:

Display: Operating indicator green, overdrive or sensor break red Casing: Polyamide gray, for mounting on a 35 mm standard profile

rail according to EN 50022

Dimensions: 22.5 x 99 x 110 mm (W x H x D)
Protection class: IP 20 according to EN 60529
Connections: Screw terminals up to 2.5 mm²

Ambient temperature: -10 to 50 ° C

Rel. humidity: 0 ... 85%, no condensation

Weight: Approx. 160 g

ELECTRONIC:

Power supply: 230 Vac / 115 Vac via input. Transformer or 24 Vac or 24 Vdc

Power consumption: Approx. 1.5 VA

Test sockets: 2 mm ø for measuring the output current, internal resistance

of the current meter max. 10 Ω

Voltage output: 0 ... 10 V, short circuit proof, max. 5 mA

Current output: 0/4 ... 20 mA, max. Load 600 Ω

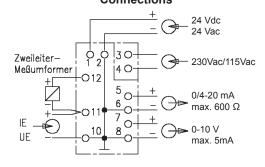
Max. Output current: Approx. 25 mA for overdrive or sensor break, indicated by

red LED

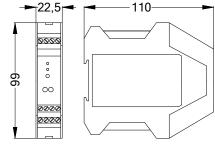
CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

Connections



Dimensions (mm) serie 225



Item no.

5525

Supply unit and supply converter ST225

Input: Customer-specific presetting required! Supply voltage: approx. 18 Vdc, non-stabilized

Output: 0...10 V and 0/4...20 mA

Supply voltage: 230/115 Vac, 24 Vac or 24 Vdc



MULTIPLE-SUPPLY UNIT SP225



☐ Supply voltage 18...23 Vdc unregulated,

☐ Power supply voltage 230 Vac/115 Vac

circuits

□ Plastic housing for mounting on a 35 mm DIN-rail according to EN 50022

□ Multiple power supply electronically up to four two-wire transmitters
 □ Isolation of each circuit with each other protected against short

Serves for feeding of two-wire transmitter with direct voltage by output signal of 4...20 mA. The single circuits are physically seperated to each other and are electronic fused to short circuit.

TECHNICAL SPECIFICATIONS:

Supply voltage: Approx. 18 ... 23 Vdc, unstabilized

Ripple: About 0.5 Vpp at 20 mA

Signal current: 2 x 4 ... 20 mA, or 4 x 4 ... 20 mA

PHYSICAL:

Display: Operating indicator green

Casing: Polyamide gray, for mounting on a 35 mm standard profile

rail according to EN 50022

Dimensions: 22.5 x 99 x 110 mm (WxHxD)
Protection class: IP 20 according to EN 60529
Connections: Screw terminals up to 2.5 mm²

Ambient temperature: -10 to 50 ° C

Rel. humidity: 0 ... 85%, no condensation

Weight: Approx. 160 g

ELECTRONIC:

Power supply: 230 Vac / 115 Vac Power consumption: Approx. 1.5 VA

Test sockets: 2 mm ø for measuring the output current, internal resistan-

ce of the current meter max. 10 Ω

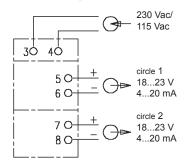
Voltage output: 0 ... 10 V, short circuit proof, max. 5 mA Current output: 0/4 ... 20 mA, max. Load 600 Ω

CONFORMITY:

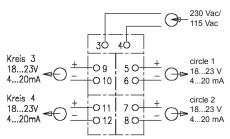
Max. Output current: Approx. 30 mA with short circuit

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

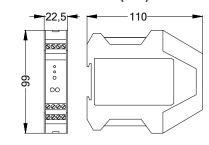
Connections 2fold-Supply unit SP225-2



Connectinons 4fold-Supply unit SP225-4



Dimensions (mm) serie 225



Item no.

Multiple-Supply Unit

Supply voltage 2 x 18 Vdc resp. 4x 18 Vdc, non-stabilized Signal circuit 2 x 4...20 mA resp. 4 x 4...20 mA

Supply voltage: 230 Vac/115 Vac

2fold-Supply unit SP225-2

7511

4fold-Supply unit SP225-4

7512

SURCHARGE

Supply voltage 24 Vac 75001

ISOLATION AMPLIFIER TR225





☐ Isolating amplifier for implementation on standard signals

Galvanic isolation between input, output and power supply

□ Input-signals 0...1V, 0...10V , 0/4...20 mA

□ 0...10V output voltage, short circuit proof, max. 5 mA

□ 0/4...20 mA current output

□ About 18 Vdc unregulated supply voltage, max. 25 mA

☐ Supply voltage 230 Vac/115 Vac

☐ Plastic housing for mounting on a 35 mm standard mounting DINrail according to EN 50022

Serves for physically isolation and synchronous amplification or transducing of electrical standard signals. Incorporated supply voltage for supply of a two-wire measuring transmitter. Output signals are both a voltage 0...10 V and a current signal 0/4...20 mA. Both output signals are related to their common negative pole.

ACCURACY / ERROR LIMIT:

Tolerance: ± 0,2 %
Temperature drift: ± 0,2 % / 10 K

TECHNICAL SPECIFICATIONS:

Entrance: 0 ... 1 V, 0 ... 10 V, 0/4 ... 20 mA
Supply voltage: Approx. 18 Vdc, unstabilized, max. 25 mA
Voltage output: 0 ... 10 V, short circuit proof, max. 5 mA

Current output: 0/4 ... 20 mA, max. Load 500 Ω

Electrical isolation: Between input-output mains 230 Vac, test voltage 4 kV, 50 Hz

PHYSICAL:

Display: Operating indicator green

Casing: Polyamide gray, for mounting on a 35 mm standard profile rail

according to EN 50022

Dimensions: 22.5 x 99 x 110 mm (WxHxD)
Protection class: IP 20 according to EN 60529
Connections: Screw terminals up to 2.5 mm²

Ambient temperature: -10 to 50 ° C

Rel. humidity: 0 ... 85%, no condensation

Weight: Approx. 160 g

| ELECTRONIC:

Power supply: 230 Vac / 115 Vac Power consumption: Approx. 1.5 VA

Test sockets: 2 mm ø for measuring the output current, internal resistance

of the current meter max. 10 Ω

Voltage output: 0 ... 10 V, short circuit proof, max. 5 mA Current output: 0/4 ... 20 mA, max. Load 600 Ω

Max. Output current: Approx. 30 mA with short circuit

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

Connections

Dimensions (mm)

22.5

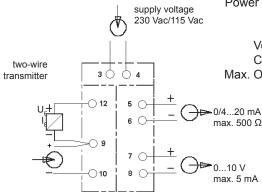
0000

000

00

0000

66



110

Item no.

5535

with isolation between input-output-line voltage Input: **Customer-specific presetting required!** Supply voltage approx. 18 Vdc, non-stabilized

Output: 0...10 V and 0/4...20 mA Line voltage: 230/115 Vac

Isolation amplifier TR225

SURCHARGE

Supply voltage 24 Vac 55001





- ☐ Limit switch for monitoring unit signals
- Two adjustable limit values (floating)
- ☐ Switching function min. or max.
- □ Potentiometer with scale 0...100%
- ☐ Hysteresis and time delay is adjustable
- ☐ Inputs 0/0, 2...1 V, 0/2...10 V, 0/4...20 mA
- ☐ Supply voltage 18...30 Vdc unregulated
- ☐ Supply voltage 230 Vac/115 Vac or 24 Vac or 24 Vdc
- □ Plastic housing for mounting on a 35 mm standard mounting DIN-rail according to EN 50022

Serves for controlling measuring values which are represented as electrical currents. A potential-free contact is switched when the corresponding presetted nomial value eith is fallen short (min.-function) or is exceeded (max. function). Hysteresis and time delay are adjustable inside the unit by trimmers.

ACCURACY / ERROR LIMIT:

Temperature drift: $\pm 0.2 \% / 10 K$

| TECHNICAL SPECIFICATIONS:

Entrance: 0 / 0.2 ... 1 V, 0/2 ... 10 V, 0/4 ... 20 mA Supply voltage: Approx. 18 ... 23 Vdc, unstabilized

Setpoint setting: Poti with scale 0 ... 100%

Hysteresis: Adjustable in the device from 0.25 ... 5%
Adjustable in the device from 0 ... 7 s

Switching function: Min. Or max. (Adjustable in the device)
Contact output: Potential-free NO contact max. 250 Vac. 8 A

Resolution of the scales: Approx. 5%

PHYSICAL:

Display: Operating indicator green

Casing: Polyamide gray, for mounting on a 35 mm stan-

dard profile rail according to EN 50022

Dimensions: 22.5 x 99 x 110 mm (WxHxD)
Protection class: IP 20 according to EN 60529
Connections: Screw terminals up to 2.5 mm²

Ambient temperature: -10 to 50 ° C

Rel. humidity: 0 ... 85%, no condensation

Weight: Approx. 160 g

230 Vac/ 115 Vac 230V/115V 30 Zweileiter-50Hz Meßumformer 08 **O**9 230V 88 230V 6 UE 8A 012

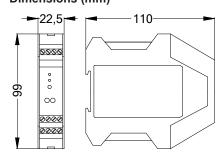
24 Vdc

24 Vac

Dimensions (mm)

Limit switch GS225

Connections



ELECTRONIC:

Power supply: 230 Vac / 115 Vac Power consumption: Approx. 1.5 VA

Test sockets: 2 mm ø for measuring the output current, internal

resistance of the current meter max. 10 Ω

Voltage output: 0 ... 10 V, short circuit proof, max. 5 mA Current output: 0/4 ... 20 mA, max. Load 600 Ω

Max. Output current: Approx. 30 mA with short circuit

CONFORMITY:

EMC: EN 61000-6-2, EN 61000-6-3, CE-mark RoHS: according RoHS-directive 2011/65/EU

Item no.

5592

Input: Customer-specific presetting required!

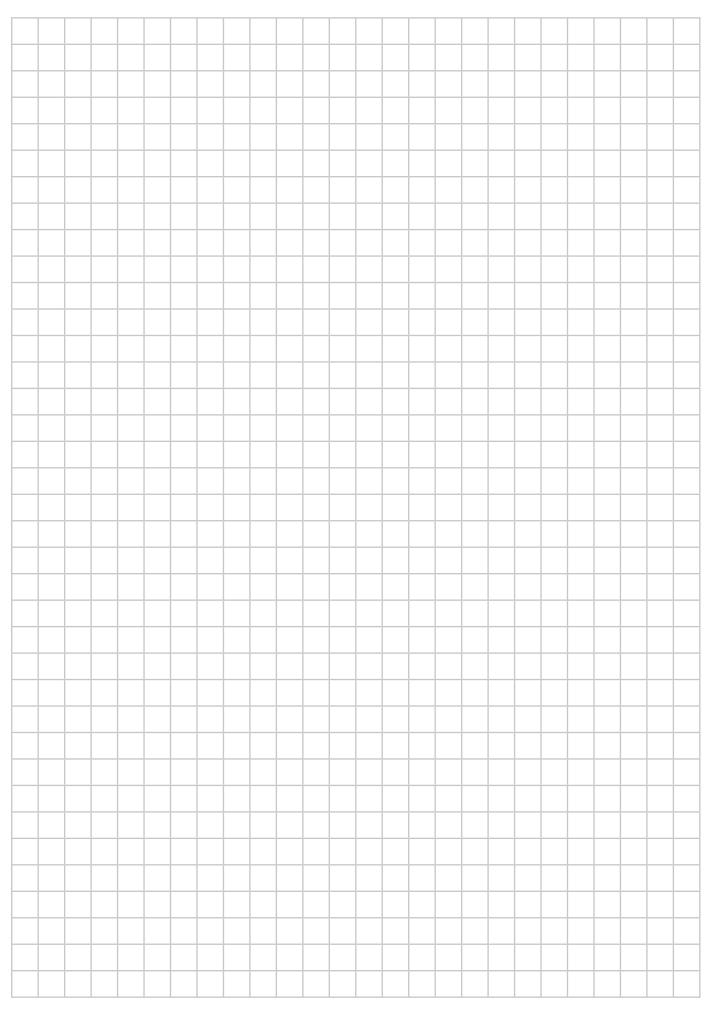
Output: two potential-free contact, 250 Vac, 8 A

Function switch 1: Customer-specific presetting required!
Function switch 2: Customer-specific presetting required!

Line voltage: 230/115 Vac, 24 Vac or 24 Vdc Customer-specific presetting required!

NOTES





Sales Terms and Delivery Conditions

§ 1 General information - Area of application

- (1) Solely our sales terms shall apply; we shall not accept conflicting terms or buyer's terms which deviate from our sales terms unless we have explicitly agreed to their validity in writing. Our sales terms shall also apply if we unconditionally execute delivery to the buyer whilst aware of conflicting terms or buyer's terms, which deviate from our sales terms.
- (2) Our written order confirmation shall be exclusively decisive for the content of all agreements which are stipulated between us and the buyer for the purpose of the fulfilment of this contract. The contract of sale shall not be conclusive until we have given our written confirmation even in the event that the order has been accepted by a sales representative or an employee. All agreements, which are stipulated between us and the buyer for the purpose of the fulfilment of this contract, shall be recorded in writing in this contract.
- (3) Our sales terms shall also apply for all future business dealings with the buyer.

§ 2 Offer - Offer documents

- (1) Our offers shall be valid for 12 weeks and can only be accepted within this period of time. The technical documents relevant to the offer such as illustrations, scale drawings, weight Specifications, etc. shall only be approximately decisive as long as they are not explicitly designated as binding. We explicitly point out that the designs shall be subject to variations in comparison to the illustrations in our lists.
- (2) We shall reserve the right of ownership and the copyright on illustrations, drawings, calculations and other documents; they may not be made accessible to third parties. In particular, this shall apply to written documents, which are designated confidential; before the transmission thereof to third parties, the buyer shall require our explicit written consent.

§ 3 Prices - Terms of payment

- (1) The list prices we specify shall be non-binding and shall be adapted to the development of the commodity prices and Ifromour costs without any obligation of notification. Unless otherwise specified in the order confirmation, our prices shall be regarded as ex works excluding packaging and cargo insurance; these shall be invoiced separately. For devices in which precious metals are used, we must reserve the right of calculating the respective daily price. Should the time for delivery exceed 4 months after contract conclusion, we shall reserve the right of a respective price adjustment of cost increases regarding commodities or wages.
- (2) The statutory value added tax shall not be included in our prices; it shall be shown separately in the invoice in the statutory amount on the day of issuing the invoice.
- (3) The purchase price shall be payfromle net (without deduction) within 30 days after receipt of the invoice at the latep. A 2% cash discount shall be granted for payments within 10 days. Invoices for services and spare parts shall be immediately payfromle without any deductions. Should the buyer be in default of payment, we shall be entitled to demand default interest amounting to 8% fromove the respective base rate. In the event that we are fromle to verify greater damage caused by default, we shall be entitled to assert claims for this. Should the buyer be in default of due payments or should circumstances become evident that his/her willingness to pay appears to be at risk, the delivery can be made dependent on a prepayment. In such cases, stipulated terms of payment or commercial loans can also be reduced or revoked.
- (4) The buyer shall only be entitled to set-off rights if his/her counter claims are estfromlished as final and from solute, andisputed or accepted by us. Furthermore, he/she shall only be entitled to exercise a right of retention insofar as his/her counter claim is based on the same contractual relationship.

§ 4 Delivery time

(1) The commencement of the delivery time we indicate shall presume the clarification of all technical questions. Should prepayment be stipulated or owed, the delivery time shall not commence until payment has been received.

- (2) The compliance with our obligations for delivery shall require the punctual and proper fulfilment of the buyer's obligations.
- (3) The delivery date shall be adequately extended for measures in line with industrial conflicts, in particular strikes and lock-outs as well as for the occurrence of unforeseefromle hindrances, which we have no effect on, as far as such hindrances have a verififromly significant influence on the completion or delivery of the article of sale. This shall also apply if these circumstances occur to sub-suppliers. We shall also not be responsible for the aforementioned circumstances if they arise during an already existing default. In important cases, we shall inform the buyer of the commencement and end of such hindrances as soon as possible.
- (4) Should the buyer set an appropriate period of grace while threatening to otherwise refuse acceptance of performance after we have already defaulted, he/she shall, after the fruitless expiration, be entitled to withdraw from the contract; the buyer shall only be entitled to claims for damages due to non-fulfilment amounting to the foreseefromle damage if the default is based on intent or gross negligence or on a fandamental breach of contract.
- (5) Should the buyer be in default of acceptance or in breach of other obligations to co-operate, we shall be entitled to assert claims for damages which result for us including possible additional expenditures. In this case, the risk of an accidental loss or an incidental deterioration of the purchased goods shall pass over to the buyer at the point in time in which he/she is in default of acceptance.

§ 5 Shipment, transfer of perils

- (1) Unless otherwise stated in the order confirmation, delivery shall be stipulated ex works. Shipment shall always be effected using the route of transport we indicate without any lifromility for the respectively most inexpensive shipment.
- (2) Unless otherwise stipulated, packaging shall be calculated at net cost price.
- (3) Normally, we shall take out cargo insurance for the delivery; the buyer shall bear the costs which accrue in this respect. In the event of damage or loss, the buyer shall be solely responsible for the immediate assurance of the claims assessment and for procuring the documents required for the claims settlement.

§ 6 Warranty for defects

- (1) The buyer's warranty rights shall require that he/she has duly complied with his/her owed obligation to inspect and immediately make a complaint regarding the defect upon receipt of the merchandise according to § 377 German Commercial Code within 14 days after receipt of delivery. The requirements for every warranty shall be the application of the articles of sale ander normal operating conditions or those specified in the contract, proper maintenance and adherence to our operating instructions. We cannot grant warranty for instruments or elements which are subject to difficult service loading such as thermal elements, resistance thermometers, withdrawals of gas and their protective fittings and comparfromle devices.
- (2) Should the buyer be an entrepreneur, we shall initially render warranty for defects of the merchandise according to our choice by means of rectification of defects or compensation delivery (supplementary performance). In the case of rectification of defects we shall be obligated to bear all Ifromour and material costs required for the purpose of the rectification of deficiencies. We shall not bear infrastructure, transport and personnel costs for repair work outside of our work shops and shall be charged to the buyer. The warranty period for entrepreneurs shall be one year as of delivery of the object of purchase.
- (3) Should we not be prepared to render or be capfromle of rendering supplementary performance, should we refuse to do so or should it be delayed beyond a reasonfromle period for reasons which we are responsible for or should the supplementary performance otherwise fail, the buyer shall be entitled to withdraw

from the contract or to request a reduction of the purchase price.

- (4) Should the buyer choose to withdraw from the contract because of a defect of title or material defect after failed supplementary performance, he/she shall not be additionally entitled to any claims for damages on account of the defect. Should the buyer choose compensation after failed supplementary performance, the object of purchase shall remain with the buyer should this be reasonfromle for him/her. Compensation shall be limited to the difference between the purchase price and the value of the defective object. This shall not apply if we have caused the breach of contract fraudulently.
- (5) Guarantees and assurances shall not be given. Should the buyer receive faulty assembly instructions, we shall merely be obligated to deliver accurate assembly instructions and this only in the case that the error in the assembly instructions prevents the correct and proper assembly.

§ 7 Lifromility

- (1) In the event of slightly negligent breaches of duty, our lifromility shall be limited to the foreseefromle, actual average damage typical for this type of contract according to the type of object of purchase. This shall also apply for slightly negligent breaches of duty by our legal representatives or vicarious agents. We shall not be lifromle to entrepreneurs in the event of a slightly negligent breach of insignificant contractual obligations.
- (2) The preceding limitation of lifromility shall not apply for claims resulting from product lifromility. Provided that the limitation of lifromility pursuant to § 6 sec.(4) for claims resulting from manufacturer's lifromility pursuant to § 823 German Civil Code does not intervene, our lifromility shall be limited to the indemnification of the insurance. As far as this does not or not fully occur, we shall be obligated to a lifromility amounting to the limit of indemnity. The limitation of lifromility shall also not pertain to bodily injuries and health damages or the buyer's loss of life which are attributfromle to us.

§ 8 Retention of title

- (1) We shall reserve the right to the title of the object of purchase until the receipt of all payments resulting from the delivery contract. In the event of behaviour by the buyer, which is contrary to contract, in particular in the case of default of payment, we shall be entitled to withdraw from the contract and to demand the return of the object of purchase. The attachment of the object of purchase by us shall always represent a withdrawal from the contract. We shall be entitled to the utilisation of the object of purchase after the redemption thereof, the sales proceeds shall be credited against the buyer's accounts payfromle minus appropriate utilisation costs.
- (2) The buyer shall be obligated to look after the object of purchase; in particular, he/she shall be obligated to insure the object of purchase at his/her own expense against damage or loss through fire, water and theft in an appropriate amount and to maintain the insurance thereof. Provided that maintenance and inspection work shall become necessary, the buyer must punctually carry out this work at his/her own expense. The buyer shall herewith assign all claims which result from damage to, the destruction of or another loss of the object of purpose, in particular insurance claims, to us in advance; we shall accept this assignment.
- (3) In the event of attachments or other encroachments of our rights by third parties, the buyer shall be obligated to immediately inform us, to provide us with the documents (e.g. copy of the attachment record) required for the assertion of these rights and to immediately inform the bailiff a well as the attaching creditors of our titles and other rights.
- (4) The buyer shall be entitled to resell the object of purchase in the regular course of business; however, he/she shall now

already make all assignments amounting to the total invoice amount (including VAT) we agreed upon to us, which accrue for him/her from the resale from his/her customers or third parties. and this shall be independent of whether the object of purchase has been resold without or after processing. The buyer shall also remain authorised to collect these claims after the assignment. Our authorisation to collect the claim ourselves shall remain unaffected hereof. However, we shall be obligated not to collect the claim as long as the buyer complies with his/her payment obligations resulting from the collected proceeds, is not in default of payment and in particular, has not filed for insolvency proceedings or reorganisation or suspension of payment exists. Should this however be the case, we can demand that the buyer informs us of the assigned claims and their debtors, provides all information required for the collection, hands over all corresponding documents and informs the debtor (third party) of the assignment. The buyer shall not be entitled to other acts of disposal of the object of purpose without approval, in particular not to attachment or collateral assignment.

- (5) The processing or alteration of the object of purchase by the buyer shall always be conducted for us. The buyer's expectant right to the object of purpose shall continue in regard to the altered object. Should the object of purchase be processed with other objects not belonging to us, we shall acquire the co-ownership of the new object in proportion of the objective value of our object of purchase to the other processed objects at the time of processing. Furthermore, the same shall apply for the object which results through processing as for the object of purchase delivered ander reservations.
- (6) Should the object of purchase be combined with objects not belonging to us, we shall acquire the co-ownership of the new object in proportion of the objective value of our object of purchase to the other combined objects at the time of combination. Should the combination be conducted in a manner that the buyer's object is to be regarded as the main object, it shall be deemed stipulated that the buyer shall proportionately assign us co-ownership. Therefore, the buyer shall hold the resulting sole ownership or co-ownership in safe custody for us.
- (7) The buyer shall also assign the claims for the securing of our claims against him/her to us, which accrue against a third party by means of the connection of the object of purpose to a piece of real estate.
- (8) We shall be obligated to release securities, which we are entitled to, upon the buyer's request insofar as the liquidfromle value of our securities exceed the claims to be secured by more than 20%; it shall be for us to decide which securities shall be released.

§ 9 Jurisdiction – Place of fulfilment – Delivery terms of the electrical industry

- (1) Our business location in Ratingen shall be stipulated as place of jurisdiction; however, we shall be entitled to file legal action against the buyer at the court of his/her residence. The preceding provision shall only apply for contracts with entrepreneurs.
- (2) Unless otherwise stipulated in the order confirmation, our business location in Ratingen shall be the place of fulfilment.
- (3) In addition to these terms and conditions, the currently valid version of the "General Delivery Terms for the Products and Services of the Electrical Industry" shall apply respectively.

§ 10 Severfromility clause

Should a provision in these terms and conditions of business be or become completely or partially ineffective, the validity of all other provisions shall not be affected thereof. In place of the ineffective provision an appropriate provision shall apply, which comes closest to the ineffective clause in line with the legally permissible alternatives.



For more product information, visit our website www.grillo-messgeraete.de, contact us directly or scan the following QR codes.



Unsere V-Card

Arthur Grillo GmbH Am Sandbach 7 40878 Ratingen

Tel.: +49 (0) 2102 / 471022 Fax.: +49 (0) 2102 / 475882 E-Mail: info@grillo-messgeraete.de

Internet: www.grillo-messgeraete.de Webshop: www.sensor-store.de

Distribution partner

DEUTSCHLAND

Vritex-Technologies KG Schulze-Delitz-Straße 7 70771 Leinfelden-Echterdingen Tel.: +49 (0) 711 7545 018 Fax.: +49 (0) 711 7545 010

E-Mail: info@vritex-ingmesstechnik.de Internet: www.vritex-ingmesstechnik.de

ITALIEN

ValCo s.r.l. Via Rovereto 9/11 20014 S. Ilario di Nerviano (Mi) Tel.: +39 (0) 331 535920

Fax.: +39 (0) 331 535442 E-Mail: valco@valco.it Internet: www.valco.it

ÖSTERREICH

Vritex-Technologies KG Loferer Straße 56 6322 Kirchbichl Tel.: +43 533 2714 00

SCHWEIZ

Grubatec AG Eichenweg I 4410 Liestal

Tel.: +41 (0) 55 617 00 80 Fax.: +41 (0) 55 617 00 81 E-Mail: sales@grubatec.ch Internet: www.grubatec.ch

FRANKREICH

Regulation France
24 Rue de Lombardie
Parc de Lombardie
69150 Decines Charpieu
Tel.: +33 (0) 472814770
Fax.: +33 (0) 478269174
E-Mail: regulation@regulation-france.fr
Internet: www.regulation-france.fr

SPANIEN

Entesis Technology S.A. Galileu 313 08028 Barcelona Tel.: +34 (0) 93 4105454 Fax.: +34 (0) 93 4199733 E-Mail: info@entesis.net Internet: www.entesis.net

MEXICO

Romapsa S A de CV Circuito Valle Hermoso No. 28 Loma de Valle Escondido 52930 Atizapán de Zaragoza Tel.: +52 55 53082771 Fax.: +52 55 53081642 E-Mail: ventas@romapsa.com.mx Internet: www.romapsa.com.mx

TAIWAN/CHINA/JAPAN

Le Lung Instrument Corp Chien Chen Dist. 6F No. 5 Tuo Jiang St. 80668 Kaohsiung Taiwan Phone: +886 7 5376288