

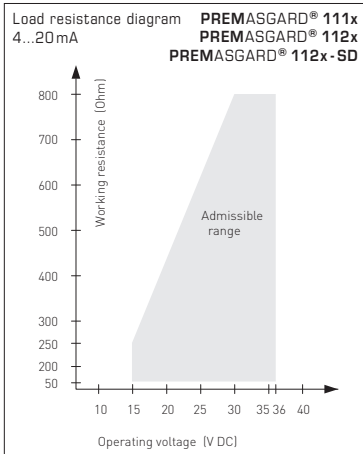
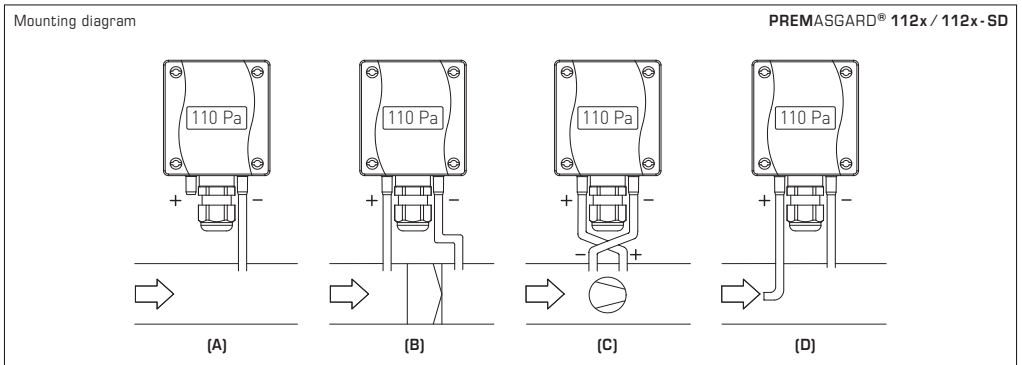
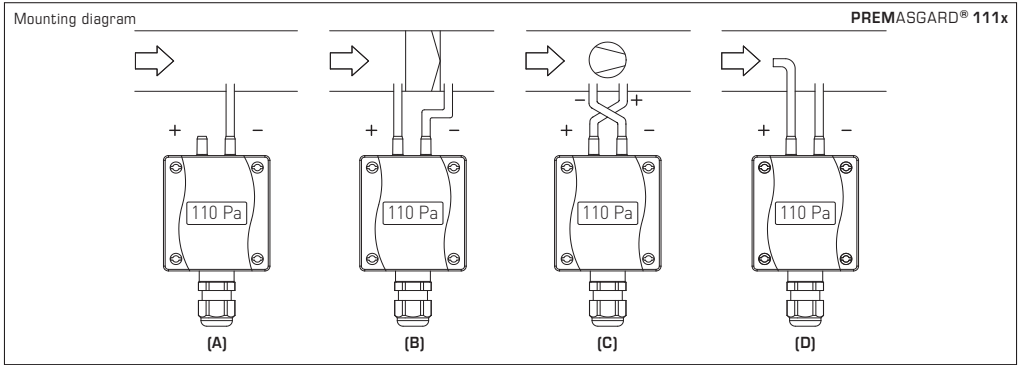
The calibrateable compact pressure sensors of the **PREMASGARD® 111x/112x/112x-SD** series are equipped with eight switchable measuring ranges and with or without optional display (eight devices in one) and are used for measuring above-atmospheric, below-atmospheric, or differential pressures and Volume flow in air. The piezo-resistive measuring element is temperature-compensated and guarantees a high degree of reliability and accuracy. These pressure transmitters have a pushbutton for manual zero point calibration and an adjustable offset. Applications of these pressure sensors are in clean room, medical and filter technology, in ventilation and air conditioning ducts, in spray booths, in large-scale catering facilities, for monitoring filters, for level measurement or for triggering frequency converters. Media measured with these pressure transducers are air (non-precipitating), or other gaseous non-aggressive, non-combustible media. The differential pressure sensor is supplied including connection set **ASD-06** (2m connection hose, two pressure connection nipples, screws). You can find further device types under **PREMASGARD® 211x/212x/212x-SD** (3-conductor connection) with switchable output (0-10V / 4...20mA).

TECHNICAL DATA

| | |
|--------------------------------------|--|
| Power supply: | 24V AC (±20%); 15...36V DC for U variant 15...36V DC for I variant, depending on working resistance, residual ripple stabilised ±0.3V |
| Working resistance: | $R_a \text{ (ohm)} = (U_b - 14V) / 0.02A$ for I variant |
| Load resistance: | $R_L > 5k\Omega$ for U variant |
| Power consumption: | < 1 W at 24V DC; < 2VA at 24V AC |
| Measuring function: | Differential pressure, volume flow (square root output signal) |
| Measuring ranges: | multi-range switching with 8 switchable measuring ranges (see table) |
| Output: | 0-10V or 4...20mA |
| Electrical connection: | 2- or 3-wire connection |
| Media temperature: | -20...+50 °C |
| Pressure connection: | with connection nozzles for pressure hose Ø 6mm |
| Type of pressure: | differential pressure |
| Medium: | clean air and other non-aggressive, non-combustible gases |
| Accuracy: | Type 1111/1121/1121-SD (1000 Pa): typically ±10 Pa Type 1115/1125/1125-SD (5000 Pa): typically ±50 Pa compared to the calibrated reference device |
| Zero point offset: | ±10 % of final value |
| Above- / below-atmospheric pressure: | max. 5 x measuring range |
| Long-term stability: | ±1 % per year |
| Signal filtering: | switchable 1 s / 10 s |
| Hysteresis: | 0.3% of final value |
| Media contacting parts: | ms, Ni, Nylon, PU, Si, PVC with plasticisers |
| Temperature drift values: | ±0.1 % of final value / °C |
| Current consumption: | < 20 mA |
| Linearity: | < ±1 % of final value |
| Housing: | plastic, UV-resistant, material polyamide, 30 % glass-globe reinforced, colour traffic white (similar to RAL9016), housing cover for display is transparent! Type 111x/112x: with quick-locking screws (slotted/Phillips head combination) Type 112x-SD: with snap-on lid |
| Housing dimensions: | 72 x 64 x 37.8 mm (Tyr 1/Tyr01 without display) 72 x 64 x 43.3 mm (Tyr 1/Tyr01 with display) |
| Cable connection: | cable gland , plastic (M16 x 1.5; with strain relief, exchangeable, inner diameter 10.4 mm) or M12 connector according to DIN EN 61076-2-101 (optional on request) |
| Electrical connection: | 0.14 - 1.5 mm ² , via terminal screws |
| Humidity: | < 95% RH, non-precipitating air |
| Protection class: | III (according to EN 60730) |
| Protection type: | Type 111x/112x: IP 67 (according to EN 60529)* Housing tested, TÜV SÜD, Report No. 713139052 (Tyr 1) Type 112x-SD: IP 54 (according to EN 60529)* Housing tested, TÜV SÜD, Report No. 713160960A (Tyr 01) * Housing in the built-in state |
| Standards: | CE conformity, electromagnetic compatibility according to EN 61326, EMC directive 2014/30/EU |
| Features: | two-line display with illumination , cutout approx. 36 x 15 mm (W x H), to display ACTUAL pressure |
| ACCESSORIES | see table |

| PREMASGARD® 112x-SD | | | | | |
|--|--------------------------|----------------------------|----------|---------|--|
| Pressure, differential pressure and volume flow measuring transducers, <i>Standard</i> (Pressure connectors on the bottom side) | | | | | |
| Pressure range (Ranges adjustable) | Type/WG01 | Connection 2- or 3-wire | Output | Display | Item No (with snap-on lid) |
| max. - 1000...+ 1000 Pa | | | | | |
| Type 1121-SD | | | | | |
| 0... 100 Pa / - 100...+ 100 Pa | PREMASGARD 1121-SD-I | 2 | 4...20mA | | 1301-1182-0010-000 |
| 0... 300 Pa / - 300...+ 300 Pa | PREMASGARD 1121-SD-I LCD | 2/3 | 4...20mA | ■ | 1301-1182-2010-000 |
| 0... 500 Pa / - 500...+ 500 Pa | - | 3 | 0-10V | | see PREMASGARD® 212x-SD |
| 0... 1000 Pa / -1000...+1000 Pa | - | 3 | 0-10V | | see PREMASGARD® 212x-SD |
| max. - 5000...+5000 Pa | | | | | |
| Type 1125-SD | | | | | |
| 0...1000 Pa / -1000...+ 1000 Pa | PREMASGARD 1125-SD-I | 2 | 4...20mA | | 1301-1182-0050-000 |
| 0...2000 Pa / -2000...+2000 Pa | PREMASGARD 1125-SD-I LCD | 2/3 | 4...20mA | ■ | 1301-1182-2050-000 |
| 0...3000 Pa / -3000...+3000 Pa | - | 3 | 0-10V | | see PREMASGARD® 212x-SD |
| 0...5000 Pa / -5000...+5000 Pa | - | 3 | 0-10V | | see PREMASGARD® 212x-SD |
| PREMASGARD® 111x | | | | | |
| Pressure, differential pressure and volume flow measuring transducers, <i>Premium</i> (Pressure connectors on the top side) | | | | | |
| Pressure range (Ranges adjustable) | Type/WG01 | Connection 2- or 3-wire | Output | Display | Item No (with quick-locking screws) |
| max. - 1000...+ 1000 Pa | | | | | |
| PREMASGARD® 1111 | | | | | |
| IP 67 | | | | | |
| 0... 100 Pa / - 100...+ 100 Pa | PREMASGARD 1111-I | 2 | 4...20mA | | 1301-1112-0010-000 |
| 0... 300 Pa / - 300...+ 300 Pa | PREMASGARD 1111-I LCD | 2/3 | 4...20mA | ■ | 1301-1112-2010-000 |
| 0... 500 Pa / - 500...+ 500 Pa | - | 3 | 0-10V | | see PREMASGARD® 211x |
| 0... 1000 Pa / -1000...+ 1000 Pa | - | 3 | 0-10V | | see PREMASGARD® 211x |
| max. - 5000...+ 5000 Pa | | | | | |
| PREMASGARD® 1115 | | | | | |
| IP 67 | | | | | |
| 0...1000 Pa / -1000...+ 1000 Pa | PREMASGARD 1115-I | 2 | 4...20mA | | 1301-1112-0050-000 |
| 0...2000 Pa / -2000...+2000 Pa | PREMASGARD 1115-I LCD | 2/3 | 4...20mA | ■ | 1301-1112-2050-000 |
| 0...3000 Pa / -3000...+3000 Pa | - | 3 | 0-10V | | see PREMASGARD® 211x |
| 0...5000 Pa / -5000...+5000 Pa | - | 3 | 0-10V | | see PREMASGARD® 211x |
| PREMASGARD® 112x | | | | | |
| Pressure, differential pressure and volume flow measuring transducers, <i>Premium</i> (Pressure connectors on the bottom side) | | | | | |
| Pressure range (Ranges adjustable) | Type/WG01 | Connection 2- or 3-wire | Output | Display | Item No (with quick-locking screws) |
| max. - 1000...+ 1000 Pa | | | | | |
| Type 1121 | | | | | |
| IP 67 | | | | | |
| 0... 100 Pa / - 100...+ 100 Pa | PREMASGARD 1121-I | 2 | 4...20mA | | 1301-1172-0010-000 |
| 0... 300 Pa / - 300...+ 300 Pa | PREMASGARD 1121-I LCD | 2/3 | 4...20mA | ■ | 1301-1172-2010-000 |
| 0... 500 Pa / - 500...+ 500 Pa | - | 3 | 0-10V | | see PREMASGARD® 212x |
| 0... 1000 Pa / -1000...+ 1000 Pa | - | 3 | 0-10V | | see PREMASGARD® 212x |
| max. - 5000...+ 5000 Pa | | | | | |
| Type 1125 | | | | | |
| IP 67 | | | | | |
| 0...1000 Pa / -1000...+ 1000 Pa | PREMASGARD 1125-I | 2 | 4...20mA | | 1301-1172-0050-000 |
| 0...2000 Pa / -2000...+2000 Pa | PREMASGARD 1125-I LCD | 2/3 | 4...20mA | ■ | 1301-1172-2050-000 |
| 0...3000 Pa / -3000...+3000 Pa | - | 3 | 0-10V | | see PREMASGARD® 212x |
| 0...5000 Pa / -5000...+5000 Pa | - | 3 | 0-10V | | see PREMASGARD® 212x |
| Multi-range switching: The pressure ranges depend on the device type and can be set via DIP switches. | | | | | |
| Connection: I variant with 2-wire connection for devices with /without display (not illuminated) | | | | | |
| Optional: Cable connection with M12 connector according to DIN EN 61076-2-101 (on request) | | | | | |

| ACCESSORIES | | Item No. |
|---------------|---|--------------------|
| ASD-06 | Connection set (included in the scope of delivery) , consisting of 2 connection nipples (straight) made of ABS, 2 m PVC hose (soft, UV-resistant) and 4 screws | 7100-0060-3000-000 |
| ASD-07 | 2 connection nipples (at 90 degree angle) made of plastic, ABS | 7100-0060-7000-000 |
| DAL-01 | Pressure outlet for ceiling or in-wall installation (e.g. in clean rooms) | 7300-0060-3000-001 |
| WS-04 | Weather and sun protection hood , 130x180x135 mm, stainless steel V2A (1.4301) | 7100-0040-7000-000 |



TYPES OF MONITORING:

Pressure connections at the pressure switch are marked with P1 (+) for higher pressure and P2 (-) for lower pressure.

(A) Below-atmospheric pressure

P1 (+) is not connected, but open to the atmosphere
 P2 (-) connected to inside of duct

(B) Filter

P1 (+) connected upstream of filter
 P2 (-) connected downstream of filter

(C) Ventilator

P1 (+) connected downstream of ventilator
 P2 (-) connected upstream of ventilator

(D) Volume flow

P1 (+) dynamic pressure, connected in flow direction
 P2 (-) static pressure, connected free of dynamic pressure components

$$V = k \cdot \sqrt{\Delta p}$$

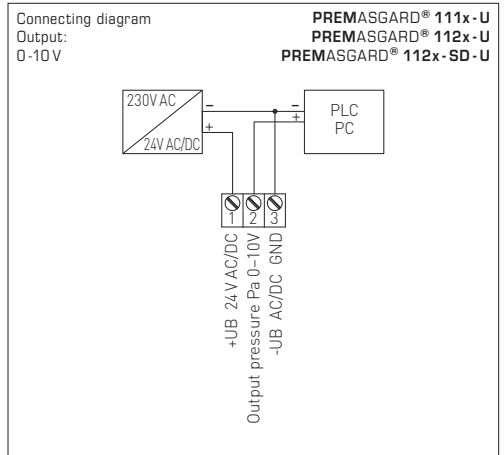
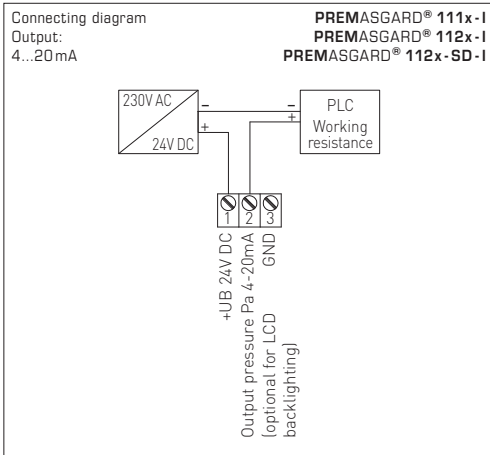
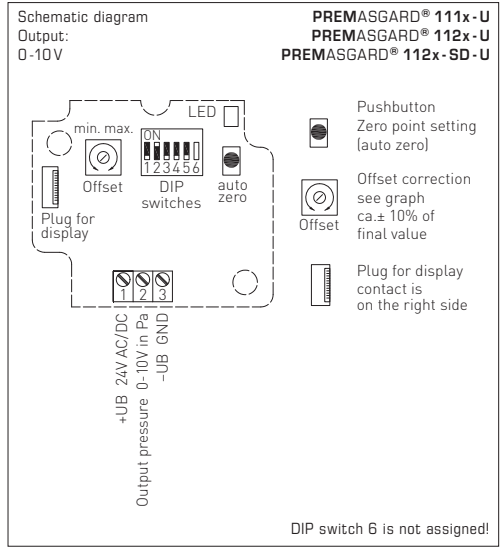
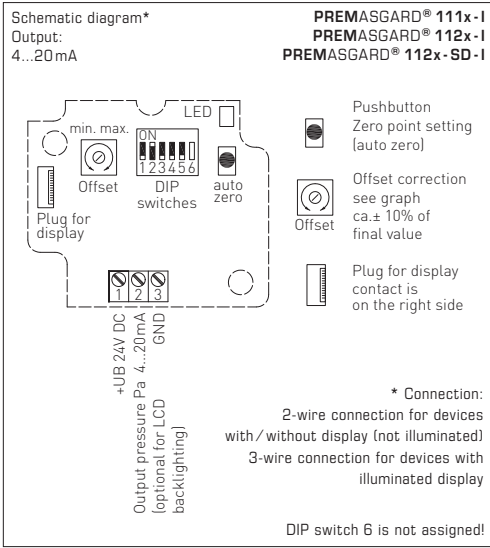
V = Volume flow

k = k faktor

Δp = Differential pressure [Pa]

Conversion table for pressure values:

| Unit = | bar | mbar | Pa | kPa | mWS |
|--------|---------------|--------------|------------|-------------|-----------------|
| 1 Pa | 0.00001 bar | 0.01 mbar | 1 Pa | 0.001 kPa | 0.000101971 mWS |
| 1 kPa | 0.01 bar | 10 mbar | 1000 Pa | 1 kPa | 0.101971 mWS |
| 1 bar | 1 bar | 1000 mbar | 100000 Pa | 100 kPa | 10.1971 mWS |
| 1 mbar | 0.001 bar | 1 mbar | 100 Pa | 0.1 kPa | 0.0101971 mWS |
| 1 mWS | 0.0980665 bar | 98.0665 mbar | 9806.65 Pa | 9.80665 kPa | 1 mWS |



DIP switches for pressure range setting, output attenuation and zero compensation:

| Pressure range | | DIP 1 | DIP 2 |
|---|--------------------|-------------------------|-------------------------|
| max. measuring range (default) is depending to the type of device | | | |
| 0...100 Pa | 0...1000 Pa | -100...+100 Pa | -1000...+1000 Pa |
| 0...300 Pa | 0...2000 Pa | -300...+300 Pa | -2000...+2000 Pa |
| 0...500 Pa | 0...3000 Pa | -500...+500 Pa | -3000...+3000 Pa |
| 0...1000 Pa | 0...5000 Pa | -1000...+1000 Pa | -5000...+5000 Pa |

| Measuring range (Mode) | DIP 3 |
|------------------------------------|-------|
| Unidirectional (default) (0...+MR) | OFF |
| Bidirectional (-MR...+MR) | ON |

| Output characteristic line (Mode) | DIP 4 |
|---|-------|
| Linear (default) for pressure detection | OFF |
| Square root extracting to determine the volume flow | ON |

| Measurement signal filtering | DIP 5 |
|------------------------------|-------|
| 10 s (default) interval | OFF |
| 1 s interval | ON |

The following configurations can be preset via DIP switches.

The DIP switch sliding blocks can be moved without using tools. DIP switch 6 is not assigned.

Pressure ranges

In each case four different pressure ranges depending on the type of device can be preset via DIP switches **DIP 1** and **DIP 2**.

Measuring range mode

The measuring range is configured via DIP switch **DIP 3**, either into the unidirectional range or into the bidirectional range.

Therefore altogether eight pressure measuring ranges are configurable.

Characteristic line - analog output

The output characteristic line can be defined via DIP switch **DIP 4**. Here is distinguished between a linear and a square root extracting output characteristic line. When square root extracting output characteristic line is selected, the measuring range setting at DIP switches **DIP 1** and **DIP 2** is without function.

In that case the maximum pressure range is used for computation.

Measurement signal filtering

In order to stabilize the pressure measurement signal and the output voltage, the measurement signal is filtered.

The time interval for such averaging can be preset via DIP switch **DIP 5** to 1 or 10 seconds.

By a longer filtering interval, the settling time of the sensor is automatically extended.

Offset adjustment is done at a potentiometer on the circuit board within an adjustment range of $\pm 10\%$ of the device's pressure range.

Ex-factory this potentiometer is in center position and is lacquer sealed.

Automatic offset setting

1. Before setting the zero point, the device must be in operation for at least 60 minutes.
2. Connect pressure inputs P(+) and P(-) by means of a hose (pressure difference between both inputs = 0 Pa).
3. For zero point setting press button uninterruptedly for 5 seconds.

A LED signals prompting the calibration by short flashing, and after a short countdown the measured (current) offset value is added to the measurand and zero voltage safe stored.

Correct calibration is confirmed by steady light of the LED for 3 seconds respectively indicated in the display (optional) by switching from "AUTO 0" to "PROG 0".

Note: By releasing the button during the countdown (counter > 0), zero point setting is immediately terminated!



Manual offset adjustment

At the potentiometer OFFSET ΔP can be balanced.

The adjustment range is ca. $\pm 10\%$ of the pressure range.

Here another reference point different from zero point can be used.

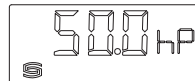
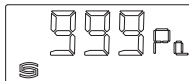
Readout in the display

In the 1st line of the display, the **ACTUAL pressure** up to the measuring range limit is displayed.

Switching between the units Pa and hPa (100 Pa = 1 hPa) happens automatically.

Pa = Pascal

hPa = Hektopascal



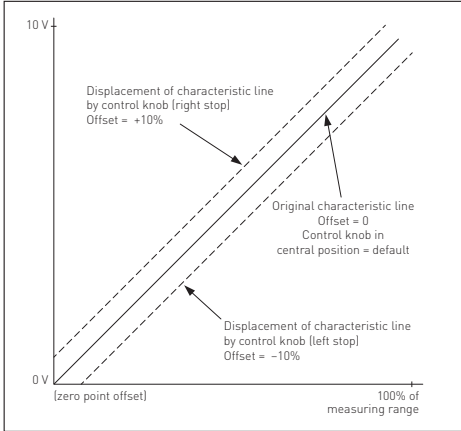
U-variant

(Range: 0...+xxPa)

After successful zero point calibration, the output voltage is 0 V at 0 Pa pressure difference (with the offset knob in central position)!

Output voltage 0...10 V

for pressure difference from 0 Pa to final value



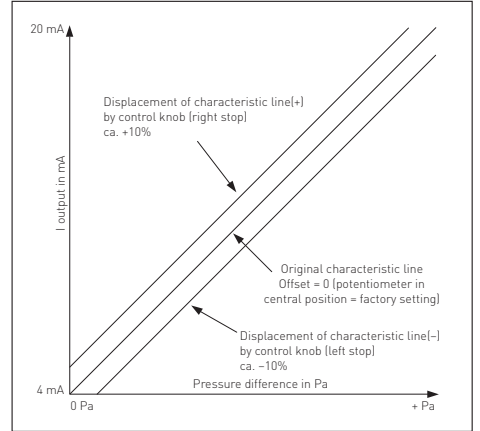
I-variant

(Range: 0...+xxPa)

After successful zero point calibration, the output current is 4 mA at 0 Pa pressure difference (with the offset knob in central position)!

Output current 4...20 mA

for pressure difference from 0 Pa to final value



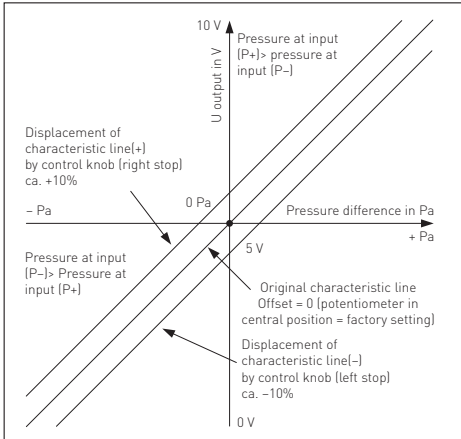
U-variant

(Range: -xx ... +xxPa)

After successful zero point calibration, the output voltage is 5 V at 0 Pa pressure difference (with the offset knob in central position)!

Output voltage 0...10 V

for pressure difference -ΔP...+ΔP



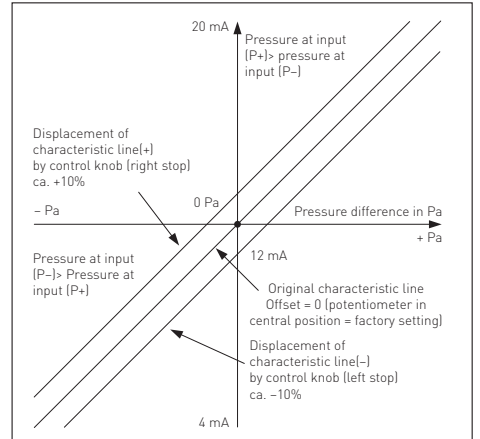
I-variant

(Range: -xx ... +xxPa)

After successful zero point calibration, the output current is 12 mA at 0 Pa pressure difference (with the offset knob in central position)!

Output current 4...20 mA

for pressure difference -ΔP...+ΔP



The voltage output is short-circuit proof. Applying overvoltage at the voltage output will destroy this device. Pressure ranges are indicated on the device label. Applying measuring pressures beyond that range will cause mismeasurements and increased deviations or may destroy the device.

- Recommended installation position: cable supply points downwards.
- A suitable weather and sun protection hood must be used when installed outdoors
- Attention! When leading in cables, make sure, they do not go under the board. This might buckle or damage hose connections!
- The voltage output is short-circuit proof. Applying overvoltage at the voltage output will destroy this device.
- Pressure inputs are "poled" i.e. the above-atmospheric pressure line must be connected at input P+ and the below-atmospheric pressure line must be connected at input P-.
- At an adjusting element, the output signal can be offset by $\pm 10\%$ of the final value of the measuring range. In this way, possible ageing or drift effects can be compensated.
- Adjustment may only be made at the presence of differential pressure (ca. 90 % of final value).
- By changing the offset at the adjusting element, factory-calibration is lost!
- If this device is operated beyond the specified range, all warranty claims are forfeited.

Our "General Terms and Conditions for Business" together with the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry" (ZVEI conditions) including supplementary clause "Extended Retention of Title" apply as the exclusive terms and conditions.

In addition, the following points are to be observed:

- These instructions must be read before installation and putting in operation and all notes provided therein are to be regarded!
- Devices must only be connected to safety extra-low voltage and under dead-voltage condition. To avoid damages and errors at the device (e.g. by voltage induction) shielded cables are to be used, laying parallel with current-carrying lines is to be avoided, and EMC directives are to be observed.
- This device shall only be used for its intended purpose. Respective safety regulations issued by the VDE, the states, their control authorities, the TÜV and the local energy supply company must be observed. The purchaser has to adhere to the building and safety regulations and has to prevent perils of any kind.
- No warranties or liabilities will be assumed for defects and damages arising from improper use of this device.
- Consequential damages caused by a fault in this device are excluded from warranty or liability.
- These devices must be installed and commissioned by authorised specialists.
- The technical data and connecting conditions of the mounting and operating instructions delivered together with the device are exclusively valid. Deviations from the catalogue representation are not explicitly mentioned and are possible in terms of technical progress and continuous improvement of our products.
- In case of any modifications made by the user, all warranty claims are forfeited.
- This device must not be installed close to heat sources (e.g. radiators) or be exposed to their heat flow.
- Direct sun irradiation or heat irradiation by similar sources (powerful lamps, halogen spotlights) must absolutely be avoided.
- Operating this device close to other devices that do not comply with EMC directives may influence functionality.
- This device must not be used for monitoring applications, which serve the purpose of protecting persons against hazards or injury, or as an EMERGENCY STOP switch for systems or machinery, or for any other similar safety-relevant purposes.
- Dimensions of enclosures or enclosure accessories may show slight tolerances on the specifications provided in these instructions.
- Modifications of these records are not permitted.
- In case of a complaint, only complete devices returned in original packing will be accepted.

Notes on commissioning:

This device was calibrated, adjusted and tested under standardised conditions. When operating under deviating conditions, we recommend performing an initial manual adjustment on-site during commissioning and subsequently at regular intervals.

Commissioning is mandatory and may only be performed by qualified personnel!

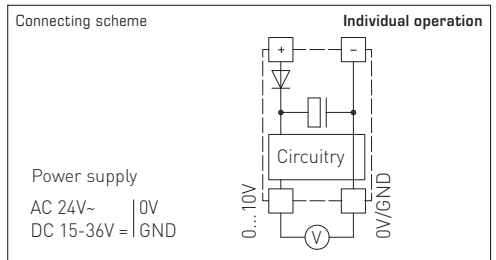
These instructions must be read before installation and commissioning and all notes provided therein are to be regarded!

SUPPLY VOLTAGE:

For operating voltage reverse polarity protection, a one-way rectifier or reverse polarity protection diode is integrated in this device variant. This internal one-way rectifier also allows operating 0-10V devices on AC supply voltage.

The output signal is to be tapped by a measuring instrument. Output voltage is measured here against zero potential (0V) of the input voltage!

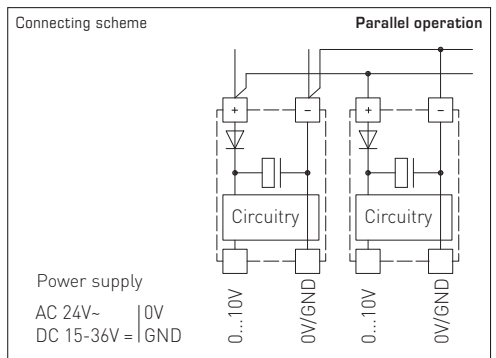
When this device is operated on **DC supply voltage**, the operating voltage input UB+ is to be used for 15...36V DC supply and UB- or GND for ground wire!

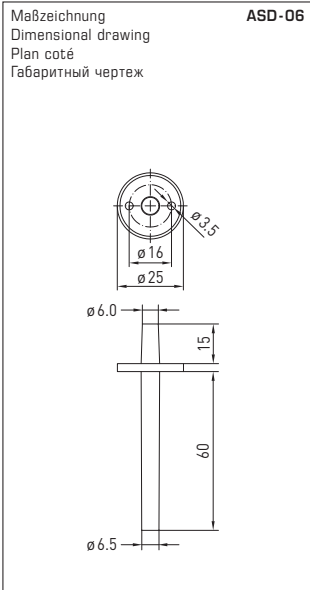


When several devices are supplied by one 24V **AC voltage supply**, it is to be ensured that all "positive" operating voltage input terminals (+) of the field devices are connected with each other and all "negative" operating voltage input terminals (-) (= reference potential) are connected together (in-phase connection of field devices). All outputs of field devices must be referenced to the same potential!

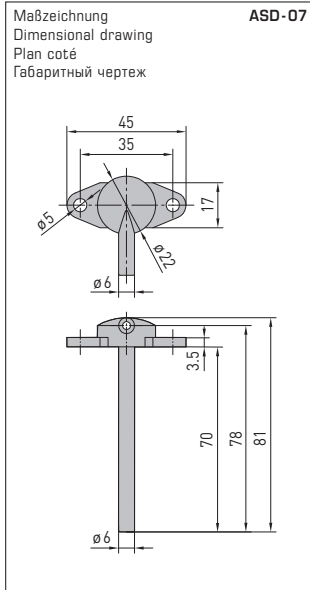
In case of reversed polarity at one field device, a supply voltage short-circuit would be caused by that device. The consequential short-circuit current flowing through this field device may cause damage to it.

Therefore, pay attention to correct wiring!

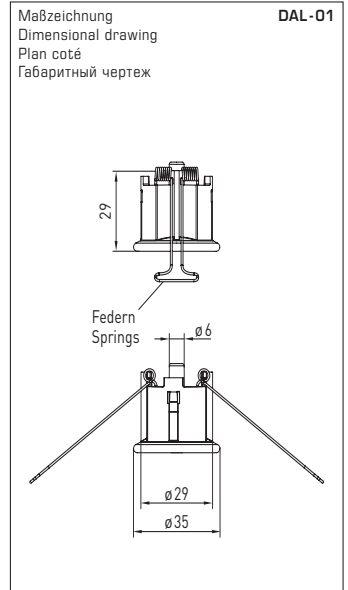




ASD-06
Anschluss-Set
Connection set
Kit de raccordement
Комплект соединительных деталей



ASD-07
Anschlussnippel
Connection nipple
Embout de raccordement
Соединительный ниппель



DAL-01
Druckauslass
Pressure outlet
Sortie pression
Клапан выпуска давления

