

# 711x

## Operating Instructions, Mounting & Installation

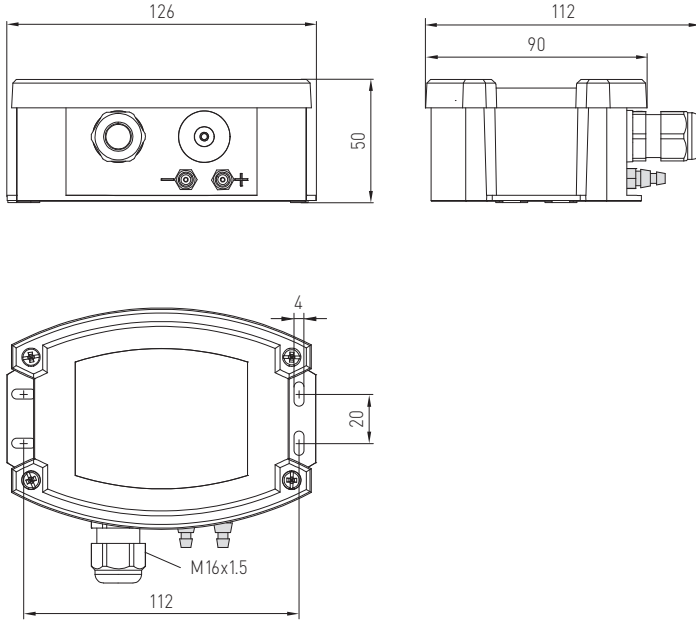
Pressure and differential pressure measuring transducers), including connection set, calibratable, with multi-range switching and active output

711x



Dimensional drawing

711x



711x  
Connections



The calibratable **711x** compact pressure sensors (series) are equipped with eight switchable measuring ranges and equipped with optional display (eight devices in one) and are used to measure above-atmospheric, below-atmospheric, or differential pressures in air. The piezoresistive measuring element is temperature-compensated and guarantees a high degree of reliability and precision. The pressure transmitters feature a pushbutton for manual zero point calibration or an automatic zero point calibration function as well as 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 clean air (non-precipitating), or other gaseous non-aggressive, non-combustible media. The pressure sensor has eight selectable measuring ranges, thereby minimising the diversity of types and inventory levels while covering a greater range of applications. The differential pressure sensor is supplied including connection set **ASD-06** (2 m connection hose, two pressure connection nipples, screws).

## TECHNICAL DATA

Power supply:	24 V AC ( $\pm 20\%$ ); 15...36 V DC for U variant 15...36 V DC for I variant, depending on working resistance, residual ripple stabilised $\pm 0.3$ V
Working resistance:	$R_a$ (ohm) = $(U_0 - 14 \text{ V}) / 0.02 \text{ A}$ for I variant
Load resistance:	$R_L > 5 \text{ kOhm}$ for U variant
Power consumption:	$< 2 \text{ VA} / 24 \text{ V DC}$ , $< 3.5 \text{ VA} / 24 \text{ V AC}$
Measuring ranges:	<b>multi-range switching with 8 switchable measuring ranges</b> (see table)
Output signal:	0 -10 V or 4...20 mA
Electrical connection:	2- or 3-wire connection
Media temperature:	$-20...+50 \text{ }^\circ\text{C}$
Pressure connection:	4 / 6 x 11 mm (hoses $\varnothing = 4 / 6 \text{ mm}$ ), metal pressure connection nozzles
Type of pressure:	differential pressure
Medium:	clean air and non-aggressive, non-combustible gases
Accuracy:	<b>Type 7112</b> (25 Pa): $\pm 1 \text{ Pa}$ <b>Type 7110</b> (100 Pa): $\pm 2 \text{ Pa}$ <b>Type 7111</b> (1000 Pa): $\pm 5 \text{ Pa}$ <b>Type 7115</b> (5000 Pa): $\pm 25 \text{ Pa}$ compared to the calibrated reference device
Sum of Linearity+hysteresis:	$< \pm 1\%$ of final value $\pm 2\%$ of final value for pressure ranges $< \pm 250 \text{ Pa}$
Temperature drift values:	$\pm 0.1\%$ / $^\circ\text{C}$ $\pm 0.3\%$ / $^\circ\text{C}$ for pressure ranges $< 250 \text{ Pa}$
Zero point offset:	$< \pm 0.7\%$ of final value $\pm 1.4\%$ of final value for pressure ranges $< 250 \text{ Pa}$
Above- / below-atmospheric pressure:	max. $\pm 100 \text{ hPa}$
Signal filtering:	<b>switchable 1 s / 10 s</b>
Enclosure:	plastic, UV-stabilised, material polyamide, 30% glass-globe reinforced, with quick-locking screws (slotted / Phillips head combination), colour traffic white (similar to RAL 9016), enclosure cover for display is transparent!
Dimensions:	126 x 90 x 50 mm (Tyr2)
Electrical connection:	0.14 -1.5 mm <sup>2</sup> , via plug-in screw terminal
Cable gland:	M 16 x 1.5; including strain relief
Air humidity:	$< 95\%$ r. H., non-precipitating air
Protection class:	III (according to EN 60730)
Protection type:	IP 65 (according to EN 60529)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU, according to EN 61326-1, according to EN 61326-2-3
Equipment:	three-line <b>display with illumination</b> , cutout approx. 70 x 40 mm (W x H), for displaying ACTUAL pressure and for adjusting the automatic zero point calibration
<b>ACCESSORIES</b>	
<b>ASD-06</b>	Connection set (nipple straight) – (included in the scope of delivery)
<b>ASD-07</b>	Connection nipple (at 90° angle)
<b>DAL-01</b>	Pressure outlet for ceiling or in-wall installation (e.g. in clean rooms)
<b>WS-03</b>	Weather and sun protection, 200 x 180 x 150 mm, stainless steel

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## Conversion table for pressure values:

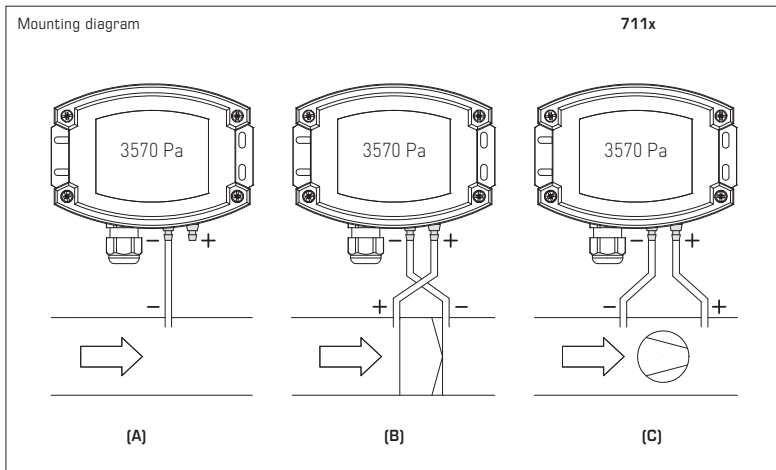
Unit =	bar	mbar	Pa	kPa	mH <sub>2</sub> O
1 Pa	0.00001 bar	0.01 mbar	1 Pa	0.001 kPa	0.000101971 mH <sub>2</sub> O
1 kPa	0.01 bar	10 mbar	1000 Pa	1 kPa	0.101971 mH <sub>2</sub> O
1 bar	1 bar	1000 mbar	100000 Pa	100 kPa	10.1971 mH <sub>2</sub> O
1 mbar	0.001 bar	1 mbar	100 Pa	0.1 kPa	0.0101971 mH <sub>2</sub> O
1 mH <sub>2</sub> O	0.0980665 bar	98.0665 mbar	9806.65 Pa	9.80665 kPa	1 mH <sub>2</sub> O

## 711x – Pressure and differential pressure measuring transducers, *Deluxe*

Pressure range (Ranges adjustable)	Type/WG02	Output	Display	Item No.
<b>max. – 1000...+ 1000 Pa</b>	<b>PREMASGARD® 7111</b>			
0... 100 Pa / – 100... + 100 Pa	PREMASGARD 7111-U	0-10V		1301-7111-0010-200
0... 300 Pa / – 300... + 300 Pa	PREMASGARD 7111-U DISPLAY	0-10V	■	1301-7111-4010-200
0... 500 Pa / – 500... + 500 Pa	PREMASGARD 7111-I	4...20mA		1301-7112-0010-100
0...1000 Pa / –1000... +1000 Pa	PREMASGARD 7111-I DISPLAY	4...20mA	■	1301-7112-4010-100
<b>max. – 5000...+5000 Pa</b>	<b>PREMASGARD® 7115</b>			
0...1000 Pa / –1000... +1000 Pa	PREMASGARD 7115-U	0-10V		1301-7111-0050-200
0...2000 Pa / –2000... +2000 Pa	PREMASGARD 7115-U DISPLAY	0-10V	■	1301-7111-4050-200
0...3000 Pa / –3000... +3000 Pa	PREMASGARD 7115-I	4...20mA		1301-7112-0050-100
0...5000 Pa / –5000... +5000 Pa	PREMASGARD 7115-I DISPLAY	4...20mA	■	1301-7112-4050-100
<b>max. –100...+100 Pa</b>	<b>PREMASGARD® 7110</b>			
0... +50 Pa / –50... +50 Pa	PREMASGARD 7110-U	0-10V		1301-7111-0110-200
0...+100 Pa / –100...+100 Pa	PREMASGARD 7110-U DISPLAY	0-10V	■	1301-7111-4110-200
	PREMASGARD 7110-I	4...20mA		1301-7112-0110-100
	PREMASGARD 7110-I DISPLAY	4...20mA	■	1301-7112-4110-100
<b>max. –25...+25 Pa</b>	<b>PREMASGARD® 7112</b>			
0... +25 Pa / –25... +25 Pa	PREMASGARD 7112-U	0-10V		1301-7111-0370-200
	PREMASGARD 7112-U DISPLAY	0-10V	■	1301-7111-4370-200
	PREMASGARD 7112-I	4...20mA		1301-7112-0370-200
	PREMASGARD 7112-I DISPLAY	4...20mA	■	1301-7112-4370-200
	<b>Equipped as standard with automatic zero point calibration (3-wire connection)</b>			
Multi-range switching:	Depending on the type of device, altogether <b>eight</b> pressure ranges can be preset via <b>DIP</b> switches. (Factory setting is maximum measuring range)			
Extra charge:	Other special measuring ranges up to max. 5000 Pa <b>with optional automatic zero point calibration</b> (please specify in your order)			

## Accessories

<b>ASD-06</b>	<b>Connection set (included in the scope of delivery)</b> , consisting of 2 connection nipples (straight) made of ABS, 2 m PVC hose, soft, and 4 tapping screws	7100-0060-3000-000
<b>ASD-07</b>	<b>2 connection nipples</b> (at 90 degree angle) made of plastic, ABS	7100-0060-7000-000
<b>DAL-01</b>	<b>Pressure outlet</b> for ceiling or in-wall installation (e.g. in clean rooms)	7300-0060-3000-001
<b>WS-03</b>	<b>Weather and sun protection</b> , 200 x 180 x 150 mm, stainless steel	7100-0040-6000-000



**TYPES OF MONITORING:**

**(A) Below-atmospheric pressure:**

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

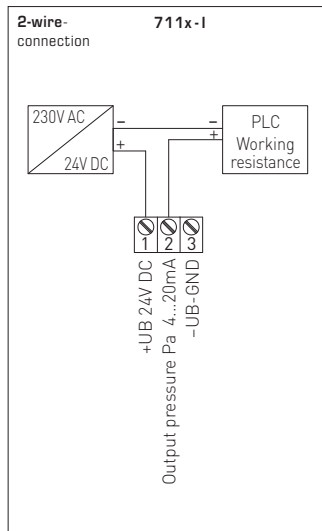
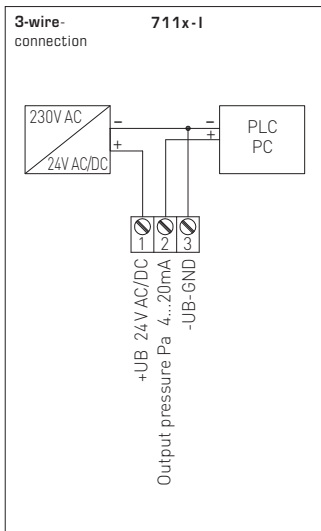
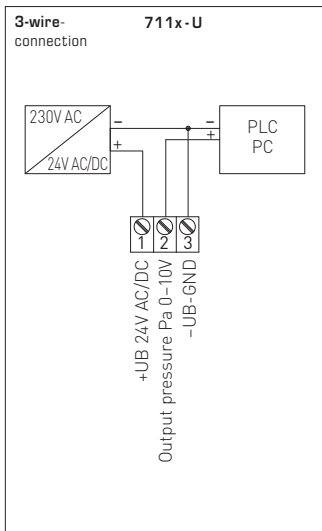
**(B) Filter:**

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

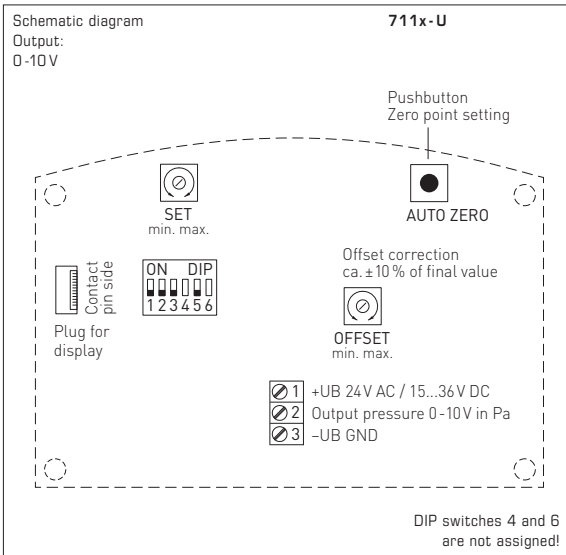
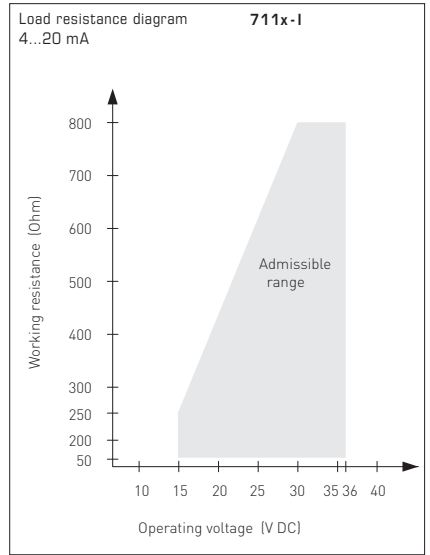
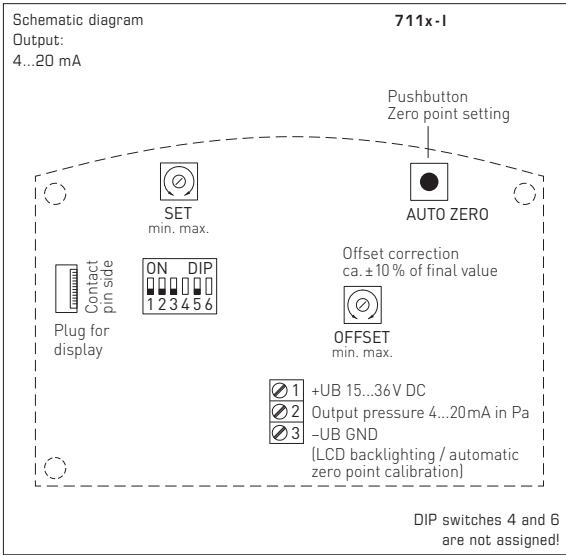
**(C) Ventilator:**

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

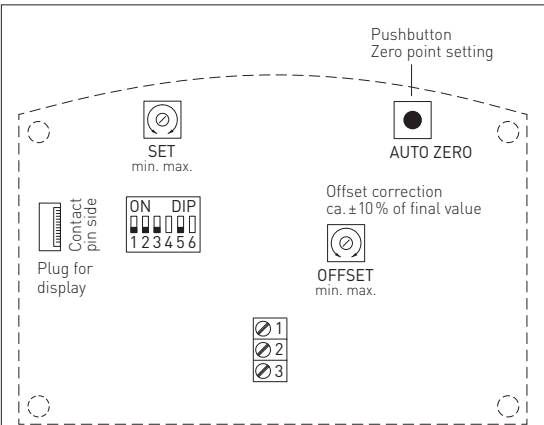
Pressure connections at the pressure switch are marked with P1 (+) for higher pressure and P2 (-) for lower pressure.



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**Automatic offset setting:**

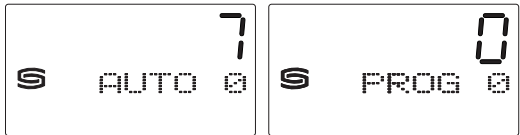


1. For zero point setting, the device must be in operation for at least 60 minutes.
2. Connect pressure inputs P (+) and P (-) with a hose. (Pressure difference between the inputs = 0 Pa).
3. For zero point setting, press pushbutton uninterrupted for 10 seconds.

By pressing the pushbutton, a countdown of ca. 10 seconds is started. The yellow LED is blinking and the countdown is shown on the display (optional).

Zero point calibration takes place after the countdown period. This is indicated by continuous LED light and at the display (optional) by switching from "AUTO 0" to "PROG 0".

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



**Manual offset adjustment:**

The offset potentiometer functions additionally and independently for automatically setting the zero point.  
 With the OFFSET potentiometer, a deviation outside of the zero point can be aligned.  
 The range for adjustment is ca. ± 10% of the pressure range.

**Automatic zero point calibration (25 Pa):**

A **zero point calibration** is carried out cyclically via an internal valve.  
 The cycle time can be set between 15 minutes and 24 hours using the SET potentiometer.  
 During the automatic calibration, the output value remains at its last pressure value.

**Display readout:**

The 1st line in the display shows the **actual pressure**.  
 In the 2nd line, the **unit pascal (Pa)** is shown.

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

Pressure range (adjustable, maximum measuring range depending on type of device)									
0...25 Pa	0...100 Pa	0...1000 Pa	0...5000 Pa	-25...+25 Pa	-100...+100 Pa	-1000...+1000 Pa	-5000...+5000 Pa	DIP 1	DIP 2
0...25 Pa	0...50 Pa	0...100 Pa	0...1000 Pa	-25...+25 Pa	-50...+50 Pa	-100...+100 Pa	-1000...+1000 Pa	OFF	OFF
-	0...100 Pa	0...300 Pa	0...2000 Pa	-	-100...+100 Pa	-300...+300 Pa	-2000...+2000 Pa	ON	OFF
-	-	0...500 Pa	0...3000 Pa	-	-	-500...+500 Pa	-3000...+3000 Pa	OFF	ON
-	-	0...1000 Pa	0...5000 Pa	-	-	-1000...+1000 Pa	-5000...+5000 Pa	ON	ON

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 DIP switches 4 and 6 are not assigned!

Measuring range mode (Mode selectable)	DIP 3
Unidirectional (0...+MR)	OFF
Bidirectional [-MR...+MR]	ON

Output damping (Strength and length-adjustable)	DIP 5
Long (10s)	OFF
Small (1s)	ON

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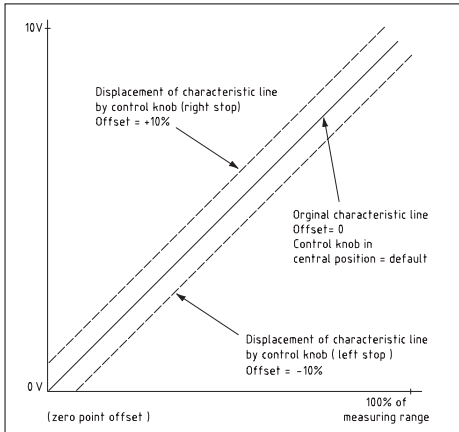
### 711x

[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...10V

for pressure difference from 0 Pa to final value



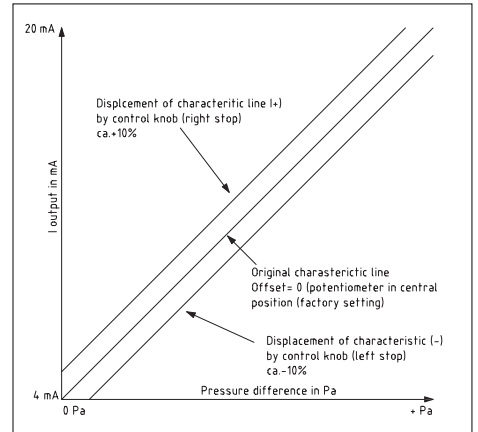
## 711x

[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



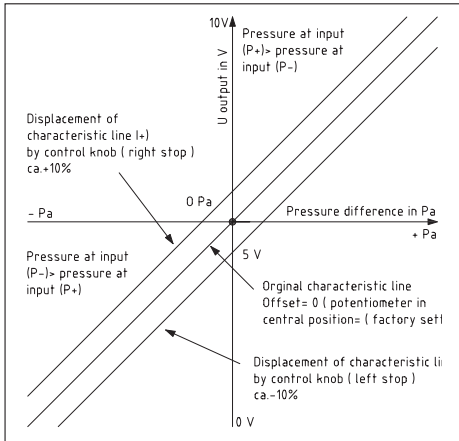
## 711x

[Range: -xx...+xxPa]

After successful zero point calibration, the output current 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



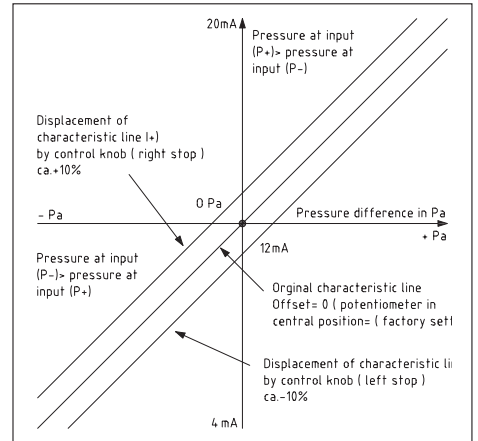
## 711x

[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





## General notes

This device can be mounted in any position. 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.

- Attention! When leading in cables, make sure, they do not go under the board.  
This might buckle or damage hose connections!
- 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.
- 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 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 by authorised specialists only.
- 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.

**These instructions must be read before installation and putting in operation 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.

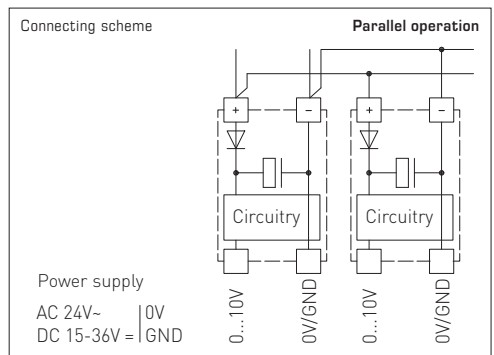
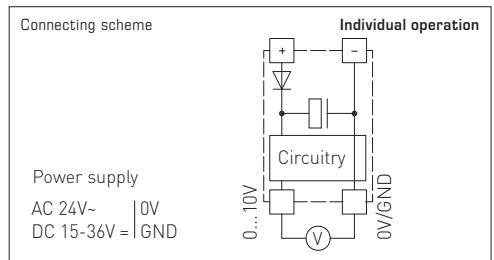
The output signal is to be tapped by a measuring instrument. Output voltage is measured here against zero potential (0V) of the input voltage!

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!**

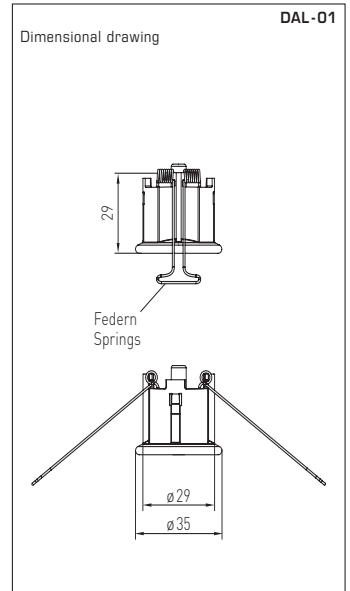
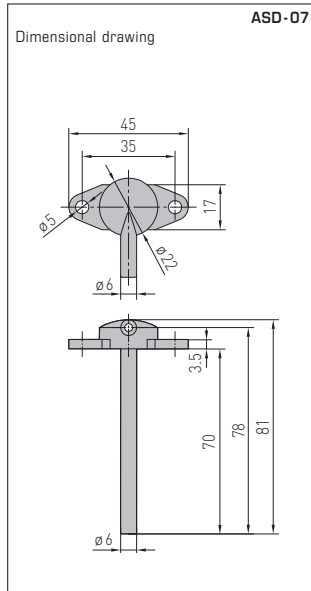
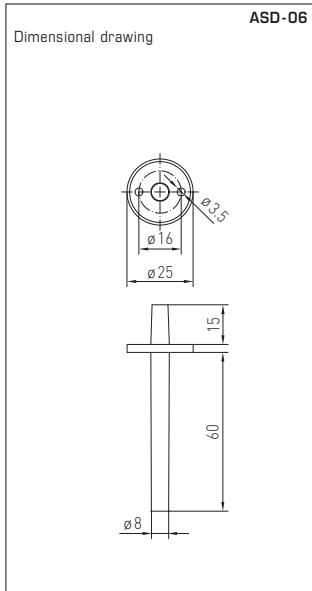


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WS-03

Weather and sun protection  
(optional)





**ASD-06**  
Connection set



**ASD-07**  
Connection nipple



**DAL-01**  
Pressure outlet

