

## EGP 100: Differential pressure transducer

### Improving energy efficiency

Allows precise recording of room pressures, duct pressures or volume flows to optimise energy consumption in ventilation systems

### Areas of use

Optimised for applications such as filter monitoring, room or duct pressure monitoring, level monitoring in fluids, actuating frequency converters for fan control and recording volume flow, especially for room air balancing in laboratories.

### Features

- Exact measurement of positive, negative and differential pressures in gases
- Optimised for applications such as filter monitoring, room or duct pressure monitoring, level monitoring in fluids, actuating frequency converters for fan control and recording volume flow, especially for room air balancing in laboratories.
- Can be ideally combined with XAFP100 flow probe for precise measurement of volume flow
- Static dual-membrane-pressure sensor on capacitive basis
- Can be fitted in any position
- Can be used for dusty air or air polluted with chemicals (not ATEX approved)
- Manufacturer's test certificate ex works
- The measuring range can be adapted to the needs of the application
- Variable zero point and filter time constant to suppress pressure surges in the system
- Display shows the actual value and the signal progression (depending on type)
- Status LED for immediate indication of operating status (depending on type)
- Measuring range can be reduced to one third (depending on type)
- Fitted to either wall or top-hat rail (EN 60715)
- Cover that does not require special tools to open

### Technical data

Power supply		
Power supply	24 V~/, ±20%	
Power consumption F**2	24 V~	3.0 VA
	24 V=	1.3 W
Power consumption F**1	24 V~	1.4 VA
	24 V=	0.4 W

Parameters		
Admissible positive pressure	±10 kPa	
Influence of position <sup>1)</sup>	±1% full span (FS) at 150 Pa, ±75 Pa, ±0,75% FS at 300 Pa, ±150 Pa	
Non-linearity	1% FS pressure-linear	
Zero point stability	< 0.3% FS	
Reproducibility	0.2% FS	
Pneumatic connection <sup>2)</sup>	6.2 mm	
Parts in contact with media	PC/ABS blend, MQ, CuSn6, FR4	

Ambient conditions		
Temperature of medium	0...70 °C	
Admissible operating pressure p <sub>stat</sub> <sup>3)</sup>	±3 kPa	
Admissible ambient temperature	0...60 °C	
Admissible ambient humidity	5...95% rh, no condensation	

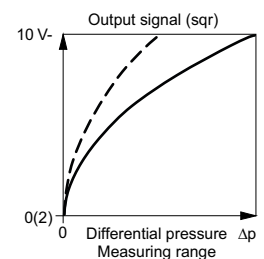
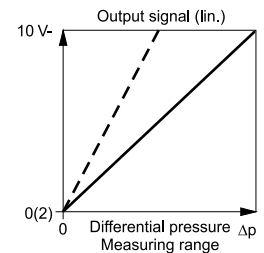
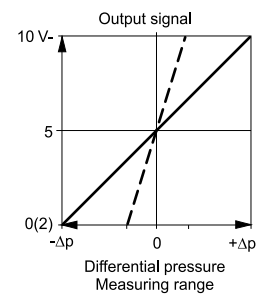
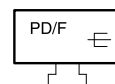
<sup>1)</sup> The sensor is calibrated at the factory for vertical fitting. The influence of position must be taken into account if the unit is not fitted in the vertical position.

<sup>2)</sup> Max. length of measuring wire (di = 6.2 mm): L<sub>max</sub> = 15 m for time constant < 0.5 s, L<sub>max</sub> = 60 m for time constant > 0.5 s

<sup>3)</sup> The zero point should be rebalanced if the admissible operating pressure is exceeded



EGP100F\*12



— Gain  $\Delta p = 1$   
 - - - Gain  $\Delta p = 3$



Inputs/outputs		
Output signal <sup>4)</sup>	F*01: 0...10 V, load > 10 kΩ F*11: 0...10 V, load > 5 kΩ F*02/F*12: 0(2)...10 V, load < 500 Ω	
Filter time constant	F*01: 0.05...2 s F*02, F*11, F*12: 0.15...5.2 s	

Structural design		
Pressure connection	Internal Ø 6 mm	
Housing	PC/ABS	
Cable gland	M16	
Screw terminals	For electric wires of up to 1.5 mm <sup>2</sup>	

Standards and directives		
Type of protection	IP 65	
Protection class	III (EN 60730-1)	
EMC directive 2004/108/EC	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4	

### Overview of types

**i** Output signal: analogue output limited to 10.6 V. Measured value can thus be transferred with an overflow of 6% of the measuring range

**i** Variable characteristic/LED: Manual adjustment of measuring range with gain potentiometer. Signal curve: linear/root-extracted. Output signal: 0...10 V/2...10 V via DIP switches or with CASE Sensors software

Type	Measuring range	Display	Variable characteristic/LED	Weight (kg)
EGP100F101	±75 Pa, ±0,75 mbar	–	–	0.17
EGP100F102	±75 Pa, ±0,75 mbar	–	•	0.18
EGP100F111	±75 Pa, ±0,75 mbar	•	–	0.18
EGP100F112	±75 Pa, ±0,75 mbar	•	•	0.19
EGP100F201	±150, 1,5 mbar	–	–	0.17
EGP100F202	±150, 1,5 mbar	–	•	0.18
EGP100F211	±150, 1,5 mbar	•	–	0.19
EGP100F212	±150, 1,5 mbar	•	•	0.19
EGP100F301	0...150 Pa, 0...1.5 mbar	–	–	0.17
EGP100F302	0...150 Pa, 0...1.5 mbar	–	•	0.18
EGP100F311	0...150 Pa, 0...1.5 mbar	•	–	0.18
EGP100F312	0...150 Pa, 0...1.5 mbar	•	•	0.19
EGP100F401	0...300 Pa, 0...3.0 mbar	–	–	0.17
EGP100F402	0...300 Pa, 0...3.0 mbar	–	•	0.18
EGP100F411	0...300 Pa, 0...3.0 mbar	•	–	0.18
EGP100F412	0...300 Pa, 0...3.0 mbar	•	•	0.19

### Accessories

Type	Description
0010240300	Connection set, 6 mm, complete
XAFP100F001	Flow sensor to measure the air volume in ventilation ducts
CERTIFICAT001	Manufacturer's test certificate type M
CERTIFICAT999	Test for further device (from 2 pcs.)
0300360001	USB connection set

<sup>4)</sup> With a load of < 500 Ω, a change-over to 0...20 mA or 4...20 mA occurs automatically. Output protected against short circuits and excess voltage up to 24 V~

## Additional information

Manual	7010081001 C
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### Description of operation

The differential pressure to be measured is recorded using double membranes. The pressure difference is evaluated using a differential capacitive measuring principle and provided as a linear or root electric signal.

### Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product documents must also be adhered to. Changing or converting the product is not admissible.

### Differential pressure measurement (linear characteristic)

The transducer converts the differential pressure to be measured into a linear electric signal. The output signal at connection 01 is thus proportional to the pressure difference.

### Volume flow recording (root characteristic)

The transducer converts the differential pressure produced at an orifice plate or flow probe (XAFP100) into a flow-linear signal. The output signal at connection 01 is thus proportional to the volume flow or air speed. The versions with symmetrical measuring ranges only support the linear characteristic.

### LED indicator

The LED (Run/Fault) indicates the operating status as follows:

- Continuous green light = power OK and no other faults
- Green briefly flashing = after a manual adjustment (DIP switch, potentiometer), the LED flashes for 15 seconds, then lights up green continuously.
- Continuous red light = sensor measuring range (FS) exceeded by 40% or sensor error. The LED goes green again after the zero point button is pressed. If the measuring range is exceeded, zero adjustment is necessary.
- Flashing red = low voltage. When the voltage is OK again, the LED flashes for another ten seconds then lights up green continuously

An LED lamp inside the housing indicates the various statuses during zero adjustment of the differential pressure sensor. These are indicated as follows:

Continuous orange light = start of zero adjustment

Orange flashing rapidly = zero adjustment in progress

Orange flashing slowly = zero adjustment required

### Display

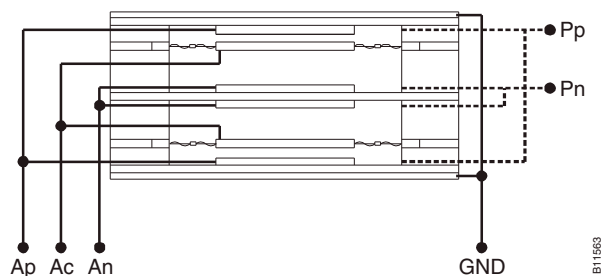
The 4-digit display shows the current measuring range, the unit and the characteristic. The display can show measured values of up to 150% of the set measuring range (linear characteristic) or up to 122% (root characteristic).

### Sensor technology

The sensor element is a static twin-membrane sensor with PCB technology. Because of its symmetrical structure with two, principally independent, measuring cells, the sensor is compensated for installation in any position. The differential pressure acting on it is evaluated using a differential, capacitive measuring principle. The unique design guarantees high accuracy for differential pressures of less than 1 Pa.

The static measuring principle means that the sensor can also be used for measuring gases containing dust or chemicals.

**Sensor structure**

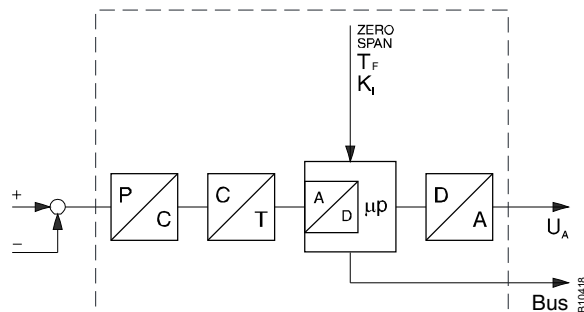


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**Key**

Pp	Connection for higher pressure
Pn	Connection for lower pressure
Ac	Common pole of differential capacitor
Ap	Positive pole
An	Negative pole
GND	Ground

**Block diagram of sensor**



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The filter time constant  $T$  of the transducer can be adjusted to stabilise the sensor output signal when the pressure signals fluctuate strongly (see the technical data and fitting instructions).  
The zero point can be adjusted, but this must always be done in accordance with the fitting instructions.

**Conversion table for pressure**

Unit		bar	mbar	Pa	kPa	mWs
1 bar	≡	1	1000	100000	100	10.1971
1 mbar	≡	0.001	1	100	0.1	0.0101971
1 Pa	≡	0.00001	0.01	1	0.001	0.000101971
1 kPa	≡	0.01	10	1000	1	0.101971
1 mWs	≡	0.0980665	98.0665	9806.65	9.80665	1

**Fitting notes**

Any fitting position is allowed, providing the effect of the position is taken into account. To increase measuring accuracy, the zero point can be adjusted if necessary.

**Wiring**

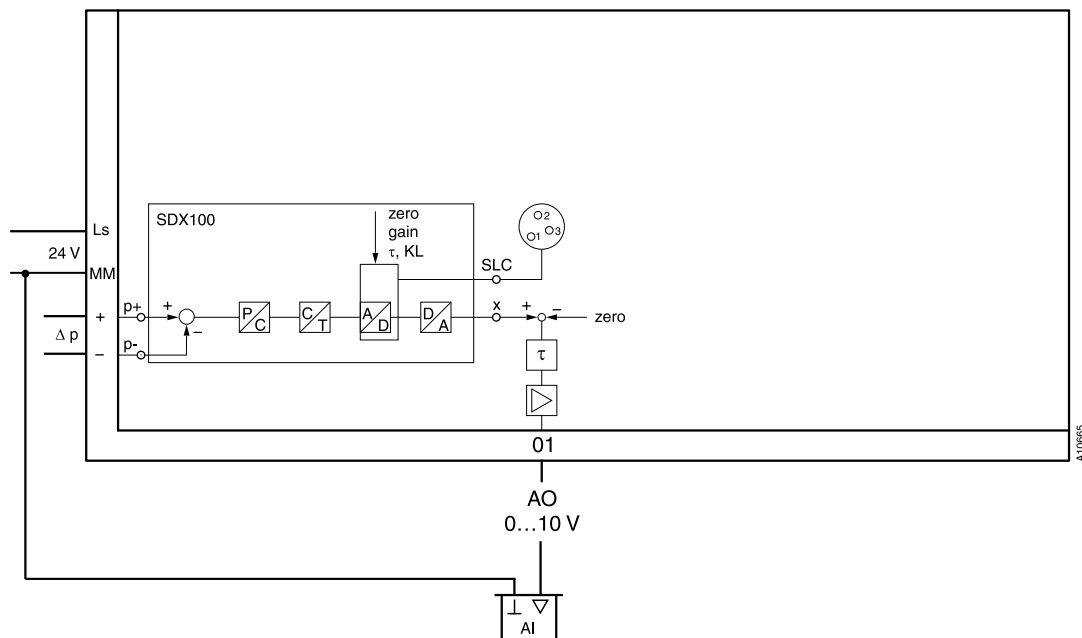
Star wiring of the power supply line is essential. To prevent problems with the measuring signal, no inductive loads may be connected to the same transformer as the transducer.  
The reference point of the measuring signal (MM) must be taken from the device and connected to the ground terminal of the corresponding analogue input (see the connection diagrams).

**Disposal**

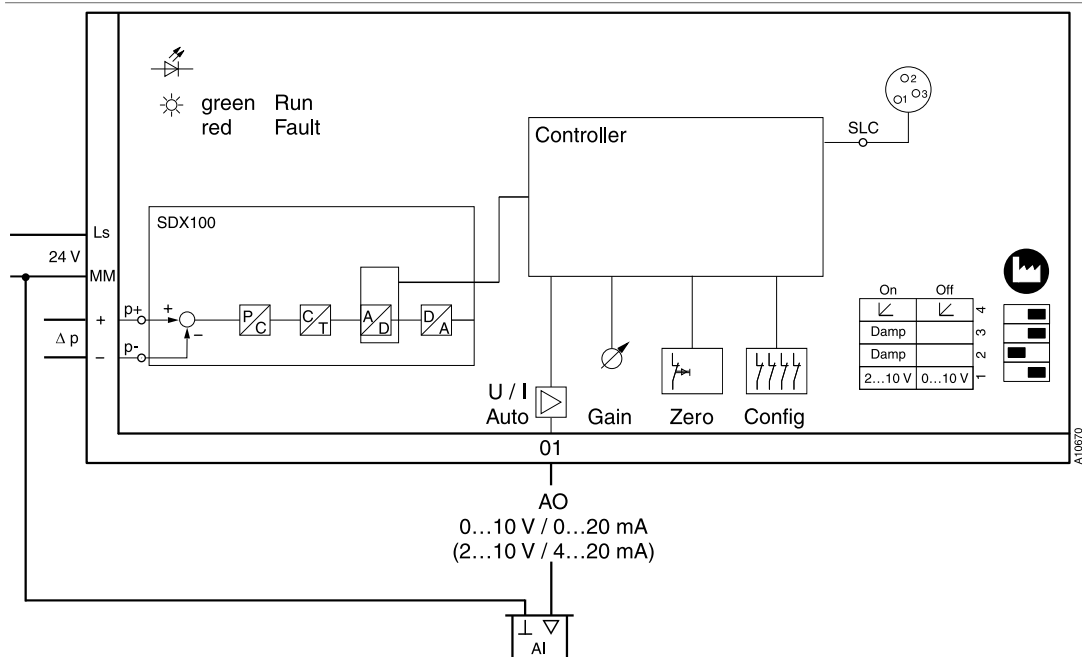
When disposing of the product, observe the currently applicable local laws.  
More information on materials can be found in the Declaration on materials and the environment for this product.

Connection diagram

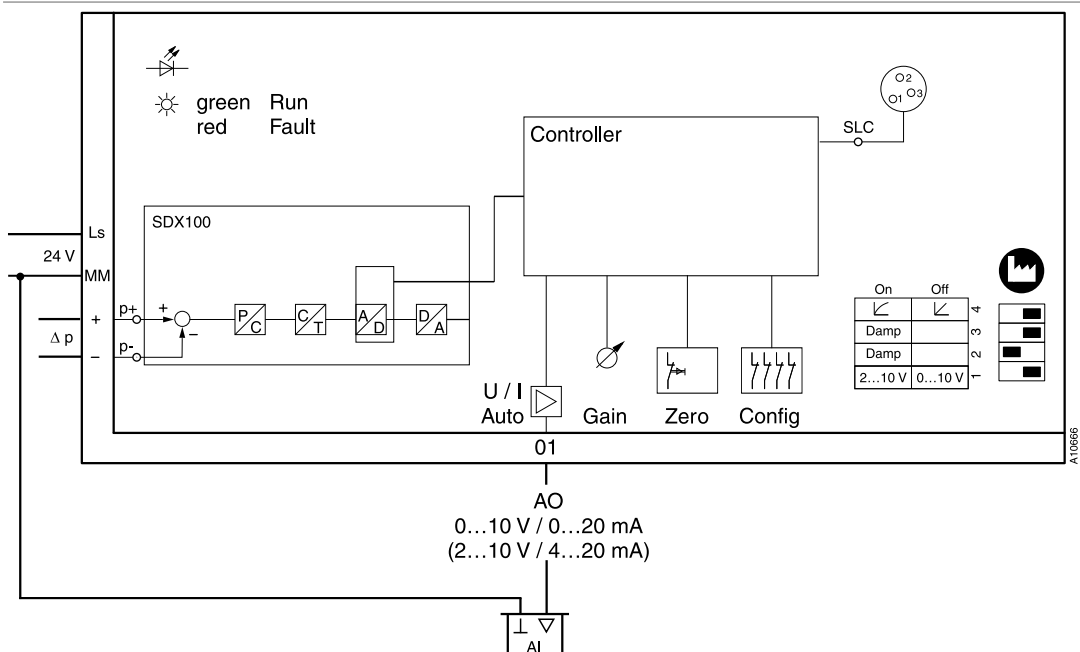
F101/F201/F301/F401



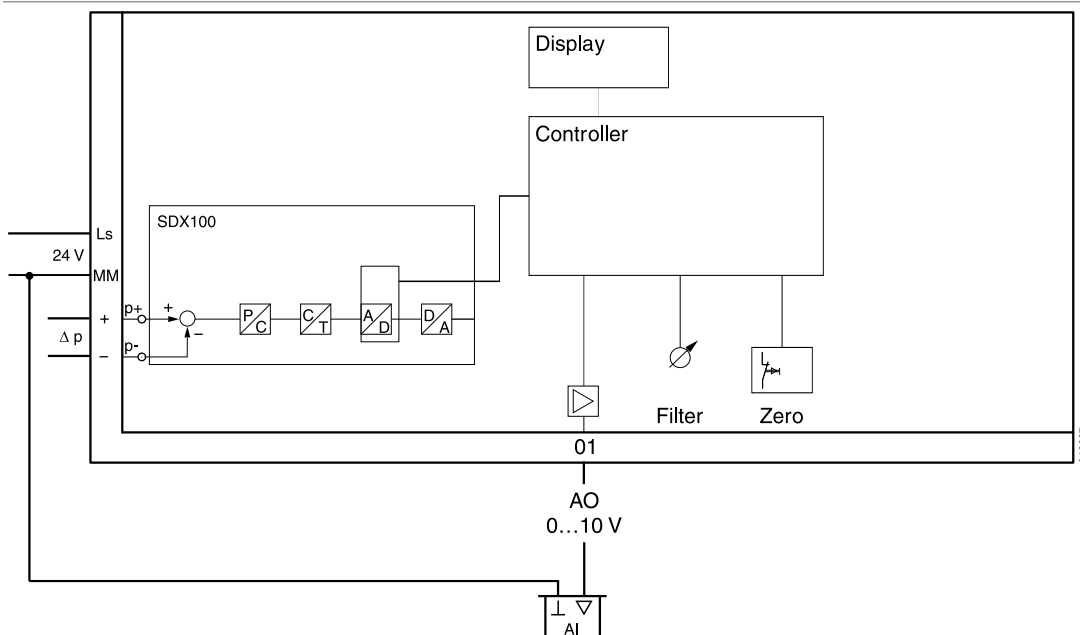
F102/F202



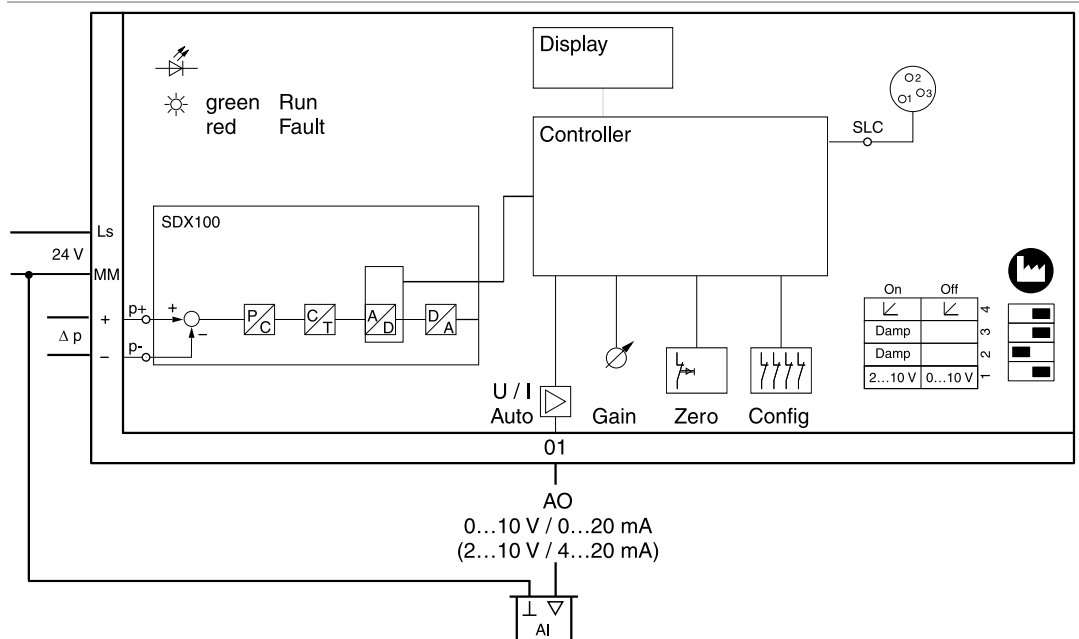
F302/F402



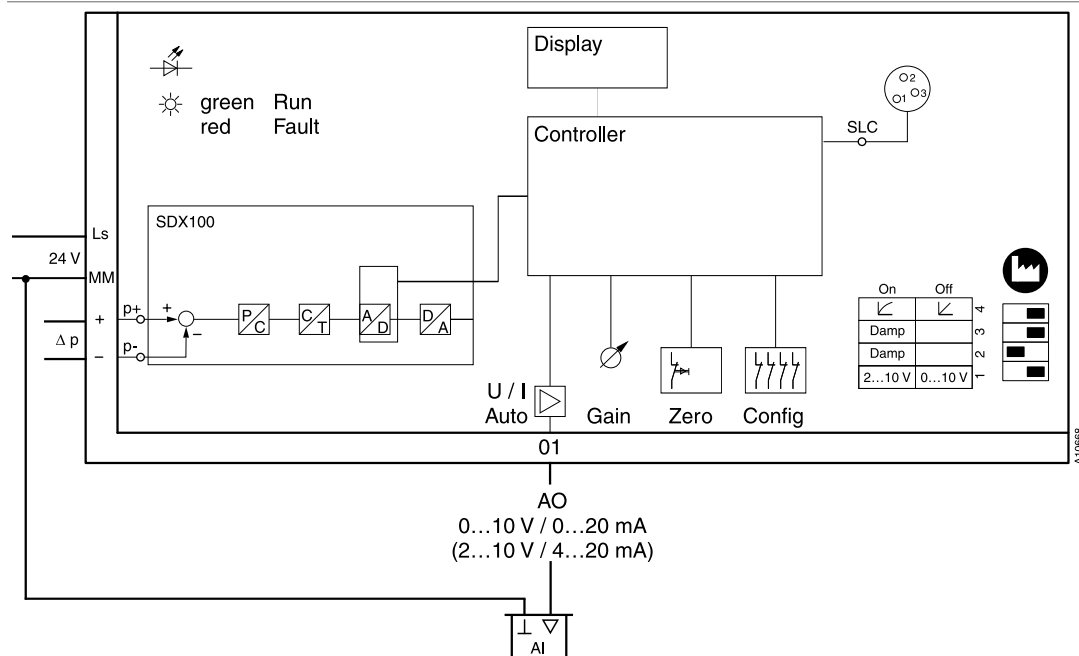
F111/F211/F311/F411



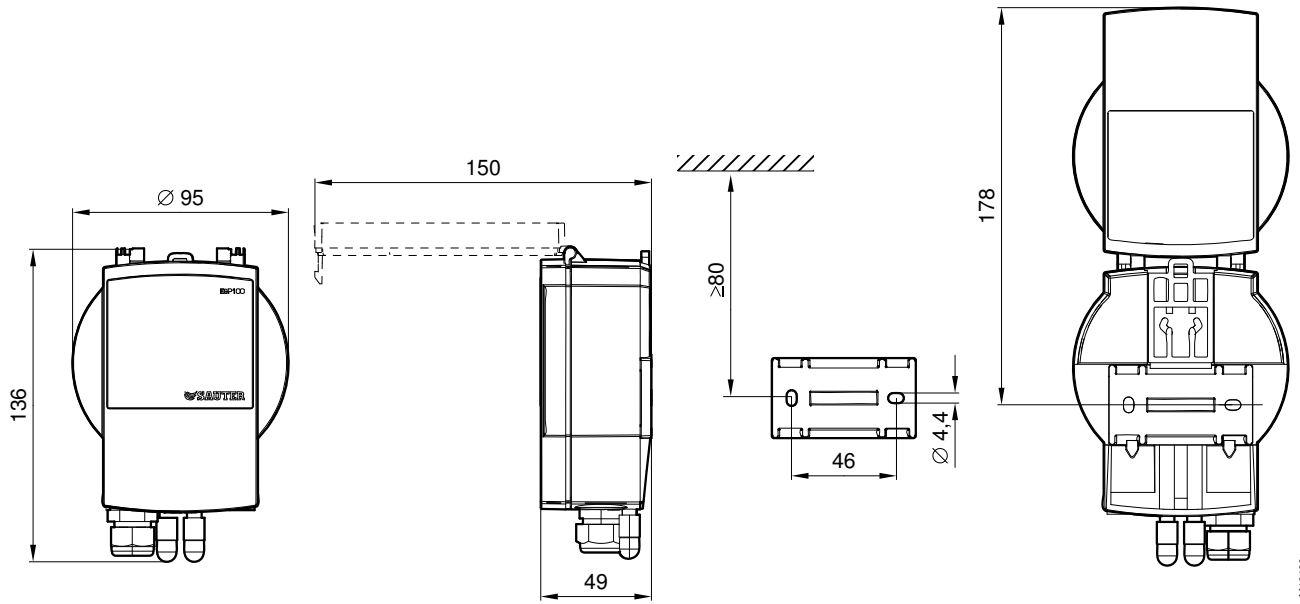
F112/F212



F312/F412



Dimension drawing

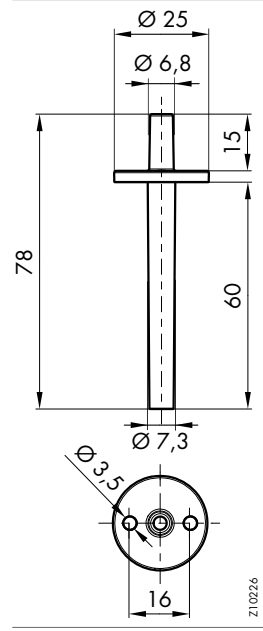


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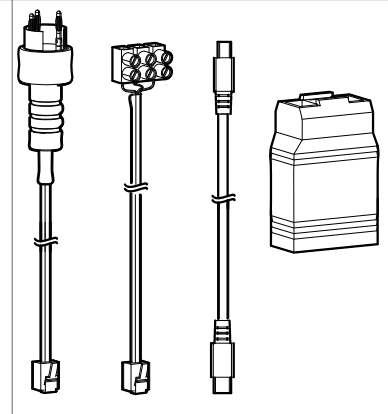
Accessories

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XAFP100F001

