

## P981-01xx

### Schaevitz Pressure Transducers for Steelmill Applications

- ▣ Measurement ranges 0 ... 350 bar [others on request]
- ▣ Pressure sealed gauge
- ▣ Accuracy 0.1 % FRO
- ▣ Output signal 4 ... 20 mA 2-wire
- ▣ Supply voltage 10 ... 36 VDC



These pressure sensor models were designed specifically to meet the requirements of accurate pressure measurement in hostile, harsh environments like in steel and aluminum rolling mill applications. Based on the popular P98x 4 ... 20 mA two wire series, the P981-01xx offer unique features not found on other types of pressure transducers.

- Measurement ranges 0 ... 350 bar [others on request]
- High overload capability
- Pressure connection with O-ring
- Built-in pressure restrictor
- High vibration and shock resistance
- High accuracy
- Integral electronics in 4-20mA 2-wire
- Transient suppressor to protect against voltage spikes
- Reverse voltage protection

All pressure transducers incorporate a proprietary fatigue enhanced diaphragm, which extends long term reliability and reduces degradation caused by a high number of pressure cycles, to withstand a large number of pressure cycles without changes in zero position.

The P981-01xx has built-in transient suppressor diodes to eliminate the effects of line voltage transient and is EMC compliant to CE Standards. The pressure transducer has also been fitted with an integral pressure restrictor virtually eliminating the possibility of damage due to very fast pressure changes, which might cause the sensor diaphragm into mechanical resonance.

The pressure connection is made by steel mill proven ¼" or ½" male adaptor with an 'o'-ring for sealing.

The electrical termination is done by a 6 m long, six core cable. As an option, the transmitter is available with longer cable or with a 6-pin male connector (female mating part included)

The transducers are available in measurement ranges from 0 ... 7 bar sg to 0 ... 700 bar sg. (Please change "xxxBAS" to range in bar).

#### Models

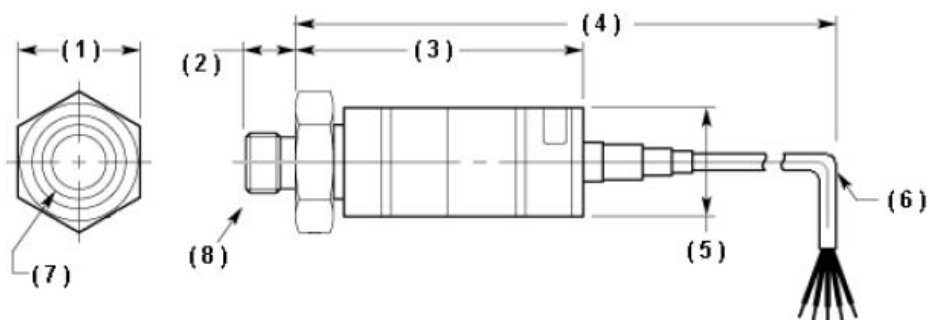
P981-0107-06M0-xxxBAS	Pressure connector ¼" male
P981-0120-06M0-xxxBAS	Pressure connector ½" male
P981-0121-06M0-xxxBAS	Pressure connector ½" male, vented
P981-0181-06M0-xxxBAS	Pressure connector ¼" male, frequency range 0 ... 900 Hz

## ■ Specifications

Pressure range:	0 ... 350 bar (other ranges from 0 ... 7 bar to 0 ... 700 bar on request)
Pressure limit:	5x full range pressure or 830 bar, whichever is less
Burst pressure:	20x full range pressure or 1500 bar, whichever is less
Pressure media:	Liquids and gases compatible with 17-4 PH or 1.4541/71
Temperature range:	
	compensated: -20 ... +80 °C (0 ... +100 °C optional)
	operable: -54 ... +120 °C
	storage: -54 ... +150 °C
Environmental sealing:	IP67 (fluid must not enter the ends of cable)
Mech. natural frequency:	approx. 20 kHz (diaphragm and sensor element)
Frequency range (-3 dB):	0 ... 350 Hz (Model P981-0181: 0 ... 900 Hz)
Acceleration response:	±0.02 % FRO/g
Vibration, max.:	surpasses Mil.Std. 810C, Methode 514-2, Curve L and EUROCAE ED14A/RTCA160A
Shock, max.:	1000 g for 5 ms will not damage the sensor
Supply voltage:	10 ... 36 VDC unstab., with reverse voltage protection
Voltage spike protection:	internal Transzorb diodes (no protection against constant overvoltage above 36 VDC)
Effect of change of supply voltage to output	<0.005 % FRO/V
Output signal:	4 ... 20 mA 2-wire
Output signal zero pressure:	4 mA (-0 %, +2 %)
Signal span rated pressure:	16 mA (±1 %)
Combined error (non-linearity, hysteresis and non-repeatability)	±0.1 % FRO typ., ±0.18 % FRO max.
Total error band:	
	-20/+80 °C: <±0.75 % typ.
	-40/+120 °C: <±1.2 % typ.
Long term stability:	<0.1 % FRO per year after burn-in, at constant pressure and temperature of 25 °C
Combined thermal zero and sensitivity error	max. 0.015 % FRO/K
Electrical connection:	Cable, 6 m, 6 core, screened, polyurethan (Hytrel 5555HS), diameter 5 mm
Pressure connection:	P981-0107: ¼" male thread with o-ring seal P981-0120: ½" male thread with o-ring seal P981-0121: ½" male thread with o-ring seal, vented P981-0181: ¼" male thread with o-ring seal
Weight:	approx. 150 grams + 25 grams/m cable

## ■ Dimensions

### P981-0107 and P981-0181:



1 30.0 mm (1.18 inch)

2 11.7 mm (0.46 inch)

3 82.3 mm (3.24 inch)

4 min. installation height  
h = 143 mm (5.63 inch)

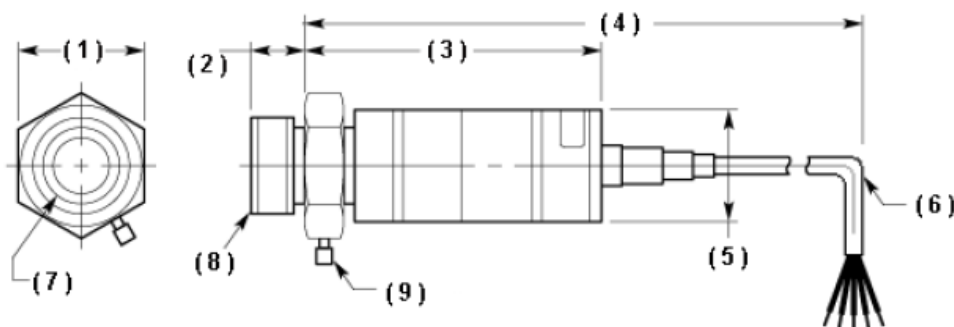
5 25.4 mm (1.00 inch)

6 6-wire cable, 2 wires used, 6 m long (cut off unused length), diameter 6 mm,  
min. bending radius r = 15 mm

7 O-ring groove 14 x 2 mm

8 Thread G 1/4" (1/4" BSP)

### P981-0120 and P981-0121:



1 30.0 mm (1.18 inch)

2 14.7 mm (0.58 inch)

3 82.3 mm (3.24 inch)

4 min. installation height  
h = 143 mm (5.63 inch)

5 25.4 mm (1.00 inch)

6 6-wire cable, 2 wires used, 6 m long (cut off unused length), diameter 6 mm,  
min. bending radius r = 15 mm

7 O-ring groove 26.2/26.0 22.0/21.8 mm, 1.05/1.0 deep

8 Thread G 1/2" (1/2" BSP)

9 Bleed screw (only for model P981-0121)

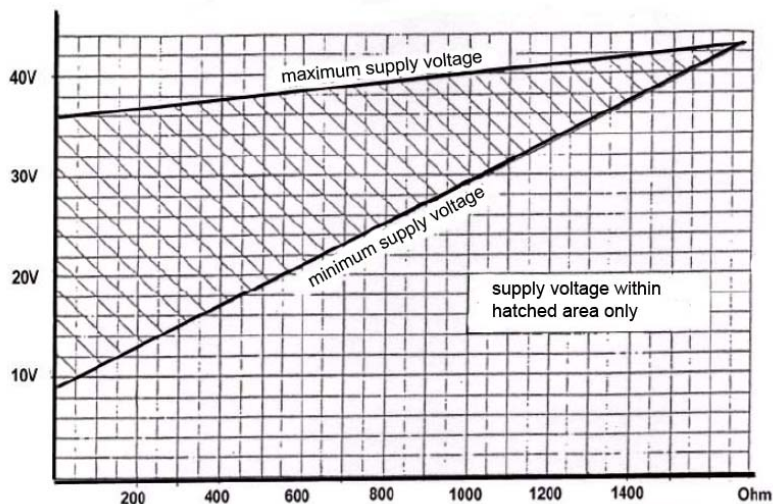
All dimensions in mm,  
approx. values.  
These drawings are for  
information only and not  
intended for construction  
purpose.  
Please ask for detailed  
drawings.

## Electrical Connections

The electrical connection of this transmitter has to be made according the local safety requirements (in Germany according to VDE 0100). This transmitter works in 2 wire technology, that means signal and supply voltage are done with the same cabling.

The transmitter can be driven with an unstabilised voltage between 10 and 36 VDC. The built-in electronics is protected against reverse polarity and against high-voltage transient spikes. Supply voltage must not exceed 36 VDC, otherwise the transmitter could be damaged.

The resistor applied in series with the transmitter should be within 0 and 1300 Ohm, according to the diagram.



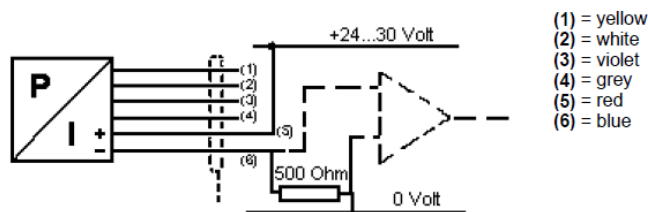
Max. loop resistance:

$$(36 - 9) \frac{1000}{15} = 1687 \text{ Ohm}$$

Max. supply voltage:

$$= (1687 \times 0.004) + 36 = 42.75 \text{ VDC}$$

## Wiring:



Due to continual product development, ALTHEN and partners reserve the right to vary the foregoing details without prior notice.