

**Process - Filling Level Probe - Pressure Transducer
E 100, E 300
based on matched Sensor Technology
with Remote Data Transmission, Modbus 1, Profibus DP**



The process pressure transducers are top quality products to meet highest demands. Being supplied with an unregulated DC voltage of 10 - 30 V, they deliver all standard output signals of the measuring technique. This technology allows excellent values with regard to temperature behaviour and long-term steadiness. Special features comprise the very high accuracy, sturdy and compact design as well as the flexibility to match different measurement problems. The standard type does not need a pressure transmitter. (a device to average the pressure)

Advantages

- Casings and all components getting in contact with the medium to be measured are made of CrNi-steel
- No additional sealing elements are required, as components wetted by the measuring medium are completely sealed
- Sealed-in electronic, resulting in an increased shock- and vibration resistance
- Measuring ranges according to DIN from 0 - 100 mbar up to 0 - 1000 bar with output signal 4 - 20 mA/2 wire, 0...20 mA/3-wire or bus-capable; Accuracy classes 0.05 0.25 0.5 1%

Pressure transmitter (Quick coupling)

For the separation of the medium with pressure membrane, pressure transmitters according to DIN 1851 are available. For higher temperatures up to + 250°C, it is recommended to use the type fitted with capillary tubing as the separation device, (distance between measuring location and pressure sensor: 1 - 15 m).

Field of application

Hydraulic, climate, heating, ventilation, testing facilities, auto- and aeronautical engineering, research institutes, mechanical engineering, apparatus construction, gas processing and gas distribution, oil processing (substitution of manometer), hydrostatic level measurement, food and beverage industry, environmental technique, paper and pulp production, water supply, process industry, chemistry, metal production, power plant technique

Technical data

	E 100 Class 0.25				E 101 Class 0.25							
Configuration	inside membrane manometer coupling acc. DIN 16288				front flush mounted membrane foodgrade							
Standard measuring ranges in bar	-1...0	-0.6...0	-0.4...4	-0.25...0	+ 0.1	+ 0.25	+ 0.4	+ 0.6	1	1.6	2.5	4
Overload limits in bar	-1.2	-1.2	-1.2	-1.2	1	1.2	1.2	1.2	2	3.2	5	8
Burst pressures in bar	-2	-3	-2	-2	1.5	2	2	3	4	5	10	15
Standard measuring ranges in bar	6	10	16	25	40	60	100	160	250	400	600	1000
Overload limits in bar	12	20	32	50	80	120	200	320	500	800	1200	1500
Burst pressures in bar	20	40	60	100	150	200	300	500	800	1500	2000	3000

Type of pressure	Relative pressure or absolute pressure (Option)	
Pressure tap	G 1/2 A according DIN 16288 (Manometer coupling) 0...100mbar...1000 bar (rel.)	
	G 1/2 A front flush mounted membrane with O-ring, 0...2,5...600 bar	
	G 1 A front flush mounted membrane with O-ring, 0...100 mbar...0...1,6 bar	
Components wetted by the measuring medium	Cr Ni - steel 1.4571 and 1.4542	
Casing material	Cr Ni-steel 1.4301	
Internal transmission liquid	Silicone grease only for devices <25 bar, respectively front flush mounted membrane	
Supply voltage	10...30 V DC	
Output current	4...20 mA, 2-wire, RA = 700 Ω at 24 V	
Setting time (10...90%)	≤ 1 ms	
Characteristic deviation	≤ 0.25% (0.05 Option)	
Hysteresis	≤ 0.1% of final value	
Repeatability	≤ 0.05% of final value	
Allowable temperature of measuring medium	-30...+100°C	
Ambient temperature	-10...+80°C	
Storage temperature	-40...+100°C	
Compensated range	0...80°C	
Temperature influence:	Zero point	≤ 0.2% of final value/10 k, about +/- 3%, by means of adjustable potentiometer
	Measuring span	≤ 0.2% of final value/10 k, about +/- 3%, by means of adjustable potentiometer
Output signal	4...20 mA, 2-wire	
Electrical connection	4-pin 90-degree connector according DIN 43650 - cable outlet, ventilated cable	
Protection class according DIN 4050	IP 65 (IP 67 at cable outlet), Reverse polarity-, overvoltage- and short circuit protection In case of intrinsically safe execution only reverse polarity protection	
Weight	about 0.20 kg (E 100)	
	about 0.35 kg (E 101)	
Relative pressure = Under- / Overpressure measurement against atmosphere, pe = hydrostatic level measurement		
Absolute pressure = against confined vacuum (pabs = 0)		

OEM - Pressure Transducer for relative- and absolute pressure (Option)

Type	E 110... Class 0.5	E 111... Class 0.5	E 300... Class 0.5	E 310..... E 320.... Class 0.5 class 1
Configuration	inside membrane acc. DIN 16288	front flush mounted membrane	inside membrane	inside membrane
Material	1.4305 (V2A)	1.4305 (V2A)	1.4571 + 1.4542	1.4571 + 1.4542
Process connection	G 1/2 A	G 1 A	G 1/4 A	G 1/4 A
Standard measuring range	-1...+1,...0.250 mbar	2,5,10,16,35,70,350 bar	0...250 mbar...1000 bar	0...1...1000 bar
Special measuring range acc. customer demands			see E 100	see E 100
Overload limit	double	double	double	double
Temperature of measuring medium	-50...+100°C	-50...+100°C	-30...+100°C	-30...+100°C
Compensated range	-50...+100°C	-50...+100°C	0...80°C	0...80°C
Repeatability	0.1%	0.1%	≥0.05% of final value	≥0.05% of final value
Setting time	1 ms	1 ms	1 ms	1 ms
Adjustability	fixed	fixed	zero point and final value +/- 5%	
Electrical connection	Plug according DIN 43650 with cable box		Plug DIN 43650 C with cable box	Plug DIN 43650 with cable box
Electrical protection types	Reverse polarity-, overvoltage- and short circuit protection			
Protection type according DIN 40050	IP 65			
EMV-Protection IEC 801	Intensity level 2			
Supply voltage	12...30 V DC			
Load at 24 V	600 Ω			

Options



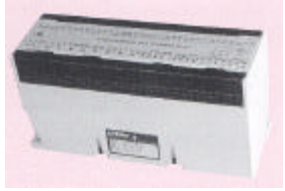
S1	0...20 mA, 3 - wire
S2	Measurement of oxygen (Oil-free and degreased)
S3	Special type for the food-industry, front flush mounted membrane with standard milk-tube screwing, no dead storages, simply to clean, internal transmission liquid vegetable oil, temperature of measuring medium 10...120°C, ambient temperature -10...+60°C, storage temperature -30...120°C (in connection with E 100)
S4	Integrated cooling zone for temperatures up to 150°C of the measuring medium
S5	Filling level probe (cable outlet F), attachment by means of an anchoring rope, 3 m long. Other lengths on request
S6	Absolute pressure (max. 16 bar)
S7	Precision pressure transducer with an accuracy of 0.05, without potentiometer, programming via RS 232 C - interface, only together with E 100 / 101
S11	Increased temperature of measuring medium, -40...+125°C (E 100/101)
S13	Other process connections, for example, NPT, on request
S14	4 - 20 mA, 3-wire
S20	LCD - Clip-on-display, 4 decades for all pressure transducers with plug according DIN 43650

Type designation code for process-pressure transducers

	0	90 - degree connector	type of connection
	1	cable outlet with cable, 1 m long	
	0/1	piezoresistive, 0.1...16 bar	type of sensor
	3	thin-film-gauge-DMS, 25...1000 bar	
	0	inside membrane	process-connection
	1	front flush mounted membrane	
	0	accuracy 0.25	accuracy
	1	accuracy 0.5	
	2	accuracy 1	
	1	standard execution	transducer / basic type
	2	-----	
	3	miniature execution, G 1/4" connection	

Technical data

Programmable Pressure Indicators / Pressure Multiplexer with modem connection for remote data transmission - Profibus DP - Modbus 1

	PMO 2105	DC 24.5	DC 16.5.16
			
Type of measurement	Pressure / Differential pressure	Pressure / Differential pressure	Pressure
Number of measuring points	1	6, 12, 24	16
2 - wire transducer supply	yes	no	yes
Multiplexed transducer supply	no	yes	no
Display	+/- 99999	+/- 19999	---
Peak value	yes	yes	no
Mean value	yes	yes	yes
Binary input	no	no	8
Binary output (relay)	3	4	8
Analog interface	0 (4)...20 mA	no	no
RS - 232 interface for remote data transmission	no	no	yes
RS - 485 Ednet-interface	yes	yes	yes
Profibus DP, modbus 1 via gateway MP 32	yes	yes	yes
Solution	+/- 15 bit	+/- 20 000	+/- 16 bit
Further data	Data sheet d 111	Data sheet d 125	Data sheet d 128

Field bus - Gateway MP 32

The Gateway MP 32 forms a bridge between the local field bus system "Ednet" (DIN 66019) and a host field bus system, profibus DP or modbus 1.

For further details see data sheet d 128

Application example

Hydrostatic level measurement with E 101 (relative pressure), front flush mounted membrane.

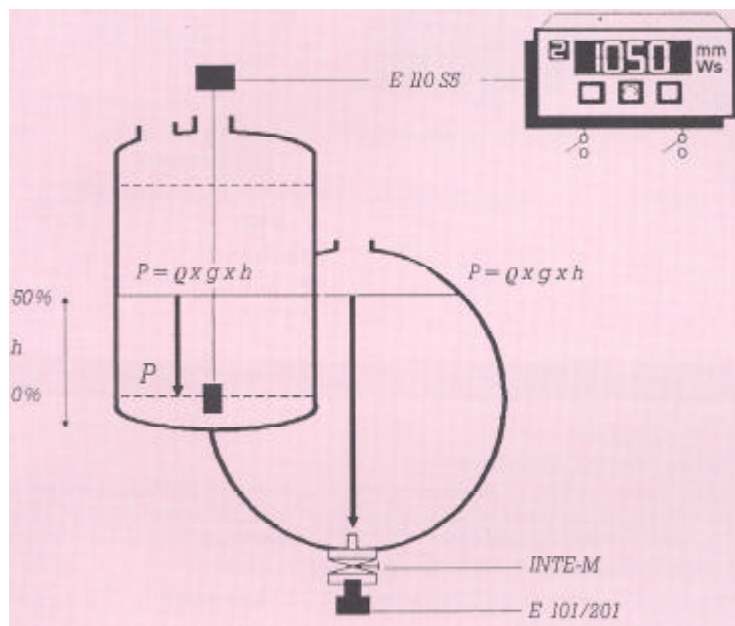
The physical basis of the hydrostatic measuring principle is defined by the following formula:

$$P = \rho \times g \times h$$

On condition, that the density ρ and the gravitational acceleration are constant, this will result in a proportional connection of $P \propto h$.

As the hydrostatic pressure is equal everywhere, the pressure transducer can be installed at the bottom or as a filling level probe by means of an anchoring rope.

Example:



Flowing status

To integrate sensors in processes by making use of a ball cock measuring instrument - shut-off device.

In the industry, sensors will be installed at the most different locations. Measuring will be done directly or indirectly.

Normally, direct measurements are more exact, however, an exchange or the maintenance of a sensor is complicated.

These problems do not arise with indirect measurements, but therefore this method is more difficult from the technical point of view and more expensive.

By making use of the ball-cock measuring instrument - shut-off device the advantages of the direct measurement can commonly be realized with those of the indirect advantages.

Further data:
Data sheet d 191

