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EGE

Brochure No. 7.2

Pressure Sensors

Special-Sensors for Automation

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Pressure Sensors

Technique & Application

Application

Devices of the series DN monitors pressure levels in pipes and containers. However, the high accuracy of its capacitive ceramic gauge head makes it an effective fill level monitor as well. It can record fill levels with an accuracy of one centimeter in containers that stand five meters tall. Measurement instruments with a 1000 mbar measurement range have proven to be very useful for these types of applications. When measuring the fill level of water, 10 mbar of pressure corresponds to 10 cm water height. The instrument displays the pressure value digitally. The fill level measurement is not effected by foam on the liquid's surface. Suspended matter inside the container will not effect the measurement either - as long as the matter does not disturb the pressure distribution in the area surrounding the sensor membrane. The pressure sensor is a compact device that contains all the measurement and evaluation electronics. It is designed for use with 24 V DC. In addition to many programmable features, it also provides two PNP switch outputs and a 4 to 20 mA current output. Additionally we offer a model with 2 switching points and a rapid programming feature which can be used, for example, for minimum and maximum detection in a container. A model with one analog output only is also availble.

Functionality

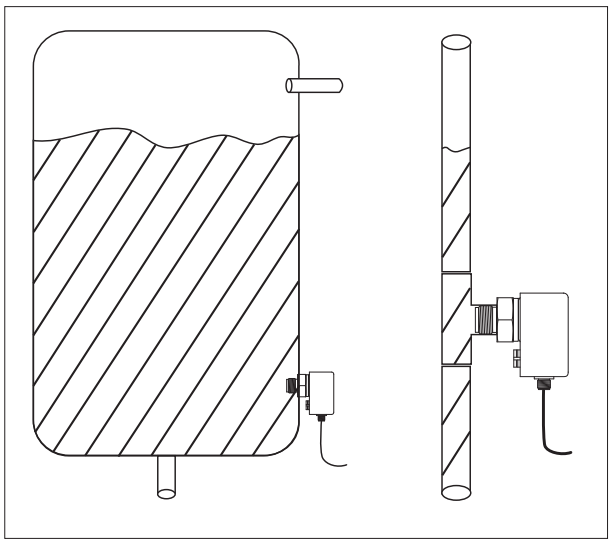
The pressure sensor is designed to be screwed into the wall of a pressure container or a pipe. The medium contacts the sensor's ceramic gauge head directly. A pressure mediating fluid is not used. The dry capacitive gauge head provides a high level of overload stability. The medium pressure will cause the measurement membrane to deflect by a maximum of 0.03 mm. At maximum deflection, the membrane lies against the ceramic carrier, thereby enabling an instrument designed for a pressure range of 0 to 16 bar to withstand an overload or pressure spike of up to 64 bar without being damaged. When the overload passes, the membrane returns to its neutral position without exhibiting any hysteresis. Deflection of the membrane against the ceramic carrier effects a capacity change that the integrated microprocessor-controlled evaluating electronics convert into a pressure-proportional DC signal of 4 to 20 mA. The measurement value is displayed on the four-digit LED display, whereby all values can be freely scaled to four digits with up to three decimal places.
The signal can be processed internally with buffering of up to 30 seconds, thereby making it possible to diminish pressure spikes in pipes.
Three buttons and a four-digit LED display enable the user to calibrate the sensor measurement range and to program the PNP switch outputs, and the buffering. Only a few button combinations are required to rapidly complete configuration. Both integrated PNP switch outputs are freely programmable, allowing the user to adjust the limit value, hysteresis, and functionality type (normally closed or normally open) as needed. A LED signals the switching condition of the PNP switch outputs. The programmed data is stored in an EEPROM, providing security even in the event of power failure. The sensors DN 752 GPP and DN 752 GA have a three-digit LED display and they allow a fast and easy programming for either two switchpoints or one analog output.

For measurement and monitoring of gases of low pressures (0...30 mbar) use the pressure controller DN 752 GA-003 with analog output.

Sealing materials

The sensor membrane must be resistant to the medium in which the sensor will be used. A fluoroelastomer (FPM) gasket is standard equipment.

Installation of the pressure sensor



Resistance characteristics

Sign	FPM	EPDM	NBR	Kalrez
Trade name	Viton	Keltan	Perbunan	Kalrez
Water	++	++	++	++
Aromatic hydrocarbons	++	-	-	++
Halogenated solvents	+	-	-	+
Acid	++	+	-	++
Lye	-	++	+	++
Vegetable oil Animal fat	++	-	++	++
Fuel Lubricating oil Hydraulic oil	++	-	+	++

Two switching points

Monitoring sensor for gases and fluids

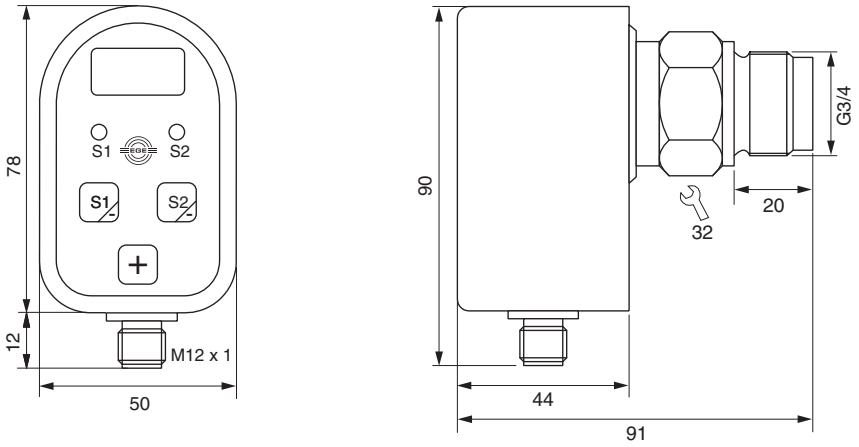
Fast and easy programming

Two independent switching points

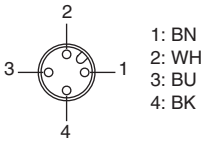
7-segment display
Display rotatable

Design	*DC PNP • G3/4*	

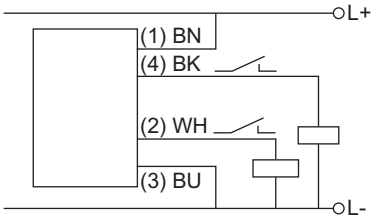
Dimensions



Sensing range	[bar]	0...1 relative	0...16 relative
Output		2 x PNP NO	
ID-No.		P72014	P72015
Type		DN 752 GPP-01	DN 752 GPP-16
Supply voltage	[V]	24 DC ±20%	
Switching current	[mA]	200	
Current consumption	[mA]	<50	
Ambient temperature	[°C]	−20...+70	
Medium temperature	[°C]	−20...+80	
Compressive strength	[bar]	5	48
Sensor material		AISI 316 Ti	
Material gauge head		Ceramic	
Sealing material		FPM	
Housing material		PBT	
Protection	[EN 60529]	IP 65	
Connection		M12 connector	



1: BN
2: WH
3: BU
4: BK



Accessories	Connecting cable type SLG 4-2 (Z00445)