

Series PRD-33X

High-precision piezoresistive differential pressure transmitters with integrated line pressure sensor

Series PRD-33X has been developed for applications requiring both high accuracy and high proof pressure in the low differential pressure range.

With a second, integrated sensor, the unit measures not only the differential pressure but also the line pressure. This allows compensation of the dependency on line pressure. The customer has access to both process variables, differential pressure and line pressure (absolute). Both process variables are calibrated over pressure and temperature and mathematically modelled, enabling the high accuracy to be achieved. Particularly noteworthy is the high proof pressure of the differential pressure sensor of ± 35 bar, even in the smallest differential pressure range of 350 mbar.

This opens up new possibilities for users.

For example, in liquefied gas tanks primarily filled with cryogenic liquid oxygen, nitrogen, carbon dioxide, or argon, the fill level can now be measured safely, precisely, and economically.

The built-in sensing element features a stainless steel diaphragm on one side (+ side). The pressure on the rear (- side) acts directly on the silicon of the pressure sensor chip. The floating mounting of the pressure transducer ensures maximum decoupling from mechanical forces. The insulated, encapsulated pressure sensor chip to determine system pressure (line pressure) is integrated in the metallic pressure transducer housing.

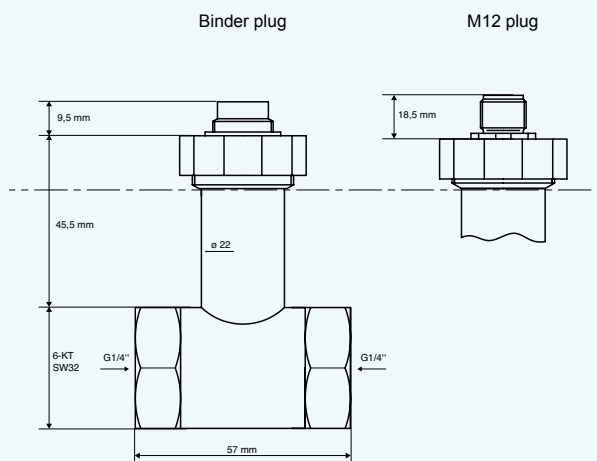
Another key to the success of the PRD-33X series from KELLER Pressure is the robust digital RS485 interface. It ensures information such as serial number, pressure ranges and filter settings as well as the process values of both pressure sensors (differential and absolute pressure and their temperatures) can be read out easily.

Features

- High-precision differential pressure measurement with compensated line pressure dependency
- Additional line pressure measurement
- High accuracy through pressure and temperature compensation
- Very high proof pressure
- Digital interface RS485
- Simple configuration via software
- Compact design for flexible installation situations

Applications

- Level measurement of technical gases in liquid gas tanks
- Differential pressure measurement with high one-sided proof pressure



ELECTRICAL CONNECTIONS

Function	Cable	Binder Series 723	M12 A-coded
GND	white	1	1
n.c.	red	2	2
Power supply	black	3	3
RS485A	blue	4	4
RS485B	yellow	5	5
CASE	Shield	Thread	Thread

use shielded cable

Specifications

Differential pressure measurement (P1):

Pressure range*	0...350 mbar	0...1 bar	0...3 bar
Accuracy**	± 0,1 %FS	± 0,05 %FS	± 0,05 %FS
Resolution	0,005 %FS	0,002 %FS	0,002 %FS
Total error band (-30...60 °C)***	± 1 %FS	± 0,4 %FS	± 0,2 %FS
Line pressure range	0...40 bar abs	0...40 bar abs	0...40 bar abs
Overpressure resistance one-sided	± 35 bar	± 35 bar	± 35 bar
Burst pressure		± 80 bar ± 80 bar	± 80 bar

*Other pressure ranges on request ** incl. linearity (BFS), hysteresis, repeatability *** incl. accuracy, temperature error, line pressure dependency

Absolute pressure measurement (P2) ⁽¹⁾:

Pressure range	0...40 bar abs
Accuracy**	0,1 %FS
Resolution	0,002 %FS
Total error band (-30...60 °C)***	0,3 %FS

⁽¹⁾ Measured on the positive (+) pressure connection

Digital interface	RS485
Voltage supply	8...32 VDC
Voltage insulation RS485	± 32 VDC
Power consumption (without communication)	< 8 mA

Pressure connection	G1/4 female
Electrical connection	Round plug 423/425/723 M16 x 0.75
	Round plug, M12x1
	Cable
Baud rate	9600 or 115200 baud
Start-up time (power supply ON)	< 250 ms
Compensated temperature range	-30...60 °C
Storage/operating temperature range	-40...80 °C
GND CASE isolation	10 MΩ @ 300 VDC
Degree of protection	Reverse polarity and overvoltage protection integrated
CE-conformity (EMC)	IP67 (plug 723, M12), IP68 (cable), degrees of protection are only valid with the corresponding mating plug in the connected state.
	EN 61000-6-1 to -6-4 / EN 61326-1 / EN 61326-2-3
Wetted parts	Stainless steel AISI 316L, silicon O-ring
Compatibility of medium	On the negative pressure connection additionally gold/tin and silicon/glass
	Oxygen, argon, nitrogen, nitrous oxide, CO ₂
Weight	On the positive pressure connection, also aggressive media
	approx. 400 g

Modbus interface

The X-line products have a digital interface (RS485 half-duplex), which supports the MODBUS RTU and KELLER bus protocols. Details of the communication protocols can be found at www.keller-pressure.com. To integrate the communication protocol into your own software, documentation, a Dynamic Link Library (DLL) and various program examples are available.

