

PTH

PRESSURE TRANSMITTERS WITH ANALOGUE OR DIGITAL OUTPUT



p nom:
25 - 40 - 60 - 100 - 160 - 250 - 400 bar

DESCRIPTION

This series of pressure transmitters has been designed in order to be used for the main industrial applications and on moving machines.

The main feature of this transmitter is to ensure its functioning also in harsh environments, especially for what concerns the fluid temperature range which can vary from a minimum of - 40 °C up to a maximum of + 120 °C.

The basis of this transmitter is the strain-gauge, which is powered by an electric circuit developed according to the SMT technology which ensures a high reliability and maximum resistance to vibrations and mechanical stress.

Every component into contact with the fluid is made of stainless steel and the pressure sensor is completely fluid-proof.

It is available with current output signal 4 ÷ 20 mA or with voltage output signal 0 ÷ 10 V.

Versions also available upon request are 0 ÷ 5 V and 0.5 ÷ 4.5 V, ratiometric.

The series includes also a version with output PNP transistor with the function of pressure switch.

All the transmitters are reverse polarity protected.

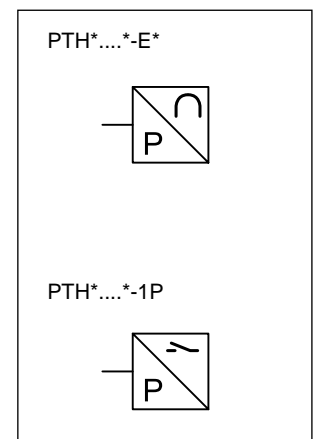
The protection class of the electrical connection for the version with DIN connector is IP65, while the version with the M12 connector has a protection class IP67.

TECHNICAL SPECIFICATIONS

Nominal pressure P _N	bar	25	40	60	100	160	250	400
Overpressure	x P _N	x 3	x 3	x 3	x 3	x 3	x 3	x 2.5
Burst pressure	x P _N	x 12	x 7	x 6.5	x 5	x 4.7	x 4	x 5

Accuracy (typical at 25 °C)	% P _N	± 0,5
Output signal:	current voltage switching PNP	4 ÷ 20 0 ÷ 10, 0 ÷ 5, 0.5 ÷ 4.5 1 output, 24 V
Sensor temperature range:	°C	- 40 / +120
Ambient and fluid temperature range: sealing in	FPM (standard) NBR EPDM	-20 / +120 -25 / +100 -40 / +125
Rise time (10%...90% of P _N)	ms	1
Hydraulic connection		1/4" BSP with seal
Housing and pressure connection		AISI 304
Mass	g	50

HYDRAULIC SYMBOLS



1 - IDENTIFICATION CODE

<div style="display: flex; justify-content: space-around; font-weight: bold; font-size: 1.2em;"> PTH- / - </div>	<p>Pressure transmitter</p> <p>High-dynamic performance</p> <p>Nominal pressure</p> <p>025 = 25 bar 040 = 40 bar 060 = 60 bar 100 = 100 bar 160 = 160 bar 250 = 250 bar 400 = 400 bar (other pressure values are available upon request)</p> <p>Series N.</p> <p>30 = transmitters with electrical connection type K10 31 = transmitters with electrical connection type K12 (the overall and mounting dimensions remain unchanged from 30 to 39)</p>
	<p>Electrical connection</p> <p>K10 = Reduced electrical connector type DIN 43650 K12 = Electrical connector M12 - 4 pin</p> <p>Analogue output signal (standard)</p> <p>E0 = 0 ÷ 10 V E1 = 4 ÷ 20 mA upon request only: E2 = 0 ÷ 5 V E5 = 0.5 ÷ 4.5 V ratiometric</p> <p>Seals:</p> <p>V = FPM seals for special fluids (standard) N = NBR seals for mineral oil EP = EPDM seals</p> <p> WARNING! The EPDM is not suitable for use with mineral oil. Verify the compatibility of EPDM with the used fluid!</p>

2 - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm

PTH-*/30*- *K10

PTH-*/31*- *K12

1	Integral seal type DIN 3869
2	Key: spanner 19 Tightening torque: 25 Nm
3	Damping restrictor
4	Electrical connector EN 17301-803 (ex DIN 43650) Micro C - PG7 Included in delivery
5	Electrical connector 5 pin EC5S/M12L/10 (to be ordered separately) code 3491001001 IP67 - PG7

3 - TECHNICAL CHARACTERISTICS

Electrical data

		E0	E1	E2	E5
Output signal		0 ÷ 10 V	4 ÷ 20 mA	0 ÷ 5 V	0.5 ÷ 4.5 V ratiometric
Supply voltage (U _S)	V CC	24 (15 ÷ 32)	24 (9 ÷ 32)	24 (9 ÷ 32)	5 (4.75 ÷ 5.25)
Max current consumption	mA	≤ 15	-	≤ 20	≤ 10
Load resistance	kΩ	≥ 5.0	see p. 4.2	≥ 5.0	≥ 5.0

Accuracy

Accuracy (typical at 25 °C)	% P _N	± 0.5
TEB Total error band (-25...+85 °C)	% P _N	± 1.75
NLH Non linearity and hysteresis (at 25 °C)	% P _N	± 0.2
TC Temperature coefficient	% P _N	± 0.03
Long-term stability after 1 year (at 25 °C)	% P _N	± 0.1

Environmental conditions

Electromagnetic compatibility (EMC): according to 2014/30/EU		Immunity 61000-6-2 Emissions 61000-6-4
Vibrations		50 G / 11 ms
Class protection according to EN 60529 with connector properly installed.	K10 K12	IP65 IP67

4 - TRANSMITTERS POWER SUPPLY

4.1 - Versions in voltage (E0, E2, E5 ratiometric)

These transmitters are equipped with voltage stabilizer which supplies the electric circuit with constant voltage, independently from power supply voltage.

We recommend a stabilized power supply voltage, within proper ranges as in table at point 3.

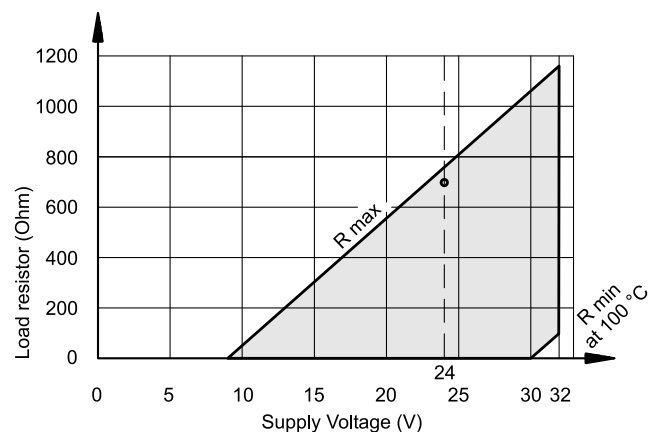
4.2 - Version in current 4 ÷ 20 mA (E1)

The transmitter works properly within an operating area (see diagram) that depends on both the voltage supply value and the external load resistance used to convert the signal.

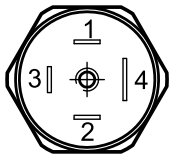
It is recommended to choose values close to the limit R_{max}, in order to have a wide signal that is easier to read.

We suggest supply voltage of 24 VDC and a load resistance of 700 Ohm.

min / max resistor vs. supply voltage E1 version
with P_{max} = 100%



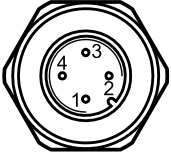
5 - ELECTRIC CONNECTIONS



K10
Connection DIN 43650 reduced
3 pin + GND



WARNING! Check that the connection cables are suitable for the temperature range intended for the use of the device.



K12
Connection M12x1
4 pin

6 - WIRING DIAGRAMS - K10 CONNECTION

voltage output - 3 wires + GND	Version			current output - 2 wires + GND	Version
	E0	E2	E5		E1
	24 V	24 V	5 V		24 V
<p>⊕ U_s (Supply) - 1</p> <p>⊕ Output — 2</p> <p>⊖ U_s (0V) — 3</p> <p>⊕ GND — 4</p>	0 ÷ 10 V	0 ÷ 5 V	0.5 ÷ 4.5 V	<p>⊕ U_s (Supply) — 2</p> <p>⊖ U_s (Output signal) 1</p> <p>⊕ GND — 4</p>	4 ÷ 20 mA
	GND	GND	GND		GND



WARNING! The pin assignment for the transducer PTH - */30*-E0K10 (DIN 43650 connection) differs from that of the previous series!

7 - WIRING DIAGRAMS - K12 CONNECTION

voltage output - 3 wires + GND	Version			current output - 2 wires + GND	Version
	E0	E2	E5		E1
	24 V	24 V	5 V		24 V
<p>⊕ U_s (Supply) 1</p> <p>⊕ Output — 2</p> <p>⊖ U_s (0V) — 3</p> <p>⊕ GND — 4</p>	0 ÷ 10 V	0 ÷ 5 V	0.5 ÷ 4.5 V	<p>⊕ U_s (Supply) — 1</p> <p>⊖ U_s (Output signal) 2</p> <p>⊕ GND — 4</p>	4 ÷ 20 mA
	GND	GND	GND		GND



WARNING! The pin assignment for the transducer PTH - */31*-E*K12 (M12 - 4 pin connection) differs from that of the previous series!

8 - VERSION WITH DIGITAL SWITCHING OUTPUT PNP

8.1 - Identification code

P T H - / 31 - 1PK12	
<p>Pressure transmitter ————</p> <p>High-dynamic performance ————</p> <p>Nominal pressure ————</p> <p>025 = 25 bar 040 = 40 bar 060 = 60 bar 100 = 100 bar 160 = 160 bar 250 = 250 bar 400 = 400 bar (other pressure values are available upon request)</p> <p>Series N. _____ (the overall and mounting dimensions remain unchanged from 30 to 39)</p>	<p>Electrical connection for connector M12 - 4 pin</p> <p>Output signal: 1 output PNP transistor</p> <p>Seals: V = FPM seals for special fluids (standard) N = NBR seals for mineral oil EP = EPDM seals</p> <p>⚠ WARNING! The EPDM is not suitable for use with mineral oil. Verify the compatibility of EPDM with the used fluid!</p>

8.2 - Overall and mounting dimensions

Please refer to the dimensions at point 2 for version PTH-*/31*-K12.

8.3 - Technical characteristics

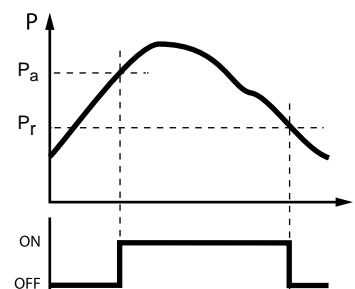
Please refer to the table at point 3 for accuracy and environmental conditions.

Output signal		1 PNP, U_s
Supply voltage (U_s)	V CC	24 (9 ÷ 32)
Max current consumption	mA	≤ 10
Switch point:	switch reset	% P_N 75 25
Switching resistance	Ohm	≤ 3
Switching frequency	Hz	≤ 60
Switch delay time	ms	0

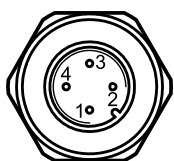
8.4 - Switch point

The transmitter changes state when the pressure achieves the switch point and again when the pressure drops down to the reset value.

The reset point is always lower than the switch point. These points are set as a percentage of the full scale value. The step between switch point and reset point must always be ≥ 1 % of the full scale value.



8.5 - Electrical connection and wiring diagram



K12
 Connection M12x1 - male
 4 pin



WARNING! Check that the connection cables are suitable for the temperature range intended for the use of the device.

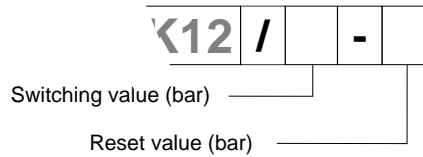
output PNP 1 transistor 1P	Version
	1P
	24 V
	U_s
	-
	0V

8.6 - Customized setting of the switch points

It is possible to order PNP transmitters with customized setting of the switch point, after evaluation of the request by our Sales Dept. Please also indicate any needs of customization of the delay time during the request phase.

Setting range of the switch point for customized setting	% P _N	1 ÷ 99
Step between switch point and reset point (switch point > reset point)	% P _N	≥ 1

The desired switch point and reset point have to be indicated at the end of the identification code.



Example: **PTH-060/31N1PK12/40-30**