

Microelectronic pressure transmitters PTM Series

- **Main error**
±0,5 %; ±0,25 %
- **Operating pressure range**
from 0-0,16 to 0-100 MPa
- **Operating temperature range**
from -40 to +85 °C
- **Output signals**
4-20 mA; 0-5 V; 0,5-4,5 V
- **Materials in contact with measuring medium: stainless steel and titanium alloy**



Applications

- ★ Industrial automatics
- ★ Oil and gas industry
- ★ Hydraulics/ Pneumatic
- ★ Pumping stations/ Compressors
- ★ Heat metering

- **The transmitters are intended for continuous conversion of pressure into unified analog electrical output signal**

Exclusive features

- ✓ Sensitive element of pressure transmitters is a two-layer sapphire-titanium membrane with monocrystal silicon resistance strain gauges.
- ✓ Monocrystal sapphire membrane is a perfect elastic element that due to connection with titanium acquires the best quality as to the deformation level, and preserves its elastic properties up to +400°C.
- ✓ Monocrystal silicon resistance strain gauges are automatically connected with sapphire (heteroepitaxy method) and provide almost no hysteresis or fatigue effects.
- ✓ Exceptional insulating properties and radiation resistance of sapphire enable to use the sensitive element within temperature range from -200 to +350°C under the effect of high electromagnetic interferences and radiation.
- ✓ Strain gauges elements are manufactured in groups by solid-state micro-electronic methods and provide high quality and good repeatability of the output parameters.
- ✓ Optimal metrological and operating performance of the transmitters, such as stability, reproducibility and interference resistance of the output signal, are achieved through the use of a specialized electronic circuit with high -scale integration and digital signal processing.
- ✓ High degree of reliability of the sensitive element and the electronic circuit does not require correction of the output signal range during operation.

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Datasheet

1 Nominal, overload and burst pressure

Designation	Nominal pressure, MPa	Overload pressure, MPa	Burst pressure, MPa
PTM1-0,16-...; PTM2-0,16-...; PTM3-0,16-...	0...0,16	-0,1...0,48	0,64
PTM1-0,25-...; PTM2-0,25-...; PTM3-0,25-...	0...0,25	-0,1...0,75	1
PTM1-0,4-...; PTM2-0,4-...; PTM3-0,4-...	0...0,4	-0,1...1,2	1,6
PTM1-0,6-...; PTM2-0,6-...; PTM3-0,6-...	0...0,6	-0,1...1,8	2,4
PTM1-1-...; PTM2-1-...; PTM3-1-...	0...1	-0,1...3	4
PTM1-1,6-...; PTM2-1,6-...; PTM3-1,6-...	0...1,6	-0,1...4,8	6,4
PTM1-2,5-...; PTM2-2,5-...; PTM3-2,5-...	0...2,5	-0,1...7,5	10
PTM1-4-...; PTM2-4-...; PTM3-4-...	0...4	-0,1...12	16
PTM1-6-...; PTM2-6-...; PTM3-6-...	0...6	-0,1...18	24
PTM1-10-...; PTM2-10-...; PTM3-10-...	0...10	-0,1...30	40
PTM1-16-...; PTM2-16-...; PTM3-16-...	0...16	-0,1...48	64
PTM1-25-...; PTM2-25-...; PTM3-25-...	0...25	-0,1...75	100
PTM1-40-...; PTM2-40-...; PTM3-40-...	0...40	-0,1...100	160
PTM1-60-...; PTM2-60-...; PTM3-60-...	0...60	-0,1...120	150
PTM1-100-...; PTM2-100-...; PTM3-100-...	0...100	-0,1...150	200

2 Operating temperature range

- 2.1 Version 1 from - 40 to + 85 °C
 2.2 Version 2 from + 5 to + 50 °C

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3 Accuracy parameters

3.1 Error limits

3.1.1 Main error within temperature range, % FS:

from + 5 to + 50 °C ±0,25

from - 40 to + 85 °C ±0,5

3.1.2 Total error within temperature range, % FS:

from + 5 to + 50 °C ±0,7

3.2 Variation, % FS 0,15

3.3 Additional ambient temperature error, % FS/10 °C ±0,25; ±0,45

3.4 Additional vibration error, % FS ±0,25

4 Electrical characteristics and parameters

4.1 Output signals:

4.1.1 For PTM1, mA 4-20

4.1.2 For PTM2, V 0-5

4.1.3 For PTM3, V 0,5-4,5

4.2 Load resistance (R_L), kOhm:

4.2.1 For PTM1, taking into account formula limitations

$R_L \leq (U_s - 9 \text{ V}) / 0,02 \text{ A}$ 0-1

4.2.2 For PTM2, PTM3 1-10

4.3 Insulation resistance at room temperature, MOhm 20

4.4 Electrical insulation strength (AC voltage), V 100

4.5 Supply voltage U_s, V 9-30

5 Mechanical characteristics

5.1 Vibration resistance (sinusoidal vibration):

Frequency range, Hz from 10 to 150

Acceleration amplitude, m/s² 50

6 Operating conditions

6.1 IP level IP65

6.2 Materials in contact with measuring medium: stainless steel
and titanium alloy.

6.3 Pressure media - gases, liquids and their mixtures
not aggressive to the titanium alloy (air, sea water,
5 % vitriol acid, chlorine water, chloride solutions,
oils, acetylene etc)

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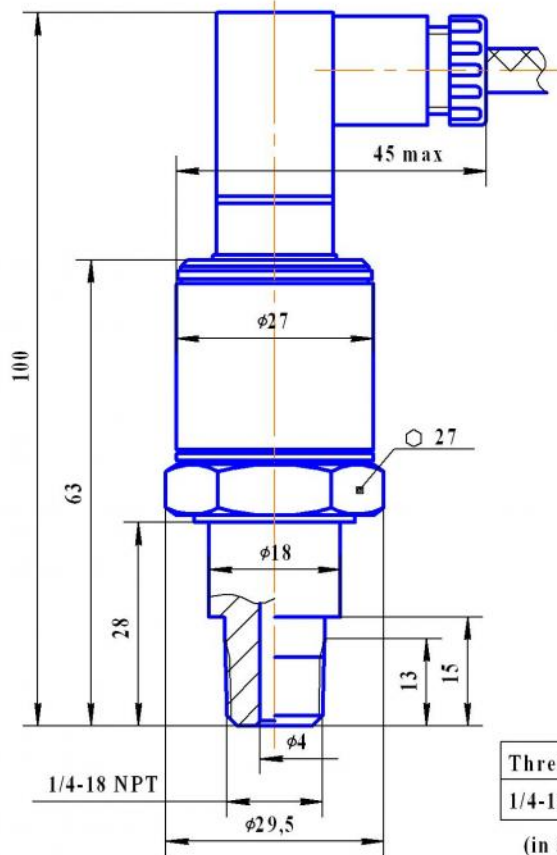
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7 Overall and mounting dimensions

7.1 Version with connector P2 Series

7.2 Version with connector GDM Series

PTM...-C1-K1/4

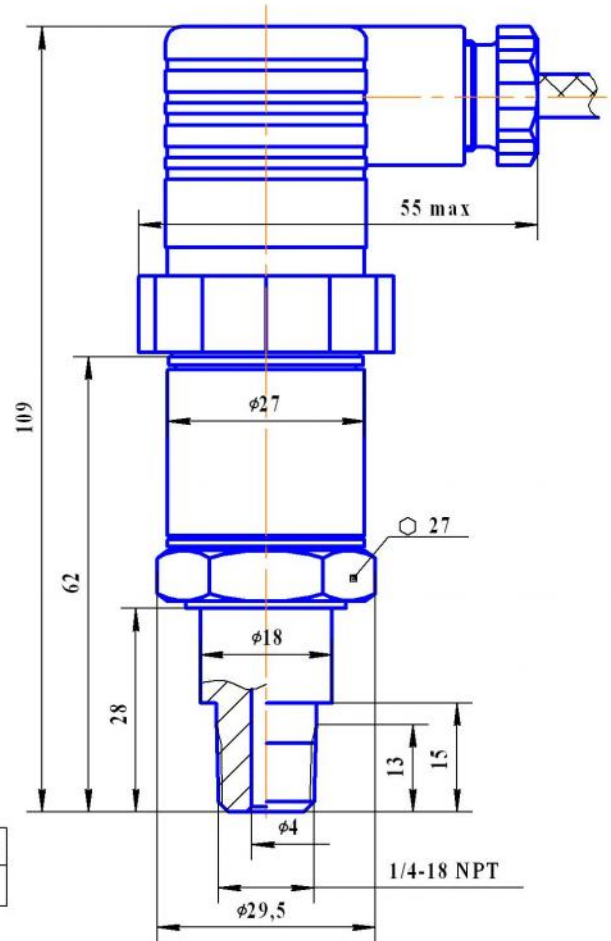


Drawing 1

Thread	Code
1/4-18 NPT	K

(in accord with
DIN 3866)

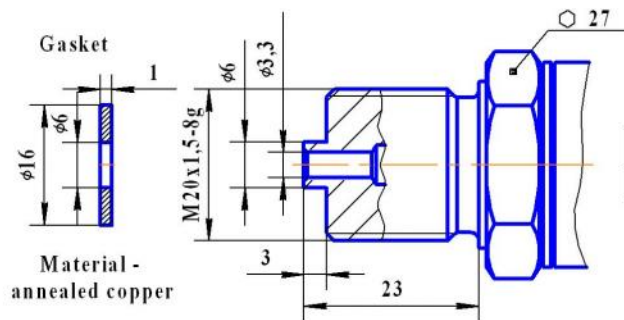
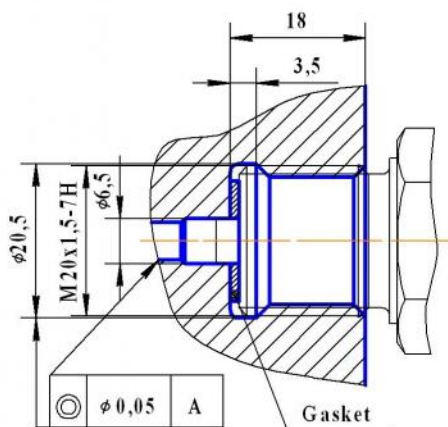
PTM...-C2-K1/4



Drawing 2

7.3 Thread design

Mounting diagrams

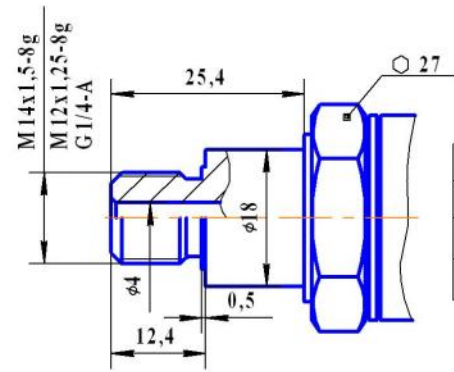
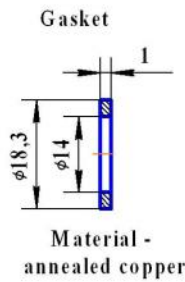
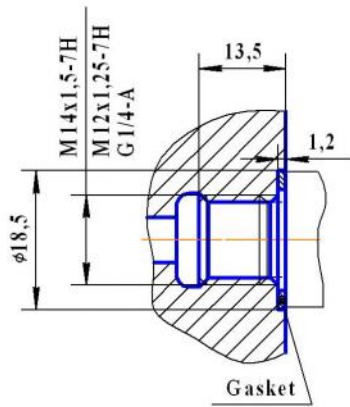


Thread	Code
M20x1,5-8g	M20

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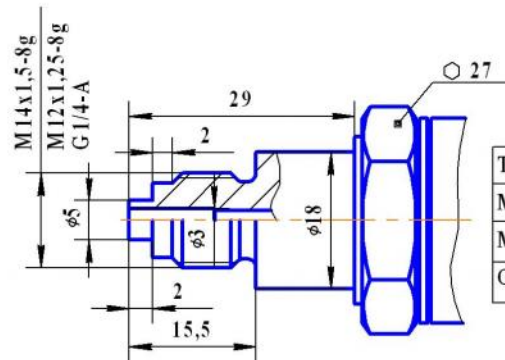
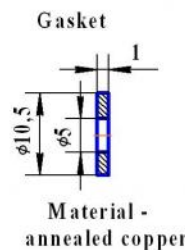
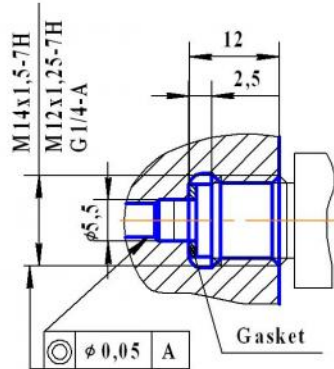
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PTM...-M14, PTM...-M12, PTM...-G1/4



Thread	Code
M 14x1,5-8g	M14
M 12x1,25-8g	M12
G 1/4-A	G1/4

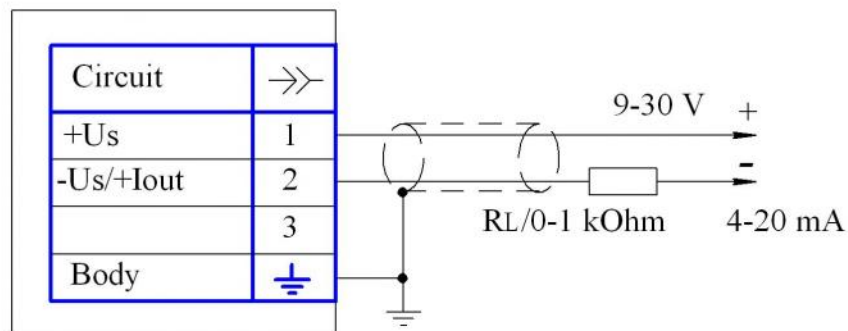
PTM...-M14A, PTM...-M12A, PTM...-G1/4A



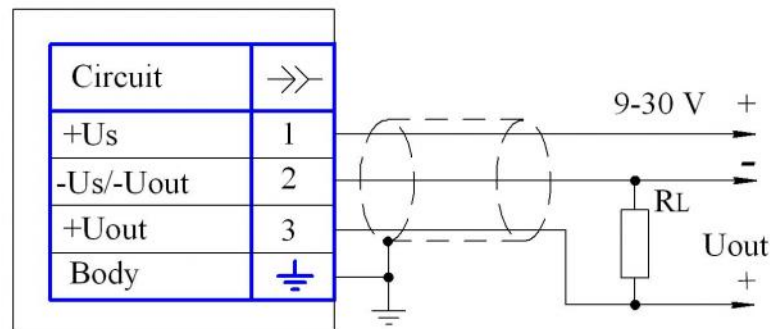
Thread	Code
M 14x1,5-8g	M14A
M 12x1,25-8g	M12A
G 1/4-A	GA1/4A

8 Electrical connection diagram

Pressure transmitters PTM1



Pressure transmitters PTM2, PTM3



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9 Type designation

PTMX -XXX - XXX - XX - XXXX

Series

Output signal version

- 1 - 4-20 mA;
- 2 - 0-5 V;
- 3 - 0,5-4,5 V

Upper gauge pressure limit

- 0,16; 0,25; 0,4; 0,6; 1; 1,6; 2,5; 4; 6;
- 10; 16; 25; 40; 60; 100 MPa

Limit error

- 0,25 % - main error (for transmitters with operating temperature range from + 5 to + 50 °C);
- 0,5 % - main error (for transmitters with operating temperature range from - 40 to + 85 °C);
- 0,7 % - total error (for transmitters with operating temperature range from + 5 to + 50 °C)

Electrical connection

- C1 - connector P2 Series;
- C2 - connector GDM Series

Thread code

- K - 1/4-18 NPT
- M20 - M20x1,5-8g;
- M14 - M14x1,5-8g;
- M12 - M12x1,25-8g;
- G1/4 - G1/4-A
- M14A - M14x1,5-8g, end seal;
- M12A - M12x1,25-8g, end seal;
- G1/4A - G1/4-A, end seal

Order example of pressure transmitter

Pressure transmitter of PTM Series with characteristics: output signal 4-20 mA, upper gauge pressure limit 1,6 MPa, limit of main error $\pm 0,25$ % (operating temperature range from + 5 to + 50 °C), with electrical connector P2 Series and fitting thread M20x1,5-8g:

Pressure transmitter PTM1-1,6-0,25 %-C1-M20.

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