



## Microelectronic gauge pressure transmitters PTM, PTM-M Series

- ▶ **Main error**  
 $\pm 0,5 \%$ ;  $\pm 0,25 \%$
- ▶ **Operating pressure range**  
PTM: from 0-0,16 to 0-100 MPa  
PTM-M: from 0-0,1 to 0-250 MPa
- ▶ **Operating temperature range**  
from  $-40$  to  $+85$  °C
- ▶ **Output signals**  
PTM: 4-20 mA; 0-5 V  
PTM-M: 4-20 mA;  
0,5-4,5 V (ratiometric)
- ▶ **Materials in contact with measuring medium**  
PTM: stainless steel and titanium alloy;  
PTM-M: 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

✓ 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 monocrystal silicon sensitive element located on a sapphire membrane and specialized electronic circuit with a high scale integration and digital signal processing.

✓ High overload capacity of the transmitters is achieved through the use of a two-layer sapphire-titanium membrane with monocrystal silicon resistance strain gages (“silicon-on-sapphire technology”). Monocrystal sapphire membrane is a perfect elastic element that due to connection with titanium acquires the best quality as to the deformation level.

✓ High degree of reliability of the sensitive element and the electronic circuit does not require correction of the output signal range during operation.

✓ Digital correction of the zero output signal.



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## Datasheet

### 1 Nominal, overload and burst pressure

Designation	Nominal pressure, MPa	Overload pressure, MPa	Burst pressure, MPa
PTM-M-0,1-...	0...0,1	-0,1...0,3	0,4
PTM(PTM-M)-0,16-...	0...0,16	-0,1...0,48	0,64
PTM(PTM-M)-0,25-...	0...0,25	-0,1...0,75	1
PTM(PTM-M)-0,4-...	0...0,4	-0,1...1,2	1,6
PTM(PTM-M)-0,6-...	0...0,6	-0,1...1,8	2,4
PTM(PTM-M)-1-...	0...1	-0,1...3	4
PTM(PTM-M)-1,6-...	0...1,6	-0,1...4,8	6,4
PTM(PTM-M)-2,5-...	0...2,5	-0,1...7,5	10
PTM(PTM-M)-4-...	0...4	-0,1...12	16
PTM(PTM-M)-6-...	0...6	-0,1...18	24
PTM(PTM-M)-10-...	0...10	-0,1...30	40
PTM(PTM-M)-16-...	0...16	-0,1...48	64
PTM(PTM-M)-25-...	0...25	-0,1...75	100
PTM(PTM-M)-40-...	0...40	-0,1...100	160
PTM(PTM-M)-60-...	0...60	-0,1...120	150
PTM(PTM-M)-100-...	0...100	-0,1...150	200
PTM-M-160-...	0...160	-0,1...175	240
PTM-M-200-...	0...200	-0,1...220	300
PTM-M-250-...	0...250	-0,1...275	375

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## 2 Operating temperature range

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

## 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  
for version with upper gauge pressure limit 0,1MPa ..... ±1

#### 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

- for version with upper gauge pressure limit 0,1MPa ..... ±0,6

### 3.4 Additional vibration error, % FS ..... ±0,25

## 4 Electrical characteristics and parameters

### 4.1 Output signals:

- 4.1.1 For PTM1, PTM1-M, mA ..... 4-20  
4.1.2 For PTM2, V ..... 0-5  
4.1.3 For PTM3-M, V ratiometric output signal  
(from 10 to 90 %  $U_s=5$  V) ..... 0,5-4,5

### 4.2 Load resistance ( $R_L$ ), kOhm:

- 4.2.1 For PTM1, PTM1-M, 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-M ..... 2-10

### 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

- 4.5.1 For PTM1, PTM1-M, PTM2 ..... 9-30  
4.5.2 For PTM3-M ..... 4,5-5,5

## 5 Mechanical characteristics

### 5.1 Vibration resistance (sinusoidal vibration):

- Frequency range, Hz ..... from 10 to 150  
Acceleration amplitude,  $\text{m/s}^2$  ..... 50

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## 6 Operating conditions

6.1 IP level ..... IP65

6.2 Materials in contact with measuring medium:

PTM - stainless steel and titanium alloy;

PTM-M - титановый сплав.

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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Lomonosov str.6, building 2, 302040 Orel, Russia  
Tel.: +7(4862) 30-34-50, e-mail: mail@microtensor.ru

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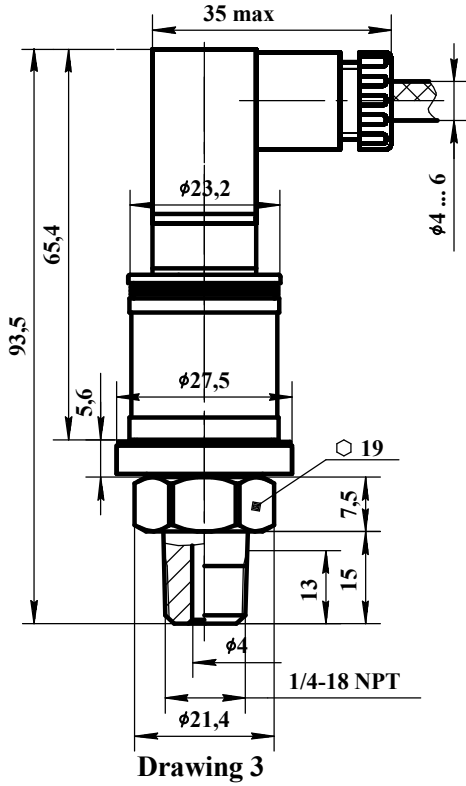
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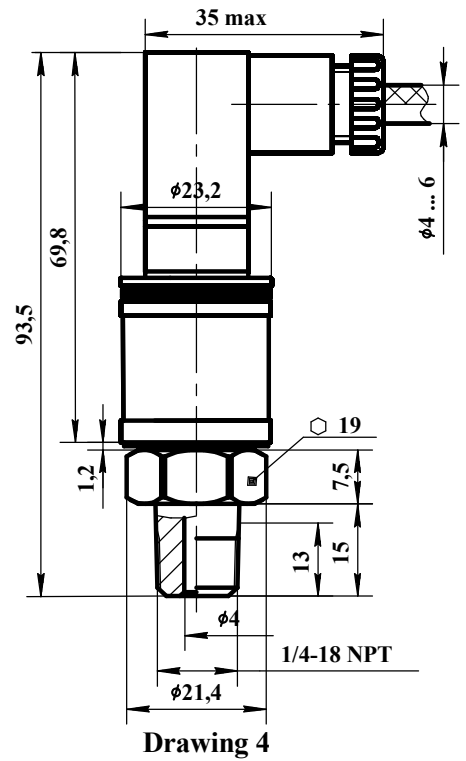
## 7.2 Pressure transmitters PTM-M

### 7.2.1 Version with connector P2 Series

PTM1(3)-M-0,1(0,16)-...-C1-K

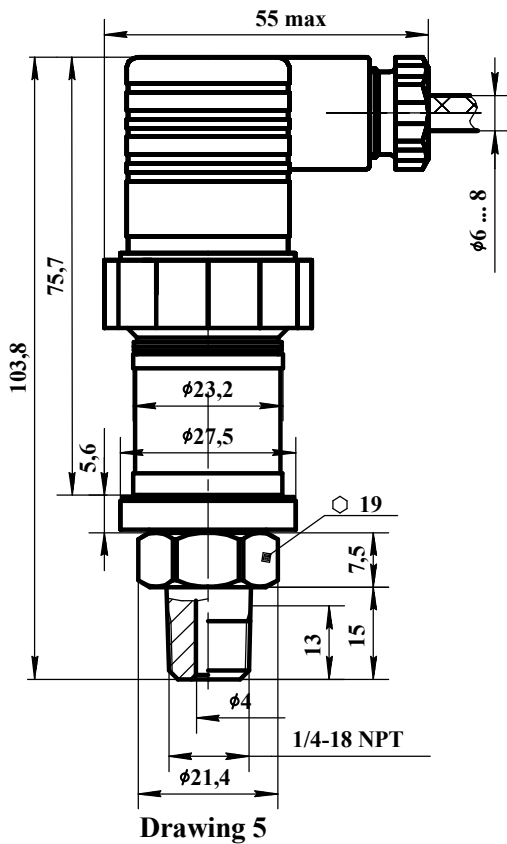


PTM1(3)-M-0,25(0,4-100)-...-C1-K

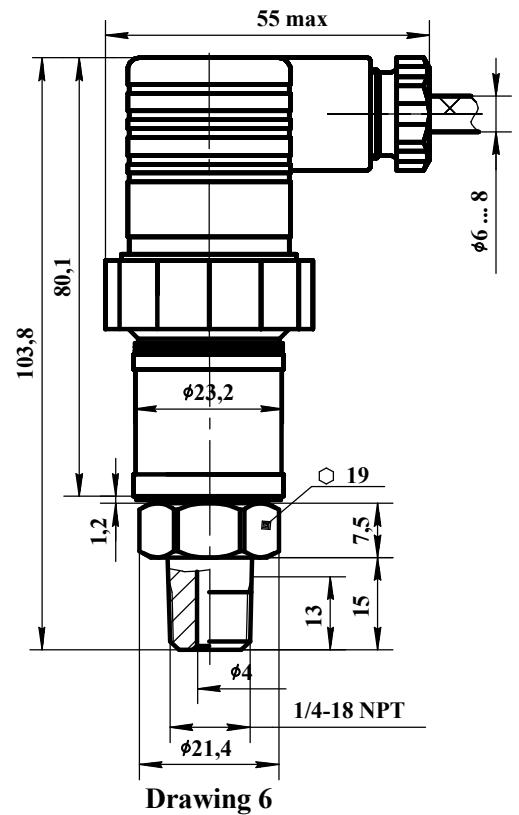


### 7.2.2 Version with connector GDM Series

PTM1(3)-M-0,1(0,16)-...-C2-K



PTM1(3)-M-0,25(0,4-100)-...-C2-K

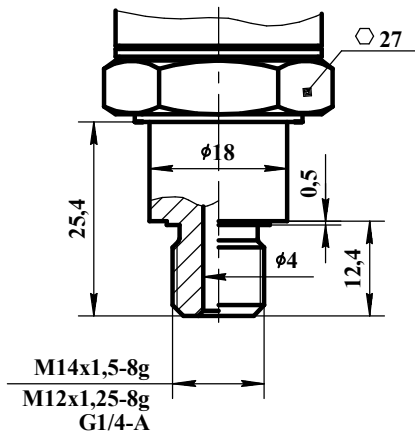


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Pressure transmitters PTM, PTM-M Series

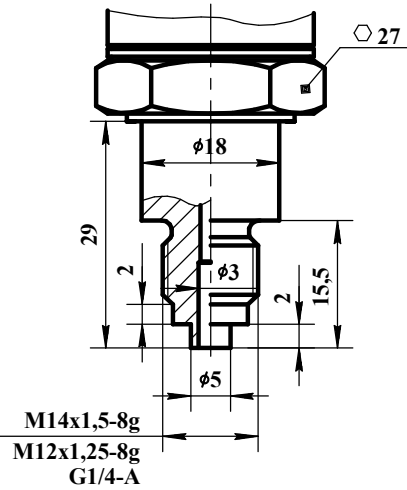
### 7.3 Thread design

**PTM1(2)-0,16(0,25...100)-  
...-M14(M12, G1/4)**



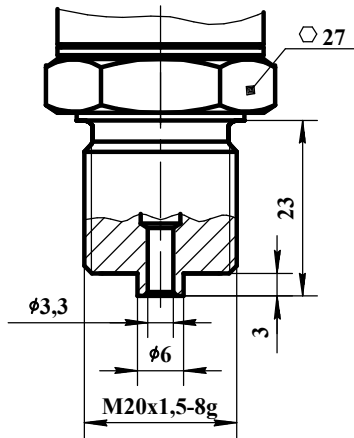
Thread	Code
M14x1,5-8g	M14
M12x1,25-8g	M12
G1/4-A	G1/4

**PTM1(2)-0,16(0,25...100)-  
...-M14A(M12A, G1/4A)**



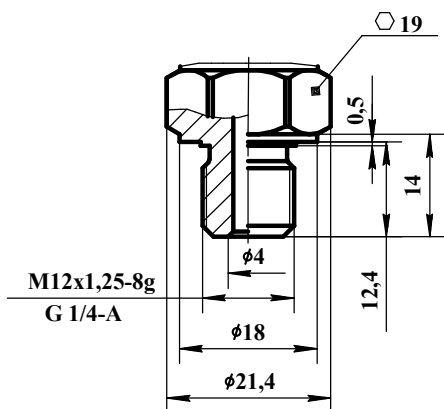
Thread	Code
M14x1,5-8g	M14A
M12x1,25-8g	M12A
G1/4-A	GA1/4A

**PTM1(2)-0,16(0,25...100)-...-M20;  
PTM1(3)-M-0,1(0,16...100)-...-M20**



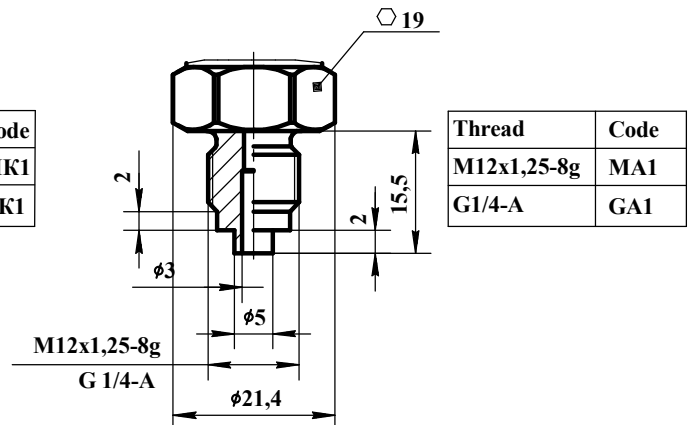
Thread	Code
M20x1,5-8g	M20

**PTM1(3)-M-0,1(0,16...100)-...-MK1;  
PTM1(3)-M-0,1(0,16...100)-...-GK1**



Thread	Code
M12x1,25-8g	MK1
G1/4-A	GK1

**PTM1(3)-M-0,1(0,16-250)-...-MA1;  
PTM1(3)-M-0,1(0,16...250)-...-GA1**



Thread	Code
M12x1,25-8g	MA1
G1/4-A	GA1

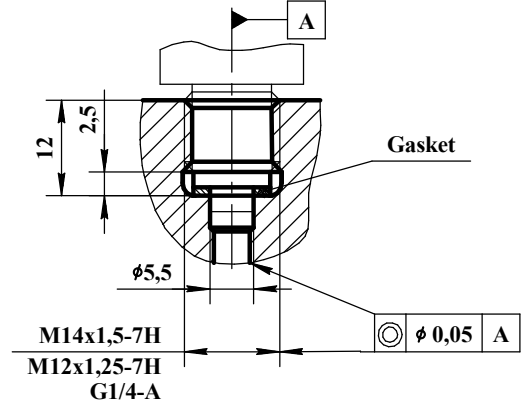
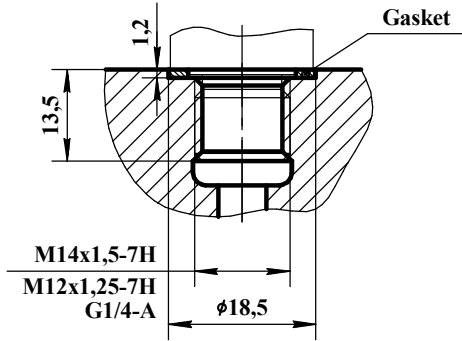
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## 8 Mounting diagrams

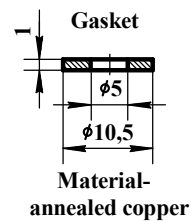
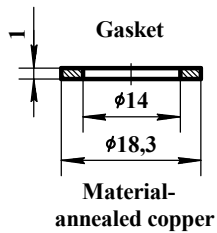
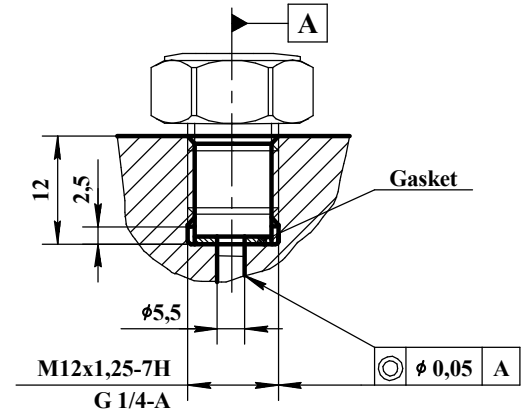
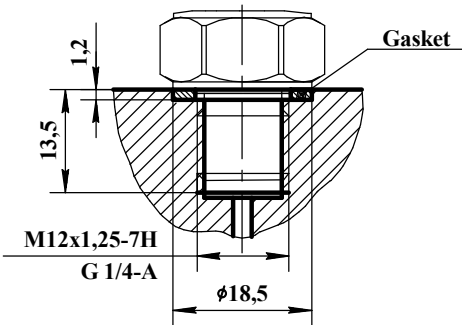
**PTM...-M14, PTM...-M12, PTM...-G1/4**

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

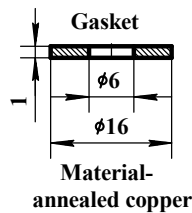
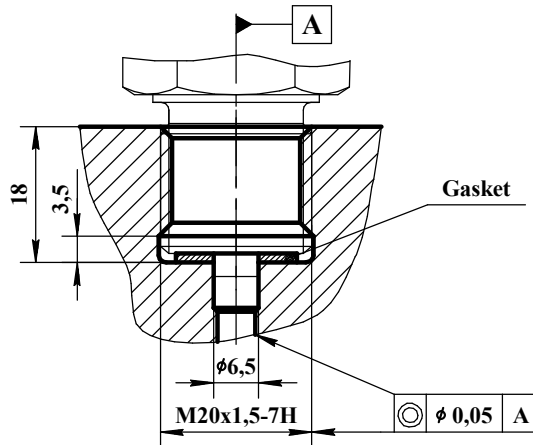


**PTM-M...-MK1, PTM-M...-GK1**

**PTM-M...-MA1, PTM-M...-GA1**



**PTM(PTM-M)...-M20**



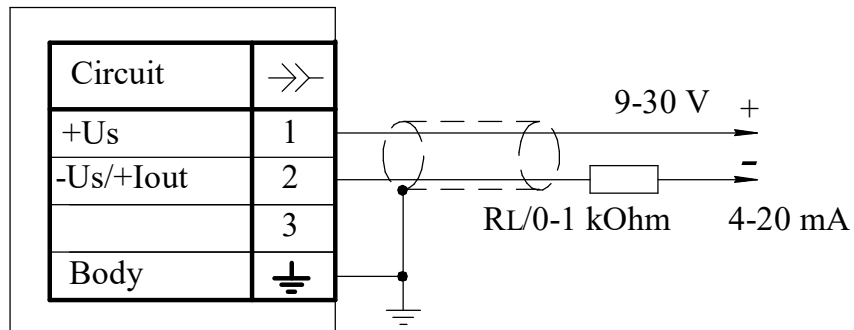
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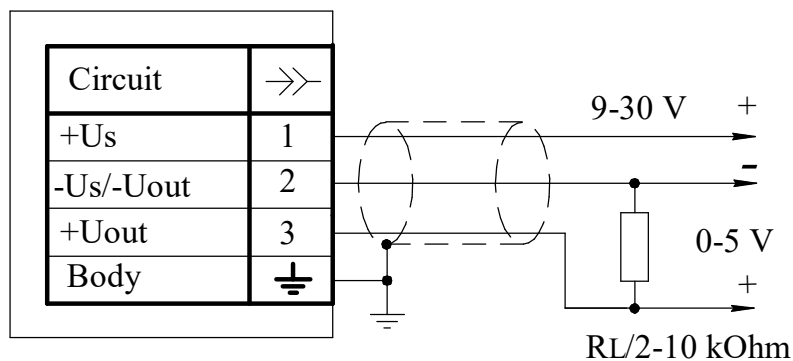


## 9 Electrical connection diagram

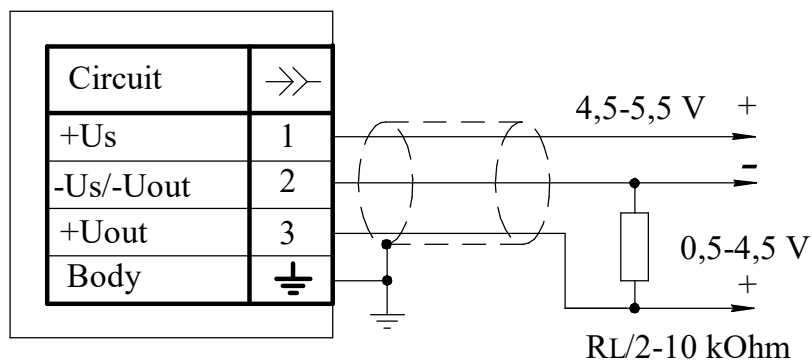
### Pressure transmitters PTM1, PTM1-M



### Pressure transmitters PTM2-M



### Pressure transmitters PTM3-M



## 10 Type designation

XXX X - M - XXX - XXXX - XX - XXXX

### Series

PTM, PTM-M

### Output signal version

1 - 4-20 mA for PTM, PTM-M;  
2 - 0-5 V for PTM;  
3 - 0,5-4,5 V ratiometric for PTM-M

### Version for the threaded fitting

M - titanium alloy

### Upper gauge pressure limit

0,1; 0,16; 0,25; 0,4; 0,6; 1; 1,6; 2,5; 4; 6;  
10; 16; 25; 40; 60; 100; 160; 200; 250 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);  
1 % - main error for PTM-M 0,1-... with operating temperature range from - 40 to + 85 °C;  
0,7 %T - 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; M14A - M14x1,5-8g, end seal for PTM;  
M20 - M20x1,5-8g; M12A(MA1) - M12x1,25-8g, end seal;  
M14 - M14x1,5-8g for PTM; G1/4A(GA1) - G1/4-A, end seal  
M12(MK1) - M12x1,25-8g;  
G1/4(GK1) - G1/4-A;

### 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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