AXTAL ADVANCED XTAL PRODUCTS

Specification	PDTK-P-MS	Rev.: 2	Date: 2016-04-25

Type: **Quartz Pressure and Temperature Transducer**

Features:

- **Precision pressure measurement**
- **Compensation of temperature error**
- **High accuracy pressure standard (0.06%)**
- **High resolution (0.0005%)**
- **Wide temperature range 0°C up to +150°C**
- **Low power consumption**
- **Optional serial digital interfaces**
- **Stainless steel bellow or membrane separator**
- **Stainless steel case**
- **Geophysical, downhole and barometric reference**

Parameter	min.	typ.	Max.	Unit	Condition
Pressure range (See order code) FS = Full Scale	0.07%FS 0.07%FS 0.07%FS 0.07%FS		20 40 60 80	MPa MPa MPa MPa	Option "P" = 20 Option "P" = 40 Option "P" = 60 Option "P" = 80
Operating temperature range (Note 1)	0 0 0	100 125 150	120 130 160	°C °C °C	Option "Y" = 1 Option "Y" = 2 Option "Y" = 3 (Note 2)
Pressure accuracy z (Note 3)			0.06 0.1 0.15	% % %	+100°C to +125°C +100°C to +150°C +100°C to +160°C
Additional error in operating temperature range over 10K interval			±0.05·z	%	
Temperature accuracy			±0.3	K	
Pressure resolution			±0.0005	%	
Temperature resolution			±0.005	K	
Frequency of Pressure signal (pin 4) f_p	46		52	kHz	Option "A" = 1
Frequency change over nom. pressure range	1.3		4.0	kHz	
Beat frequency of Pressure signal	400		600	Hz	Option "A" = 2, Note 4
Frequency output Temperature signal f_T	32		33	kHz	Option "A" = 1
Beat frequency of Temperature signal	300		1000	Hz	Option "A" = 2, Note 4
Zero drift			=z =2·z	% %	up to +125° up to +150°C
Pressure equation (2nd order) (Note 5)	$p = p_0+a_1 \cdot f_T+a_2 \cdot f_T^2+a_3 \cdot f_p+a_4 \cdot f_p^2+a_5 \cdot f_T \cdot f_p$				
Pressure equation (5th order) (Note 5)	$p = p_0+b_1 \cdot f_T+b_2 \cdot f_T^2+b_3 \cdot f_p+b_4 \cdot f_p^2+b_5 \cdot f_T \cdot f_p+b_5 \cdot f_T \cdot f_p+b_6 \cdot f_T^2 \cdot f_p+b_7 \cdot f_T \cdot f_p^2+ +b_8 \cdot f_T^2 \cdot f_p^2+b_9 \cdot f_p^3+b_{10} \cdot f_T \cdot f_p^3+b_{11} \cdot f_T^2 \cdot f_p^3$				
Supply voltage V_S	2.8		5.0	V	
Current consumption			10	mA	
Output amplitude			$0.7 \cdot V_S$	V	@ $R_L \geq 500\ \Omega$, $C_L < 20$ nF
Output load current (Note 6)			0.8 2	mA mA	Option "B" = 1 Option "B" = 2
Weight			300	g	MS-24: < 130 g

Notes:

1. Working time at maximum operating temperature 1000 h max.
2. Not for 80 MPa version
3. With application of temperature compensation algorithm
4. Frequency difference of the sensor to reference resonator RK206
5. Coefficients p_0, a_1 ...a_5 or b_1 ... b_{11} are supplied with transducer on request
6. Optional serial digital interface (RS-485, UART, I²C or SPI available on request

Ordering Code

P D T K – P - MS - X – Y – Z – A – B

Pressure range (MPa) – Option P

20	40	60	80

Package style

MS-22	MS-23;25	MS-24	MS-27	MS-30
see Fig.1	see Fig.2	see Fig.3	see Fig.4	see Fig.5

Operating Temperature Range – Option Y

1	2	3
0°C ~ 120°C (standard)	0°C ~ 130°C	0°C ~ 160°C

Pressure Accuracy – Option Z

1	2	3
0.15 %	0.1%	0.06 %

Frequency output – Option A

1	2
crystal frequency	beat frequency

Output load current – Option B

1	2
0.8 mA	2 mA

Example:

PDTK-40-MS-22-3-2-1-1
= pressure transducer with:
- pressure range from 0.07% FS to 40 MPa,
- «3» temperature range 0°C to +150 °C (limiting temperature +160) °C,
- «2» pressure accuracy 0.1 %,
- «1» frequency output = crystal frequency,
- «1» output current load 0.8 mA.

Enclosure drawings

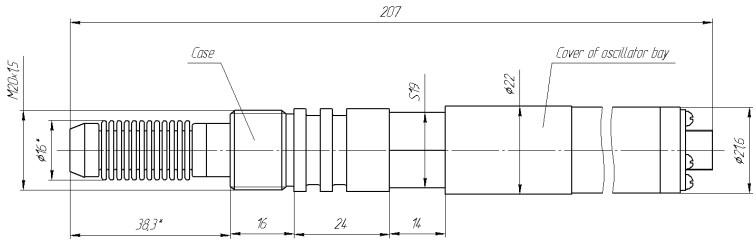

Fig.1: Package M-22

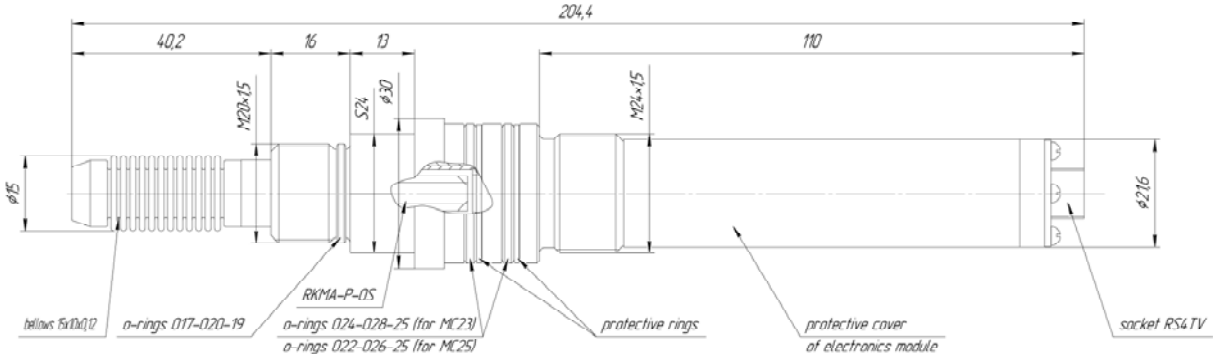

Fig. 2: Package M-23 and M-25

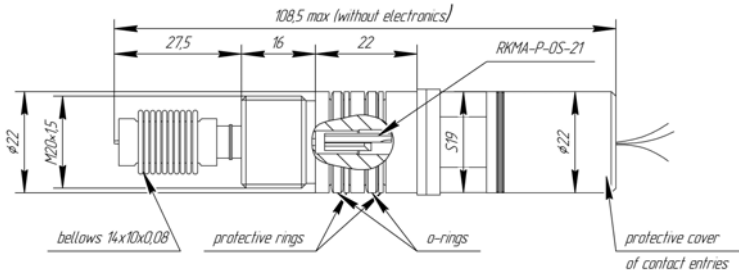

Fig. 3: Package MS-24

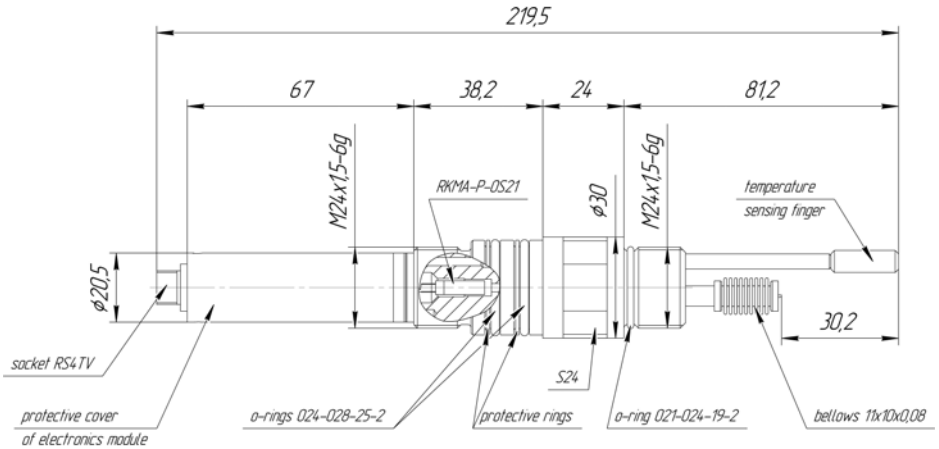

Fig. 4: Package MS-27

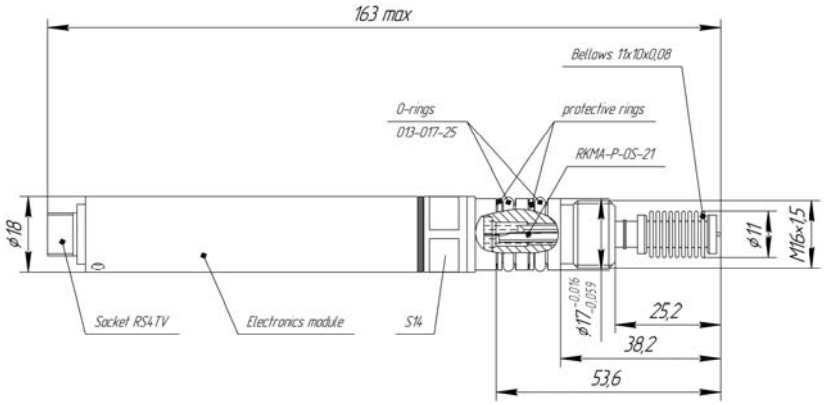

Fig. 5: Package MS-30

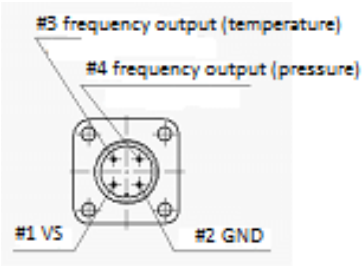

Fig. 6: Pin connections - connector PC4TB (Proelectro)

Revision History

Rev.	Drawing	Date [dd.mm.yyyy]	Remarks	Author	Checked
1	D0	28.10.2009	First issue	BN	BN
2	D1	22.04.2016	Major extensions	BN	BN
2	D"	25:04:2016	Package drawing M-23/M-25 corrected	BN	BN