



K10-SERIES Absolute/Gauge

Pressure Sensor Module – Absolute and Gauge Measurements

Pressure sensors from K10-series use High Stability MEMS dies. The die is mounted on T0-8-headers and used for absolute or relative (gauge) pressure measurement.

(V-, L- and M-Layout)

Note: The sensor consists of silicon, glass, glue and gold. Therefore, substances which might react with these materials should be tested before application

Features

- Very high long-term stability
- Very low pressure and temperature hysteresis
- High static pressures applicable
- Fast response
- High bridge resistance
- Fatigue free monocrystalline silicon diaphragm giving high load cycle stability
- Temperature sensor (spreading resistance)
- Filling volume consists of ceramic components (no swelling in oil)

Applications

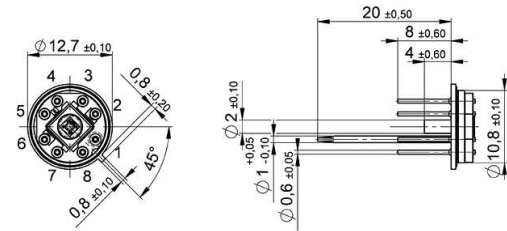
- Industrial transmitter
- Measurement and control

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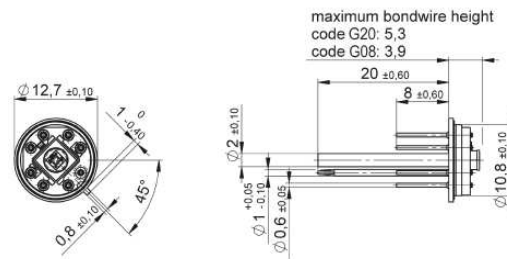
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Basic component



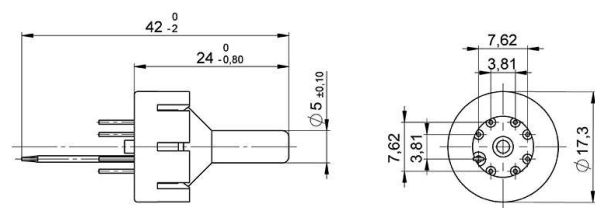
Absolute model

T08



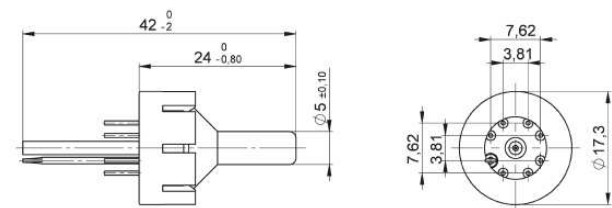
Relative model

Component delivery form



Weight approx. 4.5 g

Protection cap is suitable for applying pressure up to 10 bar



Weight approx. 4.5 g

Protection cap is suitable for applying pressure up to 10 bar

Common characteristics

Type	Pressure range	Parameter	min.	typ.	max.	Unit
K10-HS20V6B-06k0-GXX	6 kPa	Span voltage	60	100	140	mV@5V
K10-HS20V6B-10k0-GXX	10 kPa	Span voltage	60	100	140	mV@5V
K10-HS20L6B-35k0-GXX	35 kPa	Span voltage	60	100	140	mV@5V
K10-HS20L6B-50k0-G20	50 kPa	Span voltage	60	100	140	mV@5V
K10-HS20L6B-100k-A/GXX	100 kPa	Span voltage	60	100	140	mV@5V
K10-HS20M6B-250k-A/GXX	250 kPa	Span voltage	60	100	140	mV@5V
K10-HS20M6B-500k-A/GXX	500 kPa	Span voltage	60	100	140	mV@5V
K10-HS20M6B-01M0-GXX	1,0 MPa	Span voltage	60	100	140	mV@5V
K10-HS20M6B-03M0-A/GXX	3,0 MPa	Span voltage	60	100	140	mV@5V
K10-HS20M6B-10M0-A/GXX	10,0 MPa	Span voltage	200	250	300	mV@5V
K10-HS20M6B-20M0-A08	20,0 MPa	Span voltage	60	100	140	mV@5V
K10-HS20M6B-40M0-A08	40,0 MPa	Span voltage	60	100	140	mV@5V

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Electrical characteristics

(measured at 5V supply and 25°C, unless otherwise specified)

Parameter	min.	typ.	max.	Unit
Bridge resistance	5.000	6.000	7.000	Ω
Offset voltage	-25	0	+25	mV
Temperature coefficient of bridge resistance ¹	+0.07	+0.09	+0.11	%/K
Temperature coefficient of offset ¹ (>100kPa) (<250kPa)	-0.05 0.00	+0.01 +0.05	+0.05 +0.10	%F.S.S./K
Temperature coefficient of span ¹ (>10kPa)	-0.23	-0.20	-0.17	%F.S.S./K
Temperature hysteresis ¹		<0.05		±%F.S.S.
Pressure hysteresis		<0.10		±%F.S.S.
Linearity error ^{2,3} (higher than 10 kPa) p-range: higher than 10 MPa		<0.30 <1.00	0.50	±%F.S.S.

1) Measured from 25°C to 85°C.

2) End Point straight line setting.

3) Pressure applied onto the front side of the die

Maximum ratings

Type	Over Pressure (100kPa)		Burst Pressure (100kPa)	
	FS min.	RS min.	FS min.	RS min.
K10-HS20V6B-06k0-A/GXX	4	2*	>4	>2*
K10-HS20V6B-10k0-A/GXX	6	3*	>6	>3*
K10-HS20L6B-35k0-A/GXX	10	5	>10	>5
K10-HS20L6B-50k0-G20	10	5	>10	>5
K10-HS20L6B-100k-A/GXX	20	10	>20	>10
K10-HS20M6B-250k-A/GXX	40	20	>40	>20
K10-HS20M6B-500k-A/GXX	50	25	>50	>25
K10-HS20M6B-01M0-A/GXX	60	30	>60	>30
K10-HS20M6B-03M0-A/GXX	150	75	>150	>75
K10-HS20M6B-10M0-A/GXX	200	75	>200	>75
K10-HS20M6B-20M0-A08	600	–	>600	–
K10-HS20M6B-40M0-A08	800	–	>800	–

FS: Frontside; RS: Rearside; * 1bar for G-Type

Parameter	Limit Values			Unit
	min.	typ.	max.	RS min.
Operating temperature range	-40	-	+125	°C
Storage temperature range	-50	-	+130	°C
Supply Voltage		5	12	V

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Silicon Temperature Sensor (at $T_A = 25^\circ\text{C}$ and $I_B = 1\text{ mA}$, unless otherwise specified)

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Sensor resistance at $T_A=25^\circ\text{C}$	R_{th}	1,85	2,00	2,15	
Spread of temperature factor					
$T_A=-25^\circ\text{C}$	k_T	0,655	0,66	0,675	$k\Omega$
$T_A=0^\circ\text{C}$		0,812	0,82	0,826	
$T_A=25^\circ\text{C}$			1		
$T_A=50^\circ\text{C}$		1,195	1,20	1,215	
$T_A=75^\circ\text{C}$		1,42	1,43	1,45	
$T_A=100^\circ\text{C}$		1,66	1,68	1,70	
$T_A=125^\circ\text{C}$		1,92	1,95	1,98	

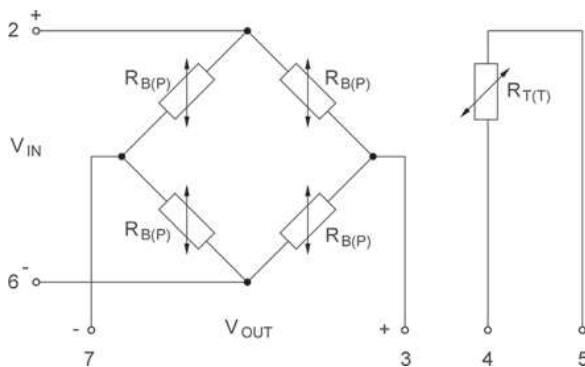
$$R_{th} = R_{25} \cdot (1 + \alpha \cdot \Delta T_A + \beta \cdot \Delta^2 T_A) [\Omega] = f(T_A)$$

$$\alpha = 7.68 \cdot 10^{-3} [K^{-1}], \beta = 1.88 \cdot 10^{-5} [K^{-2}]$$

$$k_T = \frac{R_{th}}{R_{25}} = 1 + \alpha \cdot \Delta T_A + \beta \cdot \Delta^2 T_A = f(T_A)$$

$$T = 25 + \frac{\sqrt{\alpha^2 - 4\beta} + 4\beta \cdot k_T - \alpha}{2\beta} [^\circ\text{C}]$$

Pin configuration:



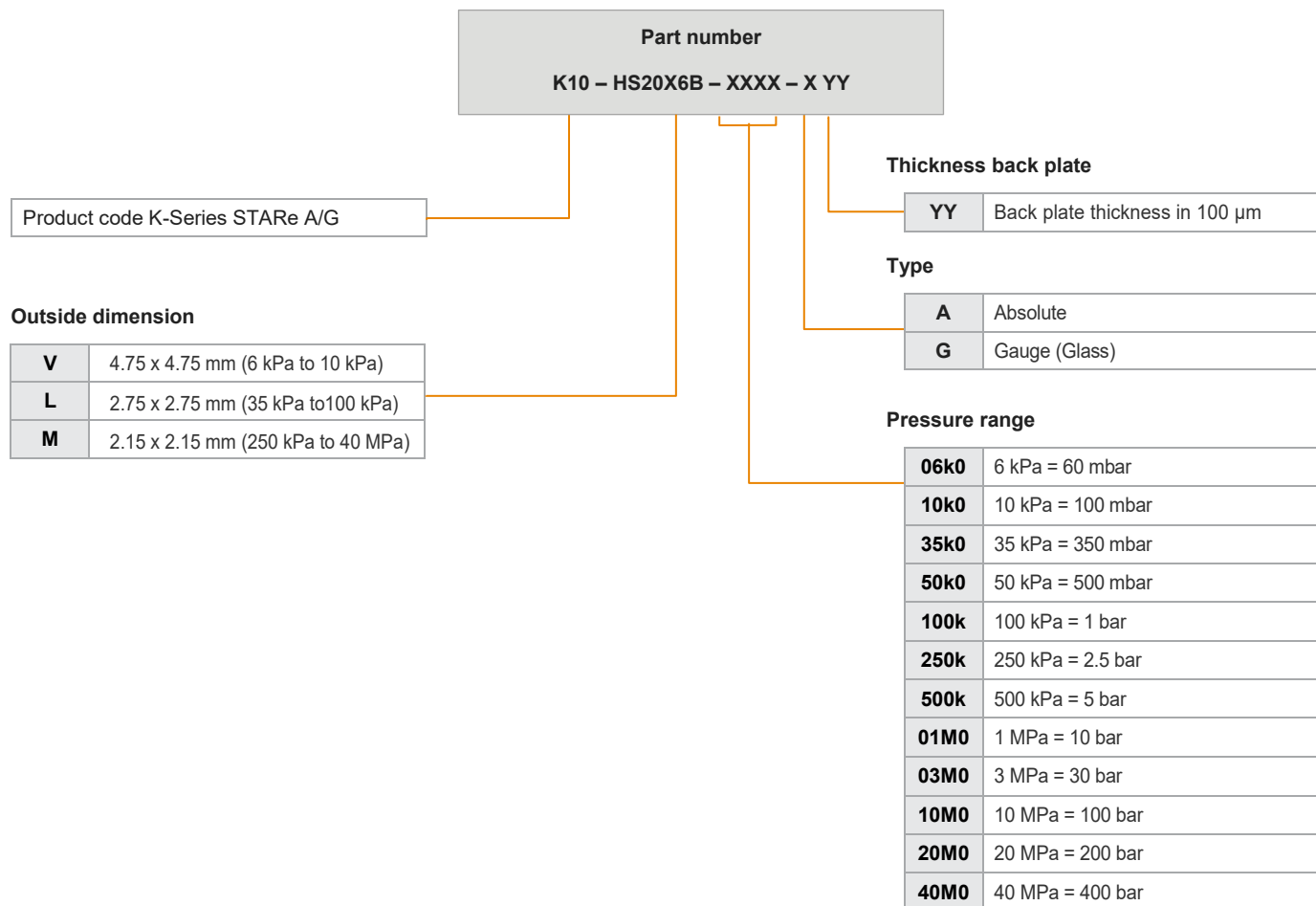
- 1 Capillary tube
- 2 V_{IN}
- 3 V_{OUT}
- 4 Temperature sensor
- 5 Temperature sensor
- 6 $-V_{IN}$
- 7 $-V_{OUT}$
- 8 Not connected

Polarity according to pressure onto frontside

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Pressure Sensor Module – Absolute and Gauge Measurements

Part numbering key



Ordering information (standard configurations)

Description	TE Part Number	Pressure Range	Type
K10-HS20V6B-06k0-A08 FSW	20024321-00	6 kPa	Absolute
K10-HS20V6B-10k0-A08 FSW	20024322-00	10 kPa	Absolute
K10-HS20L6B-35k0-A08 FSW	20024323-00	35 kPa	Absolute
K10-HS20L6B-100k0-A08 FSW	20024324-00	100 kPa	Absolute
K10-HS20M6B-250k0-A08 FSW	20024325-00	250 kPa	Absolute
K10-HS20M6B-500k0-A08 FSW	20024326-00	500 kPa	Absolute
K10-HS20M6B-01M0-A08 FSW	20024327-00	1 MPa	Absolute
K10-HS20M6B-03M0-A08 FSW	20024328-00	3 MPa	Absolute
K10-HS20M6B-10M0-A08 FSW	20024329-00	10 MPa	Absolute

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Description	TE Part Number	Pressure Range	Type
K10-HS20M6B-20M0-A08 FSW	20024330-00	20 MPa	Absolute
K10-HS20M6B-40M0-A08 FSW	20024331-00	40 MPa	Absolute
K10-HS20L6B-35k0-G08 FSW	20024314-00	35 kPa	Gauge
K10-HS20L6B-100k0-G08 FSW	20024315-00	100 kPa	Gauge
K10-HS20M6B-250k0-G08 FSW	20024316-00	250 kPa	Gauge
K10-HS20M6B-500k0-G08 FSW	20024317-00	500 kPa	Gauge
K10-HS20M6B-01M0-G08 FSW	20024318-00	1 MPa	Gauge
K10-HS20M6B-03M0-G08 FSW	20024319-00	3 MPa	Gauge
K10-HS20M6B-10M0-G08 FSW	20024320-00	10 MPa	Gauge
K10-HS20V6B-06k0-G20 FSW	20024304-00	6 kPa	Gauge
K10-HS20V6B-10k0-G20 FSW	20024305-00	10 kPa	Gauge
K10-HS20L6B-35k0-G20 FSW	20024306-00	35 kPa	Gauge
K10-HS20L6B-50k0-G20 FSW	20024307-00	50 kPa	Gauge
K10-HS20L6B-100k0-G20 FSW	20024308-00	100 kPa	Gauge
K10-HS20M6B-250k0-G20 FSW	20024309-00	250 kPa	Gauge
K10-HS20M6B-500k0-G20 FSW	20024310-00	500 kPa	Gauge
K10-HS20M6B-01M0-G20 FSW	20024311-00	1 MPa	Gauge
K10-HS20M6B-03M0-G20 FSW	20024312-00	3 MPa	Gauge
K10-HS20M6B-10M0-G20 FSW	20024313-00	10 MPa	Gauge

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