Pt100-XM
Class A resistance temperature sensors

- *Temperature sensors of accuracy class A*
- *Universal four-wire connection*
- *Robust stainless steel case in two sizes*
- *Polyurethane power cable with selectable length (0.5 m to 100 m)*
- *Direct connection to TEP06, Minilog transmitters (resolution up to 0.002 °C, high measurement accuracy)*

Basic description

Pt100 resistance temperature sensors have long been one of the most widely used temperature sensors due to their excellent long-term stability, high measurement accuracy, reliability and mechanical resistance.

The sensors we offer use Pt100 accuracy class A sensors from the leading Japanese manufacturer of RTD sensors, Hayashidenko. During their production, a thin layer of platinum is deposited on the ceramic substrate. This layer is photolithographically structured and with the help of a laser the resistance of the sensor is precisely set to the nominal value of the sensor. 100.0 R at 0.0 °C. The active layer is passivated by an insulating layer, which protects the sensor against external chemical and mechanical damage. The terminals of the sensor itself are made of gold-plated nickel.

The ceramic plate of the temperature sensor has dimensions of only 2.0x5.0x1.0 mm. Due to the mechanical resistance, the sensor together with the cable connection is encapsulated in a stainless steel housing.

The small dimensions of the sensor itself allow the construction of other special sensors with a very short time constant - for example for botanical and other similar applications.

Technical parameters

Accuracy class: A according to IEC60751: 2008
Tolerance: 0.15 + 0.002 * t [° C]
Temperature coefficient: 0.003851
Temperature range: -50 ° C to 120 ° C
Sensor dimensions: 2.0 x 5.0 x 1.0 mm
Permitted measuring current: <1 mA
Long term stability (200 ° C, 1000 hours): <0.02 ° C
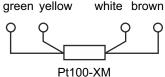**Time constant of unencapsulated Pt100 sensor:**
   air (90%, v = 3.0 m / s): 11 sec
   water (90%): 0.3 sec
Sensor body material: 316L stainless steel
MP sensor dimensions: diam. 6mm, length 37mm
VP sensor dimensions: diam. 10mm, length 110mm
Protection: IP68
Connection: four-core PUR cable

Color marking four-core connection Pt100-XM sensors

green yellow   white brown

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Maximum error of a Pt100 class A sensor depending on the measuring range

°C	-30	-20	-10	0	10	20	30	40	50	60
Δ°C	0,21	0,19	0,17	0,15	0,17	0,19	0,21	0,23	0,25	0,27

Temperature dependence of Pt100 sensor resistance

°C	0	1	2	3	4	5	6	7	8	9
-30	88,2222	87,8287	87,4331	87,0383	86,6434	86,2484	85,8532	85,4579	85,0625	84,6669
-20	92,1603	91,7671	91,3737	90,9802	90,5886	90,1929	89,7990	89,4050	89,0109	88,6166
-10	96,0861	95,6941	95,3019	94,9097	94,5173	94,1247	93,7321	93,3394	92,9465	92,5535
0	100,0000	99,6091	99,2182	98,8271	98,4359	98,0445	97,6531	97,2615	96,8698	96,4780
0	100,0000	100,3907	100,7814	101,1719	101,5623	101,9526	102,3427	102,7328	103,1227	103,5125
10	103,9022	104,2918	104,6813	105,0706	105,4599	105,8490	106,2380	106,6269	107,0156	107,4043
20	107,7928	108,1813	108,5696	108,9578	109,3458	109,7338	110,1216	110,5094	110,8970	111,2845
30	111,6718	112,0591	112,4463	112,8333	113,2202	113,6070	113,9937	114,3802	114,7667	115,1530
40	115,5392	115,9254	116,3113	116,6972	117,0830	117,4686	117,8541	118,2395	118,6248	119,0100
50	119,3951	119,7800	120,1648	120,5495	120,9341	121,3186	121,7030	122,0872	122,4713	122,8554
60	123,2392	123,6230	124,0067	124,3902	124,7737	125,1570	125,5402	125,9233	126,3063	126,0000