Temperature sensing elements Pt 100, TCR = 3850 ppm/ °C

Basic technical data

Sensing element	Thin-layer platinum resistor
Maximum range of working temperatures	-50° to 400°C *
Resistance at 0°C	100 Ω
Long term stability of resistance	0,03% after 1000 hours at t = 400°C
Recommended / Maximum dc measure current	1mA / 3mA

* The real range of working temperatures of a sensor is defined by the design and technology.

Temperature relation of the sensing element resistance is expressed by the following formula:

$R = 100 (1 + At + Bt^2 + C (t-100) t^3)$ in the range of temperatures –50° to 0°C
$R = 100 (1 + At + Bt^2)$ in the range of temperatures 0° to 400°C

for: **$A = 3{,}9083. 10^{-3}$ °C^{-1}** **$B = -5{,}775. 10^{-7}$ °C^{-2}** **$C = -4{,}183. 10^{-12}$ °C^{-4}**

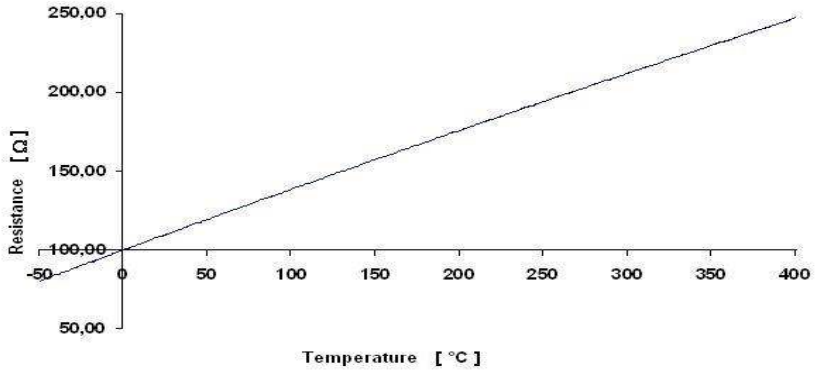
Relation the resistor value on temperature (in Ohm [Ω]):

°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-50	80,31									
-40	84,27	83,87	83,48	83,08	82,69	82,29	81,89	81,50	81,10	80,70
-30	88,22	87,83	87,43	87,04	86,64	86,25	85,85	85,46	85,06	84,67
-20	92,16	91,77	91,37	90,98	90,59	90,19	89,80	89,40	89,01	88,62
-10	96,09	95,69	95,30	94,91	94,52	94,12	93,73	93,34	92,95	92,55
0	100,00	99,61	99,22	98,83	98,44	98,04	97,65	97,26	96,87	96,48

°C	0	1	2	3	4	5	6	7	8	9
0	100,00	100,39	100,78	101,17	101,56	101,95	102,34	102,73	103,12	103,51
10	103,90	104,29	104,68	105,07	105,46	105,85	106,24	106,63	107,02	107,40
20	107,79	108,18	108,57	108,96	109,35	109,73	110,12	110,51	110,90	111,29
30	111,67	112,06	112,45	112,83	113,22	113,61	114,00	114,38	114,77	115,15
40	115,54	115,93	116,31	116,70	117,08	117,47	117,86	118,24	118,63	119,01
50	119,40	119,78	120,17	120,55	120,94	121,32	121,71	122,09	122,47	122,86
60	123,24	123,63	124,01	124,39	124,78	125,16	125,54	125,93	126,31	126,69
70	127,08	127,46	127,84	128,22	128,61	128,99	129,37	129,75	130,13	130,52
80	130,90	131,28	131,66	132,04	132,42	132,80	133,18	133,57	133,95	134,33
90	134,71	135,09	135,47	135,85	136,23	136,61	136,99	137,37	137,75	138,13
100	138,51	138,88	139,26	139,64	140,02	140,40	140,78	141,16	141,54	141,91
110	142,29	142,67	143,05	143,43	143,80	144,18	144,56	144,94	145,31	145,69
120	146,07	146,44	146,82	147,20	147,57	147,95	148,33	148,70	149,08	149,46
130	149,83	150,21	150,58	150,96	151,33	151,71	152,08	152,46	152,83	153,21
140	153,58	153,96	154,33	154,71	155,08	155,46	155,83	156,20	156,58	156,95
150	157,33	157,70	158,07	158,45	158,82	159,19	159,56	159,94	160,31	160,68
160	161,05	161,43	161,80	162,17	162,54	162,91	163,29	163,66	164,03	164,40
170	164,77	165,14	165,51	165,89	166,26	166,63	167,00	167,37	167,74	168,11
180	168,48	168,85	169,22	169,59	169,96	170,33	170,70	171,07	171,43	171,80
190	172,17	172,54	172,91	173,28	173,65	174,02	174,38	174,75	175,12	175,49
200	175,86	176,22	176,59	176,96	177,33	177,69	178,06	178,43	178,79	179,16
210	179,53	179,89	180,26	180,63	180,99	181,36	181,72	182,09	182,46	182,82
220	183,19	183,55	183,92	184,28	184,65	185,01	185,38	185,74	186,11	186,47
230	186,84	187,20	187,56	187,93	188,29	188,66	189,02	189,38	189,75	190,11
240	190,47	190,84	191,20	191,56	191,92	192,29	192,65	193,01	193,37	193,74
250	194,10	194,46	194,82	195,18	195,55	195,91	196,27	196,63	196,99	197,35
260	197,71	198,07	198,43	198,79	199,15	199,51	199,87	200,23	200,59	200,95
270	201,31	201,67	202,03	202,39	202,75	203,11	203,47	203,83	204,19	204,55

280	204,90	205,26	205,62	205,98	206,34	206,70	207,05	207,41	207,77	208,13
290	208,48	208,84	209,20	209,56	209,91	210,27	210,63	210,98	211,34	211,70
300	212,05	212,41	212,76	213,12	213,48	213,83	214,19	214,54	214,90	215,25
310	215,61	215,96	216,32	216,67	217,03	217,38	217,74	218,09	218,44	218,80
320	219,15	219,51	219,86	220,21	220,57	220,92	221,27	221,63	221,98	222,33
330	222,68	223,04	223,39	223,74	224,09	224,45	224,80	225,15	225,50	225,85
340	226,21	226,56	226,91	227,26	227,61	227,96	228,31	228,66	229,02	229,37
350	229,72	230,07	230,42	230,77	231,12	231,47	231,82	232,17	232,52	232,87
360	233,21	233,56	233,91	234,26	234,61	234,96	235,31	235,66	236,00	236,35
370	236,70	237,05	237,40	237,74	238,09	238,44	238,79	239,13	239,48	239,83
380	240,18	240,52	240,87	241,22	241,56	241,91	242,26	242,60	242,95	243,29
390	243,64	243,99	244,33	244,68	245,02	245,37	245,71	246,06	246,40	246,75
400	247,09									

Characteristic of the sensing element



Accuracy classes of the sensing element

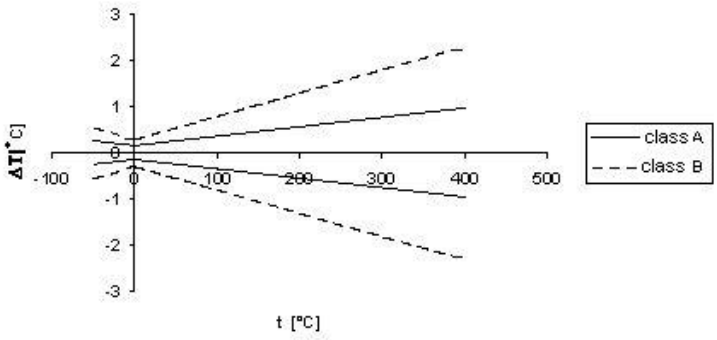
Sensing elements are produced in two basic accuracy classes with tolerance fields which are specified by the following formula:

Class A: **ΔT = ± (0,15 + 0,002 | t |) in °C**
Class B: **ΔT = ± (0,30 + 0,005 | t |) in °C**

| t | is absolute temperature value in °C

Temperature [°C]	**Resistance [Ω]**	**Class A**		**Class B**	
		ΔT [°C]	**ΔR [Ω]**	**ΔT [°C]**	**ΔR [Ω]**
-50	80,31	± 0,25	± 0,10	± 0,55	± 0,22
0	100,00	± 0,15	± 0,06	± 0,30	± 0,12
100	138,51	± 0,35	± 0,13	± 0,80	± 0,30
200	175,86	± 0,55	± 0,20	± 1,30	± 0,47
400	247,09	± 0,95	± 0,33	± 2,30	± 0,79

Tolerance field



Temperature sensors of the company SENSIT s.r.o. based on Pt 100/3850

Standard temperature sensors

Type of sensor	Temperature range	Usage
PTS 100	-30 to 100°C	indoor
PTS 110, PTS 110K	-30 to 100°C	outdoor – with plastic head
PTS 120, PTS 120K	-30 to 150°C	with plastic head in pipes and air condition
MINI P 120, MINI P 120K	-30 to 150°C	with the stem of serie MINI
PTS 140, PTS 140K	-30 to 130°C	contact-type with plastic head
PTS 150	-30 to 130°C	contact-type with cable
PTS 160, PTS 160K	-30 to 130°C	with speed response and plastic head
PTK 110	-30 to 100°C	outdoor – with metal head
PTK 120	-30 to 200°C	with metal head for pipes and air condition
PTK 160	-30 to 130°C	with speed response and metal head
PTS 41	-60 to 400°C	up to 400°C (with smooth stem)
PTS 61	-60 to 400°C	up to 400°C (with screwing)
PTS 51, PTS 71	-50 to 50°C 0 to 100°C 0 to 150°C 0 to 200°C 0 to 400°C	up to 400°C with the output 4-20 mA (PTS 51 - with smooth stem PTS 71 - with screwing)
PTS 180P, PTS 180K	-30 to 200°C	with stem and cylindrical stainless steel he-ad
TP 11, TP 11-P07	0 to 180°C	paired sensor for temperature meters
TP 13, TP 13A	0 to 180°C	temperature sensors as the separate sub-assembly of heatmeters
TP 15, TP 15A	0 to 180°C	
TP 16, TP 16A	0 to 180°C	
T 11	0 to 150°C	temperature sensors for indicators of hea-ting supplied by vapor
T 13	0 to 150°C	
T 16	0 to 150°C	

Temperature probes

Type of probe	Temperature range	Usage
S 1031/150	-30 to 150°C	touch - type
S 1033/250	-30 to 250°C	touch - type
S 1040c/80	-30 to 80°C	space - type
S 1042/150	0 to 150°C	space - type
S 1051/150	-30 to 150°C	stick-in – type – food industry
S 1061/200	-30 to 200°C	stick-in – type – food industry
S 1301/220	-30 to 220°C	stick-in – type
S 1302/220	-30 to 220°C	stick-in – type
S 1071, S 1071A	-30 to 50°C	screw-in – type – food industry
S 1081, S 1081A	-20 to 80°C	stick-in – type – food industry
S 1061/250	-30 to 250°C	stick-in – type – food industry