

2.3 Models NTC*WF*

Storage conditions	-50T105 °C
Operating range	-50T105 °C
Connections	Stripped ends, dimensions: 5±1 mm
Sensor	NTC 10 kΩ ±1% a 25 °C Beta 3435
Precision	±0.3°C a 25°C, ±1°C -50T80°C, ±1.5°C 80T105°C
Dissipation factor (in air)	ca. / approx. 7 mW/°C
Thermal constant over time (in air)	ca. / approx. 10 s
Cable	Two-wire with double sheath, AWG22, tinned copper with electrical resistance ≤63 Ω/km - Insulation: TPE specific for immersion in water on outer sheath, PP/Co inside on wires, OD 3.5 mm max.
Sensitive element index of protection	IP67
Sensitive element housing	AISI 316 steel diameter 4 mm - L= 30 mm
Classification according to protection against electric shock (sensitive element & cable)	Basic insulation for 250 Vac
Category of resistance to heat and fire	Flame retardant

Tab. 2.c

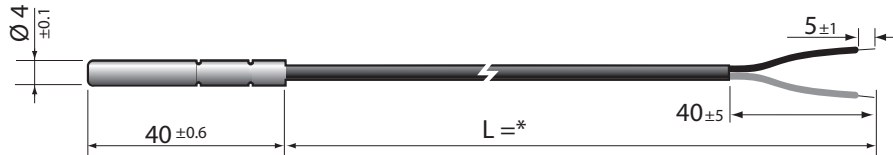


Fig. 2.c

* = see table of product codes in price list

2.4 Models NTC*WH*

Storage conditions	-50T105 °C
Operating range	-50T105 °C
Connections	Stripped ends, dimensions: 5±1 mm
Sensor	NTC 10 kΩ ±1% a 25 °C Beta 3435
Precision	± 0,3 °C @ 25 °C - ± 1 °C @ 80 °C - ±1,2 °C @ -20 °C
Dissipation factor (in air)	ca. / approx. 2,2 mW/°C
Thermal constant over time (in water)	ca. / approx. 30 s
Cable	Two-wire with double sheath, AWG22, tinned copper with electrical resistance ≤63 Ω/km - Insulation: TPE specific for immersion in water on outer sheath, PP/Co inside on wires, OD 3.5 mm max
Sensitive element index of protection	IP68
Sensitive element housing	PP/Co with AISI 316 outer cap
Classification according to protection against electric shock (sensitive element and cable)	Supplementary insulation for 250 Vac;
Category of resistance to heat and fire	Flame retardant
Standard	NSF (only for 1,5-3-6 m versions)

Tab. 2.d

Version 1

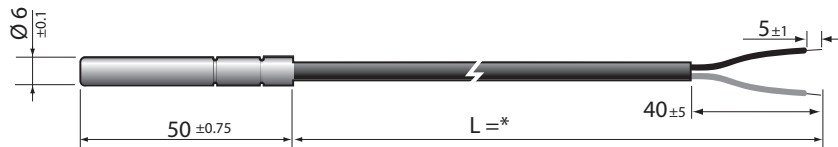


Fig. 2.d

* = see table of product codes in price list

Version 2

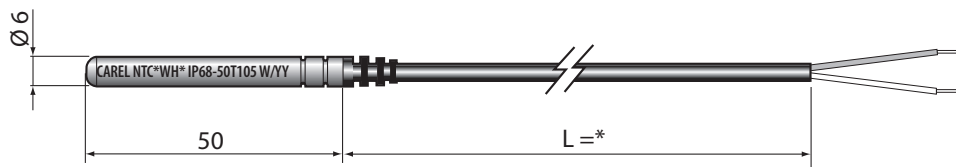


Fig. 2.e

Accessories

- Socket: nickel-coated brass - 1413306AXX
 - Maximum operating pressure 35 bar
 - Temperature -20...95°C
- Socket 2: AISI 316 - code 1413309AXX
 - Maximum operating pressure 40 bar
 - Temperature -20...95 °C

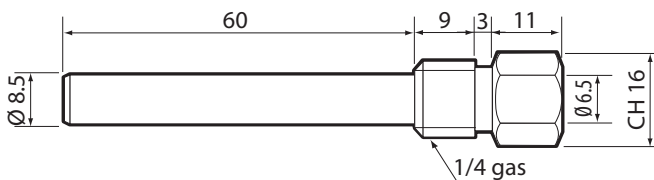


Fig. 2.f

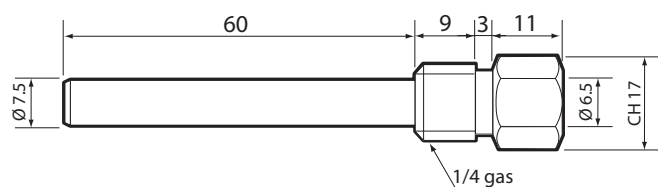


Fig. 2.g

- Socket: brass - 1413311AXX

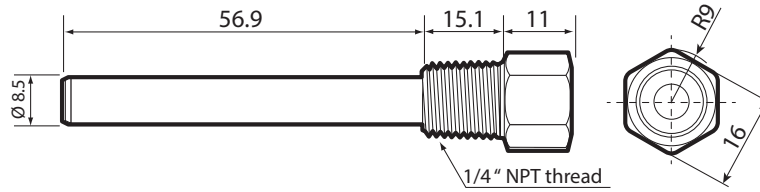


Fig. 1.a

Note: cable secured with PG7, IP68 cable gland applied to hexagonal end. - kit available complete with socket and cable gland

- Compression fitting with metal olive - code 1309589AXX

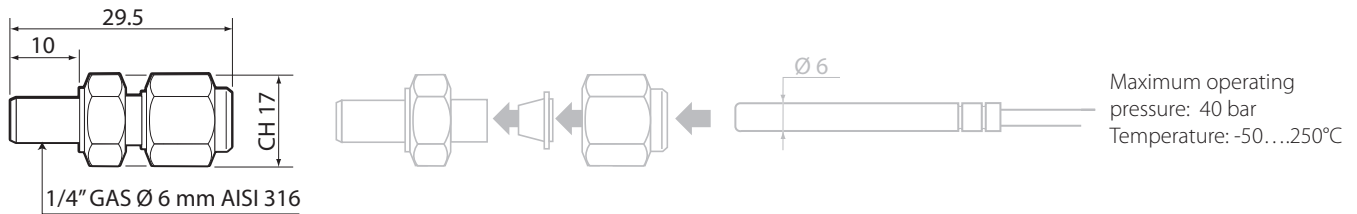


Fig. 2.h

Maximum operating pressure: 40 bar
Temperature: -50...250°C

2.5 Models NTC*WP*

Storage conditions	-50T105 °C
Operating range	-50T105 °C
Connections	Stripped ends, dimensions: 5±1 mm
Sensor	NTC 10 kΩ ±1% a 25 °C Beta 3435
Dissipation factor (in air)	ca. / approx. 2,2 mW/°C
Thermal constant over time (in air)	ca. / approx. 30 s
Cable	Two-wire with double sheath, AWG22, tinned copper with electrical resistance ≤63 Ω/km - Insulation: TPE specific for immersion in water on outer sheath, PP/Co inside on wires, OD 3.5 mm max
Sensitive element index of protection	IP67
Sensitive element housing	PP/Co with AISI 316 outer cap
Classification according to protection against electric shock (sensitive element and cable)	Supplementary insulation for 250 Vac;
Category of resistance to heat and fire	Flame retardant

Tab. 2.e

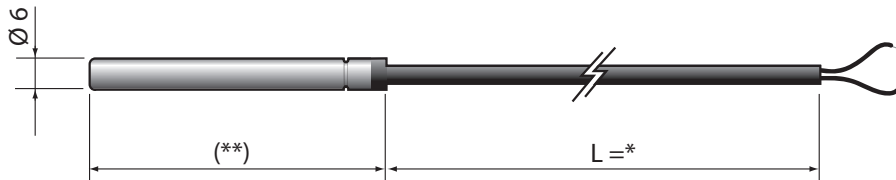


Fig. 2.i

* = see table of product codes in price list; (**) = 100, 200, 300.

Note: cable secured with PG7, IP68 cable gland applied to hexagonal end. - kit available complete with socket and cable gland

- Compression fitting with metal olive - code 1309589AXX

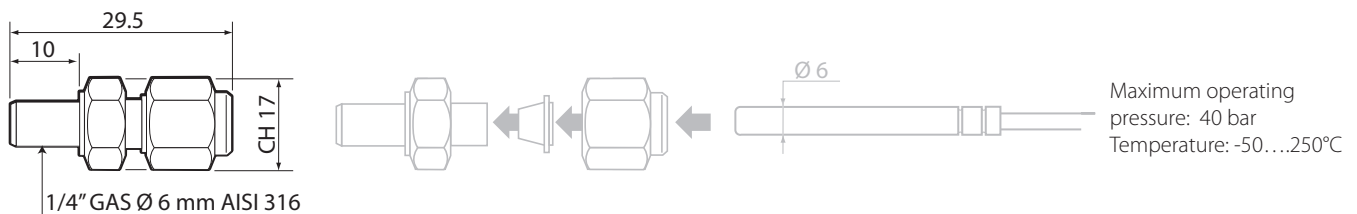


Fig. 2.j

Maximum operating pressure: 40 bar
Temperature: -50...250°C

5. TABLE OF TEMPERATURE VALUES

5.1 Table of temperature-resistance values for NTC sensor 10K@25°C β 3435

Temp. °C	Resistance value		
	Max. KΩ	Typical KΩ	Min. KΩ
-50	344,60	329,50	314,90
-49	325,00	310,90	297,30
-48	306,60	293,50	280,90
-47	289,40	277,20	265,40
-46	273,40	262,00	251,00
-45	258,30	247,70	237,40
-44	244,20	234,30	224,70
-43	231,00	221,70	212,80
-42	218,60	209,90	201,60
-41	207,00	198,90	191,00
-40	196,00	188,50	181,10
-39	185,50	178,50	171,60
-38	175,60	169,00	162,60
-37	166,30	160,20	154,20
-36	157,60	151,90	146,30
-35	149,40	144,10	138,80
-34	141,70	136,70	131,80
-33	134,50	129,80	125,20
-32	127,70	123,30	119,00
-31	121,20	117,10	113,10
-30	115,20	111,30	107,50
-29	109,40	105,70	102,20
-28	103,90	100,50	97,20
-27	98,68	95,52	92,45
-26	93,80	90,84	87,97
-25	89,20	86,43	83,73
-24	84,85	82,26	79,74
-23	80,76	78,33	75,96
-22	76,89	74,61	72,39
-21	73,23	71,10	69,01
-20	69,77	67,77	65,82
-19	66,44	64,57	62,74
-18	63,30	61,54	59,83
-17	60,32	58,68	57,07
-16	57,51	55,97	54,46
-15	54,85	53,41	51,99
-14	52,33	50,98	49,65
-13	49,95	48,68	47,43
-12	47,69	46,50	45,32
-11	45,55	44,43	43,33
-10	43,52	42,47	41,43
-9	41,55	40,57	39,60
-8	39,69	38,77	37,86
-7	37,92	37,06	36,21
-6	36,25	35,44	34,64
-5	34,66	33,90	33,15
-4	33,15	32,44	31,73
-3	31,72	31,05	30,39
-2	30,36	29,73	29,11
-1	29,06	28,48	27,89
0	27,83	27,28	26,74

Temp. °C	Resistance value		
	Max. KΩ	Typical KΩ	Min. KΩ
1	26,65	26,13	25,62
2	25,52	25,03	24,55
3	24,44	23,99	23,54
4	23,42	23,00	22,57
5	22,45	22,05	21,66
6	21,53	21,15	20,78
7	20,64	20,30	19,95
8	19,81	19,48	19,15
9	19,01	18,70	18,39
10	18,25	17,96	17,67
11	17,51	17,24	16,97
12	16,81	16,56	16,30
13	16,14	15,90	15,67
14	15,50	15,28	15,06
15	14,89	14,69	14,48
16	14,31	14,12	13,92
17	13,75	13,58	13,39
18	13,22	13,06	12,89
19	12,72	12,56	12,40
20	12,24	12,09	11,94
21	11,77	11,63	11,50
22	11,32	11,20	11,07
23	10,90	10,78	10,66
24	10,49	10,38	10,27
25	10,10	10,00	9,90
26	9,73	9,63	9,53
27	9,38	9,28	9,18
28	9,04	8,94	8,84
29	8,72	8,62	8,52
30	8,41	8,31	8,21
31	8,11	8,01	7,92
32	7,83	7,73	7,63
33	7,55	7,45	7,36
34	7,29	7,19	7,10
35	7,04	6,94	6,85
36	6,79	6,70	6,61
37	6,56	6,47	6,37
38	6,34	6,25	6,15
39	6,12	6,03	5,94
40	5,92	5,83	5,74
41	5,72	5,63	5,54
42	5,53	5,44	5,35
43	5,34	5,26	5,17
44	5,17	5,08	4,99
45	5,00	4,91	4,83
46	4,83	4,75	4,67
47	4,68	4,59	4,51
48	4,52	4,44	4,36
49	4,38	4,30	4,22
50	4,24	4,16	4,08
51	4,10	4,03	3,95
52	3,97	3,90	3,82
53	3,85	3,77	3,70
54	3,73	3,65	3,58
55	3,61	3,54	3,46

Temp. °C	Resistance value		
	Max. KΩ	Typical KΩ	Min. KΩ
56	3,50	3,43	3,35
57	3,39	3,32	3,25
58	3,28	3,22	3,15
59	3,18	3,12	3,05
60	3,09	3,02	2,95
61	2,99	2,93	2,86
62	2,90	2,84	2,77
63	2,82	2,75	2,69
64	2,73	2,67	2,61
65	2,65	2,59	2,53
66	2,57	2,51	2,45
67	2,50	2,44	2,38
68	2,42	2,36	2,31
69	2,35	2,30	2,24
70	2,28	2,23	2,17
71	2,22	2,16	2,11
72	2,15	2,10	2,05
73	2,09	2,04	1,99
74	2,03	1,98	1,93
75	1,98	1,92	1,87
76	1,92	1,87	1,82
77	1,87	1,82	1,77
78	1,81	1,77	1,72
79	1,76	1,72	1,67
80	1,72	1,67	1,62
81	1,67	1,62	1,58
82	1,62	1,58	1,53
83	1,58	1,53	1,49
84	1,54	1,49	1,45
85	1,49	1,45	1,41
86	1,45	1,41	1,37
87	1,42	1,37	1,33
88	1,38	1,34	1,30
89	1,34	1,30	1,26
90	1,31	1,27	1,23
91	1,27	1,23	1,19
92	1,24	1,20	1,16
93	1,21	1,17	1,13
94	1,17	1,14	1,10
95	1,14	1,11	1,07
96	1,12	1,08	1,04
97	1,09	1,05	1,02
98	1,06	1,02	0,99
99	1,03	1,00	0,97
100	1,01	0,97	0,94
101	0,98	0,95	0,92
102	0,96	0,92	0,89
103	0,93	0,90	0,87
104	0,91	0,88	0,85
105	0,89	0,86	0,83
106	0,87	0,84	0,81
107	0,84	0,82	0,79
108	0,82	0,80	0,77
109	0,80	0,78	0,75
110	0,79	0,76	0,73

Tab. 5.a

5.2 Table of temperature-resistance values for NTC sensor 50K@25°C β 3977

Temp.	Resistance value			Temp.	Resistance value			Temp.	Resistance value		
	Max.	Typical	Min.		Max.	Typical	Min.		Max.	Typical	Min.
°C	Ohms	Ohms	Ohms	°C	Ohms	Ohms	Ohms	°C	Ohms	Ohms	Ohms
0	165239	161638	158036	51	17760	17401	17042	102	3293	3176	3058
1	157036	153694	150352	52	17109	16757	16405	103	3199	3084	2969
2	149288	146187	143086	53	16485	16140	15795	104	3108	2995	2883
3	141965	139088	136211	54	15887	15549	15211	105	3019	2909	2799
4	135043	132375	129706	55	15314	14982	14651	106	2934	2826	2719
5	128498	126023	123548	56	14764	14439	14114	107	2851	2746	2641
6	122307	120012	117717	57	14236	13918	13600	108	2771	2668	2565
7	116449	114321	112194	58	13730	13418	13107	109	2694	2593	2492
8	110904	108932	106961	59	13244	12939	12634	110	2619	2520	2422
9	105654	103827	102001	60	12778	12479	12181	111	2547	2450	2354
10	100682	98990	97298	61	12330	12038	11746	112	2477	2382	2288
11	95971	94405	92838	62	11901	11615	11329	113	2409	2316	2224
12	91507	90057	88608	63	11488	11208	10928	114	2343	2252	2162
13	87276	85934	84593	64	11092	10818	10544	115	2279	2191	2102
14	83263	82022	80782	65	10711	10443	10175	116	2218	2131	2044
15	79456	78310	77163	66	10345	10083	9821	117	2158	2073	1988
16	75845	74786	73727	67	9993	9737	9481	118	2100	2017	1934
17	72417	71440	70462	68	9655	9405	9154	119	2044	1962	1881
18	69163	68261	67359	69	9330	9085	8840	120	1989	1910	1830
19	66073	65241	64410	70	9018	8778	8538	121	1937	1859	1781
20	63137	62372	61606	71	8717	8483	8248	122	1886	1809	1733
21	60348	59643	58939	72	8428	8199	7969	123	1836	1761	1687
22	57697	57049	56401	73	8150	7926	7701	124	1788	1715	1642
23	55177	54582	53987	74	7882	7663	7443	125	1742	1670	1598
24	52780	52234	51688	75	7625	7410	7195	126	1697	1626	1556
25	50500	50000	49500	76	7377	7167	6957	127	1653	1584	1515
26	48373	47873	47373	77	7138	6933	6727	128	1610	1543	1476
27	46348	45848	45349	78	6908	6707	6506	129	1569	1503	1437
28	44417	43920	43422	79	6686	6490	6294	130	1529	1465	1400
29	42577	42082	41587	80	6473	6281	6089	131	1490	1427	1364
30	40823	40332	39840	81	6267	6080	5892	132	1453	1391	1329
31	39151	38663	38174	82	6069	5886	5702	133	1416	1355	1295
32	37556	37072	36588	83	5878	5699	5520	134	1381	1321	1262
33	36034	35554	35075	84	5694	5519	5343	135	1346	1288	1230
34	34581	34107	33633	85	5517	5345	5174	136	1313	1256	1199
35	33195	32726	32258	86	5346	5178	5010	137	1280	1224	1168
36	31871	31408	30945	87	5181	5017	4853	138	1249	1194	1139
37	30607	30150	29694	88	5022	4861	4701	139	1218	1164	1111
38	29400	28949	28499	89	4868	4711	4554	140	1189	1136	1083
39	28246	27802	27358	90	4720	4566	4413	141	1160	1108	1056
40	27143	26706	26269	91	4577	4427	4277	142	1132	1081	1030
41	26090	25659	25229	92	4439	4292	4145	143	1104	1055	1005
42	25082	24659	24235	93	4306	4162	4019	144	1078	1029	980
43	24118	23702	23286	94	4177	4037	3896	145	1052	1004	956
44	23197	22787	22378	95	4053	3916	3778	146	1027	980	933
45	22315	21913	21511	96	3933	3799	3664	147	1003	957	911
46	21471	21076	20681	97	3817	3686	3554	148	979	934	889
47	20663	20275	19888	98	3705	3577	3448	149	956	912	868
48	19890	19509	19129	99	3597	3471	3346	150	933	890	847
49	19149	18776	18402	100	3492	3369	3246				
50	18440	18074	17707	101	3391	3271	3151				

Tab. 5.b

5.3 Table of temperature-resistance values for NTC sensor 750 Ohm @25°C β 3969

°C	Ohms	°C	Ohms	°C	Ohms	°C	Ohms	°C	Ohms
-80	577421.72	-40	25693.65	0	2457.67	40	399.77	80	94.66
-79	527949.43	-39	24032.58	1	2335.27	41	384.06	81	91.67
-78	483039.76	-38	22489.43	2	2219.68	42	369.06	82	88.78
-77	442244.46	-37	21055.15	3	2110.50	43	354.73	83	86.00
-76	405161.84	-36	19721.40	4	2007.32	44	341.03	84	83.32
-75	371431.66	-35	18480.57	5	1909.80	45	327.93	85	80.73
-74	340730.65	-34	17325.63	6	1817.58	46	315.40	86	78.24
-73	312768.50	-33	16250.14	7	1730.35	47	303.42	87	75.84
-72	287284.35	-32	15248.17	8	1647.82	48	291.96	88	73.52
-71	264043.66	-31	14314.26	9	1569.70	49	281.00	89	71.29
-70	242835.52	-30	13443.41	10	1495.74	50	270.50	90	69.13
-69	223469.52	-29	12630.97	11	1425.69	51	260.45	91	67.05
-68	205774.90	-28	11872.71	12	1359.32	52	250.83	92	65.04
-67	189597.20	-27	11164.69	13	1296.43	53	241.61	93	63.10
-66	174797.23	-26	10503.29	14	1236.81	54	232.78	94	61.23
-65	161249.35	-25	9885.19	15	1180.27	55	224.32	95	59.43
-64	148840.08	-24	9307.28	16	1126.64	56	216.22	96	57.68
-63	137466.39	-23	8766.74	17	1075.75	57	208.44	97	56.00
-62	127036.93	-22	8260.92	18	1027.45	58	200.99	98	54.37
-61	117466.39	-21	7787.41	19	981.59	59	193.84	99	52.80
-60	108679.25	-20	7343.85	20	938.04	60	186.99	100	51.28
-59	100606.67	-19	6928.47	21	896.67	61	180.41	101	49.81
-58	93186.24	-18	6539.04	22	857.36	62	174.10	102	48.39
-57	86361.37	-17	6173.88	23	819.99	63	168.04	103	47.02
-56	80080.67	-16	5831.34	24	784.46	64	162.22	104	45.69
-55	74297.50	-15	5509.89	25	750.00	65	156.64	105	44.41
-54	68969.45	-14	5208.12	26	718.52	66	151.27		
-53	64057.99	-13	4924.70	27	687.93	67	146.12		
-52	59528.05	-12	4658.43	28	658.81	68	141.17		
-51	55347.72	-11	4408.16	29	631.09	69	136.41		
-50	51489.92	-10	4172.85	30	604.69	70	131.84		
-49	47922.16	-9	3951.51	31	579.54	71	127.44		
-48	44626.30	-8	3743.25	32	555.57	72	123.21		
-47	41578.30	-7	3547.21	33	532.73	73	119.15		
-46	38758.05	-6	3362.61	34	510.95	74	115.23		
-45	36147.17	-5	3188.72	35	490.18	75	111.47		
-44	33728.89	-4	3024.86	36	470.37	76	107.85		
-43	31487.85	-3	2870.40	37	451.47	77	104.36		
-42	29410.02	-2	2724.74	38	433.43	78	101.01		
-41	27482.54	-1	2587.33	39	416.21	79	97.78		

Tab. 5.c

6. PT100 PROBE TECHNICAL SPECIFICATIONS

6.1 Models PT100

Storage conditions	-50T250 °C
Operating range elemento sensibile	Pt100000A1: -50 °C...+250 °C, PT100000A2 : 0 °C...+400 °C
Sensor	Pt100 Class B in accordance with DIN IEC751, 3 wire
Precision	+/- class B=(0,005xt)+0,3, a 100°C = ±0,8°C
Connections aliment. e uscita	Stripped ends, dimensions 6±1mm
Cable	PT100000A1: silicone rubber HALOGEN COMPOUNDS ≤ 1.1 x 10 ⁻³ mg/g PT100000A2: 3x0.5 mm ² fibreglass wire and secondary insulation
Dissipation factor (in air)	0,3 K/mW at 0 °C
Thermal constant over time (in air)	ca./approx 20 s
Category of resistance to heat and fire	Range -20 °C +200°C for PT100000A1, +500 °C for PT100000A2
Insulation resistance	>500 Mohm / 250V
Dielectric strength	250 Vac (code PT100000A1 only) not applicabile for PT100000A2
Primary insulation (porbe and cable)	250 Vac
Sensitive element index of protection	IP65
Sensitive element housing	AISI 316 stainless steel



Fig. 6.a

* = see table of product codes in price list; ** = 3-wires cable compensates for the resistance introduced by the cable