

°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-200	18.52									
-190	22.83	22.40	21.97	21.54	21.11	20.68	20.25	19.82	19.38	18.95
-180	27.10	26.67	26.24	25.82	25.39	24.97	24.54	24.11	23.68	23.25
-170	31.34	30.91	30.49	30.07	29.64	29.22	28.80	28.37	27.95	27.52
-160	35.54	35.12	34.70	34.28	33.86	33.44	33.02	32.60	32.18	31.76
-150	39.72	39.31	38.89	38.47	38.05	37.64	37.22	36.80	36.38	35.96
-140	43.88	43.46	43.05	42.63	42.22	41.80	41.39	40.97	40.56	40.14
-130	48.00	47.59	47.18	46.77	46.36	45.94	45.53	45.12	44.70	44.29
-120	52.11	51.70	51.29	50.88	50.47	50.06	49.65	49.24	48.83	48.42
-110	56.19	55.79	55.38	54.97	54.56	54.15	53.75	53.34	52.93	52.52
-100	60.26	59.85	59.44	59.04	58.63	58.23	57.82	57.41	57.01	56.60
- 90	64.30	63.90	63.49	63.09	62.68	62.28	61.88	61.47	61.07	60.66
- 80	68.33	67.92	67.52	67.12	66.72	66.31	65.91	65.51	65.11	64.70
- 70	72.33	71.93	71.53	71.13	70.73	70.33	69.93	69.53	69.13	68.73
- 60	76.33	75.93	75.53	75.13	74.73	74.33	73.93	73.53	73.13	72.73
- 50	80.31	79.91	79.51	79.11	78.72	78.32	77.92	77.52	77.12	76.73
- 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									



°C	0	1	2	3	4	5	6	7	8	9
200		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	247.44	247.78	248.13	248.47	248.81	249.16	249.50	249.85	250.19
410	250.53	250.88	251.22	251.56	251.91	252.25	252.59	252.93	253.28	253.62
420	253.96									
°C	0	1	2	3	4	5	6	7	8	9
420		254.30	254.65	254.99	255.33	255.67	256.01	256.35	256.70	257.04
430	257.38	257.72	258.06	258.40	258.74	259.08	259.42	259.76	260.10	260.44
440	260.78	261.12	261.46	261.80	262.14	262.48	262.82	263.16	263.50	263.84
450	264.18	264.52	264.86	265.20	265.53	265.87	266.21	266.55	266.89	267.22
460	267.56	267.90	268.24	268.57	268.91	269.25	269.59	269.92	270.26	270.60
470	270.93	271.27	271.61	271.94	272.28	272.61	272.95	273.29	273.62	273.96
480	274.29	274.63	274.96	275.30	275.63	275.97	276.30	276.64	276.97	277.31
490	277.64	277.98	278.31	278.64	278.98	279.31	279.64	279.98	280.31	280.64
500	280.98	281.31	281.64	281.98	282.31	282.64	282.97	283.31	283.64	283.97
510	284.30	284.63	284.97	285.30	285.63	285.96	286.29	286.62	286.95	287.29
520	287.62	287.95	288.28	288.61	288.94	289.27	289.60	289.93	290.26	290.59
530	290.92	291.25	291.58	291.91	292.24	292.56	292.89	293.22	293.55	293.88
540	294.21	294.54	294.86	295.19	295.52	295.85	296.18	296.50	296.83	297.16
550	297.49	297.81	298.14	298.47	298.80	299.12	299.45	299.78	300.10	300.43
560	300.75	301.08	301.41	301.73	302.06	302.38	302.71	303.03	303.36	303.69
570	304.01	304.34	304.66	304.98	305.31	305.63	305.96	306.28	306.61	306.93
580	307.25	307.58	307.90	308.23	308.55	308.87	309.20	309.52	309.84	310.16
590	310.49	310.81	311.13	311.45	311.78	312.10	312.42	312.74	313.06	313.39
600	313.71	314.03	314.35	314.67	314.99	315.31	315.64	315.96	316.28	316.60
610	316.92	317.24	317.56	317.88	318.20	318.52	318.84	319.16	319.48	319.80
620	320.12	320.43	320.75	321.07	321.39	321.71	322.03	322.35	322.67	322.98
630	323.30	323.62	323.94	324.26	324.57	324.89	325.21	325.53	325.84	326.16
640	326.48									



°C	0	1	2	3	4	5	6	7	8	9
640		326.79	327.11	327.43	327.74	328.06	328.38	328.69	329.01	329.32
650	329.64	329.96	330.27	330.59	330.90	331.22	331.53	331.85	332.16	332.48
660	332.79	333.11	333.42	333.74	334.05	334.36	334.68	334.99	335.31	335.62
670	335.93	336.25	336.56	336.87	337.18	337.50	337.81	338.12	338.44	338.75
680	339.06	339.37	339.69	340.00	340.31	340.62	340.93	341.24	341.56	341.87
690	342.18	342.49	342.80	343.11	343.42	343.73	344.04	344.35	344.66	344.97
700	345.28	345.59	345.90	346.21	346.52	346.83	347.14	347.45	347.76	348.07
710	348.38	348.69	348.99	349.30	349.61	349.92	350.23	350.54	350.84	351.15
720	351.46	351.77	352.08	352.38	352.69	353.00	353.30	353.61	353.92	354.22
730	354.53	354.84	355.14	355.45	355.76	356.06	356.37	356.67	356.98	357.28
740	357.59	357.90	358.20	358.51	358.81	359.12	359.42	359.72	360.03	360.33
750	360.64	360.94	361.25	361.55	361.85	362.16	362.46	362.76	363.07	363.37
760	363.67	363.98	364.28	364.58	364.89	365.19	365.49	365.79	366.10	366.40
770	366.70	367.00	367.30	367.60	367.91	368.21	368.51	368.81	369.11	369.41
780	369.71	370.01	370.31	370.61	370.91	371.21	371.51	371.81	372.11	372.41
790	372.71	373.01	373.31	373.61	373.91	374.21	374.51	374.81	375.11	375.41
800	375.70	376.00	376.30	376.60	376.90	377.19	377.49	377.79	378.09	378.39
810	378.68	378.98	379.28	379.57	379.87	380.17	380.46	380.76	381.06	381.35
820	381.65	381.95	382.24	382.54	382.83	383.13	383.42	383.72	384.01	384.31
830	384.60	384.90	385.19	385.49	385.78	386.08	386.37	386.67	386.96	387.25
840	387.55	387.84	388.14	388.43	388.72	389.02	389.31	389.60	389.90	390.19
850	390.48									

Grundwerte für Messwiderstände

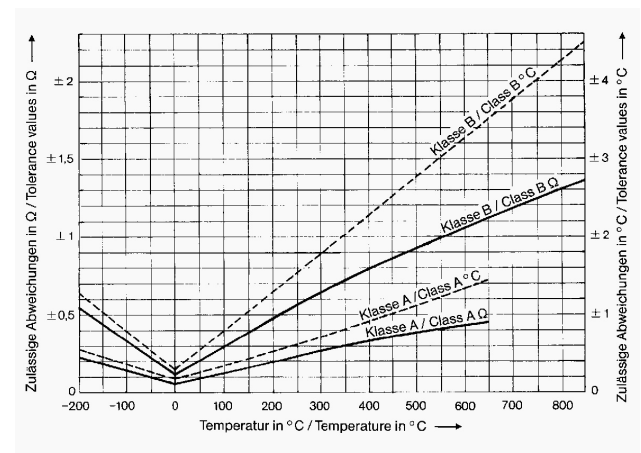
°C	Pt 100 Ω	Pt 500 Ω	Pt 1000 Ω	Ni 1000 Ω	Ni 1000 TK 5000 Ω	NTC 5 kOhm Ω	NTC 10 kOhm Ω	KTY 81-110 Ω	KTY 81-210 Ω	KTY 81-122 Ω	LM 235Z mV
-50	80.31	401.55	803.10	743.00	790.88	333914.00	667830.00	515.00	1030.00	520.00	
-40	84.27	421.35	842.70	791.00	830.83	167835.00	335670.00	567.00	1135.00	573.00	
-30	88.22	441.10	882.20	842.00	871.69	88342.00	176680.00	624.00	1247.00	630.00	
-20	92.16	460.80	921.60	893.00	913.48	48487.00	96670.00	684.00	1367.00	690.00	
-10	96.09	480.45	960.90	946.00	956.24	27649.00	55300.00	747.00	1495.00	795.00	
0	100.00	500.00	1000.00	1000.00	1000.00	16325.40	32650.00	815.00	1630.00	823.00	
10	103.90	519.50	1039.00	1056.00	1044.79	9951.80	19900.00	886.00	1772.00	895.00	2832.00
20	107.79	538.95	1077.90	1112.00	1090.65	6246.80	12490.00	961.00	1922.00	971.00	2932.00
25	109.74	548.70	1097.40	1141.00	1113.99	5000.00	10000.00	1000.00	2000.00	1010.00	2982.00
30	111.67	558.35	1116.70	1171.00	1137.61	4028.00	8060.00	1040.00	2080.00	1050.00	3032.00
40	115.54	577.70	1155.40	1230.00	1185.71	2662.40	5320.00	1122.00	2245.00	1134.00	3132.00
50	119.40	597.00	1194.00	1291.00	1234.97	1800.49	3600.00	1209.00	2417.00	1221.00	3232.00
60	123.24	616.20	1232.40	1353.00	1285.44	1243.53	2490.00	1299.00	2597.00	1312.00	3332.00
70	127.07	635.00	1270.00	1417.00	1337.14	875.81	1750.00	1392.00	2785.00	1406.00	3432.00
80	130.89	654.45	1308.90	1483.00	1390.12	628.09	1260.00	1490.00	2980.00	1505.00	3532.00
90	134.70	673.50	1347.00	1549.00	1444.39	458.06	920.00	1591.00	3182.00	1607.00	3632.00
100	138.50	692.50	1385.00	1618.00	1500.00	339.32	680.00	1696.00	3392.00	1713.00	3732.00
110	142.29	711.00	1422.00	1688.00	1556.98	255.03	510.00	1805.00	3607.00	1823.00	3832.00
120	146.06	730.00	1460.60	1760.00	1615.36	194.30	390.00	1915.00	3817.00	1934.00	3932.00
130	149.82	749.10	1498.20	1883.00	1675.18	149.91	300.00	2023.00	4008.00	2044.00	
140	153.58	767.90	1535.80	1909.00	1736.47	117.04	230.00	2124.00	4166.00	2146.00	
150	157.31	786.55	1573.10	1987.00	1799.26	92.39	180.00	2211.00	4280.00	2233.00	
200	175.84	879.92	1758.43	2407.00							
250	194.07	970.35	1940.81								
300	212.02	1060.09	2120.30								
400	247.04	1235.19									
500	280.90	1404.48									
600	313.59	1567.97									

°C	0	1	2	3	4	5	6	7	8	9
-60	69.5	70.0	70.5	70.9	71.4	71.9	72.3	72.8	73.3	73.8
-50	74.3	74.7	75.2	75.7	76.2	76.7	77.2	77.7	78.1	78.6
-40	79.1	79.6	80.1	80.6	81.1	81.6	82.1	82.6	83.1	83.6
-30	84.1	84.7	85.2	85.7	86.2	86.7	87.2	87.7	88.3	88.8
-20	89.3	89.8	90.3	90.9	91.4	91.9	92.5	93.0	93.5	94.0
-10	94.6	95.1	95.7	96.2	96.7	97.3	97.8	98.4	98.9	99.5
0	100.0	100.5	101.1	101.7	102.2	102.8	103.3	103.9	104.4	105.0
10	105.6	106.1	106.7	107.2	107.8	108.4	108.9	109.5	110.1	110.7
20	111.2	111.8	112.4	113.0	113.5	114.1	114.7	115.3	115.9	116.5
30	117.1	117.6	118.2	118.8	119.4	120.0	120.6	121.2	121.8	122.4
40	123.0	123.6	124.2	124.8	125.4	126.0	126.7	127.3	127.9	128.5
50	129.1	129.7	130.3	131.0	131.6	132.2	132.8	133.5	134.1	134.7
60	135.3	136.0	136.6	137.2	137.9	138.5	139.2	139.8	140.4	141.1
70	141.7	142.4	143.0	143.7	144.3	145.0	145.6	146.3	146.9	147.6
80	148.3	148.9	149.6	150.2	150.9	151.6	152.2	152.9	153.6	154.3
90	154.9	155.6	156.3	157.0	157.7	158.3	159.0	159.7	160.4	161.1
100	161.8	162.5	163.2	163.9	164.6	165.3	166.0	166.7	167.4	168.1
110	168.8	169.5	170.2	170.9	171.6	172.4	173.1	173.8	174.5	175.3
120	176.0	176.7	177.4	178.2	178.9	179.6	180.4	181.1	181.9	182.6
130	183.4	184.1	184.9	185.6	186.4	187.1	187.9	188.6	189.4	190.2
140	190.9	191.7	192.5	193.2	194.0	194.8	195.6	196.3	197.1	197.9
150	198.7	199.5	200.3	201.1	201.8	202.6	203.4	204.2	205.0	205.8
160	206.7	207.5	208.3	209.1	209.9	210.7	211.5	212.4	213.2	214.0
170	214.9	215.7	216.5	217.4	218.2	219.0	219.9	220.7	221.6	222.4
180	223.3	224.1	225.0	225.9	226.7	227.6	228.5	229.3	230.2	231.1
190	232.0	232.9	233.7	234.6	235.5	236.4	237.3	238.2	239.1	240.0
200	240.9	241.8	242.7	243.7	244.6	245.5	246.4	247.3	248.3	249.2
210	250.1	251.1	252.0	253.0	253.9	254.9	255.8	256.8	257.7	258.7
220	259.7	260.6	261.6	262.6	263.5	264.5	265.5	266.5	267.5	268.5
230	269.5	270.5	271.5	272.5	273.5	274.5	275.5	276.6	277.6	278.6
240	279.6	280.7	281.7	282.7	283.8	284.8	285.9	286.9	288.0	289.1
250	290.1									

Grenzabweichungen für Pt-Messwiderstände nach IEC 751 und für Ni-Messwiderstände nach IEC 43760

Temp.	Pt100 Class A		Pt100 Class B		Ni Widerst.	
	Ohm	°C	Ohm	°C	Ohm	°C
-200	±0.24	±0.55	±0.56	±1.3		
-100	±0.14	±0.35	±0.32	±0.8		
-60					±1.0	±2.1
0	±0.06	±0.15	±0.12	±0.3	±0.2	±0.4
+100	±0.13	±0.35	±0.30	±0.8	±0.8	±1.1
+200	±0.20	±0.55	±0.48	±1.3	±1.6	±1.8
+250					±2.3	±2.1
+300	±0.27	±0.75	±0.64	±1.8		
+400	±0.33	±0.95	±0.79	±2.3		
+500	±0.38	±1.15	±0.93	±2.8		
+600	±0.43	±1.35	±1.06	±3.3		
+700			±1.17	±3.8		
+800			±1.28	±4.3		
+850			±1.34	±4.6		

Die zulässigen Abweichungen für PT-Messwiderstände sind durch nachfolgende Zahlenwertgleichungen nach IEC 751,2 bzw. EN 60751 festgelegt:
 Klasse A: $t \text{ in } ^\circ\text{C} = \pm (0,15 + 0,002 [t])$
 Klasse B: $t \text{ in } ^\circ\text{C} = \pm (0,30 + 0,005 [t])$
 hierin ist [t] der Betrag der Temperatur in °C



Die Abweichungen in °C gelten für alle Nennwiderstände, die Abweichungen in nur für 100 Ohm. Für andere Nennwiderstände müssen die Werte der Abweichungen in mit dem Faktor $R_0 \times 10^{-2}$ multipliziert werden (R_0 = Nennwiderstand bei 0°C).