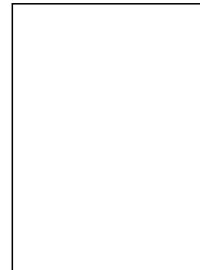


# Grundwertreihe für Thermoelemente Typ L (Fe/CuNi)



## Eisen - KupferNickel nach DIN EN 60584 Typ L Bezugstemperatur 0°C. Temperaturen in °C (ITS-90)

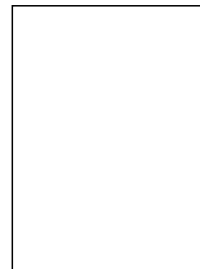
Temp. °C	Millivolt									
	0	1	2	3	4	5	6	7	8	9
0	0,00	0,05	0,10	0,16	0,21	0,26	0,31	0,36	0,42	0,47
10	0,52	0,57	0,63	0,68	0,73	0,78	0,84	0,89	0,94	1,00
20	1,05	1,10	1,16	1,21	1,26	1,31	1,37	1,42	1,47	1,53
30	1,58	1,63	1,69	1,74	1,79	1,84	1,90	1,95	2,00	2,06
40	2,11	2,16	2,22	2,27	2,33	2,38	2,43	2,49	2,54	2,60
50	2,65	2,70	2,76	2,81	2,87	2,92	2,97	3,03	3,08	3,14
60	3,19	3,24	3,30	3,35	3,41	3,46	3,51	3,57	3,62	3,68
70	3,73	3,78	3,84	3,89	3,95	4,00	4,05	4,11	4,16	4,22
80	4,27	4,32	4,38	4,43	4,49	4,54	4,60	4,65	4,71	4,77
90	4,82	4,87	4,93	4,98	5,04	5,09	5,15	5,20	5,26	5,32
100	5,37	5,42	5,48	5,53	5,59	5,64	5,70	5,75	5,81	5,87
110	5,92	5,97	6,03	6,08	6,14	6,19	6,25	6,30	6,36	6,42
120	6,47	6,53	6,58	6,64	6,69	6,75	6,81	6,86	6,92	6,97
130	7,03	7,09	7,14	7,20	7,25	7,31	7,37	7,42	7,48	7,53
140	7,59	7,65	7,70	7,76	7,81	7,87	7,93	7,98	8,04	8,09
150	8,15	8,21	8,26	8,32	8,37	8,43	8,49	8,54	8,60	8,65
160	8,71	8,77	8,82	8,88	8,93	8,99	9,05	9,10	9,16	9,21
170	9,27	9,33	9,38	9,44	9,49	9,55	9,61	9,66	9,72	9,77
180	9,83	9,89	9,94	10,00	10,05	10,11	10,17	10,22	10,28	10,33
190	10,39	10,45	10,50	10,56	10,61	10,67	10,73	10,78	10,84	10,89
200	10,95	11,01	11,06	11,12	11,17	11,23	11,29	11,34	11,40	11,45
210	11,51	11,57	11,62	11,68	11,73	11,79	11,85	11,90	11,96	12,01
220	12,07	12,13	12,18	12,24	12,29	12,35	12,41	12,46	12,52	12,57

# Grundwertreihe für Thermoelemente Typ L (Fe/CuNi)

	<b>PROBAG</b> <small>WÄRMETECHNIK AG</small>	<b>HS</b> HEIZELEMENTE
	IM FELD 45 CH-4626 NIEDERBUCHSITEN	
	info@probag.ch www.probag.ch	

<b>230</b>	12,63	12,69	12,74	12,80	12,85	12,91	12,97	13,02	13,08	13,13
<b>240</b>	13,19	13,25	13,30	13,36	13,41	13,47	13,53	13,58	13,64	13,69
<b>250</b>	13,75	13,81	13,86	13,92	13,97	14,03	14,09	14,14	14,20	14,25
<b>260</b>	14,31	14,37	14,42	14,48	14,54	14,59	14,65	14,71	14,76	14,82
<b>270</b>	14,88	14,94	14,99	15,05	15,10	15,16	15,22	15,27	15,33	15,38
<b>280</b>	15,44	15,50	15,55	15,61	15,66	15,72	15,78	15,83	15,89	15,94
<b>290</b>	16,00	16,06	16,11	16,17	16,22	16,28	16,34	16,39	16,45	16,50
<b>300</b>	16,56	16,62	16,67	16,73	16,78	16,84	16,90	16,95	17,01	17,06
<b>310</b>	17,12	17,18	17,23	17,29	17,34	17,40	17,46	17,51	17,57	17,62
<b>320</b>	17,68	17,74	17,79	17,85	17,90	17,96	18,02	18,07	18,13	18,18
<b>330</b>	18,24	18,30	18,35	18,41	18,46	18,52	18,58	18,63	18,69	18,74
<b>340</b>	18,80	18,86	18,91	18,97	19,02	19,08	19,14	19,19	19,25	19,30
<b>350</b>	19,36	19,42	19,47	19,53	19,58	19,64	19,70	19,75	19,81	19,85
<b>360</b>	19,92	19,98	20,03	20,09	20,14	20,20	20,26	20,31	20,37	20,42
<b>370</b>	20,48	20,54	20,59	20,65	20,70	20,76	20,82	20,87	20,93	20,98
<b>380</b>	21,04	21,10	21,15	21,21	21,26	21,32	21,38	21,43	21,49	21,54
<b>390</b>	21,60	21,66	21,71	21,77	21,82	21,88	21,94	21,99	22,05	22,10
<b>400</b>	22,16	22,22	22,27	22,33	22,38	22,44	22,50	22,55	22,61	22,66
<b>410</b>	22,72	22,78	22,83	22,89	22,95	23,00	23,06	23,12	23,18	23,23
<b>420</b>	23,29	23,35	23,40	23,46	23,52	23,57	23,63	23,69	23,74	23,80
<b>430</b>	23,86	23,92	23,97	24,03	24,09	24,14	24,20	24,26	24,32	24,37
<b>440</b>	24,43	24,49	24,54	24,60	24,66	24,71	24,77	24,83	24,89	24,94
<b>450</b>	25,00	25,06	25,11	25,17	25,23	25,28	25,34	25,40	25,46	25,51
<b>460</b>	25,57	25,63	25,68	25,74	25,80	25,85	25,91	25,97	26,03	26,08
<b>470</b>	26,14	26,20	26,25	26,31	26,37	26,42	26,48	26,54	26,60	26,65
<b>480</b>	26,71	26,77	26,82	26,88	26,94	26,99	27,05	27,11	27,17	27,22

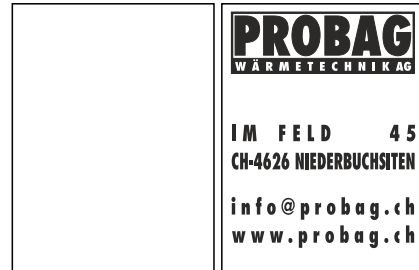
# Grundwertreihe für Thermoelemente Typ J (Fe/CuNi)



## Eisen - KupferNickel nach DIN EN 60584 Typ J Bezugstemperatur 0°C. Temperaturen in °C (ITS-90)

Temp. °C	Mikrovolt									
	0	1	2	3	4	5	6	7	8	9
0	0	50	101	151	202	253	303	354	405	456
10	507	558	609	660	711	762	814	865	916	968
20	1019	1071	1122	1174	1226	1277	1329	1381	1433	1485
30	1537	1589	1641	1693	1745	1797	1849	1902	1954	2006
40	2059	2111	2164	2216	2269	2322	2374	2427	2480	2532
50	2585	2638	2691	2744	2797	2850	2903	2956	3009	3062
60	3116	3169	3222	3275	3329	3382	3436	3489	3543	3596
70	3650	3703	3757	3810	3864	3918	3971	4025	4079	4133
80	4187	4240	4294	4348	4402	4456	4510	4564	4618	4672
90	4726	4781	4835	4889	4943	4997	5052	5106	5160	5215
100	5269	5323	5378	5432	5487	5541	5595	5650	5705	5759
110	5814	5868	5923	5977	6032	6087	6141	6196	6251	6306
120	6360	6415	6470	6525	6579	6634	6689	6744	6799	6854
130	6909	6964	7019	7074	7129	7184	7239	7294	7349	7404
140	7459	7514	7569	7624	7679	7734	7789	7844	7900	7955
150	8010	8065	8120	8175	8231	8286	8341	8396	8452	8507
160	8562	8618	8673	8728	8783	8839	8894	8949	9005	9060
170	9115	9171	9226	9282	9337	9392	9448	9503	9559	9614
180	9669	9725	9780	9836	9891	9947	10002	10057	10113	10168
190	10224	10279	10335	10390	10446	10501	10557	10612	10668	10723
200	10779	10834	10890	10945	11001	11056	11112	11167	11223	11278
210	11334	11389	11445	11501	11556	11612	11667	11723	11778	11834
220	11889	11945	12000	12056	12111	12167	12222	12278	12334	12389

# Grundwertreihe für Thermoelemente Typ J (Fe/CuNi)



230	12445	12500	12556	12611	12667	12722	12778	12833	12889	12944
240	13000	13056	13111	13167	13222	13278	13333	13389	13444	13500
250	13555	13611	13666	13722	13777	13833	13888	13944	13999	14055
260	14110	14166	14221	14277	14332	14388	14443	14499	14554	14609
270	14665	14720	14776	14831	14887	14942	14998	15053	15109	15164
280	15219	15275	15330	15386	15441	15496	15552	15607	15663	15718
290	15773	15829	15884	15940	15995	16050	16106	16161	16216	16272
300	16327	16383	16438	16493	16549	16604	16659	16715	16770	16825
310	16881	16936	16991	17046	17102	17157	17212	17268	17323	17378
320	17434	17489	17544	17599	17655	17710	17765	17820	17876	17931
330	17986	18041	18097	18152	18207	18262	18318	18373	18428	18483
340	18538	18594	18649	18704	18759	18814	18870	18925	18980	19035
350	19090	19146	19201	19256	19311	19366	19422	19477	19532	19587
360	19642	19697	19753	19808	19863	19918	19973	20028	20083	20139
370	20194	20249	20304	20359	20414	20469	20525	20580	20635	20690
380	20745	20800	20855	20911	20966	21021	21076	21131	21186	21241
390	21297	21352	21407	21462	21517	21572	21627	21683	21738	21793
400	21848	21903	21958	22014	22069	22124	22179	22234	22289	22345
410	22400	22455	22510	22565	22620	22676	22731	22786	22841	22896
420	22952	23007	23062	23117	23172	23228	23283	23338	23393	23449
430	23504	23559	23614	23670	23725	23780	23835	23891	23946	24001
440	24057	24112	24167	24223	24278	24333	24389	24444	24499	24555
450	24610	24665	24721	24776	24832	24887	24943	24998	25053	25109
460	25164	25220	25275	25331	25386	25442	25497	25553	25608	25664
470	25720	25775	25831	25886	25942	25998	26053	26109	26165	26220
480	26276	26332	26387	26443	26499	26555	26610	26666	26722	26778

# Grundwertreihe für Thermoelemente Typ K (NiCr/Ni)



## NickelChrom - Nickel nach DIN EN 60584 Typ K Bezugstemperatur 0°C. Temperaturen in °C (ITS-90)

Temp. °C	Mikrovolt									
	0	1	2	3	4	5	6	7	8	9
0	0	39	79	119	158	198	238	277	317	357
10	397	437	477	517	557	597	637	677	718	758
20	798	838	879	919	960	1000	1041	1081	1122	1163
30	1203	1244	1285	1326	1366	1407	1448	1489	1530	1571
40	1612	1653	1694	1735	1776	1817	1858	1899	1941	1982
50	2023	2064	2106	2147	2188	2230	2271	2312	2354	2395
60	2436	2478	2519	2561	2602	2644	2685	2727	2768	2810
70	2851	2893	2934	2976	3017	3059	3100	3142	3184	3225
80	3267	3308	3350	3391	3433	3474	3516	3557	3599	3640
90	3682	3723	3765	3806	3848	3889	3931	3972	4013	4055
100	4096	4138	4179	4220	4262	4303	4344	4385	4427	4468
110	4509	4550	4591	4633	4674	4715	4756	4797	4838	4879
120	4920	4961	5002	5043	5084	5124	5165	5206	5247	5288
130	5328	5369	5410	5450	5491	5532	5572	5613	5653	5694
140	5735	5775	5815	5856	5896	5937	5977	6017	6058	6098
150	6138	6179	6219	6259	6299	6339	6380	6420	6460	6500
160	6540	6580	6620	6660	6701	6741	6781	6821	6861	6901
170	6941	6981	7021	7060	7100	7140	7180	7220	7260	7300
180	7340	7380	7420	7460	7500	7540	7579	7619	7659	7699
190	7739	7779	7819	7859	7899	7939	7979	8019	8059	8099
200	8138	8178	8218	8258	8298	8338	8378	8418	8458	8499
210	8539	8579	8619	8659	8699	8739	8779	8819	8860	8900
220	8940	8980	9020	9061	9101	9141	9181	9222	9262	9302

# Grundwertreihe für Thermoelemente Typ K (NiCr/Ni)



<b>230</b>	9343	9383	9423	9464	9504	9545	9585	9626	9666	9707
<b>240</b>	9747	9788	9828	9869	9909	9950	9991	10031	10072	10113
<b>250</b>	10153	10194	10235	10276	10316	10357	10398	10439	10480	10520
<b>260</b>	10561	10602	10643	10684	10725	10766	10807	10848	10889	10930
<b>270</b>	10971	11012	11053	11094	11135	11176	11217	11259	11300	11341
<b>280</b>	11382	11423	11465	11506	11547	11588	11630	11671	11712	11753
<b>290</b>	11795	11836	11877	11919	11960	12001	12043	12084	12126	12167
<b>300</b>	12209	12250	12291	12333	12374	12416	12457	12499	12540	12582
<b>310</b>	12624	12665	12707	12748	12790	12831	12873	12915	12956	12998
<b>320</b>	13040	13081	13123	13165	13206	13248	13290	13331	13373	13415
<b>330</b>	13457	13498	13540	13582	13624	13665	13707	13749	13791	13833
<b>340</b>	13874	13916	13958	14000	14042	14084	14126	14167	14209	14251
<b>350</b>	14293	14335	14377	14419	14461	14503	14545	14587	14629	14671
<b>360</b>	14713	14755	14797	14839	14881	14923	14965	15007	15049	15091
<b>370</b>	15133	15175	15217	15259	15301	15343	15385	15427	15469	15511
<b>380</b>	15554	15596	15638	15680	15722	15764	15806	15849	15891	15933
<b>390</b>	15975	16017	16059	16102	16144	16186	16228	16270	16313	16355
<b>400</b>	16397	16439	16482	16524	16566	16608	16651	16693	16735	16778
<b>410</b>	16820	16862	16904	16947	16989	17031	17074	17116	17158	17201
<b>420</b>	17243	17285	17328	17370	17413	17455	17497	17540	17582	17624
<b>430</b>	17667	17709	17752	17794	17837	17879	17921	17964	18006	18049
<b>440</b>	18091	18134	18176	18218	18261	18303	18346	18388	18431	18473
<b>450</b>	18516	18558	18601	18643	18686	18728	18771	18813	18856	18898
<b>460</b>	18941	18983	19026	19068	19111	19154	19196	19239	19281	19324
<b>470</b>	19366	19409	19451	19494	19537	19579	19622	19664	19707	19750
<b>480</b>	19792	19835	19877	19920	19962	20005	20048	20090	20133	20175

# Grundwertreihe für Thermoelemente Typ K (NiCr/Ni)

<b>PROBAG</b> WÄRMETECHNIK AG	
IM FELD 45	
CH-4626 NIEDERBUCHSITEN	
info@probag.ch	
www.probag.ch	



<b>490</b>	20218	20261	20303	20346	20389	20431	20474	20516	20559	20602
<b>500</b>	20644	20687	20730	20772	20815	20857	20900	20943	20985	21028
<b>510</b>	21071	21113	21156	21199	21241	21284	21326	21369	21412	21454
<b>520</b>	21497	21540	21582	21625	21668	21710	21753	21796	21838	21881
<b>530</b>	21924	21966	22009	22052	22094	22137	22179	22222	22265	22307
<b>540</b>	22350	22393	22435	22478	22521	22563	22606	22649	22691	22734
<b>550</b>	22776	22819	22862	22904	22947	22990	23032	23075	23117	23160
<b>560</b>	23203	23245	23288	23331	23373	23416	23458	23501	23544	23586
<b>570</b>	23629	23671	23714	23757	23799	23842	23884	23927	23970	24012
<b>580</b>	24055	24097	24140	24182	24225	24267	24310	24353	24395	24438
<b>590</b>	24480	24523	24565	24608	24650	24693	24735	24778	24820	24863
<b>600</b>	24905	24948	24990	25033	25075	25118	25160	25203	25245	25288
<b>610</b>	25330	25373	25415	25458	25500	25543	25585	25627	25670	25712
<b>620</b>	25755	25797	25840	25882	25924	25967	26009	26052	26094	26136
<b>630</b>	26179	26221	26263	26306	26348	26390	26433	26475	26517	26560
<b>640</b>	26602	26644	26687	26729	26771	26814	26856	26898	26940	26983
<b>650</b>	27025	27067	27109	27152	27194	27236	27278	27320	27363	27405
<b>660</b>	27447	27489	27531	27574	27616	27658	27700	27742	27784	27826
<b>670</b>	27869	27911	27953	27995	28037	28079	28121	28163	28205	28247
<b>680</b>	28289	28332	28374	28416	28458	28500	28542	28584	28626	28668
<b>690</b>	28710	28752	28794	28835	28877	28919	28961	29003	29045	29087
<b>700</b>	29129	29171	29213	29255	29297	29338	29380	29422	29464	29506
<b>710</b>	29548	29589	29631	29673	29715	29757	29798	29840	29882	29924
<b>720</b>	29965	30007	30049	30090	30132	30174	30216	30257	30299	30341
<b>730</b>	30382	30424	30466	30507	30549	30590	30632	30674	30715	30757
<b>740</b>	30798	30840	30881	30923	30964	31006	31047	31089	31130	31172

# Grundwertreihe für Widerstandselemente Pt 100

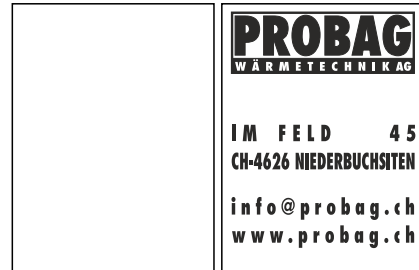


**Pt 100 Ohm nach DIN EN 60751**  
R(0) = 100,00 Ohm. Temperaturen in °C (ITS-90)

Temp. °C	Widerstand in Ω									
	0	1	2	3	4	5	6	7	8	9
0	100,000	100,391	100,781	101,172	101,562	101,953	102,343	102,733	103,123	103,513
10	103,903	104,292	104,682	105,071	105,460	105,849	106,238	106,627	107,016	107,405
20	107,794	108,182	108,570	108,959	109,347	109,735	110,123	110,510	110,898	111,286
30	111,673	112,060	112,447	112,835	113,221	113,608	113,995	114,382	114,768	115,155
40	115,541	115,927	116,313	116,699	117,085	117,470	117,856	118,241	118,627	119,012
50	119,397	119,782	120,167	120,552	120,936	121,321	121,705	122,090	122,474	122,858
60	123,242	123,626	124,009	124,393	124,777	125,160	125,543	125,926	126,309	126,692
70	127,075	127,458	127,840	128,223	128,605	128,987	129,370	129,752	130,133	130,515
80	130,897	131,278	131,660	132,041	132,422	132,803	133,184	133,565	133,946	134,326
90	134,707	135,087	135,468	135,848	136,228	136,608	136,987	137,367	137,747	138,126
100	138,506	138,885	139,264	139,643	140,022	140,400	140,779	141,158	141,536	141,914
110	142,293	142,671	143,049	143,426	143,804	144,182	144,559	144,937	145,314	145,691
120	146,068	146,445	146,822	147,198	147,575	147,951	148,328	148,704	149,080	149,456
130	149,832	150,208	150,583	150,959	151,334	151,710	152,085	152,460	152,835	153,210
140	153,584	153,959	154,333	154,708	155,082	155,456	155,830	156,204	156,578	156,952
150	157,325	157,699	158,072	158,445	158,818	159,191	159,564	159,937	160,309	160,682
160	161,054	161,427	161,799	162,171	162,543	162,915	163,286	163,658	164,030	164,401
170	164,772	165,143	165,514	165,885	166,256	166,627	166,997	167,368	167,738	168,108
180	168,478	168,848	169,218	169,588	169,958	170,327	170,696	171,066	171,435	171,804
190	172,173	172,542	172,910	173,279	173,648	174,016	174,384	174,752	175,120	175,488
200	175,856	176,224	176,591	176,959	177,326	177,693	178,060	178,427	178,794	179,161
210	179,528	179,894	180,260	180,627	180,993	181,359	181,725	182,091	182,456	182,822
220	183,188	183,553	183,918	184,283	184,648	185,013	185,378	185,743	186,107	186,472



# Grundwertreihe für Widerstandselemente Pt 100



<b>230</b>	186,836	187,200	187,564	187,928	188,292	188,656	189,019	189,383	189,746	190,110
<b>240</b>	190,473	190,836	191,199	191,562	191,924	192,287	192,649	193,012	193,374	193,736
<b>250</b>	194,098	194,460	194,822	195,183	195,545	195,906	196,268	196,629	196,990	197,351
<b>260</b>	197,712	198,073	198,433	198,794	199,154	199,514	199,875	200,235	200,595	200,954
<b>270</b>	201,314	201,674	202,033	202,393	202,752	203,111	203,470	203,829	204,188	204,546
<b>280</b>	204,905	205,263	205,622	205,980	206,338	206,696	207,054	207,411	207,769	208,127
<b>290</b>	208,484	208,841	209,198	209,555	209,912	210,269	210,626	210,982	211,339	211,695
<b>300</b>	212,052	212,408	212,764	213,120	213,475	213,831	214,187	214,542	214,897	215,252
<b>310</b>	215,608	215,962	216,317	216,672	217,027	217,381	217,736	218,090	218,444	218,798
<b>320</b>	219,152	219,506	219,860	220,213	220,567	220,920	221,273	221,626	221,979	222,332
<b>330</b>	222,685	223,038	223,390	223,743	224,095	224,447	224,799	225,151	225,503	225,855
<b>340</b>	226,206	226,558	226,909	227,260	227,612	227,963	228,314	228,664	229,015	229,366
<b>350</b>	229,716	230,066	230,417	230,767	231,117	231,467	231,816	232,166	232,516	232,865
<b>360</b>	233,214	233,564	233,913	234,262	234,610	234,959	235,308	235,656	236,005	236,353
<b>370</b>	236,701	237,049	237,397	237,745	238,093	238,440	238,788	239,135	239,482	239,829
<b>380</b>	240,176	240,523	240,870	241,217	241,563	241,910	242,256	242,602	242,948	243,294
<b>390</b>	243,640	243,986	244,331	244,677	245,022	245,367	245,713	246,058	246,403	246,747
<b>400</b>	247,092	247,437	247,781	248,125	248,470	248,814	249,158	249,502	249,845	250,189
<b>410</b>	250,533	250,876	251,219	251,562	251,906	252,248	252,591	252,934	253,277	253,619
<b>420</b>	253,962	254,304	254,646	254,988	255,330	255,672	256,013	256,355	256,696	257,038
<b>430</b>	257,379	257,720	258,061	258,402	258,743	259,083	259,424	259,764	260,105	260,445
<b>440</b>	260,785	261,125	261,465	261,804	262,144	262,483	262,823	263,162	263,501	263,840
<b>450</b>	264,179	264,518	264,857	265,195	265,534	265,872	266,210	266,548	266,886	267,224
<b>460</b>	267,562	267,900	268,237	268,574	268,912	269,249	269,586	269,923	270,260	270,597
<b>470</b>	270,933	271,270	271,606	271,942	272,278	272,614	272,950	273,286	273,622	273,957
<b>480</b>	274,293	274,628	274,963	275,298	275,633	275,968	276,303	276,638	276,972	277,307