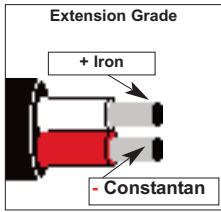




Technical Information Data Bulletin

Type J Thermocouple Iron-Constantan

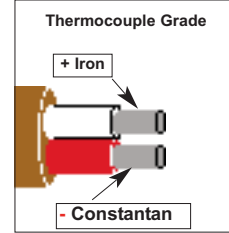
TEMPERATURE & PROCESS INSTRUMENTS - CONSTANTAN



Temperature vs Millivolt Table Reference Junction 0°C

Temperature Range
Maximum Useful Temperature Range:
Thermocouple Grade: 32 to 1382°F
 0 to 750°C
Extension Grade: 32 to 392°F
 0 to 200°C

Maximum Thermocouple Grade Temperature Range
 -346 to 2193°F
 -210 to 1200°C
Accuracy: Standard: 2.2°C or 0.75%
 Special: 1.1°C or 0.4%

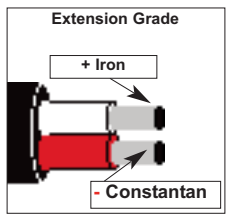


Recommended Applications:

Reducing, Vacuum, Inert Environments Limited Use in Oxidizing Environments at High Temperatures Not Recommended for Low Temperatures Applications

Temp	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-210	-8.0954									
-200	-7.8905	-7.9122	-7.9337	-7.9548	-7.9757	-7.9964	-8.0167	-8.0368	-8.0566	-8.0761
-190	-7.6589	-7.6833	-7.7073	-7.7311	-7.7546	-7.7779	-7.8010	-7.8237	-7.8463	-7.8685
-180	-7.4025	-7.4292	-7.4557	-7.4820	-7.5080	-7.5337	-7.5593	-7.5846	-7.6096	-7.6344
-170	-7.1228	-7.1518	-7.1805	-7.2091	-7.2374	-7.2655	-7.2933	-7.3210	-7.3484	-7.3756
-160	-6.8214	-6.8525	-6.8834	-6.9140	-6.9445	-6.9748	-7.0048	-7.0346	-7.0642	-7.0936
-150	-6.4998	-6.5328	-6.5657	-6.5983	-6.6308	-6.6631	-6.6951	-6.7270	-6.7587	-6.7902
-140	-6.1592	-6.1941	-6.2288	-6.2633	-6.2976	-6.3318	-6.3658	-6.3995	-6.4331	-6.4666
-130	-5.8011	-5.8376	-5.8741	-5.9103	-5.9464	-5.9823	-6.0180	-6.0536	-6.0890	-6.1242
-120	-5.4265	-5.4647	-5.5027	-5.5405	-5.5782	-5.6158	-5.6531	-5.6904	-5.7274	-5.7643
-110	-5.0366	-5.0763	-5.1158	-5.1551	-5.1943	-5.2334	-5.2723	-5.3111	-5.3497	-5.3882
-100	-4.6325	-4.6736	-4.7144	-4.7552	-4.7958	-4.8363	-4.8766	-4.9168	-4.9569	-4.9968
-90	-4.2152	-4.2575	-4.2997	-4.3417	-4.3837	-4.4255	-4.4671	-4.5087	-4.5501	-4.5914
-80	-3.7856	-3.8290	-3.8724	-3.9157	-3.9588	-4.0019	-4.0448	-4.0876	-4.1302	-4.1728
-70	-3.3445	-3.3891	-3.4336	-3.4780	-3.5222	-3.5664	-3.6104	-3.6544	-3.6982	-3.7419
-60	-2.8928	-2.9384	-2.9839	-3.0294	-3.0747	-3.1199	-3.1650	-3.2101	-3.2550	-3.2998
-50	-2.4313	-2.4779	-2.5243	-2.5707	-2.6170	-2.6632	-2.7093	-2.7553	-2.8013	-2.8471
-40	-1.9607	-2.0081	-2.0555	-2.1028	-2.1500	-2.1971	-2.2441	-2.2910	-2.3379	-2.3846
-30	-1.4816	-1.5299	-1.5780	-1.6262	-1.6742	-1.7221	-1.7700	-1.8178	-1.8655	-1.9131
-20	-0.9947	-1.0438	-1.0927	-1.1416	-1.1904	-1.2391	-1.2877	-1.3363	-1.3848	-1.4332
-10	-0.5007	-0.5504	-0.6000	-0.6496	-0.6991	-0.7486	-0.7979	-0.8472	-0.8965	-0.9456
0	0.0000	-0.0504	-0.1006	-0.1509	-0.2010	-0.2511	-0.3012	-0.3512	-0.4011	-0.4509

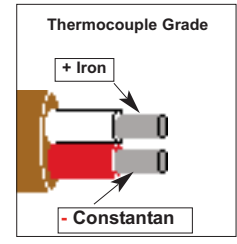
Temp	0	1	2	3	4	5	6	7	8	9
0	0.0000	0.0504	0.1009	0.1514	0.2020	0.2527	0.3034	0.3541	0.4050	0.4558
10	0.5068	0.5578	0.6088	0.6599	0.7111	0.7623	0.8136	0.8649	0.9163	0.9677
20	1.0192	1.0707	1.1223	1.1739	1.2256	1.2773	1.3291	1.3809	1.4328	1.4847
30	1.5367	1.5887	1.6407	1.6928	1.7450	1.7972	1.8494	1.9017	1.9541	2.0064
40	2.0589	2.1113	2.1638	2.2164	2.2689	2.3216	2.3742	2.4270	2.4797	2.5325
50	2.5853	2.6382	2.6911	2.7440	2.7970	2.8500	2.9031	2.9562	3.0093	3.0625
60	3.1157	3.1689	3.2222	3.2755	3.3288	3.3822	3.4356	3.4890	3.5425	3.5960
70	3.6495	3.7031	3.7567	3.8103	3.8640	3.9177	3.9714	4.0252	4.0789	4.1328
80	4.1866	4.2405	4.2943	4.3483	4.4022	4.4562	4.5102	4.5642	4.6183	4.6724
90	4.7265	4.7806	4.8348	4.8890	4.9432	4.9974	5.0517	5.1059	5.1602	5.2146
100	5.2689	5.3233	5.3777	5.4321	5.4865	5.5410	5.5955	5.6500	5.7045	5.7591
110	5.8136	5.8682	5.9228	5.9774	6.0321	6.0867	6.1414	6.1961	6.2508	6.3056
120	6.3603	6.4151	6.4699	6.5247	6.5795	6.6343	6.6892	6.7440	6.7989	6.8538
130	6.9087	6.9637	7.0186	7.0736	7.1286	7.1835	7.2385	7.2936	7.3486	7.4036
140	7.4587	7.5138	7.5688	7.6239	7.6790	7.7341	7.7893	7.8444	7.8996	7.9547
150	8.0099	8.0651	8.1203	8.1755	8.2307	8.2859	8.3412	8.3964	8.4517	8.5069
160	8.5622	8.6175	8.6728	8.7281	8.7834	8.8387	8.8941	8.9494	9.0047	9.0601
170	9.1154	9.1708	9.2262	9.2815	9.3369	9.3923	9.4477	9.5031	9.5585	9.6139
180	9.6694	9.7248	9.7802	9.8357	9.8911	9.9465	10.0020	10.0574	10.1129	10.1684
190	10.2238	10.2793	10.3348	10.3903	10.4458	10.5013	10.5567	10.6122	10.6677	10.7232
200	10.7787	10.8343	10.8898	10.9453	11.0008	11.0563	11.1118	11.1674	11.2229	11.2784
210	11.3339	11.3895	11.4450	11.5005	11.5560	11.6116	11.6671	11.7227	11.7782	11.8337
220	11.8893	11.9448	12.0003	12.0559	12.1114	12.1670	12.2225	12.2780	12.3336	12.3891
230	12.4446	12.5002	12.5557	12.6113	12.6668	12.7223	12.7779	12.8334	12.8889	12.9445



Temperature vs Millivolt Table Reference Junction 0°C

Temperature Range
Maximum Useful Temperature Range:
Thermocouple Grade: 32 to 1382°F
0 to 750°C
Extension Grade: 32 to 392°F
0 to 200°C

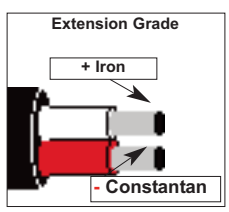
Maximum Thermocouple Grade
Temperature Range
-346 to 2193°F
-210 to 1200°C
Accuracy: Standard: 2.2°C or 0.75%
Special: 1.1°C or 0.4%



Recommended Applications:

Reducing, Vacuum, Inert Environments Limited Use in Oxidizing Environments at High Temperatures Not Recommended for Low Temperatures Applications

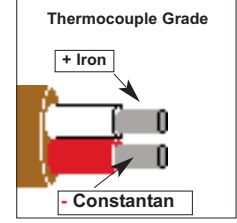
Temp	0	1	2	3	4	5	6	7	8	9
240	13.0000	13.0555	13.1110	13.1666	13.2221	13.2776	13.3331	13.3886	13.4442	13.4997
250	13.5552	13.6107	13.6662	13.7217	13.7772	13.8327	13.8882	13.9437	13.9992	14.0547
260	14.1102	14.1657	14.2212	14.2766	14.3321	14.3876	14.4431	14.4985	14.5540	14.6095
270	14.6649	14.7204	14.7759	14.8313	14.8868	14.9422	14.9976	15.0531	15.1085	15.1639
280	15.2194	15.2748	15.3302	15.3856	15.4411	15.4965	15.5519	15.6073	15.6627	15.7181
290	15.7735	15.8289	15.8842	15.9396	15.9950	16.0504	16.1058	16.1611	16.2165	16.2718
300	16.3272	16.3826	16.4379	16.4933	16.5486	16.6039	16.6593	16.7146	16.7699	16.8252
310	16.8806	16.9359	16.9912	17.0465	17.1018	17.1571	17.2124	17.2677	17.3230	17.3783
320	17.4335	17.4888	17.5441	17.5994	17.6546	17.7099	17.7652	17.8204	17.8757	17.9309
330	17.9862	18.0414	18.0967	18.1519	18.2071	18.2624	18.3176	18.3728	18.4280	18.4833
340	18.5385	18.5937	18.6489	18.7041	18.7593	18.8145	18.8697	18.9249	18.9801	19.0353
350	19.0905	19.1456	19.2008	19.2560	19.3112	19.3664	19.4215	19.4767	19.5319	19.5870
360	19.6422	19.6974	19.7525	19.8077	19.8629	19.9180	19.9732	20.0283	20.0835	20.1386
370	20.1938	20.2489	20.3041	20.3592	20.4144	20.4695	20.5246	20.5798	20.6349	20.6901
380	20.7452	20.8003	20.8555	20.9106	20.9658	21.0209	21.0760	21.1312	21.1863	21.2415
390	21.2966	21.3518	21.4069	21.4620	21.5172	21.5723	21.6275	21.6826	21.7378	21.7929
400	21.8481	21.9032	21.9584	22.0135	22.0687	22.1238	22.1790	22.2342	22.2893	22.3445
410	22.3997	22.4549	22.5100	22.5652	22.6204	22.6756	22.7308	22.7860	22.8412	22.8964
420	22.9516	23.0068	23.0620	23.1172	23.1724	23.2276	23.2829	23.3381	23.3933	23.4486
430	23.5038	23.5591	23.6143	23.6696	23.7249	23.7802	23.8354	23.8907	23.9460	24.0013
440	24.0566	24.1119	24.1673	24.2226	24.2779	24.3333	24.3886	24.4440	24.4993	24.5547
450	24.6101	24.6655	24.7209	24.7763	24.8317	24.8871	24.9425	24.9980	25.0534	25.1089
460	25.1643	25.2198	25.2753	25.3308	25.3863	25.4418	25.4974	25.5529	25.6084	25.6640
470	25.7196	25.7751	25.8307	25.8863	25.9420	25.9976	26.0532	26.1089	26.1645	26.2202
480	26.2759	26.3316	26.3873	26.4431	26.4988	26.5546	26.6103	26.6661	26.7219	26.7777
490	26.8335	26.8894	26.9452	27.0011	27.0570	27.1129	27.1688	27.2247	27.2807	27.3367
500	27.3926	27.4486	27.5046	27.5606	27.6167	27.6727	27.7288	27.7849	27.8410	27.8972
510	27.9534	28.0095	28.0657	28.1219	28.1781	28.2344	28.2906	28.3469	28.4032	28.4595
520	28.5159	28.5722	28.6286	28.6850	28.7414	28.7979	28.8543	28.9108	28.9673	29.0239
530	29.0804	29.1370	29.1936	29.2502	29.3068	29.3635	29.4201	29.4768	29.5336	29.5903
540	29.6471	29.7039	29.7607	29.8175	29.8744	29.9313	29.9882	30.0451	30.1021	30.1591
550	30.2161	30.2732	30.3302	30.3873	30.4444	30.5016	30.5587	30.6159	30.6731	30.7304
560	30.7877	30.8450	30.9023	30.9596	31.0170	31.0744	31.1319	31.1893	31.2468	31.3044
570	31.3619	31.4195	31.4771	31.5347	31.5924	31.6501	31.7078	31.7656	31.8233	31.8812
580	31.9390	31.9969	32.0548	32.1127	32.1707	32.2287	32.2867	32.3448	32.4029	32.4610
590	32.5191	32.5773	32.6355	32.6938	32.7521	32.8104	32.8687	32.9271	32.9855	33.0439
600	33.1024	33.1609	33.2195	33.2780	33.3366	33.3953	33.4540	33.5127	33.5714	33.6302
610	33.6890	33.7479	33.8067	33.8656	33.9246	33.9836	34.0426	34.1017	34.1607	34.2199
620	34.2790	34.3382	34.3975	34.4567	34.5160	34.5754	34.6347	34.6942	34.7536	34.8131
630	34.8726	34.9322	34.9917	35.0514	35.1110	35.1707	35.2305	35.2903	35.3501	35.4099
640	35.4698	35.5297	35.5897	35.6497	35.7097	35.7698	35.8299	35.8901	35.9502	36.0105
650	36.0707	36.1310	36.1914	36.2517	36.3121	36.3726	36.4331	36.4936	36.5542	36.6148
660	36.6754	36.7361	36.7968	36.8575	36.9183	36.9792	37.0400	37.1009	37.1619	37.2229
670	37.2839	37.3449	37.4060	37.4672	37.5283	37.5895	37.6508	37.7121	37.7734	37.8347
680	37.8961	37.9576	38.0190	38.0805	38.1421	38.2037	38.2653	38.3269	38.3886	38.4504
690	38.5121	38.5739	38.6358	38.6977	38.7596	38.8215	38.8835	38.9455	39.0076	39.0697
700	39.1318	39.1940	39.2562	39.3184	39.3807	39.4430	39.5054	39.5678	39.6302	39.6926
710	39.7551	39.8176	39.8802	39.9428	40.0054	40.0680	40.1307	40.1935	40.2562	40.3190
720	40.3818	40.4447	40.5076	40.5705	40.6334	40.6964	40.7594	40.8225	40.8856	40.9487



Temperature vs Millivolt Table Reference Junction 0°C

Temperature Range: 0 to 200°C
 Maximum Useful Temperature Range: 32 to 1382°F
 Thermocouple Grade: 32 to 750°C
 Extension Grade: 32 to 392°F

Maximum Thermocouple Grade Temperature Range: -346 to 2193°F
 -210 to 1200°C



Recommended Applications:
 Reducing, Vacuum, Inert Environments Limited Use in Oxidizing Environments at High Temperatures Not Recommended for Low Temperatures Applications

Temp	0	1	2	3	4	5	6	7	8	9
730	41.0118	41.0750	41.1382	41.2014	41.2646	41.3279	41.3912	41.4546	41.5180	41.5814
740	41.6448	41.7082	41.7717	41.8352	41.8988	41.9623	42.0259	42.0895	42.1532	42.2168
750	42.2805	42.3442	42.4080	42.4717	42.5355	42.5993	42.6631	42.7270	42.7908	42.8547
760	42.9186	42.9826	43.0466	43.1106	43.1746	43.2387	43.3028	43.3669	43.4311	43.4953
770	43.5595	43.6237	43.6880	43.7523	43.8166	43.8810	43.9453	44.0097	44.0741	44.1386
780	44.2030	44.2675	44.3320	44.3964	44.4610	44.5255	44.5900	44.6546	44.7191	44.7837
790	44.8483	44.9128	44.9774	45.0420	45.1066	45.1713	45.2359	45.3005	45.3651	45.4298
800	45.4944	45.5590	45.6237	45.6883	45.7529	45.8176	45.8822	45.9468	46.0114	46.0761
810	46.1407	46.2053	46.2699	46.3345	46.3991	46.4636	46.5282	46.5928	46.6573	46.7219
820	46.7864	46.8509	46.9154	46.9799	47.0444	47.1089	47.1734	47.2378	47.3022	47.3666
830	47.4310	47.4954	47.5598	47.6241	47.6885	47.7528	47.8171	47.8813	47.9456	48.0098
840	48.0740	48.1382	48.2024	48.2665	48.3307	48.3948	48.4588	48.5229	48.5869	48.6510
850	48.7149	48.7789	48.8428	48.9067	48.9706	49.0345	49.0983	49.1621	49.2259	49.2897
860	49.3534	49.4171	49.4808	49.5444	49.6080	49.6716	49.7351	49.7987	49.8622	49.9256
870	49.9891	50.0525	50.1159	50.1792	50.2425	50.3058	50.3690	50.4323	50.4955	50.5586
880	50.6217	50.6848	50.7479	50.8109	50.8739	50.9369	50.9998	51.0627	51.1256	51.1884
890	51.2512	51.3139	51.3767	51.4394	51.5020	51.5647	51.6273	51.6898	51.7523	51.8148
900	51.8773	51.9397	52.0021	52.0644	52.1268	52.1890	52.2513	52.3135	52.3757	52.4378
910	52.4999	52.5620	52.6240	52.6860	52.7480	52.8100	52.8719	52.9337	52.9955	53.0573
920	53.1191	53.1808	53.2425	53.3042	53.3658	53.4274	53.4889	53.5504	53.6119	53.6733
930	53.7348	53.7961	53.8575	53.9188	53.9801	54.0413	54.1025	54.1637	54.2248	54.2859
940	54.3470	54.4080	54.4690	54.5300	54.5909	54.6518	54.7127	54.7735	54.8343	54.8950
950	54.9558	55.0165	55.0771	55.1378	55.1984	55.2589	55.3195	55.3800	55.4405	55.5009
960	55.5613	55.6217	55.6820	55.7423	55.8026	55.8629	55.9231	55.9833	56.0434	56.1036
970	56.1637	56.2237	56.2838	56.3438	56.4038	56.4637	56.5236	56.5835	56.6434	56.7032
980	56.7630	56.8228	56.8825	56.9423	57.0020	57.0616	57.1213	57.1809	57.2405	57.3000
990	57.3595	57.4190	57.4785	57.5380	57.5974	57.6568	57.7162	57.7755	57.8348	57.8941
1000	57.9534	58.0127	58.0719	58.1311	58.1903	58.2494	58.3085	58.3677	58.4267	58.4858
1010	58.5448	58.6038	58.6628	58.7218	58.7808	58.8397	58.8986	58.9575	59.0163	59.0752
1020	59.1340	59.1928	59.2516	59.3104	59.3691	59.4278	59.4865	59.5452	59.6039	59.6625
1030	59.7212	59.7798	59.8384	59.8970	59.9555	60.0141	60.0726	60.1311	60.1896	60.2481
1040	60.3065	60.3650	60.4234	60.4818	60.5402	60.5986	60.6570	60.7153	60.7737	60.8320
1050	60.8903	60.9486	61.0069	61.0652	61.1234	61.1817	61.2399	61.2981	61.3563	61.4145
1060	61.4727	61.5309	61.5890	61.6472	61.7053	61.7634	61.8215	61.8797	61.9377	61.9958
1070	62.0539	62.1120	62.1700	62.2281	62.2861	62.3441	62.4021	62.4601	62.5181	62.5761
1080	62.6341	62.6921	62.7501	62.8080	62.8660	62.9239	62.9818	63.0398	63.0977	63.1556
1090	63.2135	63.2714	63.3293	63.3872	63.4451	63.5029	63.5608	63.6187	63.6765	63.7344
1100	63.7922	63.8501	63.9079	63.9657	64.0235	64.0814	64.1392	64.1970	64.2548	64.3126
1110	64.3704	64.4282	64.4860	64.5437	64.6015	64.6593	64.7171	64.7748	64.8326	64.8903
1120	64.9481	65.0058	65.0636	65.1213	65.1791	65.2368	65.2945	65.3523	65.4100	65.4677
1130	65.5254	65.5831	65.6409	65.6986	65.7563	65.8140	65.8717	65.9293	65.9870	66.0447
1140	66.1024	66.1601	66.2178	66.2754	66.3331	66.3908	66.4484	66.5061	66.5637	66.6214
1150	66.6790	66.7367	66.7943	66.8519	66.9095	66.9672	67.0248	67.0824	67.1400	67.1976
1160	67.2552	67.3128	67.3704	67.4280	67.4856	67.5431	67.6007	67.6583	67.7158	67.7734
1170	67.8309	67.8884	67.9460	68.0035	68.0610	68.1185	68.1760	68.2335	68.2910	68.3485
1180	68.4059	68.4634	68.5209	68.5783	68.6357	68.6932	68.7506	68.8080	68.8654	68.9227
1190	68.9801	69.0375	69.0948	69.1522	69.2095	69.2668	69.3241	69.3814	69.4387	69.4959
1200	69.5532									