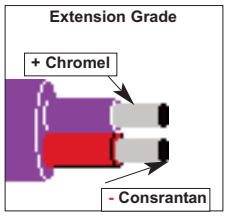
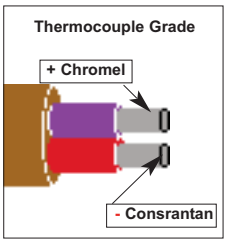
Technical Information Data Bulletin

Type E Thermocouple
Chromel-Constantan

TEMPERATURE & PROCESS INSTRUMENTS INC



Temperature vs Millivolt Table
Reference Junction 0°C



Temperature Range
Maximum Useful Temperature Range:
Thermocouple Grade: -328 to 1652°F
-200 to 900°C
Extension Grade: 32 to 392°F
0 to 200°C

Maximum Thermocouple Grade Temperature Range
–454 to 1832°F
–270 to 1000°C
Accuracy: Standard: 1.7°C or 0.5%
Special: 1.0°C or 0.4%

Recommended Applications:
Oxidizing or Inert.Limited Use in Vacuum or Reducing.Environments.

Temp	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-270	-9.8350									
-260	-9.7966	-9.8023	-9.8076	-9.8126	-9.8171	-9.8212	-9.8248	-9.8281	-9.8308	-9.8331
-250	-9.7184	-9.7279	-9.7370	-9.7458	-9.7541	-9.7622	-9.7698	-9.7771	-9.7840	-9.7905
-240	-9.6039	-9.6170	-9.6297	-9.6420	-9.6540	-9.6656	-9.6769	-9.6878	-9.6984	-9.7086
-230	-9.4550	-9.4714	-9.4875	-9.5032	-9.5186	-9.5337	-9.5484	-9.5628	-9.5769	-9.5906
-220	-9.2738	-9.2933	-9.3125	-9.3314	-9.3500	-9.3683	-9.3863	-9.4039	-9.4213	-9.4383
-210	-9.0629	-9.0852	-9.1073	-9.1291	-9.1507	-9.1719	-9.1929	-9.2135	-9.2339	-9.2540
-200	-8.8246	-8.8496	-8.8743	-8.8988	-8.9230	-8.9470	-8.9707	-8.9942	-9.0173	-9.0402
-190	-8.5609	-8.5884	-8.6156	-8.6426	-8.6693	-8.6958	-8.7221	-8.7481	-8.7738	-8.7993
-180	-8.2734	-8.3032	-8.3328	-8.3621	-8.3912	-8.4201	-8.4487	-8.4771	-8.5053	-8.5332
-170	-7.9633	-7.9953	-8.0271	-8.0587	-8.0900	-8.1211	-8.1520	-8.1827	-8.2132	-8.2434
-160	-7.6316	-7.6657	-7.6997	-7.7333	-7.7668	-7.8001	-7.8332	-7.8660	-7.8987	-7.9311
-150	-7.2793	-7.3155	-7.3514	-7.3871	-7.4227	-7.4580	-7.4931	-7.5281	-7.5628	-7.5973
-140	-6.9073	-6.9454	-6.9833	-7.0210	-7.0584	-7.0957	-7.1329	-7.1698	-7.2065	-7.2430
-130	-6.5164	-6.5563	-6.5961	-6.6356	-6.6750	-6.7142	-6.7532	-6.7920	-6.8306	-6.8691
-120	-6.1073	-6.1490	-6.1905	-6.2319	-6.2731	-6.3141	-6.3549	-6.3955	-6.4360	-6.4763
-110	-5.6807	-5.7241	-5.7674	-5.8105	-5.8534	-5.8961	-5.9387	-5.9811	-6.0234	-6.0654
-100	-5.2372	-5.2823	-5.3272	-5.3720	-5.4166	-5.4610	-5.5053	-5.5494	-5.5933	-5.6371
-90	-4.7774	-4.8241	-4.8706	-4.9170	-4.9632	-5.0093	-5.0552	-5.1009	-5.1465	-5.1919
-80	-4.3019	-4.3501	-4.3982	-4.4462	-4.4939	-4.5416	-4.5890	-4.6364	-4.6835	-4.7305
-70	-3.8113	-3.8610	-3.9106	-3.9600	-4.0093	-4.0585	-4.1074	-4.1563	-4.2050	-4.2535
-60	-3.3062	-3.3574	-3.4084	-3.4592	-3.5100	-3.5606	-3.6110	-3.6613	-3.7114	-3.7615
-50	-2.7872	-2.8397	-2.8921	-2.9444	-2.9965	-3.0484	-3.1003	-3.1520	-3.2035	-3.2549
-40	-2.2548	-2.3086	-2.3623	-2.4159	-2.4694	-2.5227	-2.5758	-2.6289	-2.6818	-2.7346
-30	-1.7095	-1.7646	-1.8196	-1.8744	-1.9291	-1.9837	-2.0382	-2.0926	-2.1468	-2.2009
-20	-1.1516	-1.2080	-1.2642	-1.3203	-1.3763	-1.4321	-1.4878	-1.5434	-1.5989	-1.6543
-10	-0.5815	-0.6391	-0.6965	-0.7538	-0.8110	-0.8681	-0.9250	-0.9819	-1.0386	-1.0952
0	0.0000	-0.0586	-0.1171	-0.1756	-0.2339	-0.2921	-0.3502	-0.4082	-0.4661	-0.5239

Temp	0	1	2	3	4	5	6	7	8	9
0	0.0000	0.0587	0.1175	0.1764	0.2354	0.2945	0.3536	0.4129	0.4722	0.5317
10	0.5912	0.6508	0.7105	0.7703	0.8302	0.8902	0.9503	1.0104	1.0707	1.1311
20	1.1915	1.2520	1.3127	1.3734	1.4342	1.4951	1.5561	1.6172	1.6784	1.7397
30	1.8010	1.8625	1.9240	1.9857	2.0474	2.1092	2.1712	2.2332	2.2953	2.3575
40	2.4197	2.4821	2.5446	2.6071	2.6698	2.7325	2.7954	2.8583	2.9213	2.9844
50	3.0476	3.1109	3.1743	3.2377	3.3013	3.3649	3.4287	3.4925	3.5564	3.6204
60	3.6845	3.7487	3.8130	3.8773	3.9418	4.0063	4.0709	4.1356	4.2004	4.2653
70	4.3303	4.3953	4.4605	4.5257	4.5910	4.6565	4.7219	4.7875	4.8532	4.9189
80	4.9848	5.0507	5.1167	5.1828	5.2490	5.3152	5.3815	5.4480	5.5145	5.5811
90	5.6477	5.7145	5.7813	5.8482	5.9152	5.9823	6.0495	6.1167	6.1840	6.2515
100	6.3189	6.3865	6.4541	6.5219	6.5897	6.6575	6.7255	6.7935	6.8617	6.9298
110	6.9981	7.0665	7.1349	7.2034	7.2720	7.3406	7.4093	7.4781	7.5470	7.6160
120	7.6850	7.7541	7.8233	7.8925	7.9618	8.0312	8.1007	8.1702	8.2398	8.3095
130	8.3793	8.4491	8.5190	8.5889	8.6590	8.7291	8.7992	8.8695	8.9398	9.0102
140	9.0806	9.1512	9.2217	9.2924	9.3631	9.4339	9.5047	9.5757	9.6467	9.7177
150	9.7888	9.8600	9.9312	10.0026	10.0739	10.1454	10.2169	10.2884	10.3601	10.4317
160	10.5035	10.5753	10.6472	10.7191	10.7911	10.8632	10.9353	11.0075	11.0797	11.1520
170	11.2244	11.2968	11.3693	11.4418	11.5144	11.5871	11.6598	11.7325	11.8054	11.8782
180	11.9512	12.0242	12.0972	12.1703	12.2435	12.3167	12.3900	12.4633	12.5367	12.6101

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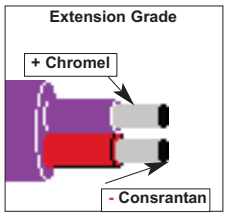
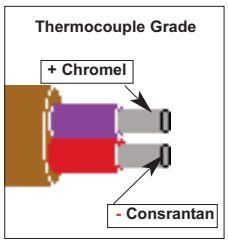


Temperature vs Millivolt Table
Reference Junction 0°C



Temperature Range
Maximum Useful Temperature Range:
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Extension Grade: 32 to 392°F
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Maximum Thermocouple Grade Temperature Range
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Accuracy: Standard: 1.7°C or 0.5%
Special: 1.0°C or 0.4%

Recommended Applications:
Oxidizing or Inert.Limited Use in Vacuum or Reducing.Environments.

Temp	0	1	2	3	4	5	6	7	8	9
190	12.6836	12.7571	12.8307	12.9043	12.9780	13.0518	13.1256	13.1994	13.2733	13.3473
200	13.4213	13.4954	13.5695	13.6436	13.7178	13.7921	13.8664	13.9407	14.0151	14.0896
210	14.1641	14.2386	14.3132	14.3879	14.4625	14.5373	14.6121	14.6869	14.7618	14.8367
220	14.9116	14.9866	15.0617	15.1368	15.2119	15.2871	15.3624	15.4376	15.5130	15.5883
230	15.6637	15.7392	15.8147	15.8902	15.9658	16.0414	16.1171	16.1928	16.2685	16.3443
240	16.4201	16.4960	16.5719	16.6478	16.7238	16.7999	16.8759	16.9520	17.0282	17.1043
250	17.1806	17.2568	17.3331	17.4095	17.4858	17.5622	17.6387	17.7152	17.7917	17.8682
260	17.9448	18.0215	18.0981	18.1748	18.2516	18.3284	18.4052	18.4820	18.5589	18.6358
270	18.7127	18.7897	18.8667	18.9438	19.0209	19.0980	19.1751	19.2523	19.3295	19.4068
280	19.4841	19.5614	19.6387	19.7161	19.7935	19.8710	19.9484	20.0259	20.1035	20.1810
290	20.2586	20.3363	20.4139	20.4916	20.5693	20.6471	20.7248	20.8026	20.8805	20.9583
300	21.0362	21.1142	21.1921	21.2701	21.3481	21.4261	21.5042	21.5823	21.6604	21.7386
310	21.8167	21.8949	21.9732	22.0514	22.1297	22.2080	22.2863	22.3647	22.4431	22.5215
320	22.5999	22.6784	22.7569	22.8354	22.9140	22.9925	23.0711	23.1497	23.2284	23.3070
330	23.3857	23.4644	23.5432	23.6219	23.7007	23.7795	23.8584	23.9372	24.0161	24.0950
340	24.1739	24.2529	24.3318	24.4108	24.4898	24.5689	24.6479	24.7270	24.8061	24.8852
350	24.9644	25.0435	25.1227	25.2019	25.2812	25.3604	25.4397	25.5190	25.5983	25.6776
360	25.7570	25.8363	25.9157	25.9951	26.0746	26.1540	26.2335	26.3130	26.3925	26.4720
370	26.5515	26.6311	26.7107	26.7903	26.8699	26.9495	27.0292	27.1089	27.1886	27.2683
380	27.3480	27.4277	27.5075	27.5873	27.6671	27.7469	27.8267	27.9065	27.9864	28.0663
390	28.1462	28.2261	28.3060	28.3859	28.4659	28.5459	28.6259	28.7059	28.7859	28.8659
400	28.9460	29.0260	29.1061	29.1862	29.2663	29.3464	29.4266	29.5067	29.5869	29.6671
410	29.7472	29.8274	29.9077	29.9879	30.0681	30.1484	30.2287	30.3090	30.3893	30.4696
420	30.5499	30.6302	30.7106	30.7909	30.8713	30.9517	31.0321	31.1125	31.1929	31.2733
430	31.3538	31.4342	31.5147	31.5951	31.6756	31.7561	31.8366	31.9171	31.9977	32.0782
440	32.1588	32.2393	32.3199	32.4005	32.4810	32.5616	32.6422	32.7229	32.8035	32.8841
450	32.9647	33.0454	33.1261	33.2067	33.2874	33.3681	33.4488	33.5295	33.6102	33.6909
460	33.7716	33.8523	33.9331	34.0138	34.0946	34.1753	34.2561	34.3369	34.4176	34.4984
470	34.5792	34.6600	34.7408	34.8216	34.9024	34.9833	35.0641	35.1449	35.2258	35.3066
480	35.3875	35.4683	35.5492	35.6300	35.7109	35.7918	35.8727	35.9535	36.0344	36.1153
490	36.1962	36.2771	36.3580	36.4389	36.5198	36.6007	36.6817	36.7626	36.8435	36.9244
500	37.0054	37.0863	37.1672	37.2482	37.3291	37.4100	37.4910	37.5719	37.6529	37.7338
510	37.8148	37.8957	37.9767	38.0576	38.1386	38.2195	38.3005	38.3815	38.4624	38.5434
520	38.6243	38.7053	38.7863	38.8672	38.9482	39.0291	39.1101	39.1911	39.2720	39.3530
530	39.4339	39.5149	39.5959	39.6768	39.7578	39.8387	39.9197	40.0006	40.0816	40.1625
540	40.2435	40.3244	40.4054	40.4863	40.5673	40.6482	40.7291	40.8101	40.8910	40.9719
550	41.0528	41.1338	41.2147	41.2956	41.3765	41.4574	41.5383	41.6192	41.7001	41.7810
560	41.8619	41.9428	42.0237	42.1046	42.1854	42.2663	42.3472	42.4280	42.5089	42.5897
570	42.6706	42.7514	42.8323	42.9131	42.9939	43.0747	43.1556	43.2364	43.3172	43.3980
580	43.4788	43.5596	43.6404	43.7211	43.8019	43.8827	43.9634	44.0442	44.1249	44.2057
590	44.2864	44.3671	44.4478	44.5286	44.6093	44.6900	44.7707	44.8513	44.9320	45.0127
600	45.0934	45.1740	45.2547	45.3353	45.4159	45.4966	45.5772	45.6578	45.7384	45.8190
610	45.8996	45.9802	46.0607	46.1413	46.2218	46.3024	46.3829	46.4634	46.5440	46.6245
620	46.7050	46.7855	46.8660	46.9464	47.0269	47.1074	47.1878	47.2682	47.3487	47.4291
630	47.5095	47.5899	47.6703	47.7507	47.8310	47.9114	47.9918	48.0721	48.1524	48.2328
640	48.3131	48.3934	48.4737	48.5540	48.6342	48.7145	48.7948	48.8750	48.9552	49.0355
650	49.1157	49.1959	49.2761	49.3562	49.4364	49.5166	49.5967	49.6769	49.7570	49.8371
660	49.9172	49.9973	50.0774	50.1575	50.2375	50.3176	50.3976	50.4777	50.5577	50.6377

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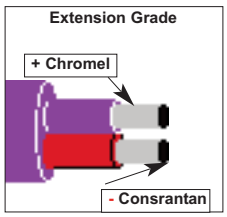

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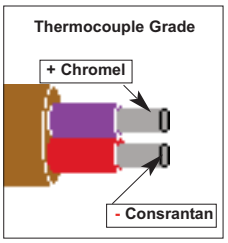
Reference Junction 0°C



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Extension Grade: 32 to 392°F
0 to 200°C

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Accuracy: Standard: 1.7°C or 0.5%
Special: 1.0°C or 0.4%

Recommended Applications:
Oxidizing or Inert.Limited Use in Vacuum or Reducing.Environments.

Temp	0	1	2	3	4	5	6	7	8	9
670	50.7177	50.7977	50.8777	50.9576	51.0376	51.1175	51.1975	51.2774	51.3573	51.4372
680	51.5171	51.5969	51.6768	51.7567	51.8365	51.9163	51.9962	52.0760	52.1558	52.2355
690	52.3153	52.3951	52.4748	52.5546	52.6343	52.7140	52.7937	52.8734	52.9531	53.0327
700	53.1124	53.1920	53.2717	53.3513	53.4309	53.5105	53.5901	53.6697	53.7492	53.8288
710	53.9083	53.9878	54.0673	54.1468	54.2263	54.3058	54.3853	54.4647	54.5442	54.6236
720	54.7030	54.7824	54.8618	54.9412	55.0206	55.1000	55.1793	55.2586	55.3380	55.4173
730	55.4966	55.5759	55.6551	55.7344	55.8137	55.8929	55.9721	56.0513	56.1306	56.2097
740	56.2889	56.3681	56.4472	56.5264	56.6055	56.6846	56.7638	56.8428	56.9219	57.0010
750	57.0801	57.1591	57.2381	57.3172	57.3962	57.4752	57.5542	57.6331	57.7121	57.7911
760	57.8700	57.9489	58.0278	58.1067	58.1856	58.2645	58.3434	58.4222	58.5011	58.5799
770	58.6587	58.7375	58.8163	58.8951	58.9738	59.0526	59.1313	59.2101	59.2888	59.3675
780	59.4462	59.5249	59.6035	59.6822	59.7608	59.8395	59.9181	59.9967	60.0753	60.1538
790	60.2324	60.3110	60.3895	60.4680	60.5466	60.6251	60.7035	60.7820	60.8605	60.9389
800	61.0174	61.0958	61.1742	61.2526	61.3310	61.4094	61.4877	61.5661	61.6444	61.7227
810	61.8010	61.8793	61.9576	62.0359	62.1141	62.1924	62.2706	62.3488	62.4270	62.5052
820	62.5834	62.6615	62.7397	62.8178	62.8959	62.9740	63.0521	63.1302	63.2082	63.2863
830	63.3643	63.4423	63.5203	63.5983	63.6763	63.7542	63.8322	63.9101	63.9880	64.0659
840	64.1438	64.2217	64.2995	64.3773	64.4552	64.5330	64.6108	64.6885	64.7663	64.8441
850	64.9218	64.9995	65.0772	65.1549	65.2326	65.3102	65.3878	65.4655	65.5431	65.6206
860	65.6982	65.7758	65.8533	65.9308	66.0083	66.0858	66.1633	66.2407	66.3182	66.3956
870	66.4730	66.5504	66.6277	66.7051	66.7824	66.8597	66.9370	67.0143	67.0916	67.1688
880	67.2460	67.3232	67.4004	67.4776	67.5548	67.6319	67.7090	67.7861	67.8632	67.9402
890	68.0173	68.0943	68.1713	68.2483	68.3252	68.4022	68.4791	68.5560	68.6329	68.7097
910	69.5539	69.6306	69.7072	69.7837	69.8603	69.9369	70.0134	70.0899	70.1664	70.2428
920	70.3192	70.3957	70.4721	70.5484	70.6248	70.7011	70.7774	70.8537	70.9300	71.0062
930	71.0825	71.1587	71.2349	71.3110	71.3872	71.4633	71.5394	71.6155	71.6915	71.7676
940	71.8436	71.9196	71.9956	72.0715	72.1475	72.2234	72.2993	72.3752	72.4510	72.5268
950	72.6027	72.6785	72.7542	72.8300	72.9057	72.9814	73.0571	73.1328	73.2085	73.2841
960	73.3597	73.4353	73.5109	73.5865	73.6620	73.7376	73.8131	73.8886	73.9641	74.0395
970	74.1150	74.1904	74.2658	74.3412	74.4166	74.4920	74.5674	74.6427	74.7180	74.7934
980	74.8687	74.9440	75.0192	75.0945	75.1698	75.2450	75.3202	75.3955	75.4707	75.5459
990	75.6211	75.6963	75.7715	75.8467	75.9218	75.9970	76.0722	76.1474	76.2225	76.2977
1000	76.3728									

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