

THERMOCOUPLE VOLTAGE TEMPERATURE TABLE

APPLICATION NOTE

Type J Thermocouple

°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-50	-2.431	-2.478	-2.524	-2.571	-2.617	-2.663	-2.709	-2.755	-2.801	-2.847
-40	-1.961	-2.008	-2.055	-2.103	-2.15	-2.197	-2.244	-2.291	-2.338	-2.385
-30	-1.482	-1.53	-1.578	-1.626	-1.674	-1.722	-1.77	-1.818	-1.865	-1.913
-20	-0.995	-1.044	-1.093	-1.142	-1.19	-1.239	-1.288	-1.336	-1.385	-1.433
-10	-0.501	-0.55	-0.6	-0.65	-0.699	-0.749	-0.798	-0.847	-0.896	-0.946
0	0	-0.05	-0.101	-0.151	-0.201	-0.251	-0.301	-0.351	-0.401	-0.451
°C	0	1	2	3	4	5	6	7	8	9
0	0	0.05	0.101	0.151	0.202	0.253	0.303	0.354	0.405	0.456
10	0.507	0.558	0.609	0.66	0.711	0.762	0.814	0.865	0.916	0.968
20	1.019	1.071	1.122	1.174	1.226	1.277	1.329	1.381	1.433	1.485
30	1.537	1.589	1.641	1.693	1.745	1.797	1.849	1.902	1.954	2.006
40	2.059	2.111	2.164	2.216	2.269	2.322	2.374	2.427	2.48	2.532
50	2.585	2.638	2.691	2.744	2.797	2.85	2.903	2.956	3.009	3.062
60	3.116	3.169	3.222	3.275	3.329	3.382	3.436	3.489	3.543	3.596
70	3.65	3.703	3.757	3.81	3.864	3.918	3.971	4.025	4.079	4.133
80	4.187	4.24	4.294	4.348	4.402	4.456	4.51	4.564	4.618	4.672
90	4.726	4.781	4.835	4.889	4.943	4.997	5.052	5.106	5.16	5.215
100	5.269	5.323	5.378	5.432	5.487	5.541	5.595	5.65	5.705	5.759
110	5.814	5.868	5.923	5.977	6.032	6.087	6.141	6.196	6.251	6.306
120	6.36	6.415	6.47	6.525	6.579	6.634	6.689	6.744	6.799	6.854
130	6.909	6.964	7.019	7.074	7.129	7.184	7.239	7.294	7.349	7.404
140	7.459	7.514	7.569	7.624	7.679	7.734	7.789	7.844	7.9	7.955
150	8.01	8.065	8.12	8.175	8.231	8.286	8.341	8.396	8.452	8.507
160	8.562	8.618	8.673	8.728	8.783	8.839	8.894	8.949	9.005	9.06
170	9.115	9.171	9.226	9.282	9.337	9.392	9.448	9.503	9.559	9.614
180	9.669	9.725	9.78	9.836	9.891	9.947	10.002	10.057	10.113	10.168
190	10.224	10.279	10.335	10.39	10.446	10.501	10.557	10.612	10.668	10.723
200	10.779	10.834	10.89	10.945	11.001	11.056	11.112	11.167	11.223	11.278
210	11.334	11.389	11.445	11.501	11.556	11.612	11.667	11.723	11.778	11.834
220	11.889	11.945	12	12.056	12.111	12.167	12.222	12.278	12.334	12.389
230	12.445	12.5	12.556	12.611	12.667	12.722	12.778	12.833	12.889	12.944
240	13	13.056	13.111	13.167	13.222	13.278	13.333	13.389	13.444	13.5

Thermoelectric voltage as a function of temperature (°C) reference junctions at 0°C

THERMOCOUPLE VOLTAGE TEMPERATURE TABLE

APPLICATION NOTE

Type K Thermocouple

°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-50	-1.889	-1.925	-1.961	-1.996	-2.032	-2.067	-2.103	-2.138	-2.173	-2.208
-40	-1.527	-1.564	-1.6	-1.637	-1.673	-1.709	-1.745	-1.782	-1.818	-1.854
-30	-1.156	-1.194	-1.231	-1.268	-1.305	-1.343	-1.38	-1.417	-1.453	-1.49
-20	-0.778	-0.816	-0.854	-0.892	-0.93	-0.968	-1.006	-1.043	-1.081	-1.119
-10	-0.392	-0.431	-0.47	-0.508	-0.547	-0.586	-0.624	-0.663	-0.701	-0.739
0	0	-0.039	-0.079	-0.118	-0.157	-0.197	-0.236	-0.275	-0.314	-0.353
°C	0	1	2	3	4	5	6	7	8	9
0	0	0.039	0.079	0.119	0.158	0.198	0.238	0.277	0.317	0.357
10	0.397	0.437	0.477	0.517	0.557	0.597	0.637	0.677	0.718	0.758
20	0.798	0.838	0.879	0.919	0.96	1	1.041	1.081	1.122	1.163
30	1.203	1.244	1.285	1.326	1.366	1.407	1.448	1.489	1.53	1.571
40	1.612	1.653	1.694	1.735	1.776	1.817	1.858	1.899	1.941	1.982
50	2.023	2.064	2.106	2.147	2.188	2.23	2.271	2.312	2.354	2.395
60	2.436	2.478	2.519	2.561	2.602	2.644	2.685	2.727	2.768	2.81
70	2.851	2.893	2.934	2.976	3.017	3.059	3.1	3.142	3.184	3.225
80	3.267	3.308	3.35	3.391	3.433	3.474	3.516	3.557	3.599	3.64
90	3.682	3.723	3.765	3.806	3.848	3.889	3.931	3.972	4.013	4.055
100	4.096	4.138	4.179	4.22	4.262	4.303	4.344	4.385	4.427	4.468
110	4.509	4.55	4.591	4.633	4.674	4.715	4.756	4.797	4.838	4.879
120	4.92	4.961	5.002	5.043	5.084	5.124	5.165	5.206	5.247	5.288
130	5.328	5.369	5.41	5.45	5.491	5.532	5.572	5.613	5.653	5.694
140	5.735	5.775	5.815	5.856	5.896	5.937	5.977	6.017	6.058	6.098
150	6.138	6.179	6.219	6.259	6.299	6.339	6.38	6.42	6.46	6.5
160	6.54	6.58	6.62	6.66	6.701	6.741	6.781	6.821	6.861	6.901
170	6.941	6.981	7.021	7.06	7.1	7.14	7.18	7.22	7.26	7.3
180	7.34	7.38	7.42	7.46	7.5	7.54	7.579	7.619	7.659	7.699
190	7.739	7.779	7.819	7.859	7.899	7.939	7.979	8.019	8.059	8.099
200	8.138	8.178	8.218	8.258	8.298	8.338	8.378	8.418	8.458	8.499
210	8.539	8.579	8.619	8.659	8.699	8.739	8.779	8.819	8.86	8.9
220	8.94	8.98	9.02	9.061	9.101	9.141	9.181	9.222	9.262	9.302
230	9.343	9.383	9.423	9.464	9.504	9.545	9.585	9.626	9.666	9.707
240	9.747	9.788	9.828	9.869	9.909	9.95	9.991	10.031	10.072	10.113

Thermoelectric voltage as a function of temperature (°C) reference junctions at 0°C

THERMOCOUPLE VOLTAGE TEMPERATURE TABLE

APPLICATION NOTE

Type T Thermocouple

°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-50	-1.819	-1.853	-1.887	-1.92	-1.954	-1.987	-2.021	-2.054	-2.087	-2.12
-40	-1.475	-1.51	-1.545	-1.579	-1.614	-1.648	-1.683	-1.717	-1.751	-1.785
-30	-1.121	-1.157	-1.192	-1.228	-1.264	-1.299	-1.335	-1.37	-1.405	-1.44
-20	-0.757	-0.794	-0.83	-0.867	-0.904	-0.94	-0.976	-1.013	-1.049	-1.085
-10	-0.383	-0.421	-0.459	-0.496	-0.534	-0.571	-0.608	-0.646	-0.683	-0.72
0	0	-0.039	-0.077	-0.116	-0.154	-0.193	-0.231	-0.269	-0.307	-0.345
°C	0	1	2	3	4	5	6	7	8	9
0	0	0.039	0.078	0.117	0.156	0.195	0.234	0.273	0.312	0.352
10	0.391	0.431	0.47	0.51	0.549	0.589	0.629	0.669	0.709	0.749
20	0.79	0.83	0.87	0.911	0.951	0.992	1.033	1.074	1.114	1.155
30	1.196	1.238	1.279	1.32	1.362	1.403	1.445	1.486	1.528	1.57
40	1.612	1.654	1.696	1.738	1.78	1.823	1.865	1.908	1.95	1.993
50	2.036	2.079	2.122	2.165	2.208	2.251	2.294	2.338	2.381	2.425
60	2.468	2.512	2.556	2.6	2.643	2.687	2.732	2.776	2.82	2.864
70	2.909	2.953	2.998	3.043	3.087	3.132	3.177	3.222	3.267	3.312
80	3.358	3.403	3.448	3.494	3.539	3.585	3.631	3.677	3.722	3.768
90	3.814	3.86	3.907	3.953	3.999	4.046	4.092	4.138	4.185	4.232
100	4.279	4.325	4.372	4.419	4.466	4.513	4.561	4.608	4.655	4.702
110	4.75	4.798	4.845	4.893	4.941	4.988	5.036	5.084	5.132	5.18
120	5.228	5.277	5.325	5.373	5.422	5.47	5.519	5.567	5.616	5.665
130	5.714	5.763	5.812	5.861	5.91	5.959	6.008	6.057	6.107	6.156
140	6.206	6.255	6.305	6.355	6.404	6.454	6.504	6.554	6.604	6.654
150	6.704	6.754	6.805	6.855	6.905	6.956	7.006	7.057	7.107	7.158
160	7.209	7.26	7.31	7.361	7.412	7.463	7.515	7.566	7.617	7.668
170	7.72	7.771	7.823	7.874	7.926	7.977	8.029	8.081	8.133	8.185
180	8.237	8.289	8.341	8.393	8.445	8.497	8.55	8.602	8.654	8.707
190	8.759	8.812	8.865	8.917	8.97	9.023	9.076	9.129	9.182	9.235
200	9.288	9.341	9.395	9.448	9.501	9.555	9.608	9.662	9.715	9.769
210	9.822	9.876	9.93	9.984	10.038	10.092	10.146	10.2	10.254	10.308
220	10.362	10.417	10.471	10.525	10.58	10.634	10.689	10.743	10.798	10.853
230	10.907	10.962	11.017	11.072	11.127	11.182	11.237	11.292	11.347	11.403
240	11.458	11.513	11.569	11.624	11.68	11.735	11.791	11.846	11.902	11.958

Thermoelectric voltage as a function of temperature (°C) reference junctions at 0°C

THERMOCOUPLE VOLTAGE TEMPERATURE TABLE

APPLICATION NOTE

Type E Thermocouple

°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-50	-2.787	-2.84	-2.892	-2.944	-2.996	-3.048	-3.1	-3.152	-3.204	-3.255
-40	-2.255	-2.309	-2.362	-2.416	-2.469	-2.523	-2.576	-2.629	-2.682	-2.735
-30	-1.709	-1.765	-1.82	-1.874	-1.929	-1.984	-2.038	-2.093	-2.147	-2.201
-20	-1.152	-1.208	-1.264	-1.32	-1.376	-1.432	-1.488	-1.543	-1.599	-1.654
-10	-0.582	-0.639	-0.697	-0.754	-0.811	-0.868	-0.925	-0.982	-1.039	-1.095
0	0	-0.059	-0.117	-0.176	-0.234	-0.292	-0.35	-0.408	-0.466	-0.524
°C	0	1	2	3	4	5	6	7	8	9
0	0	0.059	0.118	0.176	0.235	0.294	0.354	0.413	0.472	0.532
10	0.591	0.651	0.711	0.77	0.83	0.89	0.95	1.01	1.071	1.131
20	1.192	1.252	1.313	1.373	1.434	1.495	1.556	1.617	1.678	1.74
30	1.801	1.862	1.924	1.986	2.047	2.109	2.171	2.233	2.295	2.357
40	2.42	2.482	2.545	2.607	2.67	2.733	2.795	2.858	2.921	2.984
50	3.048	3.111	3.174	3.238	3.301	3.365	3.429	3.492	3.556	3.62
60	3.685	3.749	3.813	3.877	3.942	4.006	4.071	4.136	4.2	4.265
70	4.33	4.395	4.46	4.526	4.591	4.656	4.722	4.788	4.853	4.919
80	4.985	5.051	5.117	5.183	5.249	5.315	5.382	5.448	5.514	5.581
90	5.648	5.714	5.781	5.848	5.915	5.982	6.049	6.117	6.184	6.251
100	6.319	6.386	6.454	6.522	6.59	6.658	6.725	6.794	6.862	6.93
110	6.998	7.066	7.135	7.203	7.272	7.341	7.409	7.478	7.547	7.616
120	7.685	7.754	7.823	7.892	7.962	8.031	8.101	8.17	8.24	8.309
130	8.379	8.449	8.519	8.589	8.659	8.729	8.799	8.869	8.94	9.01
140	9.081	9.151	9.222	9.292	9.363	9.434	9.505	9.576	9.647	9.718
150	9.789	9.86	9.931	10.003	10.074	10.145	10.217	10.288	10.36	10.432
160	10.503	10.575	10.647	10.719	10.791	10.863	10.935	11.007	11.08	11.152
170	11.224	11.297	11.369	11.442	11.514	11.587	11.66	11.733	11.805	11.878
180	11.951	12.024	12.097	12.17	12.243	12.317	12.39	12.463	12.537	12.61
190	12.684	12.757	12.831	12.904	12.978	13.052	13.126	13.199	13.273	13.347
200	13.421	13.495	13.569	13.644	13.718	13.792	13.866	13.941	14.015	14.09
210	14.164	14.239	14.313	14.388	14.463	14.537	14.612	14.687	14.762	14.837
220	14.912	14.987	15.062	15.137	15.212	15.287	15.362	15.438	15.513	15.588
230	15.664	15.739	15.815	15.89	15.966	16.041	16.117	16.193	16.269	16.344
240	16.42	16.496	16.572	16.648	16.724	16.8	16.876	16.952	17.028	17.104

Thermoelectric voltage as a function of temperature (°C) reference junctions at 0°C

te.com/sensorsolutions

Measurement Specialties, Inc., a TE Connectivity company.

Measurement Specialties, MEAS, TE Connectivity, and the TE connectivity (logo) are trademarks. All other logos, products and/or company names referred to herein might be trademarks of their respective owners.

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

© 2016 TE Connectivity Ltd. family of companies All Rights Reserved.

Measurement Specialties, Inc.,
a TE Connectivity Company
1711 139th Lane NW
Andover, MN 55304
Tel +1 763 689 4870
Fax +1 763 689 5033
customerare.ando@te.com