Type K Thermocouple Table (mV vs °C)

Basis: NIST ITS 90 reference functions as adopted in IEC 60584 1. Type K is Nickel Chromium vs Nickel Aluminium (Chromel vs Alumel): the most widely used general purpose thermocouple for −200 to 1260 °C.

instrumentationblog.in/downloads/engineering-reference-tables/type-k-thermocouple-table/

Type K Thermocouple Table, EMF in mV (reference junction 0 °C)

°C	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
−270	−6.458	−6.457	−6.456	−6.455	−6.453	−6.452	−6.450	−6.448	−6.446	−6.444
−260	−6.441	−6.438	−6.435	−6.432	−6.429	−6.425	−6.421	−6.417	−6.413	−6.408
−250	−6.404	−6.399	−6.393	−6.388	−6.382	−6.377	−6.370	−6.364	−6.358	−6.351
−240	−6.344	−6.337	−6.329	−6.322	−6.314	−6.306	−6.297	−6.289	−6.280	−6.271
−230	−6.262	−6.252	−6.243	−6.233	−6.223	−6.213	−6.202	−6.192	−6.181	−6.170
−220	−6.158	−6.147	−6.135	−6.123	−6.111	−6.099	−6.087	−6.074	−6.061	−6.048
−210	−6.035	−6.021	−6.007	−5.994	−5.980	−5.965	−5.951	−5.936	−5.922	−5.907
−200	−5.891	−5.876	−5.861	−5.845	−5.829	−5.813	−5.797	−5.780	−5.763	−5.747
−190	−5.730	−5.713	−5.695	−5.678	−5.660	−5.642	−5.624	−5.606	−5.588	−5.569
−180	−5.550	−5.531	−5.512	−5.493	−5.474	−5.454	−5.435	−5.415	−5.395	−5.374
−170	−5.354	−5.333	−5.313	−5.292	−5.271	−5.250	−5.228	−5.207	−5.185	−5.163
−160	−5.141	−5.119	−5.097	−5.074	−5.052	−5.029	−5.006	−4.983	−4.960	−4.936
−150	−4.913	−4.889	−4.865	−4.841	−4.817	−4.793	−4.768	−4.744	−4.719	−4.694
−140	−4.669	−4.644	−4.618	−4.593	−4.567	−4.542	−4.516	−4.490	−4.463	−4.437
−130	−4.411	−4.384	−4.357	−4.330	−4.303	−4.276	−4.249	−4.221	−4.194	−4.166
−120	−4.138	−4.110	−4.082	−4.054	−4.025	−3.997	−3.968	−3.939	−3.911	−3.882
−110	−3.852	−3.823	−3.794	−3.764	−3.734	−3.705	−3.675	−3.645	−3.614	−3.584
−100	−3.554	−3.523	−3.492	−3.462	−3.431	−3.400	−3.368	−3.337	−3.306	−3.274
−90	−3.243	−3.211	−3.179	−3.147	−3.115	−3.083	−3.050	−3.018	−2.986	−2.953
−80	−2.920	−2.887	−2.854	−2.821	−2.788	−2.755	−2.721	−2.688	−2.654	−2.620
−70	−2.587	−2.553	−2.519	−2.485	−2.450	−2.416	−2.382	−2.347	−2.312	−2.278
−60	−2.243	−2.208	−2.173	−2.138	−2.103	−2.067	−2.032	−1.996	−1.961	−1.925
−50	−1.889	−1.854	−1.818	−1.782	−1.745	−1.709	−1.673	−1.637	−1.600	−1.564
−40	−1.527	−1.490	−1.453	−1.417	−1.380	−1.343	−1.305	−1.268	−1.231	−1.194
−30	−1.156	−1.119	−1.081	−1.043	−1.006	−0.968	−0.930	−0.892	−0.854	−0.816
−20	−0.778	−0.739	−0.701	−0.663	−0.624	−0.586	−0.547	−0.508	−0.470	−0.431
−10	−0.392	−0.353	−0.314	−0.275	−0.236	−0.197	−0.157	−0.118	−0.079	−0.039
0	0.000	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	0.960	1.000	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	1.530	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	2.230	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	2.810
70	2.851	2.893	2.934	2.976	3.017	3.059	3.100	3.142	3.184	3.225
80	3.267	3.308	3.350	3.391	3.433	3.474	3.516	3.557	3.599	3.640
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	4.220	4.262	4.303	4.344	4.385	4.427	4.468
110	4.509	4.550	4.591	4.633	4.674	4.715	4.756	4.797	4.838	4.879
120	4.920	4.961	5.002	5.043	5.084	5.124	5.165	5.206	5.247	5.288
130	5.328	5.369	5.410	5.450	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	6.380	6.420	6.460	6.500

°C	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
160	6.540	6.580	6.620	6.660	6.701	6.741	6.781	6.821	6.861	6.901
170	6.941	6.981	7.021	7.060	7.100	7.140	7.180	7.220	7.260	7.300
180	7.340	7.380	7.420	7.460	7.500	7.540	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	8.860	8.900
220	8.940	8.980	9.020	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	9.950	9.991	10.031	10.072	10.113
250	10.153	10.194	10.235	10.276	10.316	10.357	10.398	10.439	10.480	10.520
260	10.561	10.602	10.643	10.684	10.725	10.766	10.807	10.848	10.889	10.930
270	10.971	11.012	11.053	11.094	11.135	11.176	11.217	11.259	11.300	11.341
280	11.382	11.423	11.465	11.506	11.547	11.588	11.630	11.671	11.712	11.753
290	11.795	11.836	11.877	11.919	11.960	12.001	12.043	12.084	12.126	12.167
300	12.209	12.250	12.291	12.333	12.374	12.416	12.457	12.499	12.540	12.582
310	12.624	12.665	12.707	12.748	12.790	12.831	12.873	12.915	12.956	12.998
320	13.040	13.081	13.123	13.165	13.206	13.248	13.290	13.331	13.373	13.415
330	13.457	13.498	13.540	13.582	13.624	13.665	13.707	13.749	13.791	13.833
340	13.874	13.916	13.958	14.000	14.042	14.084	14.126	14.167	14.209	14.251
350	14.293	14.335	14.377	14.419	14.461	14.503	14.545	14.587	14.629	14.671
360	14.713	14.755	14.797	14.839	14.881	14.923	14.965	15.007	15.049	15.091
370	15.133	15.175	15.217	15.259	15.301	15.343	15.385	15.427	15.469	15.511
380	15.554	15.596	15.638	15.680	15.722	15.764	15.806	15.849	15.891	15.933
390	15.975	16.017	16.059	16.102	16.144	16.186	16.228	16.270	16.313	16.355
400	16.397	16.439	16.482	16.524	16.566	16.608	16.651	16.693	16.735	16.778
410	16.820	16.862	16.904	16.947	16.989	17.031	17.074	17.116	17.158	17.201
420	17.243	17.285	17.328	17.370	17.413	17.455	17.497	17.540	17.582	17.624
430	17.667	17.709	17.752	17.794	17.837	17.879	17.921	17.964	18.006	18.049
440	18.091	18.134	18.176	18.218	18.261	18.303	18.346	18.388	18.431	18.473
450	18.516	18.558	18.601	18.643	18.686	18.728	18.771	18.813	18.856	18.898
460	18.941	18.983	19.026	19.068	19.111	19.154	19.196	19.239	19.281	19.324
470	19.366	19.409	19.451	19.494	19.537	19.579	19.622	19.664	19.707	19.750
480	19.792	19.835	19.877	19.920	19.962	20.005	20.048	20.090	20.133	20.175
490	20.218	20.261	20.303	20.346	20.389	20.431	20.474	20.516	20.559	20.602
500	20.644	20.687	20.730	20.772	20.815	20.857	20.900	20.943	20.985	21.028
510	21.071	21.113	21.156	21.199	21.241	21.284	21.326	21.369	21.412	21.454
520	21.497	21.540	21.582	21.625	21.668	21.710	21.753	21.796	21.838	21.881
530	21.924	21.966	22.009	22.052	22.094	22.137	22.179	22.222	22.265	22.307
540	22.350	22.393	22.435	22.478	22.521	22.563	22.606	22.649	22.691	22.734
550	22.776	22.819	22.862	22.904	22.947	22.990	23.032	23.075	23.117	23.160
560	23.203	23.245	23.288	23.331	23.373	23.416	23.458	23.501	23.544	23.586
570	23.629	23.671	23.714	23.757	23.799	23.842	23.884	23.927	23.970	24.012
580	24.055	24.097	24.140	24.182	24.225	24.267	24.310	24.353	24.395	24.438
590	24.480	24.523	24.565	24.608	24.650	24.693	24.735	24.778	24.820	24.863
600	24.905	24.948	24.990	25.033	25.075	25.118	25.160	25.203	25.245	25.288
610	25.330	25.373	25.415	25.458	25.500	25.543	25.585	25.627	25.670	25.712
620	25.755	25.797	25.840	25.882	25.924	25.967	26.009	26.052	26.094	26.136
630	26.179	26.221	26.263	26.306	26.348	26.390	26.433	26.475	26.517	26.560
640	26.602	26.644	26.687	26.729	26.771	26.814	26.856	26.898	26.940	26.983
650	27.025	27.067	27.109	27.152	27.194	27.236	27.278	27.320	27.363	27.405

℃	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
660	27.447	27.489	27.531	27.574	27.616	27.658	27.700	27.742	27.784	27.826
670	27.869	27.911	27.953	27.995	28.037	28.079	28.121	28.163	28.205	28.247
680	28.289	28.332	28.374	28.416	28.458	28.500	28.542	28.584	28.626	28.668
690	28.710	28.752	28.794	28.835	28.877	28.919	28.961	29.003	29.045	29.087
700	29.129	29.171	29.213	29.255	29.297	29.338	29.380	29.422	29.464	29.506
710	29.548	29.589	29.631	29.673	29.715	29.757	29.798	29.840	29.882	29.924
720	29.965	30.007	30.049	30.090	30.132	30.174	30.216	30.257	30.299	30.341
730	30.382	30.424	30.466	30.507	30.549	30.590	30.632	30.674	30.715	30.757
740	30.798	30.840	30.881	30.923	30.964	31.006	31.047	31.089	31.130	31.172
750	31.213	31.255	31.296	31.338	31.379	31.421	31.462	31.504	31.545	31.586
760	31.628	31.669	31.710	31.752	31.793	31.834	31.876	31.917	31.958	32.000
770	32.041	32.082	32.124	32.165	32.206	32.247	32.289	32.330	32.371	32.412
780	32.453	32.495	32.536	32.577	32.618	32.659	32.700	32.742	32.783	32.824
790	32.865	32.906	32.947	32.988	33.029	33.070	33.111	33.152	33.193	33.234
800	33.275	33.316	33.357	33.398	33.439	33.480	33.521	33.562	33.603	33.644
810	33.685	33.726	33.767	33.808	33.848	33.889	33.930	33.971	34.012	34.053
820	34.093	34.134	34.175	34.216	34.257	34.297	34.338	34.379	34.420	34.460
830	34.501	34.542	34.582	34.623	34.664	34.704	34.745	34.786	34.826	34.867
840	34.908	34.948	34.989	35.029	35.070	35.110	35.151	35.192	35.232	35.273
850	35.313	35.354	35.394	35.435	35.475	35.516	35.556	35.596	35.637	35.677
860	35.718	35.758	35.798	35.839	35.879	35.920	35.960	36.000	36.041	36.081
870	36.121	36.162	36.202	36.242	36.282	36.323	36.363	36.403	36.443	36.484
880	36.524	36.564	36.604	36.644	36.685	36.725	36.765	36.805	36.845	36.885
890	36.925	36.965	37.006	37.046	37.086	37.126	37.166	37.206	37.246	37.286
900	37.326	37.366	37.406	37.446	37.486	37.526	37.566	37.606	37.646	37.686
910	37.725	37.765	37.805	37.845	37.885	37.925	37.965	38.005	38.044	38.084
920	38.124	38.164	38.204	38.243	38.283	38.323	38.363	38.402	38.442	38.482
930	38.522	38.561	38.601	38.641	38.680	38.720	38.760	38.799	38.839	38.878
940	38.918	38.958	38.997	39.037	39.076	39.116	39.155	39.195	39.235	39.274
950	39.314	39.353	39.393	39.432	39.471	39.511	39.550	39.590	39.629	39.669
960	39.708	39.747	39.787	39.826	39.866	39.905	39.944	39.984	40.023	40.062
970	40.101	40.141	40.180	40.219	40.259	40.298	40.337	40.376	40.415	40.455
980	40.494	40.533	40.572	40.611	40.651	40.690	40.729	40.768	40.807	40.846
990	40.885	40.924	40.963	41.002	41.042	41.081	41.120	41.159	41.198	41.237
1000	41.276	41.315	41.354	41.393	41.431	41.470	41.509	41.548	41.587	41.626
1010	41.665	41.704	41.743	41.781	41.820	41.859	41.898	41.937	41.976	42.014
1020	42.053	42.092	42.131	42.169	42.208	42.247	42.286	42.324	42.363	42.402
1030	42.440	42.479	42.518	42.556	42.595	42.633	42.672	42.711	42.749	42.788
1040	42.826	42.865	42.903	42.942	42.980	43.019	43.057	43.096	43.134	43.173
1050	43.211	43.250	43.288	43.327	43.365	43.403	43.442	43.480	43.518	43.557
1060	43.595	43.633	43.672	43.710	43.748	43.787	43.825	43.863	43.901	43.940
1070	43.978	44.016	44.054	44.092	44.130	44.169	44.207	44.245	44.283	44.321
1080	44.359	44.397	44.435	44.473	44.512	44.550	44.588	44.626	44.664	44.702
1090	44.740	44.778	44.816	44.853	44.891	44.929	44.967	45.005	45.043	45.081
1100	45.119	45.157	45.194	45.232	45.270	45.308	45.346	45.383	45.421	45.459
1110	45.497	45.534	45.572	45.610	45.647	45.685	45.723	45.760	45.798	45.836
1120	45.873	45.911	45.948	45.986	46.024	46.061	46.099	46.136	46.174	46.211
1130	46.249	46.286	46.324	46.361	46.398	46.436	46.473	46.511	46.548	46.585
1140	46.623	46.660	46.697	46.735	46.772	46.809	46.847	46.884	46.921	46.958
1150	46.995	47.033	47.070	47.107	47.144	47.181	47.218	47.256	47.293	47.330

°C	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1160	47.367	47.404	47.441	47.478	47.515	47.552	47.589	47.626	47.663	47.700
1170	47.737	47.774	47.811	47.848	47.884	47.921	47.958	47.995	48.032	48.069
1180	48.105	48.142	48.179	48.216	48.252	48.289	48.326	48.363	48.399	48.436
1190	48.473	48.509	48.546	48.582	48.619	48.656	48.692	48.729	48.765	48.802
1200	48.838	48.875	48.911	48.948	48.984	49.021	49.057	49.093	49.130	49.166
1210	49.202	49.239	49.275	49.311	49.348	49.384	49.420	49.456	49.493	49.529
1220	49.565	49.601	49.637	49.674	49.710	49.746	49.782	49.818	49.854	49.890
1230	49.926	49.962	49.998	50.034	50.070	50.106	50.142	50.178	50.214	50.250
1240	50.286	50.322	50.358	50.393	50.429	50.465	50.501	50.537	50.572	50.608
1250	50.644	50.680	50.715	50.751	50.787	50.822	50.858	50.894	50.929	50.965
1260	51.000	51.036	51.071	51.107	51.142	51.178	51.213	51.249	51.284	51.320
1270	51.355	51.391	51.426	51.461	51.497	51.532	51.567	51.603	51.638	51.673
1280	51.708	51.744	51.779	51.814	51.849	51.885	51.920	51.955	51.990	52.025
1290	52.060	52.095	52.130	52.165	52.200	52.235	52.270	52.305	52.340	52.375
1300	52.410	52.445	52.480	52.515	52.550	52.585	52.620	52.654	52.689	52.724
1310	52.759	52.794	52.828	52.863	52.898	52.932	52.967	53.002	53.037	53.071
1320	53.106	53.140	53.175	53.210	53.244	53.279	53.313	53.348	53.382	53.417
1330	53.451	53.486	53.520	53.555	53.589	53.623	53.658	53.692	53.727	53.761
1340	53.795	53.830	53.864	53.898	53.932	53.967	54.001	54.035	54.069	54.104
1350	54.138	54.172	54.206	54.240	54.274	54.308	54.343	54.377	54.411	54.445
1360	54.479	54.513	54.547	54.581	54.615	54.649	54.683	54.717	54.751	54.785
1370	54.819	54.852	54.886							

Notes

- IEC colour code: green positive wire with white negative. ANSI MC96.1: yellow jacket.
- Values are reference values; real sensors have a tolerance class (see the thermocouple tolerance table).

Free download from instrumentationblog.in. Check values against the current edition of the standard for design work.