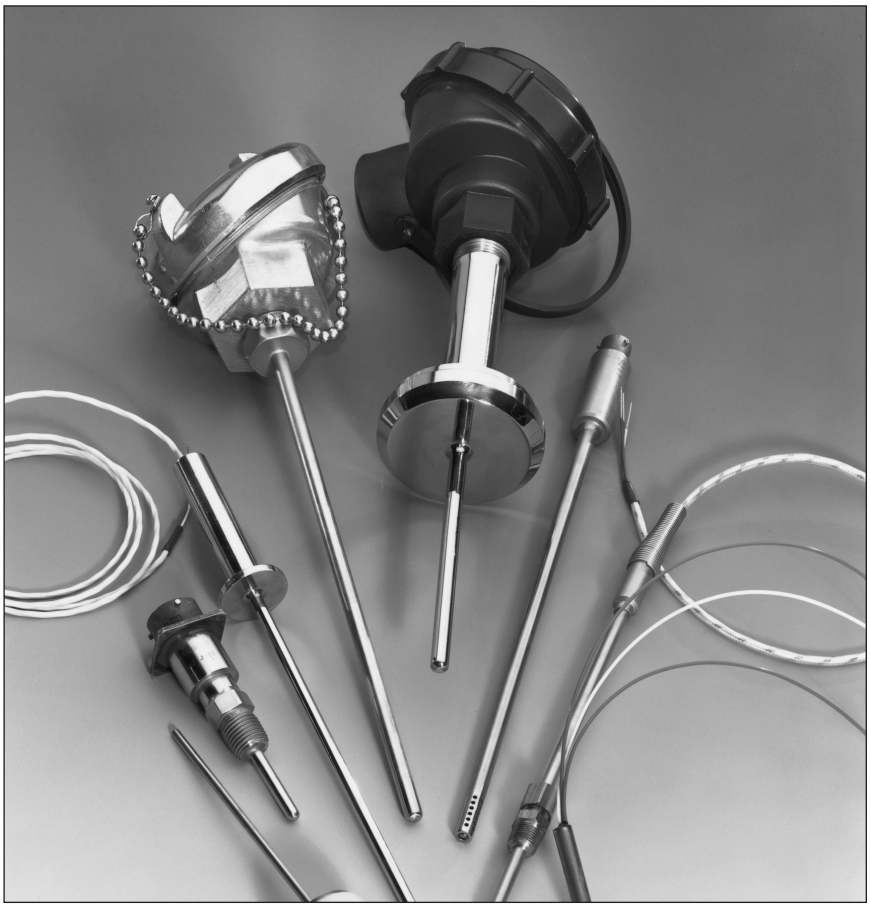
Reference Data

Thermocouple Temperature vs. EMF Tables

The following tables provide the Temperature vs. EMF outputs of common thermocouples, in accordance with the newly released ITS-90 reference standards.



ANSI Type B Temperature vs. EMF Outputs—Ref. 38

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
0.0	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	0.0
10.0	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.003	-0.003	10.0
20.0	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	20.0
30.0	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	30.0
40.0	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	40.0
50.0	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.005	0.005	0.006	0.006	50.0
60.0	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.011	0.011	60.0
70.0	0.011	0.012	0.012	0.013	0.014	0.014	0.015	0.015	0.016	0.017	0.017	70.0
80.0	0.017	0.018	0.019	0.020	0.020	0.021	0.022	0.022	0.023	0.024	0.025	80.0
90.0	0.025	0.026	0.026	0.027	0.028	0.029	0.030	0.031	0.031	0.032	0.033	90.0
100.0	0.033	0.034	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.042	0.043	100.0
110.0	0.043	0.044	0.045	0.046	0.047	0.048	0.049	0.050	0.051	0.052	0.053	110.0
120.0	0.053	0.055	0.056	0.057	0.058	0.059	0.060	0.062	0.063	0.064	0.065	120.0
130.0	0.065	0.066	0.068	0.069	0.070	0.072	0.073	0.074	0.075	0.077	0.078	130.0
140.0	0.078	0.079	0.081	0.082	0.084	0.085	0.086	0.088	0.089	0.091	0.092	140.0
150.0	0.092	0.094	0.095	0.096	0.098	0.099	0.101	0.102	0.104	0.106	0.107	150.0
160.0	0.107	0.109	0.110	0.112	0.113	0.115	0.117	0.118	0.120	0.122	0.123	160.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type B Temperature vs. EMF Outputs—Ref. 38

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
170.0	0.123	0.125	0.127	0.128	0.130	0.132	0.134	0.135	0.137	0.139	0.141	170.0
180.0	0.141	0.142	0.144	0.146	0.148	0.150	0.151	0.153	0.155	0.157	0.159	180.0
190.0	0.159	0.161	0.163	0.165	0.166	0.168	0.170	0.172	0.174	0.176	0.178	190.0
200.0	0.178	0.180	0.182	0.184	0.186	0.188	0.190	0.192	0.195	0.197	0.199	200.0
210.0	0.199	0.201	0.203	0.205	0.207	0.209	0.212	0.214	0.216	0.218	0.220	210.0
220.0	0.220	0.222	0.225	0.227	0.229	0.231	0.234	0.236	0.238	0.241	0.243	220.0
230.0	0.243	0.245	0.248	0.250	0.252	0.255	0.257	0.259	0.262	0.264	0.267	230.0
240.0	0.267	0.269	0.271	0.274	0.276	0.279	0.281	0.284	0.286	0.289	0.291	240.0
250.0	0.291	0.294	0.296	0.299	0.301	0.304	0.307	0.309	0.312	0.314	0.317	250.0
260.0	0.317	0.320	0.322	0.325	0.328	0.330	0.333	0.336	0.338	0.341	0.344	260.0
270.0	0.344	0.347	0.349	0.352	0.355	0.358	0.360	0.363	0.366	0.369	0.372	270.0
280.0	0.372	0.375	0.377	0.380	0.383	0.386	0.389	0.392	0.395	0.398	0.401	280.0
290.0	0.401	0.404	0.407	0.410	0.413	0.416	0.419	0.422	0.425	0.428	0.431	290.0
300.0	0.431	0.434	0.437	0.440	0.443	0.446	0.449	0.452	0.455	0.458	0.462	300.0
310.0	0.462	0.465	0.468	0.471	0.474	0.478	0.481	0.484	0.487	0.490	0.494	310.0
320.0	0.494	0.497	0.500	0.503	0.507	0.510	0.513	0.517	0.520	0.523	0.527	320.0
330.0	0.527	0.530	0.533	0.537	0.540	0.544	0.547	0.550	0.554	0.557	0.561	330.0
340.0	0.561	0.564	0.568	0.571	0.575	0.578	0.582	0.585	0.589	0.592	0.596	340.0
350.0	0.596	0.599	0.603	0.607	0.610	0.614	0.617	0.621	0.625	0.628	0.632	350.0
360.0	0.632	0.636	0.639	0.643	0.647	0.650	0.654	0.658	0.662	0.665	0.669	360.0
370.0	0.669	0.673	0.677	0.680	0.684	0.688	0.692	0.696	0.700	0.703	0.707	370.0
380.0	0.707	0.711	0.715	0.719	0.723	0.727	0.731	0.735	0.738	0.742	0.746	380.0
390.0	0.746	0.750	0.754	0.758	0.762	0.766	0.770	0.774	0.778	0.782	0.787	390.0
400.0	0.787	0.791	0.795	0.799	0.803	0.807	0.811	0.815	0.819	0.824	0.828	400.0
410.0	0.828	0.832	0.836	0.840	0.844	0.849	0.853	0.857	0.861	0.866	0.870	410.0
420.0	0.870	0.874	0.878	0.883	0.887	0.891	0.896	0.900	0.904	0.909	0.913	420.0
430.0	0.913	0.917	0.922	0.926	0.930	0.935	0.939	0.944	0.948	0.953	0.957	430.0
440.0	0.957	0.961	0.966	0.970	0.975	0.979	0.984	0.988	0.993	0.997	1.002	440.0
450.0	1.002	1.007	1.011	1.016	1.020	1.025	1.030	1.034	1.039	1.043	1.048	450.0
460.0	1.048	1.053	1.057	1.062	1.067	1.071	1.076	1.081	1.086	1.090	1.095	460.0
470.0	1.095	1.100	1.105	1.109	1.114	1.119	1.124	1.129	1.133	1.138	1.143	470.0
480.0	1.143	1.148	1.153	1.158	1.163	1.167	1.172	1.177	1.182	1.187	1.192	480.0
490.0	1.192	1.197	1.202	1.207	1.212	1.217	1.222	1.227	1.232	1.237	1.242	490.0
500.0	1.242	1.247	1.252	1.257	1.262	1.267	1.272	1.277	1.282	1.288	1.293	500.0
510.0	1.293	1.298	1.303	1.308	1.313	1.318	1.324	1.329	1.334	1.339	1.344	510.0
520.0	1.344	1.350	1.355	1.360	1.365	1.371	1.376	1.381	1.387	1.392	1.397	520.0
530.0	1.397	1.402	1.408	1.413	1.418	1.424	1.429	1.435	1.440	1.445	1.451	530.0
540.0	1.451	1.456	1.462	1.467	1.472	1.478	1.483	1.489	1.494	1.500	1.505	540.0
550.0	1.505	1.511	1.516	1.522	1.527	1.533	1.539	1.544	1.550	1.555	1.561	550.0
560.0	1.561	1.566	1.572	1.578	1.583	1.589	1.595	1.600	1.606	1.612	1.617	560.0
570.0	1.617	1.623	1.629	1.634	1.640	1.646	1.652	1.657	1.663	1.669	1.675	570.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type B Temperature vs. EMF Outputs—Ref. 38

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
580.0	1.675	1.680	1.686	1.692	1.698	1.704	1.709	1.715	1.721	1.727	1.733	580.0
590.0	1.733	1.739	1.745	1.750	1.756	1.762	1.768	1.774	1.780	1.786	1.792	590.0
600.0	1.792	1.798	1.804	1.810	1.816	1.822	1.828	1.834	1.840	1.846	1.852	600.0
610.0	1.852	1.858	1.864	1.870	1.876	1.882	1.888	1.894	1.901	1.907	1.913	610.0
620.0	1.913	1.919	1.925	1.931	1.937	1.944	1.950	1.956	1.962	1.968	1.975	620.0
630.0	1.975	1.981	1.987	1.993	1.999	2.006	2.012	2.018	2.025	2.031	2.037	630.0
640.0	2.037	2.043	2.050	2.056	2.062	2.069	2.075	2.082	2.088	2.094	2.101	640.0
650.0	2.101	2.107	2.113	2.120	2.126	2.133	2.139	2.146	2.152	2.158	2.165	650.0
660.0	2.165	2.171	2.178	2.184	2.191	2.197	2.204	2.210	2.217	2.224	2.230	660.0
670.0	2.230	2.237	2.243	2.250	2.256	2.263	2.270	2.276	2.283	2.289	2.296	670.0
680.0	2.296	2.303	2.309	2.316	2.323	2.329	2.336	2.343	2.350	2.356	2.363	680.0
690.0	2.363	2.370	2.376	2.383	2.390	2.397	2.403	2.410	2.417	2.424	2.431	690.0
700.0	2.431	2.437	2.444	2.451	2.458	2.465	2.472	2.479	2.485	2.492	2.499	700.0
710.0	2.499	2.506	2.513	2.520	2.527	2.534	2.541	2.548	2.555	2.562	2.569	710.0
720.0	2.569	2.576	2.583	2.590	2.597	2.604	2.611	2.618	2.625	2.632	2.639	720.0
730.0	2.639	2.646	2.653	2.660	2.667	2.674	2.681	2.688	2.696	2.703	2.710	730.0
740.0	2.710	2.717	2.724	2.731	2.738	2.746	2.753	2.760	2.767	2.775	2.782	740.0
750.0	2.782	2.789	2.796	2.803	2.811	2.818	2.825	2.833	2.840	2.847	2.854	750.0
760.0	2.854	2.862	2.869	2.876	2.884	2.891	2.898	2.906	2.913	2.921	2.928	760.0
770.0	2.928	2.935	2.943	2.950	2.958	2.965	2.973	2.980	2.987	2.995	3.002	770.0
780.0	3.002	3.010	3.017	3.025	3.032	3.040	3.047	3.055	3.062	3.070	3.078	780.0
790.0	3.078	3.085	3.093	3.100	3.108	3.116	3.123	3.131	3.138	3.146	3.154	790.0
800.0	3.154	3.161	3.169	3.177	3.184	3.192	3.200	3.207	3.215	3.223	3.230	800.0
810.0	3.230	3.238	3.246	3.254	3.261	3.269	3.277	3.285	3.292	3.300	3.308	810.0
820.0	3.308	3.316	3.324	3.331	3.339	3.347	3.355	3.363	3.371	3.379	3.386	820.0
830.0	3.386	3.394	3.402	3.410	3.418	3.426	3.434	3.442	3.450	3.458	3.466	830.0
840.0	3.466	3.474	3.482	3.490	3.498	3.506	3.514	3.522	3.530	3.538	3.546	840.0
850.0	3.546	3.554	3.562	3.570	3.578	3.586	3.594	3.602	3.610	3.618	3.626	850.0
860.0	3.626	3.634	3.643	3.651	3.659	3.667	3.675	3.683	3.692	3.700	3.708	860.0
870.0	3.708	3.716	3.724	3.732	3.741	3.749	3.757	3.765	3.774	3.782	3.790	870.0
880.0	3.790	3.798	3.807	3.815	3.823	3.832	3.840	3.848	3.857	3.865	3.873	880.0
890.0	3.873	3.882	3.890	3.898	3.907	3.915	3.923	3.932	3.940	3.949	3.957	890.0
900.0	3.957	3.965	3.974	3.982	3.991	3.999	4.008	4.016	4.024	4.033	4.041	900.0
910.0	4.041	4.050	4.058	4.067	4.075	4.084	4.093	4.101	4.110	4.118	4.127	910.0
920.0	4.127	4.135	4.144	4.152	4.161	4.170	4.178	4.187	4.195	4.204	4.213	920.0
930.0	4.213	4.221	4.230	4.239	4.247	4.256	4.265	4.273	4.282	4.291	4.299	930.0
940.0	4.299	4.308	4.317	4.326	4.334	4.343	4.352	4.360	4.369	4.378	4.387	940.0
950.0	4.387	4.396	4.404	4.413	4.422	4.431	4.440	4.448	4.457	4.466	4.475	950.0
960.0	4.475	4.484	4.493	4.501	4.510	4.519	4.528	4.537	4.546	4.555	4.564	960.0
970.0	4.564	4.573	4.582	4.591	4.599	4.608	4.617	4.626	4.635	4.644	4.653	970.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type B Temperature vs. EMF Outputs—Ref. 38

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
980.0	4.653	4.662	4.671	4.680	4.689	4.698	4.707	4.716	4.725	4.734	4.743	980.0
990.0	4.743	4.753	4.762	4.771	4.780	4.789	4.798	4.807	4.816	4.825	4.834	990.0
1000.0	4.834	4.843	4.853	4.862	4.871	4.880	4.889	4.898	4.908	4.917	4.926	1000.0
1010.0	4.926	4.935	4.944	4.954	4.963	4.972	4.981	4.990	5.000	5.009	5.018	1010.0
1020.0	5.018	5.027	5.037	5.046	5.055	5.065	5.074	5.083	5.092	5.102	5.111	1020.0
1030.0	5.111	5.120	5.130	5.139	5.148	5.158	5.167	5.176	5.186	5.195	5.205	1030.0
1040.0	5.205	5.214	5.223	5.233	5.242	5.252	5.261	5.270	5.280	5.289	5.299	1040.0
1050.0	5.299	5.308	5.318	5.327	5.337	5.346	5.356	5.365	5.375	5.384	5.394	1050.0
1060.0	5.394	5.403	5.413	5.422	5.432	5.441	5.451	5.460	5.470	5.480	5.489	1060.0
1070.0	5.489	5.499	5.508	5.518	5.528	5.537	5.547	5.556	5.566	5.576	5.585	1070.0
1080.0	5.585	5.595	5.605	5.614	5.624	5.634	5.643	5.653	5.663	5.672	5.682	1080.0
1090.0	5.682	5.692	5.702	5.711	5.721	5.731	5.740	5.750	5.760	5.770	5.780	1090.0
1100.0	5.780	5.789	5.799	5.809	5.819	5.828	5.838	5.848	5.858	5.868	5.878	1100.0
1110.0	5.878	5.887	5.897	5.907	5.917	5.927	5.937	5.947	5.956	5.966	5.976	1110.0
1120.0	5.976	5.986	5.996	6.006	6.016	6.026	6.036	6.046	6.055	6.065	6.075	1120.0
1130.0	6.075	6.085	6.095	6.105	6.115	6.125	6.135	6.145	6.155	6.165	6.175	1130.0
1140.0	6.175	6.185	6.195	6.205	6.215	6.225	6.235	6.245	6.256	6.266	6.276	1140.0
1150.0	6.276	6.286	6.296	6.306	6.316	6.326	6.336	6.346	6.356	6.367	6.377	1150.0
1160.0	6.377	6.387	6.397	6.407	6.417	6.427	6.438	6.448	6.458	6.468	6.478	1160.0
1170.0	6.478	6.488	6.499	6.509	6.519	6.529	6.539	6.550	6.560	6.570	6.580	1170.0
1180.0	6.580	6.591	6.601	6.611	6.621	6.632	6.642	6.652	6.663	6.673	6.683	1180.0
1190.0	6.683	6.693	6.704	6.714	6.724	6.735	6.745	6.755	6.766	6.776	6.786	1190.0
1200.0	6.786	6.797	6.807	6.818	6.828	6.838	6.849	6.859	6.869	6.880	6.890	1200.0
1210.0	6.890	6.901	6.911	6.922	6.932	6.942	6.953	6.963	6.974	6.984	6.995	1210.0
1220.0	6.995	7.005	7.016	7.026	7.037	7.047	7.058	7.068	7.079	7.089	7.100	1220.0
1230.0	7.100	7.110	7.121	7.131	7.142	7.152	7.163	7.173	7.184	7.194	7.205	1230.0
1240.0	7.205	7.216	7.226	7.237	7.247	7.258	7.269	7.279	7.290	7.300	7.311	1240.0
1250.0	7.311	7.322	7.332	7.343	7.353	7.364	7.375	7.385	7.396	7.407	7.417	1250.0
1260.0	7.417	7.428	7.439	7.449	7.460	7.471	7.482	7.492	7.503	7.514	7.524	1260.0
1270.0	7.524	7.535	7.546	7.557	7.567	7.578	7.589	7.600	7.610	7.621	7.632	1270.0
1280.0	7.632	7.643	7.653	7.664	7.675	7.686	7.697	7.707	7.718	7.729	7.740	1280.0
1290.0	7.740	7.751	7.761	7.772	7.783	7.794	7.805	7.816	7.827	7.837	7.848	1290.0
1300.0	7.848	7.859	7.870	7.881	7.892	7.903	7.914	7.924	7.935	7.946	7.957	1300.0
1310.0	7.957	7.968	7.979	7.990	8.001	8.012	8.023	8.034	8.045	8.056	8.066	1310.0
1320.0	8.066	8.077	8.088	8.099	8.110	8.121	8.132	8.143	8.154	8.165	8.176	1320.0
1330.0	8.176	8.187	8.198	8.209	8.220	8.231	8.242	8.253	8.264	8.275	8.286	1330.0
1340.0	8.286	8.298	8.309	8.320	8.331	8.342	8.353	8.364	8.375	8.386	8.397	1340.0
1350.0	8.397	8.408	8.419	8.430	8.441	8.453	8.464	8.475	8.486	8.497	8.508	1350.0
1360.0	8.508	8.519	8.530	8.542	8.553	8.564	8.575	8.586	8.597	8.608	8.620	1360.0
1370.0	8.620	8.631	8.642	8.653	8.664	8.675	8.687	8.698	8.709	8.720	8.731	1370.0
1380.0	8.731	8.743	8.754	8.765	8.776	8.787	8.799	8.810	8.821	8.832	8.844	1380.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type B Temperature vs. EMF Outputs—Ref. 38

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
1390.0	8.844	8.855	8.866	8.877	8.889	8.900	8.911	8.922	8.934	8.945	8.956	1390.0
1400.0	8.956	8.967	8.979	8.990	9.001	9.013	9.024	9.035	9.047	9.058	9.069	1400.0
1410.0	9.069	9.080	9.092	9.103	9.114	9.126	9.137	9.148	9.160	9.171	9.182	1410.0
1420.0	9.182	9.194	9.205	9.216	9.228	9.239	9.251	9.262	9.273	9.285	9.296	1420.0
1430.0	9.296	9.307	9.319	9.330	9.342	9.353	9.364	9.376	9.387	9.398	9.410	1430.0
1440.0	9.410	9.421	9.433	9.444	9.456	9.467	9.478	9.490	9.501	9.513	9.524	1440.0
1450.0	9.524	9.536	9.547	9.558	9.570	9.581	9.593	9.604	9.616	9.627	9.639	1450.0
1460.0	9.639	9.650	9.662	9.673	9.684	9.696	9.707	9.719	9.730	9.742	9.753	1460.0
1470.0	9.753	9.765	9.776	9.788	9.799	9.811	9.822	9.834	9.845	9.857	9.868	1470.0
1480.0	9.868	9.880	9.891	9.903	9.914	9.926	9.937	9.949	9.961	9.972	9.984	1480.0
1490.0	9.984	9.995	10.007	10.018	10.030	10.041	10.053	10.064	10.076	10.088	10.099	1490.0
1500.0	10.099	10.111	10.122	10.134	10.145	10.157	10.168	10.180	10.192	10.203	10.215	1500.0
1510.0	10.215	10.226	10.238	10.249	10.261	10.273	10.284	10.296	10.307	10.319	10.331	1510.0
1520.0	10.331	10.342	10.354	10.365	10.377	10.389	10.400	10.412	10.423	10.435	10.447	1520.0
1530.0	10.447	10.458	10.470	10.482	10.493	10.505	10.516	10.528	10.540	10.551	10.563	1530.0
1540.0	10.563	10.575	10.586	10.598	10.609	10.621	10.633	10.644	10.656	10.668	10.679	1540.0
1550.0	10.679	10.691	10.703	10.714	10.726	10.738	10.749	10.761	10.773	10.784	10.796	1550.0
1560.0	10.796	10.808	10.819	10.831	10.843	10.854	10.866	10.877	10.889	10.901	10.913	1560.0
1570.0	10.913	10.924	10.936	10.948	10.959	10.971	10.983	10.994	11.006	11.018	11.029	1570.0
1580.0	11.029	11.041	11.053	11.064	11.076	11.088	11.099	11.111	11.123	11.134	11.146	1580.0
1590.0	11.146	11.158	11.169	11.181	11.193	11.205	11.216	11.228	11.240	11.251	11.263	1590.0
1600.0	11.263	11.275	11.286	11.298	11.310	11.321	11.333	11.345	11.357	11.368	11.380	1600.0
1610.0	11.380	11.392	11.403	11.415	11.427	11.438	11.450	11.462	11.474	11.485	11.497	1610.0
1620.0	11.497	11.509	11.520	11.532	11.544	11.555	11.567	11.579	11.591	11.602	11.614	1620.0
1630.0	11.614	11.626	11.637	11.649	11.661	11.673	11.684	11.696	11.708	11.719	11.731	1630.0
1640.0	11.731	11.743	11.754	11.766	11.778	11.790	11.801	11.813	11.825	11.836	11.848	1640.0
1650.0	11.848	11.860	11.871	11.883	11.895	11.907	11.918	11.930	11.942	11.953	11.965	1650.0
1660.0	11.965	11.977	11.988	12.000	12.012	12.024	12.035	12.047	12.059	12.070	12.082	1660.0
1670.0	12.082	12.094	12.105	12.117	12.129	12.141	12.152	12.164	12.176	12.187	12.199	1670.0
1680.0	12.199	12.211	12.222	12.234	12.246	12.257	12.269	12.281	12.292	12.304	12.316	1680.0
1690.0	12.316	12.327	12.339	12.351	12.363	12.374	12.386	12.398	12.409	12.421	12.433	1690.0
1700.0	12.433	12.444	12.456	12.468	12.479	12.491	12.503	12.514	12.526	12.538	12.549	1700.0
1710.0	12.549	12.561	12.572	12.584	12.596	12.607	12.619	12.631	12.642	12.654	12.666	1710.0
1720.0	12.666	12.677	12.689	12.701	12.712	12.724	12.736	12.747	12.759	12.770	12.782	1720.0
1730.0	12.782	12.794	12.805	12.817	12.829	12.840	12.852	12.863	12.875	12.887	12.898	1730.0
1740.0	12.898	12.910	12.921	12.933	12.945	12.956	12.968	12.980	12.991	13.003	13.014	1740.0
1750.0	13.014	13.026	13.037	13.049	13.061	13.072	13.084	13.095	13.107	13.119	13.130	1750.0
1760.0	13.130	13.142	13.153	13.165	13.176	13.188	13.200	13.211	13.223	13.234	13.246	1760.0
1770.0	13.246	13.257	13.269	13.280	13.292	13.304	13.315	13.327	13.338	13.350	13.361	1770.0
1780.0	13.361	13.373	13.384	13.396	13.407	13.419	13.430	13.442	13.453	13.465	13.476	1780.0
1790.0	13.476	13.488	13.499	13.511	13.522	13.534	13.545	13.557	13.568	13.580	13.591	1790.0
1800.0	13.591	13.603	13.614	13.626	13.637	13.649	13.660	13.672	13.683	13.694	13.706	1800.0
1810.0	13.706	13.717	13.729	13.740	13.752	13.763	13.775	13.786	13.797	13.809	13.820	1810.0
1820.0	13.820											

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type E Temperature vs. EMF Outputs—Ref. 39

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
-260.0	-9.796	-9.802	-9.807	-9.812	-9.817	-9.821	-9.824	-9.827	-9.830	-9.833	-9.834	-260.0
-250.0	-9.718	-9.727	-9.737	-9.745	-9.754	-9.762	-9.769	-9.777	-9.783	-9.790	-9.796	-250.0
-240.0	-9.604	-9.617	-9.629	-9.642	-9.654	-9.665	-9.676	-9.687	-9.698	-9.708	-9.718	-240.0
-230.0	-9.455	-9.471	-9.487	-9.503	-9.518	-9.533	-9.548	-9.562	-9.576	-9.590	-9.604	-230.0
-220.0	-9.273	-9.293	-9.312	-9.331	-9.350	-9.368	-9.386	-9.404	-9.421	-9.438	-9.455	-220.0
-210.0	-9.063	-9.085	-9.107	-9.129	-9.150	-9.172	-9.193	-9.213	-9.234	-9.254	-9.273	-210.0
-200.0	-8.824	-8.849	-8.874	-8.899	-8.923	-8.947	-8.970	-8.994	-9.017	-9.040	-9.063	-200.0
-190.0	-8.561	-8.588	-8.615	-8.642	-8.669	-8.696	-8.722	-8.748	-8.774	-8.799	-8.824	-190.0
-180.0	-8.273	-8.303	-8.333	-8.362	-8.391	-8.420	-8.449	-8.477	-8.505	-8.533	-8.561	-180.0
-170.0	-7.963	-7.995	-8.027	-8.058	-8.090	-8.121	-8.152	-8.183	-8.213	-8.243	-8.273	-170.0
-160.0	-7.632	-7.666	-7.700	-7.733	-7.767	-7.800	-7.833	-7.866	-7.899	-7.931	-7.963	-160.0
-150.0	-7.279	-7.315	-7.351	-7.387	-7.423	-7.458	-7.493	-7.528	-7.563	-7.597	-7.632	-150.0
-140.0	-6.907	-6.945	-6.983	-7.021	-7.058	-7.096	-7.133	-7.170	-7.206	-7.243	-7.279	-140.0
-130.0	-6.516	-6.556	-6.596	-6.636	-6.675	-6.714	-6.753	-6.792	-6.831	-6.869	-6.907	-130.0
-120.0	-6.107	-6.149	-6.190	-6.232	-6.273	-6.314	-6.355	-6.395	-6.436	-6.476	-6.516	-120.0
-110.0	-5.681	-5.724	-5.767	-5.810	-5.853	-5.896	-5.939	-5.981	-6.023	-6.065	-6.107	-110.0
-100.0	-5.237	-5.282	-5.327	-5.372	-5.417	-5.461	-5.505	-5.549	-5.593	-5.637	-5.681	-100.0
-90.0	-4.777	-4.824	-4.871	-4.917	-4.963	-5.009	-5.055	-5.101	-5.146	-5.192	-5.237	-90.0
-80.0	-4.302	-4.350	-4.398	-4.446	-4.494	-4.542	-4.589	-4.636	-4.684	-4.731	-4.777	-80.0
-70.0	-3.811	-3.861	-3.911	-3.960	-4.009	-4.058	-4.107	-4.156	-4.205	-4.253	-4.302	-70.0
-60.0	-3.306	-3.357	-3.408	-3.459	-3.510	-3.561	-3.611	-3.661	-3.711	-3.761	-3.811	-60.0
-50.0	-2.787	-2.840	-2.892	-2.944	-2.996	-3.048	-3.100	-3.152	-3.204	-3.255	-3.306	-50.0
-40.0	-2.255	-2.309	-2.362	-2.416	-2.469	-2.523	-2.576	-2.629	-2.682	-2.735	-2.787	-40.0
-30.0	-1.709	-1.765	-1.820	-1.874	-1.929	-1.984	-2.038	-2.093	-2.147	-2.201	-2.255	-30.0
-20.0	-1.152	-1.208	-1.264	-1.320	-1.376	-1.432	-1.488	-1.543	-1.599	-1.654	-1.709	-20.0
-10.0	-0.582	-0.639	-0.697	-0.754	-0.811	-0.868	-0.925	-0.982	-1.039	-1.095	-1.152	-10.0
0.0	0.000	-0.059	-0.117	-0.176	-0.234	-0.292	-0.350	-0.408	-0.466	-0.524	-0.582	0.0
0.0	0.000	0.059	0.118	0.176	0.235	0.294	0.354	0.413	0.472	0.532	0.591	0.0
10.0	0.591	0.651	0.711	0.770	0.830	0.890	0.950	1.010	1.071	1.131	1.192	10.0
20.0	1.192	1.252	1.313	1.373	1.434	1.495	1.556	1.617	1.678	1.740	1.801	20.0
30.0	1.801	1.862	1.924	1.986	2.047	2.109	2.171	2.233	2.295	2.357	2.420	30.0
40.0	2.420	2.482	2.545	2.607	2.670	2.733	2.795	2.858	2.921	2.984	3.048	40.0
50.0	3.048	3.111	3.174	3.238	3.301	3.365	3.429	3.492	3.556	3.620	3.685	50.0
60.0	3.685	3.749	3.813	3.877	3.942	4.006	4.071	4.136	4.200	4.265	4.330	60.0
70.0	4.330	4.395	4.460	4.526	4.591	4.656	4.722	4.788	4.853	4.919	4.985	70.0
80.0	4.985	5.051	5.117	5.183	5.249	5.315	5.382	5.448	5.514	5.581	5.648	80.0
90.0	5.648	5.714	5.781	5.848	5.915	5.982	6.049	6.117	6.184	6.251	6.319	90.0
100.0	6.319	6.386	6.454	6.522	6.590	6.658	6.725	6.794	6.862	6.930	6.998	100.0
110.0	6.998	7.066	7.135	7.203	7.272	7.341	7.409	7.478	7.547	7.616	7.685	110.0
120.0	7.685	7.754	7.823	7.892	7.962	8.031	8.101	8.170	8.240	8.309	8.379	120.0
130.0	8.379	8.449	8.519	8.589	8.659	8.729	8.799	8.869	8.940	9.010	9.081	130.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type E Temperature vs. EMF Outputs—Ref. 39

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
140.0	9.081	9.151	9.222	9.292	9.363	9.434	9.505	9.576	9.647	9.718	9.789	140.0
150.0	9.789	9.860	9.931	10.003	10.074	10.145	10.217	10.288	10.360	10.432	10.503	150.0
160.0	10.503	10.575	10.647	10.719	10.791	10.863	10.935	11.007	11.080	11.152	11.224	160.0
170.0	11.224	11.297	11.369	11.442	11.514	11.587	11.660	11.733	11.805	11.878	11.951	170.0
180.0	11.951	12.024	12.097	12.170	12.243	12.317	12.390	12.463	12.537	12.610	12.684	180.0
190.0	12.684	12.757	12.831	12.904	12.978	13.052	13.126	13.199	13.273	13.347	13.421	190.0
200.0	13.421	13.495	13.569	13.644	13.718	13.792	13.866	13.941	14.015	14.090	14.164	200.0
210.0	14.164	14.239	14.313	14.388	14.463	14.537	14.612	14.687	14.762	14.837	14.912	210.0
220.0	14.912	14.987	15.062	15.137	15.212	15.287	15.362	15.438	15.513	15.588	15.664	220.0
230.0	15.664	15.739	15.815	15.890	15.966	16.041	16.117	16.193	16.269	16.344	16.420	230.0
240.0	16.420	16.496	16.572	16.648	16.724	16.800	16.876	16.952	17.028	17.104	17.181	240.0
250.0	17.181	17.257	17.333	17.409	17.486	17.562	17.639	17.715	17.792	17.868	17.945	250.0
260.0	17.945	18.021	18.098	18.175	18.252	18.328	18.405	18.482	18.559	18.636	18.713	260.0
270.0	18.713	18.790	18.867	18.944	19.021	19.098	19.175	19.252	19.330	19.407	19.484	270.0
280.0	19.484	19.561	19.639	19.716	19.794	19.871	19.948	20.026	20.103	20.181	20.259	280.0
290.0	20.259	20.336	20.414	20.492	20.569	20.647	20.725	20.803	20.880	20.958	21.036	290.0
300.0	21.036	21.114	21.192	21.270	21.348	21.426	21.504	21.582	21.660	21.739	21.817	300.0
310.0	21.817	21.895	21.973	22.051	22.130	22.208	22.286	22.365	22.443	22.522	22.600	310.0
320.0	22.600	22.678	22.757	22.835	22.914	22.993	23.071	23.150	23.228	23.307	23.386	320.0
330.0	23.386	23.464	23.543	23.622	23.701	23.780	23.858	23.937	24.016	24.095	24.174	330.0
340.0	24.174	24.253	24.332	24.411	24.490	24.569	24.648	24.727	24.806	24.885	24.964	340.0
350.0	24.964	25.044	25.123	25.202	25.281	25.360	25.440	25.519	25.598	25.678	25.757	350.0
360.0	25.757	25.836	25.916	25.995	26.075	26.154	26.233	26.313	26.392	26.472	26.552	360.0
370.0	26.552	26.631	26.711	26.790	26.870	26.950	27.029	27.109	27.189	27.268	27.348	370.0
380.0	27.348	27.428	27.507	27.587	27.667	27.747	27.827	27.907	27.986	28.066	28.146	380.0
390.0	28.146	28.226	28.306	28.386	28.466	28.546	28.626	28.706	28.786	28.866	28.946	390.0
400.0	28.946	29.026	29.106	29.186	29.266	29.346	29.427	29.507	29.587	29.667	29.747	400.0
410.0	29.747	29.827	29.908	29.988	30.068	30.148	30.229	30.309	30.389	30.470	30.550	410.0
420.0	30.550	30.630	30.711	30.791	30.871	30.952	31.032	31.112	31.193	31.273	31.354	420.0
430.0	31.354	31.434	31.515	31.595	31.676	31.756	31.837	31.917	31.998	32.078	32.159	430.0
440.0	32.159	32.239	32.320	32.400	32.481	32.562	32.642	32.723	32.803	32.884	32.965	440.0
450.0	32.965	33.045	33.126	33.207	33.287	33.368	33.449	33.529	33.610	33.691	33.772	450.0
460.0	33.772	33.852	33.933	34.014	34.095	34.175	34.256	34.337	34.418	34.498	34.579	460.0
470.0	34.579	34.660	34.741	34.822	34.902	34.983	35.064	35.145	35.226	35.307	35.387	470.0
480.0	35.387	35.468	35.549	35.630	35.711	35.792	35.873	35.954	36.034	36.115	36.196	480.0
490.0	36.196	36.277	36.358	36.439	36.520	36.601	36.682	36.763	36.843	36.924	37.005	490.0
500.0	37.005	37.086	37.167	37.248	37.329	37.410	37.491	37.572	37.653	37.734	37.815	500.0
510.0	37.815	37.896	37.977	38.058	38.139	38.220	38.300	38.381	38.462	38.543	38.624	510.0
520.0	38.624	38.705	38.786	38.867	38.948	39.029	39.110	39.191	39.272	39.353	39.434	520.0
530.0	39.434	39.515	39.596	39.677	39.758	39.839	39.920	40.001	40.082	40.163	40.243	530.0
540.0	40.243	40.324	40.405	40.486	40.567	40.648	40.729	40.810	40.891	40.972	41.053	540.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type E Temperature vs. EMF Outputs—Ref. 39

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
550.0	41.053	41.134	41.215	41.296	41.377	41.457	41.538	41.619	41.700	41.781	41.862	550.0
560.0	41.862	41.943	42.024	42.105	42.185	42.266	42.347	42.428	42.509	42.590	42.671	560.0
570.0	42.671	42.751	42.832	42.913	42.994	43.075	43.156	43.236	43.317	43.398	43.479	570.0
580.0	43.479	43.560	43.640	43.721	43.802	43.883	43.963	44.044	44.125	44.206	44.286	580.0
590.0	44.286	44.367	44.448	44.529	44.609	44.690	44.771	44.851	44.932	45.013	45.093	590.0
600.0	45.093	45.174	45.255	45.335	45.416	45.497	45.577	45.658	45.738	45.819	45.900	600.0
610.0	45.900	45.980	46.061	46.141	46.222	46.302	46.383	46.463	46.544	46.624	46.705	610.0
620.0	46.705	46.785	46.866	46.946	47.027	47.107	47.188	47.268	47.349	47.429	47.509	620.0
630.0	47.509	47.590	47.670	47.751	47.831	47.911	47.992	48.072	48.152	48.233	48.313	630.0
640.0	48.313	48.393	48.474	48.554	48.634	48.715	48.795	48.875	48.955	49.035	49.116	640.0
650.0	49.116	49.196	49.276	49.356	49.436	49.517	49.597	49.677	49.757	49.837	49.917	650.0
660.0	49.917	49.997	50.077	50.157	50.238	50.318	50.398	50.478	50.558	50.638	50.718	660.0
670.0	50.718	50.798	50.878	50.958	51.038	51.118	51.197	51.277	51.357	51.437	51.517	670.0
680.0	51.517	51.597	51.677	51.757	51.837	51.916	51.996	52.076	52.156	52.236	52.315	680.0
690.0	52.315	52.395	52.475	52.555	52.634	52.714	52.794	52.873	52.953	53.033	53.112	690.0
700.0	53.112	53.192	53.272	53.351	53.431	53.510	53.590	53.670	53.749	53.829	53.908	700.0
710.0	53.908	53.988	54.067	54.147	54.226	54.306	54.385	54.465	54.544	54.624	54.703	710.0
720.0	54.703	54.782	54.862	54.941	55.021	55.100	55.179	55.259	55.338	55.417	55.497	720.0
730.0	55.497	55.576	55.655	55.734	55.814	55.893	55.972	56.051	56.131	56.210	56.289	730.0
740.0	56.289	56.368	56.447	56.526	56.606	56.685	56.764	56.843	56.922	57.001	57.080	740.0
750.0	57.080	57.159	57.238	57.317	57.396	57.475	57.554	57.633	57.712	57.791	57.870	750.0
760.0	57.870	57.949	58.028	58.107	58.186	58.265	58.343	58.422	58.501	58.580	58.659	760.0
770.0	58.659	58.738	58.816	58.895	58.974	59.053	59.131	59.210	59.289	59.367	59.446	770.0
780.0	59.446	59.525	59.604	59.682	59.761	59.839	59.918	59.997	60.075	60.154	60.232	780.0
790.0	60.232	60.311	60.390	60.468	60.547	60.625	60.704	60.782	60.860	60.939	61.017	790.0
800.0	61.017	61.096	61.174	61.253	61.331	61.409	61.488	61.566	61.644	61.723	61.801	800.0
810.0	61.801	61.879	61.958	62.036	62.114	62.192	62.271	62.349	62.427	62.505	62.583	810.0
820.0	62.583	62.662	62.740	62.818	62.896	62.974	63.052	63.130	63.208	63.286	63.364	820.0
830.0	63.364	63.442	63.520	63.598	63.676	63.754	63.832	63.910	63.988	64.066	64.144	830.0
840.0	64.144	64.222	64.300	64.377	64.455	64.533	64.611	64.689	64.766	64.844	64.922	840.0
850.0	64.922	65.000	65.077	65.155	65.233	65.310	65.388	65.465	65.543	65.621	65.698	850.0
860.0	65.698	65.776	65.853	65.931	66.008	66.086	66.163	66.241	66.318	66.396	66.473	860.0
870.0	66.473	66.550	66.628	66.705	66.782	66.860	66.937	67.014	67.092	67.169	67.246	870.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type E Temperature vs. EMF Outputs—Ref. 39

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
880.0	67.246	67.323	67.400	67.478	67.555	67.632	67.709	67.786	67.863	67.940	68.017	880.0
890.0	68.017	68.094	68.171	68.248	68.325	68.402	68.479	68.556	68.633	68.710	68.787	890.0
900.0	68.787	68.863	68.940	69.017	69.094	69.171	69.247	69.324	69.401	69.477	69.554	900.0
910.0	69.554	69.631	69.707	69.784	69.860	69.937	70.013	70.090	70.166	70.243	70.319	910.0
920.0	70.319	70.396	70.472	70.548	70.625	70.701	70.777	70.854	70.930	71.006	71.082	920.0
930.0	71.082	71.159	71.235	71.311	71.387	71.463	71.539	71.615	71.692	71.768	71.844	930.0
940.0	71.844	71.920	71.996	72.072	72.147	72.223	72.299	72.375	72.451	72.527	72.603	940.0
950.0	72.603	72.678	72.754	72.830	72.906	72.981	73.057	73.133	73.208	73.284	73.360	950.0
960.0	73.360	73.435	73.511	73.586	73.662	73.738	73.813	73.889	73.964	74.040	74.115	960.0
970.0	74.115	74.190	74.266	74.341	74.417	74.492	74.567	74.643	74.718	74.793	74.869	970.0
980.0	74.869	74.944	75.019	75.095	75.170	75.245	75.320	75.395	75.471	75.546	75.621	980.0
990.0	75.621	75.696	75.771	75.847	75.922	75.997	76.072	76.147	76.223	76.298	76.373	990.0
1000.0	76.373											

ANSI Type J Temperature vs. EMF Outputs—Ref. 40

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
-200.0	-7.890	-7.912	-7.934	-7.955	-7.976	-7.996	-8.017	-8.037	-8.057	-8.076	-8.095	-200.0
-190.0	-7.659	-7.683	-7.707	-7.731	-7.755	-7.778	-7.801	-7.824	-7.846	-7.868	-7.890	-190.0
-180.0	-7.403	-7.429	-7.456	-7.482	-7.508	-7.534	-7.559	-7.585	-7.610	-7.634	-7.659	-180.0
-170.0	-7.123	-7.152	-7.181	-7.209	-7.237	-7.265	-7.293	-7.321	-7.348	-7.376	-7.403	-170.0
-160.0	-6.821	-6.853	-6.883	-6.914	-6.944	-6.975	-7.005	-7.035	-7.064	-7.094	-7.123	-160.0
-150.0	-6.500	-6.533	-6.566	-6.598	-6.631	-6.663	-6.695	-6.727	-6.759	-6.790	-6.821	-150.0
-140.0	-6.159	-6.194	-6.229	-6.263	-6.298	-6.332	-6.366	-6.400	-6.433	-6.467	-6.500	-140.0
-130.0	-5.801	-5.838	-5.874	-5.910	-5.946	-5.982	-6.018	-6.054	-6.089	-6.124	-6.159	-130.0
-120.0	-5.426	-5.465	-5.503	-5.541	-5.578	-5.616	-5.653	-5.690	-5.727	-5.764	-5.801	-120.0
-110.0	-5.037	-5.076	-5.116	-5.155	-5.194	-5.233	-5.272	-5.311	-5.350	-5.388	-5.426	-110.0
-100.0	-4.633	-4.674	-4.714	-4.755	-4.796	-4.836	-4.877	-4.917	-4.957	-4.997	-5.037	-100.0
-90.0	-4.215	-4.257	-4.300	-4.342	-4.384	-4.425	-4.467	-4.509	-4.550	-4.591	-4.633	-90.0
-80.0	-3.786	-3.829	-3.872	-3.916	-3.959	-4.002	-4.045	-4.088	-4.130	-4.173	-4.215	-80.0
-70.0	-3.344	-3.389	-3.434	-3.478	-3.522	-3.566	-3.610	-3.654	-3.698	-3.742	-3.786	-70.0
-60.0	-2.893	-2.938	-2.984	-3.029	-3.075	-3.120	-3.165	-3.210	-3.255	-3.300	-3.344	-60.0
-50.0	-2.431	-2.478	-2.524	-2.571	-2.617	-2.663	-2.709	-2.755	-2.801	-2.847	-2.893	-50.0
-40.0	-1.961	-2.008	-2.055	-2.103	-2.150	-2.197	-2.244	-2.291	-2.338	-2.385	-2.431	-40.0
-30.0	-1.482	-1.530	-1.578	-1.626	-1.674	-1.722	-1.770	-1.818	-1.865	-1.913	-1.961	-30.0
-20.0	-0.995	-1.044	-1.093	-1.142	-1.190	-1.239	-1.288	-1.336	-1.385	-1.433	-1.482	-20.0
-10.0	-0.501	-0.550	-0.600	-0.650	-0.699	-0.749	-0.798	-0.847	-0.896	-0.946	-0.995	-10.0
0.0	0.000	-0.050	-0.101	-0.151	-0.201	-0.251	-0.301	-0.351	-0.401	-0.451	-0.501	0.0
0.0	0.000	0.050	0.101	0.151	0.202	0.253	0.303	0.354	0.405	0.456	0.507	0.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type J Temperature vs. EMF Outputs—Ref. 40

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
10.0	0.507	0.558	0.609	0.660	0.711	0.762	0.814	0.865	0.916	0.968	1.019	10.0
20.0	1.019	1.071	1.122	1.174	1.226	1.277	1.329	1.381	1.433	1.485	1.537	20.0
30.0	1.537	1.589	1.641	1.693	1.745	1.797	1.849	1.902	1.954	2.006	2.059	30.0
40.0	2.059	2.111	2.164	2.216	2.269	2.322	2.374	2.427	2.480	2.532	2.585	40.0
50.0	2.585	2.638	2.691	2.744	2.797	2.850	2.903	2.956	3.009	3.062	3.116	50.0
60.0	3.116	3.169	3.222	3.275	3.329	3.382	3.436	3.489	3.543	3.596	3.650	60.0
70.0	3.650	3.703	3.757	3.810	3.864	3.918	3.971	4.025	4.079	4.133	4.187	70.0
80.0	4.187	4.240	4.294	4.348	4.402	4.456	4.510	4.564	4.618	4.672	4.726	80.0
90.0	4.726	4.781	4.835	4.889	4.943	4.997	5.052	5.106	5.160	5.215	5.269	90.0
100.0	5.269	5.323	5.378	5.432	5.487	5.541	5.595	5.650	5.705	5.759	5.814	100.0
110.0	5.814	5.868	5.923	5.977	6.032	6.087	6.141	6.196	6.251	6.306	6.360	110.0
120.0	6.360	6.415	6.470	6.525	6.579	6.634	6.689	6.744	6.799	6.854	6.909	120.0
130.0	6.909	6.964	7.019	7.074	7.129	7.184	7.239	7.294	7.349	7.404	7.459	130.0
140.0	7.459	7.514	7.569	7.624	7.679	7.734	7.789	7.844	7.900	7.955	8.010	140.0
150.0	8.010	8.065	8.120	8.175	8.231	8.286	8.341	8.396	8.452	8.507	8.562	150.0
160.0	8.562	8.618	8.673	8.728	8.783	8.839	8.894	8.949	9.005	9.060	9.115	160.0
170.0	9.115	9.171	9.226	9.282	9.337	9.392	9.448	9.503	9.559	9.614	9.669	170.0
180.0	9.669	9.725	9.780	9.836	9.891	9.947	10.002	10.057	10.113	10.168	10.224	180.0
190.0	10.224	10.279	10.335	10.390	10.446	10.501	10.557	10.612	10.668	10.723	10.779	190.0
200.0	10.779	10.834	10.890	10.945	11.001	11.056	11.112	11.167	11.223	11.278	11.334	200.0
210.0	11.334	11.389	11.445	11.501	11.556	11.612	11.667	11.723	11.778	11.834	11.889	210.0
220.0	11.889	11.945	12.000	12.056	12.111	12.167	12.222	12.278	12.334	12.389	12.445	220.0
230.0	12.445	12.500	12.556	12.611	12.667	12.722	12.778	12.833	12.889	12.944	13.000	230.0
240.0	13.000	13.056	13.111	13.167	13.222	13.278	13.333	13.389	13.444	13.500	13.555	240.0
250.0	13.555	13.611	13.666	13.722	13.777	13.833	13.888	13.944	13.999	14.055	14.110	250.0
260.0	14.110	14.166	14.221	14.277	14.332	14.388	14.443	14.499	14.554	14.609	14.665	260.0
270.0	14.665	14.720	14.776	14.831	14.887	14.942	14.998	15.053	15.109	15.164	15.219	270.0
280.0	15.219	15.275	15.330	15.386	15.441	15.496	15.552	15.607	15.663	15.718	15.773	280.0
290.0	15.773	15.829	15.884	15.940	15.995	16.050	16.106	16.161	16.216	16.272	16.327	290.0
300.0	16.327	16.383	16.438	16.493	16.549	16.604	16.659	16.715	16.770	16.825	16.881	300.0
310.0	16.881	16.936	16.991	17.046	17.102	17.157	17.212	17.268	17.323	17.378	17.434	310.0
320.0	17.434	17.489	17.544	17.599	17.655	17.710	17.765	17.820	17.876	17.931	17.986	320.0
330.0	17.986	18.041	18.097	18.152	18.207	18.262	18.318	18.373	18.428	18.483	18.538	330.0
340.0	18.538	18.594	18.649	18.704	18.759	18.814	18.870	18.925	18.980	19.035	19.090	340.0
350.0	19.090	19.146	19.201	19.256	19.311	19.366	19.422	19.477	19.532	19.587	19.642	350.0
360.0	19.642	19.697	19.753	19.808	19.863	19.918	19.973	20.028	20.083	20.139	20.194	360.0
370.0	20.194	20.249	20.304	20.359	20.414	20.469	20.525	20.580	20.635	20.690	20.745	370.0
380.0	20.745	20.800	20.855	20.911	20.966	21.021	21.076	21.131	21.186	21.241	21.297	380.0
390.0	21.297	21.352	21.407	21.462	21.517	21.572	21.627	21.683	21.738	21.793	21.848	390.0
400.0	21.848	21.903	21.958	22.014	22.069	22.124	22.179	22.234	22.289	22.345	22.400	400.0
410.0	22.400	22.455	22.510	22.565	22.620	22.676	22.731	22.786	22.841	22.896	22.952	410.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type J Temperature vs. EMF Outputs—Ref. 40

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
420.0	22.952	23.007	23.062	23.117	23.172	23.228	23.283	23.338	23.393	23.449	23.504	420.0
430.0	23.504	23.559	23.614	23.670	23.725	23.780	23.835	23.891	23.946	24.001	24.057	430.0
440.0	24.057	24.112	24.167	24.223	24.278	24.333	24.389	24.444	24.499	24.555	24.610	440.0
450.0	24.610	24.665	24.721	24.776	24.832	24.887	24.943	24.998	25.053	25.109	25.164	450.0
460.0	25.164	25.220	25.275	25.331	25.386	25.442	25.497	25.553	25.608	25.664	25.720	460.0
470.0	25.720	25.775	25.831	25.886	25.942	25.998	26.053	26.109	26.165	26.220	26.276	470.0
480.0	26.276	26.332	26.387	26.443	26.499	26.555	26.610	26.666	26.722	26.778	26.834	480.0
490.0	26.834	26.889	26.945	27.001	27.057	27.113	27.169	27.225	27.281	27.337	27.393	490.0
500.0	27.393	27.449	27.505	27.561	27.617	27.673	27.729	27.785	27.841	27.897	27.953	500.0
510.0	27.953	28.010	28.066	28.122	28.178	28.234	28.291	28.347	28.403	28.460	28.516	510.0
520.0	28.516	28.572	28.629	28.685	28.741	28.798	28.854	28.911	28.967	29.024	29.080	520.0
530.0	29.080	29.137	29.194	29.250	29.307	29.363	29.420	29.477	29.534	29.590	29.647	530.0
540.0	29.647	29.704	29.761	29.818	29.874	29.931	29.988	30.045	30.102	30.159	30.216	540.0
550.0	30.216	30.273	30.330	30.387	30.444	30.502	30.559	30.616	30.673	30.730	30.788	550.0
560.0	30.788	30.845	30.902	30.960	31.017	31.074	31.132	31.189	31.247	31.304	31.362	560.0
570.0	31.362	31.419	31.477	31.535	31.592	31.650	31.708	31.766	31.823	31.881	31.939	570.0
580.0	31.939	31.997	32.055	32.113	32.171	32.229	32.287	32.345	32.403	32.461	32.519	580.0
590.0	32.519	32.577	32.636	32.694	32.752	32.810	32.869	32.927	32.985	33.044	33.102	590.0
600.0	33.102	33.161	33.219	33.278	33.337	33.395	33.454	33.513	33.571	33.630	33.689	600.0
610.0	33.689	33.748	33.807	33.866	33.925	33.984	34.043	34.102	34.161	34.220	34.279	610.0
620.0	34.279	34.338	34.397	34.457	34.516	34.575	34.635	34.694	34.754	34.813	34.873	620.0
630.0	34.873	34.932	34.992	35.051	35.111	35.171	35.230	35.290	35.350	35.410	35.470	630.0
640.0	35.470	35.530	35.590	35.650	35.710	35.770	35.830	35.890	35.950	36.010	36.071	640.0
650.0	36.071	36.131	36.191	36.252	36.312	36.373	36.433	36.494	36.554	36.615	36.675	650.0
660.0	36.675	36.736	36.797	36.858	36.918	36.979	37.040	37.101	37.162	37.223	37.284	660.0
670.0	37.284	37.345	37.406	37.467	37.528	37.590	37.651	37.712	37.773	37.835	37.896	670.0
680.0	37.896	37.958	38.019	38.081	38.142	38.204	38.265	38.327	38.389	38.450	38.512	680.0
690.0	38.512	38.574	38.636	38.698	38.760	38.822	38.884	38.946	39.008	39.070	39.132	690.0
700.0	39.132	39.194	39.256	39.318	39.381	39.443	39.505	39.568	39.630	39.693	39.755	700.0
710.0	39.755	39.818	39.880	39.943	40.005	40.068	40.131	40.193	40.256	40.319	40.382	710.0
720.0	40.382	40.445	40.508	40.570	40.633	40.696	40.759	40.822	40.886	40.949	41.012	720.0
730.0	41.012	41.075	41.138	41.201	41.265	41.328	41.391	41.455	41.518	41.581	41.645	730.0
740.0	41.645	41.708	41.772	41.835	41.899	41.962	42.026	42.090	42.153	42.217	42.281	740.0
750.0	42.281	42.344	42.408	42.472	42.536	42.599	42.663	42.727	42.791	42.855	42.919	750.0
760.0	42.919											

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type K Temperature vs. EMF Outputs—Ref. 41

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
-260.0	-6.441	-6.444	-6.446	-6.448	-6.450	-6.452	-6.453	-6.455	-6.456	-6.457	-6.458	-260.0
-250.0	-6.404	-6.408	-6.413	-6.417	-6.421	-6.425	-6.429	-6.432	-6.435	-6.438	-6.441	-250.0
-240.0	-6.344	-6.351	-6.358	-6.364	-6.370	-6.377	-6.382	-6.388	-6.393	-6.399	-6.404	-240.0
-230.0	-6.262	-6.271	-6.280	-6.289	-6.297	-6.306	-6.314	-6.322	-6.329	-6.337	-6.344	-230.0
-220.0	-6.158	-6.170	-6.181	-6.192	-6.202	-6.213	-6.223	-6.233	-6.243	-6.252	-6.262	-220.0
-210.0	-6.035	-6.048	-6.061	-6.074	-6.087	-6.099	-6.111	-6.123	-6.135	-6.147	-6.158	-210.0
-200.0	-5.891	-5.907	-5.922	-5.936	-5.951	-5.965	-5.980	-5.994	-6.007	-6.021	-6.035	-200.0
-190.0	-5.730	-5.747	-5.763	-5.780	-5.797	-5.813	-5.829	-5.845	-5.861	-5.876	-5.891	-190.0
-180.0	-5.550	-5.569	-5.588	-5.606	-5.624	-5.642	-5.660	-5.678	-5.695	-5.713	-5.730	-180.0
-170.0	-5.354	-5.374	-5.395	-5.415	-5.435	-5.454	-5.474	-5.493	-5.512	-5.531	-5.550	-170.0
-160.0	-5.141	-5.163	-5.185	-5.207	-5.228	-5.250	-5.271	-5.292	-5.313	-5.333	-5.354	-160.0
-150.0	-4.913	-4.936	-4.960	-4.983	-5.006	-5.029	-5.052	-5.074	-5.097	-5.119	-5.141	-150.0
-140.0	-4.669	-4.694	-4.719	-4.744	-4.768	-4.793	-4.817	-4.841	-4.865	-4.889	-4.913	-140.0
-130.0	-4.411	-4.437	-4.463	-4.490	-4.516	-4.542	-4.567	-4.593	-4.618	-4.644	-4.669	-130.0
-120.0	-4.138	-4.166	-4.194	-4.221	-4.249	-4.276	-4.303	-4.330	-4.357	-4.384	-4.411	-120.0
-110.0	-3.852	-3.882	-3.911	-3.939	-3.968	-3.997	-4.025	-4.054	-4.082	-4.110	-4.138	-110.0
-100.0	-3.554	-3.584	-3.614	-3.645	-3.675	-3.705	-3.734	-3.764	-3.794	-3.823	-3.852	-100.0
-90.0	-3.243	-3.274	-3.306	-3.337	-3.368	-3.400	-3.431	-3.462	-3.492	-3.523	-3.554	-90.0
-80.0	-2.920	-2.953	-2.986	-3.018	-3.050	-3.083	-3.115	-3.147	-3.179	-3.211	-3.243	-80.0
-70.0	-2.587	-2.620	-2.654	-2.688	-2.721	-2.755	-2.788	-2.821	-2.854	-2.887	-2.920	-70.0
-60.0	-2.243	-2.278	-2.312	-2.347	-2.382	-2.416	-2.450	-2.485	-2.519	-2.553	-2.587	-60.0
-50.0	-1.889	-1.925	-1.961	-1.996	-2.032	-2.067	-2.103	-2.138	-2.173	-2.208	-2.243	-50.0
-40.0	-1.527	-1.564	-1.600	-1.637	-1.673	-1.709	-1.745	-1.782	-1.818	-1.854	-1.889	-40.0
-30.0	-1.156	-1.194	-1.231	-1.268	-1.305	-1.343	-1.380	-1.417	-1.453	-1.490	-1.527	-30.0
-20.0	-0.778	-0.816	-0.854	-0.892	-0.930	-0.968	-1.006	-1.043	-1.081	-1.119	-1.156	-20.0
-10.0	-0.392	-0.431	-0.470	-0.508	-0.547	-0.586	-0.624	-0.663	-0.701	-0.739	-0.778	-10.0
0.0	0.000	-0.039	-0.079	-0.118	-0.157	-0.197	-0.236	-0.275	-0.314	-0.353	-0.392	0.0
0.0	0.000	0.039	0.079	0.119	0.158	0.198	0.238	0.277	0.317	0.357	0.397	0.0
10.0	0.397	0.437	0.477	0.517	0.557	0.597	0.637	0.677	0.718	0.758	0.798	10.0
20.0	0.798	0.838	0.879	0.919	0.960	1.000	1.041	1.081	1.122	1.163	1.203	20.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type K Temperature vs. EMF Outputs—Ref. 41

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
30.0	1.203	1.244	1.285	1.326	1.366	1.407	1.448	1.489	1.530	1.571	1.612	30.0
40.0	1.612	1.653	1.694	1.735	1.776	1.817	1.858	1.899	1.941	1.982	2.023	40.0
50.0	2.023	2.064	2.106	2.147	2.188	2.230	2.271	2.312	2.354	2.395	2.436	50.0
60.0	2.436	2.478	2.519	2.561	2.602	2.644	2.685	2.727	2.768	2.810	2.851	60.0
70.0	2.851	2.893	2.934	2.976	3.017	3.059	3.100	3.142	3.184	3.225	3.267	70.0
80.0	3.267	3.308	3.350	3.391	3.433	3.474	3.516	3.557	3.599	3.640	3.682	80.0
90.0	3.682	3.723	3.765	3.806	3.848	3.889	3.931	3.972	4.013	4.055	4.096	90.0
100.0	4.096	4.138	4.179	4.220	4.262	4.303	4.344	4.385	4.427	4.468	4.509	100.0
110.0	4.509	4.550	4.591	4.633	4.674	4.715	4.756	4.797	4.838	4.879	4.920	110.0
120.0	4.920	4.961	5.002	5.043	5.084	5.124	5.165	5.206	5.247	5.288	5.328	120.0
130.0	5.328	5.369	5.410	5.450	5.491	5.532	5.572	5.613	5.653	5.694	5.735	130.0
140.0	5.735	5.775	5.815	5.856	5.896	5.937	5.977	6.017	6.058	6.098	6.138	140.0
150.0	6.138	6.179	6.219	6.259	6.299	6.339	6.380	6.420	6.460	6.500	6.540	150.0
160.0	6.540	6.580	6.620	6.660	6.701	6.741	6.781	6.821	6.861	6.901	6.941	160.0
170.0	6.941	6.981	7.021	7.060	7.100	7.140	7.180	7.220	7.260	7.300	7.340	170.0
180.0	7.340	7.380	7.420	7.460	7.500	7.540	7.579	7.619	7.659	7.699	7.739	180.0
190.0	7.739	7.779	7.819	7.859	7.899	7.939	7.979	8.019	8.059	8.099	8.138	190.0
200.0	8.138	8.178	8.218	8.258	8.298	8.338	8.378	8.418	8.458	8.499	8.539	200.0
210.0	8.539	8.579	8.619	8.659	8.699	8.739	8.779	8.819	8.860	8.900	8.940	210.0
220.0	8.940	8.980	9.020	9.061	9.101	9.141	9.181	9.222	9.262	9.302	9.343	220.0
230.0	9.343	9.383	9.423	9.464	9.504	9.545	9.585	9.626	9.666	9.707	9.747	230.0
240.0	9.747	9.788	9.828	9.869	9.909	9.950	9.991	10.031	10.072	10.113	10.153	240.0
250.0	10.153	10.194	10.235	10.276	10.316	10.357	10.398	10.439	10.480	10.520	10.561	250.0
260.0	10.561	10.602	10.643	10.684	10.725	10.766	10.807	10.848	10.889	10.930	10.971	260.0
270.0	10.971	11.012	11.053	11.094	11.135	11.176	11.217	11.259	11.300	11.341	11.382	270.0
280.0	11.382	11.423	11.465	11.506	11.547	11.588	11.630	11.671	11.712	11.753	11.795	280.0
290.0	11.795	11.836	11.877	11.919	11.960	12.001	12.043	12.084	12.126	12.167	12.209	290.0
300.0	12.209	12.250	12.291	12.333	12.374	12.416	12.457	12.499	12.540	12.582	12.624	300.0
310.0	12.624	12.665	12.707	12.748	12.790	12.831	12.873	12.915	12.956	12.998	13.040	310.0
320.0	13.040	13.081	13.123	13.165	13.206	13.248	13.290	13.331	13.373	13.415	13.457	320.0
330.0	13.457	13.498	13.540	13.582	13.624	13.665	13.707	13.749	13.791	13.833	13.874	330.0
340.0	13.874	13.916	13.958	14.000	14.042	14.084	14.126	14.167	14.209	14.251	14.293	340.0
350.0	14.293	14.335	14.377	14.419	14.461	14.503	14.545	14.587	14.629	14.671	14.713	350.0
360.0	14.713	14.755	14.797	14.839	14.881	14.923	14.965	15.007	15.049	15.091	15.133	360.0
370.0	15.133	15.175	15.217	15.259	15.301	15.343	15.385	15.427	15.469	15.511	15.554	370.0
380.0	15.554	15.596	15.638	15.680	15.722	15.764	15.806	15.849	15.891	15.933	15.975	380.0
390.0	15.975	16.017	16.059	16.102	16.144	16.186	16.228	16.270	16.313	16.355	16.397	390.0
400.0	16.397	16.439	16.482	16.524	16.566	16.608	16.651	16.693	16.735	16.778	16.820	400.0
410.0	16.820	16.862	16.904	16.947	16.989	17.031	17.074	17.116	17.158	17.201	17.243	410.0
420.0	17.243	17.285	17.328	17.370	17.413	17.455	17.497	17.540	17.582	17.624	17.667	420.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type K Temperature vs. EMF Outputs—Ref. 41

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
430.0	17.667	17.709	17.752	17.794	17.837	17.879	17.921	17.964	18.006	18.049	18.091	430.0
440.0	18.091	18.134	18.176	18.218	18.261	18.303	18.346	18.388	18.431	18.473	18.516	440.0
450.0	18.516	18.558	18.601	18.643	18.686	18.728	18.771	18.813	18.856	18.898	18.941	450.0
460.0	18.941	18.983	19.026	19.068	19.111	19.154	19.196	19.239	19.281	19.324	19.366	460.0
470.0	19.366	19.409	19.451	19.494	19.537	19.579	19.622	19.664	19.707	19.750	19.792	470.0
480.0	19.792	19.835	19.877	19.920	19.962	20.005	20.048	20.090	20.133	20.175	20.218	480.0
490.0	20.218	20.261	20.303	20.346	20.389	20.431	20.474	20.516	20.559	20.602	20.644	490.0
500.0	20.644	20.687	20.730	20.772	20.815	20.857	20.900	20.943	20.985	21.028	21.071	500.0
510.0	21.071	21.113	21.156	21.199	21.241	21.284	21.326	21.369	21.412	21.454	21.497	510.0
520.0	21.497	21.540	21.582	21.625	21.668	21.710	21.753	21.796	21.838	21.881	21.924	520.0
530.0	21.924	21.966	22.009	22.052	22.094	22.137	22.179	22.222	22.265	22.307	22.350	530.0
540.0	22.350	22.393	22.435	22.478	22.521	22.563	22.606	22.649	22.691	22.734	22.776	540.0
550.0	22.776	22.819	22.862	22.904	22.947	22.990	23.032	23.075	23.117	23.160	23.203	550.0
560.0	23.203	23.245	23.288	23.331	23.373	23.416	23.458	23.501	23.544	23.586	23.629	560.0
570.0	23.629	23.671	23.714	23.757	23.799	23.842	23.884	23.927	23.970	24.012	24.055	570.0
580.0	24.055	24.097	24.140	24.182	24.225	24.267	24.310	24.353	24.395	24.438	24.480	580.0
590.0	24.480	24.523	24.565	24.608	24.650	24.693	24.735	24.778	24.820	24.863	24.905	590.0
600.0	24.905	24.948	24.990	25.033	25.075	25.118	25.160	25.203	25.245	25.288	25.330	600.0
610.0	25.330	25.373	25.415	25.458	25.500	25.543	25.585	25.627	25.670	25.712	25.755	610.0
620.0	25.755	25.797	25.840	25.882	25.924	25.967	26.009	26.052	26.094	26.136	26.179	620.0
630.0	26.179	26.221	26.263	26.306	26.348	26.390	26.433	26.475	26.517	26.560	26.602	630.0
640.0	26.602	26.644	26.687	26.729	26.771	26.814	26.856	26.898	26.940	26.983	27.025	640.0
650.0	27.025	27.067	27.109	27.152	27.194	27.236	27.278	27.320	27.363	27.405	27.447	650.0
660.0	27.447	27.489	27.531	27.574	27.616	27.658	27.700	27.742	27.784	27.826	27.869	660.0
670.0	27.869	27.911	27.953	27.995	28.037	28.079	28.121	28.163	28.205	28.247	28.289	670.0
680.0	28.289	28.332	28.374	28.416	28.458	28.500	28.542	28.584	28.626	28.668	28.710	680.0
690.0	28.710	28.752	28.794	28.835	28.877	28.919	28.961	29.003	29.045	29.087	29.129	690.0
700.0	29.129	29.171	29.213	29.255	29.297	29.338	29.380	29.422	29.464	29.506	29.548	700.0
710.0	29.548	29.589	29.631	29.673	29.715	29.757	29.798	29.840	29.882	29.924	29.965	710.0
720.0	29.965	30.007	30.049	30.090	30.132	30.174	30.216	30.257	30.299	30.341	30.382	720.0
730.0	30.382	30.424	30.466	30.507	30.549	30.590	30.632	30.674	30.715	30.757	30.798	730.0
740.0	30.798	30.840	30.881	30.923	30.964	31.006	31.047	31.089	31.130	31.172	31.213	740.0
750.0	31.213	31.255	31.296	31.338	31.379	31.421	31.462	31.504	31.545	31.586	31.628	750.0
760.0	31.628	31.669	31.710	31.752	31.793	31.834	31.876	31.917	31.958	32.000	32.041	760.0
770.0	32.041	32.082	32.124	32.165	32.206	32.247	32.289	32.330	32.371	32.412	32.453	770.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type K Temperature vs. EMF Outputs—Ref. 41

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
780.0	32.453	32.495	32.536	32.577	32.618	32.659	32.700	32.742	32.783	32.824	32.865	780.0
790.0	32.865	32.906	32.947	32.988	33.029	33.070	33.111	33.152	33.193	33.234	33.275	790.0
800.0	33.275	33.316	33.357	33.398	33.439	33.480	33.521	33.562	33.603	33.644	33.685	800.0
810.0	33.685	33.726	33.767	33.808	33.848	33.889	33.930	33.971	34.012	34.053	34.093	810.0
820.0	34.093	34.134	34.175	34.216	34.257	34.297	34.338	34.379	34.420	34.460	34.501	820.0
830.0	34.501	34.542	34.582	34.623	34.664	34.704	34.745	34.786	34.826	34.867	34.908	830.0
840.0	34.908	34.948	34.989	35.029	35.070	35.110	35.151	35.192	35.232	35.273	35.313	840.0
850.0	35.313	35.354	35.394	35.435	35.475	35.516	35.556	35.596	35.637	35.677	35.718	850.0
860.0	35.718	35.758	35.798	35.839	35.879	35.920	35.960	36.000	36.041	36.081	36.121	860.0
870.0	36.121	36.162	36.202	36.242	36.282	36.323	36.363	36.403	36.443	36.484	36.524	870.0
880.0	36.524	36.564	36.604	36.644	36.685	36.725	36.765	36.805	36.845	36.885	36.925	880.0
890.0	36.925	36.965	37.006	37.046	37.086	37.126	37.166	37.206	37.246	37.286	37.326	890.0
900.0	37.326	37.366	37.406	37.446	37.486	37.526	37.566	37.606	37.646	37.686	37.725	900.0
910.0	37.725	37.765	37.805	37.845	37.885	37.925	37.965	38.005	38.044	38.084	38.124	910.0
920.0	38.124	38.164	38.204	38.243	38.283	38.323	38.363	38.402	38.442	38.482	38.522	920.0
930.0	38.522	38.561	38.601	38.641	38.680	38.720	38.760	38.799	38.839	38.878	38.918	930.0
940.0	38.918	38.958	38.997	39.037	39.076	39.116	39.155	39.195	39.235	39.274	39.314	940.0
950.0	39.314	39.353	39.393	39.432	39.471	39.511	39.550	39.590	39.629	39.669	39.708	950.0
960.0	39.708	39.747	39.787	39.826	39.866	39.905	39.944	39.984	40.023	40.062	40.101	960.0
970.0	40.101	40.141	40.180	40.219	40.259	40.298	40.337	40.376	40.415	40.455	40.494	970.0
980.0	40.494	40.533	40.572	40.611	40.651	40.690	40.729	40.768	40.807	40.846	40.885	980.0
990.0	40.885	40.924	40.963	41.002	41.042	41.081	41.120	41.159	41.198	41.237	41.276	990.0
1000.0	41.276	41.315	41.354	41.393	41.431	41.470	41.509	41.548	41.587	41.626	41.665	1000.0
1010.0	41.665	41.704	41.743	41.781	41.820	41.859	41.898	41.937	41.976	42.014	42.053	1010.0
1020.0	42.053	42.092	42.131	42.169	42.208	42.247	42.286	42.324	42.363	42.402	42.440	1020.0
1030.0	42.440	42.479	42.518	42.556	42.595	42.633	42.672	42.711	42.749	42.788	42.826	1030.0
1040.0	42.826	42.865	42.903	42.942	42.980	43.019	43.057	43.096	43.134	43.173	43.211	1040.0
1050.0	43.211	43.250	43.288	43.327	43.365	43.403	43.442	43.480	43.518	43.557	43.595	1050.0
1060.0	43.595	43.633	43.672	43.710	43.748	43.787	43.825	43.863	43.901	43.940	43.978	1060.0
1070.0	43.978	44.016	44.054	44.092	44.130	44.169	44.207	44.245	44.283	44.321	44.359	1070.0
1080.0	44.359	44.397	44.435	44.473	44.512	44.550	44.588	44.626	44.664	44.702	44.740	1080.0
1090.0	44.740	44.778	44.816	44.853	44.891	44.929	44.967	45.005	45.043	45.081	45.119	1090.0
1100.0	45.119	45.157	45.194	45.232	45.270	45.308	45.346	45.383	45.421	45.459	45.497	1100.0
1110.0	45.497	45.534	45.572	45.610	45.647	45.685	45.723	45.760	45.798	45.836	45.873	1110.0
1120.0	45.873	45.911	45.948	45.986	46.024	46.061	46.099	46.136	46.174	46.211	46.249	1120.0
1130.0	46.249	46.286	46.324	46.361	46.398	46.436	46.473	46.511	46.548	46.585	46.623	1130.0
1140.0	46.623	46.660	46.697	46.735	46.772	46.809	46.847	46.884	46.921	46.958	46.995	1140.0
1150.0	46.995	47.033	47.070	47.107	47.144	47.181	47.218	47.256	47.293	47.330	47.367	1150.0
1160.0	47.367	47.404	47.441	47.478	47.515	47.552	47.589	47.626	47.663	47.700	47.737	1160.0
1170.0	47.737	47.774	47.811	47.848	47.884	47.921	47.958	47.995	48.032	48.069	48.105	1170.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type K Temperature vs. EMF Outputs—Ref. 41

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
1180.0	48.105	48.142	48.179	48.216	48.252	48.289	48.326	48.363	48.399	48.436	48.473	1180.0
1190.0	48.473	48.509	48.546	48.582	48.619	48.656	48.692	48.729	48.765	48.802	48.838	1190.0
1200.0	48.838	48.875	48.911	48.948	48.984	49.021	49.057	49.093	49.130	49.166	49.202	1200.0
1210.0	49.202	49.239	49.275	49.311	49.348	49.384	49.420	49.456	49.493	49.529	49.565	1210.0
1220.0	49.565	49.601	49.637	49.674	49.710	49.746	49.782	49.818	49.854	49.890	49.926	1220.0
1230.0	49.926	49.962	49.998	50.034	50.070	50.106	50.142	50.178	50.214	50.250	50.286	1230.0
1240.0	50.286	50.322	50.358	50.393	50.429	50.465	50.501	50.537	50.572	50.608	50.644	1240.0
1250.0	50.644	50.680	50.715	50.751	50.787	50.822	50.858	50.894	50.929	50.965	51.000	1250.0
1260.0	51.000	51.036	51.071	51.107	51.142	51.178	51.213	51.249	51.284	51.320	51.355	1260.0
1270.0	51.355	51.391	51.426	51.461	51.497	51.532	51.567	51.603	51.638	51.673	51.708	1270.0
1280.0	51.708	51.744	51.779	51.814	51.849	51.885	51.920	51.955	51.990	52.025	52.060	1280.0
1290.0	52.060	52.095	52.130	52.165	52.200	52.235	52.270	52.305	52.340	52.375	52.410	1290.0
1300.0	52.410	52.445	52.480	52.515	52.550	52.585	52.620	52.654	52.689	52.724	52.759	1300.0
1310.0	52.759	52.794	52.828	52.863	52.898	52.932	52.967	53.002	53.037	53.071	53.106	1310.0
1320.0	53.106	53.140	53.175	53.210	53.244	53.279	53.313	53.348	53.382	53.417	53.451	1320.0
1330.0	53.451	53.486	53.520	53.555	53.589	53.623	53.658	53.692	53.727	53.761	53.795	1330.0
1340.0	53.795	53.830	53.864	53.898	53.932	53.967	54.001	54.035	54.069	54.104	54.138	1340.0
1350.0	54.138	54.172	54.206	54.240	54.274	54.308	54.343	54.377	54.411	54.445	54.479	1350.0
1360.0	54.479	54.513	54.547	54.581	54.615	54.649	54.683	54.717	54.751	54.785	54.819	1360.0
1370.0	54.819	54.852	54.886									

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type N Temperature vs. EMF Outputs—Ref. 42

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
-190.0	-3.884	-3.896	-3.907	-3.918	-3.928	-3.939	-3.950	-3.960	-3.970	-3.980	-3.990	-190.0
-180.0	-3.766	-3.778	-3.790	-3.803	-3.815	-3.827	-3.838	-3.850	-3.862	-3.873	-3.884	-180.0
-170.0	-3.634	-3.648	-3.662	-3.675	-3.688	-3.702	-3.715	-3.728	-3.740	-3.753	-3.766	-170.0
-160.0	-3.491	-3.506	-3.521	-3.535	-3.550	-3.564	-3.578	-3.593	-3.607	-3.621	-3.634	-160.0
-150.0	-3.336	-3.352	-3.368	-3.384	-3.400	-3.415	-3.431	-3.446	-3.461	-3.476	-3.491	-150.0
-140.0	-3.171	-3.188	-3.205	-3.221	-3.238	-3.255	-3.271	-3.288	-3.304	-3.320	-3.336	-140.0
-130.0	-2.994	-3.012	-3.030	-3.048	-3.066	-3.084	-3.101	-3.119	-3.136	-3.153	-3.171	-130.0
-120.0	-2.808	-2.827	-2.846	-2.865	-2.883	-2.902	-2.921	-2.939	-2.958	-2.976	-2.994	-120.0
-110.0	-2.612	-2.632	-2.652	-2.672	-2.691	-2.711	-2.730	-2.750	-2.769	-2.789	-2.808	-110.0
-100.0	-2.407	-2.428	-2.448	-2.469	-2.490	-2.510	-2.531	-2.551	-2.571	-2.592	-2.612	-100.0
-90.0	-2.193	-2.215	-2.237	-2.258	-2.280	-2.301	-2.322	-2.344	-2.365	-2.386	-2.407	-90.0
-80.0	-1.972	-1.995	-2.017	-2.039	-2.062	-2.084	-2.106	-2.128	-2.150	-2.172	-2.193	-80.0
-70.0	-1.744	-1.767	-1.790	-1.813	-1.836	-1.859	-1.882	-1.905	-1.927	-1.950	-1.972	-70.0
-60.0	-1.509	-1.533	-1.557	-1.580	-1.604	-1.627	-1.651	-1.674	-1.698	-1.721	-1.744	-60.0
-50.0	-1.269	-1.293	-1.317	-1.341	-1.366	-1.390	-1.414	-1.438	-1.462	-1.485	-1.509	-50.0
-40.0	-1.023	-1.048	-1.072	-1.097	-1.122	-1.146	-1.171	-1.195	-1.220	-1.244	-1.269	-40.0
-30.0	-0.772	-0.798	-0.823	-0.848	-0.873	-0.898	-0.923	-0.948	-0.973	-0.998	-1.023	-30.0
-20.0	-0.518	-0.544	-0.569	-0.595	-0.620	-0.646	-0.671	-0.696	-0.722	-0.747	-0.772	-20.0
-10.0	-0.260	-0.286	-0.312	-0.338	-0.364	-0.390	-0.415	-0.441	-0.467	-0.492	-0.518	-10.0
0.0	0.000	-0.026	-0.052	-0.078	-0.104	-0.131	-0.157	-0.183	-0.209	-0.234	-0.260	0.0
0.0	0.000	0.026	0.052	0.078	0.104	0.130	0.156	0.182	0.208	0.235	0.261	0.0
10.0	0.261	0.287	0.313	0.340	0.366	0.393	0.419	0.446	0.472	0.499	0.525	10.0
20.0	0.525	0.552	0.578	0.605	0.632	0.659	0.685	0.712	0.739	0.766	0.793	20.0
30.0	0.793	0.820	0.847	0.874	0.901	0.928	0.955	0.983	1.010	1.037	1.065	30.0
40.0	1.065	1.092	1.119	1.147	1.174	1.202	1.229	1.257	1.284	1.312	1.340	40.0
50.0	1.340	1.368	1.395	1.423	1.451	1.479	1.507	1.535	1.563	1.591	1.619	50.0
60.0	1.619	1.647	1.675	1.703	1.732	1.760	1.788	1.817	1.845	1.873	1.902	60.0
70.0	1.902	1.930	1.959	1.988	2.016	2.045	2.074	2.102	2.131	2.160	2.189	70.0
80.0	2.189	2.218	2.247	2.276	2.305	2.334	2.363	2.392	2.421	2.450	2.480	80.0
90.0	2.480	2.509	2.538	2.568	2.597	2.626	2.656	2.685	2.715	2.744	2.774	90.0
100.0	2.774	2.804	2.833	2.863	2.893	2.923	2.953	2.983	3.012	3.042	3.072	100.0
110.0	3.072	3.102	3.133	3.163	3.193	3.223	3.253	3.283	3.314	3.344	3.374	110.0
120.0	3.374	3.405	3.435	3.466	3.496	3.527	3.557	3.588	3.619	3.649	3.680	120.0
130.0	3.680	3.711	3.742	3.772	3.803	3.834	3.865	3.896	3.927	3.958	3.989	130.0
140.0	3.989	4.020	4.051	4.083	4.114	4.145	4.176	4.208	4.239	4.270	4.302	140.0
150.0	4.302	4.333	4.365	4.396	4.428	4.459	4.491	4.523	4.554	4.586	4.618	150.0
160.0	4.618	4.650	4.681	4.713	4.745	4.777	4.809	4.841	4.873	4.905	4.937	160.0
170.0	4.937	4.969	5.001	5.033	5.066	5.098	5.130	5.162	5.195	5.227	5.259	170.0
180.0	5.259	5.292	5.324	5.357	5.389	5.422	5.454	5.487	5.520	5.552	5.585	180.0
190.0	5.585	5.618	5.650	5.683	5.716	5.749	5.782	5.815	5.847	5.880	5.913	190.0
200.0	5.913	5.946	5.979	6.013	6.046	6.079	6.112	6.145	6.178	6.211	6.245	200.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type N Temperature vs. EMF Outputs—Ref. 42

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
210.0	6.245	6.278	6.311	6.345	6.378	6.411	6.445	6.478	6.512	6.545	6.579	210.0
220.0	6.579	6.612	6.646	6.680	6.713	6.747	6.781	6.814	6.848	6.882	6.916	220.0
230.0	6.916	6.949	6.983	7.017	7.051	7.085	7.119	7.153	7.187	7.221	7.255	230.0
240.0	7.255	7.289	7.323	7.357	7.392	7.426	7.460	7.494	7.528	7.563	7.597	240.0
250.0	7.597	7.631	7.666	7.700	7.734	7.769	7.803	7.838	7.872	7.907	7.941	250.0
260.0	7.941	7.976	8.010	8.045	8.080	8.114	8.149	8.184	8.218	8.253	8.288	260.0
270.0	8.288	8.323	8.358	8.392	8.427	8.462	8.497	8.532	8.567	8.602	8.637	270.0
280.0	8.637	8.672	8.707	8.742	8.777	8.812	8.847	8.882	8.918	8.953	8.988	280.0
290.0	8.988	9.023	9.058	9.094	9.129	9.164	9.200	9.235	9.270	9.306	9.341	290.0
300.0	9.341	9.377	9.412	9.448	9.483	9.519	9.554	9.590	9.625	9.661	9.696	300.0
310.0	9.696	9.732	9.768	9.803	9.839	9.875	9.910	9.946	9.982	10.018	10.054	310.0
320.0	10.054	10.089	10.125	10.161	10.197	10.233	10.269	10.305	10.341	10.377	10.413	320.0
330.0	10.413	10.449	10.485	10.521	10.557	10.593	10.629	10.665	10.701	10.737	10.774	330.0
340.0	10.774	10.810	10.846	10.882	10.918	10.955	10.991	11.027	11.064	11.100	11.136	340.0
350.0	11.136	11.173	11.209	11.245	11.282	11.318	11.355	11.391	11.428	11.464	11.501	350.0
360.0	11.501	11.537	11.574	11.610	11.647	11.683	11.720	11.757	11.793	11.830	11.867	360.0
370.0	11.867	11.903	11.940	11.977	12.013	12.050	12.087	12.124	12.160	12.197	12.234	370.0
380.0	12.234	12.271	12.308	12.345	12.382	12.418	12.455	12.492	12.529	12.566	12.603	380.0
390.0	12.603	12.640	12.677	12.714	12.751	12.788	12.825	12.862	12.899	12.937	12.974	390.0
400.0	12.974	13.011	13.048	13.085	13.122	13.159	13.197	13.234	13.271	13.308	13.346	400.0
410.0	13.346	13.383	13.420	13.457	13.495	13.532	13.569	13.607	13.644	13.682	13.719	410.0
420.0	13.719	13.756	13.794	13.831	13.869	13.906	13.944	13.981	14.019	14.056	14.094	420.0
430.0	14.094	14.131	14.169	14.206	14.244	14.281	14.319	14.356	14.394	14.432	14.469	430.0
440.0	14.469	14.507	14.545	14.582	14.620	14.658	14.695	14.733	14.771	14.809	14.846	440.0
450.0	14.846	14.884	14.922	14.960	14.998	15.035	15.073	15.111	15.149	15.187	15.225	450.0
460.0	15.225	15.262	15.300	15.338	15.376	15.414	15.452	15.490	15.528	15.566	15.604	460.0
470.0	15.604	15.642	15.680	15.718	15.756	15.794	15.832	15.870	15.908	15.946	15.984	470.0
480.0	15.984	16.022	16.060	16.099	16.137	16.175	16.213	16.251	16.289	16.327	16.366	480.0
490.0	16.366	16.404	16.442	16.480	16.518	16.557	16.595	16.633	16.671	16.710	16.748	490.0
500.0	16.748	16.786	16.824	16.863	16.901	16.939	16.978	17.016	17.054	17.093	17.131	500.0
510.0	17.131	17.169	17.208	17.246	17.285	17.323	17.361	17.400	17.438	17.477	17.515	510.0
520.0	17.515	17.554	17.592	17.630	17.669	17.707	17.746	17.784	17.823	17.861	17.900	520.0
530.0	17.900	17.938	17.977	18.016	18.054	18.093	18.131	18.170	18.208	18.247	18.286	530.0
540.0	18.286	18.324	18.363	18.401	18.440	18.479	18.517	18.556	18.595	18.633	18.672	540.0
550.0	18.672	18.711	18.749	18.788	18.827	18.865	18.904	18.943	18.982	19.020	19.059	550.0
560.0	19.059	19.098	19.136	19.175	19.214	19.253	19.292	19.330	19.369	19.408	19.447	560.0
570.0	19.447	19.485	19.524	19.563	19.602	19.641	19.680	19.718	19.757	19.796	19.835	570.0
580.0	19.835	19.874	19.913	19.952	19.990	20.029	20.068	20.107	20.146	20.185	20.224	580.0
590.0	20.224	20.263	20.302	20.341	20.379	20.418	20.457	20.496	20.535	20.574	20.613	590.0
600.0	20.613	20.652	20.691	20.730	20.769	20.808	20.847	20.886	20.925	20.964	21.003	600.0
610.0	21.003	21.042	21.081	21.120	21.159	21.198	21.237	21.276	21.315	21.354	21.393	610.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type N Temperature vs. EMF Outputs—Ref. 42

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
620.0	21.393	21.432	21.471	21.510	21.549	21.588	21.628	21.667	21.706	21.745	21.784	620.0
630.0	21.784	21.823	21.862	21.901	21.940	21.979	22.018	22.058	22.097	22.136	22.175	630.0
640.0	22.175	22.214	22.253	22.292	22.331	22.370	22.410	22.449	22.488	22.527	22.566	640.0
650.0	22.566	22.605	22.644	22.684	22.723	22.762	22.801	22.840	22.879	22.919	22.958	650.0
660.0	22.958	22.997	23.036	23.075	23.115	23.154	23.193	23.232	23.271	23.311	23.350	660.0
670.0	23.350	23.389	23.428	23.467	23.507	23.546	23.585	23.624	23.663	23.703	23.742	670.0
680.0	23.742	23.781	23.820	23.860	23.899	23.938	23.977	24.016	24.056	24.095	24.134	680.0
690.0	24.134	24.173	24.213	24.252	24.291	24.330	24.370	24.409	24.448	24.487	24.527	690.0
700.0	24.527	24.566	24.605	24.644	24.684	24.723	24.762	24.801	24.841	24.880	24.919	700.0
710.0	24.919	24.959	24.998	25.037	25.076	25.116	25.155	25.194	25.233	25.273	25.312	710.0
720.0	25.312	25.351	25.391	25.430	25.469	25.508	25.548	25.587	25.626	25.666	25.705	720.0
730.0	25.705	25.744	25.783	25.823	25.862	25.901	25.941	25.980	26.019	26.058	26.098	730.0
740.0	26.098	26.137	26.176	26.216	26.255	26.294	26.333	26.373	26.412	26.451	26.491	740.0
750.0	26.491	26.530	26.569	26.608	26.648	26.687	26.726	26.766	26.805	26.844	26.883	750.0
760.0	26.883	26.923	26.962	27.001	27.041	27.080	27.119	27.158	27.198	27.237	27.276	760.0
770.0	27.276	27.316	27.355	27.394	27.433	27.473	27.512	27.551	27.591	27.630	27.669	770.0
780.0	27.669	27.708	27.748	27.787	27.826	27.866	27.905	27.944	27.983	28.023	28.062	780.0
790.0	28.062	28.101	28.140	28.180	28.219	28.258	28.297	28.337	28.376	28.415	28.455	790.0
800.0	28.455	28.494	28.533	28.572	28.612	28.651	28.690	28.729	28.769	28.808	28.847	800.0
810.0	28.847	28.886	28.926	28.965	29.004	29.043	29.083	29.122	29.161	29.200	29.239	810.0
820.0	29.239	29.279	29.318	29.357	29.396	29.436	29.475	29.514	29.553	29.592	29.632	820.0
830.0	29.632	29.671	29.710	29.749	29.789	29.828	29.867	29.906	29.945	29.985	30.024	830.0
840.0	30.024	30.063	30.102	30.141	30.181	30.220	30.259	30.298	30.337	30.376	30.416	840.0
850.0	30.416	30.455	30.494	30.533	30.572	30.611	30.651	30.690	30.729	30.768	30.807	850.0
860.0	30.807	30.846	30.886	30.925	30.964	31.003	31.042	31.081	31.120	31.160	31.199	860.0
870.0	31.199	31.238	31.277	31.316	31.355	31.394	31.433	31.473	31.512	31.551	31.590	870.0
880.0	31.590	31.629	31.668	31.707	31.746	31.785	31.824	31.863	31.903	31.942	31.981	880.0
890.0	31.981	32.020	32.059	32.098	32.137	32.176	32.215	32.254	32.293	32.332	32.371	890.0
900.0	32.371	32.410	32.449	32.488	32.527	32.566	32.605	32.644	32.683	32.722	32.761	900.0
910.0	32.761	32.800	32.839	32.878	32.917	32.956	32.995	33.034	33.073	33.112	33.151	910.0
920.0	33.151	33.190	33.229	33.268	33.307	33.346	33.385	33.424	33.463	33.502	33.541	920.0
930.0	33.541	33.580	33.619	33.658	33.697	33.736	33.774	33.813	33.852	33.891	33.930	930.0
940.0	33.930	33.969	34.008	34.047	34.086	34.124	34.163	34.202	34.241	34.280	34.319	940.0
950.0	34.319	34.358	34.396	34.435	34.474	34.513	34.552	34.591	34.629	34.668	34.707	950.0
960.0	34.707	34.746	34.785	34.823	34.862	34.901	34.940	34.979	35.017	35.056	35.095	960.0
970.0	35.095	35.134	35.172	35.211	35.250	35.289	35.327	35.366	35.405	35.444	35.482	970.0
980.0	35.482	35.521	35.560	35.598	35.637	35.676	35.714	35.753	35.792	35.831	35.869	980.0
990.0	35.869	35.908	35.946	35.985	36.024	36.062	36.101	36.140	36.178	36.217	36.256	990.0
1000.0	36.256	36.294	36.333	36.371	36.410	36.449	36.487	36.526	36.564	36.603	36.641	1000.0
1010.0	36.641	36.680	36.718	36.757	36.796	36.834	36.873	36.911	36.950	36.988	37.027	1010.0
1020.0	37.027	37.065	37.104	37.142	37.181	37.219	37.258	37.296	37.334	37.373	37.411	1020.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type N Temperature vs. EMF Outputs—Ref. 42

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
1030.0	37.411	37.450	37.488	37.527	37.565	37.603	37.642	37.680	37.719	37.757	37.795	1030.0
1040.0	37.795	37.834	37.872	37.911	37.949	37.987	38.026	38.064	38.102	38.141	38.179	1040.0
1050.0	38.179	38.217	38.256	38.294	38.332	38.370	38.409	38.447	38.485	38.524	38.562	1050.0
1060.0	38.562	38.600	38.638	38.677	38.715	38.753	38.791	38.829	38.868	38.906	38.944	1060.0
1070.0	38.944	38.982	39.020	39.059	39.097	39.135	39.173	39.211	39.249	39.287	39.326	1070.0
1080.0	39.326	39.364	39.402	39.440	39.478	39.516	39.554	39.592	39.630	39.668	39.706	1080.0
1090.0	39.706	39.744	39.783	39.821	39.859	39.897	39.935	39.973	40.011	40.049	40.087	1090.0
1100.0	40.087	40.125	40.163	40.201	40.238	40.276	40.314	40.352	40.390	40.428	40.466	1100.0
1110.0	40.466	40.504	40.542	40.580	40.618	40.655	40.693	40.731	40.769	40.807	40.845	1110.0
1120.0	40.845	40.883	40.920	40.958	40.996	41.034	41.072	41.109	41.147	41.185	41.223	1120.0
1130.0	41.223	41.260	41.298	41.336	41.374	41.411	41.449	41.487	41.525	41.562	41.600	1130.0
1140.0	41.600	41.638	41.675	41.713	41.751	41.788	41.826	41.864	41.901	41.939	41.976	1140.0
1150.0	41.976	42.014	42.052	42.089	42.127	42.164	42.202	42.239	42.277	42.314	42.352	1150.0
1160.0	42.352	42.390	42.427	42.465	42.502	42.540	42.577	42.614	42.652	42.689	42.727	1160.0
1170.0	42.727	42.764	42.802	42.839	42.877	42.914	42.951	42.989	43.026	43.064	43.101	1170.0
1180.0	43.101	43.138	43.176	43.213	43.250	43.288	43.325	43.362	43.399	43.437	43.474	1180.0
1190.0	43.474	43.511	43.549	43.586	43.623	43.660	43.698	43.735	43.772	43.809	43.846	1190.0
1200.0	43.846	43.884	43.921	43.958	43.995	44.032	44.069	44.106	44.144	44.181	44.218	1200.0
1210.0	44.218	44.255	44.292	44.329	44.366	44.403	44.440	44.477	44.514	44.551	44.588	1210.0
1220.0	44.588	44.625	44.662	44.699	44.736	44.773	44.810	44.847	44.884	44.921	44.958	1220.0
1230.0	44.958	44.995	45.032	45.069	45.105	45.142	45.179	45.216	45.253	45.290	45.326	1230.0
1240.0	45.326	45.363	45.400	45.437	45.474	45.510	45.547	45.584	45.621	45.657	45.694	1240.0
1250.0	45.694	45.731	45.767	45.804	45.841	45.877	45.914	45.951	45.987	46.024	46.060	1250.0
1260.0	46.060	46.097	46.133	46.170	46.207	46.243	46.280	46.316	46.353	46.389	46.425	1260.0
1270.0	46.425	46.462	46.498	46.535	46.571	46.608	46.644	46.680	46.717	46.753	46.789	1270.0
1280.0	46.789	46.826	46.862	46.898	46.935	46.971	47.007	47.043	47.079	47.116	47.152	1280.0
1290.0	47.152	47.188	47.224	47.260	47.296	47.333	47.369	47.405	47.441	47.477	47.513	1290.0
1300.0	47.513											

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type R Temperature vs. EMF Outputs—Ref. 43

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
-40.0	-0.188	-0.192	-0.196	-0.200	-0.204	-0.208	-0.211	-0.215	-0.219	-0.223	-0.226	-40.0
-30.0	-0.145	-0.150	-0.154	-0.158	-0.163	-0.167	-0.171	-0.175	-0.180	-0.184	-0.188	-30.0
-20.0	-0.100	-0.105	-0.109	-0.114	-0.119	-0.123	-0.128	-0.132	-0.137	-0.141	-0.145	-20.0
-10.0	-0.051	-0.056	-0.061	-0.066	-0.071	-0.076	-0.081	-0.086	-0.091	-0.095	-0.100	-10.0
0.0	0.000	-0.005	-0.011	-0.016	-0.021	-0.026	-0.031	-0.036	-0.041	-0.046	-0.051	0.0
0.0	0.000	0.005	0.011	0.016	0.021	0.027	0.032	0.038	0.043	0.049	0.054	0.0
10.0	0.054	0.060	0.065	0.071	0.077	0.082	0.088	0.094	0.100	0.105	0.111	10.0
20.0	0.111	0.117	0.123	0.129	0.135	0.141	0.147	0.153	0.159	0.165	0.171	20.0
30.0	0.171	0.177	0.183	0.189	0.195	0.201	0.207	0.214	0.220	0.226	0.232	30.0
40.0	0.232	0.239	0.245	0.251	0.258	0.264	0.271	0.277	0.284	0.290	0.296	40.0
50.0	0.296	0.303	0.310	0.316	0.323	0.329	0.336	0.343	0.349	0.356	0.363	50.0
60.0	0.363	0.369	0.376	0.383	0.390	0.397	0.403	0.410	0.417	0.424	0.431	60.0
70.0	0.431	0.438	0.445	0.452	0.459	0.466	0.473	0.480	0.487	0.494	0.501	70.0
80.0	0.501	0.508	0.516	0.523	0.530	0.537	0.544	0.552	0.559	0.566	0.573	80.0
90.0	0.573	0.581	0.588	0.595	0.603	0.610	0.618	0.625	0.632	0.640	0.647	90.0
100.0	0.647	0.655	0.662	0.670	0.677	0.685	0.693	0.700	0.708	0.715	0.723	100.0
110.0	0.723	0.731	0.738	0.746	0.754	0.761	0.769	0.777	0.785	0.792	0.800	110.0
120.0	0.800	0.808	0.816	0.824	0.832	0.839	0.847	0.855	0.863	0.871	0.879	120.0
130.0	0.879	0.887	0.895	0.903	0.911	0.919	0.927	0.935	0.943	0.951	0.959	130.0
140.0	0.959	0.967	0.976	0.984	0.992	1.000	1.008	1.016	1.025	1.033	1.041	140.0
150.0	1.041	1.049	1.058	1.066	1.074	1.082	1.091	1.099	1.107	1.116	1.124	150.0
160.0	1.124	1.132	1.141	1.149	1.158	1.166	1.175	1.183	1.191	1.200	1.208	160.0
170.0	1.208	1.217	1.225	1.234	1.242	1.251	1.260	1.268	1.277	1.285	1.294	170.0
180.0	1.294	1.303	1.311	1.320	1.329	1.337	1.346	1.355	1.363	1.372	1.381	180.0
190.0	1.381	1.389	1.398	1.407	1.416	1.425	1.433	1.442	1.451	1.460	1.469	190.0
200.0	1.469	1.477	1.486	1.495	1.504	1.513	1.522	1.531	1.540	1.549	1.558	200.0
210.0	1.558	1.567	1.575	1.584	1.593	1.602	1.611	1.620	1.629	1.639	1.648	210.0
220.0	1.648	1.657	1.666	1.675	1.684	1.693	1.702	1.711	1.720	1.729	1.739	220.0
230.0	1.739	1.748	1.757	1.766	1.775	1.784	1.794	1.803	1.812	1.821	1.831	230.0
240.0	1.831	1.840	1.849	1.858	1.868	1.877	1.886	1.895	1.905	1.914	1.923	240.0
250.0	1.923	1.933	1.942	1.951	1.961	1.970	1.980	1.989	1.998	2.008	2.017	250.0
260.0	2.017	2.027	2.036	2.046	2.055	2.064	2.074	2.083	2.093	2.102	2.112	260.0
270.0	2.112	2.121	2.131	2.140	2.150	2.159	2.169	2.179	2.188	2.198	2.207	270.0
280.0	2.207	2.217	2.226	2.236	2.246	2.255	2.265	2.275	2.284	2.294	2.304	280.0
290.0	2.304	2.313	2.323	2.333	2.342	2.352	2.362	2.371	2.381	2.391	2.401	290.0
300.0	2.401	2.410	2.420	2.430	2.440	2.449	2.459	2.469	2.479	2.488	2.498	300.0
310.0	2.498	2.508	2.518	2.528	2.538	2.547	2.557	2.567	2.577	2.587	2.597	310.0
320.0	2.597	2.607	2.617	2.626	2.636	2.646	2.656	2.666	2.676	2.686	2.696	320.0
330.0	2.696	2.706	2.716	2.726	2.736	2.746	2.756	2.766	2.776	2.786	2.796	330.0
340.0	2.796	2.806	2.816	2.826	2.836	2.846	2.856	2.866	2.876	2.886	2.896	340.0
350.0	2.896	2.906	2.916	2.926	2.937	2.947	2.957	2.967	2.977	2.987	2.997	350.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type R Temperature vs. EMF Outputs—Ref. 43

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
360.0	2.997	3.007	3.018	3.028	3.038	3.048	3.058	3.068	3.079	3.089	3.099	360.0
370.0	3.099	3.109	3.119	3.130	3.140	3.150	3.160	3.171	3.181	3.191	3.201	370.0
380.0	3.201	3.212	3.222	3.232	3.242	3.253	3.263	3.273	3.284	3.294	3.304	380.0
390.0	3.304	3.315	3.325	3.335	3.346	3.356	3.366	3.377	3.387	3.397	3.408	390.0
400.0	3.408	3.418	3.428	3.439	3.449	3.460	3.470	3.480	3.491	3.501	3.512	400.0
410.0	3.512	3.522	3.533	3.543	3.553	3.564	3.574	3.585	3.595	3.606	3.616	410.0
420.0	3.616	3.627	3.637	3.648	3.658	3.669	3.679	3.690	3.700	3.711	3.721	420.0
430.0	3.721	3.732	3.742	3.753	3.764	3.774	3.785	3.795	3.806	3.816	3.827	430.0
440.0	3.827	3.838	3.848	3.859	3.869	3.880	3.891	3.901	3.912	3.922	3.933	440.0
450.0	3.933	3.944	3.954	3.965	3.976	3.986	3.997	4.008	4.018	4.029	4.040	450.0
460.0	4.040	4.050	4.061	4.072	4.083	4.093	4.104	4.115	4.125	4.136	4.147	460.0
470.0	4.147	4.158	4.168	4.179	4.190	4.201	4.211	4.222	4.233	4.244	4.255	470.0
480.0	4.255	4.265	4.276	4.287	4.298	4.309	4.319	4.330	4.341	4.352	4.363	480.0
490.0	4.363	4.373	4.384	4.395	4.406	4.417	4.428	4.439	4.449	4.460	4.471	490.0
500.0	4.471	4.482	4.493	4.504	4.515	4.526	4.537	4.548	4.558	4.569	4.580	500.0
510.0	4.580	4.591	4.602	4.613	4.624	4.635	4.646	4.657	4.668	4.679	4.690	510.0
520.0	4.690	4.701	4.712	4.723	4.734	4.745	4.756	4.767	4.778	4.789	4.800	520.0
530.0	4.800	4.811	4.822	4.833	4.844	4.855	4.866	4.877	4.888	4.899	4.910	530.0
540.0	4.910	4.922	4.933	4.944	4.955	4.966	4.977	4.988	4.999	5.010	5.021	540.0
550.0	5.021	5.033	5.044	5.055	5.066	5.077	5.088	5.099	5.111	5.122	5.133	550.0
560.0	5.133	5.144	5.155	5.166	5.178	5.189	5.200	5.211	5.222	5.234	5.245	560.0
570.0	5.245	5.256	5.267	5.279	5.290	5.301	5.312	5.323	5.335	5.346	5.357	570.0
580.0	5.357	5.369	5.380	5.391	5.402	5.414	5.425	5.436	5.448	5.459	5.470	580.0
590.0	5.470	5.481	5.493	5.504	5.515	5.527	5.538	5.549	5.561	5.572	5.583	590.0
600.0	5.583	5.595	5.606	5.618	5.629	5.640	5.652	5.663	5.674	5.686	5.697	600.0
610.0	5.697	5.709	5.720	5.731	5.743	5.754	5.766	5.777	5.789	5.800	5.812	610.0
620.0	5.812	5.823	5.834	5.846	5.857	5.869	5.880	5.892	5.903	5.915	5.926	620.0
630.0	5.926	5.938	5.949	5.961	5.972	5.984	5.995	6.007	6.018	6.030	6.041	630.0
640.0	6.041	6.053	6.065	6.076	6.088	6.099	6.111	6.122	6.134	6.146	6.157	640.0
650.0	6.157	6.169	6.180	6.192	6.204	6.215	6.227	6.238	6.250	6.262	6.273	650.0
660.0	6.273	6.285	6.297	6.308	6.320	6.332	6.343	6.355	6.367	6.378	6.390	660.0
670.0	6.390	6.402	6.413	6.425	6.437	6.448	6.460	6.472	6.484	6.495	6.507	670.0
680.0	6.507	6.519	6.531	6.542	6.554	6.566	6.578	6.589	6.601	6.613	6.625	680.0
690.0	6.625	6.636	6.648	6.660	6.672	6.684	6.695	6.707	6.719	6.731	6.743	690.0
700.0	6.743	6.755	6.766	6.778	6.790	6.802	6.814	6.826	6.838	6.849	6.861	700.0
710.0	6.861	6.873	6.885	6.897	6.909	6.921	6.933	6.945	6.956	6.968	6.980	710.0
720.0	6.980	6.992	7.004	7.016	7.028	7.040	7.052	7.064	7.076	7.088	7.100	720.0
730.0	7.100	7.112	7.124	7.136	7.148	7.160	7.172	7.184	7.196	7.208	7.220	730.0
740.0	7.220	7.232	7.244	7.256	7.268	7.280	7.292	7.304	7.316	7.328	7.340	740.0
750.0	7.340	7.352	7.364	7.376	7.389	7.401	7.413	7.425	7.437	7.449	7.461	750.0
760.0	7.461	7.473	7.485	7.498	7.510	7.522	7.534	7.546	7.558	7.570	7.583	760.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type R Temperature vs. EMF Outputs—Ref. 43

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
770.0	7.583	7.595	7.607	7.619	7.631	7.644	7.656	7.668	7.680	7.692	7.705	770.0
780.0	7.705	7.717	7.729	7.741	7.753	7.766	7.778	7.790	7.802	7.815	7.827	780.0
790.0	7.827	7.839	7.851	7.864	7.876	7.888	7.901	7.913	7.925	7.938	7.950	790.0
800.0	7.950	7.962	7.974	7.987	7.999	8.011	8.024	8.036	8.048	8.061	8.073	800.0
810.0	8.073	8.086	8.098	8.110	8.123	8.135	8.147	8.160	8.172	8.185	8.197	810.0
820.0	8.197	8.209	8.222	8.234	8.247	8.259	8.272	8.284	8.296	8.309	8.321	820.0
830.0	8.321	8.334	8.346	8.359	8.371	8.384	8.396	8.409	8.421	8.434	8.446	830.0
840.0	8.446	8.459	8.471	8.484	8.496	8.509	8.521	8.534	8.546	8.559	8.571	840.0
850.0	8.571	8.584	8.597	8.609	8.622	8.634	8.647	8.659	8.672	8.685	8.697	850.0
860.0	8.697	8.710	8.722	8.735	8.748	8.760	8.773	8.785	8.798	8.811	8.823	860.0
870.0	8.823	8.836	8.849	8.861	8.874	8.887	8.899	8.912	8.925	8.937	8.950	870.0
880.0	8.950	8.963	8.975	8.988	9.001	9.014	9.026	9.039	9.052	9.065	9.077	880.0
890.0	9.077	9.090	9.103	9.115	9.128	9.141	9.154	9.167	9.179	9.192	9.205	890.0
900.0	9.205	9.218	9.230	9.243	9.256	9.269	9.282	9.294	9.307	9.320	9.333	900.0
910.0	9.333	9.346	9.359	9.371	9.384	9.397	9.410	9.423	9.436	9.449	9.461	910.0
920.0	9.461	9.474	9.487	9.500	9.513	9.526	9.539	9.552	9.565	9.578	9.590	920.0
930.0	9.590	9.603	9.616	9.629	9.642	9.655	9.668	9.681	9.694	9.707	9.720	930.0
940.0	9.720	9.733	9.746	9.759	9.772	9.785	9.798	9.811	9.824	9.837	9.850	940.0
950.0	9.850	9.863	9.876	9.889	9.902	9.915	9.928	9.941	9.954	9.967	9.980	950.0
960.0	9.980	9.993	10.006	10.019	10.032	10.046	10.059	10.072	10.085	10.098	10.111	960.0
970.0	10.111	10.124	10.137	10.150	10.163	10.177	10.190	10.203	10.216	10.229	10.242	970.0
980.0	10.242	10.255	10.268	10.282	10.295	10.308	10.321	10.334	10.347	10.361	10.374	980.0
990.0	10.374	10.387	10.400	10.413	10.427	10.440	10.453	10.466	10.480	10.493	10.506	990.0
1000.0	10.506	10.519	10.532	10.546	10.559	10.572	10.585	10.599	10.612	10.625	10.638	1000.0
1010.0	10.638	10.652	10.665	10.678	10.692	10.705	10.718	10.731	10.745	10.758	10.771	1010.0
1020.0	10.771	10.785	10.798	10.811	10.825	10.838	10.851	10.865	10.878	10.891	10.905	1020.0
1030.0	10.905	10.918	10.932	10.945	10.958	10.972	10.985	10.998	11.012	11.025	11.039	1030.0
1040.0	11.039	11.052	11.065	11.079	11.092	11.106	11.119	11.132	11.146	11.159	11.173	1040.0
1050.0	11.173	11.186	11.200	11.213	11.227	11.240	11.253	11.267	11.280	11.294	11.307	1050.0
1060.0	11.307	11.321	11.334	11.348	11.361	11.375	11.388	11.402	11.415	11.429	11.442	1060.0
1070.0	11.442	11.456	11.469	11.483	11.496	11.510	11.524	11.537	11.551	11.564	11.578	1070.0
1080.0	11.578	11.591	11.605	11.618	11.632	11.646	11.659	11.673	11.686	11.700	11.714	1080.0
1090.0	11.714	11.727	11.741	11.754	11.768	11.782	11.795	11.809	11.822	11.836	11.850	1090.0
1100.0	11.850	11.863	11.877	11.891	11.904	11.918	11.931	11.945	11.959	11.972	11.986	1100.0
1110.0	11.986	12.000	12.013	12.027	12.041	12.054	12.068	12.082	12.096	12.109	12.123	1110.0
1120.0	12.123	12.137	12.150	12.164	12.178	12.191	12.205	12.219	12.233	12.246	12.260	1120.0
1130.0	12.260	12.274	12.288	12.301	12.315	12.329	12.342	12.356	12.370	12.384	12.397	1130.0
1140.0	12.397	12.411	12.425	12.439	12.453	12.466	12.480	12.494	12.508	12.521	12.535	1140.0
1150.0	12.535	12.549	12.563	12.577	12.590	12.604	12.618	12.632	12.646	12.659	12.673	1150.0
1160.0	12.673	12.687	12.701	12.715	12.729	12.742	12.756	12.770	12.784	12.798	12.812	1160.0
1170.0	12.812	12.825	12.839	12.853	12.867	12.881	12.895	12.909	12.922	12.936	12.950	1170.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type R Temperature vs. EMF Outputs—Ref. 43

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
1180.0	12.950	12.964	12.978	12.992	13.006	13.019	13.033	13.047	13.061	13.075	13.089	1180.0
1190.0	13.089	13.103	13.117	13.131	13.145	13.158	13.172	13.186	13.200	13.214	13.228	1190.0
1200.0	13.228	13.242	13.256	13.270	13.284	13.298	13.311	13.325	13.339	13.353	13.367	1200.0
1210.0	13.367	13.381	13.395	13.409	13.423	13.437	13.451	13.465	13.479	13.493	13.507	1210.0
1220.0	13.507	13.521	13.535	13.549	13.563	13.577	13.590	13.604	13.618	13.632	13.646	1220.0
1230.0	13.646	13.660	13.674	13.688	13.702	13.716	13.730	13.744	13.758	13.772	13.786	1230.0
1240.0	13.786	13.800	13.814	13.828	13.842	13.856	13.870	13.884	13.898	13.912	13.926	1240.0
1250.0	13.926	13.940	13.954	13.968	13.982	13.996	14.010	14.024	14.038	14.052	14.066	1250.0
1260.0	14.066	14.081	14.095	14.109	14.123	14.137	14.151	14.165	14.179	14.193	14.207	1260.0
1270.0	14.207	14.221	14.235	14.249	14.263	14.277	14.291	14.305	14.319	14.333	14.347	1270.0
1280.0	14.347	14.361	14.375	14.390	14.404	14.418	14.432	14.446	14.460	14.474	14.488	1280.0
1290.0	14.488	14.502	14.516	14.530	14.544	14.558	14.572	14.586	14.601	14.615	14.629	1290.0
1300.0	14.629	14.643	14.657	14.671	14.685	14.699	14.713	14.727	14.741	14.755	14.770	1300.0
1310.0	14.770	14.784	14.798	14.812	14.826	14.840	14.854	14.868	14.882	14.896	14.911	1310.0
1320.0	14.911	14.925	14.939	14.953	14.967	14.981	14.995	15.009	15.023	15.037	15.052	1320.0
1330.0	15.052	15.066	15.080	15.094	15.108	15.122	15.136	15.150	15.164	15.179	15.193	1330.0
1340.0	15.193	15.207	15.221	15.235	15.249	15.263	15.277	15.291	15.306	15.320	15.334	1340.0
1350.0	15.334	15.348	15.362	15.376	15.390	15.404	15.419	15.433	15.447	15.461	15.475	1350.0
1360.0	15.475	15.489	15.503	15.517	15.531	15.546	15.560	15.574	15.588	15.602	15.616	1360.0
1370.0	15.616	15.630	15.645	15.659	15.673	15.687	15.701	15.715	15.729	15.743	15.758	1370.0
1380.0	15.758	15.772	15.786	15.800	15.814	15.828	15.842	15.856	15.871	15.885	15.899	1380.0
1390.0	15.899	15.913	15.927	15.941	15.955	15.969	15.984	15.998	16.012	16.026	16.040	1390.0
1400.0	16.040	16.054	16.068	16.082	16.097	16.111	16.125	16.139	16.153	16.167	16.181	1400.0
1410.0	16.181	16.196	16.210	16.224	16.238	16.252	16.266	16.280	16.294	16.309	16.323	1410.0
1420.0	16.323	16.337	16.351	16.365	16.379	16.393	16.407	16.422	16.436	16.450	16.464	1420.0
1430.0	16.464	16.478	16.492	16.506	16.520	16.534	16.549	16.563	16.577	16.591	16.605	1430.0
1440.0	16.605	16.619	16.633	16.647	16.662	16.676	16.690	16.704	16.718	16.732	16.746	1440.0
1450.0	16.746	16.760	16.774	16.789	16.803	16.817	16.831	16.845	16.859	16.873	16.887	1450.0
1460.0	16.887	16.901	16.915	16.930	16.944	16.958	16.972	16.986	17.000	17.014	17.028	1460.0
1470.0	17.028	17.042	17.056	17.071	17.085	17.099	17.113	17.127	17.141	17.155	17.169	1470.0
1480.0	17.169	17.183	17.197	17.211	17.225	17.240	17.254	17.268	17.282	17.296	17.310	1480.0
1490.0	17.310	17.324	17.338	17.352	17.366	17.380	17.394	17.408	17.423	17.437	17.451	1490.0
1500.0	17.451	17.465	17.479	17.493	17.507	17.521	17.535	17.549	17.563	17.577	17.591	1500.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type R Temperature vs. EMF Outputs—Ref. 43

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
1510.0	17.591	17.605	17.619	17.633	17.647	17.661	17.676	17.690	17.704	17.718	17.732	1510.0
1520.0	17.732	17.746	17.760	17.774	17.788	17.802	17.816	17.830	17.844	17.858	17.872	1520.0
1530.0	17.872	17.886	17.900	17.914	17.928	17.942	17.956	17.970	17.984	17.998	18.012	1530.0
1540.0	18.012	18.026	18.040	18.054	18.068	18.082	18.096	18.110	18.124	18.138	18.152	1540.0
1550.0	18.152	18.166	18.180	18.194	18.208	18.222	18.236	18.250	18.264	18.278	18.292	1550.0
1560.0	18.292	18.306	18.320	18.334	18.348	18.362	18.376	18.390	18.404	18.417	18.431	1560.0
1570.0	18.431	18.445	18.459	18.473	18.487	18.501	18.515	18.529	18.543	18.557	18.571	1570.0
1580.0	18.571	18.585	18.599	18.613	18.627	18.640	18.654	18.668	18.682	18.696	18.710	1580.0
1590.0	18.710	18.724	18.738	18.752	18.766	18.779	18.793	18.807	18.821	18.835	18.849	1590.0
1600.0	18.849	18.863	18.877	18.891	18.904	18.918	18.932	18.946	18.960	18.974	18.988	1600.0
1610.0	18.988	19.002	19.015	19.029	19.043	19.057	19.071	19.085	19.098	19.112	19.126	1610.0
1620.0	19.126	19.140	19.154	19.168	19.181	19.195	19.209	19.223	19.237	19.250	19.264	1620.0
1630.0	19.264	19.278	19.292	19.306	19.319	19.333	19.347	19.361	19.375	19.388	19.402	1630.0
1640.0	19.402	19.416	19.430	19.444	19.457	19.471	19.485	19.499	19.512	19.526	19.540	1640.0
1650.0	19.540	19.554	19.567	19.581	19.595	19.609	19.622	19.636	19.650	19.663	19.677	1650.0
1660.0	19.677	19.691	19.705	19.718	19.732							

ANSI Type S Temperature vs. EMF Outputs—Ref. 44

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
-40.0	-0.194	-0.199	-0.203	-0.207	-0.211	-0.215	-0.219	-0.224	-0.228	-0.232	-0.236	-40.0
-30.0	-0.150	-0.155	-0.159	-0.164	-0.168	-0.173	-0.177	-0.181	-0.186	-0.190	-0.194	-30.0
-20.0	-0.103	-0.108	-0.113	-0.117	-0.122	-0.127	-0.132	-0.136	-0.141	-0.146	-0.150	-20.0
-10.0	-0.053	-0.058	-0.063	-0.068	-0.073	-0.078	-0.083	-0.088	-0.093	-0.098	-0.103	-10.0
0.0	0.000	-0.005	-0.011	-0.016	-0.021	-0.027	-0.032	-0.037	-0.042	-0.048	-0.053	0.0
0.0	0.000	0.005	0.011	0.016	0.022	0.027	0.033	0.038	0.044	0.050	0.055	0.0
10.0	0.055	0.061	0.067	0.072	0.078	0.084	0.090	0.095	0.101	0.107	0.113	10.0
20.0	0.113	0.119	0.125	0.131	0.137	0.143	0.149	0.155	0.161	0.167	0.173	20.0
30.0	0.173	0.179	0.185	0.191	0.197	0.204	0.210	0.216	0.222	0.229	0.235	30.0
40.0	0.235	0.241	0.248	0.254	0.260	0.267	0.273	0.280	0.286	0.292	0.299	40.0
50.0	0.299	0.305	0.312	0.319	0.325	0.332	0.338	0.345	0.352	0.358	0.365	50.0
60.0	0.365	0.372	0.378	0.385	0.392	0.399	0.405	0.412	0.419	0.426	0.433	60.0
70.0	0.433	0.440	0.446	0.453	0.460	0.467	0.474	0.481	0.488	0.495	0.502	70.0
80.0	0.502	0.509	0.516	0.523	0.530	0.538	0.545	0.552	0.559	0.566	0.573	80.0
90.0	0.573	0.580	0.588	0.595	0.602	0.609	0.617	0.624	0.631	0.639	0.646	90.0
100.0	0.646	0.653	0.661	0.668	0.675	0.683	0.690	0.698	0.705	0.713	0.720	100.0
110.0	0.720	0.727	0.735	0.743	0.750	0.758	0.765	0.773	0.780	0.788	0.795	110.0
120.0	0.795	0.803	0.811	0.818	0.826	0.834	0.841	0.849	0.857	0.865	0.872	120.0
130.0	0.872	0.880	0.888	0.896	0.903	0.911	0.919	0.927	0.935	0.942	0.950	130.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type S Temperature vs. EMF Outputs—Ref. 44

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
140.0	0.950	0.958	0.966	0.974	0.982	0.990	0.998	1.006	1.013	1.021	1.029	140.0
150.0	1.029	1.037	1.045	1.053	1.061	1.069	1.077	1.085	1.094	1.102	1.110	150.0
160.0	1.110	1.118	1.126	1.134	1.142	1.150	1.158	1.167	1.175	1.183	1.191	160.0
170.0	1.191	1.199	1.207	1.216	1.224	1.232	1.240	1.249	1.257	1.265	1.273	170.0
180.0	1.273	1.282	1.290	1.298	1.307	1.315	1.323	1.332	1.340	1.348	1.357	180.0
190.0	1.357	1.365	1.373	1.382	1.390	1.399	1.407	1.415	1.424	1.432	1.441	190.0
200.0	1.441	1.449	1.458	1.466	1.475	1.483	1.492	1.500	1.509	1.517	1.526	200.0
210.0	1.526	1.534	1.543	1.551	1.560	1.569	1.577	1.586	1.594	1.603	1.612	210.0
220.0	1.612	1.620	1.629	1.638	1.646	1.655	1.663	1.672	1.681	1.690	1.698	220.0
230.0	1.698	1.707	1.716	1.724	1.733	1.742	1.751	1.759	1.768	1.777	1.786	230.0
240.0	1.786	1.794	1.803	1.812	1.821	1.829	1.838	1.847	1.856	1.865	1.874	240.0
250.0	1.874	1.882	1.891	1.900	1.909	1.918	1.927	1.936	1.944	1.953	1.962	250.0
260.0	1.962	1.971	1.980	1.989	1.998	2.007	2.016	2.025	2.034	2.043	2.052	260.0
270.0	2.052	2.061	2.070	2.078	2.087	2.096	2.105	2.114	2.123	2.132	2.141	270.0
280.0	2.141	2.151	2.160	2.169	2.178	2.187	2.196	2.205	2.214	2.223	2.232	280.0
290.0	2.232	2.241	2.250	2.259	2.268	2.277	2.287	2.296	2.305	2.314	2.323	290.0
300.0	2.323	2.332	2.341	2.350	2.360	2.369	2.378	2.387	2.396	2.405	2.415	300.0
310.0	2.415	2.424	2.433	2.442	2.451	2.461	2.470	2.479	2.488	2.497	2.507	310.0
320.0	2.507	2.516	2.525	2.534	2.544	2.553	2.562	2.571	2.581	2.590	2.599	320.0
330.0	2.599	2.609	2.618	2.627	2.636	2.646	2.655	2.664	2.674	2.683	2.692	330.0
340.0	2.692	2.702	2.711	2.720	2.730	2.739	2.748	2.758	2.767	2.776	2.786	340.0
350.0	2.786	2.795	2.805	2.814	2.823	2.833	2.842	2.851	2.861	2.870	2.880	350.0
360.0	2.880	2.889	2.899	2.908	2.917	2.927	2.936	2.946	2.955	2.965	2.974	360.0
370.0	2.974	2.983	2.993	3.002	3.012	3.021	3.031	3.040	3.050	3.059	3.069	370.0
380.0	3.069	3.078	3.088	3.097	3.107	3.116	3.126	3.135	3.145	3.154	3.164	380.0
390.0	3.164	3.173	3.183	3.192	3.202	3.212	3.221	3.231	3.240	3.250	3.259	390.0
400.0	3.259	3.269	3.279	3.288	3.298	3.307	3.317	3.326	3.336	3.346	3.355	400.0
410.0	3.355	3.365	3.374	3.384	3.394	3.403	3.413	3.423	3.432	3.442	3.451	410.0
420.0	3.451	3.461	3.471	3.480	3.490	3.500	3.509	3.519	3.529	3.538	3.548	420.0
430.0	3.548	3.558	3.567	3.577	3.587	3.596	3.606	3.616	3.626	3.635	3.645	430.0
440.0	3.645	3.655	3.664	3.674	3.684	3.694	3.703	3.713	3.723	3.732	3.742	440.0
450.0	3.742	3.752	3.762	3.771	3.781	3.791	3.801	3.810	3.820	3.830	3.840	450.0
460.0	3.840	3.850	3.859	3.869	3.879	3.889	3.898	3.908	3.918	3.928	3.938	460.0
470.0	3.938	3.947	3.957	3.967	3.977	3.987	3.997	4.006	4.016	4.026	4.036	470.0
480.0	4.036	4.046	4.056	4.065	4.075	4.085	4.095	4.105	4.115	4.125	4.134	480.0
490.0	4.134	4.144	4.154	4.164	4.174	4.184	4.194	4.204	4.213	4.223	4.233	490.0
500.0	4.233	4.243	4.253	4.263	4.273	4.283	4.293	4.303	4.313	4.323	4.332	500.0
510.0	4.332	4.342	4.352	4.362	4.372	4.382	4.392	4.402	4.412	4.422	4.432	510.0
520.0	4.432	4.442	4.452	4.462	4.472	4.482	4.492	4.502	4.512	4.522	4.532	520.0
530.0	4.532	4.542	4.552	4.562	4.572	4.582	4.592	4.602	4.612	4.622	4.632	530.0
540.0	4.632	4.642	4.652	4.662	4.672	4.682	4.692	4.702	4.712	4.722	4.732	540.0

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Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type S Temperature vs. EMF Outputs—Ref. 44

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
550.0	4.732	4.742	4.752	4.762	4.772	4.782	4.793	4.803	4.813	4.823	4.833	550.0
560.0	4.833	4.843	4.853	4.863	4.873	4.883	4.893	4.904	4.914	4.924	4.934	560.0
570.0	4.934	4.944	4.954	4.964	4.974	4.984	4.995	5.005	5.015	5.025	5.035	570.0
580.0	5.035	5.045	5.055	5.066	5.076	5.086	5.096	5.106	5.116	5.127	5.137	580.0
590.0	5.137	5.147	5.157	5.167	5.178	5.188	5.198	5.208	5.218	5.228	5.239	590.0
600.0	5.239	5.249	5.259	5.269	5.280	5.290	5.300	5.310	5.320	5.331	5.341	600.0
610.0	5.341	5.351	5.361	5.372	5.382	5.392	5.402	5.413	5.423	5.433	5.443	610.0
620.0	5.443	5.454	5.464	5.474	5.485	5.495	5.505	5.515	5.526	5.536	5.546	620.0
630.0	5.546	5.557	5.567	5.577	5.588	5.598	5.608	5.618	5.629	5.639	5.649	630.0
640.0	5.649	5.660	5.670	5.680	5.691	5.701	5.712	5.722	5.732	5.743	5.753	640.0
650.0	5.753	5.763	5.774	5.784	5.794	5.805	5.815	5.826	5.836	5.846	5.857	650.0
660.0	5.857	5.867	5.878	5.888	5.898	5.909	5.919	5.930	5.940	5.950	5.961	660.0
670.0	5.961	5.971	5.982	5.992	6.003	6.013	6.024	6.034	6.044	6.055	6.065	670.0
680.0	6.065	6.076	6.086	6.097	6.107	6.118	6.128	6.139	6.149	6.160	6.170	680.0
690.0	6.170	6.181	6.191	6.202	6.212	6.223	6.233	6.244	6.254	6.265	6.275	690.0
700.0	6.275	6.286	6.296	6.307	6.317	6.328	6.338	6.349	6.360	6.370	6.381	700.0
710.0	6.381	6.391	6.402	6.412	6.423	6.434	6.444	6.455	6.465	6.476	6.486	710.0
720.0	6.486	6.497	6.508	6.518	6.529	6.539	6.550	6.561	6.571	6.582	6.593	720.0
730.0	6.593	6.603	6.614	6.624	6.635	6.646	6.656	6.667	6.678	6.688	6.699	730.0
740.0	6.699	6.710	6.720	6.731	6.742	6.752	6.763	6.774	6.784	6.795	6.806	740.0
750.0	6.806	6.817	6.827	6.838	6.849	6.859	6.870	6.881	6.892	6.902	6.913	750.0
760.0	6.913	6.924	6.934	6.945	6.956	6.967	6.977	6.988	6.999	7.010	7.020	760.0
770.0	7.020	7.031	7.042	7.053	7.064	7.074	7.085	7.096	7.107	7.117	7.128	770.0
780.0	7.128	7.139	7.150	7.161	7.172	7.182	7.193	7.204	7.215	7.226	7.236	780.0
790.0	7.236	7.247	7.258	7.269	7.280	7.291	7.302	7.312	7.323	7.334	7.345	790.0
800.0	7.345	7.356	7.367	7.378	7.388	7.399	7.410	7.421	7.432	7.443	7.454	800.0
810.0	7.454	7.465	7.476	7.487	7.497	7.508	7.519	7.530	7.541	7.552	7.563	810.0
820.0	7.563	7.574	7.585	7.596	7.607	7.618	7.629	7.640	7.651	7.662	7.673	820.0
830.0	7.673	7.684	7.695	7.706	7.717	7.728	7.739	7.750	7.761	7.772	7.783	830.0
840.0	7.783	7.794	7.805	7.816	7.827	7.838	7.849	7.860	7.871	7.882	7.893	840.0
850.0	7.893	7.904	7.915	7.926	7.937	7.948	7.959	7.970	7.981	7.992	8.003	850.0
860.0	8.003	8.014	8.026	8.037	8.048	8.059	8.070	8.081	8.092	8.103	8.114	860.0
870.0	8.114	8.125	8.137	8.148	8.159	8.170	8.181	8.192	8.203	8.214	8.226	870.0
880.0	8.226	8.237	8.248	8.259	8.270	8.281	8.293	8.304	8.315	8.326	8.337	880.0
890.0	8.337	8.348	8.360	8.371	8.382	8.393	8.404	8.416	8.427	8.438	8.449	890.0
900.0	8.449	8.460	8.472	8.483	8.494	8.505	8.517	8.528	8.539	8.550	8.562	900.0
910.0	8.562	8.573	8.584	8.595	8.607	8.618	8.629	8.640	8.652	8.663	8.674	910.0
920.0	8.674	8.685	8.697	8.708	8.719	8.731	8.742	8.753	8.765	8.776	8.787	920.0
930.0	8.787	8.798	8.810	8.821	8.832	8.844	8.855	8.866	8.878	8.889	8.900	930.0
940.0	8.900	8.912	8.923	8.935	8.946	8.957	8.969	8.980	8.991	9.003	9.014	940.0
950.0	9.014	9.025	9.037	9.048	9.060	9.071	9.082	9.094	9.105	9.117	9.128	950.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type S Temperature vs. EMF Outputs—Ref. 44

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
960.0	9.128	9.139	9.151	9.162	9.174	9.185	9.197	9.208	9.219	9.231	9.242	960.0
970.0	9.242	9.254	9.265	9.277	9.288	9.300	9.311	9.323	9.334	9.345	9.357	970.0
980.0	9.357	9.368	9.380	9.391	9.403	9.414	9.426	9.437	9.449	9.460	9.472	980.0
990.0	9.472	9.483	9.495	9.506	9.518	9.529	9.541	9.552	9.564	9.576	9.587	990.0
1000.0	9.587	9.599	9.610	9.622	9.633	9.645	9.656	9.668	9.680	9.691	9.703	1000.0
1010.0	9.703	9.714	9.726	9.737	9.749	9.761	9.772	9.784	9.795	9.807	9.819	1010.0
1020.0	9.819	9.830	9.842	9.853	9.865	9.877	9.888	9.900	9.911	9.923	9.935	1020.0
1030.0	9.935	9.946	9.958	9.970	9.981	9.993	10.005	10.016	10.028	10.040	10.051	1030.0
1040.0	10.051	10.063	10.075	10.086	10.098	10.110	10.121	10.133	10.145	10.156	10.168	1040.0
1050.0	10.168	10.180	10.191	10.203	10.215	10.227	10.238	10.250	10.262	10.273	10.285	1050.0
1060.0	10.285	10.297	10.309	10.320	10.332	10.344	10.356	10.367	10.379	10.391	10.403	1060.0
1070.0	10.403	10.414	10.426	10.438	10.450	10.461	10.473	10.485	10.497	10.509	10.520	1070.0
1080.0	10.520	10.532	10.544	10.556	10.567	10.579	10.591	10.603	10.615	10.626	10.638	1080.0
1090.0	10.638	10.650	10.662	10.674	10.686	10.697	10.709	10.721	10.733	10.745	10.757	1090.0
1100.0	10.757	10.768	10.780	10.792	10.804	10.816	10.828	10.839	10.851	10.863	10.875	1100.0
1110.0	10.875	10.887	10.899	10.911	10.922	10.934	10.946	10.958	10.970	10.982	10.994	1110.0
1120.0	10.994	11.006	11.017	11.029	11.041	11.053	11.065	11.077	11.089	11.101	11.113	1120.0
1130.0	11.113	11.125	11.136	11.148	11.160	11.172	11.184	11.196	11.208	11.220	11.232	1130.0
1140.0	11.232	11.244	11.256	11.268	11.280	11.291	11.303	11.315	11.327	11.339	11.351	1140.0
1150.0	11.351	11.363	11.375	11.387	11.399	11.411	11.423	11.435	11.447	11.459	11.471	1150.0
1160.0	11.471	11.483	11.495	11.507	11.519	11.531	11.542	11.554	11.566	11.578	11.590	1160.0
1170.0	11.590	11.602	11.614	11.626	11.638	11.650	11.662	11.674	11.686	11.698	11.710	1170.0
1180.0	11.710	11.722	11.734	11.746	11.758	11.770	11.782	11.794	11.806	11.818	11.830	1180.0
1190.0	11.830	11.842	11.854	11.866	11.878	11.890	11.902	11.914	11.926	11.939	11.951	1190.0
1200.0	11.951	11.963	11.975	11.987	11.999	12.011	12.023	12.035	12.047	12.059	12.071	1200.0
1210.0	12.071	12.083	12.095	12.107	12.119	12.131	12.143	12.155	12.167	12.179	12.191	1210.0
1220.0	12.191	12.203	12.216	12.228	12.240	12.252	12.264	12.276	12.288	12.300	12.312	1220.0
1230.0	12.312	12.324	12.336	12.348	12.360	12.372	12.384	12.397	12.409	12.421	12.433	1230.0
1240.0	12.433	12.445	12.457	12.469	12.481	12.493	12.505	12.517	12.529	12.542	12.554	1240.0
1250.0	12.554	12.566	12.578	12.590	12.602	12.614	12.626	12.638	12.650	12.662	12.675	1250.0
1260.0	12.675	12.687	12.699	12.711	12.723	12.735	12.747	12.759	12.771	12.783	12.796	1260.0
1270.0	12.796	12.808	12.820	12.832	12.844	12.856	12.868	12.880	12.892	12.905	12.917	1270.0
1280.0	12.917	12.929	12.941	12.953	12.965	12.977	12.989	13.001	13.014	13.026	13.038	1280.0
1290.0	13.038	13.050	13.062	13.074	13.086	13.098	13.111	13.123	13.135	13.147	13.159	1290.0
1300.0	13.159	13.171	13.183	13.195	13.208	13.220	13.232	13.244	13.256	13.268	13.280	1300.0
1310.0	13.280	13.292	13.305	13.317	13.329	13.341	13.353	13.365	13.377	13.390	13.402	1310.0
1320.0	13.402	13.414	13.426	13.438	13.450	13.462	13.474	13.487	13.499	13.511	13.523	1320.0
1330.0	13.523	13.535	13.547	13.559	13.572	13.584	13.596	13.608	13.620	13.632	13.644	1330.0
1340.0	13.644	13.657	13.669	13.681	13.693	13.705	13.717	13.729	13.742	13.754	13.766	1340.0
1350.0	13.766	13.778	13.790	13.802	13.814	13.826	13.839	13.851	13.863	13.875	13.887	1350.0
1360.0	13.887	13.899	13.911	13.924	13.936	13.948	13.960	13.972	13.984	13.996	14.009	1360.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type S Temperature vs. EMF Outputs—Ref. 44

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
1370.0	14.009	14.021	14.033	14.045	14.057	14.069	14.081	14.094	14.106	14.118	14.130	1370.0
1380.0	14.130	14.142	14.154	14.166	14.178	14.191	14.203	14.215	14.227	14.239	14.251	1380.0
1390.0	14.251	14.263	14.276	14.288	14.300	14.312	14.324	14.336	14.348	14.360	14.373	1390.0
1400.0	14.373	14.385	14.397	14.409	14.421	14.433	14.445	14.457	14.470	14.482	14.494	1400.0
1410.0	14.494	14.506	14.518	14.530	14.542	14.554	14.567	14.579	14.591	14.603	14.615	1410.0
1420.0	14.615	14.627	14.639	14.651	14.664	14.676	14.688	14.700	14.712	14.724	14.736	1420.0
1430.0	14.736	14.748	14.760	14.773	14.785	14.797	14.809	14.821	14.833	14.845	14.857	1430.0
1440.0	14.857	14.869	14.881	14.894	14.906	14.918	14.930	14.942	14.954	14.966	14.978	1440.0
1450.0	14.978	14.990	15.002	15.015	15.027	15.039	15.051	15.063	15.075	15.087	15.099	1450.0
1460.0	15.099	15.111	15.123	15.135	15.148	15.160	15.172	15.184	15.196	15.208	15.220	1460.0
1470.0	15.220	15.232	15.244	15.256	15.268	15.280	15.292	15.304	15.317	15.329	15.341	1470.0
1480.0	15.341	15.353	15.365	15.377	15.389	15.401	15.413	15.425	15.437	15.449	15.461	1480.0
1490.0	15.461	15.473	15.485	15.497	15.509	15.521	15.534	15.546	15.558	15.570	15.582	1490.0
1500.0	15.582	15.594	15.606	15.618	15.630	15.642	15.654	15.666	15.678	15.690	15.702	1500.0
1510.0	15.702	15.714	15.726	15.738	15.750	15.762	15.774	15.786	15.798	15.810	15.822	1510.0
1520.0	15.822	15.834	15.846	15.858	15.870	15.882	15.894	15.906	15.918	15.930	15.942	1520.0
1530.0	15.942	15.954	15.966	15.978	15.990	16.002	16.014	16.026	16.038	16.050	16.062	1530.0
1540.0	16.062	16.074	16.086	16.098	16.110	16.122	16.134	16.146	16.158	16.170	16.182	1540.0
1550.0	16.182	16.194	16.205	16.217	16.229	16.241	16.253	16.265	16.277	16.289	16.301	1550.0
1560.0	16.301	16.313	16.325	16.337	16.349	16.361	16.373	16.385	16.396	16.408	16.420	1560.0
1570.0	16.420	16.432	16.444	16.456	16.468	16.480	16.492	16.504	16.516	16.527	16.539	1570.0
1580.0	16.539	16.551	16.563	16.575	16.587	16.599	16.611	16.623	16.634	16.646	16.658	1580.0
1590.0	16.658	16.670	16.682	16.694	16.706	16.718	16.729	16.741	16.753	16.765	16.777	1590.0
1600.0	16.777	16.789	16.801	16.812	16.824	16.836	16.848	16.860	16.872	16.883	16.895	1600.0
1610.0	16.895	16.907	16.919	16.931	16.943	16.954	16.966	16.978	16.990	17.002	17.013	1610.0
1620.0	17.013	17.025	17.037	17.049	17.061	17.072	17.084	17.096	17.108	17.120	17.131	1620.0
1630.0	17.131	17.143	17.155	17.167	17.178	17.190	17.202	17.214	17.225	17.237	17.249	1630.0
1640.0	17.249	17.261	17.272	17.284	17.296	17.308	17.319	17.331	17.343	17.355	17.366	1640.0
1650.0	17.366	17.378	17.390	17.401	17.413	17.425	17.437	17.448	17.460	17.472	17.483	1650.0
1660.0	17.483	17.495	17.507	17.518	17.530							

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type T Temperature vs. EMF Outputs—Ref. 45

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
-260.0	-6.263	-6.269	-6.274	-6.279	-6.283	-6.287	-6.290	-6.293	-6.295	-6.296	-6.297	-260.0
-250.0	-6.180	-6.188	-6.199	-6.208	-6.218	-6.226	-6.235	-6.243	-6.250	-6.257	-6.263	-250.0
-240.0	-6.105	-6.114	-6.122	-6.130	-6.138	-6.146	-6.153	-6.160	-6.167	-6.174	-6.180	-240.0
-230.0	-6.007	-6.017	-6.028	-6.038	-6.049	-6.059	-6.068	-6.078	-6.087	-6.096	-6.105	-230.0
-220.0	-5.888	-5.901	-5.914	-5.926	-5.938	-5.950	-5.962	-5.973	-5.985	-5.996	-6.007	-220.0
-210.0	-5.753	-5.767	-5.782	-5.795	-5.809	-5.823	-5.836	-5.850	-5.863	-5.876	-5.888	-210.0
-200.0	-5.603	-5.619	-5.634	-5.650	-5.665	-5.680	-5.695	-5.710	-5.724	-5.739	-5.753	-200.0
-190.0	-5.439	-5.456	-5.473	-5.489	-5.506	-5.523	-5.539	-5.555	-5.571	-5.587	-5.603	-190.0
-180.0	-5.261	-5.279	-5.297	-5.316	-5.334	-5.351	-5.369	-5.387	-5.404	-5.421	-5.439	-180.0
-170.0	-5.070	-5.089	-5.109	-5.128	-5.148	-5.167	-5.186	-5.205	-5.224	-5.242	-5.261	-170.0
-160.0	-4.865	-4.886	-4.907	-4.928	-4.949	-4.969	-4.989	-5.010	-5.030	-5.050	-5.070	-160.0
-150.0	-4.648	-4.671	-4.693	-4.715	-4.737	-4.759	-4.780	-4.802	-4.823	-4.844	-4.865	-150.0
-140.0	-4.419	-4.443	-4.466	-4.489	-4.512	-4.535	-4.558	-4.581	-4.604	-4.626	-4.648	-140.0
-130.0	-4.177	-4.202	-4.226	-4.251	-4.275	-4.300	-4.324	-4.348	-4.372	-4.395	-4.419	-130.0
-120.0	-3.923	-3.949	-3.975	-4.000	-4.026	-4.052	-4.077	-4.102	-4.127	-4.152	-4.177	-120.0
-110.0	-3.657	-3.684	-3.711	-3.738	-3.765	-3.791	-3.818	-3.844	-3.871	-3.897	-3.923	-110.0
-100.0	-3.379	-3.407	-3.435	-3.463	-3.491	-3.519	-3.547	-3.574	-3.602	-3.629	-3.657	-100.0
-90.0	-3.089	-3.118	-3.148	-3.177	-3.206	-3.235	-3.264	-3.293	-3.322	-3.350	-3.379	-90.0
-80.0	-2.788	-2.818	-2.849	-2.879	-2.910	-2.940	-2.970	-3.000	-3.030	-3.059	-3.089	-80.0
-70.0	-2.476	-2.507	-2.539	-2.571	-2.602	-2.633	-2.664	-2.695	-2.726	-2.757	-2.788	-70.0
-60.0	-2.153	-2.186	-2.218	-2.251	-2.283	-2.316	-2.348	-2.380	-2.412	-2.444	-2.476	-60.0
-50.0	-1.819	-1.853	-1.887	-1.920	-1.954	-1.987	-2.021	-2.054	-2.087	-2.120	-2.153	-50.0
-40.0	-1.475	-1.510	-1.545	-1.579	-1.614	-1.648	-1.683	-1.717	-1.751	-1.785	-1.819	-40.0
-30.0	-1.121	-1.157	-1.192	-1.228	-1.264	-1.299	-1.335	-1.370	-1.405	-1.440	-1.475	-30.0
-20.0	-0.757	-0.794	-0.830	-0.867	-0.904	-0.940	-0.976	-1.013	-1.049	-1.085	-1.121	-20.0
-10.0	-0.383	-0.421	-0.459	-0.496	-0.534	-0.571	-0.608	-0.646	-0.683	-0.720	-0.757	-10.0
0.0	0.000	-0.039	-0.077	-0.116	-0.154	-0.193	-0.231	-0.269	-0.307	-0.345	-0.383	0.0
0.0	0.000	0.039	0.078	0.117	0.156	0.195	0.234	0.273	0.312	0.352	0.391	0.0
10.0	0.391	0.431	0.470	0.510	0.549	0.589	0.629	0.669	0.709	0.749	0.790	10.0
20.0	0.790	0.830	0.870	0.911	0.951	0.992	1.033	1.074	1.114	1.155	1.196	20.0
30.0	1.196	1.238	1.279	1.320	1.362	1.403	1.445	1.486	1.528	1.570	1.612	30.0
40.0	1.612	1.654	1.696	1.738	1.780	1.823	1.865	1.908	1.950	1.993	2.036	40.0
50.0	2.036	2.079	2.122	2.165	2.208	2.251	2.294	2.338	2.381	2.425	2.468	50.0
60.0	2.468	2.512	2.556	2.600	2.643	2.687	2.732	2.776	2.820	2.864	2.909	60.0
70.0	2.909	2.953	2.998	3.043	3.087	3.132	3.177	3.222	3.267	3.312	3.358	70.0
80.0	3.358	3.403	3.448	3.494	3.539	3.585	3.631	3.677	3.722	3.768	3.814	80.0
90.0	3.814	3.860	3.907	3.953	3.999	4.046	4.092	4.138	4.185	4.232	4.279	90.0
100.0	4.279	4.325	4.372	4.419	4.466	4.513	4.561	4.608	4.655	4.702	4.750	100.0
110.0	4.750	4.798	4.845	4.893	4.941	4.988	5.036	5.084	5.132	5.180	5.228	110.0
120.0	5.228	5.277	5.325	5.373	5.422	5.470	5.519	5.567	5.616	5.665	5.714	120.0
130.0	5.714	5.763	5.812	5.861	5.910	5.959	6.008	6.057	6.107	6.156	6.206	130.0

CONTINUED

Reference Data

Thermocouple Temperature vs. EMF Tables

Continued

ANSI Type T Temperature vs. EMF Outputs—Ref. 45

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

°C	0	1	2	3	4	5	6	7	8	9	10	°C
140.0	6.206	6.255	6.305	6.355	6.404	6.454	6.504	6.554	6.604	6.654	6.704	140.0
150.0	6.704	6.754	6.805	6.855	6.905	6.956	7.006	7.057	7.107	7.158	7.209	150.0
160.0	7.209	7.260	7.310	7.361	7.412	7.463	7.515	7.566	7.617	7.668	7.720	160.0
170.0	7.720	7.771	7.823	7.874	7.926	7.977	8.029	8.081	8.133	8.185	8.237	170.0
180.0	8.237	8.289	8.341	8.393	8.445	8.497	8.550	8.602	8.654	8.707	8.759	180.0
190.0	8.759	8.812	8.865	8.917	8.970	9.023	9.076	9.129	9.182	9.235	9.288	190.0
200.0	9.288	9.341	9.395	9.448	9.501	9.555	9.608	9.662	9.715	9.769	9.822	200.0
210.0	9.822	9.876	9.930	9.984	10.038	10.092	10.146	10.200	10.254	10.308	10.362	210.0
220.0	10.362	10.417	10.471	10.525	10.580	10.634	10.689	10.743	10.798	10.853	10.907	220.0
230.0	10.907	10.962	11.017	11.072	11.127	11.182	11.237	11.292	11.347	11.403	11.458	230.0
240.0	11.458	11.513	11.569	11.624	11.680	11.735	11.791	11.846	11.902	11.958	12.013	240.0
250.0	12.013	12.069	12.125	12.181	12.237	12.293	12.349	12.405	12.461	12.518	12.574	250.0
260.0	12.574	12.630	12.687	12.743	12.799	12.856	12.912	12.969	13.026	13.082	13.139	260.0
270.0	13.139	13.196	13.253	13.310	13.366	13.423	13.480	13.537	13.595	13.652	13.709	270.0
280.0	13.709	13.766	13.823	13.881	13.938	13.995	14.053	14.110	14.168	14.226	14.283	280.0
290.0	14.283	14.341	14.399	14.456	14.514	14.572	14.630	14.688	14.746	14.804	14.862	290.0
300.0	14.862	14.920	14.978	15.036	15.095	15.153	15.211	15.270	15.328	15.386	15.445	300.0
310.0	15.445	15.503	15.562	15.621	15.679	15.738	15.797	15.856	15.914	15.973	16.032	310.0
320.0	16.032	16.091	16.150	16.209	16.268	16.327	16.387	16.446	16.505	16.564	16.624	320.0
330.0	16.624	16.683	16.742	16.802	16.861	16.921	16.980	17.040	17.100	17.159	17.219	330.0
340.0	17.219	17.279	17.339	17.399	17.458	17.518	17.578	17.638	17.698	17.759	17.819	340.0
350.0	17.819	17.879	17.939	17.999	18.060	18.120	18.180	18.241	18.301	18.362	18.422	350.0
360.0	18.422	18.483	18.543	18.604	18.665	18.725	18.786	18.847	18.908	18.969	19.030	360.0
370.0	19.030	19.091	19.152	19.213	19.274	19.335	19.396	19.457	19.518	19.579	19.641	370.0
380.0	19.641	19.702	19.763	19.825	19.886	19.947	20.009	20.070	20.132	20.193	20.255	380.0
390.0	20.255	20.317	20.378	20.440	20.502	20.563	20.625	20.687	20.748	20.810	20.872	390.0
400.0	20.872											