

# A.3

## THERMOCOUPLE TABLES

The following tables give the output voltage of several thermocouple (TC) types over a range of temperature in 5°C increments. In each case, the TC reference temperature is 0°C. The first-named material will be the positive terminal, as *iron-constantan*; the iron will be the positive lead when the reference temperature is lower than the measurement. The temperature is in °C and the output is mV. Each column is in 5°C increments from the temperature of that row.

### TYPE J: Iron-constantan

	0	5	10	15	20	25	30	35	40	45
-150	-6.50	-6.66	-6.82	-6.97	-7.12	-7.27	-7.40	-7.54	-7.66	-7.78
-100	-4.63	-4.83	-5.03	-5.23	-5.42	-5.61	-5.80	-5.98	-6.16	-6.33
-50	-2.43	-2.66	-2.89	-3.12	-3.34	-3.56	-3.78	-4.00	-4.21	-4.42
-0	0.00	-0.25	-0.50	-0.75	-1.00	-1.24	-1.48	-1.72	-1.96	-2.20
+0	0.00	0.25	0.50	0.76	1.02	1.28	1.54	1.80	2.06	2.32
50	2.58	2.85	3.11	3.38	3.65	3.92	4.19	4.46	4.73	5.00
100	5.27	5.54	5.81	6.08	6.36	6.63	6.90	7.18	7.45	7.73
150	8.00	8.28	8.56	8.84	9.11	9.39	9.67	9.95	10.22	10.50
200	10.78	11.06	11.34	11.62	11.89	12.17	12.45	12.73	13.01	13.28
250	13.56	13.84	14.12	14.39	14.67	14.94	15.22	15.50	15.77	16.05
300	16.33	16.60	16.88	17.15	17.43	17.71	17.98	18.26	18.54	18.81
350	19.09	19.37	19.64	19.92	20.20	20.47	20.75	21.02	21.30	21.57
400	21.85	22.13	22.40	22.68	22.95	23.23	23.50	23.78	24.06	24.33
450	24.61	24.88	25.16	25.44	25.72	25.99	26.27	26.55	26.83	27.11
500	27.39	27.67	27.95	28.23	28.52	28.80	29.08	29.37	29.65	29.94
550	30.22	30.51	30.80	31.08	31.37	31.66	31.95	32.24	32.53	32.82
600	33.11	33.41	33.70	33.99	34.29	34.58	34.88	35.18	35.48	35.78
650	36.08	36.38	36.69	36.99	37.30	37.60	37.91	38.22	38.53	38.84
700	39.15	39.47	39.78	40.10	40.41	40.73	41.05	41.36	41.68	42.00

**TYPE K: Chromel-alumel**

	0	5	10	15	20	25	30	35	40	45
-150	-4.81	-4.92	-5.03	-5.14	-5.24	-5.34	-5.43	-5.52	-5.60	-5.68
-100	-3.49	-3.64	-3.78	-3.92	-4.06	-4.19	-4.32	-4.45	-4.58	-4.70
-50	-1.86	-2.03	-2.20	-2.37	-2.54	-2.71	-2.87	-3.03	-3.19	-3.34
-0	0.00	-0.19	-0.39	-0.58	-0.77	-0.95	-1.14	-1.32	-1.50	-1.68
+0	0.00	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.61	1.81
50	2.02	2.23	2.43	2.64	2.85	3.05	3.26	3.47	3.68	3.89
100	4.10	4.31	4.51	4.72	4.92	5.13	5.33	5.53	5.73	5.93
150	6.13	6.33	6.53	6.73	6.93	7.13	7.33	7.53	7.73	7.93
200	8.13	8.33	8.54	8.74	8.94	9.14	9.34	9.54	9.75	9.95
250	10.16	10.36	10.57	10.77	10.98	11.18	11.39	11.59	11.80	12.01
300	12.21	12.42	12.63	12.83	13.04	13.25	13.46	13.67	13.88	14.09
350	14.29	14.50	14.71	14.92	15.13	15.34	15.55	15.76	15.98	16.19
400	16.40	16.61	16.82	17.03	17.24	17.46	17.67	17.88	18.09	18.30
450	18.51	18.73	18.94	19.15	19.36	19.58	19.79	20.01	20.22	20.43
500	20.65	20.86	21.07	21.28	21.50	21.71	21.92	22.14	22.35	22.56
550	22.78	22.99	23.20	23.42	23.63	23.84	24.06	24.27	24.49	24.70
600	24.91	25.12	25.34	25.55	25.76	25.98	26.19	26.40	26.61	26.82
650	27.03	27.24	27.45	27.66	27.87	28.08	28.29	28.50	28.72	28.93
700	29.14	29.35	29.56	29.77	29.97	30.18	30.39	30.60	30.81	31.02
750	31.23	31.44	31.65	31.85	32.06	32.27	32.48	32.68	32.89	33.09
800	33.30	33.50	33.71	33.91	34.12	34.32	34.53	34.73	34.93	35.14
850	35.34	35.54	35.75	35.95	36.15	36.35	36.55	36.76	36.96	37.16
900	37.36	37.56	37.76	37.96	38.16	38.36	38.56	38.76	38.95	39.15
950	39.35	39.55	39.75	39.94	40.14	40.34	40.53	40.73	40.92	41.12
1000	41.31	41.51	41.70	41.90	42.09	42.29	42.48	42.67	42.87	43.06
1050	43.25	43.44	43.63	43.83	44.02	44.21	44.40	44.59	44.78	44.97
1100	45.16	45.35	45.54	45.73	45.92	46.11	46.29	46.48	46.67	46.85
1150	47.04	47.23	47.41	47.60	47.78	47.97	48.15	48.34	48.52	48.70
1200	48.89	49.07	49.25	49.43	49.62	49.80	49.98	50.16	50.34	50.52
1250	50.69	50.87	51.05	51.23	51.41	51.58	51.76	51.94	52.11	52.29
1300	52.46	52.64	52.81	52.99	53.16	53.34	53.51	53.68	53.85	54.03
1350	54.20	54.37	54.54	54.71	54.88					

**TYPE T: Copper-constantan**

	0	5	10	15	20	25	30	35	40	45
-150	-4.603	-4.712	-4.817	-4.919	-5.018	-5.113	-5.205	-5.294	-5.379	
-100	-3.349	-3.488	-3.624	-3.757	-3.887	-4.014	-4.138	-4.259	-4.377	-4.492
-50	-1.804	-1.971	-2.135	-2.296	-2.455	-2.611	-2.764	-2.914	-3.062	-3.207
-0	0.000	-0.191	-0.380	-0.567	-0.751	-0.933	-1.112	-1.289	-1.463	-1.635
+0	0.000	0.193	0.389	0.587	0.787	0.990	1.194	1.401	1.610	1.821
50	2.035	2.250	2.467	2.687	2.908	3.132	3.357	3.584	3.813	4.044
100	4.277	4.512	4.749	4.987	5.227	5.469	5.712	5.957	6.204	6.453
150	6.703	6.954	7.208	7.462	7.719	7.987	8.236	8.497	8.759	9.023
200	9.288	9.555	9.823	10.093	10.363	10.635	10.909	11.183	11.459	11.735
250	12.015	12.294	12.575	12.857	13.140	13.425	13.710	13.997	14.285	14.573
300	14.864	15.155	15.447	15.740	16.035	16.330	16.626	16.924	17.222	17.521
350	17.821	18.123	18.425	18.727	19.032	19.337	19.642	19.949	20.257	20.565

**Type S: Platinum-platinum/10% rhodium**

	0	5	10	15	20	25	30	35	40	45
+0	0.000	0.028	0.056	0.084	0.113	0.143	0.173	0.204	0.235	0.266
50	0.299	0.331	0.364	0.397	0.431	0.466	0.500	0.535	0.571	0.607
100	0.643	0.680	0.717	0.754	0.792	0.830	0.869	0.907	0.946	0.986
150	1.025	1.065	1.166	1.146	1.187	1.228	1.269	1.311	1.352	1.394
200	1.436	1.479	1.521	1.564	1.607	1.650	1.693	1.736	1.780	1.824
250	1.868	1.912	1.956	2.001	2.045	2.090	2.135	2.180	2.225	2.271
300	2.316	2.362	2.408	2.453	2.499	2.546	2.592	2.638	2.685	2.731
350	2.778	2.825	2.872	2.919	2.966	3.014	3.061	3.108	3.156	3.203
400	3.251	3.299	3.347	3.394	3.442	3.490	3.539	3.587	3.635	3.683
450	3.732	3.780	3.829	3.878	3.926	3.975	4.024	4.073	4.122	4.171
500	4.221	4.270	4.319	4.369	4.419	4.468	4.518	4.568	4.618	4.668
550	4.718	4.768	4.818	4.869	4.919	4.970	5.020	5.071	5.122	5.173
600	5.224	5.275	5.326	5.377	5.429	5.480	5.532	5.583	5.635	5.686
650	5.738	5.790	5.842	5.894	5.946	5.998	6.050	6.102	6.155	6.207
700	6.260	6.312	6.365	6.418	6.471	6.524	6.577	6.630	6.683	6.737
750	6.790	6.844	6.897	6.951	7.005	7.058	7.112	7.166	7.220	7.275
800	7.329	7.383	7.438	7.492	7.547	7.602	7.656	7.711	7.766	7.821
850	7.876	7.932	7.987	8.042	8.098	8.153	8.209	8.265	8.320	8.376
900	8.432	8.488	8.545	8.601	8.657	8.714	8.770	8.827	8.883	8.940
950	8.997	9.054	9.111	9.168	9.225	9.282	9.340	9.397	9.455	9.512
1000	9.570	9.628	9.686	9.744	9.802	9.860	9.918	9.976	10.035	10.093
1050	10.152	10.210	10.269	10.328	10.387	10.446	10.505	10.564	10.623	10.682
1100	10.741	10.801	10.860	10.919	10.979	11.038	11.098	11.157	11.217	11.277
1150	11.336	11.396	11.456	11.516	11.575	11.635	11.695	11.755	11.815	11.875
1200	11.935	11.995	12.055	12.115	12.175	12.236	12.296	12.356	12.416	12.476
1250	12.536	12.597	12.657	12.717	12.777	12.837	12.897	12.957	13.018	13.078
1300	13.138	13.198	13.258	13.318	13.378	13.438	13.498	13.558	13.618	13.678
1350	13.738	13.798	13.858	13.918	13.978	14.038	14.098	14.157	14.217	14.277
1400	14.337	14.397	14.457	14.516	14.576	14.636	14.696	14.755	14.815	14.875
1450	14.935	14.994	15.054	15.113	15.173	15.233	15.292	15.352	15.411	15.471
1500	15.530	15.590	15.649	15.709	15.768	15.827	15.887	15.946	16.006	16.065
1550	16.124	16.183	16.243	16.302	16.361	16.420	16.479	16.538	16.597	16.657
1600	16.716	16.775	16.834	16.893	16.952	17.010	17.069	17.128	17.187	17.246
1650	17.305	17.363	17.422	17.481	17.539	17.598	17.657	17.715	17.774	17.832
1700	17.891	17.949	18.008	18.066	18.124	18.183	18.241	18.299	18.358	18.416
1750	18.474	18.532	18.590	18.648						