

NORTHERN ALBERTA INSTITUTE OF TECHNOLOGY
EDMONTON ALBERTA

INSTRUMENTATION TECHNOLOGY

COPPER vs. CONSTANTAN THERMOCOUPLE

Degrees Centigrade Reference Junction 0° C.

°C	0	1	2	3	4	5	6	7	8	9	
	Millivolts										
190	-5.379	-5.395	-5.411	-5.427	-5.443	-5.459	-5.475	-5.491	-5.507	-5.523	
180	-5.205	-5.223	-5.241	-5.258	-5.276	-5.294	-5.311	-5.328	-5.345	-5.362	
170	-5.018	-5.037	-5.056	-5.075	-5.094	-5.113	-5.132	-5.150	-5.169	-5.187	
160	-4.817	-4.838	-4.858	-4.878	-4.899	-4.919	-4.939	-4.959	-4.978	-4.998	
150	-4.603	-4.625	-4.647	-4.669	-4.690	-4.712	-4.733	-4.754	-4.775	-4.796	
140	-4.377	-4.400	-4.423	-4.446	-4.469	-4.492	-4.514	-4.537	-4.559	-4.581	
130	-4.138	-4.162	-4.187	-4.211	-4.235	-4.259	-4.283	-4.307	-4.330	-4.354	
120	-3.887	-3.912	-3.938	-3.964	-3.989	-4.014	-4.039	-4.064	-4.089	-4.114	
110	-3.624	-3.651	-3.678	-3.704	-3.730	-3.757	-3.783	-3.809	-3.835	-3.861	
100	-3.349	-3.377	-3.405	-3.432	-3.460	-3.488	-3.515	-3.542	-3.570	-3.597	
90	-3.062	-3.091	-3.120	-3.149	-3.178	-3.207	-3.235	-3.264	-3.292	-3.320	
80	-2.764	-2.794	-2.824	-2.854	-2.884	-2.914	-2.944	-2.974	-3.003	-3.033	
70	-2.455	-2.486	-2.518	-2.549	-2.580	-2.611	-2.642	-2.672	-2.703	-2.733	
60	-2.135	-2.167	-2.200	-2.232	-2.264	-2.296	-2.328	-2.360	-2.392	-2.423	
50	-1.804	-1.838	-1.871	-1.905	-1.938	-1.971	-2.004	-2.037	-2.070	-2.103	
40	-1.463	-1.498	-1.532	-1.567	-1.601	-1.635	-1.669	-1.703	-1.737	-1.771	
30	-1.112	-1.148	-1.183	-1.218	-1.254	-1.289	-1.324	-1.359	-1.394	-1.429	
20	-0.751	-0.788	-0.824	-0.860	-0.897	-0.933	-0.969	-1.005	-1.041	-1.076	
10	-0.380	-0.417	-0.455	-0.492	-0.530	-0.567	-0.604	-0.641	-0.678	-0.714	
(-)	0.000	-0.038	-0.077	-0.115	-0.153	-0.191	-0.229	-0.267	-0.305	-0.343	
(+)	0.000	0.038	0.077	0.116	0.154	0.193	0.232	0.271	0.311	0.350	
10	0.389	0.429	0.468	0.508	0.547	0.587	0.627	0.667	0.707	0.747	
20	0.787	0.827	0.868	0.908	0.949	0.990	1.030	1.071	1.112	1.153	
30	1.194	1.235	1.277	1.318	1.360	1.401	1.443	1.485	1.526	1.568	
40	1.610	1.652	1.694	1.737	1.779	1.821	1.864	1.907	1.949	1.992	
50	2.035	2.078	2.121	2.164	2.207	2.250	2.293	2.336	2.380	2.423	
60	2.467	2.511	2.555	2.599	2.643	2.687	2.731	2.775	2.820	2.864	
70	2.908	2.953	2.997	3.042	3.087	3.132	3.177	3.222	3.267	3.312	
80	3.357	3.402	3.448	3.493	3.539	3.584	3.630	3.676	3.722	3.767	
90	3.813	3.859	3.906	3.952	3.998	4.044	4.091	4.138	4.184	4.230	
100	4.277	4.324	4.371	4.418	4.465	4.512	4.559	4.606	4.654	4.701	
110	4.749	4.796	4.843	4.891	4.939	4.987	5.035	5.083	5.131	5.179	
120	5.227	5.275	5.323	5.372	5.420	5.469	5.518	5.566	5.615	5.663	
130	5.712	5.761	5.810	5.859	5.908	5.957	6.007	6.056	6.105	6.155	
140	6.204	6.254	6.303	6.353	6.403	6.453	6.503	6.553	6.603	6.653	
150	6.703	6.753	6.803	6.853	6.904	6.954	7.004	7.055	7.106	7.157	
160	7.208	7.258	7.309	7.360	7.411	7.462	7.513	7.565	7.616	7.667	
170	7.719	7.770	7.822	7.874	7.926	7.978	8.029	8.080	8.132	8.184	
180	8.236	8.288	8.340	8.392	8.445	8.497	8.549	8.601	8.654	8.707	
190	8.759	8.812	8.864	8.917	8.970	9.023	9.076	9.129	9.182	9.235	
200	9.288	9.341	9.394	9.448	9.501	9.555	9.608	9.662	9.715	9.769	
210	9.823	9.877	9.931	9.985	10.039	10.093	10.147	10.201	10.255	10.309	
220	10.363	10.417	10.471	10.526	10.580	10.635	10.689	10.744	10.799	10.854	
230	10.909	10.963	11.018	11.073	11.128	11.183	11.238	11.293	11.348	11.403	
240	11.459	11.514	11.569	11.624	11.680	11.735	11.791	11.847	11.903	11.959	
250	12.015	12.071	12.126	12.182	12.238	12.294	12.350	12.406	12.462	12.518	
260	12.575	12.631	12.688	12.744	12.800	12.857	12.913	12.970	13.027	13.083	
270	13.140	13.197	13.254	13.311	13.368	13.425	13.482	13.539	13.596	13.653	
280	13.710	13.768	13.825	13.882	13.939	13.997	14.055	14.112	14.170	14.227	
290	14.285	14.343	14.400	14.458	14.515	14.573	14.631	14.689	14.747	14.805	
300	14.864	14.922	14.980	15.038	15.096	15.155	15.213	15.271	15.330	15.388	
310	15.447	15.506	15.564	15.623	15.681	15.740	15.799	15.858	15.917	15.976	
320	16.035	16.094	16.153	16.212	16.271	16.330	16.389	16.449	16.508	16.567	
330	16.626	16.685	16.745	16.804	16.864	16.924	16.983	17.043	17.102	17.162	
340	17.222	17.281	17.341	17.401	17.461	17.521	17.581	17.641	17.701	17.761	
350	17.821	17.881	17.941	18.002	18.062	18.123	18.183	18.243	18.304	18.364	
360	18.425	18.485	18.546	18.607	18.667	18.727	18.788	18.849	18.910	18.971	
370	19.032	19.093	19.154	19.215	19.276	19.337	19.398	19.459	19.520	19.581	
380	19.642	19.704	19.765	19.827	19.888	19.949	20.011	20.072	20.134	20.195	
390	20.257	20.318	20.380	20.442	20.504	20.565	20.627	20.688	20.750	20.812	

