

MAXIMUM TEMPERATURE RANGE

Thermocouple Grade

-32 to 4208°F

-0 to 2320°C

Extension Grade

32 to 1600°F

0 to 870°C

LIMITS OF ERROR

(whichever is greater)

Standard: 4.5°C to 425°C

1.0% to 2320°C

Special: Not Established

COMMENTS, BARE WIRE ENVIRONMENT:

Vacuum, Inert; Hydrogen; Beware of

Embrittlement; Not Practical Below 750°F;

Not for Oxidizing Atmosphere

TEMPERATURE IN DEGREES °C

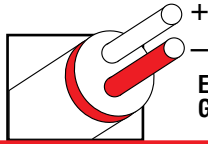
REFERENCE JUNCTION AT 0°C



Tungsten-5% Rhenium

vs.

Tungsten-26% Rhenium



Extension Grade

Revised Thermocouple Reference Tables

TYPE C

Reference Tables ANSI/ASTM E-230



IEC color code

ANSI color code

Thermoelectric Voltage in Millivolts

Table with 20 columns and 20 rows of thermoelectric voltage data in millivolts, organized by temperature in degrees Celsius.

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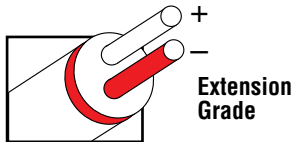
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TEMPERATURE IN DEGREES °C

REFERENCE JUNCTION AT 0°C

°C
**Tungsten-
 5% Rhenium
 vs.
 Tungsten-
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**Revised Thermocouple
 Reference Tables**

IEC color code

ANSI color code

TYPE

Reference
 Tables
**ANSI/ASTM
 E-230**

C

Thermoelectric Voltage in Millivolts

°C	0	1	2	3	4	5	6	7	8	9	10	°C	°C	0	1	2	3	4	5	6	7	8	9	10	°C
2000	33.669	33.681	33.693	33.706	33.718	33.730	33.742	33.754	33.766	33.779	33.791	2000	2200	35.940	35.951	35.961	35.972	35.982	35.993	36.003	36.013	36.024	36.034	36.044	2200
2010	33.791	33.803	33.815	33.827	33.839	33.851	33.863	33.875	33.887	33.899	33.911	2010	2210	36.044	36.055	36.065	36.075	36.086	36.096	36.106	36.116	36.127	36.137	36.147	2210
2020	33.911	33.923	33.936	33.948	33.960	33.972	33.984	33.996	34.008	34.019	34.031	2020	2220	36.147	36.157	36.168	36.178	36.188	36.198	36.208	36.219	36.229	36.239	36.249	2220
2030	34.031	34.043	34.055	34.067	34.079	34.091	34.103	34.115	34.127	34.139	34.151	2030	2230	36.249	36.259	36.269	36.279	36.289	36.300	36.310	36.320	36.330	36.340	36.350	2230
2040	34.151	34.163	34.174	34.186	34.198	34.210	34.222	34.234	34.245	34.257	34.269	2040	2240	36.350	36.360	36.370	36.380	36.390	36.400	36.410	36.420	36.430	36.440	36.449	2240
2050	34.269	34.281	34.293	34.304	34.316	34.328	34.340	34.351	34.363	34.375	34.387	2050	2250	36.449	36.459	36.469	36.479	36.489	36.499	36.509	36.519	36.528	36.538	36.548	2250
2060	34.387	34.398	34.410	34.422	34.433	34.445	34.457	34.468	34.480	34.492	34.503	2060	2260	36.548	36.558	36.568	36.577	36.587	36.597	36.607	36.616	36.626	36.636	36.645	2260
2070	34.503	34.515	34.527	34.538	34.550	34.561	34.573	34.585	34.596	34.608	34.619	2070	2270	36.645	36.655	36.665	36.675	36.684	36.694	36.703	36.713	36.723	36.732	36.742	2270
2080	34.619	34.631	34.642	34.654	34.665	34.677	34.688	34.700	34.711	34.723	34.734	2080	2280	36.742	36.751	36.761	36.771	36.780	36.790	36.799	36.809	36.818	36.828	36.837	2280
2090	34.734	34.746	34.757	34.769	34.780	34.792	34.803	34.814	34.826	34.837	34.849	2090	2290	36.837	36.846	36.856	36.865	36.875	36.884	36.894	36.903	36.912	36.922	36.931	2290
2100	34.849	34.860	34.871	34.883	34.894	34.905	34.917	34.928	34.939	34.951	34.962	2100	2300	36.931	36.940	36.950	36.959	36.968	36.978	36.987	36.996	37.005	37.015	37.024	2300
2110	34.962	34.973	34.984	34.996	35.007	35.018	35.029	35.041	35.052	35.063	35.074	2110	2310	37.024	37.033	37.042	37.051	37.061	37.070						2310
2120	35.074	35.085	35.097	35.108	35.119	35.130	35.141	35.152	35.164	35.175	35.186	2120													
2130	35.186	35.197	35.208	35.219	35.230	35.241	35.252	35.263	35.274	35.285	35.296	2130													
2140	35.296	35.307	35.318	35.329	35.340	35.351	35.362	35.373	35.384	35.395	35.406	2140													
2150	35.406	35.417	35.428	35.439	35.450	35.461	35.472	35.482	35.493	35.504	35.515	2150													
2160	35.515	35.526	35.537	35.547	35.558	35.569	35.580	35.591	35.601	35.612	35.623	2160													
2170	35.623	35.634	35.644	35.655	35.666	35.676	35.687	35.698	35.708	35.719	35.730	2170													
2180	35.730	35.740	35.751	35.762	35.772	35.783	35.793	35.804	35.814	35.825	35.836	2180													
2190	35.836	35.846	35.857	35.867	35.878	35.888	35.899	35.909	35.920	35.930	35.940	2190													
°C	0	1	2	3	4	5	6	7	8	9	10	°C	°C	0	1	2	3	4	5	6	7	8	9	10	°C

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TEMPERATURE IN DEGREES °F

REFERENCE JUNCTION AT 32°F

°F

Tungsten-5% Rhenium vs. Tungsten-26% Rhenium



Extension Grade

IEC color code

ANSI color code

Revised Thermocouple Reference Tables

TYPE

Reference Tables ANSI/ASTM E-230

C

Thermoelectric Voltage in Millivolts

Table with 20 columns of temperature values in °F and 20 columns of millivolt values. The table is organized into pairs of columns for each temperature, with the first column being the reference temperature and the second column being the corresponding millivolt output.

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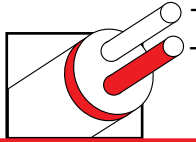
REFERENCE JUNCTION AT 32°F

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Tungsten-5% Rhenium

vs.

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Revised Thermocouple Reference Tables

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Reference Tables ANSI/ASTM E-230

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Thermoelectric Voltage in Millivolts

Table with 20 columns and 100 rows of thermoelectric voltage data in millivolts, organized by temperature ranges from 3000°F down to 3490°F.

Revised Thermocouple Reference Tables

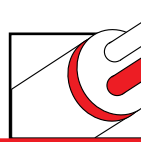
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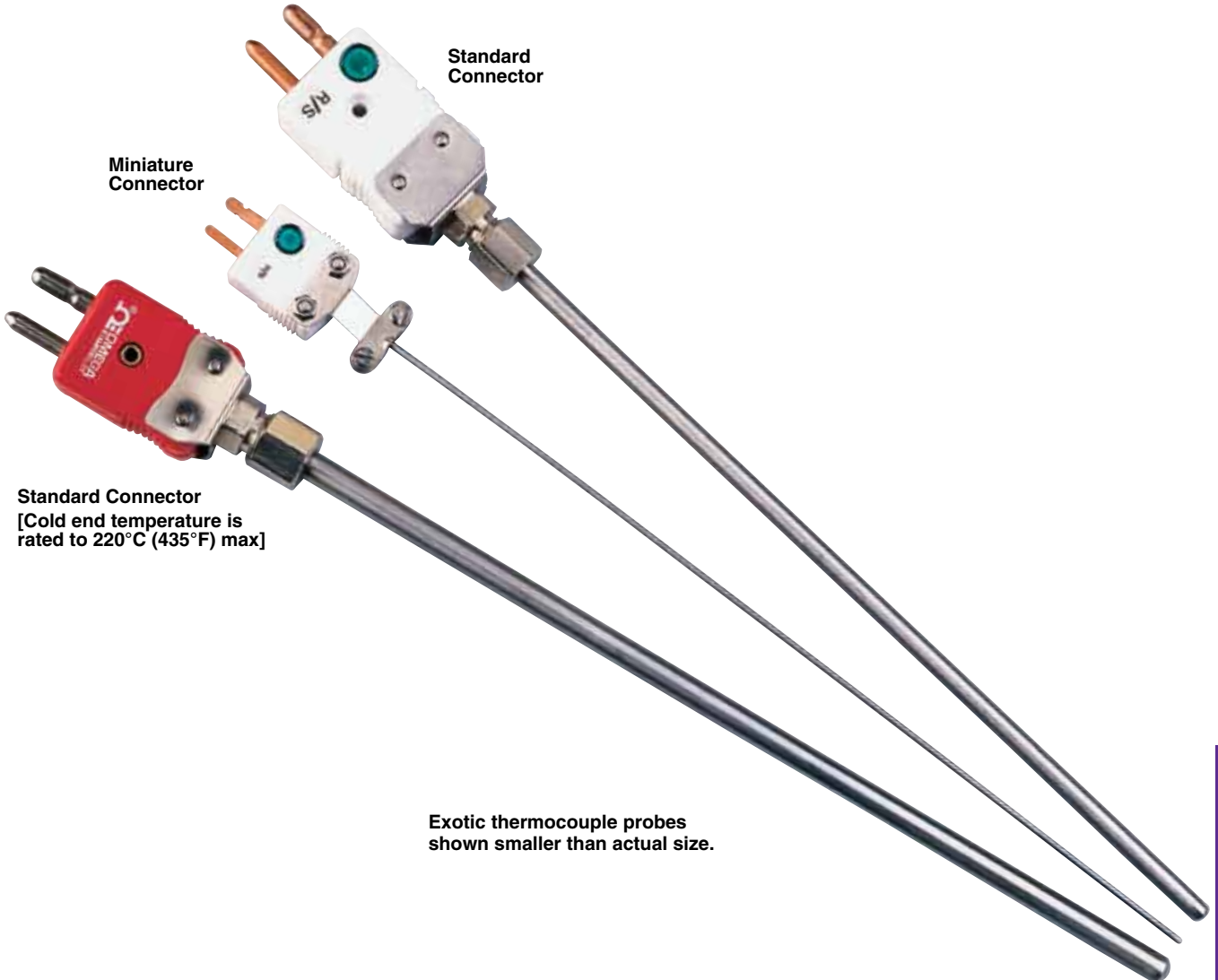
TEMPERATURE IN DEGREES °F

REFERENCE JUNCTION AT 32°F

Thermoelectric Voltage in Millivolts

°F	0	1	2	3	4	5	6	7	8	9	10	°F
4000	35.987	35.993	35.998	36.004	36.010	36.016	36.021	36.027	36.033	36.039	36.044	4000
4010	36.044	36.050	36.056	36.062	36.067	36.073	36.079	36.084	36.090	36.096	36.102	4010
4020	36.102	36.107	36.113	36.119	36.124	36.130	36.136	36.142	36.147	36.153	36.159	4020
4030	36.159	36.164	36.170	36.176	36.181	36.187	36.193	36.198	36.204	36.210	36.215	4030
4040	36.215	36.221	36.226	36.232	36.238	36.243	36.249	36.255	36.260	36.266	36.271	4040
4050	36.271	36.277	36.283	36.288	36.294	36.300	36.305	36.311	36.316	36.322	36.327	4050
4060	36.327	36.333	36.339	36.344	36.350	36.355	36.361	36.366	36.372	36.378	36.383	4060
4070	36.383	36.389	36.394	36.400	36.405	36.411	36.416	36.422	36.427	36.433	36.438	4070
4080	36.438	36.444	36.449	36.455	36.460	36.466	36.471	36.477	36.482	36.488	36.493	4080
4090	36.493	36.499	36.504	36.510	36.515	36.521	36.526	36.532	36.537	36.543	36.548	4090
°F	0	1	2	3	4	5	6	7	8	9	10	°F

°F	0	1	2	3	4	5	6	7	8	9	10	°F
4100	36.548	36.553	36.559	36.564	36.570	36.575	36.581	36.586	36.591	36.597	36.602	4100
4110	36.602	36.608	36.613	36.619	36.624	36.629	36.635	36.640	36.645	36.651	36.656	4110
4120	36.656	36.662	36.667	36.672	36.678	36.683	36.688	36.694	36.699	36.704	36.710	4120
4130	36.710	36.715	36.721	36.726	36.731	36.737	36.742	36.747	36.752	36.758	36.763	4130
4140	36.763	36.768	36.774	36.779	36.784	36.790	36.795	36.800	36.805	36.811	36.816	4140
4150	36.816	36.821	36.826	36.832	36.837	36.842	36.848	36.853	36.858	36.863	36.868	4150
4160	36.868	36.874	36.879	36.884	36.889	36.895	36.900	36.905	36.910	36.915	36.921	4160
4170	36.921	36.926	36.931	36.936	36.941	36.947	36.952	36.957	36.962	36.967	36.972	4170
4180	36.972	36.978	36.983	36.988	36.993	36.998	37.003	37.008	37.014	37.019	37.024	4180
4190	37.024	37.029	37.034	37.039	37.044	37.049	37.055	37.060	37.065	37.070	37.075	4190
4200	37.075											4200
°F	0	1	2	3	4	5	6	7	8	9	10	°F



Miniature Connector

Standard Connector

Standard Connector
[Cold end temperature is rated to 220°C (435°F) max]

Exotic thermocouple probes shown smaller than actual size.

TEMP-224

TEMPERATURE