Thermocouple types

| ANSI<br>Calibration<br>Code | Positive<br>Leg  | Negative<br>Leg                                   | Recommended<br>Temp. Range<br>°F(°C)of Prot. TC' | ** Application Information  |
|-----------------------------|--|---|--|---|
| J                           | Iron<br>ThermoKanthal JP*  | Constantan* Cupron* Advance* ThermoKanthal JN*    | 32 to 1400<br>(0 to 760)                         | Suitable for vacuum, reducing, or inert atmospheres, oxidizing atmospheres with reduced life. Iron oxidizes rapidly above 1000°F (538°C) so only heavy gauge wire is recommended for high temperature. Bare elements should not be exposed to sulphurous atmospheres above 1000°F (538°C).  |
| К                           | Chromel*<br>Tophel*<br>T1*<br>ThermoKanthal KP*                      | Alumel*<br>Nial*<br>T2*<br>ThermoKanthal KN*      | 32 to 2300<br>(0 to 1260)                        | Recommended for continuous oxidizing or neutral atmospheres. Mostly used above 1000°F (530°C). Subject to failure if exposed to sulphur. Preferential oxidation of chromium in positive leg at certain low oxygen concentrations causes "green rot" and large negative calibration drifts most serious in the 1500 - 1900°F range (816 — 1038°C). Ventilation or inert-sealing of the protection tube can prevent this. |
| Т                           | Copper   | Constantan*<br>Cupron*<br>Advance*                | 300 to + 700<br>(184 to +371)                    | Useable in oxidizing, reducing, or inert atmospheres as well as vacuum. Not subject to corrosion in moist atmospheres. Limits of error published for sub-zero temperature ranges.   |
| E                           | Chromel*<br>Tophel*<br>T1*<br>ThermoKanthal KP*                      | Constantan* Cupron* Advance* ThermoKanthal JN*    | 32 to 1600<br>(0 to 871)                         | Recommended for continuously oxidizing or inert atmospheres. Sub-zero limits of error not established. Highest thermoelectric output of common calibrations.  |
| R<br>S                      | Platinum—<br>13% Rhodium<br>Platinum—<br>10% Rhodium                 | Platinum<br>Platinum                              | 100 to 2700<br>(538 to 1482)                     | Recommended for high temperature. Must be protected with non-metallic protection tube and ceramic insulators. Continued high temperature usages causes grain growth which can lead to mechanical failure. Negative calibration drift caused by rhodium diffusion to pure leg as well as from rhodium volatilization.  |
| В                           | Platinum—<br>30%<br>Rhodium  | Platinum—<br>6%<br>Rhodium                        | 1600 to 3100<br>(871 to 1705)                    | Type R is used in industry; type S in the laboratory  Similar as R & S but output is lower. Also less susceptible to grain growth and drift.  |
|                             | Nickel   | Nickel—<br>18% Molybdenum                         | 32 to 2250                                       | High temperature applications in inert or vacuum atmosphere. Useful in many hydrogen applications. Continuous cycling causes excessive grain growth.  |
| С                           | Tungsten-<br>5 %<br>Rhenium(W-5Re)                                   | Tungsten-<br>26% Rhenium<br>(W-26Re)              | 32 to 4200                                       | Very high temperature applications in inert or vacuum. Preferred over Tungsten/Tungsten—26% Rhenium because less brittle at low temperatures.   |
| W                           | Tungsten-<br>3% Rhenium<br>(W-3Re)                                   | Tungsten-<br>25% Rhenium<br>(W-25Re)              | 32 to 4200                                       | The ductility of the W3Re leg is superior to pure Tungsten, but not as good as W5Re. This combination has highest output of the 3 common Tungsten Rhenium calibrations from 1860 to 4200°F.   |
| N                           | Nicrosil*** 14.5% Chromium 1.4% Silicon .1% Magnesium Balance Nickel | Nisil*** 4.2% Silicon .1%Magnesium Balance Nickel | 32 to 2300<br>(0 to 1260)                        | Can be used in applications where Type K elements have shorter life and stability problems due to oxidation and the development of "Green Rot"  |
| None                        | Platinei*  | Platinel*   | 32 to 2300                                       | Noble metal combination which approximates Type K curve but has much improved oxidation resistance. Should be treated as any noble metal calibration.   |

<sup>\*</sup>Trade names. Chromel, Alumel: Hoskins Mfg. Co.; T1, T2, Advance: Driver-Harris Co.; Nial, Tophel: Wilbur B. Driver Co.; ThermoKanthal KP and KN: The Kanthal Corp.; Platinel; Engelhard Industries.

<sup>\*\*</sup>The Recommended Temperature Range is that temperature range for which limits of error have been established.
\*\*\*Trade Name: Amax Specialty Metals Corp.

Thermocouple Types

|   | mits of Error Thermocouples<br>1/4 limits available on request   |   | nce June  | uon't (32°F).   | . Published in F   | i voi oii caiai i                  | WIC 90.1 -   | 902  |   |   |  |                                   |
|---|--|---|---|---|--|------------------------------------|--|--|---|---|--|-----------------------------------|
|   | Temperature Range C(°F) for Standard Limits of Error   | Sta<br>of E   | ndard Lir<br>rror                                 |   | for Specia   | ıre Range °C<br>I Limits of Eı     |  | of E   | ecial Lim<br>Error                                      |   |  |                                   |
|   | 0 to 293 (32 to 559)   |   | 2°C (+4.0°  | °F)   | 0 to 275 (3  |                                    |  |  | .1 °C (+ 2  | °F)   |  |                                   |
| J   | 293 to 760 (559 to 1400)   | ± 0.7   |   |   | 275 to 760   | (527 to 1400)                      | )  | ± 0.   | .4%   |   |  |                                   |
|   | -200 to -110 (-328 to -166)<br>-110 to 0 (-166 to 32)  | ± 2%  | 6 <b>°</b><br>2°C (+ 4°F                          | =)*   | 0 to 275 (3  | 2 to 527)                          |  | * *  |   |   |  |                                   |
| K   | 0 to 293 (32 to 559)   |   | 2°C (+ 4°F  |   | 0 10 27 3 (3   | 2 10 327)                          |  | ± 1.   | 1 °C (+ 2   | °F)   |  |                                   |
| • • •   | 293 to 1250 (559 to 2282)  | ± 0.7   |   | ,   | 275 to 125   | 0 (527 to 228)                     | 2)   | ± 0.   | 4%  | . ,   |  |                                   |
|   | -200 to -67 (-328 to -89)  | ± 1.5   | 5 % *   |   |  |                                    |  | * *  |   |   |  |                                   |
| Т   | -67 to 0 (-89 to 32)   |   | C (+ 1.8°F  |   | 0 to 125 (3  | 2 to 257)                          |  | * *  |   |   |  |                                   |
|   | 0 to 133 (32 to 271)   | ± 1 °C (+ 1.8° F)<br>± 0.75%  |   |   | 105 1- 050 (057 1- 000)  |                                    |  |  | ± 0.5°C (+ 0.9°F)                                       |   |  |                                   |
|   | 133 to 350 (271 to 662)  |   |   |   | 125 to 350   | (257 to 662)                       |  | ± 0.   | 4%  |   |  |                                   |
|   | -200 to -170 (-328 to -274)<br>-170 to 0 (-274 to 32)  | ± 1%  |   | °F)*  | 0 to 250 (3  | 2 to 482)                          |  | * *  |   |   |  |                                   |
| Ε   | 0 to 340 (32 to 644)   | ± 1.7°C (+ 3.1°F)*<br>± 1.7°C (+ 3.1°F)<br>± 0.5%   |   |   | 0 to 250 (32 to 482)<br>250 to 900 (482 to 1652)   |                                    |  | ± 1  | ± 1 °C (+ 1.8°F)<br>± 0.4%                              |   |  |                                   |
|   | 340 to 900 (644 to 1652)   |   |   |   |  |                                    |  | ± 0.   |   |   |  |                                   |
|   | 0 to 600 (32 to 1112)  | ± 1.5   | s°C (+ 2.7  | °F)   | 0 to 600 (3  | 2 to 1112)                         |  | ± 0.   | 6°C (+ 1.   | 1 ° F)  |  |                                   |
| R   | 600 to 1450 (1112 to 2642)   | ± 0.2   |   |   |  | ) (1112 to 264                     | 12)  | ± 0.   |   |   |  |                                   |
| _   | 0 to 600 (32 to 1112)  |   | s°C (+ 2.7  | °F)   | 0 to 600 (3  |                                    | 10)  |  | 6°C (+ 1.   | 1°F)  |  |                                   |
| _ <u>S</u> _  | 600 to 1450 (1112 to 2642)   | ± 0.2   |   |   |  | ) (1112 to 264                     |  | ± 0.   | 1%  |   |  |                                   |
| В   | 800 to 1700 (1472 to 3092) ouples and thermocouple   | ± 0.5   | nformance   | is agreed to  | -200 to  | 0 (1472 to 309                     | 92)  |  | zaro limito   | of error for T  | Type I                                 |                                   |
|   | are supplied to meet the   | umess co  | monnance  | is agreed to.   |  | + 1°C or +0.5%,                    | whichever  |  |   | ecial limits of   |  |                                   |
|   | error specified for<br>res above O°C, A ther-  |   |   | rror for sub-zero   |  | r Type T +0.5°0                    | C or +0.8%,  |  |   | ot considered   |  |                                   |
|   | material may not conform   |   | ures have no<br>ed. The follo                     | owing limits for  | whiche   | er is greater.                     |  | mate   |   | haracteristics  | or the                                 |                                   |
| the pub   | lished sub-zero limits of er-<br>t material when purchased,  |   | ns E and T  | are useful to   |  |                                    |  |  |   |   |  |                                   |
|   | CITIES The second  |   |   |   |  |                                    |  |  |   |   |  |                                   |
| Pyro  |  | les   |   | Temperature   |  |                                    |  |  |   |   |  |                                   |
|   |  | les   |   | Range, °C (°  | F)   |                                    |  | of Error   |   |   |  |                                   |
| Pyro<br>Typ   | туре   | les   |   | Range, °C (°<br>0 to 427 (32  | F)<br>to 800)  |                                    | ±4.4°C   | of Error<br>(+ 8°F)  |   |   |  |                                   |
| Pyro  |  | les   |   | Range, °C (°<br>0 to 427 (32<br>427 to 2316   | F)<br>to 800)<br>(800 to 4200)   |                                    | ±4.4°C<br>± 1%   | (+ 8°F)  |   |   |  |                                   |
| Pyro<br>Typ   | туре   | les   |   | Range, °C (°<br>0 to 427 (32<br>427 to 2316<br>0 to 427 (32   | F)<br>to 800)<br>(800 to 4200)   |                                    | ±4.4°C<br>± 1%   |  |   |   |  |                                   |
| Pyro<br>Typ   | Y-W. 26%, Re   | les   |   | Range, °C (°<br>0 to 427 (32<br>427 to 2316<br>0 to 427 (32   | F)<br>to 800)<br>(800 to 4200)<br>to 800)  | Page 19-may                        | ±4.4°C<br>± 1%<br>± 4.4°C  | (+ 8°F)  |   |   |  |                                   |
| Pyro<br>Typ   | W-W. 26%, Re<br>W, 5% Re-W, 26% Re   | les   |   | Range, °C (°<br>0 to 427 (32<br>427 to 2316<br>0 to 427 (32   | F)<br>to 800)<br>(800 to 4200)<br>to 800)<br>(800 to 4200)   | Page 19-                           | ±4.4°C<br>± 1%<br>± 4.4°C<br>± 1%<br>± .75%  | (+ 8°F)<br>C (+ 8°F)   |   |   |  |                                   |
| Pyro<br>Type<br>G<br>C  | W-W. 26%, Re W, 5% Re-W, 26% Re Nickel - Nickel, 18% Moly Nicrosil -   | les   |   | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32  | to 800)<br>(800 to 4200)<br>to 800)<br>(800 to 4200)<br>2 to 2250)   | Page 19-                           | ±4.4°C<br>± 1%<br>± 4.4°C<br>± 1%<br>± .75%<br>± 2.2°C   | C (+ 8°F)  |   |   |  |                                   |
| Pyro<br>Typ<br>G  | W-W. 26%, Re W, 5% Re-W, 26% Re Nickel - Nickel, 18% Moly  | les   |   | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32  | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282)   |                                    | ±4.4°C<br>± 1%<br>± 4.4°C<br>± 1%<br>± .75%<br>± 2.2°C<br>± .75%   | C (+ 8°F)  | Au  |   |  |                                   |
| Pyro<br>Type<br>G<br>C<br>M   | W-W. 26%, Re W, 5% Re-W, 26% Re Nickel - Nickel, 18% Moly Nicrosil - Nisil   | les   |   | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32   | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800)   |                                    | ±4.4°C<br>±1%<br>±4.4°C<br>±1%<br>±.75%<br>±2.2°C<br>±.75%<br>±4.4°C   | C (+ 8°F)  | Au  |   |  |                                   |
| Pyro<br>Type<br>G<br>C  | W-W. 26%, Re W, 5% Re-W, 26% Re Nickel - Nickel, 18% Moly Nicrosil - Nisil W, 3% Re-W, 25% Re  | les   |   | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316   | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200)   |                                    | ±4.4°C<br>±1%<br>±4.4°C<br>±1%<br>±.75%<br>±2.2°C<br>±.75%<br>±4.4°C<br>±1%  | C (+ 8°F)  C (+ 8°F)  C (+ 4°F)  C (+ 8°F)   | Au  |   |  |                                   |
| Pyro<br>Type<br>G<br>C<br>M<br>N  | W-W. 26%, Re W, 5% Re-W, 26% Re Nickel - Nickel, 18% Moly Nicrosil - Nisil W, 3% Re-W, 25% Re Platinel II  | les   |   | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32  | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112)  |                                    | ±4.4°C ±1% ±4.4°C ±1%  ± 1.75% ± 2.2°C ±.75% ± 4.4°C ± 1.75% ± 1.75%   | C (+ 8°F) C (+ 8°F) C (+ 4°F) C (+ 8°F)  | Au  |   |  |                                   |
| Pyro<br>Type<br>G<br>C<br>M   | W-W. 26%, Re W, 5% Re-W, 26% Re Nickel - Nickel, 18% Moly Nicrosil - Nisil W, 3% Re-W, 25% Re  | les   |   | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (°  | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200)   |                                    | ±4.4°C<br>±1%<br>±4.4°C<br>±1%<br>±.75%<br>±2.2°C<br>±.75%<br>±4.4°C<br>±1%  | C (+ 8°F) C (+ 8°F) C (+ 4°F) C (+ 8°F)  | Au  |   |  |                                   |
| Pyro<br>Typ   | W-W. 26%, Re W, 5% Re-W, 26% Re Nickel - Nickel, 18% Moly Nicrosil - Nisil W, 3% Re-W, 25% Re Platinel II (Platinel 5355/  |   | for Prote   | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (' 700 to 1300  | F) to 800) (800 to 4200) to 800) (800 to 4200)  2 to 2250)  2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372)   |                                    | ±4.4°C<br>±1%<br>±4.4°C<br>±1%<br>±.75%<br>±2.2°C<br>±.75%<br>±4.4°C<br>±1%<br>±0.10i  | C (+ 8°F)  C (+ 8°F)  C (+ 4°F)  C (+ 8°F)   | Au  | erature   |  |                                   |
| Pyro<br>Typ   | W-W. 26%, Re W, 5% Re-W, 26% Re Nickel - Nickel, 18% Moly Nicrosil - Nisil W, 3% Re-W, 25% Re Platinel II (Platinel 5355/ Platinel 7674)   |   |   | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (7 700 to 1300 cted Thermo  | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) to 1120 to 1292) (1292 to 2372) poouples 11 ga.  | (Type M Onl                        | ±4.4°C<br>±1%<br>±4.4°C<br>±1%<br>±.75%<br>±2.2°C<br>±.75%<br>±4.4°C<br>±0.100<br>±0.150<br>±0.200                                   | C (+ 8°F)  C (+ 8°F)  C (+ 4°F)  C (+ 8°F)   | m Tempe   | erature   |  |                                   |
| Pyro<br>Type<br>G<br>C<br>M<br>N<br>D   | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly  Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature   | Limits<br>Minimu<br>Temper  | m<br>rature                                       | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (700 to 1300 cted Thermo 8 ga.                                      | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) poouples 11 ga. 14 ga.  | (All Others)                       | ±4.4°C<br>±1%<br>±4.4°C<br>±1%<br>±.75%<br>±2.2°C<br>±.75%<br>±4.4°C<br>±0.100<br>±0.150<br>±0.200<br>y)<br>20 ga.                   | C (+ 8°F) C (+ 8°F) C (+ 4°F) C (+ 8°F) nV nV Maximu   | m Tempe<br>24 ga.                                       |   | 30 ga.                                 |                                   |
| Pyro<br>Type<br>G<br>C<br>M<br>N<br>D   | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly  Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature   | e Limits<br>Minimu<br>Temper  | m<br>rature<br>°F                                 | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (7 700 to 1300 cted Thermo 8 ga. °C °                               | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) couples 11 ga. 14 ga. F °C  | (All Others)<br>°F                 | ±4.4°C ±1% ±4.4°C ±1%  ± .75% ± 2.2° ± .75% ± 0.100 ± 0.150 ± 0.200  y) 20 ga. °C  | C (+ 8°F) C (+ 8°F) C (+ 4°F) C (+ 8°F) nV nV Maximu   | m Tempo<br>24 ga.<br>°C                                 | °F  | °C                                     | °F                                |
| Pyro<br>Type<br>G<br>C<br>M<br>N<br>D<br>P  | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly  Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature  nocouple Type (Copper-Constantan)  | e Limits<br>Minimu<br>Temper<br>°C<br>-184°   | m<br>rature<br>°F<br>-300°                        | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (7 700 to 1300 cted Thermo  8 ga. °C °C                             | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) becouples 11 ga. 14 ga. F °C  | (All Others)<br>°F                 | ±4.4°C ±1% ±4.4°C ±1%  ± .75% ± 2.2°C ± .75% ± 4.4°C ± 1%  ± 0.100 ± 0.151 ± 0.200  y) 20 ga. °C 260°                                | C (+ 8°F) C (+ 8°F) C (+ 4°F) C (+ 8°F) nV nV Maximu °F 500°   | m Tempo<br>24 ga.<br>°C<br>204°                         | °F<br>400°  | ° <b>C</b><br>204°                     | 400°                              |
| Pyrcy Type  G C M N D P   | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature  Incouple Type I (Copper-Constantan)   | Limits<br>Minimu<br>Temper<br>°C<br>-184°<br>-18°   | m<br>rature<br>°F<br>-300°                        | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (7 700 to 1300 cted Thermo  8 ga. °C ° 760° 1                       | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) becouples 11 ga. 14 ga. F °C 400° 593°                                | °F<br><br>1100°                    | ±4.4°C ±1% ±4.4°C ±1%  ± .75% ± 2.2°C ± .75% ± 4.4°C ± 1%  ± 0.100 ± 0.151 ± 0.200  y) 20 ga. °C 260° 482°                           | C (+ 8°F) C (+ 8°F) C (+ 8°F) C (+ 8°F) T (+ 8 | m Tempo<br>24 ga.<br>°C<br>204°<br>371°                 | °F<br>400°<br>700°  | ° <b>C</b><br>204°<br>371°             | 400°<br>700°                      |
| Pyro<br>Type<br>G<br>C<br>M<br>N<br>D<br>P  | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature  Incouple Type I (Copper-Constantan) I (Iron-Constantan) I (Chromel-Constantan)  | Limits<br>Minimu<br>Tempel<br>°C<br>-184°<br>-18°   | m<br>rature<br>°F<br>-300°<br>-0°<br>-300°        | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (7 700 to 1300 cted Thermo  8 ga.  °C ° 760° 1 871° 1               | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) brouples 11 ga. 14 ga. F °C 400° 593° 600° 649°                       | °F<br><br>1100°<br>1200°           | ±4.4°C ±1% ±4.4°C ±1%  ± 1.75% ± 2.2°C ±.75% ± 4.4°C ± 1.75% ± 0.100 ± 0.150 ± 0.200  y) 20 ga. °C 260° 482° 538°                    | C (+ 8°F) C (+ 8°F) C (+ 8°F) C (+ 8°F) N N Maximu    *F 500° 900° 1000°   | 24 ga. °C 204° 371° 427°                                | °F<br>400°<br>700°<br>800°                                | °C<br>204°<br>371°<br>427°             | 400°<br>700°<br>800°              |
| Pyro<br>Type<br>G<br>C<br>M<br>N<br>D<br>P  | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature  (Copper-Constantan) ((Chromel-Constantan) ((Chromel-Alumel)   | Limits<br>Minimu<br>Tempel<br>°C<br>-184°<br>-18°<br>-184°                                | rature °F -300° -0° -300° -0°                     | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (' 700 to 1300 cted Thermo  8 ga.  °C °C 760° 1 871° 1 1260° 2      | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) couples 11 ga. 14 ga. F °C 400° 593° 600° 649° 300° 1093°             | (All Others)  °F 1100° 1200° 2000° | ±4.4°C ±1% ±4.4°C ±1%  ± 4.4°C ± 1%  ± .75% ± 2.2°C ± .75% ± 4.4°C ± 1% ± 0.100 ± 0.150 ± 0.200  y) 20 ga. °C 260° 482° 538° 982°    | C (+ 8°F) C (+ 8°F) C (+ 8°F) C (+ 8°F) N N Maximu    *F 500° 900° 1000° 1800°   | m Tempo<br>24 ga.<br>°C<br>204°<br>371°<br>427°<br>871° | °F<br>400°<br>700°<br>800°<br>1600°                       | °C<br>204°<br>371°<br>427°<br>871°     | 400°<br>700°<br>800°<br>1600      |
| Pyro<br>Type<br>G<br>C<br>M<br>N<br>D<br>P  | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature  T(Copper-Constantan) J (Iron-Constantan) J (Iron-Constantan) C(Chromel-Constantan) C(Chromel-Alumel) M (Nickel-Nickel, 18% Moly)                                      | Limits<br>Minimu<br>Tempel<br>°C<br>-184°<br>-18°<br>-184°<br>-188°                       | rature °F -300° -0° -300° -0° -0°                 | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (7 700 to 1300 cted Thermo  8 ga.  °C ° 760° 1 871° 1 1260° 2       | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) couples 11 ga. 14 ga. F °C 400° 593° 600° 649° 300° 1093° 1287°       | °F 1100° 1200° 2000° 2250°         | ±4.4°C ±1% ±4.4°C ±1%  ± 4.4°C ± 1%  ± .75% ± 2.2°C ± .75% ± 4.4°C ± 0.100 ± 0.150 ± 0.200  20 ga. °C 260° 482° 538° 982°            | C (+ 8°F) C (+ 8°F) C (+ 8°F) C (+ 8°F) T (+ 8 | 24 ga. °C 204° 371° 427° 871°                           | °F<br>400°<br>700°<br>800°<br>1600°                       | °C<br>204°<br>371°<br>427°<br>871°<br> | 400°<br>700°<br>800°<br>1600      |
| Pyro<br>Type<br>G<br>C<br>M<br>N<br>D<br>P  | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature  T(Copper-Constantan) J (Iron-Constantan) J (Iron-Constantan) C(Chromel-Constantan) C(Chromel-Alumel) M (Nickel-Nickel, 18% Moly) N (Nicrosil-Nisil)                   | Limits<br>Minimu<br>°C<br>-184°<br>-18°<br>-184°<br>-188°<br>-188°<br>-188°               | rature  | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 (' 700 to 1300 cted Thermo  8 ga.  °C ° 760° 1 871° 1 1260° 2       | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) couples 11 ga. 14 ga. F °C 400° 593° 600° 649° 300° 1093° 1287° 1093° | (All Others)                       | ±4.4°C ±1% ±4.4°C ±1%  ± 4.4°C ± 1%  ± .75% ± 2.2°C ± .75% ± 4.4°C ± 0.100 ± 0.150 ± 0.200  y) 20 ga. °C 260° 482° 538° 982° 982°    | C (+ 8°F) C (+ 8°F) C (+ 8°F) C (+ 8°F) T (+ 8 | 24 ga. °C 204° 371° 427° 871°                           | °F<br>400°<br>700°<br>800°<br>1600°                       | °C<br>204°<br>371°<br>427°<br>871°     | 400°<br>700°<br>800°<br>1600      |
| Pyrc Type  G C M N D P Therr Type Type Type Type Type Type Type Type  | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature  T(Copper-Constantan) J (Iron-Constantan) J (Iron-Constantan) C(Chromel-Constantan) C(Chromel-Alumel) M (Nickel-Nickel, 18% Moly) N (Nicrosil-Nisil) R and Type S      | Limits<br>Minimu<br>Tempel<br>°C<br>-184°<br>-18°<br>-184°<br>-188°                       | rature °F -300° -0° -300° -0° -0°                 | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 ( 700 to 1300 cted Thermo  8 ga.  °C °  760° 1 871° 1 1260° 2       | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) couples 11 ga. 14 ga. F °C 400° 593° 600° 649° 300° 1093° 1287° 1093° | °F 1100° 1200° 2000° 2250°         | ±4.4°C ±1% ±4.4°C ±1%  ± 4.4°C ± 1%  ± .75% ± 2.2°C ± .75% ± 4.4°C ± 0.100 ± 0.150 ± 0.200  20 ga. °C 260° 482° 538° 982°            | C (+ 8°F) C (+ 8°F) C (+ 8°F) C (+ 8°F) T (+ 8 | 24 ga. °C 204° 371° 427° 871°                           | °F<br>400°<br>700°<br>800°<br>1600°                       | °C 204° 371° 427° 871°                 | 400°<br>700°<br>800°<br>1600'     |
| Pyro<br>Type<br>G<br>C<br>M<br>N<br>D<br>P<br>Therr<br>Type<br>Type<br>Type<br>Type<br>Type<br>Type<br>Type<br>Type | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly  Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel III (Platinel 5355/ Platinel 7674)  Recommended Temperature  (Copper-Constantan) (Iron-Constantan) (Iron-Constantan) (Chromel-Constantan) (Chromel-Alumel) M (Nickel-Nickel, 18% Moly) N (Nicrosil-Nisil) R and Type S           | Limits<br>Minimu<br>Temper<br>°C<br>-184°<br>-18°<br>-18°<br>-18°<br>-18°<br>-18°<br>-18° | rature  | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 ( 700 to 1300 cted Thermo  8 ga.  °C  "C  "T  600" 1 871" 1 1260° 2 | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) couples 11 ga. 14 ga. F °C 400° 593° 600° 649° 300° 1093° 1287° 1093° | (All Others)                       | ±4.4°C ±1% ±4.4°C ±1%  ± 4.4°C ±1%  ± .75% ± 2.2°C ±.75% ± 4.4°C ± 1%  ± 0.100 ± 0.150 ± 0.200  20 ga. °C 260° 482° 538° 982° 982°   | C (+ 8°F) C (+ 8°F) C (+ 8°F) C (+ 8°F) T (+ 8 | 24 ga. °C 204° 371° 427° 871° 1482°                     | °F<br>400°<br>700°<br>800°<br>1600°<br><br>2700°          | °C<br>204°<br>371°<br>427°<br>871°<br> | 400°<br>700°<br>800°<br>1600°<br> |
| Pyro<br>Type<br>G<br>C<br>M<br>N<br>D<br>P<br>Therr<br>Type<br>Type<br>Type<br>Type<br>Type<br>Type<br>Type<br>Type | W-W. 26%, Re  W, 5% Re-W, 26% Re  Nickel - Nickel, 18% Moly  Nicrosil - Nisil  W, 3% Re-W, 25% Re  Platinel II (Platinel 5355/ Platinel 7674)  Recommended Temperature  (Copper-Constantan) (Iron-Constantan) (Chromel-Constantan) (Chromel-Alumel) M (Nickel-Nickel, 18% Moly) N (Nicrosil-Nisil) R and Type S 3 idium 600% Rhodium-Iridium | Limits<br>Minimu<br>Temper<br>°C<br>-184°<br>-18°<br>-18°<br>-18°<br>-18°<br>-18°<br>-18° | rature  °F  -300°  -0°  -300°  -0°  -0°  -0°  -0° | Range, °C (° 0 to 427 (32 427 to 2316 0 to 427 (32 427 to 2316 0 to 1287 (32 0 to 1250 (32 0 to 427 (32 427 to 2316 0 to 600 (32 600 to 700 ( 700 to 1300  cted Thermo  8 ga.  °C  "C  "1 1260° 1 1260° 2       | F) to 800) (800 to 4200) to 800) (800 to 4200) 2 to 2250) 2 to 2282) to 800) (800 to 4200) to 1112) 1112 to 1292) (1292 to 2372) couples 11 ga. 14 ga. F °C 400° 593° 600° 649° 300° 1093° 1287° 1093° | (All Others)                       | ±4.4°C ±1% ±4.4°C ±1%  ± 4.4°C ±1%  ± .75% ± 2.2°C ± .75% ± 4.4°C ± 1.00 ± 0.100 ± 0.150 ± 0.200  20 ga. °C 260° 482° 538° 982° 982° | C (+ 8°F) C (+ 8°F) C (+ 8°F) C (+ 8°F) MV nV Maximu  °F 500° 900° 1000° 1800° 1800°   | 24 ga. °C 204° 371° 427° 871° 1482° 1705°               | °F<br>400°<br>700°<br>800°<br>1600°<br><br>2700°<br>3100° | °C 204° 371° 427° 871°                 | 400°<br>700°<br>800°<br>1600<br>  |