

T ° F**Type T Thermocouple** — Copper / Copper-Nickel
reference junctions at 32 °F

Thermoelectric Voltage in Millivolts

| °F | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °F |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| -450 | -6.254 | -6.255 | -6.256 | -6.257 | -6.258 | | | | | | | -450 |
| -440 | -6.240 | -6.242 | -6.243 | -6.245 | -6.247 | -6.248 | -6.250 | -6.251 | -6.252 | -6.253 | -6.254 | -440 |
| -430 | -6.217 | -6.220 | -6.222 | -6.225 | -6.227 | -6.230 | -6.232 | -6.234 | -6.236 | -6.238 | -6.240 | -430 |
| -420 | -6.187 | -6.191 | -6.194 | -6.197 | -6.200 | -6.203 | -6.206 | -6.209 | -6.212 | -6.215 | -6.217 | -420 |
| -410 | -6.150 | -6.154 | -6.158 | -6.162 | -6.166 | -6.170 | -6.173 | -6.177 | -6.180 | -6.184 | -6.187 | -410 |
| -400 | -6.105 | -6.110 | -6.115 | -6.119 | -6.124 | -6.128 | -6.133 | -6.137 | -6.141 | -6.146 | -6.150 | -400 |
| -390 | -6.053 | -6.059 | -6.064 | -6.069 | -6.075 | -6.080 | -6.085 | -6.090 | -6.095 | -6.100 | -6.105 | -390 |
| -380 | -5.994 | -6.001 | -6.007 | -6.013 | -6.019 | -6.025 | -6.030 | -6.036 | -6.042 | -6.047 | -6.053 | -380 |
| -370 | -5.930 | -5.937 | -5.943 | -5.950 | -5.956 | -5.963 | -5.969 | -5.976 | -5.982 | -5.988 | -5.994 | -370 |
| -360 | -5.860 | -5.867 | -5.874 | -5.881 | -5.888 | -5.896 | -5.902 | -5.909 | -5.916 | -5.923 | -5.930 | -360 |
| -350 | -5.785 | -5.792 | -5.800 | -5.808 | -5.815 | -5.823 | -5.830 | -5.838 | -5.845 | -5.853 | -5.860 | -350 |
| -340 | -5.705 | -5.713 | -5.721 | -5.729 | -5.737 | -5.745 | -5.753 | -5.761 | -5.769 | -5.777 | -5.785 | -340 |
| -330 | -5.620 | -5.629 | -5.638 | -5.646 | -5.655 | -5.663 | -5.672 | -5.680 | -5.688 | -5.697 | -5.705 | -330 |
| -320 | -5.532 | -5.541 | -5.550 | -5.559 | -5.568 | -5.577 | -5.585 | -5.594 | -5.603 | -5.612 | -5.620 | -320 |
| -310 | -5.439 | -5.448 | -5.458 | -5.467 | -5.476 | -5.486 | -5.495 | -5.504 | -5.513 | -5.523 | -5.532 | -310 |
| -300 | -5.341 | -5.351 | -5.361 | -5.371 | -5.381 | -5.391 | -5.400 | -5.410 | -5.420 | -5.429 | -5.439 | -300 |
| -290 | -5.240 | -5.250 | -5.261 | -5.271 | -5.281 | -5.291 | -5.301 | -5.312 | -5.322 | -5.332 | -5.341 | -290 |
| -280 | -5.135 | -5.145 | -5.156 | -5.167 | -5.177 | -5.188 | -5.198 | -5.209 | -5.219 | -5.230 | -5.240 | -280 |
| -270 | -5.025 | -5.036 | -5.048 | -5.059 | -5.070 | -5.081 | -5.091 | -5.102 | -5.113 | -5.124 | -5.135 | -270 |
| -260 | -4.912 | -4.923 | -4.935 | -4.946 | -4.958 | -4.969 | -4.980 | -4.992 | -5.003 | -5.014 | -5.025 | -260 |
| -250 | -4.794 | -4.806 | -4.818 | -4.830 | -4.842 | -4.854 | -4.865 | -4.877 | -4.889 | -4.900 | -4.912 | -250 |
| -240 | -4.673 | -4.685 | -4.698 | -4.710 | -4.722 | -4.734 | -4.746 | -4.759 | -4.771 | -4.783 | -4.794 | -240 |
| -230 | -4.548 | -4.561 | -4.573 | -4.586 | -4.599 | -4.611 | -4.624 | -4.636 | -4.648 | -4.661 | -4.673 | -230 |
| -220 | -4.419 | -4.432 | -4.445 | -4.458 | -4.471 | -4.484 | -4.497 | -4.510 | -4.523 | -4.535 | -4.548 | -220 |
| -210 | -4.286 | -4.300 | -4.313 | -4.326 | -4.340 | -4.353 | -4.366 | -4.380 | -4.393 | -4.406 | -4.419 | -210 |
| -200 | -4.149 | -4.163 | -4.177 | -4.191 | -4.205 | -4.218 | -4.232 | -4.246 | -4.259 | -4.273 | -4.286 | -200 |
| -190 | -4.009 | -4.023 | -4.037 | -4.052 | -4.066 | -4.080 | -4.094 | -4.108 | -4.122 | -4.136 | -4.149 | -190 |
| -180 | -3.865 | -3.879 | -3.894 | -3.908 | -3.923 | -3.937 | -3.952 | -3.966 | -3.980 | -3.995 | -4.009 | -180 |
| -170 | -3.717 | -3.732 | -3.747 | -3.762 | -3.777 | -3.791 | -3.806 | -3.821 | -3.836 | -3.850 | -3.865 | -170 |
| -160 | -3.565 | -3.581 | -3.596 | -3.611 | -3.626 | -3.642 | -3.657 | -3.672 | -3.687 | -3.702 | -3.717 | -160 |
| -150 | -3.410 | -3.426 | -3.441 | -3.457 | -3.473 | -3.488 | -3.504 | -3.519 | -3.535 | -3.550 | -3.565 | -150 |
| -140 | -3.251 | -3.267 | -3.283 | -3.299 | -3.315 | -3.331 | -3.347 | -3.363 | -3.379 | -3.394 | -3.410 | -140 |
| -130 | -3.089 | -3.105 | -3.122 | -3.138 | -3.154 | -3.171 | -3.187 | -3.203 | -3.219 | -3.235 | -3.251 | -130 |
| -120 | -2.923 | -2.940 | -2.956 | -2.973 | -2.990 | -3.006 | -3.023 | -3.040 | -3.056 | -3.072 | -3.089 | -120 |
| -110 | -2.754 | -2.771 | -2.788 | -2.805 | -2.822 | -2.839 | -2.856 | -2.873 | -2.889 | -2.906 | -2.923 | -110 |
| -100 | -2.581 | -2.598 | -2.616 | -2.633 | -2.651 | -2.668 | -2.685 | -2.702 | -2.719 | -2.737 | -2.754 | -100 |
| -90 | -2.405 | -2.423 | -2.440 | -2.458 | -2.476 | -2.493 | -2.511 | -2.529 | -2.546 | -2.564 | -2.581 | -90 |
| -80 | -2.225 | -2.244 | -2.262 | -2.280 | -2.298 | -2.316 | -2.334 | -2.351 | -2.369 | -2.387 | -2.405 | -80 |
| -70 | -2.043 | -2.061 | -2.079 | -2.098 | -2.116 | -2.134 | -2.153 | -2.171 | -2.189 | -2.207 | -2.225 | -70 |

T ° F**Type T Thermocouple** — Copper / Copper-Nickel
reference junctions at 32 °F

Thermoelectric Voltage in Millivolts

| °F | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °F |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| -60 | -1.857 | -1.875 | -1.894 | -1.913 | -1.931 | -1.950 | -1.969 | -1.987 | -2.006 | -2.024 | -2.043 | -60 |
| -50 | -1.667 | -1.686 | -1.705 | -1.724 | -1.743 | -1.762 | -1.781 | -1.800 | -1.819 | -1.838 | -1.857 | -50 |
| -40 | -1.475 | -1.494 | -1.514 | -1.533 | -1.552 | -1.572 | -1.591 | -1.610 | -1.629 | -1.648 | -1.667 | -40 |
| -30 | -1.279 | -1.299 | -1.319 | -1.338 | -1.358 | -1.378 | -1.397 | -1.417 | -1.436 | -1.456 | -1.475 | -30 |
| -20 | -1.081 | -1.101 | -1.121 | -1.141 | -1.161 | -1.181 | -1.200 | -1.220 | -1.240 | -1.260 | -1.279 | -20 |
| -10 | -0.879 | -0.900 | -0.920 | -0.940 | -0.960 | -0.980 | -1.001 | -1.021 | -1.041 | -1.061 | -1.081 | -10 |
| 0 | -0.675 | -0.695 | -0.716 | -0.736 | -0.757 | -0.777 | -0.798 | -0.818 | -0.839 | -0.859 | -0.879 | 0 |
| 0 | -0.675 | -0.654 | -0.633 | -0.613 | -0.592 | -0.571 | -0.550 | -0.530 | -0.509 | -0.488 | -0.467 | 0 |
| 10 | -0.467 | -0.446 | -0.425 | -0.404 | -0.383 | -0.362 | -0.341 | -0.320 | -0.299 | -0.278 | -0.256 | 10 |
| 20 | -0.256 | -0.235 | -0.214 | -0.193 | -0.171 | -0.150 | -0.129 | -0.107 | -0.086 | -0.064 | -0.043 | 20 |
| 30 | -0.043 | -0.022 | 0.000 | 0.022 | 0.043 | 0.065 | 0.086 | 0.108 | 0.130 | 0.151 | 0.173 | 30 |
| 40 | 0.173 | 0.195 | 0.216 | 0.238 | 0.260 | 0.282 | 0.303 | 0.325 | 0.347 | 0.369 | 0.391 | 40 |
| 50 | 0.391 | 0.413 | 0.435 | 0.457 | 0.479 | 0.501 | 0.523 | 0.545 | 0.567 | 0.589 | 0.611 | 50 |
| 60 | 0.611 | 0.634 | 0.656 | 0.678 | 0.700 | 0.723 | 0.745 | 0.767 | 0.790 | 0.812 | 0.834 | 60 |
| 70 | 0.834 | 0.857 | 0.879 | 0.902 | 0.924 | 0.947 | 0.969 | 0.992 | 1.015 | 1.037 | 1.060 | 70 |
| 80 | 1.060 | 1.083 | 1.105 | 1.128 | 1.151 | 1.174 | 1.196 | 1.219 | 1.242 | 1.265 | 1.288 | 80 |
| 90 | 1.288 | 1.311 | 1.334 | 1.357 | 1.380 | 1.403 | 1.426 | 1.449 | 1.472 | 1.496 | 1.519 | 90 |
| 100 | 1.519 | 1.542 | 1.565 | 1.588 | 1.612 | 1.635 | 1.658 | 1.682 | 1.705 | 1.729 | 1.752 | 100 |
| 110 | 1.752 | 1.776 | 1.799 | 1.823 | 1.846 | 1.870 | 1.893 | 1.917 | 1.941 | 1.964 | 1.988 | 110 |
| 120 | 1.988 | 2.012 | 2.036 | 2.060 | 2.083 | 2.107 | 2.131 | 2.155 | 2.179 | 2.203 | 2.227 | 120 |
| 130 | 2.227 | 2.251 | 2.275 | 2.299 | 2.323 | 2.347 | 2.371 | 2.395 | 2.420 | 2.444 | 2.468 | 130 |
| 140 | 2.468 | 2.492 | 2.517 | 2.541 | 2.565 | 2.590 | 2.614 | 2.639 | 2.663 | 2.687 | 2.712 | 140 |
| 150 | 2.712 | 2.737 | 2.761 | 2.786 | 2.810 | 2.835 | 2.860 | 2.884 | 2.909 | 2.934 | 2.958 | 150 |
| 160 | 2.958 | 2.983 | 3.008 | 3.033 | 3.058 | 3.082 | 3.107 | 3.132 | 3.157 | 3.182 | 3.207 | 160 |
| 170 | 3.207 | 3.232 | 3.257 | 3.282 | 3.307 | 3.333 | 3.358 | 3.383 | 3.408 | 3.433 | 3.459 | 170 |
| 180 | 3.459 | 3.484 | 3.509 | 3.534 | 3.560 | 3.585 | 3.610 | 3.636 | 3.661 | 3.687 | 3.712 | 180 |
| 190 | 3.712 | 3.738 | 3.763 | 3.789 | 3.814 | 3.840 | 3.866 | 3.891 | 3.917 | 3.943 | 3.968 | 190 |
| 200 | 3.968 | 3.994 | 4.020 | 4.046 | 4.071 | 4.097 | 4.123 | 4.149 | 4.175 | 4.201 | 4.227 | 200 |
| 210 | 4.227 | 4.253 | 4.279 | 4.305 | 4.331 | 4.357 | 4.383 | 4.409 | 4.435 | 4.461 | 4.487 | 210 |
| 220 | 4.487 | 4.513 | 4.540 | 4.566 | 4.592 | 4.618 | 4.645 | 4.671 | 4.697 | 4.724 | 4.750 | 220 |
| 230 | 4.750 | 4.776 | 4.803 | 4.829 | 4.856 | 4.882 | 4.909 | 4.935 | 4.962 | 4.988 | 5.015 | 230 |
| 240 | 5.015 | 5.042 | 5.068 | 5.095 | 5.122 | 5.148 | 5.175 | 5.202 | 5.228 | 5.255 | 5.282 | 240 |
| 250 | 5.282 | 5.309 | 5.336 | 5.363 | 5.389 | 5.416 | 5.443 | 5.470 | 5.497 | 5.524 | 5.551 | 250 |
| 260 | 5.551 | 5.578 | 5.605 | 5.632 | 5.660 | 5.687 | 5.714 | 5.741 | 5.768 | 5.795 | 5.823 | 260 |
| 270 | 5.823 | 5.850 | 5.877 | 5.904 | 5.932 | 5.959 | 5.986 | 6.014 | 6.041 | 6.068 | 6.096 | 270 |
| 280 | 6.096 | 6.123 | 6.151 | 6.178 | 6.206 | 6.233 | 6.261 | 6.288 | 6.316 | 6.343 | 6.371 | 280 |
| 290 | 6.371 | 6.399 | 6.426 | 6.454 | 6.482 | 6.510 | 6.537 | 6.565 | 6.593 | 6.621 | 6.648 | 290 |
| 300 | 6.648 | 6.676 | 6.704 | 6.732 | 6.760 | 6.788 | 6.816 | 6.844 | 6.872 | 6.900 | 6.928 | 300 |
| 310 | 6.928 | 6.956 | 6.984 | 7.012 | 7.040 | 7.068 | 7.096 | 7.124 | 7.152 | 7.181 | 7.209 | 310 |
| 320 | 7.209 | 7.237 | 7.265 | 7.294 | 7.322 | 7.350 | 7.378 | 7.407 | 7.435 | 7.463 | 7.492 | 320 |
| 330 | 7.492 | 7.520 | 7.549 | 7.577 | 7.606 | 7.634 | 7.663 | 7.691 | 7.720 | 7.748 | 7.777 | 330 |
| 340 | 7.777 | 7.805 | 7.834 | 7.863 | 7.891 | 7.920 | 7.949 | 7.977 | 8.006 | 8.035 | 8.064 | 340 |

T ° F

Type T Thermocouple — Copper / Copper-Nickel reference junctions at 32 °F

Thermoelectric Voltage in Millivolts

| °F | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °F |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| 350 | 8.064 | 8.092 | 8.121 | 8.150 | 8.179 | 8.208 | 8.237 | 8.266 | 8.294 | 8.323 | 8.352 | 350 |
| 360 | 8.352 | 8.381 | 8.410 | 8.439 | 8.468 | 8.497 | 8.526 | 8.555 | 8.585 | 8.614 | 8.643 | 360 |
| 370 | 8.643 | 8.672 | 8.701 | 8.730 | 8.759 | 8.789 | 8.818 | 8.847 | 8.876 | 8.906 | 8.935 | 370 |
| 380 | 8.935 | 8.964 | 8.994 | 9.023 | 9.052 | 9.082 | 9.111 | 9.141 | 9.170 | 9.200 | 9.229 | 380 |
| 390 | 9.229 | 9.259 | 9.288 | 9.318 | 9.347 | 9.377 | 9.406 | 9.436 | 9.466 | 9.495 | 9.525 | 390 |
| 400 | 9.525 | 9.555 | 9.584 | 9.614 | 9.644 | 9.673 | 9.703 | 9.733 | 9.763 | 9.793 | 9.822 | 400 |
| 410 | 9.822 | 9.852 | 9.882 | 9.912 | 9.942 | 9.972 | 10.002 | 10.032 | 10.062 | 10.092 | 10.122 | 410 |
| 420 | 10.122 | 10.152 | 10.182 | 10.212 | 10.242 | 10.272 | 10.302 | 10.332 | 10.362 | 10.392 | 10.423 | 420 |
| 430 | 10.423 | 10.453 | 10.483 | 10.513 | 10.543 | 10.574 | 10.604 | 10.634 | 10.664 | 10.695 | 10.725 | 430 |
| 440 | 10.725 | 10.755 | 10.786 | 10.816 | 10.847 | 10.877 | 10.907 | 10.938 | 10.968 | 10.999 | 11.029 | 440 |
| 450 | 11.029 | 11.060 | 11.090 | 11.121 | 11.151 | 11.182 | 11.213 | 11.243 | 11.274 | 11.304 | 11.335 | 450 |
| 460 | 11.335 | 11.366 | 11.396 | 11.427 | 11.458 | 11.489 | 11.519 | 11.550 | 11.581 | 11.612 | 11.643 | 460 |
| 470 | 11.643 | 11.673 | 11.704 | 11.735 | 11.766 | 11.797 | 11.828 | 11.859 | 11.890 | 11.920 | 11.951 | 470 |
| 480 | 11.951 | 11.982 | 12.013 | 12.044 | 12.075 | 12.106 | 12.138 | 12.169 | 12.200 | 12.231 | 12.262 | 480 |
| 490 | 12.262 | 12.293 | 12.324 | 12.355 | 12.386 | 12.418 | 12.449 | 12.480 | 12.511 | 12.543 | 12.574 | 490 |
| 500 | 12.574 | 12.605 | 12.636 | 12.668 | 12.699 | 12.730 | 12.762 | 12.793 | 12.824 | 12.856 | 12.887 | 500 |
| 510 | 12.887 | 12.919 | 12.950 | 12.982 | 13.013 | 13.045 | 13.076 | 13.108 | 13.139 | 13.171 | 13.202 | 510 |
| 520 | 13.202 | 13.234 | 13.265 | 13.297 | 13.328 | 13.360 | 13.392 | 13.423 | 13.455 | 13.487 | 13.518 | 520 |
| 530 | 13.518 | 13.550 | 13.582 | 13.614 | 13.645 | 13.677 | 13.709 | 13.741 | 13.772 | 13.804 | 13.836 | 530 |
| 540 | 13.836 | 13.868 | 13.900 | 13.932 | 13.964 | 13.995 | 14.027 | 14.059 | 14.091 | 14.123 | 14.155 | 540 |
| 550 | 14.155 | 14.187 | 14.219 | 14.251 | 14.283 | 14.315 | 14.347 | 14.379 | 14.411 | 14.444 | 14.476 | 550 |
| 560 | 14.476 | 14.508 | 14.540 | 14.572 | 14.604 | 14.636 | 14.669 | 14.701 | 14.733 | 14.765 | 14.797 | 560 |
| 570 | 14.797 | 14.830 | 14.862 | 14.894 | 14.926 | 14.959 | 14.991 | 15.023 | 15.056 | 15.088 | 15.121 | 570 |
| 580 | 15.121 | 15.153 | 15.185 | 15.218 | 15.250 | 15.283 | 15.315 | 15.347 | 15.380 | 15.412 | 15.445 | 580 |
| 590 | 15.445 | 15.477 | 15.510 | 15.543 | 15.575 | 15.608 | 15.640 | 15.673 | 15.705 | 15.738 | 15.771 | 590 |
| 600 | 15.771 | 15.803 | 15.836 | 15.869 | 15.901 | 15.934 | 15.967 | 15.999 | 16.032 | 16.065 | 16.098 | 600 |
| 610 | 16.098 | 16.130 | 16.163 | 16.196 | 16.229 | 16.262 | 16.295 | 16.327 | 16.360 | 16.393 | 16.426 | 610 |
| 620 | 16.426 | 16.459 | 16.492 | 16.525 | 16.558 | 16.591 | 16.624 | 16.657 | 16.690 | 16.723 | 16.756 | 620 |
| 630 | 16.756 | 16.789 | 16.822 | 16.855 | 16.888 | 16.921 | 16.954 | 16.987 | 17.020 | 17.053 | 17.086 | 630 |
| 640 | 17.086 | 17.120 | 17.153 | 17.186 | 17.219 | 17.252 | 17.286 | 17.319 | 17.352 | 17.385 | 17.418 | 640 |
| 650 | 17.418 | 17.452 | 17.485 | 17.518 | 17.552 | 17.585 | 17.618 | 17.652 | 17.685 | 17.718 | 17.752 | 650 |
| 660 | 17.752 | 17.785 | 17.819 | 17.852 | 17.886 | 17.919 | 17.952 | 17.986 | 18.019 | 18.053 | 18.086 | 660 |
| 670 | 18.086 | 18.120 | 18.154 | 18.187 | 18.221 | 18.254 | 18.288 | 18.321 | 18.355 | 18.389 | 18.422 | 670 |
| 680 | 18.422 | 18.456 | 18.490 | 18.523 | 18.557 | 18.591 | 18.624 | 18.658 | 18.692 | 18.725 | 18.759 | 680 |
| 690 | 18.759 | 18.793 | 18.827 | 18.861 | 18.894 | 18.928 | 18.962 | 18.996 | 19.030 | 19.064 | 19.097 | 690 |
| 700 | 19.097 | 19.131 | 19.165 | 19.199 | 19.233 | 19.267 | 19.301 | 19.335 | 19.369 | 19.403 | 19.437 | 700 |
| 710 | 19.437 | 19.471 | 19.505 | 19.539 | 19.573 | 19.607 | 19.641 | 19.675 | 19.709 | 19.743 | 19.777 | 710 |
| 720 | 19.777 | 19.811 | 19.845 | 19.879 | 19.913 | 19.947 | 19.982 | 20.016 | 20.050 | 20.084 | 20.118 | 720 |
| 730 | 20.118 | 20.152 | 20.187 | 20.221 | 20.255 | 20.289 | 20.323 | 20.358 | 20.392 | 20.426 | 20.460 | 730 |
| 740 | 20.460 | 20.495 | 20.529 | 20.563 | 20.597 | 20.632 | 20.666 | 20.700 | 20.735 | 20.769 | 20.803 | 740 |
| 750 | 20.803 | 20.838 | 20.872 | | | | | | | | | 750 |
| °F | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °F |

