# MCS-T100-L-xx
## Description & Specifications

Part # **MCS-T100-L**

## Description

The **MCS-T100-L** probe is an extremely fast acting thermistor packaged in a watertight stainless steel deep drawn tube. The sensor is potted with thermally conductive RTV Cure Silicon Adhesive to guarantee durability and response. Its high accuracy allows for interchangeability in the field.

The large resistance range allows the use of over 1000' of cable with no noticeable effect. By placing a 100,000 ohms resister between signal and ground the sensor may be used in a three wire input mode. The table below provides a cross reference between °F, ohms, and vdc at sensor input pin (S1) of MCS micro controller.

## Specifications

Standard Temperature Range .....-60ºF to +48ºF (-51º to 9ºC)
Standard Temperature Accuracy ..±0.36ºF (±0.2°C)
Resistance Range .....743K to 21.0 K
Response Time (–60ºF to 48ºF) ...22 sec (in liquid)
Response Time (48ºF to –60ºF) ...30 sec (in liquid)
Input Voltage.....5vdc
Sensor Resistance .....10,000 ohms @ 77ºF (25°C)

### Housing Specifications:

Dimensions..... 0.187"OD x 1.5"L
Material..... 305 Stainless Steel
Environmental rating..... Waterproof to IP68
Testing ..... 10,000 freeze/thaw thermal cycles

### Cable:

Length.....20' or 40'
Wire .....2 conductor 22 awg stranded
Shield.....Foil shield with 25% overlap
Drain.....Stranded tinned copper drain

**Part number description when ordering (MCS-T100-xx)**
**xx.....20', 40', 100' and 200' wire length.**

### Temperature to Resistance to VDC Chart

| Temp (°F / °C) | Resist (kΩ) | S1 (vdc) |
|---|---|---|
| -60/-51 | 743.4 | 0.593 |
| -59/-50.5 | 714.1 | 0.614 |
| -58/-50 | 686.0 | 0.636 |
| -57/-49.4 | 659.1 | 0.659 |
| -56/-48.9 | 633.4 | 0.682 |
| -55/-48.3 | 608.8 | 0.705 |
| -54/-47.8 | 585.2 | 0.730 |
| -53/-47.2 | 562.7 | 0.755 |
| -52/-46.7 | 541.1 | 0.780 |
| -51/-46.1 | 520.4 | 0.806 |
| -50/-45.5 | 500.6 | 0.833 |
| -49/-45 | 481.6 | 0.850 |
| -48/-44.44 | 463.4 | 0.888 |
| -47/-43.89 | 445.9 | 0.916 |
| -46/-43.33 | 429.2 | 0.945 |
| -45/-42.78 | 413.1 | 0.974 |
| -44/-42.22 | 397.8 | 1.005 |
| -43/-41.67 | 383.0 | 1.035 |

| Temp (°F) | Resist (kΩ) | S1 (vdc) |
|---|---|---|
| -42/-41.1 | 368.9 | 1.066 |
| -41/-40.5 | 355.3 | 1.098 |
| -40/-40 | 342.3 | 1.131 |
| -39/-39.4 | 329.8 | 1.163 |
| -38/-38.9 | 317.8 | 1.197 |
| -37/-38.3 | 306.3 | 1.231 |
| -36/-37.8 | 295.2 | 1.265 |
| -35/-37.2 | 284.6 | 1.300 |
| -34/-36.7 | 274.4 | 1.335 |
| -33/-36.1 | 264.6 | 1.371 |
| -32/-35.5 | 255.2 | 1.408 |
| -31/-35 | 246.2 | 1.444 |
| -30/-34.4 | 237.5 | 1.482 |
| -29/-33.9 | 229.1 | 1.519 |
| -28/-33.3 | 221.1 | 1.557 |
| -27/-32.8 | 213.4 | 1.595 |
| -26/-32.2 | 206.0 | 1.634 |
| -25/-31.7 | 198.9 | 1.673 |

| Temp (°F) | Resist (kΩ) | S1 (vdc) |
|---|---|---|
| -24/-31.1 | 192.0 | 1.712 |
| -23/-30.5 | 185.4 | 1.752 |
| -22/-30 | 179.1 | 1.792 |
| -21/-29.4 | 173.0 | 1.832 |
| -20/-28.9 | 167.1 | 1.872 |
| -19/-28.3 | 161.4 | 1.913 |
| -18/-27.8 | 156.0 | 1.953 |
| -17/-27.2 | 150.8 | 1.994 |
| -16/-26.7 | 145.7 | 2.035 |
| -15/-26.1 | 140.9 | 2.076 |
| -14/-25.5 | 136.2 | 2.117 |
| -13/-25 | 131.7 | 2.158 |
| -12/-24.4 | 127.3 | 2.199 |
| -11/-23.9 | 123.1 | 2.241 |
| -10/-23.3 | 119.1 | 2.282 |
| -9/-22.8 | 115.2 | 2.323 |
| -8/-22.2 | 111.5 | 2.364 |
| -7/-21.7 | 107.9 | 2.405 |

| Temp (°F) | Resist (kΩ) | S1 (vdc) |
|---|---|---|
| -6/-21.1 | 104.4 | 2.446 |
| -5/-20.5 | 101.1 | 2.487 |
| -4/-20 | 97.8 | 2.582 |
| -3/-19.4 | 94.7 | 2.568 |
| -2/-19 | 91.7 | 2.608 |
| -1/-18.3 | 88.8 | 2.648 |
| 0/-17.8 | 86.0 | 2.688 |
| 1/-17.2 | 83.3 | 2.728 |
| 2/-16.7 | 80.7 | 2.767 |
| 3/-16.1 | 78.2 | 2.806 |
| 4/-15.5 | 75.7 | 2.845 |
| 5/-15 | 73.4 | 2.884 |
| 6/-14.4 | 71.1 | 2.922 |
| 7/-13.9 | 68.9 | 2.960 |
| 8/-13.3 | 66.8 | 2.997 |
| 9/-12.8 | 64.8 | 3.034 |
| 10/-12.2 | 62.8 | 3.071 |
| 11/-11.7 | 60.9 | 3.107 |

| Temp (°F) | Resist (kΩ) | S1 (vdc) |
|---|---|---|
| 12/-11.1 | 59.1 | 3.143 |
| 13/-10.5 | 57.3 | 3.179 |
| 14/-10 | 55.6 | 3.214 |
| 15-9.4 | 53.9 | 3.248 |
| 16/-8.9 | 52.3 | 3.283 |
| 17/-8.3 | 50.8 | 3.316 |
| 18/-7.8 | 49.3 | 3.350 |
| 19/-7.2 | 47.8 | 3.383 |
| 20/-6.7 | 46.4 | 3.415 |
| 21/-6.1 | 45.1 | 3.447 |
| 22/-5.5 | 43.7 | 3.478 |
| 23/-5 | 42.5 | 3.509 |
| 24/-4.4 | 41.2 | 3.540 |
| 25/-3.9 | 40.1 | 3.570 |
| 26/-3.3 | 38.9 | 3.600 |
| 27/-2.8 | 37.8 | 3.629 |
| 28/-2.2 | 36.7 | 3.657 |
| 29/-1.7 | 35.7 | 3.685 |

| Temp (°F) | Resist (kΩ) | S1 (vdc) |
|---|---|---|
| 30/-1.1 | 34.7 | 3.713 |
| 31/-0.5 | 33.7 | 3.740 |
| 32/0 | 32.7 | 3.767 |
| 33/0.5 | 31.8 | 3.793 |
| 34/1.1 | 30.9 | 3.819 |
| 35/1.7 | 30.1 | 3.844 |
| 36/2.2 | 29.2 | 3.869 |
| 37/2.8 | 28.4 | 3.893 |
| 38/3.3 | 27.6 | 3.917 |
| 39/3.9 | 26.9 | 3.940 |
| 40/4.4 | 726.2 | 3.963 |
| 41/5 | 25.4 | 3.986 |
| 42/5.5 | 24.7 | 4.008 |
| 43/6.1 | 24.1 | 4.030 |
| 44/6.7 | 23.4 | 4.051 |
| 45/7.2 | 22.8 | 4.072 |
| 46/7.8 | 22.2 | 4.092 |
| 47/8.3 | 21.6 | 4.112 |
| 48/8.9 | 21.0 | 4.131 |

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