



# MCS-T100

## Description & Specifications



Part # **MCS-T100**

### Specifications

Standard Temperature Range.....+32°F to +158°F (0°C to +70°C)  
 Standard Temperature Accuracy .. ±0.36°F (±0.2°C)  
 Extended Temperature Range..... -40°F to +248°F  
 (-40°C to 120°C)  
 Extended Temperature Accuracy.. ±1.5°F (±0.8°C)  
 Resistance Range ..... 4 Megohms to 3K ohms  
 Response Time (32 to 212°F)..... 22 sec (in liquid)  
 Response Time (212 to 32°F)..... 30 sec (in liquid)  
 Input Voltage..... 5vdc  
 Sensor Resistance ..... 100,000 ohms @ 77°F (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', 40', 60', 100' and 150'  
 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', 60', 100' or 150' wire length

### Packaging (weight and dimension are approx)

Ship Weight 20 ft ..... .3 lb Bag Dim. 12 X 8.5 X .5"  
 Ship Weight 40 ft ..... .55 lb Bag Dim. 12 X 8.5 X 1.25"  
 Ship Weight 60 ft ..... .85 lb Bag Dim. 12 X 8.5 X 1.5"  
 Ship Weight 100 ft ..... 1.00 lb Bag Dim. 12 X 8.5 X 1.75"  
 Ship Weight 150 ft ..... 2.07 lb Bag Dim. 12 X 8.5 X 1.75"

### Description

The **MCS-T100** is an extremely fast acting temperature sensor built for demanding environments. It is ideal for high moisture locations with continuous freeze and thaw cycles. The sensor is potted with a 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 ohm resistor between signal and ground the sensor may be used in a three wire input mode. The table below provides a cross reference between °F/°C, ohms, and voltage on a sensor input pin (S1) of a MCS micro controller.

### Temperature to Resistance to VDC Chart

Temp °F	Temp °C	Resist (ohms)	Voltage on MCS
-40	-40.0	4,071,362	0.120
-35	-37.2	3,362,784	0.144
-30	-34.4	2,787,185	0.173
-25	-31.7	2,317,936	0.207
-20	-28.9	1,934,054	0.246
-15	-26.1	1,618,941	0.291
-10	-23.3	1,359,420	0.343
-5	-20.6	1,144,994	0.402
0	-17.8	967,267	0.468
5	-15.0	819,505	0.544
10	-12.2	696,288	0.628
15	-9.4	593,236	0.721
20	-6.7	506,804	0.824
25	-3.9	434,108	0.936
30	-1.1	372,798	1.058

Temp °F	Temp °C	Resist (ohms)	Voltage on MCS
32	0.0	351,019	1.109
35	1.7	320,953	1.188
40	4.4	276,997	1.326
45	7.2	239,636	1.472
50	10.0	207,801	1.624
55	12.8	180,608	1.782
60	15.6	157,326	1.943
65	18.3	137,345	2.107
70	21.1	120,159	2.271
75	23.9	105,344	2.435
77	25.0	100,000	2.500
80	26.7	92,544	2.597
85	29.4	81,463	2.755
90	32.2	71,849	2.910
95	35.0	63,491	3.058

Temp °F	Temp °C	Resist (ohms)	Voltage on MCS
100	37.8	56,211	3.201
105	40.6	49,857	3.337
110	43.3	44,300	3.465
115	46.1	39,432	3.586
120	48.9	35,160	3.699
122	50.0	33,599	3.743
125	51.7	31,403	3.805
130	54.4	28,094	3.903
135	57.2	25,174	3.994
140	60.0	22,594	4.079
145	62.8	20,309	4.156
150	65.6	18,284	4.227
155	68.3	16,484	4.292
160	71.1	14,884	4.352
165	73.9	13,458	4.407

Temp °F	Temp °C	Resist (ohms)	Voltage on MCS
170	76.7	12,186	4.457
175	79.4	11,049	4.503
180	82.2	10,032	4.544
185	85.0	9,121	4.582
190	87.8	8,303	4.617
195	90.6	7,568	4.648
200	93.3	6,906	4.677
205	96.1	6,310	4.703
210	98.9	5,773	4.727
215	101.7	5,287	4.749
220	104.4	4,848	4.769
225	107.2	4,451	4.787
230	110.0	4,090	4.804
235	112.8	3,763	4.819
240	115.6	3,466	4.833