



APPLICATION NOTE

APP #158

MCS-10KZS-3 TEMPERATURE SENSOR

Introduction

The **MCS-TEMP-10KZS-3 temperature sensor** 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 moisture and vibration resistant material 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.



Requirements

1. Any *10k Ω curve Z temperature sensors that matches the table on next page.
2. A 10k Ω resistor, preferred 1% tolerance.
3. A sensor input terminal on MCS controls.
4. An appropriate length of 2 wire shielded cable.
5. MCS Magnum controller with **Software Version 17.40 or higher.**
6. MCS-Connect **Software Version 18.40 or higher.**
7. MCS-Config **Software Version 18.14 or higher.**

*York - YVAA, YVWA, YCAV and YAGK compressor Motor NTC'S can also be supported.

*Mammoth Inc. Temperature Sensor 15040772 can also be supported.

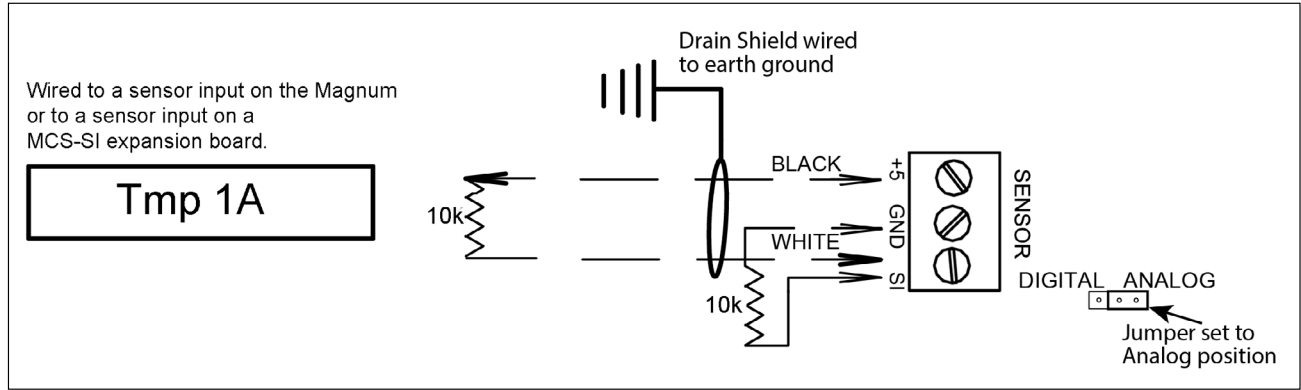
Any questions regarding this release, contact: support@mcscontrols.com

Micro Control Systems, Inc. 5580 Enterprise Parkway Fort Myers, Florida 33905
(239)694-0089 FAX: (239)694-0031 www.mcscontrols.com

Information contained in this document has been prepared by Micro Control Systems, Inc. and is copyright © protected 2024.
Copying or distributing this document is prohibited unless expressly approved by MCS.

MCS Magnum

The thermistor is wired to a sensor input on the Magnum or to a sensor input on a MCS-SI expansion board. The drawing below shows the actual wiring to MCS Sensor input. **Set sensor to 'ANALOG' position.**



Step by step wiring:

Sensor End

1. Connect black wire to + 5vdc on MCS sensor input.
2. Connect one end of 10K Ω to ground terminal on MCS sensor.
3. Connect white wire and other side of 10K Ω to sensor signal.
4. Connect drain lead from shielded cable to earth ground.

MCS Cfg or MCS Connect

Use Lookup Table from MCS Connect or MCS-Cfg

Temp ($^{\circ}$ C)

Lookup Table #1			
#	Input Column Counts	Output Column Temp	
1	27	-40	
2	50	-30	
3	88	-20	
4	144	-10	
5	223	0	
6	321	10	
7	422	20	
8	488	25	
9	543	30	
10	646	40	
11	733	50	
12	804	60	
13	859	70	
14	900	80	
15	930	90	
16	953	100	
17	969	110	
18	982	120	
19	991	130	
20	998	140	
21	1004	150	

Temp ($^{\circ}$ F)

Lookup Table #1			
#	Input Column Counts	Output Column Temp	
1	27	-40	
2	50	-22	
3	88	-4	
4	144	14	
5	223	32	
6	321	50	
7	422	68	
8	488	77	
9	543	86	
10	646	104	
11	733	122	
12	804	140	
13	859	158	
14	900	176	
15	930	194	
16	953	212	
17	969	230	
18	982	248	
19	991	266	
20	998	284	
21	1004	302	

Temperature versus ohms Ω Table 1.0

	Temp ($^{\circ}$ C)	Temp ($^{\circ}$ F)	Resistance (Ω)	A/D Counts
1	-40.0	-40.0	336,500	27
2	-30.0	-22.0	176,980	50
3	-20.0	-4.0	97,080	88
4	-10.0	14.0	55,320	144
5	0.0	32.0	32,650	223
6	10.0	50.0	19,900	321
7	20.0	68.0	12,490	423
8	25.0	77.0	10,000	488
9	30.0	86.0	8,057	543
10	40.0	104.0	5,326	646
11	50.0	122.0	3,603	733

	Temp ($^{\circ}$ C)	Temp ($^{\circ}$ F)	Resistance (Ω)	A/D Counts
12	60.0	140.0	2,487	804
13	70.0	158.0	1,751	859
14	80.0	176.0	1,255	900
15	90.0	194.0	916	930
16	100.0	212.0	678	953
17	110.0	230.0	511	969
18	120.0	248.0	390	982
19	130.0	266.0	301	991
20	140.0	284.0	234	998
21	150.0	302.0	184	1004