



APPLICATION NOTE

APP #139

Revision History

Date	Author	Description
2-19-2020	Jeff T.	Setup

Combining T100 Low temp and T100 Temp Sensors into 1 input for -60 to 100 Temp Scale

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This is for low temp applications, so that the sensors can still read accurately during high temp instances.

1. First, you'll need to have 2 sensor inputs, a high temp input (T100), and low temp input (T100L).

M-9	...	BoxTmpHi	MCST100
M10	...	BoxTmpLow	MCST100L

2. Then, you'll need to create 2 lookup tables in Config.

Lookup Tables Setup							
#	Number of Rows	Input Column Name	Output Column Name	Input Column Display Type	Output Column Display Type	Minimum Auth Level	
1	21	BoxTmpHi	HiTmpCntl	TEMP	TEMP	View Only	
2	21	BoxTmpLow	LowTmpCntl	TEMP	TEMP	View Only	
3	0	Input #3	Output #3	Spare	Spare	View Only	
4	0	Input #4	Output #4	Spare	Spare	View Only	
5	0	Input #5	Output #5	Spare	Spare	View Only	

Lookup Table #1			
#	Input Column BoxTmpHi	Output Column HiTmpCntl	
1	-0.1	-80	
2	0	0	
3	5	5	
4	10	10	
5	15	15	
6	20	20	
7	25	25	
8	30	30	
9	35	35	
10	40	40	
11	45	45	
12	50	50	
13	55	55	
14	60	60	
15	65	65	
16	70	70	
17	75	75	
18	80	80	
19	85	85	
20	90	90	
21	100	100	

Note the negative value for the high temp sensor, this will set the value of the sensor to -80 whenever the temp drops below 0.

Lookup Table #2			
#	Input Column BoxTmpLow	Output Column LowTmpCntl	
1	-60	-60	
2	-57	-57	
3	-54	-54	
4	-51	-51	
5	-48	-48	
6	-45	-45	
7	-43	-43	
8	-40	-40	
9	-37	-37	
10	-34	-34	
11	-30	-30	
12	-27	-27	
13	-24	-24	
14	-20	-20	
15	-16	-16	
16	-14	-14	
17	-12	-12	
18	-10	-10	
19	-5	-5	
20	0	0	
21	0.1	-80	

Note the negative values for the low temp sensor. This table will set the low temp sensor to a value of -80, whenever the sensor goes above 0.

3. Next is to create 2 virtual sensors, that will reference the lookup table values.

3-1	...	HiBoxCntl	Lookup_Table_Sl
3-2	...	LowBoxCntl	Lookup_Table_Sl

- You'll set up the lookup table to point to the sensor and reference the scale like shown below.

Lookup Table SI Form

HiBoxCntl

Sensor Display Type (Do this FIRST)

HiBoxCntl =

Lookup Table Input		Lookup Table	
Type	<input type="text" value="SI"/>	Number	<input type="text" value="Lookup Table #1"/>
Point Index	<input type="text" value="BoxTmpHi"/>	Convert Method	<input type="text" value="Estimate Weighted Aver."/>

OK Cancel

The screenshot shows a window titled "Lookup Table SI Form" with a subtitle "LowBoxCntl". It contains the following fields:

- Sensor Display Type (Do this FIRST):** A dropdown menu set to "TEMP".
- LowBoxCntl =** A label followed by two grouped dropdown menus:
 - Lookup Table Input:**
 - Type: "SI"
 - Point Index: "BoxTmpLow"
 - Lookup Table:**
 - Number: "Lookup Table #2"
 - Convert Method: "Estimate Weighted Aver."
- Four right-pointing arrows (">>>>>") are positioned between the two grouped dropdown menus.
- Buttons for "OK" and "Cancel" are at the bottom.

4. With that done, you just need to create a user logic sensor input that will be the High Value of either of the lookup table sensors.

The screenshot shows a horizontal bar with three sections: "M-1", "...", and "Box Temp". To the right of this bar is a separate box labeled "User Logic".

The screenshot shows a window titled "User Logic SI Form" with a subtitle "Box Temp". It contains the following fields:

- Select Display Type (Do this FIRST):** A dropdown menu set to "TEMP".
- Box Temp =** A label followed by two grouped dropdown menus:
 - Operand #1:**
 - Type: "SI"
 - Value: "HiBoxCntl"
 - High Value:** A dropdown menu set to "High Value".
 - Operand #2:**
 - Type: "SI"
 - Value: "LowBoxCntl"
- Buttons for "OK" and "Cancel" are at the bottom.

The box temp sensor input will now look at the low temp sensor whenever the temp is below 0, and the high temp sensor whenever the temp is above 0. You can adjust the scaling of the high temp sensor to go over 100, by adjusting the values in the high lookup table as needed.