**Horner Electric**

Advanced Products Group

Thermocouple Module
Product Specifications
and Installation Data

The Horner Electric Thermocouple Input Modules allow thermocouple temperature sensors to be directly connected to the PLC without external signal processing (transducers, transmitters, etc.). All analog and digital processing of the thermocouple signal is performed on the module, and temperature values in ½ °C increments are written to the 90-30 %AI input table. There are four channel (THM400, THM440) and eight channel (THM800, THM880) modules available. All modules have open thermocouple detection, and two models (THM440, THM880) also have digital inputs which are energized when an open thermocouple condition exists.

THM800.DWG
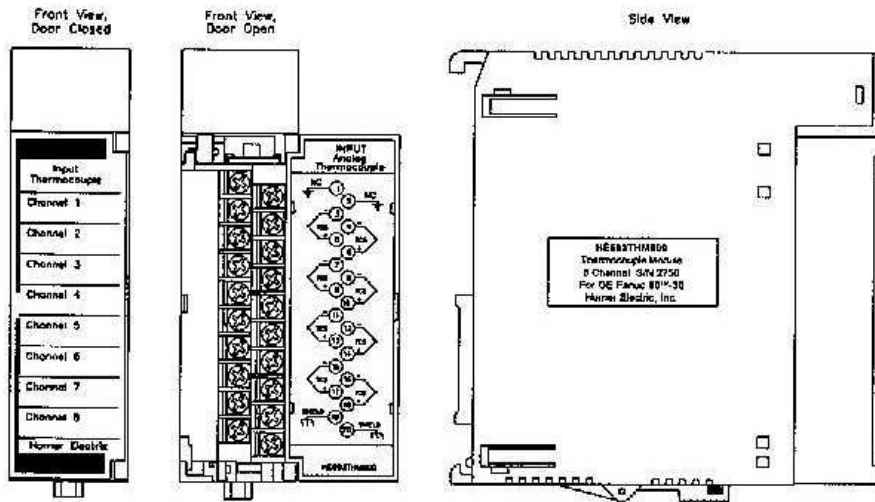
Specification	THM400/[440]	THM800/[880]	Specification	THM400/[440]	THM800/[880]
Power Consumption	100mA @ 5VDC		I/O Points Required	4%AI [& 16%I]	8%AI [& 16%I]
Number of Channels	4	8	Input Impedence	20kohms	
Types Supported	J,K,T		Max Normal Voltage Input	54.875mV (Type K @ 1372°C)	
Input Range (Temp)	J: -210 to +760°C		Maximum Voltage Input	+/- 5VDC or AC	
	K: -270 to +1372°C		A/D Conversion Type	Successive Approximation	
	T: -270 to +400°C		A/D Conversion Time	1 ms	
Resolution	0.5°C		Operating Temperature	0 to 60°C (32 to 140°F)	
Accuracy	+/- 1.0°C		Relative Humidity	5% to 95% non-condensing	

CONFIGURATION

```
 RACK
1 pcm    2 hsc    3 frgn    4 oi    5 apm    6    7    8    9    10

>
         SERIES 90-30 MODULE IN RACK 0 SLOT 2
                           SOFTWARE  CONFIGURATION
 SLOT    Catalog #: FOREIGN                    FOREIGN MODULE
  2
 FRGN
         Module ID  :  3
         %I Ref Adr :  %I0001    Byte 1  : 00000001    Byte 9  : 00
         %I Size    :  0         Byte 2  : 00000100    Byte 10 : 00
         %Q Ref Adr :  %Q0001    Byte 3  : 00          Byte 11 : 00
         %Q Size    :  0         Byte 4  : 00          Byte 12 : 00
         %AI Ref Adr:  %AI001    Byte 5  : 00          Byte 13 : 00
         %AI Size   :  4         Byte 6  : 00          Byte 14 : 00
         %AQ Ref Adr:  %AQ001    Byte 7  : 00          Byte 15 : 00
         %AQ Size   :  0         Byte 8  : 00          Byte 16 : 00


                                  OFFLINE
 D:\LM90\THM                     PRG: THM                    CONFIG VALID
 REPLACE CATS
```

Logicmaster™ 90-30 Foreign Module Configuration. To reach this screen, select I/O Configuration (F1), cursor over to the slot containing the module and select Other (F8), and Foreign (F3).
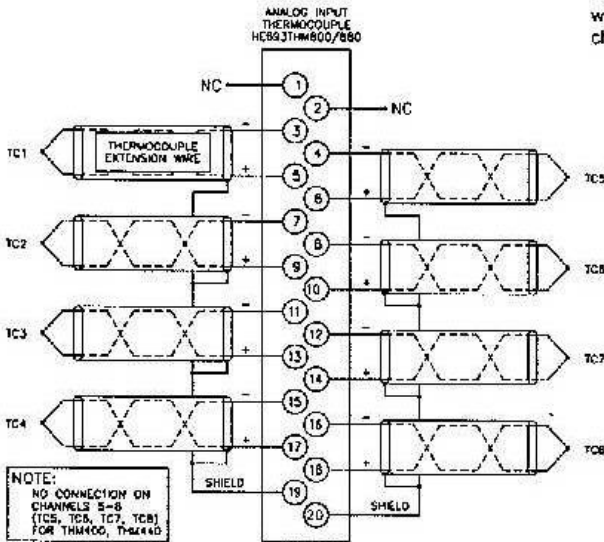
Model	%I Size	%AI Size	Byte 1	Byte 2
HE693THM400	0	4		
HE693THM440	16	4	0001	0000 thru 0111 (see chart)
HE693THM800	0	8		
HE693THM880	16	8		

Configuration Parameters. The four necessary parameters are %I Size, %AI Size, Byte 1, and Byte 2.
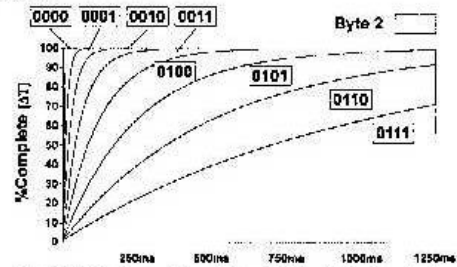
Digital Filtering. The effect of digital filtering (set with Byte 2) on module response to a temperature change. *(% temp change completed vs. time).*

WIRING/INSTALLATION

ANALOG INPUT THERMOCOUPLE HE693THM800/880

NOTE: NO CONNECTION ON CHANNELS 5-8 (TC5, TC6, TC7, TC8) FOR THM400, THM440.

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Installation Hints

☑ Special care must be taken with grounded junction sensors to avoid applying a voltage potential to the thermocouple junction.

☑ Extension wire of the proper Thermocouple type must be used. Keep total wire resistance less than 100Ω to maintain rated accuracy.

☑ Extension wiring should be routed in its own conduit. Shielded, twisted pair extension wiring offers best noise immunity.

☑ If shielded wiring is used, a good earth ground connection (on one end only) is critical. Terminals 19 & 20 may be used as the shield ground point.

Dipswitch Settings						
THM Type	Switch					
	1	**2**	**3**	**4**	**5**	**6**
J	1	1	0	0	0	0
K	0	0	1	1	0	0
T	0	0	0	0	1	1
1 = closed **2 = open**						