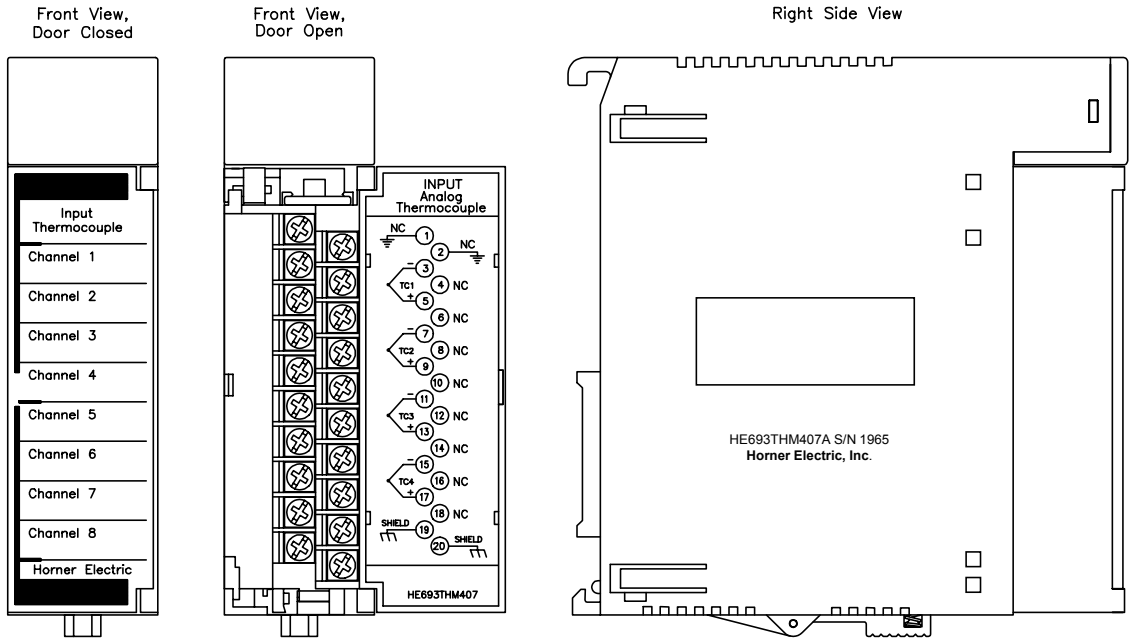
Thermocouple Input Module with Real Time Clock

DESCRIPTION

The Thermocouple Input Module (HE693THM407) allows 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. This module has a resolution of 0.5°C, and temperature values may be reported to the PLC %AI I/O table in 0.5°C or 0.5°F increments. The module features open circuit detection, where the temperature value written to the %AI register goes to its maximum value upon an open circuit condition. A unique feature to this module is a real time calendar clock, which continually reports the current time and date to 7 %AI registers. Module calibration, as well as time and date setting are accomplished through a built-in serial port, accessible through the front window of the module.

ILLUSTRATION



SPECIFICATIONS

Specification	HE693THM407	Specification	HE693THM407
Power Consumption	100mA @ 5VDC	I/O Points Required	11%AI
Number of Channels	4	Input Impedence	>20Mohms
Types Supported	J,K,N,T	Maximum Safe Overload	+/- 35V
Input Range (Temp)	J: -210 to +760°C	Common Mode Range	+/- 12V
	K: -270 to +1372°C	Common Mode Rejection	>100dB
	N: -270 to +1300°C	A/D Conversion Type	Integrating
	T: -270 to +400°C	Sample Rate	45 channels / second
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

SOFTWARE CONFIGURATION

SLOT 2 FRGN

Catalog #: FOREIGN FOREIGN MODULE

Module ID	: 3						
%I Ref Adr	: %I0001	Byte 1	: 00000001	Byte 9	: 00		
%I Size	: 0	Byte 2	: 00000010	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	: 11	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		

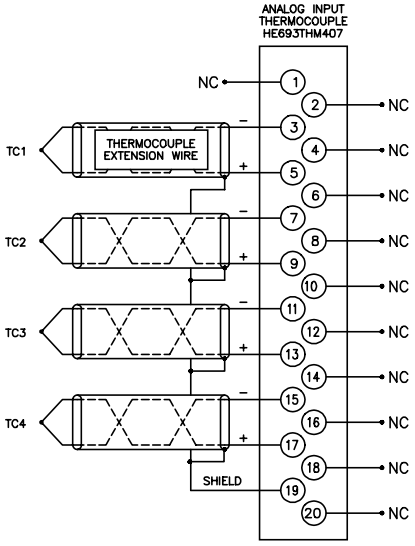
Foreign Module Configuration. To reach this screen, select I/O Configuration (F1), cursor over to the slot containing the module and select Other (F8), and Foreign (F3).

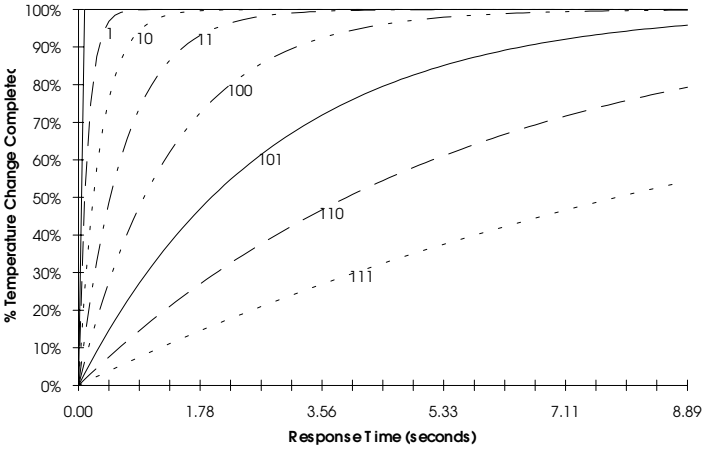
%AI Size	Byte				
	1	2	3	4	5
11	1	*(see chart)*	0	0: 0.5°C	00: J
					01: K
				1: 0.5°F	02: N
					03: T

Configuration Parameters. Byte 2 sets digital filtering, Byte 4 sets the module resolution, and Byte 5 sets the thermocouple type.

Byte 4	Formula
0	°C = %AI / 2
1	°F = %AI / 2

Temperature Scaling. *Temperature values are written to the %AI registers in 0.5°C or 0.5°F increments, depending upon the value of Byte 4.*





Digital Filtering. The effect of digital filtering (set with Byte 2) on module response to a temperature change. *(% temp change completed vs. time).*

Addres	Parameter	Range	Address*	Parameter	Range
%AI5	Year	1993 to ????	%AI9	Minutes	0 to 59
%AI6	Month	1 to 12	%AI10	Seconds	0 to 59
%AI7	Day of Month	1 to 31	%AI11	Day of Week	1 to 7
%AI8	Hours	0 to 23	* note: assumes %AI Ref Adr: = %AI1		

Calendar Clock Interface. The current time and date information are automatically updated in 7 %AI registers. The time and date data values are reported as listed above, in integer form.

WIRING/INSTALLATION

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 is critical. Terminals 19 and/or 20 may be used as the shield ground point.