FLEX I/O Thermocouple/Millivolt Input Module

Catalog Number 1794-IT8

Allen-Bradley
by ROCKWELL AUTOMATION

User Manual

Original Instructions

1794-IT8 - Thermocouple/mV Input Module Image Table Mapping

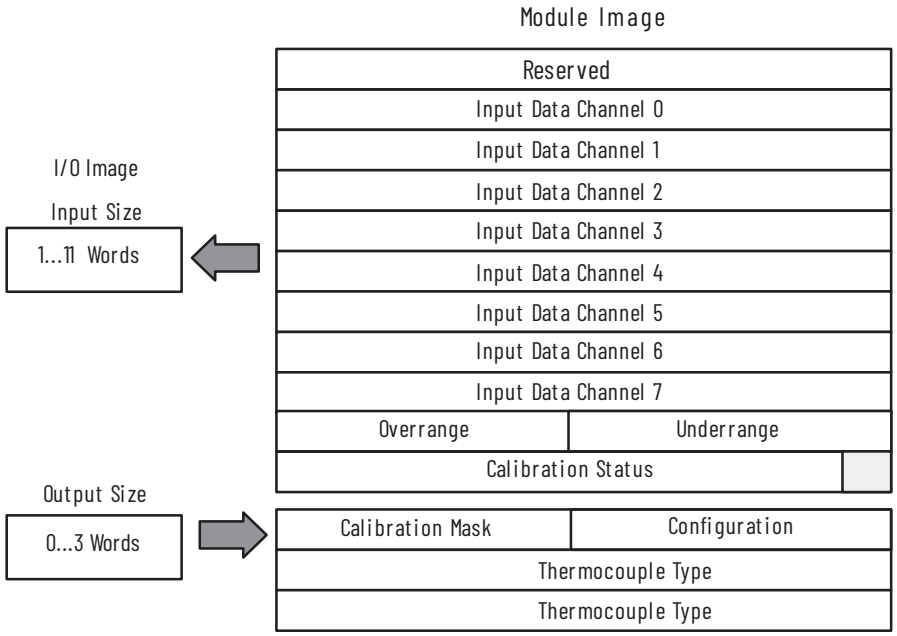

Table 2 - Thermocouple/mV Input Module - 1794-IT8 Read

Word/Dec. Bit	**15**	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
Word/Octal Bit	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
Read Word 0	Reserved															
Read Word 1	Channel 0 Input Data															
Read Word 2	Channel 1 Input Data															
Read Word 3	Channel 2 Input Data															
Read Word 4	Channel 3 Input Data															
Read Word 5	Channel 4 Input Data															
Read Word 6	Channel 5 Input Data															
Read Word 7	Channel 6 Input Data															
Read Word 8	Channel 7 Input Data															
Read Word 9	Overrange Bits								Underrange Bits							
Read Word 10	0	0	0	0	0	CB	CD	CR	0	Diagnostic Status			PU	BS	CJC Over	CJC Under
Where:	PU = Power-up CB = Calibration bad CD = Calibration done CR = Calibration range BS = Bad structure															

Table 3 - Thermocouple/mV Input Module - 1794-IT8 Write

Word/Dec. Bit	**15**	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
Word/Octal Bit	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
Write Word 0	8-bit Calibration Mask								CK	CH CL	Filter Cutoff			FDF	Data Type	
Write Word 1	Thermocouple 3 Type				Thermocouple 2 Type				Thermocouple 1 Type				Thermocouple 0 Type			
Write Word 2	Thermocouple 7 Type				Thermocouple 6 Type				Thermocouple 5 Type				Thermocouple 4 Type			
Where:	CK = Calibration clock CH = Calibration high CL = Calibration low FDF = Fixed digit filter bit															

Table 4 - Read Word/Bit Descriptions for 1794-IT8 Thermocouple/mV Input Module

Read Word	Decimal Bit (Octal Bit)	Definition
Read Word 0	00…15 (00…17)	Reserved
Read Word 1	00…15 (00…17)	Channel 0 Input data
Read Word 2	00…15 (00…17)	Channel 1 Input data
Read Word 3	00…15 (00…17)	Channel 2 Input data
Read Word 4	00…15 (00…17)	Channel 3 Input data
Read Word 5	00…15 (00…17)	Channel 4 Input data
Read Word 6	00…15 (00…17)	Channel 5 Input data
Read Word 7	00…15 (00…17)	Channel 6 Input data
Read Word 8	00…15 (00…17)	Channel 7 Input data
Read Word 9	00…07 (00…07)	**Underrange bits** – These bits are set if the input signal is below the input channels minimum range.
	08…15 (10…17)	**Overrange bits** – These bits are set if the input signal is above the input channels maximum range or an open detector is detected.
Read Word 10	00 (00)	Cold Junction sensor underrange bit – This bit is set if the cold junction temperature is below 0 °C (32 °F).
	01 (01)	Cold Junction sensor overrange bit – This bit is set if the cold junction temperature is above 70 °C (158 °F).
	02 (02)	**Bad Structure** – This bit is set if an invalid thermocouple type is selected.
	03 (03)	**Powerup bit** – This bit is set (1) until configuration data is received by the module.
	04…06 (04…06)	**Critical Error bits** – If these bits are anything other than all zeros, return the module to the factory for repair.
	07 (07)	Unused – Set to 1
	08 (10)	**Calibration Range bit** – Set to 1 if a reference signal is out of range during calibration.
	09 (11)	**Calibration Done bit** – Set to 1 after an initiated calibration cycle is complete.
	10 (12)	**Calibration Bad bit** – Set to 1 if the channel has not had a valid calibration.
	11…15 (13…17)	Unused – Set to 0

Table 5 - Write Word/Bit Descriptions for 1794-IT8 Thermocouple/mV Input Module

Write Word	Decimal Bit (Octal Bit)	Definition				
Write Word 0	00-01 (00-01)	**Module Data Type**				
		Bit	**01**	**00**	**Definition**	
		–	0	0	°C (default)	
			0	1	°F	
			1	0	Bipolar counts are scaled from –32,768…+32,767	
			1	1	Unipolar counts are scaled from 0…65,535	
	02 (02)	**Fixed Digital Filter** – When this bit is set (1), a software digital filter is enabled. This filter settles to 100% of a Full Scale step input in 60 times the selected first notch filter time shown in Table 1. (**Default – Filter is disabled.**)				
	03…05 (03…05)	**A/D Filter First Notch Frequency**				
		Bit	**05**	**04**	**03**	**Definition**
		–	0	0	0	10 Hz (default)
			0	0	1	25 Hz
			0	1	0	50 Hz
			0	1	1	60 Hz
			1	0	0	100 Hz
			1	0	1	250 Hz
			1	1	0	500 Hz
			1	1	1	1000 Hz
	06 (06)	Calibration High/Low bit – This bit is set during gain calibration and reset during offset calibration.				
	07 (07)	Calibration clock – This bit must be set to 1 to prepare for a calibration cycle, then reset to 0 to initiate calibration.				
	08…15 (10…17)	Calibration mask – The channel or channels to be calibrated have the correct mask bit set. The bit 8 corresponds to the channel 0, bit 9 corresponds to the channel 1, and so on.				

Table 5 - Write Word/Bit Descriptions for 1794-IT8 Thermocouple/mV Input Module (Continued)

Write Word	Decimal Bit (Octal Bit)	Definition					
Write Word 1	00…03 (00…03)	Channel 0 Thermocouple Type					
		Bit	**03**	**02**	**01**	**00**	**Thermocouple Type – Range**
		–	0	0	0	0	Millivolts (default)
			0	0	0	1	Type B, range 300…1800 °C (572…3272 °F)
			0	0	1	0	Type E, range –270…+1000 °C (–454…+1832 °F)
			0	0	1	1	Type J, range –210…+1200 °C (–346…+2192 °F)
			0	1	0	0	Type K, range –270…+1372 °C (–454…+2502 °F)
			0	1	0	1	Type R, range –50…+1768 °C (–58…+3214 °F)
			0	1	1	0	Type S, range –50…+1768 °C (–58…+3214 °F)
			0	1	1	1	Type T, range –270…+400 °C (–454…+752 °F)
			1	0	0	0	Type C, range 0…2315 °C (32…4199 °F)
			1	0	0	1	Type N, range –270…+1300 °C (–450…+2372 °F)
			1	0	1	0	Type L, range -200…+800 °C (-328…+1472 °F)
			1	0	1	1	Reserved
			1	1	0	0	The module reports cold junction temperature for channels 00…03.
			1	1	0	1	The module reports cold junction temperature for channels 04…07.
			1	1	1	0	Reserved
			1	1	1	1	No sensor is connected (do not scan).
	04…07 (04…07)	Channel 1 Thermocouple Type (see bits 00…03)					
	08…11 (10…13)	Channel 2 Thermocouple Type (see bits 00…03)					
	12…15 (14…17)	Channel 3 Thermocouple Type (see bits 00…03)					
Write Word 2	00…03 (00…03)	Channel 4 Thermocouple Type (see write word 1, bits 00…03)					
	04…07 (04…07)	Channel 5 Thermocouple Type (see write word 1, bits 00…03)					
	08…11 (10…13)	Channel 6 Thermocouple Type (see write word 1, bits 00…03)					
	12…15 (14…17)	Channel 7 Thermocouple Type (see write word 1, bits 00…03)					