6.2. Analog Modules

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Analog I/O Modules (Parallel Bus) Table 6-2-1

Models	I-8014W	I-8017HW	I-8017DW	I-8017HCW	I-8024W	I-8024DW
Pictures	NEW 		NEW 	NEW 		NEW 
Analog Input						
Channel	8/16	8/16			-	-
Wiring	Differential/ Single-ended	Differential/ Single-ended				
Range	±10 VDC, ±5 VDC, ±2.5 VDC, ±1.25 VDC -20 ~ +20 mA (Requires Optional External 125 Ω Resistor)	±10 VDC, ±5 VDC, ±2.5 VDC, ±-1.25 VDC ±20 mA (Requires Optional External 125 Ω Resistor)	±10 VDC, ±5 VDC, ±2.5 VDC, ±-1.25 VDC ±20 mA (Jumper Select)		-	-
Resolution	16-bit	14-bit			-	-
Accuracy	0.05% of FSR	±0.1% of FSR			-	-
Sampling Rate	Single Channel Polling Mode: 250 k S/s	Single Channel Polling Mode: 100 k S/s Single Channel Interrupt Mode: 50 k S/s 8 channel Scan Mode : 16 k S/s			-	-
Input Impedance	20 k, 200 k, 20 M (Jumper Select)	20 k, 200 k, 20 M (Jumper Select)			-	-
Over Voltage Protection	-45 ~ +60 VDC	±35 VDC			-	-
Analog Output						
Channel	-	-			4	
Range	-	-			±10 VDC, 0 ~ +20 mA	
Resolution	-	-			14-bit	
Accuracy	-	-			±0.1% of FSR for voltage output ; ±0.2% of FSR for current output	
Throughput	-	-				
Output Capacity	-	-			20 mA @ 10 VDC	
Power on Value	-	-			-	
Safe Value	-	-			-	
System						
Watchdog	-	-			-	
Isolation	2500 Vrms	2500 Vrms			3000 VDC	
Power Consumption	2.5 W	2 W			2 W	
Connector	Terminal Block	Terminal Block	D-Sub 37	Terminal Block	Terminal Block	D-Sub 37
Optional Accessories	-	-	DN-37-381-A	-	-	DN-37-381-A

I/O module with DN-37-381-A

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Analog Input Modules (Serial Bus) Table 6-2-2

Models	I-87005W	I-87013W	I-87015W	I-87015PW
Pictures	NEW 			
Sensor Type	Precon ST-A3, Fenwell U, YSI L100, YSI L300, YSI L1000, YSI B2252, YSI B3000, YSI B5000, YSI B6000, YSI B10000, YSI H10000, YSI H30000, User-defined	Pt100, Pt1000, Cu50, Ni120	Pt100, Pt1000, Ni120, Cu50, Cu100, Cu1000	
Channel	8	4	7	
Wiring	2 Wires	2/3/4 Wires	2/3 Wire	
Resolution	16-bit	16-bit	16-bit	
Accuracy	±0.1% of FSR	±0.1% of FSR	±0.05% of FSR	
Sampling Rate	8 Hz (Total)	10 Hz (Total)	12 Hz (Total)	
Individual Channel Configurable	Yes	Yes	Yes	
3-wire RTD lead resistance elimination	-	Yes	-	Yes
Resistance Measurement	200 kΩ	3.2 kΩ	3.2 kΩ	
Open Wire Detection	Yes	Yes	Yes	
Over Voltage Protection	±120 V_{DC} /110 V_{AC}	±20 V_{DC}	±20 V_{DC}	±110 V_{DC}
4KV ESD Protection	Yes	Yes	Yes	
System				
Dual Watchdog	Yes	Yes	Yes	
Isolation	3000 V_{DC}	3000 V_{DC}	3000 V_{DC}	
Power Consumption	1 W	0.8 W	1 W	
Connector	Terminal Block	Terminal Block	Terminal Block	
Optional Accessories	-	-	-	-

■ **3-wire RTD lead resistance elimination**
With the feature, the line resistance of the RTD cable is eliminated regardless the length of the RTD cable for 3-wire RTD measurement.

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Analog Input Modules (Serial Bus) Table 6-2-3

Models	I-87017W	I-87017DW	I-87017RW	I-87017W-A5	I-87017RCW	I-87017RCDW	I-87017RCDW-AI
Pictures		NEW 				Available soon 	Available soon 
Channel	8	8/16	8	8	8	16	16
Wiring	Differential	Differential/ Single-ended	Differential	Differential	Differential	Differential	Differential
Range	±10 VDC, ±5 VDC, ±1 VDC, ±500 mV, ±150 mV, ±20 mA (Requires Optional External 125 Ω Resistor)			±50 VDC, ±150 VDC	0 ~ +20 mA, +4 ~ +20 mA, ±20 mA (No External Restistor Reguired)	0 ~ +20 mA, +4 ~ +20 mA, ±20 mA (No External Restistor Reguired)	0 ~ +100 mA
Resolution	Normal Mode: 16-bit Fast Mode: 12-bit			Normal Mode: 16-bit Fast Mode: 12-bit	Normal Mode: 16-bit Fast Mode: 12-bit		
Accuracy	Normal Mode :±0.1% of FSR Fast Mode :±0.5% of FSR			Normal Mode: ±0.1% of FSR Fast Mode: ±0.25% of FSR	Normal Mode: ±.1% of FSR Fast Mode: ±0.5% of FSR		
Sampling Rate	Normal Mode: 10 Hz (Total) Fast Mode: 60 Hz (Total)			Normal Mode: 10 Hz (Total) Fast Mode: 50 Hz (Total)	Normal Mode: 10 Hz (Total) Fast Mode: 60 Hz (Total)		
Input Impedance	20 MΩ	20 MΩ	> 2 MΩ	290 KΩ	125 Ω		
Common Voltage Protection	-	-	-	-	200 VDC		
Individual Channel Configurable	-	Yes	-	-	-	Yes	Yes
Open Daughter Board Detection	-	Yes	-	-	-	Yes	Yes
Over Voltage Protection	±35 VDC	±35 VDC	240 Vrms	±200 VDC	-		
4KV ESD Protection	Yes	Yes	Yes	Yes	Yes		
System							
Dual Watchdog	Yes			Yes	Yes		
Isolation	3000 VDC			3000 VDC	3000 VDC		
Power Consumption	1.3 W			1.3 W	1.3 W		
Connector	Terminal Block	D-Sub 37	Terminal Block	Terminal Block	Terminal Block	D-Sub 37	D-Sub 37
Optional Accessories	-	DN-37-381-A	-	-	-	DN-37-381-A	DN-37-381-A

I/O module with DN-37-381-A

Introduction

A thermocouple is a temperature sensor which consists of two wires of different conductors.
Based on the Seebeck effect in thermoelectricity, the temperature difference results voltage difference on the two wires.
Thermocouples are widely used in scientific and industrial applications because they're generally accurate and can operate over wide range of temperature.

Thermocouple Type

Type	Range (°C)
J	-210 ~ +760
K	-270 ~ +1372
T	-270 ~ +400
E	-270 ~ +1000
R	0 ~ +1768
S	0 ~ +1768
B	0 ~ +1820
N	-270 ~ 1300
C	0 ~ 2320
L	-200 ~ +800
M	-200 ~ +100
L (DIN43710)	-200 ~ +900

Analog Input Modules (Serial Bus) — **Table 6-2-4**

Models	I-87018W	I-87018PW	I-87018RW	I-87018ZW	I-87019RW
Pictures		NEW 			
Sensor Type	±15 mV, ±50 mV, ±100 mV ±500 mV, ±1 VDC, ±2.5 VDC			±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 VDC, ±2.5 VDC	±15 mV, ±50 mV, ±100 mV, ±150 mV ±500 mV, ±1 VDC, ±2.5 VDC,±5VDC, ±10 VDC
	±20 mA (Requires Optional External 125 Ω Resistor)			±0 mA, 0 ~ 20 mA, 4 ~ 20 mA (Requires Optional External 125 Ω Resistor)	±20 mA (Jumper Selectable)
	Thermocouple (J, K, T, E. R. S, B, N, C, L, M, LDIN43710)			Thermocouple (J, K, T, E, R, S, B, N, C, L, M, LDIN43710)	Thermocouple (J, K, T, E. R. S, B, N, C, L, M, LDIN43710)
Channel	8			10	8
Wiring	Differential			Differential	Differential
Temperature outputs consistency	-	Yes	-	Yes	-
Stable tempereture output in the field	-	Yes	-	Yes	-
Resolution	16-bit			16-bit	16-bit
Accuracy	±0.1% of FSR			±0.1% of FSR	±0.1% of FSR
Sampling Rate	10 Hz (Total)			10 Hz (Total)	8 Hz (Total)
Input Impedance	>400 kΩ			>400 kΩ	Voltage Input: >2 MΩ, Current Input: 125 Ω
Individual Channel Configurable	-	Yes	-	Yes	Yes
Open Wire Detection	-	Yes	Yes	Yes	Yes
Over Voltage Protection	±35 VDC	240 Vrms	240 Vrms	240 Vrms	240 Vrms
4KV ESD Protection	Yes	Yes	Yes	Yes	Yes
System					
Dual Watchdog	Yes			Yes	Yes
Isolation	3000 VDC			3000 VDC	3000 VDC
Power Consumption	0.8 W			0.8 W	1.1 W
Connector	Terminal Block			DB25	Terminal Block
Optional Accessories	-	CN-1824	-	DB-1820/DN-1822	-

Special daughter board for thermocouple inputs features two benefits

- Temperature outputs consistency
- Stable tempereture output in the field

I-87018PW-G/S CR=
I-87018PW connects CN-1824 directly

I-87018ZW-G/S CR=
I-87018ZW connects DB-1820 directly

I-87018ZW-G/S2 CR=
I-87018ZW connects DN-1822 with CD-2518D kit

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Analog Output Modules (Serial Bus) Table 6-2-5

Models	I-87024W	I-87024DW	I-87024CW	I-87028CW
Pictures		NEW 	Available soon 	NEW 
Channel	4		4	8
Wiring	Bipolar/Unipolar		Unipolar	
Range	0 ~ +5 VDC, ±5 VDC, 0 ~ +10 VDC, ±10 VDC, 0 ~ +20 mA, +4 ~ +20 mA		0 ~ +20 mA, +4 ~ +20 mA	
Resolution	14-bit		12-bit	
Accuracy	±0.1% of FSR		±0.1% of FSR	
DA Output Response Time	10 ms per channel		10 ms per channel	
Output Capacity	Voltage: 10 VDC @ 20 mA Current: External +24 VDC @ 1050 Ω		External +24 VDC @ 1050 Ω	
Channel to channel isolation	-		Yes, 1 kV	
Open Wire Detection	-	Yes	Yes	
Short Circuit Protection	Yes		Yes	
4KV ESD Protection	Yes		Yes	
Dual Watch dos	Yes		Yes	
Power on Value	Yes		Yes	
Safe Value	Yes		Yes	
System				
Dual Watchdog	Yes		Yes	
Isolation	3000 VDC		1000 VDC	
Power Consumption	2.8 W		0.9 W	1.4 W
Connector	Terminal Block	D-Sub 37	Terminal Block	
Optional Accessories	-	DN-37-381-A	-	

I/O module with DN-37-381-A