



AIMS-4X Analog to Modbus Combiner-AIMS-8U-PPI-Converter Instruction Manual

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AIMS-4X Analog to Modbus Combiner-AIMS-8U-PPI-Converter

This brief manual is primarily meant for quick reference to wiring connections and parameter searching. For more details on operation and application; please log on to www.ppiindia.net

Input Registers (Read-Only Parameters)

Parameter	MODBUS Address	Values							
Process Value	1561 to 1564 (4 Channels) 1561 to 1568 (8 Channels)	Value	PV Error Type						
		-32768	Under Range						
		+32752	Over Range						
		+32767	Sensor Open						
Alarm-1 Status	1577	Bit 15 ... Bit 7 ... Bit 1 Bit 0 (X = 1, 2, 3, 4) Alarm-X Status for Channel-1 Alarm-X Status for Channel-2 Alarm-X Status for Channel-8							
Alarm-2 Status	1578								
Alarm-3 Status	1579								
Alarm-4 Status	1580								
		<table><tr><th>Bit Value</th><th>Status</th></tr><tr><td>0</td><td>Alarm OFF</td></tr><tr><td>1</td><td>Alarm ON</td></tr></table>	Bit Value	Status	0	Alarm OFF	1	Alarm ON	
Bit Value	Status								
0	Alarm OFF								
1	Alarm ON								
		For 4 Channel Version (AIMS-4X), ignore Bit-4 to Bit-15 For 8 Channel Version (AIMS-8X), ignore Bit-8 to Bit-15							
Ambient Temperature	82	Signed integer values from -30000 to +30000 representing the measured Ambient Temperature through the semiconductor sensor mounted on the Module. The measured value is always in °C with 0.1 resolution. For example, 30.0°C is represented as 300.							

Holding Registers (Read / Write Parameters)			
Parameter	MODBUS Address	Settings (Default Value)	
		Applicable for Input Type TC / RTD Pt100 / V / mV / m	
		Value	Type

Input Type

83 to 86 (4
Channels) 83 to 9
0 (8 Channels)

0	Type J Thermocouple
1	Type K Thermocouple
2	Type T Thermocouple
3	Type R Thermocouple
4	Type S Thermocouple
5	Type B Thermocouple
6	Type N Thermocouple
7	Reserved TC (Default: Type J)
8	RTD Pt100, 3-wire
9	0 to 20 mA
10	4 to 20 mA
11	0 to 80 mV
12	Reserved (Default: 0 to 80 mV)
13	0 to 1.25 V
14	0 to 5 V
15	0 to 10 V
16	1 to 5 V

(Default : 0 to 10 V)

Applicable for Input Type RTD Pt100

Value	Type
0	RTD Pt100, 3-wire (This is a Read Only parameter)
0	Type J Thermocouple
1	Type K Thermocouple
2	Type T Thermocouple
3	Type R Thermocouple
4	Type S Thermocouple
5	Type B Thermocouple
6	Type N Thermocouple
7	Reserved TC (Default: Type J)
8	0 to 80 mV

Applicable for Input Type TC / (Default : Type K)

Parameter	MODBUS Address	Settings(Default Value)		
Input Type	83 to 86 (4 Channels) 83 to 90 (8 Channels)	Applicable for Input Type V / mA		
			Value	Type
			0	0to 20 mA
			1	4 to 20 mA
			2	0to 1.25 V
			3	0to 5V
			4	0to 10V
			5	1 to 5V
			(Default : 0 to 10 V)	
Temperature Units	99 to 102 (4 Channels) 99 to 106 (8 Channels)		Conditional Parameter (Note	
			Value	Unit
			0	°C

		1		°F	
		(Default : °C)			
DC Resolution (Note')	115 to 118 (4 Channels) 115 to 122 (8 Channels)	Conditional Parameter No e 2)			
			Value	Resolution	
			0	1	
			1	0.1	
			2	0.01	
			3	0.001	
			4	0.0001	
		(Default : 1 Unit for DC Linear input & 0.1 for Thermocouple & RTD)			
Signal Low	501 to 504 (4 Channels) 501 to 508 (8 Channels)	Conditional Parameter "eV			
			Input Type	Settings	Default
			0 to 20 mA	0.00 to Signal High	0.00
			4 to 20 mA	4.00 to Signal High	4.00
			0 to 80 mV	0.00 to Signal High	0.00
			0 to 1.25 V	0.000 to Signal High	0.000
			0 to 5 V	0.000 to Signal High	0.000
			0 to 10 V	0.00 to Signal High	0.00
			1 to 5 V	1.000 to Signal High	1.000
Signal High	517 to 520 (4 Channels) 517 to 524 (8 Channels)	Conditional Parameter (N°le 2)			
			Input Type	Settings	Default
			0 to 20 mA	Signal Low to 20.00	20.00
			4 to 20 mA	Signal Low to 20.00	20.00
			0 to 80 mV	Signal Low to 80.00	80.00
			0 to 1.25 V	Signal Low to 1.250	1.250
			0 to 5 V	Signal Low to 5.000	5.000
			0 to 10 V	Signal Low to 10.00	10.00

		1 to 5 V	Signal Low to 5.000	5.000	
Range Low	131 to 134 (4 Channels) 131 to 138 (8 Channels)	(Nolo 2) Conditional Parameter -30000 to 30000 (Default : 0)			
Range High	147 to 150 (4 Channels) 147 to 154 (8 Channels)	(Nolo 2) Conditional Parameter -30000 to 30000 (Default : 1000)			
Offset for PV (Note)	163 to 166 (4 Channels) 163 to 170 (8 Channels)	-30000 to 30000 (Default : 0)			
Alarm-1 Type	179 to 182 (4 Channels) 179 to 186 (8 Channels)				
Alarm-2 Type	243 to 246 (4 Channels) 243 to 250 (8 Channels)		Value	Type	
			0	None	
			1	Process Low	
Alarm-3 Type	307 to 310 (4 Channels) 307 to 314 (8 Channels)		2	Process High	
Alarm-4 Type	371 to 374 (4 Channels) 371 to 378 (8 Channels)	(Default : None)			

Parameter	MODBUS Address	Settings (Default Value)
Alarm-1 Set-point (Note “	195 to 198 (4 Channels) 195 to 202 (8 Channels)	Min. to Max. Range specified for the selected Input Type Refer Table 1 (Default : MM or Max Range depending on the Alarm type)
Alarm-2 Set-point (Note “	259 to 262 (4 Channels) 259 to 266 (8 Channels)	
Alarm-3 Set-point (Note “	323 to 326 (4 Channels) 323 to 330 (8 Channels)	
Alarm-4 Set-point (Note “	387 to 390 (4 Channels) 387 to 394 (8 Channels)	
Alarm-1 Hysteresis (Note V	211 to 214 (4 Channels) 211 to 218 (8 Channels)	
Alarm-2 Hysteresis (Note I)	275 to 278 (4 Channels) 275 to 282 (8 Channels)	
		1 to 30000 (Default : 20)

Alarm-3 Hysteresis (Note V)	339 to 342 (4 Channels) 339 to 346 (8 Channels)				
Alarm-4 Hysteresis (Note 1)	403 to 406 (4 Channels) 403 to 410 (8 Channels)				
Alarm-1 Inhibit	227 to 230 (4 Channels) 227 to 234 (8 Channels)				
Alarm-2 Inhibit	291 to 294 (4 Channels) 291 to 298 (8 Channels)		Value	Inhibit	
			0	Disable	
Alarm-3 Inhibit	355 to 358 (4 Channels) 355 to 362 (8 Channels)		1	Enable	
Alarm-4 Inhibit	419 to 422 (4 Channels) 419 to 426 (8 Channels)		(Default : Disable)		
Enable Bottom Clipping	435 to 438 (4 Channels) 435 to 442 (8 Channels)				
			Value	Enable	
			0	No	
			1	Yes	
		Default : No)			
Bottom Clip Value	451 to 454 (4 Channels) 451 to 458 (8 Channels)	-30000 to 30000 (Default : 0)			
Enable Top Clipping	467 to 470 (4 Channels) 467 to 474 (8 Channels)				
			Value	Enable	
			0	No	
			1	Yes	
		Default : No)			
Top Clip Value	483 to 486 (4 Channels) 483 to 490 (8 Channels)	-30000 to 30000 (Default : 1000)			

Configuring Communication Parameters																			
Parameter	MODBUS Address	Settings (Default Value)																	
Modbus Slave ID	1	1 to 247 (Default : 1)																	
Baud Rate	2	<table><tr><th>Value</th><th>2400 bps</th></tr><tr><td>0</td><td>4800 bps</td></tr><tr><td>1</td><td>9600 bps</td></tr><tr><td>2</td><td>19200 bps</td></tr><tr><td>3</td><td>38400 bps</td></tr><tr><td>4</td><td>57600 bps</td></tr><tr><td>5</td><td>115200 bps</td></tr><tr><td>6</td><td>Baud Rate</td></tr></table>		Value	2400 bps	0	4800 bps	1	9600 bps	2	19200 bps	3	38400 bps	4	57600 bps	5	115200 bps	6	Baud Rate
		Value	2400 bps																
		0	4800 bps																
		1	9600 bps																
		2	19200 bps																
		3	38400 bps																
		4	57600 bps																
		5	115200 bps																
		6	Baud Rate																
		(Default : 9600 bps)																	
Parity	3	<table><tr><th>Value</th><th>Parity</th></tr><tr><td>0</td><td>None</td></tr><tr><td>1</td><td>Even</td></tr><tr><td>2</td><td>Odd</td></tr></table>		Value	Parity	0	None	1	Even	2	Odd								
		Value	Parity																
		0	None																
		1	Even																
		2	Odd																
(Default : Even)																			

Note 1

Thermocouples (J, K, T, R, S, B, N) and RTD Pt100 (3-wire) Inputs

The process value is always measured in 0.1°C/°F resolution. That is, for example, the value 300 means 30.0°C / °F.

The same should be followed while setting the values for the parameters that are resolution based (like Zero Offset,

Alarm Set-point, Alarm Hysteresis, etc.). That is for example, set 300 counts for 30.0°C / °F.

DC mA / mV / V Inputs

(Also Refer Appendix A : DC Linear Signal Interface)

The measured PV is a Resolution-less Scaled Value derived using the values for the parameters : Signal Low, Signal

High, Range Low and Range High. The parameter 'DC Resolution' holds the desired resolution that can be used to insert appropriate Decimal Place in the scaled PV. For example, if the DC Resolution value is 2 (0.01) then the scaled value of 3000 can be read as 30.00.

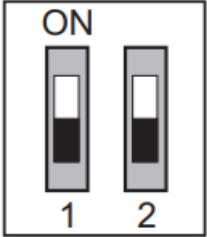
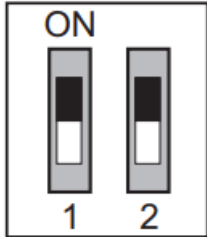
Similarly the corresponding parameters like Zero Offset, Alarm Set-point, Alarm Hysteresis, etc., are also resolution less and, if desired, the parameter value for 'DC Resolution' should be used for appropriate Decimal Place.

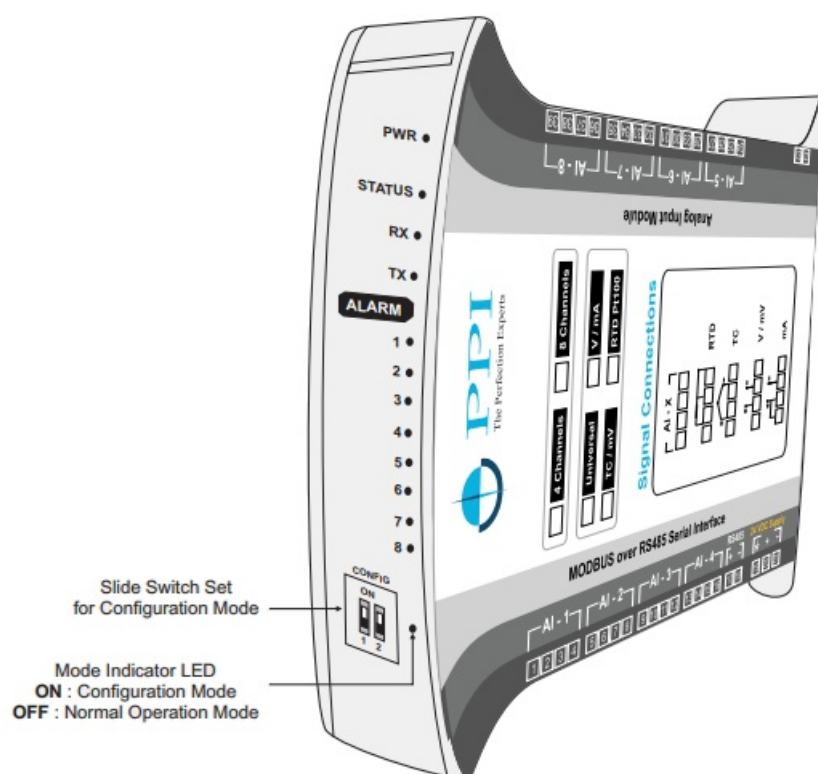
Note 2

Conditional Parameters are those whose usage depend upon the values set for some other parameters. For example; the parameters 'Signal Low' & 'Signal High' for a selected channel are used only if the input type for the selected channel is DC Input (mV / V / mA). The access to the conditional parameters for Read / Write operation, however, is not restricted.

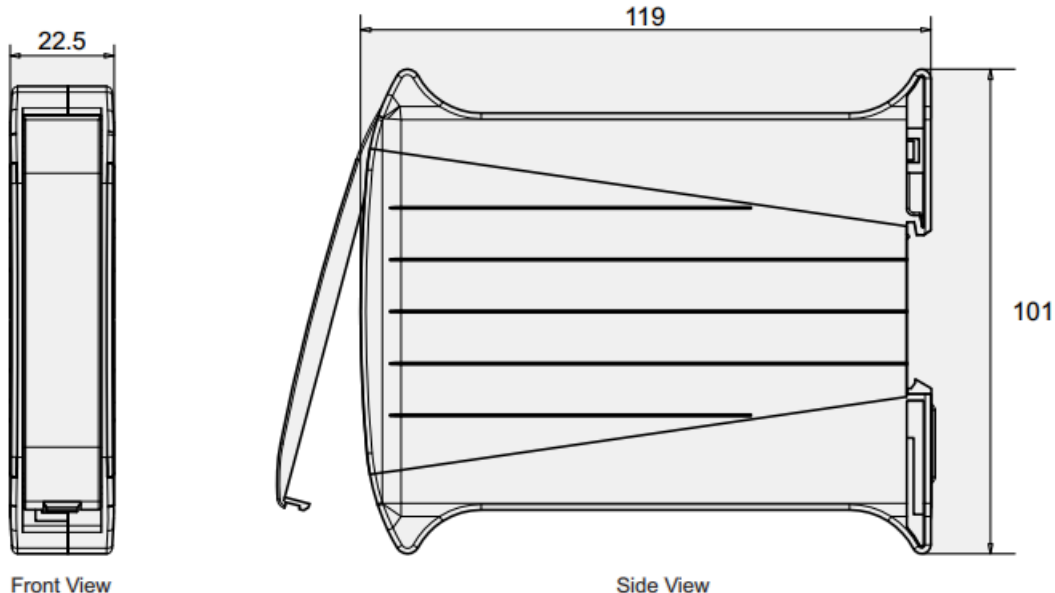
Input Type	Range (Min. to Max.)	Resolution
Type J Thermocouple	0 to +960.0°C / +32.0 to +1760.0°F	0.1 °C / °F
Type K Thermocouple	-200.0 to +1376.0°C / -328.0 to +2508.0°F	
Type T Thermocouple	-200.0 to +387.0°C / -328.0 to +728.0°F	
Type R Thermocouple	0 to +1771.0°C / +32.0 to +3219.0°F	
Type S Thermocouple	0 to +1768.0°C / +32.0 to +3214.0°F	
Type B Thermocouple	0 to +1826.0°C / +32.0 to +3218.0°F	
Type N Thermocouple	0 to +1314.0°C / +32.0 to +2397.0°F	
3-wire, RTD Pt100	-199.0 to +600.0°C / -328.0 to +1112.0°F	1 0.1 0.01 0.001 0.0001 Units
0 to 20mA DC current	-30000 to 30000 units	
4 to 20mA DC current		
0 to 80mV DC voltage		
0 to 1.25V DC voltage		
0 to 5.0V DC voltage		
0 to 10.0V DC voltage		
1 to 5.0V DC voltage		

CONFIGURING COMMUNICATION

Switch Position	 Down	 Up
Mode Indicator	OFF	ON
Operation Mode	Normal	Configuration
Communication Parameter Values	User Set values for Module Slave ID, Baud Rate & Parity	Module Slave ID : 1 Baud Rate : 9600 Parity : Even

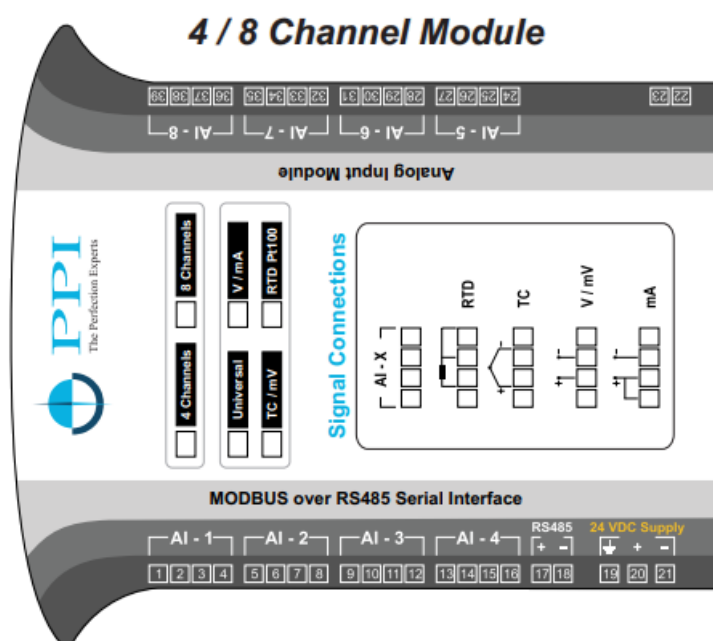


OVERALL DIMENSION



Width (W) : 22.5 mm	Height (H) : 101.0 mm	Depth (D) : 119.0 mm
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ELECTRICAL CONNECTIONS



Note : For 4 Channel Version the connectors for AI-5 to AI-8 are not fitted.



AIMS-4/8X

4 / 8 Channel DIN-Rail Analog Input Modules
MODBUS over RS485 Serial Interface
(Single-Ended & Differential Input Versions)

PPI 101, Diamond Industrial Estate, Navghar,
Vasai Road (E), Dist. Palghar – 401 210.

Sales : 8208199048 / 8208141446

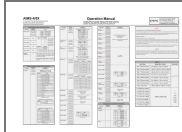
Support : 07498799226 / 08767395333

E: sales@ppiindia.net

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Documents / Resources



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AIMS-4X Analog to Modbus Combiner-AMS-8U-PPI-Converter, AIMS-4X, Analog to Modbus C
ombiner-AMS-8U-PPI-Converter, Combiner-AMS-8U-PPI-Converter, PPI-Converter

References

- [Factory Automation Products India | Automation Solutions in India](#)