

Combo Module-2288

COMS-2288

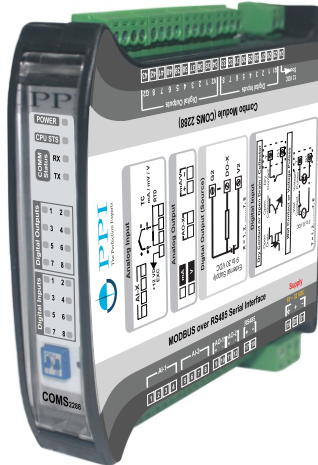
2 AI + 2 AO + 8 DI + 8 DO
DIN-Rail Mount
MODBUS over Serial
18~32 VDC Operated

Process Precision Instruments

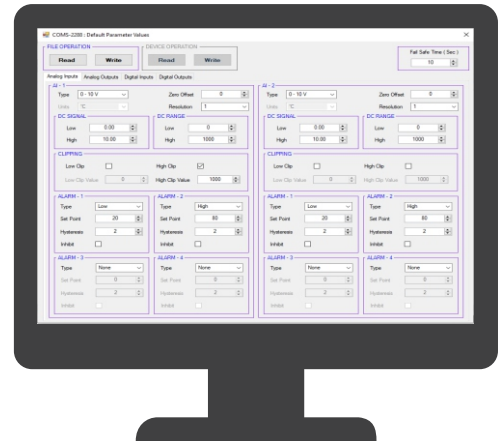
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COMS-2288



Configuration Tool



Salient Features

• Analog Inputs

- 2 Universal Channels : Thermocouples, RTD Pt100, Volts, mV and mA
- 16 Bit Sigma-Delta ADC ($\pm 32,768$ Counts)
- Automatic CJC for Thermocouple & LRC for RTD Inputs
- User Settable Scalable Range for DC V/mV/mA Inputs with 12 or 5 VDC Excitation Supply on Each Channel
- 4 Programmable Soft Alarms for each Channel
- Process Values Available as both 16-Bit Signed Integer & 32-Bit Single Precision Float
- Fast Channel Update Rate

• Analog Outputs

- 2 Channels : Current (0-20 mA, 4-20 mA, 0-10 mA) or Voltage (0-5 V, 1-5 V, 0-10 V)
- Programmable Min / Max Counts Corresponding to Signal Low & Signal High Outputs

• Digital Inputs

- 8 Channels : Input Type Programmable as -
 - (a) Dry Contact **or** Potential-Free Contacts / Open Drain / Open Collector
 - (b) 5 to 30 VDC Wet Contact **or** Voltage Pulses
- Both High / Low Levels & High-to-Low / Low-to-High Transition Status Available

• Digital Outputs

- 8 Channels (Source) : 9 to 30 VDC @ 75mA per O/P
- 3 Digital Output Modes
 - ❖ On-Off
 - ❖ Re-Triggerable Pulse (Programmable Pulse Time)
 - ❖ Pulse Train (Programmable Pulse-ON/OFF Time)
- Three-way Isolation Eliminates Potential Ground Loops between Power, Inputs / Outputs and RS485 Serial Port
- 2-wire, Half-Duplex, Start-Stop Synchronized RS485 Port
- Industry Standard MODBUS RTU Protocol with Programmable ID, Baud Rate & Parity
- Compact DIN-Rail Enclosure : 22.5(W) X 101(H) X 119(D), mm
- Wide Supply Voltage Range : 18 ~ 32 VDC (24 VDC Nominal)
- Free PC Tool for Easy Configuration and Parameter Settings

General Information

Product Type	2 AI + 2 AO + 8 DI + 8 DO Combo Module MODBUS over RS485 Serial Interface
Quantity	1 Unit
Accessories	(Optional) USB to RS485 Converter
Similar Modules	COMS-40C4

Analog Input Channels

Channel Specifications

Number of Channels	2
Input Types	Thermocouples : J, K, T, R, S, B, N, E RTD : Pt100, 3-Wire DC mV : 0 to 80 mV DC Volts : 0 to 1.25V, 0 to 5V, 1 to 5V, 0 to 10V DC mA : 0-20 mA, 4-20 mA
Accuracy	Thermocouples Measurement : $\pm 0.25\%$ of Measured Value ± 1 LSC (Excluding CJC Error) Cold Junction : $\pm 2.5^{\circ}\text{C}$ (Specified over 18 to 37°C Ambient) RTD Pt100 $\pm 0.25\%$ of Measured Value ± 1 LSC (Lead-Resistance compensated up to 5Ω in each Lead) DC mA / mV / V $\pm 0.20\%$ of Measured Value ± 1 LSC
Resolution	For Thermocouples & RTD : 0.1°C For DC Linear Volts / Current : 0.001 / 0.01 / 0.1 / 1 Counts
Range	Thermocouple & RTD Pt100 : Refer Table-1 DC Volts / Current : -30000 to +30000 Counts
Zero Offset	User Adjustable over Full Range for Each Channel
ADC	16 Bit ($\pm 32,768$ Counts), Sigma-Delta ($\Sigma\Delta$)
Sampling Time	250mS Per Channel (4 Samples per Second)
Input Resistance	Thermocouple / RTD Pt100 / mV : Greater than $8\text{ M}\Omega$ Voltage : Approx. $47\text{ K}\Omega$ mA : 249Ω Precision Shunt
Transmitter Excitation Voltage Output (Short Circuit Protected)	12VDC $\pm 3\%$ on Each Channel (50mA Max Total Current Output) as Standard (5 VDC $\pm 3\%$ on Request)
Input Protection	ESD : 8KV EFT : 2KV Surge : 1KV
Input Conditioning	First Order Analog R-C Low-Pass Filter
Isolation	Three-way Isolation Eliminates Potential Ground Loops between Power, Inputs & RS485 Serial Port 1500VAC for 1 second or 250VAC continuous

Alarms

Numbers	4, Independent for Each Channel
Programmable Parameters	Type : Process Low, Process High Setpoint : Adjustable over Full Range Hysteresis : 1 to 3000 Unit Counts Inhibit : No, Yes

Analog Output Channels

Channel Specifications

Number of Channels	2
Output Types (Programmable)	0-20 mA, 4-20 mA, 0-10 mA as Standard (0 to 5V, 1 to 5V, 0 to 10V on Request)
Accuracy	Better than $\pm 0.1\%$ of Span
Resolution	Better than 14 Bit
Response Time (Step Change)	150 mS typical for output signal to reach 98% of final value (Actual response time will change with load type / value)
Output Burden	Current : 500 Ω Maximum Voltage : 1 K Ω Minimum
Isolation	Three-way Isolation Eliminates Potential Ground Loops between Power, Outputs & RS485 Serial Port 1500VAC for 1 second or 250VAC continuous
Scaling (User Programmable)	Programmable Minimum & Maximum Counts (-30,000 to +30,000) Corresponding to Signal Low & Signal High Outputs
Fail-Safe Mode	The Outputs hold programmed Signal Level upon Communication link failure for more than programmed time period (1 to 300 Sec.)

Digital Input Channels

Channel Specifications

Number of Channels	8
Input Types	Programmable as : (a) Dry Contact or Potential-Free Contacts / Open Drain / Open Collector (b) 5 to 30 VDC Wet Contact / Voltage Pulses
Input Logic Levels	• Dry Contact : Logic Low : Open Logic High : Close to Ground • Open Drain / Collector : Logic Low : Off-State Logic High : On-State • Wet Contact : Logic Low : Open Logic High : Close to Potential • Voltage Pulses : Logic Low : 2VDC max. Logic High : 5 to 30 VDC
Filter Time Constant	Programmable from 1 to 30000 mS. <i>A 'Low to High' or 'High to Low' state change is registered if the changed state persists for at least the set Filter Time Constant. This helps in suppressing noise.</i>
Isolation	Three-way Isolation Eliminates Potential Ground Loops between Power, Inputs & RS485 Serial Port 1500VAC for 1 second or 250VAC continuous

Digital Output Channels

Channel Specifications

Number of Channels	8
Output Types	Sourcing : 9 to 30 VDC (External Supply), each channel is current limited to 75mA
Output Modes	• On-Off • Re-Triggerable Pulse with Programmable Pulse-ON Time (0.01 to 300 Seconds) • Pulse Train with Programmable Pulse-ON & Pulse-OFF Time (0.01 to 300 Seconds)
Fail-Safe Mode	The Outputs switch to programmed ON or OFF state upon Communication link failure for more than programmed time period (1 to 300 Seconds)
Isolation	Three-way Isolation Eliminates Potential Ground Loops between Power, Outputs & RS485 Serial Port 1500VAC for 1 second or 250VAC continuous

General Specifications

Serial Communication

Port	RS485, 2-wire, Half Duplex, Start-Stop Synchronized
Protocol	MODBUS RTU (Slave)
Slave ID	Settable : 1 to 127
Baud Rate	Settable : 2400, 4800, 9600, 19200 bps
Parity	Settable : None, Even, Odd
Max. Units per Loop	31
Max. Distance	1200 Meters

Power Supply

Type	Switch Mode (SMPS)
Power Requirement	18 ~ 32 VDC, nominal 24 VDC @ 300mA Max.
Consumption	7 VA Max @ 24 VDC

Physical

Mounting	DIN-Rail
Overall Dimensions	22.5(W) X 101(H) X 119(D), mm
Terminals	Screw Type, Pluggable
Weight	400 gm, Appx.

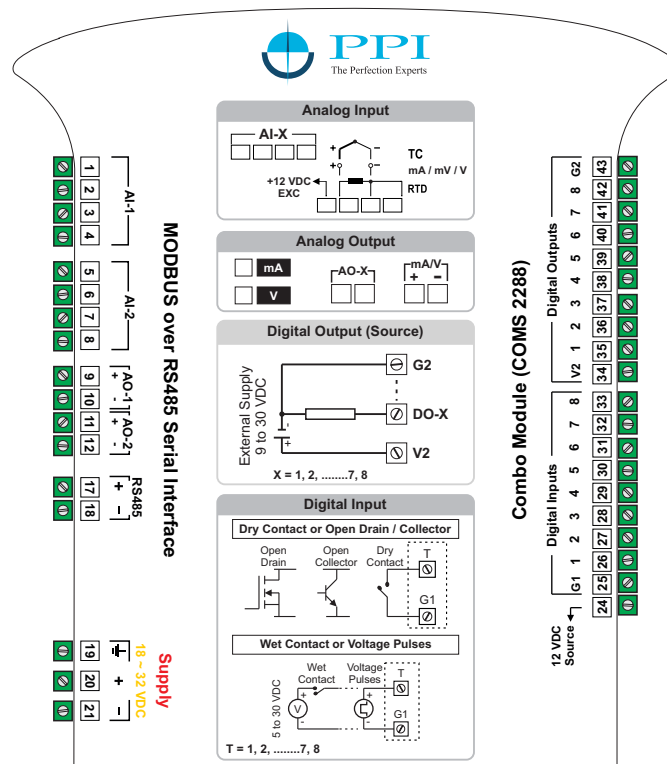
Environmental

Operating Ambient	0 to 55°C & 5 to 90%RH Non-condensing
Storage Temperature	-10 to +70°C
Atmospheres	Not Suitable for use in Corrosive or Explosive Atmospheres. The Panel in which the Instrument is Mounted must be free of Electrically Conductive Pollution.

TABLE 1

Input Type	Range (Min. to Max.)
2 / 3-wire, RTD Pt100	-199.0 to +850.0°C / -328.0 to +1562.0°F
Type J Thermocouple (Fe-K)	0 to +960.0°C / +32.0 to +1760.0°F
Type K Thermocouple (Cr-Al)	-200.0 to +1376.0°C / -328.0 to +2508.0°F
Type T Thermocouple (Cu-Con)	-200.0 to +387.0°C / -328.0 to +728.0°F
Type R Thermocouple (Pt / Pt-Rh13%)	0 to +1771.0°C / +32.0 to +3219.0°F
Type S Thermocouple (Pt / Pt-Rh10%)	0 to +1768.0°C / +32.0 to +3214.0°F
Type B Thermocouple (Pt-Rh6% / Pt-Rh30%)	0 to +1826.0°C / +32.0 to +3318.0°F
Type N Thermocouple (NiCrSi / NiSi)	0 to +1314.0°C / +32.0 to +2397.0°F
Type E Thermocouple (NiCr / Con)	-200 to +1000.0°C / -328.0 to +1832.0°F

Terminations



Process Precision Instruments (An ISO 9001 : 2008 Company)

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