



# MINT Intelligent I/Os & Communication Processor

- DI-16 16-Channel Digital Input Module
- DO-16 16-Channel Digital Output Module
- AI-08 8-Channel Analog Input Module
- AO-08 8-Channel Analog Output Module
- MINT CP - Communication Processor
- MINT IO Pair



Masibus' MINT I/O series is the most cost effective field interface module for smart systems whether it is DAS, SCADA, PLC or DCS. The MINT I/Os are available in universal 8 channel analog Input, 8 channel analog output, 16 channel digital input and 16 channel digital output.

Using MINT I/Os supervisory system one can read remote process values and events as well as communicate for process control. These I/Os consist of powerful processors suited for high-speed communication and enhanced hardware features.

The MINT I/O family has Modbus RTU & Ethernet-Modnet port that integrates with same type of existing network in plant.

MINT DI module has unique filter time selection feature for input noise cancellation and debounce time feature to prevent extra events from a single contact closure. MINT DI can also store counter input of frequency up to 1KHz.

MINT CP is a communication processor which connects MINT I/Os and any make of serial Modbus-RTU devices to a Modnet Ethernet network.

**mINT PLUS** configuration software configures all communicating parameters in MINT series.

The MINT series is best suited for processes that require reliable and efficient control with high speed connectivity for system monitoring and information exchange up to the corporate network.

## Features

### MINT I/O

- 2 Modbus serial ports RS-485
- 1 RS-485 + 1 Modbus over TCP/IP port - Modnet (Optional)
- 2 masters can be connected at a time in MINT with 2 RS-485 port option
- Compact DIN-Rail enclosure
- High-speed communication
- Supports up to 15 clients on TCP/IP
- LEDs for fault, communication and power

### MINT CP

- No. of Modbus serial slave devices supports on RS-485 - 15 max.
- Modbus over Ethernet (Modnet) - 10/100Mbps- auto-detecting
- Serial RS-485 (Protocol supported: Modbus RTU master)

### Free **mINT PLUS** Configuration Software

- Configuration and diagnostics
- Online excel sheet logging

## Applications

- Pulse totalizing - Utility accounting
- Cost effective field interface to PLC/DCS
- Remote I/Os for monitoring and control
- SCADA
- Security systems
- Solar string monitoring
- Building automation
- Gas detection systems
- Pipeline monitoring
- Environmental monitoring
- Infrastructure monitoring
- Asset management

# TECHNICAL SPECIFICATIONS: MINT I/O RS485 - ETHERNET

AI-08 Module				DO-16 Module	
<b>Input Specifications</b>				<b>Output Specifications</b>	
No. of Channels		8		Output Type	Open collector (External 24V DC required) (Source or sink - factory set)
Input Types	Thermocouple	E	-200 °C to 1000 °C	Default/Pre-defined Value	ON/ OFF
		J	-200 °C to 1200 °C	Pulse Width	10msec.
		K	-200 °C to 1350 °C	Maximum Current	100mA per output (Total current for output No.1 to 8 <500mA ) (Total current for output No.9 to 16 <500mA )
		T	-200 °C to 400 °C	Vce ON	1.1V max.
		B	450 °C to 1800 °C	<b>Status Indication</b>	
		R	0 °C to 1750 °C	LEDs	Power, module status, communication, channel status
		S	0 °C to 1750 °C	<b>Configuration Software</b>	
	RTD	Pt100 (3 wire)	-200 °C to 850 °C	mINT PLUS Software	Configuration and diagnostics Online excel sheet logging Logging time selectable : 1 to 65535 msec.
		Cu-53	-210 °C to 210 °C	<b>Communication</b>	
		NI-120	-80 °C to 210 °C	<b>RS-485 Serial Port</b>	
	Resistor Input	Upto 2kΩ	0-2000	Protocol	Modbus-RTU slave
	Current	0/4 -20mA (Ext. 50Ω resistor)	-2000 to +20000	No. of Port	2
				Communication Speed (Baud Rate)	9600, 19200, 38400, 57600,115200 bps
				Parity	ODD, EVEN ,NONE
Data Bits				8	
Stop Bit				1, 2	
Voltage	0 to +10V 0 to +100mV -10mV to +50mV 0 to +250mV 0 to +5V	-2000 to +20000 -2000 to +20000 -2000 to +20000 -2000 to +20000 -2000 to +20000	Default Settings	9600, 8 data bits, 1 stop bit, no parity	
			Connector	Plug-in screw terminals, 1.5mm <sup>2</sup> cable size	
			Recommended Cable	Shielded, twisted pair, size: 0.14mm <sup>2</sup>	
			<b>Ethernet Port (Optional)</b>		
			Protocol	Modbus TCP/IP (Modnet)	
Accuracy	0.1% of FS		No. of Port	1	
Scan Rate	T/C & voltage/current: 50mSec./channel RTD: 100mSec./channel		Speed	10/100 Mbps (auto-detecting)	
ADC Resolution	16 bit		Maximum No. of Read Registers	1024	
NMRR	>60dB		Maximum No. of Write Registers	1024	
CMRR	>120dB		Connector	RJ45 (auto-crossover)	
Temp-Co	100 ppm/°C		No. of Clients Supported	Up to 15	
CJC Error	±2°C (0 to 55°C)		<b>Power Supply</b>		
Input Impedance	V, mV, TC >1 MΩ		Power Supply	18 - 32VDC ±10%	
Sensor Burnout Current	0.5µA		Power Consumption	For I/O with only RS-485 < 3W For I/O with ethernet < 5W	
RTD Excitation Current	250µA		<b>Isolation</b>		
Max Voltage	20V DC		Supply to field: 1500VAC RMS Supply to RS-485: 1500VAC RMS Supply to ethernet: 1000VAC RMS		
Range Scaling	Current/voltage inputs only		<b>Physical</b>		
<b>DI-16 Module</b>					
<b>Input Specifications</b>					
No of Channels		16		Dimensions (in mm)	
Counter Frequency		1 KHz max.		101(H) x 22.5(W) x 120(D) for I/O with only RS-485	
Counter Resolution		32 bit		101(H) x 48.5(W) x 120(D) for I/O with Ethernet	
Counter Mode		Up/Down		Mounting	
Pulse Width		500µSec.		DIN-Rail (35 mm)	
Filter Time (ms)		0 to 65535 msec.		Weight	
De-bounce Time (ms)		0 to 65535 msec.		160 gms approx. – For I/O with only RS-485 250 gms approx. – For I/O with Ethernet	
Chatter Filter Time		0 to 65535 msec.		Enclosure Material	
Chatter Filter Counts		1 to 250 events		Molded ABS	
Input Impedance		2200 Ω		Color	
				Black	
<b>AO-08 Module</b>				<b>Environmental</b>	
<b>Output Specifications</b>				Operating Temperature	
No. of Channels		8		0 to 55 °C	
Output Types	Current	0-20mA/ 4-20mA @ 750 Ω max. (external 24V DC required)		Storage Temperature	
	Voltage	0.05 -10/ 2-10 VDC @ 2KΩ min. (external 24V DC required)		-10 to 70 °C	
DAC Resolution		16 bit		Humidity	
Accuracy		0.05% of FS		30 to 95 %RH non-condensing	
Temp-Co		100 ppm/°C			

