



## 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

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.

**mINTPLUS** 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 RS485
- 1 RS485 + 1 Modbus over TCP/IP Port - Modnet (optional)
- 2 Masters can be connected at a time in MINT with 2 RS485 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 RS485 - 15 Max.
- Modbus over ethernet (Modnet) - 10/100Mbps- auto-detecting
- Serial RS485 (Protocol supported: Modbus RTU Master)

#### Free **mINTPLUS** 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>		
	N	-200 °C to 1300 °C	mINT PLUS software		Configuration and Diagnostics Online Excel Sheet logging Logging Time selectable : 1 to 65535 mSec		
	RTD	Pt100 (3 wire)		-200 °C to 850 °C		<b>Communication</b>	
		Cu-53		-210 °C to 210 °C			
		NI-120		-80 °C to 210 °C			
	Resistor Input	Upto 2kΩ		0-2000		<b>RS485 Serial Port</b>	
	Current	0/4 -20mA (Ext. 50Ω resistor)		-2000 to +20000		Protocol	Modbus-RTU Slave
		Voltage	0 to +10V		-2000 to +20000		No of port
0 to +100mV			-2000 to +20000		Communication Speed (Baud Rate)	9600, 19200, 38400, 57600,115200 bps	
-10mV to +50mV			-2000 to +20000		Parity	ODD, EVEN ,NONE	
0 to +250mV			-2000 to +20000		Data bits	8	
0 to +1V			-2000 to +20000		Stop bit	1, 2	
Accuracy	0.1% of FS				Default Settings	9600, 8 Data bits, 1 Stop bit, No Parity	
Scan Rate	T/C & Voltage/Current: 50mSec/Channel RTD: 100mSec/Channel				Connector	Plug-in screw terminals, 1.5mm <sup>2</sup> Cable Size	
ADC Resolution	16 bit				Recommended Cable	Shielded, Twisted Pair, Size: 0.14mm <sup>2</sup>	
NMRR	>60dB				<b>Ethernet Port (Optional)</b>		
CMRR	>120dB				Protocol	Modbus TCP/IP(Modnet)	
Temp-Co	100 ppm/°C				No of port	1	
CJC Error	±2°C (0 to 55°C)				Speed	10/100 Mbps (auto-detecting)	
Input Impedance	V, mV, TC >1 MΩ				Maximum No. of Read Registers	1024	
Sensor Burnout Current	0.5µA				Maximum No. of Write Registers	1024	
RTD Excitation Current	250µA				Connector	RJ45 (auto-crosscover)	
Max Voltage	20V DC				No. of Clients supported	Up to 15	
<b>DI-16 Module</b>				<b>Power Supply</b>			
<b>Input Specifications</b>		16		Power Supply	18 - 32VDC ±10%		
No of Channels	1 KHz max				Power Consumption	For I/O with only RS485 < 3W For I/O with Ethernet < 5W	
Counter Frequency	32 bit				<b>Isolation</b>		
Counter Resolution	Up/Down				Supply to Field: 1500VAC RMS		
Counter Mode	500µSec				Supply to RS485: 1500VAC RMS		
Pulse width	0 to 65535 mSec				Supply to Ethernet: 1000VAC RMS		
Filter time (ms)	0 to 65535 mSec				<b>Physical</b>		
De-bounce Time (ms)	0 to 65535 mSec				Dimensions (in mm)	101(H) x 22.5(W) x 120(D) for I/O with only RS485	
Chatter Filter Time	0 to 65535 mSec				Mounting	101(H) x 48.5(W) x 120(D) for I/O with Ethernet	
Chatter Filter Counts	1 to 250 events				Weight	DIN Rail (35 mm) 160 gms approx. - For I/O with only RS485 250 gms approx. - For I/O with Ethernet	
Input Impedance	2200 Ω				Enclosure Material	Molded ABS	
<b>AO-08 Module</b>				<b>Environmental</b>			
<b>Output Specifications</b>		8		Operating Temperature	0 to 55 °C		
No of Channels	Output Types	Current	0-20mA/ 4-20mA @ 750Ω max. (external 24V DC required)	Storage Temperature	-10 to 70 °C		
		Voltage	0-10/ 2-10 VDC @ 2KΩ min. (external 24V DC required)		Humidity	30 to 95 %RH non-condensing	
DAC Resolution	16 bit						
Accuracy	0.05% of FS						
Temp-Co	100 ppm/°C						

# MINT CP MODULE

Performance		Ethernet Port	
Processor	32-bit CPU ARM Core	Protocol	Modbus TCP/IP (Modnet)
Maximum No. of Read Registers	1024	No of port	1
Maximum No. of Write Registers	1024	Speed	10/100 Mbps (auto-detecting)
Maximum No. of Modbus commands supported	100	Connector	RJ45 (auto-crossover)
No. of slave devices supported per serial port	No. Of Modbus Devices Supports on serial Port - 15	<b>Power Supply</b>	
No. of Clients supported on TCP/IP	Up to 15	Logic Supply Voltage	18 - 32V DC
<b>Configuration Software</b>		Logic Supply Current	100mA max @ 24VDC
mINT PLUS software	Configuration and Diagnostics	Power Consumption	< 2.5W
<b>Communication</b>		Isolation	Supply to RS485: 1500V AC RMS Supply to Ethernet: 1000V AC RMS
<b>RS485 Serial Port</b>		<b>Physical</b>	
Protocol	Modbus-RTU Slave	Enclosure Material	ABS Plastic
No of port	2	Mounting	DIN Rail (35 mm)
Communication Speed (Baud Rate)	9600, 19200, 38400, 57600, 115200 bps	Dimension (H x W x D)	101 mm x 22.5 mm x 120 mm
Parity	ODD ,EVEN, NONE	Color	Black
Data bits	8	Weight	160 g
Stop bit	1, 2	<b>Environmental</b>	
Default Settings	9600, 8 Data bits, 1 Stop bit, No Parity	Operating Temperature	0 °C to 55 °C
Connector	Plug-in screw terminals, 1.5mm <sup>2</sup> Cable Size	Storage Temperature	-10 °C to 70 °C
Recommended Cable	Shielded, Twisted Pair, Size: 0.14mm <sup>2</sup>	Humidity	30 to 95% RH Non-condensing

### Ordering code

Model	I/O Type		AI Channel Type		MINT I/O DO Type		AO Type		Communication		
	XX		X		X		X		Port 1	Port 2	
MINT	AI	8 channel Analog Input	N	None	N	None	N	None	SS	RS485	RS485
	DI	16 channel Digital Input	0	Non Isolated	0	Sink Type	I	Current o/p	SE	RS485	Ethernet
	AO	8 channel Analog Output			1	Source Type	V	Voltage o/p			
	DO	16 channel Digital Output									

Model
MINT CP

### APPLICATION

