



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.

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
- 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 **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		
Input Specifications				Output Specifications		
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			
		B	450 °C to 1800 °C			
		R	0 °C to 1750 °C	Vce ON	1.1V max.	
		S	0 °C to 1750 °C	Status Indication		
	RTD	N	-200 °C to 1300 °C	LEDs	Power, module status, communication, channel status	
		Pt100 (3 wire)	-200 °C to 850 °C	Configuration Software		
		Cu-53	-210 °C to 210 °C	mINT PLUS Software	Configuration and diagnostics Online excel sheet logging Logging time selectable : 1 to 65535 msec.	
	Resistor Input	NI-120	-80 °C to 210 °C		Communication	
	Current	Upto 2k Ω	0-2000		RS-485 Serial Port	
		Voltage	0/4 -20mA (Ext. 50Ω resistor)	-2000 to +20000	Protocol	Modbus-RTU slave
			0 to +10V	-2000 to +20000	No. of Port	2
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 +5V	-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 ² cable size		
ADC Resolution	16 bit		Recommended Cable	Shielded, twisted pair, size: 0.14mm ²		
NMRR	>60dB		Ethernet Port (Optional)			
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-crossover)		
Max Voltage	20V DC		No. of Clients Supported	Up to 15		
Range Scaling	Current/voltage inputs only		Power Supply			
DI-16 Module				Power Supply	18 - 32VDC ±10%	
Input Specifications				Power Consumption	For I/O with only RS-485 < 3W For I/O with ethernet < 5W	
No of Channels		16		Isolation		
Counter Frequency		1 KHz max.		Supply to field: 1500VAC RMS		
Counter Resolution		32 bit		Supply to RS-485: 1500VAC RMS		
Counter Mode		Up/Down		Supply to ethernet: 1000VAC RMS		
Pulse Width		500µSec.		Physical		
Filter Time (ms)		0 to 65535 msec.		Dimensions (in mm)	101(H) x 22.5(W) x 120(D) for I/O with only RS-485	
De-bounce Time (ms)		0 to 65535 msec.			101(H) x 48.5(W) x 120(D) for I/O with Ethernet	
Chatter Filter Time		0 to 65535 msec.				
Chatter Filter Counts		1 to 250 events		Mounting	DIN-Rail (35 mm)	
Input Impedance		2200 Ω		Weight	160 gms approx. – For I/O with only RS-485 250 gms approx. – For I/O with Ethernet	
AO-08 Module				Enclosure Material	Molded ABS	
Output Specifications				Color	Black	
No. of Channels		8		Environmental		
Output Types	Current	0-20mA/ 4-20mA @ 750 Ω max. (external 24V DC required)		Operating Temperature	0 to 55 °C	
	Voltage	0.05 -10/ 2-10 VDC @ 2KΩ min. (external 24V DC required)		Storage Temperature	-10 to 70 °C	
DAC Resolution		16 bit		Humidity	30 to 95 %RH non-condensing	
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	Power Supply	
No. of Clients Supported on TCP/IP	Up to 15	Logic Supply Voltage	18 - 32V DC
Configuration Software		Logic Supply Current	100mA max. @ 24VDC
		Power Consumption	< 2.5W
Communication		Isolation	Supply to RS-485: 1500V AC RMS Supply to Ethernet: 1000V AC RMS
		Physical	
mINT PLUS Software	Configuration and diagnostics	Enclosure Material	ABS plastic
RS-485 Serial Port		Mounting	DIN-Rail (35 mm)
		Dimension (H x W x D)	101 mm x 22.5 mm x 120 mm
Protocol	Modbus-RTU slave	Color	Black
No. of Port	2	Weight	160 g
Communication Speed (Baud Rate)	9600, 19200, 38400, 57600, 115200 bps	Environmental	
Parity	ODD, EVEN, NONE	Operating Temperature	0 °C to 55 °C
Data Bits	8	Storage Temperature	-10 °C to 70 °C
Stop Bit	1, 2	Humidity	30 to 95% RH non-condensing
Default Settings	9600, 8 data bits, 1 stop bit, no. parity	Ordering Code	
Connector	Plug-in screw terminals, 1.5mm ² cable size		
Recommended Cable	Shielded, twisted pair, size: 0.14mm ²		

Model										
MINT	I/O Type		AI Channel Type		MINT I/O DO Type		AO Type		Communication	
	XX		X		X		X		Port 1	Port 2
	AI	8 channel analog input	N	None	N	None	N	None	SS	RS-485
	DI	16 channel digital input	0	8 Channel universal	0	Sink type	I	Current O/P	SE	RS-485
	AO	8 channel analog output			1	Source type	V	Voltage O/P		Ethernet
	DO	16 channel digital output								

Model
MINT CP

Application

