MINI-IP Series

Multiprotocol I/O Modules

MODEL	DESCRIPTION		
iSMA-B- 4I4O-H-IP	I/O module with 4 digital inputs, 4 digital outputs, HOA switches, BACnet IP and Modbus TCP/IP communication, and built-in light application		
iSMA-B-	I/O module with 4 digital outputs, HOA switches,		
40-H-IP	BACnet IP and Modbus TCP/IP communication		
iSMA-B-	I/O module with 4 triac outputs, HOA switches,		
4TO-H-IP	BACnet IP and Modbus TCP/IP communication		
iSMA-B- 4U4A-H-IP	I/O module with 4 universal inputs and 4 analog outputs, manual override switches, BACnet IP and Modbus TCP/IP communication		
iSMA-B- 4U4O-H-IP	I/O module with 4 universal inputs, 4 digital outputs, HOA switches, BACnet IP and Modbus TCP/IP communication, and built-in HVAC and light applications		
iSMA-B-	I/O module with 8 digital inputs, BACnet IP and		
8I-IP	Modbus TCP/IP communication		
iSMA-B-	I/O module with 8 universal inputs, BACnet IP		
8U-IP	and Modbus TCP/IP IP communication		



APPLICATION AND USE

Multiprotocol I/O modules of the MINI-IP series are compact devices working as remote I/Os over IP with open protocols, BACnet IP and Modbus TCP/IP. The MINI-IP modules can extend building controllers with a number of inputs and outputs and complement. the MIX I/O modules. Unlike the MIX series, the MINI line is dedicated to all applications where manually operated switches are required. Built-in algorithms for lighting, cooling, and heating make them suitable for use as standalone controllers. In addition, the modules support timer relay modes dedicated to occupancy sensors. Like the MIX-IP series, the MINI-IP modules are factoryequipped with the two most popular open communication protocols, Modbus TCP/IP and BACnet IP, selected using DIP switches. The MINI-IP series modules are equipped with the Ethernet and RS485 interfaces. They have an additional functionality, the Modbus TCP/IP to Modbus RTU/ASCII gateway, enabling the connection of additional modules/devices, which communicate as servers (slaves) on the serial bus. The Modbus gateway functionality is active both when the module is operating in the Modbus and BACnet mode. The MINI-IP modules, communicating either in Modbus or BACnet, are always client (master) units on the network. One major advantage of supporting the modules with open communication standards is the versatility to install them in both new and completed installations, as part of an existing BMS. The modules are addressed using rotary switches, which facilitates and accelerates the process of commissioning the system. Built-in mini USB allows for the initial configuration of the unit without a power supply.

FEATURES

- 7 different types of modules with IP communication
- BACnet IP and Modbus TCP/IP protocols, selected with a DIP switch
- Built-in Modbus TCP/IP to Modbus RTU/ASCII gateway
- Compact dimensions
- Manual override switches*
- Built-in HVAC and light applications**
- All digital inputs work as fast counters up to 100 Hz
- Universal inputs have 16-bit resolution, which increases the accuracy of measurement
- Wide range of supported temperature sensors in Celsius and Fahrenheit degrees (NTC, PT1000, etc.)

- Automatic detection of a signal type of universal inputs
- Digital outputs 230 V AC max. 3 A or 8 A allow for direct control without additional relays
- Triac outputs: 0.5 A at 24 V AC, 0.5 A at 230 V AC
- Analog output with max. 20 mA load per channel allows for a direct control of relays (12 V DC) or SSR with PWM support
- 1 Fast Ethernet
- LEDs indicate the status of inputs and outputs
- Simple and fast addressing from 0 to 99 using rotary switches
- UL listed
- BTL certified

* The '-H' part in the product code indicates a manual override switch onboard. Digital outputs can be manually overridden using a dedicated hand operating switch, analog outputs can be manually overdriven using a dedicated manual potentiometer. ** Built-in applications are supported in the iSMA-B-4U4O-H-IP and iSMA-B-4I4O-H-IP models.

The performances stated in this sheet can be modified without any prior notice.





Power supply Voltage 24 V X/DC + 20% Image: Supply Number of inputs 4 (4UAA H IP, 4 (4UA H IP, 8 (8U IP) Voltage: input Imput impedance: 100 kD Imput impedance: 100 kD Voltage: input Measurement accuracy +0.1% Measurement accuracy +0.1% Universal inputs Current input Regulard external resistor: 200 G Current input Current resolution: 15 [A at 12 bit and 5 [A at 16 bit Measurement resolution: 15 [A at 12 bit and 5 [A at 16 bit Measurement resolution: 15 [A at 12 bit and 5 [A at 16 bit Universal inputs Digital input Output resolution for PTI000 and N1000 oard 10 at 16 bit Resistance: input Measurement resolution for PTI000 and N1000 oard 10 at 16 bit Measurement resolution 12 bit (Red Time b gital Struttary) at a to bit Measurement resolution 12 bit (Red Time b gital Struttary) at a to bit Measurement resolution 12 bit (Red Time b gital Struttary) at a to bit Measurement resolution 12 bit (Red Time b gital Struttary) at a to bit Measurement resolution 12 bit (Red Time b gital Struttary) at a to bit Measurement resolution 12 bit Measurement resolution 12 bit M	DESCRIPTION		MINI-IP I/O MODULES				
Image: Second	Power supply	Voltage	24 V AC/DC ± 20%				
Universal input Voltage input Voltage measurement: 0.10 VDC Imput impedance: 100 KC Measurement accuracy: .0.1% Measurement accuracy: .0.1% Measurement accuracy: .0.1% Measurement incontrol: 31 wit 12 bit and 1 rW at 16 bit Current input Universal inputs Digital input Current measurement: 0.20 mA Required exercal resistance: 0.100 KC Measurement accuracy: .0.1% Measurement accuracy: .0.1% Measurement accuracy: .0.1% Measurement resolution 15 juk 11.2% at 16-bit Measurement resolution 10 KC Juk 116-bit Measurement resolution 10 KC Juk 116-bit Measurement resolution 11.2% bit 10.2 at 16-bit Measurement resolution 11.2% bit 10.2 at 16-bit Measurement resolution 11.2% bit 10.2 at 16-bit Measurement resolution 12.2% Mumber of inputs Analog outputs Juk 12, 12, 12, 13, 14, 14, 14, 14, 14, 14, 14, 14, 14, 14		Number of inputs	4 (4U4A-H-IP, 4U4O-H-IP), 8 (8U-IP)				
Universal inputs Current input Current masurement. 0.2 MA Required external resistor: 200 L Measurement castor: 200 L Measurement castor: 200 L Measurement castor: 200 L Measurement castor: 200 L Measurement of resistance 0.100 kL Measurement resolution: 15 µ kL 12-bit and 10 at 16-bit Measurement resolution for 20 kD io 200 at 12-bit and 10 at 16-bit Measurement resolution for 20 kD io 200 at 12-bit and 10 at 16-bit Measurement resolution for 20 kD io 200 at 12-bit and 10 at 16-bit Measurement resolution for 20 kD io 200 at 12-bit and 10 at 16-bit Measurement resolution for 20 kD io 200 at 12-bit and 10 at 16-bit Measurement with RTDs (Real Time Digital Simulator) attached Accaracy: 201°C The PT1000 and NI1000 sensors us 16-bit Processing time Measurement resolution 12-bit (default). 16-bit Measurement with RTDs (Real Time Digital Simulator) attached Accaracy: 201°C The PT1000 and NI1000 sensors us 16-bit Measurement resolution Digital inputs Measurement with RTDs (Real Time Digital Simulator) attached Maximum input frequency Number of inputs Ut conscherent at 12-bit 140 ms/channel at 12-bit Maximum input frequency 100 H2 saved in the EEPR0M memory Maximum load: 100 H2 saved in the EEPR0M memory Maximum load: UL compliant ratings Maximum load: UL compliant ratings Maximum load: UL compliant ratings Maximum load: UL compliant ratings Maximum load: 3 At 22 4VAC 30 W at 30 VDC 3 At 23 0VAC 30 W at 30 VDC		Voltage input	Voltage measurement: 0-10 V DC Input impedance: 100 kΩ Measurement accuracy: ±0.1% Measurement resolution: 3 mV at 12-bit and 1 mV at 16-bit				
Universal liquits Digital liquit Output current -1 mA Resistance input Measurement of resistance. 0.100 kQ Measurement resolution for 20 kQ at 12-bit and 1.0 at 16-bit Resistance input Measurement resolution for P1000 and N1000.0.10 at 16-bit Resistance Temperature input Measurement resolution for P1000 and N1000.0.10 at 16-bit Resistance Measurement resolution 12 bit (default), 16-bit Accuracy:e0.1° Measurement resolution 10 ms/channel at 12-bit Measurement resolution Measurement resolution 10 ms/channel at 12-bit Measurement resolution Number of inputs 10 ms/channel at 12-bit Measurement resolution Number of outputs 3 Sectoracy Measurement resolution Number of outputs 3 Sectoracy Measurement resolution Measurement resolution Maximum load current 20 mA 12-bit Measurement resolution Sectoracy Maximum load current 20 mA 12-bit Measurement resolution Sectoracy Maximum load current 12-bit 4(440 H IP, 4/040 H IP 40 H IP Maximum resings Maximum load		Current input	Current measurement: 0-20 mA Required external resistor: 200 Ω Measurement accuracy: ±1.1% Measurement resolution: 15 μA at 12-bit and 5 μA at 16-bit				
Universal inputs Measurement of resistance 0.100 kQ Resistance input Measurement resolution for 20 k0 and 20 and 21 bit and 1 G at 16 bit. Measurement resolution for 21 k0 v0 tage divider Resistance input Measurement method.v0 tage divider Temperature input Measurement method.v0 tage divider Measurement method.v0 tage divider Accuracy: 10.11° Measurement method.v0 tage divider Accuracy: 10.11° Measurement method.v0 tage divider Measurement method.v0 tage divider Measurement resolution 12-bit (default). 16-bit resolution Maximum input frequency 100 Hz saved in the EEPROM memory Maximum for di uputs 3 Voltage range 0-10 V DC Maximum loads: U (di 0-H)P, 240-H)P.		Digital input	Output current ~1 mA				
Image: Processing time Measurement with RTDS (Real Time Digital Simulator) attached Accuracy:::0.1°C Measurement resolution The PT1000 and N1000 sensors use 16 bit resolution Measurement resolution 10 ms/channel at 16 bit Processing time 100 ms/channel at 16 bit Mumber of inputs 4 (4140-H-IP), 8 (8I-IP) Maximum input frequency 100 Hz saved in the EEPROM memory: Maximum input frequency 0 100 VDC Maximum input frequency 0 100 VDC Maximum input frequency 0 100 VDC Maximum input frequency 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Universal inputs	Resistance input	Measurement of resistance: 0-1000 k Ω Measurement resolution for 20 k Ω load: 20 Ω at 12-bit and 1 Ω at 16-bit Measurement resolution for PT1000 and NI1000: 0.1 Ω at 16-bit Resistance measurement method: voltage divider				
Measurement resolution 12-bit (default), 16-bit Processing time 10 ms/channel at 12-bit Number of inputs 4(4140-H-IP), 8 (8I-IP) Digital inputs Type Maximum input frequency 100 Hz saved in the EEPROM memory Number of outputs 3 Maximum input frequency 100 Hz saved in the EEPROM memory Number of outputs 3 Voltage range 0-10 V DC Maximum load current 20 mA Resolution 12-bit Accuracy =0.5% Number of outputs 4 (4140-H-IP, 4U40-H-IP, 4U40-H-IP, 40-H-IP) Maximum loads: UL compliant ratings Maximum ratings Maximum ratings Digital outputs Resistive load (AC1) 3 A at 24 V AC 30 w at 30 V DC 3 A at 230 V AC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC		Temperature input	Measurement with RTDS (Real Time Digital Simulator) attached Accuracy: ±0.1°C The PT1000 and NI1000 sensors use 16-bit resolution				
Processing time 10 ms/channel at 12-bit 140 ms/channel at 16-bit Digital inputs Number of inputs 4 (414O-I-I-IP), 8 (8I-IP) Digital inputs Type Dry contact or fast pulse counter Maximum input frequency 100 Hz saved in the EEPROM memory Maximum load current 3 Voltage range 0-10 V DC Maximum load current 20 mA Resolution 12-bit Accuracy ±0.5% Maximum loads: UL compliant ratings Maximum ratings Maximum loads: UL compliant ratings Maximum ratings Maximum loads: UL compliant ratings Maximum ratings Inductive load (AC1) 3 A at 24 V AC 3 A at 30 V DC 3 A at 230 V AC 3 A at 30 V DC 8 A at 230 V AC 3 A at 30 V DC Inductive load (AC2) 8 Va at 24 V AC 30 w at 30 V DC 3 A at 20 V AC 30 w at 30 V DC 8 A at 30 V DC Triac outputs Inductive load (AC3) 8 Va at 24 V AC 30 w at 30 V DC 3 A at 20 V AC 30 w at 30 V DC 8 A at 30 V DC Feal load per channel 1.5 A at 20 V AC up to max. 250 V AC 30 w at 30 V DC 8 A at 30 V DC 90 w at 30 V DC		Measurement resolution	12-bit (default), 16-bit				
Number of inputs 4 (4I4O-H-IP), 8 (8I-IP) Digital inputs Type Dry contact or fast pulse counter Maximum input frequency 100 Hz saved in the EEPROM memory Number of outputs 3 Voltage range 0-10 V DC Maximum load current 20 mA Resolution 12-bit Accuracy 40.0-H-IP, 4U4O-H-IP, 4Q-H-IP, 4O-H-IP Maximum loads: 4140-H-IP, 4U4O-H-IP, 4U-H-IP, 4Q-H-IP Maximum loads: UL compliant ratings Maximum ratings Resistive load (AC1) 3 A at 24 VAC 3 A at 230 VAC 8 A at 230 VAC B Aat 30 VDC 3 A at 30 VDC 36 A at 230 VAC 8 A at 230 VAC 8 A at 230 VAC B Aat 30 VDC 3 A at 24 VAC 75 VA at 230 VAC 8 A at 230 VAC 8 A at 230 VAC B Aat 30 VDC 30 W at 30 VDC 36 W at 32 WAC 30 W at 30 VDC 90 W at 30 VDC Inductive load (AC3) 8 VA at 24 VAC 75 VA at 230 VAC 36 W at 32 WAC 30 W at 30 VDC Inductive load (AC3) 8 VA at 24 VAC 30 W at 30 VDC 90 W at 30 VDC 90 W at 30 VDC Induct		Processing time	10 ms/channel at 12-bit 140 ms/channel at 16-bit				
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Accuracy±0.5%Number of outputs		Resolution	12-bit				
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Biglish Gdippers Resistive load (AC1) 3 A at 24 V AC 3 A at 30 V DC 3 A at 230 V AC 3 A at 30 V DC 8 A at 230 V AC 8 A at 30 V DC 8 A at 230 V AC 9 0 W at 30 V DC 9 0 W at 30 V DC	Digital outputs		UL compliant ratings	Maximum ratings	UL compliant ratings	Maximum ratings	
Inductive load (AC3) 8 VA at 24 V AC 30 W at 30 V DC 75 VA at 230 V AC 30 W at 30 V DC 360 VA at 230 V AC 90 W at 30 V DC Number of outputs		Resistive load (AC1)	3 A at 24 V AC 3 A at 30 V DC	3 A at 230 V AC 3 A at 30 V DC	8 A at 230 V AC 8 A at 30 V DC	8 A at 230 V AC 8 A at 30 V DC	
Number of outputs4 (4TO-H-IP)Load0.5 A at 20 V AC up to max. 250 V ACPeak load per channel1.5 A at 20 V AC up to max. 250 V AC (30 s)Gate controlZero crossing turn ONFrequency range47 to 63 HzSnubberSnubberless triacSnubberUp to 128 devicesRS485 interfaceHalf-duplexCOM1Communication protocolPortsScrew connectorBaud rate2400-115200Address0-99 set by a rotary switchETH1Communication protocolModbus TCP/IP BACnet IP		Inductive load (AC3)	8 VA at 24 V AC 30 W at 30 V DC	75 VA at 230 V AC 30 W at 30 V DC	37 VA at 230 V AC 90 W at 30 V DC	360 VA at 230 V AC 90 W at 30 V DC	
Initial Load0.5 A at 20 V AC up to max. 250 V ACPeak load per channel1.5 A at 20 V AC up to max. 250 V AC (30 s)Gate controlZero crossing turn ONFrequency range47 to 63 HzSnubberSnubberSnubberSnubberRS485 interfaceUp to 128 devicesCOM1Communication protocolPortsScrew connectorBaud rate2400-115200Address0-99 set by a rotary switchETH1Ethernet interfaceCommunication protocolModbus TCP/IP BAC net IP	Trips outputs	Number of outputs	4 (4TO-H-IP)				
Triac outputsPeak load per channel1.5 A at 20 V AC up to max. 250 V AC (30 s)Gate controlZero crossing turn ONFrequency range47 to 63 HzSnubberSnubberSnubberUp to 128 devicesRS485 interfaceUp to 128 devicesCOM1Communication protocolPortsScrew connectorBaud rate2400-115200Address0-99 set by a rotary switchETH1Ethernet interfaceCommunication protocolModbus TCP/IP BACnet IP		Load	0.5 A at 20 V AC up to max. 250 V AC				
IndecoutputsGate controlZero crossing turn ONFrequency range47 to 63 HzSnubberSnubberSnubberSnubberless triacRS485 interfaceUp to 128 devicesRS485 interfaceHalf-duplexCommunication protocolModbus RTU/ASCII (only as Modbus gateway)PortsScrew connectorBaud rate2400-115200Address0-99 set by a rotary switchETH1Ethernet interfaceFTH1Communication protocol		Peak load per channel	1.5 A at 20 V AC up to max. 250 V AC (30 s)				
Frequency range47 to 63 HzSnubberSnubberSnubberSnubberless triacRS485 interfaceUp to 128 devicesRS485 interfaceHalf-duplexCommunication protocolModbus RTU/ASCII (only as Modbus gateway)PortsScrew connectorBaud rate2400-115200Address0-99 set by a rotary switchEthernet interfaceFast EthernetEthernet interfaceModbus TCP/IP. BACnet IP.		Gate control	Zero crossing turn ON				
SnubberSnubberSnubberless triacCOM1RS485 interfaceUp to 128 devicesCOM1Communication protocolModbus RTU/ASCII (only as Modbus gateway)PortsScrew connectorBaud rate2400-115200Address0-99 set by a rotary switchEthernet interfaceFast EthernetCommunication protocolModbus ICP/IP BACnet IP		Frequency range	47 to 63 Hz				
COM1RS485 interfaceUp to 128 devicesCommunication protocolHalf-duplexCommunication protocolModbus RTU/ASCII (only as Modbus gateway)PortsScrew connectorBaud rate2400-115200Address0-99 set by a rotary switchEthernet interfaceFast EthernetCommunication protocolModbus TCP/IP BAC net IP		Snubber	Snubberless triac				
COM1 Communication protocol Modbus RTU/ASCII (only as Modbus gateway) Ports Screw connector Baud rate 2400-115200 Address 0-99 set by a rotary switch Ethernet interface Fast Ethernet Communication protocol Modbus TCP/IP BACnet IP	COM1	RS485 interface	Up to 128 devices Half-duplex				
COM1 Ports Screw connector Baud rate 2400-115200 Address 0-99 set by a rotary switch Ethernet interface Fast Ethernet Communication protocol Modbus TCP/IP BACnet IP		Communication protocol	Modbus RTU/ASCII (only as Modbus gateway)				
Baud rate 2400-115200 Address 0-99 set by a rotary switch Ethernet interface Fast Ethernet Communication protocol Modbus TCP/IP BACnet IP		Ports	Screw connector				
Address 0-99 set by a rotary switch ETH1 Ethernet interface Fast Ethernet Communication protocol Modbus TCP/IP BACnet IP		Baud rate	2400-115200				
ETH1 Ethernet interface Fast Ethernet Communication protocol Modbus TCP/IP BACnet IP		Address	0-99 set by a rotary switch				
ETH1 Communication protocol Modbus TCP/IP BACnet IP	ETH1 -	Ethernet interface	Fast Ethernet				
Communication protocol Mododo Ferrir, Brieneri		Communication protocol	Modbus TCP/IP, BACnet IP				





DESCRIPTION		MINI-IP I/O MODULES		
ETH1	Port	RJ45		
	Baud rate	10/100 Mb/s		
USB1	USB 2.0	mini USB type B		
Ingress protection	IP rating	IP 40 for indoor installation		
Temperature	Storage	-40°C to +85°C (-40°F to +185°F)		
	Operating	-10°C to +50°C (14°F to 122°F)		
Humidity	Relative	5 to 95% RH (without condensation)		
Screw connectors	Туре	Removable screw terminals		
	Maximum cable size	2.5 mm ² (1812 AWG)		
Housing	Material	Self-extinguishing plastic (PC/ABS)		
	Mounting	DIN (DIN EN 50022 norm)		
Dimensions	Width	36.30 mm/1.43 in		
	Length	114.40 mm/4.39 in		
	Lleight	Without hand switch	With hand switch	
	Height	62.00 mm/2.44 in	68.70 mm/2.70 in	

WIRING DIAGRAMS

Power Supply





U3

 \oslash

200 Ω

Sensor power supply from PELV/SELV source

U4

 \oslash

G0

 \oslash

U1

 \bigotimes

U2

 \oslash

U3

 \oslash

U4

 \oslash

Shielded Twisted Cable

G0

 \bigotimes





U1

Ø

U2

 \oslash

Output Current ~ 1mA

U3

 \oslash

U4

 \oslash

Shielded Twisted Cable

G0

 \oslash

Universal Inputs



Sensor power supply from PELV/SELV source

Digital Inputs



Triac Outputs

U1

 \oslash

0-20 mA

U2

 \oslash

1



Digital Outputs

10k Thermistor



Every CX terminal can be supplied by different PELV/SELV source









Analog Outputs







APPLICATION EXAMPLE









iSMA Configurator - configuration tool for non-programmable iSMA CONTROLLI devices

DIMENSIONS [mm]

Without Hand Switch



With Hand Switch



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