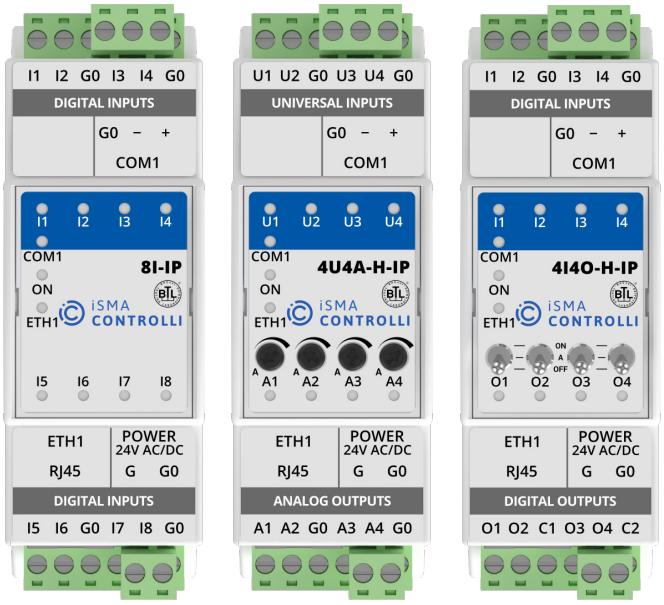
MINI-IP Series

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-4O-H-IP	I/O module with 4 digital outputs, HOA switches, BACnet IP and Modbus TCP/IP communication
iSMA-B-4TO-H-IP	I/O module with 4 triac outputs, HOA switches, 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-8I-IP	I/O module with 8 digital inputs, BACnet IP and Modbus TCP/IP communication
iSMA-B-8U-IP	I/O module with 8 universal inputs, BACnet 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 factory-equipped 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.

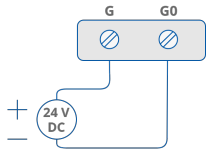
The performances stated in this sheet can be modified without any prior notice.

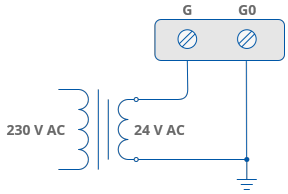
DESCRIPTION		MINI-IP I/O MODULES			
Power supply	Voltage	24 V AC/DC ± 20%			
Universal inputs	Number of inputs	4 (4U4A-H-IP, 4U4O-H-IP), 8 (8U-IP)			
	Voltage input	Voltage measurement: 0-10 V DC Input impedance: 100 kΩ Measurement accuracy: ±0.1% Measurement resolution: 3 mV at 12-bit and 1 mV at 16-bit			
	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			
	Digital input	Output current ~1 mA			
	Resistance input	Measurement of resistance: 0-1000 kΩ Measurement resolution for 20 kΩ 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			
	Temperature input	Measurement with RTDS (Real Time Digital Simulator) attached Accuracy: ±0.1˚C The PT1000 and NI1000 sensors use 16-bit resolution			
	Measurement resolution	12-bit (default), 16-bit			
	Processing time	10 ms/channel at 12-bit 140 ms/channel at 16-bit			
Digital inputs	Number of inputs	4 (4I4O-H-IP), 8 (8I-IP)			
	Type	Dry contact or fast pulse counter			
	Maximum input frequency	100 Hz saved in the EEPROM memory			
Analog outputs	Number of outputs	3			
	Voltage range	0-10 V DC			
	Maximum load current	20 mA			
	Resolution	12-bit			
	Accuracy	±0.5%			
Digital outputs	Number of outputs	4 (4I4O-H-IP, 4U4O-H-IP, 4O-H-IP)			
	Maximum loads:	4I4O-H-IP, 4U4O-H-IP		4O-H-IP	
		UL compliant ratings	Maximum ratings	UL compliant ratings	Maximum ratings
	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
	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
Triac outputs	Number of outputs	4 (4TO-H-IP)			
	Load	0.5 A at 20 V AC up to max. 250 V AC			
	Peak load per channel	1.5 A at 20 V AC up to max. 250 V AC (30 s)			
	Gate control	Zero crossing turn ON			
	Frequency range	47 to 63 Hz			
	Snubber	Snubberless triac			
COM1	RS485 interface	Up to 128 devices			
		Half-duplex			
	Communication protocol	Modbus RTU/ASCII (only as Modbus gateway)			
	Ports	Screw connector			
	Baud rate	2400-115200			
	Address	0-99 set by a rotary switch			
ETH1	Ethernet interface	Fast Ethernet			
	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	Type	Removable screw terminals	
	Maximum cable size	2.5 mm² (18...12 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	
	Height	Without hand switch	With hand switch
		62.00 mm/2.44 in	68.70 mm/2.70 in

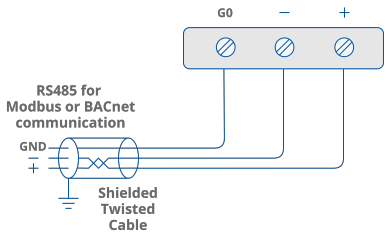
WIRING DIAGRAMS

Power Supply

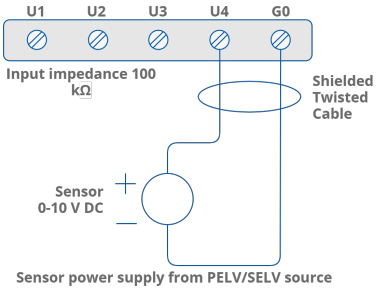


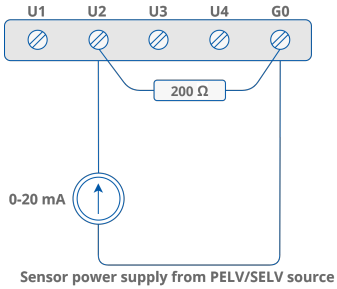


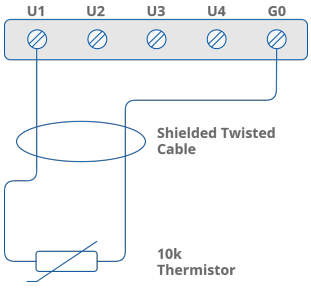
Communication

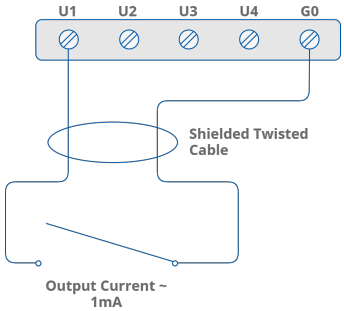


Universal Inputs

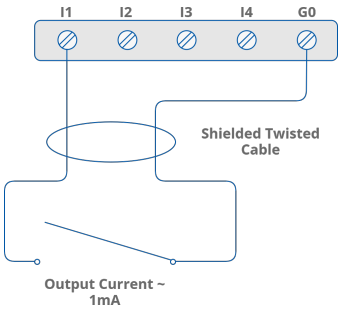




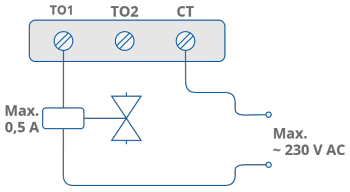




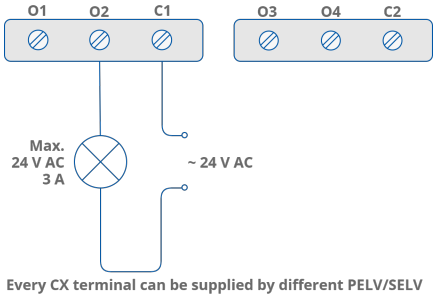
Digital Inputs

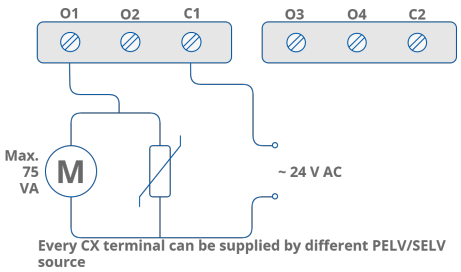


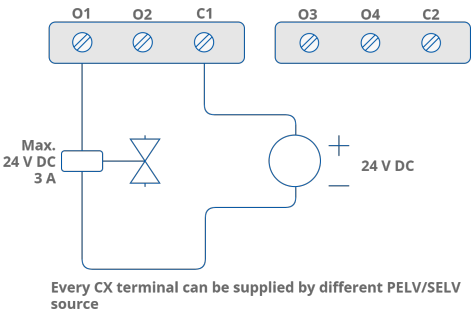
Triac Outputs



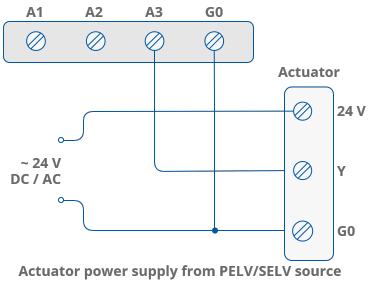
Digital Outputs

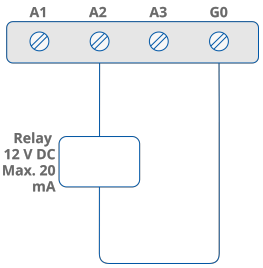


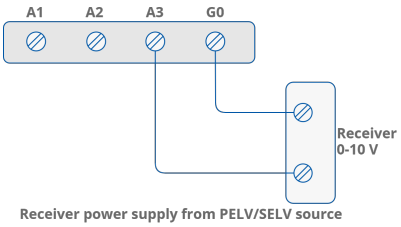




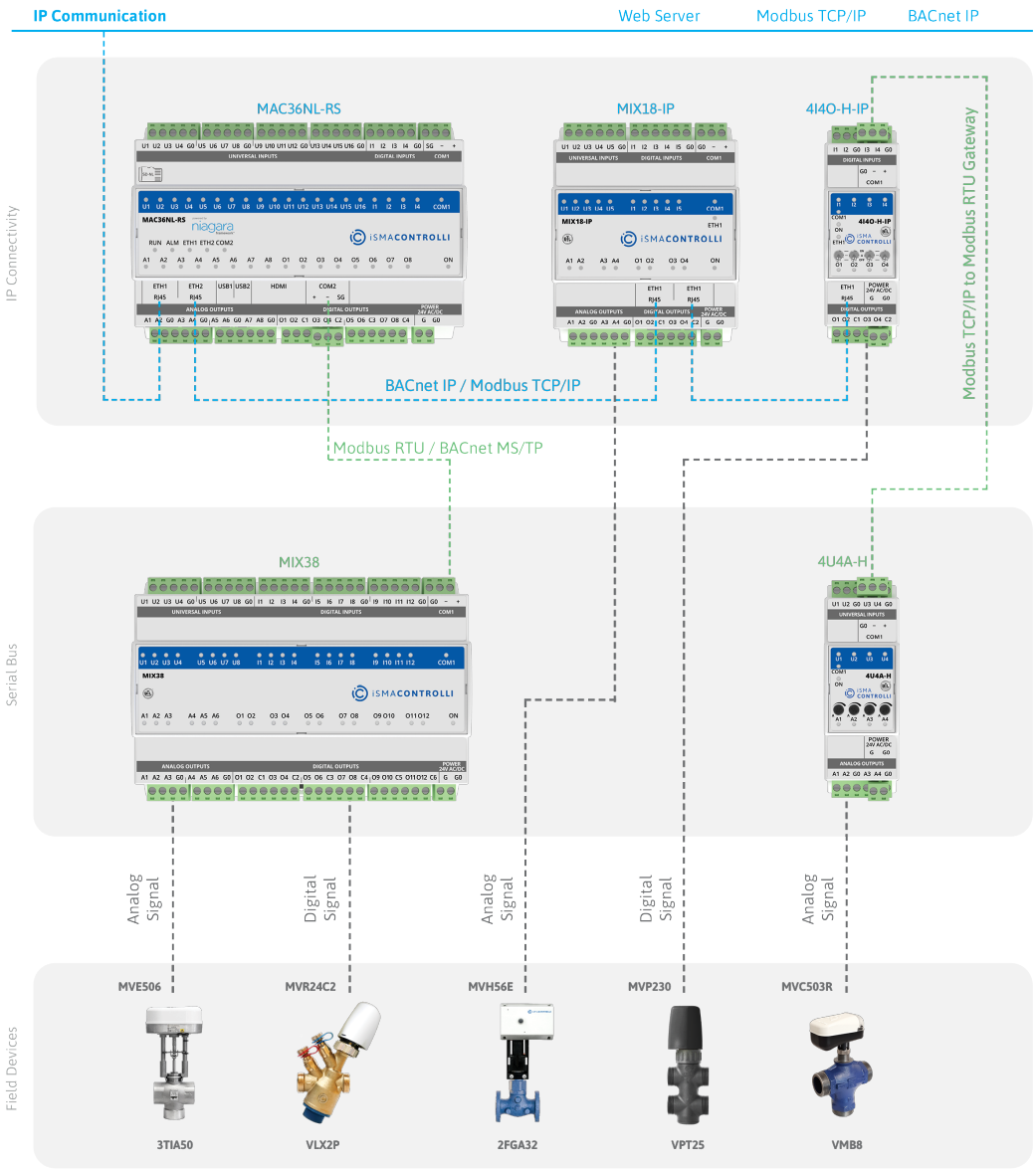
Analog Outputs







APPLICATION EXAMPLE

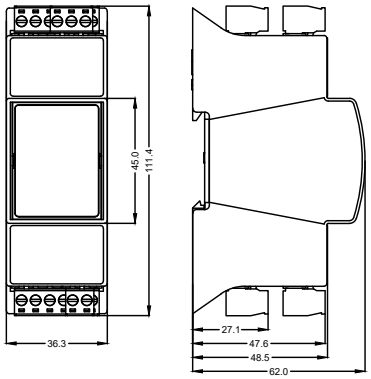


DEDICATED SOFTWARE

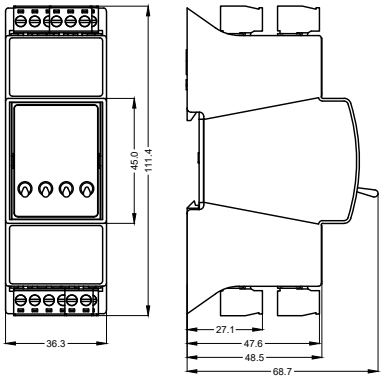
iSMA Configurator - configuration tool for non-programmable iSMA CONTROLLI devices

DIMENSIONS [mm]

Without Hand Switch



With Hand Switch



QUICKLINK SOLUTIONS S.r.l. | info@qlsol.com
Sede operativa nord ovest: Via G. Matteotti 193-203, 21044 Cavaria con Premezzo (VA), Italy
Sede operativa nord est: Via F. Petrarca, 34, 35020 Albignasego (PD), Italy