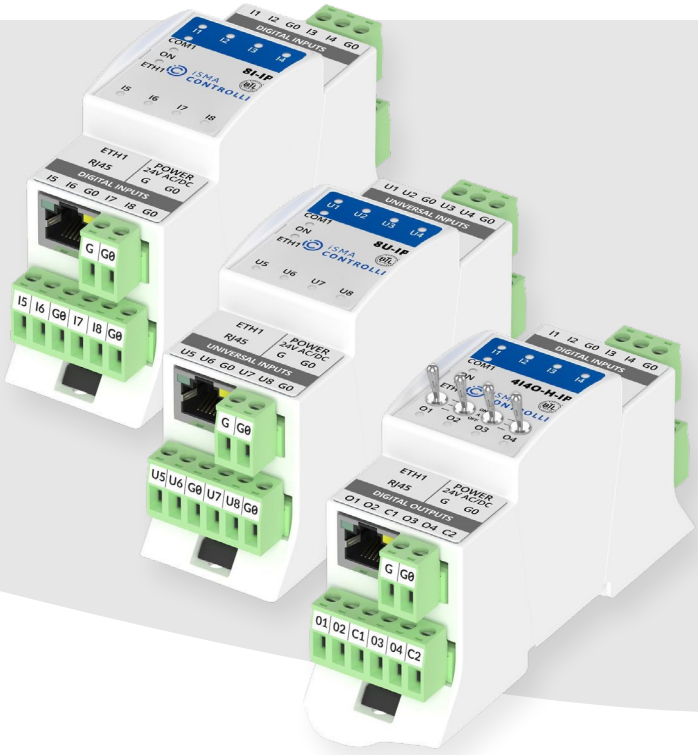
MINI-IP Series

Multiprotocol I/O modules.



iSMA-B-4I4O-H-IP

Multiprotocol I/O module with 4 digital inputs and 4 digital outputs, HOA switches, IP connectivity, and built-in light applications.

Multiprotocol I/O Module in a Compact Size with Built-in Light Applications. Powerful I/O module that works as a remote I/O over IP with open protocols, BACnet IP and Modbus TCP/IP. A compact size and ease of installation allow the module to be fitted even into limited space installations. The module is equipped with light applications that control the output based on the input measurement.

iSMA-B-8I-IP

Multiprotocol I/O module with 8 digital inputs, IP connectivity, and built-in Modbus TCP/IP to Modbus RTU/ASCII gateway.

Multiprotocol I/O Module in a Compact Size. Powerful I/O module that works as a remote I/O over IP with open protocols, BACnet IP and Modbus TCP/IP. The module is equipped with 8 digital inputs, which make the module a perfect monitoring device. A compact size and ease of installation allow the module to be fitted even into limited space installations.

iSMA-B-8U-IP

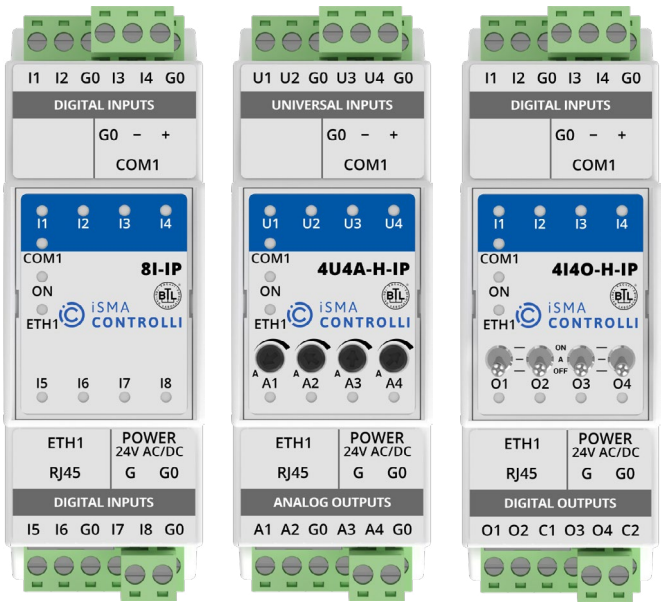
Multiprotocol I/O module with 8 universal inputs, IP connectivity, and built-in Modbus TCP/IP to Modbus RTU/ASCII gateway.

Multiprotocol I/O Module in a Compact Size. Powerful I/O module that works as a remote I/O over IP with open protocols, BACnet IP and Modbus TCP/IP. The module is equipped with 8 universal inputs with a built-in temperature table for over twenty types of temperature sensors in both Celsius and Fahrenheit degrees. A compact size and ease of installation allow the module to be fitted even into limited space installations.

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.

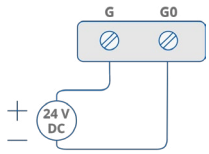
TECHNICAL SPECIFICATION

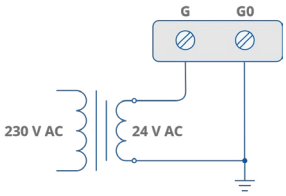
<table>
<tr><th colspan="2">DESCRIPTION</th><th colspan="4">MINI-IP I/O MODULES</th></tr>
<tr><td>Power supply</td><td>Voltage</td><td colspan="4">24 V AC/DC ± 20%</td></tr>
<tr><td rowspan="8">Universal inputs</td><td>Number of inputs</td><td colspan="4">4 (4U4A-H-IP, 4U4O-H-IP), 8 (8U-IP)</td></tr>
<tr><td>Voltage input</td><td colspan="4">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</td></tr>
<tr><td>Current input</td><td colspan="4">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</td></tr>
<tr><td>Digital input</td><td colspan="4">Output current ~1 mA</td></tr>
<tr><td>Resistance input</td><td colspan="4">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</td></tr>
<tr><td>Temperature input</td><td colspan="4">Measurement with RTDS (Real Time Digital Simulator) attached
Accuracy: ±0.1˚C
The PT1000 and NI1000 sensors use 16-bit resolution</td></tr>
<tr><td>Measurement resolution</td><td colspan="4">12-bit (default), 16-bit</td></tr>
<tr><td>Processing time</td><td colspan="4">10 ms/channel at 12-bit
140 ms/channel at 16-bit</td></tr>
<tr><td rowspan="3">Digital inputs</td><td>Number of inputs</td><td colspan="4">4 (4I4O-H-IP), 8 (8I-IP)</td></tr>
<tr><td>Type</td><td colspan="4">Dry contact or fast pulse counter</td></tr>
<tr><td>Maximum input frequency</td><td colspan="4">100 Hz saved in the EEPROM memory</td></tr>
<tr><td rowspan="5">Analog outputs</td><td>Number of outputs</td><td colspan="4">3</td></tr>
<tr><td>Voltage range</td><td colspan="4">0-10 V DC</td></tr>
<tr><td>Maximum load current</td><td colspan="4">20 mA</td></tr>
<tr><td>Resolution</td><td colspan="4">12-bit</td></tr>
<tr><td>Accuracy</td><td colspan="4">±0.5%</td></tr>
<tr><td rowspan="4">Digital outputs</td><td>Number of outputs</td><td colspan="4">4 (4I4O-H-IP, 4U4O-H-IP, 4O-H-IP)</td></tr>
<tr><td rowspan="2">Maximum loads:</td><td colspan="2">4I4O-H-IP, 4U4O-H-IP</td><td colspan="2">4O-H-IP</td></tr>
<tr><td>UL compliant ratings</td><td>Maximum ratings</td><td>UL compliant ratings</td><td>Maximum ratings</td></tr>
<tr><td>Resistive load (AC1)</td><td>3 A at 24 V AC
3 A at 30 V DC</td><td>3 A at 230 V AC
3 A at 30 V DC</td><td>8 A at 230 V AC
8 A at 30 V DC</td><td>8 A at 230 V AC
8 A at 30 V DC</td></tr>
<tr><td>Inductive load (AC3)</td><td>8 VA at 24 V AC
30 W at 30 V DC</td><td>75 VA at 230 V AC
30 W at 30 V DC</td><td>37 VA at 230 V AC
90 W at 30 V DC</td><td>360 VA at 230 V AC
90 W at 30 V DC</td></tr>
<tr><td rowspan="6">Triac outputs</td><td>Number of outputs</td><td colspan="4">4 (4TO-H-IP)</td></tr>
<tr><td>Load</td><td colspan="4">0.5 A at 20 V AC up to max. 250 V AC</td></tr>
<tr><td>Peak load per channel</td><td colspan="4">1.5 A at 20 V AC up to max. 250 V AC (30 s)</td></tr>
<tr><td>Gate control</td><td colspan="4">Zero crossing turn ON</td></tr>
<tr><td>Frequency range</td><td colspan="4">47 to 63 Hz</td></tr>
<tr><td>Snubber</td><td colspan="4">Snubberless triac</td></tr>
<tr><td rowspan="5">COM1</td><td rowspan="2">RS485 interface</td><td colspan="4">Up to 128 devices</td></tr>
<tr><td colspan="4">Half-duplex</td></tr>
<tr><td>Communication protocol</td><td colspan="4">Modbus RTU/ASCII (only as Modbus gateway)</td></tr>
<tr><td>Ports</td><td colspan="4">Screw connector</td></tr>
<tr><td>Baud rate</td><td colspan="4">2400-115200</td></tr>
<tr><td rowspan="2">ETH1</td><td>Address</td><td colspan="4">0-99 set by a rotary switch</td></tr>
<tr><td>Ethernet interface</td><td colspan="4">Fast Ethernet</td></tr>
<tr><td></td><td>Communication protocol</td><td colspan="4">Modbus TCP/IP, BACnet IP</td></tr>
</table>

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

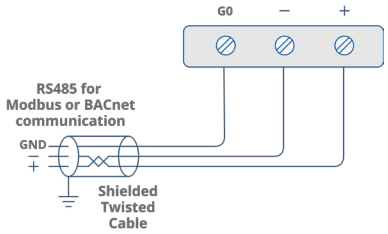
WIRING DIAGRAMS

Power Supply

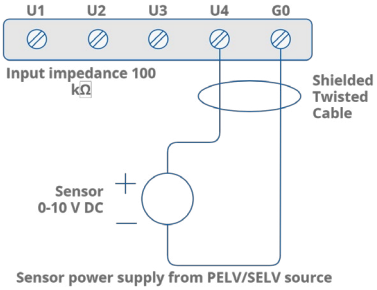


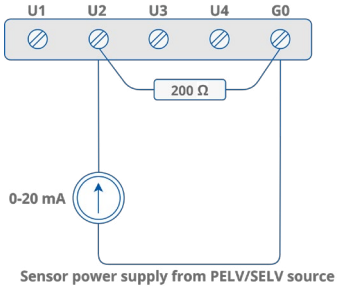


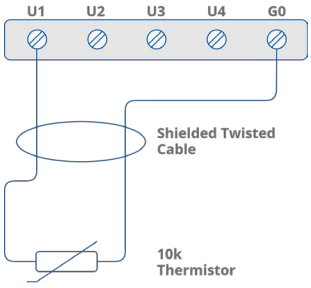
Communication

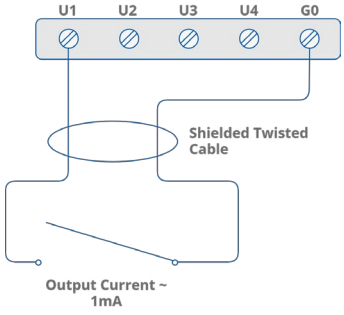


Universal Inputs

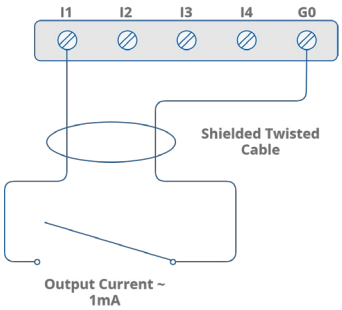




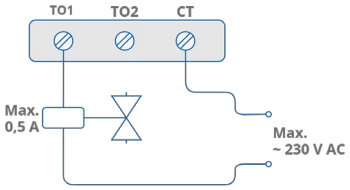




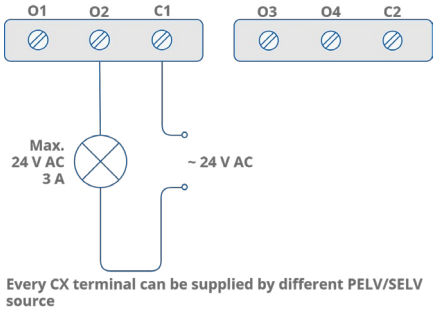
Digital Inputs

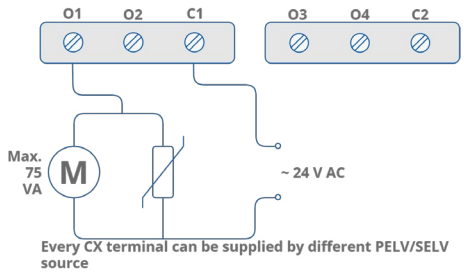


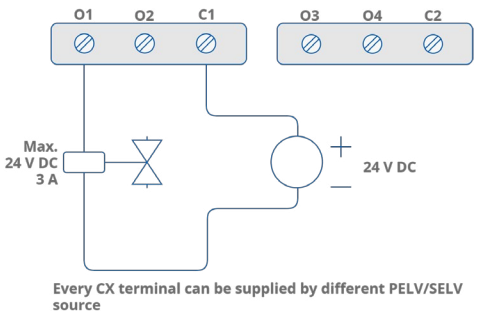
Triac Outputs



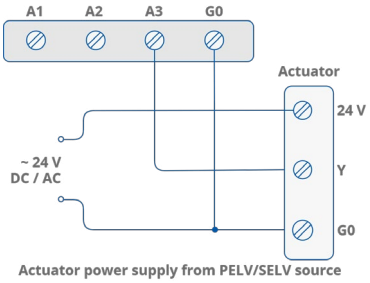
Digital Outputs

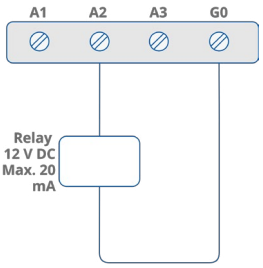


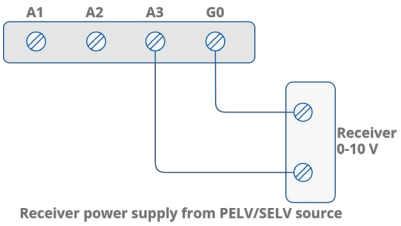




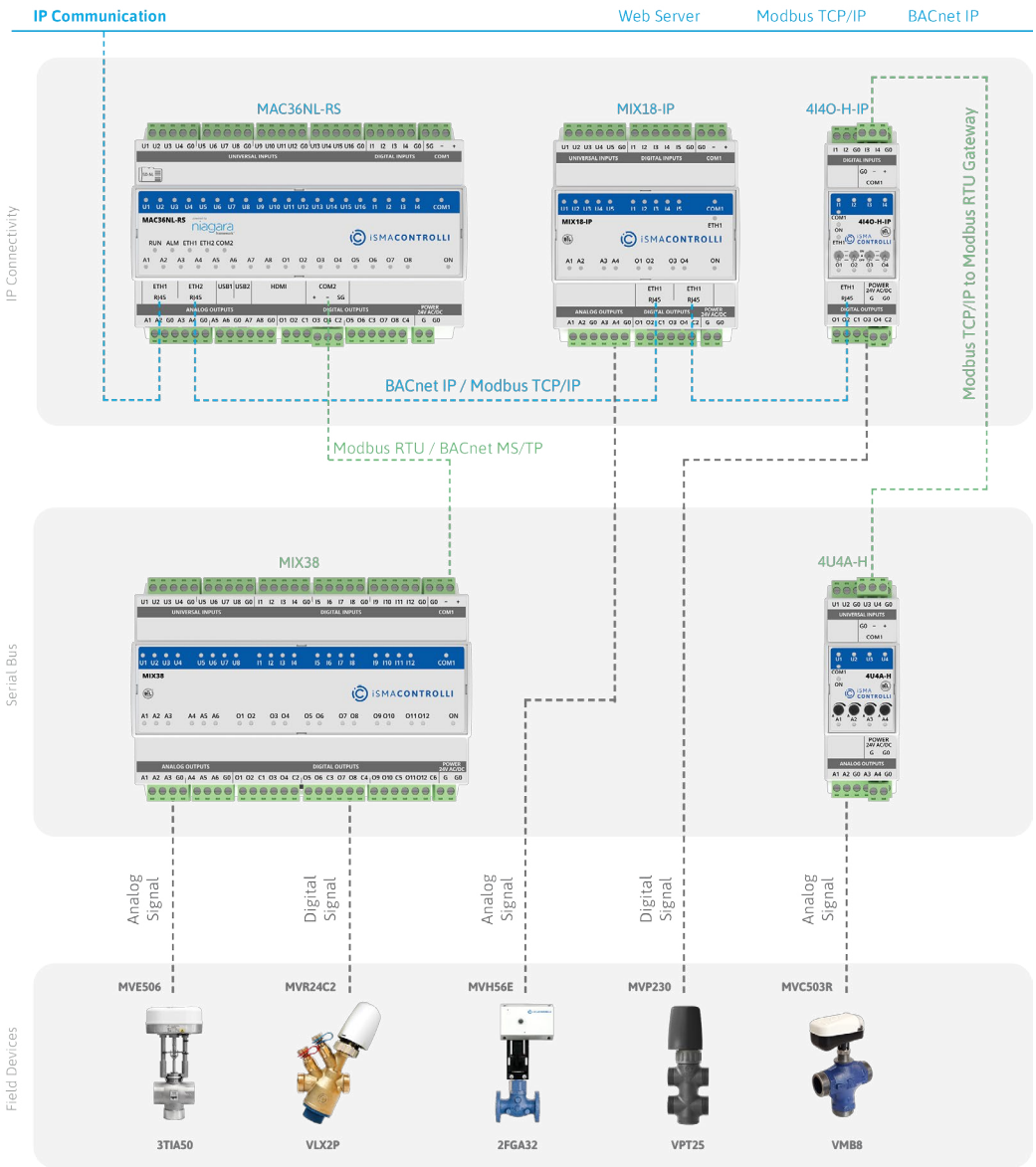
Analog Outputs







APPLICATION EXAMPLE

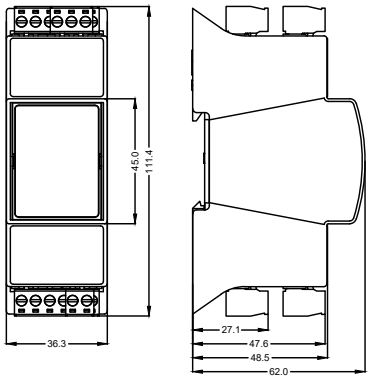
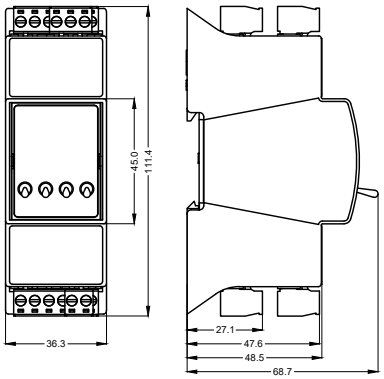


DEDICATED SOFTWARE

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

DIMENSIONS [mm]

Without Hand Switch



With Hand Switch