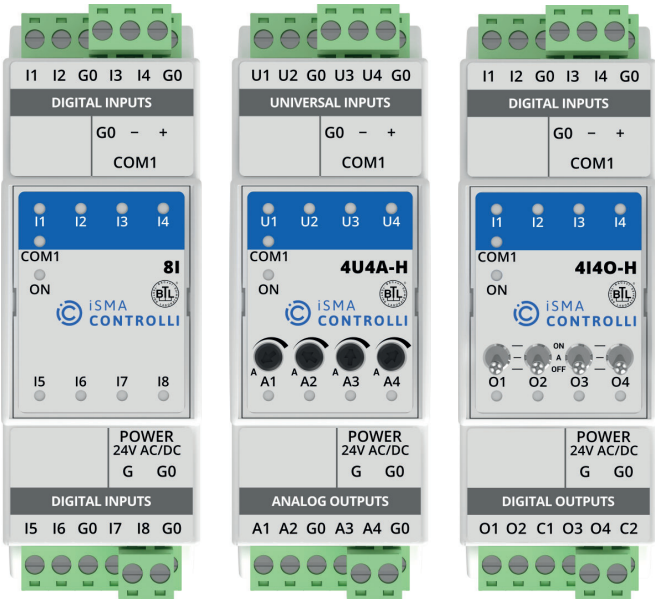


Multiprotocol I/O Modules

| MODEL         | DESCRIPTION                                                                                                                                                          |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| iSMA-B-4I4O-H | I/O module with 4 digital inputs, 4 digital outputs, HOA switches, RS485 BACnet MS/TP and Modbus RTU/ASCII communication, and built-in light application             |
| iSMA-B-4O-H   | I/O module with 4 digital outputs, HOA switches, and RS485 BACnet MS/TP and Modbus RTU/ASCII communication                                                           |
| iSMA-B-4TO-H  | I/O module with 4 triac outputs, HOA switches, and RS485 BACnet MS/TP and Modbus RTU/ASCII communication                                                             |
| iSMA-B-4U4A-H | I/O module with 4 universal inputs, 4 analog outputs, manual override switches, and RS485 BACnet MS/TP and Modbus RTU/ASCII communication                            |
| iSMA-B-4U4O-H | I/O module with 4 universal inputs, 4 digital outputs, HOA switches, RS485 BACnet MS/TP and Modbus RTU/ASCII communication, and built-in HVAC and light applications |
| iSMA-B-8I     | I/O module with 8 digital inputs and RS485 BACnet MS/TP and Modbus RTU/ASCII communication                                                                           |
| iSMA-B-8U     | I/O module with 8 universal inputs and RS485 BACnet MS/TP and Modbus RTU/ASCII communication                                                                         |



APPLICATION AND USE

Multiprotocol I/O modules of the MINI-RS series are compact devices working as remote I/Os over RS485 with open protocols, BACnet MS/TP and Modbus RTU/ASCII. The modules can be simply addressed from 0 to 99 using an onboard rotary switch and connected to a BMS via a local controller or using the Modbus gateway functionality in a MIX-IP or MINI-IP module of choice, to create a cost-effective building control solution. The MINI-RS 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-RS series, the MINI-RS modules are factory-equipped with the two most popular open communication protocols, Modbus RTU/ASCII and BACnet MS/TP, selected with DIP switches. Devices configured to communicate in the Modbus RTU/ASCII protocol operate as server devices, and devices configured to communicate in the BACnet MS/TP protocol work as client or server devices. 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. Built-in mini USB allows for the initial configuration of the unit without an additional power supply.

FEATURES

- 7 different types of modules with RS485 communication
- BACnet MS/TP, BACnet Slave, and Modbus RTU/ASCII protocols, selected with a DIP switch
- 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
- 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 and iSMA-B-4I4O-H models.

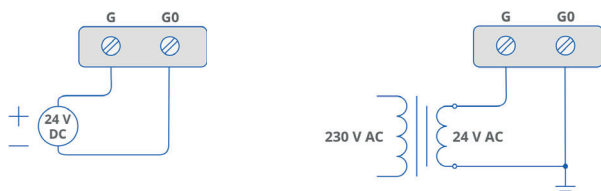
The performances stated in this sheet can be modified without any prior notice.

| DESCRIPTION      |                         | MINI-RS I/O MODULES                                                                                                                                                                                                                                                     |                                      |                                      |                                       |
|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|
| Power supply     | Voltage                 | 24 V AC/DC $\pm$ 20%                                                                                                                                                                                                                                                    |                                      |                                      |                                       |
| Universal inputs | Number of inputs        | 4 (4U4A-H, 4U4O-H), 8 (8U)                                                                                                                                                                                                                                              |                                      |                                      |                                       |
|                  | Voltage input           | Voltage measurement: 0-10 V DC<br>Input impedance: 100 k $\Omega$<br>Measurement accuracy: $\pm$ 0.1%<br>Measurement resolution: 3 mV at 12-bit and 1 mV at 16-bit                                                                                                      |                                      |                                      |                                       |
|                  | Current input           | Current measurement: 0-20 mA<br>Required external resistor: 200 $\Omega$<br>Measurement accuracy: $\pm$ 1.1%<br>Measurement resolution: 15 $\mu$ A at 12-bit and 5 $\mu$ A at 16-bit                                                                                    |                                      |                                      |                                       |
|                  | Digital input           | Output current $\sim$ 1 mA                                                                                                                                                                                                                                              |                                      |                                      |                                       |
|                  | Resistance input        | Measurement of resistance: 0-1000 k $\Omega$<br>Measurement resolution for 20 k $\Omega$ load: 20 $\Omega$ at 12-bit and 1 $\Omega$ at 16-bit<br>Measurement resolution for PT1000 and NI1000: 0.1 $\Omega$ at 16-bit<br>Resistance measurement method: voltage divider |                                      |                                      |                                       |
|                  | Temperature input       | Measurement with attached RTDs (resistance temperature detectors)<br>Accuracy: $\pm$ 0.1 $^{\circ}$ C<br>The PT1000 and NI1000 sensors use 16-bit resolution                                                                                                            |                                      |                                      |                                       |
|                  | Measurement resolution  | 12-bit (default), 16-bit                                                                                                                                                                                                                                                |                                      |                                      |                                       |
|                  | Processing time         | 10 ms/channel at 12-bit<br>140 ms/channel at 16-bit                                                                                                                                                                                                                     |                                      |                                      |                                       |
| Digital inputs   | Number of inputs        | 4 (4I4O-H), 8 (8I)                                                                                                                                                                                                                                                      |                                      |                                      |                                       |
|                  | 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                | $\pm$ 0.5%                                                                                                                                                                                                                                                              |                                      |                                      |                                       |
| Digital outputs  | Number of outputs       | 4 (4I4O-H, 4U4O-H, 4O-H)                                                                                                                                                                                                                                                |                                      |                                      |                                       |
|                  | Maximum loads:          | 4I4O-H, 4U4O-H                                                                                                                                                                                                                                                          |                                      | 4O-H                                 |                                       |
|                  |                         | UL compliant ratings                                                                                                                                                                                                                                                    | Maximum ratings                      | UL compliant ratings                 | Maximum ratings                       |
|                  | Resistive load (AC1)    | 3 A at 24 V AC<br>3 A at 30 V DC                                                                                                                                                                                                                                        | 3 A at 230 V AC<br>3 A at 30 V DC    | 8 A at 230 V AC<br>8 A at 30 V DC    | 8 A at 230 V AC<br>8 A at 30 V DC     |
|                  | Inductive load (AC3)    | 8 VA at 24 V AC<br>30 W at 30 V DC                                                                                                                                                                                                                                      | 75 VA at 230 V AC<br>30 W at 30 V DC | 37 VA at 230 V AC<br>90 W at 30 V DC | 360 VA at 230 V AC<br>90 W at 30 V DC |
| Triac outputs    | Number of outputs       | 4 (4TO-H)                                                                                                                                                                                                                                                               |                                      |                                      |                                       |
|                  | 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, BACnet MS/TP                                                                                                                                                                                                                                          |                                      |                                      |                                       |
|                  | Ports                   | Screw connector                                                                                                                                                                                                                                                         |                                      |                                      |                                       |
|                  | Baud rate               | 2400-115200                                                                                                                                                                                                                                                             |                                      |                                      |                                       |
|                  | Address                 | 0-99 set by a rotary switch                                                                                                                                                                                                                                             |                                      |                                      |                                       |

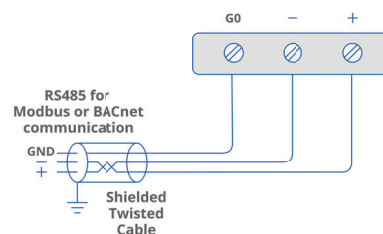
| DESCRIPTION        |                    | MINI-RS I/O MODULES                 |                  |
|--------------------|--------------------|-------------------------------------|------------------|
| USB1               | USB 2.0            | mini USB type B                     |                  |
| 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 mm <sup>2</sup> (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

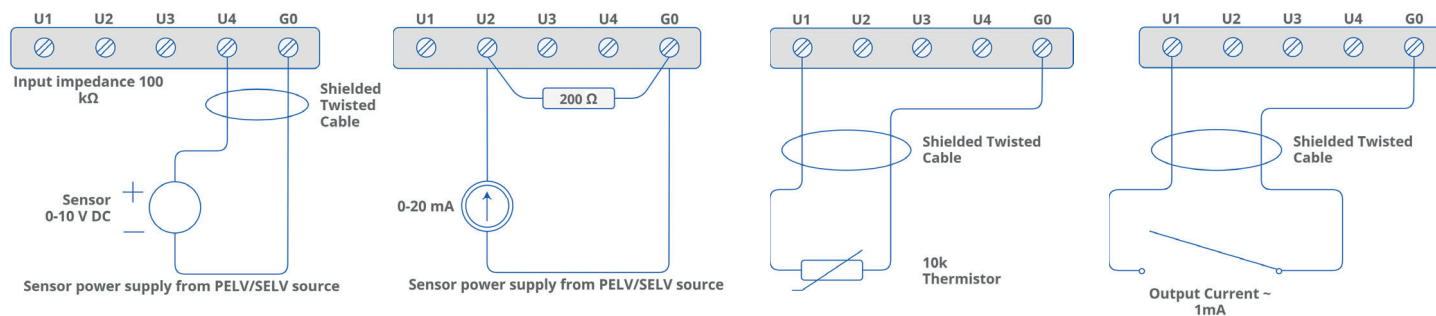
### Power Supply



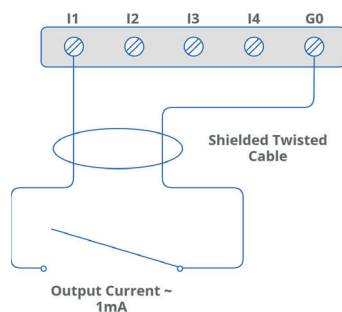
### Communication



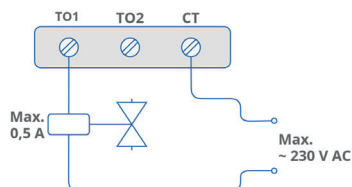
### Universal Inputs



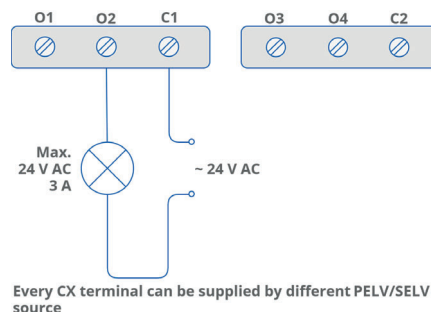
### Digital Inputs

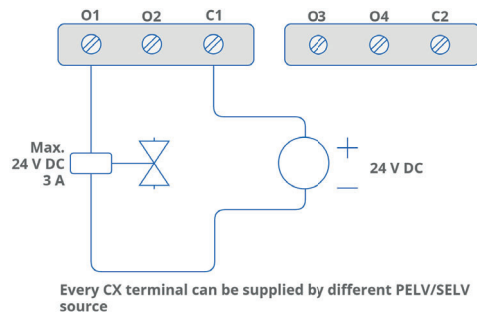
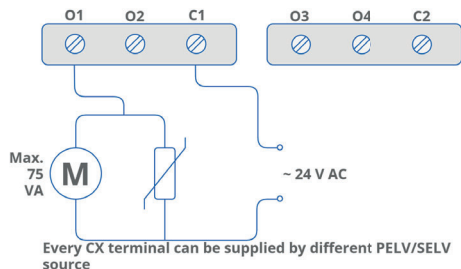


### Triac Outputs

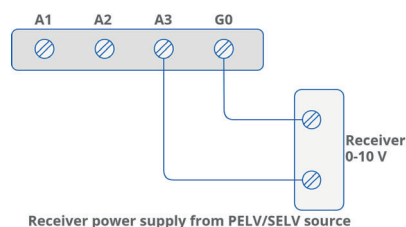
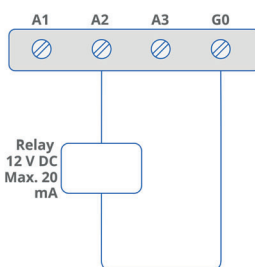
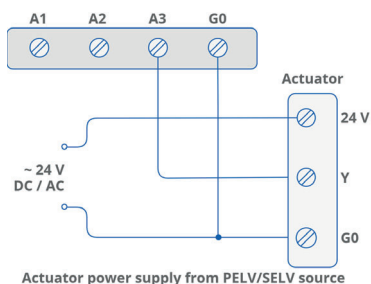


### Digital Outputs

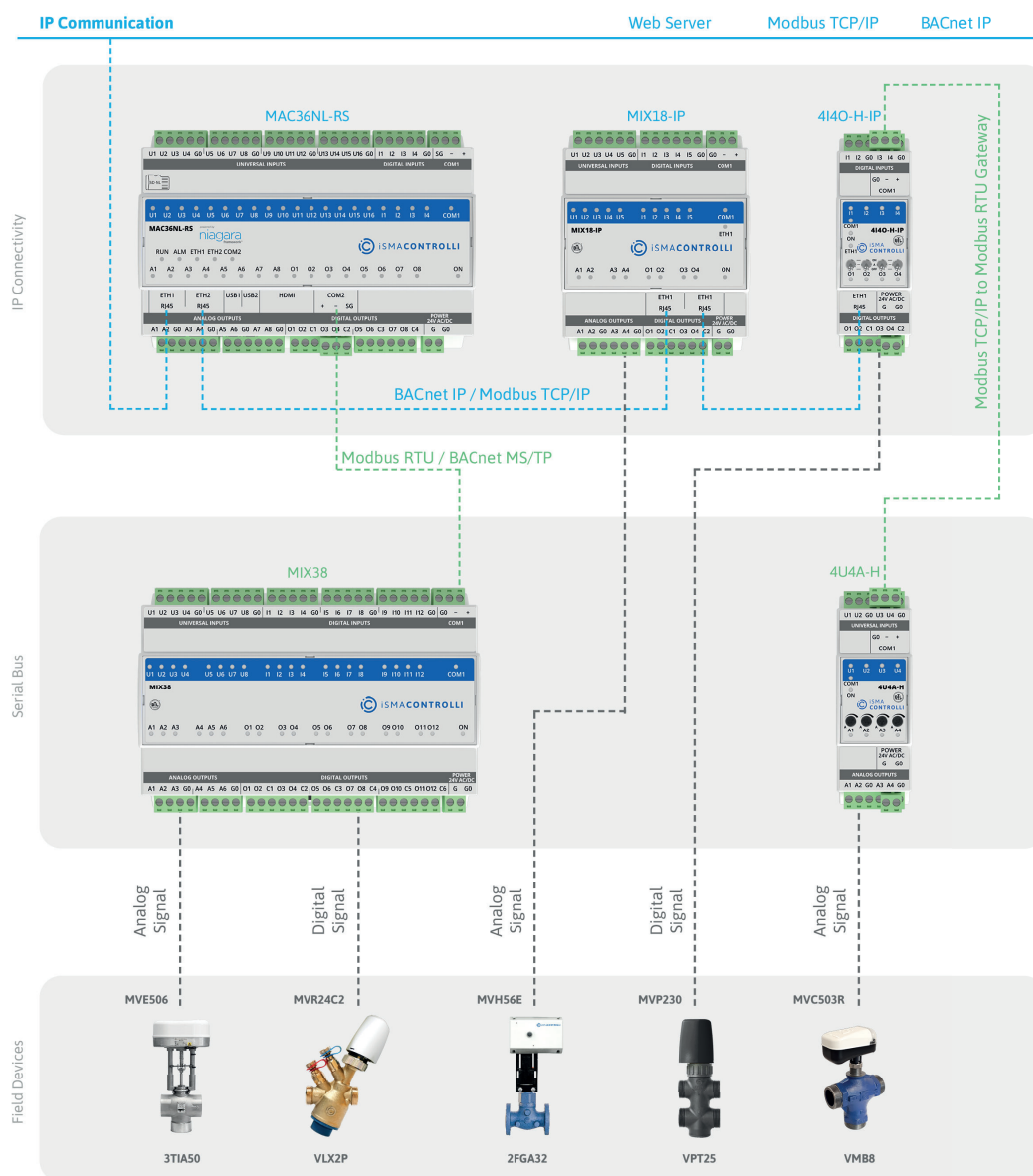




## Analog Outputs



## APPLICATION EXAMPLE

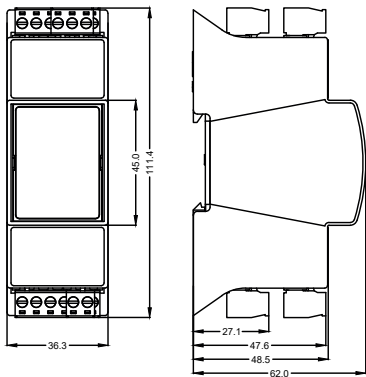




iSMA Configurator - configuration tool for non-programmable iSMA CONTROLLI devices

DIMENSIONS [mm]

Without Hand Switch



With Hand Switch

