



A smart building
is like a living organism



Global Control 5

We make buildings intelligent

+48 22 54 892 77 / gc5@gc5.pl / www.gc5.pl

Global Control 5 Sp. z o.o., Wyczolki 71, 02-820 Warsaw, Poland

A photograph of a modern, curved glass skyscraper with a grid-like window pattern, reflecting the sky and surrounding environment. The building is the central focus of the background.

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Global Control 5, one of the Niagara Community members, is the Polish leader in hardware and software technology.

We are a team of experienced specialists who have been professionally dealing with building automation systems for many years now.

Being guided by our commitment and passion, we set new challenges, develop the company and plan to expand in the sector of building technologies.

We deliver technologically sophisticated solutions, responding to the needs of modern world. The blend of innovation, openness and individual approach to each project has gained us the trust of our clients.

Global Control 5 is a privately-owned company. All owners work for Global Control 5 and are responsible for specific areas of the company.

Who we are?



The name Global Control 5 stands for our goal to manage buildings globally, on 5 continents.

We work closely with international companies and successfully sell iSMA products in many countries.

Global Control 5

on 5 continents



What we do?



We create solutions for building and industrial management systems. They are developed upon the worldwide Niagara Frame work® standard and are easily integrated with products of other brands. Our devices give you the full flexibility and choice.

Our solutions control all features that ensure comfort and are expressed in definite physical values like temperature, air humidity, lighting, carbon dioxide levels, opening and shutting of windows, using blinds.

Global Control 5 experts use commercially available technologies to create their own solutions.

These include comprehensive solutions for building automation under its own brand iSMA (Intelligent Solution Managing Automation).



Our portfolio consists of managing and supervisory software, automation controllers, DDC controllers, fan-coil units, I/O modules and peripherals like sensors, relays, etc.

All our devices are made in Poland and sold with global success.

Solutions
knowledge + components



Our vision



Global Control 5 being a global company, creates and delivers "premium" intelligent building automation technology ranging from peripherals and sensors through edge devices to cloud services.

Global Control 5 designs and produces IoT-enabled solutions that seamlessly connect, collect, analyze and act on data in real-time delivering enhanced safety, efficiency, reliability and sustainability.

With openness, versatility, ease of installation and usage as well as the robust analytics capability, GC5 provides its clients with the innovative solution perfectly suiting their most demanding needs



Creating
open solutions



Our mission



We are a team of highly qualified specialists with passion, skills and commitment to our work. We strive every day to take up new challenges with aim to lead in all areas of our business activity.

Our team's open-minded approach and strong will to constantly develop keeps us creative and lets us follow newest trends in building automation business.

Our unique work culture enables us to quickly solve problems that may face us, making our team agile and ready for any challenge.



Our customers around the world are handled with greatest care as we strongly value long-term partnerships and loyalty.

With that mindset, we create our products and services with great attention to detail in order to achieve top notch quality – our number one priority.

That's all
that is Global Control 5



Our references



Alchemia III
Gdansk, Poland



Alchemia III

Gdansk, Poland

That is ARGON, the largest standalone office building in northern Poland. It consists of 14 overground H-shaped storeys. It accommodates 36 000 sqm of class A office space, with the total leasable area of 38 000 sqm. The facility offers 500 parking spaces.

The building is LEED Platinum pre-certified. The complex Building Management System (BMS) was developed primarily on the basis of iSMA solutions proposed by Global Control 5 – a Polish producer of building automation equipment.

Awards, Titles, Certificates:

Award in EUROBUILD AWARDS 2015 in the category New Office Building of the Year in Poland.

Title of The Best Ecological Design in the GREEN BUILDING AWARD competition

LEED Platinum Certificate. The building achieved the score of 89.

It is currently the highest score in Tricity and the third highest score in Poland.

The complex Building Management System (BMS) was developed primarily on the basis of iSMA solutions proposed by Global Control 5 – a Polish producer of building automation equipment.

Provided equipment:

- 1200 iSMA-B-FCU-HL comfort controllers for all the FCUs in the building
- 660 fully personalised iSMA-B-LP room modules for local operation of FCUs
- 2200 iSMA-TE-DP temperature sensors
- 60 iSMA-B-AAC20 freely programmable DDC controllers
- 320 iSMA-B-MIX and iSMA-B-MINI I/O modules

The entire facility is managed by the Niagara 4 BMS software and 20 network controllers working in the Niagara 4 environment.

ARGON contains 50,000 automation points, visualised and managed as a homogeneous system.

The following communication protocols are used: BACnet MSTP, BACnet IP, LON FTT/10, Modbus RTU, MODBUS TCP, M-BUS, MP-BUS, DALI.



WHY iSMA?

Universal – each iSMA device is equipped with two most popular building protocols: BACnet and Modbus. Furthermore, BACnet IP or Modbus TCP communication is a unique feature for I/O modules. Apart from their basic functionality, the modules – in certain situations – serve as a Modbus TCP gateway to RS-485 for other devices.

Convenient: I/O modules supporting IP communication can be directly communicated with the BMS system without using converters.

Easy to Use: manual control over all outputs in iSMA-B-MINI modules, with simultaneous LED signalisation of all I/O.

Space Saving thanks to the compact design of the modules.

Additionally, the following features of iSMA-B-FCU FCU controllers have been emphasised:

- Modbus and BACnet in a single device
- additional, built-in RS-485
- quick and easy configuration using DIP switches, addressing, device grouping, and communication protocol selection. This allowed for reduction of engineering works time by 70%.



Our references



Alchemia II
Gdansk, Poland

Alchemia II

Gdansk, Poland

Two office towers – FERRUM and TITANIUM – connected by a common four-storey podium, which accommodates retail space and a car park.

The total area of the facility is 25 000 sqm, of which 22 000 sqm is occupied by class A office space. The building offers nearly 350 parking spaces at five levels.

Awards, Titles, Certificates:

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The complex Building Management System (BMS) was developed primarily on the basis of iSMA solutions proposed by Global Control 5 – a Polish producer of building automation equipment.

The following equipment was provided:

- 1600 iSMA-TE-DT temperature sensors
- 213 iSMA-B-MIX and iSMA-B-MINI I/O modules
- 30 iSMA-B-W0202 wireless modules

The entire facility has been equipped with the BMS Niagara AX software and 30 network controllers working in the Niagara AX environment.

Each of the buildings contains 50,000 automation points, visualised and managed as a homogeneous system.

The following communication protocols are used:

BACnet MSTP, BACnet IP, LON FTT/10, Modbus RTU, MODBUS TCP, M-BUS, MP-BUS, DALI.



WHY iSMA?

Universal – each iSMA device is equipped with two most popular building protocols: BACnet and Modbus. Furthermore, BACnet IP or Modbus TCP communication is a unique feature for I/O modules. Apart from their basic functionality, the modules – in certain situations – serve as a Modbus TCP gateway to RS-485 for other devices.

Convenient: I/O modules supporting IP communication can be directly communicated with the BMS system without using converters.

Easy to Use: manual control over all outputs in iSMA-B-MINI modules, with simultaneous LED signalisation of all I/O.

Space Saving thanks to the compact design of the modules.



iSMA-B-MAC36NL

The iSMA-B-MAC36NL is a compact Master Application Controller with built-in different types of I/O and operating in Niagara Framework environment. Using the specific local I/O set 16x UI, 8x AO, 4x DI and 8x DO allows to use the device in different applications. The controller provides control, data logging, alarming, scheduling, integration and visualisation.

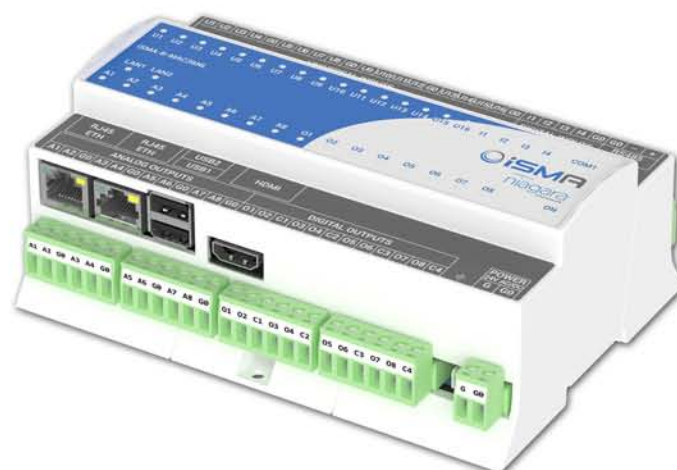
To allow IP connectivity there are 2x Fast Ethernet ports which can operate as two independent ports or in switch mode. Built-in 1x RS485 can be used to expand number of I/O by connecting MINI or MIX series I/O modules or to integrate with other subsystems.

Optionally, the controller can be equipped with Wi-Fi adapter, 3G modem or one of the interfaces: DALI, M-bus, second RS485.

The iSMA-B-MAC36NL provides rich graphical interface displaying on a standard Web browser or on external display with touchscreen connected to built-in HDMI and USB port.

Key Features

- Niagara 4.3 and later
- Real-time programming
- 2x Fast Ethernet (independent or switch mode)
- 1x RS485 (opto-isolated)
- 2x USB
- 16x UI, 8x AO, 4x DI and 8x DO
- HDMI to connect external display, touchscreen support
- Built-in Web server provides graphical user interface available from Web browser level
- SD card to collect real-time data, history and alarms
- Wi-Fi adapter via USB (option)
- Built-in 3G modem (option)
- Optionally one of the interfaces: DALI, M-Bus, second RS485
- Different licensing models for various application types



powered by
niagara
framework

iSMA-B-MAC36NL

Specification

16x Universal Inputs (16UI)

All Universal Inputs have 16-bit ADC which support the following types of inputs:

- Temperature input supports the following types of sensors: 10K3A1, 10K4A1, Carel 10K, 20K6A1, 2.2K3A1, 3K3A1, 30K6A1, SIE1, TAC1, SAT1, Pt1000, Ni1000

For sensors Pt1000 and Ni1000 use only 16-bit resolution

- Voltage input 0-10 V DC: input resistance 100 k Ω accuracy $\pm 0,1\%$, measurement resolution 3 mV @ 12-bit and 1 mV @ 16-bit
- Current input 0-20 mA (external resistor 499 Ω required)
- Resistive input 0-1000 k Ω : measurement resolution for 20 k Ω load: 20 Ω @ 12-bit and 1 Ω @ 16-bit
- Dry contact input

4x Digital Inputs (4DI)

- Dry contact inputs
- Fast pulse counter up to 100 Hz saved in EEPROM memory

8x Analog Outputs (8AO)

All Analog Outputs are equipped with 12-bit ADC provides 10 mV resolution and accuracy less than $\pm 0,5\%$. They support the following output types:

- Voltage: 0-10 V DC max. load up to 20 mA
- PWM: 0,01 Hz, 0,1 Hz, 1 Hz, 10 Hz, 100 Hz

8x Digital Outputs (8DO)

- Relay output (NO): max. 3 A @ 230 V AC and max. 3 A @ 30 V DC

Platform

- Multicore Cortex-A Series ARM Processor
- 512 MB DDR3 SDRAM
- Removable micro-SD card – 4 GB (2 GB system reserved / 2 GB user storage)

Communication

- RS485 half-duplex, opto-isolated
- Baud rate from 2400 to 115200
- 2x Fast Ethernet (independent or switch mode)
- 2x USB (1x OTG, 1x Host)
- HDMI type A (standard)
- Micro SD card slot
- 1-Wire Interface
- Modbus RTU/ASCII/IP, BACnet MSTP/IP
- Wi-Fi adapter over USB (option)
- Built-in 3G modem (option)
- Optionally one of the interfaces: DALI, M-Bus, second RS485

Power supply

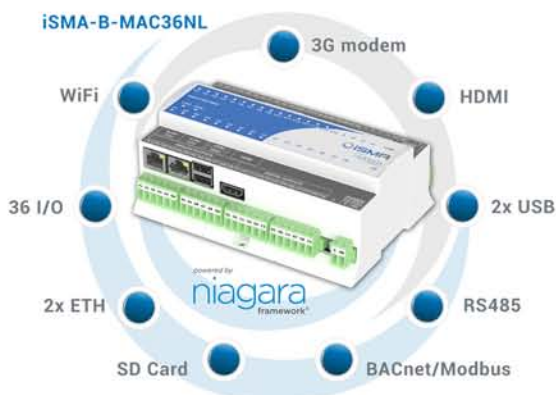
- 24 V AC/DC

Housing

- Dimension: 160x110x62 mm
- Construction: UL approved, self-extinguishing plastic (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation



iSMA-B-2D1B

iSMA-B-2D1B has been built in order to control light and a blind/shutter motor in a single space in the building.

The device is dedicated to control two separate DALI light areas with up to 32 DALI ballasts. Built-in two Special Inputs and two Digital Inputs are dedicated to connect presence detectors and light switches. Dedicated DIP-switch allows to activate predefined inputs configuration. Out of box the device allows to control the DALI ballasts by a common light switch and a common presence detector without the need of programming, which makes iSMA-B-2D1B the unique plug& play type device dedicated to DALI network control.

In addition iSMA-B-2D1B has blind/shutter control function implemented, which allows to control a blind/shutter motor by a common double-switch. The controller is factory-equipped with the RS485 interface which is the physical layer for the most popular open communication protocol Modbus ASCII/RTU.

Key Features

- Addressing from 0 to 255 by DIP-switch
- 230 V AC power supply
- Dedicated DIP-switch for inputs configuration
- Fast processor with ARM core
- Modbus ASCII/RTU or for connecting to higher level system over RS485
- 2x DALI Interface: built-in power supply for up to 16 ballasts each
- Special and Digital Inputs for present detectors and light and blind switches connection
- 2x power supply outputs for ballasts (fuse protected)
- 1x power supply output for blind motor (fuse protected)
- Built-in 24 V DC for an external equipment



iSMA-B-2D1B

Specification

Inputs

- 2x Special Input – dry contact
- 4x Digital Input – dry contact

Outputs

- 2x Light output 230 V AC max. 4 A
- 1x Motor Output 230 V AC max. 1,5 A
- 1x Power Supply Output 24V DC max. 80 mA

WARNING! Max. current for all the outputs is 8 A

Power supply

- 230 V AC

Environment

- Operating temperature: 0°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation

Platform

- ARM Cortex – M4

Communication

RS485 Interface:

- Interface RS485 half-duplex
- Up to 128 devices on bus
- Protocols: Modbus
- Baud rate: 2400 to 115200 bps

DALI Interface:

- 2x separate DALI Interface: built-in power supply max. 40 mA
- Up to 16 DALI ballasts per interface

Housing

- Dimension: 123,6x136,6x54,5 mm, (123,6x171,2x54,9 mm with plastic cover for terminals)
- Construction: plastic, self-extinguishing (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Ordering	2x Special Inputs	Digital Inputs	2x 230 V AC Light Output	1x Motor Output	2x Dali Interface	Wieland connectors
iSMA-B-2D1B	✓	4x DI	✓	✓	✓	
iSMA-B-2D1B-WD	✓	4x DI	✓	✓	✓	✓
iSMA-B-2D	✓	2x DI	✓		✓	
iSMA-B-2D-WD	✓	2x DI	✓		✓	✓



iSMA-B-AAC20

The iSMA-B-AAC20 is an advanced control device to building automation and HVAC systems. Using SVM (Sedona Virtual Machine) allows the user to quickly and easily program in real time. Large number of inputs and outputs allows to integrate with other devices and sensors (AAC20 provides 8xUI, 4xDI, 4/6xAO and 4xDO). Legible, fully programmable LCD, can be used as simple interface to local operation of system. Built-in RS485 can be used to expand number of I/O by connecting MINI or MIX series I/O modules using Modbus ASCII/RTU. In addition, to increase the versatility of the controller, it supports many open communications protocols: BACnet, Modbus, SOX, DALI, M-Bus, 1-Wire or oBIX. The AAC20 is mounted in a housing adapted for DIN rail mounting or directly on a panel. Separate, easy to remove connectors allow quick wiring without removing the entire module.

Key Features

- Sedona Framework 1.2 support
- Real Time Clock (RTC)
- Configuration via web
- 2x Fast Ethernet with built-in switch
- RS485 port (Modbus or BACnet)
- Built-in Modbus Gateway TCP/IP to RS485
- DALI Interface: built-in power supply (option)
- M-Bus Interface: up to 20 devices (option)
- 1-Wire Interface
- USB Host Interface
- An external display
- Built-in LCD Display (option)
- Micro SD card slot to log historical data and alarms
- Fast processor with ARM dual core 204MHz



Powered by
sedona
FRAMEWORK™

iSMA-B-AAC20

Specification

8x Universal Inputs (8UI)

All universal inputs have 16-bit resolution which support the following types of inputs:

- Temperature input support the following types of sensors: 10K3A1, 10K4A1, Carel 10K, 20K6A1, 2.2K3A1, 3K3A1, 30K6A1, SIE1, TACT, SAT1, Pt1000, Ni1000

For sensor Pt1000 and Ni1000 use only 16-bit resolution

- Voltage input 0-10 V DC: input resistance 100 k Ω accuracy $\pm 0,1\%$ measurement resolution 3 mV @ 12-bit and 1 mV @ 16-bit
- Current input 0-20 mA (external resistor 499 Ω required)
- Resistive input 0-1000 k Ω : measurement resolution for 20 k Ω load 20 Ω @ 12-bit and 1 Ω @ 16-bit
- Dry contact input

4x Digital Inputs (4DI)

- Dry contact inputs
- Fast pulse counter up to 100 Hz save in EEPROM memory

4/6x Analog Outputs (4/6AO)

All analog outputs are equipped with 12-bit ADC provides 10 mV resolution and accuracy less than $\pm 0,5\%$. They support the following output types:

- Output: 0-10 V DC maximum load up to 20 mA (AO6- 5 mA)
- PWM: 0,01 Hz, 0,1 Hz, 1 Hz, 10 Hz, 100 Hz

AO5 and AO6 can only be used if 1-wire port is not in use, please notice for AO6 maximum current load is up to 5 mA.

4x Digital Outputs (4DO)

- Relay output (NO): max. 3 A, 230 V AC/30 V DC

Platform

- ARM Cortex-M4 204 MHz
- ARM Cortex-M0 204 MHz

Communication

- Interface RS485 half-duplex
- Baud rate: 2400 to 115200 bps
- 2x Ethernet with built-in switch (DHCP, Auto IP)
- DALI Interface: built-in power supply 130 mA (option)
- M-Bus Interface: up to 20 devices (option)
- 1-Wire Interface
- Micro SD card slot
- USB Host Interface
- Protocols: Modbus RTU/ASCII/IP, BACnet MSTP/IP, SOX, DALI, M-Bus, 1-Wire, oBIX

Power supply

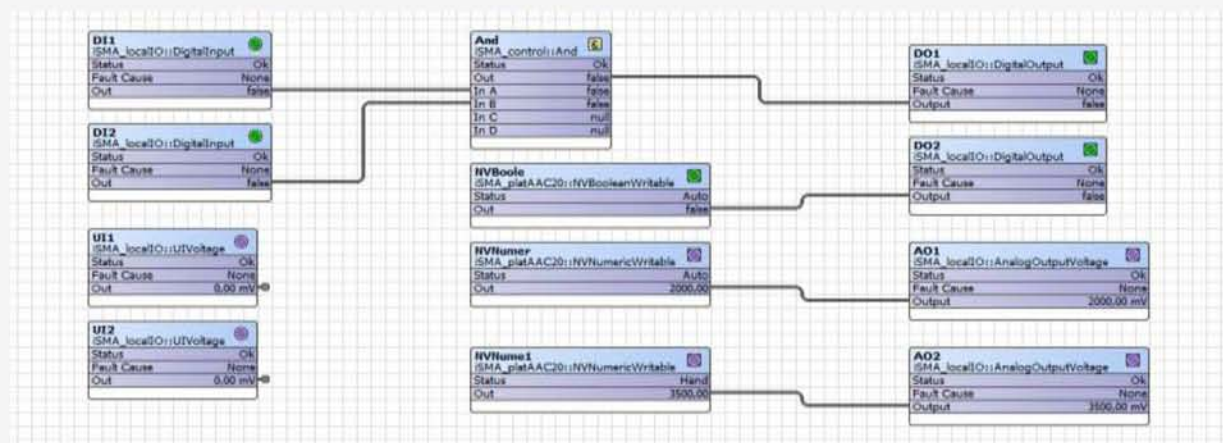
- 24 V AC/DC

Housing

- Dimension: 106x110x62 mm
- Construction: UL approved, self-extinguishing plastic (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation



iSMA-B-FCU

The fully programmable controller iSMA-B-FCU, is built with the aim of controlling the FCU. The controller is factory-equipped with the two most popular open communication protocols **Modbus ASCII/RTU** and **BACnet MSTP**, which are selected using DIP switches. To minimise time and simplify commissioning process the controller is delivered with universal application, which supports the most popular types of FCU. Dedicated DIP-switch allows to adjust parameters of the application. Additionally, in the BACnet protocol, the application has the built-in function which allows automatically to bind Master and Slave controllers in the groups (20 groups on the bus, up to 6 devices in one group). In the case, if the application does not meet the project requirements, it can be modified or created from scratch. Changing of the application is possible in real-time by USB. There are three hardware versions which have different types of Triac Outputs and power supply.

Key Features

- Pre-loaded universal application
- Support 2-pipe or 4-pipe systems
- Application adjustable by dedicated DIP-switch
- Programming in real-time
- Addressing from 0 to 255 by DIP-switch
- Built-in 18 Inputs/Outputs
- Sedona Framework 1.2 support
- Fast processor with ARM core
- Modbus ASCII/RTU or BACnet MSTP for connecting to higher level system
- 2x RJ12 (1x RS485) for connecting wall panels, external devices communicating in Modbus ASCII/RTU
- Built-in 24 V AC for an external equipment (version 230 V AC).



iSMA-B-FCU

Specification

Inputs

- 4x Special Input - voltage, resistance, dry contact
- 4x Digital Input – dry contact

Outputs

- 3x Digital Output 6 A (Fan Speed)
- 1x Digital Output 10 A (electric heater)
- 1x Digital Output 6 A (cooling actuator)
- 2x Triac 0,5 A @ 230 V AC or 0,5 A/0,3 A* @ 24 V AC (heating and cooling, actuators)
- 3x Analog Outputs 0-10 V DC (heating, cooling actuators and Fan Speed)

Platform

- ARM Cortex-M4

Power supply

- 230 V AC or 24 V AC

Communication

- Interface RS485 half-duplex
- Up to 128 devices on the bus
- Protocols: Modbus or BACnet
- Baud rate: 4800 to 115200 bps

Housing

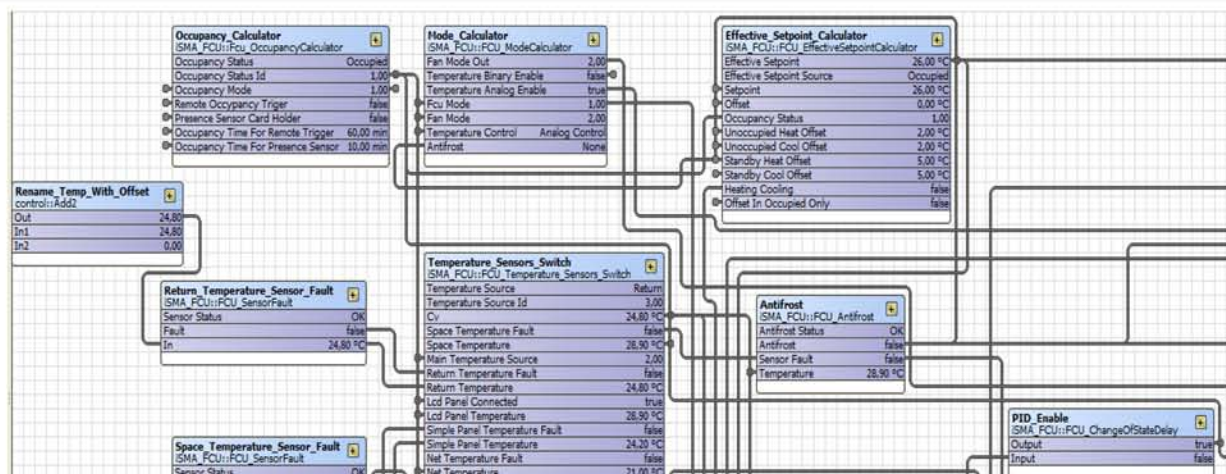
- Dimension: 123,6 x 136,6 x 54,5 mm, (123,6 x 171,2 x 54,9 mm) with plastic cover for terminals
- Construction: plastic, self-extinguishing (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, non-condensing
- Ingress Protection Rating: IP40 – for indoor installation

* $I_{max}=0,3A=I_{T01}+I_{T02}+I_{24V\ out}$

Ordering	Power supply 230 V AC	Power supply 24 V AC	Triac 0,5 A 230 V AC	Triac 0,5 A/0,3 A 24 V AC*
iSMA-B-FCU-HH	✓		✓	
iSMA-B-FCU-HL	✓			✓*
iSMA-B-FCU-LL		✓		✓
FCU-TC	Mounting accessory - plastic cover for terminals, recommended for 230 V AC			



iSMA-B-LP / iSMA-B-LP-1

iSMA-B-LP is a wall panel with 2.3" LCD display and four function buttons. Additionally, the panel has the built-in temperature sensor and optionally the humidity and CO₂ sensors. iSMA-B-LP is powered with 24 V AC/DC and has the built-in RS485 port (Modbus RTU/ASCII, BACnet MSTP). Use of open communication protocol allows to connect the panel with any controller supporting Modbus RTU/ASCII or BACnet MSTP. Together with iSMA-B-FCU controller, the panel allows to change the basic parameters such as: temperature setpoint, fan speed, FCU mode and others. Thanks to built-in USB port, there is possibility to maintenance the panel configuration without the power supply. iSMA-B-LP has the modern design and it is available in different colours at client's request, and also in two versions of button icons appearance.

Key Features

- 2.3" LCD display with backlight
- 4x function buttons
- Built-in temperature, CO₂ and humidity sensors
- Modbus RTU/ASCII
- BACnet MSTP
- Wall mounting (standard electric box – 60 mm)
- Changing of the basic parameters in conjunction with FCU controller
- 2x RJ12 for fast connection to FCU controller
- 7 main menu categories
- Over 100 freely configurable variables
- Possibility to display the current time



iSMA-B-LP



iSMA-B-LP-1



iSMA-B-LP

Specification

Temperature sensor:

- Type: 10k NTC
- Range: 0 – 50°C
- Accuracy: +/- 0,5°C
- Resolution: +/- 0,1°C

Humidity sensor:

- Range: 0-100% RH
- Accuracy: +/- 2% RH in range 20 – 80% RH
- Resolution: +/- 1% RH

CO₂ sensor:

- Method Non Dispersive Infrared (NDIR), gold plated optics, diffusion sampling (with Telaire's Patented ABC Logic Self Calibrated Algorithm)
- Range: 400 – 2000 ppm
- Accuracy: +/- 30 ppm OR +/- 3% of reading
- Stability: < 2% of FS over life of sensor (15 years typical)
- Warm Up Time : < 2 minutes (operational); 10 minutes (maximum accuracy)
- Calibration: ABC Logic Algorithm
- Manual Calibration Interval: Not required

Communication

- 2x RJ12 terminal (RS485 half-duplex)
- Baud rate: 2400 to 115200 bps
- Protocols: Modbus, BACnet
- MINI USB, Type B

Platform

- ARM Cortex: M0+

Housing

- Dimension: 100x123x27 mm
- Construction: plastic, self-extinguishing (PC/ABS)
- Wall mounting (standard electric box)
- Cooling: internal air circulation

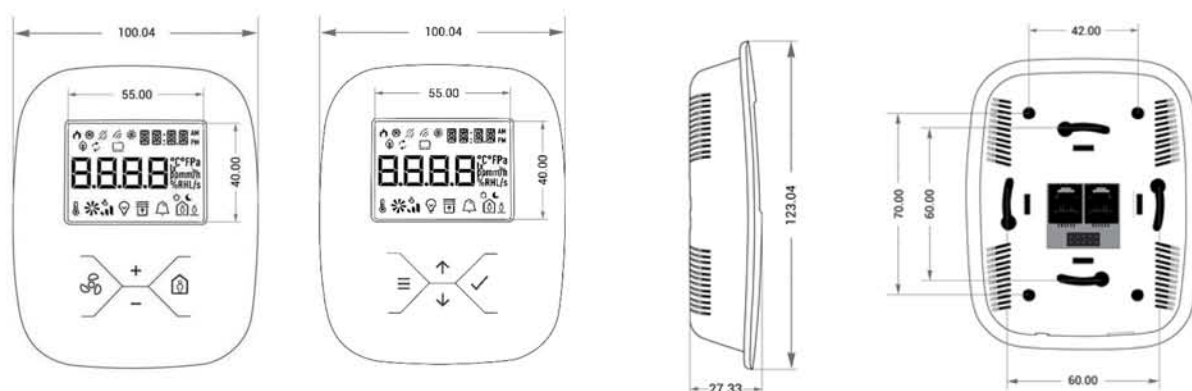
Environment

- Operating temperature: 0°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP20
- For indoor installation

Power supply

- 24 V AC/DC +/- 20%

Type	Temperature	Humidity	CO ₂
iSMA-B-LP(-1)	✓		
iSMA-B-LP-H(-1)	✓	✓	
iSMA-B-LP-C(-1)	✓		✓
iSMA-B-LP-HC(-1)	✓	✓	✓



iSMA-B-SP

iSMA-B-SP is wall panel with a potentiometer and one function button. Additionally, the panel has the built-in temperature sensor. We design this device for those who are looking for a low-cost and simple solution and don't want to pay for features they won't use. Compact size and clear style/design is friendly to architects and building owners. This device is ready to use with iSMA-B-FCU controllers without a need of any configuration. In connection to them the panel allows to change the basic parameters such as: temperature setpoint or FCU controller working mode. The actual status of this last parameter is indicated by the built-in LED diode.

In effect, these two devices create a **cost-effective solution for comfort and energy saving.**

Key Features

- Built-in temperature sensor for its precise monitoring
- 1x function push button e.g. for occupancy mode activation
- Simple and easy-to-use setpoint adjustment method
- Small size of housing
- Universal visual design fits into many applications
- Surface mounting (with or without the use of standard electric box – 60 mm)
- Changing of the basic parameters in connection to FCU controllers without any additional configuration



iSMA-B-SP

Specification

Temperature sensor

- Type: 10k NTC
- Range: 0 – 50°C
- Accuracy: +/- 0,5°C
- Resolution: +/- 0,1°C

Potentiometer

- Type: 10k, linear
- Tolerance: ±20%

LED Diode

- Waterclear Blue – current driven

Push Button Switch

- Normal Open (NO)

Communication

- Wiring: 5-wire cable: common ground, separate wires for temperature sensor, potentiometer, LED diode, push button switch.
- Connectors: 5x screw connectors, max 2 mm.

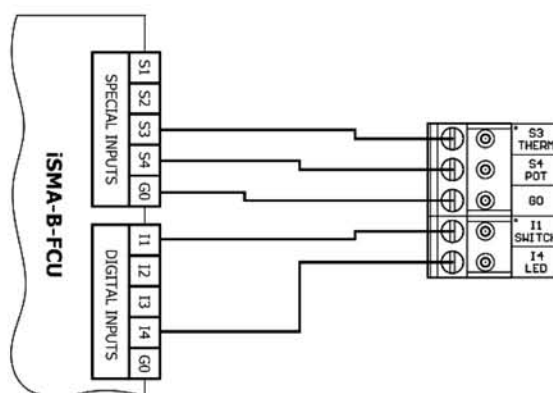
Housing

- Dimensions: 71 x 71 x 27 mm
- Construction: plastic, self-extinguishing (PC/ABS)
- Surface mounting (with or without standard electric box 60 mm)

Environment

- Operating temperature: 0°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection: IP20 – for indoor installation

Wiring Diagram



iSMA-B-MIX

The product group of I/O modules of the MIX series has been designed for building distributed control systems using JACE or AAC20 devices.

All the MIX Series modules have been equipped with the most commonly used types of I/O in building automation (MIX of all types of I/O in one unit).

The modules are factory-equipped with the two most popular open communication protocols: **Modbus (ASCII, RTU, TCP/IP)** and **BACnet (MSTP, IP)**, which are selected using DIP switches. There are two versions of the modules, namely: modules with interface RS485, and modules with interfaces 2x Ethernet and RS485. Devices with interfaces 2x Ethernet and RS485 have the added functionality of "Modbus Gateway TCP/IP to Modbus ASCII/RTU", enabling you to connect additional modules/devices that communicate via Modbus RS485. One major advantage of supporting our modules with open communication standards is the versatility to install them in both new and completed installations, as part of an existing BMS.

Addressing the modules is via rotary switches, which facilitates and accelerates the process of commissioning the system. Built-in mini USB allows for initial configuration of the unit without power supply.

Key Features

- A large number of all types of I/O
- All Digital Inputs work as fast counters up to 100 Hz
- Universal Inputs have 16-bit resolution which increase the accuracy of measurement
- Wide range of supported temperature sensors (NTC, PT1000 etc.)
- Automatic detection of the signal type in the case of Universal Inputs
- Digital Outputs 230 V AC max. 3 A allow direct control without additional relays
- Analog Output with max. 20 mA load allow direct control of relays (12 V DC) or SSR with PWM support
- LEDs indicate the status of inputs and outputs
- Supports open standards: BACnet or Modbus
- RS485 communication port, half-duplex
- 2x Fast Ethernet with built-in switch
- Built-in Modbus Gateway TCP/IP to RS485
- Simple and fast addressing from 1 to 99



iSMA-B-MIX

Specification

Universal Inputs (UI)

All Universal Inputs have 16-bit resolution which support the following types of inputs:

- Temperature input support the following types of sensors: 10K3A1, 10K4A1, Carel 10K, 20K6A1, 2.2K3A1, 3K3A1, 30K6A1, SIE1, TAC1, SAT1, Pt1000, Ni1000

For sensor Pt1000 and Ni1000 use only 16-bit resolution

- Voltage input 0-10 V DC: input resistance 100 k Ω accuracy $\pm 0,1\%$ measurement resolution 3 mV @ 12-bit and 1 mV @ 16-bit
- Current input 0-20 mA (external resistor 200 Ω required)
- Resistive input 0-1000 k Ω : measurement resolution for 20 k Ω load 20 Ω @ 12-bit and 1 Ω @ 16-bit
- Dry contact input

Digital Inputs (DI)

- Dry contact inputs
- Fast pulse counter up to 100 Hz save in EEPROM memory

Analog Outputs (AO)

All Analog Outputs are equipped with 12-bit ADC provides 10 mV resolution and accuracy less than $\pm 0,5\%$. They support the following output types:

- Output 0-10 V DC maximum load up to 20 mA
- PWM: 0,01 Hz, 0,1 Hz, 1 Hz, 10 Hz, 100 Hz

Digital Outputs (DO)

- Relay Output (NO) max. 3 A @ 230 V AC/30 V DC

Platform

- ARM Cortex-M3

Communication

- Interface RS485 half-duplex
- 2x Ethernet with built-in switch- only version IP
- Up to 99 devices on the bus
- Protocols: Modbus or BACnet
- Baud rate: 2400 to 115200 bps

Power supply

- 24 V AC/DC

Housing

- Dimension MIX18: 88x110x62 mm
- Dimension MIX38: 160x110x62 mm
- Construction: UL approved, self-extinguishing plastic (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation

	UI	DI	AO	DO	Modbus RS485	Modbus TCP/IP	Bacnet MSTP	Bacnet IP
MIX18	5	5	4	4	✓		✓	
MIX18 -IP	5	5	4	4	✓	✓		✓
MIX38	8	12	6	12	✓		✓	
MIX38 -IP	8	12	6	12	✓	✓		✓
	✓ Voltage ✓ Current ✓ Resistive ✓ Dry contact	✓ Dry contact ✓ Fast pulse counter up to 100 Hz	✓ Voltage ✓ PWM ✓ Max. load up to 20 mA	✓ (NO) 3 A @ 230 V AC	✓ RTU ✓ ASCII	✓ Modbus Gateway IP/RS485	✓ Master ✓ Slave	

iSMA-B-MINI

The product group of I/O modules MINI series has been designed to complement the I/O modules of the MIX series.

Unlike the MIX series, the MINI line is dedicated to all applications, where hand operating switches are required. The built-in light, cooling and heating control algorithms make them applicable as the standalone controllers. Additionally, the modules support time relay modes dedicated for present detectors.

Like in case of the MIX modules, the modules are factory-equipped with the two most popular open communication protocols: **Modbus (ASCII, RTU, TCP/IP)** and **BACnet (MSTP, IP)**, which are selected using DIP switches. There are two versions of the modules, namely: modules with interface RS485, and modules with interfaces Ethernet and RS485. Devices with interfaces Ethernet and RS485 have the added functionality of " **Modbus Gateway TCP/IP to Modbus ASCII/RTU**", enabling you to connect additional modules /devices which communicate via Modbus RS485. One major advantage of supporting our modules with open communication standards is the versatility to install them in both new and completed installations, as part of an existing BMS.

Addressing the modules is via rotary switches, which facilitates and accelerates the process of commissioning the system. Built-in mini USB allows for initial configuration of the unit without power supply.

Key Features

- 14 different types
- Small dimension
- Manual override switches
- Built-in light, cooling and heating control modes
- Present sensor support modes
- All Digital Inputs work as fast counters up to 100 Hz
- Universal Inputs have 16-bit resolution which increase the accuracy of measurement
- Wide range of supported temperature sensors (NTC, PT1000 etc.)
- Automatic detection of the signal type in the case of Universal Inputs
- Digital Outputs 230 V AC max. 3 A or 8 A allow direct control without additional relays
- Triac Outputs: 0,5 A @ 24 V AC, 0,5 A @ 230 V AC
- Analog Output with max. 20 mA load allow direct control of relays (12 V DC) or SSR with PWM support
- LEDs indicate the status of inputs and outputs
- Supports open standards: BACnet or Modbus
- Built-in Modbus Gateway TCP/IP to RS485
- 1x Fast Ethernet
- Simple and fast addressing from 1 to 99



iSMA-B-MINI

Specification

Universal Inputs (UI)

All Universal Inputs have 16-bit resolution which support the following types of inputs:

- Temperature input support the following types of sensors: 10K3A1, 10K4A1, Carel 10K, 20K6A1, 2.2K3A1, 3K3A1, 30K6A1, SIE1, TAC1, SAT1, Pt1000, Ni1000

For sensor Pt1000 and Ni1000 use only 16-bit resolution

- Voltage input 0-10 V DC: input resistance 100 k Ω accuracy $\pm 0,1\%$ measurement resolution 3 mV @ 12-bit and 1 mV @ 16-bit
- Current input 0-20 mA (external resistor 200 Ω required)
- Resistive input 0-1000 k Ω : measurement resolution for 20 k Ω load 20 Ω @ 12-bit and 1 Ω @ 16-bit
- Dry contact input

Digital Inputs (DI)

- Dry contact inputs
- Fast pulse counter up to 100 Hz save in EEPROM memory

Analog Outputs (AO)

All Analog Outputs are equipped with 12-bit ADC provides 10 mV resolution and accuracy less than $\pm 0,5\%$. They support the following output types:

- Output 0-10 V DC maximum load up to 20 mA
- PWM: 0,01 Hz, 0,1 Hz, 1 Hz, 10 Hz, 100 Hz

Digital Outputs (DO)

- Relay output (NO) max. 3 A @ 230 V AC/30 V DC
- Relay output (NC/NO) max. 8 A @ 230 V AC/30 V DC

Triac Outputs (TO)

- Triac Outputs: 0,5 A @ 24 V AC, 0,5 A @ 230 V AC

Platform

- ARM Cortex-M3

Communication

- Interface RS485 half-duplex
- 1x Fast Ethernet - only version IP
- Up to 99 devices on the bus
- Protocols: Modbus or BACnet
- Baud rate: 2400 to 115200 bps

Power supply

- 24 V AC/DC

Housing

- Dimension: 35x110x62 mm
- Construction: UL approved, self-extinguishing plastic (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation

	UI	DI	AO	DO	TO	Modbus RS485	Modbus TCP/IP	BACnet MSTP	BACnet IP
4I4O-H		4		4 *		✓		✓	
4I4O-H-IP		4		4 *		✓	✓		✓
4O-H				4 **		✓		✓	
4O-H-IP				4 **		✓	✓		✓
4TO-H					4	✓		✓	
4TO-H-IP					4	✓	✓		✓
4U4A-H	4		4			✓		✓	
4U4A-H-IP	4		4			✓	✓		✓
4U4O-H	4			4 *		✓		✓	
4U4O-H-IP	4			4 *		✓	✓		✓
8I		8				✓		✓	
8I-IP		8				✓	✓		✓
8U	8					✓		✓	
8U-IP	8					✓	✓		✓
	✓ Voltage ✓ Current ✓ Resistive ✓ Dry contact	✓ Dry contact ✓ Fast pulse counter up to 100 Hz	✓ Voltage ✓ PWM ✓ Max. load up to 20 mA	* (NO) 3 A @ 230 V AC ** (NC/NO) 8 A @ 230 V AC	✓ 0,5 A @ 24 V AC ✓ 0,5 A @ 230 V AC	✓ RTU ✓ ASCII	✓ Modbus Gateway IP/RS485	✓ Master ✓ Slave	

Global Control 5 Sp. z o.o.

Warsaw, Poland

www.gc5.pl

iSMA-B-W0202

W0202 has been built to allow extension of RS485 bus using wireless technology wherever use of network cable is impossible or unprofitable. Use of two W0202 allows to build the wireless 'bridge' for the RS485 by building wireless remote island (one or more) for devices communicate via **Modbus RTU/ASCII** - eg. MIX series or MINI series I/O modules. W0202 in addition to the RS485 port and wireless port is equipped with 2x SI (Special Inputs) and 2x DO (Digital Outputs), which allows to use device as I/O module or light controller communicating in Modbus RTU/ASCII. Implemented algorithm in the processor allows user to choose one of different modes:

- Modbus Bridge
- Modbus Bridge and I/O module (both DO work independent of the state of SI)
- Modbus Bridge and I/O module with built-in algorithms for light, cooling or heating control.
- Modbus Bridge and I/O module with present sensors support.

W0202 is also equipped with a micro USB port which allows to configure it without the external power supply (the device is powered through the USB port). This solution gives user an easy way to carry out the tests within the existing facility.

Key Features

- High transmit power and high sensitivity
- No license required for the radio band
- USB for configuration
- 1x RS485 port (Modbus)
- 2x Special Inputs: voltage, resistance, dry contact and fast counter up to 100 Hz save in EEPROM
- 2x Digital Outputs: relay max. 3 A, 230 V AC/ 30 V DC
- LEDs indicating the state of the SI and DO
- Fast processor with ARM core
- 4 Different operating modes
- Built-in present sensor support modes



iSMA-B-W0202

Specification

Special Inputs (SI)

All Special Inputs have 12-bit resolution which support the following types of inputs:

- Temperature input support the following types of sensors:
10K3A1, 10K4A1, Carel 10K, 20K6A1, 2.2K3A1, 3K3A1, 30K6A1, SIE1, TAC1, SAT1: accuracy $\pm 0,1^{\circ}\text{C}$ at 25°C
- Voltage input 0-10 V DC: input resistance 100 k Ω accuracy $\pm 0,5\%$
- Resistive input 0-1000 k Ω : measurement resolution for 20 k Ω load 20 Ω
- Dry contact input
- Fast pulse counter up to 100 Hz save in EEPROM memory

Digital Outputs (DO)

- Relay output (NO) max. 3 A, 230 V AC/30 V DC

Platform

- ARM Cortex-M3

Power supply

- 24 V AC/DC

Communication

- Interface RS485 half duplex
- Up to 128 devices on the bus
- Protocols: Modbus
- Baud rate: 2400 to 115200 bps

Radio

- Frequency 868 MHz
- Max output power: +20 dBm, 100 mW
- Sensitivity: -120 dBm
- Encryption: AES-128
- Speed: 115 kb/s
- External antenna (SMA socket)

Housing

- Dimension: 17,5x110x62 mm
- Construction: plastic, self-extinguishing (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation



iSMA-B-MG-IP

The iSMA-B-MG-IP device has been designed to simplify the connection of meters installation with BMS.

By applying the most popular interfaces for M-Bus and Modbus meters, the device allows to handle **up to 180 meters of various types simultaneously**.

The M-Bus interface allows to communicate and supply with power **up to 60 M-Bus meters**. The maximum current may not exceed 130 mA.

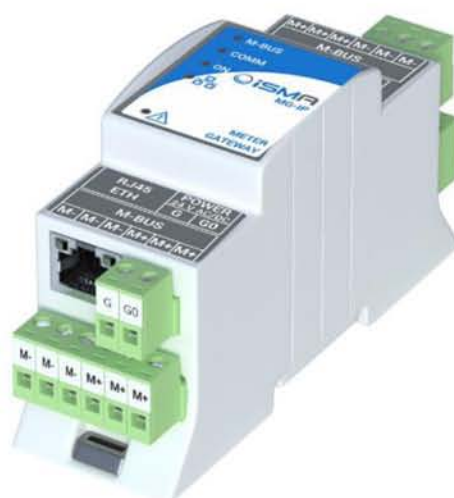
The RS485 interface allows to connect **up to 128 Modbus devices**. The device address and baud rate for Modbus are set by using DIP switches.

The built-in TCP/IP interface provides the ability to use the existing LAN infrastructure, also allows to build a scattered meters monitoring systems.

iSMA-B-MG-IP device configuration is possible from the built-in web services level, and by using free tool such as iSMA Configurator.

Key Features

- M-Bus TCP/IP to M-Bus gateway
- Modbus TCP/IP to Modbus RTU/ASCII gateway
- Up to 180 meters of various types
- Two independent gateways operating simultaneously in one device
- Built-in power supply for up to 60 M-Bus meters
- Direct connection for up to 6 M-bus branches
- Built-in Mini USB port for configuration and firmware updates



M-Bus

Modbus

iSMA-B-MG-IP

Specification

Connectors

- 12x screw connector max 2,5 mm².
Direct connection for up to 6 M-Bus branches
- 1x RS485
- 1x RJ45

Supported devices

- Up to 60 M-Bus meters
- Up to 128 Modbus Slave devices

Galvanic isolation

- 3 kV AC/DC for all interfaces and power supply

Communication

- Interface M-Bus Master according to EN 13757-2
- Interface RS485 half duplex
- 1x Fast Ethernet
- Protocols: M-Bus and Modbus
- M-Bus baud rate: 300 to 38400 bps
- Modbus baud rate: 2400 to 115200 bps

Platform

- ARM Cortex-M3

Power supply

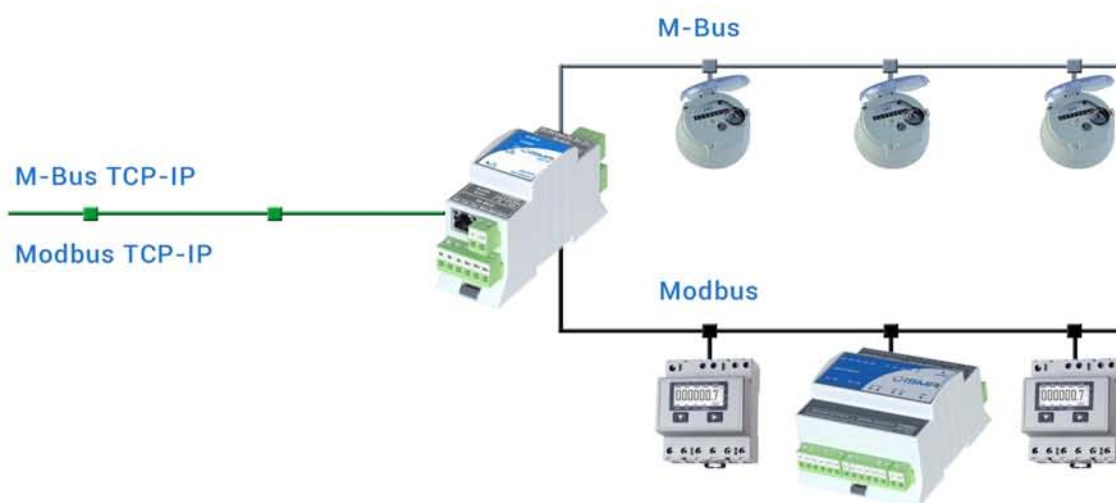
- 24 V AC/DC

Housing

- Dimension: 35x110x62 mm
- Construction: plastic, self-extinguishing (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10°C to 50°C
- Storage temperature: -40°C to 85°C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation



iSMA-B-8000

The iSMA-B-8000 is a compact, embedded IoT (Internet of Things) controller and server platform for connecting multiple and diverse devices and sub-systems. With Internet connectivity and Webserving capability, the JACE 8000 controller provides integrated control, supervision, data logging, alarming, scheduling and network management. It streams data and rich graphical displays to a standard Web browser via an Ethernet or wireless LAN, or remotely over the Internet. The licensing model for the JACE 8000 controller is simplified and features standard drivers along with optional IO and field bus expansion modules for ultimate flexibility and expandability. The JACE 8000 controller operates with Niagara 4, the latest version of the Niagara Framework®, for optimum performance. In larger facilities, multibuilding applications and large-scale control system integrations, Niagara 4 Supervisors can be used with JACE 8000 controllers to aggregate information, including real-time data, history and alarms, to create a single, unified application.

Key Features

- Niagara 4.1 and later
- Real time clock
- 2x isolated RS-485 with selectable bias and termination
- 2x Ethernet
- Optional extension cards
- Support a wide range of protocols like: LON, BACnet, KNX-IP, Modbus, M-bus, SNMP, Z-Wave and others
- Removable micro-SD card with 4GB flash total storage/2GB user storage
- Complete network management of devices based on LONworks technology
- Built-in Web server which provides a graphical user interface available from Web browser level
- Real-time data, history and alarms
- Different licensing models for various application types.



powered by
niagara
framework®

iSMA-B-8000

Specification

Operating System

- Operating system QNX RTOS
- Oracle Hotspot Java Virtual Machine
- Niagara 4.1 and later
- Real time clock

Platform

- TI AM3352: 1000 MHz ARM® Cortex™-A8
- 1 GB DDR3 SDRAM
- Removable micro-SD card – 4 GB (flash total storage/
• 2 GB user storage)

Optional extension cards

- There is possible to attach up to four modules containing communication interfaces
- Module 2x RS485 (max. 2 modules)
- Module 1x LON (max. 4 modules)
- Module 1x RS232 (max. 4 modules)

Power supply

- 24V AC/DC

Communications

- 2x Fast Ethernet
- 2x RS485
- 1x WLAN
- 1x USB type A

Housing

- Construction: plastic, internal air circulation
- To indoor using

Environment

- Operating temperature: from -20°C to 60°C
- Storage temperature: from -40°C to 85°C
- Humidity: from 5% to 95%, non condensing
- MTTF: 10 years+



iSMA Building Supervisor

The iSMA Building Supervisor is an IoT (Internet of Things) software platform used in server-class applications. It makes managing all buildings at an enterprise level possible, giving facilities managers the ability to quickly respond to problems and insights to optimize their system. Supervisor is the one of a suite of Niagara Framework® products designed to integrate LonWorks™, BACnet™, Modbus, OPC UA, MQTT and various Internet standards into a common object model, embedded at the controller level and supported by a standard web browser interface. Web Supervisor also includes integrated network management tools to support the design, configuration, installation, and maintenance of interoperable networks. iSMA Supervisor is a flexible network server used to manage multiple JACE stations with larger projects or to provide a central monitoring station in multi-site projects. Optionally, it could support direct communication with other systems via various IP based protocols, including BACnet I/P, OPC (client), Modbus TCP, EIB/KNX, LON-IP & SNMP. The enables seamless integration of the other systems at the IP level with a common browser user interface and provides much more flexible access (from any networked PC), and simplify operator training.

Key Features

- Centralized system management
- Quickly navigate to individual buildings using tags to diagnose problems
- Compare data between buildings
- Export system data to external databases
- Integrate BAS to other enterprise applications
- Integrate to other applications, such as work order management, analytics, etc.
- Single tool used to program JACE controllers and Supervisor
- Remotely back up JACE applications to Supervisor
- Batch provisioning of JACE firmware upgrades from Supervisor
- Robust built-in analytic capabilities supported by standard Niagara components and visualizations
- Compatibility with Niagara Analytics 2.0, adding data source, functional and mathematical programming blocks to enable sophisticated analytic algorithms



powered by
niagara
framework®

iSMA Building Supervisor

Specification

Features

- HTML5 and Java-enabled user interface (UI); JavaScript data interface library included (Baja Script)
- Supports an unlimited number of users over the Internet / intranet with a standard Web browser (depending on the host PC resources)
- Optional enterprise-level data archival using SQL, MySQL or Oracle databases and HTTP/HTML/XML, CSV or text formats
- "Audit Trail" of database changes, database storage and backup, global time functions, calendar, central scheduling, control and energy management routines
- Sophisticated alarm processing and routing, including email alarm acknowledging
- Access to alarms, logs, graphics, schedules and configuration data with a standard Web browser
- Niagara follows industry best practices for cyber security, with support for features such as strong hashed passwords, TLSv1 for secure communications and certificate management tools for authentication
- HTML-based help system that includes comprehensive online system documentation
- Provides online/offline use of the Niagara

- Supports multiple Niagara-based stations connected to a local Ethernet network, or the Internet
- Framework® Workbench AX graphical configuration tool and a comprehensive Java Object Library
- Optional direct Ethernet-based driver support for most Open IP field bus protocols (see supported drivers document)

Platform requirements

- Processor: Intel® Xeon® CPU E5-2640 x64 (or better), compatible with dual- and quad-core processors
- Operating System: Windows 10, 64-bit Windows 8.1 Enterprise, 2012 R2 Standard, RHEL-7
- Memory: 1 GB minimum, 2 GB recommended
- Hard Drive: 4 GB minimum, more recommended depending on archiving requirements
- Display: Video card and monitor capable of displaying 1024 x 768 pixel resolution or greater
- Network Support: Ethernet adapter (10/100 Mb with RJ-45 connector)
- Connectivity: Full-time high-speed ISP connection recommended for
- remote site access (i.e., T1, ADSL, cable modem) and IPv6 compliant

Order Codes

Main Software	
iSMA-B-N4-0	Small Building Supervisor with no JACE connectivity.
iSMA-B-N4-1	Small Building Supervisor Software with connectivity for 1 JACE only.
iSMA-B-N4-10	Supervisor Software with connectivity for 10 JACE only.
iSMA-B-N4-100	Supervisor Software with connectivity for 100 JACE only.
iSMA-B-N4-UNL	Supervisor Software with connectivity for unlimited JACEs.
Supervisor Options	
iSMA-B-N4-L-500	Upgrade Supervisor add Driver Capacity 500 points.
iSMA-B-N4-L-1250	Upgrade Supervisor add Driver Capacity 1.250 points.
iSMA-B-N4-L-2500	Upgrade Supervisor add Driver Capacity 2.500 points.
iSMA-B-N4-L-5K	Upgrade Supervisor add Driver Capacity 5.000 points.
iSMA-B-N4-L-10K	Upgrade Supervisor add Driver Capacity 10.000 points.
iSMA-B-N4-L-25K	Upgrade Supervisor add Driver Capacity 25.000 points.
iSMA-B-N4-L-50K	Upgrade Supervisor add Driver Capacity 50.000 points.
Additional Modules	
iSMA-B-N4-ALM	The Alarm Console client. No separate server is required. Supports Niagara alarm monitoring.
Supervisor Upgrades	
iSMA-B-N4-UP-1	Upgrade Supervisor add 1 JACE connectivity.
iSMA-B-N4-UP-100	Upgrade Supervisor from Small Building Supervisor to connectivity for 100 JACE only.

Supervisor
Options

Global Control 5 Sp. z o.o.

Warsaw, Poland

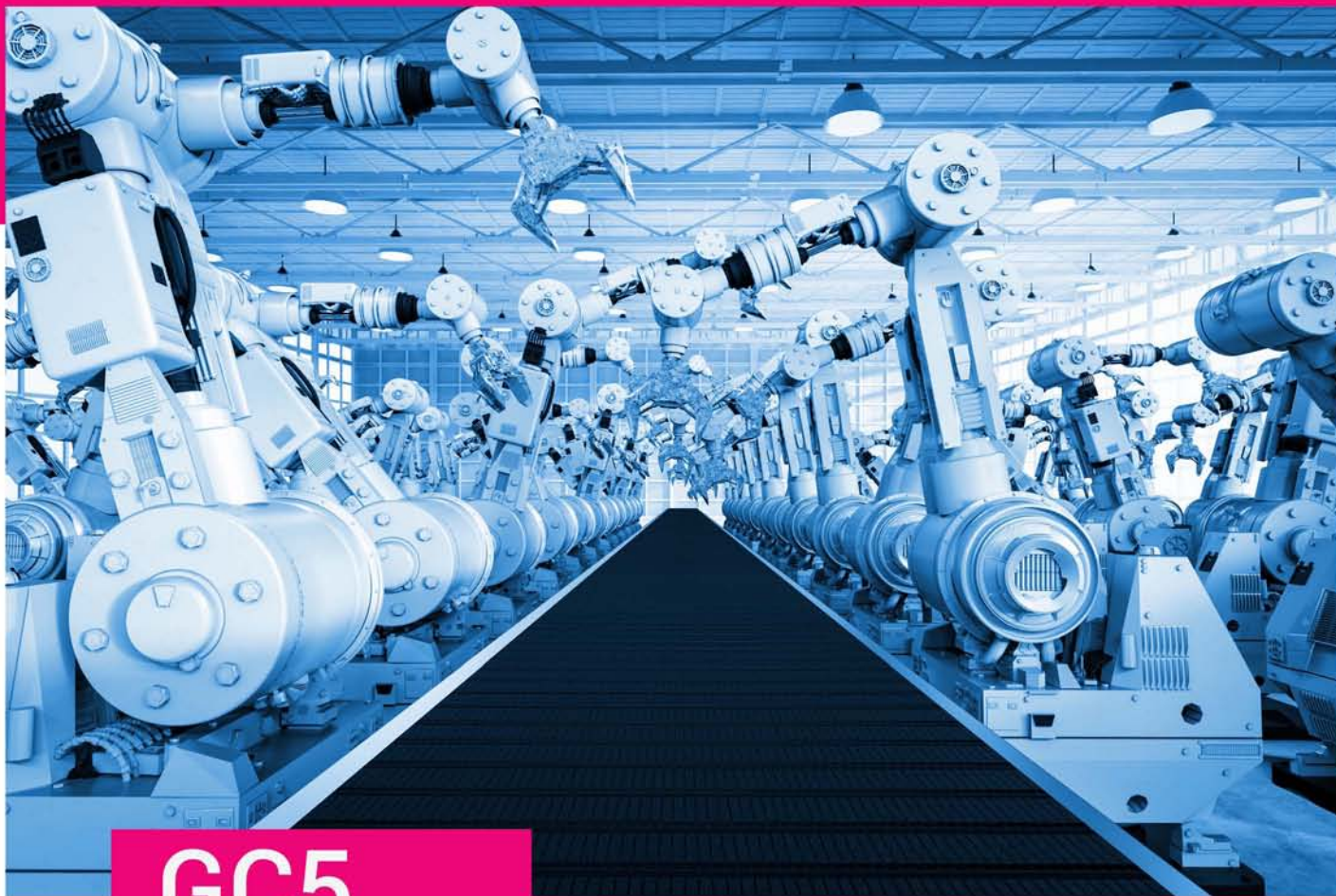
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Solutions For Automation & Robotics



GC5

for industrial automation

Global Control 5 has expanded its range for industrial automation offering the products under the brand SFAR (Solutions for Automation & Robotics).

Our experience and knowledge of modern technologies allow us to introduce to the market two wide range series of I/O modules for industrial automation: SFAR-S and SFAR-1M.



SFAR-1M Series of I/O modules

The SFAR-1M series of I/O modules is the generation of devices for the industrial automation and robotics.

These devices are one of the smallest I/O modules available on the market with **1M enclosure** size.

There are 7 different types with the range of built-in I/O from 2 to 4, which makes these modules perfect solution for measuring a small number of signals at one point.

Built-in RS485 interface allows to easy connection over **Modbus RTU/ASCII** protocol with a PLC makes the modules an external I/O. The use of **32-bit ARM** core processor provides fast processing and communication with the baud rate from 2400 to 115200 bps.

All the modules are equipped with a set of **LEDs** used to indicate the status of inputs and outputs useful for diagnostic purposes and helping to find errors.

Built-in mini **USB** allows for initial configuration of the unit without power supply.

Key Features

- 7 different types
- Digital Inputs work as fast counters up to 1 kHz
- Version with FRAM memory for counters
- Digital Inputs supports encoders
- Analog Inputs measuring current or voltage
- Temperature Inputs support the most popular sensor types: PT100, PT500, PT1000, NI100, KTY81-110 (2 and 3- wire)
- Temperature Inputs support the most popular thermocouples types: J, K, T, N, S, R, B
- Relay outputs up to 10 A
- Analog Outputs operating as current or voltage
- Modbus RTU/ASCII communication
- Up to 128 modules on the bus
- 1 kV galvanic isolated I/O
- Built-in mini USB type B port for configuration



SFAR-1M

Specification

Digital Inputs (DI)

- Input type: PNP or NPN
- Fast pulse counter up to 1 kHz save to FRAM memory
- Time counting in ms for active input
- DI1-DI4- encoders support

Analog Inputs (AI)

All Analog Inputs have 16-bit ADC resolution which support the following types of inputs:

- Voltage input: 0-1 V DC, resolution 0,1875 mV
- Voltage input: -1-1 V DC, resolution 0,1875 mV
- Voltage input: 0-10 V DC, resolution 1,5 mV
- Voltage input: -10-10 V DC, resolution 1,5 mV
- Current input: 0-20 mA, resolution 3,75 μ A
- Current input: 4-20 mA, resolution 3,75 μ A
- Current input: -20-20 mA, resolution 3,75 μ A
- Voltage measurement accuracy $\pm 0,2\%$
- Current measurement accuracy $\pm 0,1\%$
- ADC processing time: 70 ms/channel

Temperature Inputs (TE)

All Temperature Inputs have 16-bit ADC resolution which support the following types of inputs:

- Resistance temperature sensors input:
PT100, PT500, PT1000, NI100, KTY81-110
(2 and 3- wire), resolution 0,1 $^{\circ}$ C
- Thermocouples sensors input: J, K, T, N, S, R, B,
resolution 0,1 $^{\circ}$ C, cold junction temperature
measurement
- Resistive input: 0-8000 Ω , resolution 1 Ω
- Voltage input: 0-256 mV, resolution 10 μ V
- Voltage input: 0-2048 mV, resolution 100 μ V
- ADC processing time: 150 ms/channel

Digital Outputs (DO)

- Transistor output (PNP) max. 250 mA, 55 V DC
- Open collector output (NPN) max. 250 mA, 55 V DC

Analog Outputs (AO)

All Analog Outputs have 12-bit DAC resolution which support the following types of outputs:

- Voltage output: 0-10 V DC, resolution 1,5 mV
- Current output: 0-20 mA, resolution 5 μ A
- Current output: 4-20 mA, resolution 16 μ A
- Voltage measurement accuracy $\pm 0,5\%$
- Current measurement accuracy $\pm 0,5\%$
- DAC processing time: 16 ms/channel

Platform

- ARM Cortex-M3

Communication

- Interface RS485 half duplex
- Up to 128 devices on the bus
- Protocol: Modbus RTU/ASCII
- Baud rate: 2400 to 115200 bps
- Interface mini USB type B

Power supply

- 10-36 V DC $\pm 20\%$

Housing

- Dimension HxWxD: 90x17x56 mm
- Construction: plastic, self-extinguishing (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10 $^{\circ}$ C to 50 $^{\circ}$ C
- Storage temperature: -40 $^{\circ}$ C to 85 $^{\circ}$ C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation

SFAR-1M

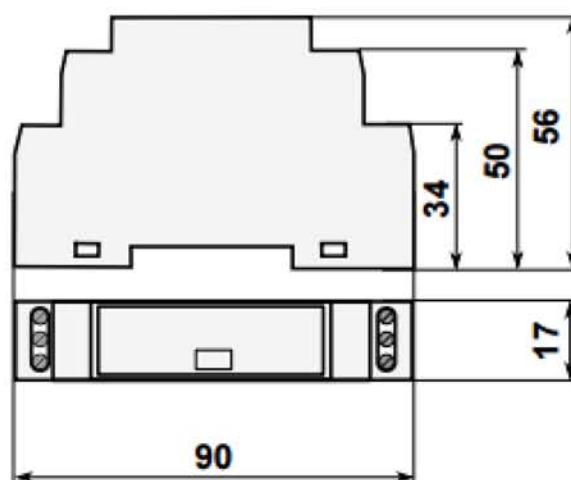
Specification

Codes of orders

Product code	DI	AI	TE	DO	AO	Modbus RS485 RTU/ASCII
SFAR-1M-4DI	4*					✓
SFAR-1M-4DI-M	4**					✓
SFAR-1M-4DO				4		✓
SFAR-1M-2DI2DO	2*			2		✓
SFAR-1M-1AI1DO		1		1		✓
SFAR-1M-2DI1AO	2*				1	✓
SFAR-1M-1TE1DO			1	1		✓

*32 bit counters without memory. **version with FRAM memory for counters.

Dimensions



SFAR-S Series of I/O modules

The SFAR-S series of I/O modules is the generation of devices for the industrial automation and robotics.

The characteristic feature of these modules is **slim** type of enclosure which needs very small space in the cabinet while offering up to **16 I/O**.

Built-in **RS485** interface allows to easy connection over **Modbus RTU/ASCII** protocol with a PLC makes the modules an external I/O. The use of **32-bit ARM** core processor provides fast processing and communication with the baud rate from 2400 to 115200 bps.

All the modules are equipped with a set of **LEDs** used to indicate the status of inputs and outputs useful for diagnostic purposes and helping to find errors.

Built-in mini **USB** allows for initial configuration of the unit without power supply.

Dedicated IP module **SFAR-S-ETH** with Modbus TCP/IP to RS485 gateway, enabling use of SFAR-S series modules in the applications where the IP connectivity is required.

Key Features

- 12 different types
- Digital Inputs work as fast counters up to 1 kHz
- Version with FRAM memory for counters
- Digital Inputs supports encoders
- Analog Inputs measuring current or voltage
- Temperature Inputs support the most popular sensor types: PT100, PT500, PT1000, NI100, KTY81-110 (2 and 3- wire)
- Temperature Inputs support the most popular thermocouples types: J, K, T, N, S, R, B
- Relay outputs up to 10 A
- Analog Outputs operating as current or voltage
- Modbus RTU/ASCII communication
- Up to 128 modules on the bus
- Dedicated TCP/IP gateway device SFAR-S-ETH
- 1 kV galvanic isolated I/O
- Built-in mini USB type B port for configuration



SFAR-S

Specification

Digital Inputs (DI)

- Input type: PNP or NPN
- Fast pulse counter up to 1 kHz save to FRAM memory
- Time counting in ms for active input
- DI1-DI4- 2x encoders support

Analog Inputs (AI)

All Analog Inputs have 14-bit ADC resolution which support the following types of inputs:

- Voltage input: 0-1 V DC, resolution 0,1875 mV
- Voltage input: -1-1 V DC, resolution 0,1875 mV
- Voltage input: 0-10 V DC, resolution 1,5 mV
- Voltage input: -10-10 V DC, resolution 1,5 mV
- Current input: 0-20 mA, resolution 3,75 μ A
- Current input: 4-20 mA, resolution 3,75 μ A
- Current input: -20-20 mA, resolution 3,75 μ A
- Voltage measurement accuracy $\pm 0.1\%$
- Current measurement accuracy $\pm 0.1\%$
- ADC processing time: 16 ms/channel

Temperature Inputs (TE)

All Temperature Inputs have 16-bit ADC resolution which support the following types of inputs:

- Resistance temperature sensors input: PT100, PT500, PT1000, NI100, KTY81-110 (2 and 3- wire), resolution 0,1 $^{\circ}$ C
- Thermocouples sensors input: J, K, T, N, S, R, B, resolution 0,1 $^{\circ}$ C, cold junction temperature measurement
- Resistive input: 0-8000 Ω , resolution 1 Ω
- Voltage input: 0-256 mV, resolution 10 μ V
- Voltage input: 0-2048 mV, resolution 100 μ V
- ADC processing time: 150 ms/channel

Digital Outputs (DO)

- Transistor output (PNP) max. 500 mA, 30 V DC
- Open collector output (NPN) max. 500 mA, 55 V DC

Triac Outputs (TR)

- Triac Outputs: 500 mA @ 24 V AC, 500 mA @ 230 V AC

Relay Outputs (RO)

- Relay Output (NC/NO) max. 10 A @ 24 V DC, 5 A @ 250 V AC
- Relay Output (NO) max. 3 A @ 30 V DC, 3 A @ 230 V AC

Analog Outputs (AO)

All Analog Outputs have 12-bit DAC resolution which support the following types of outputs:

- Voltage output: 0-10 V DC, resolution 1,5 mV
- Current output: 0-20 mA, resolution 5 μ A
- Current output: 4-20 mA, resolution 16 μ A
- Voltage measurement accuracy $\pm 0.5\%$
- Current measurement accuracy $\pm 0.5\%$
- DAC processing time: 16 ms/channel

Platform

- ARM Cortex-M3

Communication

- Interface RS485 half duplex
- Up to 128 devices on the bus
- Protocol: Modbus RTU/ASCII
- Baud rate: 2400 to 115200 bps
- Interface mini USB type B

Power supply

- 10-36 V DC $\pm 20\%$

Housing

- Dimension HxWxD: 120x22,5x101 mm
- Construction: plastic, self-extinguishing (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10 $^{\circ}$ C to 50 $^{\circ}$ C
- Storage temperature: -40 $^{\circ}$ C to 85 $^{\circ}$ C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation

SFAR-S

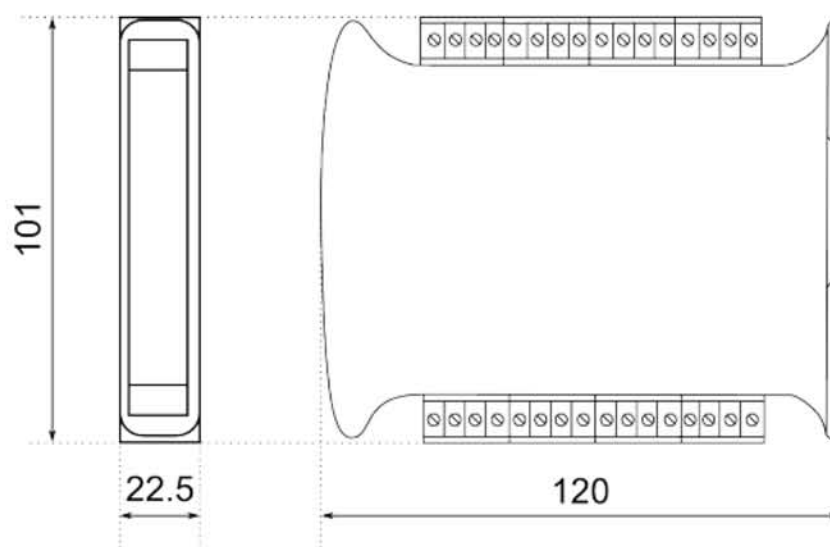
Specification

Codes of orders

Product code	DI	AI	TE	DO	AO	TR	RO	Modbus RS485 RTU/ASCII	Modbus TCP/IP Gateway
SFAR-S-16DI	16*							✓	
SFAR-S-16DI-M	16**							✓	
SFAR-S-16DO				16				✓	
SFAR-S-8DI8DO	8*			8				✓	
SFAR-S-8DI8RO	8*						8 (10 A @ 24 V DC, 5 A @ 250 V AC)	✓	
SFAR-S-16RO							16 (10 A @ 24 V DC, 5 A @ 250 V AC)	✓	
SFAR-S-6RO							6 (10 A @ 24 V DC, 5 A @ 250 V AC)	✓	
SFAR-S-8AI2DO		2		2				✓	
SFAR-S-8AO					8			✓	
SFAR-S-8TR						8		✓	
SFAR-S-6TE			6	2				✓	
SFAR-S-ETH	4*						3 (3 A @ 24 V DC, 3 A @ 230 V AC)	✓ Master	✓

*32 bit counters without FRAM memory. **version with FRAM memory for counters.

Dimensions



Global Control 5 Sp. z o.o.

Poland, Warsaw

www.gc5.pl

Ver. 1.0