

iSMA-B-MG-IP

User Manual



Table of content

1	Introduction.....	3
1.1	Revision history.....	4
1.2	Safety rules.....	4
1.3	Technical specifications.....	5
1.4	Dimension.....	5
1.5	Power supply connection.....	6
1.5.1	DC power connection.....	6
1.5.2	AC power connection.....	6
1.6	LED Indicators.....	6
1.7	Grounding and shielding.....	7
1.8	Restoring the default settings.....	7
1.9	Default Settings.....	8
1.10	Firmware version and device type (Modbus register 30001).....	8
1.11	Up time (Modbus register 30012).....	8
1.12	Device actions (Modbus register 40001).....	9
2	iSMA-B-MG-IP as a Modbus Gateway.....	9
2.1	Connecting the communication bus (RS485).....	10
2.2	RS 485 network termination.....	11
2.3	Setting Device Address on Modbus Network.....	11
2.4	Baud rate selection.....	11
2.5	Protocol selection.....	12
2.6	Modbus configuration registers.....	12
2.6.1	Device address (30002).....	12
2.6.2	Baud rate and protocol (30003).....	12
2.6.3	Counter of received messages (30004) = Modbus.....	12
2.6.4	Counter of error messages (30006) = Modbus.....	13
2.6.5	Counter of sent messages (30008) = Modbus.....	13
2.6.6	Hardware_version (30130).....	13
2.6.7	MAC_address (30131).....	13
2.6.8	Device actions (40001).....	13
2.6.9	Baud rate (40136).....	13
2.6.10	Stop bits (40137).....	14
2.6.11	Data bits (40138).....	14
2.6.12	Parity bit (40139).....	15
2.6.13	Response delay time (40140).....	15
3	iSMA-B-MG-IP as a M-Bus Gateway.....	16
3.1	About M-Bus.....	17
3.1.1	M-Bus topology and cable.....	17
3.1.2	M-Bus addressing.....	18
3.2	Connecting the communication bus (M-Bus).....	18
3.3	Modbus configuration registers for M-Bus.....	19
3.3.1	Counter of received messages (30015) = M-Bus.....	19
3.3.2	Counter of sent messages (30017) = M-Bus.....	19
3.3.3	Counter of Alarms (30019) = M-Bus.....	19
4	WEB Configuration.....	19
4.1	Web server access.....	19
4.2	Device page.....	20
4.3	M-Bus Configuration page.....	21
4.4	RS485 Configuration.....	22
4.5	IP Configuration.....	23
4.6	Device management.....	24
4.7	Contact.....	25
5	List of all Modbus Registers.....	25

1 Introduction

iSMA-B-MG-IP device (Meter Gateway) has been created to convert data from Modbus RTU/ASCII and M-Bus protocols to corresponding TCP IP protocols (Modbus TCP IP and M-Bus TCP IP). Meter Gateway allows to use one type of these conversions or both at the same time, using the same Ethernet connection.

iSMA-B-MG-IP allows to service up to 128 Modbus RTU/ASCII devices with unique addresses connected to RS485 port and up to 60 M-Bus meters (with unique address) connected to M-Bus interface.

The figure below shows an example of system with iSMA-B-MG-IP.

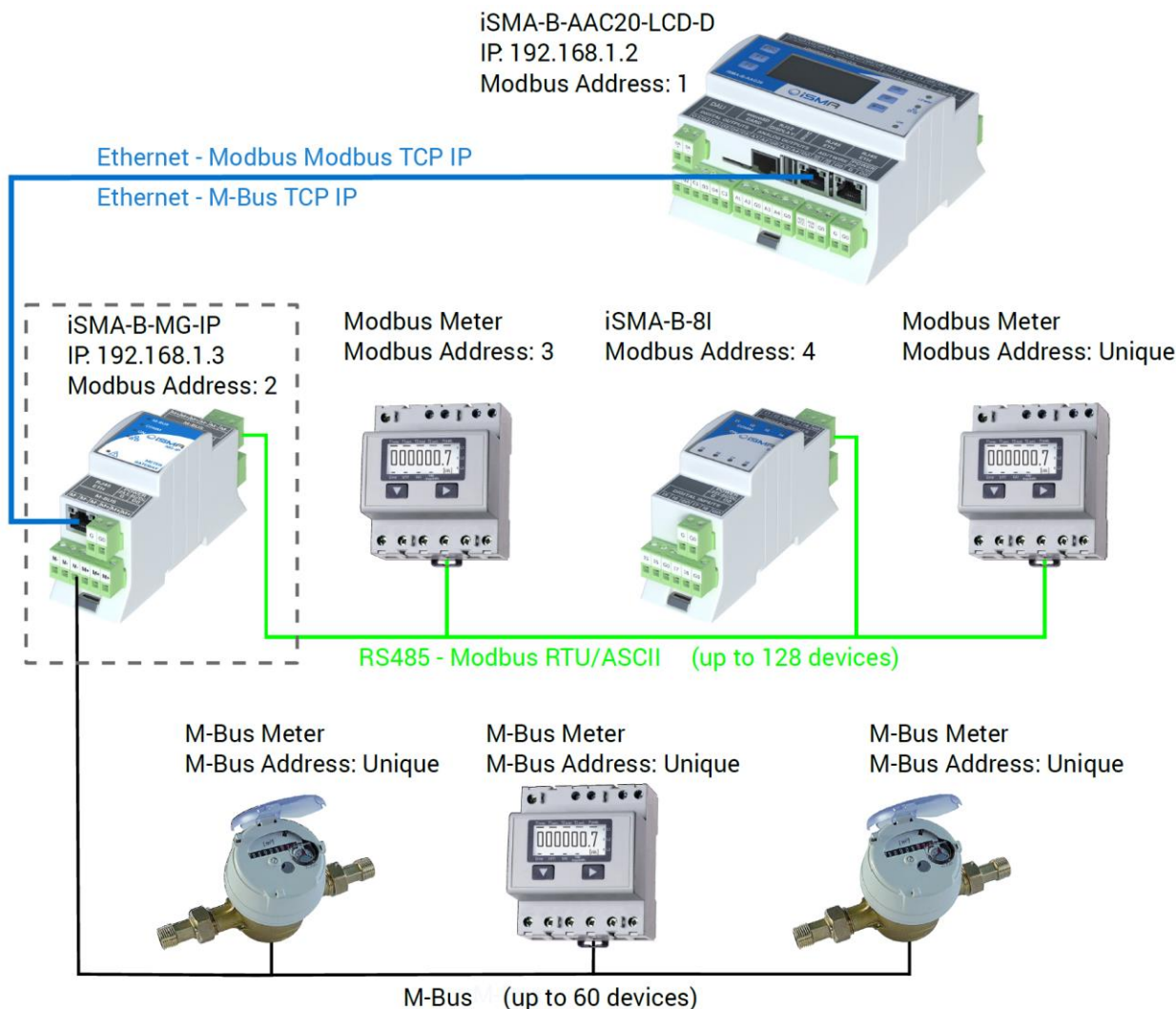


Figure 1. Modbus TCP IP to RS485 Gateway and M-Bus TCP IP to M-Bus Gateway an example

1.1 Revision history

Rev	Date	Description
1.0	2017.01.24	First edition
1.1	2017.12.14	The reason for the creation of new version of the document: New functions: <ul style="list-style-type: none"> • Added new Modbus registers: HW version, MAC address; • Added RS485_BIASING bit in STOP_BITS registers; • Added possibility to deactivate RS485_BIASING in hardware version 2.5 and newer • Added new elements on built-in web page: HW version, RS485 biasing;
1.2	2018.10.26	The reason for the creation of new version of the document: <ul style="list-style-type: none"> • Corrections of typing errors in the text • Added imperial unit of measure
1.3	2018.11.15	The reason for the creation of new version of the document: <ul style="list-style-type: none"> • Added M-Bus extended star and tree topology
1.4	2019.02.11	The reason for the creation of new version of the document: <ul style="list-style-type: none"> • Added MBUS BAUD RATE (32 _ bits) registers • Added MBUS CONNECTION TIMEOUT (32 _ bits) registers

Table 1. Revision history

1.2 Safety rules

- **Note:** Incorrect wiring of this product can damage it and lead to other hazards. Make sure the product has been correctly wired before turning the power ON.
- Before wiring, or removing/mounting the product, be sure to turn the power OFF. Failure to do so might cause an electric shock.
- Do not touch electrically charged parts such as the power terminals. Doing so might cause an electric shock.
- Do not disassemble the product. Doing so might cause an electric shock or faulty operation.
- Use the product within the operating ranges recommended in the specification (temperature, humidity, voltage, shock, mounting direction, atmosphere etc.). Failure to do so might cause a fire or faulty operation
- Firmly tighten the wires to the terminal. Insufficient tightening of the wires to the terminal might cause a fire.

1.3 Technical specifications

Power supply	Voltage	24 V AC/DC \pm 20%	
	Power consumption	@ 24 VDC	@ 24 VAC
		5 W	7.5 VA
RS485 Interface	RS485	Up to 128 devices	
	Communication protocols	Modbus RTU, Modbus ASCII set by switch	
	Baud rate	From 2400 to 115200 set by switch	
	Address	0 to 99 set by switch	
M-Bus Interface	M-Bus	Up to 60 devices	
	Baud rate	From 300 to 38400	
Ethernet	1x Fast Ethernet	IP Interface	
	Baud rate	10/100 Mb/s	
USB	USB	Mini USB 2.0	
Ingress protection	IP	IP40	
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%	
Connectors	Type	Removable	
	Maximum cable size	2.5 mm ² (18 = 12 AWG)	
Dimension	Width	110 mm (4.331 in)	
	Length	37 mm (1.457 in)	
	Height	62 mm (2.441 in)	

Table 2. Technical specification

1.4 Dimension

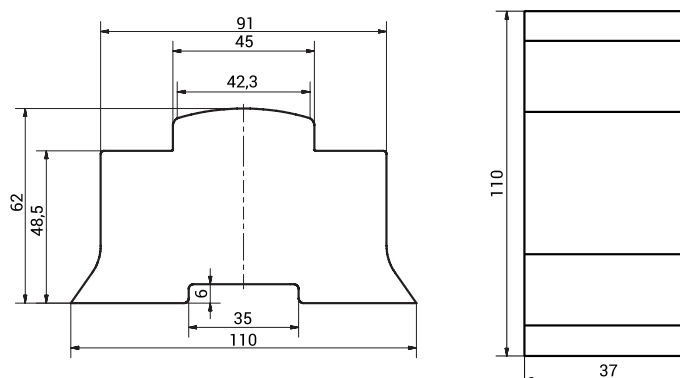


Figure 2. iSMA-B-MG-IP dimension

1.5 Power supply connection

1.5.1 DC power connection

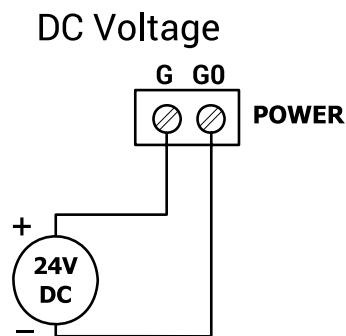


Figure 3. DC power supply connection

1.5.2 AC power connection

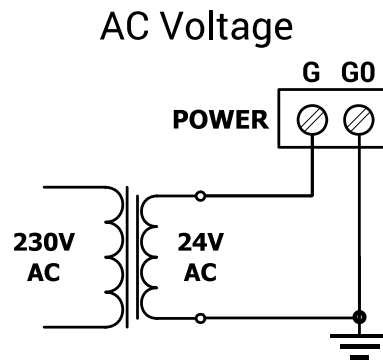


Figure 4. AC power supply connection

1.6 LED Indicators

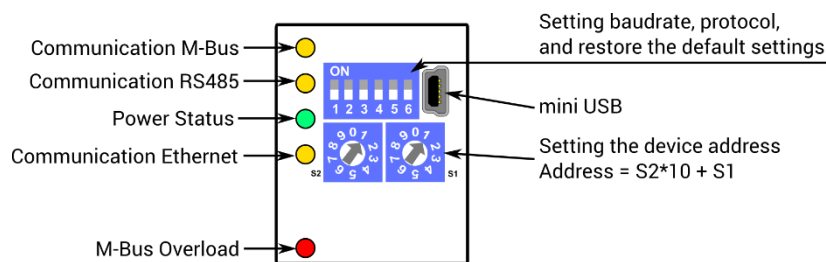


Figure 5. Top panel iSMA-B-MG-IP

- The power LED is ON (green) when the device is running properly.
- Communication M-Bus LED is ON (green) for 20 ms after sending each message by M-Bus bus. If the device receives/sends a lot of messages, LED can be lit continuously.
- Communication RS485 LED is ON (orange) for 20 ms after sending each message by RS485 port. If the device receives/sends a lot of messages, LED can be lit continuously.
- Communication Ethernet LED is ON (orange) for 20 ms after sending each message by Ethernet. If the device receives/sends a lot of messages, LED can be lit continuously.
- Alarm LED is ON (green) when it is detected overload on M-Bus bus (if current on M-Bus

bus exceed 130 mA).

1.7 Grounding and shielding

In the most cases, device will be installed in an enclosure along with other devices which generate electromagnetic radiation. Relays, contactors, transformers, motor invertors etc. are the examples of these devices. This electromagnetic radiation can induce electrical noise into both power and signal lines, as well as direct radiation into the device causing negative effects on the system. The appropriate grounding, shielding and other protective steps should be taken at the installation stage to prevent these effects. These protective steps include control cabinet grounding, cable shield grounding, protective elements for electromagnetic switching devices, correct wiring as well as consideration of cable types and their cross sections.

1.8 Restoring the default settings

To restore the default configuration of all registers, follow the steps below:

1. Turn off power supply
2. Set section 6 of S3 switch to ON
3. Turn on power supply, power LED blinking
4. Switch section 6 of S3 switch to OFF to restore the default settings. To cancel the reset, turn off the power and switch section 6 of S3 switch to the OFF position.

1.9 Default Settings

Out of the box device as well as after restoring default values procedure, has got the following default registers values:

Register Name	Default Value
BAUD RATE	76800 (76800 bps)
STOP BITS	1
DATA BITS	8
PARITY BITS	0
RESPONSE DELAY	0
USERNAME	platform
PASSWORD	1000
IP ADDRESS	192.168.1.123
MASK	255.255.255.0
GATEWAY	192.168.1.1
HTTP PORT	80
MODBUS TCP PORT	502
MODBUS TCP TIMEOUT	60s
RS485 TIMEOUT	500ms
SEND MODBUS ERRORS	DISABLE
MBUS BAUD RATE	2400
MBUS PORT	6021

Table 3. Default values

1.10 Firmware version and device type (Modbus register 30001)

The type and firmware version of device are encoded in this register.

Low byte contains information about the type of device. In case of iSMA-B-MG-IP it is 59_{10} ($0x3B_{16}$).

High byte contains the device firmware version multiplied by 10.

An example:

In register 30001 is number $15114_{10} = 0x3B0A_{16}$. It means that it is a iSMA-B-MG-IP device ($0x3B$) with firmware in version 1.0 ($0x0A_{16} = 10_{10}$)

1.11 Up time (Modbus register 30012)

This 32-bits register contains information in seconds about \uparrow Up time \downarrow . The value is reset after power cycle.

1.12 Device actions (Modbus register 40001)

Setting register 40001 according to the table below will enable 1 of 3 available actions: reset device, reload settings and set to default.

Value [dec]	Value [hex]	Action
511	0x01FF	Reset
767	0x02FF	Reload settings
1023	0x03FF	Set to default

Table 4. Device actions

2 iSMA-B-MG-IP as a Modbus Gateway

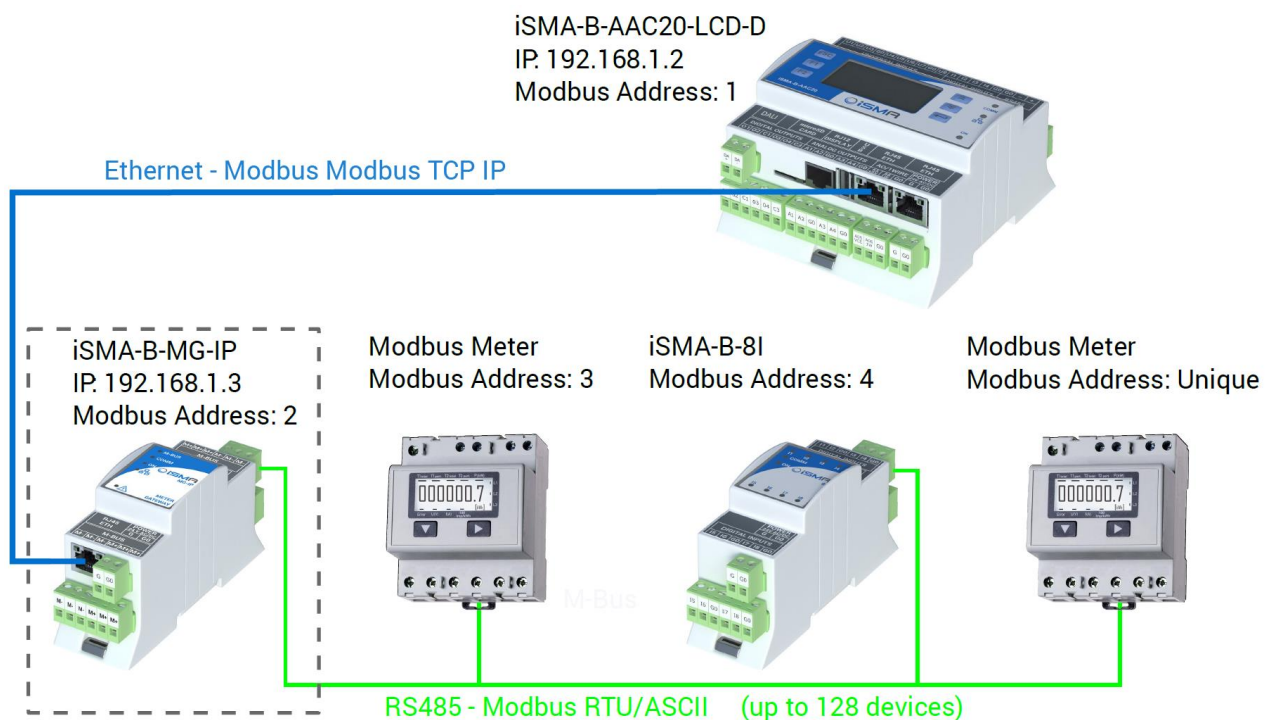


Figure 6. Modbus TCP IP to RS485 Gateway an example

The device simultaneously supports up to **4 Modbus TCP clients**. If the fifth device want to connect to the device, TCP connection will be rejected. In order to secure the device before filling up the call list, it was introduced a mechanism for monitoring each Modbus TCP connection. There is a parameter called **Modbus TCP Connection Timeout** (default 60s). If it does not come any request from the Modbus TCP client during this time, the device will close the connection.

To read internal registers of the device need to generate the correct MODBUS TCP frame with address according to the setting of dipswitch. If the address is different, the frame will be sent to the RS485 port.

If device receives an incorrect MODBUS TCP frame, it sends back a frame with error code:

0x01 - if the function code in the query is not supported

0x02 - if the address of the register is invalid

0x03 - if the amount of data disagrees in the query

If the query is correct, device instantly generates answer with the data or acknowledgment of receipt of data, depending on the query.

iSMA-B-MG-IP has built-in Modbus TCP/IP to RS485 gateway which allows to connect using RS485 Modbus meters or other Modbus devices. In order to ensure proper operation of Modbus Gateway, please make sure that all parameters of RS485 (Baud Rate, Stop Bits etc.) for all the devices connected to RS485 (Gateway and Modbus meters/Modbus devices) are the same.

Operation of gateway is based on checking the MODBUS address in the MODBUS TCP query. If the address is different from the set on the DIP switch, data frame from the query is converted to MODBUS RTU/ASCII, and sent to the RS485 port. Then, the Meter Gateway waits for an answer from device connected to the RS485. If slave does not respond within the estimated time defined by the **RS485 Timeout** (default 500ms), an exception response will be given: error code 0x0B. If the slave answered the correct frame, it is converted to Modbus TCP and sent to the master.

Meter Gateway sends error code 0x0B in case the valid frame does not receive,. Some systems upon receipt of this error code, no repeats the query according to the settings. No retry may result in immediate going point to down mode. That is why Meter Gateway has the ability to block the sending information about errors (**Send Modbus Errors** setting from built-in web or iSMA-Configurator). Then, in the absence of any response, the system retry the request according to the settings.

2.1 Connecting the communication bus (RS485)

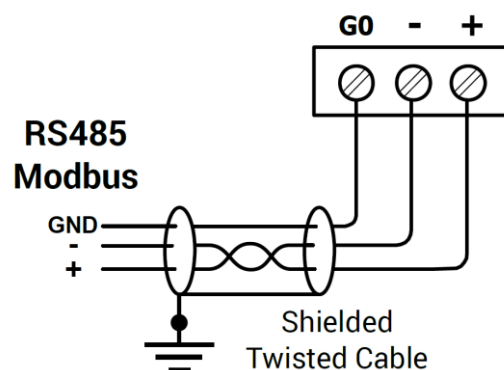


Figure 7. RS485 connection

2.2 RS 485 network termination

Transmission line often affects the present problem on data communication networks. These problems include reflections and signal attenuation.

To eliminate the presence of reflections from the end of the cable, the cable must be terminated at both ends with a resistor across the line equal to its characteristic impedance. The both ends must be terminated since the direction of propagation is bidirectional. In the case of an RS485 twisted pair cable this termination is typically 120 Ω.

2.3 Setting Device Address on Modbus Network

To determine the address on the Modbus network, device provides two rotary switches S1 and S2 located on the top panel of the device.

It is possible to set the device address from 0 to 99.

The formula for setting the address:

$$\text{Address} = S2 \cdot 10 + S1$$

Where S1 and S2 are values of switches.

The example:

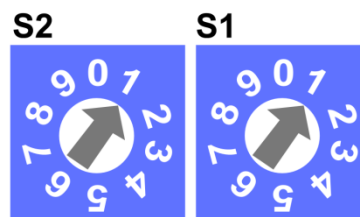


Figure 8. Sample of setting address

Switches set as in figure above, will set the device address to 11.

2.4 Baud rate selection

Transmission baud rate is determined by S3 switch (sections 1, 2 and 3) in accordance with the following table:

1	2	3	Baud rate
OFF (0)	OFF (0)	OFF (0)	Defined by the user in the registry
OFF (0)	OFF (0)	ON (1)	76800
OFF (0)	ON (1)	OFF (0)	4800
OFF (0)	ON (1)	ON (1)	9600
ON (1)	OFF (0)	OFF (0)	19200
ON (1)	OFF (0)	ON (1)	38400
ON (1)	ON (1)	OFF (0)	57600
ON (1)	ON (1)	ON (1)	115200 (factory set)

Table 5. Baud rate selection

2.5 Protocol selection

Protocol selection is done by sections 4 and 5 of the S3 switch according to table:

4	5	Protocol
OFF (0)	OFF (0)	Modbus RTU
OFF (0)	ON (1)	Modbus ASCII
ON (1)	OFF (0)	N/A
ON (1)	ON (1)	N/A

Table 6. Protocol selection

2.6 Modbus configuration registers

WARNING! Changing the parameters configuring transmission (except for registers which value is read from the switch), they will only take effect after restarting the device.

2.6.1 Device address (30002)

This register contains information about the address of the Modbus device. This address is set by using switches S1 and S2 (see section Setting Device Address on Modbus Network).

2.6.2 Baud rate and protocol (30003)

The register contains information about the baud rate of RS485 port and type of protocol in accordance with the table below. This register reflects the state of the switch S3.

Baud rate				Protocol		
Bit 0	Bit 1	Bit 2	Baud rate	Bit 3	Bit 4	Protocol
0	0	0	User defined	0	0	Modbus RTU
0	0	1	76800	0	1	Modbus ASCII
0	1	0	4800	1	0	N/A
0	1	1	9600	1	1	N/A
1	0	0	19200			
1	0	1	38400			
1	1	0	57600			
1	1	1	115200			

Table 7. Baud rate and protocol

2.6.3 Counter of received messages (30004) – Modbus

32-bit register with the number of valid Modbus receives the messages by the device from

last powered up. The value is reset after power cycle or after changing transmission parameters (speed, stop bits, parity, etc.).

2.6.4 Counter of error messages (30006) – Modbus

32-bit register with the number of error Modbus receives messages by the device from last powered up. The value is reset after power cycle or after changing transmission parameters (speed, stop bits, parity, etc.).

2.6.5 Counter of sent messages (30008) – Modbus

32-bit register with the number of Modbus sends messages by the device from last powered up. The value is reset after power cycle or after changing transmission parameters (speed, stop bits, parity, etc.).

2.6.6 Hardware_version (30130)

This 16-bits register contains the module hardware version multiplied by 10.

2.6.7 MAC_address (30131)

This 32-bits register contains the module MAC address information.

2.6.8 Device actions (40001)

Setting register 40001 according to the table below will enable 1 of 4 available actions: reset module, reload settings, set to default and enter bootloader.

Value	Action
511	Reset
767	Reload settings
1023	Set to default
1279	Enter Bootloader

Table 8. Device actions

2.6.9 Baud rate (40136)

When sections 1,2 and 3 of S3 switch are in off position, baud rate is determined in accordance with this register. Baud rate is determined by the following formula:

$$\text{Baud rate} = \text{Register value} \cdot 10$$

2.6.10 Stop bits (40137)

Number of stop bits is determined on the basis of this register in accordance with the following table:

Value	No of stop bits
1 (default)	1
2	2
256	RS485 biasing*

Table 9. Stop bits

*Bit no 8 activates RS485 biasing resistors in order to pull-up voltage on the RS485 bus. When the bit no 8 is true (bit 8 = 1) then RS485 biasing resistors are activated. The function is **only** available in **MG-IP devices** with a hardware version ≥ 2.0

The biasing resistors are useful in case when iSMA modules are connected with a third part devices with the same RS485 bus and communication errors appears on the network.

WARNING! The only one single device in the network can have biasing resistors activated

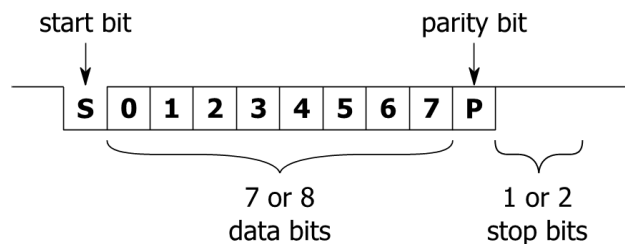


Figure 9. Modbus message frame

2.6.11 Data bits (40138)

Number of data bits transmitted in a single byte is determined according to the following table:

Value	No of data bits
7	7
8 (default)	8

Table 10. Data bit

2.6.12 Parity bit (40139)

Each byte of data being transferred may have additional protection as a parity bit added before stop bit (bits).

The method of calculating parity bit determines the table below:

Register value	Type of parity bit
0 (default)	none
1	Odd (number of all ones in a byte is odd)
2	Even (number of all ones in a byte is even)
3	Always 1
4	Always 0

Table 8. Parity bit

2.6.13 Response delay time (40140)

The value of this 16-bits register determines the number of milliseconds to wait before the device answers the question. This time is used to extend the interval between question and answer. The default value of 0 means no delay (the answer is sent once during the 3.5 character required by the protocol Modbus RTU).

3 iSMA-B-MG-IP as a M-Bus Gateway

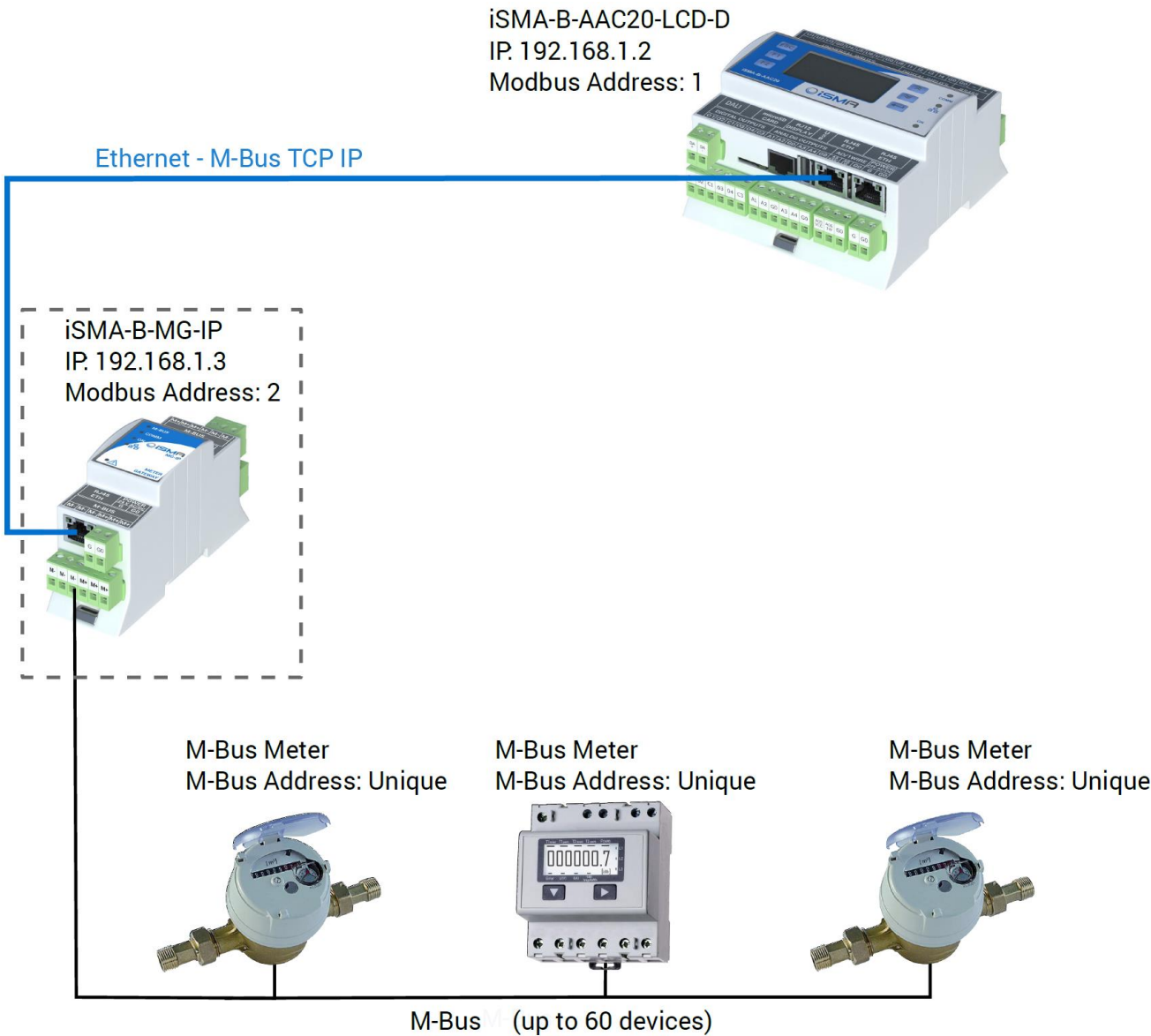


Figure 10. M-Bus TCP IP to M-Bus Gateway an example

The device simultaneously supports up to 4 M-Bus TCP clients. If the fifth device want to connect to Meter Gateway, TCP connection will be rejected. In order to secure Meter Gateway before filling up the call list, it was introduced a mechanism for monitoring each M-Bus TCP IP connection. Every 45 seconds a query is sent to the devices connected to M-Bus bus. If device does not response for query, after 2 seconds is sent another query. If device does not response three times, Meter Gateway will close the connection.

iSMA-B-MG-IP device has built-in M-Bus TCP IP to M-Bus interface gateway which allows to connect using M-Bus bus as an additional 3rd party M-bus devices. In order to ensure proper operation of M-Bus Gateway, please make sure that Baud Rate of M-Bus interface of all the devices connected to M-Bus bus (Gateway and an addition devices) are the same.

Operation of gateway is based on sending the M-Bus TCP IP query by M-Bus bus. Data frame from query is converted to M-Bus, and sent to the M-Bus bus. Then the iSMA-B-MG-IP device waits for an answer from device connected to the bus, if meter does not respond within the estimated time defined by parameter M-Bus Timeout (default 2000ms), an exception/exceptional response will be given: error code 0x0B. If the slave answers the correct frame, it is converted to M-Bus TCP IP and sent to the master.

3.1 About M-Bus

The M-Bus (Meter Bus) was developed to fill the need for a system for the networking and remote reading of utility meters, for example to measure the consumption of gas or water in the home. This bus fulfils the special requirements of remotely powered or battery driven systems, including consumer utility meters. When interrogated, the meters deliver the data they have collected to a common master, for example, DDC controller or a hand-held computer, connected at periodic intervals to read all utility meters of a building.

3.1.1 M-Bus topology and cable

The M-Bus is a hierarchical system, with communication controlled by a master (for example the AAC20-M). The M-Bus consists of the master, a number of slaves (end-equipment meters) and a two-wire connecting cable. The slaves are connected in parallel to the transmission medium - the connecting cable.

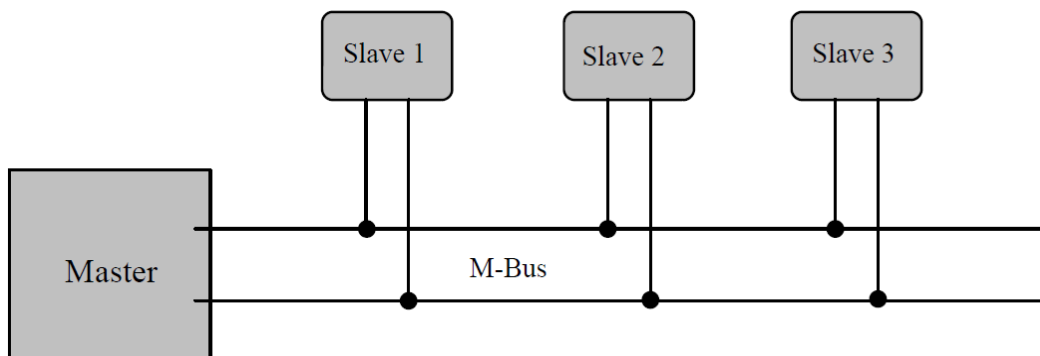


Figure 11. - M-Bus connection topology

A two-wire cable (JYStY N*2*0.8 mm) is used as the transmission medium for the M-Bus. The maximum distance between the slave and the repeater is 350 m; this length corresponds to a cable resistance of up to 29 Ω . This distance applies for the standard configuration having Baud rates between 300 and 9600 baud rate, and maximum of 250 slaves. The maximum distance can be increased by limiting the Baud rate and using fewer slaves, but the bus voltage in the Space state must at no point in a segment fall below 12 V, because of the remote powering of the slaves. In the standard configuration the total cable length should not exceed 1000 m, in order to meet the requirement of a maximum cable capacitance of 180 nF.

3.1.2 M-Bus addressing

M-Bus devices are using two types of addressing:

- Primary = This address is assigned by user in commissioning process (all new M-Bus devices have this address, set by factory to 0). This type of address has limited range from 0 to 250.
- Secondary = This address has wider range than primary and in default contains device serial number. All out of box devices connected to the bus have unique secondary address.

3.2 Connecting the communication bus (M-Bus)

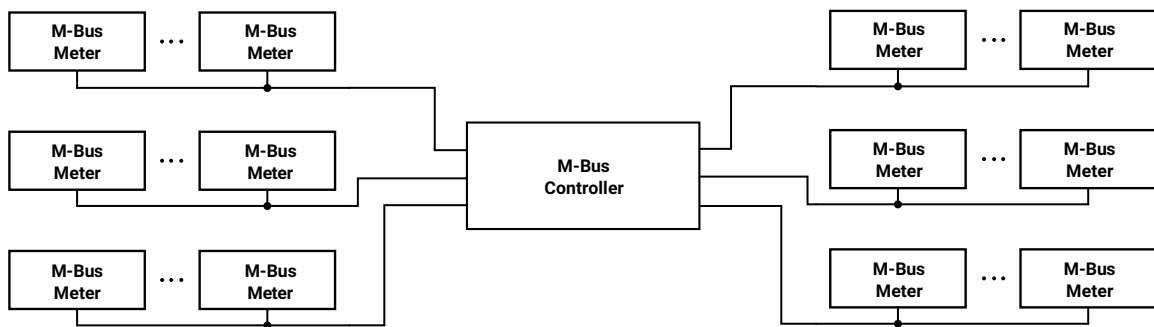


Figure 12. M-Bus bus – star topology

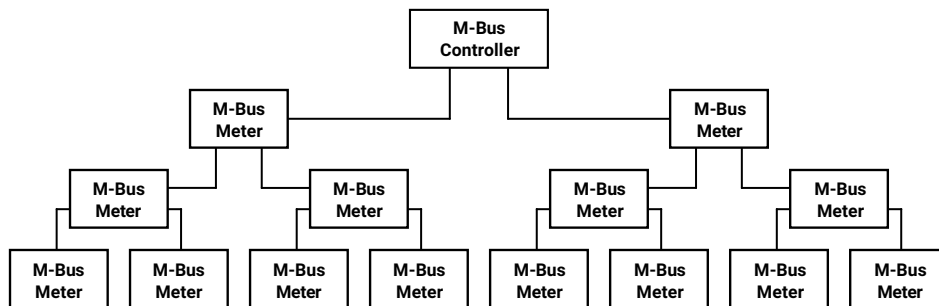


Figure 13. M-Bus bus – tree topology

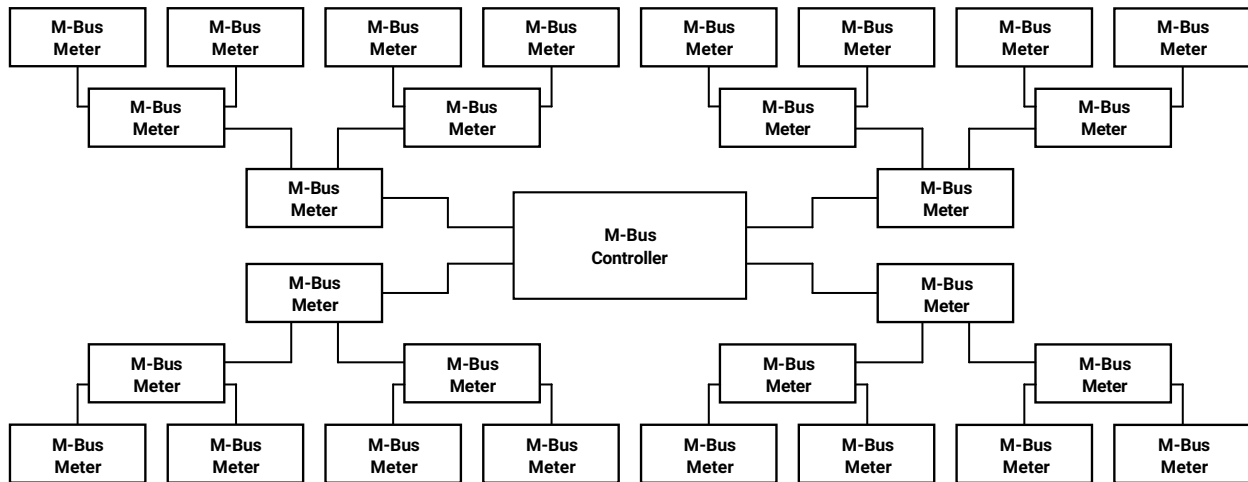


Figure 14. M-Bus bus – extended star topology

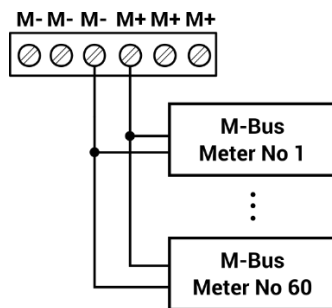


Figure 15. M-Bus bus - bus topology

3.3 Modbus configuration registers for M-Bus

WARNING! Changing the parameters configuring transmission (except for registers which value is read from the switch) will only take effect after restarting the device.

3.3.1 Counter of received messages (30015) – M-Bus

16-bit register with the number of valid M-Bus receives messages by the device from last powered up. The value is reset after power cycle or after changing transmission parameters.

3.3.2 Counter of sent messages (30017) – M-Bus

16-bit register with the number of M-Bus sends messages by the device from last powered up. The value is reset after power cycle or after changing transmission parameters.

3.3.3 Counter of Alarms (30019) – M-Bus

16-bit register with the number of M-Bus alarms from last powered up. Alarm is detected when current M-Bus bus exceeds acceptable level (130 mA). The value is reset after power cycle or after changing transmission parameters.

4 WEB Configuration

4.1 Web server access

iSMA-B-MG-IP device has built-in web server, which allows to show device status and to change configuration.

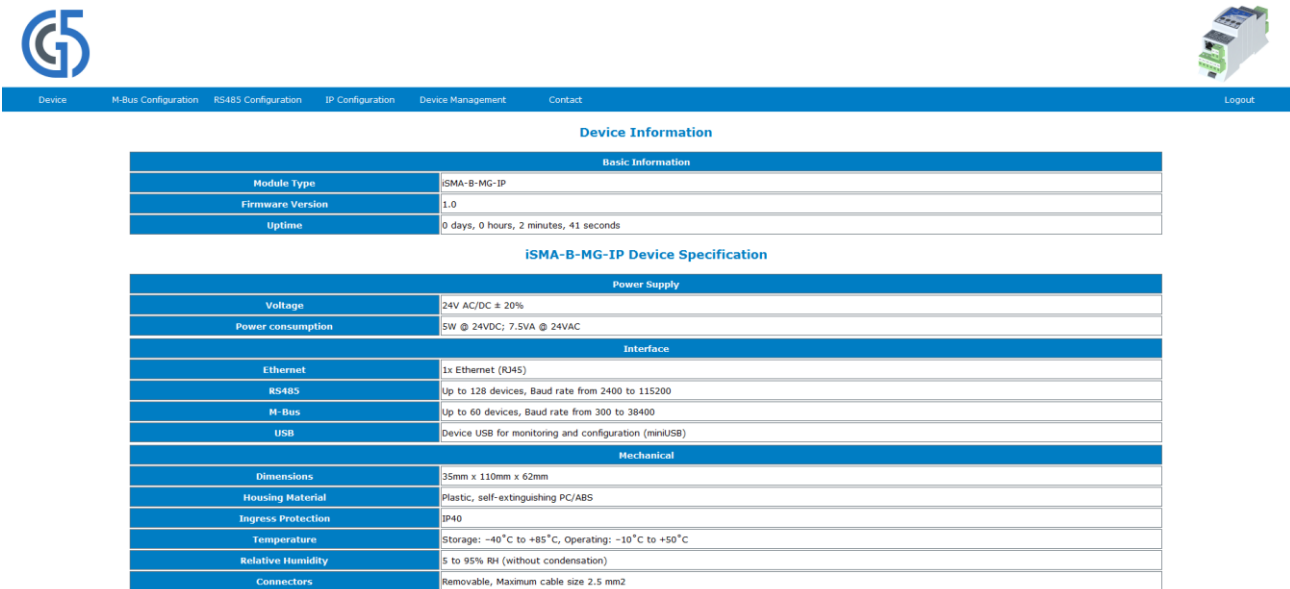
To access web server open browser and entre IP address of the device, default address for new device (default IP address is 192.168.1.123). Please use the following credentials :

Username: platform

Password: 1000 (by default)

4.2 Device page

This page contains information and technical specification of the device. The Basic Information section includes information about device type, firmware version and uptime. In the Device Specification there are information about: Power Supply, Inputs/Outputs parameters, Interfaces and Mechanical.



The screenshot shows the web interface for the iSMA-B-MG-IP device. At the top left is the logo, and at the top right is a small image of the device. A navigation bar contains links for Device, M-Bus Configuration, RS485 Configuration, IP Configuration, Device Management, and Contact. A Logout link is also present on the right. The main content area is titled "Device Information" and is divided into two sections: "Basic Information" and "iSMA-B-MG-IP Device Specification".

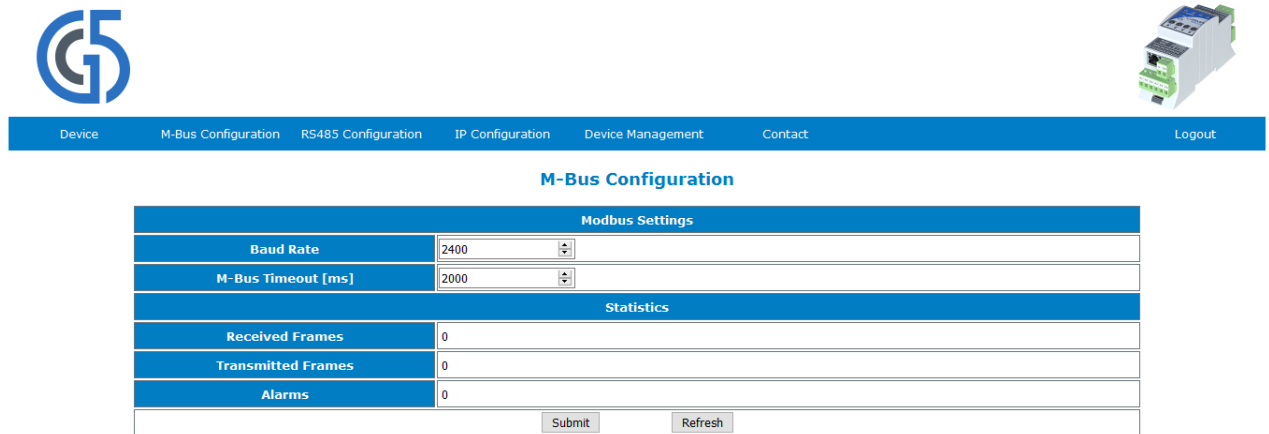
Basic Information	
Module Type	iSMA-B-MG-IP
Firmware Version	1.0
Uptime	0 days, 0 hours, 2 minutes, 41 seconds

iSMA-B-MG-IP Device Specification	
Power Supply	
Voltage	24V AC/DC ± 20%
Power consumption	5W @ 24VDC; 7.5VA @ 24VAC
Interface	
Ethernet	1x Ethernet (RJ45)
RS485	Up to 128 devices, Baud rate from 2400 to 115200
M-Bus	Up to 60 devices, Baud rate from 300 to 38400
USB	Device USB for monitoring and configuration (miniUSB)
Mechanical	
Dimensions	35mm x 110mm x 62mm
Housing Material	Plastic, self-extinguishing PC/ABS
Ingress Protection	IP40
Temperature	Storage: -40°C to +85°C, Operating: -10°C to +50°C
Relative Humidity	5 to 95% RH (without condensation)
Connectors	Removable, Maximum cable size 2.5 mm2

Figure 16. Device page of iSMA-B-MG-IP

4.3 M-Bus Configuration page

This page allows to enter configuration parameters and show information of M-Bus interface.



Modbus Settings	
Baud Rate	2400
M-Bus Timeout [ms]	2000
Statistics	
Received Frames	0
Transmitted Frames	0
Alarms	0

Figure 137. M-Bus Configuration page

This page allows to set parameters such as:

- **Baud Rate** (Read & Write), M-Bus bus baud rate from 300 up to 38400,
- **M-Bus Timeout** (Read & Write), timeout for M-Bus messages,
- **Received Frames** (Read Only), number of received frames,
- **Transmitted Frames** (Read Only), number of transmitted frames,
- **Alarms** (Read Only), number of M-Bus alarms,

WARNING! To save changes, please use “Submit” button.

4.4 RS485 Configuration

This page allows to enter configuration parameters and show information of controllers RS485 port.

Modbus Settings	
Actual Baud Rate	115200
User Baud Rate	76800
Stop Bits	1 Bit
Data Bits	8 Bits
Parity Bits	None
Statistics	
Received Frames	0
Error Frames	0
Transmitted Frames	0

Figure 18. iMSA-B-MG-IP RS485 configuration page

This page allows to set parameters such as:

- **Baud rate** (Read Only), RS485 baud rate from 2400 up to 115200,
- **Modbus Config** (Read Only), Modbus Protocol Type- RTU or ASCII,
- **Stop Bits** (Read & Write), number of stop bits (1 or 2),
- **Data Bits** (Read & Write), number of data bits transmitted in a single byte (7 or 8),
- **Parity Bits** (Read & Write), transmission protection as a parity bit added before stop bit (bits),
- **Received Frames** (Read Only), number of received frames,
- **Transmitted Frames** (Read Only), number of transmitted frames,
- **Error Frames** (Read Only), number of error frames.

WARNING! To save changes, please use “Submit” button.

4.5 IP Configuration

This page allows to change parameters of Ethernet port, Modbus TCP IP and M-Bus TCP IP.

Network Configuration	
Ip Address	192.168.1.123
Mask	255.255.255.0
Gateway	192.168.1.1
Http Port	80
Mac Address	00:1E:CD:F8:B1:B9
M-Bus Configuration	
M-Bus TCP Port	6021
Modbus Configuration	
Protocol Type	Modbus RTU
Modbus TCP Port	502
Modbus Address	1
Modbus TCP Connection Timeout [s]	60
RS485 Timeout [ms]	500
Send Modbus Errors	<input checked="" type="checkbox"/>

Figure 19. iSMA-B-MG-IP IP Configuration page

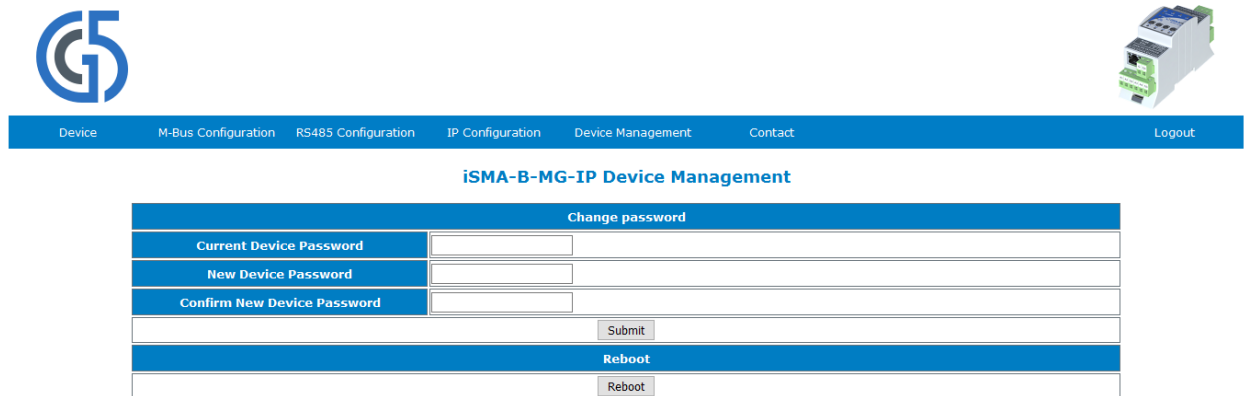
This page allows to set parameters such as:

- **IP Address** (Read & Write), controller Ethernet interface IP address,
- **Mask** (Read & Write), network mask,
- **Gateway** (Read & Write), network default gateway,
- **Http Port** (Read & Write), http port,
- **Mac Address** (Read Only), Ethernet interface MAC address,
- **M-Bus TCP Port** (Read & Write), M-Bus TCP port number; default 6021,
- **Protocol Type** (Read Only), Dip switch protocol selection,
- **Modbus TCP Port** (Read & Write), Modbus TCP port number, default 502,
- **Modbus Address** (Read Only), Modbus device address set by rotary switches,
- **Modbus TCP Connection Timeout** (Read & Write), timeout for TCP/IP messages,
- **RS485 Timeout** (Read & Write), timeout for Modbus RTU/ASCII messages,
- **Send Modbus Errors** (Read & Write), Enable/Disable sending Modbus error messages.

WARNING! To save changes, please first click "Submit" button and then "Reboot" button.

4.6 Device management

This page allows to change password and remote reboot device.



Change password	
Current Device Password	<input type="text"/>
New Device Password	<input type="text"/>
Confirm New Device Password	<input type="text"/>
<input type="button" value="Submit"/>	
Reboot	
<input type="button" value="Reboot"/>	

Figure 20. Device management page

Procedure of changing device password:

- a) enter current device password in field - Current Device Password,
- b) enter new device password in field - New Device Password,
- c) enter again new device password in field - Confirm New Device Password,
- d) to confirm password change, please click „Submit“ button,
- e) please Logout and Login again using new password.

WARNING! To reset password to default refer to “Restoring default settings”.

4.7 Contact

This page displays information about Manufacture web address and email to technical support.



Figure 141. Contact page view

5 List of all Modbus Registers

The table below shows all the registers available for iSMA-B-MG-IP device

Modbus Address	Dec Address	Hex Address	Register name	Access	Description
30001	0	0x00	VERSION AND DEVICE TYPE	Read Only	
30002	1	0x01	DEVICE ADDRESS (state of switch)	Read Only	
30003	2	0x02	BAUD RATE AND PROTOCOL (state of switch)	Read Only	
30004	3	0x03	MODBUS RECEIVED FRAMES COUNTER (32 _ bits)	Read Only	Default state is 0 Reset at the device start and change of transmission parameters.
30006	5	0x05	MODBUS ERROR FRAMES COUNTER 32 _ bits)	Read Only	Default state is 0 Reset at the device start and change of transmission parameters.
30008	7	0x07	MODBUS TRANSMITTED FRAMES COUNTER (32 _ bits)	Read Only	Default state is 0 Reset at the device start and change of transmission parameters.
30012	11	0x0B	UP TIME		Up device time in sec
30015	14	0x0E	MBUS RECEIVED FRAMES COUNTER	Read Only	Default state is 0 Reset at the device start and change of transmission parameters.
30017	16	0x10	MBUS TRANSMITTED FRAMES COUNTER	Read Only	Default state is 0 Reset at the device start and change of transmission parameters.
30019	18	0x12	MBUS ALARMS COUNTER	Read Only	Default state is 0 Reset at the device start and change of transmission parameters.
30130	129	0x81	HARDWARE_VERSION	Read Only	The current hardware version of a device
30131	130	0x82	MAC_ADDRESS (32 _ bits)	Read Only	The MAC address of a device
40001	0	0x00	DEVICE ACTIONS	Read & Write	Allows to enable 1 of 3 device actions

Modbus Address	Dec Address	Hex Address	Register name	Access	Description												
40023	22	0x16	MBUS BAUD RATE (32 = bits)	Read & Write Memory	Baud rate for Mbus (Default 2400 bps)												
40025	24	0x18	MBUS CONNECTION TIMEOUT (32 = bits)	Read & Write Memory	Timeout of Mbus connection (Default 2000 ms)												
40136	135	0x87	BAUD RATE	Read & Write Memory	Transmission speed is defined by the user calculated using the formula: $Baudrate = (registervalue) \cdot 10$ The value is considered only when sections 1, 2 and 3 of S3 switch is in the OFF position The default value is 7680 (76800 bps)												
40137	136	0x88	STOP BITS	Read & Write Memory	Supported values are 1 and 2 The default value 1												
40138	137	0x89	DATA BITS	Read & Write Memory	Supported values are 7 and 8 The default value 8												
40139	138	0x8A	PARITY BIT	Read & Write Memory	Parity bit (40139) The default value is 0 (no parity) Allowed values: <table border="1" data-bbox="1027 1032 1425 1317"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0 (default)</td> <td>none</td> </tr> <tr> <td>1</td> <td>Odd</td> </tr> <tr> <td>2</td> <td>Even</td> </tr> <tr> <td>3</td> <td>Always 1</td> </tr> <tr> <td>4</td> <td>Always 0</td> </tr> </tbody> </table>	Value	Description	0 (default)	none	1	Odd	2	Even	3	Always 1	4	Always 0
Value	Description																
0 (default)	none																
1	Odd																
2	Even																
3	Always 1																
4	Always 0																
40140	139	0x8B	RESPONSE DELAY	Read & Write Memory	Delay in ms before sending response The default value is 0.												