

# User Manual

Revision 1.002  
English

## MQTT Broker

(Order Code: HD67C00-B2, HD67C00-G43-B2)

For Website information:

[www.adfweb.com?Product=HD67C00-B2](http://www.adfweb.com?Product=HD67C00-B2)  
[www.adfweb.com?Product=HD67C00-G43-B2](http://www.adfweb.com?Product=HD67C00-G43-B2)

For Price information:

[www.adfweb.com?Price=HD67C00-B2](http://www.adfweb.com?Price=HD67C00-B2)  
[www.adfweb.com?Price=HD67C00-G43-B2](http://www.adfweb.com?Price=HD67C00-G43-B2)

### Benefits and Main Features:

- ✦ Very easy to configure
- ✦ Power Supply 18...35V DC
- ✦ Temperature range: -40°C/+85°C (-40°F/+185°F)



User Manual

For others MQTT Broker products, see also the following links:

#### Converter MQTT broker to

[www.adfweb.com?Product=HD67C01](http://www.adfweb.com?Product=HD67C01)  
[www.adfweb.com?Product=HD67C02](http://www.adfweb.com?Product=HD67C02)  
[www.adfweb.com?Product=HD67C03](http://www.adfweb.com?Product=HD67C03)  
[www.adfweb.com?Product=HD67C04](http://www.adfweb.com?Product=HD67C04)  
[www.adfweb.com?Product=HD67C05](http://www.adfweb.com?Product=HD67C05)  
[www.adfweb.com?Product=HD67C06](http://www.adfweb.com?Product=HD67C06)  
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[www.adfweb.com?Product=HD67C08](http://www.adfweb.com?Product=HD67C08)  
[www.adfweb.com?Product=HD67C09](http://www.adfweb.com?Product=HD67C09)  
[www.adfweb.com?Product=HD67C10](http://www.adfweb.com?Product=HD67C10)  
[www.adfweb.com?Product=HD67C11](http://www.adfweb.com?Product=HD67C11)  
[www.adfweb.com?Product=HD67C12](http://www.adfweb.com?Product=HD67C12)  
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[www.adfweb.com?Product=HD67C26](http://www.adfweb.com?Product=HD67C26)  
[www.adfweb.com?Product=HD67C27](http://www.adfweb.com?Product=HD67C27)

**(Ethernet)**  
**(M-Bus Master)**  
**(Serial)**  
**(Modbus Master)**  
**(Modbus Slave)**  
**(Modbus TCP Master)**  
**(Modbus TCP Slave)**  
**(BACnet Master)**  
**(BACnet Slave)**  
**(CAN)**  
**(CANopen)**  
**(DALI)**  
**(DeviceNet Master)**  
**(DeviceNet Slave)**  
**(DMX)**  
**(EtherNet/IP Slave)**  
**(J1939)**  
**(KNX)**  
**(NMEA 0183)**  
**(NMEA 2000)**  
**(PROFIBUS Master)**  
**(PROFIBUS Slave)**  
**(PROFINET Slave)**  
**(SNMP Manager)**  
**(SNMP Agent)**  
**(EtherNet/IP Master)**  
**(PROFINET Master)**

Do you need to choose a device? Do you want help?  
[www.adfweb.com?Cmd=helpme](http://www.adfweb.com?Cmd=helpme)

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**UPDATED DOCUMENTATION:**

Dear customer, we thank you for your attention and we remind you that you need to check that the following document is:

- ✚ Updated
- ✚ Related to the product you own

To obtain the most recently updated document, note the “document code” that appears at the top right-hand corner of each page of this document.

With this “Document Code” go to web page [www.adfweb.com/download/](http://www.adfweb.com/download/) and search for the corresponding code on the page. Click on the proper “Document Code” and download the updates.

**REVISION LIST:**

Revision	Date	Author	Chapter	Description
1.000	05/06/2023	Ff	All	First release version
1.001	04/10/2023	Ff	All	Revision
1.002	29/11/2023	Ff	All	Revision

**WARNING:**

ADFweb.com reserves the right to change information in this manual about our product without warning. ADFweb.com is not responsible for any error this manual may contain.

**TRADEMARKS:**

All trademarks mentioned in this document belong to their respective owners.

**SECURITY ALERT:****GENERAL INFORMATION**

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device, legal and safety regulation are required for each individual application. The same applies also when using accessories.

**INTENDED USE**

Machines and systems must be designed so the faulty conditions do not lead to a dangerous situation for the operator (i.e. independent limit switches, mechanical interlocks, etc.).

**QUALIFIED PERSONNEL**

The device can be used only by qualified personnel, strictly in accordance with the specifications. Qualified personnel are persons who are familiar with the installation, assembly, commissioning and operation of this equipment and who have appropriate qualifications for their job.

**RESIDUAL RISKS**

The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

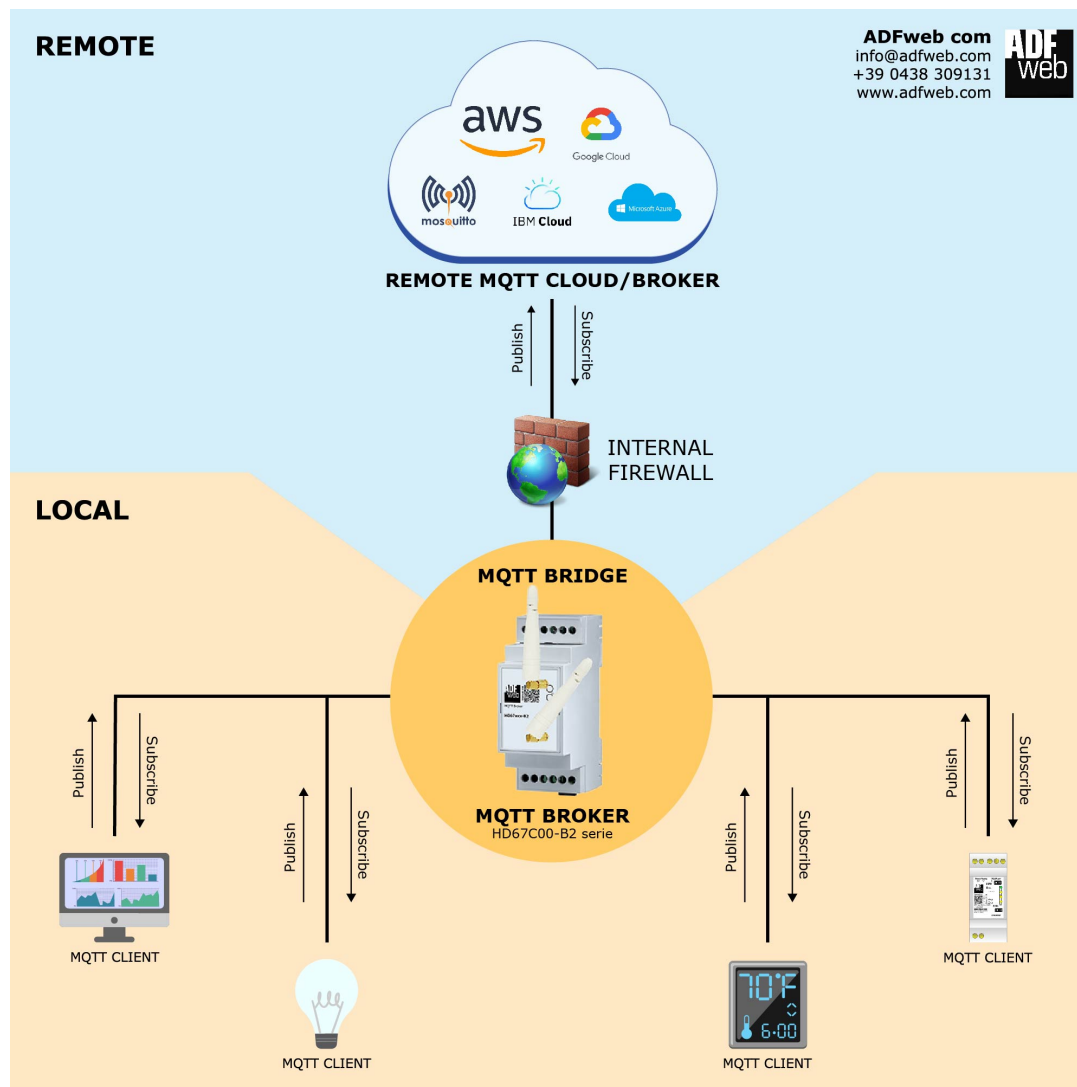


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

**CE CONFORMITY**

The declaration is made by our company. You can send an email to [support@adfweb.com](mailto:support@adfweb.com) or give us a call if you need it.

**EXAMPLE OF CONNECTION:**



**CONNECTION SCHEME:**

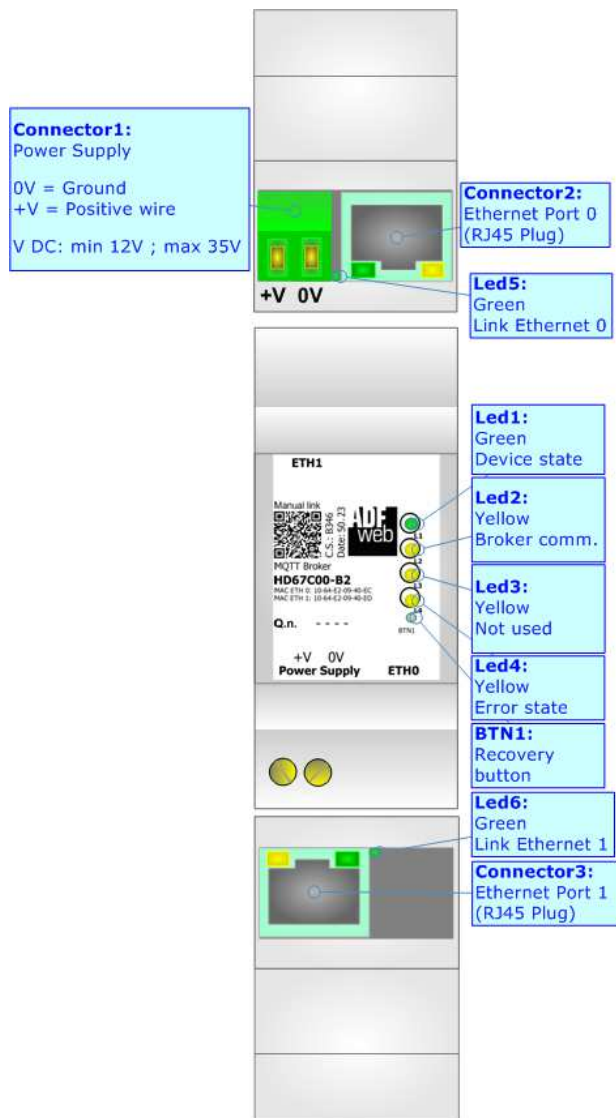


Figure 1a: Connection scheme for HD67C00-B2

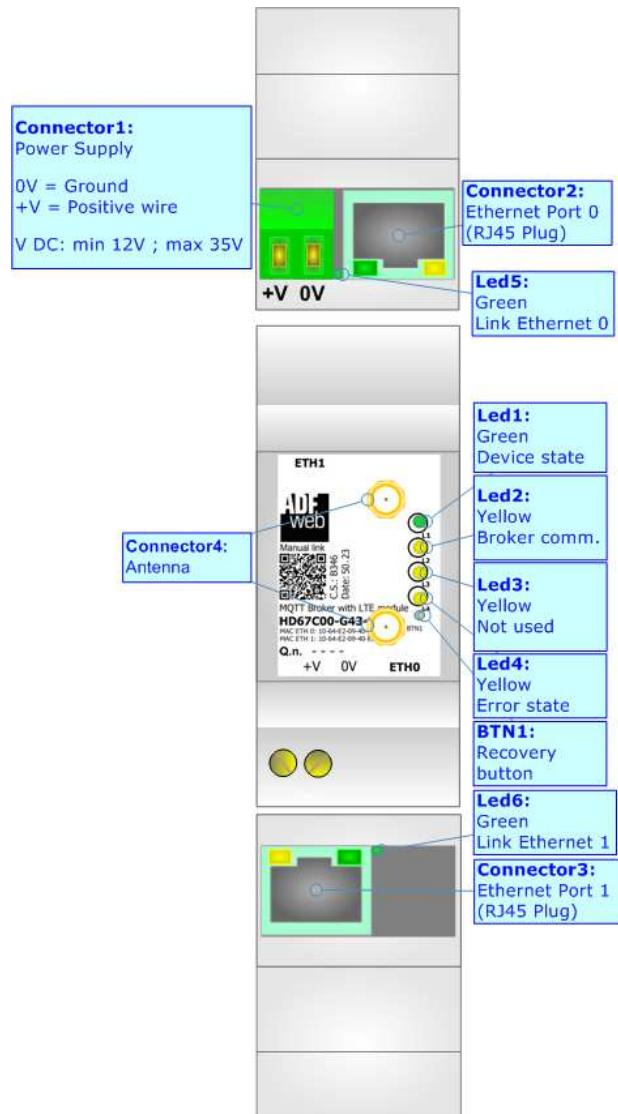


Figure 1b: Connection scheme for HD67C00-G43-B2

**CHARACTERISTICS:**

The HD67C00-B2 is a MQTT broker.

It allows the following characteristics:

- Electrical isolation between Ethernet and Power Supply;
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 18...35V DC;
- Wide temperature range: -40°C / 85°C [-40°F / +185°F].

**CONFIGURATION:**

You need "ADFweb Discovery Tool" software on your PC in order to discover the device into the network and see its IP address.

The configuration is made using an integrated webserver and it is used to:

- Define the parameter of Ethernet interfaces;
- Define the list of allowed MQTT Clients;
- Define the topics' rules;
- Define connection parameters of the bridge;
- Update the device.

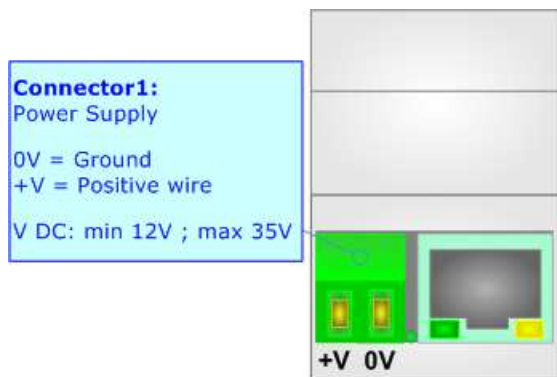
**POWER SUPPLY:**

The devices can be powered at 12...35V DC. For more details see the two tables below.

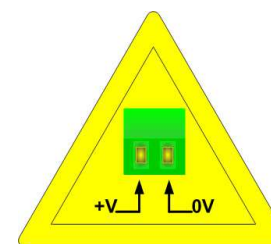
VDC	
<b>Vmin</b>	<b>Vmax</b>
<b>12V</b>	<b>35V</b>

Consumption at 24V DC:

Device	Consumption [W/VA]
HD67C00-xxx-B2	3.5



**Caution: Not reverse the polarity power**



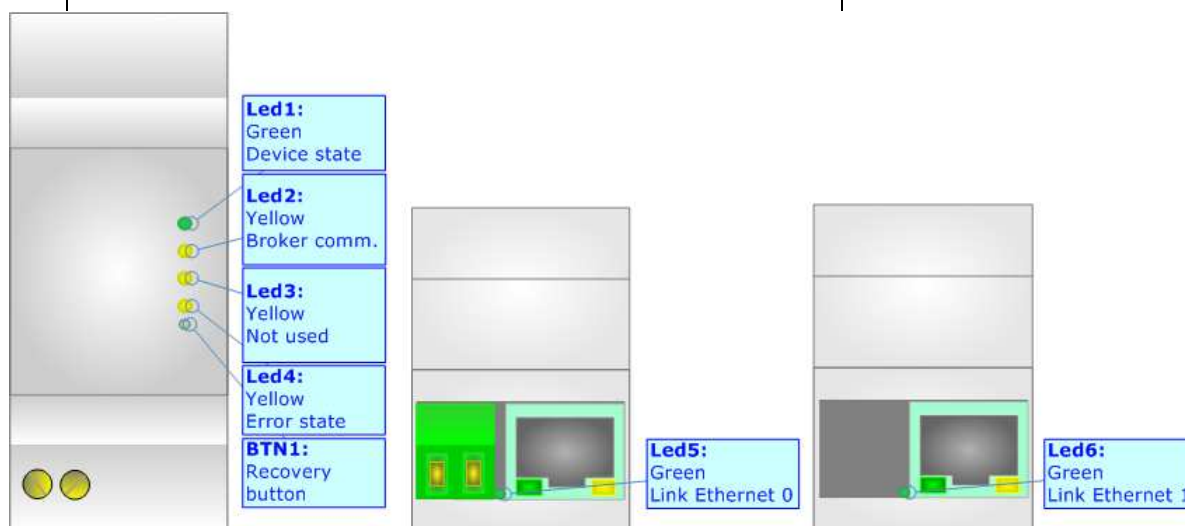
HD67C00-xxx-B2



**LEDS:**

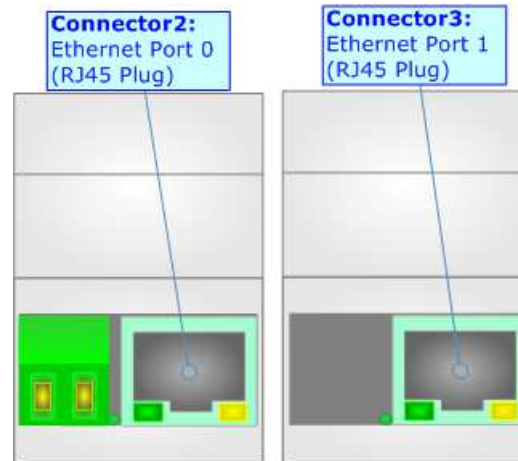
The device has got six LEDs that are used to give information of the functioning status. Meanings of the LEDs when the device is ON are described in the table below. During the start-up, there is a fixed animation of the LEDs (Scrolling LEDs) that will stop as soon as the hardware is ready.

LED	Normal Mode	Recovery Mode
1: Device State (green)	Blinks slowly (~1Hz)	Blinks quickly
2: Broker communication (yellow)	Blinks when the broker is receiving data	Blinks quickly
3: Not used (yellow)	OFF	Blinks quickly
4: Error state (yellow)	<b>ON:</b> bridge connection is in error <b>OFF:</b> No errors are present	Blinks quickly
5: Link Ethernet 0 (green)	<b>ON:</b> Ethernet cable inserted <b>OFF:</b> Ethernet cable not inserted	<b>ON:</b> Ethernet cable inserted <b>OFF:</b> Ethernet cable not inserted
6: Link Ethernet 1 (green)	<b>ON:</b> Ethernet cable inserted <b>OFF:</b> Ethernet cable not inserted	<b>ON:</b> Ethernet cable inserted <b>OFF:</b> Ethernet cable not inserted



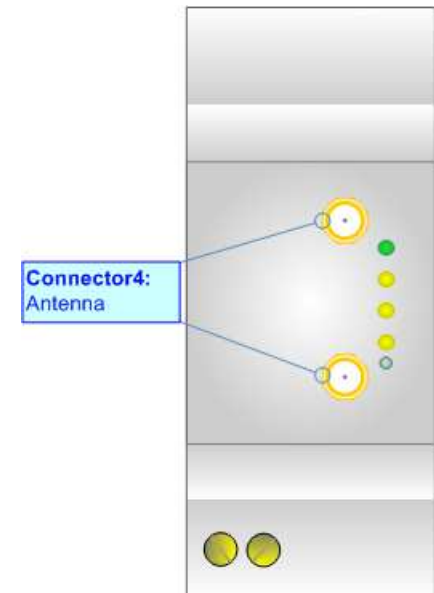
**ETHERNET:**

The Ethernet port is used for programming the device and for MQTT communication. The Ethernet connection must be made using Connector2 and/or Connector3 of HD67C00-xxx-B2 with at least a Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform to the T568 norms relative to connections in cat.5 up to 100 Mbps. To connect the device to an Hub/Switch is recommended the use of a straight cable, to connect the device to a PC is recommended the use of a cross cable.



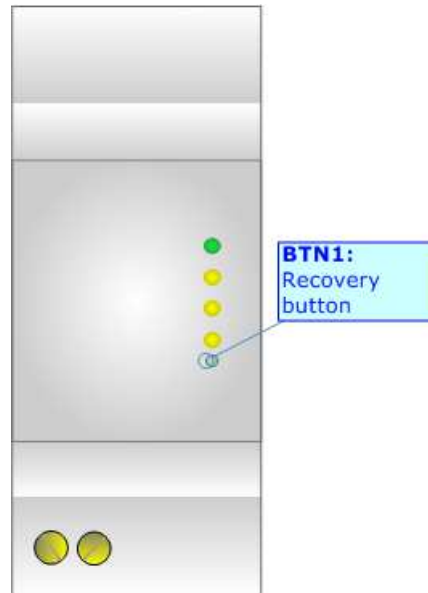
**MOBILE:**

The HD67C00-G43-B2 uses LTE module. The Antenna connector is a SMA Female ('Female Outer Shell' and 'Female Receptacle') so the Antenna must have a SMA Male connector (there are two antennas for HD67C00-G43-B2). The SIM type is Micro-Sim.



**RECOVERY BUTTON:**

In order to recover the device in case of wrong firmware updating or any error that compromises correct functioning of the device, it is necessary to press the BTN1. After pressing, the device will be switched in Recovery Mode and it will be possible to update again the firmware or reset the device using the default IP address 192.168.2.206 via webserver.





### **USE OF ADFWEB DISCOVERY TOOL SOFTWARE:**

To discover the device into the network and see its IP Address, use the available software that runs with Windows called "ADFweb Discovery Tool". It is downloadable from here: [www.adfweb.com/download/filefold/ADFweb\\_Discovery\\_Tool.zip](http://www.adfweb.com/download/filefold/ADFweb_Discovery_Tool.zip). The software works with MSWindows (XP, Vista, Seven, 8, 10, 11; 32/64bit).

**USE OF WEBSERVER:**

To configure the device, it is necessary to use the integrated webserver.

Communication will be done over the HTTPS protocol, so with encrypted communication.

The default IP address from factory is 192.168.2.206 and the device is reachable at this url: <https://192.168.2.206/>

As soon as the browser is launched and connected to the IP address of the device, the login page appears.

Default username and password: admin/admin.

It appears like below:

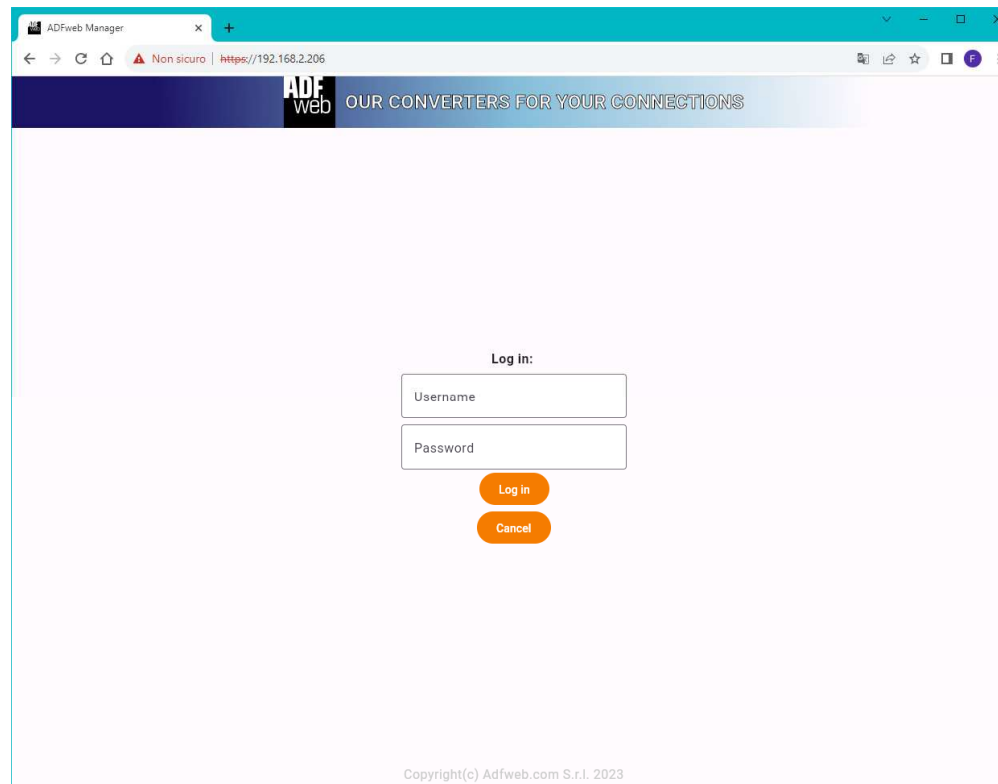


Figure 3: "Login" page

When login is done, the main page with device info will appear. In the top-left corner, there will be a menu that allows to open a drawer with all sections of the webserver.

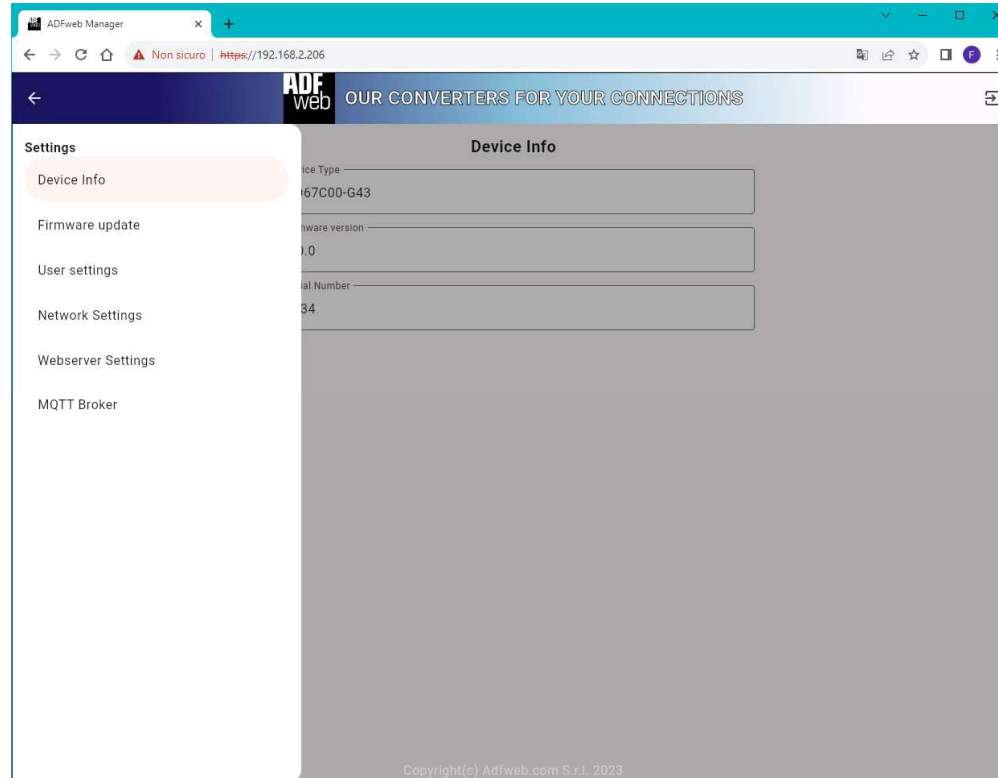


Figure 4: "Drawer"

below:

The sections are described

- Device info;
- Firmware update;
- User settings;
- Network settings;
- Webserver settings;
- MQTT Broker.

**WEBSERVER → DEVICE INFO:**

This section shows main info about the device.

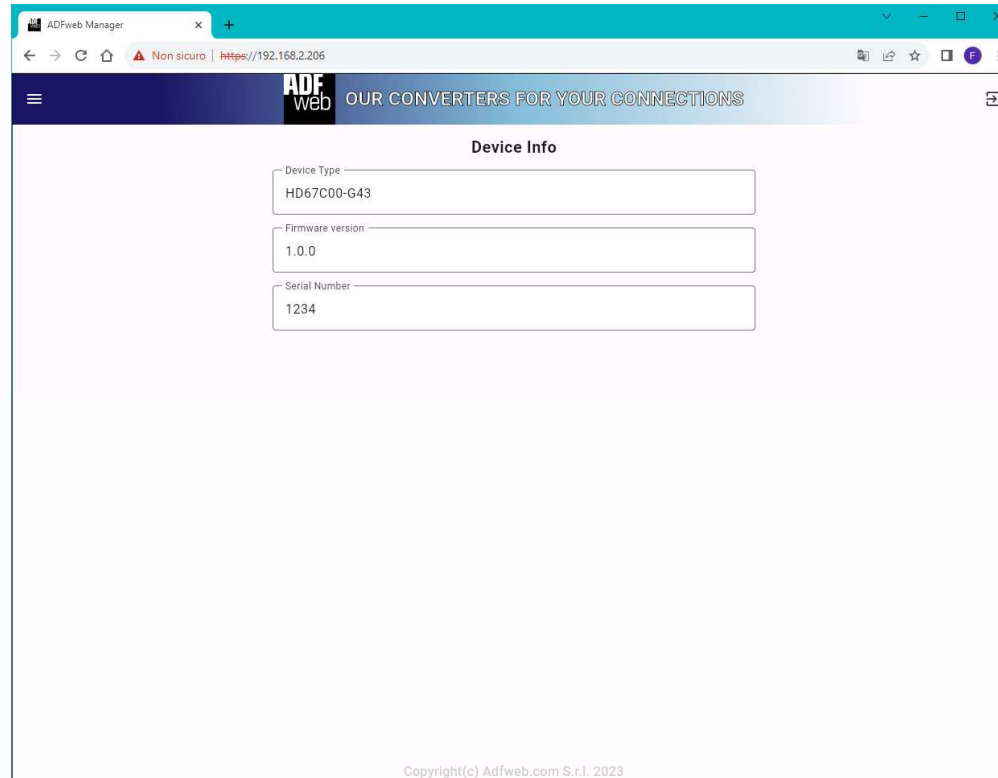


Figure 5: "Device Info" page

The means of the fields for the

"Device Info" section are:

- In the field "**Device Type**" the name of the product is displayed;
- In the field "**Firmware version**" the version of the firmware is displayed;
- In the field "**Serial number**" the serial number is defined is defined.

**WEBSERVER → FIRMWARE UPDATE:**

This section is used to download and update the firmware of the device and export/import full configuration. If required, it is possible to reset the device to Factory settings.

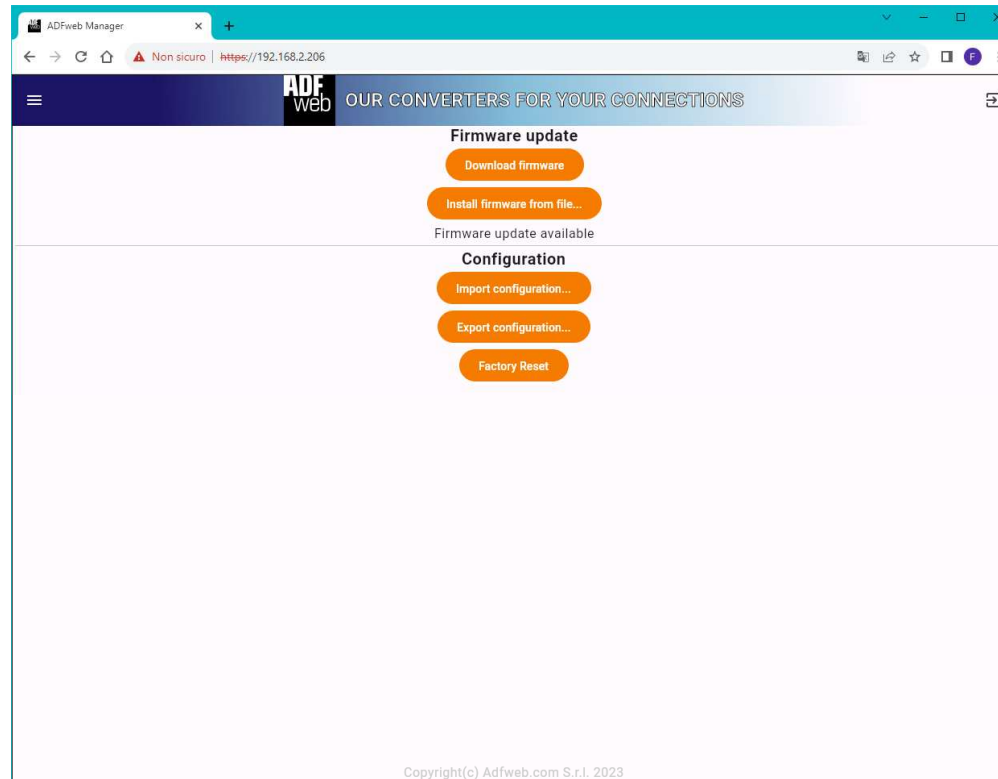


Figure 6: "Firmware update" page



**WEBSERVER → USER SETTINGS:**

This section is used to change the username and/or password of the webserver.  
All settings of this page can be imported or exported by pressing the related buttons.

The screenshot displays the 'User settings' page in a web browser. The browser's address bar shows the URL 'https://192.168.2.206' with a 'Non sicuro' (Not secure) warning. The page header features the ADFweb logo and the slogan 'OUR CONVERTERS FOR YOUR CONNECTIONS'. The main content area contains three input fields: 'Username' (with the value 'admin'), 'Old password', and 'New password'. Below these fields is a 'Set configuration' button. The footer of the page reads 'Copyright(c) Adfweb.com S.r.l. 2023'.

Figure 7: "User settings" page

**WEBSERVER → NETWORK SETTINGS:**

This section is used to set the Network interfaces of the device.  
 All settings of this page can be imported or exported by pressing the related buttons.

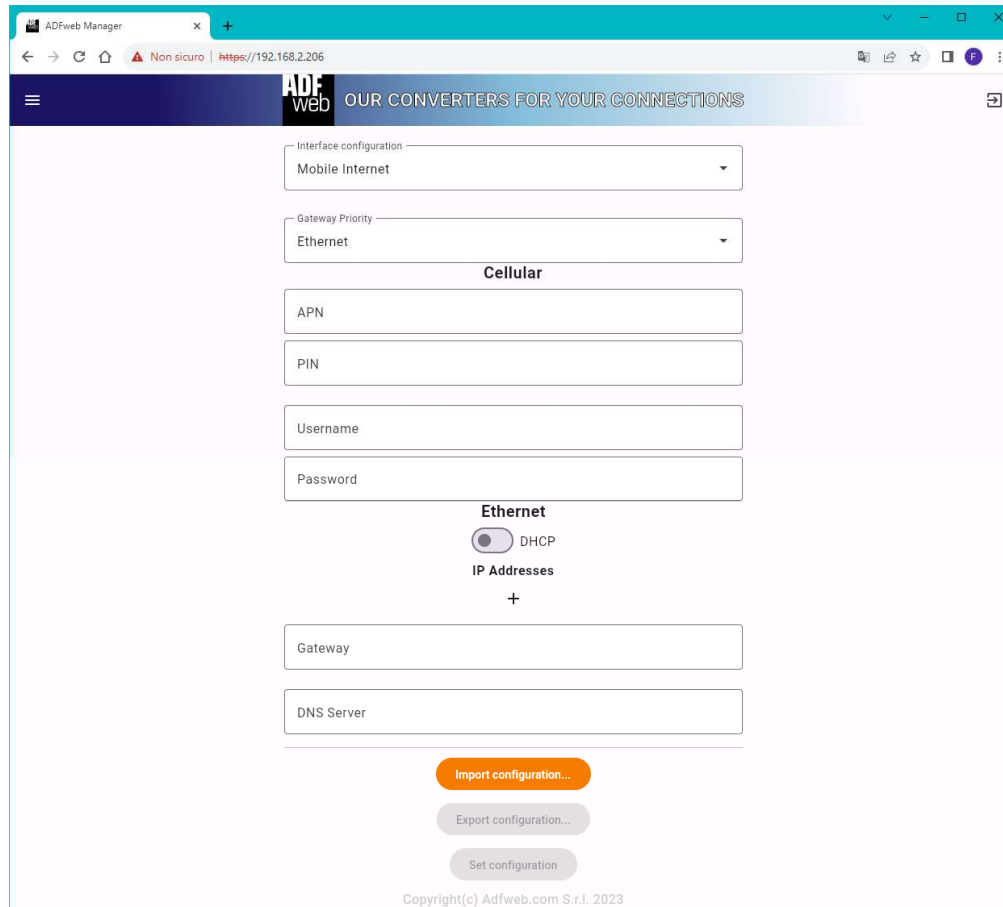


Figure 8: "Network settings" page

The means of the fields for the "Network settings" section are:

- In the field "**Interface configuration**" it is possible to isolate the Ethernet interfaces (Separate Ethernet interfaces), bridge them to act like a single interface (Single Ethernet interface) or set LTE connection (Mobile Internet);
- In the field "**Gateway Priority**" it is possible to select the interface used for Internet connection;
- In the field "**Cellular**" the mobile settings of the interface are defined. The parameters are:
  - APN: APN for mobile connection;
  - PIN: PIN code of the SIM card;
  - Username: user for mobile connection;
  - Password: passowrd for mobile connection.
- In the field "**Ethernet**" the IP settings of the interface are defined. It is possible to:
  - Set "DHCP" option;
  - Set a static IP Address by adding IP Address, SubNet Mask, Gateway and DNS.

**WEBSERVER → WEBSERVER SETTINGS:**

This section is used to update the certificate and key for TLS encryption. By default, the device has its own certificate, but it is possible to update it to be recognized, trusted and configured in the final installation.

All settings of this page can be imported or exported by pressing the related buttons.

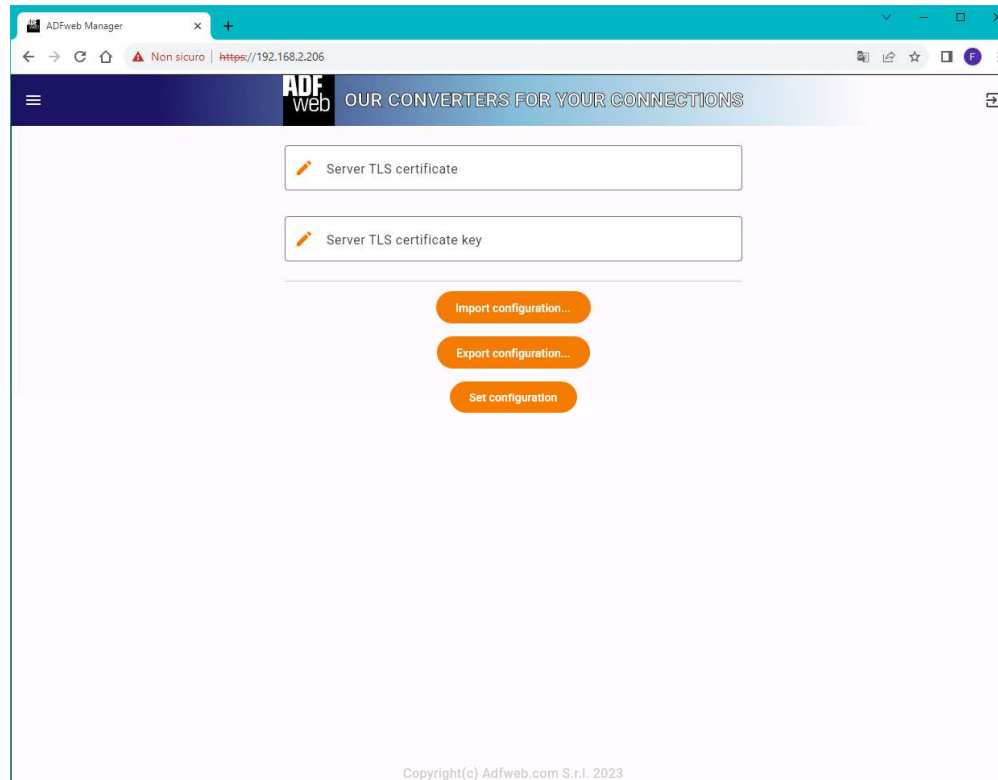


Figure 8: "Webserver settings" page

**WEBSERVER → MQTT BROKER:**

This section is used to set all parameters of MQTT broker and MQTT bridge.  
All settings of this page can be imported or exported by pressing the related buttons.

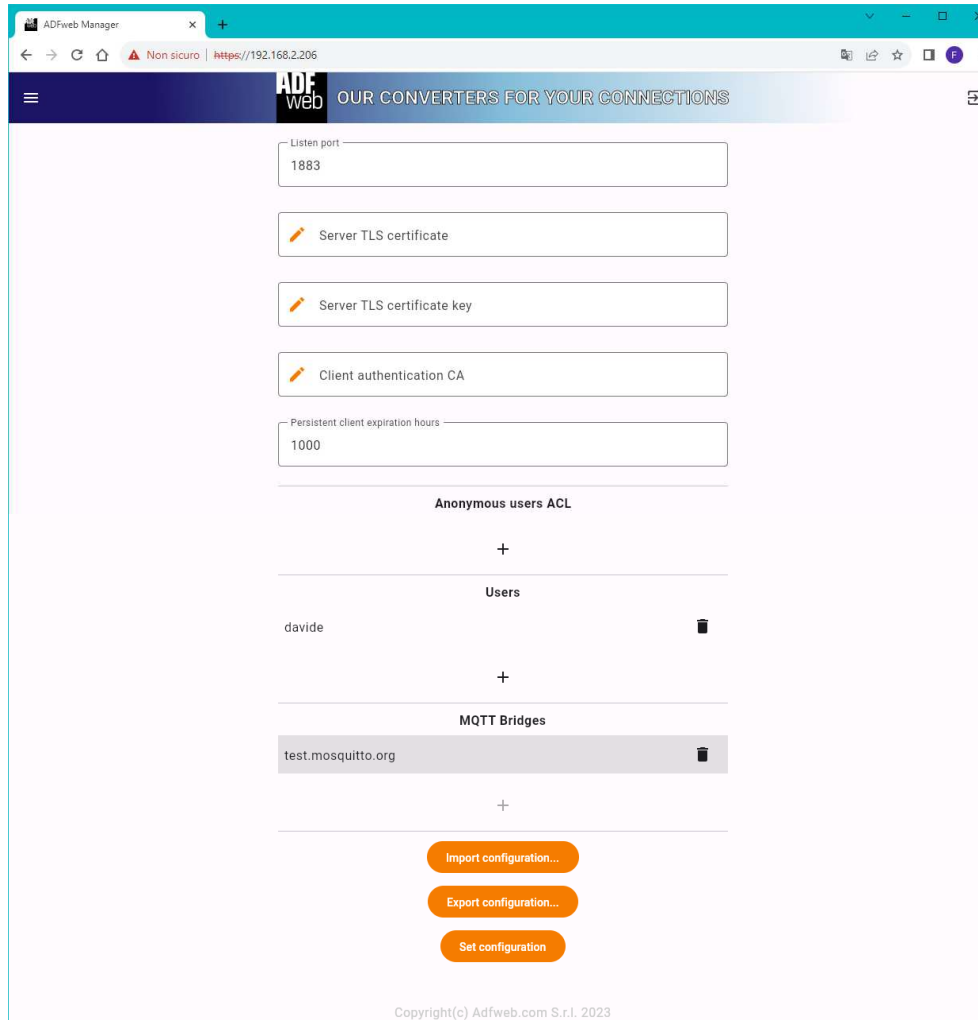


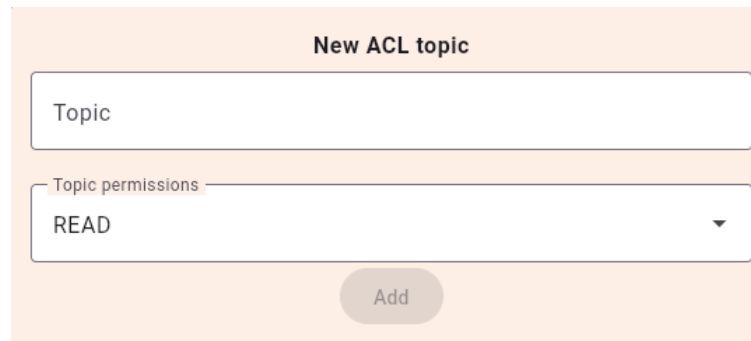
Figure 8: "Webserver settings" page

The means of the fields for the "MQTT Broker" section are:

- In the field "**Local port**" the MQTT port of the broker is defined
- In the field "**Server TLS certificate**" the .pem certificate for MQTT communication over TLS is defined;
- In the field "**Server TLS certificate key**" the .pem private key for MQTT communication over TLS is defined;
- In the field "**Client authentication CA**" the .pem CA certificate used to generate the Client certificate and private key for Client authentication;
- In the field "**Persistent client expiration hours**" the amount of hours before a Client section expires is defined.

In the section "Anonymous users ACL" it is possible to define the list of accepted/denied topics from/to anonymous clients by clicking on '+'. The means of the fields are described below:

- In the field "**Topic**" the topic name is defined
- In the field "**Topic permissions**" the access of the topics is defined.

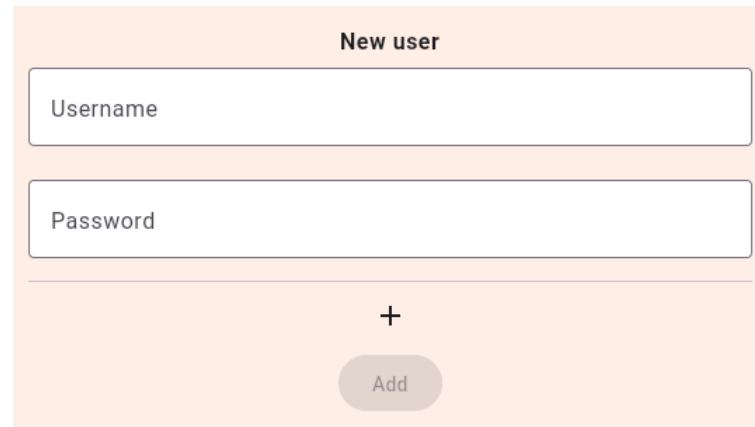


The image shows a web form titled "New ACL topic". It contains two main input fields: a text box for "Topic" and a dropdown menu for "Topic permissions" currently set to "READ". Below these fields is a grey "Add" button.

Figure 9: "New ACL topic" page

In the section "Users" it is possible to define the list of trusted clients and their accepted/denied topics by clicking on '+'. The means of the fields are described below:

- ➔ In the field "**Username**" the username of the Client is defined
- ➔ In the field "**Password**" the password of the Client is defined.



The screenshot shows a light orange background with the title "New user" at the top. Below the title are two white input fields with rounded corners. The first field is labeled "Username" and the second is labeled "Password". Below the second field is a horizontal line, followed by a plus sign (+) and a grey rounded button labeled "Add".

Figure 9: "New user" page



**Note:**

In order to add the accepted/denied topics by the user, just click on '+'. The meanings of the fields are the same described for Anonymous users.

In the section "MQTT Bridges" it is possible to define the connection to external broker/server for bridging functionalities. The means of the fields are described below:

- ➔ In the field "**Address**" the server url or IP Address is defined
- ➔ In the field "**Port**" the MQTT port is defined;
- ➔ In the field "**Bridge Protocol Version**" the MQTT version is defined;
- ➔ If the field "**Clean Session**" is checked, the last MQTT messages are deleted by the Server and the Client in case of missing ACK. If unchecked, the Server and the Client hold the last MQTT messages and, in case of incorrect disconnection or missing ACK, they try to send again them since all the ACK messages are exchanged correctly;
- ➔ In the field "**Keepalive interval in seconds**" the delay with which the Keep Alive message is sent on MQTT is defined;
- ➔ If the field "**Outgoing retain**" is checked, the published topics will have retain bit active, otherwise it will be inactive;
- ➔ In the field "**Remote Client ID**" the Client ID of the bridge is defined;
- ➔ In the field "**Remote Username**" the username of the bridge is defined;
- ➔ In the field "**Remote Password**" the password is defined;
- ➔ In the field "**CA Certificate**" the .pem CA Certificate of the remote broker/server used to open a secure connection is defined;
- ➔ In the field "**Client certificate**" the .pem Client's Certificate is defined;
- ➔ In the field "**Client certificate private key**" the corresponding .pem Client's Certificate key is defined.

The screenshot shows the "Edit bridge" configuration page. It includes the following elements:

- Address:** test.mosquitto.org
- Port:** 1883
- Bridge Protocol Version:** MQTTV311
- Clean session:**
- Keepalive interval in seconds:** 60
- Outgoing retain:**
- Remote Client ID:** (empty)
- Remote Username:** (empty)
- Remote Password:** (empty)
- CA Certificate:** (empty)
- Client certificate:** (empty)
- Client certificate private key:** (empty)
- Bridged topics:** test
- Buttons:** +, Modify

Figure 10: "Edit bridge" page



In the section "Bridged topics" it is possible to define the list of incoming and outgoing topics and the related associations. The means of the fields are described below:

- ➔ In the field "**Description**" the description of the rule is defined;
- ➔ In the fields "**Local topic**" and "**Remote topic**" it is possible to define the mapping between the local broker and the remote broker. The messages received on the local topic will be published on the remote broker in the remote topic and vice versa. Using the field "**Bridge direction**" it is possible to limit this behaviour to a single direction: either only from the local broker to the remote setting it to OUT or only from the remote broker to the local setting it to IN;
- ➔ In the field "**QoS**" the QoS for publishing and subscribing to the remote topic of the remote broker is defined.

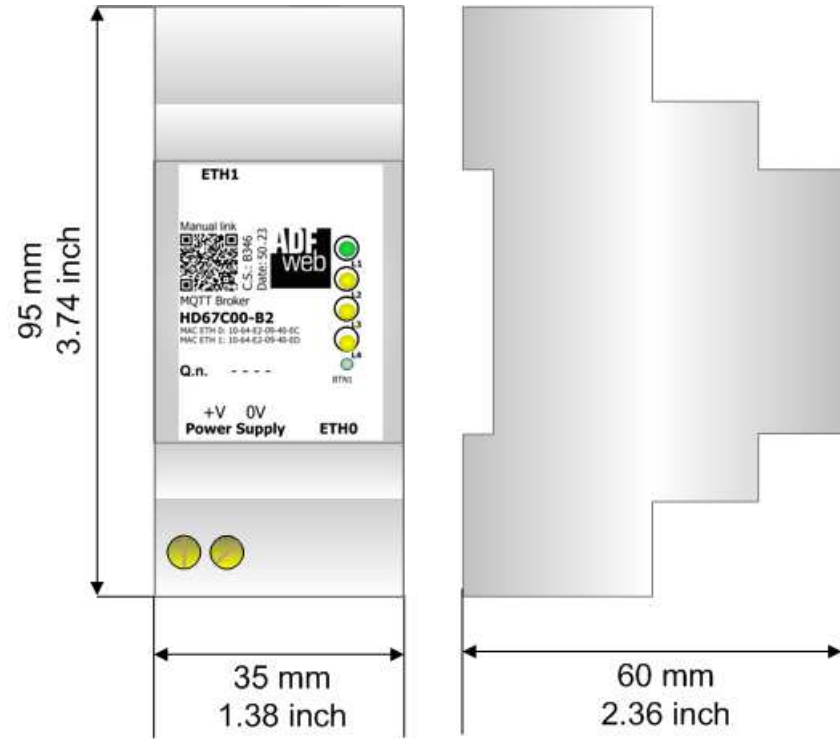
The screenshot shows a form titled "Edit bridge topic" with the following fields and values:

- Description: test
- Local topic: testtopic/2
- Remote topic: remote/testtopic/2
- Bridge direction: BOTH
- QoS: QOS1

An orange "Modify" button is located at the bottom of the form.

Figure 11: "Edit bridge topic" page

**MECHANICAL DIMENSIONS:**



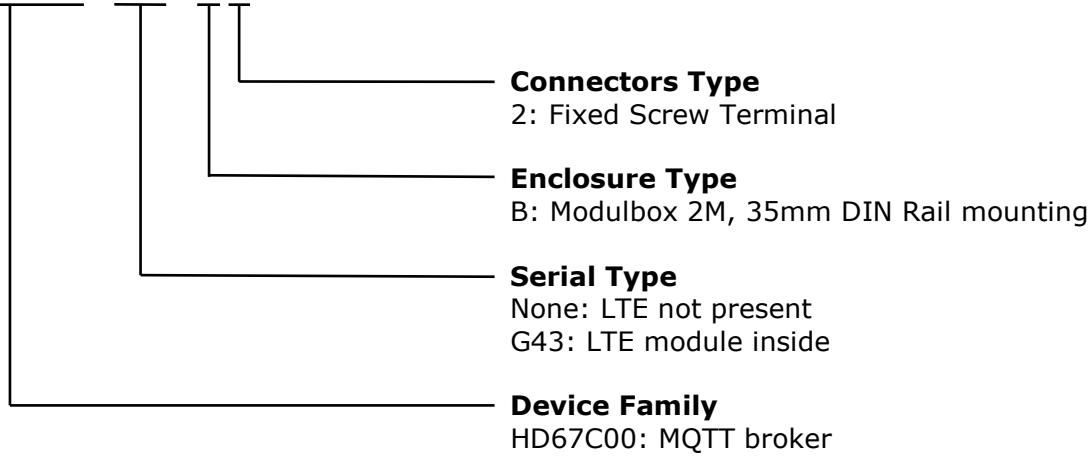
Housing: PVC  
 Weight: 200g  
 (Approx)

Figure 9: Mechanical dimensions scheme for HD67C00-xxx-B2

**ORDERING INFORMATION:**

The ordering part number is formed by a valid combination of the following:

**HD67C00 - xxx - B 2**



- Order Code: **HD67C00-B2** - MQTT Broker
- Order Code: **HD67C00-G43-B2** - MQTT Broker with LTE module

**ACCESSORIES:**

- Order Code: **AC34011** - 35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V DC
- Order Code: **AC34012** - 35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 24 V DC

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**OTHER REGULATIONS AND STANDARDS:****WEEE INFORMATION**

Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).

— This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and impact of human health, which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

**RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE**

The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

**CE MARKING**

The product conforms with the essential requirements of the applicable EC directives.

**WARRANTIES AND TECHNICAL SUPPORT:**

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at [www.adfweb.com](http://www.adfweb.com).  
Otherwise contact us at the address [support@adfweb.com](mailto:support@adfweb.com)

**RETURN POLICY:**

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

- Obtain a Product Return Number (PRN) from our internet support at [www.adfweb.com](http://www.adfweb.com). Together with the request, you need to provide detailed information about the problem.
- Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks. If the product is no longer under warranty, you will receive a repair estimate.



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