User Manual

Revision 1.001
English

EtherNet/IP Master / Modbus slave - Converter

(Order Code: HD67669-A1)

For Website information:
www.adfweb.com?Product=HD67669

For Price information:
www.adfweb.com?Price=HD67669-A1

Benefits and Main Features:

- Triple Electrical isolation
- Temperature range: -40°C/+85°C (-40°F/+185°F)

For other EtherNet/IP Master products see also the following link:

Converter EtherNet/IP Master to	
www.adfweb.com?Product=HD67B38	**(OPC UA Server)**
www.adfweb.com?Product=HD67D24	**(LoRaWAN)**
www.adfweb.com?Product=HD67E26	**(EtherCAT)**
www.adfweb.com?Product=HD67158	**(SNMP Agent)**
www.adfweb.com?Product=HD67643	**(PROFIBUS Slave)**
www.adfweb.com?Product=HD67645	**(CAN)**
www.adfweb.com?Product=HD67646	**(CANopen)**
www.adfweb.com?Product=HD67647	**(DeviceNet Slave)**
www.adfweb.com?Product=HD67661	**(PROFINET)**
www.adfweb.com?Product=HD67665	**(Modbus TCP Slave)**
www.adfweb.com?Product=HD67667	**(Serial)**
www.adfweb.com?Product=HD67668	**(Ethernet)**
www.adfweb.com?Product=HD67689	**(BACnet Slave)**
www.adfweb.com?Product=HD67743	**(IEC 61850 Server)**
www.adfweb.com?Product=HD67806	**(KNX)**
www.adfweb.com?Product=HD67955	**(MQTT)**
www.adfweb.com?Product=HD67973	**(IO-Link Slave)**

User Manual

INDEX:

	Page
INDEX	2
UPDATED DOCUMENTATION	2
REVISION LIST	2
WARNING	2
TRADEMARKS	2
SECURITY ALERT	3
EXAMPLE OF CONNECTION	4
CONNECTION SCHEME	5
CHARACTERISTICS	8
CONFIGURATION	8
POWER SUPPLY	9
FUNCTION MODES	10
LEDS	11
ETHERNET	12
USE OF COMPOSITOR SW67669	13
NEW CONFIGURATION / OPEN CONFIGURATION	14
SOFTWARE OPTIONS	15
SET COMMUNICATION	17
ETHERNET/IP ACCESS	18
UPDATE DEVICE	20
MODBUS MAP	22
MECHANICAL DIMENSIONS	24
ORDERING INFORMATIONS	25
ACCESSORIES	25
DISCLAIMER	26
OTHER REGULATIONS AND STANDARDS	26
WARRANTIES AND TECHNICAL SUPPORT	27
RETURN POLICY	27

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/ 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	21/11/2023	Ln	All	First Release
1.001	25/07/2025	Mdb	All	New design

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:

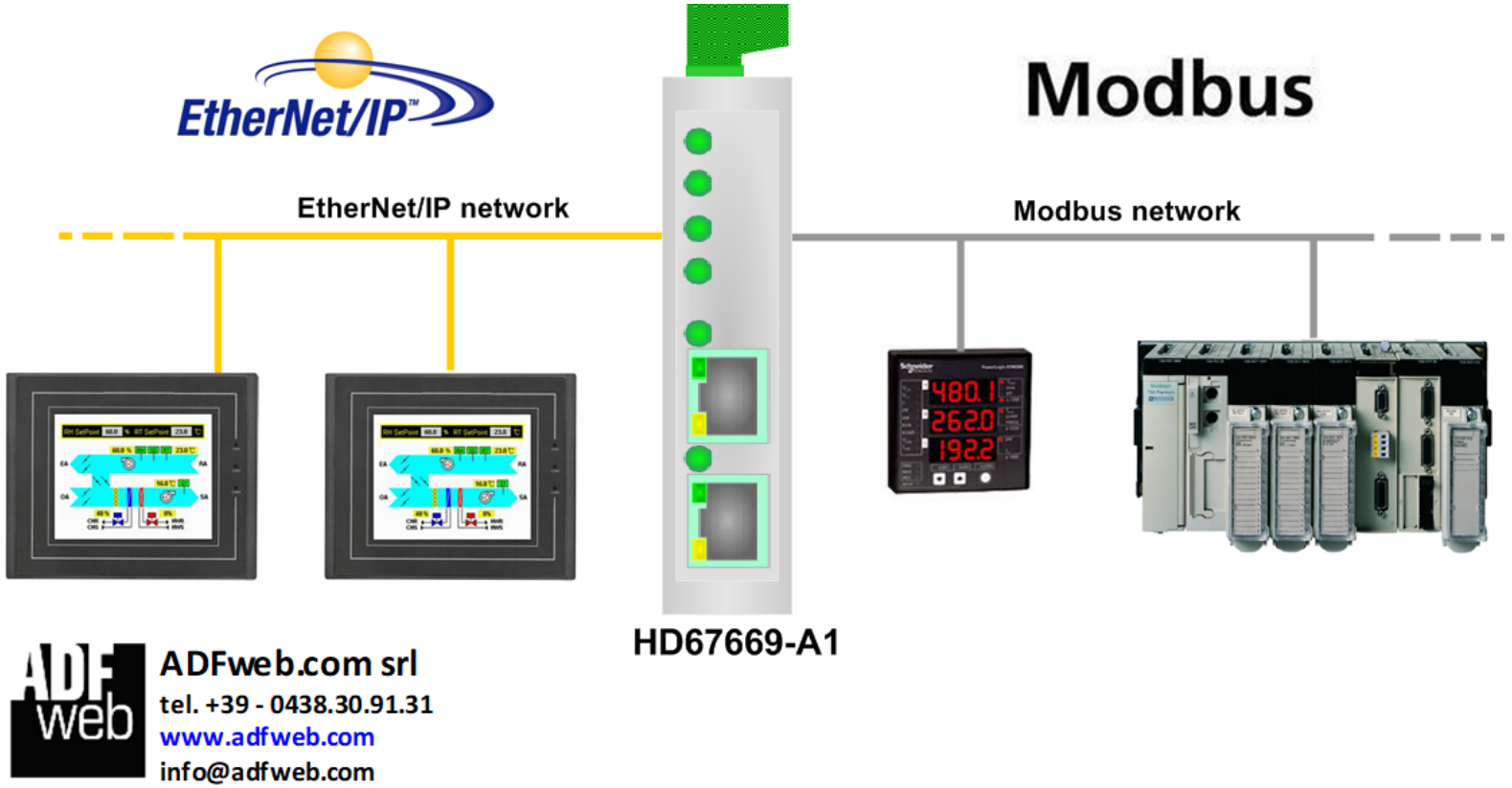


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

CE CONFORMITY

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

EXAMPLE OF CONNECTION:



CONNECTION SCHEME:

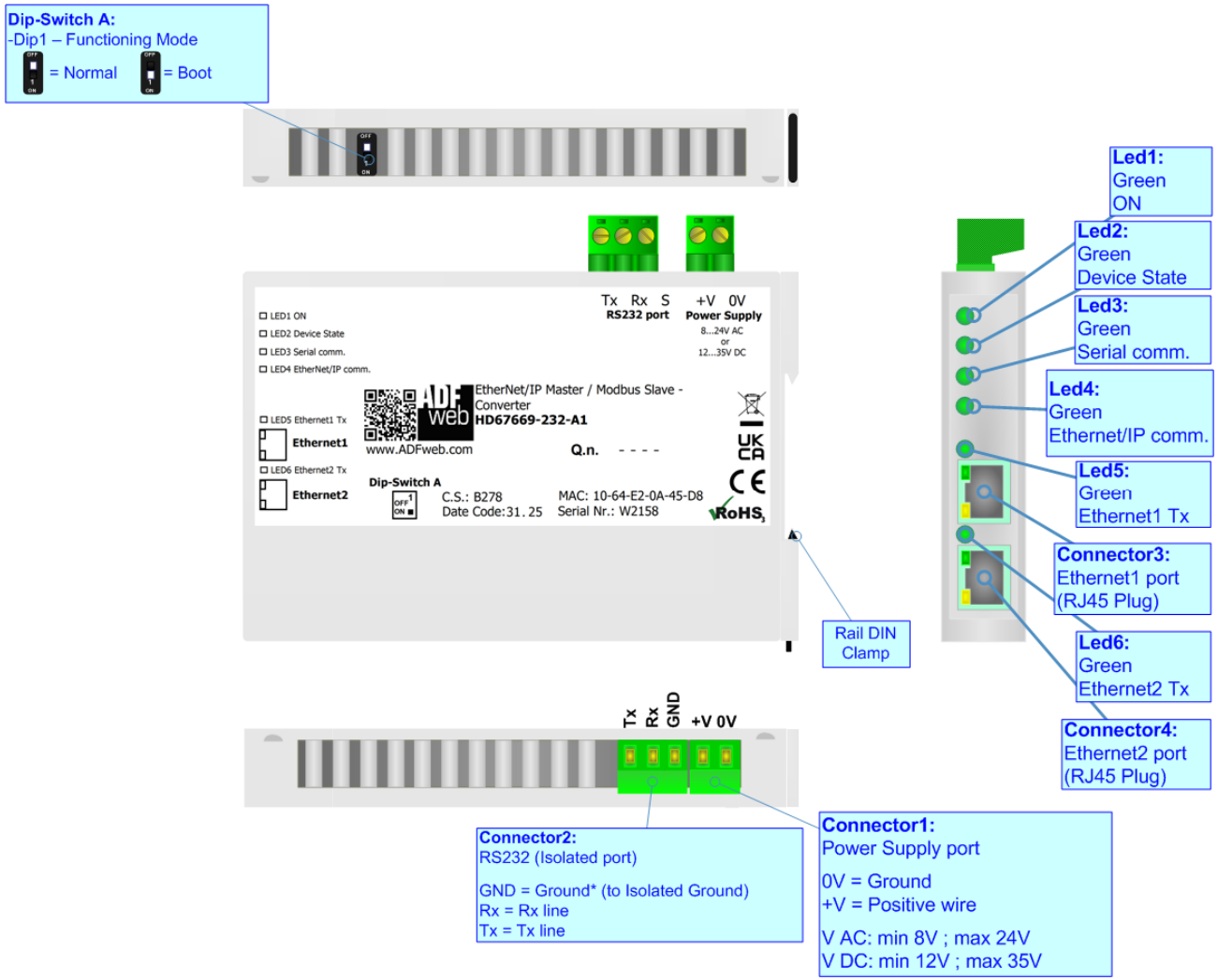


Figure 1a: Connection scheme for HD67669-232-A1

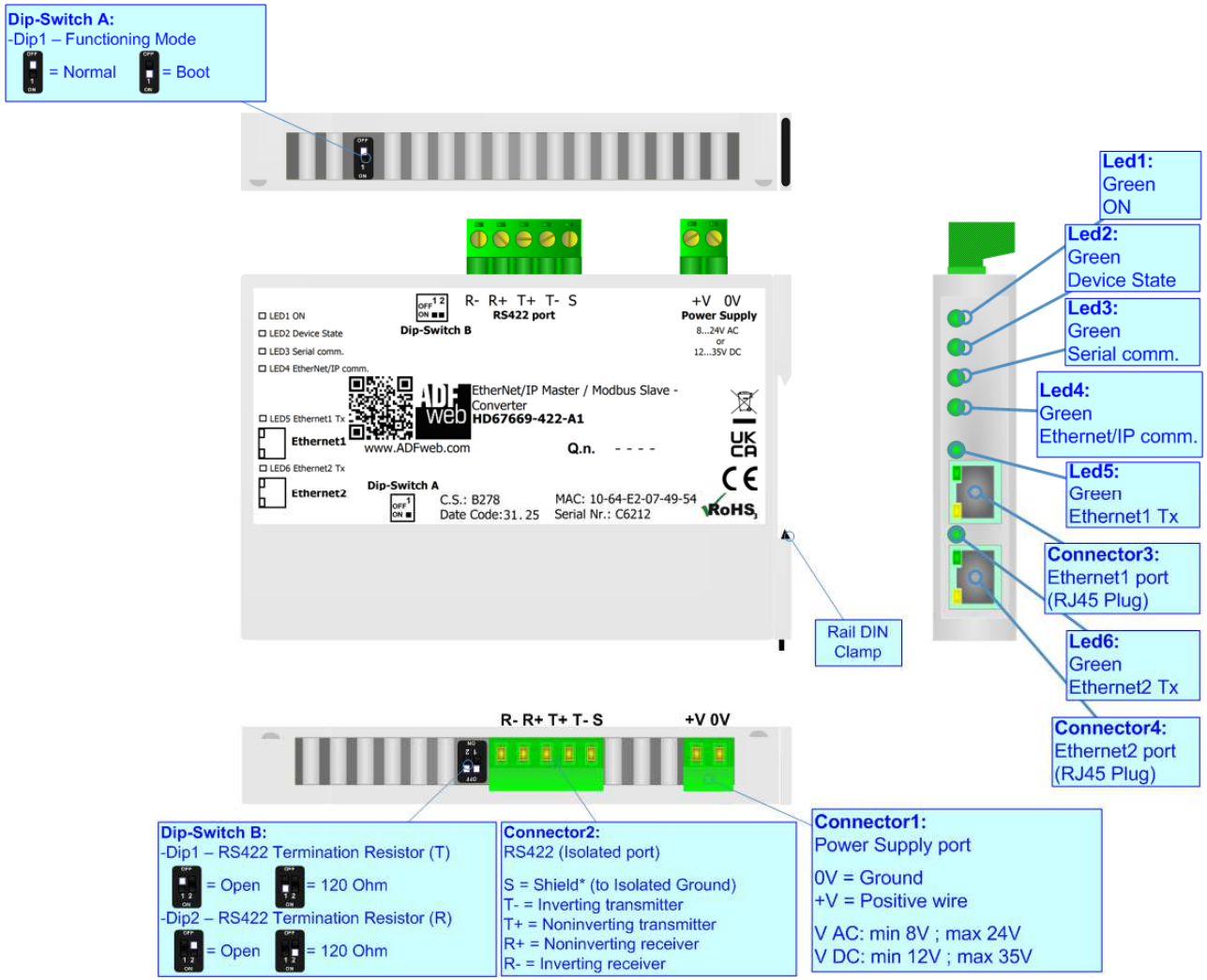


Figure 1b: Connection scheme for HD67669-422-A1

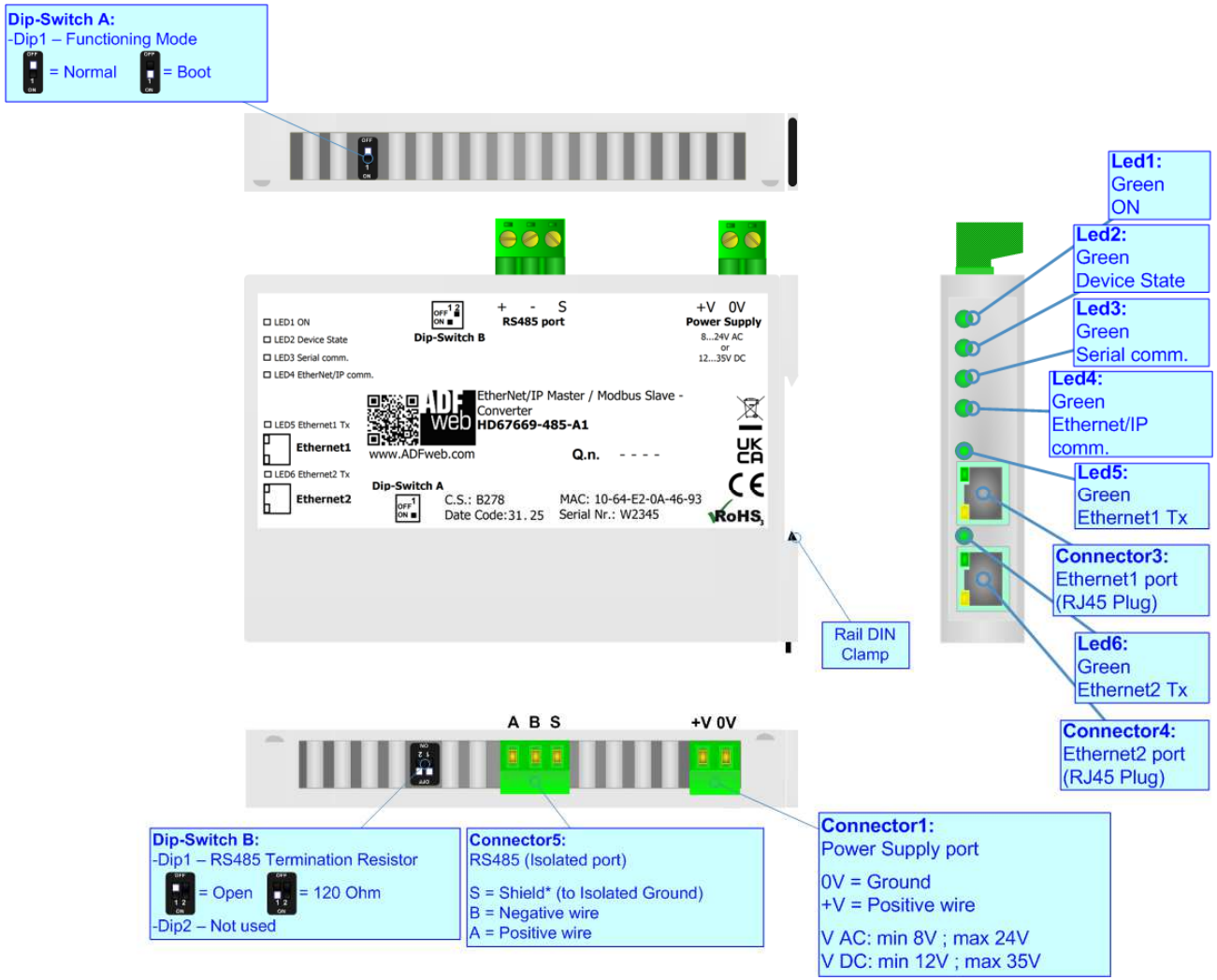


Figure 1c: Connection scheme for HD67669-485-A1

CHARACTERISTICS:

The HD67669-A1 are EtherNet/IP Master / Modbus slave - Converters.

It allows for the following characteristics:

- Isolation between Ethernet – Power Supply;
- Two-directional information between EtherNet/IP bus and Modbus bus;
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 8…24V AC or 12…35V DC;
- Wide temperature range: -40°C / +85°C [-40°F / +185°F].

CONFIGURATION:

You need Compositor SW67669 software on your PC in order to perform the following:

- Define the parameters of EtherNet/IP line;
- Define the parameters of Modbus line;
- Define the list of EtherNet/IP slaves connected to the converter;
- Update the device.

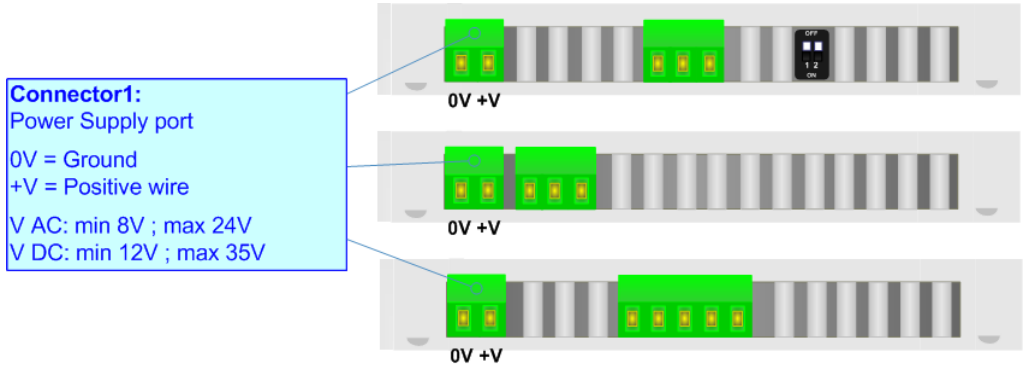
POWER SUPPLY:

The devices can be powered at 8…24V AC and 12…35V DC. For more details see the two tables below.

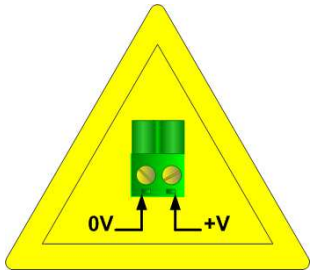
VAC ~		VDC ⎓	
Vmin	**Vmax**	**Vmin**	**Vmax**
8V	**24V**	**12V**	**35V**

Consumption at 24V DC:

Device	Consumption [W/VA]
HD67669-x-A1	3.5



Caution: Do not reverse the polarity power



HD67669-x-A1

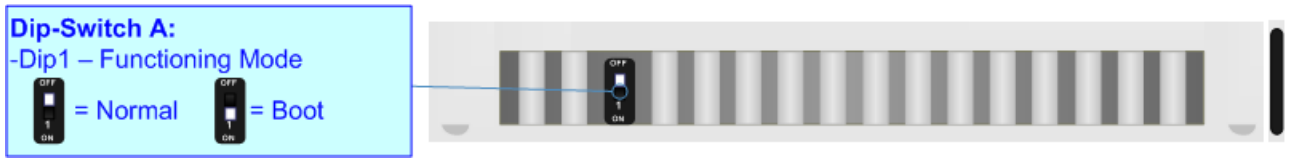
FUNCTION MODES:

The device has got two function modes depending on the position of the 'Dip1 of Dip-Switch A':

- The first, with 'Dip1 of Dip-Switch A' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip1 of Dip-Switch A' at "ON" position, is used for uploading the Project and/or Firmware.

For the operations to follow for the updating, see 'UPDATE DEVICE' section.

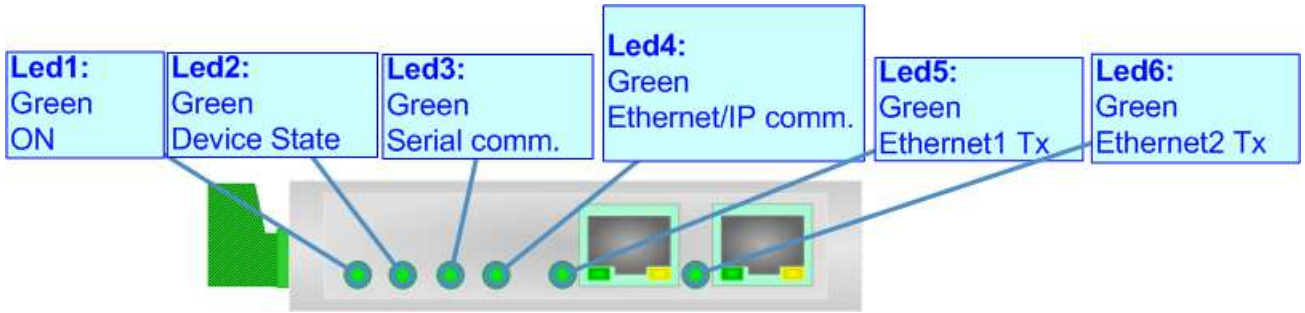
According to the functioning mode, the LEDs will have specific functions, see 'LEDS' section.



LEDS:

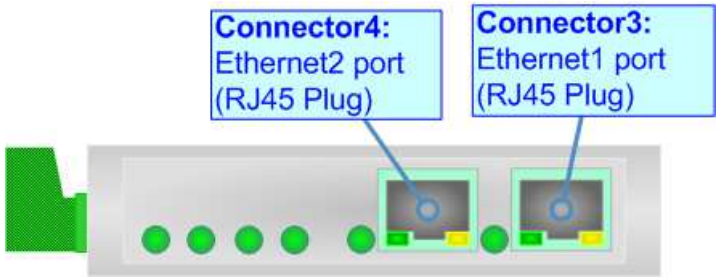
The device has got six LEDs that are used to give information about the functioning status.
The various meanings of the LEDs are described in the table below.

LED	Normal Mode	Boot Mode
1: ON (green)	**ON:** Device powered **OFF:** Device not powered	**ON:** Device powered **OFF:** Device not powered
2: Device State (green)	Blinks slowly (~1Hz)	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
3: Serial (green)	It blinks when a Serial request is received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: Ethernet/IP (green)	It blinks when EtherNet/IP comm. is running	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
5: Ethernet1 Tx (green)	It blinks when Ethernet or EtherNet/IP communication is running	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
6: Ethernet2 Tx (green)	It blinks when Ethernet or EtherNet/IP communication is running	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress



ETHERNET:

The updating of the converter and EtherNet/IP communication must be made using Connector3 and Connector4 of the HD67669-x-A1 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/PLC/other is recommended the use of a cross cable.



USE OF COMPOSITOR SW67669:

To configure the Converter, use the available software that runs with Windows called SW67669. It is downloadable on the site www.adfweb.com and its operation is described in this document. *(This manual is referenced to the last version of the software present on our web site)*. The software works with MSWindows (XP, Vista, Seven, 8, 10 or 11; 32/64bit).

When launching the SW67669, the window below appears (Fig. 2).

Note:
It is necessary to have installed .Net Framework 4.



Figure 2: Main window for SW67669

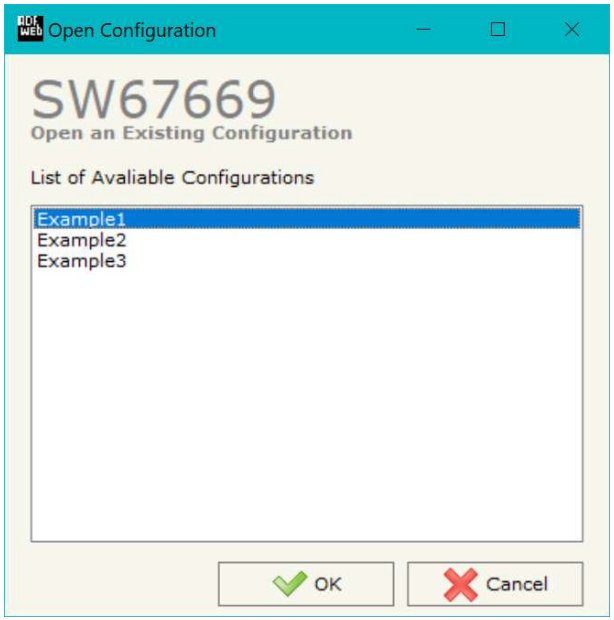
NEW CONFIGURATION / OPEN CONFIGURATION:

The "**New Configuration**" button creates the folder which contains the entire device's configuration.



A device's configuration can also be imported or exported:

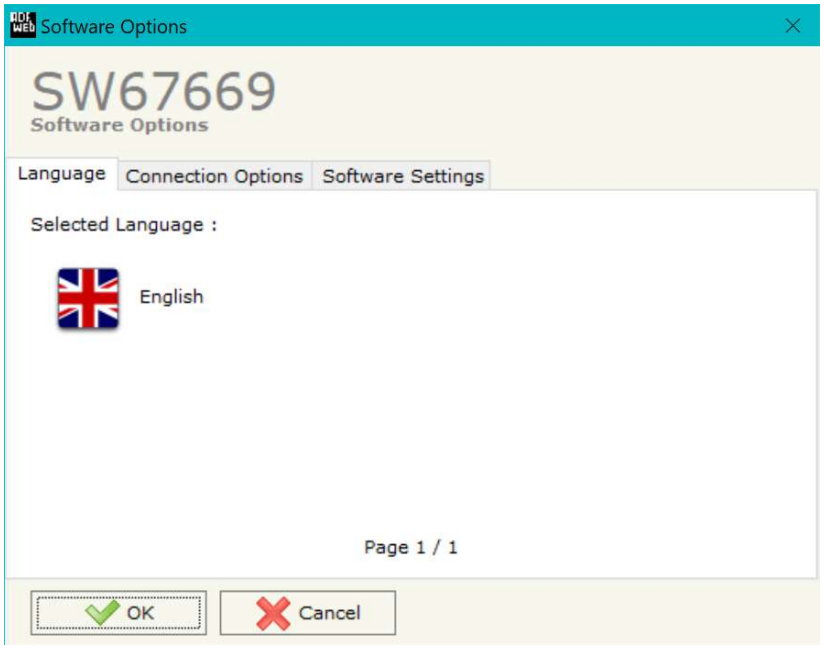
- To clone the configurations of a programmable "EtherNet/IP Master / Modbus slave - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button "**Open Configuration**".

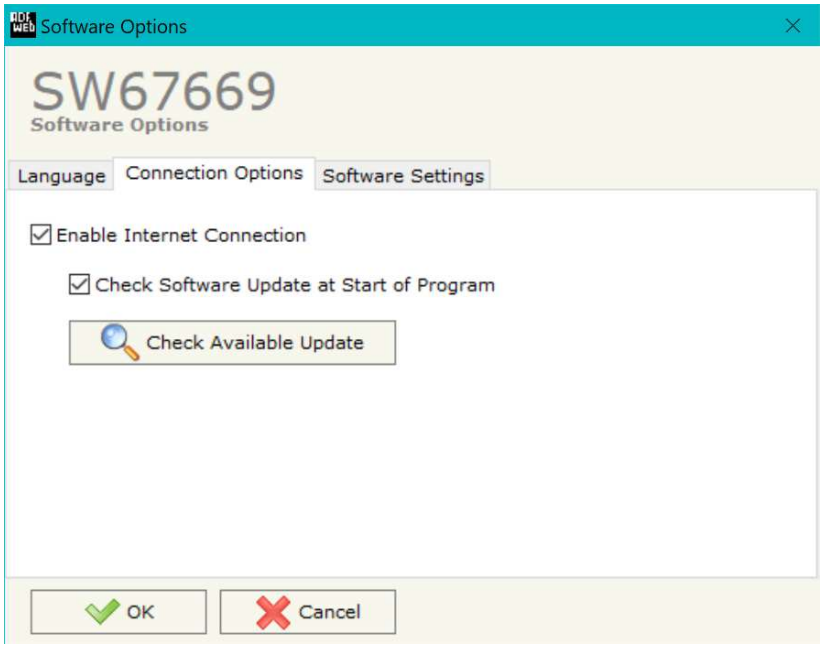


SOFTWARE OPTIONS:

By pressing the "**Settings**" ( ) button there is the possibility to change the language of the software and check the updatings for the compositor.

In the section "Language" it is possible to change the language of the software.





In the section "Connection Options", it is possible to check if there are some updatings of the software compositor in ADFweb.com website.
Checking the option "**Check Software Update at Start of Program**", the SW67669 checks automatically if there are updatings when it is launched.



In the section "Software Settings", it is possible to enable/disable some keyboard's commands for an easier navigation inside the tables contained in the different sections of the software.

SET COMMUNICATION:

This section define the fundamental communication parameters of two buses, EtherNet/IP and Modbus.

By Pressing the "**Set Communication**" button from the main window for SW67669 (Fig. 2) the window "Set Communication" appears (Fig. 3).

This section is used to define the main parameters of Modbus line. The means of the fields are:

- In the field "**Serial**" the serial lien to use for Modbus communication is defined;
- In the field "**Baudrate**" the baudrate for the serial line is defined;
- In the field "**Parity**" the parity of the serial line is defined;
- In the field "**Stop Bits**" the number of Stop Bits is defined;
- In the field "**ID Device**" the address of serial Modbus device is defined. This field can be compiled only if the selected "Operation Mode" is "Normal Mode (with Translate Table)" or "Work with Fix IP Address";
- If the field "**Read with Input Register / Status Function**" is checked, it is possible to read the Input bytes of EtherNet/IP side with Input Registers (Function 04) and write the Output bytes of EtherNet/IP side with Holding Registers (Function 06/16). The Output bytes are readable with Function 03. Otherwise, only Holding Registers will be used and the Output bytes of EtherNet/IP side cannot be read back.

The means of the fields for "EtherNet/IP Master" are:

- In the fields "**IP Address**" the IP address for EtherNet/IP side of the converter is defined;
- In the fields "**SubNet Mask**" the SubNet Mask for EtherNet/IP side of the converter is defined;
- In the fields "**Gateway**" the default gateway of the net is defined. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net;
- In the field "**Port**" the port used for EtherNet/IP communication is defined. The port has a fixed value of 44818.

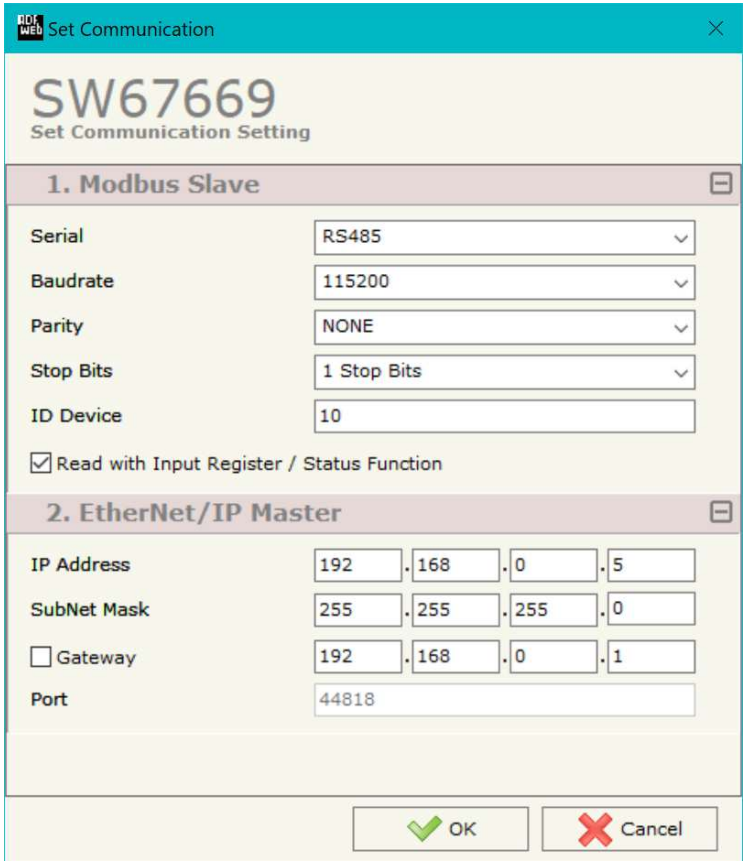
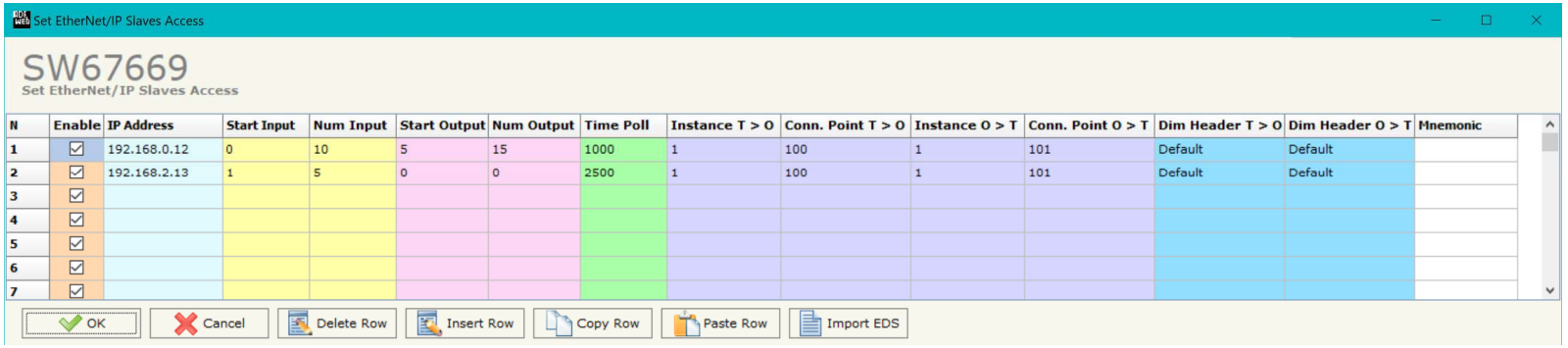


Figure 3: "Set Communication" window

ETHERNET/IP ACCESS:

By Pressing the "**EtherNet/IP Access**" button from the main window for SW67669 (Fig. 2) the window "Set EtherNet/IP Master Access" appears (Fig. 4).
This section is used to define the list of the EtherNet/IP Slaves to read/write with the Modbus.



N	Enable	IP Address	Start Input	Num Input	Start Output	Num Output	Time Poll	Instance T > O	Conn. Point T > O	Instance O > T	Conn. Point O > T	Dim Header T > O	Dim Header O > T	Mnemonic
1	☑	192.168.0.12	0	10	5	15	1000	1	100	1	101	Default	Default	
2	☑	192.168.2.13	1	5	0	0	2500	1	100	1	101	Default	Default	
3	☑													
4	☑													
5	☑													
6	☑													
7	☑													

Figure 4: "Set EtherNet/IP Slaves Access" window

The means of the fields are:

- If the field "**Enable**" is checked, the polling to the EtherNet/IP Slave is enabled;
- In the field "**IP Address**" the IP Address of the EtherNet/IP Slave is defined;
- In the field "**Start Input**" the starting Input byte of the EtherNet/IP Slave to map on Modbus side is defined;
- In the field "**Num Input**" the number of consecutive Input byte to map on Modbus side is defined;
- In the field "**Start Output**" the starting Output byte of the EtherNet/IP Slave to write from Modbus side is defined;
- In the field "**Num Output**" the number of consecutive Output byte to write from EtherNet side is defined;
- In the field "**Time Poll**" the polling time in ms is defined;
- In the field "**Instance T > O**" the instance of the assembly for the Target to Originator data direction is defined;
- In the field "**Conn. Point T > O**" the connection point of the assembly for the Target to Originator data direction is defined;
- In the field "**Instance O > T**" the instance of the assembly for the Originator to Target data direction is defined;
- In the field "**Conn. Point O > T**" the connection point of the assembly for the Originator to Target data direction is defined;

- In the field "**Dim Header T > O**" the dimension of the header for the Target to Originator data direction is defined;
- In the field "**Dim Header O > T**" the dimension of the header for the Originator to Target data direction is defined;
- In the field "**Mnemonic**" a brief description is defined.

UPDATE DEVICE:

By pressing the "**Update Device**" button, it is possible to load the created Configuration into the device; and also the Firmware, if necessary. This by using the Ethernet port.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn OFF the Device;
- Put Dip1 of 'Dip-Switch A' in ON position;
- Turn ON the device
- Connect the Ethernet cable;
- Insert the IP "**192.168.2.205**";
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" turn OFF the Device;
- Put Dip1 of 'Dip-Switch A' in OFF position;
- Turn ON the device.

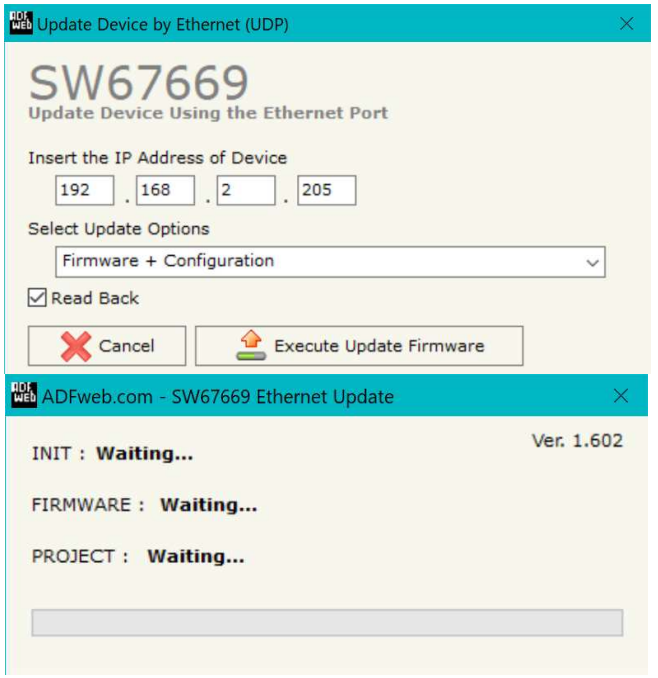


Figure 5: "Update device" windows

If you know the actual IP address of the device, you have to use this procedure:

- Turn ON the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" the device automatically goes at Normal Mode.

At this point the configuration/firmware on the device is correctly updated.

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67669 device.

Warning:
If Fig. 6 appears when you try to do the Update try these points before seeking assistance:

- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- Check the LAN settings;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven, Vista, 8, 10 or 11 make sure that you have the administrator privileges;
- In case you have to program more than one device, using the "UDP Update", you have to cancel the ARP table every time you connect a new device on Ethernet. For do this you have to launch the "Command Prompt" and write the command "arp -d". Pay attention that with Windows Vista, Seven, 8, 10 or 11 you have to launch the "Command Prompt" with Administrator Rights;
- Pay attention at Firewall lock.

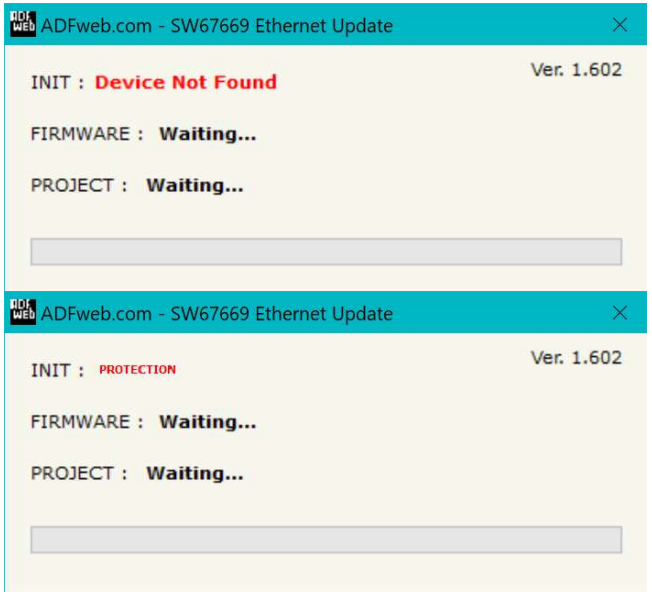


Figure 6: "Error" window

Warning:
In the case of HD67669 you have to use the software "HD67669": www.adfweb.com\download\filefold\SW67669.zip.

MODBUS MAP:

On Modbus side, the map is created automatically. In relation to the configuration defined, it is possible to have two different maps.

Read with Input Register / Status Function not enabled

Data in reading:

Type	Address	Function	Description
Holding Register	0	03	Input Bytes 0-1 of EtherNet/IP side
Holding Register	1	03	Input Bytes 2-3 of EtherNet/IP side
Holding Register	2	03	Input Bytes 4-5 of EtherNet/IP side
.			
.			
Holding Register	719	03	Input Bytes N – N+1 of EtherNet/IP side

Data in writing:

Type	Address	Function	Description
Holding Register	0	06/16	Output Bytes 0-1 of EtherNet/IP side
Holding Register	1	06/16	Output Bytes 2-3 of EtherNet/IP side
Holding Register	2	06/16	Output Bytes 4-5 of EtherNet/IP side
.			
.			
Holding Register	719	06/16	Output Bytes N – N+1 of EtherNet/IP side

Note:
The data can be read/written as single bits too using Coil Status (Function 01 and Functions 05/15).

Read with Input Register / Status Function enabled

Data in reading:

Type	Address	Function	Description
Input Register	0	04	Input Bytes 0-1 of EtherNet/IP side
Input Register	1	04	Input Bytes 2-3 of EtherNet/IP side
Input Register	2	04	Input Bytes 4-5 of EtherNet/IP side
.			
.			
Input Register	719	04	Input Bytes N – N+1 of EtherNet/IP side

Data in writing:

Type	Address	Function	Description
Holding Register	0	R: 03 W: 06/16	Output Bytes 0-1 of EtherNet/IP side
Holding Register	1	R: 03 W: 06/16	Output Bytes 2-3 of EtherNet/IP side
Holding Register	2	R: 03 W: 06/16	Output Bytes 4-5 of EtherNet/IP side
.			
.			
Holding Register	719	R: 03 W: 06/16	Output Bytes N – N+1 of EtherNet/IP side



Note:

The data can be read/written as single bits too using Input/Coil Status (Function 02 and Functions 01/05/15).

MECHANICAL DIMENSIONS:

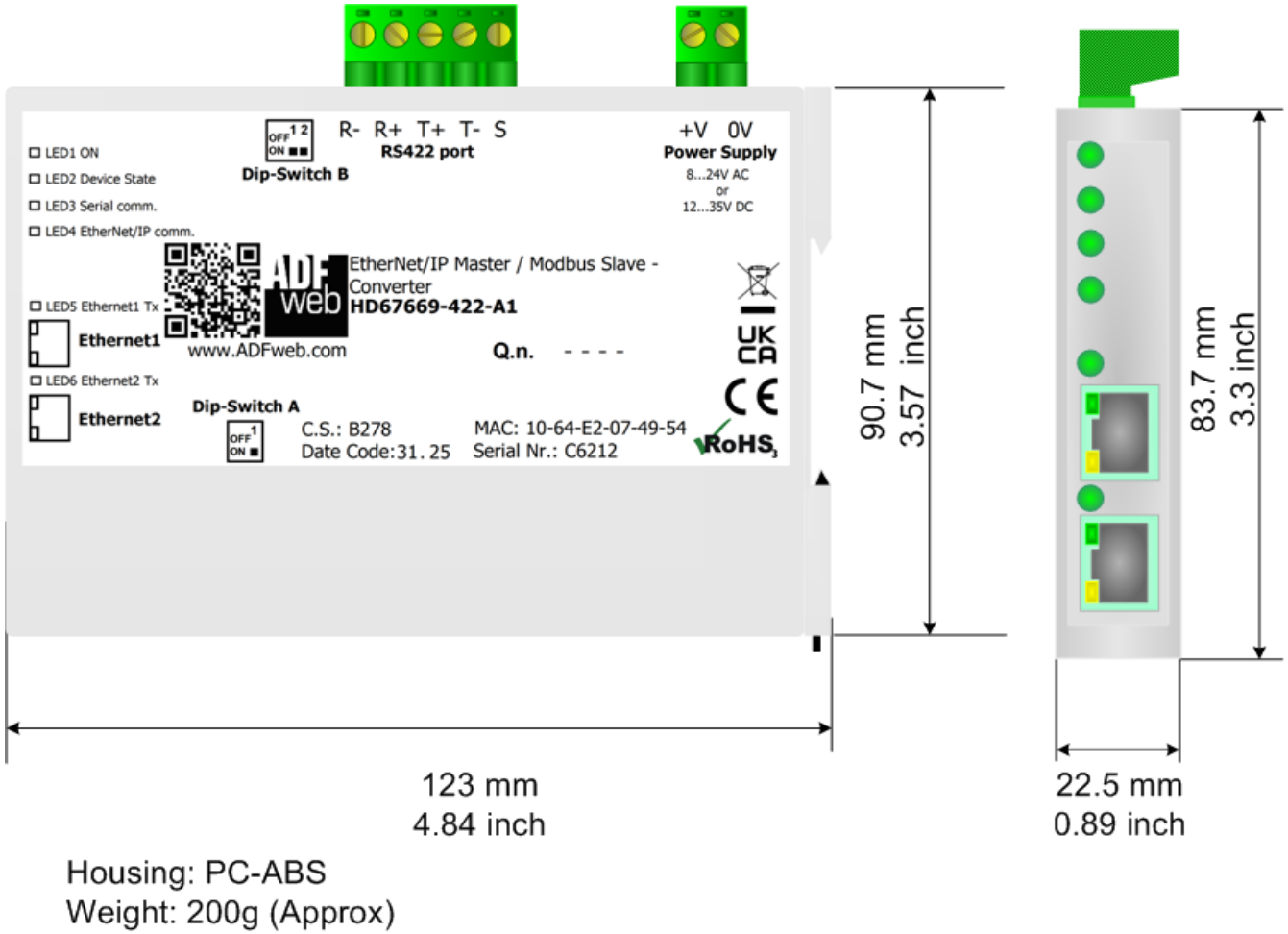


Figure 7: Mechanical dimensions scheme for HD67669-xxx-A1

ORDERING INFORMATIONS:

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

HD67669 – XXX - A 1

Connectors Type
1: Removable 5mm Screw Terminal

Enclosure Type
A: 1M, 35mm DIN Rail mounting

Serial Type
232: RS232
422: RS422
485: RS485

Device Family
HD67669: EtherNet/IP Master / Modbus Slave - Converter

Order Code: **HD67669-232-A1** - EtherNet/IP Master / Modbus slave – Converter (Modbus port: RS232)
Order Code: **HD67669-422-A1** - EtherNet/IP Master / Modbus slave – Converter (Modbus port: RS422)
Order Code: **HD67669-485-A1** - EtherNet/IP Master / Modbus slave – Converter (Modbus port: RS485)

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

DISCLAIMER:

All technical content within this document can be modified without notice. The content of the document is a under continual renewal.
For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com S.r.l. shall not be liable for consequences of improper use.

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.
Otherwise contact us at the address 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. 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.

ADFweb.com S.r.l.
Via Strada Nuova, 17
IT-31010 Mareno di Piave
TREVISO (Italy)
Phone +39.0438.30.91.31
Fax +39.0438.49.20.99
www.adfweb.com