User Manual

Revision 2.101
English

CAN/ Modbus TCP Slave - Converter

(Order Code: HD67515-A1, HD67515-B2)

for Website information:
www.adfweb.com?Product=HD67515

for Price information:
www.adfweb.com?Price=HD67515-A1
www.adfweb.com?Price=HD67515-B2

Benefits and Main Features:

- 32mm Rail DIN mount
- Wide supply input range
- Temperature range: -40°C/+85°C (-40°F/+185°F)

For others products, see also the following links:

RS232 / RS485 / USB / Ethernet

www.adfweb.com?Product=HD67118 (RS232 / RS485 - Converter)
www.adfweb.com?Product=HD67119 (USB / RS485 - Converter)
www.adfweb.com?Product=HD67038 (RS485 / RS232 / Ethernet - Converter)

CAN / CANopen / Modbus / Modbus TCP

www.adfweb.com?Product=HD67001 (CANopen / Modbus Master - Converter)
www.adfweb.com?Product=HD67502 (CANopen / Modbus Slave - Converter)
www.adfweb.com?Product=HD67011 (CAN / Modbus Master - Converter)
www.adfweb.com?Product=HD67012 (CAN / Modbus Slave - Converter)
www.adfweb.com?Product=HD67514 (CAN / Modbus TCP Master – Converter)

Modbus RTU Slave / Modbus TCP Master - Converter

www.adfweb.com?Product=HD67510

Do you have your customer protocol? Then go to:
www.adfweb.com?Product=HD67003

Do you need to choose a device? Do you want help?
www.adfweb.com?Cmd=helpme

User Manual

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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/ 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
2.002	14/01/2013	Nt & Fl	All	Added new chapters
2.100	04/07/2014	Ff	All	New hardware version
2.101	14/02/2025	Ln	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 are required for each individual application, legal and safety regulation. 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 instrument can represent a potential hazard if they are inappropriately installed and operated by personnel untrained. These instructions refer to residual risks with the following symbol:

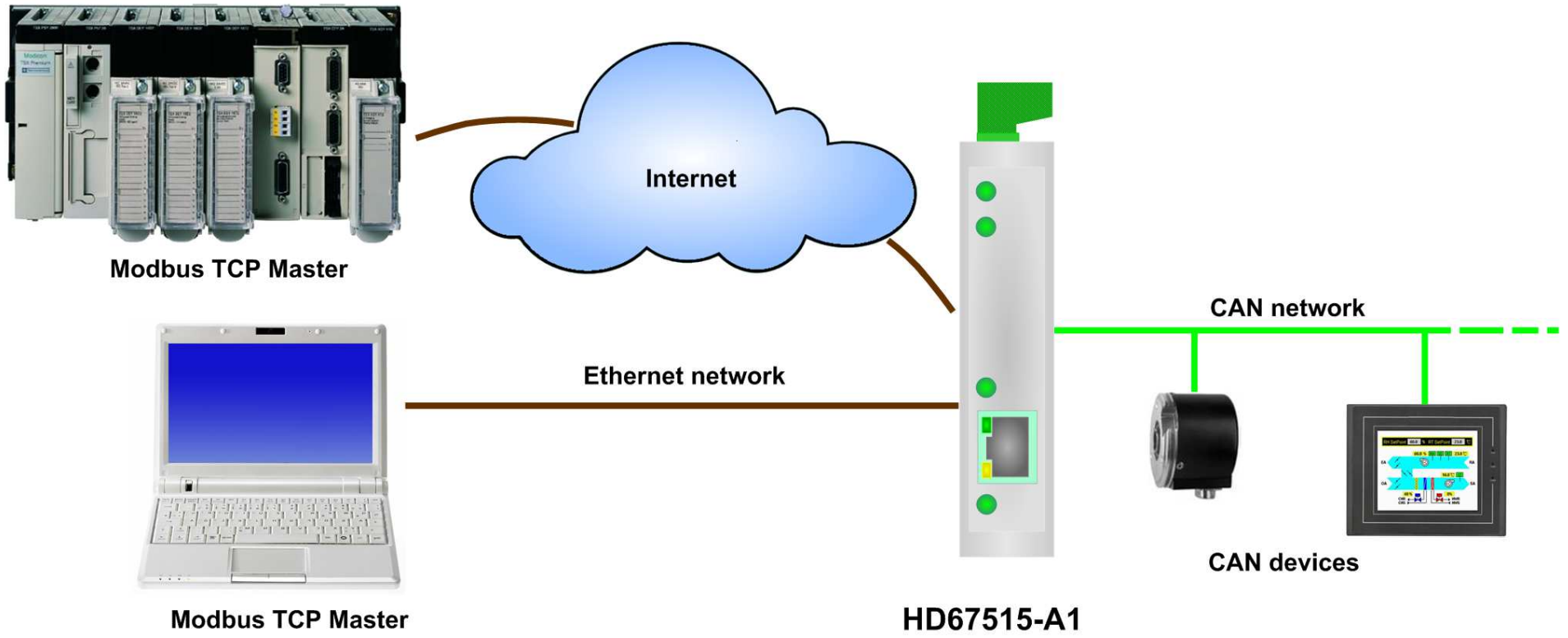


This symbol indicates that non-observance of the safety instructions is danger for people to serious injury or death and / or the possibility of damage.

CE CONFORMITY

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

EXAMPLES OF CONNECTION:



CONNECTION SCHEME:

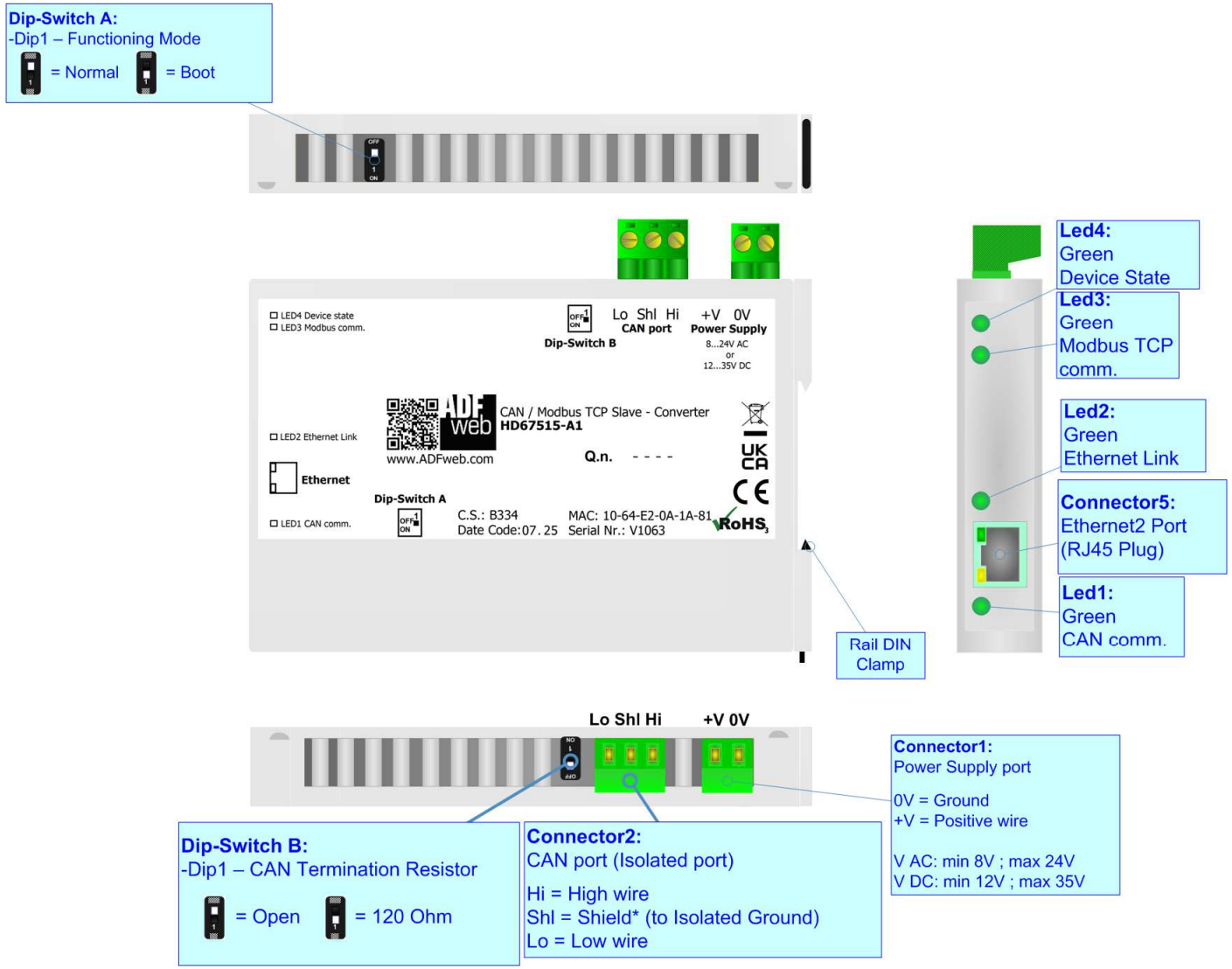


Figure 1a: Connection scheme for HD67515-A1

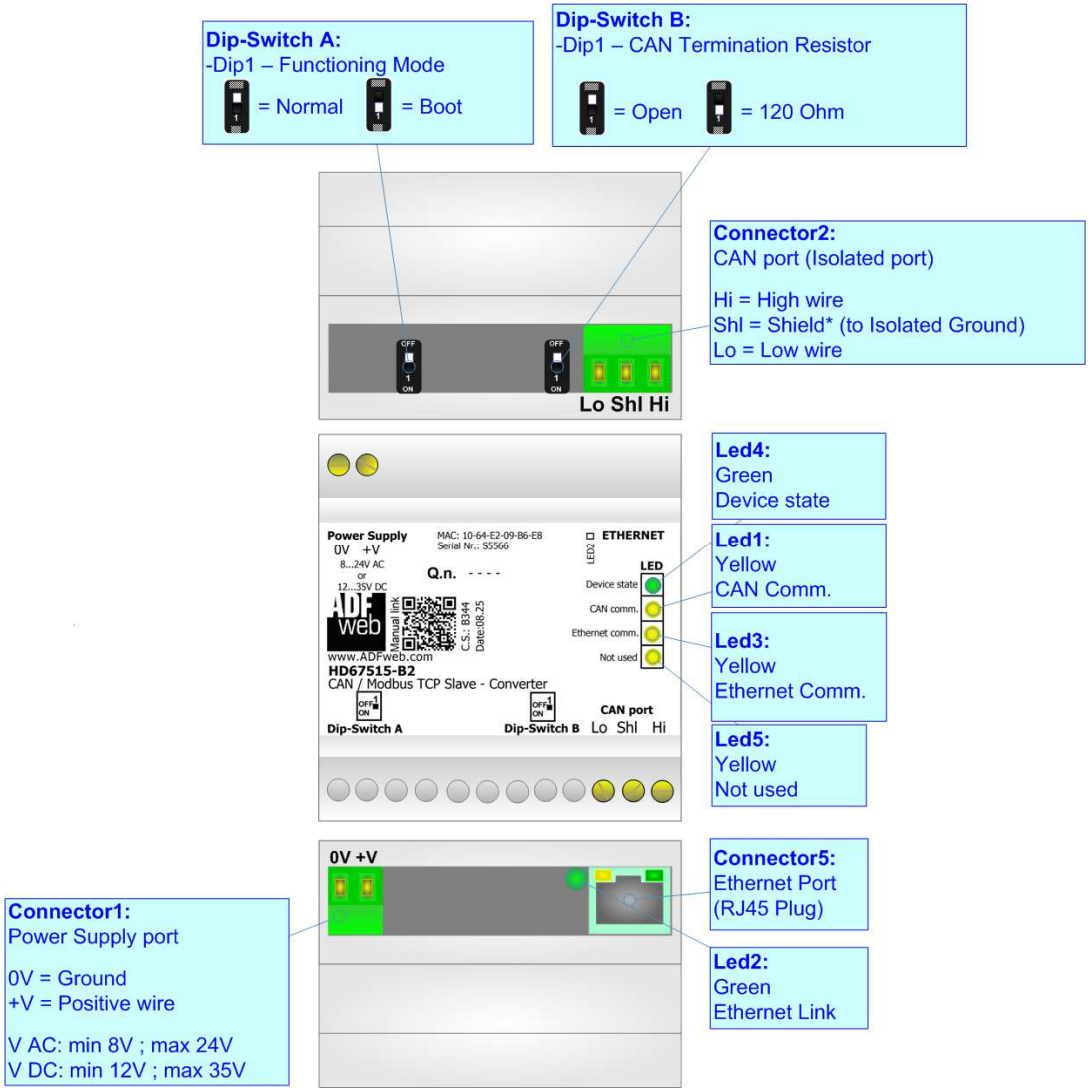


Figure 1b: Connection scheme for HD67515-B2

CHARACTERISTICS:

The "CAN / Modbus TCP Slave – Converter" allows the following characteristics:

- two-directional information between networks CAN and Modbus;
- electrical isolation between two Buses;
- to read CAN frame from Modbus word;
- to write CAN frame from Modbus word;
- 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 SW67515 software on your PC in order to perform the following:

- Define the parameter of CAN;
- Define the parameter of Modbus TCP;
- Define which CAN frames are read by the Modbus TCP;
- Define which CAN frames are write by the Modbus TCP.

POWER SUPPLY:

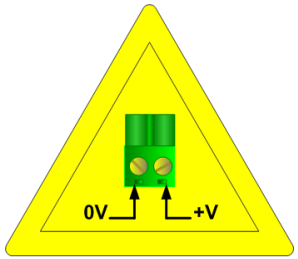
The devices can be powered at 8…24V AC and 12…35V DC. For more details see the two tables below.

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

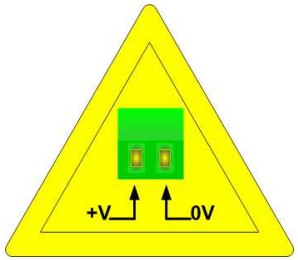
Consumption at 24V DC:

Device	Consumption [W/VA]
HD67515-A1	3.5
HD67515-B2	3.5

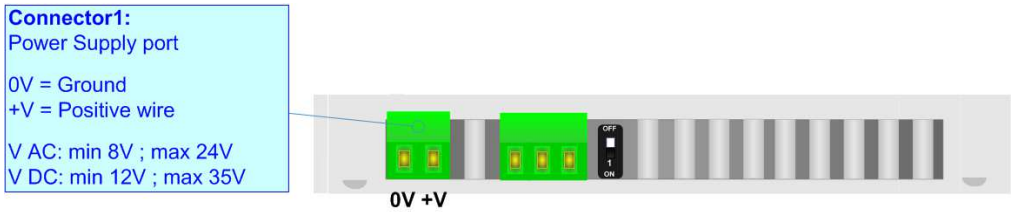
Caution: Not reverse the polarity power

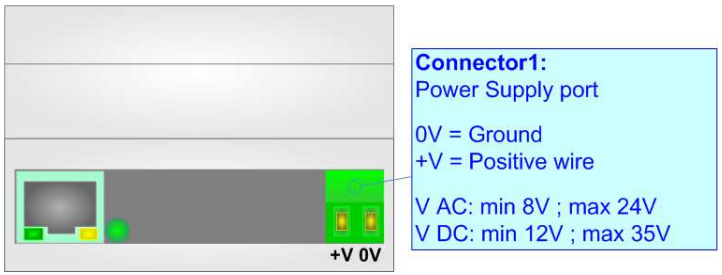


HD67515-A1



HD67515-B2





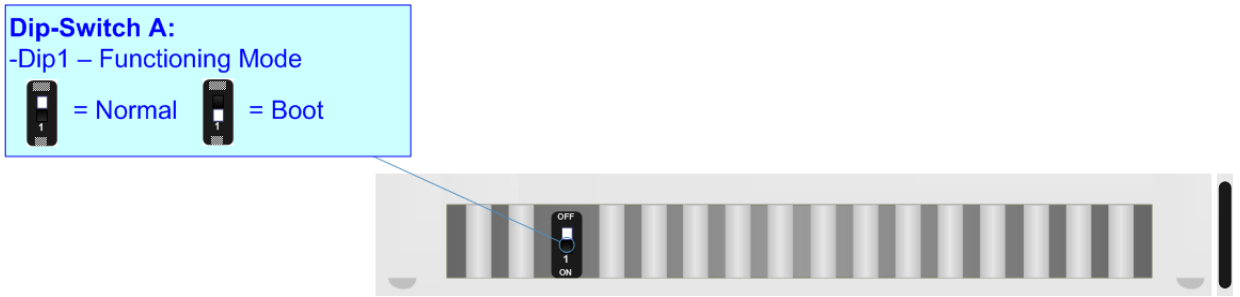
FUNCTION MODES:

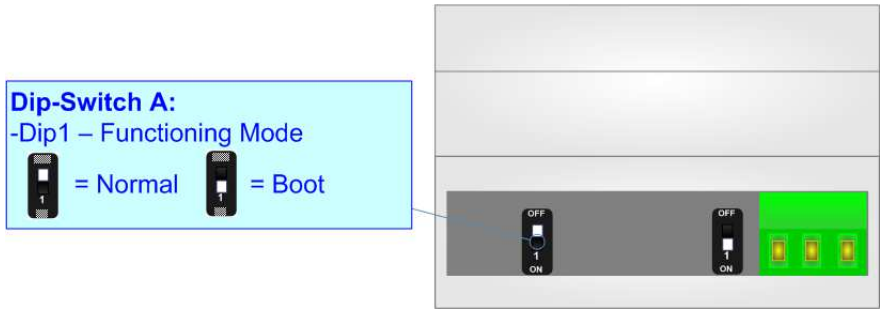
The device has got two functions mode depending of the position of the Dip1 of 'Dip-Switch A':

- The first, with Dip1 in Off position (factory setting), is used for the normal working of the device.
- The second, with Dip1 in On position, is used for upload the Project/Firmware.

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

According to the functioning mode, the LEDs will have specifics functions (see 'LEDS' section).

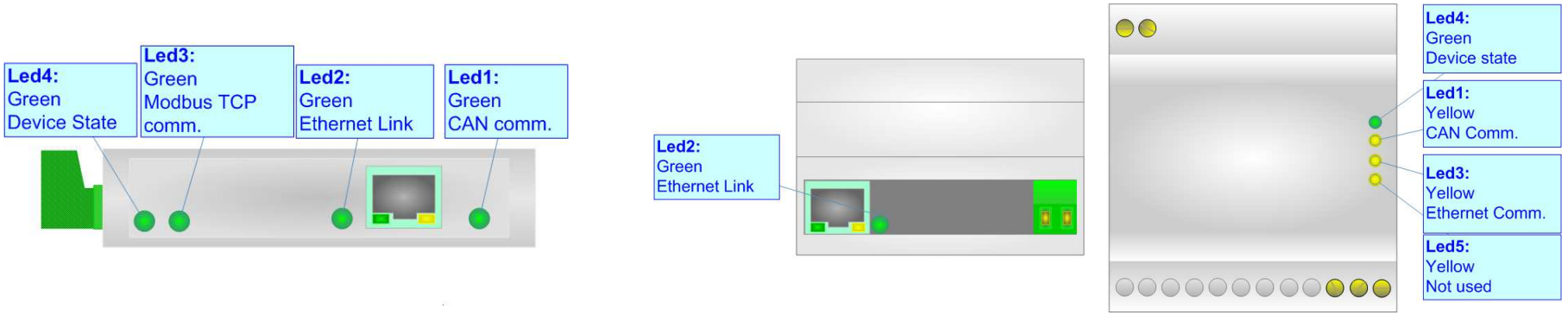




LEDS:

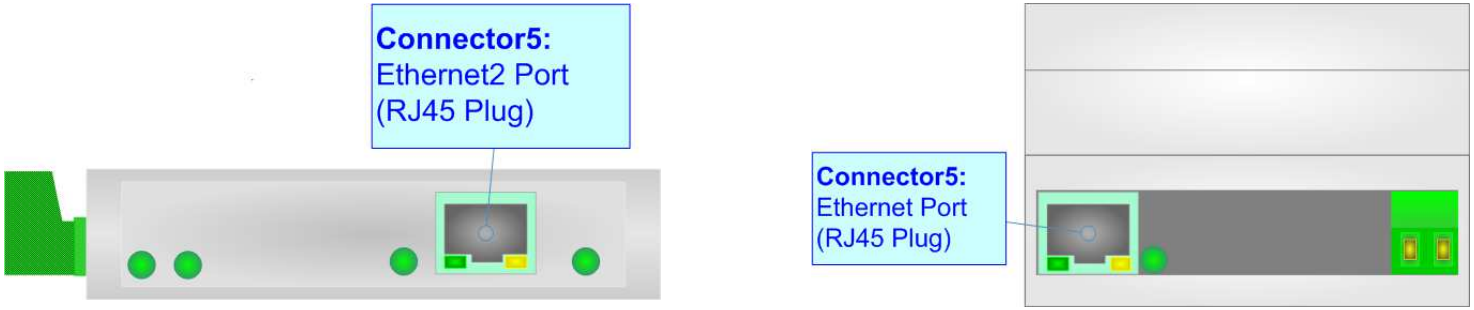
The devices has got four (five for HD67515-B2) LEDs that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

LED	Normal Mode	Boot Mode
1: CAN comm.	Blinks when CAN frames are received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
2: Ethernet Link	**ON:** Ethernet cable connected **OFF:** Ethernet cable disconnected	**ON:** Ethernet cable connected **OFF:** Ethernet cable disconnected
3: Modbus TCP comm.	Blinks when Modbus TCP frames are received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: Device State	Blinks slowly (~1Hz)	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
5: Not used (Present only on HD67515-B2)	OFF	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress



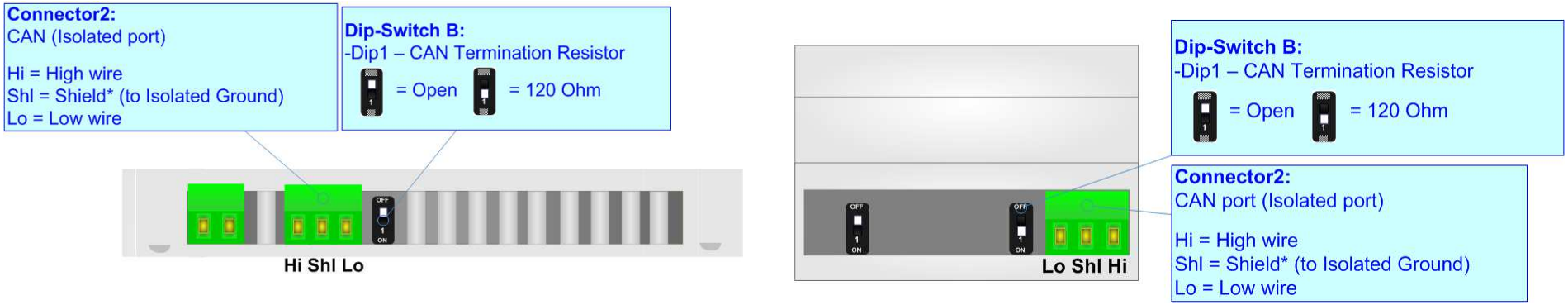
ETHERNET:

The Ethernet connection must be made using Connector5 of HD67515-A1/HD67515-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 a Hub/Switch the use of a straight cable is recommended. To connect the device to a PC/PLC/other the use of a cross cable is recommended.



CAN:

For terminating the CAN line with a 120Ω resistor it is necessary that the 'Dip-Switch B' is at ON position.



Cable characteristics:

DC parameter:		Impedance	70 Ohm/m
AC parameters:		Impedance	120 Ohm/m
		Delay	5 ns/m

Length		**Baud Rate [bps]**	**Length MAX [m]**
		10 K	5000
		20 K	2500
		50 K	1000
		100 K	650
		125 K	500
		250 K	250
		500 K	100
		800 K	50
		1000 K	25

USE OF COMPOSITOR SW67515:

To configure the Converter, use the available software that runs with Windows called SW67515. 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 SW67515, the window below appears (Fig. 2).

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

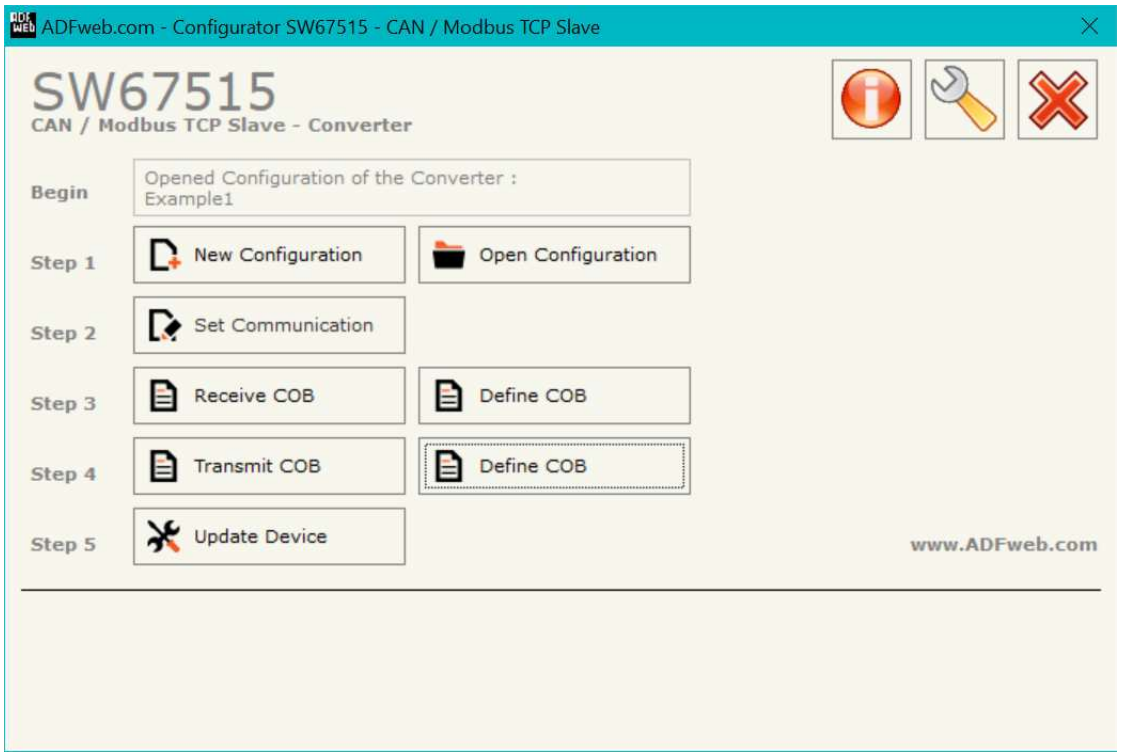
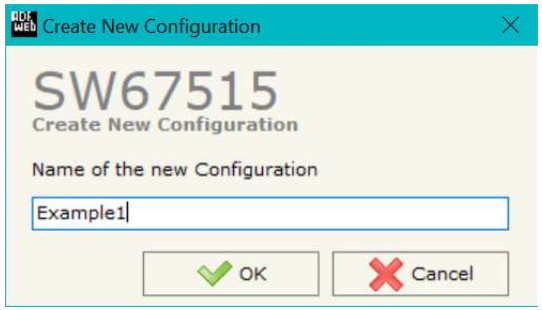


Figure 2: Main window for SW67515

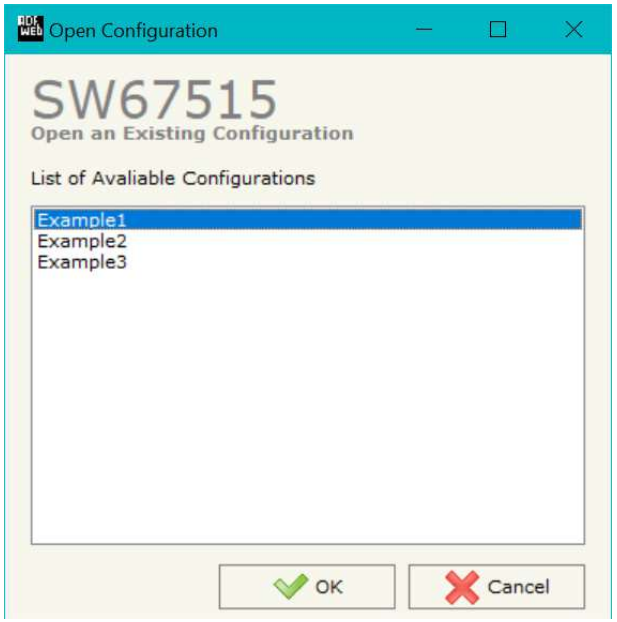
NEW CONFIGURATION / OPEN CONFIGURATION:

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 "CAN / Modbus TCP 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**".

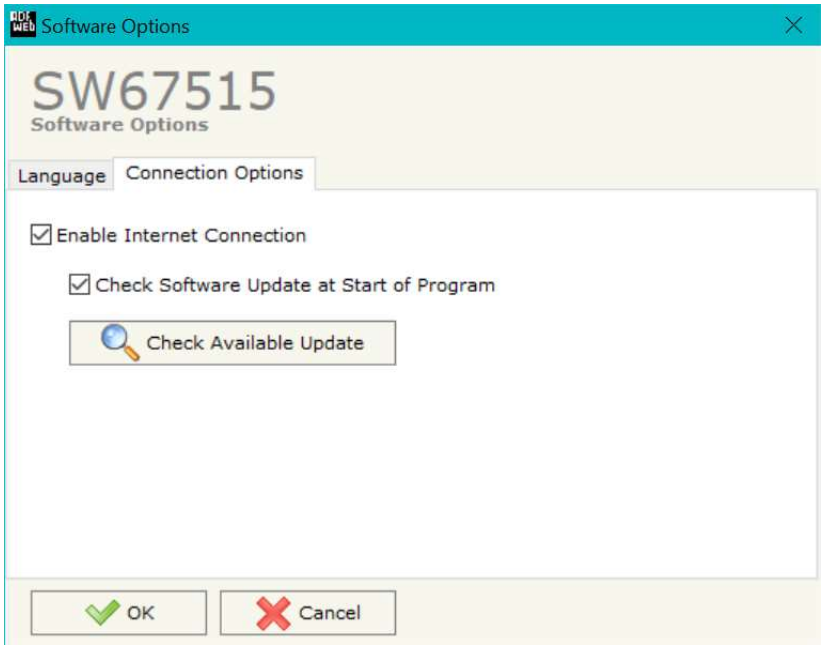


SOFTWARE OPTIONS:

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 SW67515 check automatically if there are updatings when it is launched.

SET COMMUNICATION:

This section defines the fundamental communication parameters of two Buses, CAN and Modbus TCP.

By pressing the "**Set Communication**" button from the main window for SW67515 (Fig. 2) the window "Set communication" appears (Fig. 3).

This window is divided in two sections, one for configure the CAN Network and the other for the Modbus TCP.

In the section "Select Device" it is possible to select the type of converter used:

- Device till April 2014 (with Jumper);
- Device from May 2014 (with Dip-Switches).

I
The means for the fields for the "CAN" are:

- In the field "**Baudrate**" the baudrate of the CAN is defined.

The means for the fields for "Modbus TCP Slave" are:

- In the field "**IP ADDRESS**", insert the IP address that you want to give to slave Modbus;
- In the field "**SUBNET Mask**" insert the SubNet Mask;
- In the field "**Port**" insert the number of the port;
- In the field "**GATEWAY**", insert the default gateway that you want to use. 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**" insert the number of the port.

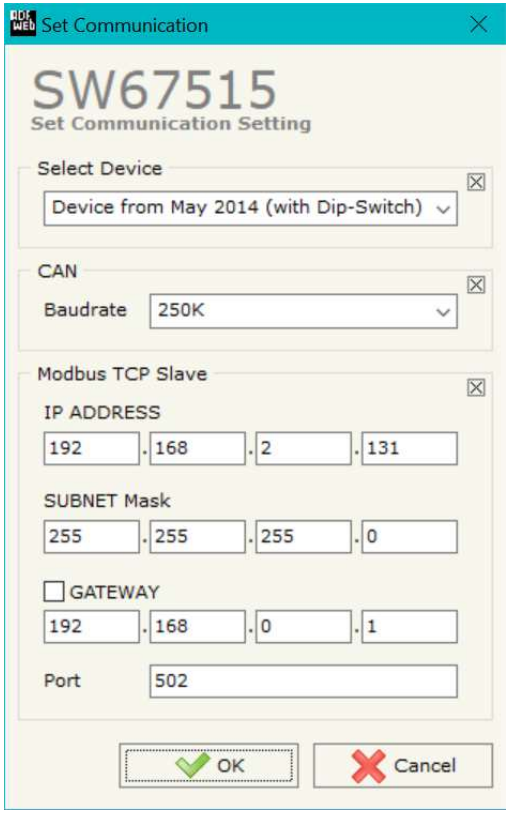


Figure 3: "Set Communication" window

RECEIVE COB:

By pressing the "**Receive COB**" button from the main window for SW67515 (Fig. 2) the window "Receive CAN Frames Definition" appears (Fig. 4). In this section, it is possible to define the CAN frames that the converter will receive from CAN network.

If "Device from May 2014 (with Dip-Switches)" is set in the section "Set Communication", the window appears like below:

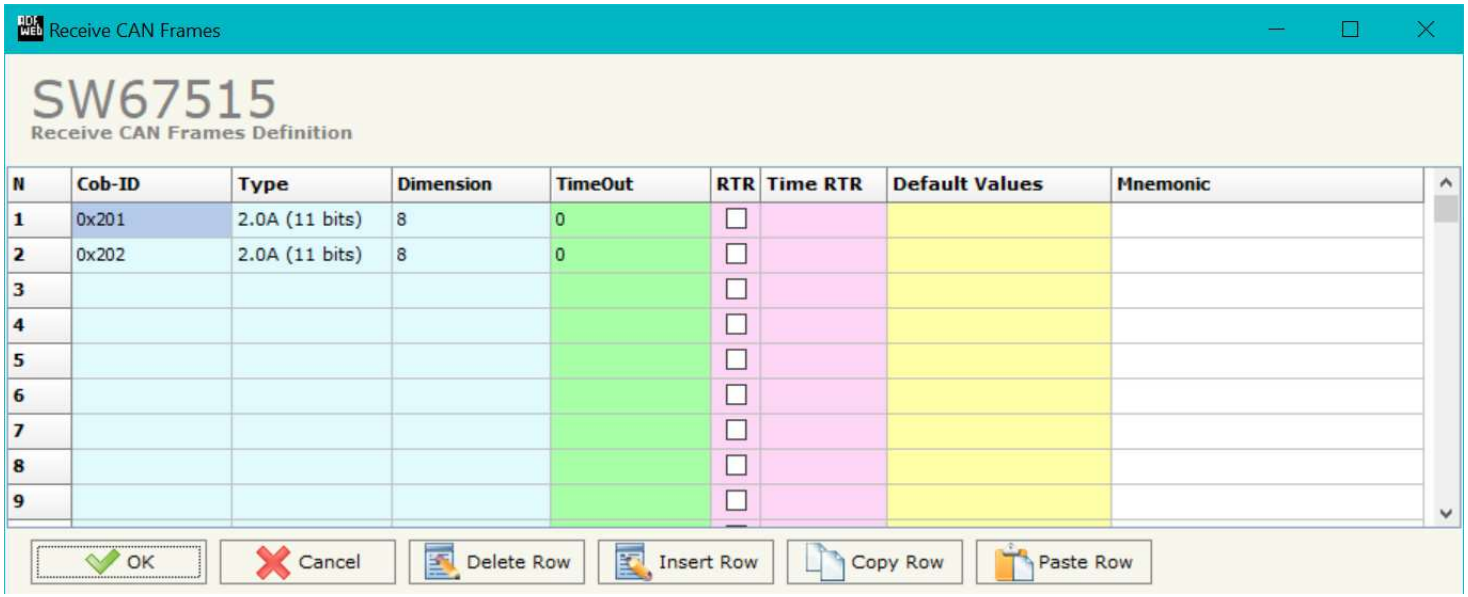


Figure 4: "Receive CAN Frame Definition" window

- In the field "**Cob-ID**" insert the Cob-ID of the CAN frame;
- In the field "**Type**" insert the type of the CAN protocol used for each frame (CAN 2.0A (11 bits) or CAN 2.0B (29 bits));
- In the field "**Dimension**" insert the number of bytes of the CAN frame (the maximum dimension is 8 Bytes);
- If the field "**TimeOut**" insert the Timeout; after the Timeout defined, the value of the data of the CAN frame become "0";
- If the field "**RTR**" is checked, the RTR bit for the selected frame is enabled;

- In the field "**Time RTR**" it is possible to define a cyclical time to send to Remote Transmit Request (RTR);
- In the field "**Default Values**" it is possible to define the default values when the converter starts;
- In the field "**Mnemonic**" a description of the frame is defined.

DEFINE COB:

By pressing the "**Define COB**" button near "Receive COB" from the main window for SW67515 (Fig. 2) the window "Define Modbus Registers for Receive CAN Frames" appears (Fig. 5):

- In the field "**List of Receive CAN Frames**" there is the list of CAN frames that you inserted in "Receive COB" Section;In the field "**List of Modbus Registers**" there are the Modbus words;
- In the field "**Create/Modify a Modbus Register**" you can define the index of the Modbus register and the bytes of the can frame that you map in.

For example:

Click on the frame, insert the valid address in the field "Index of Modbus Register", select the byte position (Byte 1 in High Modbus byte and Byte 3 in Low Modbus byte), click the "Create" button, in the field "List of Modbus Registers" appears the new Modbus register created with the data that it contains.

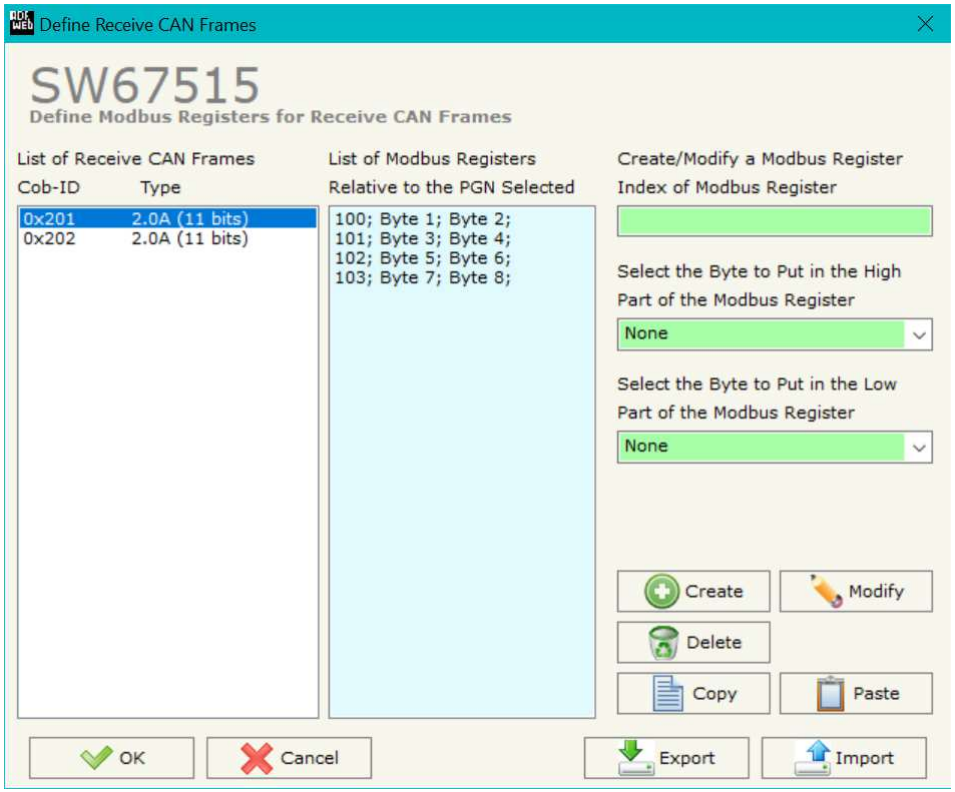


Figure 5: "Define COB" window

TRANSMIT COB:

By pressing the "**Transmit COB**" button from the main window of SW67515 the window "Transmit CAN Frames Definition" appears (Fig. 6): in this section, it is possible to define the CAN frames that the converter will send to the CAN network.

If "Device from May 2014 (with Dip-Switches)" is set in the section "Set Communication", the window appears like below:

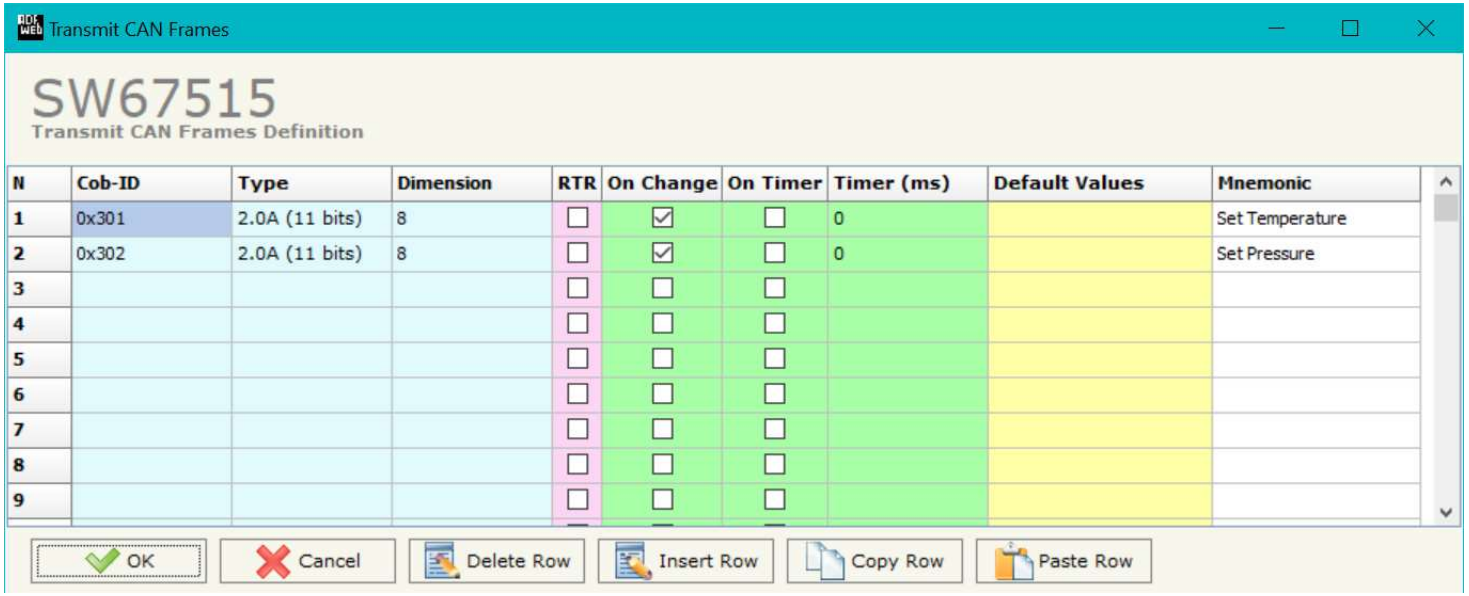


Figure 6: "Transmit CAN Frame Definition" window

- In the field "**Cob-ID**" insert the Cob-ID of the CAN frame you would to write from Modbus TCP to CAN.
- In the field "**Type**" insert the type of the CAN protocol used for each frame (CAN 2.0A (11 bits) or CAN 2.0B (29 bits));
- In the field "**Dimension**" insert the number of bytes of the CAN frame (the maximum dimension is 8 Bytes);
- If the field "**RTR**" is checked, the RTR bit is enabled ('1'); if it is not checked, it is disabled ('0');
- If the field "**On Change**" is checked the CAN frame is sent when the data written from Modbus TCP side changes;
- If the field "**On Timer**" is checked the CAN frame is sent cyclically;

- In the field "**Timer (ms)**" insert the cyclic delay;
- In the field "**Default Values**" it is possible to define the default values when the converter starts;
- In the field "**Mnemonic**" the description for the frame is defined.

DEFINE COB

By pressing the "**Define COB**" button near "Transmit COB" from the main window for SW67515 (Fig. 2) the window "Define Modbus Registers for Transmit CAN Frames" appears (Fig. 7):

- In the field "**List of Transmit CAN Frames**" there is the list of CAN frames that you inserted in "Transmit COB" Section;
- In the field "**List of Modbus Registers**" there are the Modbus words;
- In the field "**Create/Modify a Modbus Register**" you can define the index of the Modbus register and the bytes of the CAN frame where you write it;
- With the field "**Send CAN frame on Modbus Write**" it is possible to decide when to send the CAN frame. If a Modbus word has written "False "in this field, the CAN frame is not sent immediately but it is sent when another word that have this field "True" is written.

For example:

Click on the frame, insert the valid address in the field "Index of Modbus Register", select the byte position (Byte 1 in High Modbus byte and Byte 2 in Low Modbus byte), click the "Create" button, in the field "List of Modbus Registers" appears the new Modbus register created.

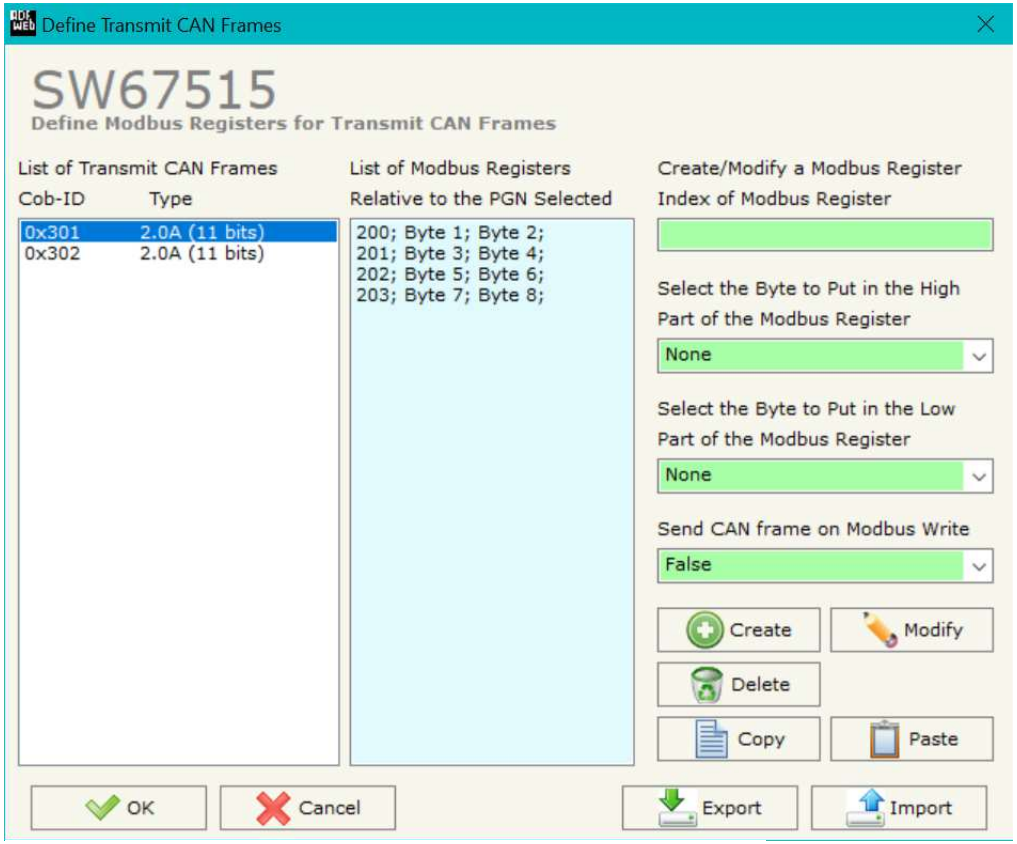


Figure 7: "Define COB" window

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.

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.



Figure 8: "Update device" windows

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67515 device.

Warning:
If Fig. 9 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.

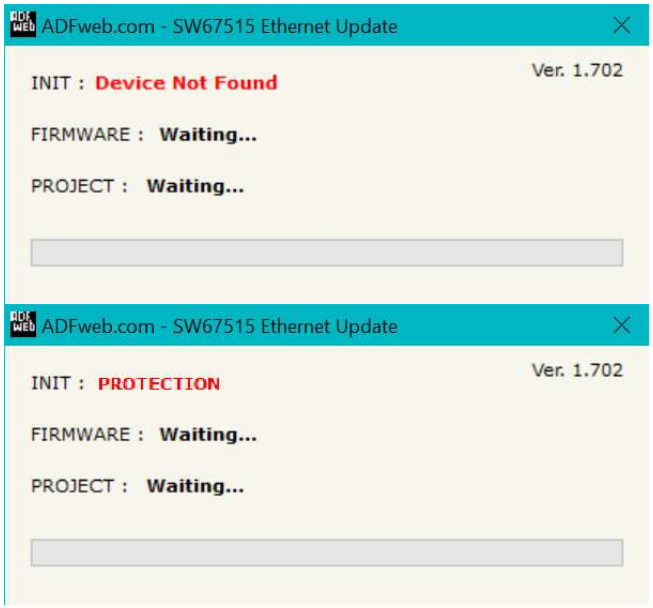


Figure 9: "Error" window

Warning:
In the case of HD67515 you have to use the software "HD67515": www.adfweb.com\download\filefold\SW67515.zip.

MECHANICAL DIMENSIONS:

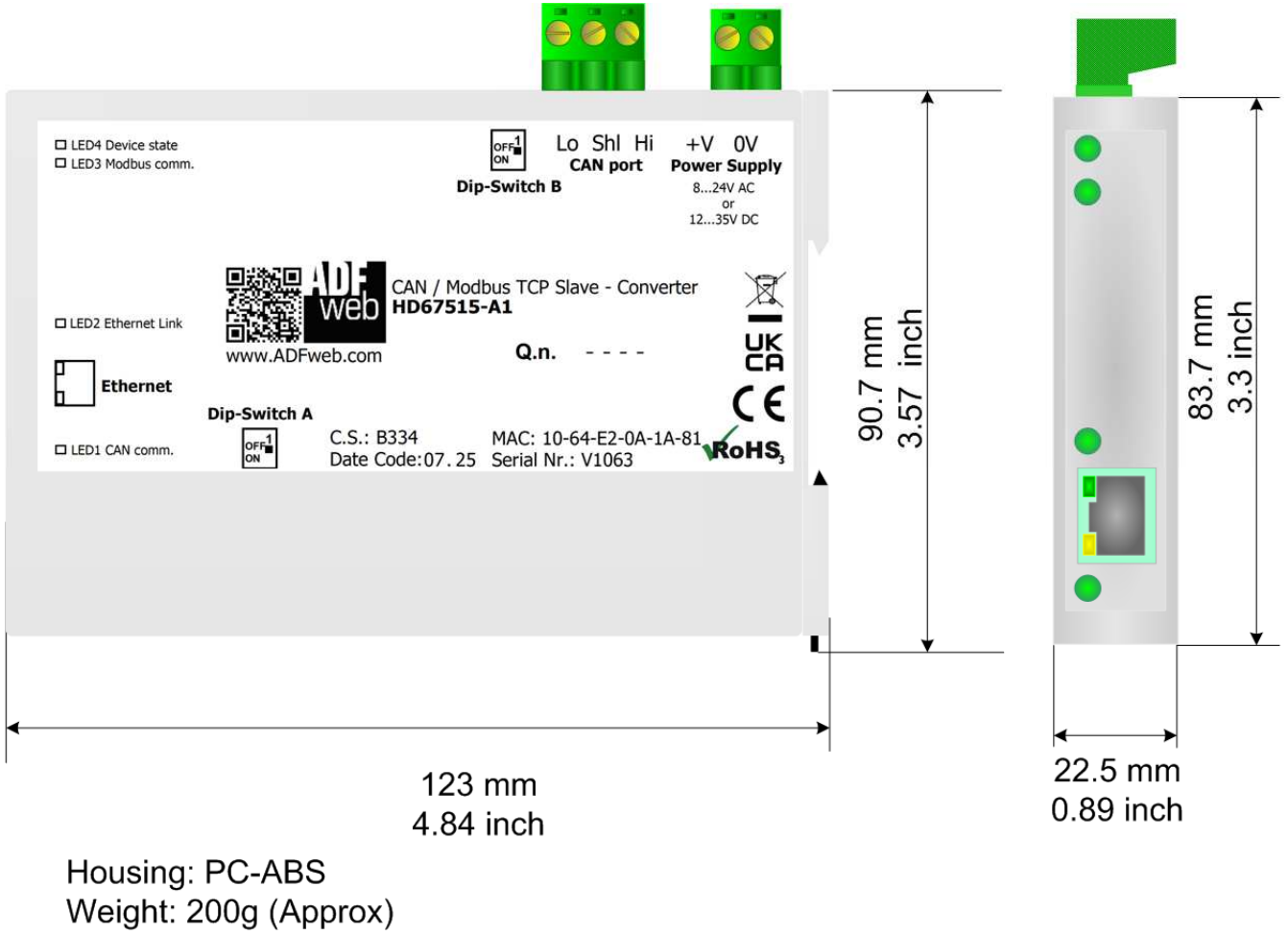
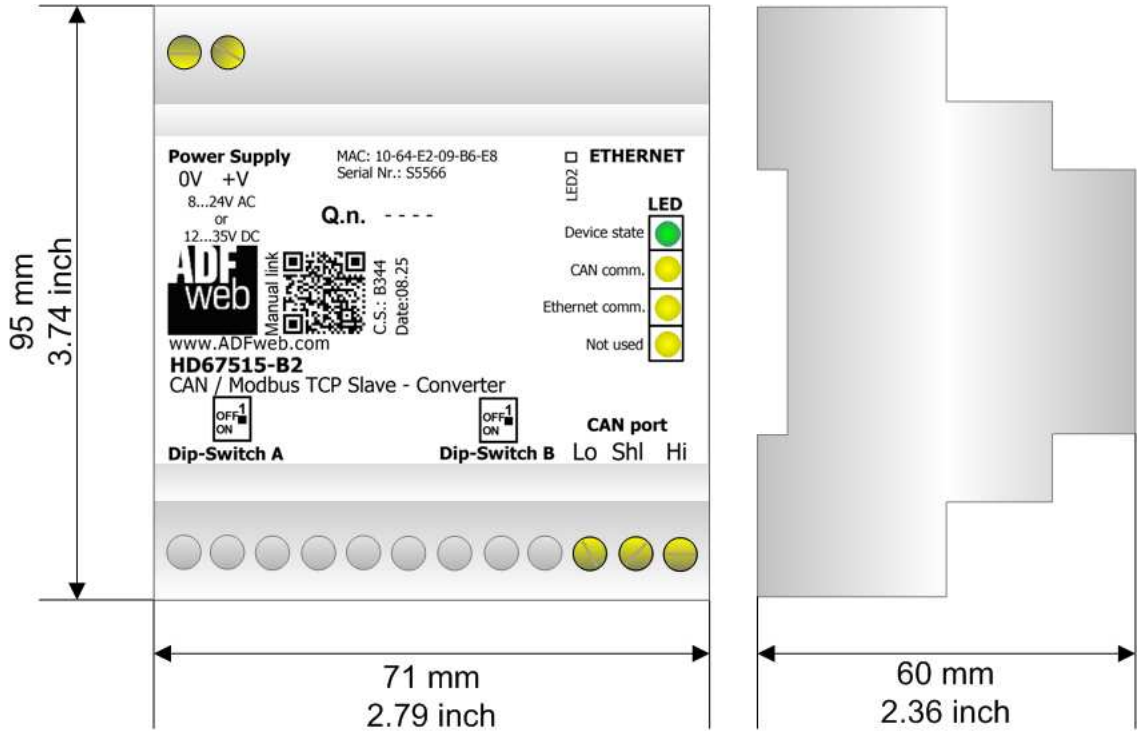


Figure 10a: Mechanical dimensions scheme for HD67515-A1



Housing: PVC
Weight: 200g (Approx)

Figure 10b: Mechanical dimensions scheme for HD67515-B2

ORDERING INFORMATIONS:

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

HD67515 - x x

Connectors Type
1: Removable 5mm Screw Terminal
2: Fixed 5mm Screw Terminal

Enclosure Type
A: 1M, 35mm DIN Rail mounting
B: 4M, 35mm DIN Rail mounting

Device Family
HD67515: CAN / Modbus TCP Slave - Converter

Order Code: **HD67515-A1** - CAN / Modbus TCP Slave - Converter (Housing type: A, Terminal Blocks Connectors)

Order Code: **HD67515-B2** - CAN / Modbus TCP Slave - Converter (Housing type: B, Terminal Blocks Connectors)

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