Industrial Electronic Devices

User Manual

Revision 1.000
English

CAN / SNMP - Converter

(Order Code: HD67155-A1, HD67155-B2)

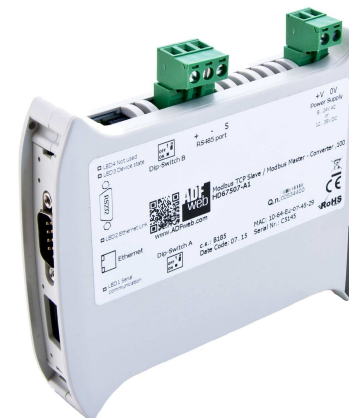for Website information:
www.adfweb.com?Product=HD67155

for Price information:
www.adfweb.com?Price=HD67155-A1
www.adfweb.com?Price=HD67155-B2

Benefits and Main Features:

⊕ Very easy to configure

⊕ Electrical isolation

⊕ Temperature range: -40°C/85°C (-40°F/185°F)

User Manual

For others SNMP products, see also the following links:

Converter SNMP to

www.adfweb.com?Product=HD67156	**(CANopen)**
www.adfweb.com?Product=HD67159	**(EtherNet/IP)**
www.adfweb.com?Product=HD67160	**(DeviceNet Master)**
www.adfweb.com?Product=HD67161	**(DeviceNet Slave)**
www.adfweb.com?Product=HD67162	**(J1939)**
www.adfweb.com?Product=HD67163	**(M-Bus Master)**
www.adfweb.com?Product=HD67164	**(Modbus Master)**
www.adfweb.com?Product=HD67165	**(Modbus Slave)**
www.adfweb.com?Product=HD67166	**(Modbus TCP Master)**
www.adfweb.com?Product=HD67167	**(Modbus TCP Slave)**
www.adfweb.com?Product=HD67168	**(PROFIBUS Master)**
www.adfweb.com?Product=HD67169	**(PROFIBUS Slave)**
www.adfweb.com?Product=HD67613	**(PROFINET)**
www.adfweb.com?Product=HD67693	**(BACnet Slave)**
www.adfweb.com?Product=HD67726	**(BACnet Master)**

Do you have an your customer protocol?
www.adfweb.com?Product=HD67003

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

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INDEX:

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	05/01/2015	Ff	All	First Release

WARNING:

ADFweb.com reserves the right to change information in this manual about our product without warning.
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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:
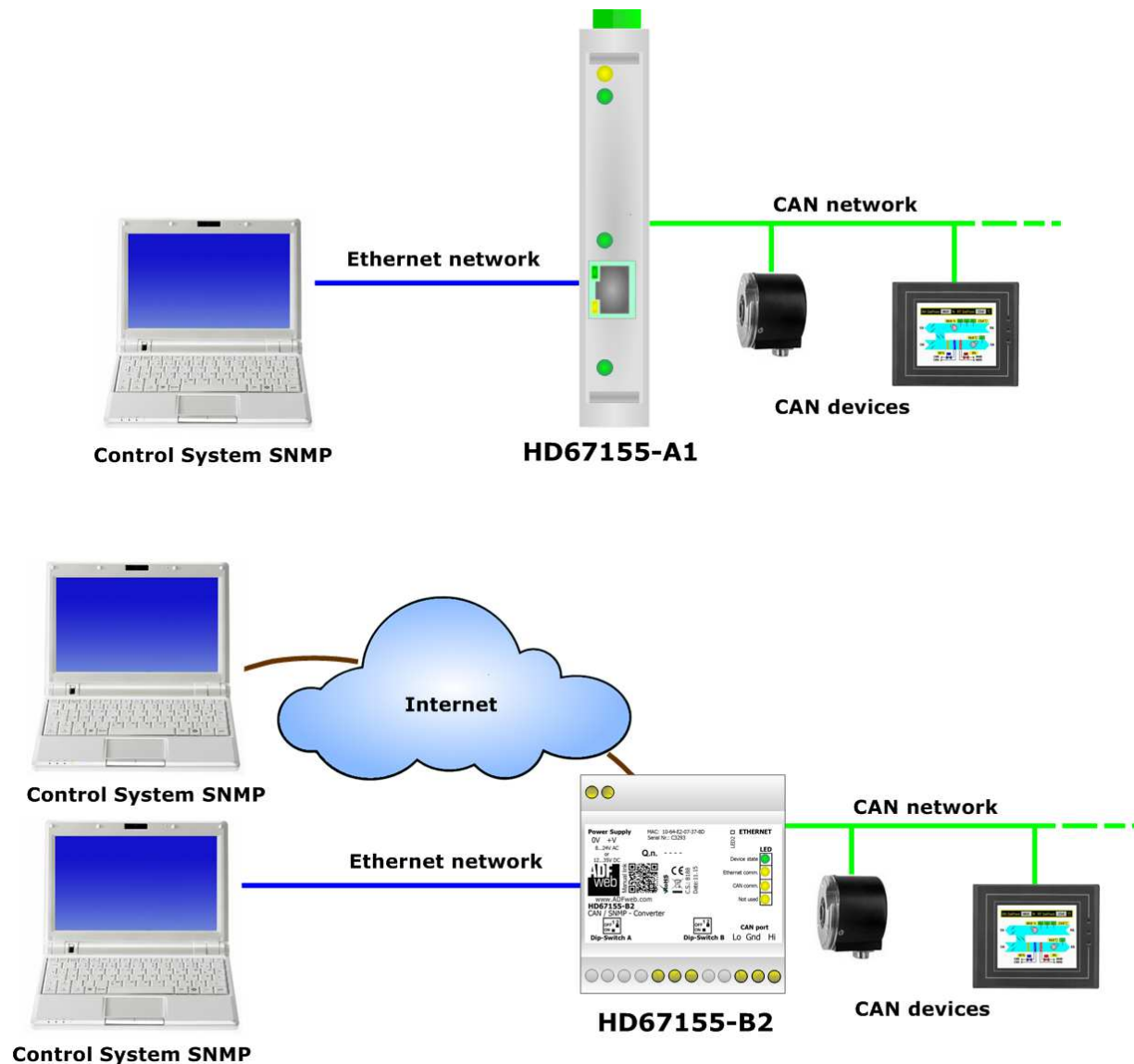
⚠ This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

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.
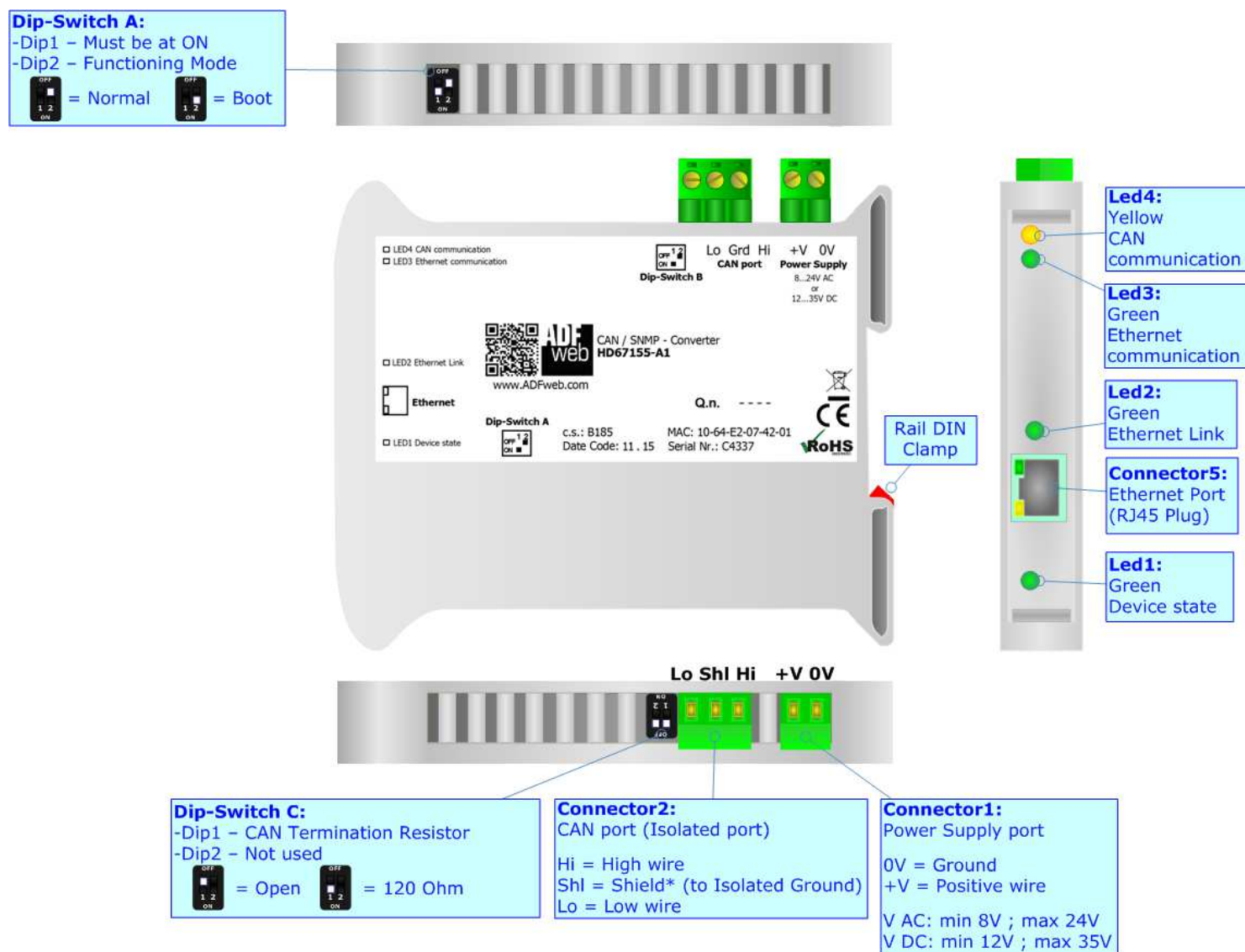
EXAMPLE OF CONNECTION:

HD67155-A1

HD67155-B2

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CONNECTION SCHEME:

Dip-Switch A:
-Dip1 – Must be at ON
-Dip2 – Functioning Mode

= Normal   = Boot

□ LED4 CAN communication
□ LED3 Ethernet communication

Lo Grd Hi   +V 0V
CAN port   **Power Supply**
Dip-Switch B   8...24V AC
or
12...35V DC

CAN / SNMP - Converter
HD67155-A1

www.ADFweb.com

□ LED2 Ethernet Link

Ethernet

Q.n. - - - -

Dip-Switch A   c.s.: B185   MAC: 10-64-E2-07-42-01
Date Code: 11 . 15   Serial Nr.: C4337

□ LED1 Device state

RoHS

Led4:
Yellow
CAN
communication

Led3:
Green
Ethernet
communication

Led2:
Green
Ethernet Link

Connector5:
Ethernet Port
(RJ45 Plug)

Rail DIN
Clamp

Led1:
Green
Device state

Lo Shl Hi   +V 0V

Dip-Switch C:
-Dip1 – CAN Termination Resistor
-Dip2 – Not used

= Open   = 120 Ohm

Connector2:
CAN port (Isolated port)

Hi = High wire
Shl = Shield* (to Isolated Ground)
Lo = Low wire

Connector1:
Power Supply port

0V = Ground
+V = Positive wire

V AC: min 8V ; max 24V
V DC: min 12V ; max 35V

Figure 1a: Connection scheme for HD67155-A1

Dip-Switch A:
-Dip1 – Must be at ON
-Dip2 – Functioning Mode

= Normal   = Boot

Dip-Switch C:
-Dip1 – CAN Termination Resistor
-Dip2 – Not used

= Open   = 120 Ohm

Connector2:
CAN port (Isolated port)

Hi = High wire
Shl = Shield* (to Isolated Ground)
Lo = Low wire

Lo Shl Hi

Led1:
Green
Device state

Led3:
Yellow
Ethernet
communication

Led4:
Yellow
CAN
Communication

Led5:
Yellow
Not used

Power Supply
0V +V
8...24V AC
or
12...35V DC

Q.n. - - - -

MAC: 10-64-E2-07-37-8D
Serial Nr.: C3293

ETHERNET

LED

Device state
Ethernet comm.
CAN comm.
Not used

www.ADFweb.com
HD67155-B2
CAN / SNMP - Converter

Dip-Switch A   Dip-Switch B   Lo Gnd Hi

CAN port

0V +V

**Connector1:**
Power Supply port

0V = Ground
+V = Positive wire

V AC: min 8V ; max 24V
V DC: min 12V ; max 35V

Connector5:
Ethernet Port
(RJ45 Plug)

Led2:
Green
Ethernet Link

Figure 1b: Connection scheme for HD67155-B2

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CHARACTERISTICS:

The HD67155-A1 and HD67155-B2 is a CAN / SNMP - Converter.

It has the following characteristics:

 → Up to 1024 bytes in reading and 1024 bytes in writing;
 → Triple isolation between CAN - Power Supply, CAN - Ethernet, Power Supply - Ethernet.
 → Two-directional information between CAN bus and SNMP 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 SW67155 software on your PC in order to perform the following:

 → Define the parameter of SNMP line;
 → Define the parameter of CAN line;
 → Define the CAN frames that the Converter can accept;
 → Define the CAN frames that the Converter sends trough the CAN line;
 → Define the map of CAN byte that must be written in the SNMP array;
 → Define the map of which SNMP bytes must be written in CAN frames;
 → Update the device.

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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]
HD67155-A1	3.5
HD67155-B2	3.5

Connector1:
Power Supply port
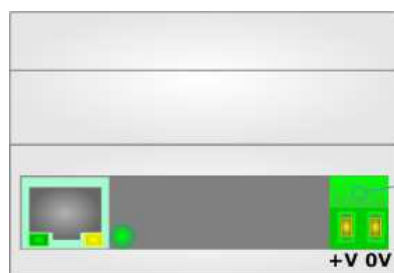
0V = Ground
+V = Positive wire

V AC: min 8V ; max 24V
V DC: min 12V ; max 35V

0V +V

Connector1:
Power Supply port

0V = Ground
+V = Positive wire

V AC: min 8V ; max 24V
V DC: min 12V ; max 35V

+V 0V

Caution: Not reverse the polarity power

0V +V   +V 0V

HD67155-A1   HD67155-B2

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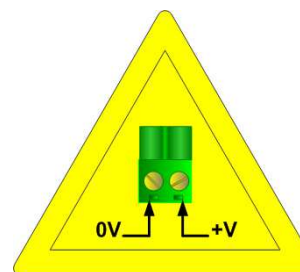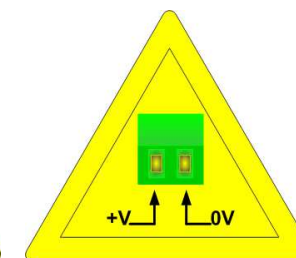
FUNCTION MODES:

The device has got two functions mode depending of the position of the 'Dip2 of Dip-Switch A':

- The first, with 'Dip2 of Dip-Switch A' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip2 of Dip-Switch A' at "ON" position, is used for upload 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 specifics functions, see 'LEDS' section.
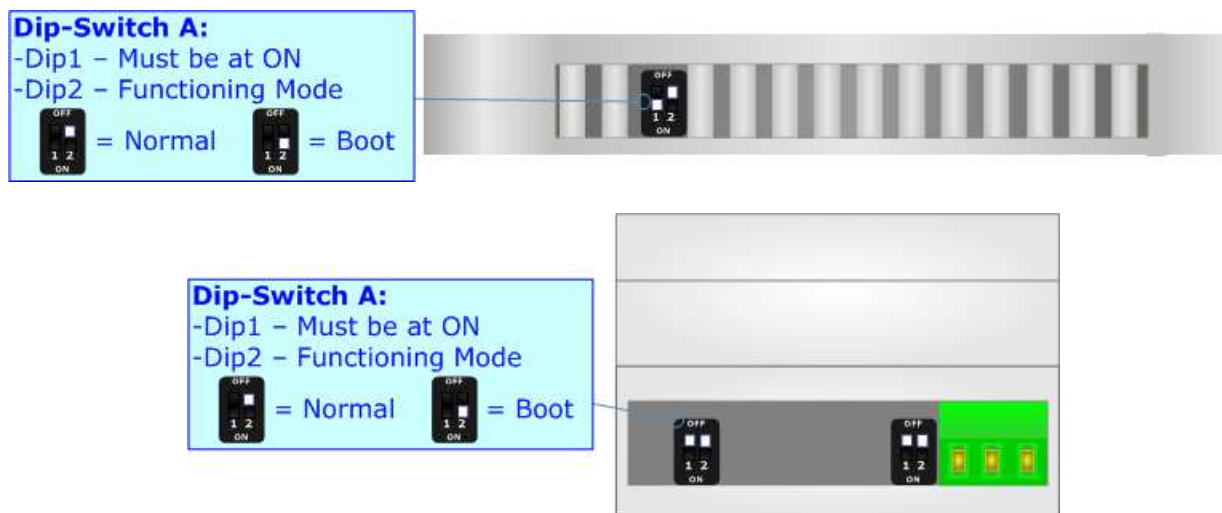
Warning:
Dip1 of 'Dip-Switch A' must be at ON position for working even if the Ethernet cable isn't inserted.

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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: Device State	Blinks slowly (~1Hz)	**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: Ethernet Communication	Blinks when SNMP frames are received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: CAN Communication	Blinks when CAN frames are received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
5: Not used (Present only on HD67155-B2)	OFF	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress

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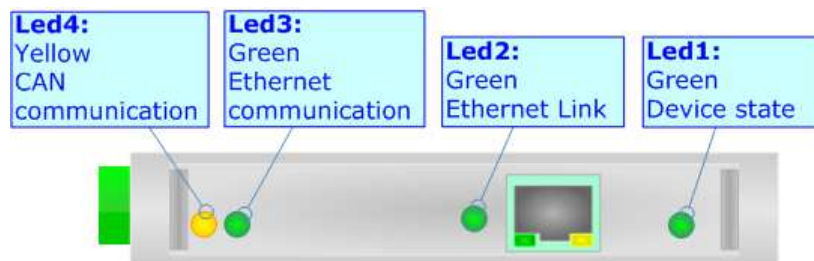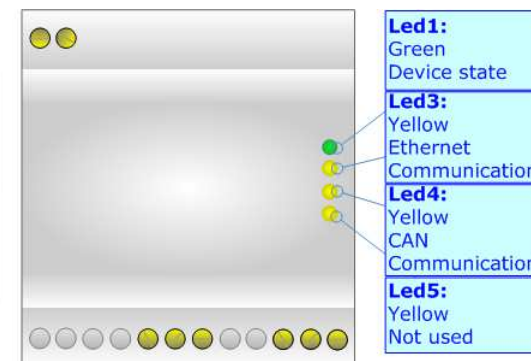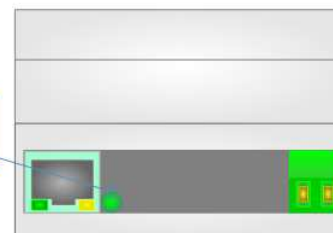
SNMP:

The SNMP connection must be made using Connector5 of HD67155-A1/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/other is recommended the use of a cross cable.

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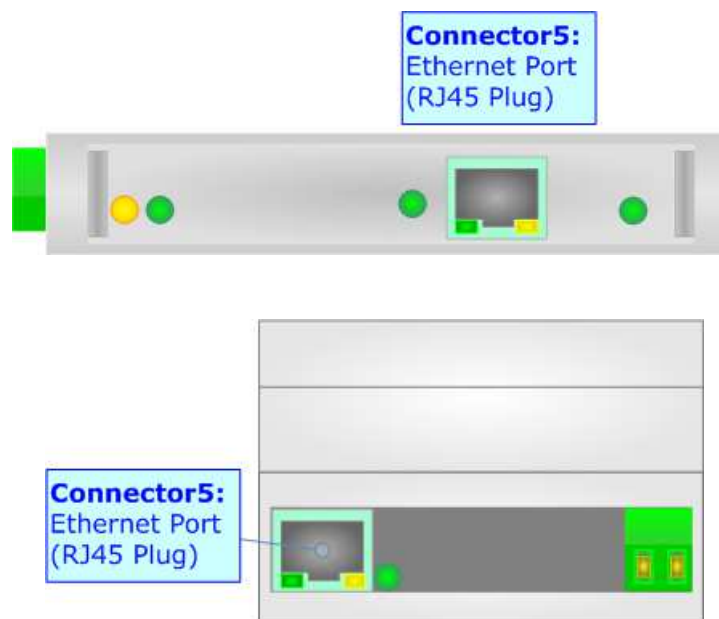
CAN:

For terminate the CAN line with a 120Ω resistor it is necessary that the Dip1 of 'Dip-Switch C' is at ON position.
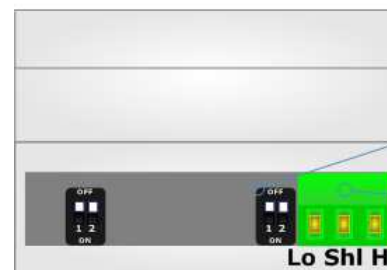
Cable characteristics:

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

![ADFweb logo] Industrial Electronic Devices

USE OF COMPOSITOR SW67155:

To configure the Converter, use the available software that runs with Windows called SW67155. 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; 32/64bit).

When launching the SW67155, the window below appears (Fig. 2).

Note:
   It is necessary to have installed .Net Framework 4.
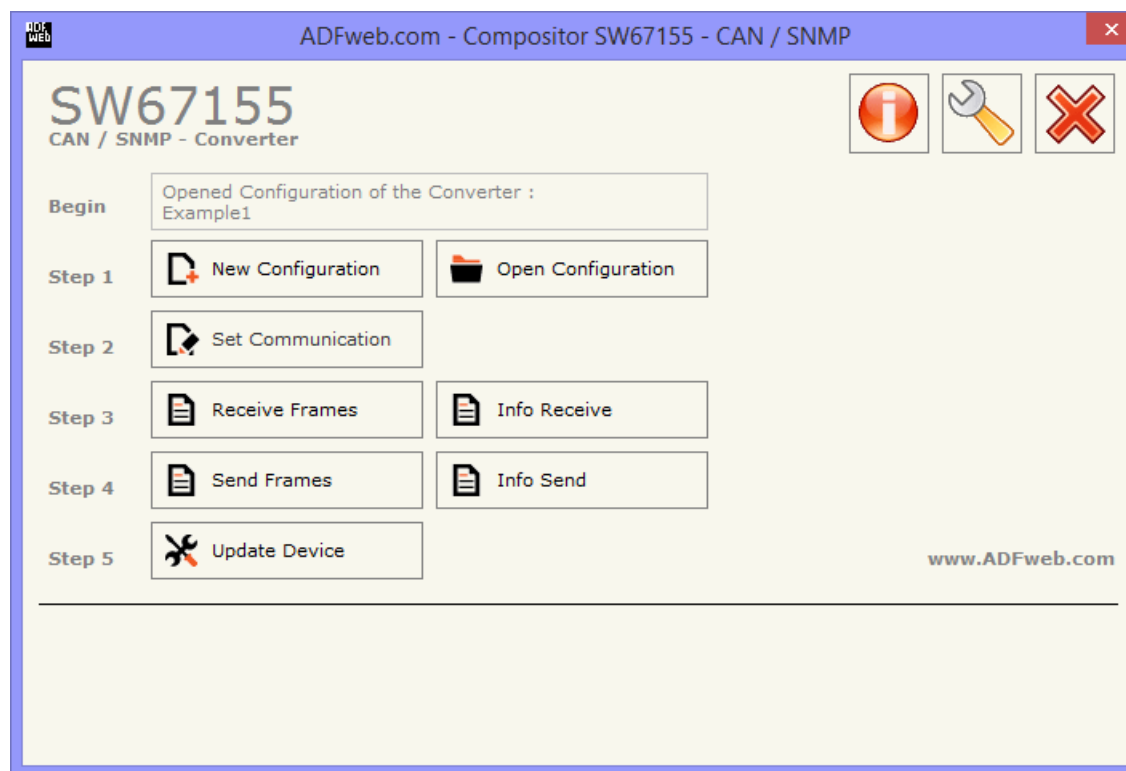
Figure 2: Main window for SW67155

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NEW CONFIGURATION / OPEN CONFIGURATION:

The "**New Configuration**" button creates the folder which contains the entire device's configuration.
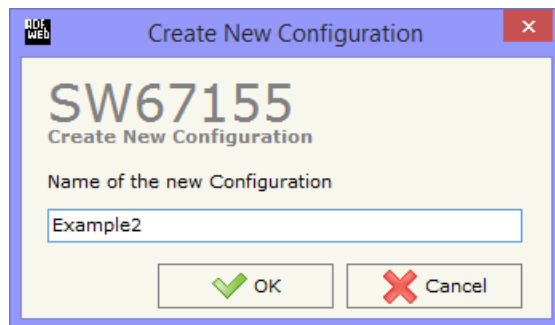
A device's configuration can also be imported or exported:

➔ To clone the configurations of a Programmable "CAN / SNMP - 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**".

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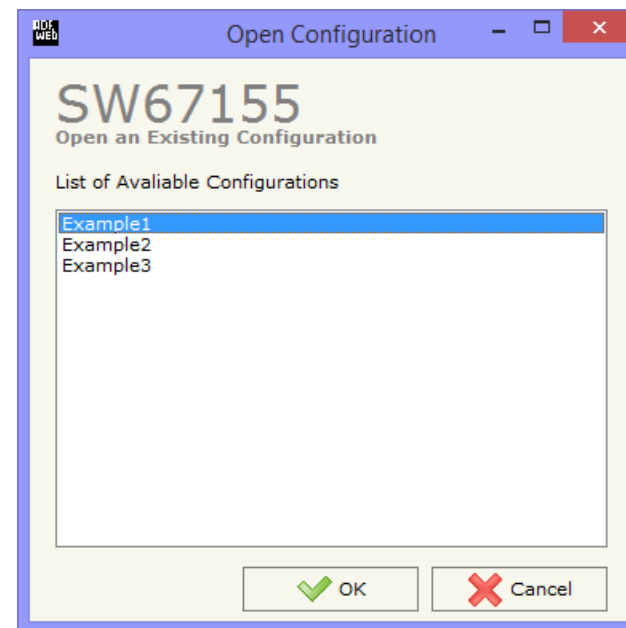
SOFTWARE OPTIONS:

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.
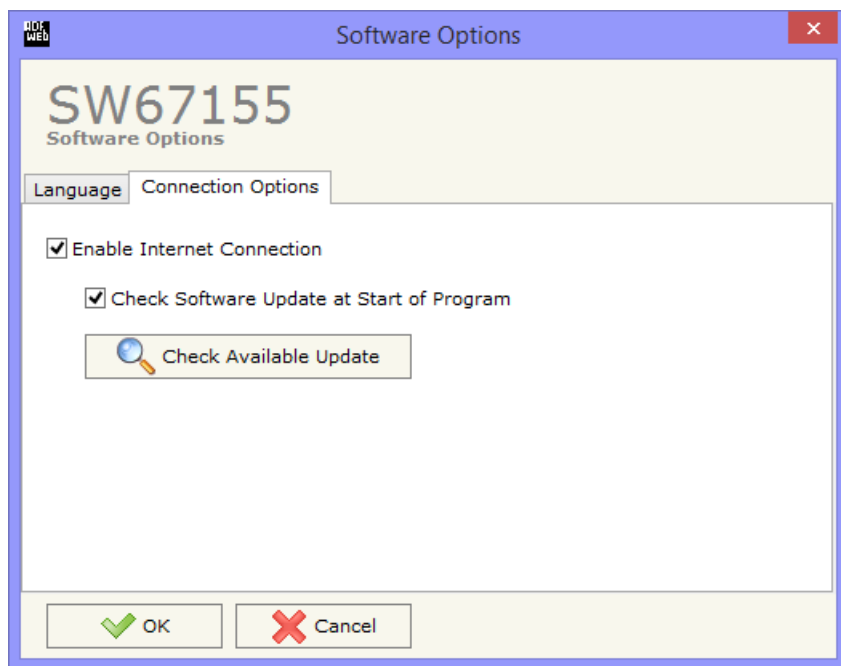
In the section "Connection Options", it is possible to check if there are some updatings of the software compositor in ADFweb.com website.
Checking the option "**Check Software Update at Start of Program**", the SW67155 check automatically if there are updatings when it is launched.

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SET COMMUNICATION:

This section define the fundamental communication parameters of two buses, SNMP and CAN.

By Pressing the "**Set Communication**" button from the main window for SW67155 (Fig. 2) the window "Set Communication" appears (Fig. 3).
The window is divided in two sections, one for the SNMP and the other for the CAN.

The means of the fields for "SNMP" are:

- In the fields "**IP ADDRESS**" insert the IP address that you want to give to the Converter;
- In the fields "**SUBNET Mask**" insert the SubNet Mask;
- In the fields "**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 "**Tunneling Port**" it is possible to define the port to use for the "Tunneling mode" (see page 23 for more details);
- In the field "**Send Back CAN messages**" it is possible to enable the transmission of CAN messages in a transparent mode;
- If the option "**Reply on the Tunneling Port**" is checked, the CAN messages are sent to the Tunneling Port (applicable only if the "Send back CAN messages" is enabled);
- In the field "**SNMP Name of Station**" is possible to assign a name to the SNMP node.

The means of the fields for the "CAN" section are:

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

Figure 3: "Set Communication" window

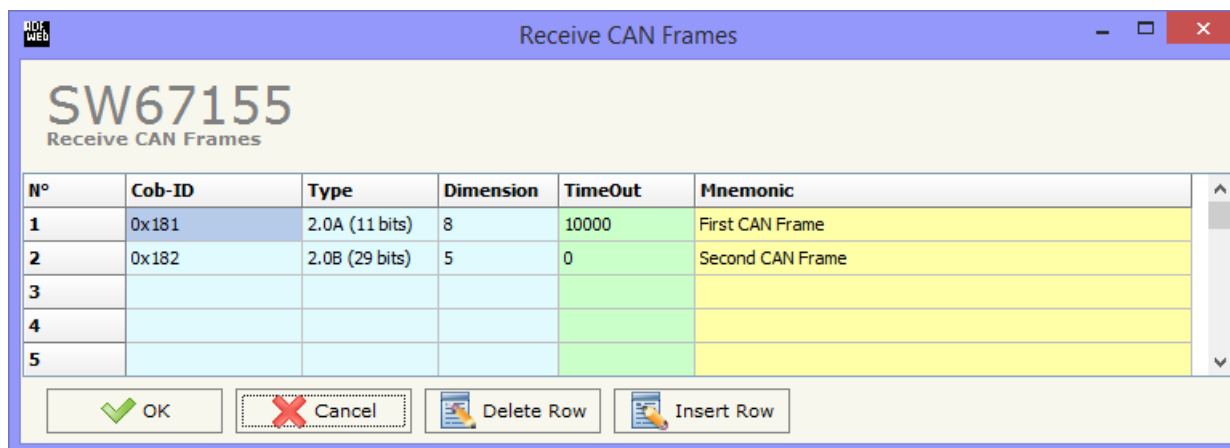Industrial Electronic Devices

RECEIVE FRAMES:

By pressing the "**Receive Frames**" button from the main window for SW67155 (Fig. 2) the "Receive CAN Frames" window appears (Fig. 4).

The COB inserted in this table contains the Output data of SNMP. These frames are accepted by the Converter.

The data of the columns have the following meanings:

- In the field "**Cob-ID**" insert the COB of the CAN frame;
- In the field "**Type**" is possible to select which type of CAN packet use for this Cob-ID; or 2.0A (11 bits) or 2.0B (29 bits);
- In the field "**Dimension**" insert the number of byte of the COB (from 1 to 8);
- The field "**TimeOut**" is used for put at zero the data into SNMP if the CAN frame don't arrives with a frequency less than the time expressed in the field. If the value in the field is 0, means that you don't want to use this feature, and so the value is never deleted;
- In the field "**Mnemonic**" it is possible to insert a brief description.

Figure 4: "Receive CAN Frames" window

INFO RECEIVE:

By pressing the "**Info Receive**" button from the main window for SW67155 (Fig. 2) the "Receive CAN Frames Info" window appears (Fig. 5).

➤ In the "**COB ID**" field there are the COB ID that you have inserts in the "Receive CAN Frames" window;

➤ In the "**Bytes**" field select the correspondence of the byte in SNMP.

For Example:
Byte 1 of frame CAN go to byte 0 in SNMP: the first byte of CAN frame is 0x11 in the byte 0 of SNMP I can read 0x11.

Figure 5: "Receive CAN Frames Info" window
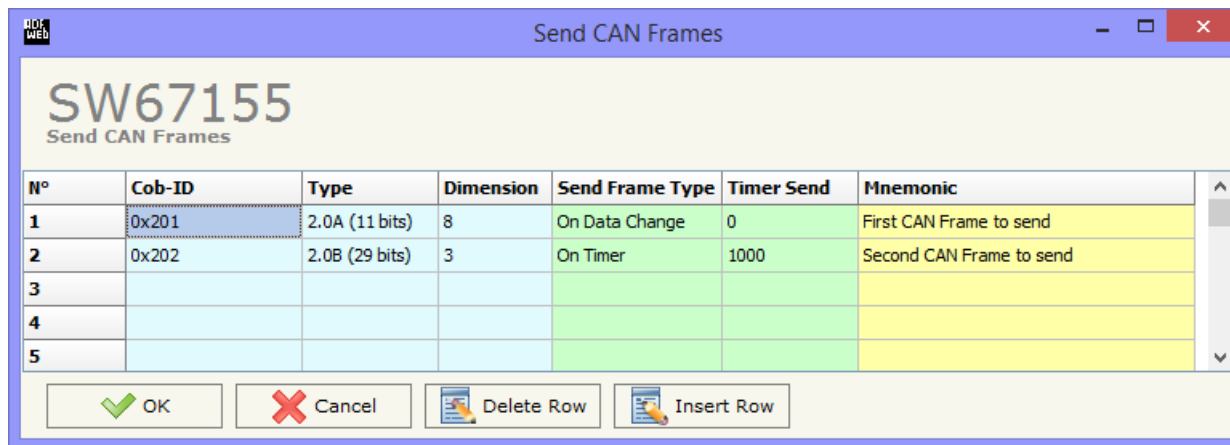
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SEND FRAMES:

By pressing the "**Send Frames**" button from the main window for SW67155 (Fig. 2) the "Send CAN frames" window appears (Fig. 6).

The COB inserted in this table contains the Input data of SNMP. These frames are sent by the Converter.

The data of the columns have the following meanings:

→ In the field "**Cob-ID**" insert the COB of the CAN frame;
→ In the field "**Type**" is possible to select which type of CAN packet use for this Cob-ID; or 2.0A (11 bits) or 2.0B (29 bits);
→ In the field "**Dimension**" insert the number of byte of the COB (from 1 to 8);
→ In the field "**Send Frame Type**" is possible to select when send the CAN frame. There are two options: the first is "**On Data Change**", the frame is sent when the data changes; the second is "**On Times**" and the frame is send cyclically;
→ In the field "**Timer Send**" insert the interval used for the "Send Frame Type On Times". The time is in milliseconds;
→ In the field "**Mnemonic**" it is possible to insert a brief description.

Figure 6: "Send CAN Frames" window

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INFO SEND:

By pressing the "**Info Send**" button from the main window for SW67155 (Fig. 2) the "Send CAN Frames Info" window appears (Fig. 7).

➔ In the "**COB ID**" field there are the COB ID that you have inserts in the "Send CAN frames" window;

➔ In the field "**Bytes**" select the correspondence of the byte in SNMP.

For Example:
Byte 1 of frame CAN is byte 0 in SNMP: the byte 0 of SNMP is 0x22, the first byte of CAN frame with COB=0x201 will be 0x22.

Figure 7: "Send Frames Info" window

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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.

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**";
- Press the "**Ping**" button, "Device Found!" must appear;
- Press the "**Next**" button;
- 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' at OFF position;
- Turn on the device.

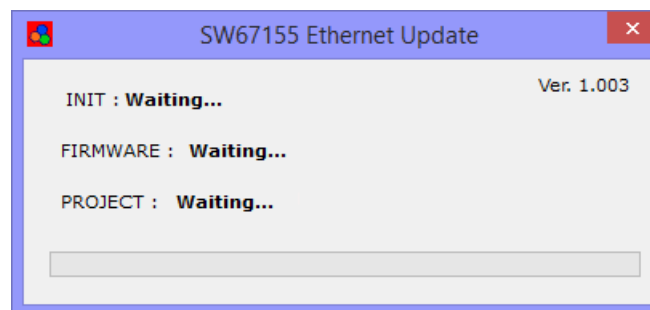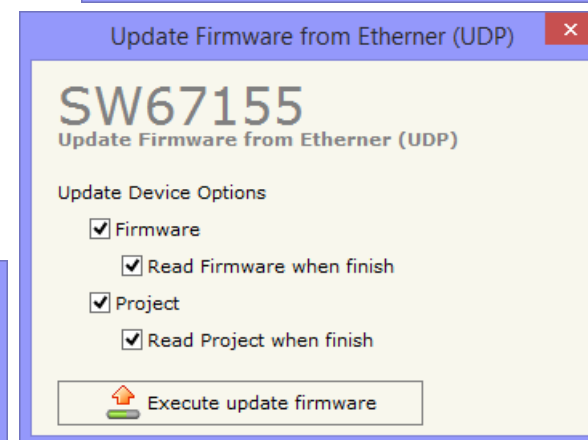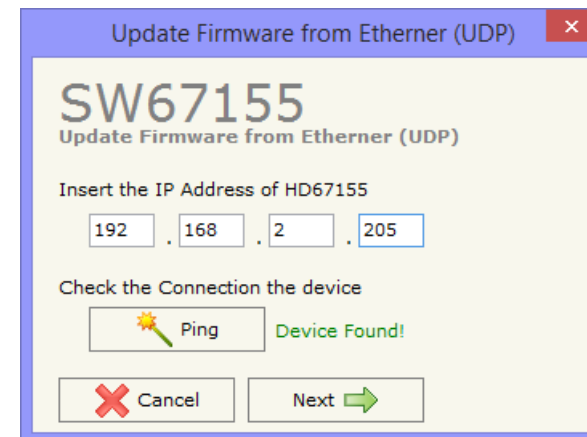At this point the configuration/firmware on the device is correctly updated.

Figure 8: "Update device" windows

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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;
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- 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 update.

Note:
When you install a new version of the software, if it is the first time it is better you do the update of the Firmware in the HD67155-A1/B2 device.

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67155-A1/B2 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;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven or Vista or 8, make sure that you have the administrator privileges;
- Take attention at Firewall lock;
- Check the LAN settings.

In the case of HD67155-A1/B2 you have to use the software "SW67155": www.adfweb.com\download\filefold\SW67155.zip.
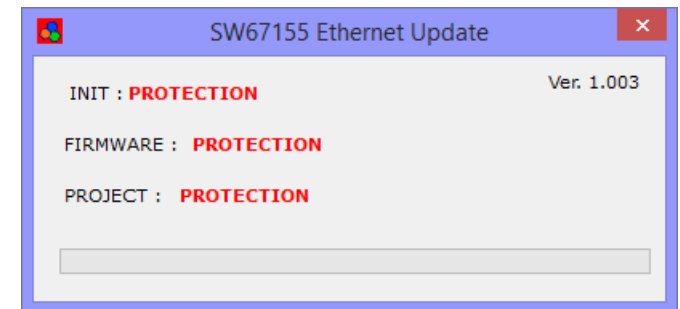
Figure 9: "Protection" window

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SNMP COMMUNICATION

In order to read/write the data from/to CAN side, it is necessary to use specific SNMP commands in order to see the SNMP Input and write the SNMP Output.

Reading CAN data from SNMP:

In order to read the data from the HD67155-A1/B2 it is necessary to use the "snmpget" command. The Input array is contained to this internal directory: 1.3.6.1.4.1.33118.1.1.1.4.x.0, where 'x' is the number of data block. Each data block has a dimension of 128 bytes.

Example: you want to read informations of the data block 3. The structure of the command to send is:

snmpget –v1 –cprivate "IP Address of the converter" 1.3.6.1.4.1.33118.1.1.1.4.**3**.0

Figure 10a: MIB Tree Input

Writing CAN data from SNMP:

In order to write the data to the HD67155-A1/B2 it is necessary to use the "snmpset" command. The Output array is contained to this internal directory: 1.3.6.1.4.1.33118.1.1.1.4.x.0, where 'x' is the number of data block. Each data block has a dimension of 128 bytes.

Example: you want to write informations of the data block 3 with the data '0123456789' (ASCII). The structure of the command to send is:

snmpset –v1 –cprivate "IP Address of the converter" 1.3.6.1.4.1.33118.1.1.1.5.**3**.0 s "0123456789"
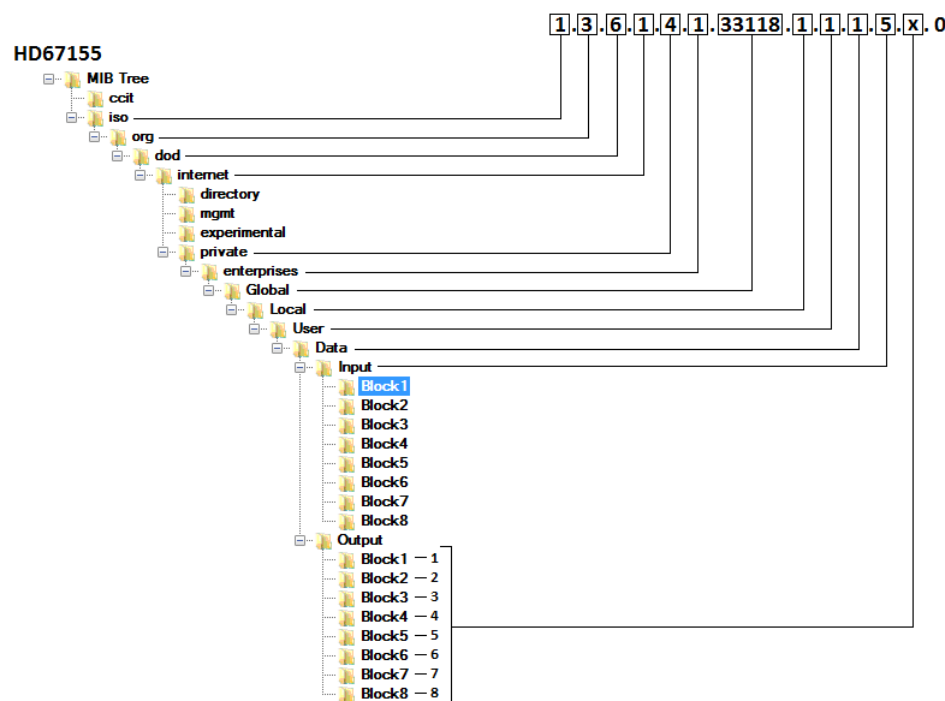

Figure 10b: MIB Tree Output

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SENDING ASYNCHRONOUS CAN MESSAGES FROM ETHERNET

The converter allows to send asynchronous CAN messages directly from Ethernet to CAN.
The Ethernet message to send to the converter must have this structure:

Byte Number	Description
1÷4	COB-ID of the CAN message to send
5÷(4+n)	Data of the CAN message

n=Number of Byte to Write

To choose the type of CAN (2.0A or 2.0B) of the frame that the converter will send, it is necessary to put the most significant bit of the byte 1 to:
- 0: CAN 2.0A;
- 1: CAN 2.0B.

To send a CAN message from Ethernet to CAN, it is necessary to send the UDP message to the tunneling port of the converter.

Example:

We want to send the CAN message with these characteristics:
CAN Type=2.0A; Frame: Cob_ID=0x0000; Data=0x0105.

So the string of hexadecimal numbers to be send to the converter is: [00][00][00][00][01][05].

Note:
    After sending the first CAN messages, if the "Send back CAN messages" option is activated, the CAN messages are sent via Ethernet (UDP messages) with the same structure.

If the option "Send Back CAN messages" is not activated, it is possible to enable/disable it by sending the following UDP messages to the Tunneling Port:

Byte 0	Byte 1
0xB3	Enabling/disabling the Transparent Mode

0x01 = Function disabled
0x00 = Function enabled

If the command message is received correctly, the same message is sent back from the converter.

Industrial Electronic Devices
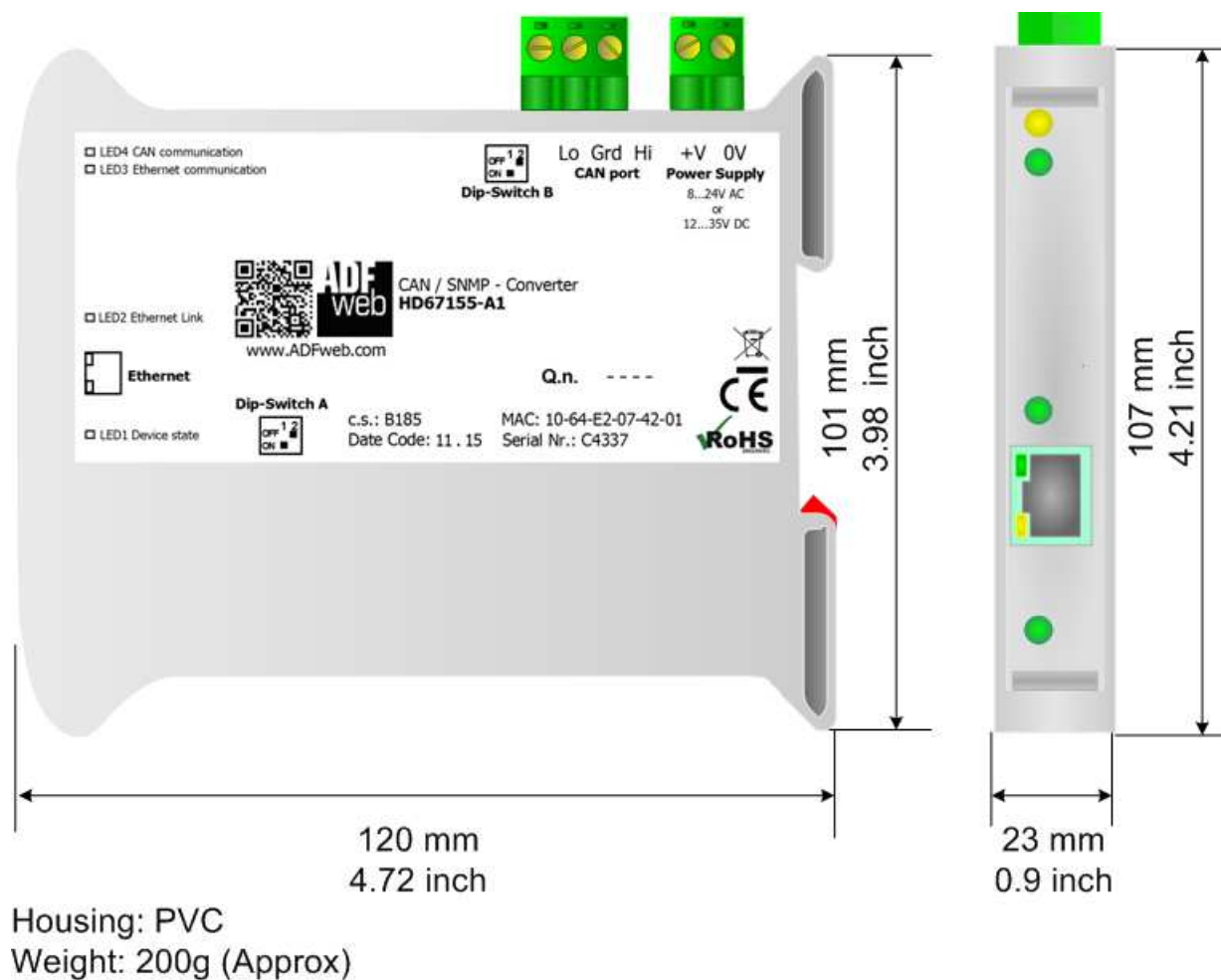
MECHANICAL DIMENSIONS:

Figure 11a: Mechanical dimensions scheme for HD67155-A1
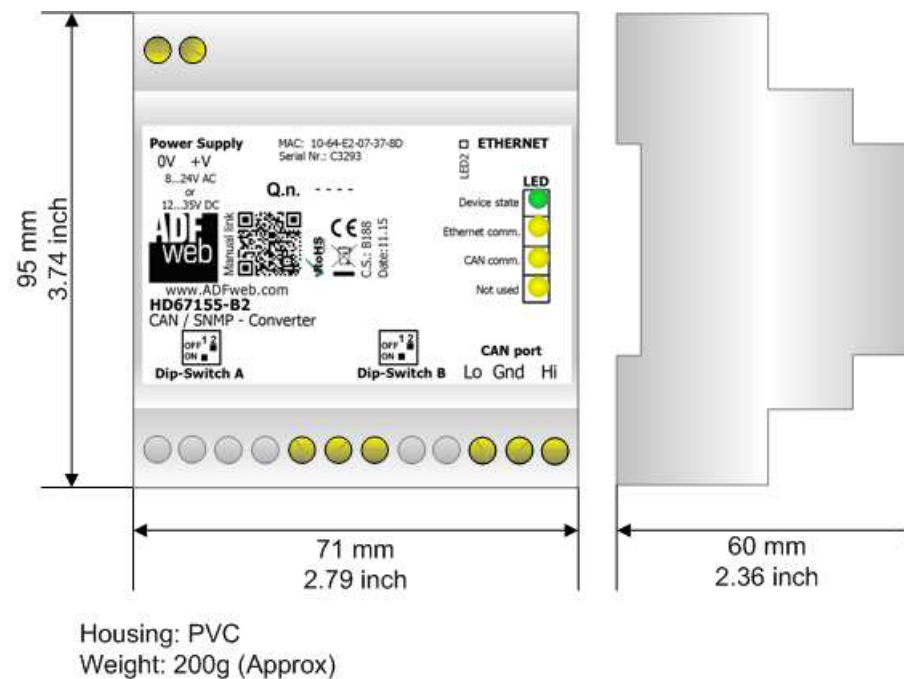
Figure 11b: Mechanical dimensions scheme for HD67155-B2

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ORDERING INFORMATIONS:

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

HD67155 – 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
HD67155: CAN / SNMP - Converter
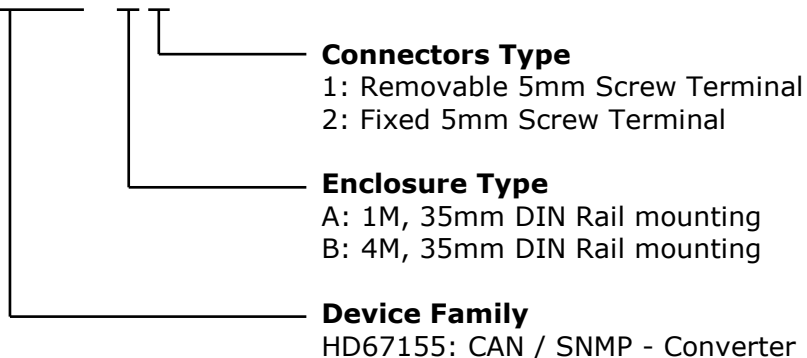
Order Code: **HD67155-A1**   -   CAN / SNMP – Converter (Housing type: A, Terminal Blocks Connectors)
Order Code: **HD67155-B2**   -   CAN / SNMP – Converter (Housing type: B, Terminal Blocks Connectors)

ACCESSORIES:

Order Code: **AC34001**   -   35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V AC

Order Code: **AC34002**   -   35mm Rail DIN - Power Supply 110V AC 50/60Hz – 12 V AC

DISCLAIMER:

All technical content within this document can be modified without notice. The content of the document is a under continual renewal.
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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.

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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.

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