Industrial Electronic Devices

User Manual

Revision 2.003
English

CANopen / DeviceNet Slave - Converter

(Order Code: HD67134)

for Website information:
www.adfweb.com?Product=HD67134

for Price information:
www.adfweb.com?Price=HD67134

Benefits and Main Features:

▶ Very easy to configure

▶ Low cost

▶ Rail mountable

▶ Wide supply input range

▶ Galvanic isolation

▶ Industrial temperature range:
-40°C / 85°C (-40°F / 185°F)

HD67134

For others Gateways / Bridges:
CANopen to Modbus

See also the following links:

www.adfweb.com?Product=HD67001   (Modbus RTU Master)
www.adfweb.com?Product=HD67502   (Modbus RTU Slave)
www.adfweb.com?Product=HD67004   (Modbus TCP Master)
www.adfweb.com?Product=HD67505   (Modbus TCP Slave)

CANopen to CANopen

See also the following link:

www.adfweb.com?Product=HD67121

Do you have an your customer protocol?

See the following link:
www.adfweb.com?Product=HD67003

Do you need to choose a device? do you want help?

Ask it to the following link:
www.adfweb.com?Cmd=helpme

Industrial Electronic Devices

INDEX:

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➢ 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 update.

To obtain the updated documentation for the product that you own, note the "Document Code" (Abbreviated written "Doc. Code" on the label on the product) and download the updated from our web site www.adfweb.com/download/

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.001	22/06/2007	Av	All	Revision
1.002	26/06/2007	Av	All	Revision
2.000	13/12/2007	Av	All	New document format
2.001	17/10/2008	Fl	All	Change Figure 2
2.002	21/07/2009	Ml Dp	All	Revision
2.003	13/02/2013	Nt	All	Added new chapters

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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 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.

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CHARACTERISTICS:

The CANopen to DeviceNet Gateway is an electronic device mountable on rail DIN with an autonomous energy supply that allows the following characteristics:

➢ The two-directional passage of information between a CANopen BUS and a DeviceNet BUS;
➢ Electrical isolation between two BUSes;
➢ To read and/or to write of SDO from the DeviceNet;
➢ To read and/or to write of PDO from the DeviceNet;
➢ Temperature range -40°C to 85°C.

POWER SUPPLY:

Recommended Power Supply	
VDC	VAC
24v	12v

VDC		VAC	
Vmin	Vmax	Vmin	Vmax
10v	35v	10v	19v

Caution: Not reverse the polarity power .

HD67134

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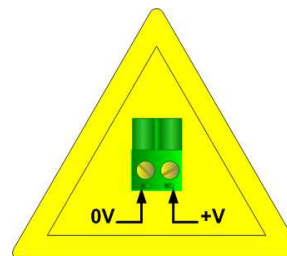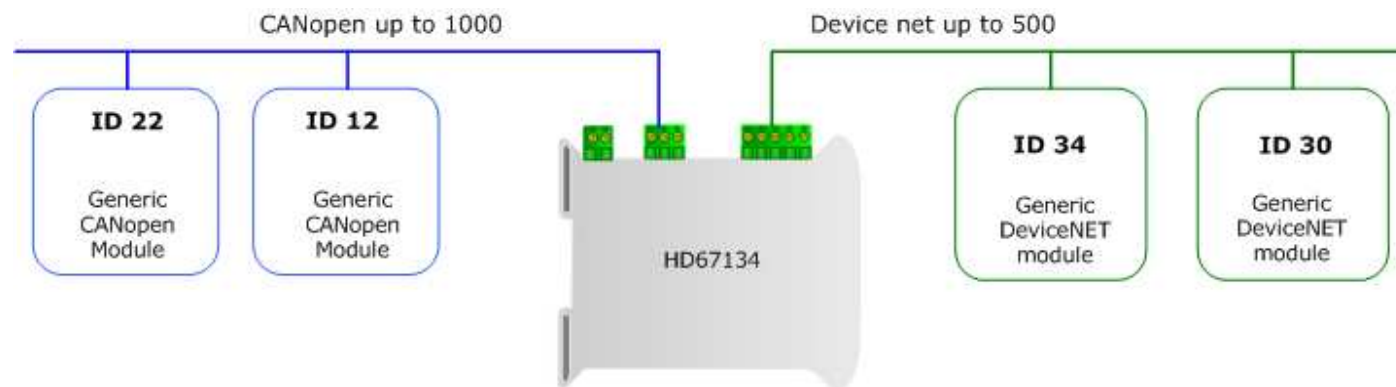
CONNECTION SCHEME:

Figure 1: Connection scheme of HD67134 between a CANopen and DeviceNET

Industrial Electronic Devices

Connector1:
Power Supply

0V = Ground
+V = Positive wire

12 VAC (min 10v ; max 19v) – 4 VA
24 VDC (min 10v ; max 35v) – 4 Watt

Jumper1:
Side "B"
Termination CAN Bus

= Open   = 120 ohm

Connector2:
CAN Bus Side "A"
(Isolated1)

H1 = High wire
Shl1 = Shield (to Isolated1 Ground)
L1 = Low wire

Connector3:
DeviceNET
(Isolated2)

V+=24Vdc (Auxiliary Power)
H = High wire
SH = Shield (to Isolated2 Ground)
L = Low wire
V-=0Vdc (Auxiliary Power)

0V +V   H1 Shl1 L1   V- L SH H V+

Led3:
Green
CAN
comunication

Connector4:
Port RS232 (D-SUB9-Male)

PIN2 = RX
PIN3 = TX
PIN5 = GND

Used for:
A) Programmation Port
B) Modbus on RS232

To connect the device to the COM port
of a PC in order to set it.
You have to use the programming cable
AC34107.

Or a cable made as showed here:

CABLE   CABLE
Side A   Side B
FEM   FEM

Rail DIN
Clamp

Led2:
Yellow

No Boot Mode:
RUN
Boot Mode: Blink
quickly

Led1:
Green
Not use

-- +   H1 Shl1 L1   V- L SH H V+

Jumper3:
Boot mode

= Yes Jumper
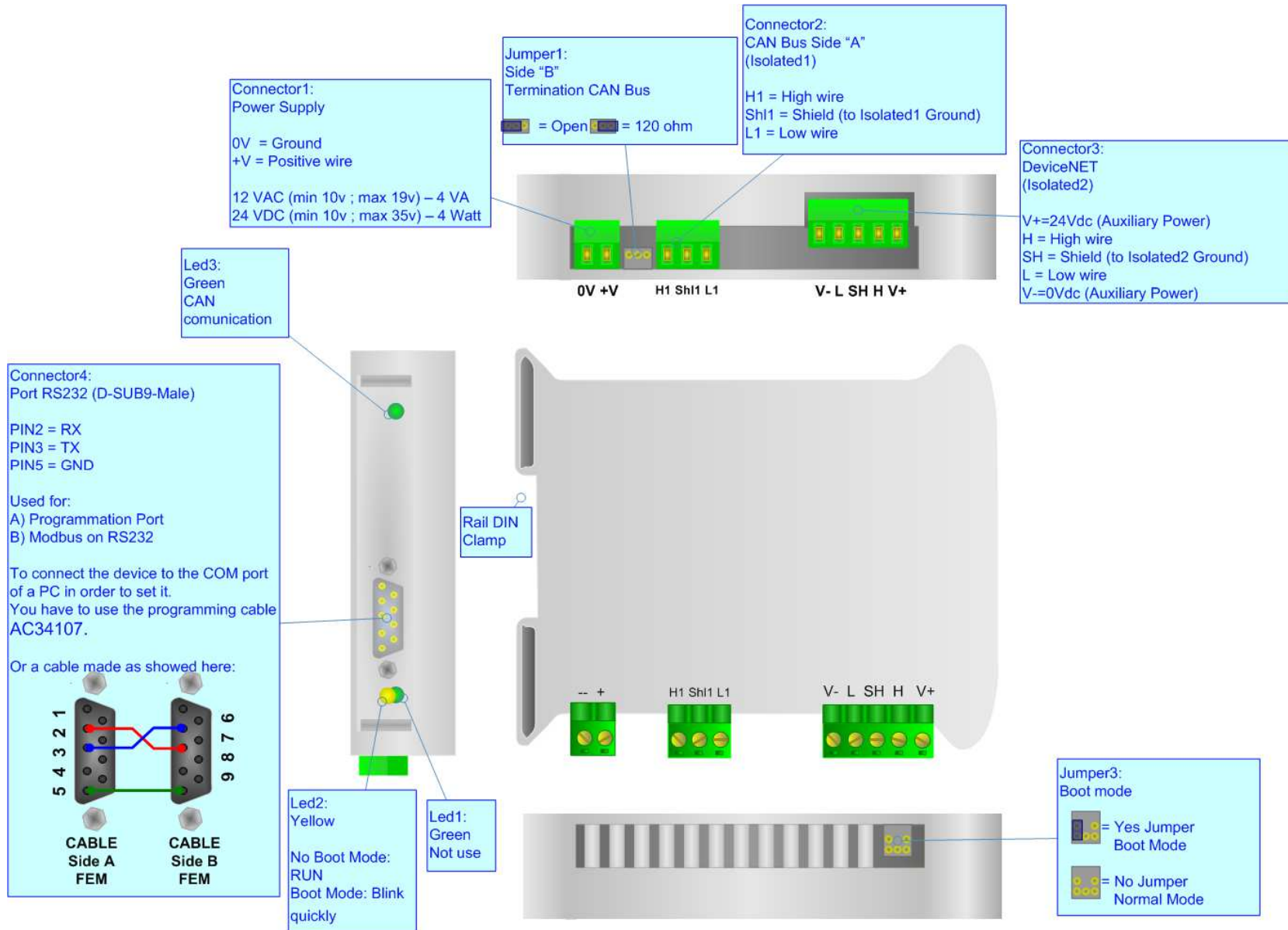Boot Mode

= No Jumper
Normal Mode

Figure 2: Connection scheme for HD67134

CONFIGURATION:

To configure the CANopen Gateway, use the available software that runs with Windows, called SW67134. It is downloadable on the site www.adfweb.com and its operation is described in this document.

The Gateway CANopen to DeviceNet is configured up to a maximum of 32 bytes in reading and 32 bytes in writing.

INTRODUCTION

The device Configurable Gateway CANopen to DeviceNet, allows a CANopen network to communicate with a DeviceNet network that we simply call CANopen and DeviceNet in this manual.

You need Compositor SW67134 software on your PC in order to perform the following:

➢ Define the BUS setting;
➢ Define SDO, in read and write, accessible from DeviceNet;
➢ Define Transmit and Receive PDO accessible from the DeviceNet;
➢ Create EDS file for the CANopen side.
➢ Save, duplicate, modify, and export configurations.

USE OF COMPOSITOR SW67134:

When launching the SW67134 the following window appears.
The SW67134 is downloadable on the site
http://www.adfweb.com/home/download/download.asp
(This manual is referenced to the last version of the software present on our web site).

Figure 3: Main window for SW67134

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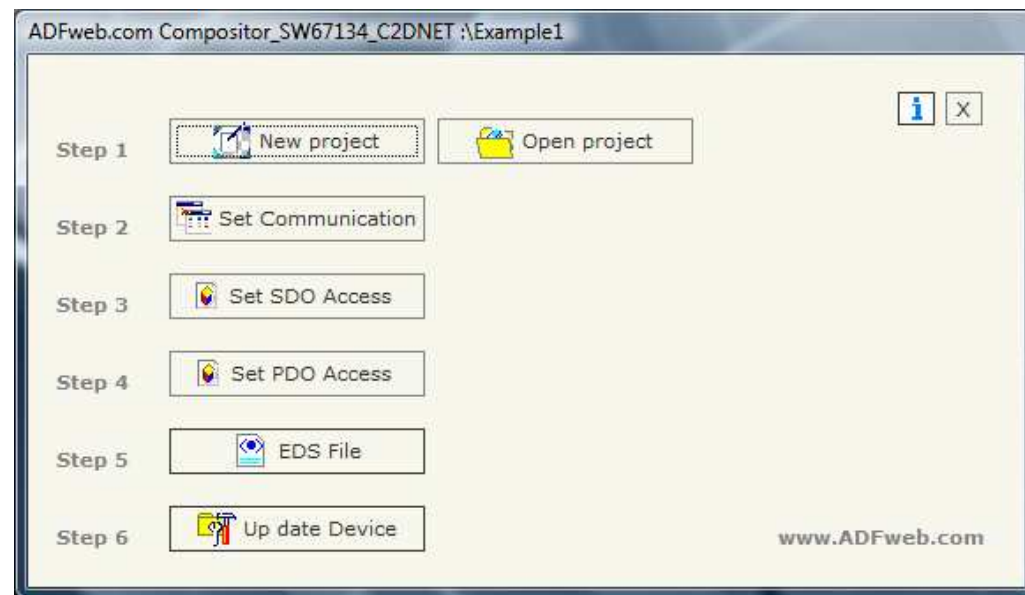
NEW PROJECT / OPEN PROJECT:

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

➢ To clone the configurations of a Programmable CANopen to Modbus Gateway 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 Project".

When a new project is created or an existent project is open, it will be possible to access the various configuration sections of the software:

➢ **"Set Communication";**
➢ **"Set SDO Access";**
➢ **"Set PDO Access".**

Industrial Electronic Devices

SET COMMUNICATION:

This section defines the fundamental communication parameters of two Buses CANopen and DeviceNet.

By pressing the "Set Communication" button from the main window for SW67134 (Fig. 3) the window "Set communication" appears (Fig. 4).

The means of the fields for the "CANopen" section are the following:

> ➢ In the "ID Dev." field you define the Gateway address of the CANopen BUS;
> ➢ In the "Baud rate" field you define the CANopen BUS baud rate;
> ➢ In the "Set Operational State at Start Up" field you define the state of Operational at start-up;
> ➢ In the "Network Start at Start Up" field you define a command of start (operational) to all the devices in the CANopen network;
> ➢ In the "Delay" field the delay before sending the network command for the CANopen is defined.

The means of the fields for the "DeviceNet" section are the following:

> ➢ In the "ID Dev." field you define the Gateway address of the DeviceNet BUS.
> ➢ In the "Baud rate" field you define the DeviceNet BUS baud rate.

"SDO Timeout" is the is the maximum time that the device attends for the answer from the Slave interrogated.

Figure 4: "Set Communication" window

SET SDO ACCESS:

The following objects can be defined within the "Set SDO Access" section:

> ➢ the SDO of the CANopen are accessible from the array of Byte of the DeviceNet.

By pressing the "Set SDO Access" button from the main window for SW67134 (Fig. 3) the "Set SDO Access" window appears (Fig. 5).

The data of the columns have the following meanings:

> ➢ In the field "ID Dev" insert the address of the CANopen device which requires the SDO;
> ➢ In the field "Index" insert the index of the SDO (coordinated with that SDO);
> ➢ In the field "Subindex" insert the subindex of SDO (coordinated with the SDO);
> ➢ In the field "nbyte" insert the length of the SDO;
> ➢ In the field "Mnemonic" you can insert a brief description of the command.

Figure 5: "Set SDO Access" window

Industrial Electronic Devices

Example 1:

If You want to read the SDO at:

- ➢ Address **22**;
- ➢ Index **0x3000**;
- ➢ Subindex **2**;
- ➢ By dimensions **2 byte**;

from a DeviceNet Master, you have to define the SDO like showed in Figure 5. Gateway takes SDO data in the first two bytes of the DeviceNet Array.

The Gateway, in DeveceNet side, is a Slave and in order to read/write the bytes, you can use the following I/O messages:

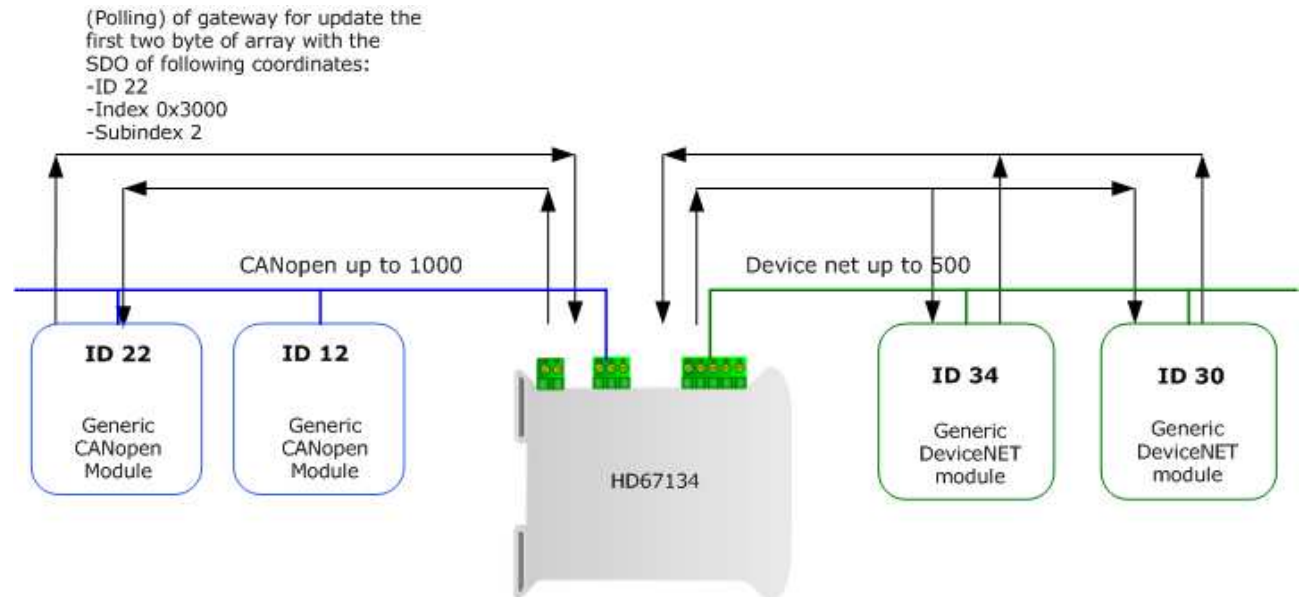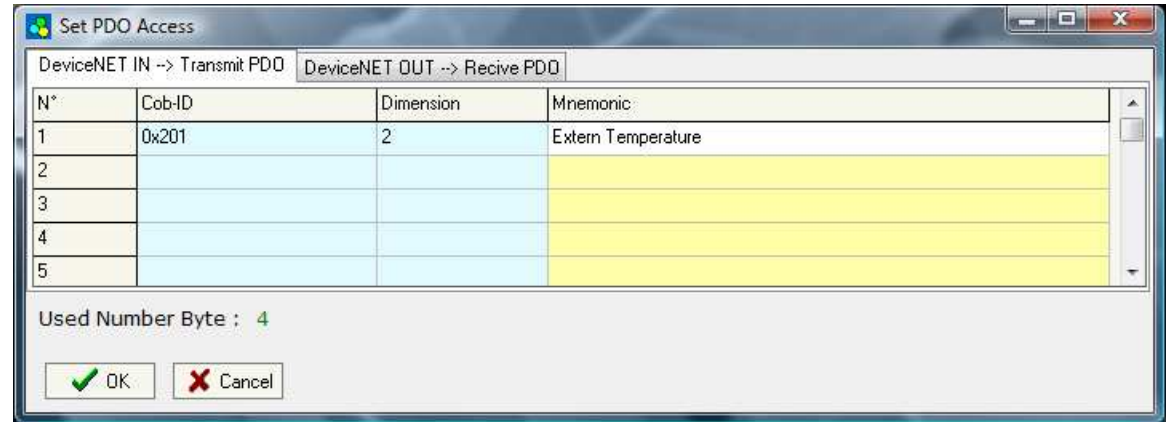- ➢ Strobe Bit;
- ➢ Polling;
- ➢ Cyclic;
- ➢ COS.

Figure 6: Chart of SDO request from Devicenet side.

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SET PDO ACCESS:

The following objects can be defined within the "Set PDO Access" section:

  ➢ Transmit PDO, they take the data from DeviceNet Array;
  ➢ Receive PDO, they put the data in DeviceNet Array.

By pressing the "Set PDO Access" button from the main window for SW67134 (Fig. 3) the window "Set PDO Access" appears (Fig. 7).

The data of the columns have the following meanings:

N°	Cob-ID	Dimension	Mnemonic
1	0x201	2	Extern Temperature
2			
3			
4			
5			

Used Number Byte : 4

Figure 7: "Set PDO Access" window

  ➢ In the field "Cob-ID" insert the Cob-ID of the CANopen PDO;
  ➢ In the field "Dimension" insert the length of PDO;
  ➢ In the field "Mnemonic" you can insert a brief description of the command.

Industrial Electronic Devices

Example 1:

If you want to Write a Transmit PDO with:

- Cob-Id **0x201**;
- Dimensions **2 byte**.

from DeviceNet, you have to define the PDO like showed in Figure 7. Gateway takes PDO Data from the DeviceNet Array. The position in this array depends of how many SDO do you set in the section SDO DeviceNet IN.

The Gateway, in DeviceNet side, is a Slave and in order to read/write the bytes, you can use the following I/O messages:

- Strobe Bit;
- Polling;
- Cyclic;
- COS.

EDS FILE:

By clicking this button, the user can create a valid EDS file for CANopen side.

Industrial Electronic Devices

UPDATE DEVICE:

Section "Update Device":

In order to load the parameters or update the firmware in the gateway, follow these instructions:

➢ Turn OFF the device;
➢ Connect the Null Modem cable from your PC to the Gateway;
➢ Insert the Boot Jumper (For more info see the "Connection scheme" of the gateway);
➢ Turn ON the device;
➢ Check the "BOOT Led". It must blink quickly (more info see the "Connection scheme" of the gateway);
➢ Select the COM port and press the "Execute update firmware" button;
➢ When the operation is finisched turn OFF the device;
➢ Disconnect the Boot Jumper;
➢ Turn ON the device.

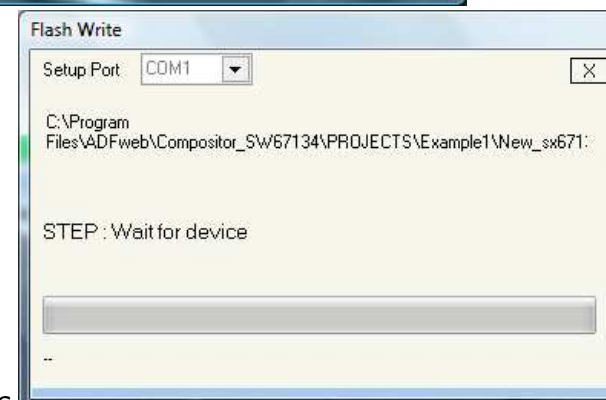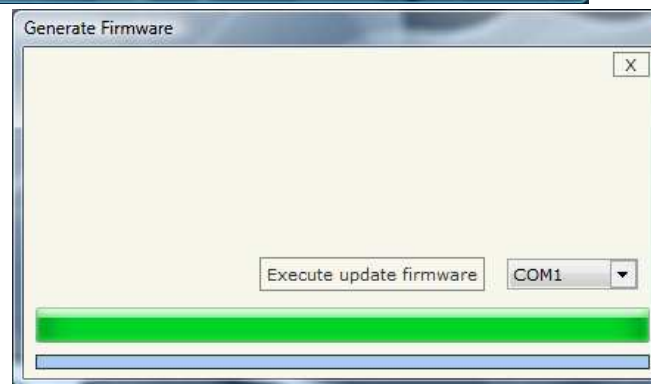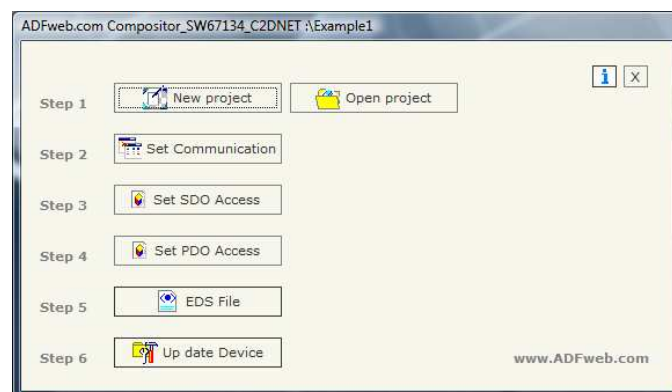At this point the configuration/firmware on the device is correctly updated

Figure 8: "Update device" windows

Industrial Electronic Devices

CHARACTERISTICS OF THE CABLES:

The connection from RS232 socket to a serial port (example one from a personal computer) must be made with a NULL MODEM cable (a serial cable where the pins 2 and 3 are crossed).
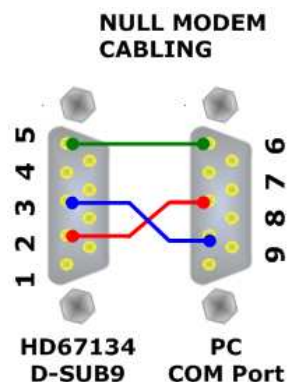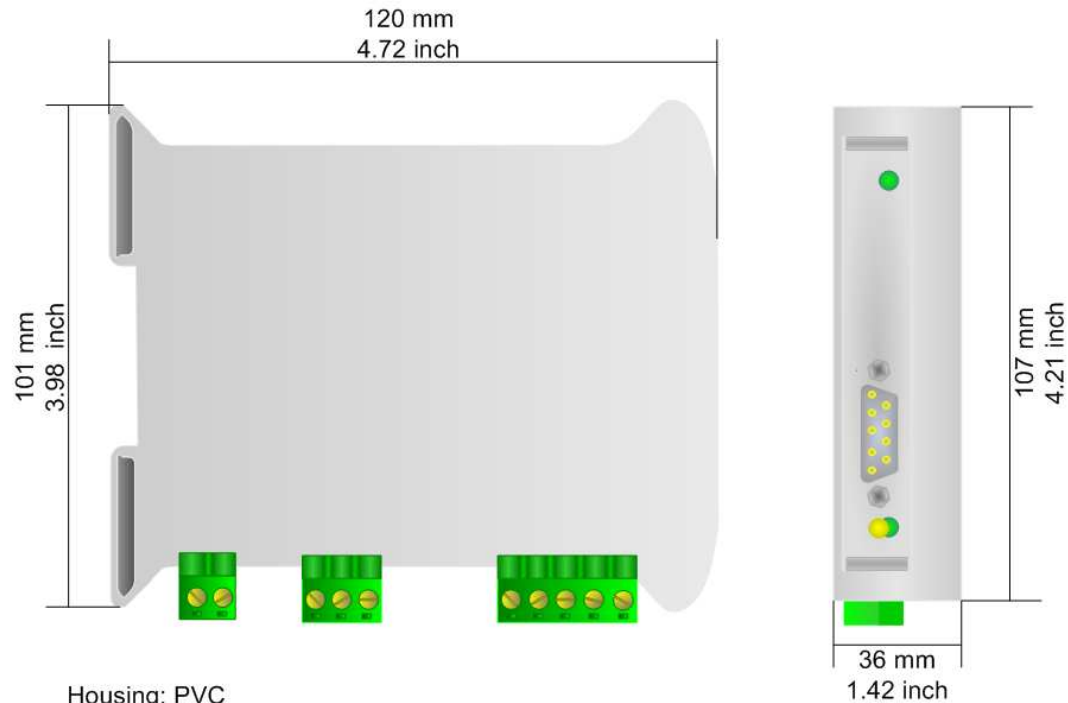It is recommended that the RS232C Cable not exceed 15 meters.

Figure 9: Null modem cabling

CAN BUS CABLE CHARACTERISTICS:

DC parameter:		Resistenza	70 Ohm/m
AC parameters:		Impedance	120 Ohm/m
		Delay	5 ns/m
Length:		Baud Rate [bps]	MAX Length [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

Industrial Electronic Devices

MECHANICAL DIMENSIONS:

Housing: PVC
Weight: 200g (Approx)

Figure 10: Mechanical dimensions scheme

ORDER CODE:

Order Code: **HD67134** - CANopen / DeviceNet Slave - Converter

ACCESSORIES:

Order Code: **AC34107** - Null Modem Cable Fem/Fem DSub 9 Pin 1,5 m

Order Code: **AC34114** - Null Modem Cable Fem/Fem DSub 9 Pin 5 m

Industrial Electronic Devices

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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 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.

Industrial Electronic Devices

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:
1)   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.
2)   Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).
3)   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.

PRODUCTS AND RELATED DOCUMENTS:

Part	Description	URL
HD67117	CAN Repeater/Isolator	www.adfweb.com?Product=HD67117
HD67116	Can Analyzer	www.adfweb.com?Product=HD67116
HD67121	Translate CANopen Gateway	www.adfweb.com?Product=HD67121