

User Manual

Revision 2.002
English

Gateway / Bridge CANopen to Modbus TCP Client

(Order Code: HD67004)

for Website information:

www.adfweb.com?Product=HD67004

for Price information:

www.adfweb.com?Price=HD67004

Benefits and Main Features:

- ▶ Very easy to configure
- ▶ Low cost
- ▶ Rail mountable
- ▶ Wide supply input range
- ▶ Galvanic isolation
- ▶ Industrial temperature range:
-30°C / 70°C (-22°F / 158°F)



HD67004

For other Gateways / Bridges:

CANopen to Modbus / DeviceNET

See also the following links:

- www.adfweb.com?product=HD67001 (Modbus RTU Master)
- www.adfweb.com?product=HD67002 (Modbus RTU Slave)
- www.adfweb.com?Product=HD67505 (Modbus TCP Server)
- www.adfweb.com?product=HD67134 (DeviceNET)

CAN bus to Modbus

See also the following links:

- www.adfweb.com?product=HD67011 (Modbus RTU Master)
- www.adfweb.com?product=HD67012 (Modbus RTU Slave)
- www.adfweb.com?product=HD67014 (Modbus TCP Master)
- www.adfweb.com?product=HD67515 (Modbus TCP Server)

Do you have an your customer protocol?

See the following links:

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

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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.

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 |
|----------|------------|--------|---------|-----------------------|
| 1.000 | 09/07/2004 | Mt | All | First release version |
| 1.001 | 21/06/2007 | Av | All | Revision |
| 1.002 | 22/06/2007 | Av | All | Revision |
| 1.003 | 26/06/2007 | Av | All | Revision |
| 2.000 | 09/07/2007 | Av | All | New document format |
| 2.001 | 20/08/2008 | Av | All | Change figure 2 |
| 2.002 | 18/06/2009 | MI | All | Revision |

WARNING:

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TRADEMARKS:

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CHARACTERISTICS:

The CANopen Modbus TCP Master Gateway allows the following characteristics:

- two-directional information between networks CANopen and ModBUS;
- Electrical isolation between two BUSES;
- SDO , PDO , Nodeguarding;
- Communication Ethernet Modbus;
- Temperature range -30°C to 70°C.

To configure the Gateway, use the available software that runs with Windows, called SW67004. It is downloadable on the site www.adfweb.com and its operation is described in this document.

The CANopen Gateway can be configured up to a maximum 1400 SDO , 2 TPDO and 2 RPDO.

CONNECTION SCHEME:

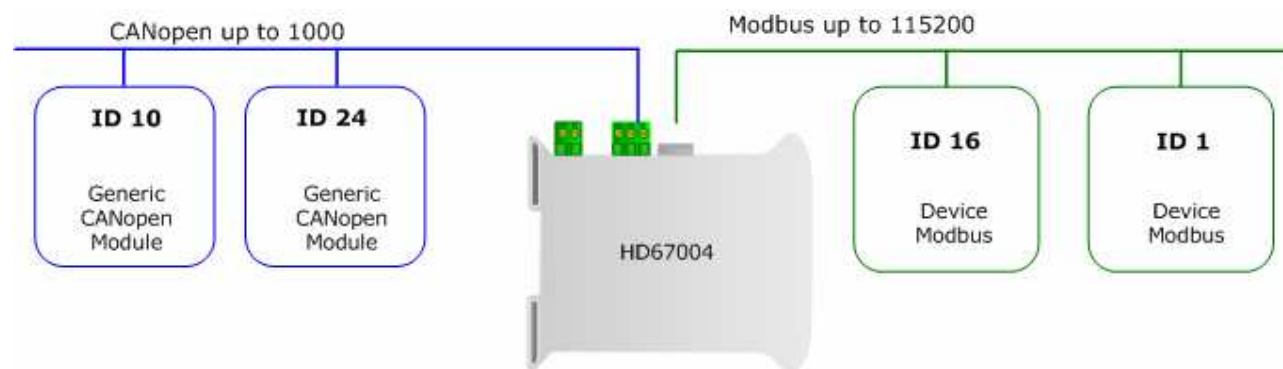


Figure 1: Connection scheme of HD67004 between a CANopen and Modbus TCP

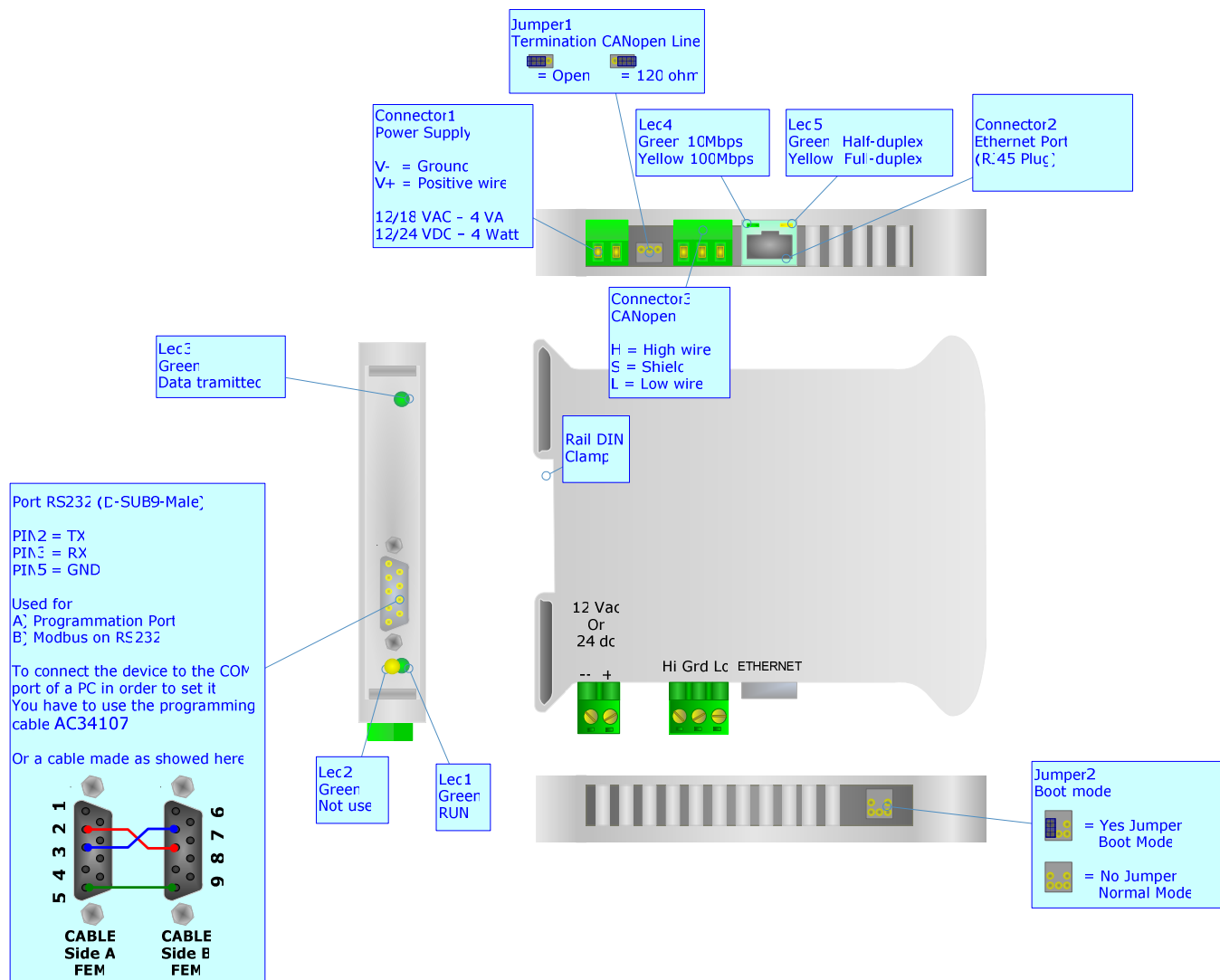


Figure 2: Connection scheme for HD67004

CONFIGURATION:

The "Gateway CANopen to Modbus", allows a CANopen network to communicate with a Modbus network.

You need Compositor SW67004 software on your PC in order to perform the following:

- Define that the CANopen frame of the CANopen are reading from Modbus;
- Define that the CANopen frame of the CANopen are writing from Modbus.

USE OF SW67004 SOFTWARE:

When launching the SW67004 the following window appears
(The SW67004 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).

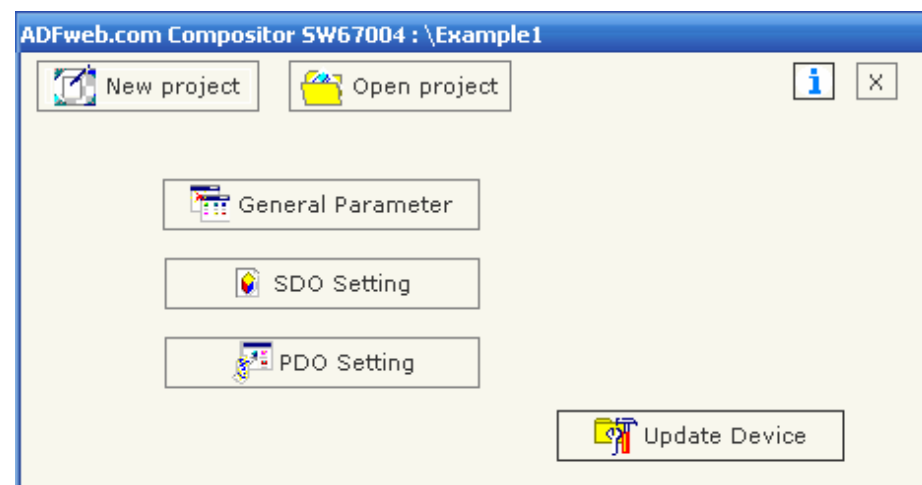


Figure 3: Main window for SW67004

The following explains the function of the buttons:

NEW PROJECT / OPEN PROJECT:

The “New Project” button creates the folder which contains the entire device configuration. A device configuration can also be imported and 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”**
- **“SDO Setting”**
- **“PDO Setting”**

GENERAL PARAMETER:

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

By pressing the “General parameter” button from the main window for SW67004 (Fig. 3) the window “General parameter” appears (Fig. 4):

- In the field “Device ID”, the CANopen address is defined;
- In the field “Baud Rate”, the velocity of the CANopen bus is defined;
- In the field “IP” insert the IP address that you want to give at master Modbus;
- In the field “SubNet Mask”, insert the SubNet Mask;
- In the field “Port”, insert the number of port;
- “Timeout” is the maximum time that the device attends for the answer from the Slave interrogated;
- Data bits and Stop bits, are a serial parameter and they are fixed in order at 8 and 1 for default.

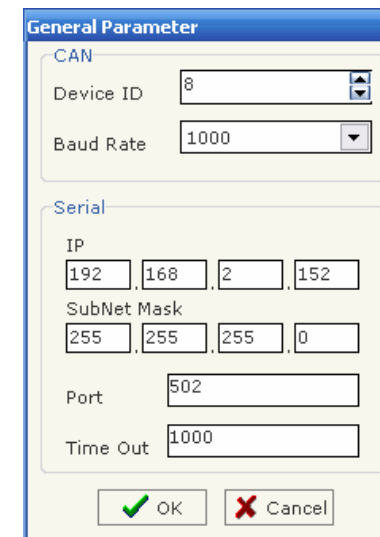


Figure 4: “General parameter” window

SDO SETTING:

The following objects can be define within the section as SDO Setting:

- the SDO of the CANopen give access to a word ModBUS.

By pressing the "SDO Setting" button from the main window for SW67004 (Fig. 3) the window "SDO Setting" appears (Fig. 5):

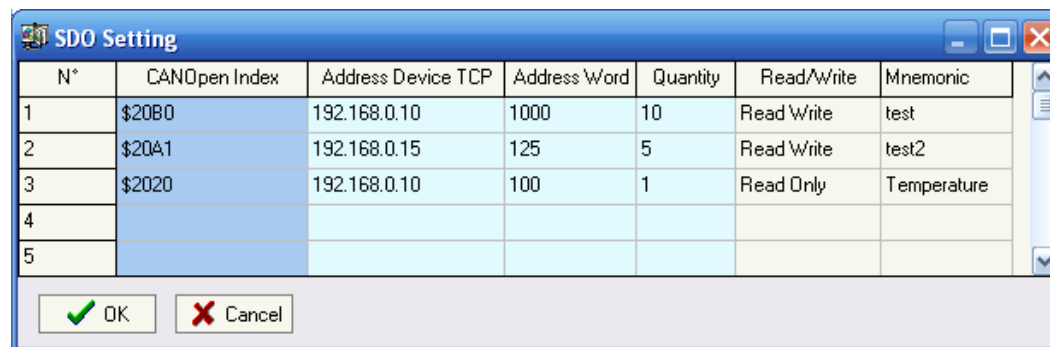


Figure 5: "SDO setting" window

In the right scenario:

- In the field "CANOpen Index", insert the index of the CANopen frame;
- In the field "Address Device TCP", insert the IP of Modbus device that contains the Modbus data;
- In the field "Address word", insert the Modbus word that contains the Modbus data;
- In the field "Quantity", insert the number of consecutive words you configured;
- In the field "Read/Write", is defined if the SDO is in reading or in writing;
- In the field "Mnemonic" it is possible to insert a brief description.

Example 1:

If I want to read data from the ModBUS network but I'm in a CANopen network :

I'll define a SDO index (\$20B0) and this will be associated with an area inside Modbus network (address 1000 inside device with IP Address 192.168.0.10).

For reading word 1000 on device at IP address 192.168.0.10 you have to read SDO index \$20B0 subindex 1.
 For reading word 1001 on device at IP address 192.168.0.10 you have to read SDO index \$20B0 subindex 2.
 Etc.

Field "Quantity" means: number of consecutive location that can be read.

The object \$2100 to 210F and \$2200 to 220F are reserved and cannot be used.

All data will be retrived on event read of specific SDO. The master CANopen need to have a timeout higher than 500 ms. The reply time is the time for a serial inquiry plus the serial response.

PDO SETTING:

The gateway permit to use 2 Receive PDO and 2 Trasmit PDO. All PDO are mapped to specific object for TPDO1 (\$2100,\$2101,\$2102,\$2103). A PDO has 8 bytes lenght and these are divided in 4 words. Each word is linked to a word in serial bus.

Writing an RPDO of gateway, the data will be written into ethernet device to the specific address.

Requesting a TPDO this PDO will contain the data read from ethernet , from a specific device and address.

By pressing the "PDO Setting" button from the main window for SW67004 (Fig. 3) the window "SDO Setting" appears (Fig. 6).

In the right scenario:

- The field "Index" is already compiled and is not possible modify it;
- The field "Description" is already compiled and is not possible modify it;
- In the field "Add Dev TCP" insert the IP address of Modbus device;
- In the field "Add Data" insert the address of Modbus word;
- In the field "Mnemonic" it is possible to insert a brief description.

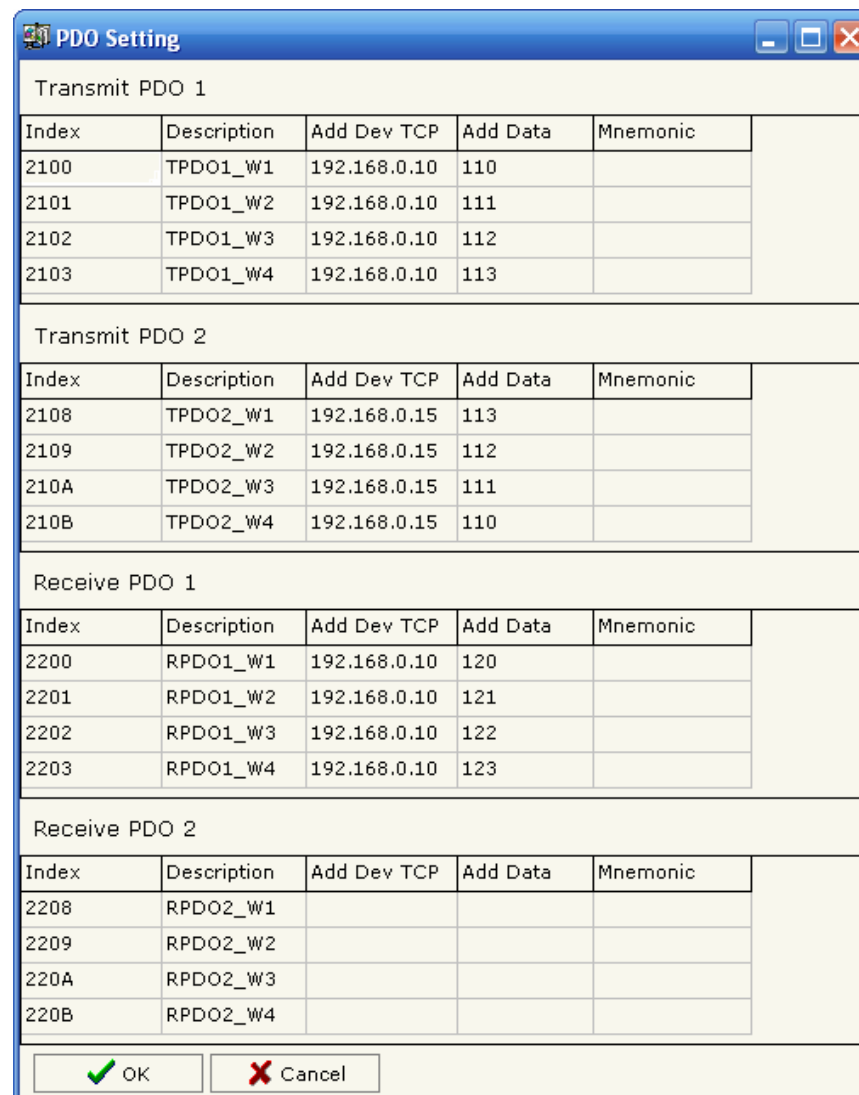


Figure 6: "PDO Setting" window

UPDATE DEVICE:

Section "Update Device":

Insert the boot jumper, see figure 2.

In order to load the parameters after they are set, set the com port you used for update, then you must click the button "execute update firmware" on the principal window.

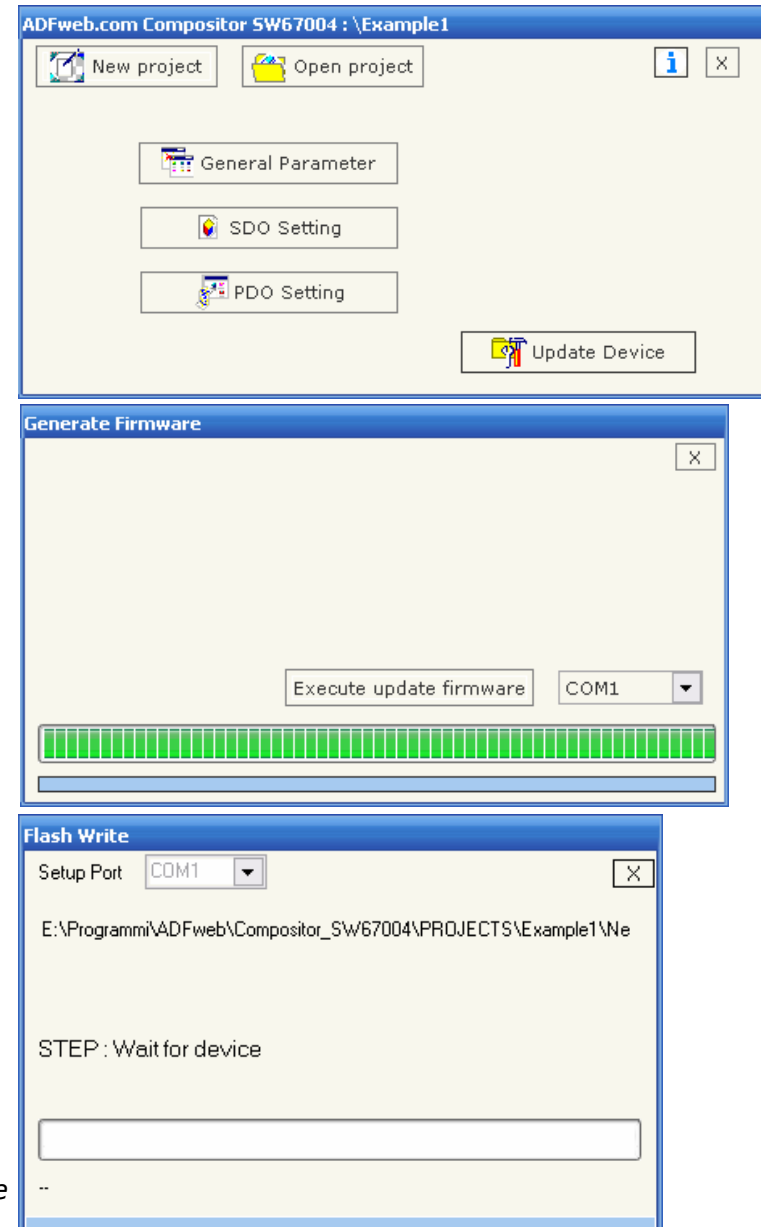


Figure 7: Update device procedure

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.

The connection at Ethernet socket must be with a Ethernet Cable with a RJ45 Plug.

CAN BUS 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 |

MECHANICAL DIMENSIONS:

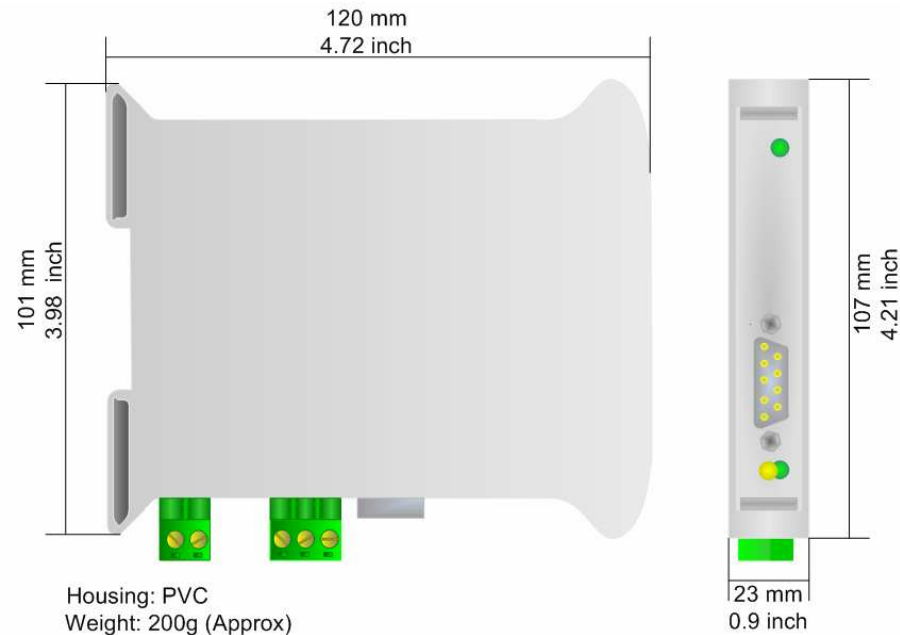


Figure 8: Mechanical dimensions scheme

ORDER CODE:

Order Code: **HD67004** - Gateway – CANopen to Modbus TCP Client

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

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

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

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).

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 |
|---------|---|--|
| HD67121 | Gateway CANopen / CANopen | www.adfweb.com?product=HD67121 |
| HD67001 | Gateway CANopen / Modbus – RTU Master | www.adfweb.com?product=HD67001 |
| HD67505 | Gateway CANopen / Modbus – Ethernet TCP | www.adfweb.com?product=HD67505 |
| HD67134 | Gateway CANopen / DeviceNet | www.adfweb.com?product=HD67134 |
| HD67117 | CAN bus Repeater | www.adfweb.com?product=HD67117 |
| HD67216 | CAN bus Analyzer | www.adfweb.com?product=HD67216 |