

# User Manual

Revision 1.000  
English

## Gateway / Bridge Ethernet from/to DeviceNet Master

(Order Code: HD67154-A1 – HD67154-B2)

for Website information:

[www.adfweb.com?Product=HD67154](http://www.adfweb.com?Product=HD67154)

for Price information:

[www.adfweb.com?Price=HD67154-A1](http://www.adfweb.com?Price=HD67154-A1)

[www.adfweb.com?Price=HD67154-B2](http://www.adfweb.com?Price=HD67154-B2)

### Benefits and Main Features:

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



HD67154-A1



HD67154-B2

For other DeviceNet products see also the following link:

#### DeviceNet Slave from/to

[www.adfweb.com?Product=HD67043](http://www.adfweb.com?Product=HD67043)  
[www.adfweb.com?Product=HD67058](http://www.adfweb.com?Product=HD67058)  
[www.adfweb.com?Product=HD67134](http://www.adfweb.com?Product=HD67134)  
[www.adfweb.com?Product=HD67136](http://www.adfweb.com?Product=HD67136)  
[www.adfweb.com?Product=HD67137](http://www.adfweb.com?Product=HD67137)  
[www.adfweb.com?Product=HD67138](http://www.adfweb.com?Product=HD67138)  
[www.adfweb.com?Product=HD67139](http://www.adfweb.com?Product=HD67139)  
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[www.adfweb.com?Product=HD67141](http://www.adfweb.com?Product=HD67141)  
[www.adfweb.com?Product=HD67235](http://www.adfweb.com?Product=HD67235)  
[www.adfweb.com?Product=HD67554](http://www.adfweb.com?Product=HD67554)

(Ethernet)  
(M-Bus)  
(CANopen SDO Client)  
(CANopen SDO Server)  
(J1939)  
(Modbus Slave)  
(Modbus TCP Client)  
(Modbus TCP Server)  
(Modbus Master)  
(CAN)  
(PROFIBUS)

#### DeviceNet Master from/to

[www.adfweb.com?Product=HD67151](http://www.adfweb.com?Product=HD67151)  
[www.adfweb.com?Product=HD67152](http://www.adfweb.com?Product=HD67152)  
[www.adfweb.com?Product=HD67153](http://www.adfweb.com?Product=HD67153)  
[www.adfweb.com?Product=HD67555](http://www.adfweb.com?Product=HD67555)

(Modbus Slave)  
(Modbus TCP Server)  
(CANopen)  
(PROFIBUS)

Do you have an your customer protocol? See the following link:

[www.adfweb.com?Product=HD67003](http://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](http://www.adfweb.com?Cmd=helpme)

## INDEX:

	Page
INDEX	2
UPDATED DOCUMENTATION	2
REVISION LIST	2
WARNING	2
TRADEMARKS	2
CONNECTION SCHEME	3
CHARACTERISTICS	5
CONFIGURATION	5
POWER SUPPLY	5
USE OF COMPOSITOR SW67154	6
NEW PROJECT / OPEN PROJECT	6
SET COMMUNICATION	7
DEVICENET NETWORK	8
UPDATE DEVICE	9
CHARACTERISTICS OF THE CABLES	10
ETHERNET PROTOCOL	11
MECHANICAL DIMENSIONS	13
ORDER CODE	13
ACCESSORIES	13
WARRANTIES AND TECHNICAL SUPPORT	14
RETURN POLICY	14
PRODUCTS AND RELATED DOCUMENTS	14

## 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/](http://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/](http://www.adfweb.com/download/)

## REVISION LIST:

Revision	Date	Author	Chapter	Description
1.000	23/04/2010	FI	All	First release version

## WARNING:

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## CONNECTION SCHEME:

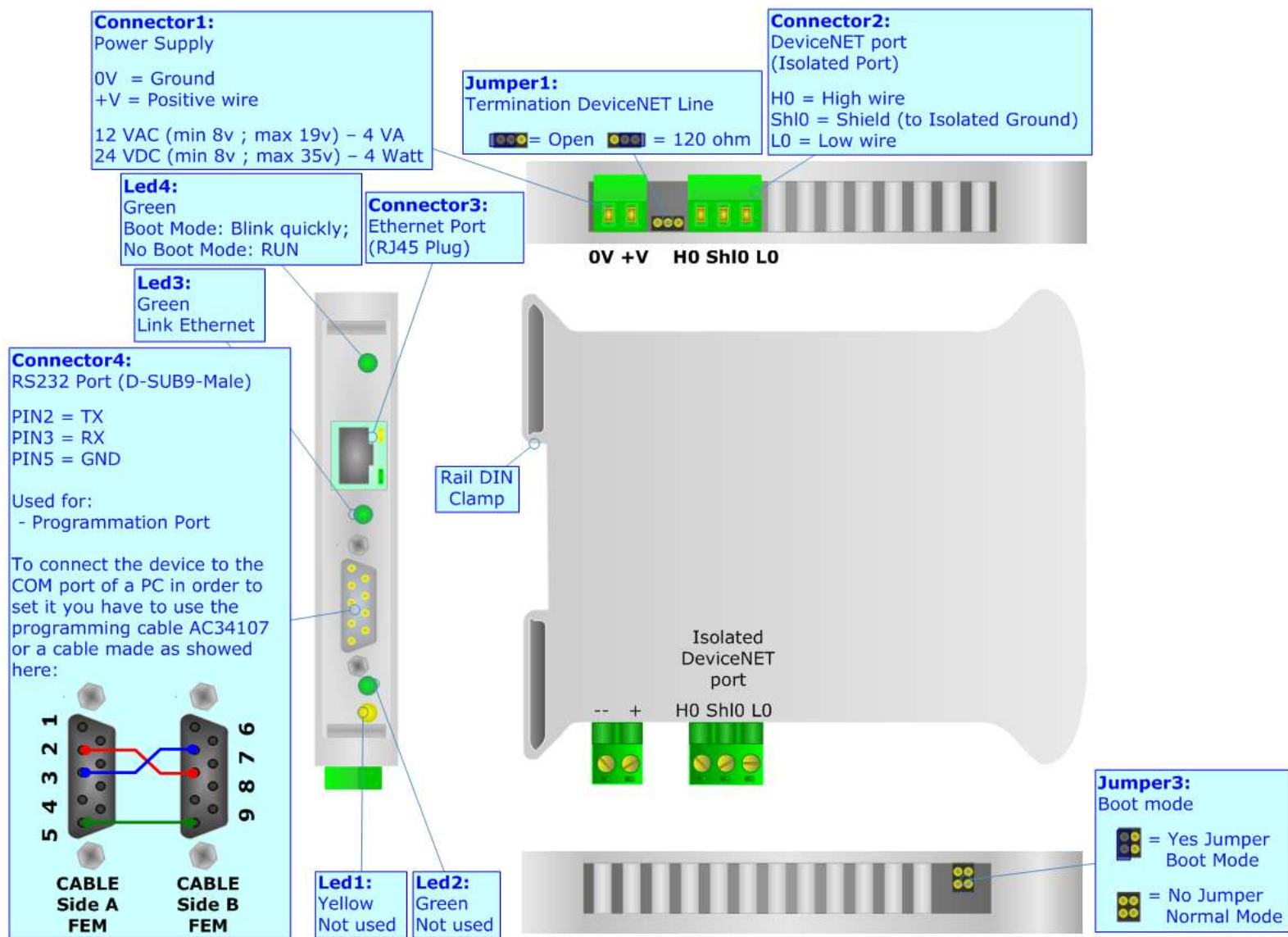


Figure 1: Connection scheme for HD67154-A1

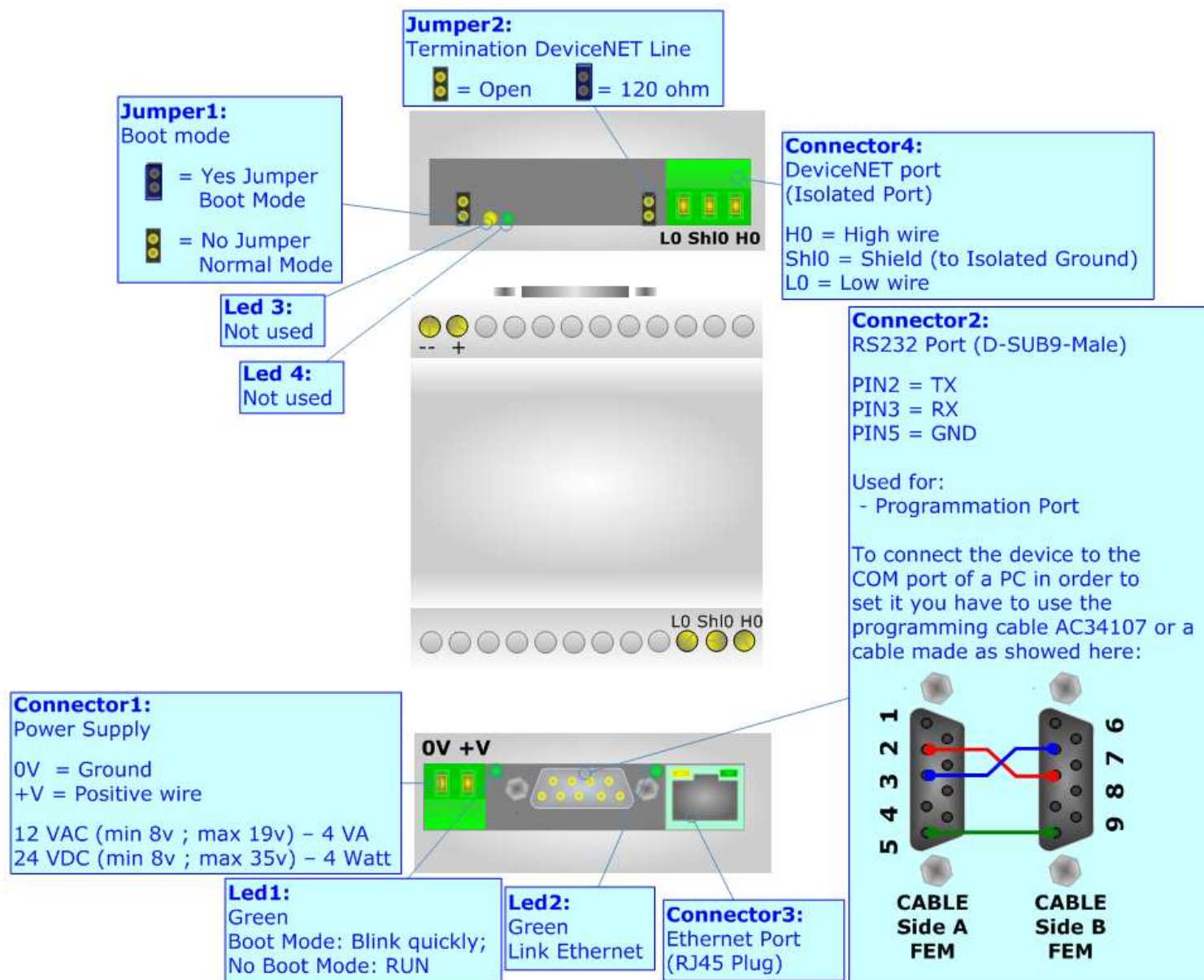


Figure 2: Connection scheme for HD67154-B2

## CHARACTERISTICS:

The Ethernet from/to DeviceNet Master Gateway allows the following characteristics:

- Two-directional information between Ethernet and DeviceNet bus;
- Electrical isolation between two buses;
- Power supply of 8...19 VAC 4VA or 8...35 VDC 4W;
- 35mm Rail DIN mounting;
- Temperature range -30°C to 70°C.

## CONFIGURATION:

You need Compositor SW67154 software on your PC in order to perform the following:

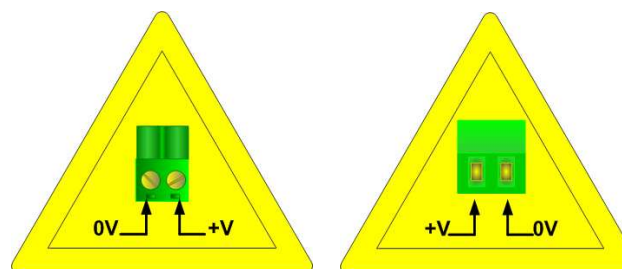
- Define the parameters of Ethernet;
- Define the parameters of DeviceNet;
- Define the DeviceNet Slave devices ;
- Update the Firmware and/or the Project.

## POWER SUPPLY:

Recommended Power Supply	
VDC	VAC
24	12

VDC		VAC	
Vmin	Vmax	Vmin	Vmax
8v	35v	8v	19v

**Caution: Not reverse the polarity power.**



**USE OF COMPOSITOR SW67154:**

To configure the Gateway, use the available software that runs with Windows, called SW67154. It is downloadable on the site [www.adfweb.com](http://www.adfweb.com) and its operation is described in this document.

When launching the SW67154 the right window appears (Fig. 3).



Figure 3: Main window for SW67154

**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 Ethernet to DeviceNet Master 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".



**SET COMMUNICATION:**

This section defines the fundamental communication parameters of two buses Ethernet and DeviceNet.

By pressing the "Set Communication" button from the main window for SW67154 (Fig. 3) the "SET COMMUNICATION" window appears (Fig. 4).

This window is divided in two sections, one for the DeviceNet and the other for the Ethernet.

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

- In the "ID Dev." field the Gateway address of the DeviceNet is defined.
- In the "Baud rate" field the DeviceNet baud rate is defined.

The means of the fields for "Ethernet" are:

- In the field "IP Address" insert the IP address;
- In the field "Subnet Mask" insert the Subnet Mask;
- If the field "Gateway" is checked in the fields under it is possible to insert the IP address used for going out to the net;
- In the field "Port" insert the number of the port;
- If the field "TCP" is checked, the Ethernet protocol used is the TCP, otherwise if the field "UDP" is checked the Ethernet protocol used is the UDP.

The screenshot shows a dialog box titled "SET COMMUNICATION". It is divided into two main sections: "DeviceNet Master" and "Ethernet".

**DeviceNet Master section:**

- "ID Dev.": A text box containing the value "10".
- "Baud rate": A dropdown menu showing "500K".

**Ethernet section:**

- "IP Address": Four text boxes containing "192", "168", "0", and "10".
- "Subnet Mask": Four text boxes containing "255", "255", "255", and "0".
- "Gateway": A checkbox that is checked, followed by four text boxes containing "192", "168", "0", and "1".
- "Port": A text box containing "502".
- Protocol selection: Two radio buttons, "TCP" (which is selected) and "UDP".

At the bottom of the dialog box are two buttons: "OK" (with a green checkmark icon) and "Cancel" (with a red X icon).

Figure 4: "Set Communication" window

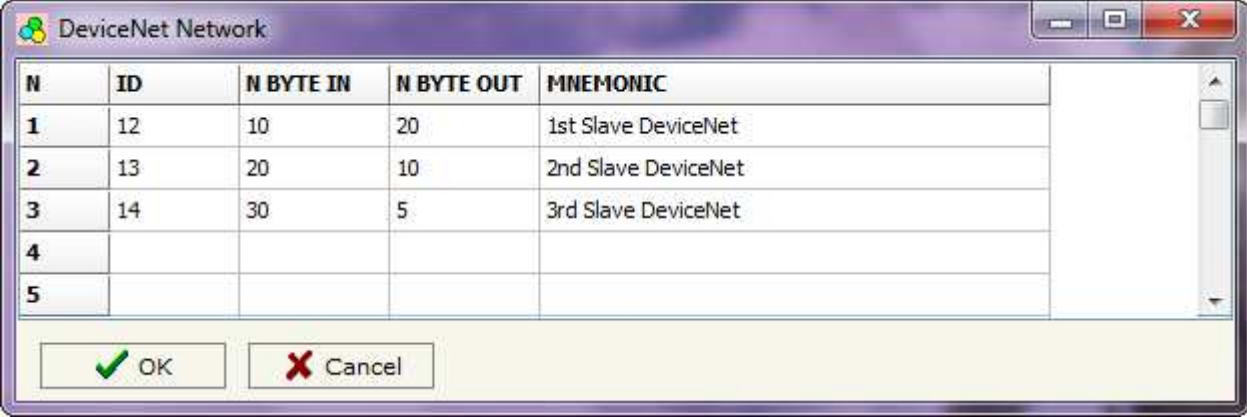
## DEVICENET NETWORK:

By pressing the "DeviceNet Network" button from the main window for SW67154 (Fig. 3) the window "DeviceNet Network" appears (Fig. 5).

Here it is possible to define the Slaves DeviceNet Devices with their ID, number of Input and number of Output bytes.

The data of the columns have the following meanings:

- In the field "ID" the ID of a slave DeviceNet device is defined;
- In the field "N BYTE IN" the number of input byte of the slave DeviceNet is defined;
- In the field "N BYTE OUT" the number of output byte of the slave DeviceNet is defined;
- In the field "Mnemonic" is possible to insert a description. It isn't necessary compiling this field, is only a label.



N	ID	N BYTE IN	N BYTE OUT	MNEMONIC
1	12	10	20	1st Slave DeviceNet
2	13	20	10	2nd Slave DeviceNet
3	14	30	5	3rd Slave DeviceNet
4				
5				

OK Cancel

Figure 5: "Set Access" window



## UPDATE DEVICE:

### Section "Update Firmware" (Fig. 6):

In order to load the parameters or update the firmware in the device, 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 Fig. 1 or Fig. 2);
- Select the COM port and press the "Connect" button;
- Turn on the device;
- Check the BOOT Led. It must blink quickly (For more info see Fig. 1 or Fig. 2);
- 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;
- Disconnect the Boot jumper;
- Disconnect the RS232 Cable;
- Turn on the device.

Figure 6: "Update Device" windows

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



#### Note:

When you install a new version of the software it is better if the first time you do the update of the Firmware in the HD67154-xx device.

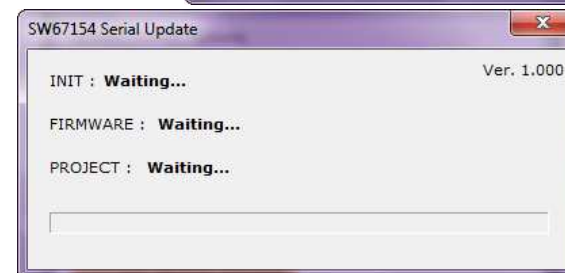


#### Warning:

If the Fig. 7 appears when you try to do the Update before require assistance try these points:

- Check if the serial COM port selected is the correct one;
- Check if the serial is connected between the PC and the device;
- Try to repeat the operations for the updating;
- If you are using a dongle try with a native COM port or change the dongle;
- Try with another PC.

Figure 7: "Protection" window



**CHARACTERISTICS OF THE CABLES:****ETHERNET:**

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

**RS232:**

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.

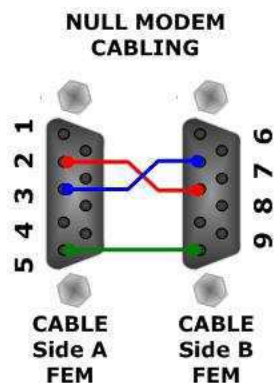


Figure 8: Null modem cabling

## ETHERNET PROTOCOL:

This protocol has got two functions for write and read frames. These routines can use both the UDP protocol and the TCP by setting the parameter wanted with the Compositor SW67154.

### READ FUNCTION:

The request include the following byte:

Byte Number	Description
1	Type of Operation (Read = 1)
2	ID of the Slave DeviceNet to Read
3	Starting Address Hi
4	Starting Address Lo
5	Number of Byte to Read Hi
6	Number of Byte to Read Lo

The response includes the following byte:

Byte Number	Description
1	Read Error Byte
2÷n+1	Data Read

n=Number of Byte to Read

The "Read Error Byte" (Byte 1) can have three values:

- 0x00: No error;
- 0x01: Starting Address doesn't exist;
- 0x02: Too many Data to Read.

If the "Read Error Byte" is 1 or 2 there aren't the data after the first byte (frame has got only one byte).

Example:

Slave DeviceNet: 13 ; DeviceNet OUT: 10 ; DeviceNet OUT Array (0...9): \$46 \$47 \$48 \$49 **\$50 \$51 \$52 \$53 \$54 \$55**

REQ: \$01 \$0D \$00 \$04 \$00 \$06

RES: \$00 **\$50 \$51 \$52 \$53 \$54 \$55**

In blue you can see the requested data. There is an offset so first byte of the DeviceNet array is the 0 and not 1.

### **WRITE FUNCTION:**

The request include the following byte:

Byte Number	Description
1	Type of Operation (Write = 2)
2	ID of the Slave DeviceNet to Write
3	Starting Address Hi
4	Starting Address Lo
5	Number of Byte to Write Hi
6	Number of Byte to Write Lo
7÷n+6	Data Write

n=Number of Byte to Write

The response includes the following byte:

Byte Number	Description
1	Write Status Byte

The “Write Status Byte” (Byte 1) can have three values:

- 0x00: No error, operation completed with success;
- 0x01: Starting Address doesn't exist;
- 0x02: Too many Data to Write.

Example:

Slave DeviceNet: 13 ; DeviceNet IN: 20 ;

DeviceNet IN Array (0...19): \$65 \$64 \$63 \$62 \$61 \$60 \$59 \$58 \$57 \$56 \$55 \$54 \$53 \$52 \$51 \$50 \$49 \$48 \$47 \$46

REQ: \$01 \$0E \$00 \$02 \$00 \$05 \$30 \$31 \$32 \$33 \$34

RES: \$00

After that the New DeviceNet IN Array is: \$65 \$64 **\$30 \$31 \$32 \$33 \$34** \$58 \$57 \$56 \$55 \$54 \$53 \$52 \$51 \$50 \$49 \$48 \$47 \$46

In blue you can find the data changed.

### MECHANICAL DIMENSIONS:

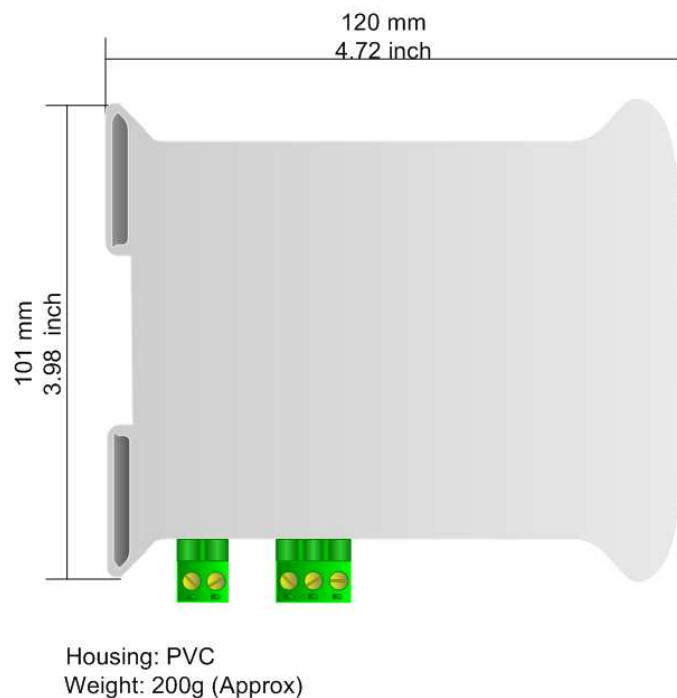


Figure 11: Mechanical dimensions scheme for HD67154-A1

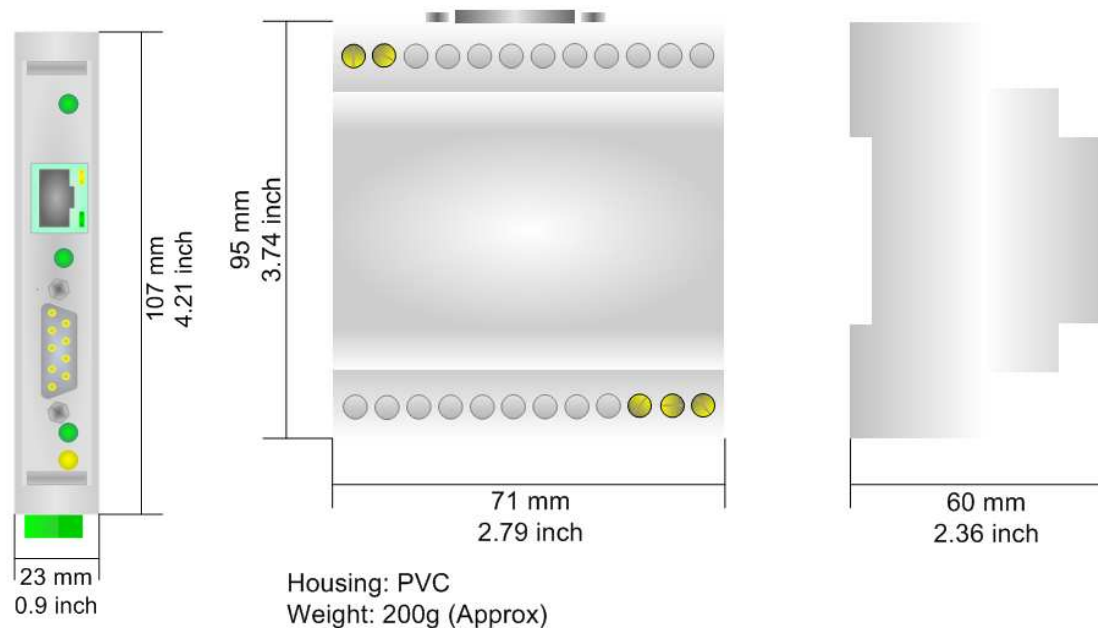


Figure 12: Mechanical dimensions scheme for HD67154-B2

### ORDER CODE:

Order Code: **HD67154-A1** - Gateway – Ethernet from/to DeviceNet Master

Order Code: **HD67154-B2** - Gateway – Ethernet from/to DeviceNet Master

### 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

**WARRANTIES AND TECHNICAL SUPPORT:**

For fast and easy technical support for your ADFweb.com srl products, consult our internet support at [www.adfweb.com](http://www.adfweb.com). Otherwise contact us at the address [support@adfweb.com](mailto: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](http://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	<a href="http://www.adfweb.com?Product=HD67117">www.adfweb.com?Product=HD67117</a>
HD67216	Can Analyzer	<a href="http://www.adfweb.com?Product=HD67216">www.adfweb.com?Product=HD67216</a>
HD67221	Translate CAN bus Gateway	<a href="http://www.adfweb.com?Product=HD67221">www.adfweb.com?Product=HD67221</a>