ADFweb

Industrial Electronic Devices

User Manual

Revision 1.011
English

M-Bus Master / DeviceNet Slave - Converter

(Order Code: HD67058-B2-20, HD67058-B2-40,
HD67058-B2-80, HD67058-B2-160,
HD67058-B2-250)

for Website information:
www.adfweb.com?Product=HD67058-B2
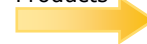
for Price information:
www.adfweb.com?Price=HD67058-B2-20
www.adfweb.com?Price=HD67058-B2-40
www.adfweb.com?Price=HD67058-B2-80
www.adfweb.com?Price=HD67058-B2-160
www.adfweb.com?Price=HD67058-B2-250

Benefits and Main Features:

► Very easy to configure

► Electrical isolation

► Industrial temperature range:

-40°C / 70°C (-40°F / 158°F)

Similiar Products

For other M-Bus products see also the following link:

Converter M-Bus to
www.adfweb.com?Product=HD67021   **(RS232)**
www.adfweb.com?Product=HD67022   **(RS485)**
www.adfweb.com?Product=HD67030   **(Ethernet)**

Gateway M-Bus / Modbus
www.adfweb.com?Product=HD67029M-232
www.adfweb.com?Product=HD67029M-485

Analyzer & Scanner M-Bus
www.adfweb.com?Product=HD67031

Extender and Repeater, M-Bus
www.adfweb.com?Product=HD67032

Gateway M-Bus / Modbus TCP
www.adfweb.com?Product=HD67044M

Gateway M-Bus / PROFIBUS
www.adfweb.com?Product=HD67053M

Concentrator M-Bus
www.adfweb.com?Product=HD67054M

Gateway M-Bus Slave / Modbus master
www.adfweb.com?Product=HD67059M-232

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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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.

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	15/04/2010	Fl	All	First release version
1.010	05/09/2011	Fl	All	Software changed (v1.000)
1.011	18/02/2013	Nt	All	Added new chapters

WARNING:

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Industrial Electronic Devices

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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CONNECTION SCHEME:

Led4:
Green
Scan State

Connector4:
Port RS232 (D-SUB9-Male)

PIN2 = RX
PIN3 = TX
PIN5 = GND

Used for:
- Programmation Port

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:

Power
Supply
Connector

M-Bus
Connector

DeviceNet
Connector

RS232
Connector

CABLE
Side A
FEM

CABLE
Side B
FEM

Led1:
Green
Device State

Connector1:
Power Supply

0V = Ground
+V = Positive wire

V AC: min 15V ; max 21V
V DC: min 18V ; max 35V

0V +V

HO ShI0 L0

Connector3:
DeviceNet

H0 = High wire
ShI0 = Shield (to Isolated Ground)
L0 = Low wire

Led3:
Green
ID requested

Dip-Switch A:
-Dip1 – Not Used
-Dip2 – Functioning Mode

= Boot Mode   = Normal Mode

Led2:
Green
M-Bus State

Connector2:
Unpolarized
M-Bus

Dip-Switch B:
-Dip1 – Termination DeviceNet Line
-Dip2 – Not Used

= Open   = 220 ohm

Figure 1: Connection scheme for HD67058-B2-xxx

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CHARACTERISTICS:

The HD67058-B2-xxx is a Gateway M-Bus master to DeviceNet Slave.

It allows the following characteristics:
- Electrical isolation between DeviceNet and M-Bus;
- Baud Rate and Parity changeable with software;
- Mountable on 35mm Rail DIN;
- Power Supply 15…21V AC or 18…35V DC;
- Temperature range -40°C to 70°C.

At the Gateway can be connected up to 250 standard M-Bus devices. This number depends of the code expressed by the xxx number:
- HD67058-B2-20 support up to 20 M-Bus devices;
- HD67058-B2-40 support up to 40 M-Bus devices;
- HD67058-B2-80 support up to 80 M-Bus devices;
- HD67058-B2-160 support up to 160 M-Bus devices;
- HD67058-B2-250 support up to 250 M-Bus devices.

⚠️ In the case of HD67058-B2-160 the device must be mounted on 35mm DIN rail which is horizontally mounted on a wall or cabinet back-plate. To avoid obstructions to the airflow around the unit it is recommended to not cover the paths of air.

⚠️ In the case of HD67058-B2-250 the device must be mounted on 35mm DIN rail which is horizontally mounted on a wall or cabinet back-plate. These units have a fan in the top of the enclosure. To avoid obstructions to the airflow around the unit it is recommended to not cover the paths of air. Take care to not cover the fan. It is recommended to put the device into a ventilated cabinet.

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POWER SUPPLY:

The devices can be powered at 15…21V AC and 18…35V DC. The consumption depends to the code of the device. For more details see the two tables below.

VAC $\sim$		VDC $=$	
Vmin	**Vmax**	**Vmin**	**Vmax**
15V	**21V**	**18V**	**35V**

Consumption at 24V DC:

Device	No Load [W/VA]	Full Load [W/VA]*
HD67058-B2-20		4
HD67058-B2-40		5
HD67058-B2-80	3.5	8
HD67058-B2-160		14
HD67058-B2-250		30

* This value is with all the Slave M-Bus devices of the code (20, 40, 80, 160, 250) connected to the line

Caution: Not reverse the polarity power

Connector1:
Power Supply

0V = Ground
+V = Positive wire

V AC: min 15V ; max 21V
V DC: min 18V ; max 35V
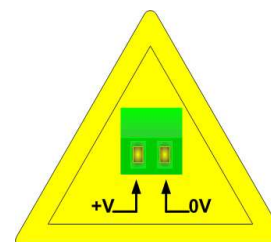
HD67058-B2-xxx

FUNCTION MODES:

The device has got two functions mode depending of the position of the Dip2 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 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).

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LEDS:

The device has got four green 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	Slow flashing	Off
2: M-Bus State	**Off:** Idle State. **Fast flashing:** Data receiving from slave M-Bus	Off
3: ID requested *(only if "Single Slave Mode" is active)*	**On:** The requested ID isn't valid **Off:** The requested ID is valid	Off
4: Scan State	A slave hasn't replied to the request	Fast flashing
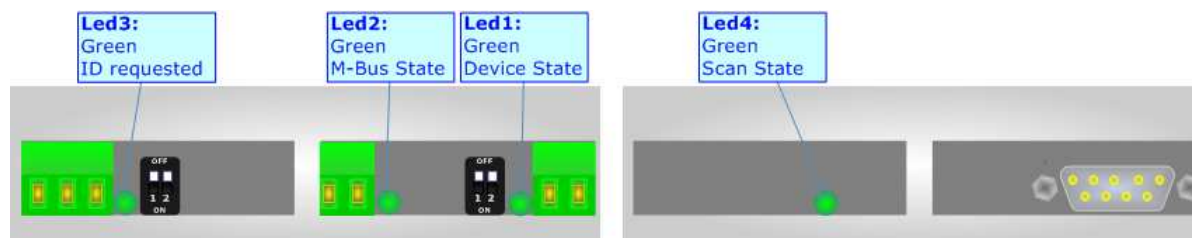
CONFIGURATION:

You need Compositor SW67058M software on your PC in order to perform the following:
+ Define the parameter of DeviceNet line;
+ Define the parameter of M-Bus line;
+ Define which M-Bus variables are readable on DeviceNet;
+ Update the device.

USE OF COMPOSITOR SW67058:

To configure the Gateway, use the available software that runs with Windows, called SW67058. 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 (MS 2000, XP, Vista, Seven).

When launching the SW67058 the right window appears (Fig. 2).
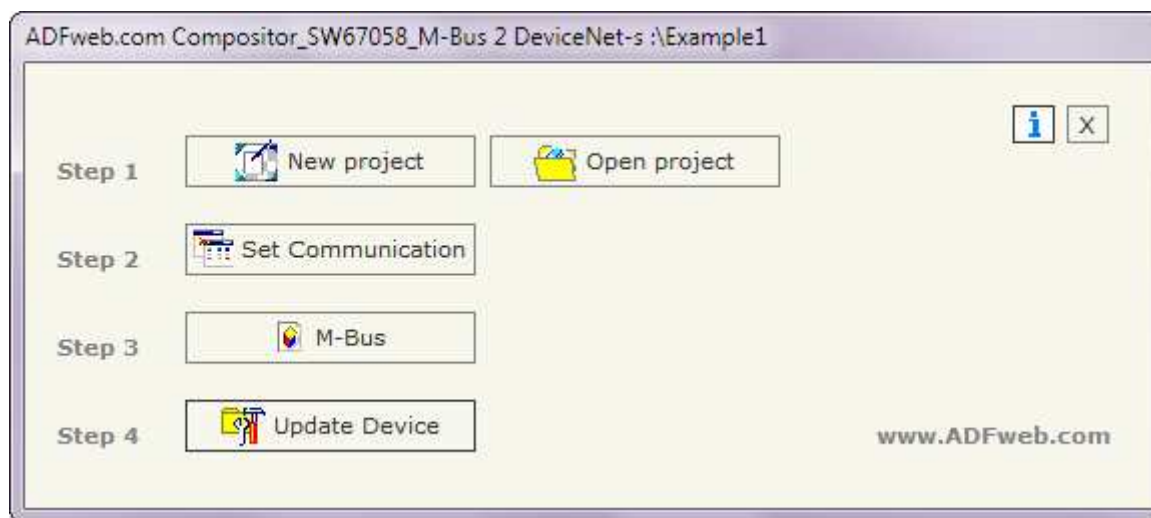
Figure 2: Main window for SW67058

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 M-Bus to DeviceNet 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 sections of the software:

  - *"Set Communication"*;
  - *"M-Bus"*;
  - "Update Device".

SET COMMUNICATION:

This section define the fundamental communication parameters of two buses, DeviceNet and M-Bus.

By Pressing the "**Set Communication**" button from the main window for SW67058 (Fig. 2) the window "Set Communication" appears (Fig. 3).
The window is divided in two sections, one for the DeviceNet and the other for the M-Bus.

The means of the fields for DeviceNet are:
- In the field "**ID Dev.**" the ID for the DeviceNet side is defined;
- In the field "**Baudrate**" it is possible to select the baudrate of DeviceNet line;
- In the field "**N Byte OUT**" insert the number of output byte of DeviceNet.

The means of the fields for M-Bus are:
- In the field "**Baudrate**" it is possible to select the baudrate of the M-Bus line;
- In the field "**Parity**" it is possible to select the parity of the line;
- If the field "**Cyclic Delay**" insert the time (expressed in seconds) between two scans.

Figure 3: "Set Communication" window

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M-BUS:

By Pressing the "**M-Bus**" button from the main window for SW67053 (Fig. 2) the window "M-Bus Network" appears (Fig. 4).

SECTION NODES:
In the section "Nodes" it is possible to create the nodes of M-Bus line. In order to create a new node it is necessary to select which address use, selecting "Primary ID" or "Secondary ID", to makes the requests and then insert the "Primary Address" (from 1 to 250) or the "Secondary Address" (from 0 to 99999999) of M-Bus device in the field "**ID Node M-Bus**". In the field "**Description**" it is possible to write a short description of the node.
If the field "**Node State**" is checked the gateway reserve one byte at the starting of PROFIBUS IN data array and saves the status of the counter.
If the field "**Identification Number**" is checked the gateway reserve four bytes at the starting of PROFIBUS IN data array and saves the Secondary Address of the device.
In the field "**Swap Identification Num.**" it is possible to select the swap mode of the Identification Number. If swap isn't necessary you have to select "None"; otherwise see the section "Swap Identification" (page 17) of this document for select the swap mode.
If the field "**Convert BCD in Integer Identification Num.**" is checked the gateway converts the Identification Number that is normally expressed in BCD in a Integer Number and saves the number in the reserved positions.
If the field "**Send SND_NKE**" is checked, the Gateway send the "SND_NKE" frame to start the communication.
In the field "**Send Reset App.**" Is checked the gateway send the "Application Reset" command to the slave.
In the field "**Variables List**" it is possible to select which type of variables definition to use. If is selected "By Type" it is necessary to fill all fields, in the section Variables, with the correct values; otherwise if "By Position" is selected you can insert the progressive number of the variable that you need (page 13 for more information).
After that, pressing the "*ADD NODE*" button, a new node appears in the left side of the window.
In order to modify a created node it is necessary to select the desired node, change the wrong items and then press the "*MODIFY NODE*" button.
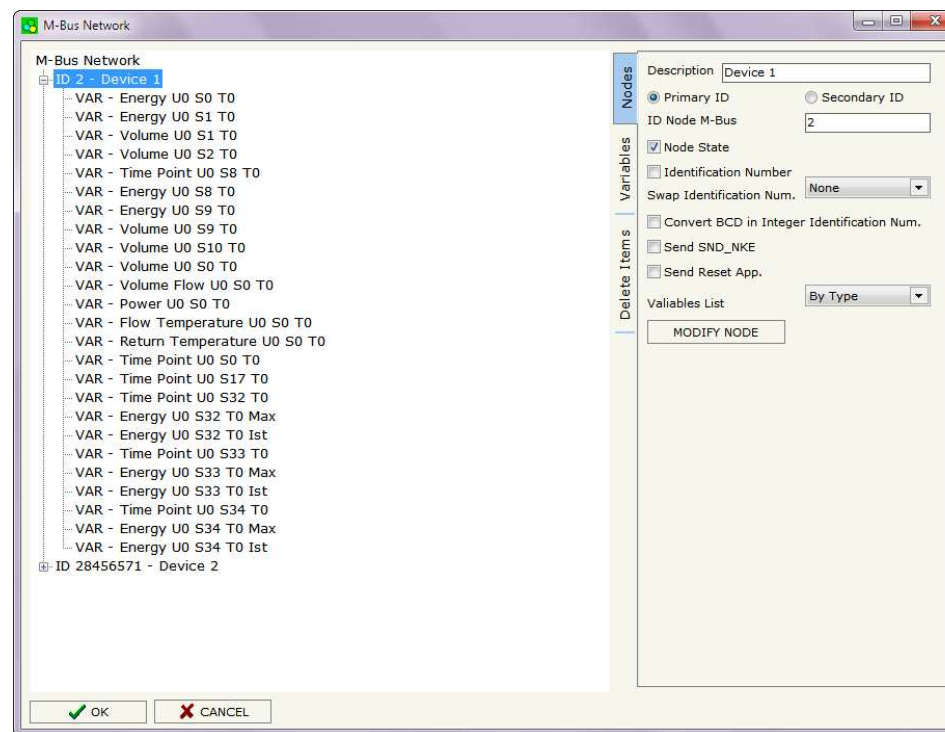
Figure 4: "M-Bus Network" window

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SECTION VARIABLES (BY TYPE):

Selecting the desired node it is possible to add a variable. In order to create a new variable it is necessary to fill these items:

➔ To use the created variable the field "**Enable Variable**" must be checked. If you have created a variable but for the moment it is unused it is possible to uncheck the field "Enable Variable" without delete it;

➔ In the field "**Description**" it is possible to write a description of the variable (it isn't a necessary information, it helps the readability of the tree of network);

➔ The field "**Type of Data**" is used to select the unit of measure;

➔ In the field "**VIF ASCII String**" insert the string of VIF. It is possible to use this field only if the "Type of Data" is "VIF is in ASCII";

➔ In the field "**Function Field**" it is necessary to select the type of data;

➔ The field "**Dimension**" is used to select the dimension of the variable (8, 16, 24, 32, 32 real, 48, 64 bit);

➔ In the field "**Length(Variable Len)**" insert the length of the data in the case of the dimension is "Variable Length";

➔ In the field "**Unit**" if it is necessary it is possible to select the unit of that variable. The Unit is used for indicates from which device the data come;

➔ If the field "**Scale**" is checked the software reserved a byte in the PROFIBUS and in this field it write the Scale of measure. If the scale is not necessary, you can unselect it;

➔ In the field "**Storage Number**" if it is necessary it is possible to insert the value of storage counter of that variable. With this field the slave can indicate and transmit various stored counter states or historical values, in the order in which they occur;

➔ In the field "**Tariff**" if it is necessary it is possible to insert the value of the tariff of that variable. The Tariff is used for indicates from which device the data come;

➔ In the field "**VIFE**" it is possible to select a sub-type of "Type of Data";

➔ If the field "**From BCD to Integer**" is checked the Gateway converts the BCD value of variable in Integer format. This happens only if the variable is in BCD format; if it isn't nothing changes;

➔ If the field "**SWAP**" is checked the byte of data of that variable are swapped. Example: from 0x01020304 to 0x04030201;

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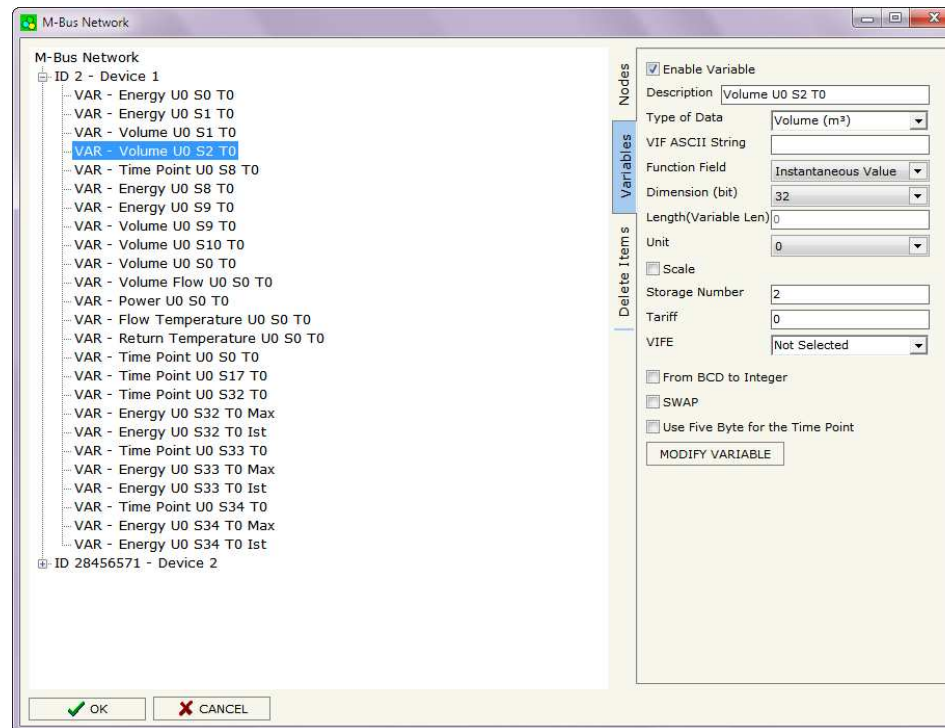
+ If the field "**Use Five Bytes for the Time Point**" and the "Type of Data" is "Time Point" it is possible to read the information of Year, Month, Day, Hour, Minutes on five consecutive positions of the array without decoding (if not selected the values are the same of the reply of the slave device, so coded with a determinate structure (page 19 for more information)).

Having completed these fields, to add the variable the button "*ADD VARIABLE*" must be pressed.

In order to modify a created variable it is necessary to select the desired variable, change the wrong items and then press the "*MODIFY VARIABLE*" button.

SECTION VARIABLES (BY POSITION):

Selecting the desired node it is possible to add a variable. In order to create a new variable it is necessary to fill these items:

+ To use the created variable the field "**Enable Variable**" must be checked. If you have created a variable but for the moment it is unused it is possible to uncheck the field "Enable Variable" without delete it;
+ In the field "**Description**" it is possible to write a description of the variable (it isn't a necessary information, it helps the readability of the tree of network);
+ The field "**Dimension**" is used to select the dimension of the variable (8, 16, 24, 32, 32 real, 48, 64 bit);
+ In the field "*Length(Variable Len)*" insert the length of the data in the case of the dimension is "Variable Length";
+ If the field "**Scale**" is checked the software reserved a byte in the PROFIBUS and in this field it write the Scale of measure. If the scale is not necessary, you can unselect it;
+ If the field "**From BCD to Integer**" is checked the Gateway converts the BCD value of variable in Integer format. This happens only if the variable is in BCD format; if it isn't nothing changes;
+ If the field "**SWAP**" is checked the byte of data of that variable are swapped. Example: from 0x01020304 to 0x04030201;

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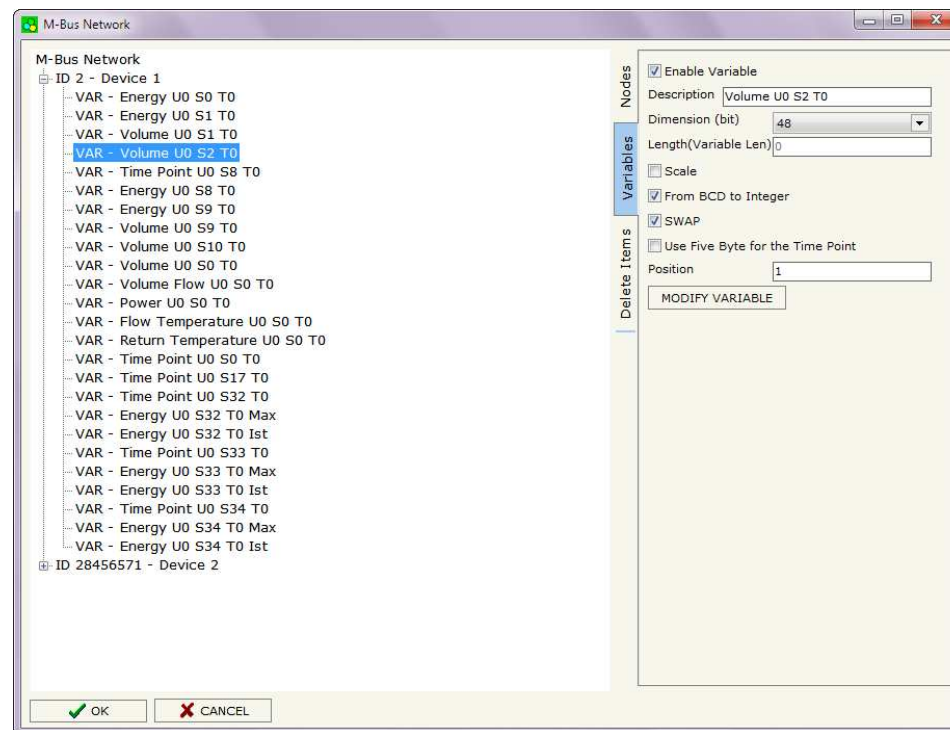
- ↳ If the field "**Use Five Bytes for the Time Point**" and the "Type of Data" is "Time Point" it is possible to read the information of Year, Month, Day, Hour, Minutes on five consecutive positions of the array without decoding (if not selected the values are the same of the reply of the slave device, so coded with a determinate structure (page 19 for more information));
- ↳ In the field "**Position**" insert the number of the variable that you want on DeviceNet.

Example:

```
0x68 – Start Byte
0xBD – L Fied
0xBD – L Field
0x68 – Start Byte
0x08 – C Field
0x02 – A Field
0x72 – CI Field

0x71 – Identification Number (Byte 4of4)
0x65 – Identification Number (Byte 3of4)
0x45 – Identification Number (Byte 2of4)
0x28 – Identification Number (Byte 1of4)
0x4D – Manufacturer (Byte 2of2)
0x6A – Manufacturer (Byte 1of2)
0x81 – Version
0x04 – Medium
0x3E – Access Number
0x27 – Status
0x00 – Signature (Byte 2of2)
0x00 – Signature (Byte 1of2)

0x04 – DIF
0x79 – VIF          Identification
0x00 – Data (Byte 4of4)
0x00 – Data (Byte 3of4)
0x00 – Data (Byte 2of4)
0x00 – Data (Byte 1of4)

0x04 – DIF
0x06 – VIF          Energy
0x00 – Data (Byte 4of4)
0x00 – Data (Byte 3of4)
0x00 – Data (Byte 2of4)
0x00 – Data (Byte 1of4)

0x44 – DIF
0x06 – VIF          Energy
0x00 – Data (Byte 4Of4)
0x00 – Data (Byte 3Of4)
0x00 – Data (Byte 2Of4)
0x00 – Data (Byte 1Of4)
…
…   Other Variables
…
0x55 – Check Sum
0x16 – Stop Byte
```
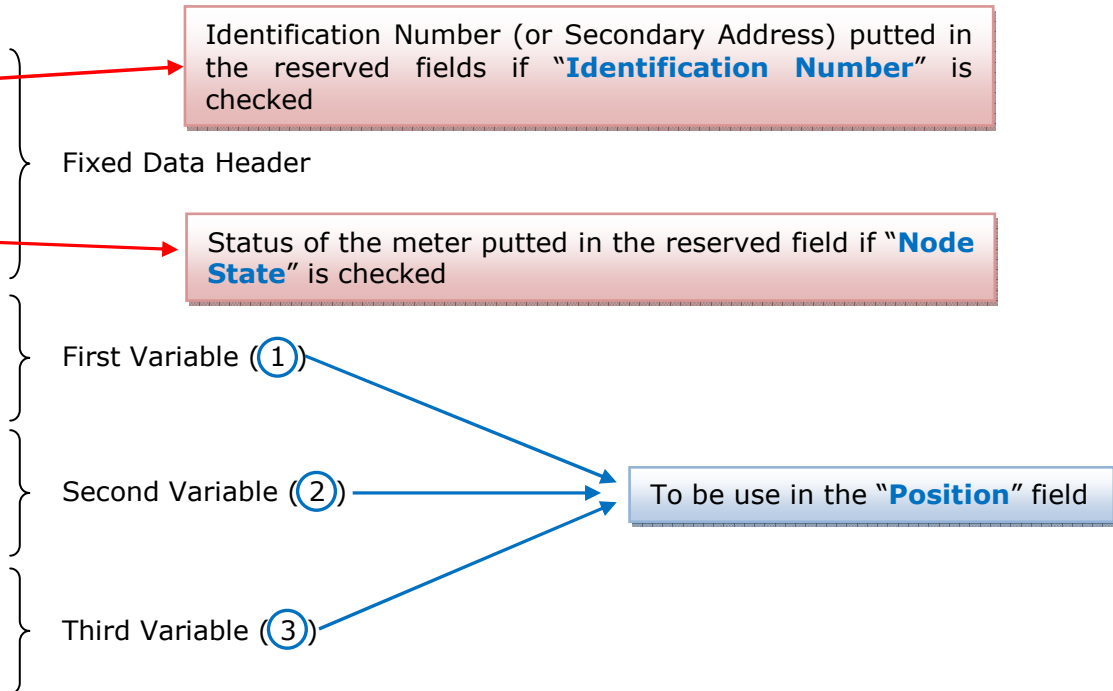
Fixed Data Header

Identification Number (or Secondary Address) putted in the reserved fields if "**Identification Number**" is checked

Status of the meter putted in the reserved field if "**Node State**" is checked

First Variable (①)

Second Variable (②)   →   To be use in the "**Position**" field

Third Variable (③)

SECTION DELETE ITEMS:

If it is necessary to delete a node or a variable, you have to select the node or the variable and then press the "**DELETE ITEM**" button.
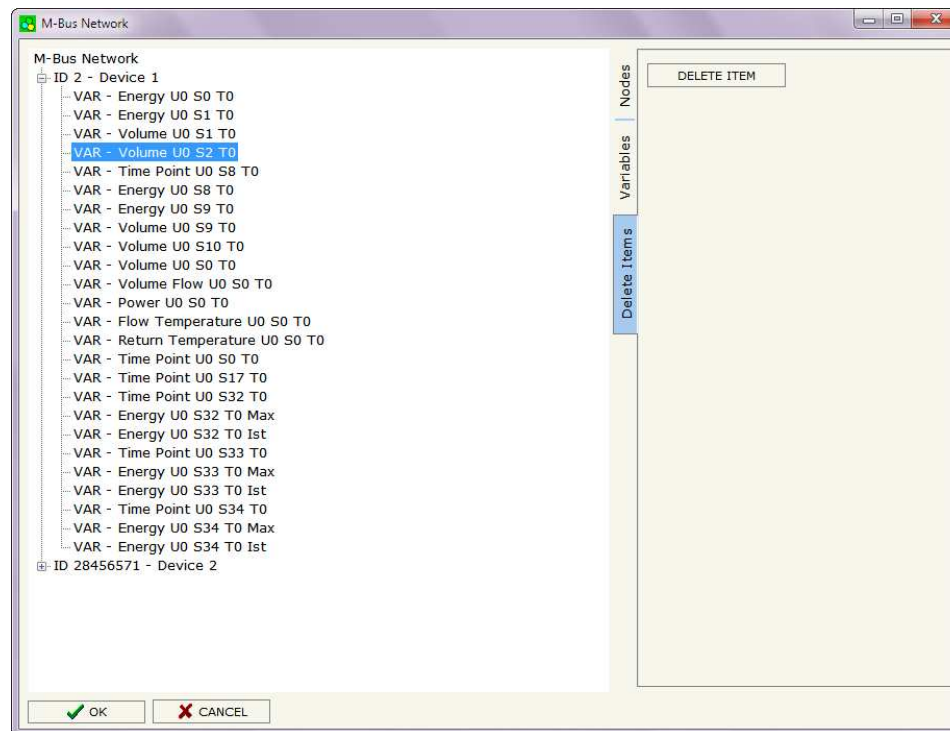
Possible choices for the fields used to create a variable:

Type of Data:
|_Energy (Wh)
|_Energy (J)
|_Volume (m^3)
|_Mass (Kg)
|_On Time
|_Operating Time
|_Power (W)
|_Power (J/h)
|_Volume Flow (m^3/h)
|_Volume Flow Ext. (m^3/min)
|_Volume Flow Ext. (m^3/s)
|_Mass Flow (Kg/h)
|_Flow Temperature (°C)
|_Return Temperature (°C)
|_Temperature Difference (K)
|_External Temperature (°C)
|_Pressure (bar)
|_Averaging Duration
|_Actuality Duration
|_Type of data in VIFE
|_Time Point
|_VIF is in ASCII
|_Unit for H.C.A.
|_Fabrication No
|_(Enhaced) Identification
|_Bus Address

Function Field:
|_Instantaneous Value
|_Minimum Value
|_Maximum Value
|_Value During Error State

Dimension (bit):
|_8
|_16
|_24
|_32
|_32 real
|_48
|_64
|_Variable Length

VIFE:
|_ Not Selected
|_ Credit of the nominal local legal currency units
|_ Debit of the nominal local legal currency units
|_ Access Number (transmission count)
|_ Medium (as in fixed header)
|_ Manufacturer (as in fixed header)
|_ Parameter set identification
|_ Model/Version
|_ Hardware Version #
|_ Firmware Version #
|_ Software Version #
|_ Customer Location
|_ Customer
|_ Access Code User
|_ Access Code Operator
|_ Access Code System Operator
|_ Access Code Developer
|_ Password
|_ Error flags (binary)
|_ Error mask
|_ Digital Output (binary)
|_ Digital Input (binary)
|_ Baudrate [Baud]
|_ response delay time [bittimes]
|_ Retry
|_ First storage # for cyclic storage
|_ Last storage # for cyclic storage
|_ Size of storage block
|_ Storage interval [sec(s)..day(s)]
|_ Storage interval month(s)
|_ Storage interval year(s)
|_ Duration since last readout[sec(s)..day(s)]
|_ Start (date/time) of tariff
|_ Duration of tariff (nn=01..11:min to day)
|_ Period of tariff [sec(s) to day(s)]

|_ Period of tariff months(s)
|_ Period of tariff year(s)
|_ dimensionless/ no VIF
|_ Volts
|_ Ampere
|_ Reset counter
|_ Comulation counter
|_ Control signal
|_ Day of week
|_ Week number
|_ Time point of day change
|_ State of parameter activation
|_ Special supplier information
|_ Duration since last comulation [hour(s)..year(s)]
|_ Operation time battery [hour(s)..year(s)]
|_ Date and time of battery change
|_ Energy MWh
|_ Energy GJ
|_ Volume
|_ Mass
|_ Volume 0,1 feet^3
|_ Volume 0,1 american gallon
|_ Volume 1 american gallon
|_ Volume flow 0,001 american gallon/min
|_ Volume flow 1 american gallon/min
|_ Volume flow 1 american gallon/h
|_ Power MW
|_ Power GJ/h
|_ Flow Temperature
|_ Return Temperature
|_ Temperature Difference
|_ External Temperature
|_ Cold/Warm Temperature Limit °F
|_ Cold/Worm Temperature Limit °C
|_ Cumul. Count max power
|_ per second

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|_ per minute
|_ per hour
|_ per day
|_ per week
|_ per month
|_ per year
|_ per revolution/measurement
|_ increment per input pulse on input channel
|_ increment per output pulse on output channel
|_ per liter
|_ per m^3
|_ per kg
|_ per K (Kelvin)
|_ per kWh
|_ per GJ
|_ per kW
|_ per (K*l)(Kelvin*liter)
|_ per V (Volt)
|_ per A (Ampere)
|_ multiplied by sek
|_ multiplied by sek/V
|_ multiplied by sek/A
|_ start date(/time) of
|_ VIF contains uncorrected unit instead of corrected unit
|_ Accumulation only if positive contributions
|_ Accumulation of abs value only if negative contributions
|_ upper/lower limit value

|_ # of exceeds of lower/upper limit
|_ Date(/time) of begin/end of first/last lower/upper limit exceed
|_ Duration of limit exceed
|_ Duration of first/last
|_ Date(/time) of first/last begin/end
|_ Multiplicative □orrection factor
|_ Additive correction constant * unit of VIF (offset)
|_ Moltiplicative correction factor: 10^3
|_ future value
|_ next VIFE's and data of this block are manufacturer specific
|_ None
|_ Too many DIFE's
|_ Storage number not implemented
|_ Unit number not implemented
|_ Tariff number not implemented
|_ Function not implemented
|_ Data class not implemented
|_ Data size not implemented
|_ Too many VIFE's
|_ Illegal VIF-Group
|_ Illegal VIF-Exponent
|_ VIF/DIF mismatch
|_ Unimplemented action
|_ No data available (undefined value)
|_ Data overflow
|_ Data underflow
|_ Data error
|_ Premature end of record

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Swap Identification:

This field is used for select the Swap mode of Identification Number.

At the moment there are these possibilities:

- None;
- Type 1.

Examples:

- Identification Number (Secondary Address): 28456571; Convert BCD in Integer Identification Num. Not checked.

None	Type 1
0x28	0x65
0x45	0x71
0x65	0x28
0x71	0x45

- Identification Number (Secondary Address): 28456571; Convert BCD in Integer Identification Num. Checked.

None	Type 1
0x01	0x36
0xB2	0x7B
0x36	0x01
0x7B	0xB2

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To know the meaning of value read in the "Scale" byte position, you must follow this table (x = Value read in Scale location):

Description	Range Coding	Range
Energy	$10^{(x-3)}$ Wh	0.001 Wh to 10000 Wh
Energy	$10^{(x)}$ J	0.001 kJ to 10000 kJ
Volume	$10^{(x-6)}$ m^3	0.001 l to 10000 l
Mass	$10^{(x-3)}$ kg	0.001 kg to 10000 kg
On Time	x = 0 Seconds x = 1 Minutes x = 2 Hours x = 3 Days	
Operating Time	coded like On Time	
Power	$10^{(x-3)}$ W	0.001 W to 10000 W
Power	$10^{(x)}$ J/h	0.001 kJ/h to 10000 kJ/h
Volume Flow	$10^{(x-6)}$ m^3/h	0.001 l/h to 10000 l/h
Volume Flow Ext.	$10^{(x-7)}$ m^3/min	0.0001 l/min to 1000 l/min
Volume Flow Ext.	$10^{(x-9)}$ m^3/s	0.001 ml/s to 10000 ml/s
Mass Flow	$10^{(x-3)}$ kg/h	0.001 kg/h to 10000 kg/h
Flow Temperature	$10^{(x-3)}$ °C	0.001 °C to 1 °C
Return Temperature	$10^{(x-3)}$ °C	0.001 °C to 1 °C
Temperature Difference	$10^{(x-3)}$ K	1 mK to 1000 mK
External Temperature	$10^{(x-3)}$ °C	0.001 °C to 1 °C
Pressure	$10^{(x-3)}$ bar	1 mbar to 1000 mbar
Averaging Duration	coded like On Time	
Actuality Duration	coded like On Time	
Time Point	x = 0 Date x = 1 Time&Date	Data type G Data type F
Unit for H.C.A.		dimensionless

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Data type F:

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	21^0	2^9	2^8
2^{23}	2^{22}	2^{21}	22^0	2^{19}	2^{18}	2^{17}	2^{16}
2^{31}	2^{30}	2^{29}	2^{28}	2^{27}	2^{26}	2^{25}	2^{24}

Min (0 … 59);
Hour (0 … 23);
Day (1 … 31);
Month (1 … 12);
Year (0 … 99);
Time Invalid (0=Valid, 1=Invalid);
Summer Time (0=Standard Time, 1=Summer Time);
Reserved (0).

Data type G:

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	21^0	2^9	2^8

Day (1 … 31);
Month (1 … 12);
Year (0 … 99).

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SINGLE SLAVE MODE FUNCTIONING:

By checking the field "Single Slave Mode" it is possible to save 456 bytes of data for a single M-Bus Slave Device.
For having the data it is necessary that the Master DeviceNet writes the first four bytes of his Output Data with the Primary or Secondary Address of the slave which want to receive the data.

Example of DeviceNet Master OUT array (data that a master DeviceNet send) using the Primary Address of the Slave M-Bus

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6
0x00	0x00	0x00	0x3A	Empty or other values	Empty or other values	Empty or other values

Example of DeviceNet Master OUT array (data that a master DeviceNet send) using the Secondary Address of the Slave M-Bus

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6
0x28	0x45	0x65	0x71	Empty or other values	Empty or other values	Empty or other values

If the address is defined in the section M-Bus and the reply frame of the slave interrogated is received, the gateway puts the requested address in the first four bytes. Then follow the normal data of the selected slave.

Example of DeviceNet Master IN array (data that a master DeviceNet receive) using the Primary Address of the Slave M-Bus

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6
0x00	0x00	0x00	0x3A	Data …	…	… Data

Example:
In "Set Communication" the "N Byte OUT" is 30.
There was defined these variables: **Var.1**: 32 bit, No Scale; **Var.2**: 48 bit, No Scale; **Var.3**: 16 bit, Si Scale; **Var.4**: 64 bit, Si scale.
The DeviceNet array is the follow:

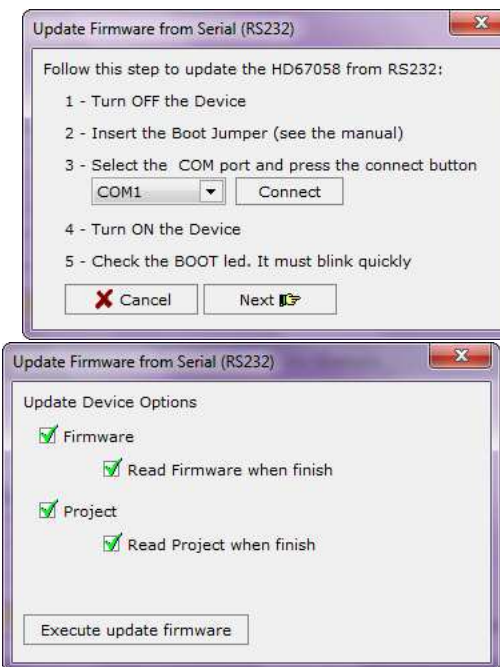| Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9
Var.1	Var.1	Var.1	Var.1	Var.2	Var.2	Var.2	Var.2	Var.2	Var.2
Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15	Byte 16	Byte 17	Byte 18	Byte 19
Var.3	Var.3	Var.3 Scale	Var.4	Var.4	Var.4	Var.4	Var.4	Var.4	Var.4
Byte 20	Byte 21	Byte 22	Byte 23	Byte 24	Byte 25	Byte 26	Byte 27	Byte 28	Byte 29
Var.4	Var.4 Scale								

UPDATE DEVICE:

Section "Update Firmware" (Fig. 5):
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 form your PC to the Gateway;
- Insert the Boot Jumper (For more info see Fig. 1);
- 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);
- 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.

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

Figure 5: "Update Device" windows

![Note icon] 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 HD67058-B2-xxx device.

![Warning icon] Warning:
If the Fig. 6 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 6: "Protection" window
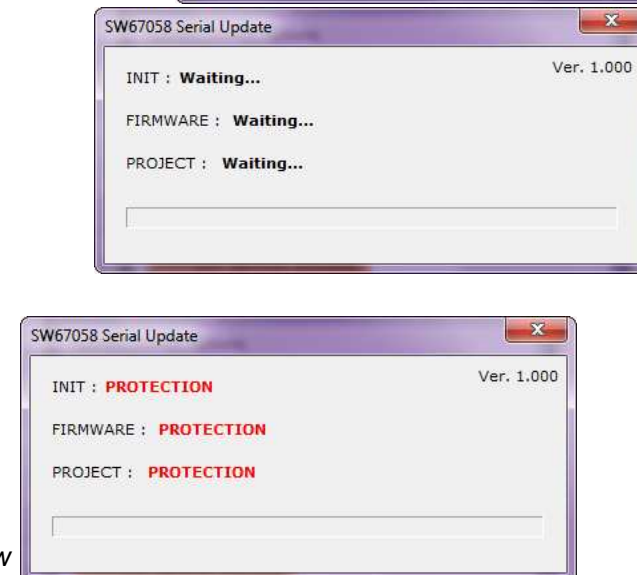
CHARACTERISTICS OF THE CABLE:

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).
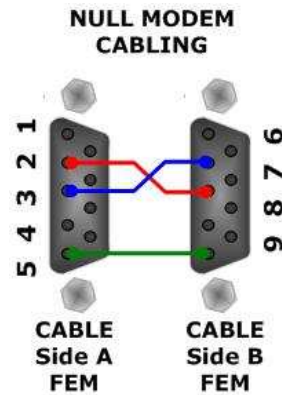It is recommended that the RS232C Cable not exceed 15 meters.

Figure 7: Null modem cabling

M-Bus:

A two wire standard telephone cable (JYStY N*2*0.8 mm) is used as the transmission medium for the M-Bus. The maximum distance between a slave and the repeater is 350m; this length corresponds to a cable resistance of up 29Ω. This distance applies for the standard configuration having Baud rates between 300 and 9600 Baud, and a maximum of 250 slaves. The maximum distance can be increased by limiting the Baud rate and using fewer slaves, but the bus voltage in the space state must at no point in a segment fall below 12V, because of the remote powering of the slaves. In the standard configuration the total cable length should not exceed 1000m, in order to meet the requirement of a maximum cable capacitance of 180nF. *(Taken from M-Bus specifics)*

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MECHANICAL DIMENSIONS:

95 mm
3.74 inch

106 mm
4.17 inch

60 mm
2.36 inch
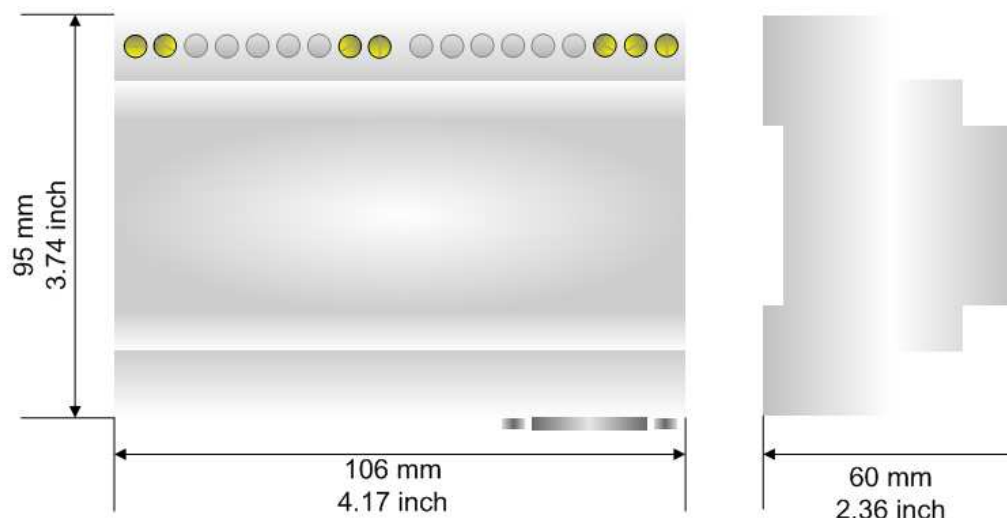
Housing: PVC
Weight: 200g (Approx)

Figure 8: Mechanical dimensions scheme for HD67053-B2-xxx

ORDER CODES:

Order Code: **HD67058-B2-20**   -   M-Bus Master / DeviceNet Slave - Converter (up to 20 slaves connected to M-Bus)

Order Code: **HD67058-B2-40**   -   M-Bus Master / DeviceNet Slave - Converter (up to 40 slaves connected to M-Bus)

Order Code: **HD67058-B2-80**   -   M-Bus Master / DeviceNet Slave - Converter (up to 80 slaves connected to M-Bus)

Order Code: **HD67058-B2-160** -   M-Bus Master / DeviceNet Slave - Converter (up to 160 slaves connected to M-Bus)

Order Code: **HD67058-B2-250** -   M-Bus Master / DeviceNet Slave - Converter (up to 250 slaves connected to M-Bus)

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

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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.

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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:
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
HD67120	Converter Ethernet to RS232/RS485	www.adfweb.com?product=HD67120
HD67119	Converter USB 2.0 to RS485 Isolated	www.adfweb.com?product=HD67119
HD67507	Gateway Modbus TCP Server to RTU Master	www.adfweb.com?product=HD67507
HD67510	Gateway Modbus TCP Client to RTU Slave	www.adfweb.com?product=HD67510