User Manual

Revision 1.021
English

M-Bus – Concentrator – Datalogger

(Order Codes: HD67054M-20
HD67054M-40
HD67054M-80
HD67054M-160
HD67054M-250)

for Website information:
www.adfweb.com?Product=HD67054M

for Price information:
www.adfweb.com?Price=HD67054M-20
www.adfweb.com?Price=HD67054M-40
www.adfweb.com?Price=HD67054M-80
www.adfweb.com?Price=HD67054M-160
www.adfweb.com?Price=HD67054M-250

Benefits and Main Features:

- Very easy to configure
- Electrical isolation
- Industrial temperature range:
  -40°C / 70°C (-40°F / 158°F)

HD67054M-xxx

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)**

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

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

Gateway M-Bus / Modbus RTU
www.adfweb.com?Product=HD67029M-232 **(on RS232)**
www.adfweb.com?Product=HD67029M-485 **(on RS485)**

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

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

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

INDEX:

UPDATED DOCUMENTATION:

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- Updated
- Related to the product you own

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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	16/03/2010	Fl	All	First release version (1.000)
1.001	06/04/2011	Fl	All	Revision
1.010	10/06/2011	Fl	All	Software changed (1.100)
1.020	19/09/2011	Fl	All	Software changed (1.200)
1.021	18/02/2013	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.

CONNECTION SCHEME:

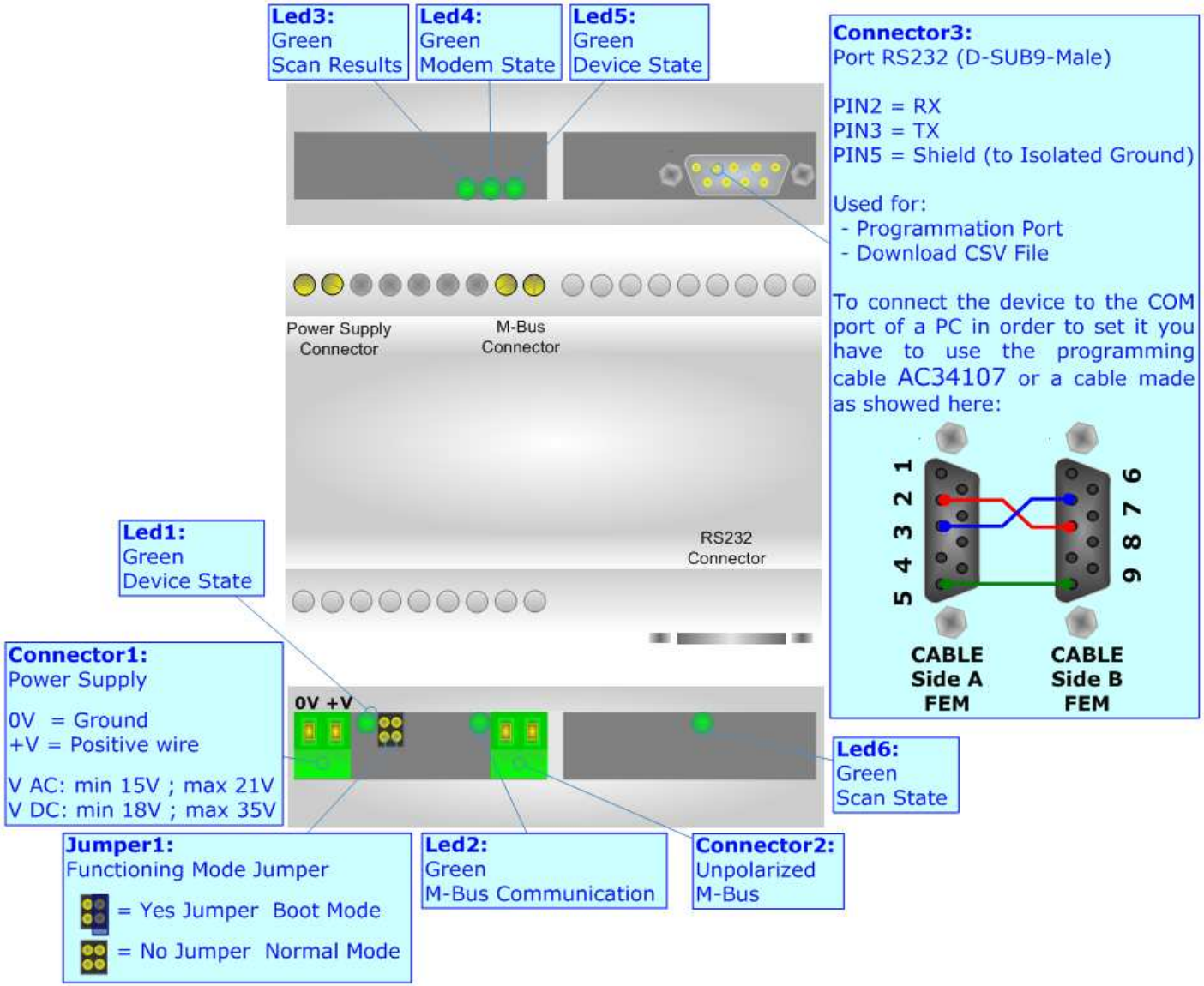


Figure 1: Connection scheme for HD67054M-xxx

CHARACTERISTICS:

The HD67054M-xxx is a M-Bus Concentrator. It allow to read data from the M-Bus meters and store the desired values into a CSV file. This file can be downloaded with a specific free software furnished with the device or with some simple commands via a Point-to-Point connection (RS232, Dialup/GSM/ISDN Modem). The readings are made automatically from the Concentrator at predetermined times.

It allows the following characteristics:

- Electrical isolation between Serial and M-Bus;
- Mountable on Rail DIN;
- 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:

- HD67054M-20 support up to 20 M-Bus devices;
- HD67054M-40 support up to 40 M-Bus devices;
- HD67054M-80 support up to 80 M-Bus devices;
- HD67054M-160 support up to 160 M-Bus devices;
- HD67054M-250 support up to 250 M-Bus devices.

 In the case of HD67054M-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 HD67054M-250 the device must be mounted on 35mm DIN rail which is horizontally mounted on a wall or cabinet back-plate. This unit 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.

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.

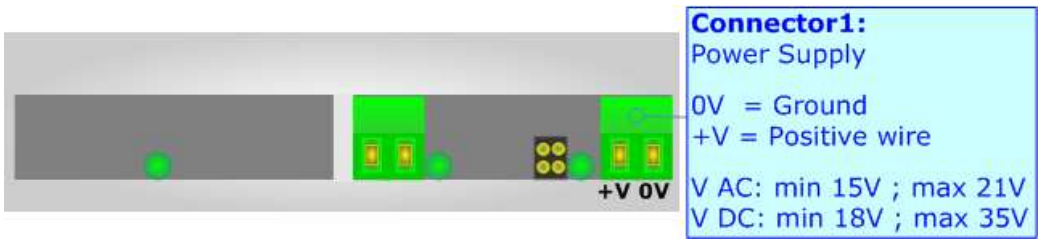
VAC ~		VDC ⎓	
Vmin	**Vmax**	**Vmin**	**Vmax**
15V	**21V**	**18V**	**35V**

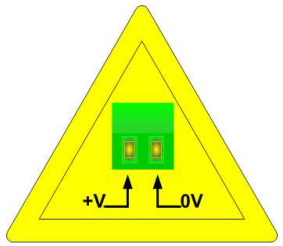
Consumption at 24V DC:

Device	No Load [W/VA]	Full Load [W/VA]*
HD67054M	3.5	4
HD67054M-40		5
HD67054M-80		8
HD67054M-160		14
HD67054M-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





HD67054M-xxx

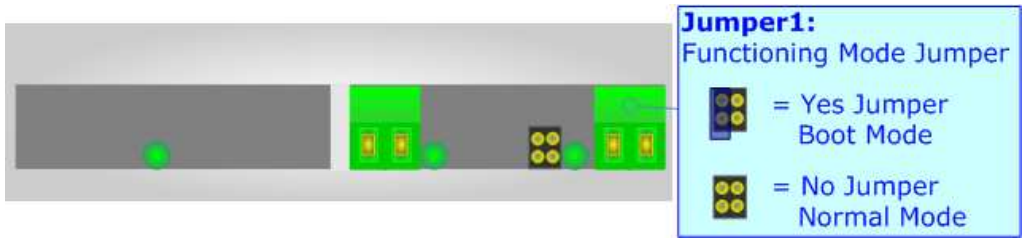
FUNCTION MODES:

The device has got two functions mode depending of the position of the 'Jumper1':

- The first, without jumper inserted (factory setting), is used for the normal working of the device.
- The second, with jumper inserted, is used for upload the Firmware/Project.

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).



LEDS:

The device has got six 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	Blink slowly	Off
2: M-Bus Communication	**Blink slowly:** Some data is arriving to the port **Off:** No data is arriving to the port	Off
3: Scan Results	**On:** In the last scan some slave haven't replied **Off:** The Last scan was completed with success	Off
4: Modem State	**On:** A Modem is correctly connected (only if is used Dial-UP or ISDN modem) **Off:** No Modem Connected	Off
5: Device State	Off	Blink quickly
6: Scan State	**On:** A scan is running **Off:** No scan is being made	Off

CONFIGURATION:

You need Compositor SW67054 software on your PC in order to perform the following:

- Define the parameter of M-Bus line;
- Define the map of M-Bus devices to be scan;
- Update the device.

USE OF COMPOSITOR SW67054:

To configure the Gateway, use the available software that runs with Windows, called SW67054. It is downloadable on the site www.adfweb.com and its operation is described in this document.

When launching the SW67054 the right window appears (Fig. 2).

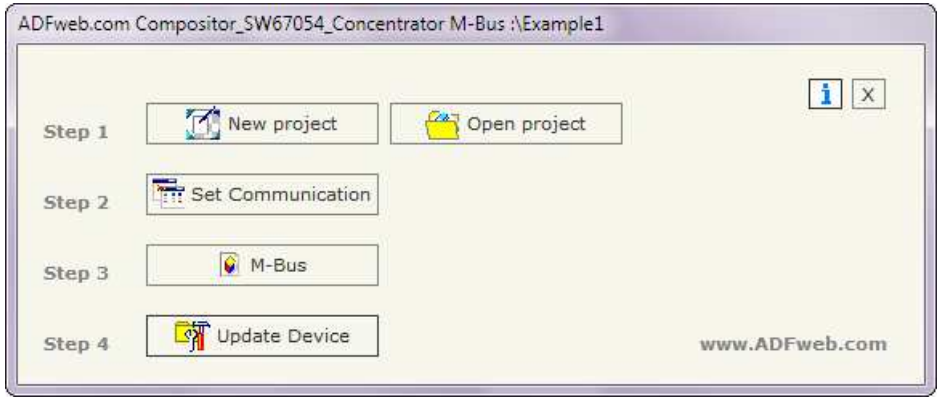


Figure 2: Main window for SW67054

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 M-Bus Concentrator 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 M-Bus and Serial.

By Pressing the "**Set Communication**" button from the main window for SW67054 (Fig. 2) the window "Set Communication" appears (Fig. 3).
The window is divided in three sections, one for the Serial, one for the Data Logger and the other for the M-Bus.

In the "Serial" section it is possible to select the mode used for download the .CSV file.

The possibilities are:

- "**Not Used**": It allows to download the file directly with a PC connected with a serial cable to the device;
- "**Modem Dial-Up**": It allows to download the file via Analog Modem connection. For use this you have to use an external analog modem;
- "**Modem GSM**": It allows to download the file via GSM connection. For use this you have to use an external GSM modem;
- "**Modem ISDN**": It allows to download the file via ISDN Modem connection. For use this you have to use an external ISDN modem.

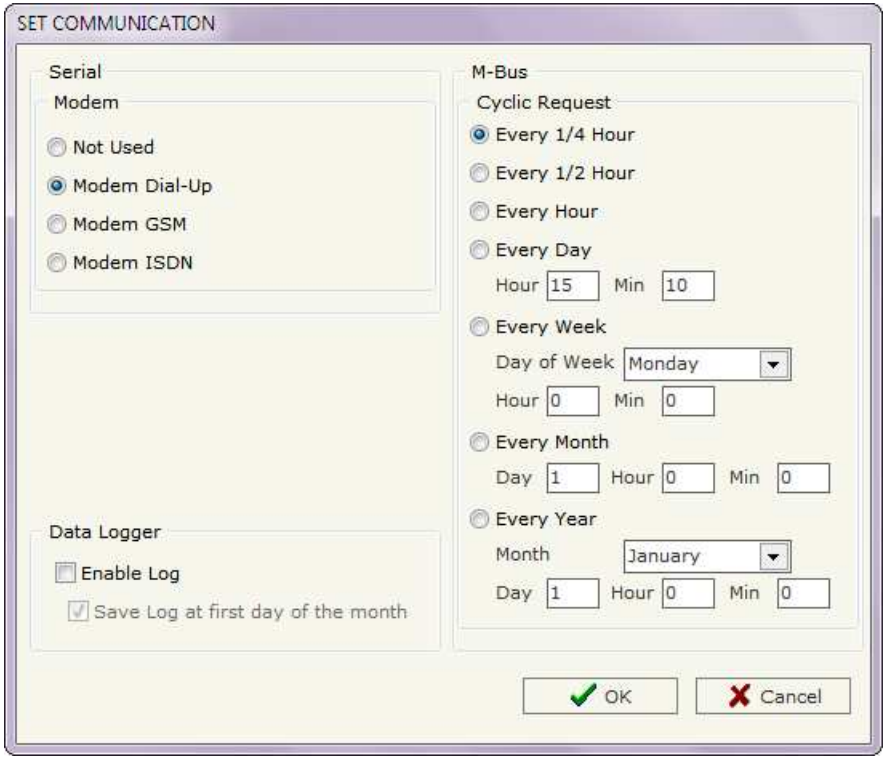


Figure 3: "Set Communication" window

In the "M-Bus" section it is possible to select when the concentrator makes the requests to the slaves.

The possibilities are:

- "**Every ¼ Hour**": The scanning is done every 15 minutes;
- "**Every ½ Hour**": The scanning is done every 30 minutes;
- "**Every Hour**": The scanning is done every 60 minutes;
- "**Every Day**": In this case you have to choose the **hour** and **minute** in which the scan will be done;
- "**Every Week**": In this case you have to choose the **day of week**, **hour**, **minute** in which the scan will be done;

- "**Every Month**": In this case you have to choose the **day**, **hour**, **minute** in which the scan will be done;
- "**Every Year**": In this case you have to choose the **month**, **day**, **hour**, **minute** in which the scan will be done.

In the "Data Logger" section it is possible to select if enable or not the Log by checking or un-checking the field "**Enable Log**". If enabled the gateway saves the first day of the month the data. These 12 logs are readable by sending the commands written in the section "Software & Commands".

M-BUS

By Pressing the "**M-Bus**" button from the main window for SW67054 (Fig. 2) the window "M-Bus Network" appears (Fig. 4).

SECTION BAUDRATES:

In the section "Baudrates" it is possible to create various group of devices based on **Baudrate** and **Parity**. After that, pressing the "**ADD GROUP**" button, a new group appears in the left side of the window.
In order to modify a created group it is necessary to select the desired group , change the wrong items and then press the "**MODIFY GROUP**" button.

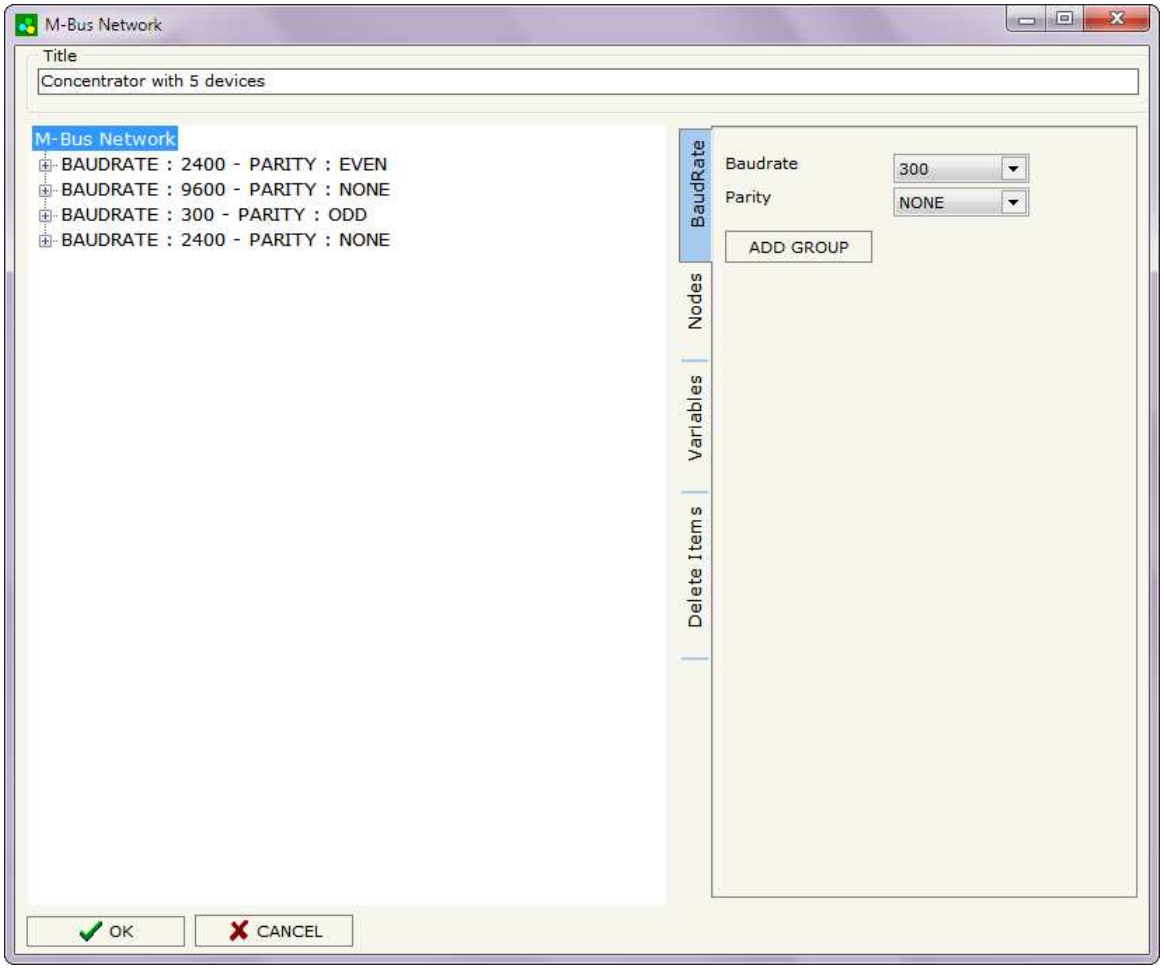
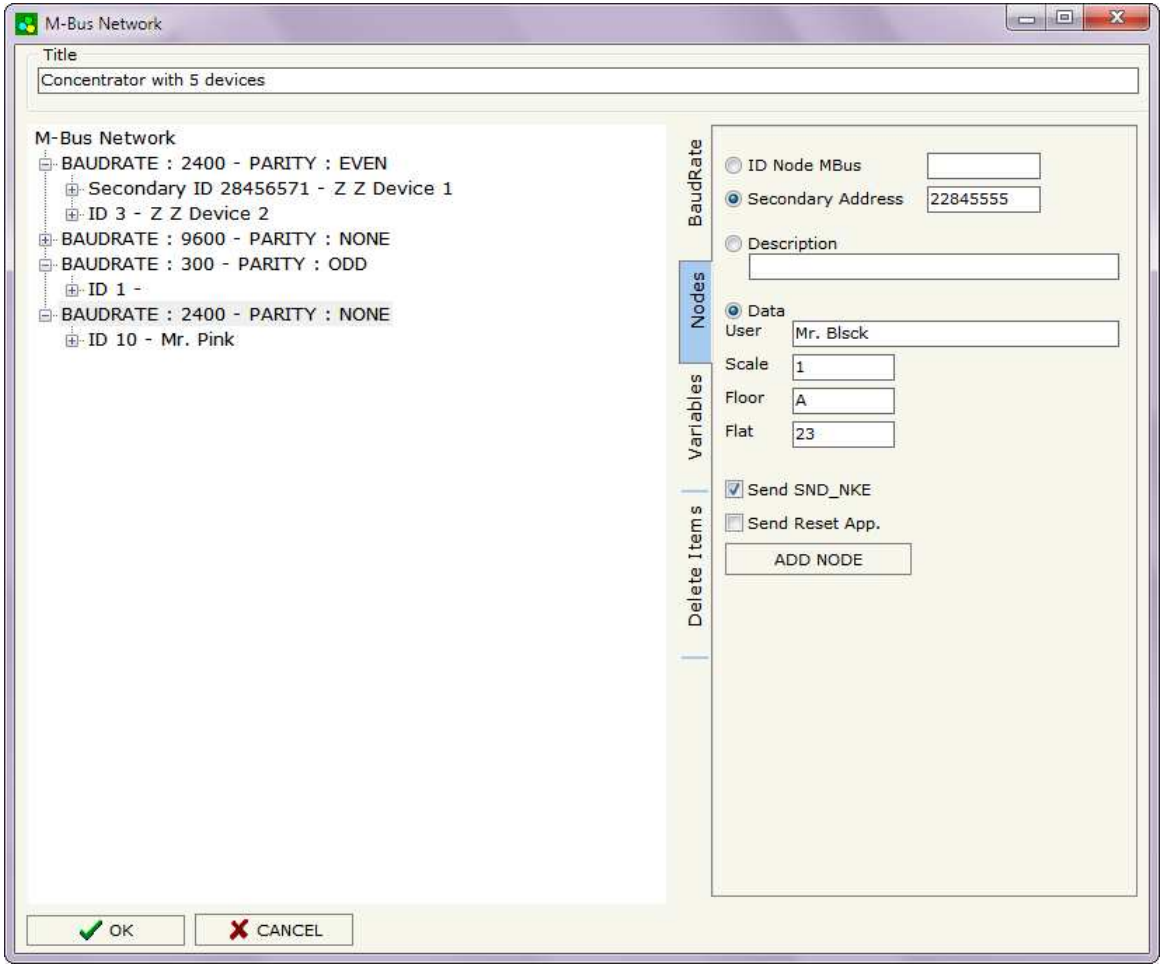


Figure 4: "M-Bus Network" window

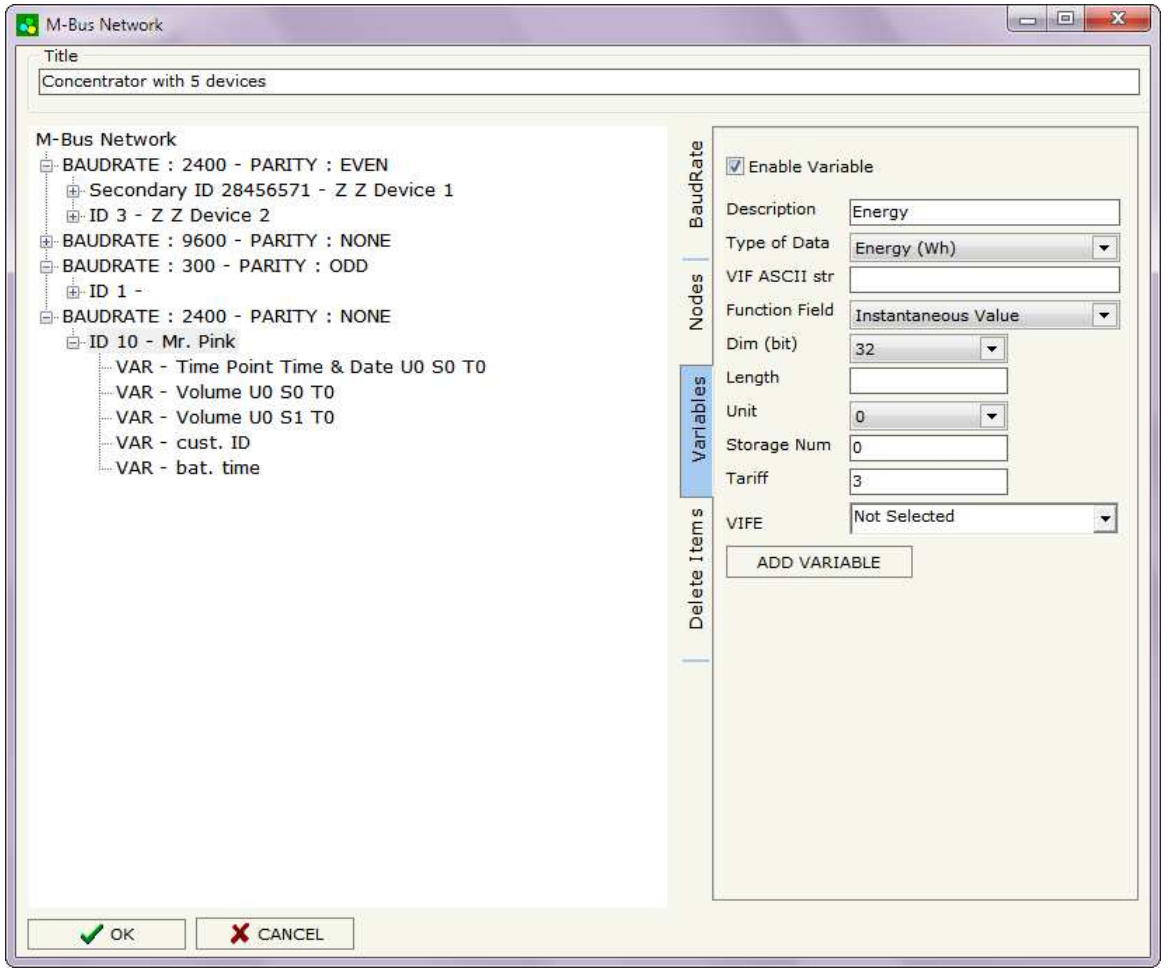
SECTION NODES:

In the section "M-Bus Node" it is possible to create the nodes of a specific 'Group'. In order to create a new node it is necessary to select which address use, selecting "**ID Node MBus**" or "**Secondary Address**", 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. If you select "**Description**" it is possible to write a short description of the node in the right field. Otherwise if "**Data**" is selected it is possible to fill the fields with the values of an apartament or else. The fields are: **User**, **Scale**, **Floor**, **Flat**. The values of "Description" or "Data" are used in the CSV file for identify the variables stored.
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. 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.



SECTION VARIABLES:

Selecting the desired node it is possible to add the variables. 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;
- If the field "Type of Data" is "VIF is in ASCII" you have to write in the field "**VIF ASCII str**" the correct string of VIF;
- 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, Variable length);
- If the field "Dimension" is "Variable Length" in the field "**Length**" you have to insert the length of data;
- 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;
- 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;
-

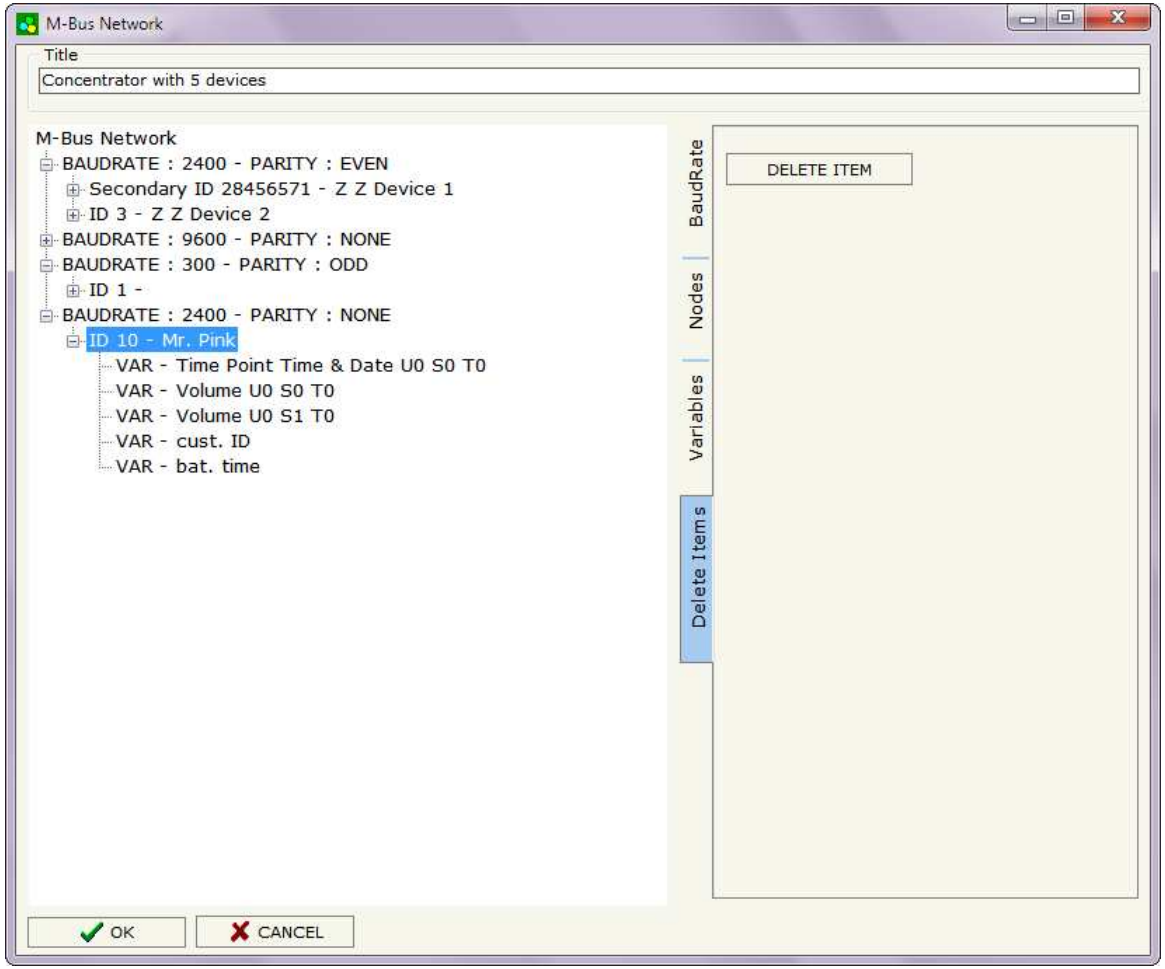
- In the field "**Tariff**" if it is necessary it is possible to insert the value of the tariff of that variable. The Tariff is used for indicates from which device the data come;
- In the field "**VIFE**" it is possible to select a sub-type of "Type of Data".

Having completed this 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 DELETE ITEMS:

If it is necessary to delete a group, 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
|_ 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 currection 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

CSV FILE

When the file is downloaded and opened in a table there are two codes that identify what the number is referred to.

At right side you can find an example of file.

- A: In this field you find the "Title" that you have defined in the compositor;
- B: This is the date and time of the last scan;
- C: If in the compositor you have select "M-Bus Node → Data" here you can find the "User";
- D: If in the compositor you have select "M-Bus Node → Data" here you can find the "Scale";
- E: If in the compositor you have select "M-Bus Node → Data" here you can find the "Floor";
- F: If in the compositor you have select "M-Bus Node → Data" here you can find the "Flat";
- G: This is the Primary Address of the M-Bus Slave Device;
- H: This is the number of variables defined in the compositor;
- I: This is the value read of the variable;
- J: This is the "First Code". It identify the type of data. For decoded it see "First Code" subsection;
- K: This is the "Second Code". Is in addition and complete the information given by the "First Code". For decoded it see "Second Code" subsection;
- L: If in the compositor you have select "M-Bus Node → Description" here you can find the "Description".

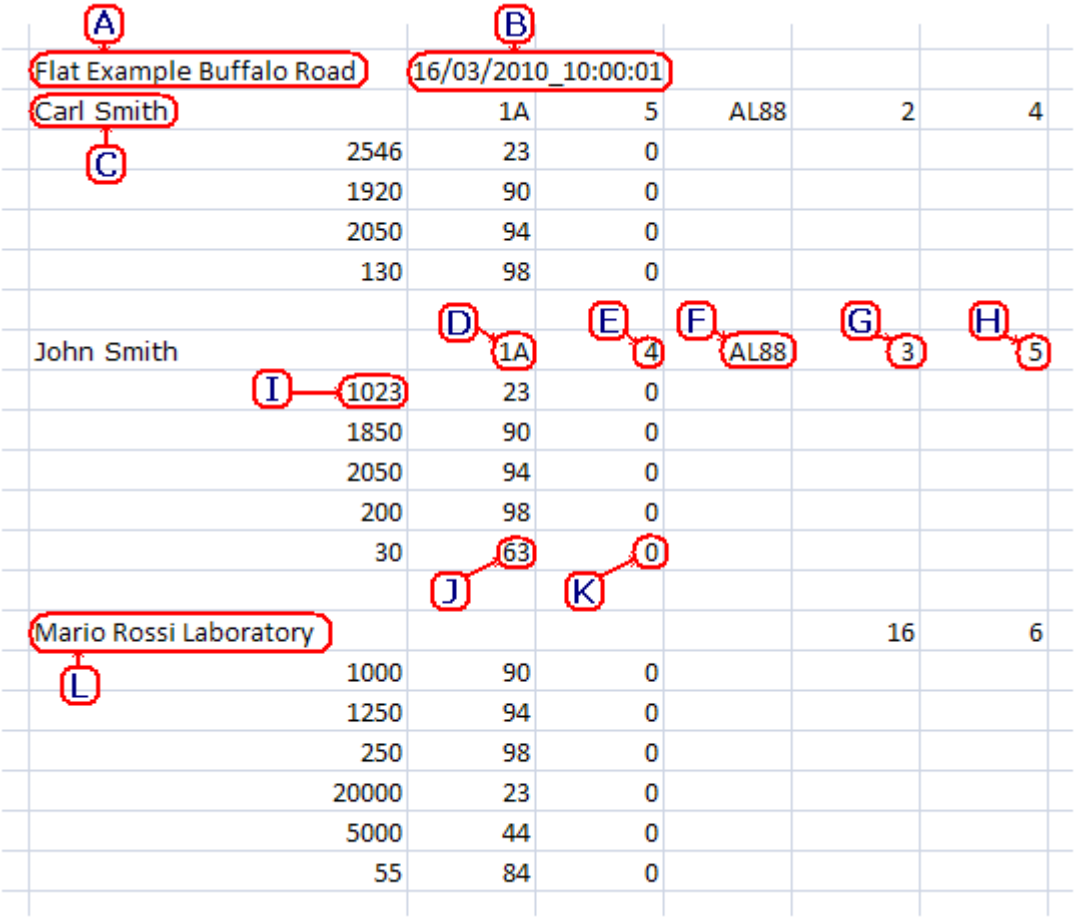


Figure 5: Example of CSV file

FIRST CODE:

0: Null

1: Energy [Wh] ($*10^{-3}$)
2: Energy [Wh] ($*10^{-2}$)
3: Energy [Wh] ($*10^{-1}$)
4: Energy [Wh] ($*10^{0}$)
5: Energy [Wh] ($*10^{1}$)
6: Energy [Wh] ($*10^{2}$)
7: Energy [Wh] ($*10^{3}$)
8: Energy [Wh] ($*10^{4}$)

9: Energy [J] ($*10^{0}$)
10: Energy [J] ($*10^{1}$)
11: Energy [J] ($*10^{2}$)
12: Energy [J] ($*10^{3}$)
13: Energy [J] ($*10^{4}$)
14: Energy [J] ($*10^{5}$)
15: Energy [J] ($*10^{6}$)
16: Energy [J] ($*10^{7}$)

17: Volume m^3 ($*10^{-6}$)
18: Volume m^3 ($*10^{-5}$)
19: Volume m^3 ($*10^{-4}$)
20: Volume m^3 ($*10^{-3}$)
21: Volume m^3 ($*10^{-2}$)
22: Volume m^3 ($*10^{-1}$)
23: Volume m^3 ($*10^{0}$)
24: Volume m^3 ($*10^{1}$)

25: Mass kg ($*10^{-3}$)
26: Mass kg ($*10^{-2}$)
27: Mass kg ($*10^{-1}$)
28: Mass kg ($*10^{0}$)
29: Mass kg ($*10^{1}$)
30: Mass kg ($*10^{2}$)
31: Mass kg ($*10^{3}$)
32: Mass kg ($*10^{4}$)

33: On Time: Seconds
34: On Time: Minutes
35: On Time: Hours
36: On Time: Days

37: Operating Time: Seconds
38: Operating Time: Minutes
39: Operating Time: Hours
40: Operating Time: Days

41: Power W ($*10^{-3}$)
42: Power W ($*10^{-2}$)
43: Power W ($*10^{-1}$)
44: Power W ($*10^{0}$)
45: Power W ($*10^{1}$)
46: Power W ($*10^{2}$)
47: Power W ($*10^{3}$)
48: Power W ($*10^{4}$)

49: Power J/h ($*10^{0}$)
50: Power J/h ($*10^{1}$)
51: Power J/h ($*10^{2}$)
52: Power J/h ($*10^{3}$)
53: Power J/h ($*10^{4}$)
54: Power J/h ($*10^{5}$)
55: Power J/h ($*10^{6}$)

56: Power J/h ($*10^{7}$)

57: Volume Flow m^3/h ($*10^{-6}$)
58: Volume Flow m^3/h ($*10^{-5}$)
59: Volume Flow m^3/h ($*10^{-4}$)
60: Volume Flow m^3/h ($*10^{-3}$)
61: Volume Flow m^3/h ($*10^{-2}$)

62: Volume Flow m^3/h ($*10^{-1}$)
63: Volume Flow m^3/h ($*10^{0}$)
64: Volume Flow m^3/h ($*10^{1}$)

65: Volume Flow ext. m^3/min ($*10^{-7}$)
66: Volume Flow m^3/min ($*10^{-6}$)
67: Volume Flow m^3/min ($*10^{-5}$)
68: Volume Flow m^3/min ($*10^{-4}$)
69: Volume Flow m^3/min ($*10^{-3}$)
70: Volume Flow m^3/min ($*10^{-2}$)
71: Volume Flow m^3/min ($*10^{1}$)
72: Volume Flow m^3/min ($*10^{0}$)

73: Volume Flow ext. m^3/s ($*10^{-9}$)
74: Volume Flow m^3/s ($*10^{-8}$)
75: Volume Flow m^3/s ($*10^{-7}$)
76: Volume Flow m^3/s ($*10^{-6}$)
77: Volume Flow m^3/s ($*10^{-5}$)
78: Volume Flow m^3/s ($*10^{-4}$)
79: Volume Flow m^3/s ($*10^{-3}$)
80: Volume Flow m^3/s ($*10^{-2}$)

81: Mass Flow kg/h ($*10^{-3}$)
82: Mass Flow kg/h ($*10^{-2}$)
83: Mass Flow kg/h ($*10^{-1}$)
84: Mass Flow kg/h ($*10^{0}$)
85: Mass Flow kg/h ($*10^{1}$)
86: Mass Flow kg/h ($*10^{2}$)
87: Mass Flow kg/h ($*10^{3}$)

88: Mass Flow kg/h ($*10^{4}$)

89: Flow Temperature [°C] ($*10^{-3}$)
90: Flow Temperature [°C] ($*10^{-2}$)
91: Flow Temperature [°C] ($*10^{-1}$)
92: Flow Temperature [°C] ($*10^{0}$)

93: Return Temperature [°C] ($*10^{-3}$)
94: Return Temperature [°C] ($*10^{-2}$)

95: Return Temperature [°C] ($*10^{-1}$)
96: Return Temperature [°C] ($*10^{0}$)

97: Temperature Difference [K] ($*10^{-3}$)
98: Temperature Difference [K] ($*10^{-2}$)
99: Temperature Difference [K] ($*10^{-1}$)
100: Temperature Difference [K] ($*10^{0}$)

101: External Temperature [°C] ($*10^{-3}$)
102: External Temperature [°C] ($*10^{-2}$)
103: External Temperature [°C] ($*10^{-1}$)
104: External Temperature [°C] ($*10^{0}$)

105: Pressure [bar] ($*10^{-3}$)
106: Pressure [bar] ($*10^{-2}$)
107: Pressure [bar] ($*10^{-1}$)
108: Pressure [bar] ($*10^{0}$)

109: Time Point: Date
110: Time Point: Time & Date

111: Averaging Duration: Seconds
112: Averaging Duration: Minutes
113: Averaging Duration: Hours
114: Averaging Duration: Days

115: Actually Duration: Seconds

116: Actually Duration: Minutes
117: Actually Duration: Hours
118: Actually Duration: Days

119: Credit of 10^{-3} of the nominal local legal currency units
120: Credit of 10^{-2} of the nominal local legal currency units

121: Credit of 10^{-1} of the nominal local legal currency units
122: Credit of 10^{0} of the nominal local legal currency units

123: Debit of 10^{-3} of the nominal local legal currency units

124: Debit of 10^{-2} of the nominal local legal currency units
125: Debit of 10^{-1} of the nominal local legal currency units
126: Debit of 10^{0} of the nominal local legal currency units

127: Access Number (transmission count)
128: Medium (as in fixed header)
129: Manufacturer (as in fixed header)
130: Parameter set identification
131: Model/Version
132: Hardware version #
133: Firmware version #
134: Software version #
135: Customer Location
136: Customer
137: Access Code User
138: Access Code Operator
139: Access Code System Operator
140: Access Code Developer
141. Password
142. Error flags (binary)
143: Error mask
144: Digital Output (binary)
145. Digital Input (binary)
146. Baudrate [Baud]
147: response delay time [bittimes]
148: Retry

149: First storage # for cyclic storage
150: Last storage # for cyclic storage
151. Size of storage block
152: Storage interval [seconds]
153: Storage interval [minutes]
154: Storage interval [hours]
155: Storage interval [days]

156: Storage interval month(s)
157. Storage interval year(s)

158: Duration since last readout[seconds]
159: Duration since last readout[minutes]
160: Duration since last readout[hours]
161: Duration since last readout[days]

162: Start (date/time) of tariff

163: Duration of tariff [minutes]
164: Duration of tariff [hours]
165: Duration of tariff [days]

166: Period of tariff [seconds]
167: Period of tariff [minutes]
168: Period of tariff [hours]
169: Period of tariff [days]

170: Period of tariff months(s)
171: Period of tariff year(s)
172: dimensionless/ no VIF

173: 10^{-9} Volts
174: 10^{-8} Volts
175: 10^{-7} Volts
176: 10^{-6} Volts
177: 10^{-5} Volts

178: 10^{-4} Volts
179: 10^{-3} Volts
180: 10^{-2} Volts
181: 10^{-1} Volts

182: 10^{0} Volts
183: 10^{1} Volts
184: 10^{2} Volts
185: 10^{3} Volts
186: 10^{4} Volts
187: 10^{5} Volts
188: 10^{6} Volts

189: 10^{-12} Ampere
190: 10^{-11} Ampere
191: 10^{-10} Ampere
192: 10^{-9} Ampere
193: 10^{-8} Ampere
194: 10^{-7} Ampere
195: 10^{-6} Ampere
196: 10^{-5} Ampere
197: 10^{-4} Ampere
198: 10^{-3} Ampere
199: 10^{-2} Ampere
200: 10^{-1} Ampere
201: 10^{0} Ampere
202: 10^{1} Ampere
203: 10^{2} Ampere
204: 10^{3} Ampere

205: Reset counter
206: Comulation counter
207: Control signal
208: Day of week
209: Week number
210: Time point of day change
211: State of parameter activation

212: Special supplier information
213: Duration since last comulation [hours]
214: Duration since last comulation [days]
215: Duration since last comulation [months]
216: Duration since last comulation [years]

217: Operation time battery [hours]
218: Operation time battery [days]
219: Operation time battery [months]
220: Operation time battery [years]

221: Date and time of battery change

222: Energy [MWh] ($*10^{-1}$)
223: Energy [MWh] ($*10^{0}$)

224: Energy [GJ] ($*10^{-1}$)
225: Energy [GJ] ($*10^{0}$)

226: Volume [m^3] ($*10^{2}$)
227: Volume [m^3] ($*10^{3}$)

228: Mass [t] ($*10^{2}$)
229: Mass [t] ($*10^{3}$)

230: Volume 0,1 feet^3
231: Volume 0,1 american gallon
232: Volume 1 american gallon
233: Volume flow 0,001 american gallon/min
234: Volume flow 1 american gallon/min
235: Volume flow 1 american gallon/h

236: Power [MW] ($*10^{-1}$)
237: Power [MW] ($*10^{0}$)

238: Power [GJ/h] ($*10^{-1}$)
239: Power [GJ/h] ($*10^{0}$)

240: Flow Temperature [°F] ($*10^{-3}$)
241: Flow Temperature [°F] ($*10^{-2}$)

242: Flow Temperature [°F] ($*10^{-1}$)
243: Flow Temperature [°F] ($*10^{0}$)

244: Return Temperature [°F] ($*10^{-3}$)
245: Return Temperature [°F] ($*10^{-2}$)
246: Return Temperature [°F] ($*10^{-1}$)
247: Return Temperature [°F] ($*10^{0}$)

248: Temperature Difference [°F] ($*10^{-3}$)
249: Temperature Difference [°F] ($*10^{-2}$)

250: Temperature Difference [°F] ($*10^{-1}$)
251: Temperature Difference [°F] ($*10^{0}$)

252: External Temperature [°F] ($*10^{-3}$)
253: External Temperature [°F] ($*10^{-2}$)
254: External Temperature [°F] ($*10^{-1}$)
255: External Temperature [°F] ($*10^{0}$)

256: Cold/Warm Temperature Limit [°F] ($*10^{-3}$)
257: Cold/Warm Temperature Limit [°F] ($*10^{-2}$)
258: Cold/Warm Temperature Limit [°F] ($*10^{-1}$)
259: Cold/Warm Temperature Limit [°F] ($*10^{0}$)

260: Cold/Worm Temperature Limit [°C] ($*10^{-3}$)
261: Cold/Worm Temperature Limit [°C] ($*10^{-2}$)
262: Cold/Worm Temperature Limit [°C] ($*10^{-1}$)
263: Cold/Worm Temperature Limit [°C] ($*10^{0}$)

264: Cumul. count max power [W] ($*10^{-3}$)
265: Cumul. count max power [W] ($*10^{-2}$)
266: Cumul. count max power [W] ($*10^{-1}$)
267: Cumul. count max power [W] ($*10^{0}$)
268: Cumul. count max power [W] ($*10^{1}$)
269: Cumul. count max power [W] ($*10^{2}$)

270: Cumul. count max power [W] ($*10^{3}$)
271: Cumul. count max power [W] ($*10^{4}$)

272÷299: Empty

SECOND CODE:

0: Null

300: per second
301: per minute
302: per hour
303: per day
304: per week
305: per month
306: per year
307: per revolution/measurement
308: increment per input pulse on input channel 0
309: increment per input pulse on input channel 1
310: increment per output pulse on output channel 0
311: increment per output pulse on output channel 1
312: per liter
313: per m^3
314: per kg
315: per K (Kelvin)
316: per kWh
317: per GJ
318: per kW
319: per (K*l)(Kelvin*liter)
320: per V (Volt)
321: per A (Ampere)
322: multiplied by sek
323: multiplied by sek/V
324: multiplied by sek/A
325: start date(/time) of
326: VIF contains uncorrected unit instead of corrected unit
327: Accumulation only if positive contributions
328: Accumulation of abs value only if negative contributions
329: upper limit value
330: lower limit value
331: # of exceeds of upper limit
332: # of exceeds of lower limit
333: Date(/time) of begin of first lower limit exceed
334: Date(/time) of end of first lower limit exceed
335: Date(/time) of begin of last lower limit exceed
336: Date(/time) of end of last lower limit exceed
337: Date(/time) of begin of first upper limit exceed
338: Date(/time) of end of first upper limit exceed
339: Date(/time) of begin of last upper limit exceed
340: Date(/time) of end of last upper limit exceed

341: Duration of limit exceed
342: Duration of limit exceed
343: Duration of limit exceed
344: Duration of limit exceed
345: Duration of limit exceed
346: Duration of limit exceed
347: Duration of limit exceed
348: Duration of limit exceed
349: Duration of limit exceed
350: Duration of limit exceed
351: Duration of limit exceed
352: Duration of limit exceed
353: Duration of limit exceed
354: Duration of limit exceed
355: Duration of limit exceed
356: Duration of limit exceed

357: Duration of first/last
358: Duration of first/last
359: Duration of first/last
360: Duration of first/last
361: Duration of first/last
362: Duration of first/last
363: Duration of first/last
364: Duration of first/last

365: Date(/time) of first/last begin/end
366: Date(/time) of first/last begin/end

367: Date(/time) of first/last begin/end
368: Date(/time) of first/last begin/end

369: Multiplicative correction factor ($*10^{-6}$)
370: Multiplicative correction factor ($*10^{-5}$)
371: Multiplicative correction factor ($*10^{-4}$)
372: Multiplicative correction factor ($*10^{-3}$)
373: Multiplicative correction factor ($*10^{-2}$)
374: Multiplicative correction factor ($*10^{-1}$)
375: Multiplicative correction factor ($*10^{0}$)
376: Multiplicative correction factor ($*10^{1}$)
377: Additive correction constant * unit of VIF (offset)
378: Additive correction constant * unit of VIF (offset)
379: Additive correction constant * unit of VIF (offset)
380: Additive correction constant * unit of VIF (offset)

381: Multiplicative correction factor: 10^{3}
382: future value
383: next VIFE's and data of this block are manufacturer specific

384: None
385: Too many DIFE's
386: Storage number not implemented
387: Unit number not implemented
388: Tariff number not implemented
389: Function not implemented
390: Data class not implemented
391: Data size not implemented
392: Too many VIFE's
393: Illegal VIF-Group
394: Illegal VIF-Exponent
395: VIF/DIF mismatch
396: Unimplemented action
397: No data available (undefined value)
398: Data overflow
399: Data underflow
400: Data error
401: Premature end of record

SOFTWARE & COMMANDS:

If you want to use our free software for making the download and do other operations you can download this software: www.adfweb.com/download/filefold/MBus_Concentrator_EU.zip.
The functioning of this software is described in this manual: www.adfweb.com/download/filefold/MBus_Concentrator_Manual.pdf

If you don't want to use our free software for making the download operations you have to use these commands:

"*Password: XXXXXXXXXX*": This must be the first command that you send to the device. Instead of XXXXXXXXXX you have to insert your password. The default password is 0123456789. If the password is correct this message appears: "*Password accepted; insert the next command.*". Otherwise: "*Password wrong. Please try again.*" If you edit for three times the wrong password you have to wait 10 minutes before retype it. The minimum characters for a password is 0 and the maximum is 10. Can be accepted numbers and digits.

After that the other commands are:

"*Read Data Time*": for read the clock data and time "*Data read: XXXX/YY/ZZ HH:MM:SS*"

"*Write Data Time: XXXX/YY/ZZ HH:MM:SS*": Instead of XXXX insert the year; YY insert the month; ZZ insert the day; HH insert the hour; MM insert the minutes; SS: insert the seconds. If the string is correct the message "*New data: XXXX/YY/ZZ HH:MM:SS*" appears. Otherwise: "*Wrong data. Please try again*".

"*Set New Password: XXXXXXXXXX*": In order to change the password you have to send this command. Instead of XXXXXXXXXX insert the new password. If the string is correct the message "*New password accepted: XXXXXXXXXX*" appears. If the password is more long than 10 characters the message "*Password too long.*" appears.

"*Download Last Data*": It is used for download the last .CSV file saved. If no .CSV file is saved, the message "*No scan has been performed.*" appears.

"*New Scan*": It is used for doing a immediately scan. It returns a "*OK*" if it is able to doing another scan. Otherwise if another scan is already in execution the message "*The device is already doing a scan.*" appears.

"*DownloadListOfReadings*": It is used for download the list of 12 stored readings where is specified the data/time of the reading.

"*DownloadStore: xx*": It is used for download the selected stored log. Instead xx, insert a value of the follow: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

"*Exit*": It is used for close the communication and make the Logout from the Password. It returns a "*Done*".

Any other command different from the ones described above returns a "*Unknown Command. Redigit it.*".

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 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. You can select only "**Firmware**", only "**Project**" or both of them;
- 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.

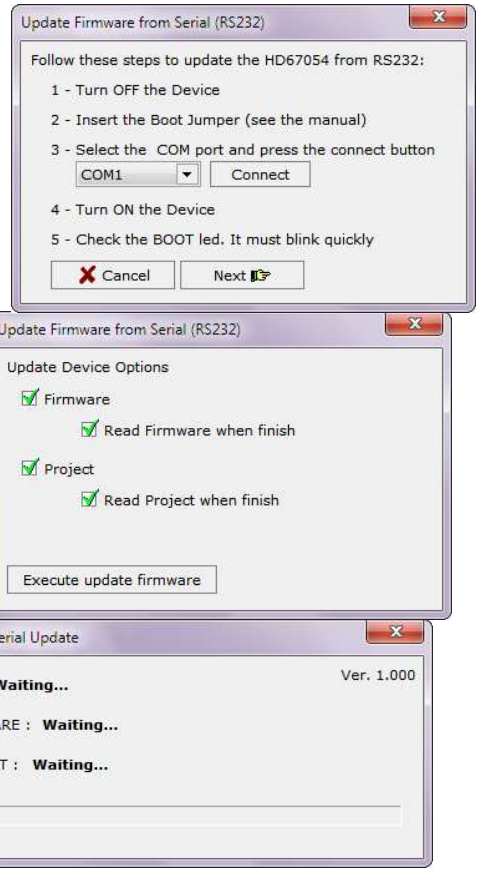


Figure 6: "Update Device" windows

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 HD67054M-xxx 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;
- Try to restart the PC.

Figure 7: "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.

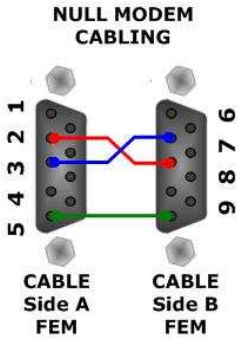


Figure 8: Null modem cabling

In case of using a "Dial-Up Modem" or "ISDN Modem" the cable to use is a cable with all lines that are managed by the board.

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)*

MECHANICAL DIMENSIONS:

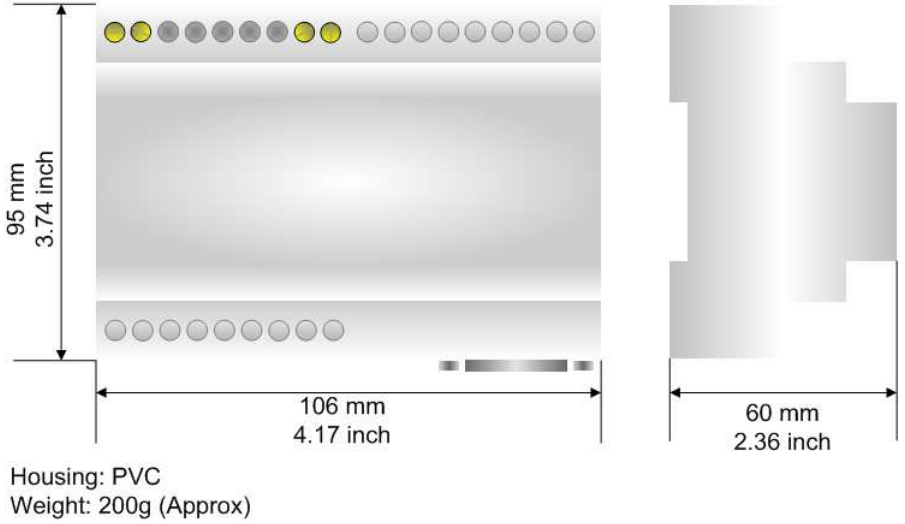


Figure 9: Mechanical dimensions scheme for HD67054M-20, HD67054M-40, HD67054M-80

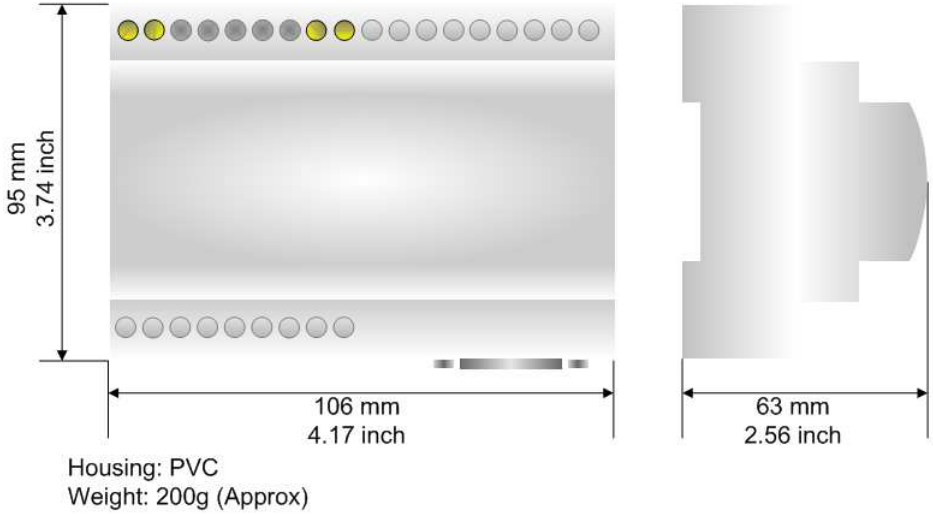


Figure 10: Mechanical dimensions scheme for HD67054M-160

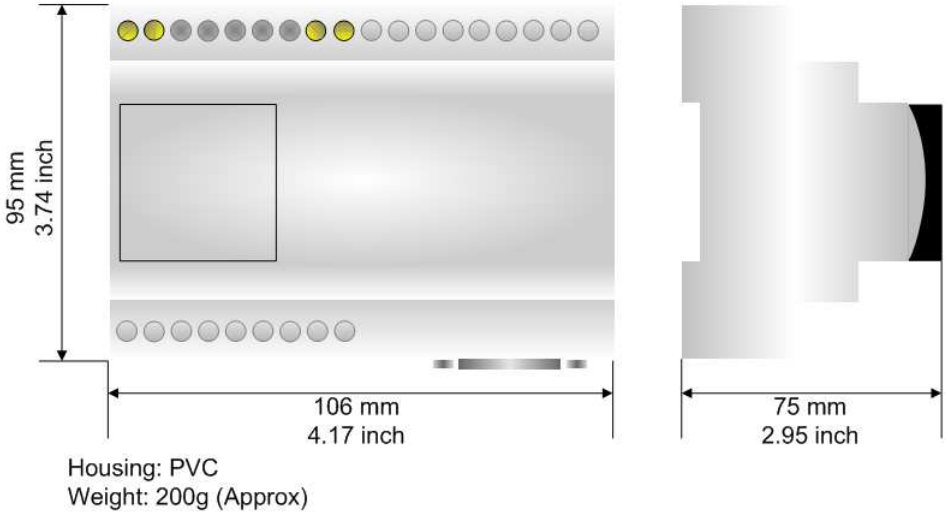


Figure 11: Mechanical dimensions scheme for HD67054M-250

ORDER CODES:

Order Code:	**HD67054M-20**	**-**	M-Bus - Concentrator - Datalogger (up to 40 slaves connected to M-Bus)
Order Code:	**HD67054M-40**	**-**	M-Bus - Concentrator - Datalogger (up to 40 slaves connected to M-Bus)
Order Code:	**HD67054M-80**	**-**	M-Bus - Concentrator - Datalogger (up to 80 slaves connected to M-Bus)
Order Code:	**HD67054M-160**	**-**	M-Bus - Concentrator - Datalogger (up to 160 slaves connected to M-Bus)
Order Code:	**HD67054M-250**	**-**	M-Bus - Concentrator - Datalogger (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

DISCLAIMER

All technical content within this document can be modified without notice. The content of the document content is a recurring audit.
For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com S.r.l. shall not be liable for consequences of improper use.

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.

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