

# User Manual

Revision 1.001  
English

## M-Bus Master / SNMP Agent - Converter

(Order Code: HD67163-B2-20, HD67163-B2-40, HD67163-B2-80, HD67163-B2-160, HD67163-B2-250)

for Website information:

[www.adfweb.com?Product=HD67163-B2](http://www.adfweb.com?Product=HD67163-B2)

for Price information:

[www.adfweb.com?Price=HD67163-B2-20](http://www.adfweb.com?Price=HD67163-B2-20)

[www.adfweb.com?Price=HD67163-B2-40](http://www.adfweb.com?Price=HD67163-B2-40)

[www.adfweb.com?Price=HD67163-B2-80](http://www.adfweb.com?Price=HD67163-B2-80)

[www.adfweb.com?Price=HD67163-B2-160](http://www.adfweb.com?Price=HD67163-B2-160)

[www.adfweb.com?Price=HD67163-B2-250](http://www.adfweb.com?Price=HD67163-B2-250)

### Benefits and Main Features:

- ✦ Very easy to configure
- ✦ Electrical isolation
- ✦ Temperature range: -40°C/85°C (-40°F/185°F)



For others SNMP products, see also the following links:

#### Converter SNMP to

- [www.adfweb.com?Product=HD67155](http://www.adfweb.com?Product=HD67155)
- [www.adfweb.com?Product=HD67156](http://www.adfweb.com?Product=HD67156)
- [www.adfweb.com?Product=HD67159](http://www.adfweb.com?Product=HD67159)
- [www.adfweb.com?Product=HD67160](http://www.adfweb.com?Product=HD67160)
- [www.adfweb.com?Product=HD67161](http://www.adfweb.com?Product=HD67161)
- [www.adfweb.com?Product=HD67040](http://www.adfweb.com?Product=HD67040)
- [www.adfweb.com?Product=HD67162](http://www.adfweb.com?Product=HD67162)
- [www.adfweb.com?Product=HD67164](http://www.adfweb.com?Product=HD67164)
- [www.adfweb.com?Product=HD67165](http://www.adfweb.com?Product=HD67165)
- [www.adfweb.com?Product=HD67166](http://www.adfweb.com?Product=HD67166)
- [www.adfweb.com?Product=HD67167](http://www.adfweb.com?Product=HD67167)
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- [www.adfweb.com?Product=HD67169](http://www.adfweb.com?Product=HD67169)
- [www.adfweb.com?Product=HD67613](http://www.adfweb.com?Product=HD67613)
- [www.adfweb.com?Product=HD67693](http://www.adfweb.com?Product=HD67693)
- [www.adfweb.com?Product=HD67726](http://www.adfweb.com?Product=HD67726)
- [www.adfweb.com?Product=HD67820](http://www.adfweb.com?Product=HD67820)

- (CAN)
- (CANopen)
- (EtherNet/IP)
- (DeviceNet Master)
- (DeviceNet Slave)
- (DMX)
- (J1939)
- (Modbus Master)
- (Modbus Slave)
- (Modbus TCP Master)
- (Modbus TCP Slave)
- (PROFIBUS Master)
- (PROFIBUS Slave)
- (PROFINET)
- (BACnet Slave)
- (BACnet Master)
- (KNX)

Do you have an your customer protocol?

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

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

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



User Manual

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**UPDATED DOCUMENTATION:**

Dear customer, we thank you for your attention and we remind you that you need to check that the following document is:

- ✚ Updated
- ✚ Related to the product you own

To obtain the most recently updated document, note the “document code” that appears at the top right-hand corner of each page of this document.

With this “Document Code” go to web page [www.adfweb.com/download/](http://www.adfweb.com/download/) and search for the corresponding code on the page. Click on the proper “Document Code” and download the updates.

**REVISION LIST:**

Revision	Date	Author	Chapter	Description
1.000	02/10/2015	Ff	All	First Release
1.001	07/12/2015	Ff	All	Revision

**WARNING:**

ADFweb.com reserves the right to change information in this manual about our product without warning.  
ADFweb.com is not responsible for any error this manual may contain.

**TRADEMARKS:**

All trademarks mentioned in this document belong to their respective owners.

**SECURITY ALERT:****GENERAL INFORMATION**

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device, legal and safety regulation are required for each individual application. 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 instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

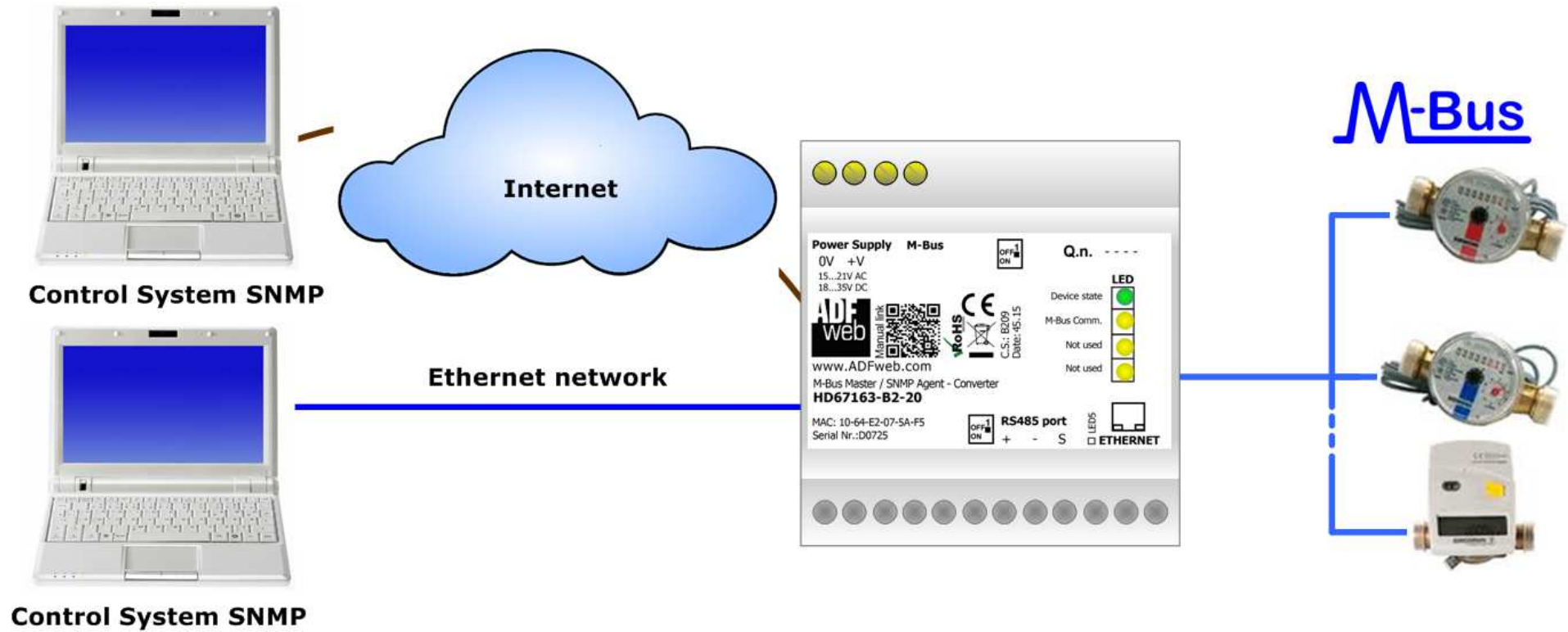


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

**CE CONFORMITY**

The declaration is made by our company. You can send an email to [support@adfweb.com](mailto:support@adfweb.com) or give us a call if you need it.

**EXAMPLE OF CONNECTION:**



**CONNECTION SCHEME:**

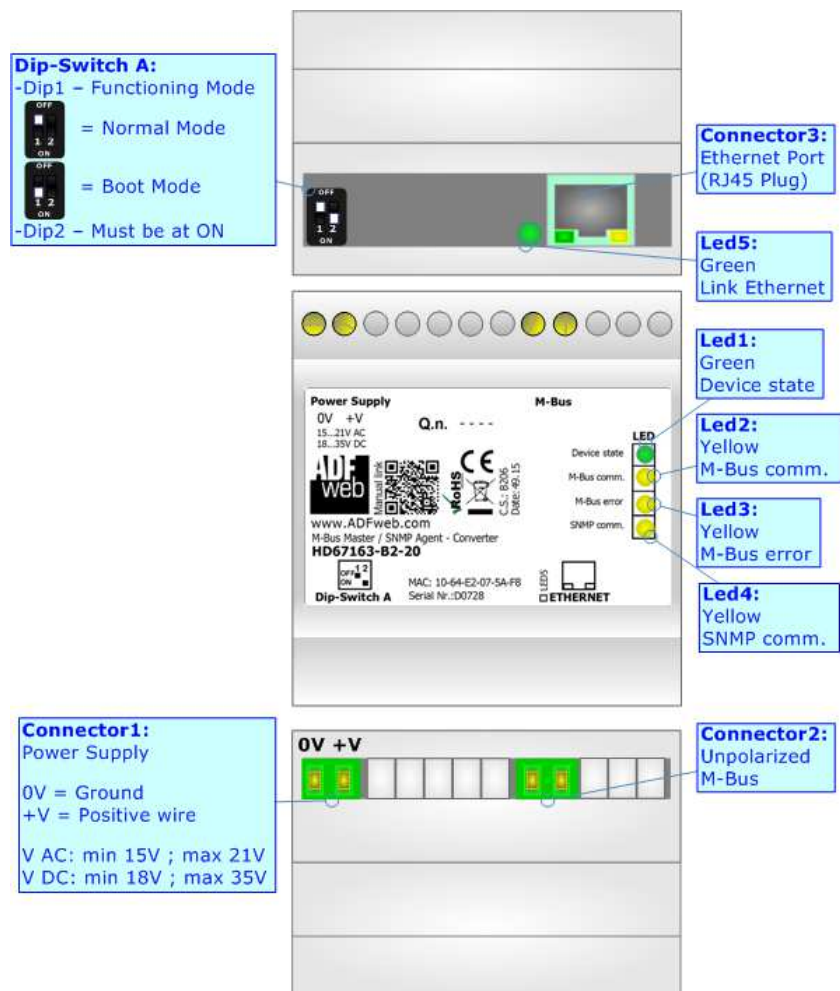


Figure 1: Connection scheme for HD67163-B2-xxx

**CHARACTERISTICS:**

The HD67163-B2-xxx is a M-Bus Master / SNMP Agent - Converter.

It has the following characteristics:

- Up to 1024 bytes in reading;
- Triple isolation between M-Bus - Power Supply, M-Bus - Ethernet, Power Supply - Ethernet.
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 15...21V AC or 18...35V DC;
- Wide temperature range: -40°C / 85°C [-40°F / +185°F].

At the Converter can be connected up to 250 standard M-Bus devices. This number depends of the code expressed by the xxx number:

- HD67163-B2-20 support up to 20 M-Bus devices;
- HD67163-B2-40 support up to 40 M-Bus devices;
- HD67163-B2-80 support up to 80 M-Bus devices;
- HD67163-B2-160 support up to 160 M-Bus devices;
- HD67163-B2-250 support up to 250 M-Bus devices.

**CONFIGURATION:**

You need Compositor SW67163 software on your PC in order to perform the following:

- Define the parameters of SNMP line;
- Define the parameters of M-Bus line;
- Define which M-Bus variables are readable on SNMP;
- Update the device.

**POWER SUPPLY:**

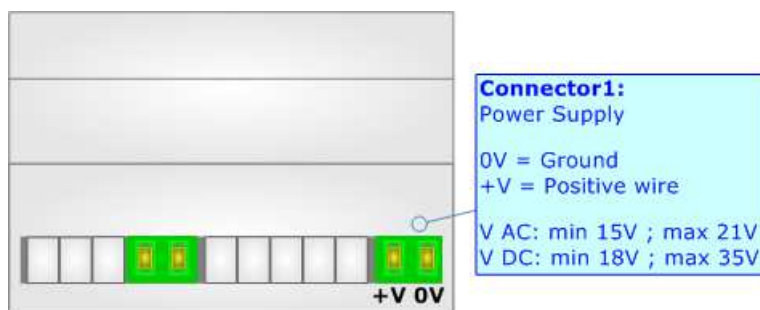
The devices can be powered at 15...21V AC and 18...35V DC. For more details see the two tables below.

VAC		VDC	
Vmin	Vmax	Vmin	Vmax
15V	21V	18V	35V

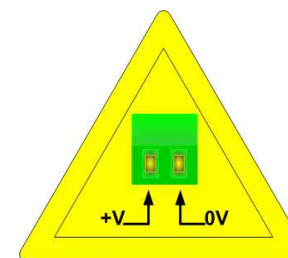
Consumption at 24V DC:

Device	No Load [W/VA]	Full Load [W/VA]*
HD67163-B2-20	3.5	4
HD67163-B2-40		5
HD67163-B2-80		8
HD67163-B2-160		14
HD67163-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**



HD67163-B2-xxx

**FUNCTION MODES:**

The device has got two functions mode depending of the position of the 'Dip1 of Dip-Switch A':

- The first, with 'Dip1 of Dip-Switch A' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip1 of Dip-Switch A' at "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.

**Warning:**

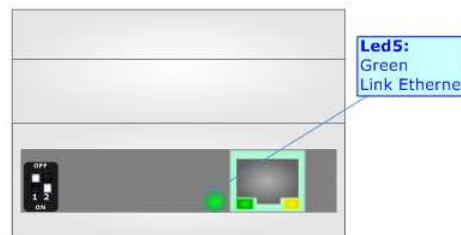
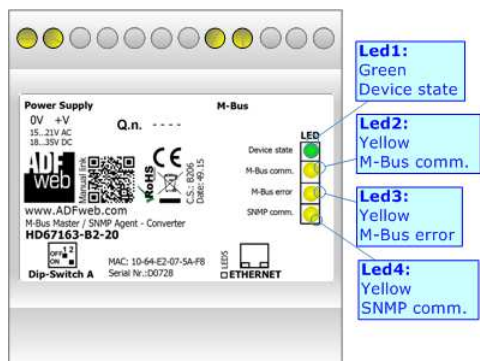
Dip2 of 'Dip-Switch A' must be at ON position for working even if the Ethernet cable isn't inserted.



**LEDS:**

The devices have got five 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 (green)	Blinks slowly (~1Hz)	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (~0.5Hz):</b> update in progress
2: M-Bus comm. (yellow)	Blinks quickly when a correct M-Bus response is received	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (~0.5Hz):</b> update in progress
3: M-Bus error (yellow)	Becomes ON when the reply to M-Bus interrogation isn't arrived	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (~0.5Hz):</b> update in progress
4: SNMP comm. (yellow)	Blinks quickly when a SNMP request is received	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (~0.5Hz):</b> update in progress
5: Ethernet Link (green)	<b>ON:</b> Ethernet cable connected <b>OFF:</b> Ethernet cable disconnected	<b>ON:</b> Ethernet cable connected <b>OFF:</b> Ethernet cable disconnected



**SNMP:**

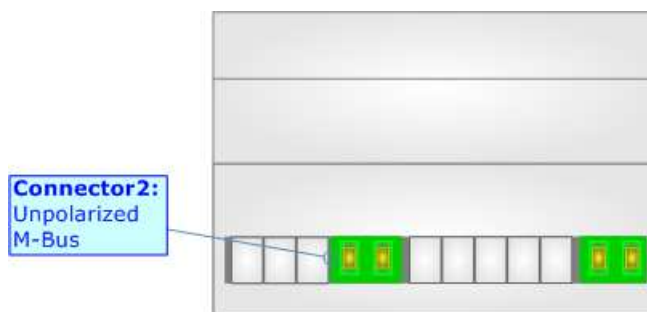
The SNMP connection must be made using Connector2 of HD67163-B2-xxx with at least a Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform to the T568 norms relative to connections in cat.5 up to 100 Mbps. To connect the device to an Hub/Switch is recommended the use of a straight cable, to connect the device to a PC/other is recommended the use of a cross cable.



**M-BUS:**

The M-Bus is a unpolarized 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)*



**USE OF COMPOSITOR SW67163:**

To configure the Converter, use the available software that runs with Windows called SW67163. It is downloadable on the site [www.adfweb.com](http://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 (XP, Vista, Seven, 8, 10; 32/64bit).

When launching the SW67163, the window below appears (Fig. 2).

**Note:**

It is necessary to have installed .Net Framework 4.

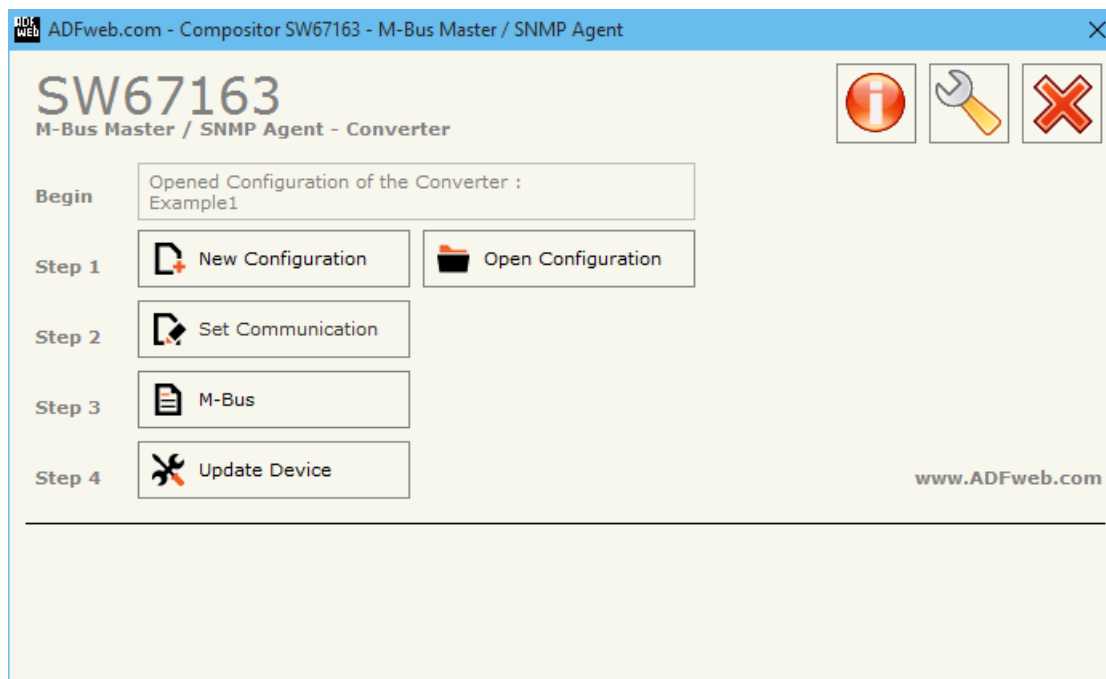
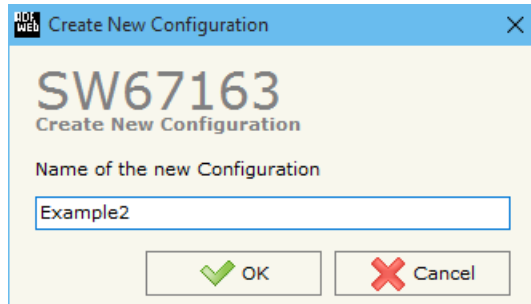


Figure 2: Main window for SW67163

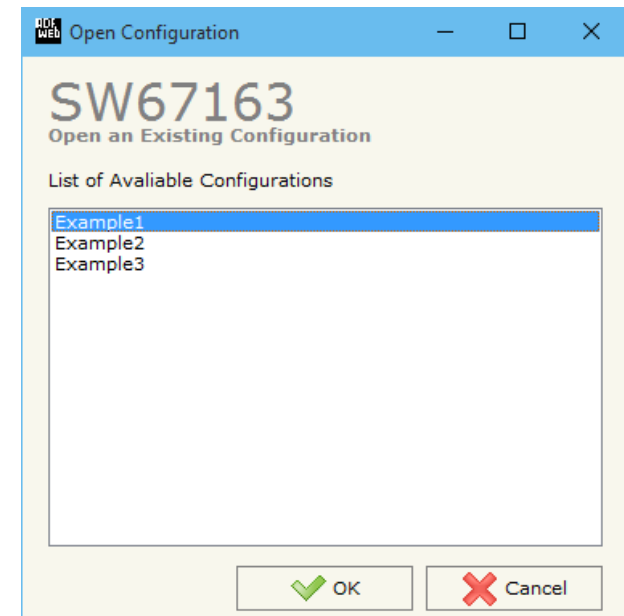
**NEW CONFIGURATION / OPEN CONFIGURATION:**

The “**New Configuration**” button creates the folder which contains the entire device’s configuration.




A device’s configuration can also be imported or exported:

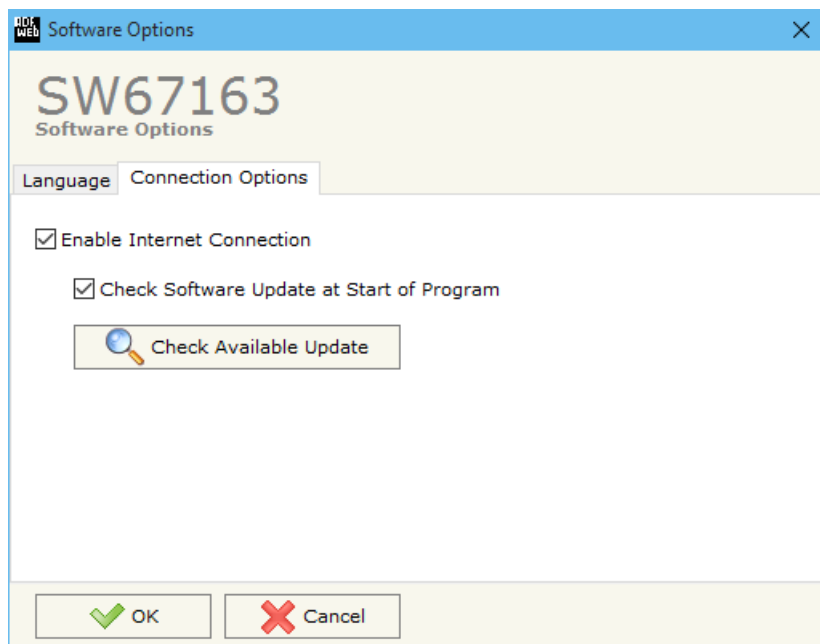
- To clone the configurations of a Programmable “M-Bus Master / SNMP Agent - Converter” in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button “**Open Configuration**”.



## SOFTWARE OPTIONS:

By pressing the “**Settings**” () button there is the possibility to change the language of the software and check the updatings for the compositor.

In the section “Language” it is possible to change the language of the software.



In the section “Connection Options”, it is possible to check if there are some updatings of the software compositor in ADFweb.com website. Checking the option “**Check Software Update at Start of Program**”, the SW67163 check automatically if there are updatings when it is launched.

## SET COMMUNICATION:

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

By Pressing the **"Set Communication"** button from the main window for SW67163 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The window is divided in two sections, one for the SNMP and the other for the M-Bus Master.

The means of the fields for "SNMP" are:

- In the field **"IP ADDRESS"** insert the IP address that you want to give to the Converter;
- In the field **"SUBNET Mask"** insert the SubNet Mask;
- In the field **"GATEWAY"** insert the default gateway that you want to use. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net;
- In the field **"SNMP Name of Station"** is possible to assign a name to the SNMP node;
- If **"Normal Mode"** is checked the bytes defined in the field "Number Byte Out" are used for storing the data of all M-Bus slaves; otherwise if **"Single Slave Mode"** is checked, the bytes defined in the field "Number Byte Out" are used for storing the data of a single slave (see section "Single Slave Mode Functioning" at page 29 for more details);
- In the field **"Auxiliary Integer Dimension"** is possible to define the dimension of the Integer values in the Data Blocks of SNMP (see page 30 for more info).

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;
- In the field **"Node State value when slave device is not present"** it is possible to insert the value to assign to the "Node State" when the Gateway doesn't find the interrogated slave M-Bus.

SW67163  
Set Communication Setting

SNMP

IP ADDRESS  
192 . 168 . 0 . 10

SUBNET Mask  
255 . 255 . 255 . 0

GATEWAY  
192 . 168 . 0 . 1

SNMP Name of Station  
devicename1

Working Mode  
 Normal Mode  
 Single Slave Mode

Auxiliary Integer Dimension 2 Bytes

M-Bus

Baudrate 300

Parity EVEN

Cyclic Delay (s) 100

Node State value when slave device is not present 0

OK Cancel

**M-BUS ACCESS:**

By Pressing the **"M-Bus"** button from the main window for SW67163 (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.

To use the created Node the field **"Enable Node"** must be checked. If you have created a Node but for the moment it is unused it is possible to uncheck the field "Enable Node" without delete it; If the field **"Node State"** is checked the gateway reserve one byte at the starting of SNMP OUT 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 SNMP OUT 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 24) 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 19 for more information).

In the field **"Cut after"** it is possible to select after how many frames stops data requests. It is used when the slave has got many data frames and you don't need to read all them.

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.

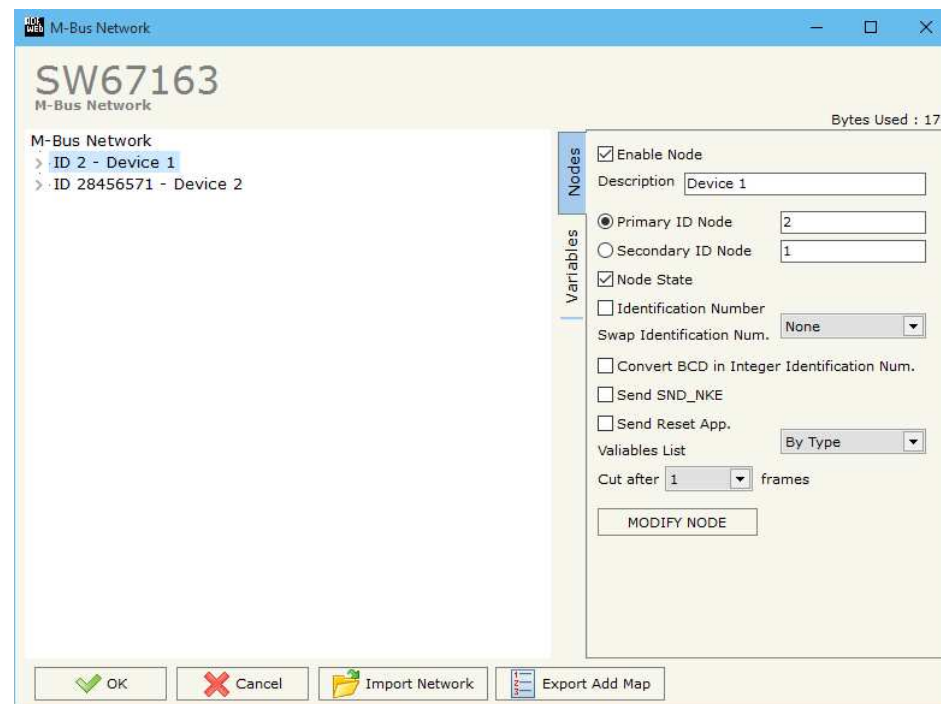
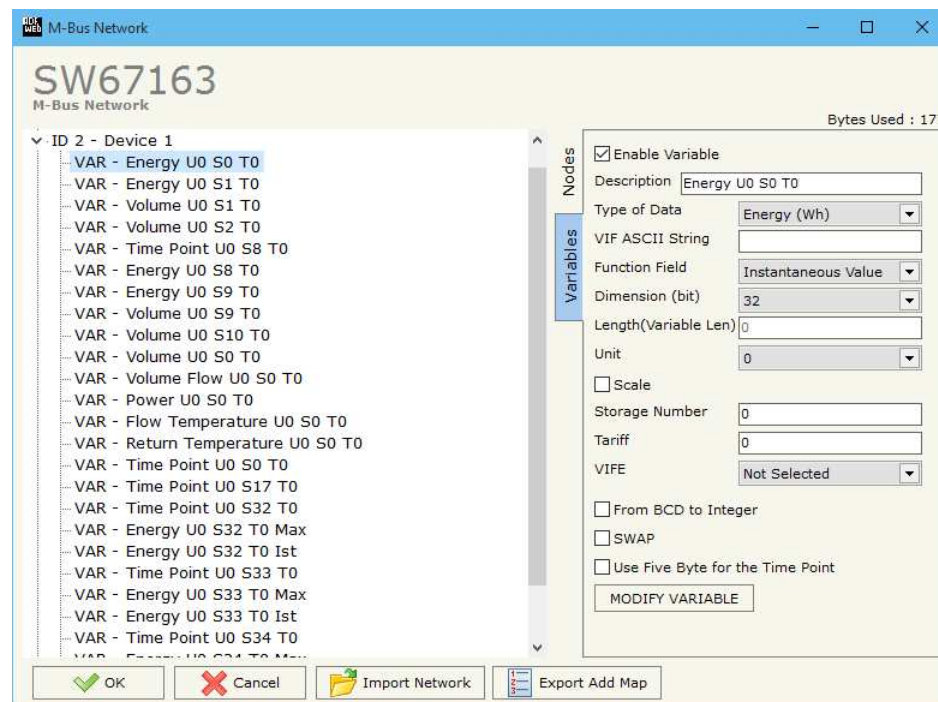


Figure 4: "M-Bus Network" window

## **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 SNMP 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;





- 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 24 for more information)).

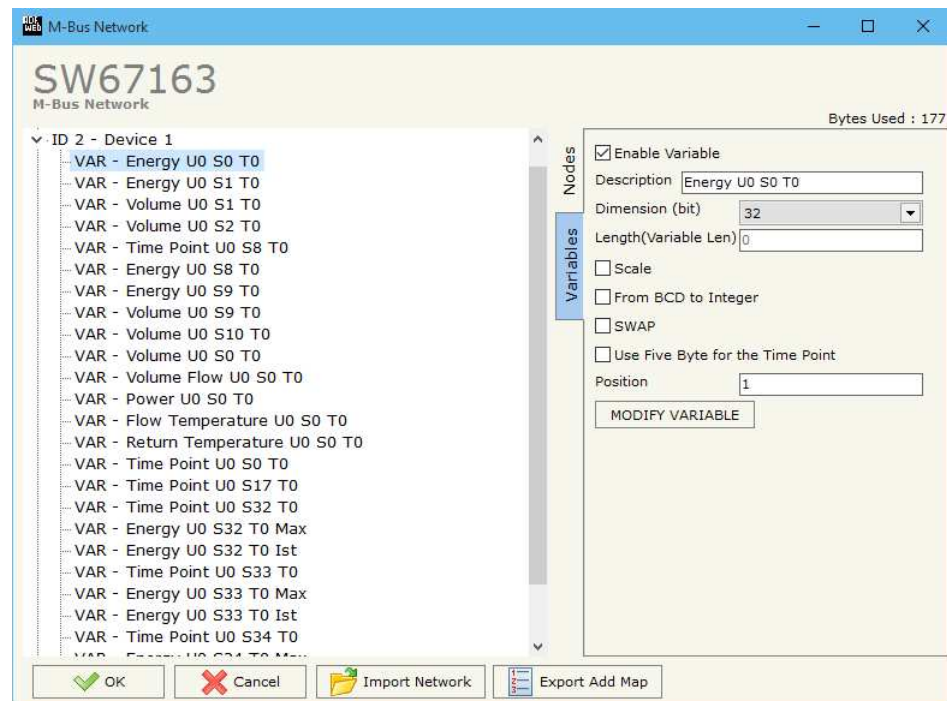
Having completed these fields, to add the variable the button "**ADD VARIABLE**" must be pressed.

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 SNMP 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;
- 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 26 for more information));
- In the field "**Position**" insert the number of the variable that you want on SNMP.



Example:

0x68 – Start Byte  
 0xBD – L Field  
 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) put in the reserved fields if "Identification Number" is checked

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

First Variable (1)

Second Variable (2)

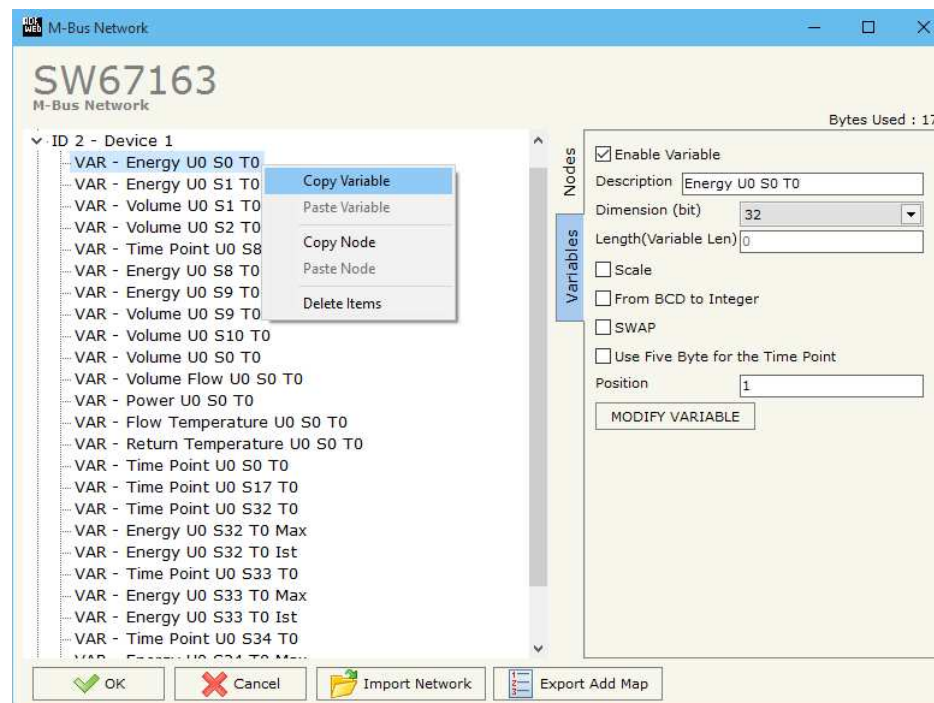
Third Variable (3)

To be use in the "Position" field

**COPY, PASTE AND DELETE ITEMS:**

By pressing the right button of the mouse over a item (Variable or Node) it is possible to Copy, Paste and Delete.  
 It is possible to Copy a variable from a Node and copy it to another Node, or copy a Variable from a project and paste in another one.  
 It is also possible to copy an entire Node with all its Variables.

 **Note:** By pressing the **“Import Network”** button is possible to import the file generated by the Analyzer HD67031.



Possible choices for the fields used to create a variable:

**Type of Data:**

- |\_Energy (Wh)
- |\_Energy (J)
- |\_Volume (m<sup>3</sup>)
- |\_Mass (Kg)
- |\_On Time
- |\_Operating Time
- |\_Power (W)
- |\_Power (J/h)
- |\_Volume Flow (m<sup>3</sup>/h)
- |\_Volume Flow Ext. (m<sup>3</sup>/min)
- |\_Volume Flow Ext. (m<sup>3</sup>/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<sup>3</sup>
- 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<sup>3</sup>
- \_ per kg
- \_ per K (Kelvin)
- \_ per kWh
- \_ per GJ
- \_ per kW
- \_ per (K\*I)(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)
- \_ Multiplicative correction factor: 10<sup>3</sup>
- \_ 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

**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.

<b>None</b>	<b>Type 1</b>
0x28	0x65
0x45	0x71
0x65	0x28
0x71	0x45

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

<b>None</b>	<b>Type 1</b>
0x01	0x36
0xB2	0x7B
0x36	0x01
0x7B	0xB2



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 <sup>3</sup>	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 <sup>3</sup> /h	0.001 l/h to 10000 l/h
Volume Flow Ext.	$10^{(x-7)}$ m <sup>3</sup> /min	0.0001 l/min to 1000 l/min
Volume Flow Ext.	$10^{(x-9)}$ m <sup>3</sup> /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

Data type F:

$2^7$	$2^6$	$2^5$	$2^4$	$2^3$	$2^2$	$2^1$	$2^0$
$2^{15}$	$2^{14}$	$2^{13}$	$2^{12}$	$2^{11}$	$2^{10}$	$2^9$	$2^8$
$2^{23}$	$2^{22}$	$2^{21}$	$2^{20}$	$2^{19}$	$2^{18}$	$2^{17}$	$2^{16}$
$2^{31}$	$2^{30}$	$2^{29}$	$2^{28}$	$2^{27}$	$2^{26}$	$2^{25}$	$2^{24}$

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:

$2^7$	$2^6$	$2^5$	$2^4$	$2^3$	$2^2$	$2^1$	$2^0$
$2^{15}$	$2^{14}$	$2^{13}$	$2^{12}$	$2^{11}$	$2^{10}$	$2^9$	$2^8$

Day (1 ... 31);

Month (1 ... 12);

Year (0 ... 99).

### UPDATE DEVICE:

By pressing the **"Update Device"** button, it is possible to load the created Configuration into the device; and also the Firmware, if necessary.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn off the Device;
- Put Dip1 of 'Dip-Switch A' in ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP **"192.168.2.205"**;
- Press the **"Ping"** button, "Device Found!" must appear;
- 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;
- Put Dip1 of 'Dip-Switch A' at OFF position;
- Turn on the device.

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

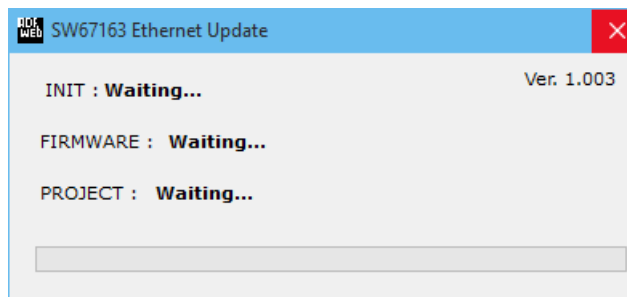
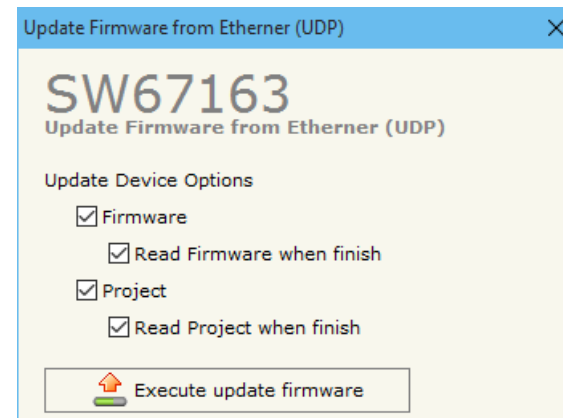
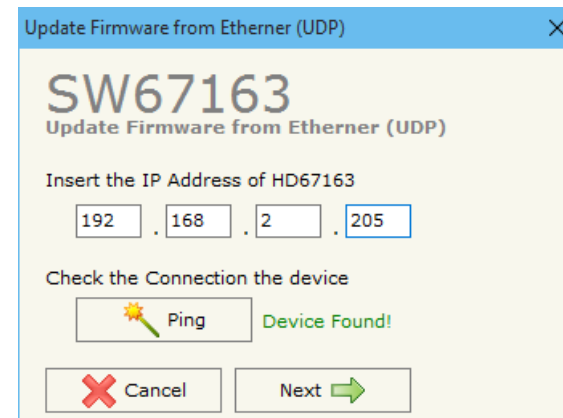


Figure 5: "Update device" windows

If you know the actual IP address of the device, you have to use this procedure:

- Turn on the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Press the "**Ping**" button, must appear "Device Found!";
- 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" the device automatically goes at Normal Mode.

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



**Note:**

When you install a new version of the software, if it is the first time it is better you do the update of the Firmware in the HD67163-B2 device.



**Note:**

When you receive the device, for the first time, you also have to update the Firmware in the HD67163-B2 device.



**Warning:**

If Fig. 6 appears when you try to do the Update try these points before seeking assistance:

- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven or Vista or 8, make sure that you have the administrator privileges;
- Take attention at Firewall lock;
- Check the LAN settings.



In the case of HD67163-B2 you have to use the software "SW67163": [www.adfweb.com/download/filefold/SW67163.zip](http://www.adfweb.com/download/filefold/SW67163.zip).

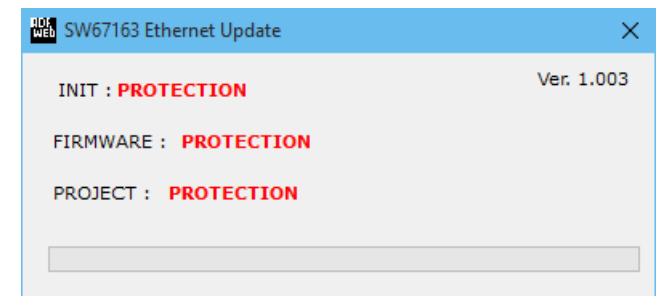


Figure 6: "Protection" window

## SNMP COMMUNICATION

In order to read the data from/to M-Bus side, it is necessary to use specific SNMP commands in order to see the SNMP Input and write the SNMP Output.

### Reading M-Bus data from SNMP:

In order to read the data from the HD67163-B2-xxx it is necessary to use the "snmpget" command. The Input array is contained to this internal directory: 1.3.6.1.4.1.33118.1.1.1.4.x.0, where 'x' is the number of data block. Each data block has a dimension of 128 bytes.

Example: you want to read informations of the data block 3. The structure of the command to send is:

```
snmpget -v1 -cprivate "IP Address of the converter" 1.3.6.1.4.1.33118.1.1.1.4.3.0
```



Figure 7: MIB Tree Input

**Note:**

The data blocks from 1 to 8 are used to read the entire internal SNMP arrays of the converter. The data are represented in bytes.

**Note:**

The data blocks from 1 to 8 has the data represented in bytes. The data blocks from 9 to 15 has the data represented in Integer. The dimension of the Integer values depends on the number of bytes set in the field "Auxiliary Integer Dimension" in the section "Set Communication".

**Note:**

It is possible to read an entire data block or only a specific byte/value (for the Data Block 1 to 8). It depends on the MIB used:

- 1.3.6.1.4.1.33118.1.1.1.4.x.0: entire data block
- 1.3.6.1.4.1.33118.1.1.1.4.x.y: value of the data block/specific byte

**SINGLE SLAVE MODE FUNCTIONING:**

By checking the field "Single Slave Mode" it is possible to save 1024 bytes of data for a single M-Bus Slave Device.

For having the data it is necessary that the SNMP Manager writes the first four bytes of the OID **1.3.6.1.4.1.33118.1.1.1.5.1.0** with the Primary or Secondary Address of the slave from which you want to receive the data.

Example of SNMP writing (data that a SNMP Manager sends) using the Primary Address of the Slave M-Bus

Byte 0	Byte 1	Byte 2	Byte 3
0x00	0x00	0x00	0x3A

Example of SNMP writing (data that a SNMP Manager sends) using the Secondary Address of the Slave M-Bus

Byte 0	Byte 1	Byte 2	Byte 3
0x28	0x45	0x65	0x71

If the address is defined in the section M-Bus and the reply frame of the slave interrogated is received, the Converter puts the requested address in the first four bytes of the first readable OID (1.3.6.1.4.1.33118.1.1.1.4.1.0). Then follow the normal data of the selected slave.

Example of SNMP data read by a SNMP Manager (data that a SNMP Manager receives) 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

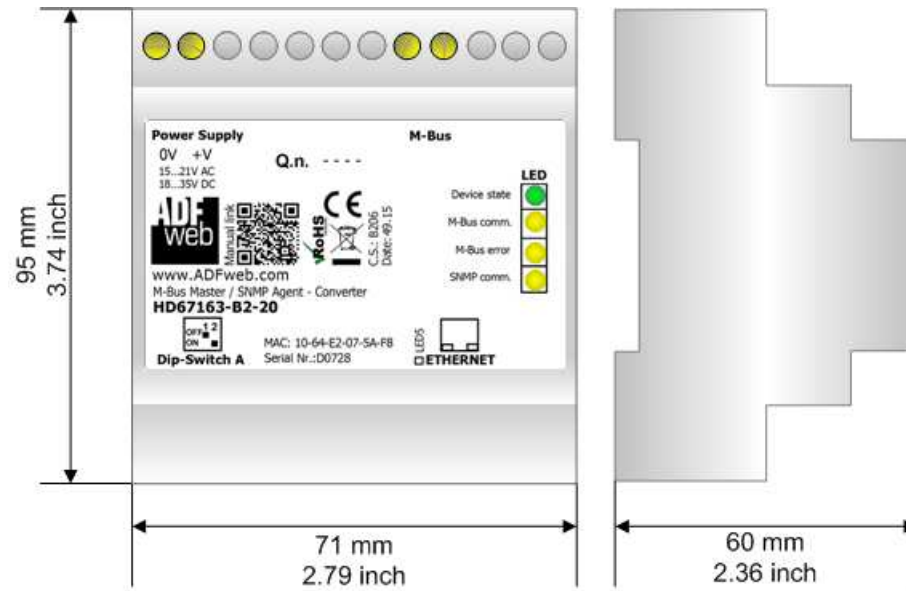
Example:

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 SNMP 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								

**MECHANICAL DIMENSIONS:**



Housing: PVC  
Weight: 200g (Approx)

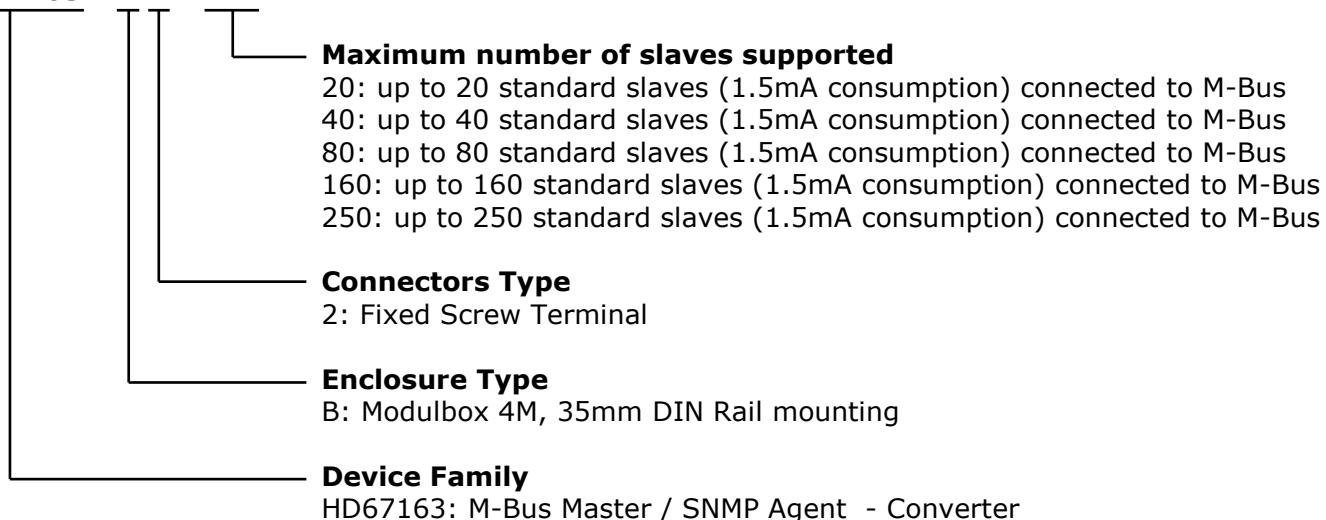
Figure 8: Mechanical dimensions scheme for HD67163-B2-xxx



## ORDERING INFORMATIONS:

The ordering part number is formed by a valid combination of the following:

### **HD67163 - B 2 - xxx**



- |                                   |   |   |
|-----------------------------------|---|---|
| Order Code: <b>HD67163-B2-20</b>  | - | M-Bus Master / SNMP Agent - Converter (up to 20 standard slaves)  |
| Order Code: <b>HD67163-B2-40</b>  | - | M-Bus Master / SNMP Agent - Converter (up to 40 standard slaves)  |
| Order Code: <b>HD67163-B2-80</b>  | - | M-Bus Master / SNMP Agent - Converter (up to 80 standard slaves)  |
| Order Code: <b>HD67163-B2-160</b> | - | M-Bus Master / SNMP Agent - Converter (up to 160 standard slaves) |
| Order Code: <b>HD67163-B2-250</b> | - | M-Bus Master / SNMP Agent - Converter (up to 250 standard slaves) |

## ACCESSORIES:

- |                           |   |   |
|---------------------------|---|---|
| Order Code: <b>APW020</b> | - | Power Supply for M-Bus Master device that supports up to 20 Slaves  |
| Order Code: <b>APW040</b> | - | Power Supply for M-Bus Master device that supports up to 40 Slaves  |
| Order Code: <b>APW080</b> | - | Power Supply for M-Bus Master device that supports up to 80 Slaves  |
| Order Code: <b>APW160</b> | - | Power Supply for M-Bus Master device that supports up to 160 Slaves |
| Order Code: <b>APW250</b> | - | Power Supply for M-Bus Master device that supports up to 250 Slaves |

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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 impact of 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](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:

- 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.
- 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.



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