User Manual

Revision 1.101
English

M-Bus Analyzer / Scanner / Sniffer

(Order Code: HD67031-xxx-yy)

for Website information:
www.adfweb.com?Product=HD67031

for Price information:
www.adfweb.com?Price=HD67031-20-B2
www.adfweb.com?Price=HD67031-40-B2
www.adfweb.com?Price=HD67031-80-B2
www.adfweb.com?Price=HD67031-160-B2
www.adfweb.com?Price=HD67031-250-B2

Benefits and Main Features:

- Very easy to use
- Low cost
- Free updating to lifetime
- Power supply of 15…21V AC or 18…35V DC
- Galvanic isolation
- Industrial temperature range:
  -40°C / 70°C (-40°F / 158°F)

HD67031-xxx-yy

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)**

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 / CANopen
www.adfweb.com?Product=HD67051

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:

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	07/01/2010	Fl	All	First release version
1.100	31/03/2011	Fl	All	Software changed (v3.000)
1.001	03/04/2013	Nt	All	Added new chapters

WARNING:

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ADFweb.com is not responsible for any error this manual may contain.

TRADEMARKS:

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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.

INTRODUCTION:

The M-Bus Analyzer/Scanner/Sniffer is a powerful, flexible and economic instrument which is used with system based in M-Bus.

The instrument is composed of the following: module hardware with a RS232, usb or Ethernet interface that connects to a personal computer, two M-Bus terminal to be connected to the line and a free software for MS Windows.

THE HARDWARE:

The model of "Analyzer/Scanner/Sniffer M-Bus" that can be used with the SW67031 is the one that has the RS232 (HD67031-xxx-yy) that lets you connect the device to a PC.
The xxx value indicate the maximum number of slaves that can be connected to the M-Bus; there are three codes: 20, 80, 250.

THE SOFTWARE:

To obtain the software please go to http://www.adfweb.com/home/download/download.asp *(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).

CHARACTERISTICS:

This product has the following characteristics:

- Electrical isolation between RS232 and M-Bus (If the model is the one with the HD67031-xxx-yy);
- Mountable on Rail DIN;
- Power Supply 15…21V AC or 18…35V DC;
- Temperature range -40°C to 70°C.

INSTALLATION:

Extract the file downloaded from our web site and follow the procedure to install the software.

USE OF SW67031 ANALYZER & SCANNER M-BUS:

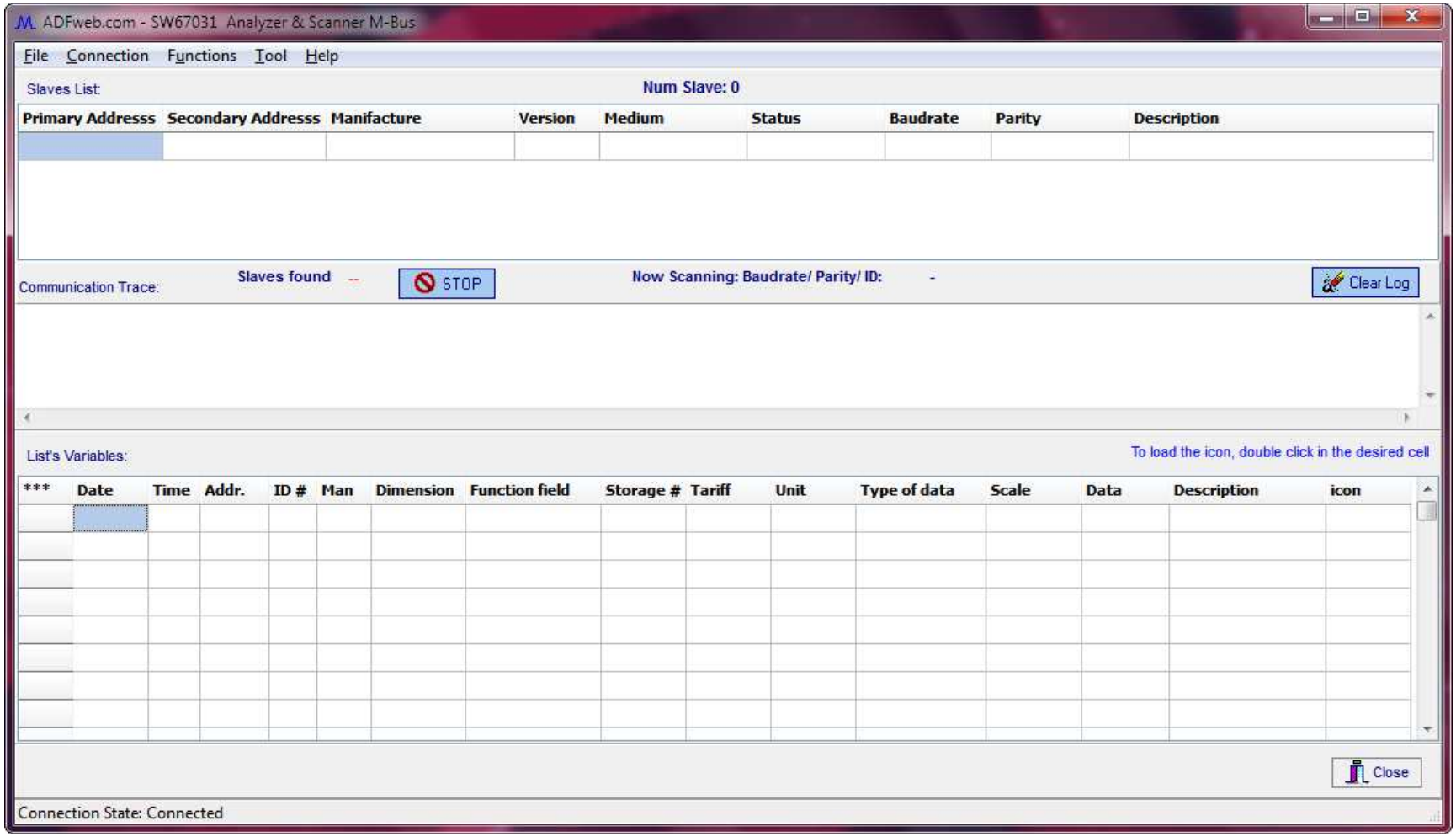


Figure 1: Main window for SW67031

SECTION FILE:

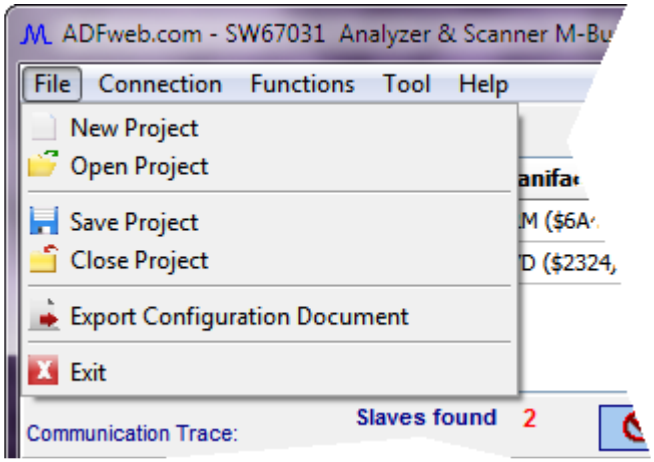


Figure 2: Section "File"

In this section it is possible to create a new project, open a saved project, save the existing project or close it. Moreover it is possible to export a configuration module.

NEW PROJECT:

The "New Project" button creates the folder which contains the new project files.

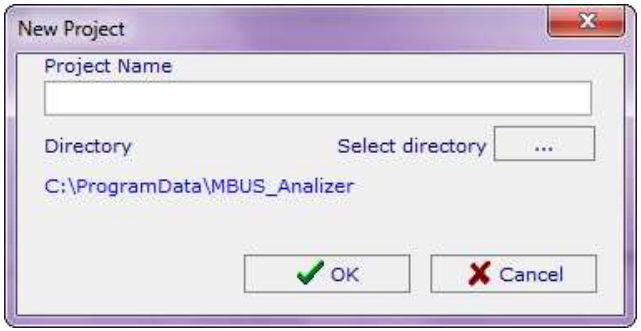


Figure 3: "New Project" window

OPEN PROJECT:

By pressing "Open Project" button it is possible to open a saved project with all the characteristics saved this project. i.e. device selected, Baudrate and Parity, devices founded at the scan, descriptions of variables…

SAVE PROJECT:

By pressing "Save Project" button it is possible to save the current workspace with all the project characteristics. i.e. device selected, Baudrate and Parity, devices founded at the scan, descriptions of variables…

CLOSE PROJECT:

By pressing "Close Project" button it is possible to close the current workspace.

EXPORT CONFIGURATION DOCUMENT:

By pressing the "Export Configuration Document" it is possible to save a .xml file used to configure the other our M-Bus products like:

- HD67029M-232;
- HD67029M-485;
- HD67044M;
- HD67051M;
- HD67053M;
- HD67054M;
- HD67055M;
- HD67061M;
- HD67062M.

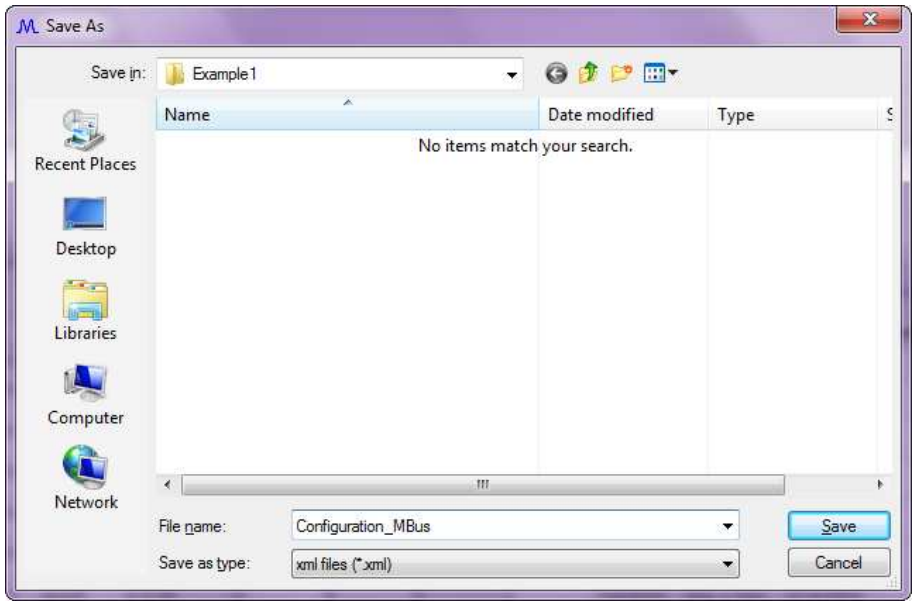


Figure 4: "Export Configuration Document" window

SECTION CONNECTION:

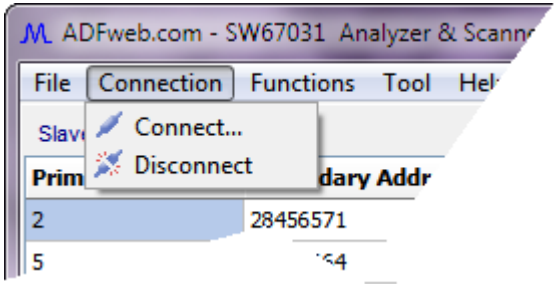


Figure 5: Section "Connection"

In this section it is possible to ménage the connection parameters, connect and disconnect to the device.

Note:
This section isn't available until a new project was created or an existing one was opened.

CONNECT...:

In this form it is possible to select the device in your possess between "HD67031-xxx-xx" and "HD67031-xxxE-xx".

If the device selected is the "HD67031-xxx-xx" the right window appear (Fig. 6).

In the field "Serial COM Port" you have to select the serial port used to connecting to the device.

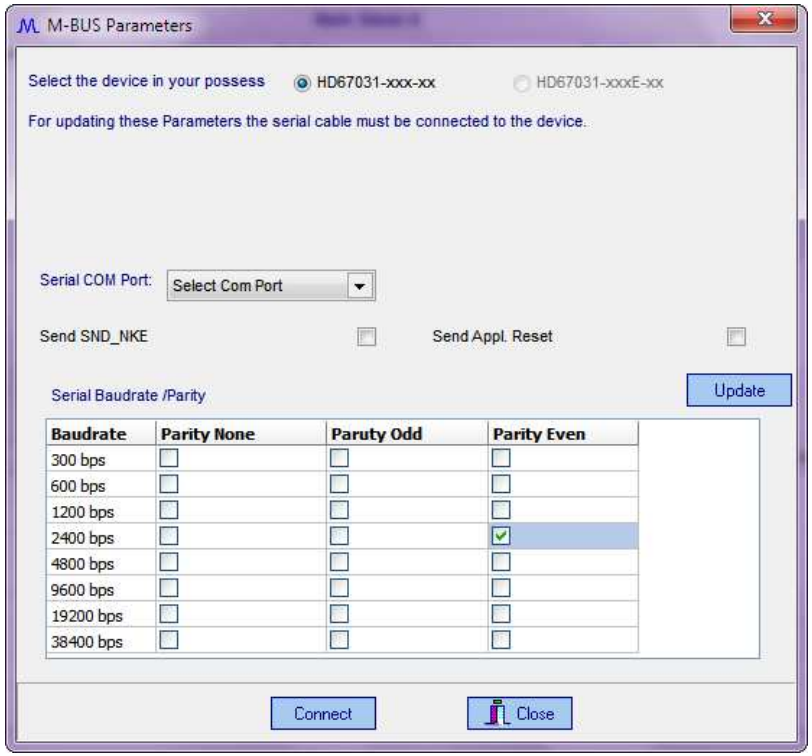


Figure 6: "Connect..." window

If you want to send the SND_NKE command when you do the scanning you have to check the "Send SND_NKE" field.

If you want to send the Application reset command when you do the scanning you have to check the "Send Appl. Reset" field.

After that it is possible to press the "Connect" button.

If the operation is completed successful the right window appear (Fig. 7).

Figure 7: "Confirm" window

DISCONNECT...:

If the "Disconnect" button is pressed the connection opened at the COM Port will closed.

SECTION FUNCTIONS:

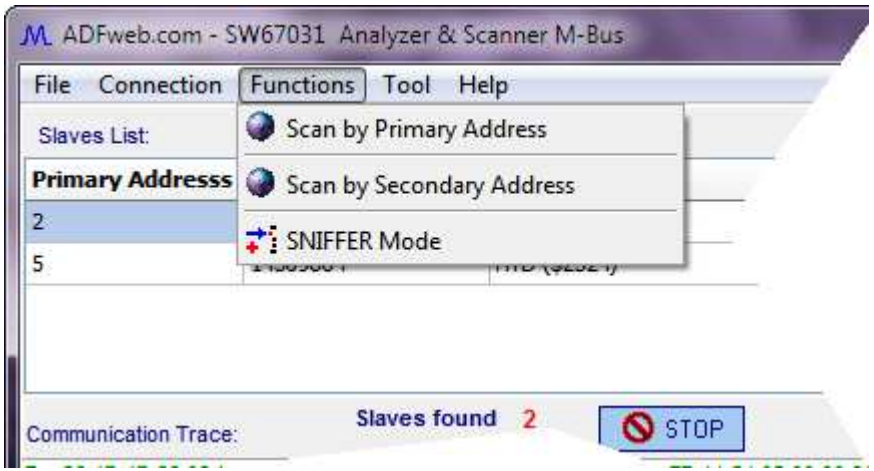


Figure 8: Section "Functions"

Note:
This section isn't available until a new project was created or an existing one was opened.

SCAN BY PRIMARY ADDRESS:

With this button the Network scanning by Primary Address starts.

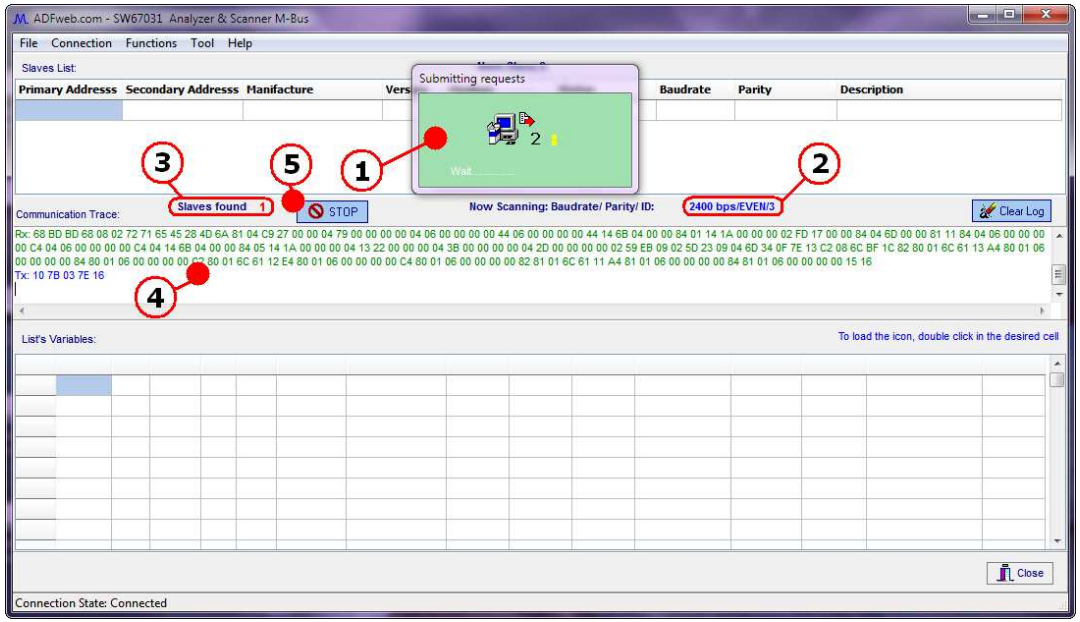


Figure 9: Scanning window

1: This window indicate that the software is doing the requests for scanning the devices;
2: This label indicates the Baudrate, Parity and the ID now scanned;
3: This label indicates the number of slaves founded until now;
4: In this field it is possible to see the data log;
5: With this button it is possible to stops the scanning. For example if you have four devices and the scan has found four devices you can stop it.

If when you have stopped the scan or it was completed and the software haven't found any device connected the right window appear (Fig. 10).

Figure 10: Warning window

Otherwise:

1: At this table it is possible to see the main information of the devices founded by the scan. i.e. Primary Address, Secondary Address, Manufacturer, Version, medium, Status, Baudrate, Parity. In the field "Description" you can insert a brief description of the device.

2: At this table it is possible to see all the variables of the scanned devices. Also in this table is present a field "Description" that allows you to insert a description of the variable.

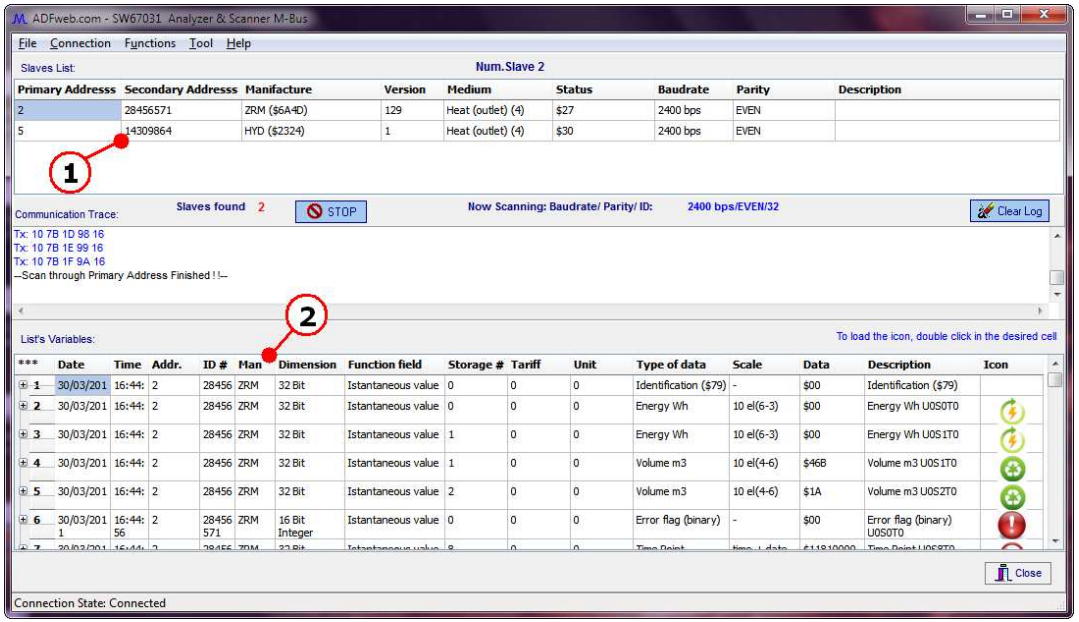


Figure 11: Scanning window

SCAN BY SECONDARY ADDRESS:

With this button the Network scanning by Secondary Address starts.

1: This window indicate that the software is doing the requests for scanning the devices;
2: This label indicates the number of slaves founded until now;
3: In this field it is possible to see the data log;
4: With this button it is possible to stops the scanning. For example if you have four devices and the scan has found four devices you can stop it.

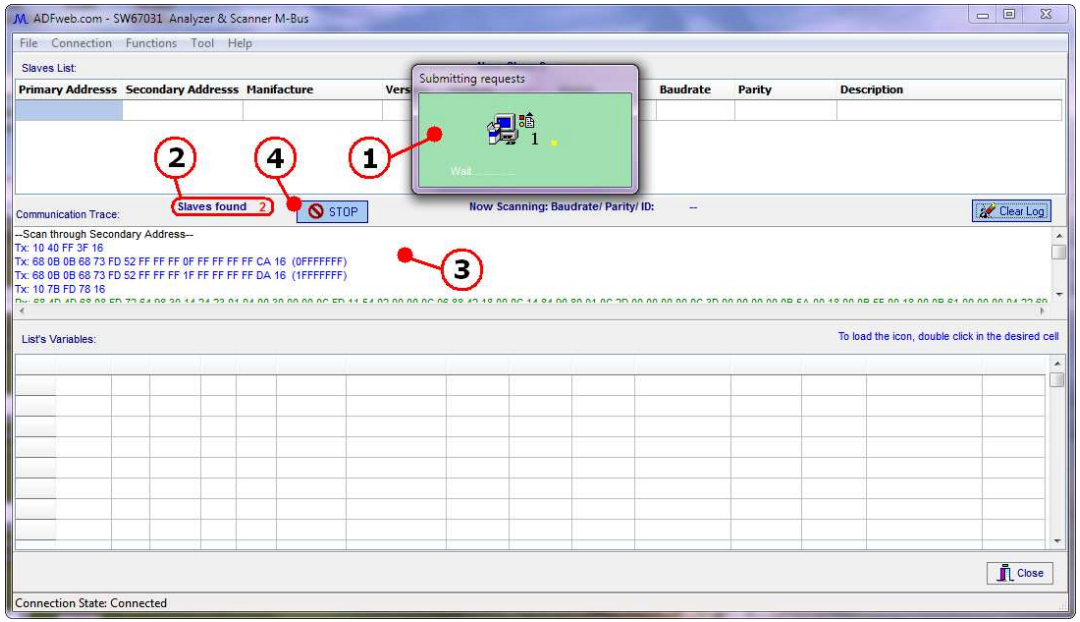


Figure 12: Scanning window

If when you have stopped the scan or it was completed and the software haven't found any device connected the right window appear (Fig. 13).

Figure 13: Warning window

Otherwise:

1: At this table it is possible to see the main information of the devices founded by the scan. i.e. Primary Address, Secondary Address, Manufacturer, Version, medium, Status, Baudrate, Parity. In the field "Description" you can insert a brief description of the device.

2: At this table it is possible to see all the variables of the scanned devices. Also in this table is present a field "Description" that allows you to insert a description of the variable.

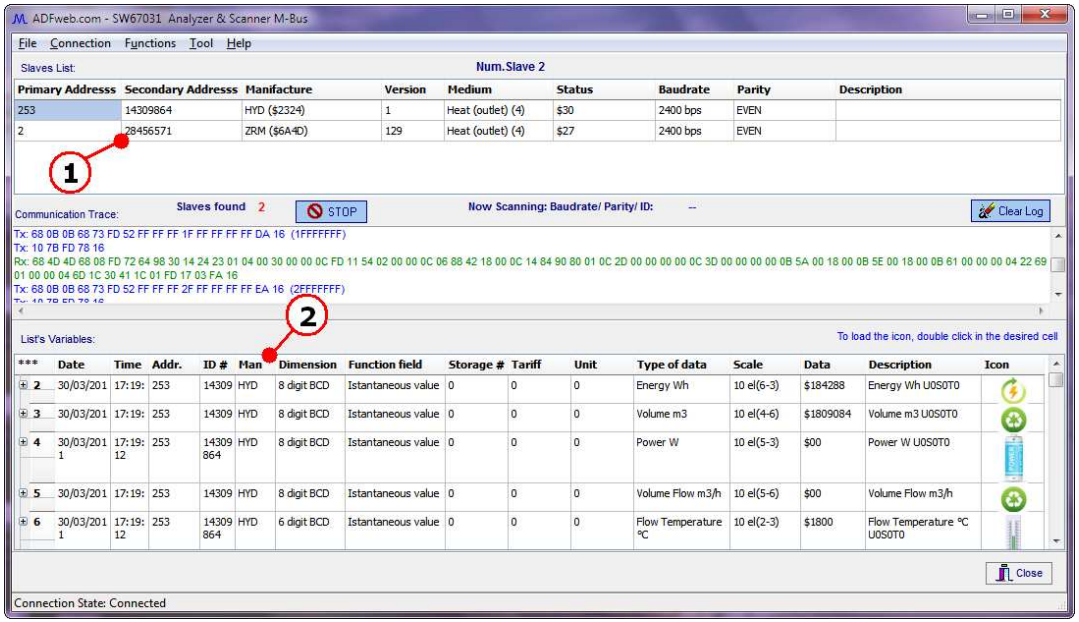


Figure 14: Scanning window

SNIFFER MODE:

With this button is possible to sniff what pass in the network. For doing this is necessary to connect the existing Master M-Bus to the Connector3 and the slaves to the Connector2.

1: This label indicates the number of slaves founded until now;
2: With this button it is possible to stops the scanning. For example if you have four devices and the scan has found four devices you can stop it;
3: In this field it is possible to see the data log.

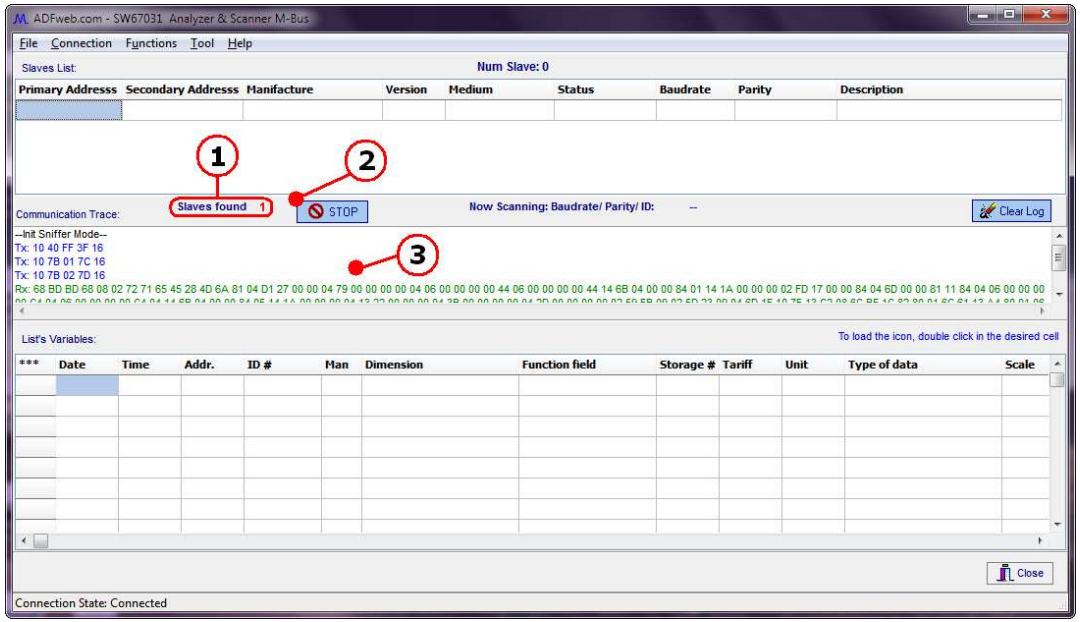
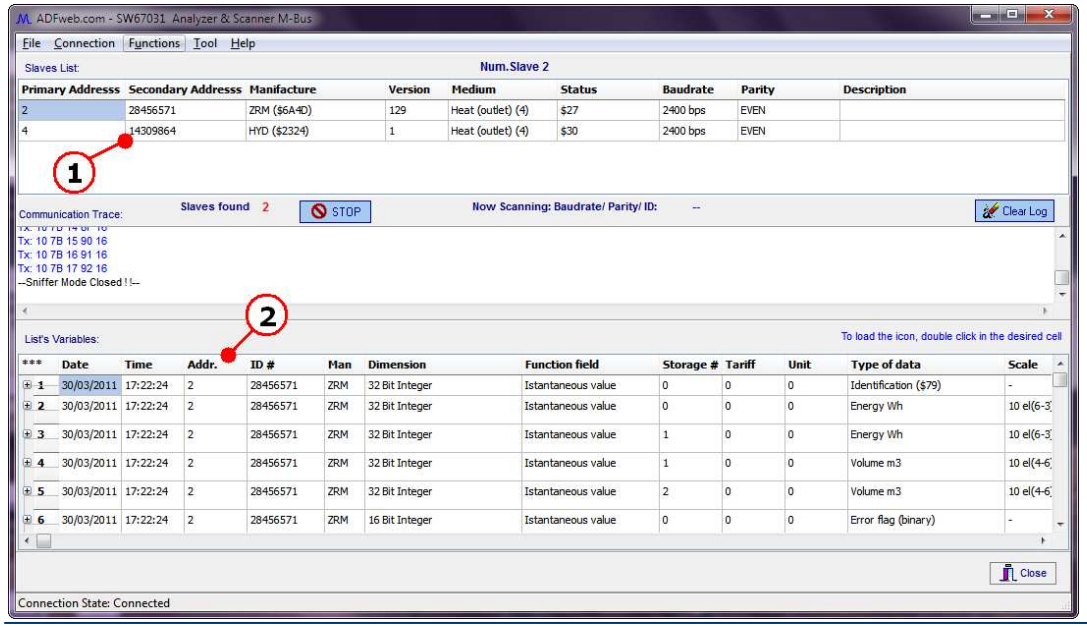


Figure 15: Scanning window



When you have stopped the Sniffer Mode functioning the right window appear (Fig. 17).

1: At this table it is possible to see the main information of the devices founded by the scan. i.e. Primary Address, Secondary Address, Manufacturer, Version, medium, Status, Baudrate, Parity. In the field "Description" you can insert a brief description of the device.

2: At this table it is possible to see all the variables of the scanned devices. Also in this table is present a field "Description" that allows you to insert a description of the variable.

Figure 16: Scanning window

OPERATIONS SLAVES LIST:

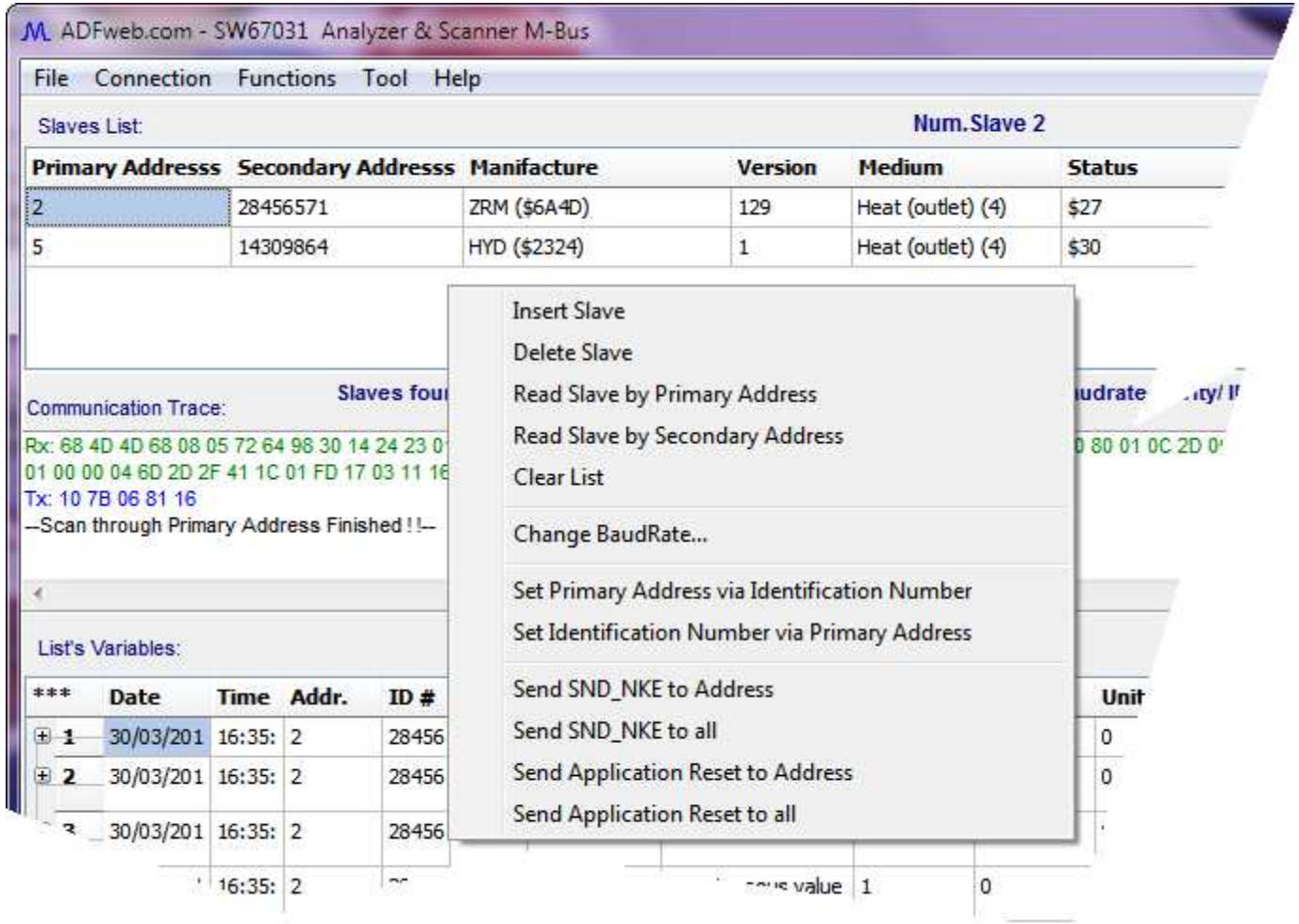


Figure 17: Operations by right click of mouse on "Slaves List" table

Note:
Some operations are available only when the connection is established, other only when there are present slaves.

INSERT SLAVE:

By pressing the "Insert Slave" button is inserted a new row where is possible to edit the Primary Address, Secondary Address, Baudrate and Parity.

DELETE SLAVE:

By pressing the "Delete Slave" button the selected slave is deleted.

READ SLAVE BY PRIMARY ADDRESS:

By pressing the "Read Slave by Primary Address" button is sended a command for read the data, using the Primary Address, of the selected slave.

READ SLAVE BY SECONDARY ADDRESS:

By pressing the "Read Slave by Primary Address" button is sended a command for read the data, using the Secondary Address, of the selected slave.

CLEAR LIST:

By pressing the "Clear List" button all the informations present in the two tables, "Slaves List" and "List's Variables", are cleared.

CHANGE BAUDRATE...:

By pressing the "Change Baudrate…" button the right window appear (Fig. 18).

This form allows you to change the baudrate of the devices. In the field "New Baud Rate" you can select the new baudrate of the device.
When you press the "OK" button the software send the frame for changing the baudrate.

Figure 18: "Change Baudrate" window

SET PRIMARY ADDRESS VIA IDENTIFICATION NUMBER:

By pressing the "Set Primary Address via Identification Number" button it is possible to change the Primary Address. For doing this you have just to change the desired Primary Address and then with the right button of mouse select the function for change the address.

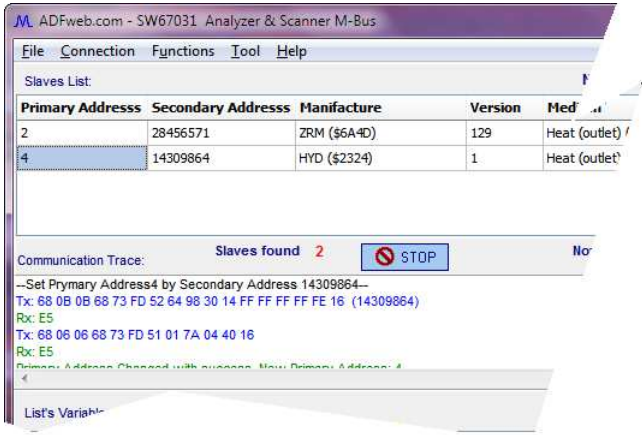


Figure 19: Set Primary Address via Identification Number

SET IDENTIFICATION NUMBER VIA PRIMARY ADDRESS:

By pressing the "Set Identification Number via Primary Address" button it is possible to change the Secondary Address. For doing this you have just to change the desired Secondary Address and then with the right button of mouse select the function for change the address.

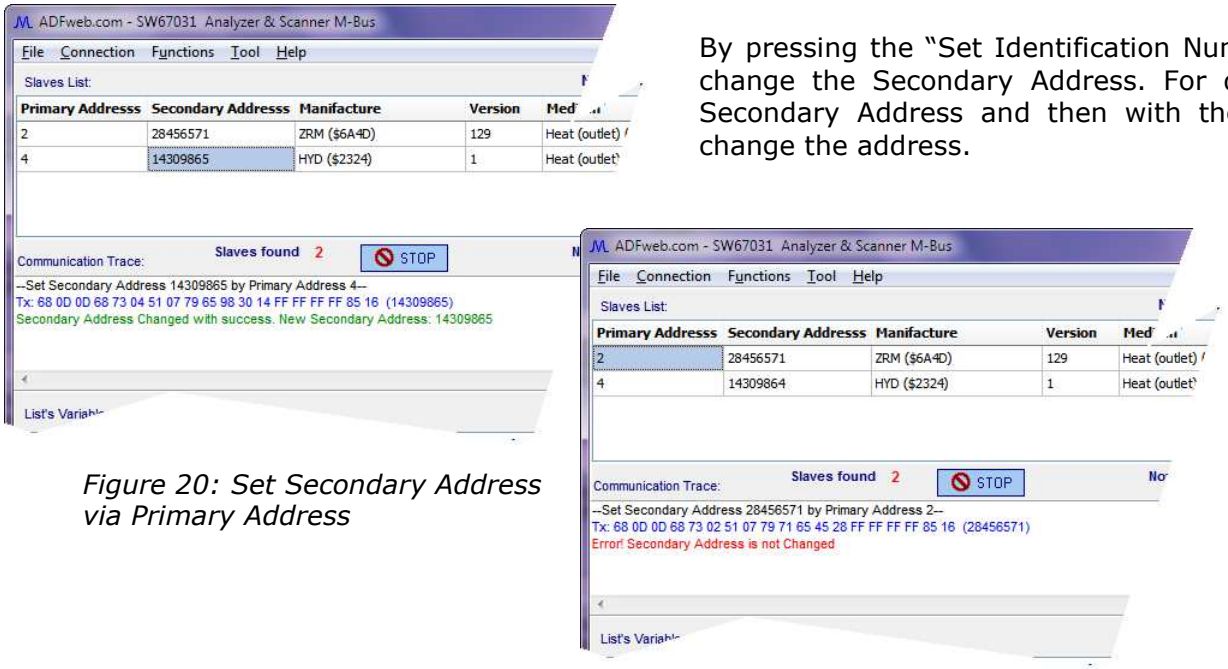


Figure 20: Set Secondary Address via Primary Address

SEND SND_NKE TO ADDRESS:

By pressing the "Send SND_NKE to Address" button you can send the SND_NKE command to the selected slave.

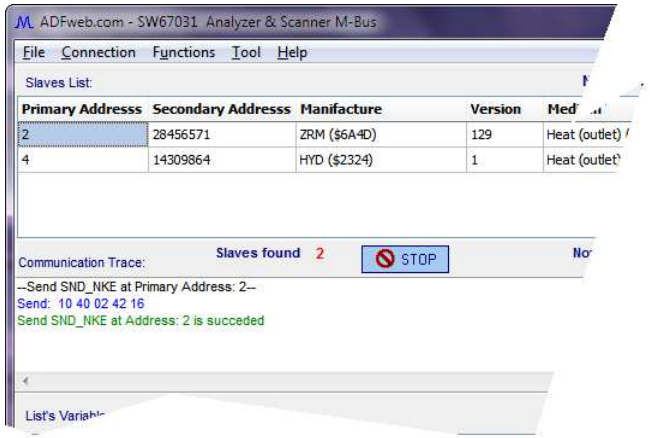


Figure 21: Send SND_NKE to Address

SEND SND_NKE TO ALL:

By pressing the "Send SND_NKE to all" button you can send the SND_NKE command to all slaves (broadcast command).

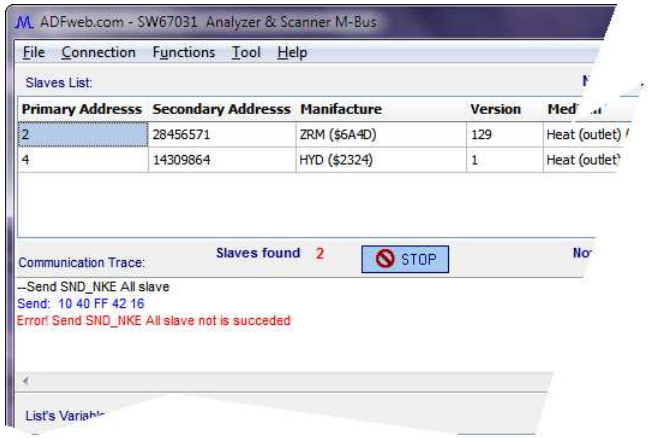


Figure 22: Send SND_NKE to all

SEND APPLICATION RESET TO ADDRESS:

By pressing the "Send Application Reset to all" button you can send an Application Reset command to the selected slave.

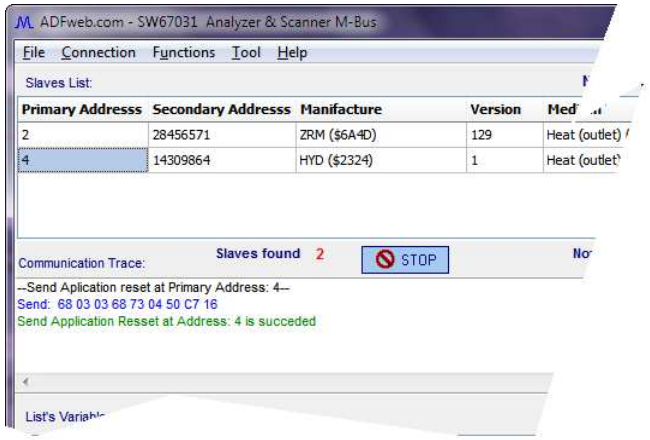


Figure 23: Send Application Reset to Address

SEND APPLICATION RESET TO ALL:

By pressing the "Send Application Reset to all" button you can send an Application Reset command to all slaves (broadcast command).

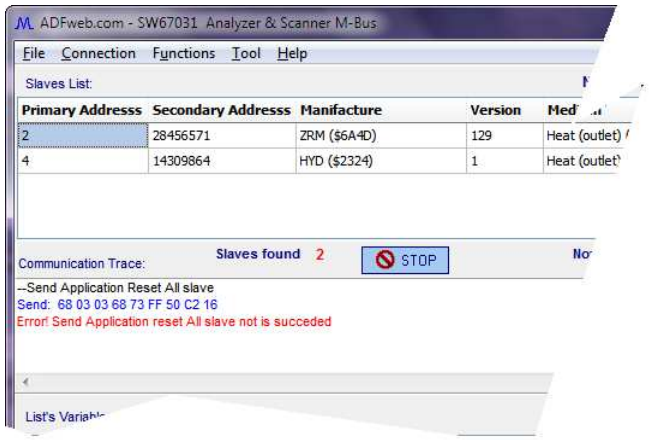


Figure 24: Send Application Reset to all

SECTION TOOL:

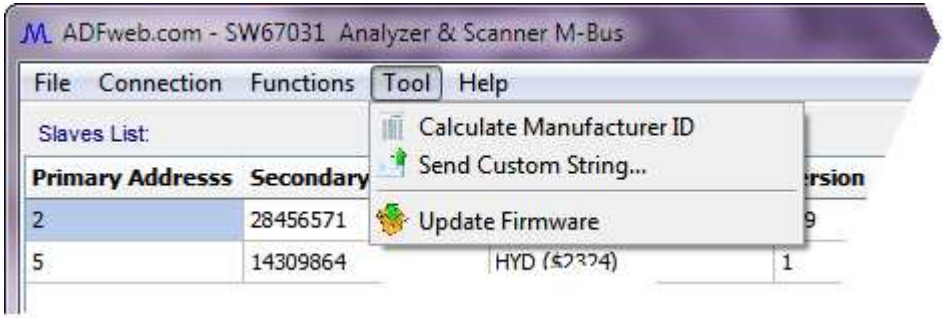


Figure 25: Section "Tool"

In this section you can have some tools and the possibility to update the firmware of the device.

CALCULATE MANUFACTURER ID:

By pressing the "Calculate Manufacturer ID" button the right window appear (Fig. 26).

In this form it is possible to calculate the Manufacturer ID. It is possible to calculate the Manufacturer ID from the three character code or vice versa.

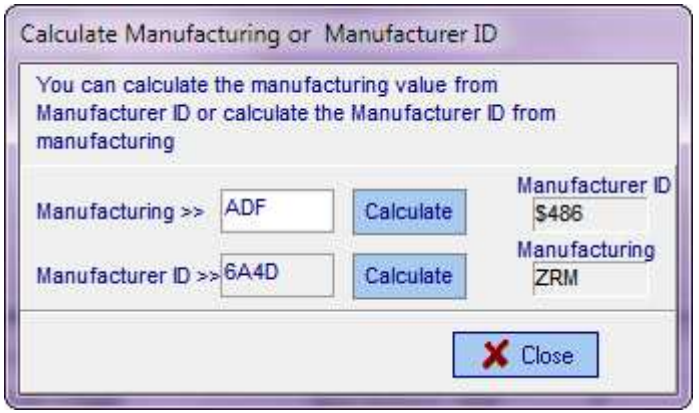


Figure 26: "Calculate Manufacturing" window

SEND CUSTOM STRING...:

By pressing the "Send Custom String…" button the right window appear (Fig. 27).

This form allows you to send a frame and see the reply of the device. The frame must be written in the first Edit-Box; the values are expressed in hexadecimal format. If the slave has replied the reply is displayed in the memo under "Send" button. It is possible to copy or clear the memo by pressing the corresponding buttons "Copy" or "Clear".

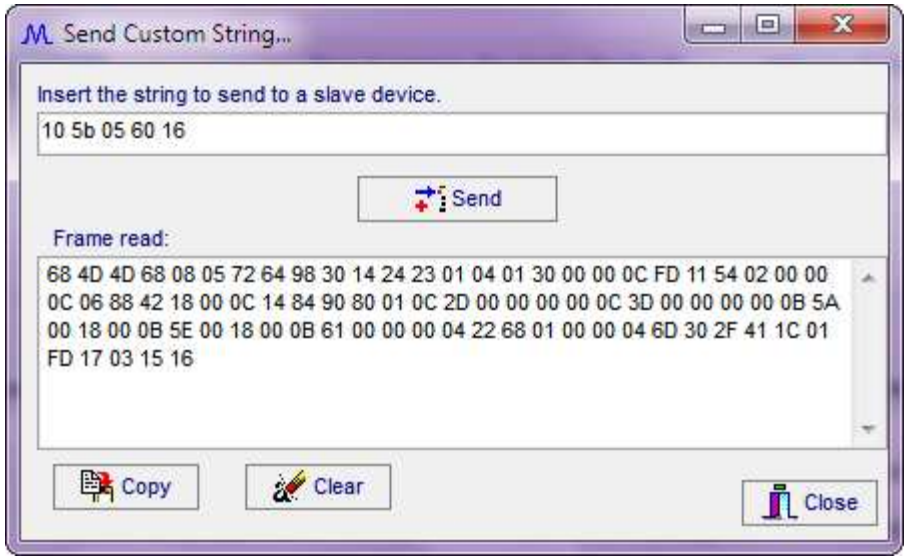


Figure 27: "Send Custom String..." window

UPDATE FIRMWARE:

By pressing the "Update Firmware" button the right window appear (Fig. 28):
In order to 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. 32);
- 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. 32);
- 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.

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 HD67031 device.

Warning:
If the Fig. 29 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 29: "Protection" window

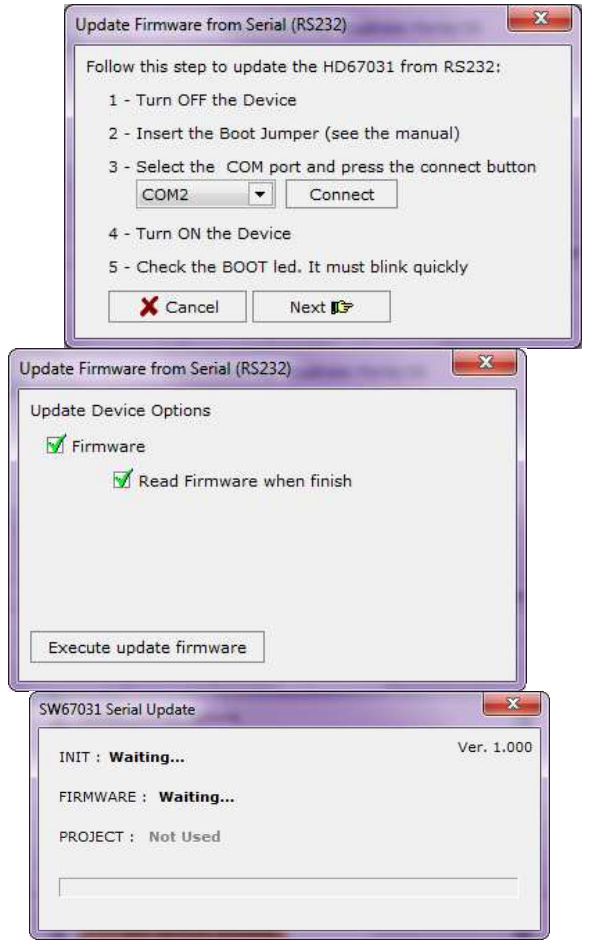


Figure 28: "Update Firmware" windows

SECTION HELP:

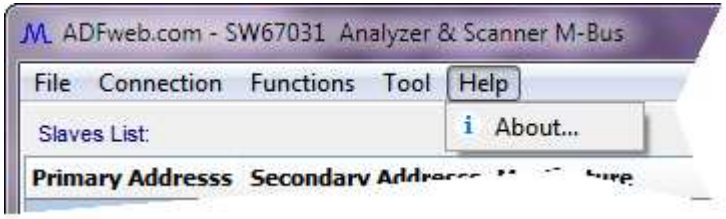


Figure 30: Section "Help"

ABOUT...:

By pressing the "About…" button the right window appear (Fig. 31).

In this form it is possible to see the version of software installed.

If you check the label "SW67031" and you have the Internet connection enabled you can download the last version from our web site.

If you check the label "MN67031" and you have the Internet connection enabled you can download the last version of this manual.

If you check the label "www.ADFweb.com" and you have the Internet connection enabled you can go at our web site.

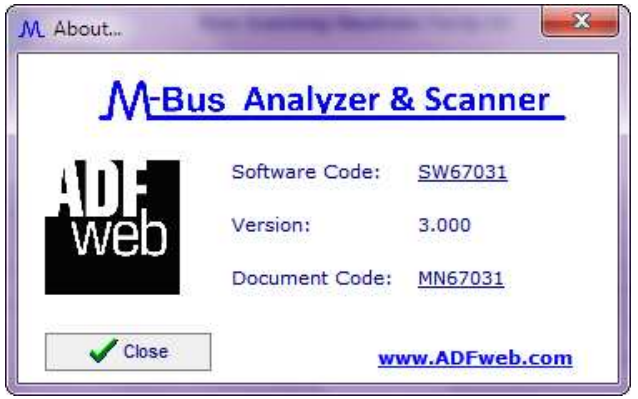


Figure 31: "About..." window

CHARACTERISTICS OF THE CABLES:

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.

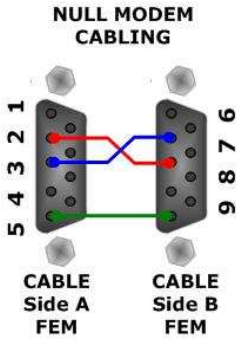


Figure 22: Null modem cabling

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)*

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.

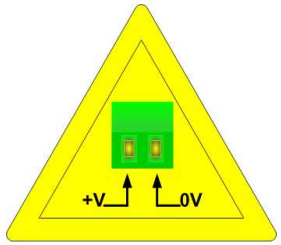
VAC ~		VDC ⎓	
Vmin	**Vmax**	**Vmin**	**Vmax**
15V	**21V**	**18V**	**35V**

Consumption at 24V DC:

Device	No Load [W/VA]	Full Load [W/VA]*
HD67031-20-B2	3.5	4
HD67031-80-B2		8
HD67031-250-B2		30

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

Caution: Not reverse the polarity power



HD67031-xxx-yy

CONNECTION SCHEME:

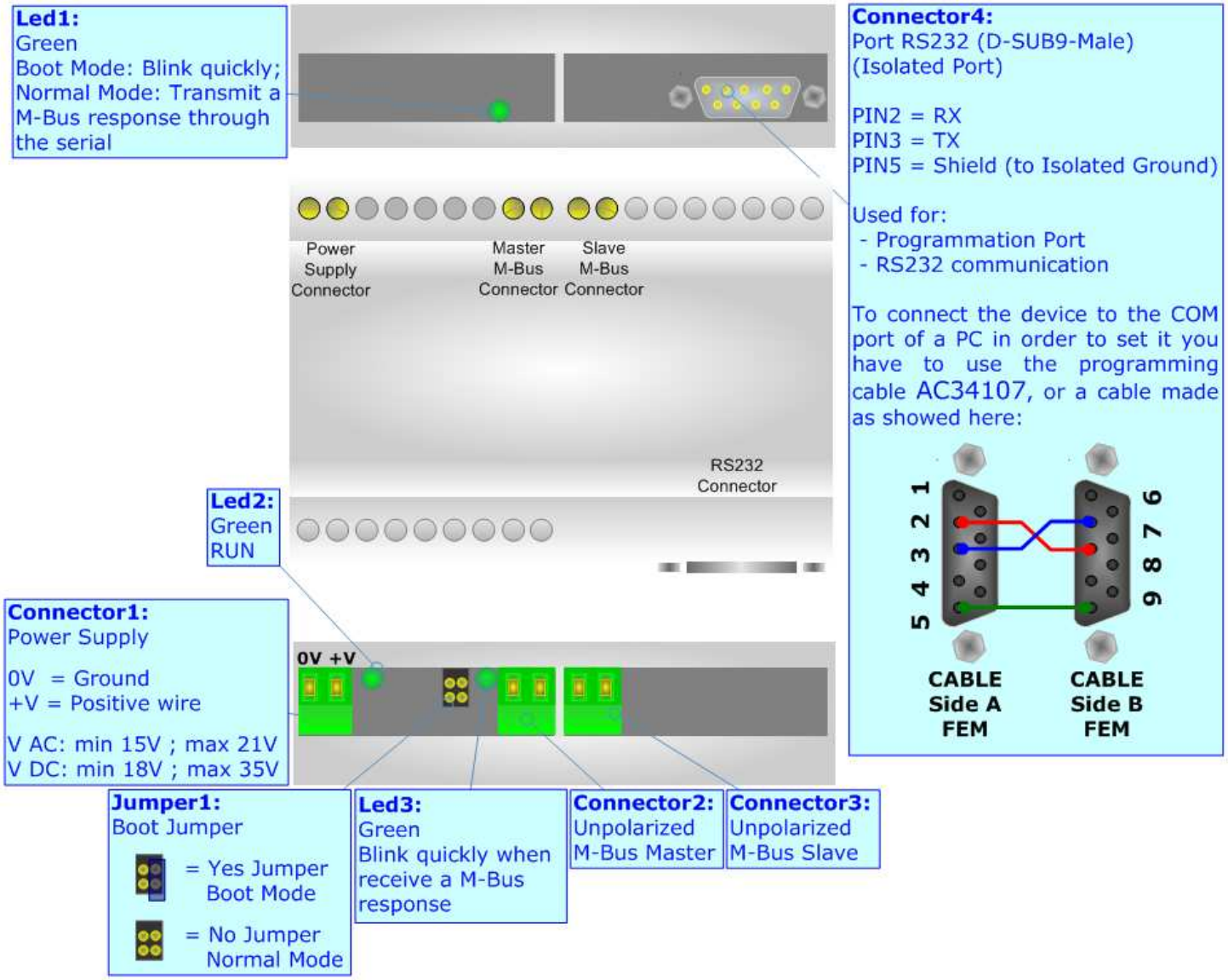


Figure 32: Connection scheme for HD67031-xxx-yy

MECHANICAL DIMENSIONS:

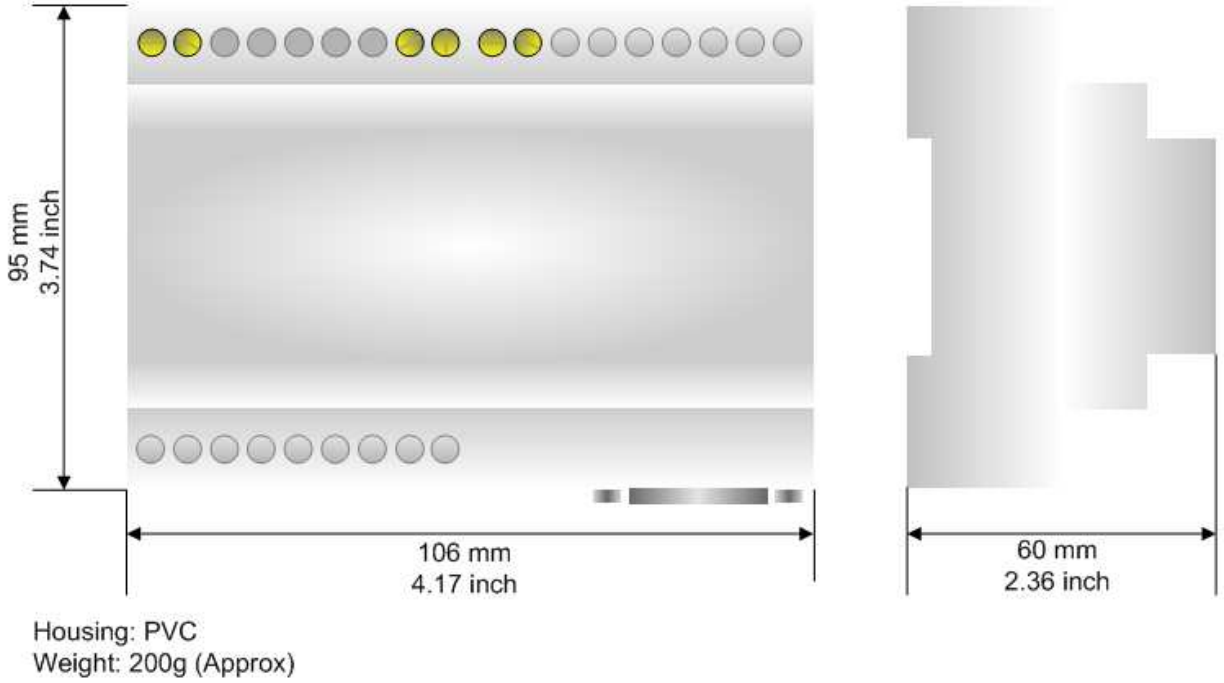


Figure 33: Mechanical dimensions scheme for HD67031-xxx-yy

ACCESSORIES:

AC34107 **-** Null Modem Cable Fem/Fem DSub 9 Pin 1,5 m

AC34114 - Null Modem Cable Fem/Fem DSub 9 Pin 5 m

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

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

ORDER CODES:

HD67031-20-B2 - M-Bus Analyzer / Scanner / Sniffer (up to 20 standard devices)

HD67031-40-B2 - M-Bus Analyzer / Scanner / Sniffer (up to 40 standard devices)

HD67031-80-B2 - M-Bus Analyzer / Scanner / Sniffer (up to 80 standard devices)

HD67031-160-B2 - M-Bus Analyzer / Scanner / Sniffer (up to 160 standard devices)

HD67031-250-B2 - M-Bus Analyzer / Scanner / Sniffer (up to 250 standard devices)

DISCLAIMER

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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.

WARRANTIES AND TECHNICAL SUPPORT:

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at www.adfweb.com.
Otherwise contact us at the address support@adfweb.com.

RETURN POLICY:

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

1) Obtain a Product Return Number (PRN) from our internet support at www.adfweb.com. Together with the request, you need to provide detailed information about the problem.
2) Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks. If the product is no longer under warranty, you will receive a repair estimate.

PRODUCTS AND RELATED DOCUMENTS:

Part	Description	URL
HD67121	Gateway CANopen / Canopen	www.adfweb.com?product=HD67121
HD67502	Gateway CANopen / Modbus - RTU	www.adfweb.com?product=HD67502
HD67505	Gateway CANopen / Modbus – Ethernet TCP	www.adfweb.com?product=HD67505
HD67134	Gateway CANopen / DeviceNet	www.adfweb.com?product=HD67134
HD67117	CAN bus Repeater	www.adfweb.com?product=HD67117
HD67216	CAN bus Analyzer	www.adfweb.com?product=HD67216