

SOFTWARE BMBUS

User manual v1.0



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Introduction

The BMBus software is a reading and configuration utility used to configure and read consumptions of devices manufactured by BMETERS.


1. Starting the program


The program will start by double clicking the desktop shortcut icon.

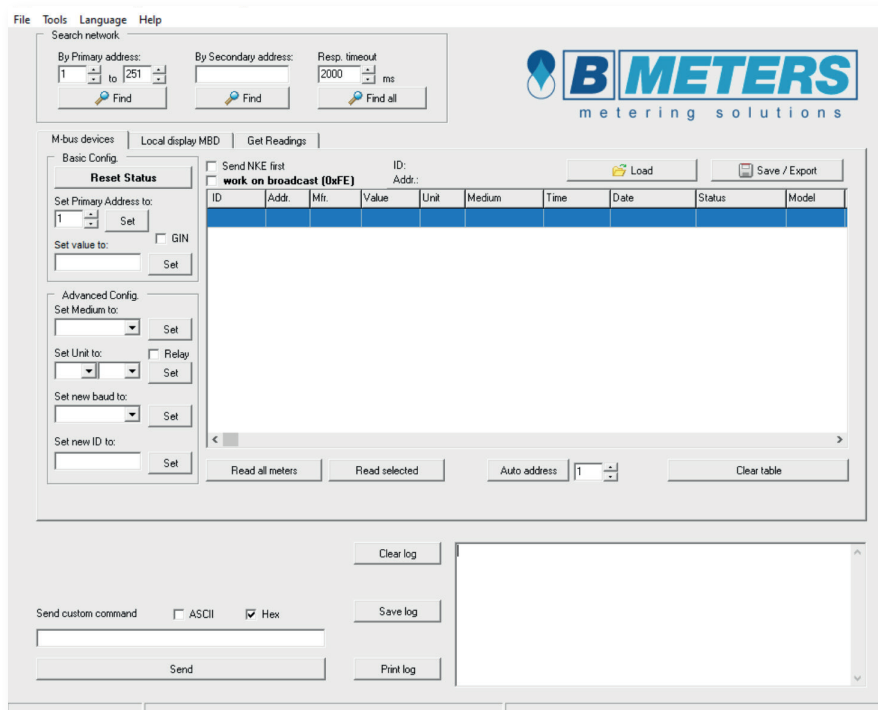
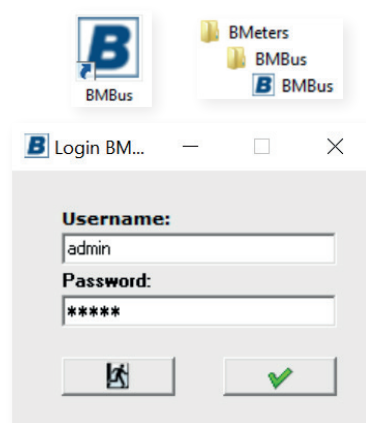
After launching the software, a login window will appear, waiting for the user to input the correct user and password.

User: **admin**

Password: **admin**

When the username and password are entered, the user can press the  button.

If the account is valid the program will start. If there is no account under those credentials (wrong username or password) the user will see a message about that, and they will need to try again with correct account. The  button closes the program.



2. Main window

The program is divided in three different tabs:

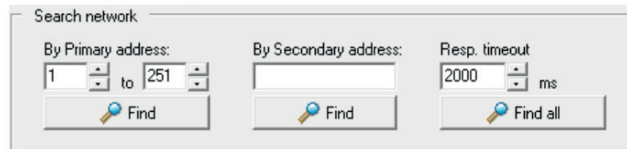
- › set-up of m-bus devices;
- › set-up of local display;
- › reading all data, including historical values.

Main program window (tab M-Bus devices)

The main window is divided in 3 areas:

› **Search MBUS network area**

The user can search devices either by primary or secondary address. Interval between searches: 300ms-9900ms.



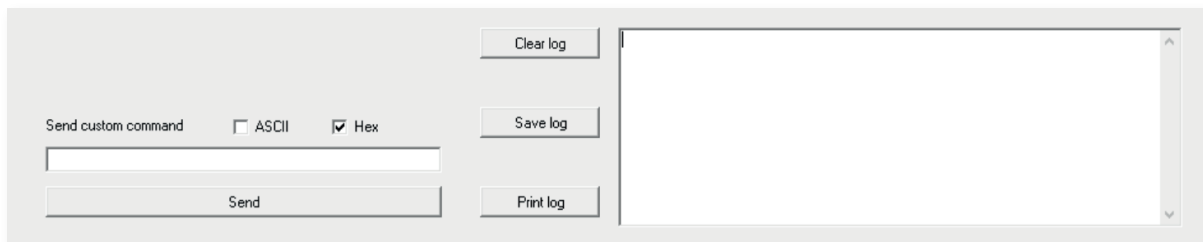
The 'Search network' dialog box contains three sections. The first section, 'By Primary address:', has two spinners for '1' and '251' with a 'Find' button below them. The second section, 'By Secondary address:', has a text input field and a 'Find' button. The third section, 'Resp. timeout', has a spinner for '2000' and a 'Find all' button. All buttons feature a magnifying glass icon.

› **Main area, divided in 3 different TABs:**

- › M-Bus devices: search, read and set different m-bus devices.
- › Local display: import or export data to/from the MBUS Master.
- › Get Readings: collect all readings from M-Bus display or MBUS central memory.

• **log and additional tools (on the lower part of the screen), used for sending custom commands to the MBUS device.**

Every operation occurring can be seen in the log window, such as responses from the MBUS Master or other devices. This log can be saved, cleared or printed. On the left side the user can send custom commands to desired devices. There are two options for sending commands

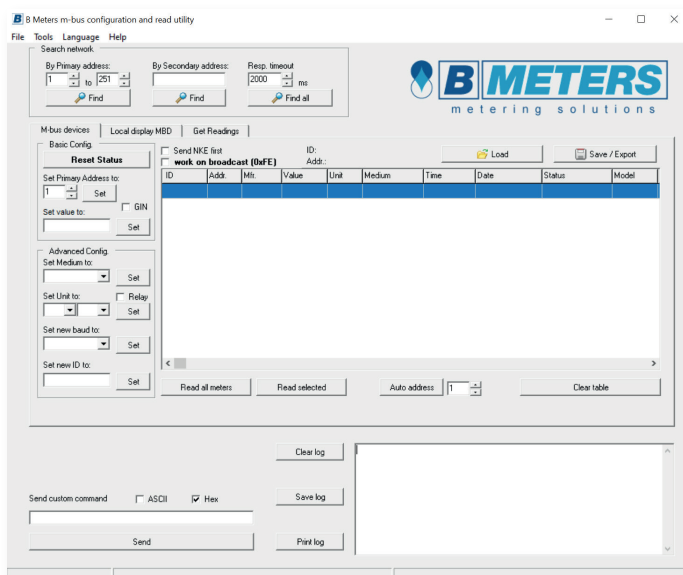


This interface section includes a 'Send custom command' area with a text box and a 'Send' button. It also has checkboxes for 'ASCII' (unchecked) and 'Hex' (checked). To the right are buttons for 'Clear log', 'Save log', and 'Print log'.

- › ASCII - sends the command as plain text, written in the box.
- › HEX - sends the command in hex values. Commands should be sent in a manner of 'xx' (bytes) with spaces between every byte.

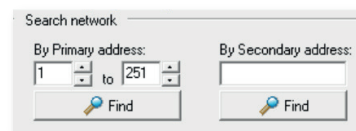
If the user wants to send the M-BUS command 'Read' to the device with primary address of 1, the string in the box should be formatted as follows: **10 5B 01 5C 16**.

2.1 Setting M-Bus devices



The main application window features a top menu bar (File, Tools, Language, Help) and a 'Search network' dialog at the top. Below this is a 'Basic Config' section with 'Reset Status' and 'Send NKE first work on broadcast (b4fE)' options. A central table displays device data with columns: ID, Addr, Mfr, Value, Unit, Medium, Time, Date, Status, Model. The bottom section contains 'Advanced Config' settings for medium, unit, baud, and ID, along with 'Read all meters', 'Read selected', 'Auto address', and 'Clear table' buttons. At the very bottom is the log and custom command interface.

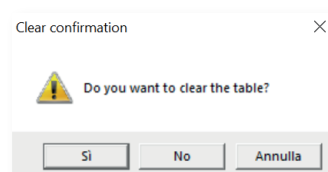
To find the devices on the network, it is possible to choose between scanning by primary or secondary address.



This is a smaller version of the 'Search network' dialog box, showing the 'By Primary address' section with spinners for '1' and '251' and a 'Find' button.

La scansione per indirizzo primario può essere eseguita dall'indirizzo 0 al 250, secondo il protocollo M-Bus, seguendo questi passaggi:

- › select minimum primary address for the search (1 on the picture).
- › select maximum primary address for the search (12 on the picture).
- › press the "Find" button.



A 'Clear confirmation' dialog box with a yellow warning icon and the text 'Do you want to clear the table?'. It has three buttons: 'Si' (Yes), 'No', and 'Annulla' (Cancel).

The network scan depends on two factors:

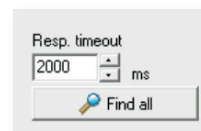
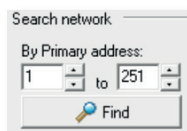
- › response timeout (ms – milliseconds, default setting is 900ms), it should be reasonably set following network devices specifications;
- › retries (the parameter can be set under Tools→Settings).

Every device that is found is automatically added to the table with the following data:

- › ID number.
- › Primary address.
- › Manufacturer.
- › Main instantaneous value.
- › Measuring unit.
- › Time and Date of the reading.
- › Status byte.
- › Model of the device - for devices that supports that functionality.

› Additional (auxiliary) values, if such are selected in Tools → Settings.

La scansione per indirizzo secondario può essere eseguita secondo due modalità:



› Single search of a determined ID (serial number) by typing the ID into the text field and pushing the “Find” button;

› Full search, the scanning will be performed in the entire M-Bus network.

Once the scanning operation is completed, the table should be filled with a number of rows equal to the number of devices in the MBUS network. Once the devices are in the table, there are two main things that can be done:

- › read all meters (button “Read all meters”) or read selected meter (after selecting a meter, press the “Read selected” button);
- › configure devices, a window with basic and advanced configuration is located on the left side of the device list.

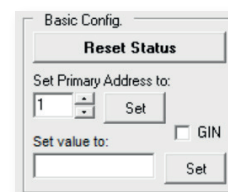
Send NKE first										ID: <input type="text"/>		Load		Save / Export	
work on broadcast (BdFE)										Addr: <input type="text"/>					
ID	Addr	Mfr	Value	Unit	Medium	Time	Date	Status	Model	Test 1	Test 2				
10061084	253	BMT	0.000	m3	Water	15:14:44	19/09/2023	MT	MB1						
21719209	9	BMT	200.001	m3	Water	15:13:23	19/09/2023	T	MB1						
20731162	1	BMT	99999.991	m3	Water	15:14:58	19/09/2023	T	MB1						
19716424	1	BMT	0.000	m3	Water	15:15:29	19/09/2023	MTV	MB1						

BASIC CONFIGURATION

This square contains some basic parameters and functions, every parameter change affects only the selected device in the table (to change a parameter it's necessary to select the corresponding row).

- › **Reset Status**: sends a reset command (SND_NKE);
- › **Set primary Address to**: allows to change the Primary address to the selected value;
- › **Set Value to**: allows to set the value into the device.

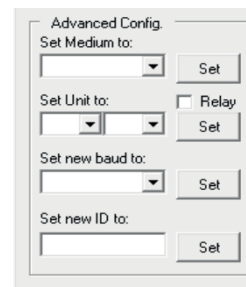
Important: for all the devices manufactured by B METERS, the value set must be entered in liters, i.e. if the water meter is showing 1,231 m3, then the value to enter must be 1231.



ADVANCED CONFIGURATION

Available configuration parameters:

- › **Set Medium to**: allows to configure the medium measured by the device. (ATTENTION: some devices only support a determined medium);
- › **Set Unit to**: allows to configure the unit of the quantity measured. (ATTENTION: some devices support only a determined set of Units);
- › **Set new baud to**: allows to change baud rate of the module;
- › **Set new ID to**: allows to change the secondary address of the device;
- › **Relay**: this checkbox must be ticked when performing configuration on Relay PADPULSE M2.



The table with the scanned meters can be saved through the “Save/Export” buttonte il pulsante “Salva/Esporta”. When a meter is selected in the table, the user can right click to make a pop-up menu appear.

The most important function of the pop-up menu is “Read Full”. This will decode in a new window the full M-BUS telegram.

2.2. Setting local display MB-MASTER devices

M-bus devices

Local display MBD

Get Readings

Read Data from Display

Get data from m-bus devices

Import

Export

Set display refresh time

4

Set refresh time

Zero start value

Date and Time

Write table to the display

Delete selected device/row

Create sort table

Sort

Update readings on display

MBM-TFT

General info

Get info

ID	Addr.	Unit	Start Main	Start P1, m3	Start P2, m3	Start Coding	Mult/Div	User numb.	Free text	Total	Total P1	Total P2	Total T4/Cool
<input type="checkbox"/> 19716424	1	m3	0.0	0.0	0.0	0.0	1/1	1					
<input type="checkbox"/> 21719209	9	m3	200.0	0.0	0.0	0.0	1/1	2					
<input type="checkbox"/> 20731162	1	m3	100000.0	0.0	0.0	0.0	1/1	3					
<input type="checkbox"/> 19822279	5	m3	0.1	0.0	0.0	0.0	10/1	4					

Select All

Deselect All

Add row

Delete row

Clear table

“Local display MBD” tab:

By pressing the  button the user should see M-BUS devices with their addresses, ID's and unit values in local display table.

The columns on the display configuration table read as follows:

- › **ID**: secondary address;
- › **Addr.**: primary address;
- › **Unit**: the unit of measurement used;
- › **Start**: filled with the actual values showed in the M-Bus devices table;
- › **Mult./ Div.**: multiplier factor of the value displayed (recommended to keep as default);
- › **User number**: filled automatically with 1 (user can modify it, but the number must be univocal);
- › **Free text**: this is a free text field and should be filled with tenant or meter description (i.e. "Mr. Robert Reds", or "Global Building Meter");
- › **Total**: this is filled only in the case of an actual reading from the current display setting (It's empty while configuring the display).

The table can be saved into a CSV file and can be loaded from a previously saved file using the corresponding buttons:



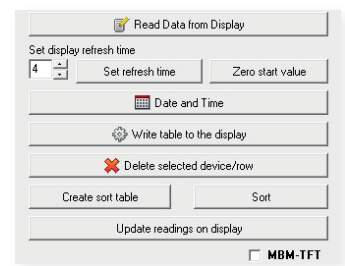
TABLE EDITING BUTTONS

- › **Select all**: select all rows in the table;
- › **Deselect all**: deselect all rows in the table;
- › **Add row**: add a new row;
- › **Delete row**: remove the selected row;
- › **Clear table**: remove all rows in the table.

Important: changes will not take effect immediately in the display; it's required to write the table to the display.

FUNCTIONALITY BUTTONS

- › **Read Data from Display**: allows to read the current table from the MBUS Master display (it only works if the display was already configured).
- › **Set refresh time**: sets the display time per row, using the value on the left (every row in the table corresponds to a screen in the display).
- › **Date and Time**: updates the display date and time using the PC's.
- › **Write table to display**: sends current table to the MBUS Master display (or only the selected rows). To send all the table data the user needs to select all the rows before pressing this button.
- › **Delete selected device/row**: removes the selected row (devices) from the onboard display table.
- › **Create sort table**: creates a sorted table inside the display.
- › **Sort**: it sorts the rows of the onboard table of the display.
- › **Update readings on display**: forces the display to collect and update the readings from devices (meters).



Attention: during normal operations the display performs a reading and updates the data displayed every 12 hours.

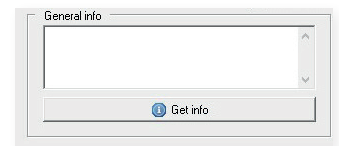
SERVICE INFO BUTTON

All settings are saved consequentially (activation, start value, unit, multiplier, etc.), so the programming might take some time. The user can check on the progress of the programming using the progress bar present on the bottom left part of the software, above the "Send custom string" box.

The user can delete device from display memory by selecting the desired row and pressing the

Delete selected device/row button. It is also possible to read all the MB-MASTER memory, in order to log the data or to check the settings **Read Data from Display**.

Important: there are small differences between LCD and TFT version of the displays.



When programming a MB-MASTER TFT, the user should make sure that the option MBM-TFT (shown in the picture beside) is ticked.

The MB-MASTER performs automatic readouts every 12 hours and that is the moment the information on the display is updated with new values. Devices can be deleted/deactivated from the memory. Date and Time can be set, and some other useful options are present in the program.

Example of info displayed on the MB-Master TFT:



- › **"1-"**: user number;
- › **"Water"**: quantity measured by the device (Medium in the M-bus devices table);
- › **"/A001"**: primary address of the device (Address in the display table);
- › **"Mr. Robert Reds"**: tenant's name (Free text field in the display table);
- › **"Count"**: precedes the indication of the current consumption;
- › **"57.1"**: current consumption;
- › **"m3"**: unit of measure (Unit field in the display table);
- › **"Tu, 06/Oct/2012"**: date on the display (current date);
- › **"19:07"**: hour in the display (current Hour).

2.3. Reading operation

The last tab allows to get readings from the modules on the network:

Choosing “Get all memory data”, the first 8 columns from the left will be filled with the current data, the historical values columns are filled only if there is data available. Historical values are available to be saved up to 12 hystorical months, each indication is saved on the first of the month at 00.00.

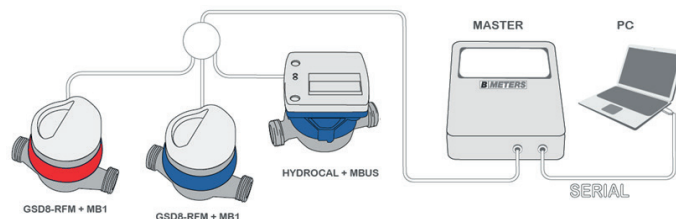
The readings table can be also edited, using dedicated buttons.

- › **Add row:** permette di aggiungere una riga, è utile ad esempio per inserire un contatore letto manualmente nella stessa tabella.
- › **Delete row:** permette di rimuovere una riga dalla tabella.
- › **Clear table:** rimuove tutte le righe.
- › **Sort table:** sorts the table's rows, by user number or address, depending on the checkbox selected on the right.

The **Export** button (top right side of the table), which allows to save the table into a CSV file.

2.4. Example of M-Bus network first setup operation

- › A water meter for cold water (GSD8-RFM with M-BUS module RFM-MB1).
- › A water meter for hot water (GSD8-RFM with M-BUS module RFM-MB1).
- › A thermal energy meter (HYDROCAL-M3 with embedded M-BUS capabilities).



Operations to perform:

- › Carry out the wiring.
- › Connect a PC and run the BMBUS software.
- › Perform a scan by secondary (“Find all” button).

Nell'esempio possiamo trovare in tabella:

- › Two water meters modules (**RFM-MB1**), these have Water as Medium, m³ as Unit, BMT as Manufacturer, 0 as Address (default factory settings); moving the table to the left, there is also an additional “Model” column with the type of the module (wich is only filled if the module is BMETERS **RFM-MB1**).
- › A thermal energy meter. Its address is set directly on the meter before scanning the network, it is not possible to modify the address via software. The Medium for that row is Heat and Unit is KWh.

To configure the RFM-MB1 settings we need to set:

- › The primary address (from 1 to 250, without using duplicate addresses).
- › The Initial Value, according to the value showed in the water meter GSD8-RFM (report all the 8 digits from the water meter to the “Set value to:” field).

After setting the RFM-MB1, perform a scan by primary adress covering all the network device addresses.

Once these tasks are performed we need to configure the display.

- › Select “Local Display MBD” and press the “Get data from m-bus devices” button.

- › Fill the Free Text fields for each row.
- › Select all rows (Select All button).
- › Set Date and Time of the display (Date and Time button).
- › Write table to display (Write table to the display button).
- › The resolution of the displayed consumptions is 1/10 of units equal to 100 liters for **RFM-MB1** and 100 Watts for **HYDROCAL**.
- › Create a sort table (Create sort table button).
- › Sort the table (Sort button).
- › Update readings on the display (Update readings on display button).
- › Consumption values are updated every 12 hours.

2.5. Modify the display table

To modify, for example, the tenant's name in the table, these are steps to follow:

- › read current display table (Read Data from display button).
- › change the Free Text field according to the new tenant's name.
- › write table to display, the tenant's name will be updated and correctly shown on the display.

The screenshot shows the 'M-bus devices' window. On the left, there are buttons for 'Read Data from Display', 'Set display refresh time', 'Date and Time', 'Write table to the display', 'Delete selected device/row', 'Create sort table', 'Sort', and 'Update readings on display'. Below these is a 'General info' section with a 'Get info' button. The main area contains a table with columns: ID, Addr, Unit, Start Main, Start P1, m3, Start P2, m3, Start Coding, Multi/Div, User numb., Free text, Total, Total P1, Total P2, and Total T4/Cool. The table has four rows of data. At the bottom, there are buttons for 'Select All', 'Deselect All', 'Add row', 'Delete row', and 'Clear table'.

3. Software Settings

In this version of the program it is possible to communicate with m-bus devices/displays only with serial RS-232 connection.

Users can change the following settings from Tools → Settings:

- › **Name:** select the COM port corresponding to the MASTER M-Bus.
- › **Speed:** set the parameter according to the M-bus devices installed on the network, all devices should have the same baud rate (known as Speed). Default setting is 2400bps and parity check "Even".
- › **Export separator:** the char used as separator for saving or loading CSV files. Default value is ';'.
- › **Retries:** defines the number of attempts at reading and scanning the M-Bus network.

ADDITIONAL INFORMATION

It's possible to select a "Second Main" value and up to 13 values that can be seen in main table, when a device is read. .

The screenshot shows the 'Settings' dialog box with the 'Communication settings' tab selected. It includes fields for 'Name' (COM5), 'Speed' (2400), and 'Parity' (Even). There are also checkboxes for 'RTS control' and 'DTR control'. On the right, there are fields for 'Retries' (1), 'Export separator' (semicolon), and checkboxes for 'Secondary Search' (checked), 'Global Initialization' (unchecked), 'MSB' (checked), 'LSB' (unchecked), and 'Unicode/CP852' (unchecked). A 'Generation code of IR-MB-PULSE, decimal' field is set to 27. 'Cancel' and 'Apply' buttons are at the bottom.

The screenshot shows the 'Settings' dialog box with the 'Additional m-bus information' tab selected. It features a grid of 13 text input fields labeled 'Title 1' through 'Title 13'. On the left, there is a 'Secondary Main' checkbox (circled in red) and a note: 'Some devices give more than 1 Main value. Check this option, if that is the case'. There are 'Close' and 'Apply' buttons at the bottom.