

M-BUS CONFIGURATION FOR GINEERS DEVICES

USER MANUAL

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1.Starting the program

The program is started with double click on the main executable file – "GMBus.exe". A login window will appear, waiting for the user to enter valid username and password;



Fig. 1. Login window

For the first use user can enter username '**admin**' and password '**admin**'. This is the first time use administrator account. Later it can be deleted and other accounts to be made (look section "*User accounts*").

When the username and password are entered, user should press button



If account is valid program will start. If there is no such account (wrong username or password) user will see a message about that and then he can try again with correct account.

Button  close the program.

2.Main window

The program is divided in four different *TABs*:

- setting of m-bus devices
- setting of communication devices (Gineers Ethernet and/or GPRS converters)
- setting of local display or m-bus central (Gineers MBD-X250, MBM or MBM-TFT)
- reading all data, including historical values

When logging in the first *TAB* will be active – setting of m-bus meters or devices. The main look of the program is:

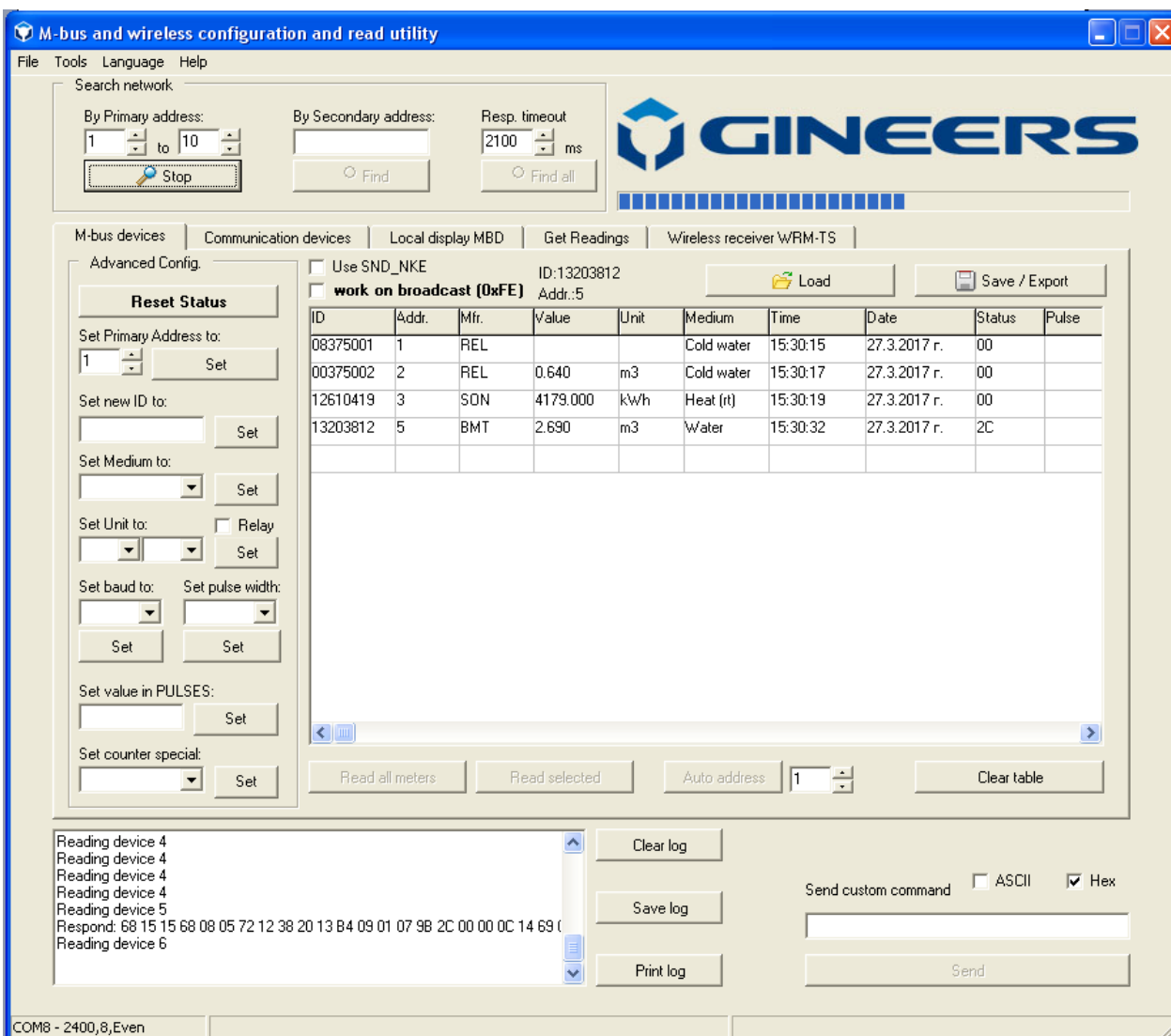


Fig. 2. Main program window (TAB m-bus devices)

Globally, there are three main areas in the main window;

- Search network area

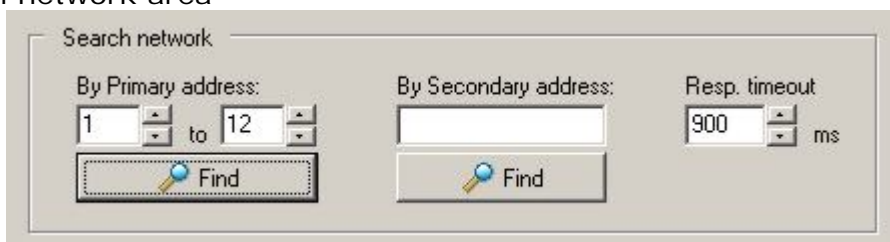


Fig.3. Searching m-bus network options

User can select primary or secondary m-bus search. When a command is send user can set timeout for a respond, before the operation is retried or ignored. This timeout is in milliseconds and the minimum value is 300ms. Maximum is 9900 ms.

- main area – three different TABs can be chosen
 - M-bus devices - search, read and set different m-bus devices
 - Communication devices – set communication devices
 - Local display MBD – program MBD or MBM type of displays/centrals
 - Get Readings – collect all readings from m-bus display or m-bus central memory
 - Wireless concentrator setting – set wireless m-bus concentrator of Gineers (WRM-TS)
- log and additional tools



Fig. 4. Log window and direct write to serial port

Here user can see log window and direct write to the serial port. In the log window every operation is notified and also respond from the m-bus or other device. This log can be saved, cleared or printed (print is disabled for now). On the right side user can send custom commands to desired device. There are two options for sending command:

- ASCII – sends the command as plain text, written in the box
- HEX – sends the command in hex values. For that purpose commands should be send in a manner of 'xx' with spaces between every byte.

Example: if we want to get main info of MBD display, we should be in ASCII mode, type '*get main*' in the box and press button 'Send'.

If the user wants to send m-bus command '*Read*' to device with primary address of 1, the string In the box should look like this:

10 5B 01 5C 16

The user must have in mind that he will see the respond in the log window in the same way he sends a command, in other words in hex or ASCII.

2.1.Setting m-bus devices

TAB for setting m-bus devices looks like this:

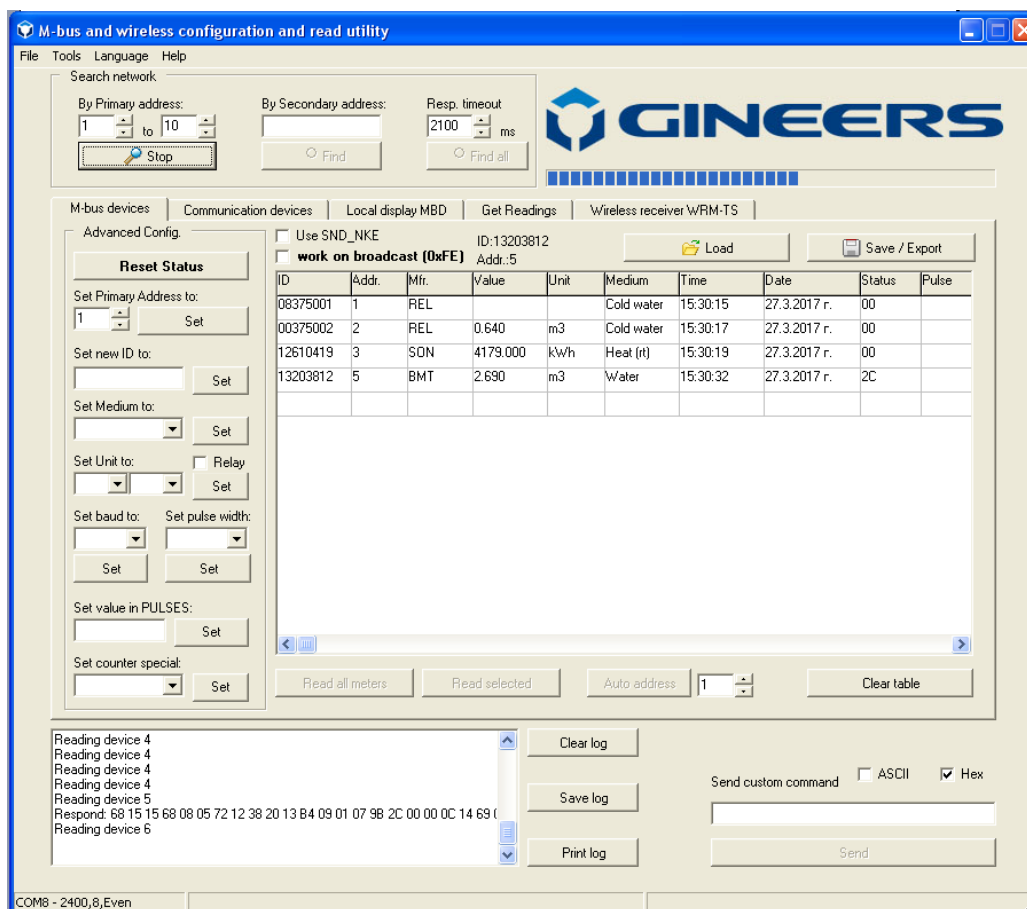


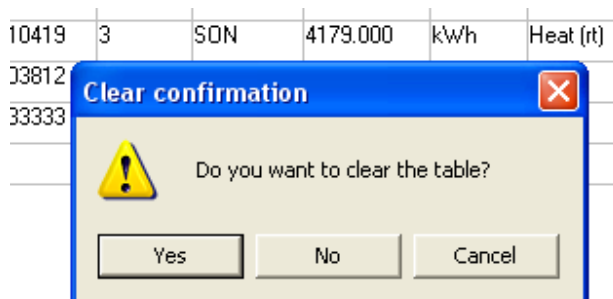
Fig. 5. M-bus devices setting and reading

To find devices user should use primary or secondary search.

Primary search is limited from 0 to 250, according to m-bus protocol. For primary search user must do the following:

- select minimum primary address for the search (1 on the picture)
- select maximum primary address for the search (10 on the picture)
- press button "Find"

Messages will pop-up, asking the user does he want to clear the table, or just add new devices in it. User must choose "Yes" or "No", and then the search begins.



The search depends on two things:

- respond timeout in milliseconds
- retry times (which can be set in *Tools -> Settings*)

Of course user should select reasonable timeout, depending on the devices (some devices have respond of 200 bytes, other – 30 bytes).

Every devices that is found, is added to the table with the following data:

- ID number
- Primary address
- Manufacturer, coded in m-bus style
- Main instantaneous value
- Measuring unit
- Medium measured
- Time and Date of the reading
- Status byte
- Pulse width (for Gineers devices)
- Model of the device (for Gineers devices)
- Battery (for Gineers devices)
- Additional (auxiliary) values, if such are selected in *Tools -> Settings*

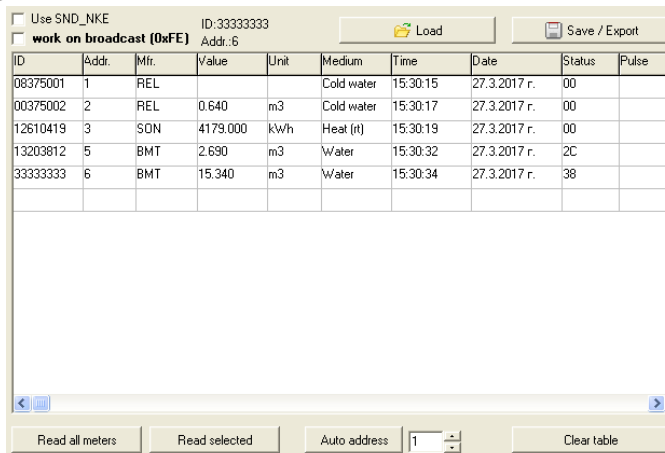
Status byte is written in hexadecimal value.

Secondary search can be performed in two manners:

- typing real ID number and try to find it in the network (i.e. exact ID of a device)
- use wildcards – for now **only** full wildcard ID can be used, i.e. FFFFFFFF. This should find ALL devices in a network, of course if they are with different ID numbers. For now this search is not complicated further with manufacturer and medium wildcards.

When 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 (button "*Read selected*")



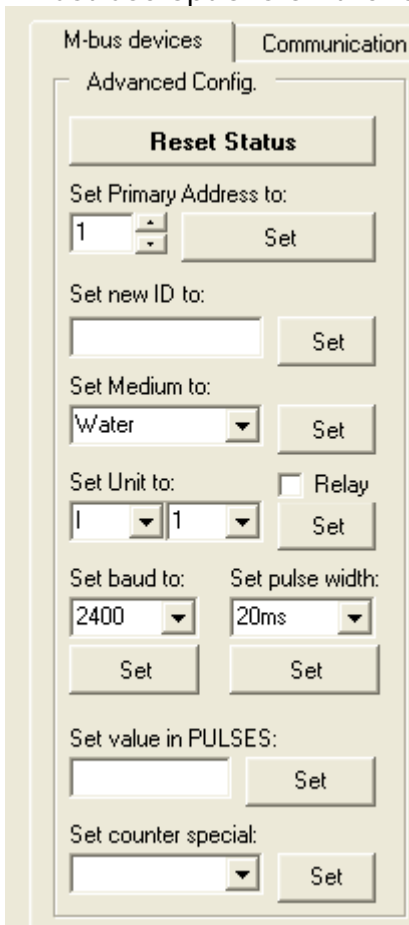
The screenshot shows a software window with a table of devices and several control buttons. The table has columns for ID, Addr., Mfr., Value, Unit, Medium, Time, Date, Status, and Pulse. The data in the table is as follows:

ID	Addr.	Mfr.	Value	Unit	Medium	Time	Date	Status	Pulse
08375001	1	REL			Cold water	15:30:15	27.3.2017 r.	00	
00375002	2	REL	0.640	m3	Cold water	15:30:17	27.3.2017 r.	00	
12610419	3	SON	4179.000	kWh	Heat (rt)	15:30:19	27.3.2017 r.	00	
13203812	5	BMT	2.690	m3	Water	15:30:32	27.3.2017 r.	2C	
33333333	6	BMT	15.340	m3	Water	15:30:34	27.3.2017 r.	38	

Below the table, there are buttons for "Read all meters", "Read selected", "Auto address" (with a dropdown menu showing "1"), and "Clear table". At the top of the window, there are checkboxes for "Use SND_NKE" and "work on broadcast (0xFE)", and fields for "ID: 33333333" and "Addr.: 6". There are also "Load" and "Save / Export" buttons.

- modify parameters

To modify parameters user must use options on the left of the table:



The screenshot shows a software interface for configuring M-bus devices. It has two tabs: 'M-bus devices' and 'Communication'. The 'Communication' tab is active, showing an 'Advanced Config.' section. This section includes a 'Reset Status' button, a 'Set Primary Address to:' field with a value of '1' and a 'Set' button, a 'Set new ID to:' field with a 'Set' button, a 'Set Medium to:' dropdown menu set to 'Water' with a 'Set' button, a 'Set Unit to:' field with a value of '1' and a 'Relay' checkbox, a 'Set baud to:' dropdown menu set to '2400' with a 'Set' button, a 'Set pulse width:' dropdown menu set to '20ms' with a 'Set' button, a 'Set value in PULSES:' field with a 'Set' button, and a 'Set counter special:' dropdown menu with a 'Set' button.

Fig. 6. modifying m-bus devices parameters

User can do the following:

- set new primary address to selected device
- set new secondary address (ID) to a device
- set new baud rate (speed)
- set pulse width (only for Gineers pulse counters)
- set medium, unit and pulse weight for different devices
- set device main value (for Gineers and some other manufacturers)
- reset (SND_NKE)

If we have just one device in the network, we can work on broadcast address, which can be selected above the meters table.

If administrator wants to forbid modifying options to a user, he must create an account, where a modifying m-bus device is not allowed. Then this group of options will not be visible.

The table with meters can be saved. If the user presses button "Save/Export" a *Save Dialog* will appear, asking the user where he wants to save and what should be the file name. The last directory, where file was saved should be displayed first.

The files are saved in CSV style, so it could be open directly with MSExcel (or export from Excel in a manner to fit in the program).

If a file is saved, it can be load next time with button "Load".

2.2.Communication devices

Communication devices are Gineers MBET-2 (Ethernet converter) and MBGP-1A (m-bus to GPRS converter). They must be set accordingly to have proper connection and readouts of a remote m-bus network.

The setting window looks like this:

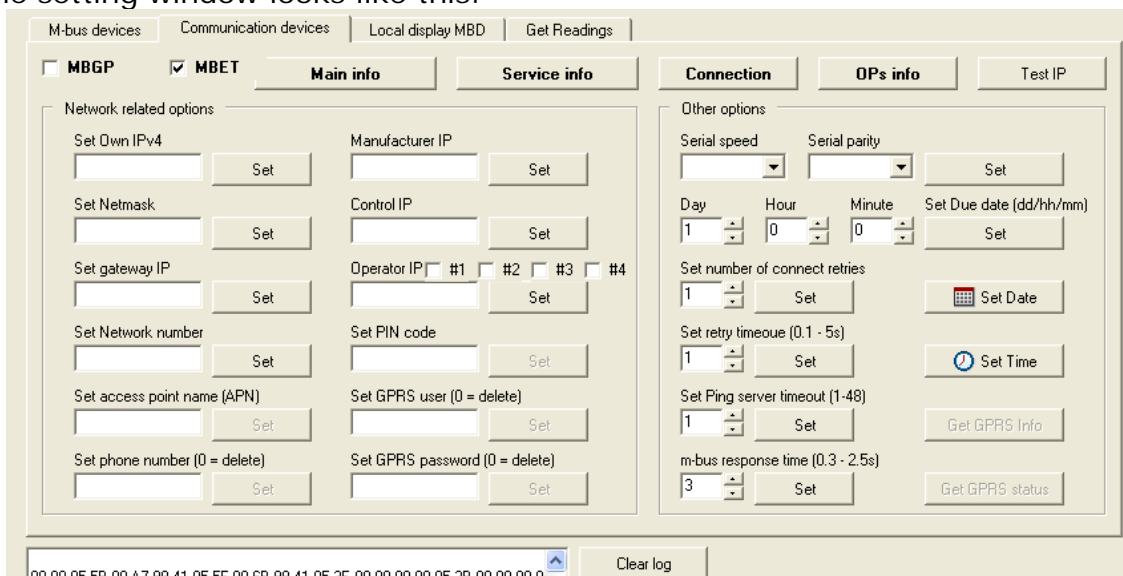



Fig. 7. Setting communication devices of Gineers

There are some options that are same for both converters. That is why user must choose the correct converter he sets at the moment:

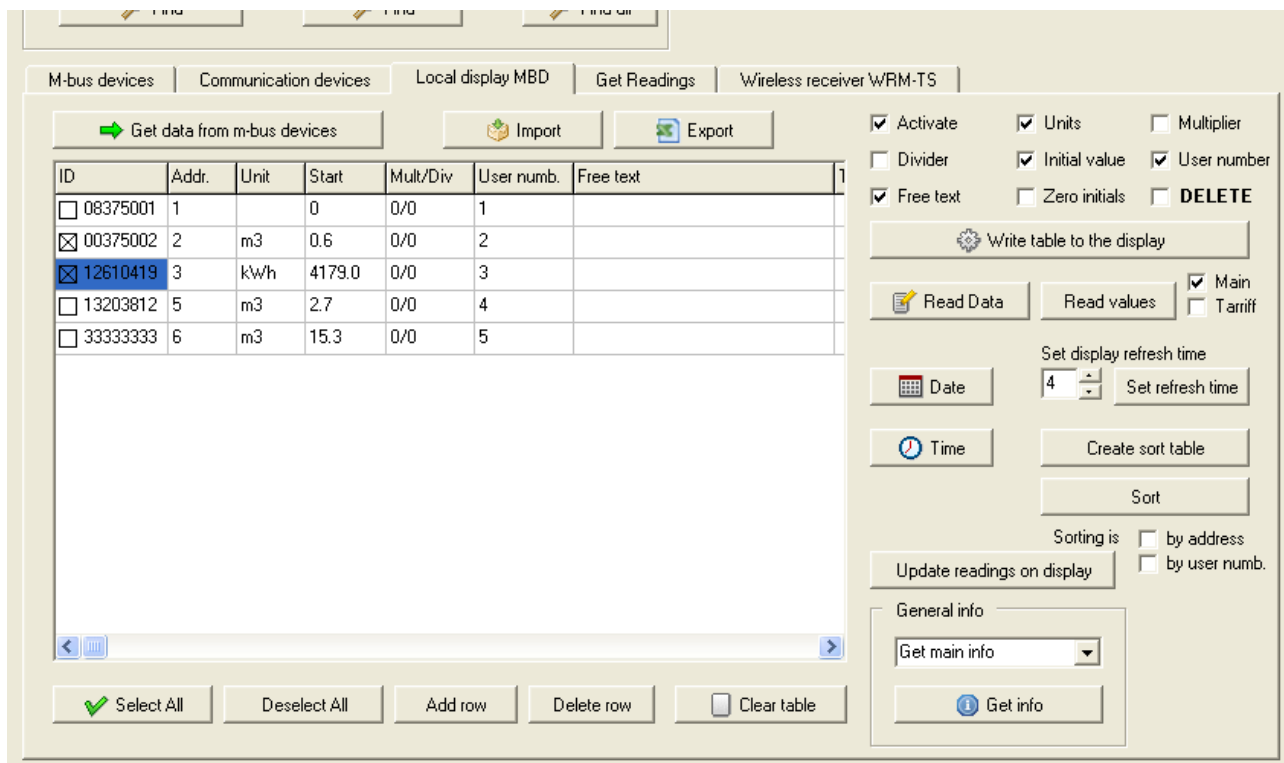


Doing that most of the options will be active, but those, which are not used for this type of converter will be disabled (like PIN for GPRS for instance).

How to set MBET-2 or MBGP-1A converter and what the parameters mean is described in their instructions or on our website.

2.3.Setting local display MBD-X250, MBM and MBM-TFT devices


This is Gineers local display and m-bus data centrals for up to 250 m-bus devices. The *TAB* for setting this display looks like this:



The screenshot shows the 'Local display MBD' tab in the GINEERS software. It features a table with columns: ID, Addr., Unit, Start, Mult/Div, User numb., and Free text. The table contains five rows of data, with the third row (ID 12610419) selected. To the right of the table are several control elements: checkboxes for 'Activate', 'Units', 'Multiplier', 'Divider', 'Initial value', 'User number', 'Free text', 'Zero initials', and 'DELETE'; a 'Write table to the display' button; 'Read Data' and 'Read values' buttons; a 'Set display refresh time' section with a 'Date' button and a numeric input set to 4; a 'Time' button and a 'Create sort table' button; a 'Sort' button; a 'Sorting is' section with checkboxes for 'by address' and 'by user numb.'; an 'Update readings on display' button; a 'General info' section with a 'Get main info' dropdown and a 'Get info' button. At the bottom of the interface are buttons for 'Select All', 'Deselect All', 'Add row', 'Delete row', and 'Clear table'.

ID	Addr.	Unit	Start	Mult/Div	User numb.	Free text
<input type="checkbox"/> 08375001	1		0	0/0	1	
<input checked="" type="checkbox"/> 00375002	2	m3	0.6	0/0	2	
<input checked="" type="checkbox"/> 12610419	3	kWh	4179.0	0/0	3	
<input type="checkbox"/> 13203812	5	m3	2.7	0/0	4	
<input type="checkbox"/> 33333333	6	m3	15.3	0/0	5	

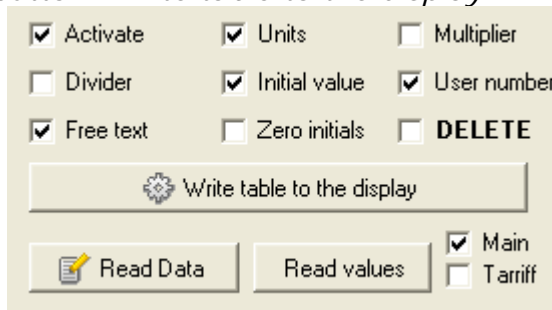
Fig. 8. Setting MBD-X250 display or MBM m-bus centrals

Because normally m-bus devices and display are set in the same time, an option to get m-bus table is provided. If the user presses button  he should see m-bus devices with their addresses, ID's and unit values in local display table.

To work correctly local display must be programmed with the following info for each m-bus device in the network:

- activate the device – MBD/MBM must be told what is the primary address of the device
- set unit, which should be displayed. Allowed are m3, kWh, kJ, N/A
- set initial value in the manner of XXXX.X. The idea of initial value is a value, that will be added to the measured value. That way display can show exactly what a meter is showing on its mechanical counter. Default value is 0.
- multiplier and divider – constants to multiply and divide measured value. Default is 1/1
- user number (optional) – user number from 1 to 999 – it is used for better identification and also can be used to sort the way how devices are displayed one after another
- free text (optional) – free text up to 20 symbols for better identification of a device. Support Cyrillic and latin characters. This is valid for LCD versions of MBM and MBD, if used MMB-TFT – there can be set two rows, 50 symbols on each row.

If the user wants to activate and set devices in MBD-X250/MBM memory, he should select devices he want to set, then select what he want to be programmed (right side), then press button "*Write table to the display*".



Then user can follow in the log window what is happening. On every successful command MBD/MBM will reply. If there is no reply that means that the command was not completed successfully.

The way MBD-X250/MBM works is the following algorithm:

- on activating a device this device is read, read value is stored as starting point of calculations
- then, on read the calculation formula is:

$$((\text{new value} - \text{starting_point}) * \text{MULTIPLIER} / \text{DIVIDER}) + \text{Initial value}$$

MBD-X250/MBM is performing automatic readouts every 6 hours and that is the moment that information 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 added in the program.

From this version reading of MBD-X250/MBM memory is introduced. That means that the user can read device memory and load data in the table.

Files can be saved and then load again for new setting.

Custom command can be send in ASCII. For example, if the user wants to force a readout, he should use the command:

set read

or press button "*Update readings on display*".

All commands for MBD-X250/MBM are described in devices manual.

3.User accounts

The software has several levels of access. Additionally, some extra options can be enabled or disabled, regardless of account access level.

There are three main access levels, which are:

- Administrator - can do anything in the program

- Setup - can do anything without changing user accounts
- Operator - can read devices and make reports, but cannot change settings in the program and user accounts

Because the software is intended to be used mainly for configuration properties, it has several different tabs, which can do the following:

- set m-bus devices (primary addresses, liter counters, etc.);
- set communication with Gineers Ethernet or GPRS converters
- set Gineers display, type MBD-X250 or MBM centrals
- set Gineers wireless concentrators

For each account Administrator can enable or disable access. This is made in the case that the program is given to end user, which do not know nothing about m-bus and should not change device's parameters.

Main window with account info looks like this:

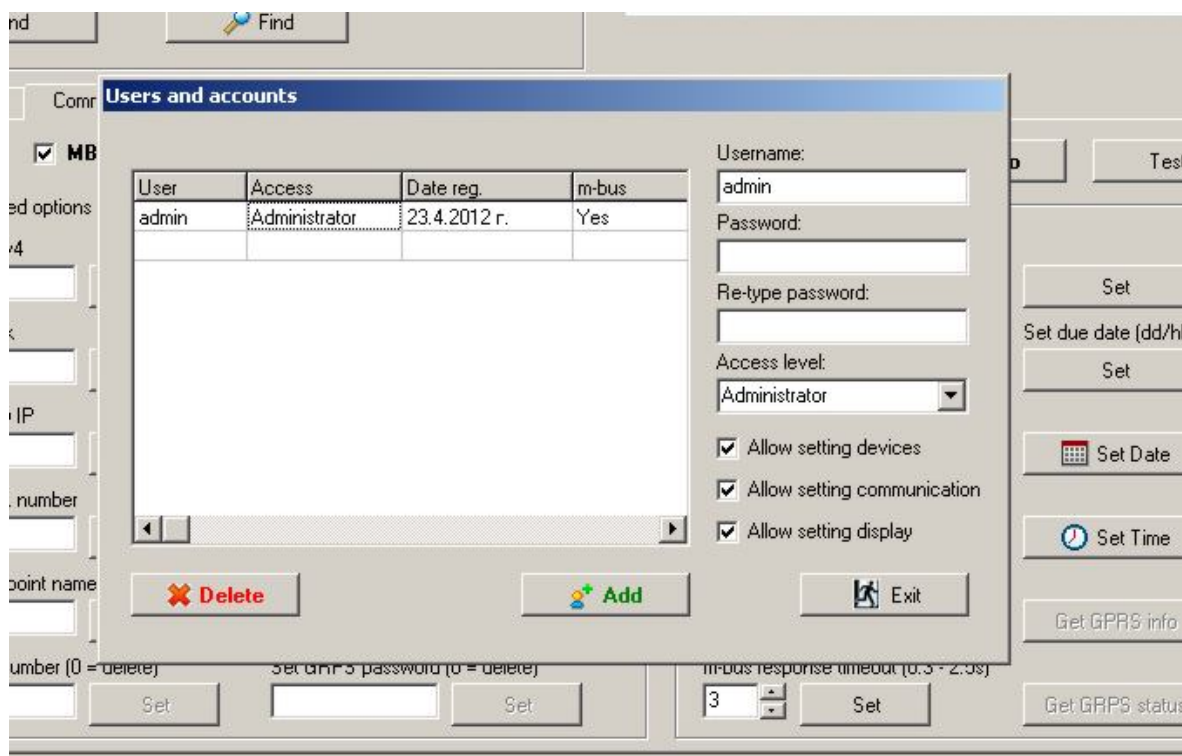


Fig. 9. Users and passwords setting

In the table are always showed active accounts at the moment. If one is administrator, he can see every account user name, access level and date of registration. Administrator can create new accounts or delete active ones. Changes to an account can not be made – you must first delete existing account and then create a new one.

In this version account with username '**admin**' CAN NOT be deleted! This is still test release, will changed that in the future.

If you want to create a new account, you must do the following:

- fill in desired user name
- type password
- re-type the password (if both passwords does not match an error will be generated)
- select desired user access
- select additional options for this user – options if he can see Communication devices setting or MBD-X250 display settings
- press button "*Add*"

If you try to create account with username that is equal to some existing user name in the table – new account will not be created.

If everything is selected and filled properly – new account will be created. Now the user can see details about the account in the table on the left side of the window.

To delete an account:

- select the account from the table
- press button "*Delete*"

If everything is ok this account will disappear from the table. As mentioned above – the account with username '**admin**' CAN NOT be deleted at this point.

4.Settings

There are several ways to communicate with m-bus devices;

- serial RS-232 connection
- MBET-2 or MBGP-1A – TCP/IP connection
- Direct Ethernet connection to local display MBD-X250/xx
- TCP/IP connection to MBET-2 in server mode

User can change the following settings for this program:

- serial port general parameters – COM port name, speed (bps), parity
- MBET-2 and MBGP-1A client connections – port to listen to
- IP and port for connection to MBD-X250 or MBET-2, when they are in server mode
- export separator
- retry times
- searching direction when Secondary search
- m-bus related issues

This window can be viewed from *Tools -> Settings* and looks like this:

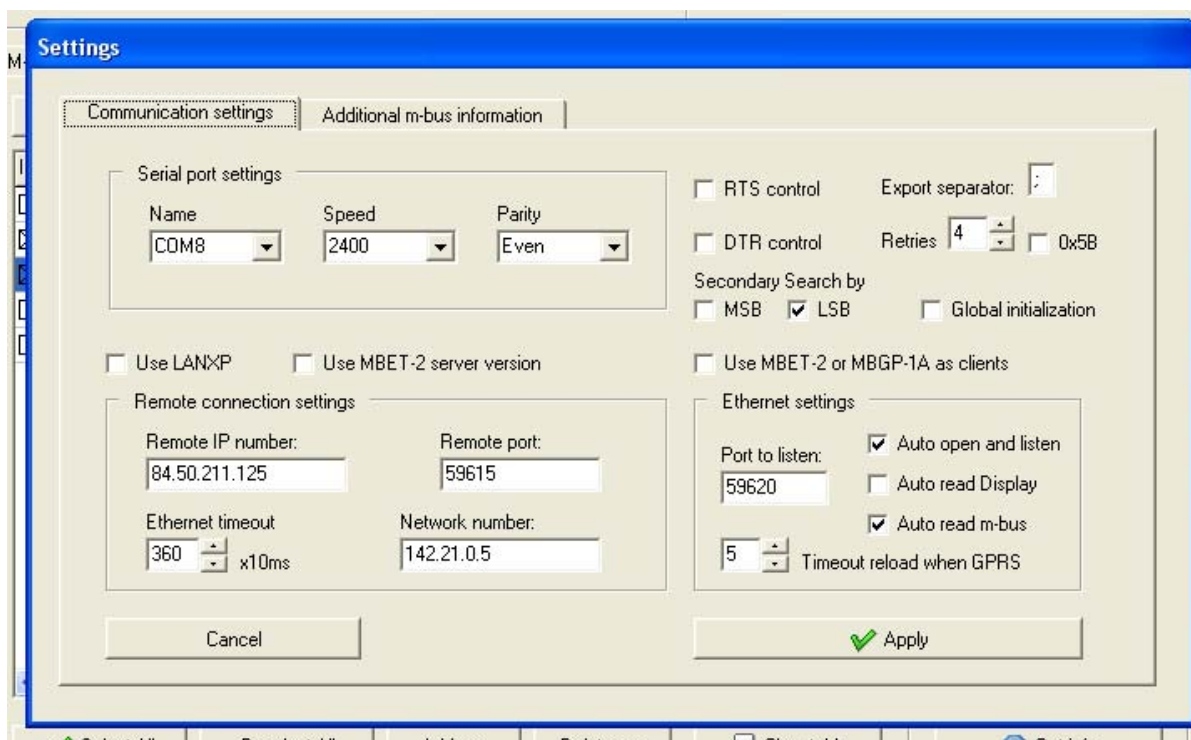


Fig. 10. Settings

Serial port settings

User must select correct serial port name from COM1 to COM30. If the port is not selected properly no reading shall be made. Speed must be set the same as m-bus devices are set. Default setting is 2400bps and Parity check (Even). If m-bus devices parameters are different or changed through the program – new settings must be made to guarantee normal work.

Use MBET-2 or MBGP-1A

If from the remote side is installed client MBET-2 or GPRS converter MBGP-1A user must set a port to listen for remote connection. Default port for our devices is 59615. If the port is not selected properly – program will not accept connections and no data will be exchanged. Because the connection is initiated from the remote side, two automatical options are provided:

- Auto read Display – means on connection program will read all data from MBD-X250 display automatically and fill the tables
- Auto read m-bus – means on connection program will search m-bus network for selected primary addresses and fill the table

Use LANXP or MBET-2 server version

These settings are for the cases where the program acts as a client, not server. This is applicable for MBD-X250 ethernet version and MBET-2 set as a server. In this case user must define IP address and port on which the remote side is listening for connections. If you are trying to access device in local network – be sure to set properly your router.

TCP/IP communication options are self-excluding, so only one can be selected at a time. If no TCP/IP communication is selected – serial RS-232 connection is active.

Export separator

This is the separator that is used when saving or loading files. In order these files to be compatible with MSExcel proper separator should be selected. Default value is ';'.

Retries

This is an option, which is directly involved with m-bus reading. The retry number tells the program how many times to try to read certain device, if it is not responding. It is tied to two options of the program:

- searching for primary addresses
- reading all devices in the table

In the second case not only lack of response is taken in mind, but also if the telegram is wrong (wrong header, check sum or stop byte) the program will try again to read this particular device. Of course, if the user sets too big number of retries this will slow down the search for primary addresses. Default value is 1, but the user can set anything from 0 to 9.

M-bus related issues

User can select secondary search direction (MSB or LSB) and should there be a global initialization telegram before search starts.

Additional information

There is an option to read and store more than one value. Normally there is always one Main value, which is pre-defined due to Medium in m-bus telegram header. But in case of heat meters, usually there are other important values like:

Temperature input and output

Volume

Power

*Additional pulse inputs
and others*

So, here user can select up to 9 values that can be seen in main table, when a device is read. This applies only to pure m-bus reading and does not have a connection with displays and m-bus data centrals, produced by Gineers.

5.Help

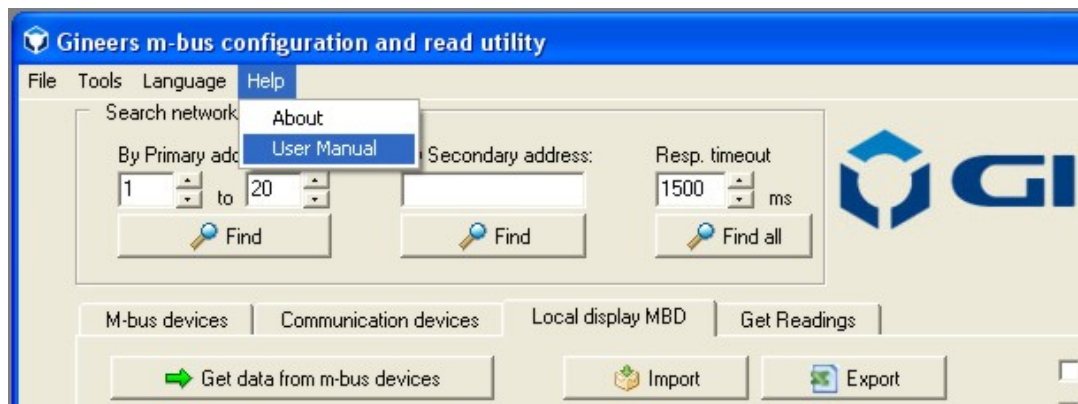
This menu contains two options:

About – shows information about the program



Fig. 11. About

User manual – starts this user manual



6.Contacts

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If any questions, suggestions or troubles using this program, please write to support@gineers.com or ivan@gineers.com