

MBSheet

Read-out software for M-Bus meters

Version 1.6

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1 M-Bus read-out with MBSheet

1.0 What is MBSheet?

MBSheet is an easy to use PC software for the read-out of meters according to the EN1434 standard in an M-Bus network. MBSheet supports all Relay level converters.

MBSheet has the following features:

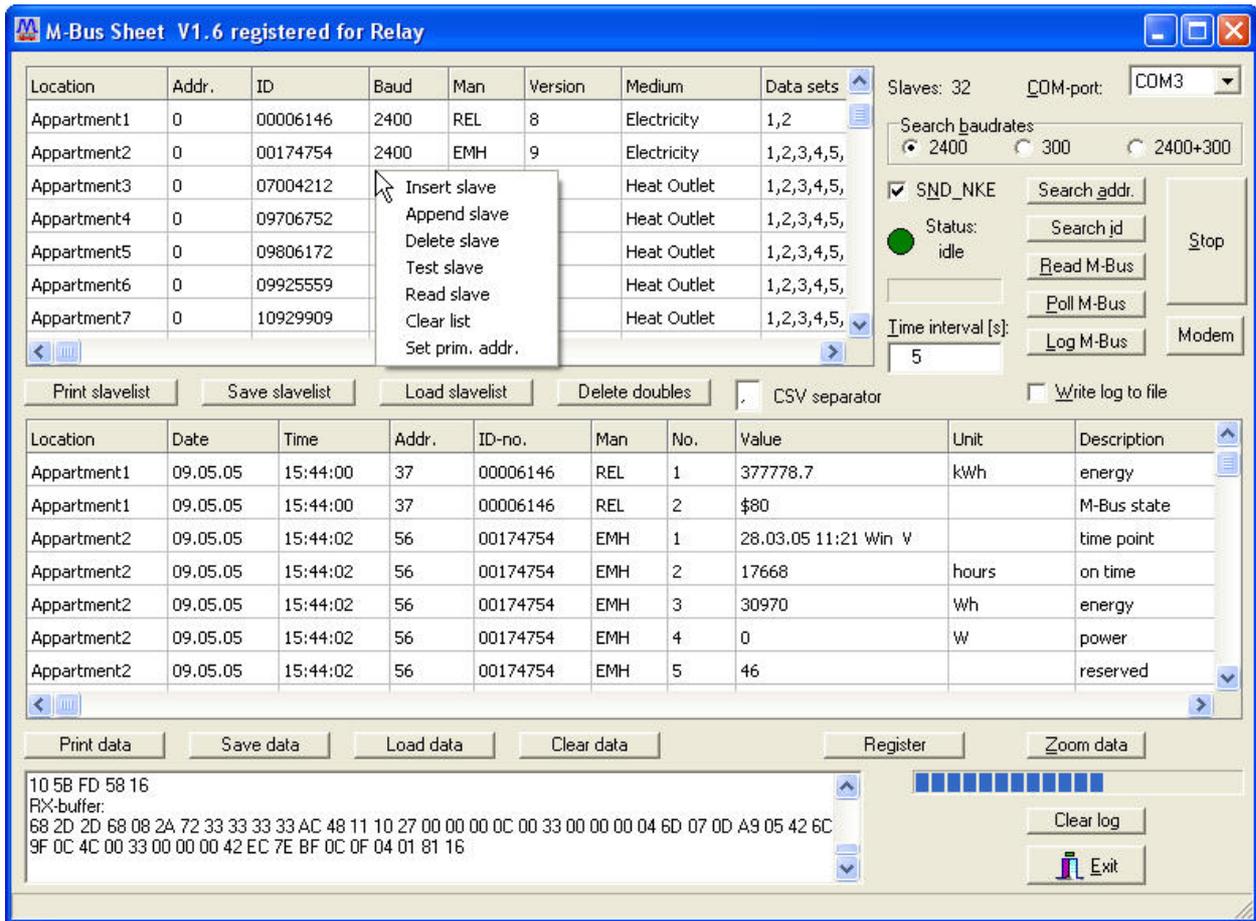
- automatic network meter search
- manual editing of the meter list
- selectable meter data sets
- periodic readout of network meters
- data export in EXCEL CSV format
- data print-out
- modem support

1.1 Installation

MBSHEET_SETUP.EXE automatically installs MBSHEET on the harddrive of the computer. The user has the choice to create a startmenu program group and a desktop icon. After installation an English and a German language version is available.

1.2 Usage

At program execution the operator can use mouse and keyboard or a keyboard only. Hints are shown when moving the mouse pointer on a program entry field or button. Grayed fields or buttons are disabled. Most labels of entry fields and buttons have an underlined character. Typing this character in combination with the keyboard [ALT]-button sets the input cursor into the entry field or invokes the function of the program button. With [TAB] and [Shift][TAB] the operator can walk forward or backward through the control elements of the program. Check boxes can be marked (unmarked) with the space bar. Pressing the [ENTER]-button activates the control element with the current focus.



In the upper right corner of the program window you can find a combobox for the choice of com-port connected to the level converter. In the neighbourhood, some buttons for meter search and data read-out are placed. The upper table window contains the description of meters found by automatic search. Meter read-out data is shown in the lower table window. Below both table windows there are buttons for saving, loading and print-out of table contents. A coloured indicator shows the program state. A green indicator means that the program is in idle state and is ready to accept new commands. When searching for meters or reading out data the indicator has a red colour (busy state). This state can only be left by pressing the stop-button or ist automatically left at the end of the command.

The user can enter a description for the installation location of each meter in the first column of the meter table. This location will be displayed in the data table at read-out time. The second column of the meter table contains the primary address of each meter in the range from 0 to 250. A meter which is found at search by ID operation gets the primary address 0. Meters with the primary address 0 will be addressed by their ID at read-out time. Meters with a primary address between 1 and 250 will be addressed only by their primary address at read-out time.

The other columns in the meter table contain the baud rate, manufacturer, version and the measured medium. The second last data set of each meter contains the M-Bus state. In the second last column of the meter table the user can choose the data sets to

be displayed at read-out time. But caution, the numbering of the data sets must be in ascending order. The last column of the meter table contains the COM-port number where the meter was found during slave search. Pressing the modem-button opens a window with input fields for the phone number and the modem configuration string and a dial/hangup-button. The modem must be connected to the serial port configured by the COM-port field in the upper right corner of the program window.

Pressing the right mouse-button in the meter table opens a context menu with additional commands. The user can insert or delete meter entries, single meters can be tested or read-out and new primary addresses can be written into meters. The test command can retrieve the ID and the number of data sets of a meter with a known primary address.

The table of meters and the data table can be sorted by clicking on a column header. Further sort criteria can be used when holding down the <shift> key.

1.3 Basic entry fields and buttons

COM-port defines the serial port of the PC connected to a level converter with a 1:1 straight forward RS232 cable or a special M-Bus modem for remote data transmission. At program exit the selected port is automatically written to the ini-file.

Search baudrates determines the baud rate of the M-Bus port during meter search. Most meters support 2400 baud but there are some older meters communicating only at 300 baud. The user can choose the setting "2400+300" if the baud rates of installed meters are unknown. In this case the meter search is performed first with 2400 baud and then with 300 baud. Meters supporting both baud rates will be found twice. At program exit the selected baud rate is automatically stored in the ini-file.

Search Addr. starts an automatic primary address search for connected meters in the M-Bus network. Primary addresses between 1 and 250 are successively tested at search time. The applied baud rate will be taken from the "search baudrates" field. Found meters are appended to the meter table. When invoking the command "Search addr." the program asks the user whether the current meter table entries should be deleted.

Search id starts an automatic secondary address (id) search for connected meters in the M-Bus network. Secondary addresses between 00000000 and 99999999 are tested with a special method. The applied baud rate will be taken from the "search baudrates" field. Found meters are appended to the meter table. When invoking the command "Search id" the program asks the user whether the current meter table entries should be deleted.

- Read M-Bus** starts a data read-out from all meters of the meter table. Baud rate, address and relevant data sets will be taken from the meter table. Meters with a primary address 0 are addressed by their secondary address (id). The read-out data is written to the data table.
- Poll M-Bus** starts a periodic read-out of the M-Bus meters. The cycle time is taken from the field "Time interval". At every read-out old data is overwritten by new data.
- Log M-Bus** starts a periodic read-out of the M-Bus meters. The cycle time is taken from the field "Time interval". At every read-out new data is appended to the data table.
- Stop** terminates search for meters as well as data read-out. The indicator will change his colour from red (busy) to green (idle) as soon as the running operation is terminated.
- Time interval [s]** is an entry field for the time period between M-Bus read-outs in the polling or logging mode.
- SND_NKE** is a control field which enables / disables the output of a M-Bus normalization command SND_NKE to a meter before reading this meter. Meters with multi telegrams can be switched to the first telegram with the SND_NKE telegram.
- Zoom data** opens an extra window for the data table. This window can be sized up to full screen.
- Print slavelist** sends the meter table entries to a printer.
- Save slavelist** writes the meter table entries to a disk file in EXCEL-CSV format.
- Load slavelist** reads a meter table file in EXCEL-CSV format from disk.
- Delete doubles** deletes double entries of a meter in the meter table. This command is helpful when same meters are found at different baud rates or at different search methods. The first entry remains in the table.
- Print data** sends the data table entries to a printer.
- Save data** writes the data table entries to a disk file in EXCEL-CSV format.
- Load data** reads a meter data file in EXCEL-CSV format from disk.
- Clear data** deletes all data table entries.

CSV separator is an entry field for the field separator char of the EXCEL-CSV formats when writing data or meter entries to disk.

Write log to file is a control field which determines the M-Bus logging strategy. When unmarked and issuing the "Log M-Bus" command all M-Bus data is appended to the data table. Because the RAM storage capacity of a PC is limited, an increasing data table slows down the performance of the PC. When marked, all M-Bus data read from the M-Bus meters will directly be written into a disk file. The program data table then only contains the data of the last read-out.

Modem opens a modem dial-window. If the connection to the modem at the level-converter side is established the program has the same features as in a local connection (see chapter "Modem").

Clicking the right mouse button on the meter table opens a context menu with the following commands:

Insert slave creates a new meter entry in the table. The insert position is above the selected row. The new meter gets the primary address 0, ID 00000000 and 2400 baud as baud rate. These values can be modified in the table grid. With the knowledge of the primary or secondary address (id) and the "Test slave" command the meter line can be completed.

Append slave creates a new meter entry at the end of the table. With the knowledge of the primary or secondary address (id) and the "Test slave" command the meter line can be completed.

Delete slave deletes the selected meter entry in the table.

Test slave retrieves all M-Bus parameters of a selected meter as long as the primary address or secondary address (id) and the baud rate is known.

Read slave reads the selected meter and appends it's data sets to the program data table.

Clear list deletes all entries of the meter table.

Set prim. addr. programs the primary address of a selected meter. The meter will be addressed with the table baud rate and it's secondary address (id). Attention, some meters don't understand this method. Also write-protected meters don't accept the new primary address.

The communication between the program and the M-Bus meters is shown in the log-window. As soon as the maximum capacity of the log-window has been reached no more data will be displayed. For more data the user has to clear the window with the "Clear log" button.

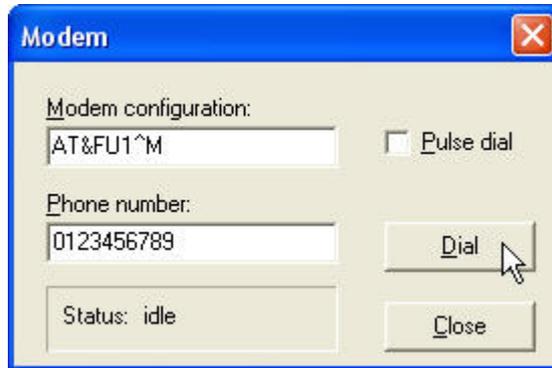
More buttons:

Register opens a window for the software registration of the program. An unregistered version of the program runs as a restricted demo version with disabled print and disk functions.

Clear log empties the log-window.

Exit terminates the program and writes the actual configuration to the ini-file. The recent slavelist will be stored on the disk in the file "slaves.csv". At program restart the configuration and the last used slavelist will be automatically loaded.

1.4 Modem



MBSHEET can communicate with a level-converter using a special modem connection (e.g. the Relay M-Bus Modem). The "Modem"-button opens a dial-window. The user can enter a modem configuration-string and a telephone number. Dialing is started by pressing the "Dial"-button. If successfully connected to the level-converter modem, the dial-window can be closed. Now all operations can be started as usual. After all operations are done, the user has to press the "Modem"-button again and then the "Hangup"-button in order to terminate the modem connection. Attention, changing the COM-port will terminate an existing modem connection.

Modem

configuration

is an input field for the configuration-string of the PC modem. This string will be sent to the modem before dialing. Example: "ATFU1^M" is the initialization of the Relay M-Bus Modem at PC side (^M is the symbol for a carriage-return).

Phone number

is an input field for the telephone number. Pre-dial numbers of privat branch exchange have to be inserted.

Pulse dial

is a checkbox for pulse dialing.

Dial

sends the configuration-string to the modem and starts dialing the phone number. The label on the "Dial"-button changes from "Dial" to "Hangup". The state of the modem-connection is displayed in the status-window.

Close

closes the dial-window.

2 MBSheet operating example

Let's consider the following situation:

An M-Bus installation with 60 meters has to be put into read-out operation. The bus wiring has always been done. We use the Relay level converter MR004C (PW60) connected with an RS232 cable to a PC as M-Bus master equipment. It's very helpful to create a site plan of all meters with their addresses and IDs during the installation. We need it later for the revisal of the slavelist after searching.

Now we install and start the MBSheet software on the PC. First we have to configure the program:

- 1) The „COM-Port“-field has to be set to the used serial port number (i.e. „COM1“).
- 2) Most M-Bus meters can be readout with 2400 Baud but some old models only support 300 Baud. Without knowing the baud rates of the connected meters the setup of the "Search baudrate"-field should be "2400+300".
- 3) If primary addresses were assigned to all meters before installation, the primary address search can be started with the button "Search Addr.". Otherwise you can start a secondary address search by pressing the button "Search id". But caution, some older meters might not support this function.
- 4) Now follows some manual work. By pressing the button "Print slavelist" the list of found meters can be send to a printer. After that you compare the number of found meters to the number of actual installed meters. If there are meters missing in the meter list, you can search for meters again with a second search method (primary or secondary). In order not to loose the already found meters, the question about deleting the actual meter list should be answered with "no". Afterwards multiple entries of meters can be deleted with the button "Delete doubles". Or you can eliminate them individually using the context menu. For this you mark the the line in the meter list by pressing the left mouse button and then open the context menu by pressing the right mouse button. After that you choose the option "Delete slave" and the meter is eliminated. If there are still meters missing in the list, you can insert them with help of the context functions "Insert slave" or "Append slave". It is possible to put in the address of the missing meters line for line. Eventually you can adjust the baudrate and then complete the line automatically with help of the button "Test slave". Should a meter not reply, you have to check the wiring in place for errors. When all meters appear in the meter list it can be stored to the hard disk by the key "Save slavelist".
- 5) Now a first readout can be started by pushing the button "Read M-Bus". The M-Bus meters are then selected in the order they are stored in the meter list. After readout the state indicator changes from red (busy) to green (idle). A meter that does not answer or does not answer correctly creates the output "error" in the value column of the data table.

- 6) For a periodic readout, you first have to insert a cycle time in seconds into the field "Time interval[s]" (e.g. 3600 for hourly readout). The time controlled readout is then started by pushing the button "Poll M-Bus" or "Log M-Bus".

With every readout the poll function overwrites the data table and so offers a clear representation if only the last and actual readout is interesting. When using the log function all read data are added to the list without deleting older data. It must be noted that the storage capacity of the data table is not endless and that table operations become ever slower with increasing data sets. Help for this problem offers the marking field "Write to log file". If this option is selected, readout M-Bus data are directly written to the harddisc. The screen, similar to the poll function, only shows the last readout data.