Driver M-bus

Description

- Protocol implementation according to EN 13757-2 and EN 13757-3
- connection of M-bus devices through local M-Bus converter
- connection of M-bus devices through unlimited number of remote M-Bus/TCP converters
- driver for reading M-Bus devices uses primary addressing
- configuring basic M-Bus device parameters:
  - primary address
  - secondary address
  - transfer speed
  - reading basic parameters:
    - manufacturer
    - medium
    - primary address
    - secondary address
- integrated M-Bus telegram analyzer, which can be used to create read profile from unknown device
- creating M-Bus telegram with command (e.g. command to disable button) and its sending through associated Bacnet point
- it is possible to assign mathematical operations to each M-Bus point:
  - add value
  - substract value
  - multiply by value
  - divide by value
  - mathematical operations are computed with double precision float numbers
- each M-bus device has created point containing state value of last reading
- active reading profile can be tested and its return results displayed
- Bacnet point for manual start of M-Bus devices reading
- virtual M-bus/TCP converter:
  - allows direct device configuration with manufacturers software on device
  - slave mode - paralel sensor reading with packet insertion from TCP client
  - master mód - disables devices reading and master client gains exclusive access to M-Bus converter


Knowledge of M-bus protocol is required to work with this driver.

Virtual gateway M-bus/TCP

Enables direct configuration of M-Bus devices with manufacturers software.

Virtual COM port emulator is requried to use this function. For Windows we recommend to use VSPE, 32-bit version is free.

Master connection

Enables exclusive access to M-Bus converter. All M-Bus functions of M-Bus/Bacnet converter are disabled while connection is active.

 Connection is established with **TCP** protocol on port **2001**.

Slave connection

Retains M-bus/Bacnet converter functions and adds received telegrams from TCP client to telegrams sent to converters software. Responses on these telegrams are returned on open TCP connection.

 Connection is established with **TCP** protocol on port **2000**.

Bacnet implementation

M-bus	**Bacnet**
Value from telegram	AnalogInput
Manual M-bus read	BinaryValue
State of last read	AnalogInput
M-bus command	AnalogValue

Properties:

- objectName
- objectType
- presentValue
- statusFlags
- outOfService
- covIncrement
- priorityArray
- relinquishDefault
- units

Values of state point of M-bus device

- **0** - OK
- **1** - No response
- **2** - Failed to open port
- **3** - CRC error
- **4 -** Failed to decode telegram
- Writing any value through Bacnet starts manual reading of device

Bacnet point of M-bus command

Written value will be used as M-bus address when command is sent to M-Bus.

Bacnet point for manual devices reading

Writing any value will start manual reading of all devices.

Driver settings

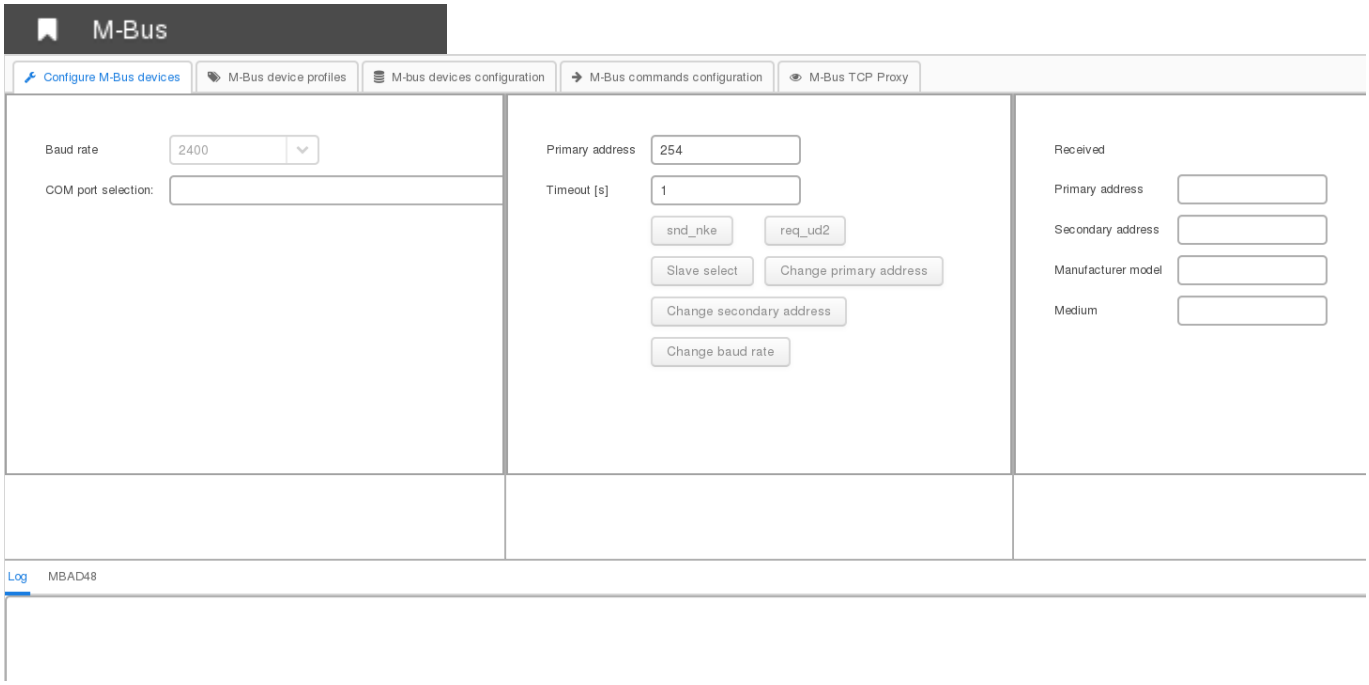
Communication speed:
Transfer speed of local port.
COM port:
Selection of local COM port.
Manual reading - point name:
Name of Bacnet point to start devices reading. Reading starts after writing any value to this Bacnet point.
Status of master M-Bus connection:
Displays status of master M-Bus connection.
M-Bus functions of converter are blocked while connection is active.
Disconnect master client
Disconnects master client.
Virtual COM ports
Virtual ports manager.

Button	Description
	Save settings
	Undo
Virtual	Add virtual COM port

Button	Description
	Delete selected
	Check availability of virtual ports

 Only TCP connection is supported currently.

M-bus devices settings



Port configuration

Transfer speed Currently set transfer speed of local M-Bus converter. Changes are applied immediately.  Warning! Transfer speed also affects reading algorithm of M-bus/Bacnet driver.

Select COM port

Selection of used port for devices configuration

Commands sending

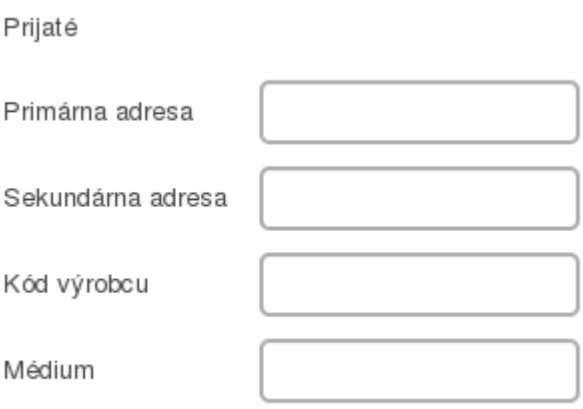
Primary address
Primary address of configured device:

- **254** - command for all devices (broadcast)
- **253** - command for secondary addressed device through **Slave select**

snd_nke
Sends telegram snd_nke
req_ud2
Sends telegram req_ud2
Slave select
Select device with secondary address
Change primary address
Changes primary address of device
Change secondary address
Changes secondary address of device
Change transfer speed
Changes transfer speed

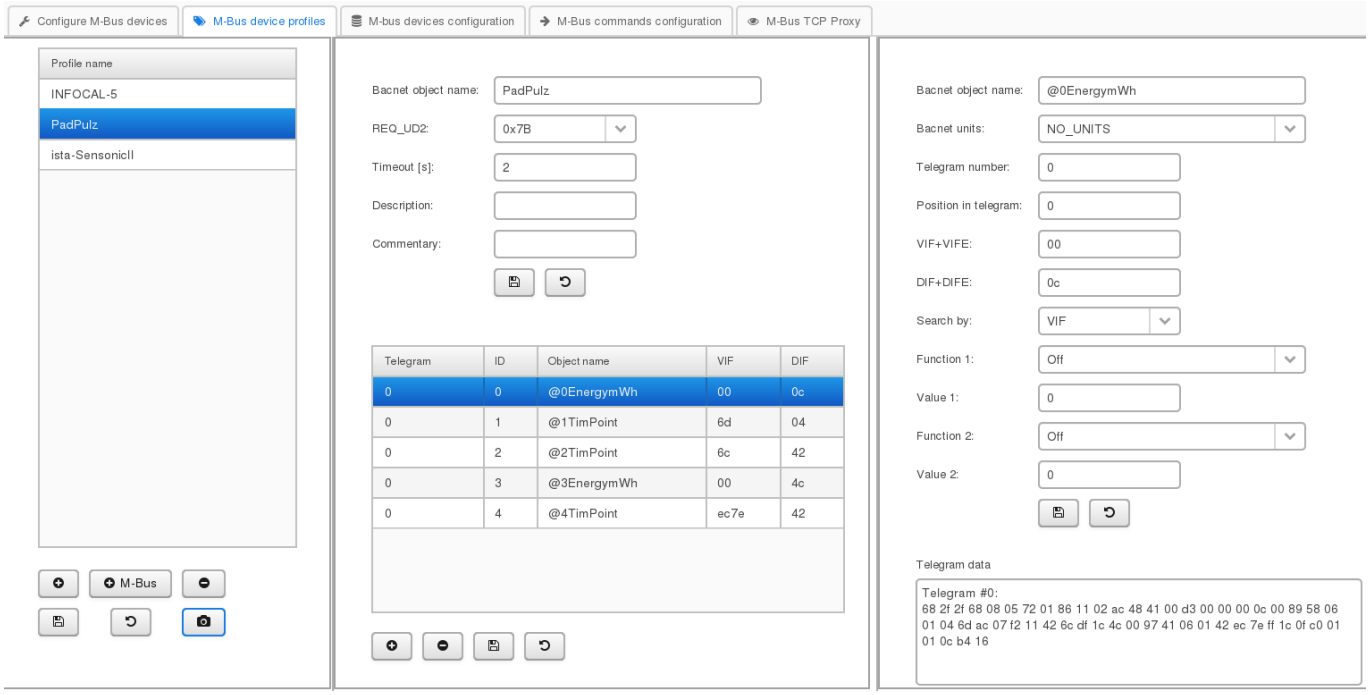
Decoded req_ud2 response

In this part will be displayed decoded response to req_ud2 telegram.



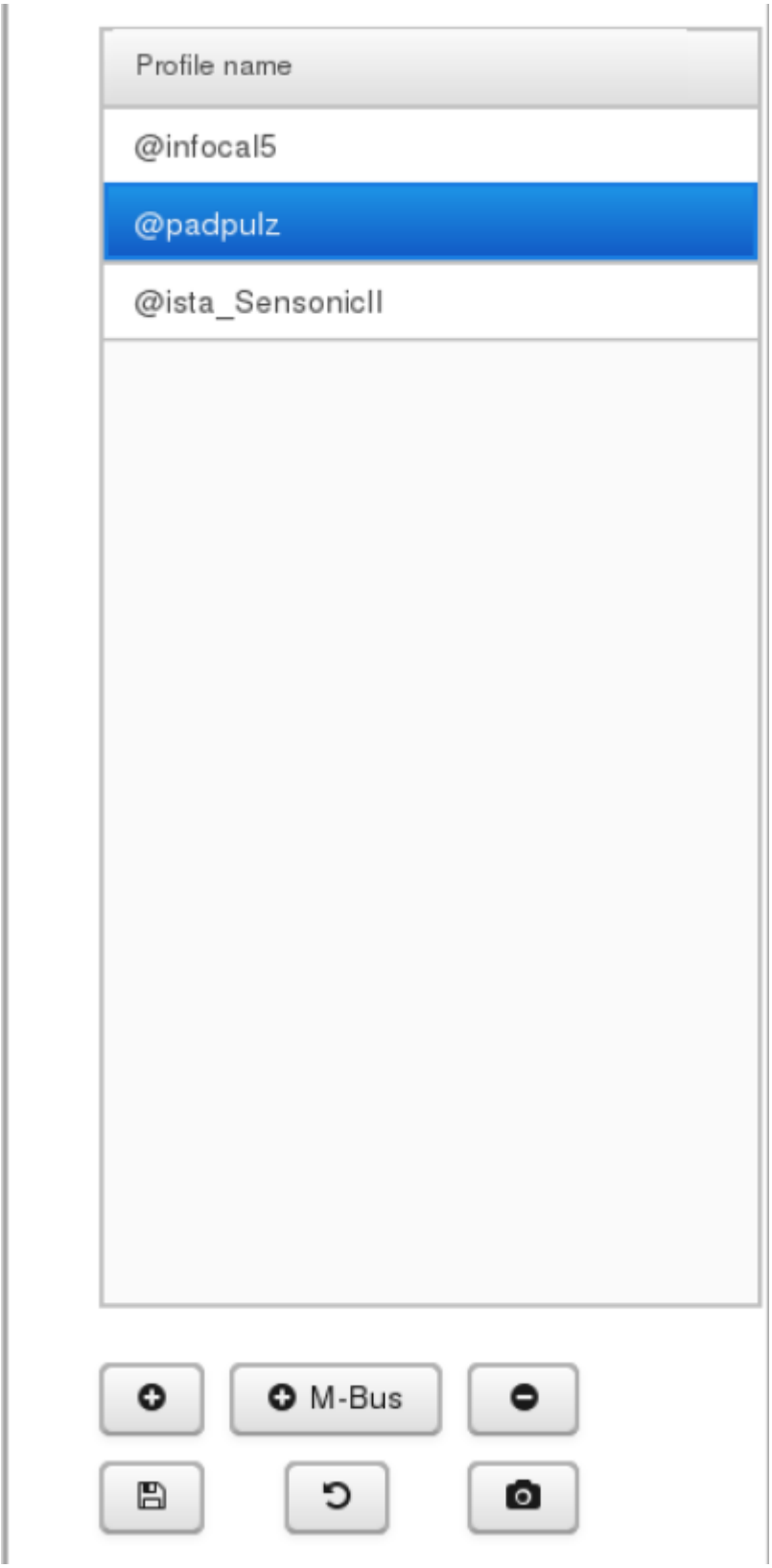
M-bus device profiles

Profile is template configuration for converting M-Bus telegrams to Bacnet points.



Editor for M-bus device profiles

In top part of the screen is located list of current profiles.

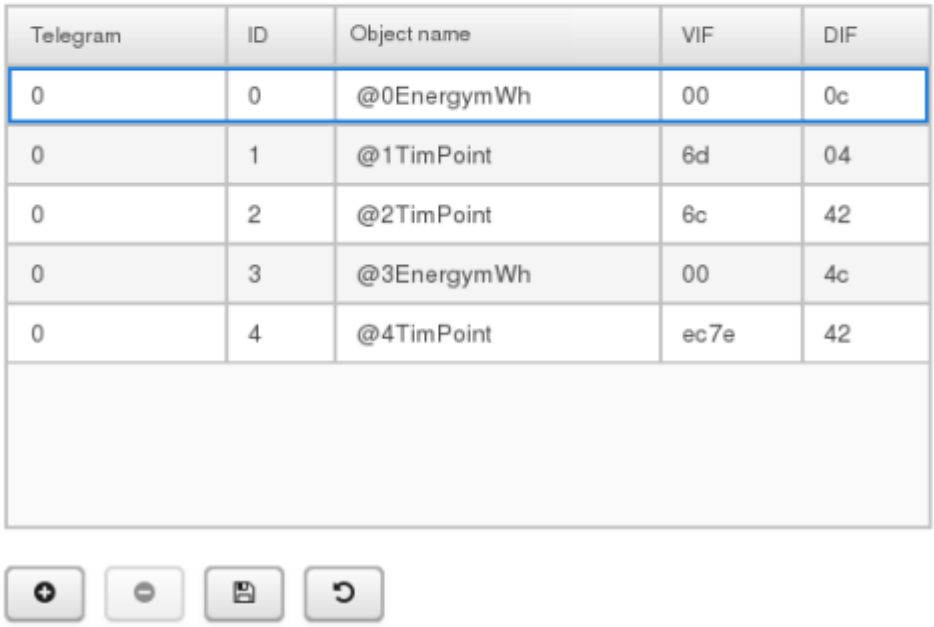


Button	Description
	Create profile
	Create profile from M-Bus device
	Delete selected profiles

Button	Description
	Save profile settings. Warning, only this option saves changes permanently to file. Other save options will save changes in memory. **Remember to use this option at the end of your work!**
	Undo
	Test profile on M-Bus device

Editor for M-bus device profile

Bacnet object name:
Name of M-Bus status point on Bacnet
Symbol @ will be replaced with given text on profile upload to M-Bus read configuration.
REQ_UD2:
“C Field” of sent telegram.
Timeout [s]:
Telegram reading timeout in seconds.
Data from TCP converters will be processed after time limit. M-bus device needs to send all data or CRC errors can occur.
Description:
Notes:
User description and notes.



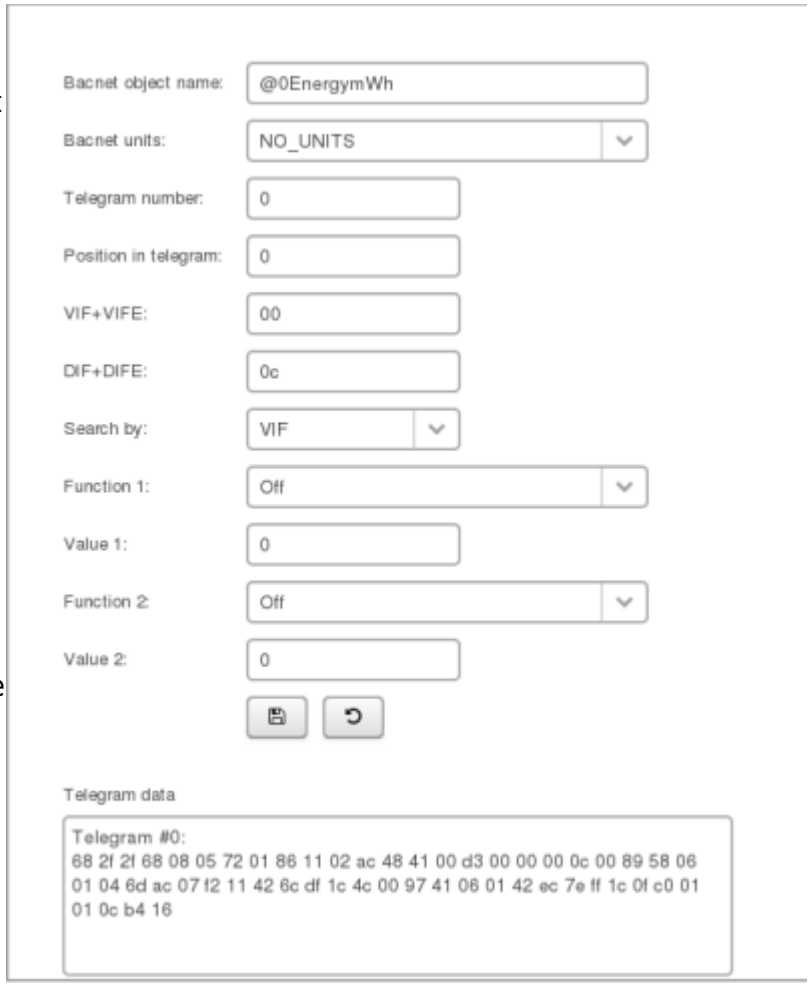
Telegram	ID	Object name	VIF	DIF
0	0	@0EnergymWh	00	0c
0	1	@1TimPoint	6d	04
0	2	@2TimPoint	6c	42
0	3	@3EnergymWh	00	4c
0	4	@4TimPoint	ec7e	42

Button	Description
	Save settings
	Undo

List of telegram entries
These entries are exported as Bacnet points

Button	Description
	Add entry
	Delete selected entries
	Save entries settings
	Undo

M-Bus telegram records editor



Bacnet object name:
Name of M-Bus point on Bacnet.
Symbol @ will be replaced with given text on profile upload to M-Bus read configuration.
Bacnet units:
Units accessible through Bacnet
Telegram number:
Position in telegram:
Informative value on automatic read from M-Bus device
VIF+VIFE:
VIF+VIFE value
DIF+DIFE:
DIF+DIFE value
Search by:
Entry in telegram is searched by VIF+VIFE, or by VIF+VIFE and at the same time by DIF+DIFE. You can find more informations about structure of M-Bus telegram here.
Mathematical functions and their values
Allows modification of decoded values before they are written to Bacnet point.

Button	Description
	Save settings
	Undo

Telegram data
Hexadecimal representation of recieved telegram on automatic profile generation.

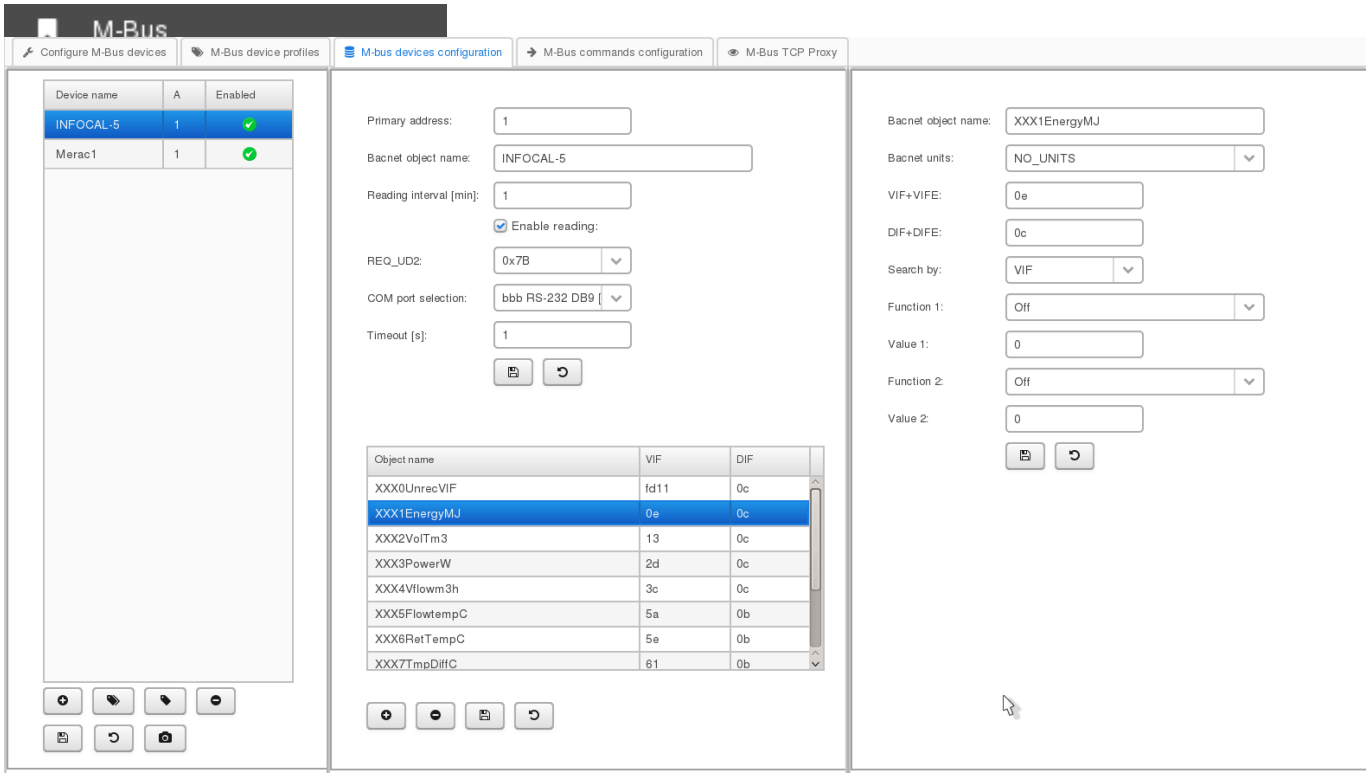
Generate profile from M-Bus device

Button	Description
	Read M-Bus device on specified COM port and req_ud2
	Generate profile from received data
	Cancel profile generation

Test profile on M-Bus device

Button	Description
	Test profile on specified COM port and req_ud2
	Close window

M-Bus device settings



M-Bus devices editor

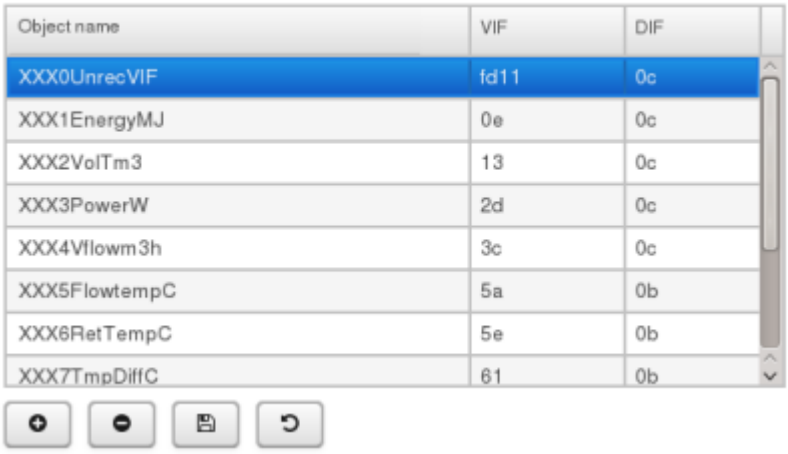
In top part of the screen is located list of currently configured devices.

Button	Description
	Create M-Bus device

Button	Description
	Create M-Bus device from profile
	Update selected device from profile
	Remove selected devices
	Save devices settings. Warning, only this option saves changes permanently to file. Other save options will save changes in memory. **Remember to use this option at the end of your work!**
	Undo
	Test current settings on M-Bus device.

M-Bus device editor

Primary address:
Primary address of M-Bus device
Bacnet object name:
Name of M-Bus status point in Bacnet
REQ_UD2:
“C Field” of send telegram.
COM port selection:
Port of connected device
Timeout [s]:
Telegram reading time limit in seconds. Data from TCP converters will be processed after time limit. M-bus device needs to send all data or CRC errors can occur.



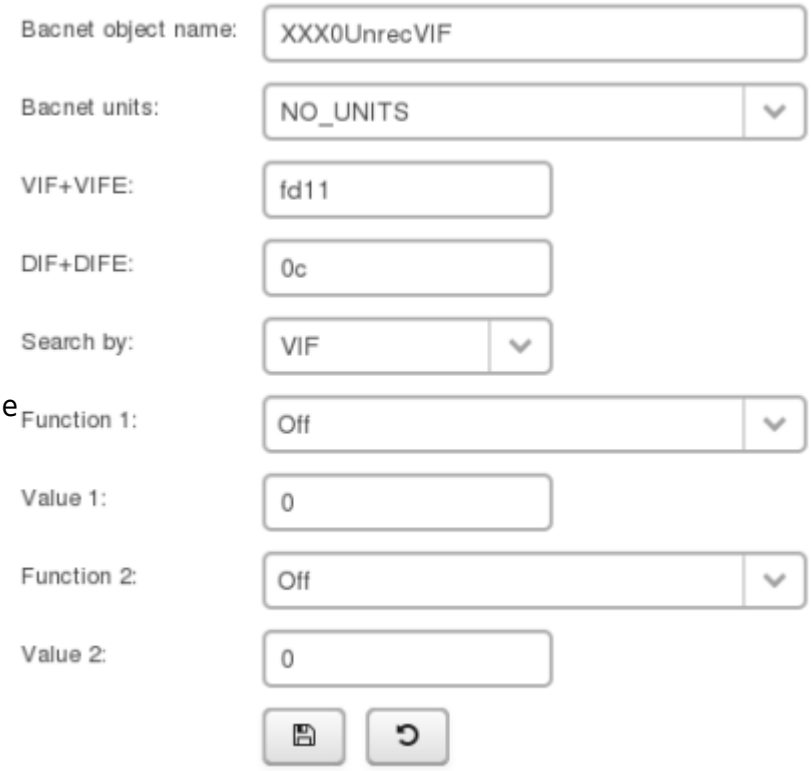
Button	Descrition
	Save settings
	Undo

List of telegram entries
These entries are exported as Bacnet points

Button	Descrition
	Add entry
	Delete selected entries
	Save entries settings
	Undo

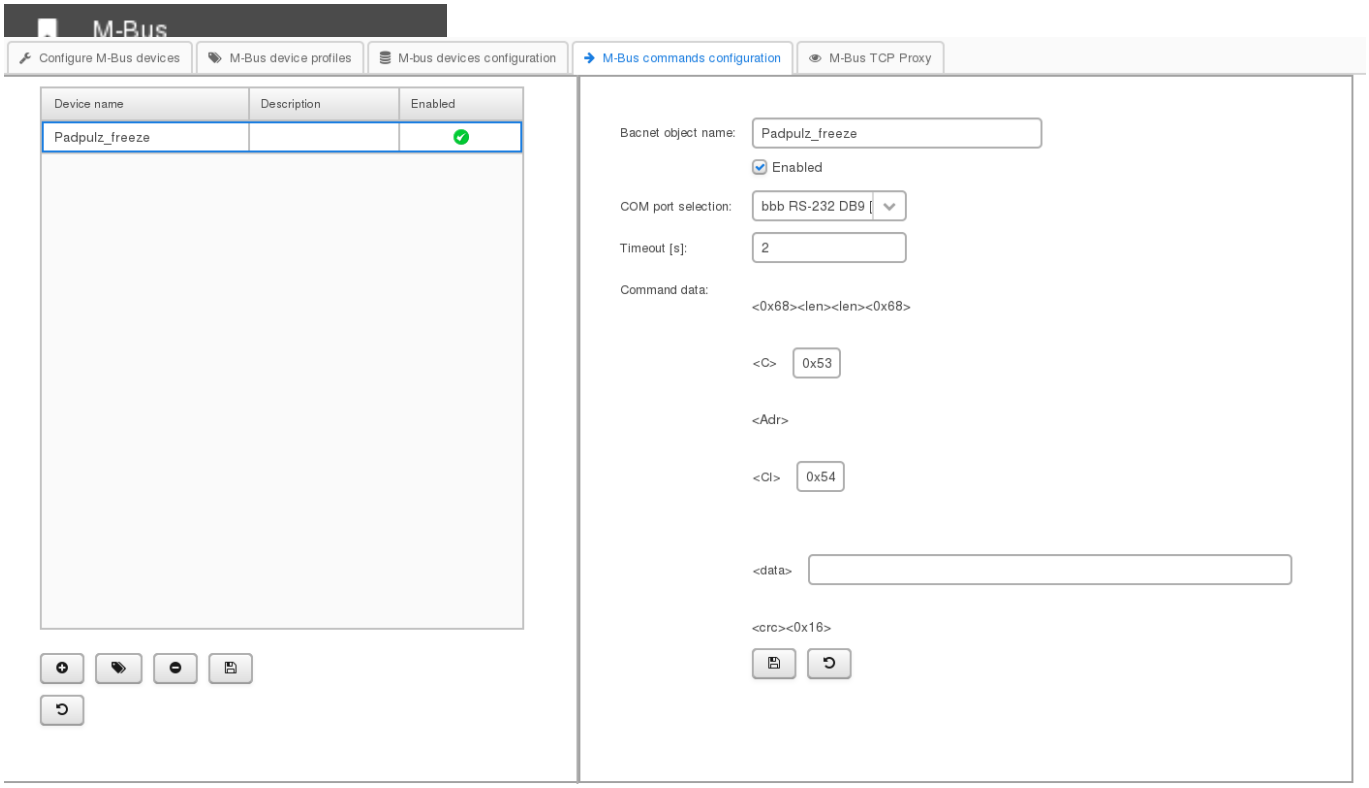
M-Bus telegram entry editor

Name of Bacnet point:
Name of M-Bus entry on Bacnet.
Bacnet units:
Units accessible from Bacnet
VIF+VIFE:
VIF+VIFE value
DIF+DIFE:
DIF+DIFE value
Search by:
Entry in telegram is searched by VIF+VIFE, or by VIF+VIFE and at the same time by DIF+DIFE. You can find more informations about structure of M-Bus telegram here.
Mathematical functions and their values
Allows modification of decoded values before they are written to Bacnet point.



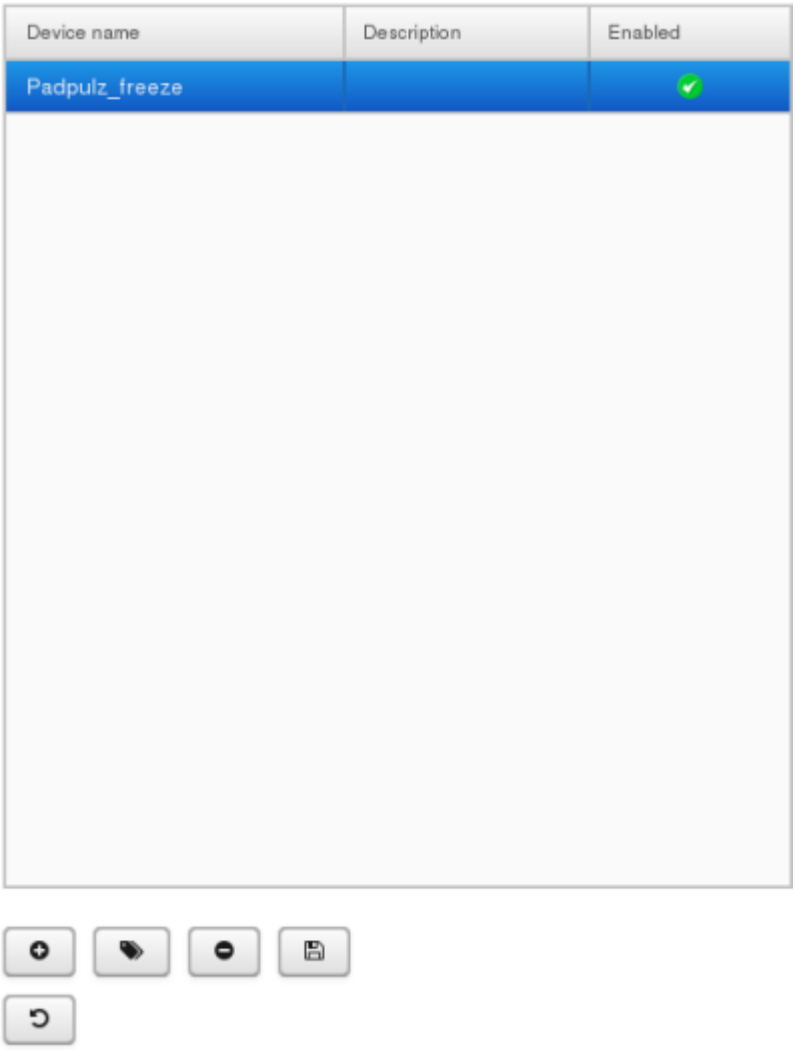
Button	Description
	Save settings
	Undo

M-bus commands settings



M-bus commands editor

In top part of the screen is located list of current commands.



Button	Description
	Add M-Bus command
	Add predefined command
Delete selected commands	
	Save commands configuration
	Undo

M-bus command editor

Bacnet object name:
Name of the Bacnet object
Enabled
Exports command to Bacnet
COM port:
COM port on which will be command sent
Timeout [s]
Response time limit, used to clear RX buffer
<C>
Telegrams “C-field”
<CI>
Telegrams “CI-field”
<DATA>
Hexadecimal representation of telegrams data

Telegram address will be included from defined value in Bacnet object. Length and CRC will be calculated before telegram is sent.

Button	Description
	Save settings
	Undo