

# 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
  - subtract 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 required 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
	Add virtual COM port
	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

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## Decoded req\_ud2 response

In this part will be displayed decoded response to req\_ud2 telegram. 

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## M-bus device profiles

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










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## 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
	Save profile settings.  Warning, only this option saves changes permanently to file. Other save options will save changes in memory. <b>Remember to use this option at the end of your work!</b>
	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.

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
	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. <b>Remember to use this option at the end of your work!</b>
	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	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 entry editor

### Name of Bacnet point:

Názov bodu M-bus záznamu na Bacnete.

### Bac. jednotky:

Jednotky prístupné cez Bacnet

### VIF+VIFE:

Hodnota VIF+VIFE

### DIF+DIFE:



Hodnota DIF+DIFE

### Hľadať podľa:

Záznam sa v telegrame hľadá podľa pol'a VIF+VIFE, alebo podľa VIF+VIFE a zároveň DIF+DIFE. Viac informácií o štruktúre M-bus telegramu nájdete [tu](#).

### Matematické funkcie a ich hodnoty

Umožňujú upraviť dekodovanú hodnotu, pred tým než sa zapíše do hodnoty bodu na Bacnete.






Tlačidlo	Popis
	Ulož nastavenie
	Undo

## M-bus commands settings



## Editor M-bus príkazov

V hornej časti sa nachádza zoznam aktuálnych príkazov.

Tlačidlo	Popis
	Vlož M-bus príkaz
	Vlož preddefinovaný príkaz
	Vymaž označený príkaz/y
	Ulož konfiguráciu príkazov
	Undo

## Editor M-bus príkazu

### Meno bac. objektu:

Názov bacnet objektu

### Zapnuté

Exportuj príkaz na Bacnet

### Výber COM portu:

COM port na ktorý sa odošle príkaz



**Timeout [s]**

Časový limit čakania na odpoveď, slúži na vyčistenie RX zásobníka

**<C>**

“C-field” telegramu



**<CI>**

“CI-field” telegramu

**<DATA>**

Dáta telegramu ak existujú. Vo formáte 0x11,0x44,0x5a

Adresa telegramu sa doplní z hodnoty zapísanej do Bacnet objektu. Dĺžka a CRC sa vypočítajú pred odoslaním telegramu.

Tlačidlo	Popis
	Ulož nastavenie
	Undo

Permanentný odkaz:

<https://wiki.apli.sk/doku.php?id=en:blacky-mbus&rev=1492599529>

