



Techknave

M-Bus Reader

**“Open-Source Free Tool for
Communicating both serial and TCP”**

USER MANUAL

Version 1.7

INDEX

Sl.No	Content	Page No.
1	Introduction	2
2	Installation	3
	2.1 Purchase License	3
3	COM Settings	4
	3.1 Serial Port	4
	3.2 TCP/IP	5
	3.3 Other Settings	5
	3.4 Language	6
4	Read	6
	4.1 Slave List	7
	4.2 Monitor Log	9
5	Telegram	10
6	Operating Example	10

1. INTRODUCTION

What is M-Bus Reader?

M-Bus Reader is easy to use PC software for the read-out of meters according to the EN1434 and EN13757 standards in an M-Bus network. M-Bus READER supports all M-Bus converters. Free demo is available with unlimited nodes for serial and 50 nodes for TCP.

M-Bus READER has the following features:

- **Automatic network meter search**
- **Manual editing of the meter list**
- **Meter data sort and search option**
- **Periodic readout of network meters**
- **Data export in EXCEL CSV format**
- **Support serial and TCP/IP communication.**
- **Set multiple primary addresses with a single click.**
- **Data monitoring and export**
- **Manual telegram sending option.**
- **Import meter list.**

2. INSTALLATION

M-Bus Reader_Setup.Exe automatically installs M-Bus Reader on the hard drive of the computer. Under the operating system Windows 7 or higher the program needs writing authorizations in the installation directory.

2.1 PURCHASE LICENSE

To activate all the options, you have to purchase the license. To purchase and activate the license follow the steps below:

Step 1: Open M-Bus Reader

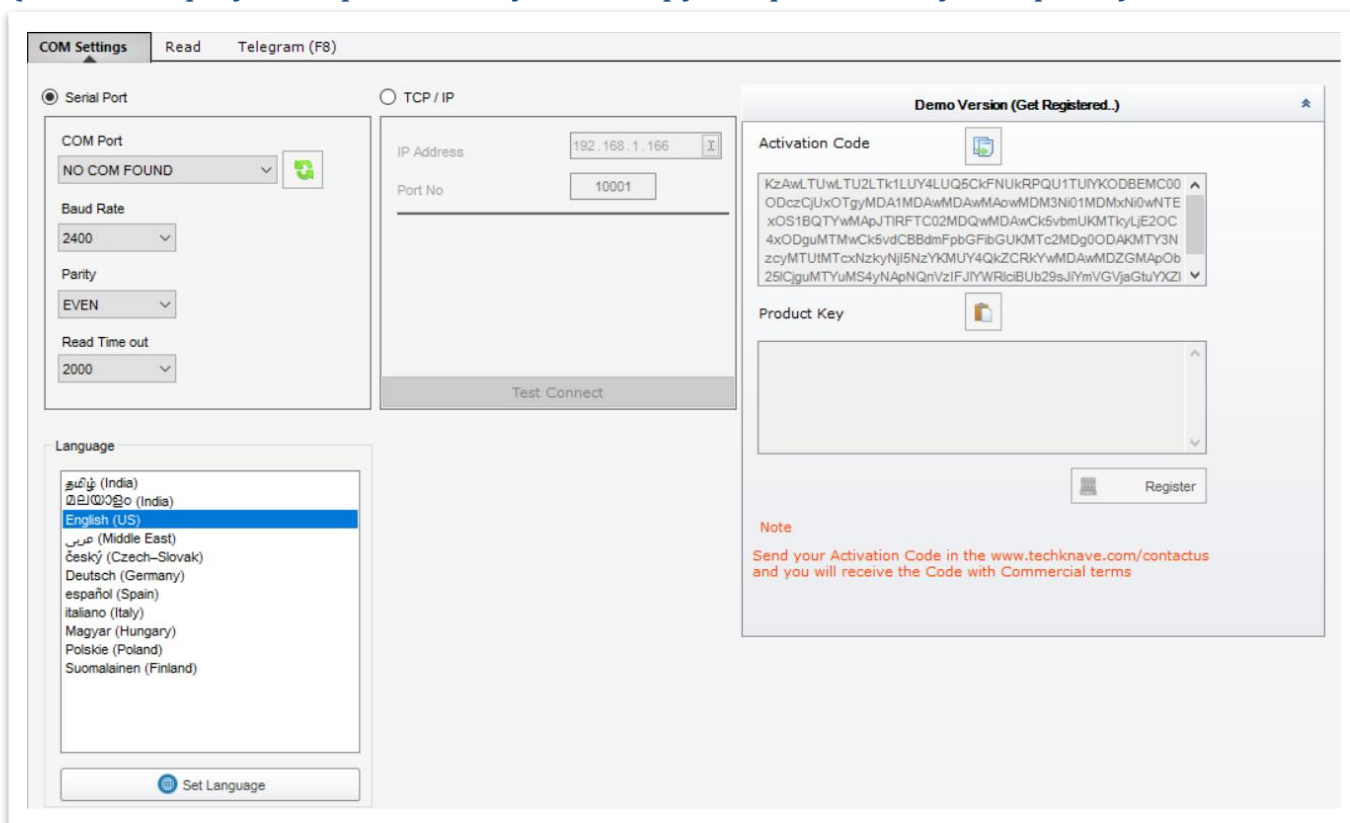
Step 2: Copy the Activation code from the COM Settings page

Step 3: Mail the code to sales@techknave.com

Step 4: Paste the product key that you got in your mail

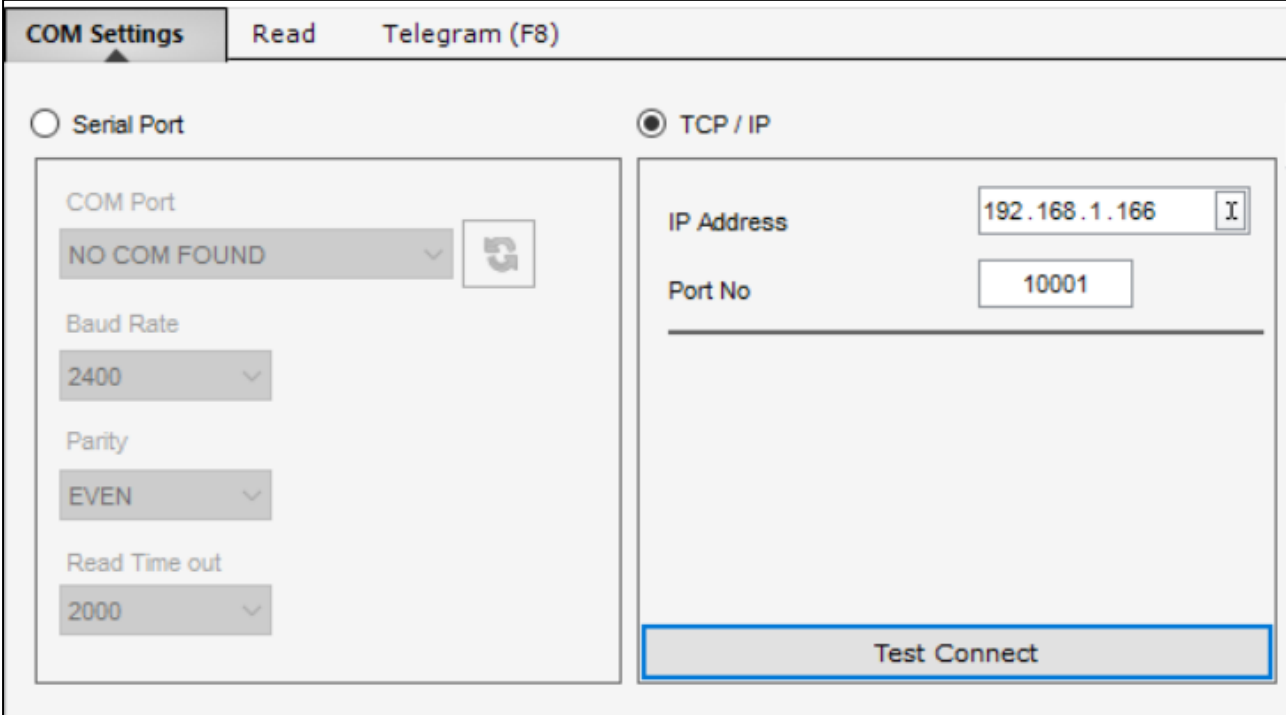
Step 5: Click register button

(We will replay with product key, then copy the product key and paste)



3. COM SETTINGS

By using this option, you can configure the communication settings with the M-Bus master



The screenshot shows the 'COM Settings' dialog box with the following configuration:

- Serial Port:** Unselected. Settings include COM Port (NO COM FOUND), Baud Rate (2400), Parity (EVEN), and Read Time out (2000).
- TCP / IP:** Selected. Settings include IP Address (192.168.1.166) and Port No (10001).
- Buttons:** 'Test Connect' button is visible at the bottom.

3.1 SERIAL PORT

Serial Port settings define the serial port of the PC connected to a M-Bus master with a 1:1 straight forward RS232 cable.

- **COM Port:** The connected COM port will be displayed in the drop down list, select the com-port connected to the M-Bus level converter. When using an USB-RS232 adapter or a virtual COM-port verify the COM-port number in the Windows device manager.
- **Baud Rate:** 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. Some meters support serial communication with 9600 baud. But the operating distance on the M-Bus network can be much reduced at higher baud rates.

- **Parity:** The default parity of M-Bus is even.
- **Read Time Out:** The reply time out delay can be selected from the drop-down list.

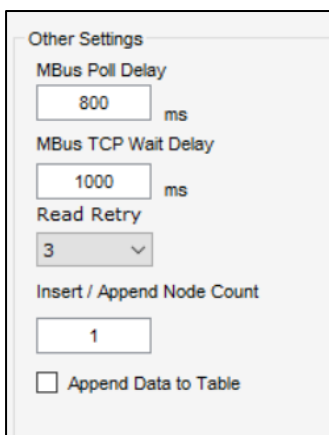
3.2 TCP/IP

TCP/IP settings can be used to configure the IP and port of a TCP/IP M-Bus master.

- **IP Address:** enter the ip address of the M-Bus master.
- **Port No:** enter the port number of the M-Bus master.

3.3 OTHER SETTINGS

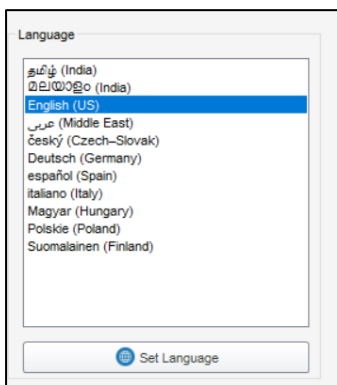
The basic communication interval settings can be configured by using this option



- **M-Bus Poll Delay:** the interval between the M-Bus polling can be configured here.
- **M-Bus TCP Wait Delay:** the reply waiting time from the M-Bus slave can be configured here.
- **Read Retry:** you can set the number of read retry.
- **Insert/ Append Node Count:** here we can configure the number of rows inserted to the meter list in a single click.
- **Append Date to Table:** If this option is selected, the new rows will be inserted to the meter data table without clearing the previous data.

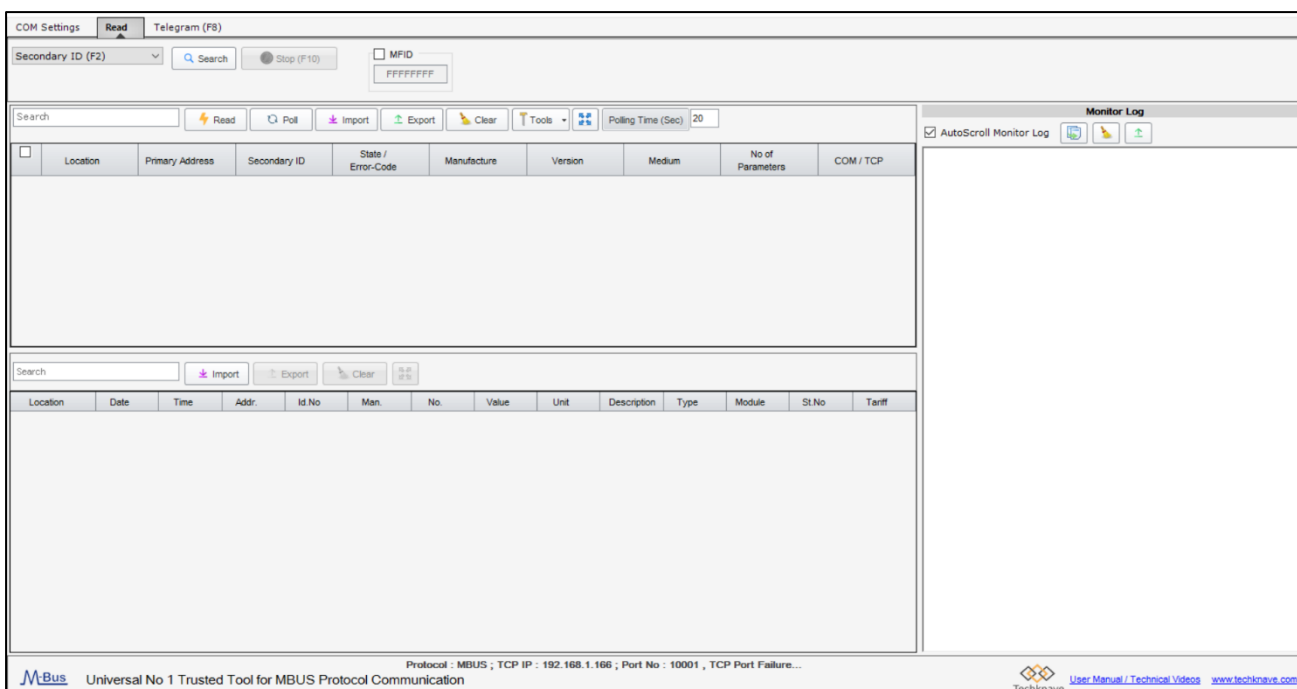
3.4 LANGUAGE

Here we can choose the language and click on set language button. Then automatically software will be changed to the selected language.



4. Read

In this page you can search the meter address and read out the data.



4.1 SLAVE LIST

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 are buttons for saving and loading. A colored progress bar will show the program state. The automatic meter search can be stopped by pressing the stop-button or it will automatically be left at the end of the search.

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.

COM Settings
Read
Telegram (F8)

MFID
FFFFFFF

Searching

Found

<input type="checkbox"/>	Location	Primary Address	Secondary ID	State / Error-Code	Manufacture	Version	Medium	No of Parameters	COM / TCP
<input type="checkbox"/>		0	35944928	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944929	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944932	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944939	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944940	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944942	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944945	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944947	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944948	D0 / Ultrasonic tran...	AMT	2B	0A/Cooling Load M...	13	172.16.116.3

Location	Date	Time	Addr.	Id.No	Man.	No.	Value	Unit	Description	Type	Module	St.No	Tariff

COM Settings **Read** Telegram (F8)

Secondary ID (F2) MFID **Searching** **Found**
Completed.. **24**

<input type="checkbox"/>	Location	Primary Address	Secondary ID	State / Error-Code	Manufacture	Version	Medium	No of Parameters	COM / TCP
<input type="checkbox"/>		0	35944928	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944929	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input checked="" type="checkbox"/>		0	35944932	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944939	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944940	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944942	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944945	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944947	00 /	AMT	2B	0A/Cooling Load M...	13	172.16.116.3
<input type="checkbox"/>		0	35944948	D0 / Ultrasonic tran...	AMT	2B	0A/Cooling Load M...	13	172.16.116.3

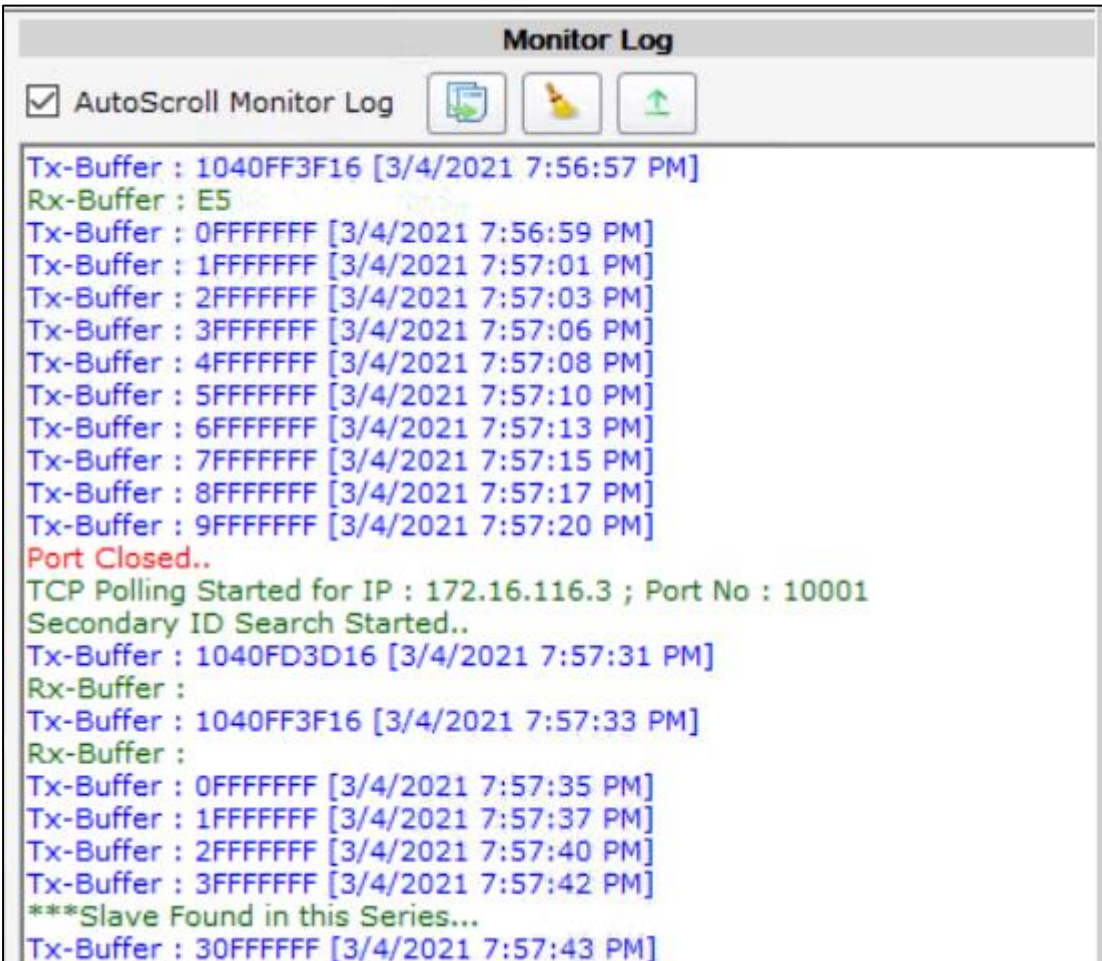
Location	Date	Time	Addr.	Id.No	Man.	No.	Value	Unit	Description	Type	Module	St.No	Tariff
	03-03-2021	01:27:34	82	35944932	AMT	2	0	Wh	Energy	Instant	0	0	1
	03-03-2021	01:27:34	82	35944932	AMT	3	0	Wh	Energy	Instant	0	0	2
	03-03-2021	01:27:34	82	35944932	AMT	4	6295.1313	m³	Volume	Instant	0	0	0
	03-03-2021	01:27:34	82	35944932	AMT	5	5.018	kW	Power	Instant	0	0	0
	03-03-2021	01:27:34	82	35944932	AMT	6	1350.4000	l/h	VolumeFlow	Instant	0	0	0
	03-03-2021	01:27:34	82	35944932	AMT	7	9.7	°C	FlowTempe...	Instant	0	0	0
	03-03-2021	01:27:34	82	35944932	AMT	8	12.9	°C	ReturnTem...	Instant	0	0	0
	03-03-2021	01:27:34	82	35944932	AMT	9	3.3	K	Temperatur...	Instant	0	0	0
	03-03-2021	01:27:34	82	35944932	AMT	10	108550	Hour	OperatingT...	Instant	0	0	0
	03-03-2021	01:27:34	82	35944932	AMT	11	0.000	m³	Volume	Instant	1	0	0
	03-03-2021	01:27:34	82	35944932	AMT	12	0.010	m³	Volume	Instant	2	0	0
	03-03-2021	01:27:34	82	35944932	AMT	13	00	M-Bus/State	-	-	-	-	-

- **IMPORT:** Below both table windows there are import buttons to save the meter list and meter data.
- **EXPORT:** Below both table windows there are export buttons to save the meter list and meter data.
- **CLEAR:** click on this button to clear data in the table
- **TOOLS:** The *Tools* menu simply provides menu access to all of the tools located on the upper area of the main window.
- **INSERT MULTIPLE NODES:** you can Insert multiple rows in a meter list and you can manually enter the meter address for read out
- **APPENED MULTIPLE NODES:**
- **DELETE MULTIPLE NODES:** to delete multiple rows from the meter list table
- **RECORD MULTIPLE NODES:** the selected meters can be read together using this option
- **CLEAR LIST:** all the meter list can be clear

- SET MULTIPLE PRIMARY ADDRESS VIA SECONDARY ID: to set primary address by using the secondary address you can use this option
- SET MULTIPLE SECONDARY ID VIA PRIMARY ADDRESS: to set secondary id by using the primary address
- APPLICATION RESET TO MULTIPLE PRIMARY ADDRESS: to reset the primary address of MBUS meter
- APPLICATION RESET TO ALL ADDRESS: to reset the MBUS meters this option can be used
- READ PRIMARY ADDRESS: to read the devices with primary address zero
- POLLING TIME: used to set polling interval

4.2 MONITOR LOG

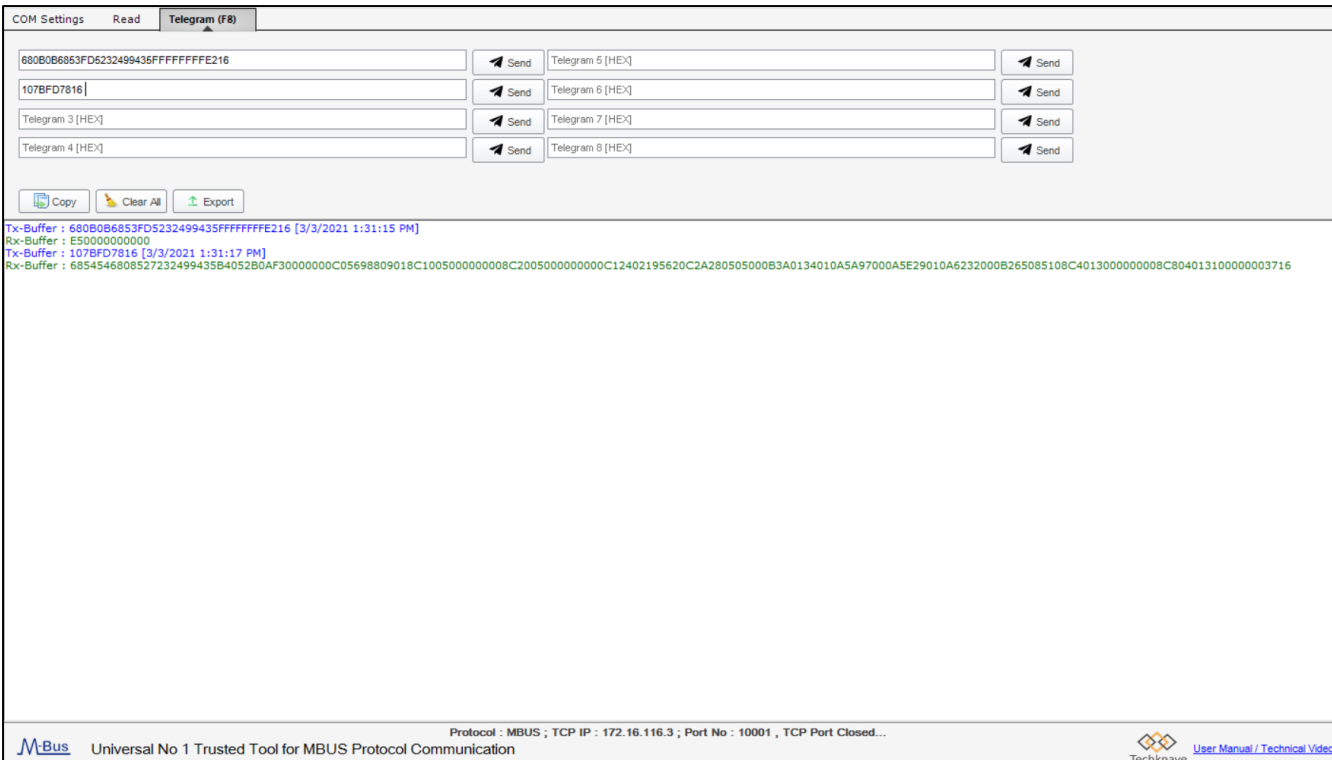
The RX and TX meter buffer can be monitor here



```
Monitor Log
 AutoScroll Monitor Log
Tx-Buffer : 1040FF3F16 [3/4/2021 7:56:57 PM]
Rx-Buffer : E5
Tx-Buffer : 0FFFFFFF [3/4/2021 7:56:59 PM]
Tx-Buffer : 1FFFFFFF [3/4/2021 7:57:01 PM]
Tx-Buffer : 2FFFFFFF [3/4/2021 7:57:03 PM]
Tx-Buffer : 3FFFFFFF [3/4/2021 7:57:06 PM]
Tx-Buffer : 4FFFFFFF [3/4/2021 7:57:08 PM]
Tx-Buffer : 5FFFFFFF [3/4/2021 7:57:10 PM]
Tx-Buffer : 6FFFFFFF [3/4/2021 7:57:13 PM]
Tx-Buffer : 7FFFFFFF [3/4/2021 7:57:15 PM]
Tx-Buffer : 8FFFFFFF [3/4/2021 7:57:17 PM]
Tx-Buffer : 9FFFFFFF [3/4/2021 7:57:20 PM]
Port Closed..
TCP Polling Started for IP : 172.16.116.3 ; Port No : 10001
Secondary ID Search Started..
Tx-Buffer : 1040FD3D16 [3/4/2021 7:57:31 PM]
Rx-Buffer :
Tx-Buffer : 1040FF3F16 [3/4/2021 7:57:33 PM]
Rx-Buffer :
Tx-Buffer : 0FFFFFFF [3/4/2021 7:57:35 PM]
Tx-Buffer : 1FFFFFFF [3/4/2021 7:57:37 PM]
Tx-Buffer : 2FFFFFFF [3/4/2021 7:57:40 PM]
Tx-Buffer : 3FFFFFFF [3/4/2021 7:57:42 PM]
***Slave Found in this Series...
Tx-Buffer : 30FFFFFF [3/4/2021 7:57:43 PM]
```

4.3 TELEGRAM

Here we can send customized telegram manually to the slave device



COM Settings Read Telegram (F8)

680B0B6853FD5232499435FFFFFFFFE216 [Send] Telegram 5 [HEX] [Send]

107BFD7816 [Send] Telegram 6 [HEX] [Send]


Telegram 3 [HEX] [Send] Telegram 7 [HEX] [Send]

Telegram 4 [HEX] [Send] Telegram 8 [HEX] [Send]

[Copy] [Clear All] [Export]

Tx-Buffer : 680B0B6853FD5232499435FFFFFFFFE216 [3/3/2021 1:31:15 PM]
 Rx-Buffer : E50000000000
 Tx-Buffer : 107BFD7816 [3/3/2021 1:31:17 PM]
 Rx-Buffer : 6854546808527232499435B4052B0AF30000000C05698809018C1005000000008C2005000000000C12402195620C2A2805050000B3A0134010A5A97000A5E29010A6232000B265085108C4013000000008C804013100000003716

Protocol : MBUS ; TCP IP : 172.16.116.3 ; Port No : 10001 , TCP Port Closed...

M-Bus Universal No 1 Trusted Tool for MBUS Protocol Communication  User Manual / Technical Videos

5. OPERATING EXAMPLE

Let's consider the following situation: An M-Bus installation with 250 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 revision of the slave list after searching.

Now we install and start the M-BUS READER 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 baud rate"-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 slave list" 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 lose 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 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 baud rate 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 slave list".
- 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 read-out). 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 is directly written to the hard disc. The screen, similar to the poll function, only shows the last read-out data.