PiiGAB
PROCESSINFORMATION

Getting started PiiGAB M-Bus 900S Wireless

Contents

1. Document information

PiiGAB M-Bus 900S Wireless is a hardware and software add-on for PiiGAB M-Bus 900S. The hardware add-on allows the PiiGAB M-Bus 900S to receive wireless M-Bus telegrams from wireless M-Bus meters. The software add-on interprets the wireless telegrams and converts them to wired M-Bus telegrams. The wireless meters can be considered as wired M-Bus meters. Any M-Bus client communicating over network, serial or external M-Bus master can read the wireless meters through the PiiGAB M-Bus 900S wireless.

1.1 Versions

Version	Detail
1.00.00	Initial version

2. Conditions

2.1 Requirements

Here are the requirements to use a PiiGAB M-Bus 900S Wireless.

2.1.1 Supported M-Bus gateways

The wireless application is only supported for PiiGAB M-Bus 900S.

PiiGAB's other M-Bus gateways (PiiGAB M-Bus 810 or PiiGAB M-Bus 900 V1/V2) cannot use the wireless application. However these gateways and most other M-Bus gateways can read the wireless M-Bus meters through a PiiGAB M-Bus 900S running the wireless application.

2.1.2 Hardware add-on

PiiGAB M-Bus 900S need a specific hardware add-on to handle the wireless M-Bus meters. The hardware add-on can be ordered with a new PiiGAB M-Bus 900S.

2.1.2.1 Additional antenna

PiiGAB M-Bus 900S is delivered with a foldable antenna as default. Other antennas can be used as well. Please contact PiiGAB for further information.

Please see contact and order information at the end of this document for ordering.

2.1.3 Software versions

Some additional applications in the PiiGAB M-Bus 900S is required to use the wireless application.

1. Open PiiGAB M-Bus 900S's web interface.
2. Go to the *Configure* page.
3. Make sure the *MBusHub* and *System* versions are the following or higher.

↓ General Configuration	
Pi-900S Version	2017-02-21
MBusHub Version	2.02.04

2.1.4 License

Make sure the license in the PiiGAB M-Bus 900S enables the use of the wireless application.

1. Open PiiGAB M-Bus 900S's web interface.
2. Go to the *Administration* page.
3. Make sure the *Wireless* tag is present in the license.

↓ License	
Active License	Loads: 5 Loads Clients: 2 Clients Protocols: MBus.2, - , MBusAscii.1, - , - , - , - , - , - , - , Wireless.500, - , - , Serial Nr: 25133188

The image show a license that handles 500 wireless M-Bus meters.

Note: If the Wireless tag is missing in the license. Please contact PiiGAB and specify the serial number to have this verified.

2.1.5 **Check if the wireless application is installed**
Make sure the wireless application is installed in the PiiGAB M-Bus 900S.

1. Open PiiGAB M-Bus 900S's web interface.
2. Look for *Wireless* in the left navigation field.
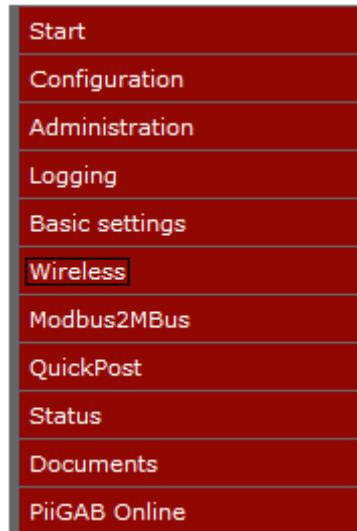
2.1.6 **Install or upgrading the wireless application**
Follow these instructions to install or upgrade the wireless application

1. Go to http://www.piigab.com and locate to the *Download* section.
2. Browse in the menus to *PiiGAB M-Bus 900S* and *Wireless*.
3. Find and download the firmware.
4. Unzip the *"_900S.tgz"* file and place it in an arbitrary folder.

5. Open PiiGAB M-Bus 900S's web interface.
6. Go to the *Administration* page.
7. Find the *Update Software section*.

8. Press the *Browse* (Bläddra…) button.
9. Browse to the "_900S.tgz" file.
10. Press the *Install* button.
11. Wait for the installation to complete.

2.2 Optional requirements

For optimal use it's recommended to pay attention to the optional requirements.

2.2.1 System clock

Please set the system clock in the PiiGAB M-Bus 900S. The system clock is used to display when a wireless telegram was received by the wireless application.

1. Open PiiGAB M-Bus 900S's web interface.
2. Go to the *Administration* page.
3. Find the *Time and Date* section.

4. Either configure the System clock:

- with an *NTP-server,* press *Set NTP*.

- manually, set the date, time and time zone manually and press the *Set Clock Manually* and the *Set Time Zone* button.

Note: See the official PiiGAB M-Bus 900S manual for details.

3. Collect information from the site

From the site it's necessary to gather information about the wireless M-Bus meters. The gathered information will be used when later verifying that all M-Bus meters has been received by the wireless application.

3.1 How many wireless M-Bus meters

The license specifies how many wireless M-Bus meters are allowed. Please verify that amount of included wireless meters in the site doesn't exceeds the license's limit.

3.2 Identification number of each wireless M-Bus meters

To identify a specific wireless M-Bus meter, collect the identification number of each meter. Later use the "meter list" in the wireless application's web interface which will list all received wireless M-Bus meters. The entire secondary address of each received wireless M-Bus meters will be listed there. Compare the secondary address to the identification numbers.

3.3 Update rate of each wireless M-Bus meters

How often does each wireless M-Bus meter transmit new data? Notice if the meter has not transmitted data to the wireless application the "meter list" in the web interface will not list the meter. Change the transmission rate of the meters if necessary.

Please see the meter's manual for information how to change the transmission rate.

3.4 M-Bus mode of each wireless M-Bus meters

It's possible to set what M-Bus mode the wireless application should use. This selected M-Bus mode in the application must be compatible with the wireless M-Bus meter's mode.

Please see the meter's manual for details about the meter's M-Bus mode.

3.5 Configure wireless M-Bus meters

It's not possible to configure the wireless M-Bus meters from the PiiGAB M-Bus 900S. Use the meters' manual or contact the manufacturer for the information how to configure the wireless M-Bus meters.

4. Start the wireless application

Follow these steps to start the wireless application.

1. Open PiiGAB M-Bus 900S's web interface.
2. Go to the *Wireless* page.

Wireless Configuration

Version: 1.00.00

Fabrication Number: 25133188. Secondary Address: 25133188.4129.01.36

| Configure | Log | Meter List |

↓ Wireless Configuration

Internal Primary Address	250
Wireless Mode	T2+C ▾
Enable leds	NO ▾
Remove Cache Files	☐

↓ Wired M-Bus SlavePort Configuration

Type	UDP ▾
Local Port	10011 ❓
M-Bus Timeout [ms]	2000 ❓

[Save Settings]

↓ Show Configuration Files

Show Configuration Files: No File ▾ [Show]

3. Configure as required.
4. Press the *Save Settings* when done configuring.

The wireless application may now receive the wireless M-Bus meters. If the leds are enabled the led below the antenna connection will indicate when a wireless telegram has been received.

Please see this section for detailed explanation of the parameters on the *Configure* page.

4.1 Quick test with the PiiGAB M-Bus Setup Wizard

If the *Wired M-Bus slave port* configuration is as above, a quick test can be performed to verify the communication with the wireless application.

1. Start the *PiiGAB M-Bus Setup Wizard* application.
2. In the main menu, select *Test, search and configure meters*. Press *Next*.
3. Specify the PiiGAB M-Bus 900S's IP-address, port *10011* and *UDP*. Press *Next*.
4. Select option *Find meter's primary and secondary address*.
5. Specify primary address *250* and press the *Find* button.
6. The internal M-Bus meter should response.
7. Specify an identification number of any wireless M-Bus meter.
8. Press the *Find* button.
9. If the wireless M-Bus meter has been received it should response.

5. The Meter list

Here is a detailed description of the information found in the Meter list page.

Secondary Address	Prim Addr	MFCT	Meter Type	RSSI	Time Stamp
00010946.3033.01.1A	1	LAS	Smoke detector	-62	2017-02-15 12:46:07
00041908.4CAE.68.07	2	SEN	Water	-62	2017-02-15 12:18:38
01137524.30E2.00.03	3	LGB	Gas	-72	2017-02-15 12:39:33
14111304.09B4.05.07	4	BMT	Water	-88	2017-02-15 12:52:27
15170191.198F.08.03	5	FLO	Gas	-76	2017-02-15 12:28:18
15700062.09B4.10.1B	6	BMT	Room sensor	-52	2017-02-15 12:51:22
15700063.09B4.10.1B	7	BMT	Room sensor	-60	2017-02-15 12:52:23
63244902.2C2D.1B.16	8	KAM	Cold water	-76	2017-02-15 12:52:43
68002478.32A7.07.04	9	LUG	Heat	-64	2017-02-15 12:51:41

Note: The content of the meter list is updated every 30 second internally in the wireless application. Please refresh the page to see any updates.

5.1 Secondary address and Prim Addr

The *Secondary Address* field specifies the wireless M-Bus meters' secondary addresses.
The *Prim Addr* field specifies the primary address in the wireless application of that particular wireless M-Bus meter. The default primary address is 0.

As the wireless M-Bus meters are emulated as wired M-Bus meters in the wireless application, the primary address can be changed with the standard M-Bus command (SND_UD). The primary address will only apply for the wireless application. Other devices reading the same wireless M-Bus meters will not be affected by the primary addresses.

5.2 MFCT and Meter Type

The *MFCT* field specifies the manufacturer code according to DLMS User Association.
The *Meter Type* field specifies the device type according to M-Bus standard EN13757-3.

5.3 RSSI

The *RSSI* field specify the signal strength of the particular wireless M-Bus meter.
The signal strength may vary between -128dBm to -6dBm.

5.4 Time Stamp

The date and time when the wireless M-Bus meters was received by the wireless application. The given date and time are taken from the system clock and is displayed as local time according to the system clock configuration on the *Administration* page.

6. The Configure page

Here is a description of the parameters in the *Configure* page. To use any changed parameters the *Save Settings* button must be pressed.

Wireless Configuration

Version: 1.00.00

Fabrication Number: 25133188. Secondary Address: 25133188.4129.01.36

| Configure | Log | Meter List |

↓ Wireless Configuration

Internal Primary Address	250
Wireless Mode	T2+C ▼
Enable leds	NO ▼
Remove Cache Files	☐

↓ Wired M-Bus SlavePort Configuration

Type	UDP ▼
Local Port	10011 ❷
M-Bus Timeout [ms]	2000 ❷

Save Settings

↓ Show Configuration Files

Show Configuration Files: No File ▼   Show

6.1 Wireless Configuration

These parameters specify how the wireless application should work regarding the wireless M-Bus meters.

6.1.1 Internal Primary Address

This field represents the primary address of the internal meter. Please see this section for detailed information about the internal meter.
Default value: 250.

6.1.2 Wireless Mode

This field specifies what M-Bus mode the wireless application is configured for. This mode has to match whatever mode the wireless meter use.
Default value: T2+C.

6.1.3 Enable leds

This option enables or disables the functionality if the wireless application should indicate that an wireless telegram was received using the leds on the front of the PiiGAB M-Bus 900S. Please see this section for a detailed description of the leds.
Default value: NO.

6.1.4 Remove Cache Files

Remove the wireless M-Bus meters that have been received by the wireless application according to the selected *Wireless Mode*. The list on the meter list page will be cleared.

6.2 Wired M-Bus SlavePort Configuration

These parameters specify how the M-Bus client should connect to the wireless application to read the wireless M-Bus meters as wired M-Bus meters.

The wireless application supports many ways for the M-Bus client to connect. All serial ports (RS232, RS485, M-bus slave port 1 & 2) on the PiiGAB M-Bus 900S can be used as well as UDP/IP and TCP/IP. Here are the most common configurations:

6.2.1 UDP/IP or TCP/IP

For communicating over UDP/IP or TCP/IP, please use the following configuration:

↓ Wired M-Bus SlavePort Configuration	
Type	UDP ▼
Local Port	10011 ❓
M-Bus Timeout [ms]	1900 ❓

Note: Change the Type field to TCP for TCP/IP.

6.2.2 RS232 or RS485

For communicating over RS232 or RS485, please use the following configuration:

↓ Wired M-Bus SlavePort Configuration	
Type	Serial ▼
Com port	RS-232 ▼
Baud rate	2400 ▼ ❓
Bit Number	8 ▼
Parity	Even Parity ▼
Stop Bit	1 ▼
M-Bus Timeout [ms]	2000 ❓

Note: Change the Com port field for RS485.
Note: Change the baud rate, bit number, parity and stop bit accordingly.

6.2.3 M-Bus slave (M-Bus slave port 1 and M-Bus slave port 2)

For communication with another M-Bus master, such as PiiGAB M-Bus 810, please use the following configuration.

↓ Wired M-Bus SlavePort Configuration	
Type	Serial ▼
Com port	M-Bus Slave 1 ▼
Baud rate	2400 ▼ ❓
Bit Number	8 ▼
Parity	Even Parity ▼
Stop Bit	1 ▼
M-Bus Timeout [ms]	2000 ❓

Note: This will bind the wireless application's slave port to M-Bus slave port 1 on the PiiGAB M-Bus 900S, pin 15-16. Change to M-Bus Slave 2 to bind to the M-Bus slave port 2 on the PiiGAB M-Bus 900S, pin 17-18.

6.2.4 M-Bus timeout

This parameter specifies how long the slave port is blocked from communicating when the M-Bus client has tried to read a non-existing meter.

7. The internal meter

The internal meter in the wireless application can be used by the M-Bus client to read-out a summary of the received wireless M-Bus meters, by the current M-Bus mode. Use the primary address or the secondary address of the wireless application to read the internal meter in the M-Bus client. 250 is default value of the primary address. The secondary address is the PiiGAB M-Bus 900S's identification.

Fabrication Number: 25133188. Secondary Address: 25133188.4129.01.36

Configure	Log	Meter List

↓ Wireless Configuration

Internal Primary Address	250

7.1 Summary of the internal meter

The content of the internal meter is a normal M-Bus response according to the M-Bus standard EN13757-3. Depending if the wireless application has received wireless M-Bus meters, the response will either be a single telegram meter or a multi telegram meter.

- No wireless M-Bus telegrams have been received: Only two telegrams.
- Wireless M-Bus telegrams have been received: Two or more telegrams.

The second and all further telegrams will contain some information about the received wireless M-Bus meters. For each telegram there will be a maximum of 11 objects representing each wireless M-Bus meters.

7.2 Description of the internal meter

Here follows a general description of the content in the internal meter.

7.2.1 First telegram

The first telegram will not contain any information about the received wireless M-Bus meters. The content is only for the wireless application itself.

Object	Representation
1	Identification of the PiiGAB M-Bus 900S
2	Flag if there is one more telegram to read

7.2.2 Second telegram and all further telegrams

The second telegram contains the first eleven received wireless M-Bus meters. There will be a maximum of eleven objects in each telegram representing the wireless M-Bus meters.

Object	Representation
3	First received wireless M-Bus telegram
4	Second received wireless M-Bus telegram
5	Third received wireless M-Bus telegram
6	Forth received wireless M-Bus telegram
7	Fifth received wireless M-Bus telegram
8	Sixth received wireless M-Bus telegram
9	Seventh received wireless M-Bus telegram
10	Eight received wireless M-Bus telegram
11	Ninth received wireless M-Bus telegram
12	Tenth received wireless M-Bus telegram
13	Eleventh received wireless M-Bus telegram
14	Flag if there is one more telegram to read

All further telegrams have the same format but with higher object numbers.

8. Content of external meters

As the wireless application emulate the wireless M-Bus meters as wired M-Bus meters, the content of each emulated meter will have some objects before the wireless meters actual objects. The content of each external meter is a normal M-Bus response according to the M-Bus standard EN13757-3.

Object	Representation	Unit	Data type	Source
1	PiiGAB M-Bus 900S serial number		BCD8	Objects from
2	Period	s	INT24	the Wireless
3	Signal strength	dBm	INT8	M-Bus
4	Timestamp	UTC	INT48	application
5	First object in the wireless telegram			Objects from
6	Second object in the wireless telegram			the wireless
7	Third object in the wireless telegram			M-Bus meter
	And so on…			

As the table describes, the first four objects in the emulated wired meter will contain some information about the wireless meter. The wireless meters first object begins with object 5.

8.1 Object 1: Serial number of the PiiGAB M-Bus 900S

This object is the PiiGAB M-Bus 900S serial number and describe, which PiiGAB M-Bus 900S received the particular wireless telegram.

8.2 Object 2: Period

The object describes the time in seconds since the wireless telegram was received by the Wireless application.

8.3 Object 3: Signal strength

The signal strength the wireless telegram had when received.

8.4 Object 4: Timestamp

Represents the date and time when the wireless telegram was received by the Wireless application. Notice the time is in UTC and the time is generated from the system clock.

9. Include and exclude files

It's possible to filter what meter should, or should not, be able to read from the wireless application. This "filter" functionality has almost infinitive variations. For instance:

- Include wireless M-Bus meters from one or more specific manufacturers.
- Exclude wireless M-Bus meters from other sites within the same wireless range.
- Include any specific wireless M-Bus meter.
- Exclude any specific wireless M-Bus meters.
- Include wireless M-Bus meters and specify primary addresses for them.

9.1 Files

The functionality uses two files to include and exclude wireless M-Bus meters.

File	Name
Exclude	wireless_exclude_<mode>.csv
Include	wireless_include_<mode>.csv

9.2 M-Bus modes

The files must be bound to a specific M-Bus mode the wireless application is using. It is possible to have several include/exclude files for different M-Bus modes. The include/exclude files which will be used by the wireless application is determined by what M-Bus mode is used.

9.3 How it works

The wireless application will first check what wireless M-Bus meters to exclude according to the exclude file. Of the meters to exclude it can make an exception and include meters according to the include file. If there is no exclude file, all received meters will be included regardless. If a meter is not listed in the exclude file, it will be included.

The image illustrates the functionality with include and exclude files. All meters at the left are excluded in a "funnel". Then the A1, A2 and A3 meters are included and go through the "funnel".

9.3.1 **Content of include and exclude files**

The content of the files is either one or several rows with the following format:

<secondary address>;<primary address>;<wireless key>

- Secondary address: the format of a secondary address XXXXXXXX.MMMM.VV.MM (Identification.Manufacturer.Version.Medium)
- Primary address: The meter's primary address.
- Wireless key: The wireless M-Bus key for the meter. Not yet implemented.

Example:

12345678.4129.00.00	Include/exclude specific meter.
FFFFFFFF.48AC.FF.FF	Include/exclude only manufacturer.
12345678.FFFF.FF.FF;1	Include/exclude specific meter with primary address.

9.4 **Find secondary address information**

The content of a secondary address can either be found on the meter, the meter's manual, the manufacturer or by reading meter. The *Meter list* show all current meters that have been received and the entire secondary address is displayed there.

9.5 **Example**

Please see this section for examples how to use the include and exclude files.

9.6 **Upload the include/exclude files and use them**

1. Open PiiGAB M-Bus 900S's web interface.
2. Go to the *Configuration* page.
3. Upload the CSV-files: Press the *Browse* (Bläddra…) button and then the *Upload* button.

Upload CSV/XML-File

Bläddra... Ingen fil är vald.

Upload

4. Go to the *Wireless* page.
5. Specify the *Wireless Mode* field.
6. Check the *Remove Cache Files*.

↓ Wireless Configuration

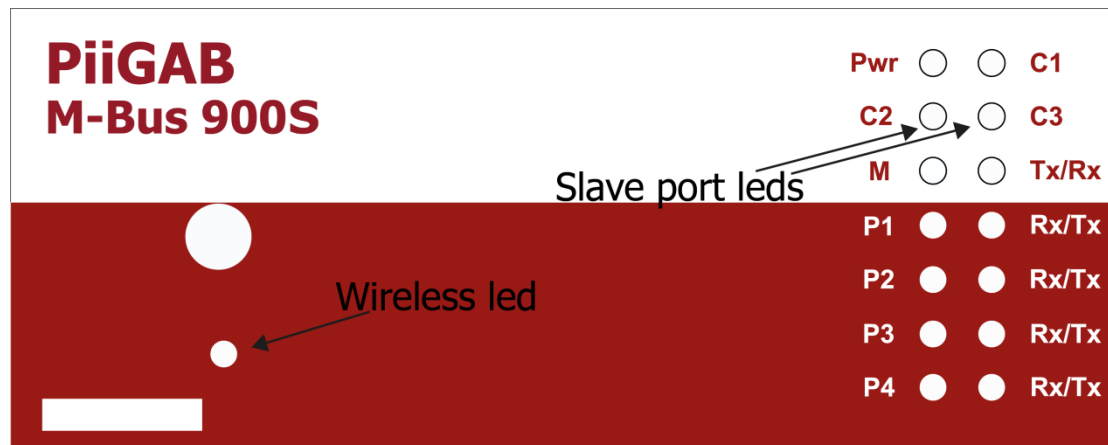|	
Internal Primary Address	250
Wireless Mode	T2+C
Enable leds	YES
Remove Cache Files	☐

7. Press the *Save Settings* button.

10. Leds

There are three leds on the front of the PiiGAB M-Bus 900S which the wireless application uses to show communication.

10.1 Wireless led

The wireless led will twinkle when a wireless telegram is being received by the wireless application. The led can be used in troubleshooting to verify if the wireless application is receiving any wireless telegrams.

10.2 Slave port leds

The slave port leds indicated communication with the M-Bus client connected to the wireless application's slave port. The leds will indicate when the slave port is receiving and sending.

- C2: The slave port is receiving data from the M-Bus client.
- C3: The slave port is sending data to the M-Bus client.

Use the leds in troubleshooting to verify communication with the M-Bus client.

10.2.1 Example of the slave port's leds sequence order

Here is a list what orders the *C2* and *C3* are lit up during communication with the M-Bus client.

1. The M-Bus client sends a request to the wireless M-Bus application. *C2* led will light up during the time the request is received.
2. The wireless application interprets the request.
3. If the request is valid, the wireless application will transmit the response to the M-Bus client and the *C3* will light up.

Note: The communication between the wireless application and the M-Bus client might occur very quickly and therefore it might look like both leds are light up at the same time.

11. The log function

The log function in the wireless application can be used for troubleshooting. Use the log function to log when wireless M-Bus meters are received.

1. Open PiiGAB M-Bus 900S's web interface.
2. Go to the *Wireless* page.
3. Click on the *Log* tab.

Wireless Logging

Configure	Log	Meter List

- Start
- Show
- Clear
- Startup Log
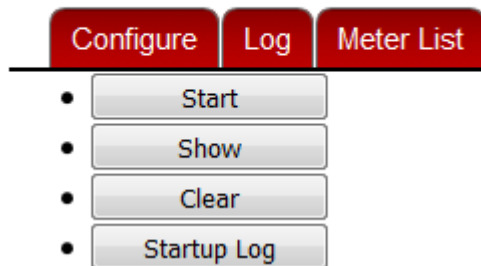
11.1 Startup log

The *Startup log* can be used to verify if the start-up of the wireless application was successful.

1. Press the *Startup Log* button.
2. Read the log to verify if the wireless application successfully started.

11.1.1 Successful start-up log

Here is an example of a successful log of the start-up of the wireless M-Bus mode T2+C.

Opening Master Port
Initialising Serial port, portdev = /dev/ttyS6, databits = 8, parity = N, stopbit = 1
Master Port opened

Opening Slave Port
Opening UDP port
UDP: Local IP = 0.0.0.0, Port = 10011
UDP: Remote IP = 0.0.0.0, Port = 0
Slave Port opened

Internal primary address set to 250
Wireless mode set to T2+C

Notice the bold texts indicating that the *Master port* and *Slave port* are opened and the *wireless mode* is T2+C.

11.2 Using the log

1. Optional: Press the *Clear* button. This will clear any previous logs.
2. Press the *Start* button.
3. Wait for any communication, either from the wireless meters or the M-Bus client.
4. Press the *Show* button to show the log.

11.2.1 New wireless meter received

Here is the log when a new wireless M-Bus meter in the wireless application has been received again.

```
Received a full telegram
68 24 44 2d 2c 02 49 24 63 1b 16 8d 20 6b 01 32
32 02 36 ae 79 34 dd 1b 4a 71 00 11 00 00 00 11
00 00 00 a6 ff ca 16

Adding telegram to map and setting primary address to 0
```

11.2.2 Existing wireless meter received

Here is the log when an existing wireless M-Bus meter in the wireless application has been received again.

```
Received a full telegram
68 24 44 2d 2c 02 49 24 63 1b 16 8d 20 01 11 30
32 02 36 ae 79 34 dd 1b 4a 71 00 11 00 00 00 11
00 00 00 91 cb 03 16

Updating telegram already in map
```

11.2.3 Request and response from the M-Bus client

Here is the log when the M-Bus client is requesting and receiving data for a virtual M-Bus meter in the wireless application.

```
Request from client
68 0b 0b 68 53 fd 52 46 09 01 00 ff ff ff ff ee
16

Response to client
e5

Request from client
10 7b fd 78 16

Response to client
68 35 35 68 08 00 72 46 09 01 00 33 30 01 1a 01
00 00 00 0c 78 88 31 13 25 03 74 10 03 00 01 fd
71 c6 06 6d 24 1e 28 34 22 08 2f 2f 02 fd 97 1d
00 00 04 fd 08 18 0a 00 00 f4 16
```

12. Appendix
12.1 Contacts

PiiGAB Processinformation
Anders Carlssons gata 7
417 55 Göteborg
Sweden

Phone + 46 31 55 99 77
www.piigab.com

Distributors
Please contact our distributors in respective countries:

Germany
Relay GmbH
Stettiner Str. 38
33106 Paderborn
Germany

Phone +49 5251 17670
www.relay.de

Norway
Autic Systems AS
Stoltenbergs gate 48
3110 Tønsberg
Norway

Phone +47 33 30 09 50
www.autic.no

Czech Republic
Papouch store s.r.o.
Strasnicka 3165/1b
102 00 PRAGUE 10
Czech Republic

Phone +420 267 314 267-8
www.papouch.com

12.2 Order information
Please use either choices to order wireless for a PiiGAB M-Bus 900S.

12.2.1 New PiiGAB M-Bus 900S

Article: PI-900S/WL/500.

12.2.1.1 Antennas

Foldable antenna: PRO-EX-321. The default antenna.

Wall mounted antenna: PRO-OS-291

12.4 Examples of include and exclude files

Here are examples of include and exclude files.

12.4.1 Include only PiiGAB meters for T2+C mode

1. Create an empty text file.
2. Set the file name to *wireless_exclude_T2C.csv*.
3. Include the following row:

   ```
   FFFFFFFF.FFFF.FF.FF
   ```

4. Save the file.
5. Create a new empty text file.
6. Set the file name to *wireless_include_T2C.csv*.
7. Include the following row:

   ```
   FFFFFFFF.4129.FF.FF
   ```

8. Save the file.
9. Upload the CSV-files.

12.4.2 Exclude PiiGAB meters for T1 mode

1. Create an empty text file.
2. Set the file name to *wireless_exclude_T1.csv*.
3. Include the following row:

   ```
   FFFFFFFF.4129.FF.FF
   ```

4. Save the file.
5. Upload the CSV-files.

12.4.3 Include specific meters with primary addresses for S1 mode

10. Create an empty text file.
11. Set the file name to *wireless_exclude_S1.csv*.
12. Include the following row:

    ```
    FFFFFFFF.FFFF.FF.FF
    ```

13. Save the file.
14. Create a new empty text file.
15. Set the file name to *wireless_include_S1.csv*.
16. Include the following row:

    ```
    00000001.FFFF.FF.FF;1
    00000010.FFFF.FF.FF;2
    00000020.FFFF.FF.FF;3
    00000458.FFFF.FF.FF;4
    ```

17. Save the file.
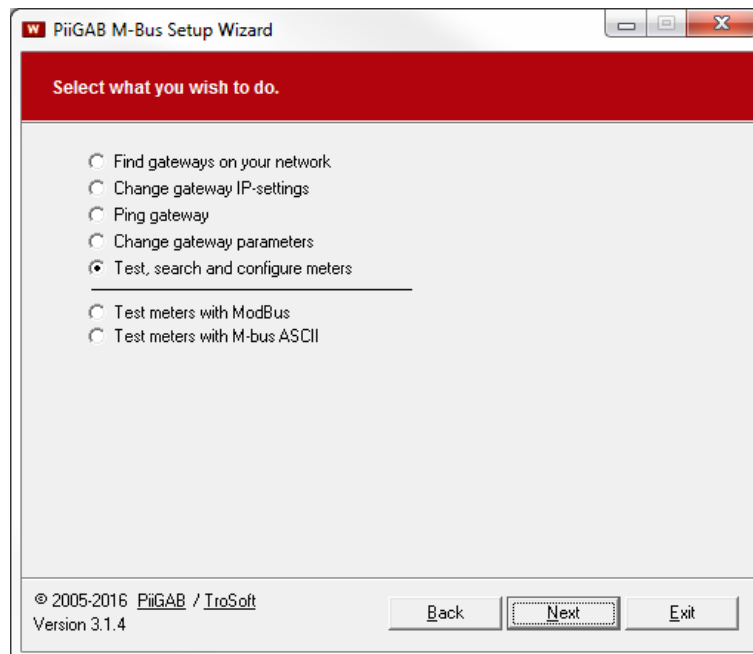18. Upload the CSV-files.

12.5 Test with PiiGAB M-Bus Setup Wizard

Here is a guide how to test communication with the PiiGAB M-Bus Setup Wizard application.

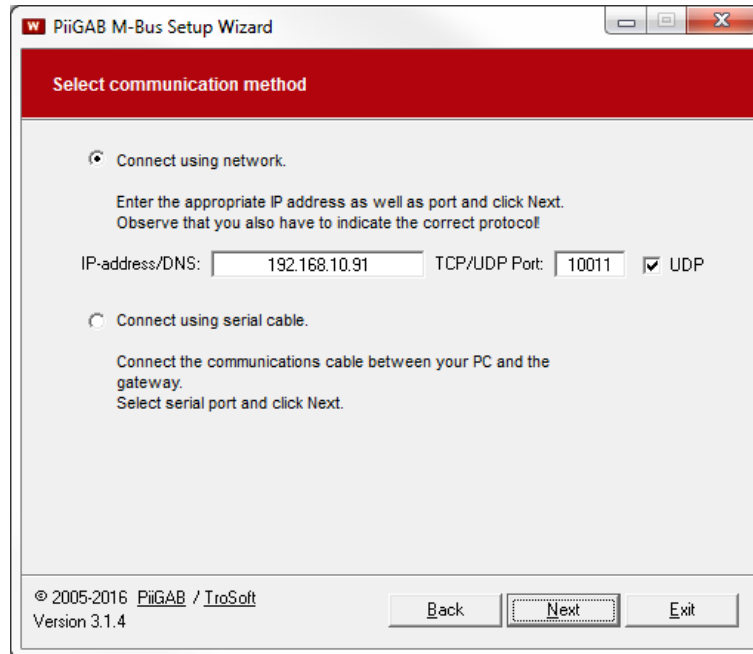1. Start the PiiGAB M-Bus Setup Wizard application.

2. Press the *Next* button.
3. Select *Test, search and configure meters*.
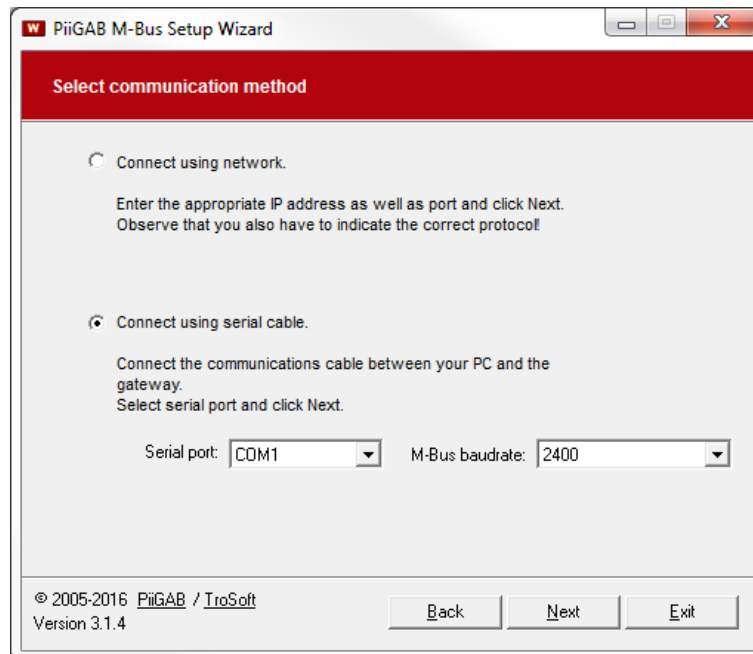

4. Press the *Next* button.

5. Specify the connection to the *Slave port* in the wireless application.

Network connection

Note: The image expects the connection to the wireless application is established with the IP-address 192.168.10.91, port 10011 with protocol UDP/IP.

Serial connection

Note: The image expects the connection to the wireless application can be established with the COM port 1 and 2400 baud.
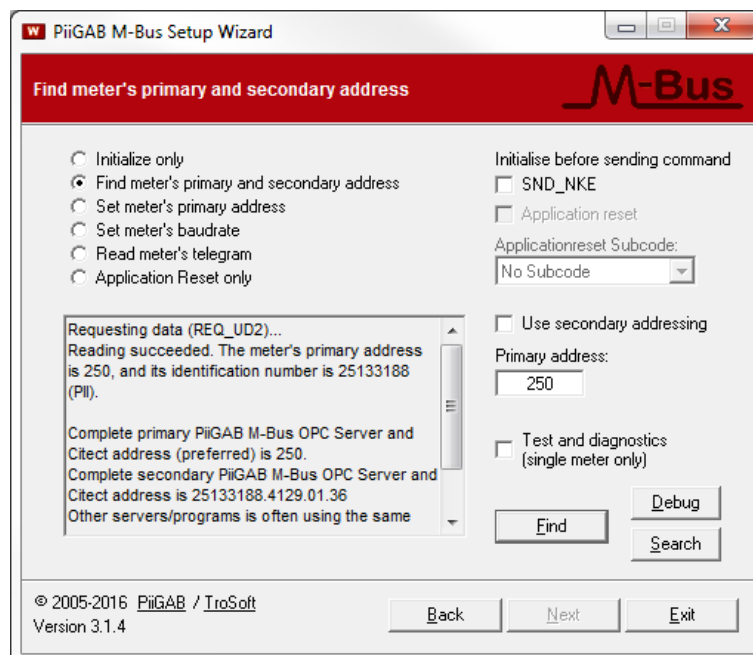
6. Press the *Next* button.

7. Select *Find meter's primary and secondary address.*
8. Specify *Primary address* 250.
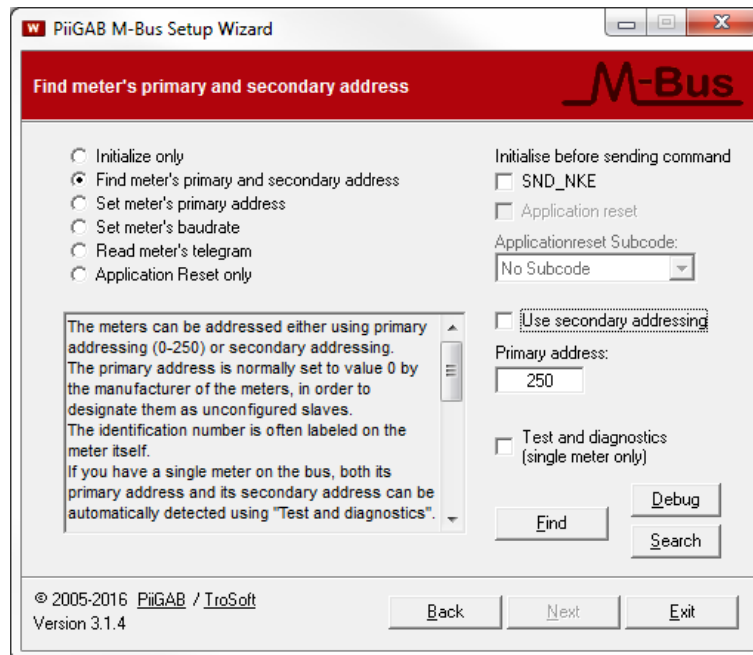
9. Press the *Find* button.

The internal meter in the wireless application should respond.

Read a wireless M-Bus meter

10. Use the *Meter list* to identify a meter.

Secondary Address	Prim Addr	MFCT	Meter Type	RSSI	Time Stamp
00010946.3033.01.1A	0	LAS	Smoke detector	-62	2017-02-15 12:46:07
00041908.4CAE.68.07	0	SEN	Water	-62	2017-02-15 12:18:38
01137524.30E2.00.03	0	LGB	Gas	-72	2017-02-15 12:39:33
14111304.09B4.05.07	0	BMT	Water	-88	2017-02-15 12:52:27
15170191.198F.08.03	0	FLO	Gas	-76	2017-02-15 12:28:18
15700062.09B4.10.1B	0	BMT	Room sensor	-52	2017-02-15 12:51:22
15700063.09B4.10.1B	0	BMT	Room sensor	-60	2017-02-15 12:52:23
63244902.2C2D.1B.16	0	KAM	Cold water	-76	2017-02-15 12:52:43
68002478.32A7.07.04	0	LUG	Heat	-64	2017-02-15 12:51:41

11. In PiiGAB M-bus Setup Wizard, check *Use secondary addressing*.
12. Select any wireless M-Bus meter: For instance: *00010946.3033.01.1A*.
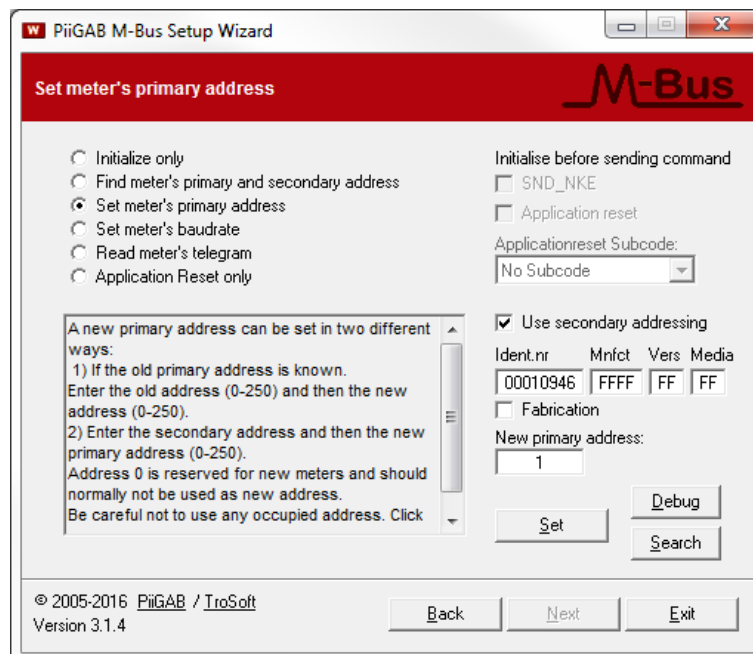13. Specify any identification number of a wireless M-Bus meter in the *Ident.nr* field.
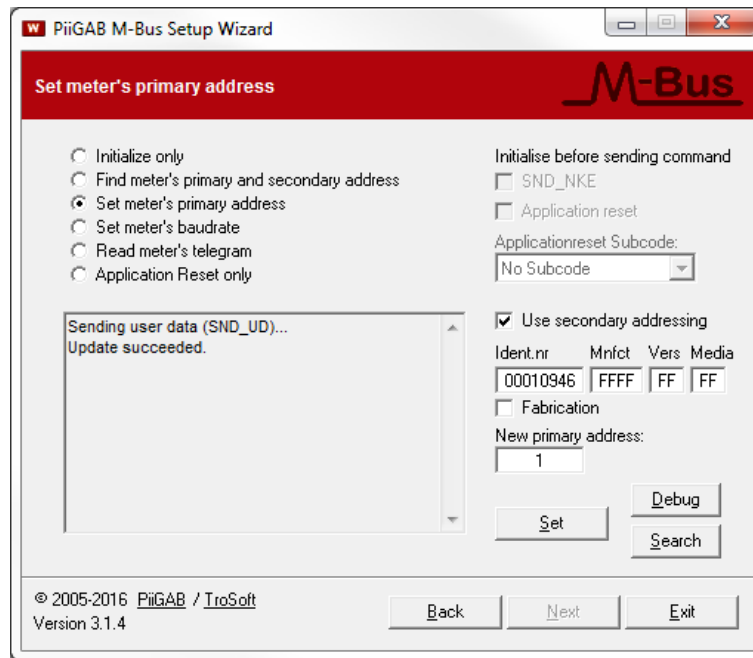
14. Press the *Find* button.
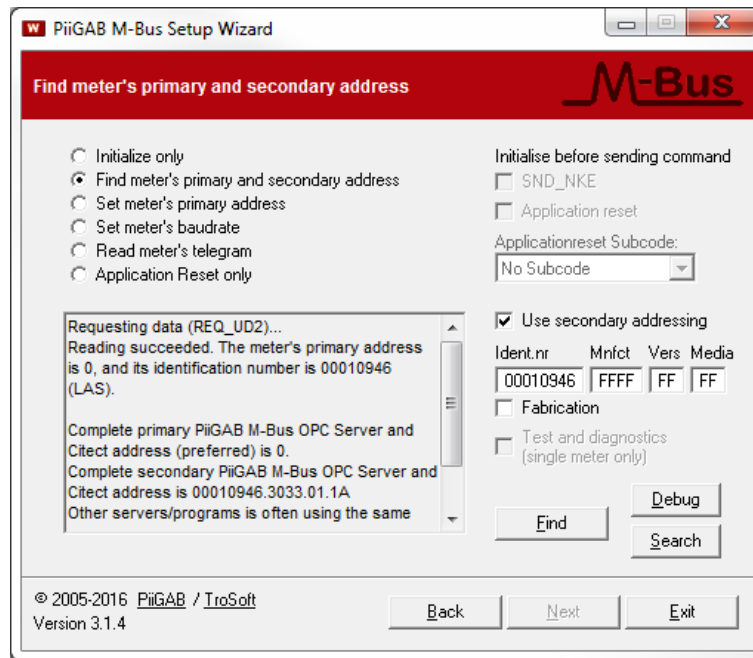
The virtual M-Bus meter should have responded.

Set primary address on any wireless M-Bus meter

15. Select *Set meter's primary address*.
16. Specify the identification of the wireless M-Bus meter.
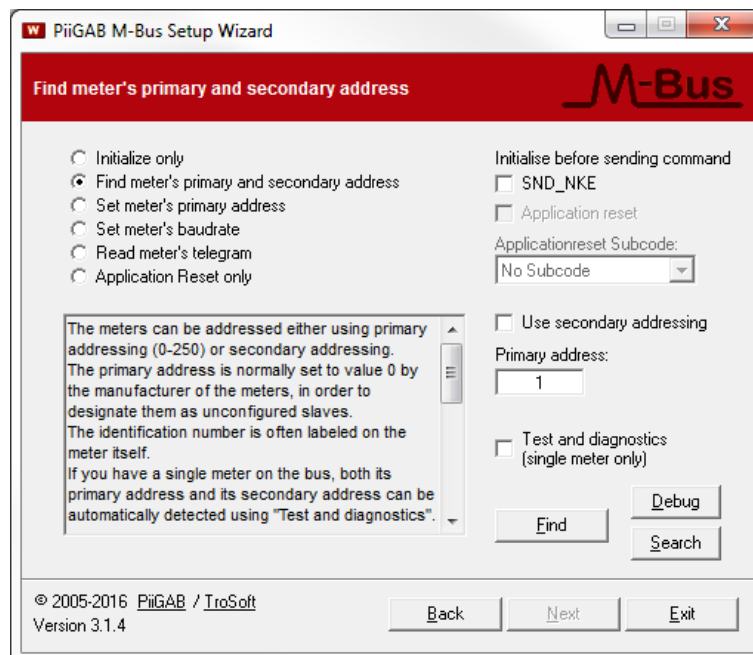17. Specify the new primary address.
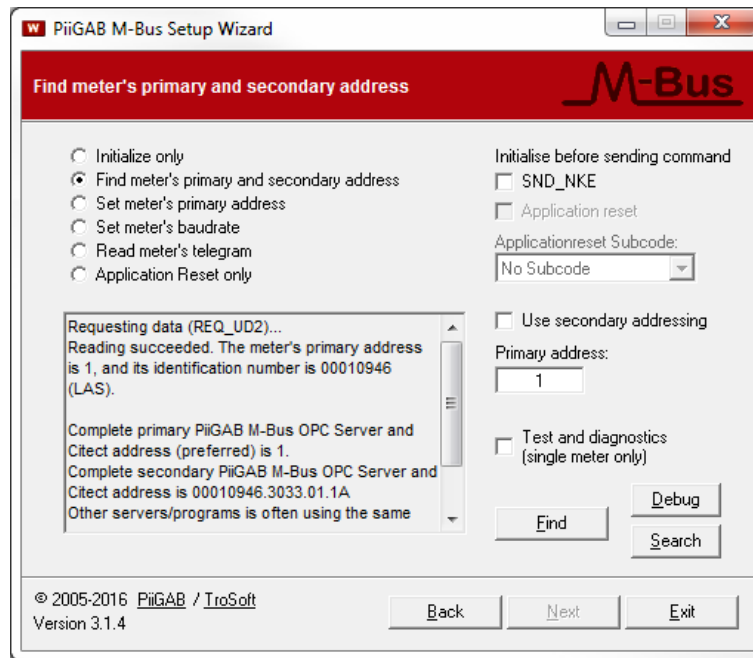

18. Press the *Set* button.

The virtual M-Bus meter should be set to the primary address.

19. Select *Find meter's primary and secondary address.*
20. Specify the *primary address.*

21. Press the *Find* button.

The virtual M-Bus meter should have responded.

22. Confirm the new primary address in the *Meter list*.

Secondary Address	Prim Addr	MFCT	Meter Type	RSSI	Time Stamp
00010946.3033.01.1A	1	LAS	Smoke detector	-68	2017-02-17 15:30:54
00041908.4CAE.68.07	0	SEN	Water	-56	2017-02-17 15:15:01
01137524.30E2.00.03	0	LGB	Gas	-66	2017-02-17 15:36:03
14111304.09B4.05.07	0	BMT	Water	-60	2017-02-17 15:37:56
15102811.09B4.05.07	0	BMT	Water	-72	2017-02-17 15:38:25
15170191.198F.08.03	0	FLO	Gas	-58	2017-02-17 15:29:00
15700062.09B4.10.1B	0	BMT	Room sensor	-58	2017-02-17 15:38:05
15700063.09B4.10.1B	0	BMT	Room sensor	-50	2017-02-17 15:38:24
58000596.09B0.51.08	0	BMP	Heat cost allocator	-50	2017-02-17 15:38:49
63244902.2C2D.1B.16	0	KAM	Cold water	-86	2017-02-17 15:38:34
68002478.32A7.07.04	0	LUG	Heat	-56	2017-02-17 15:34:57