

Getting started PiiGAB 900

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1. Document Information

This document will describe how to configure the PiiGAB 900 for M-Bus communication with one M-Bus meter using static IP or DHCP.

If you see something that is not correct in this document, that misleads you or if you are missing something please contact us so we can improve this document continuously. See contact information at the end of the document.

1.1 Versions

Version	Modified by	Details
1.00.00	Stefan Eriksson	Initial version

2. Requirements

Object	Detail
One PiiGAB 900	For at least 5 M-Bus loads and one client
One M-Bus meter	Supports EN13757
One power supply	24V AC/DC
A patch cable	
PiiGAB M-Bus Setup Wizard	Version 3.1.0 or later

2.1 Optional requirements

Object	Detail
A local area network (LAN)	With DHCP
One network switch	

3. Installation and connections

- 1. Install the PiiGAB M-Bus Setup Wizard
- 2. Connect the PiiGAB 900 gateway to your computer with the patch cable
- 3. Connect the M-Bus meter to the PiiGAB 900
- 4. Connect the PiiGAB 900 gateway to a 24V AC or DC power supply
- 5. Turn the power supply on
- 6. Wait for the PiiGAB 900's Pwr LED to go steady red



4. PiiGAB 900's MAC-address and serial number

On the right gable of the PiiGAB 900 you'll find a label containing the MAC-address and serial number of your PiiGAB 900. You can use this to identify your PiiGAB 900 with the PiiGAB M-Bus Setup Wizard.

Object	Starts with
MAC-address	E8-99-5A
Serial number	167#####

5. IP-configuration

You can either connect your PiiGAB 900 gateway to a static or DHCP network. The most common IP-configuration of the PiiGAB 900 gateway is for static IP-address. The gateway is by default set to DHCP when delivered.

5.1 DHCP network

If you have a network with DHCP you can connect your PiiGAB 900 gateway to it and the gateway will receive the IP-configuration automatically.

5.2 Static IP

If you don't have a network with DHCP you must set your PiiGAB 900 gateway to a static IP-address.

<u>Note:</u> If you have an old computer you might need a network switch between your computer and the PiiGAB 900 gateway.

- 1. Set your computer to a static IP-address
- 2. Start the PiiGAB M-Bus Setup Wizard and go to the main menu
- 3. Select Change gateway IP-settings



4. Press *Next* to continue

Note:

You can change the IP-address of a PiiGAB 900 with the PiiGAB M-Bus Setup Wizard if you have the PiiGAB 900 Version 2.0.0 or later.

- 5. Select Setup IP using network (UDP broadcast)
- 6. In the MAC-address field specify the PiiGAB 900 gateway's MAC-address



- 7. Press Next to continue
- 8. Select Use the following IP-address

PiiGAB M-Bus Setup Wizard	
Change IP settings - enter new IP settings.	_M <u>-Bus</u>
 Obtain an IP-address automatically Use the following IP-address IP-address: 192.168.10.123 Netmask: 255.255.255.1 Gateway: 192.168.10.1 Select 'Obtain an IP-address automatically' if you wish that should use DHCP to get IP-settings. If the address is manually set, ensure it is unique otherwist will not respond. The address will be set using an UDP broadcast. Ensure the address is pointing to the PC's local subnet, or setup may 	t the gateway se the gateway the new fail.
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- 9. Specify the IP-configuration. The PiiGAB 900 gateway should match your computer's IP-address
- 10. Press Next to continue

11. Press Apply to set the IP-configuration

PiiGAB M-Bus Setup Wizard	
Change IP settings - update gateway.	_M <u>-Bus</u>
By clicking the Apply button the IP-settings of the gateway will be	updated.
	Apply
© 2005-2014 PiiGAB / TroSoft Back Back	Next <u>E</u> xit

12. Wait for the PiiGAB 900 gateway to reboot

W	PiiGAB M-Bus Setup Wizard	
	Setting IP address failed.	_M <u>-Bus</u>
	The gateway did not respond. The gateway may be located on a different subnet or its security so may disallow remote setup. Try connecting the gateway directly to your PC using a twisted Eth- cable and try again. Or connect the gateway to the PC using the serial programming cat use serial setup to set a proper IP address.	ettings ernet ole and

Note that your PiiGAB M-Bus Setup Wizard may signal that it failed to set the MAC-address. Please ignore this warning. The IP-address should be set anyway.

13. Press Back three times to return to the main menu

6. Find your PiiGAB 900 on your network

You can use the PiiGAB M-Bus Setup Wizard to find your PiiGAB 900 on the network. This will work for both a network with DHCP or static IP-address configuration.

- 1. Go to the main menu in the PiiGAB M-Bus Setup Wizard
- 2. Select Find gateways on your network

PiiGAB M-Bus Setup Wizard	
Select what you wish to do.	_M <u>-Bus</u>
 Find gateways on your network Change gateway IP-settings Ping gateway Change gateway parameters Test, search and configure meters 	
 Test meters with ModBus Test meters with M-bus ASCII 	

- 3. Press *Next* to continue
- 4. Your PiiGAB 900 gateway should be listed
- 5. Find your PiiGAB 900 by the MAC-address or serial number

	🏾 PiiGAB M-Bus Setup Wizard					
ľ	letwork search cor	nplete.				-Bus
	IP-address	MAC-address	Туре	Identity	Info	
	192.168.10.123	E8-99-5A-00-01-20	900	16777360	Setup pos	sible
	✓ 192.168.10.61	00-20-4A-84-F1-12	810	-	Setup pos	sible
	•					•
2 gateways where found. Select desired gateway in the list and click Next.						
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- 6. Double click on your PiiGAB 900 gateway
- 7. Select Yes when you are asked to start the PiiGAB 900's web interface

<u>Note:</u> If you have placed your PiiGAB 900 gateway on a different sub network you might not find it in the list of available gateways.

7. Configure the PiiGAB 900

This section describes how the PiiGAB 900 should be configured for M-Bus communication using 2400 baud, UDP and port 10001 through slave port 1. All configuration of the PiiGAB 900 is done in the gateway's web interface.

- 1. Start the PiiGAB 900's web interface
- 2. Specify the PiiGAB 900's name and password to login Default login name and password are: Admin/Admin

PiiGAB 900 M-Bus Gateway V2			
Start	Configuration Interface		
Configuration	Welcome to the configuration interface for PiiGAB 900 Gateway.		
Administration			
Logging	» Configure the PiiGAB 900 Gateway		
Basic settings			
QuickPost Administration Settings			
PiiGAB Online Visit us Online			

- 3. Click Configuration in the left panel
- 4. Click on Master Port and configure it with these settings

↓ Master port configuration		
Туре	Serial 💌	
Com port	M-Bus Master 👻	
Baud rate	2400 🔻 😧	
Timeout (ms)	2000	
Reconnect (s)	120	
Protocol	M-Bus 👻	
Configuration File	No File Show Configuration	
M-Bus Master options		
myprimaryaddress	251	
switchblocktime	200	
Save Settings		

- 5. Press Save Settings
- 6. Click on Slave port 1 and configure it with these settings

↓ Slave port configuratio	n 1		
Туре	UDP 👻		
Network card	ALL	- 2	
Local Port	10001		?
Timeout (ms)	2100		
Protocol	M-Bus	•	
Save Settings			

7. Press Save settings

8. PiiGAB M-Bus Setup Wizard – M-Bus communication

This section will use the PiiGAB M-Bus Setup Wizard to verify if the PiiGAB 900 and an M-Bus meter respond to M-Bus communication.

1. In the main menu select Test, search and configure meters

PiiGAB M-Bus Setup Wizard	
Select what you wish to do.	_M <u>-Bus</u>
 Find gateways on your network Change gateway IP-settings Ping gateway Change gateway parameters Tast security and service sectors 	
C Test meters with ModBus C Test meters with M-bus ASCII	

- 2. Press Next to continue
- 3. Select *Connect using network* and configure the connection as shown in the picture below

💌 PiiGAB M-Bus Setup Wizard	J
Select communication method	
Connect using network.	
Enter the appropriate IP address as well as port and click Next. Observe that you also have to indicate the correct protoco!	İ
IP-address/DNS: 192.168.10.123 TCP/UDP Port: 10001 🔽 UDP	

<u>Note:</u> Your PiiGAB 900's IP-address may not be 192.168.10.123. The PiiGAB M-Bus Setup Wizard only fills in the IP-address automatically as you selected in *Find your PiiGAB 900 on your network*.

4. Click *Next* to continue

8.1 Communication with the PiiGAB 900's internal meter

Inside the PiiGAB 900 there is an internal M-Bus meter which can be used to read the PiiGAB 900's serial number, M-Bus voltage and M-Bus current. This meter is accessed by primary address 251. By using the internal meter, you can confirm that you have a working communication with the PiiGAB M-Bus Setup Wizard and your PiiGAB 900.

1. Configure as the picture shown below

PiiGAB M-Bus Setup Wizard	
Find meter's primary and secondary address	_M <u>-Bus</u>
 Initialize only Find meter's primary and secondary address Set meter's primary address Set meter's baudrate Read meter's telegram Application Reset only 	Initialise before sending command SND_NKE Application reset Applicationreset Subcode: No Subcode
The meters can be addressed either using primary addressing (0-250) or secondary addressing. The primary address is normally set to value 0 by the manufacturer of the meters, in order to designate them as unconfigured slaves. The identification number is often labeled on the meter itself. If you have a single meter on the bus, both its primary address and its secondary address can be automatically detected using "Test and diagnostics".	 Use secondary addressing Primary address: 251 Test and diagnostics (single meter only) <u>Debug</u> <u>Search</u>
© 2005-2014 <u>PiiGAB</u> / <u>TroSoft</u> Version 3.1.1 <u>B</u> ack	Next Exit

2. Press the Find button to test communication with the internal M-Bus meter

Requesting data (REQ_UD2) Reading succeeded. The meter's primary address is 251, and its identification number is 16777360 (PII). Complete primary PiiGAB M-Bus OPC Server and Citect address (preferred) is 251. Complete secondary PiiGAB M-Bus OPC Server and	* II	Use secondary Primary address: 251 Test and diagn (single meter or	addressing ostics ly)
Citect address is 16777360.4129.02.0E			<u>D</u> ebug
	Ŧ	<u> </u>	Search

The internal meter responded and you can see the primary address and secondary address. The identification number in the secondary address is the PiiGAB 900's serial number.

8.2 Communicate with Test and diagnostic address

There is a specific primary address which all M-Bus meters should respond to. This address is called *Test and diagnostic* and has the value 254. This address is very useful if only one M-Bus meter is connected to the M-Bus master and the meter's actual primary address is unknown.

1. Configure as the picture shown below

PiiGAB M-Bus Setup Wizard	
Find meter's primary and secondary address	_M <u>-Bus</u>
 Initialize only Find meter's primary and secondary address Set meter's primary address Set meter's baudrate Read meter's telegram Application Reset only 	Initialise before sending command SND_NKE Application reset Applicationreset Subcode: No Subcode
The meters can be addressed either using primary addressing (0-250) or secondary addressing. The primary address is normally set to value 0 by the manufacturer of the meters, in order to designate them as unconfigured slaves. The identification number is often labeled on the meter itself. If you have a single meter on the bus, both its primary address and its secondary address can be automatically detected using "Test and diagnostics".	□ Use secondary addressing Primary address: 254 ☑ Test and diagnostics (single meter only) □ Debug
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2. Press the Find button to test communication with the M-Bus meter

Requesting data (REQ_UD2) Reading succeeded. The meter's primary address is 11, and its identification number is 60820317 (INV). Complete primary PiiGAB M-Bus OPC Server and Citect address (preferred) is 11. Complete secondary PiiGAB M-Bus OPC Server and		Use secondary Primary address: 254 Test and diagno (single meter on	addressing ostics ly)
Citect address is 60820317.25D6.40.07 Other servers/programs is often using the same			<u>D</u> ebug
	Ŧ	<u>Eind</u>	<u>S</u> earch

For this example the M-bus meter responded and its primary address is 11.

8.3 Communicate with the meter's actual primary address

Always make sure the M-Bus meter responds to the actual primary address.

1. Configure as the picture shown below



2. Press the Find button to test communication with the M-Bus meter

Requesting data (REQ_UD2) Reading succeeded. The meter's primary address is 11, and its identification number is 60820317 (INV). Complete primary PiiGAB M-Bus OPC Server and Citect address (preferred) is 11. Complete secondary PiiGAB M-Bus OPC Server and	•	Use secondary Primary address: 11 Test and diagnot (single meter on	addressing ostics ly)
Citect address is 60820317.25D6.40.07 Other servers/programs is often using the same			<u>D</u> ebug
	Ŧ	<u> </u>	<u>S</u> earch

As expected the meter responded to primary address 11.

8.4 Identify the meter's addresses in the PiiGAB M-Bus Setup Wizard

The PiiGAB M-Bus Setup Wizard always shows the meter's actual primary and secondary addresses. In the previous example the meter's primary addresses were 11.

Requesting data (REQ_UD2) Reading succeeded. The meter's primary address is 11, and its identification number is 60820317 (INV). Complete primary PiiGAB M-Bus OPC Server and Citect address (preferred) is 11. Complete secondary PiiGAB M-Bus OPC Server and	* III	Use secondary Primary address: 11 Test and diagn (single meter or	addressing ostics ly)
Citect address is 60820317.25D6.40.07 Other servers/programs is often using the same		······	<u>D</u> ebug
1	•		<u>S</u> earch

Address	Value
Primary	11
Secondary	60820317.25D6.40.07

8.5 Parts in the secondary address

The secondary address is based on four fields. These fields make the meter's secondary address entirely unique. These fields are:

Field	Value
Identification number	60820317 (BCD)
Manufacture	25D6 (Hex)
Version	40 (Hex)
Media	07 (Hex)

8.6 Secondary address – Identification number and wild cards

As the same with primary addresses, make sure the meter responds to the actual secondary address. For the secondary address there is often just enough to specify the identification number.

1. Configure as the picture shown below

The meters can be addressed either using p addressing (0-250) or secondary addressin The primary address is normally set to value the manufacturer of the meters, in order to designate them as unconfigured slaves. The identification number is often labeled on meter itself. If you have a single meter on the bus, both it primary address and its secondary address automatically detected using "Test and diagn	the can be nostics".	✓ Use seconda Ident.nr Mn 60820317 FI □ Test and dia (single meter <u>F</u> ind	ary addressing fct Vers Media FFF FF FF gnostics only) <u>D</u> ebug Search
© 2005-2014 <u>PiiGAB</u> / <u>TroSoft</u> Version 3.1.1	<u>B</u> ack	Next	

2. Press the *Find* button and test the communication with the meter.

8.7 Entire secondary address

If the meter doesn't respond to the identification number you can enter the entire secondary address.

1. Configure as the picture shown below

The meters can be addressed either using primary addressing (0-250) or secondary addressing. The primary address is normally set to value 0 by the manufacturer of the meters, in order to designate them as unconfigured slaves. The identification number is often labeled on the meter itself. If you have a single meter on the bus, both its primary address and its secondary address can be automatically detected using "Test and diagnostics".	Use secondary addressing Ident.nr Mnfct Vers Media 60820317 25D6 40 07 Test and diagnostics (single meter only) <u>Eind</u> <u>Search</u>
© 2005-2014 <u>PiiGAB</u> / <u>TroSoft</u> Version 3.1.1	ack <u>N</u> ext <u>E</u> xit

2. Press the Find button and test the communication with the meter.

8.8 Read PiiGAB 900 M-Bus voltage and M-Bus current

With a PiiGAB 900 V2.0.0 or later and PiiGAB M-Bus Setup wizard V3.1.0 or later you can read the PiiGAB 900's M-Bus voltage and M-Bus current. This is very useful if you want to make a quick control what's the status of the PiiGAB 900 and the M-Bus loop.

1. Select Read meter's telegram and configure as the picture shows

PiiGAB M-Bus Setup Wizard	
Read meter's telegram	_M <u>-Bus</u>
 Initialize only Find meter's primary and secondary address Set meter's primary address Set meter's baudrate Read meter's telegram Application Reset only This option will view all raw data in the meters first telegram. Usually all data you need from the meter is contained there. Enter primary address 0-250 or the secondary address. Select "Test and diagnostics" if it is a single meter, click Read.	Initialise before sending command SND_NKE Application reset Applicationreset Subcode: No Subcode Use secondary addressing Primary address: 251 Test and diagnostics (single meter only) <u>Debug</u> <u>Search</u>
© 2005-2014 <u>PiiGAB</u> / <u>TroSoft</u> Version 3.1.1 <u>B</u> ack	Next <u>E</u> xit

2. Press the *Read* button to read the internal M-Bus meter in the PiiGAB 900

Requesting data (REQ_UD2) Reading succeeded.	Use secondary addressing
PiiGAB 900 V2: U = 39,8 V I = 4,9 mA	Primary address:
The standard version of MBSetup Wizard does only support raw data. The raw data packet is:	Test and diagnostics (single meter only)
68 26 26 68 08 FB 72 60 73 77 16 29 41 02 0E 05	<u>D</u> ebug
00 00 00 0C 78 60 73 77 16 02 FD 48 8E 01 02 FD	<u>R</u> ead <u>S</u> earch

From this response the PiiGAB M-Bus Setup Wizard can read the M-Bus voltage and M-Bus current from the internal meter's response.

9. Appendix 9.1 Contacts

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