

Ethernet/M-Bus Gateway 900 V2



Description User Manual

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ETHERNET / M-BUS Gateway 900 Description User Manual



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Chapter

1 General information

1.1 About his manual

This manual will give you the guidance to install and connect the PiiGAB 900 to your network as well as to configure the module after your specific desires.

1.2 Functional overview

The PiiGAB 900 works as an interface between the Ethernet/RS232/RS485/M-Bus slave entrance and the M-Bus loop. The gateway is completely transparent which means that the M-Bus questions asked via Ethernet are transferred out on the electric M-Bus interface. The same goes for the answers sent from the meters via the gateway.

1.3 Advantages and possibilities

- The possibility to choose between TCP/IP or UDP/IP.
- The gateway can be used with a solid or a dynamic IP number.
- It is not dependent on any specific operating system, which means it can be used with both Linux and Windows.
- There is a possibility to protect it with a password to prohibit unauthorized to change the configuration.
- Communicate with up to four clients at once.
- Read M-Bus meters via Modbus (TCP/RTU). Not described in this manual.
- Local and central reading of the same meter from different directions at once.
- Connect to existing M-Bus network.
- Makes it possible for redundant communication.
- Read meters via M-Bus and Modbus at the same time.
- Read a few M-Bus meters without external M-Bus drivers via ASCII. Not described in this manual.
- Makes it possible to connect two independent networks.
- Can be upgraded via software key.

Chapter

2 Technical structure

The gateway's interface consists of one Ethernet connection, one RS232, one RS485, two parallel M-Bus slave entrance connections, four parallel outputs for M-Bus loops as well as a voltage connection.

There are ten leds on the front of the gateway with different kinds of information please see the table in section 2.2 for more information.

An extra Ethernet card can be chosen additionally. However, this addition will be available in the fall of 2012/2013.

2.1 Connections

The connections on the upper 18 pins screw terminal are as stated in the below table 2-1

Connection	Term	Description
1	Relay NO	Relayoutput normally open (can be used in the later version of the PiiGAB 900)
2	Relay COM	Relayoutput (can be used in the later version of the PiiGAB 900)
3	Relay NC	Relayoutput normally closed (can be used in the later version of the PiiGAB 900)
4	IN1 +	Digital input no 1 (can be used in the later version of the PiiGAB 900)
5	IN1 -	Digital input no 1 (can be used in the later version of the PiiGAB 900)
6	IN2 +	Digital input no 2 (can be used in the later version of the PiiGAB 900)
7	IN2 -	Digital input no 2 (can be used in the later version of the PiiGAB 900)
8	RS485 A	Connection for RS485
9	RS485 B	Connection for RS485
10	RS232 Tx	Connection for RS232 Tx
11	RS232 Rx	Connection for RS232 Rx
12	RS232 GND	Connection for RS232 GND
13	x	Not used
14	x	Not used

15	M-Bus Slave +	Connection to already existing M-Bus loop with belonging M-Bus master. Not connected to the PiiGAB 900 masterport. Polarity independent
16	M-Bus Slave -	Connection to already existing M-Bus loop with belonging M-Bus master. Not connected to the PiiGAB 900 masterport. Polarity independent
17	M-Bus Slave +	Connection to already existing M-Bus loop with belonging M-Bus master. Not connected to the PiiGAB 900 masterport. Polarity independent
18	M-Bus Slave -	Connection to already existing M-Bus loop with belonging M-Bus master. Not connected to the PiiGAB 900 masterport. Polarity independent

THE MODERN M-BUS TECHNOLOGY

Connections on the lower left 3 pole connector are as stated in the below table:

Та	ble	2-2

Connection	Term	Description
1	24 V AC/DC+	24V AC power alternatively 24V DC (plus side)
2	24 V AC/DC-	24V AC power alternatively 24V DC (minus side)
3	x	Not used

Connections on the lower right 9 pole connector are as stated in the below table:

Connection	Term	Description
1	M-Bus Master +	Connection to the M-Bus loop
2	M-Bus Master -	Connection to the M-Bus loop
3	M-Bus Master +	Connection to the M-Bus loop
4	M-Bus Master -	Connection to the M-Bus loop
5	M-Bus Master +	Connection to the M-Bus loop
6	M-Bus Master -	Connection to the M-Bus loop
7	M-Bus Master +	Connection to the M-Bus loop
8	M-Bus Master -	Connection to the M-Bus loop
9	X	Not used

2.2 Indications

Description of the different front leds:

Row1	Description	Row2	Description
Pwr	 Power led is red when normal Flashes red and green at the start. This usually takes 7 seconds from that the power is turned on. Flashes red at a fast rate when there is a short circuit on the M-Bus loop Flashes orange at a slow speed when over loaded 	C1	
C2	Information concerned configuration etc, not yet implemented	C3	Information concerned configuration etc, not yet implemented
M (Tx)	Flashes when the Master port sends data	M (Rx)	Indicates when the Master port receives data
P1 (Rx)	Flashes when Slave port 1 receives data	P1 (Tx)	Flashes when Slave port 1 sends data
P2 (Rx)	Flashes when Slave port 2 receives data	P2 (Tx)	Flashes when Slave port 2 sends data
P3 (Rx)	Flashes when Slave port 3 receives data	P3 (Tx)	Flashes when Slave port 3 sends data
P4 (Rx)	Flashes when Slave port 4 receives data	P4 (Tx)	Flashes when Slave port 4 sends data

2.2.1 Placement of leds



2.3 Reset button

There is a reset button between the connection for supply voltage and Ethernet1. This button has different functions that are all described below.

Table 2-3

Term	Action	Description
Restart	Push the button 1 time and wait for the P1/Tx led to flash quickly. Then push the button an additional time while it is blinking.	The gateway will restart.
Reset of Ethernet 1	Push the button 5 times and wait for the P4/Rx led to flash quickly. Then push the button one additional time while it is blinking.	The gateway's Ethernet 1 port returns to its original settings. DHCP and randomized IP if there is no DHCP server available, see chapter 3.2
Reset of logging	Push the button 6 times and wait for the P3/Rx led to flash quickly. Then push the button one additional time. While it is blinking.	If a password has been chosen for the login it will now return to Admin:Admin.

2.4 Technical data

Supply voltage	24V AC/DC
Rated current	350mA (24V AC, 60 slaves)
	250mA (24V AC, 5 and 20 slaves)
Operating temperature	-20°C till +55°C
Storage temperature	-35°C till +70°C
Dimension	WxHxD 107.6 x 90 x 62.2
Weight	220 g
Protection type	IP 20
Emission	EN 50 022 class B radiation, EN 50 022 class B conducted
Immission	EN 61 000-4-2, EN 61 000-4-6 ENV 50 140, ENV 50 240, IEC 1000-4-2

2.5 M-Bus Specifications

Communication speed	300 – 9600 bps (Normally 300 or 2400 bps)
Voltage ground level ("1")	40V (±1V)
Voltage zero level ("0")	28V (±1V)
Short circuit level	210 mA
Internal resistance	<100 Ohm
Number of units	5/20/60/120 (1.5mA loads/unit)

2.6 Ethernet 1 connection

Communication speed 300 – 230000bps

Connector type

RJ45





Female socket

Male plug

2.7 Drawings

Figur 2-1 Cabinet



Dimensions and tolerance in accordance with DIN43880.

Outer measurements: W x H x D 107.6 x 90 x 62.2

Chapter

3 Get started step by step

This chapter covers the different steps needed to put the M-Bus 900 gateway into operation.

3.1 Important information

- 1) Connect the PiiGAB 900 to power supply and Ethernet1 as shown in table 2.1
- 2) Start and wait for the Pwr led to be solid red.
- 3) Read out the hardware/MAC address to be found on the right end. It has the format E8-99-5A-XX-XX-XX
- 4) Start PiiGAB M-Bus Wizard on your PC.
- 5) For initial contact with the PiiGAB 900 there are three possibilities depending on what your network looks like.
 - a) DHCP: You should be able to find your PiiGAB 900 directly via the Wizard's "Find gateways on your network".
 - b) Direct connection: Set your computer to static IP-address 192.168.10.1 and connect it directly to the PiiGAB 900. Turn on the power of the PiiGAB 900 and wait for about a minute. The gateway should get a random IP-address between 192.168.10.3 192.168.10.253. You can now use the Wizard's "Find gateways on your network" to find your PiiGAB 900 in the list.
 - c) Static network: Turn on the power on the PiiGAB 900 and wait for about a minute. The unit should now receive a random IP-address within 192.168.10.3 192.168.10.253.
 - Start/Restart the Wizard and click on "Change gateway IP-settings", click "Next"
 - Write the MAC-address for your PiiGAB 900, Click "Next"
 - Write your preferred IP-address, Click "Next", Click "Apply". The PiiGAB 900 will now restart. Netmask and Gateway is set by the web interface. Only the network address will be set. Netmask will be 255.255.255.0 which means that the IP-address must be on the same subnet as your PC.
 - The PiiGAB M-Bus Wizard will now complain that the PiiGAB 900 does not answer. Don't worry about this instead go to "Find gateways on your network" and make your final settings in the web browser.
- 6) Open up a web browser and go to the PiiGAB 900
- 7) Accept the PiiGAB 900 security exceptions.
- 8) Log into the PiiGAB 900 with default login
 - Username: Admin, Password: Admin

You should now be in the configuration web interface of your PiiGAB 900.

3.1.1 Hardware address

You have to know the unit's hardware address, which is the same as the MAC address. The MAC address can be found on the label on the right gable of the unit. It has the format E8-99-5A-xx-xx, where xx is a unique number for the unit.

3.1.2 IP Address

Most of the time the gateway needs a unique IP address on your network in order to be connected to the superior software. You can also use the automatic IP address via DHCP if you

wish. Contact the system administrator to receive the right IP address with the belonging subnet mask and gateway. The IP address has to be within the allowed area, unique within your network, and it has to be in the same subnet as your PC.

3.1.3 TCP/UDP

To communicate with the superior software you have to choose between TCP or UDP.

3.1.4 Port number

To communicate with the gateway the port number has to be adjusted. The default adjustment in the gateway is 10001, 10002, 10003, 10004 and can almost always be used. Control with the network responsible what port number to use.

3.2 Using the M-Bus Wizard

By using the M-Bus Wizard it's possible to find the PiiGAB 900 on the network. The M-Bus Wizard is a software that can be downloaded from PiiGAB's website. No other configuration can be done via the M-Bus Wizard instead it's done via the web interface inside the PiiGAB 900.

In the Wizard it is possible to search for the PiiGAB 810 as well as the PiiGAB 900 on your network. Usually there is an IP address appearing on the gateway and if it is outside the allowed range it will be marked in red. However, it is not possible to find the gateway if it's connected on a subnet.

3.3 Adjustments for TCP/UDP and port number

The web interface is used to make adjustments to TCP as well as UDP

PiiGAB 900 M-Bus Gateway V2				
Start	Configuration			
Configuration	Conngulation			
Administration	Basic Configuration Master Por	t Slave Port 1		
Logging		Glave Fort T	-	
Basic settings				
PiiGAB Online	↓ Ethernet Settings			
	Ethernet 1			
	Dynamic 👻			
	Ip Address:	192.168.10.210		
	Mac Address:	E8:99:5A:00:11:A4		
	Subnet Mask:	255.255.255.0		
	Gateway:	192.168.10.254		
	Ramdomised IP fallback:	Set	Set/Unset	
	Save Ethernet Settings Refres	sh		

	Configuration	
juration		
stration	Basic Configuration Master Po	rt Slave Port 1
settings	Ethernet Settings	
B Online		
	Ethernet 1	
	Static -	
	Ip Address:	192.168.10.210
	Mac Address:	E8:99:5A:00:11:A4
	Subnet Mask:	255.255.255.0
	Gateway:	192.168.10.254

3.4 Communication towards meters

3.4.1 Test the PiiGAB 900 like an M-Bus meter

This small test is usable to get to know the PiiGAB 900, but can also be used for troubleshooting.

- 1) Scroll in the web interface of the PiiGAB 900 and go to "Administration" and control that you have a valid license.
- Scroll to the Configuration -> Master port Default: Serial, 2400 baud, 8E1, M-Bus Master
- 3) Scroll to Configuration -> Slaveport 1 Deafult: UDP, port 10001, M-Bus
- 4) Start the Wizard and find your PiiGAB 900 on the network.
- 5) Choose"Test, search and configure meters with M-Bus" Choose port number 10001 and UDP.
- 6) Set "Primary address:" to 251, which is the internal meter in the PiiGAB 900.
- 7) Choose"Read meter's first telegram" and click"Read". The unit should now respond with its internal telegram.
- 8) Connect a meter and change "Primary address" to the meter's primary address or change it to test and diagnostics address 254. Click "Read" and wait for the answer.

3.4.2 The correct baud rate

After the correct IP address has been established the M-Bus loop's baud rate has to be adjusted. The baud rate adjusted in the web interface has to match the meters baud rate. Some meters have a baud rate of 300bps at delivery. If there is a possibility to set the meters at 2400bps try to do so in order to increase the baud rate and by that improve the performance.

When communication towards the meters has been established you also know that the M-bus loop is connected correctly, and you can continue to configure the superior software.

3.4.3 Adjusting the meter's baud rate

Via the M-Bus Wizard you can control the meter on your M-Bus loop directly via the meter's primary address and secondary address. You can also adjust functions such as baud rate and primary address via your network. Note that some meter brands do not support the possibility to change for example the primary address via a standard M-Bus command.

3.4.4 Manufacture specific configuration software

If you want to configure the meters via the meter manufacturer's own software you can normally do so over the network via the gateway.

3.4.5 Important parameter adjustments

Some issues to keep in mind regarding communication between the meter and the superior software is:

- The time interval between the questions.
- The number of telegrams that can be read out from the meter.
- What baud rate that has been chosen.

Some meters have up to 40 telegrams that can be read. With an adjusted transference speed of 300bps this can take a long time.

Chapter

4 M-Bus Wizard

the M-Bus Wizard usage.

The M-Bus Wizard is software that can be downloaded from the PiiGAB website. The software helps you to find the PiiGAB 900 on the network as well as to test your M-Bus loop. Additional configuration is done via the web interface.

4.1 Starting the M-Bus Wizard

Copy the zip file "PiiGAB MBus Setup Wizard 3.0.1.zip" to the appropriate folder on your computer and open the file. Install the program by double clicking on the Setup files or go via the control panel. After the program has been installed you can start it by choosing the program in the start menu. If the installation has been done with the base settings the program can be found in the PiiGAB folder.

The first time you start the program you have to choose your preferred language. It is however possible to change to another language at a later time.

After the language has been chosen, the introduction picture is presented with a summary of

M <u>-Bus</u>	Welcome to the PiiGAB ^{M-Bus} Setup Wizard	
PiiGAB M-Bus 810	This wizard will help you setting up the PiiGA Gateways for your metering application. You - Find any gateways on your network - Change gateway IP-settings - Ping gateway - Change gateway parameters - Find single meter's primary and secondary - Set single meter's primary address and bau - Read single meter's first telegram	AB M-Bus u can: addresses udrate
	To continue, click Next.	nge Language

Click"Next" to proceed.

4.2 Finding the gateway on the network

If you know that the gateway has an IP address that can be found via the network you will choose **Find gateways on your network** from the main menu. In some cases it is hard to find the gateway and this could be due to the fact that it's on a subnet. Contact your network provider for more information.

Figure 4-2



Figure 4-3

letwork search col	mplete.		-	
IP-address	MAC-address	Туре	Info	
192.168.10.153	00-04-25-10-67-30	900	Setup possible	
✓ 192.168.10.178	00-20-4A-CF-03-93	810	Setup possible	
✓ 192.168.10.61	00-20-4A-84-F1-12	810	Setup possible	
✓ 192.168.10.62	00-20-4A-05-79-1C	810	Setup possible	
🖌 192.168.10.91	00-20-4A-84-61-87	810	Setup possible	
•	III			•
5 gateways where found. Select desired gateway in the list and click Next. Scan again				
5 gateways where fo	und. ay in the list and click Ne	xt.		<u>S</u> can again

The gateways found on the network will be displayed equivalently to the list above. Look under Type to see if it is an 810 or a 900 that has been found. Other units located during the search will be marked with a '?'.

Figure 4-4

IP-address	MAC-address	Info
9192.100.100.100	00-20-4A-84-F1-1E	Setup may fail

If the IP address is outside the allowed address range but possible to find within the network it will be indicated in the Wizard as shown above.

By double clicking on the 900 line or 'Next' a message box with the below text will appear

Figure 4-4

MBSetup	×
?	The 900 series is configured via an external web interface. Do you want to start your web browser?
	<u>Y</u> es <u>N</u> o

If you choose Yes your standard web browser will start and if you choose No the below box will appear.

Figure 4-5

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 Change gateway parameters Test, search and configure meters 	
© 2005-2010 PiiGAB / TroSoft AB Version 3.0.1	<u>B</u> ack <u>N</u> ext <u>E</u> xit

900M.E.1.12

16

4.3 Web interface

When you know the IP number on the PiiGAB 900 you can open your web browser manually and write the gateway's IP number. This will get you to the web interface on the gateway.

Figure 4-3



It's possible to do all the installations required to configure the 900 by using the web interface.

4.4 Base configuration

Figure 4-4 PiiGAB 900 V2 Configuration - Mozilla Firefox <u>Arkiv R</u>edigera Vi<u>s</u>a Hist<u>o</u>rik <u>B</u>okmärken <u>V</u>erktyg <u>H</u>jälp 🗢 C 🤡 - m-bus opc server 🔶 🔒 https://192.168.10.210 <mark>ام</mark> PiiGAB 900 V2 Configuration + PiiGAB 900 M-Bus Gateway V2 Configuration Basic Configuration Master Port Slave Port 1 | Ethernet_Set Ethernet 1 Dynamic 👻 192.168.10.210 E8:99:5A:00:11:A4 255.255.255.0 lp Address: Mac Address Subnet Mask: 192.168.10.254 Gateway: Ramdomised IP fallback: Set Set/Unset Save Ethernet Settings Refresh ↓ General Configuration Pi-900 Version 2012-11-16 MBusHub Version 2.00.00.000 Upload CSV-File Bläddra.. Upload Remove CSV-File No File • Remove Debug options 192,168,10,1 Debug IP-address Debug Port number 30704 Port open time [h] Port closes at Port closed Save Debug Settings Restart MbusHub

Here you choose to either use a fixed or a dynamic IP address. If you choose a fixed IP address; IP Number, Subnet Mask and Gateway have to be set.

4.5 Master Port configuration

Click the Master Port tag to adjust information for such as baud rate, timeout etc

Figure 4-5

PiiGAB 900 V2 Configuration	- Mozilla Firefox		
<u>Arkiv R</u> edigera Vi <u>s</u> a Hist <u>o</u> rik	: <u>B</u> okmärken <u>V</u> erktyg <u>Hj</u> älp		
🕞 🔒 https://192.168.10.210		🟫 🗟 🚱 😁 🖉 🖓	
PiiGAB 900 V2 Configuration	+		
PiiGAB 900	M-Bus Gatewa	y V2	
Start	Configuration		
Configuration	Goingaration		
Administration	Basic Configuration Master Port Slave Port 1		
Basic settings			
PiiGAB Online	Configuration		
	↓ Master port configuration		
	Туре	Serial 👻	
	Com port	M-Bus Master 💌	
	Baud rate	2400 🔻 😢	
	Timeout (ms)	2000	
	Reconnect (s)	1000	
	Protocol	M-Bus 👻	
	Configuration File	No File Show Configuration	
	M-Bus Master options		
	myprimaryaddress	251	
	switchblocktime	200	
	Save Settings		

4.6 Port 1-4 configuration

Click the Slave Port 1-4 Configuration to adjust port information such as port number, baud rate, time out etc

Figure 4-6

PiiGAB 900 V2 Configuration -	- Mozilla Firefox			
<u>Arkiv R</u> edigera Vi <u>s</u> a Hist <u>o</u> rik	<u>B</u> okmärken ⊻erktyg <u>H</u> jälp			
A https://192.168.10.210			😭 🗟 🧭 🐂 m-bus opc server	۵
PiiGAB 900 V2 Configuration	+			
PiiGAB 900	M-Bus Gatewa	y V2		
Start	Configuration			
Configuration	comgaration			
Administration	Basic Configuration Master	Port Slave Port 1		
Logging				
Basic settings	Configuration			
PiiGAB Online	comgaration			
	↓ Slave port configuration *	1		
	Туре	UDP -		
	Network card	ALL 🝷 🔞		
	Local Port	10001	0	
	Timeout (ms)	2000		
	Protocol	M-Bus 👻		
	Save Settings			

900M.E.1.12

4.7 Communications test (Ping)

Figure 4-7

W PiiGAB M-Bus Setup Wizard	
Ping gateway	_M <u>-Bus</u>
IP-address: 192.168.10.153 By pinging a gateway you almost always assure that its IP- settings are correct. However a ping may not always detect network problems caused by a bad network setup. Enter an IP-address above and click Ping.	
	<u>P</u> ing
© 2005-2010 PiiGAB / TroSoft AB Version 3.0.1	Next <u>E</u> xit

The above picture will be presented after you have chosen to **Ping the gateway** from the main menu. Adjust the IP address you want to control on the gateway and choose "ping." If the earlier steps in wizard have been done correctly the IP address will appear in this window.

Figure 4-8

W PiiGAB M-Bus Setup Wizard	
Ping gateway	_M-Bus
IP-address: 192.168.10.153 Pinging gateway Ping number 1 - responded in 46 ms. Ping number 2 - responded in 5 ms. Ping number 3 - responded in 6 ms. Ping number 4 - responded in 17 ms. Total response time for 4 pings were 74 r	ns.
© 2005-2010 PiiGAB / TroSoft AB Version 3.0.1	<u>B</u> ack <u>N</u> ext <u>E</u> xit

If you establish contact using the Ping command the above communication result will show. Click "Next" to continue.

4.8 **Meter installations**

When all previous steps have been made the gateway is ready to communicate out on the M-Bus loop. To get there in the Wizard please choose Test, search and configure meters.

This choice makes you send a so called "SND_NKE" question in order to test the communication as well as to zero out the meter to be able to read the first telegram.

Figure 4-9

PiiGAB M-Bus Setup Wizard	
Initialize meter	_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 first telegram Application Reset only 	Initialise before sending command SND_NKE Application reset Applicationreset Subcode: No Subcode
By initializing the meter you can simply detect whether it answers or not. Enter either the primary address (0-250) or the identification number (max 8 digits or F) in the first secondary address field (if you leave the other fields empty all type of meters using same identification number will be selected). Select "Test and diagnostics" if it is a single meter on the bus, click Initialize.	Use secondary addressing Primary address: 1 Test and diagnostics (single meter only) <u>Debug</u> Initialize <u>S</u> earch
© 2005-2010 PiiGAB / TroSoft AB Back Back	Next <u>Exit</u>

Figure 4-10

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 first 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: 1 □ Test and diagnostics (single meter only) □ Eind □ Eind
© 2005-2010 PiiGAB / TroSoft AB Back Back	<u>N</u> ext <u>E</u> xit

This choice presents the meter's primary and secondary address. If you don't know which address the meter has used choose "test and diagnose" and you will receive information on both the primary and secondary address. Observe that the "test and diagnostics" function can only be used if a meter is connected to the M-Bus loop. Some meters don't support secondary addressing, however information about the secondary address can usually be read by the meter.

Figure 4-11

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 first telegram Application Reset only 	Initialise before sending command SND_NKE Application reset Applicationreset Subcode: No Subcode
Requesting data (REQ_UD2) Reading succeeded. The meter's primary address is 1, and its identification number is 00922082 (SVM). Complete primary PiiGAB M-Bus OPC Server and Citect address (preferred) is 1. Complete secondary PiiGAB M-Bus OPC Server and Citect address is 00922082.4ECD.09.04 Other servers/programs is often using the same	□ Use secondary addressing Primary address: 1 □ Test and diagnostics □ (single meter only) Eind <u>S</u> earch
© 2005-2010 PiiGAB / TroSoft AB Back Back	Next Exit

Below is an example of when the meter responds.

Figure 4-12

PiiGAB M-Bus Setup Wizard	
Set meter's primary 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 first telegram Application Reset only 	Initialise before sending command SND_NKE Application reset Applicationreset Subcode: No Subcode
A new primary address can be set in two different ways: 1) If the old primary address is known. Enter the old address (0-250) and then the new address (0-250). 2) Enter the secondary address and then the new primary address (0-250). Address 0 is reserved for new meters and should normally not be used as new address. Be careful not to use any occupied address. Click	Use secondary addressing Primary address: 1 New primary address: 0 <u>Debug</u> <u>S</u> et <u>S</u> earch
© 2005-2010 PiiGAB / TroSoft AB Version 3.0.1 <u>B</u> ack	Next <u>E</u> xit

There is also a possibility to change the meter's primary address. Some meter brands don't support the option to change the primary address with an M-Bus command. Some meters demand it to be in some kind of service mode. Check with the meter manufacturer for specifics.

Figure 4-13



This choice makes it possible to change the baud rate. When the meter is updating you will receive a message when it has been successfully updated. Some meters respond faster than the M-Bus standard claims so sometimes you will not receive the message although it has been successfully updated. If that is the case try to test at the new baud rate to see if the meter has been updated. It is very important to do a test read on the new baud rate no matter what since some meters change back to the original baud rate if no reading has been done.

Figure 4-14

PiiGAB M-Bus Setup Wizard	
Read meter's first telegram	_M <u>-Bus</u>
 Initialize only Find meter's primary and secondary address Set meter's baudrate Read meter's first 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 Application reset No Subcode Use secondary addressing Primary address: 1 Test and diagnostics (single meter only) <u>Debug</u> <u>Search</u>
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Here the first part of the meter can be read.

Figure 4-15



A read can look like this.

Figure 4-16

W PiiGAB M-Bus Setup Wizard	
Reset the application layer	_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 first telegram Application Reset only 	Initialise before sending command SND_NKE Application reset Applicationreset Subcode: No Subcode
This option will release a reset of the application layer in the slave. Each slave himself decides which parameters to change after it has received such an application reset. The application reset subcode defines which telegram function and which subtelegram is requested by the master. The use of the value zero for the number of the subtelegram means that all telegrams are requested.	Use secondary addressing Primary address: Test and diagnostics (single meter only) Beset Search
© 2005-2010 PiiGAB / TroSoft AB Version 3.0.1 Back	<u>N</u> ext <u>Exit</u>

Some meters use "Application reset" instead of or in combination with SND_NKE in order to zero out the meter to be able to read the first telegram. In some cases a sub code is needed together with "Application reset" which also can be chosen with the Wizard.

4.9 Finding meters on an M-Bus loop

Finding meters on an M-Bus loop by the PiiGAB 900 can be done with primary addressing or secondary addressing. If you have many meters with the same primary address you will get a collision indication. To be able to separate these meters you will need to use to secondary addressing.

4.9.1 Finding meters through primary address

When using primary addressing a SND_NKE is first sent and if a meter responds a REQ_UD2 is sent to read out the meter information. Some meter do not like to first get a SND_NKE and directly after a REQ_UD2, therefore you can cancel the SND_NKE question. The search will then take a little longer since a timeout is required between each question.

To make the search more effective you can set the interval of the primary address if you know that your meters should be within a certain area.

😨 PiiGAB M-Bus Setup Wizard - Sök mätare										
	Scan	Adress	SND_NKE	REQ_UD2	Identitet	Tillverkare	Version	Medium	Mätare	
	1	1	0k	Ok	00922082	SVM (4ECDh)	9 (09h)	Heat (04h)	N/A	
?	20									
,	Visa endas	t hittade enhet	erj							
L [Sökmetod —			Primära sökpa	arametrar		imeout (SND_	NKE/REQ_UD2)-		<u>A</u> vbryt
Primär adress (0-251)					KE För	sta: 1	3000 ms/10000 ms (300 bps)			
C Sekundär adress				BED LID2 Sister 251			 1500 ms/3000 ms (2400 bps) 700 ms/3000 ms (2000 bps) 			
,,						0.0. 1 201	0 700 ms/3	3000 ms (3600 pps)	Avsluta	
UDP	: 192.168.10.	227:10002					Söker: 20	Svarat SN	D_NKE: 1	Svarat REQ_UD2: 1 🛛 🔏

Bild 4-17

4.9.2 Step by step instruction for primary address search

Finding M-Bus meters on the M-Bus loop using primary addressing.

- 1. Specify the baud rate on the M-Bus loop.
- 2. State what type of questions of "SND_NKE" or "REQ_UD2" to be used.
- 3. State the first and the last primary address for the search.
- 4. Click "Start search"

4.9.3 Finding meters through secondary address

When secondary addressing is used a so called binary tree is used. This can partly be followed in the search window.

Bild 4-188

😺 PiiGAB M-Bus Setup Wizard - Sök mätare										
	Scan	Adress	SND_UD	REQ_UD2	Identitet	Tillverkare	Version	Medium	Mätare	
	00922082	1	Ok	Ok	00922082	SVM (4ECDh)	9 (09h)	Heat (04h)	N/A	
۲	42873544	251	Ok	Ok	42873544	PII (4129h)	1 (01h)	Bus/System (900	
L										
F	Visa endast	hittade enhet	er							
Г	Sökmetod —			Sekundära sö	kparametrar –	<u>I</u>	imeout (SND_	NKE/REQ_UD2)		Starta sökning
	🔿 Primär adre	ess (0-251)		Sökr	nask för Id:	FFFFFFF	O 3000 ms.	/10000 ms (300 bp	s)	
Sekundär adress				 1500 ms/3000 ms (2400 bps) 				<u>Spara</u>		
							 700 ms/3000 ms (9600 bps) <u>A</u>vsluta 			
UDF	: 192.168.10.3	227:10002				1!	50 varv på 37:	3 sek Svarat SM	ID_UD: 2	Svarat REQ_UD2: 2

4.9.4 Step by step instruction for secondary address search

Finding M-Bus meters on the M-Bus loop using secondary addressing

- 1. Specify the baud rate on the M-Bus loop.
- 2. Specify if necessary your own search pattern for secondary addressing.
- 3. Click "Start search".