

# Remote Monitoring of Woodward easYgen-3000



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This document does not replace the official manuals and documentation of the respective manufacturers.

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## Target Audience

This application note is intended for engineers and electricians. Specialist electrical knowledge is required for installation and implementation.

Working with this application note requires general knowledge in the sector of automation and stored program control. Basic knowledge of Modbus RTU will also be useful.

## History

Revision	Date	Description	Responsible
1.20	November 2013	General update, using new template	SDa
1.1	July 2013	Supplements	HEH
1.0	February 2012	First release	HEH

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# 1 Requirements

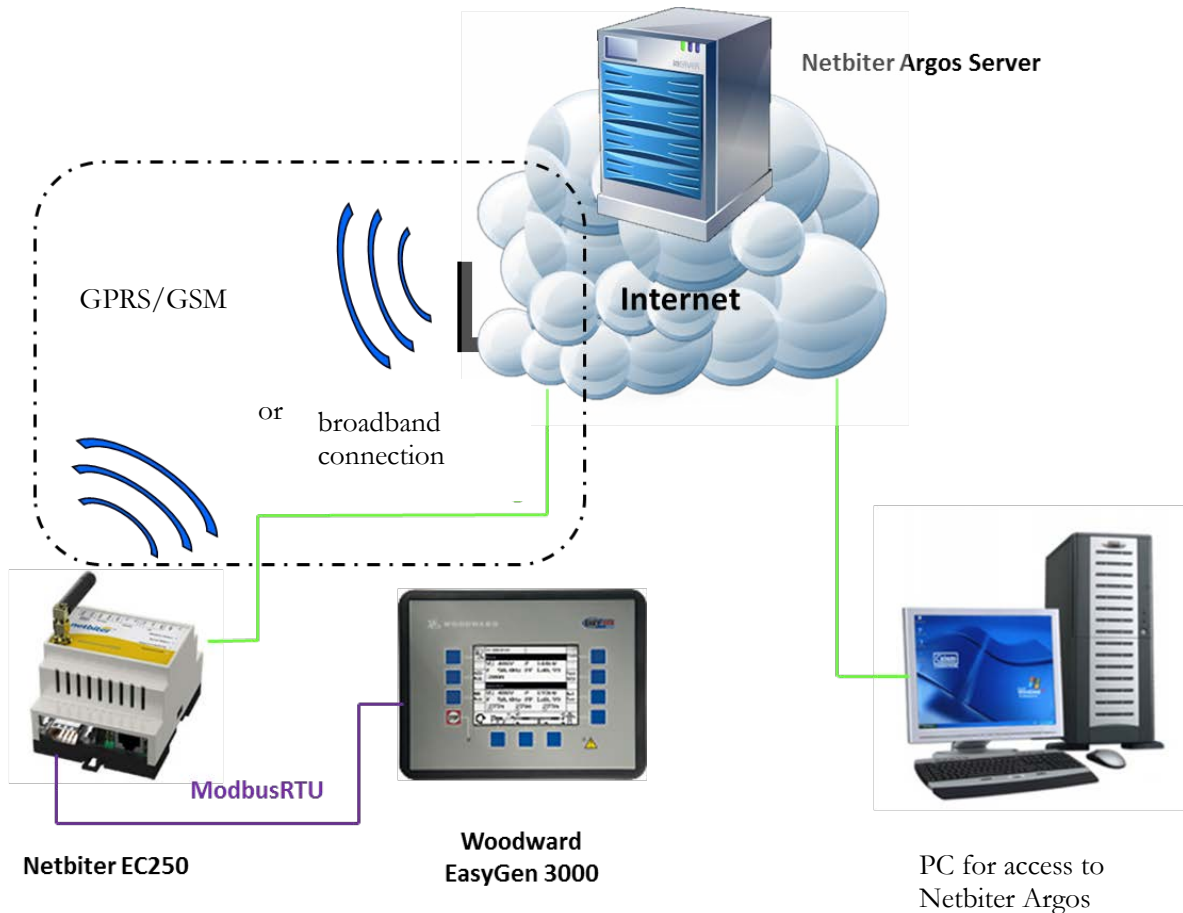
The following components are required to use this application note, which is based on the use of a factory default **Woodward easYgen-3000**, and a **Netbiter EasyConnect EC250** not yet connected to Netbiter Argos.

Description	Name / Type	Version
HMS Netbiter EasyConnect EC250	NB1003	
External 5m GSM antenna. Additional extension cables available.	E-022	
Netbiter SIM card, for connection via GPRS	NB5000	
Netbiter Config, for IP address configuration when connecting via a broadband Internet connection.		Latest
Woodward easYgen-3000		
Woodward ToolKit software		
Power supply for Woodward easYgen-3000		
PC with Internet connection and web browser.		
Specialist electrical knowledge, required for installation and implementation.		
General knowledge of automation and stored program control. Basic knowledge of Modbus RTU will be useful.		

## 2 Solution Overview

This document describes the required steps for operation of a Netbiter EasyConnect 250 and an easYgen-3000 control from Woodward.

The aim is the transfer of the easYgen-3000 data to the Netbiter Argos, the HMS portal for Netbiter applications. Data is read and written from/to the easYgen 3000 by the Netbiter EasyConnect EC250 via Modbus RTU, and is transferred via a broadband Internet connection or GPRS, to and from Netbiter Argos.



Hysteresis logging can be used to log a parameter that includes small variations over time. When a filter value is set, only values that have changed more than the set value will be stored. If the change is less than the filter value, the log point will not be stored

## 3 First Steps with the Netbiter EC250

### 3.1 Set up the Equipment

- 1) Connect to the Internet, via an Ethernet cable or a cellular phone connection. For the latter - insert the SIM card (with deactivated PIN code) into the Netbiter EasyConnect EC250, as described in the product documentation.
- 2) Using a suitable cable, connect the Woodward easYgen-3000 to the Netbiter EasyConnect EC250 via the RS-485 interface.
- 3) Provide power for the Netbiter and the Woodward easYgen-3000, according to the documentation.

### 3.2 Register the Netbiter EasyConnect EC250 at Netbiter Argos.

The Netbiter EasyConnect EC250 must be registered at Netbiter Argos. Open <https://www.netbiter.net/> and click **Create an account** under the login window, to display the following page:

Create Account	
Account name *	<input type="text"/>
Password *	<input type="password"/>
Repeat Password *	<input type="password"/>
First Name *	<input type="text"/>
Last Name *	<input type="text"/>
Company *	<input type="text"/>
Country *	Select...
Phone	<input type="text"/>
E-mail *	<input type="text"/>
Confirm E-mail *	<input type="text"/>
System ID (Device ID) *	<input type="text"/>
Activation Code *	<input type="text"/>

[Accept the terms and conditions](#)

System ID:  
123A4EFB2C2A  
Activation Code:  
253BGD32

Fill out the required fields, using the **System ID** and **Activation Code** supplied with the Netbiter EasyConnect EC250. After the information is confirmed, an e-mail is sent to the specified address. Confirm the link in this e-mail to activate the account at Netbiter Argos.

### 3.3 Activate Netbiter EasyConnect EC250

- 1) Log in to the newly created account at <https://www.netbiter.net/>
- 2) Proceed to the menu **Management > All systems > Inactive**.
- 3) Click on **Activate** to activate the Netbiter EasyConnect EC250.

The screenshot shows the Netbiter web interface. The top navigation bar includes 'Presentation', 'Reports', 'Management', 'Account', 'Contact', and 'Logout'. Below this, there are tabs for 'Projects', 'All systems', 'Templates', 'Profiles', and 'All dashboards'. The user is logged in as 'Helmut Halmburger' with account 'HMSGmbH'. The breadcrumb trail is 'Management > All systems > Inactive'. Under the 'Inactive' tab, there is a table with one entry:

Name	Device ID	Project	Level	GPS	
EasyConnect EC250	003011FB9070	My First Project	Standard	No	<a href="#">Activate</a> <a href="#">Remove</a>

A red arrow points to the 'Activate' link in the table.

In the page that opens, under **Subscription**, select the **Standard** subscription (subscription = performance agreement). Other available subscriptions with expanded possibilities are subject to charges.

The screenshot shows the 'System activation' page. The breadcrumb trail is 'Management > Systems > Inactive > MyFirstSystem > System activation'. The page has a 'System activation' tab. The form contains the following fields:

- Device ID \*:
- Activation code \*:
- Subscription:  (dropdown menu)

There is a green checkmark icon next to the 'Standard' subscription. To the right of the subscription dropdown is a button labeled 'add subscription key'. Below the form, there is a note in a dashed box: 'Note that it might take several minutes before the unit will come online when activating.' At the bottom left, there is an 'activate' button.

## 3.4 Connect via Mobile Network or Ethernet

The Netbiter EC250 can connect to Netbiter Argos via a local Ethernet network with an Internet connection, or via a mobile phone network (GPRS). These connections can be configured so that the GPRS connection is used as backup if the connection via the local network fails.

### 3.4.1 Settings for the Mobile Network Connection

- 1) Click on **Management >> All systems >> Active** and select the Netbiter EasyConnect EC250 recently added.
- 2) Select the tab **Mobile network** and enter the mobile network number for the SIM card. If using a SIM card not supplied by HMS Networks, the access point name (**APN**) must also be entered. If necessary, also enter the **APN Username** and **Password** (this information should be provided by the mobile network provider).

Management » Projects » HMS EC220 » VIHA EC220 » Mobile network

Status Configuration Dashboards Map Backup/Firmware **Mobile network** Properties

I have a Netbiter SIM-card  I have a custom or standard SIM-card

SIM-card mobile number \*

Last configuration SMS sent 2013-10-11 09:01:39 has been delivered.

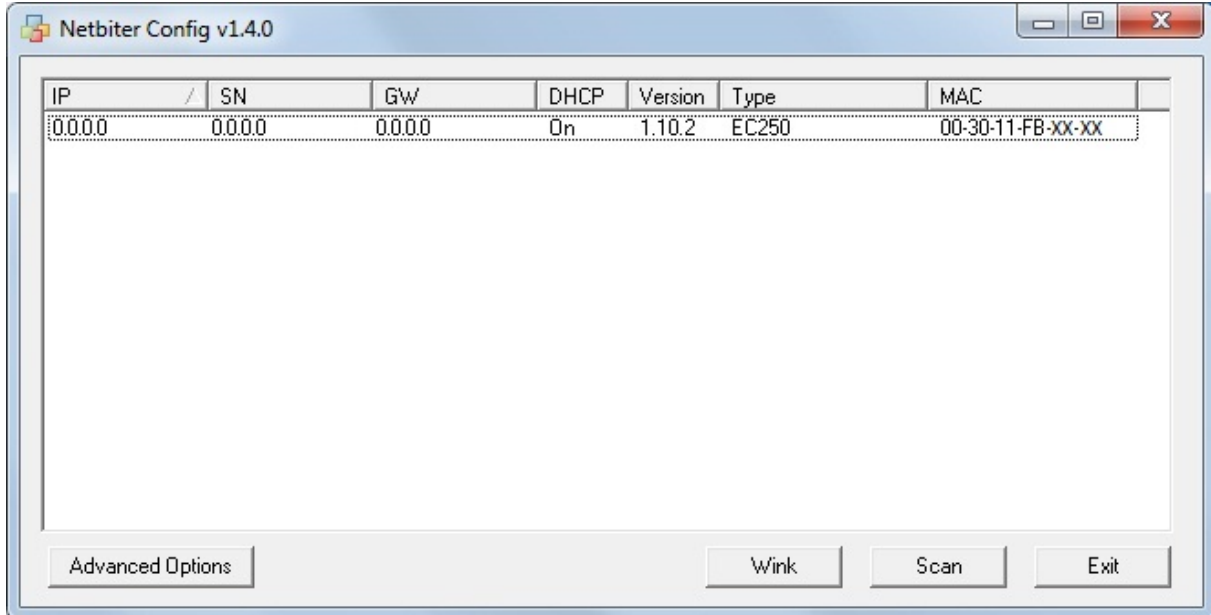
- 3) Check that the EC250 is powered up and that the mobile network reception is sufficient. This is the case when the **Module Status LED** on the EC250 flashes two or three times. If there is a single flash only, the signal strength is not sufficient, in which case the unit should be installed in a different location (outside cabinets or other shielding such as reinforced concrete walls). Alternatively, an external antenna can be used.
- 4) Click the **Activate** button. It may take a few minutes before the unit comes online.



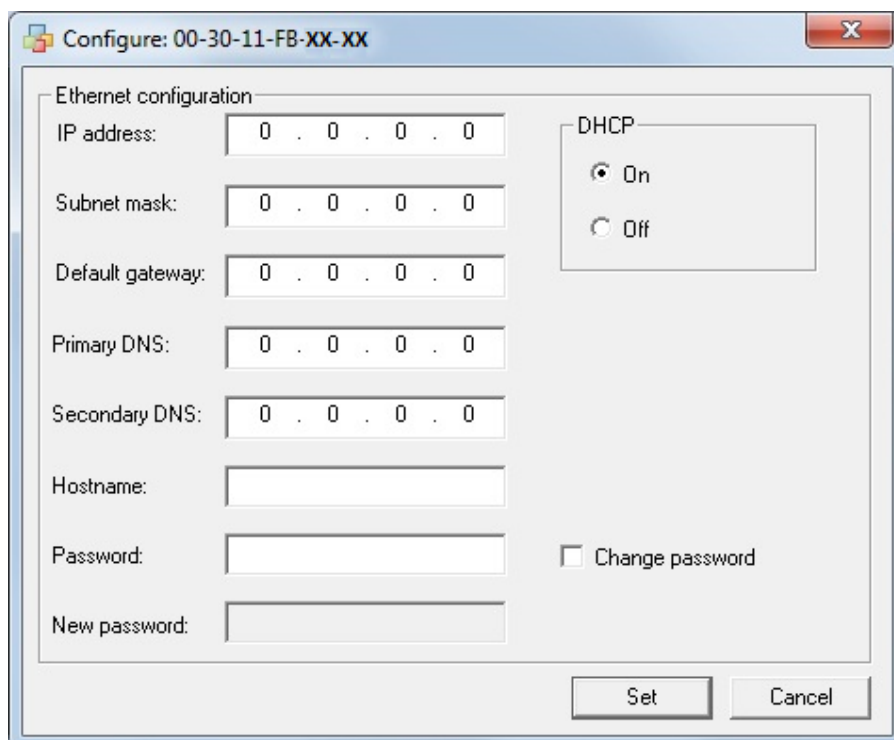
### 3.4.2 Settings for the Ethernet Connection

The IP address, subnet mask, and the gateway address can be easily set with **Netbiter Config**, a utility that finds all connected Netbiter devices on the network and allows easy setting of the IP address.

- 1) Start the utility and click **Scan**.

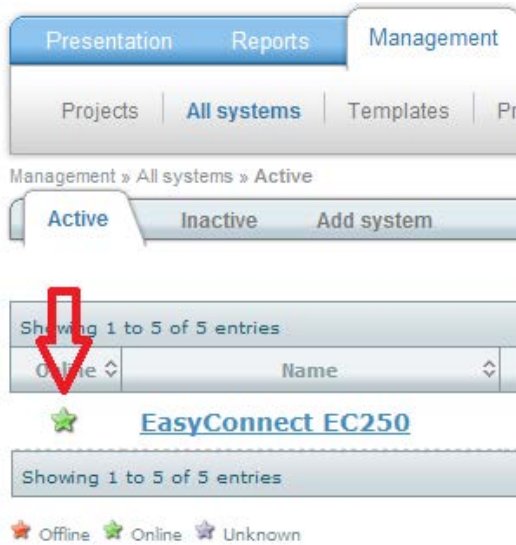


- 2) To configure settings, double-click on the required unit.
- 3) To automatically set network settings using a **DHCP** server on the network, select this option.
- 4) If the network has no DHCP server, the unit's IP address, gateway address and at least one valid DNS server must also be listed.
- 5) Enter the default password "admin" and click **Set**.



### 3.4.3 Indication of Connection Status

In the browser, click **Management >>All systems**. As soon as a small green star appears to the left of the project name, the Netbiter EC250 is online and operational.



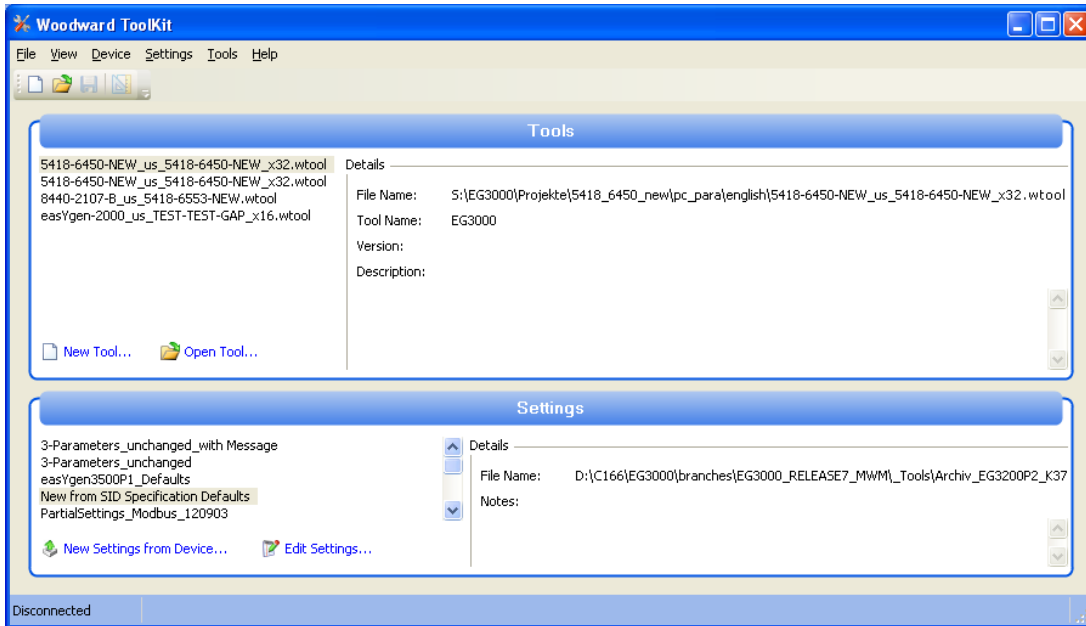
## 4 Configure the Woodward easYgen-3000

This application note does not provide details on how to use the Woodward ToolKit, nor on the settings found in the interface of the easYgen-3000. Basic knowledge required for establishing the connection between the easYgen-3000 and the Woodward ToolKit is assumed.

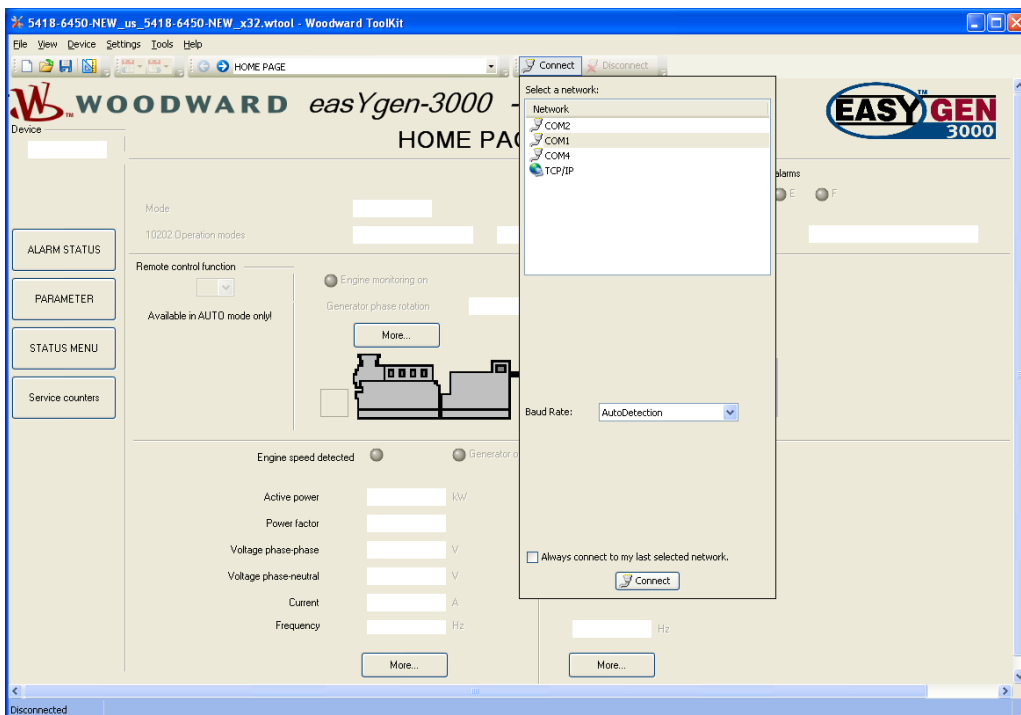
The following sections focus on the configuration of the serial interface and the setting of the protocol ID.

### 4.1 Settings for the RS-485 Interface

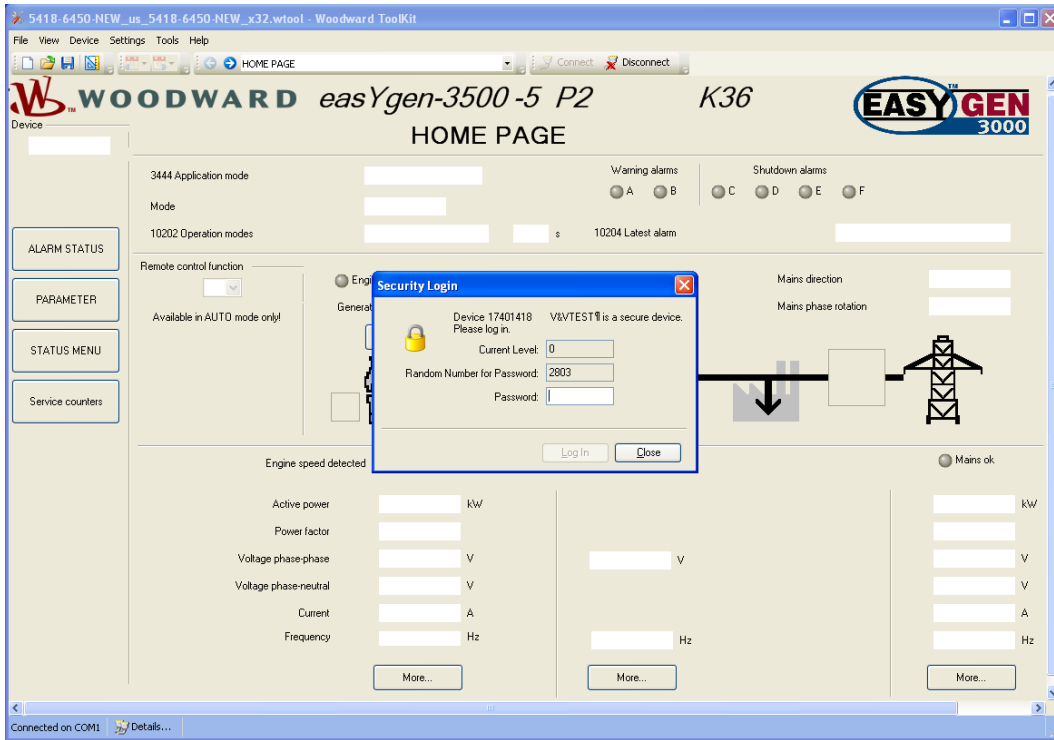
- 1) Start the Woodward ToolKit and - from the **File** menu - load the appropriate tool for your unit:



- 2) Click **Connect**, select the COM port connecting to the Woodward controller, and establish a connection:

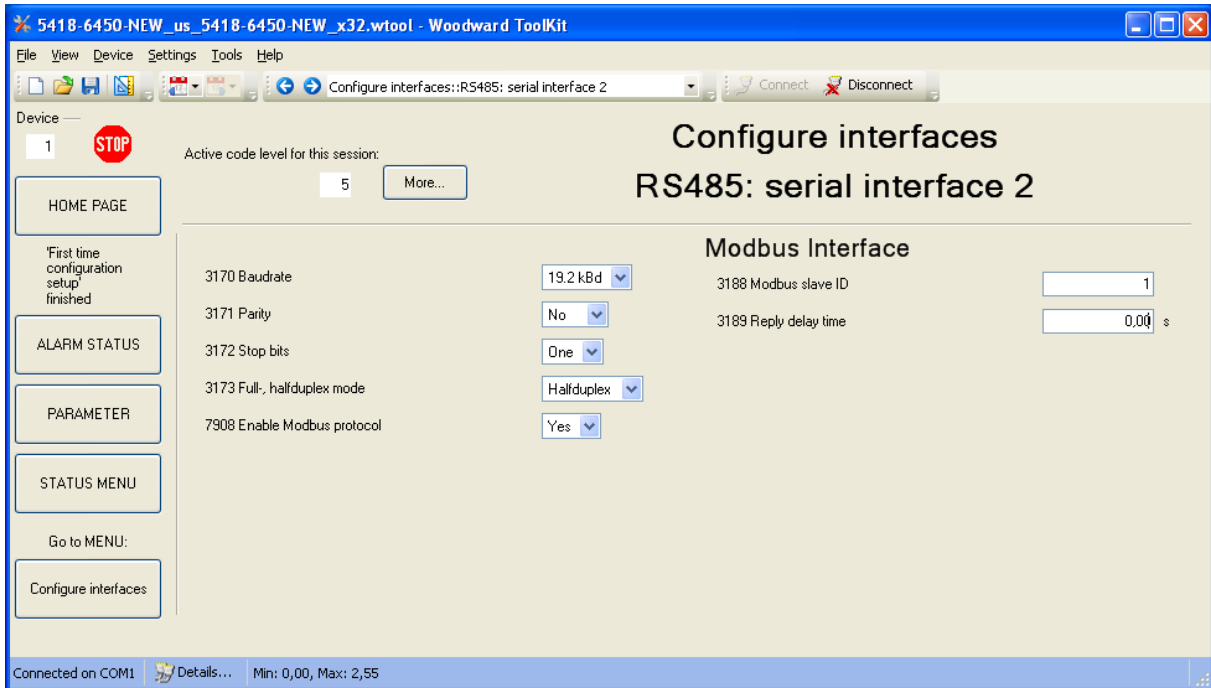


3) Enter the password for access to the controller. The factory default password is: 0500



4) Configure the settings in the menu:

**Parameters >> Configure interfaces >> RS485: serial interface 2:**



This example uses the following settings:

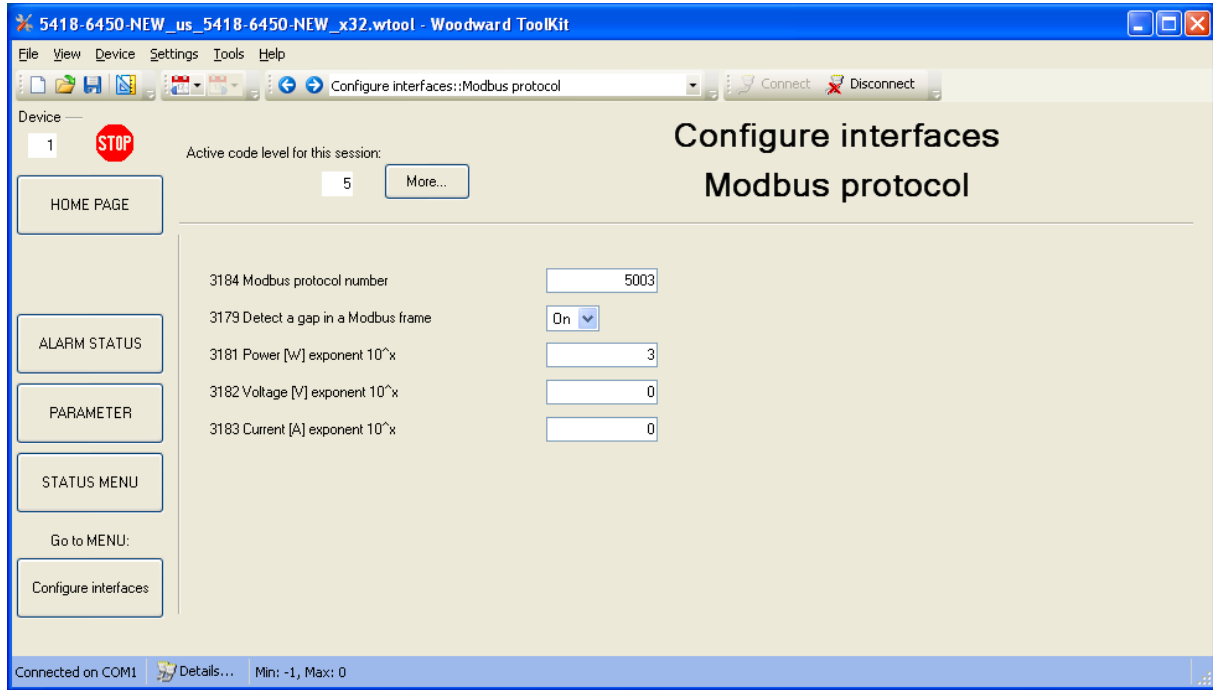
- Baud rate: 19.2 kBd
- Parity: No
- Stop bits: One
- Full, half-duplex mode: Half-duplex
- Enable Modbus protocol: Yes
- Modbus slave ID: 1
- Reply delay time: 0.00 s

## 4.2 Changing the Protocol ID

In the menu:

**Parameters >> Configure interfaces >> Modbus protocol**

change the protocol number from 5010 to 5003:



## 5 Configure the Netbiter EC250

The Netbiter EC250 can be configured entirely via Netbiter Argos. The following describes the creation of a template, adding a Modbus TCP participant, and the creation of visualization and log parameters. Additionally, there are many more functions and possibilities for visualizing the collected data (dashboards, graphs, alarms), about which more can be found in the user documentation for Netbiter Argos.

### 5.1 Templates

A template is a model for a device type, and contains listings of the devices internal registers. Templates are managed from:

**Management >> Templates**

It is recommended to use the existing template for the easYgen-3000. This is accomplished by adding the easYgen-3000 as a new “**Device**”. See below for more on this.

To learn more about how to create custom templates, see the documentation for Netbiter Argos.

### 5.2 Link Woodward easYgen-3000 to Netbiter EC250

Open the configuration page of the EC250 by clicking **Management >> All systems**, and then on the unit. Then click **Configuration >> Device configuration**, and then on the button **Add device**.

Management » Projects » My First Project » EasyConnect EC250 » Configuration

[Status](#) | **[Configuration](#)** | [Dashboards](#) | [Map](#) | [Backup/Firmware](#) | [Mobile network](#) | [Properties](#)

Last configuration update: Now  
 Last synchronization: 2012-03-01 08:43:10 ❌

**synchronize configuration**

Device configuration		Logging	Visualization	Alarms	Gateway settings	<a href="#">Show Advanced Config</a>
Device	Device type	Settings	Template	Action		
Internal	Virtual WS		Netbiter Internal	<a href="#">Edit</a>		
ETH Stats	Virtual ETH		Netbiter Ethernet Stat	<a href="#">Edit</a>		
GPS	Virtual GPS		Netbiter GPS	<a href="#">Edit</a>		
PPP Stats	Virtual PPP		Netbiter PPP Stat	<a href="#">Edit</a>		

**add device** 🟢

Server side alarm configuration  
[Edit the alarm configuration settings](#)

Offline alarms:  🟢

Select the device type **Modbus** and the template **Woodward Easygen-3000**.

Enter the following in the dialog:

**Device Name:** Enter a project-specific name for the application to be realized with the Woodward easYgen-3000 and the Netbiter EC250.

**Modbus slave:** The Modbus slave address specified here should correspond to the one specified for the Woodward easYgen-3000.

**Modbus IP:** Specification of an IP address is not required for a Modbus RTU connection.

**Modbus port:** The Modbus-TCP port is relevant only when using Modbus TCP.

The Woodward easYgen-3000 has now been entered as a new device, in addition to the virtual devices. Click the **Save** button.



## 5.3 Add Visualization Parameters for the easYgen-3000

To enable visualization of specific values from a device (i.e. the Woodward easYgen-3000) connected to the Netbiter EC250 or from the Netbiter EC250 itself, these must first be selected.

Select the **Visualization** tab and click on **Add visualization parameter**.

The screenshot shows the HMS management interface. At the top, there are navigation tabs: Presentation, Reports, Management, and Account. Below this, there are sub-tabs: Projects, All systems, Templates, Profiles, and All dashboards. The user is logged in as Helmut Halmburger, Account: HMSGmbH. The main navigation bar includes Status, Configuration, Dashboards, Map, Backup/Firmware, Mobile network, and Properties. The current page is Configuration, and the sub-page is EasyConnect EC250 Configuration. A red arrow points to the 'add visualization parameter' button.

Device	Device profile	Group	Parameter	Description	Unit	Log interval	Log share	Action
No visualization defined.								

Thereafter, select the Woodward easYgen-3000 as the device. Select the desired values from the group **Default**. It is also possible to change the representation of the values in regard to the information in the template, if desired. Click **Save**.

### Add visualization parameter

Device:

Group:

Parameter \*:

Description:

Unit:

Scaling:

Offset:

Additional id:

Number of decimals:

Valid range:  -

Enumeration:

When all the required values have been added to the visualization, the list will look something like this:

Presentation
Reports
Management
Account
Contact Logout

Projects
All systems
Templates
Profiles
All dashboards
Logged In: Helmut Halmburger  
Account: HMSGmbH

Management > Projects > MyFirstProject > MyFirstSystem > Configuration

Status
Configuration
Dashboards
Map
Backup/Firmware
Mobile network
Properties

Last configuration update Now


---

Last synchronization 2012-12-05 09:42:02

synchronize configuration

Device configuration	Logging	Visualization	Alarms	Connected device profile	Gateway settings			
Device	Device profile	Group	Parameter	Description	Unit	Log interval	Log share	Action
Woodward EasyGen 3000	-	Display_General	Operation mode	Operation mode		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Display_Generator	Gen.average ph-ph voltage[V]	Gen.average ph-ph voltage[V]		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Display_Generator	Gen.frequency[Hz]	Gen.frequency[Hz]		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Display_Mains	Mains frequency[Hz]	Mains frequency[Hz]		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Display_Mains	Mains average ph-ph voltage[V]	Mains average ph-ph voltage[V]		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Display_Mains	Mains average current[A]	Mains average current[A]		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Display_Generator	Gen.total power [kW]	Gen.total power [kW]		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Alarms_General	Alarm Class F	Alarm Class F		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Alarms_General	Alarm Class E	Alarm Class E		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Alarms_General	Alarm Class D	Alarm Class D		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Alarms_General	Alarm Class C	Alarm Class C		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Alarms_General	Alarm Class B	Alarm Class B		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Alarms_General	Alarm Class A	Alarm Class A		Live value		<a href="#">Edit</a> <a href="#">Clone</a> <a href="#">Remove</a>
Woodward EasyGen 3000	-	Display_Generator	Gen.total power [kW]	Gen.total power [kW]		Value 60 sec		

add visualization parameter

## 5.4 Add Log Parameters

By adding parameters to **Logging**, values can be stored on Netbiter Argos at configurable intervals. The values collected over time can be used to create trend curves, or the values can be downloaded for e.g. further processing in a spreadsheet program.

For definition of the log values, go to **Logging** and click the button **Add log parameter**.

The screenshot shows the HMS web interface. At the top, there are navigation tabs: Presentation, Reports, Management, and Account. Below this, there are sub-tabs: Projects, All systems, Templates, Profiles, and All dashboards. The user is logged in as Helmut Halmburger from HMS GmbH. The main navigation bar includes Status, Configuration, Dashboards, Map, Backup/Firmware, Mobile network, and Properties. The current page is 'Management » Projects » My First Project » EasyConnect EC250 » Configuration'. Under the 'Configuration' tab, there are sub-sections: Device configuration, Logging, Visualization, Alarms, and Gateway settings. The 'Logging' section shows that the log will be saved for 750 days and that the system has a subscription level of Standard with 50,000 historical data points. A table below shows no logging is currently defined. A red arrow points to the 'synchronize configuration' button, and another red arrow points to the 'add log parameter' button.

Fill out the fields as shown, to create a log for an available value:

### Add log parameter

Device	Woodward EasyGen 3000
Group	Display_Generator
Parameter *	Gen.total power [kW]
Description	Gen.total power [kW]
Unit	
Scaling	1
Offset	0
Additional id	
Number of decimals	1
Valid range	
Enumeration	
Log interval *	60 sec
Log type	Value

**Valid Range** designates an interval at which values must be positioned so that they can be logged. You can select the **Log interval** from 60 min, 30 min, 15 min, 10 min, 5 min, and 60s. You can specify the type of logging with **Log type**, **Value** saves the absolute value, **Delta** the difference between the current value and the last value logged.

## 5.5 Synchronization of the Configuration

After making changes to the configuration, the Netbiter EasyConnect must be synchronized to receive the new settings.

Go to the menu **Management >>All Systems >> Your System >> Configuration>> Gateway Settings**.

For the Modbus parameters, enter the corresponding values configured for the interface of the easYgen-3000. Click the button **Set**, and then on **Synchronize configuration**.

The configuration is now written to the Netbiter EC250, which restarts automatically. It may take some time (a few minutes) before the Netbiter is online again, which is indicated by a small green star.

The screenshot shows the HMS configuration interface. At the top, there are tabs for Presentation, Reports, Management, and Account. Below these are sub-tabs for Projects, All systems, Templates, Profiles, and All dashboards. The user is logged in as Helmut Halmburger. The main navigation bar includes Status, Configuration, Dashboards, Map, Backup/Firmware, Mobile network, and Properties. The Configuration page shows the last configuration update as 'Now' and the last synchronization as '2012-12-05 09:42:02' with a red 'X' icon. A red arrow points to the 'synchronize configuration' button. Below this, the 'Gateway settings' tab is selected, showing a 'get settings from gateway' button. The configuration is divided into GPS and Modbus sections. The Modbus section is highlighted with a red box and contains the following parameters:

Parameter	Value	Action
Physical	RS-485	set
BaudRate	19200 bps	set
Parity	None	set
StopBits	1	set
FrameType	RTU	set
ExtraDelay		set
SlaveTimeout		set

## 5.6 Test the Configuration

To display the data selected for visualization, click on **Presentation**, then select the system, and then the **Overview** tab. From the drop-down list of pages, select **Live values**. Click on the **Refresh** icon to refresh the data.

Description	Value
Alarm Class A	Aktive
Alarm Class B	Aktive
Alarm Class C	Inaktive
Alarm Class D	Inaktive
Alarm Class E	Inaktive
Alarm Class F	Inaktive
Gen.average ph-ph voltage[V]	0
Gen.frequency[Hz]	0.00
Gen.total power [kW]	0.0
Mains average current[A]	0.0
Mains average ph-ph voltage[V]	0
Mains frequency[Hz]	0.00
Operation mode	STOP

## 6 Technical Support

Get technical support for the Netbiter EC250 at: <http://support.netbiter.com/>

## 7 Further Information:

Further information concerning the Netbiter EC250 and Netbiter Argos is available at

<http://www.netbiter.net>

Information on the Woodward easYgen-3000 control:

<http://www.woodward.com/easygen3000series.aspx>