Remote Monitoring of Woodward easYgen-3000
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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

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<th>Description</th>
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<td>November 2013</td>
<td>General update, using new</td>
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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.

<table>
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<th>Description</th>
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<th>Version</th>
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<tr>
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<td>E-022</td>
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<td>Netbiter SIM card, for connection via GPRS</td>
<td>NB5000</td>
<td></td>
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<td>Netbiter Config, for IP address configuration when connecting via a broadband Internet connection.</td>
<td>Latest</td>
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<td>Woodward easYgen-3000</td>
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<tr>
<td>Woodward ToolKit software</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply for Woodward easYgen-3000</td>
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<td></td>
</tr>
<tr>
<td>PC with Internet connection and web browser.</td>
<td></td>
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</tr>
<tr>
<td>Specialist electrical knowledge, required for installation and implementation.</td>
<td></td>
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</tr>
<tr>
<td>General knowledge of automation and stored program control. Basic knowledge of Modbus RTU will be useful.</td>
<td></td>
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</tr>
</tbody>
</table>
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:

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.

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

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:

![Image of Woodward ToolKit interface]

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

![Image of Woodward easYgen-3000 interface]
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.
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.

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

![Image of the visualization list](image-url)

<table>
<thead>
<tr>
<th>Device profile</th>
<th>Group</th>
<th>Parameter</th>
<th>Description</th>
<th>Unit</th>
<th>Log interval</th>
<th>Log share</th>
<th>Action</th>
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<td>Woodward EasyGen 3000</td>
<td>-</td>
<td>Display_General</td>
<td>Operation mode</td>
<td>Operation mode</td>
<td>Live value</td>
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<td>Close/Remove</td>
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<tr>
<td>Woodward EasyGen 3000</td>
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<td>Display_Harness</td>
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<td>Live value</td>
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<td>Close/Remove</td>
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<td>Live value</td>
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<td>Alarm Class E</td>
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<td>Alarm Class O</td>
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<td>Alarm Class C</td>
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<td>Alarms_General</td>
<td>Alarm Class B</td>
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<tr>
<td>Woodward EasyGen 3000</td>
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<td>Gen total power [kW]</td>
<td>Value 03 sec</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

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