# Profinet Connection to easYgen3000XT

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Requirements:

- easYgen3000XT
- Anybus Profinet converter AB7013-C [it's successor is HMS ABC3013] *** this manual hasn't been updated yet and represents AB7013-C ***

### 1.0 Introduction

This Article describes the Profinet connection on easYgen3000XT genset controller via Anybus Modbus/Profinet converter. This application note covers the basic functions, which are required. The Modbus functionality is a subset of features in the easYgen3000XT. This application description consists of two sections:

1. how to connect and configured easYgen3000XT for use of Modbus-RTU together with the Anybus converter.

2. configuration of the Anybus AB7013-C converter

### 1.1 General remarks to the configuration

The configuration of Modbus-RTU basically consider the following frame conditions:

- RS485 Interface
- Baudrate
- Stop bits
- Connection Mode
- Modbus Slave ID
- Replay Time
- Password Protection
- Modbusregister list

### 2.0 Configuration

### 2.1 Define requested Modbus parameter

Open the user manual from easYgen3000XT an navigate the the Modbus protocol appendix. (eg. manual of easYgen3200XT - chapter "9.2.4 Protocol 5010 [Basic Visualization])

Inside the manual the required register can be chosen.

Parameter for this application note

easYgen3200XT Protocol: 5010

| Register | Count | Description |
|---|---|---|
| **50009** | 13 | Generator values |
| **50022** | 2 | Busbar values |
| **50030** | 11 | Mains values |
| **50051** | 8 | Analog values |
| **50099** | 2 | Controller mode |
| **50102** | 5 | Controller bits |
| **50108** | 1 | Relay outputs |
| **50110** | 1 | IKD1M outputs |
| **50115** | 1 | General alarm |
| **50120** | 1 | Engine alarm |
| **50126** | 1 | Generator alarm |
| **50128** | 1 | Generator alarm2 |
| **50132** | 1 | Mains alarm |
| **50191** | 7 | ECU Alarm |
| **50201** | 108 | ECU values |

### 2.2 Setup the easYgen3200XT für modbus communication

#### 2.2.1 Connect to easYgen3200XT via Toolkit

Start Toolkit



Select the configuration for your easygen3000XT (in this case easYgen3200XT) device.

In this example we use parameter file 8440-2082-L

You can download the easYgen3200XT toolkit configuration from the easygen device or from the Woodward support page.

Required information:
Partnumder: 8440-2082
Revision: L
Application type: Toolkit

After installing the configuration you can choose the configuration. If the correct configuration is selected, Toolkit will show the following screen:



Now you can click on connect and choose your favorite connection type “USB” or Ethernet and click on 'Connect'.

After connection to the easYgen3200XT device you have to enter the user and the password.

User: CL05
Password: CL0500



Enter the Parameter an click on Log In.

Now you are able to configure the Modbus parameter

First we have to change the RS485 interface setting this can be done in the parameter section.

PARAMETER -> Configure Interface -> Configure RS485 Interface

Change the following parameter on this screen.

3173 Full-, halfduplex mode -> halfduplex

9128 Password Protection -> off

All other parameter can remain as they are.

As a next step it is required to set the data protocol for the interface,

PARAMETER -> Configure Interface -> Modbus Protocol

Change the following Parameter:

3184 Modbus protocol number -> 5010

The configuration on easYgen3200XT side is finished.

#### 2.1.2 Wiring for RS485 connection

Wiring description

| **Pin easYgen3200XT** | **Pin Anybus 7013-C conveter** |
|---|---|
| RS485.6 (Z) | Sub-D 9Pol connector Pin 9 |
| RS485.5 (Y) | Sub-D 9Pol connector pin 8 |
| On last easYgen on your bus install 120 ohm resistor. | Between 8 and 9 install 120Ohm resistor |

#### 2.1.2 configuring Anybus converter 7013-C

With the register table we can create our easYgen3200XT Tempate in anybus configuration software

Let’s start to build the template:

Start Anybus configuration software



Next – choose “Wizrad – Modbus RTU Master”, click on OK.

The Wizard starts and you can go ahead with he configuration.

First chose the communication from your scada or PLC system in our Example Profinet-IO



Click on 'Next'

On this screen you have to choose the IO settings, let this on automatic, so the converter will do this calculation.



Change the Sub-D 9-Pol interface setting to fit the easYgen settings:

| **Description** | **From** | **To** |
|---|---|---|
| **Physical Standard:** | RS232 | RS485 |
| **Bitrate** | 9600 | 19200 |
| **Parity** | None | None |
| **Data bits** | 8 | 8 |
| **Stop bit** | 1 | 1 |





Click on 'Next'

Inside the following mask you can create your device template, this is helpful if you have the same device on different gensets, so you can import the template to the Anybus software.

First we choose the name of the device template: “easygen3200XT2-12-1” -> this file is attached to this article



Now click on create Parameter, this will insert one row in which you can add the first register and the register count and register type.



The number “four” at the beginning of the register number descript the modbus commend.

Example: 50009 + 400000(read holding register area) = 450009

| Read/Write | First number of register | Function Code | Register Type |
|---|---|---|---|
| **Read** | 0 | 01 | Read Coil Status |
| **Read** | 1 | 02 | Read Input Status |
| **Read** | 4 | 03 | Read Holding Registers |
| **Read** | 3 | 04 | Read Input Registers |
| **Write** | Not used | 05 | Write Single Coil |
| **Write** | Not used | 06 | Write Single Holding Register |
| **Write** | 0 | 15 | Write Multiple Coils |
| **Write** | 4 | 16 | Write Multiple Holding Registers |

This step can be repeat until all requested registers are created.



Click on "Save Device", then you are able to save the template from your created list.

Click on 'Next'.

Inside the following screen we create our subnetwork, this means the connection from Anybus converter to easYgen.



Click on 'Create node', this will add a device to your subnetwork, the only thing you have to do is to write a name, set the device ModbusID number and choose your prepared template.



Click on 'Next'.

The screen below shows the requested register inside you previous created node.



Now you have to add all register from your template to this list. Click on 'Add Parameter' and insert all Parameters





Repeat this until all Parameters are added.



Click on 'Next'.

Now you can save you configuration as text file or print your configuration.



Click on 'Next' -> now you have finished you configuration!

#### 2.1.2 transfer parameter to Anybus converter 7013-C

First connect your RS232 interface with anybus converter for transferring Parameter

choose 'Tools'-> 'Port'-> (your RS232 com Port)



Click on Connect Icon

If the connection is successfully established, this will be shown with a connection symbol and a green circle on the right side of the bottom.

Click on “download to communicator RS232/422/485“ to send the parameter to the converter.

Now you are able to set a name for this configuration and you can add an encryption password.

Click on 'OK' and the transmission will start.

Once the transfer finished you'll be ready to enable the communication between the easYgen and the Anybus converter.

To do this click on subnet monitor.

On the subnet monitor you have to click on 'File'-> 'Start Network', this will enable the communication between the easYgen and the Anybus converter.

Please make sure to take a note of the shown bytes in your converter!
This is required to calculate the block configuration for the SCADA engineer.

The Anybus converter configuration is finished ant the converter is ready for use!

#### 2.1.3 LED description

### 3.0 Profibus Block calculation

On page 26 there is a byte count shown, this count has a number of 326.

Calculation example 1:

Lets ay we use a configuration staring the 16 byte blocks.

Rest of 6 bytes

Now we use a block of 4 bytes

Rest of 2 bytes

Now we use a block of 2 bytes



The calculation is finished

This is our calculated configuration for Profinet

**16F 16F 16F 16F 16F 16F 16F 16F 16F 16F 16F 16F 16F 16F 16F 16F 16F 16F 4F 2F**

Calculation example 2:

Lets use ab lock with 256 bytes for beginning.



Rest of 70 bytes

Now we use a block of 64 bytes



Rest of 6 bytes

Now we use a lock of 4 bytes



Rest of 2 bytes

Now we use a block of 2 bytes



The calculation is finished

This is our calculated configuration for Profinet

**256F 64F 4F 2F**

**4.0 Recommended Downloads Links**

Anybus downloads

Link GSD-file:
https://www.anybus.com/docs/librariesprovider7/default-document-library/firmware-software/hms-xml-abc-prt.zip?sfvrsn=6f9dabd6_9

Link Anybus Tool:
https://www.anybus.com/docs/librariesprovider7/default-document-library/software/hms-scm-1204-169.zip?sfvrsn=f1eaa9d6_14

Link Anybus IP-Tool:
https://www.anybus.com/docs/librariesprovider7/default-document-library/software/ipconfigtool.zip?sfvrsn=6e1142d7_59

Woodward downloads

Woodward Toolkit

https://www.woodward.com/en/support/software%20assets/service%20tool/2021/10/19/20/57/9927-1226-dr

Woodard configuration files
https://www.woodward.com/en/support/industrial/technical-help-desk/control-configuration-files