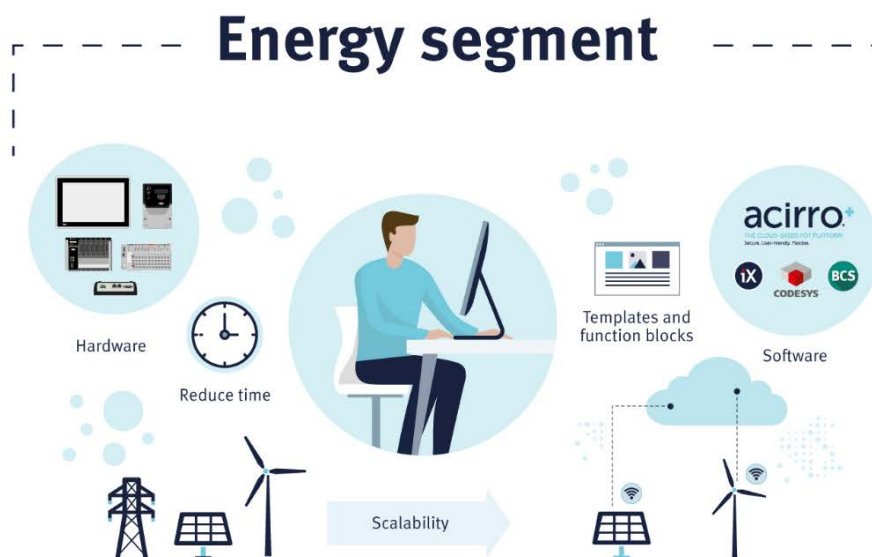


# Quick start guide

## Setting up projects for Energy Meter

SER0033 - BCS Tools and iX Developer example projects



## 1 Function and area of use

The purpose of this SER object is to save you a lot of time when setting up BCS Tools for Modbus communication with the WAGO energy meter.

You will also find an iX Developer example to display these data.

## 2 About this document

This quick start document should not be considered as a complete manual. It is an aid to be able to startup a normal application quickly and easily.

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Use the following hardware, software, drivers and utilities in order to obtain a stable application:

### **In this document we have used following software and hardware**

- iX Developer 2.40 SP7
- BCS Tools 3.34 or later
- Nexto Xpress 325 (Firmware version 1.11.10.0)
- WAGO Energy Meter 879-3000

### **For further information refer to**

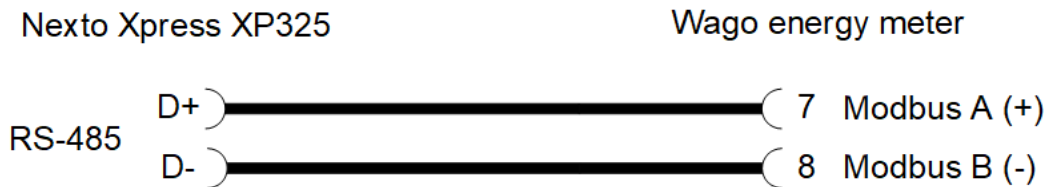
- iX Developer Reference Manual (MAxx831)
- iX Developer User's Guide (MAxx832)
- WAGO Energy Meters User Guide (Documentation/ m087930x0-00000000-0en)
- [Beijer Electronics knowledge database, HelpOnline](#)

This document and other quick start documents can be obtained from our homepage. Please use the address [support.europe@beijerelectronics.com](mailto:support.europe@beijerelectronics.com) for feedback.

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## 4 Wiring RS485



## 5 Create and configure your BCS Tools project

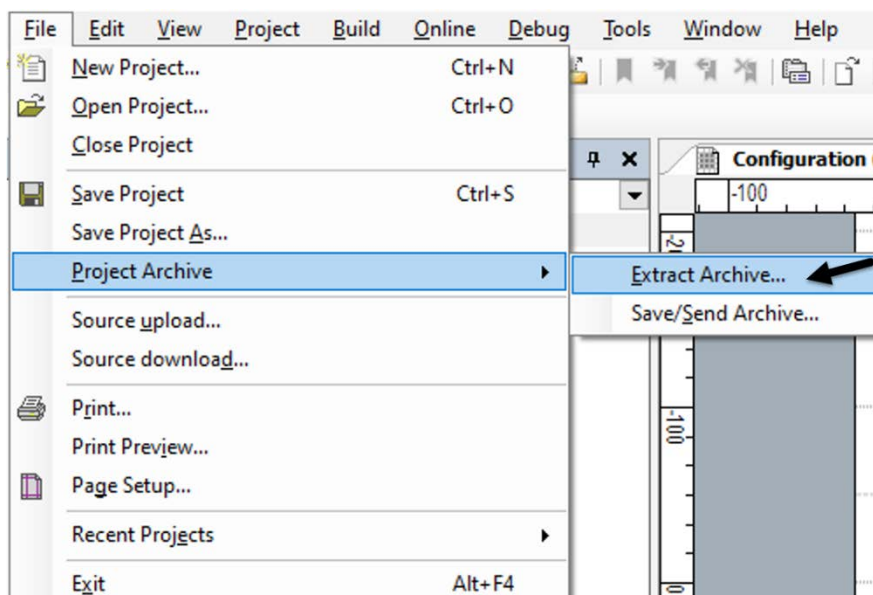
The following chapter describes two ways to configure your project to use the WAGO energy meter. In the first method, we will use a project archive which is a ready-to-use project for the Nexto Xpress XP325. In the second method, you will have to import everything manually.

### 5.1 Project archive for Nexto Xpress XP325

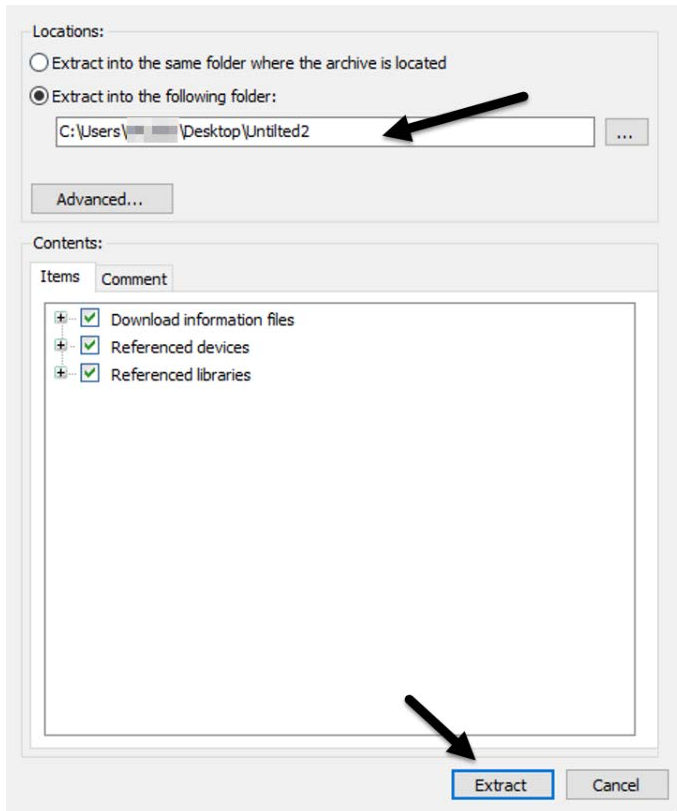
This file contains a BCS Tools project that is configured and ready to be used for a Nexto controller.

Inside the project you will find a library that contains structures to organize all the data of the energy meter, a GVL\_IO file where all the variables are declared and a Modbus Symbol RTU master already configured and mapped.

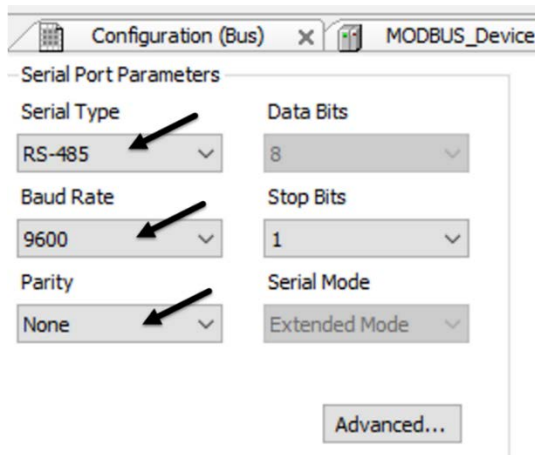
1. In BCS Tools, go to File → Project Archive and click on Extract Archive...



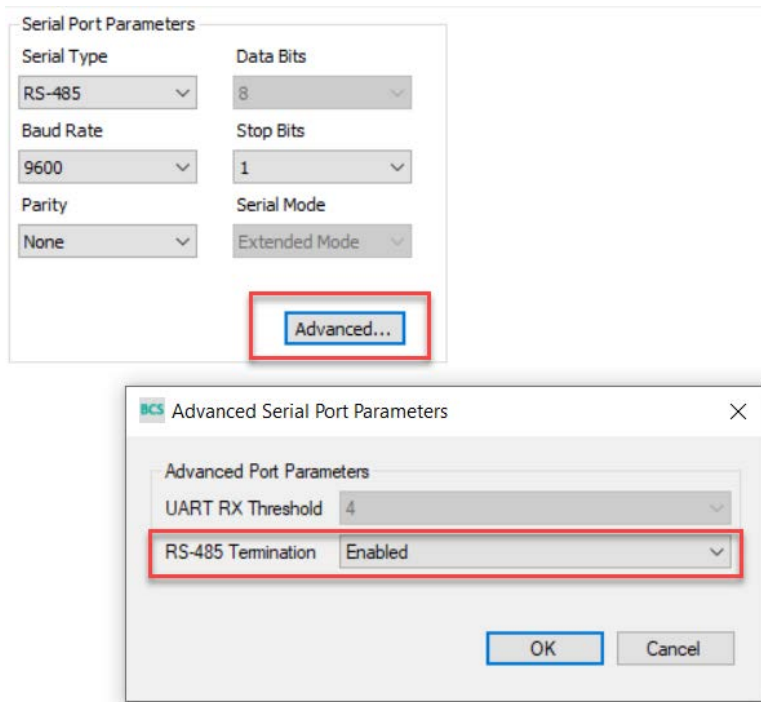
2. Open SER0033\_BCS-Nexto\_EnergyMeter\_V1.0.0.0.projectarchive.
3. Set the path to the folder of your project and select : Extract.



4. Modbus communication is configured on COM1 of the controller. Please refer to the documentation of the PLC and the WAGO energy meter for the wiring. In our case, we use a serial link of type RS-485.
5. In the COM1 serial port settings, you must ensure that the serial type is correct. The baud rate and parity should be similar to the energy meter (see documentation).



Select Advanced settings, and enable RS-485 Termination.



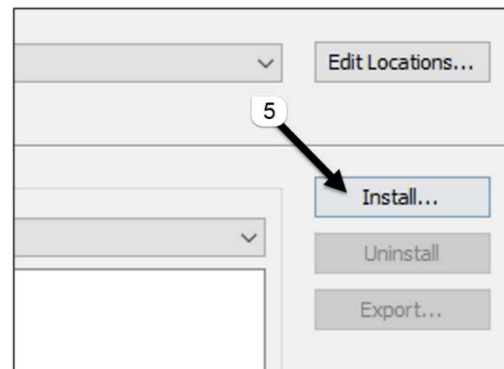
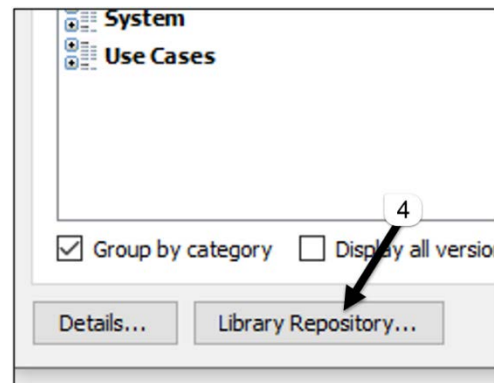
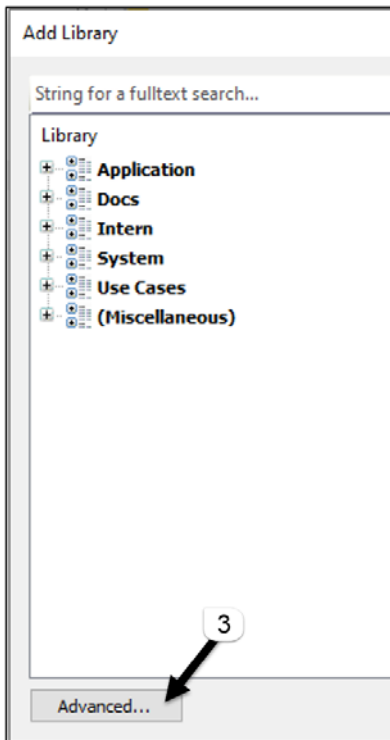
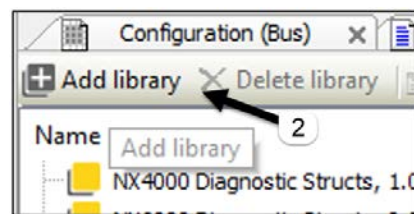
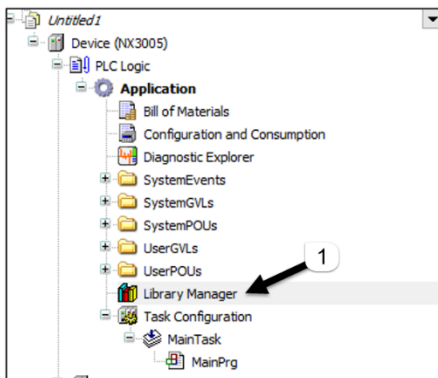
6. In the Modbus Device Mapping section, you will find the WAGO energy meter variables mentioned in the user guide.
7. You are now ready to read the information from the energy meter with the modbus protocol !

## 5.2 Import parts for other PLCs

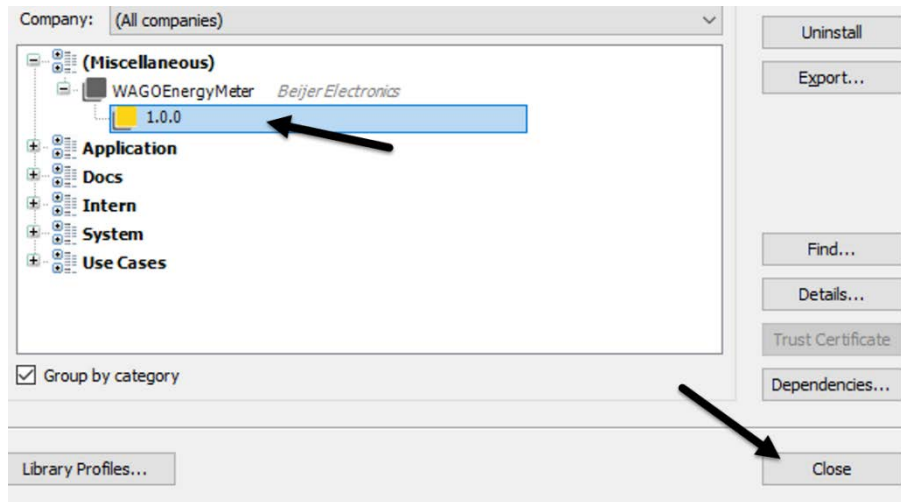
If you are not using a Nexto Xpress, you can always import parts manually into your project.

### Import the library WAGOEnergyMeter

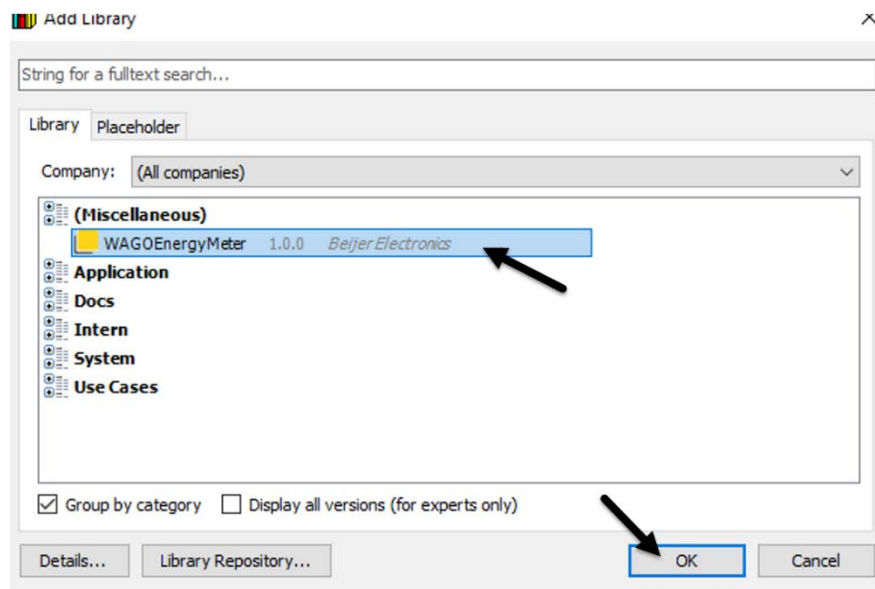
1. In BCS Tools, go to the Devices section and double-click on **Library Manager** (1).
2. Inside Library Manager, click on **Add Library**(2). A new window appears.
3. Select **Advance** (3), **Library Repository** (4), and click on **Install...** (5).



4. Open the file SER0033\_BCS-Nexto\_EnergyMeter.compiled-library.
5. Select the library and **close** the window :



6. Go to section **Miscellaneous**, select the library and click on **OK**.



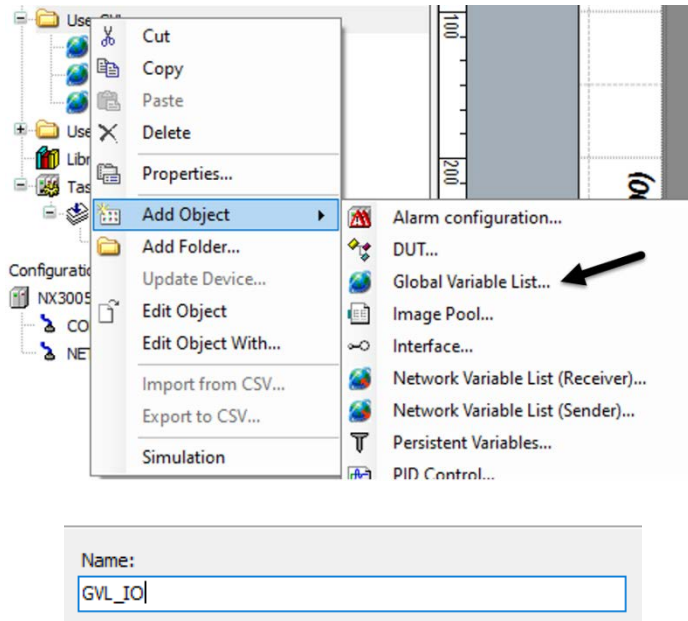
7. You have now imported a library that contains all the structures that will organize the energy meter data.



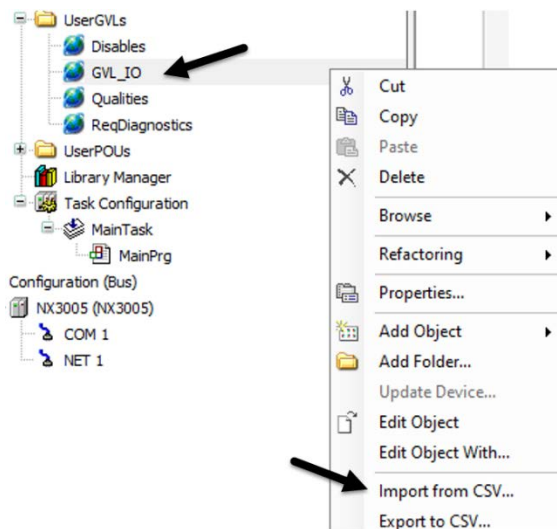
### 5.2.1 Import the variables file

1. In BCS Tools, go to the Devices section, right-click on the folder UserGVLs and select Add Object → Global Variable List...

You want to give it the name **GVL\_IO**.



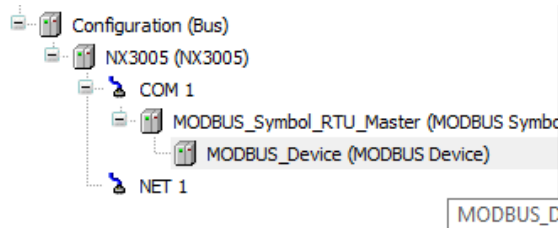
2. Then right-click on the GVL\_IO file and select “Import from CSV...”



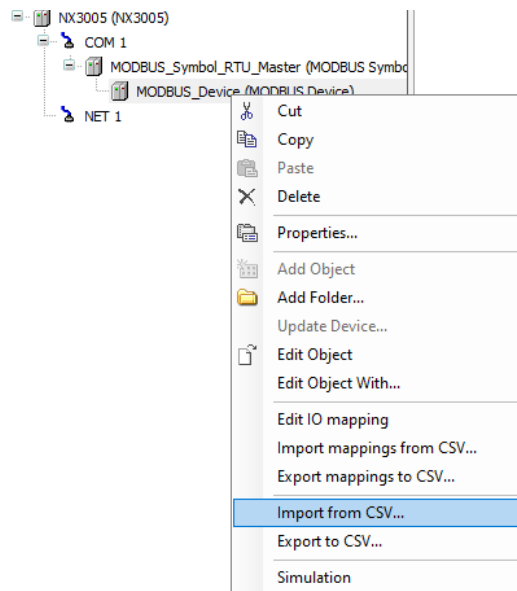
3. Open the file **SER0033\_BCS\_GVL\_IO.csv**

### 5.2.2 Modbus Mapping

1. In our case, we use MODBUS Symbol RTU Master with a Modbus device.



2. In SER folder, you'll find a CSV file that contains the mapping and the requests of the modbus protocol.
3. You can import this file by right clicking on MODBUS\_Device, Import form CSV... then open **SER0033\_BCS\_ModbusMapping.csv**.

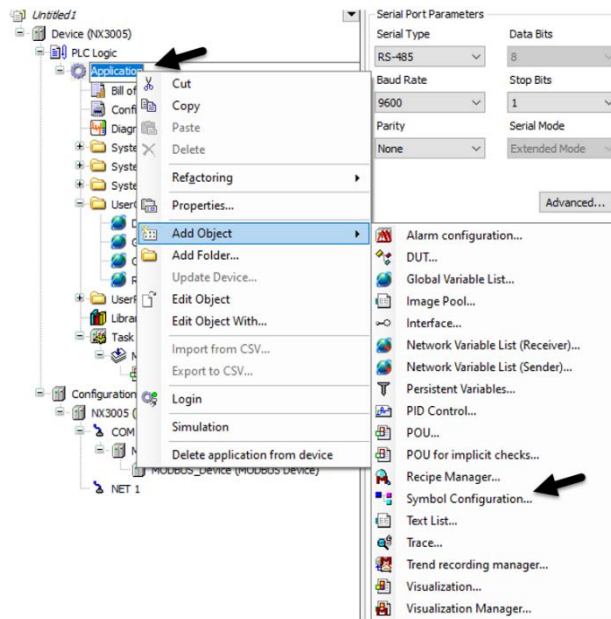


4. In the serial port settings, you must make sure that the serial type is correct. The baud rate and parity should be similar to the energy meter (see documentation).

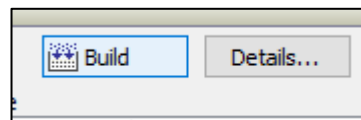
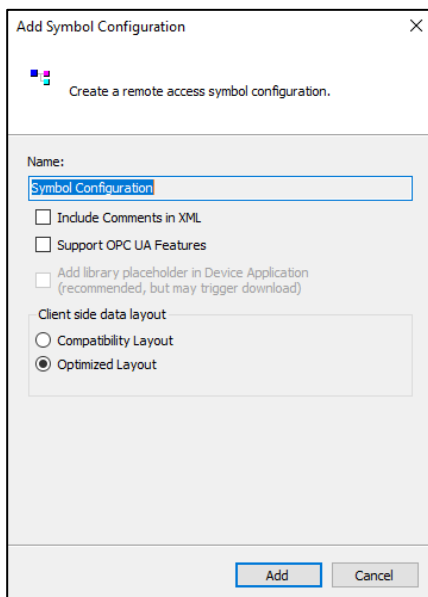
### 5.2.3 Import Symbol configuration

In order to establish communication between your PLC and your HMI, you must configure the **Symbol** section.

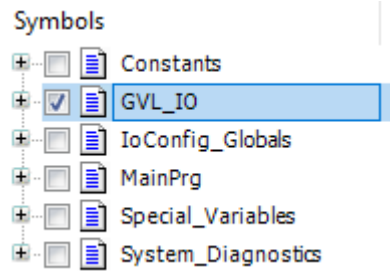
1. In BCS Tools, go to the Devices section and right-click on **Application**. Select **Add Object** and click on **Symbol Configuration...**



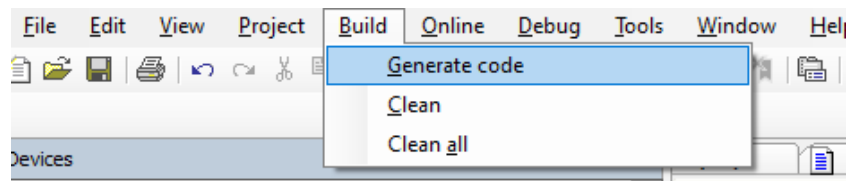
2. In the new window, click on **Add** and then on **Build** in the Symbol Configuration section.



3. Check the box next to **GVL\_IO**.



4. Finally, go in **Build** and click on **Generate Code**.



5. Everything is now ready for BCS Tools !

## 6 iX project exemple

In the SER folder, you will find a sample project to display the most important data of the WAGO energy meter. In this chapter, we will explain the content of each screen

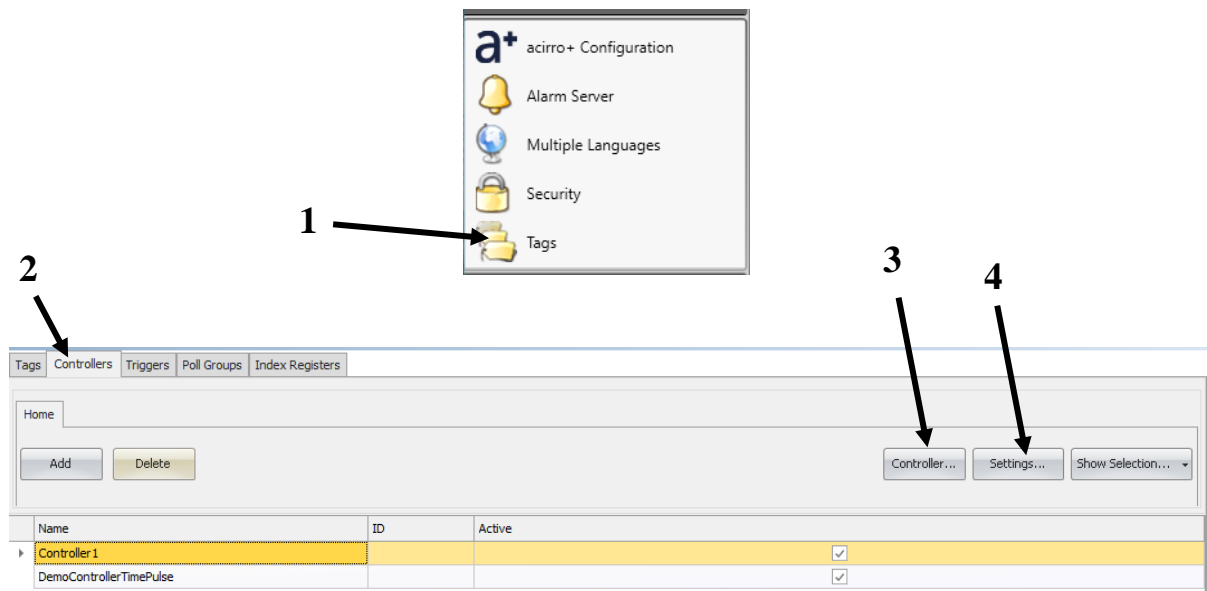
To open the sample project, simply unzip **SER0033\_WAGOEnergyMeterIHM.zip**, which you will find in the SER folder, and run **WAGOEnergyMeterIHM.neoproj**.

### 6.1 Configure controller section

In iX Developer, don't forget to configure your controller by going to Tags (1) → Controllers(2).

All energy meter variables are linked to "Controller1".

Select "Controller1" and check the configuration with **Controller...(3)** and **Settings...(4)**.



**Note:** The HMI tags for iX Developer and the energy meter is located in file:  
**SER0033\_WAGOEnergyMeterIHMTags.xls**

In the list of project tags, you will find several tags that are not in the xls file. They are just used for the **CurrentHistory** screen. This file can be used as a base to create your own iX application.

## 6.2 Display of line values

Once you have opened the project, you will see several screens in the Screens section.

You can find 4 similar screens like the one below. One for the three lines (**L1**, **L2**, **L3**) and one for the total of the values of the three lines (**Σ**).

**Software Version**      **Serial Number**      **Actual Tariff**

30/08/2022 11:20:44      V### - #####      t#      **Beijer ELECTRONICS**

Positive active energy		Negative active energy	
t1	t2	t1	t2
### kWh	### kWh	### kWh	### kWh

<b>L1</b>	Frequency	### Hz	Apparent Power	### kVA
	Total Active Energy	### kWh	Reactive Power	### kVAR
	Total Reactive Energy	### kVARh	Current	### A
	Power Factor	###	Voltage	### V
	Active Power	### kW		

**L1**   **L2**   **L3**   **Σ**   **Currents History**

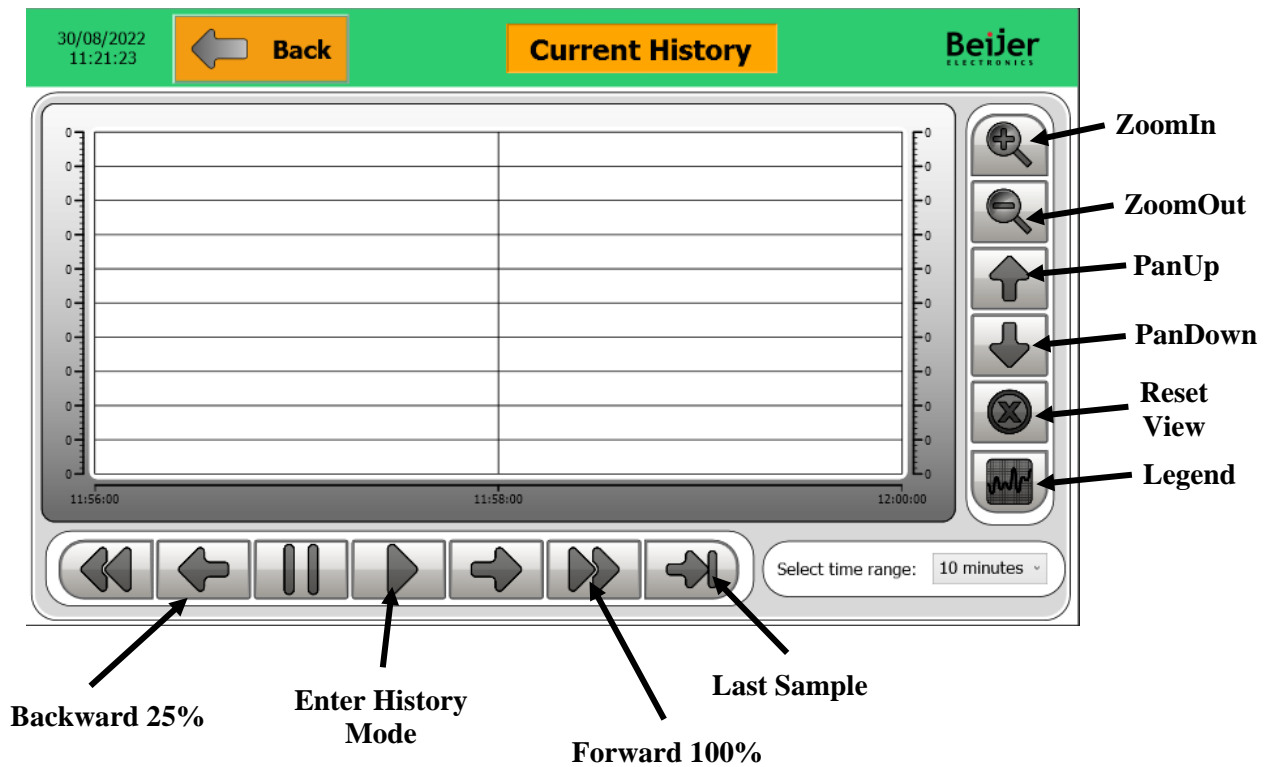
iX Developer: L1 Screen

**Change Line Screen**

### 6.3 Current Runtime/History Screen

The data logger collects the current values of the three lines every 10 seconds and stores them for 10 days. It is possible to modify these parameters in the data logger section.

This screen displays the values of these currents in graph form. There are three curves for the three lines and one curve for the total current values.



iX Developer: CurrentHistory Screen

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