

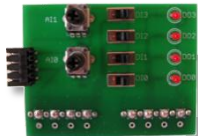


PG5 Starter Training ***Energy Meter application***

Daniel Ernst | EN02 | 2013-02-25

Energy Meter application

Introduction



Material required

- Notebook or computer
- PCD1 E-Controller
- USB cable
- Training board
- Ethernet cable
- Energy Meter starter box

Software required

- PG5 Core at least Version 2.1.027
- Saia® Web Editor 5 (included in PG5 Core)
- Java at least Version XXX

Lessons required

- Lesson 1
- Lesson 2
- Lesson 3 PG5 Core
- Lesson 4 Web Editor

Aims of the Energy Meter application

- Understanding S-Bus and commissioning



Energy Meter application

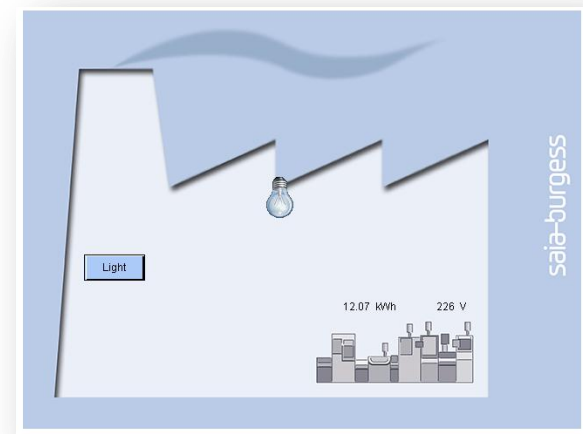
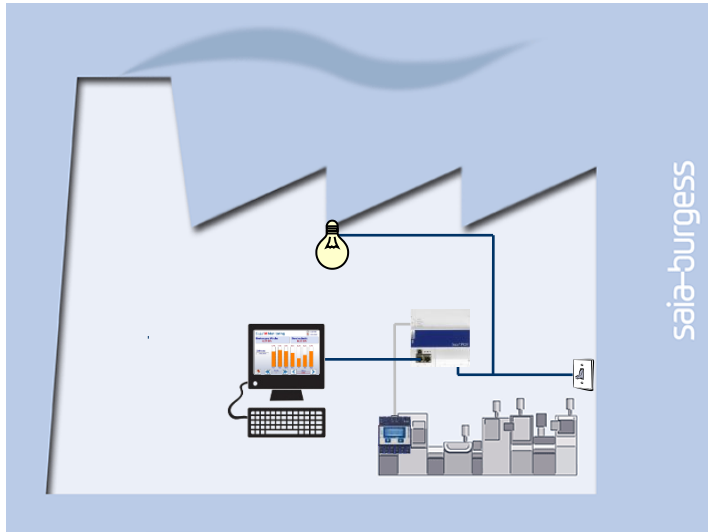
Introduction

Explanation / Introduction

- Energy Meter status must be read and displayed on web visualization

What is necessary to achieve this?

- Program produced in Lessons 3 and 4
- Ethernet connection to Saia® PCD1 E-Controller
- Monitor with web browser
- Energy Meter box

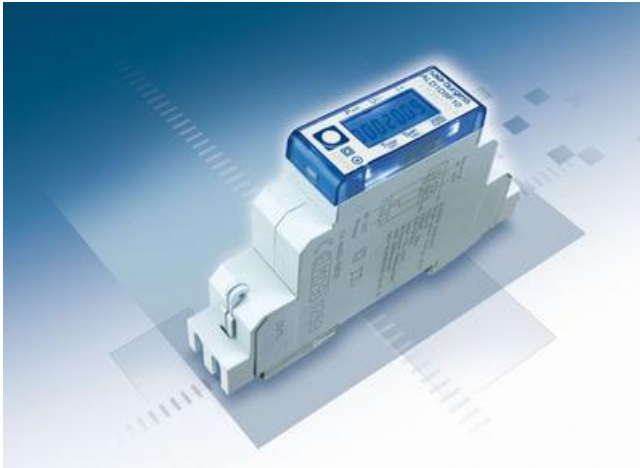


Energy Meter application

Introduction Energy Meter

Saia® Energy Meter

- The Energy Meter measures the electricity consumed by devices connected to the Energy Meter.
- The Energy Meter has an S-Bus connection to the PCD.
- The PCD reads data from the Energy Meter via S-Bus and can process it in the application program.



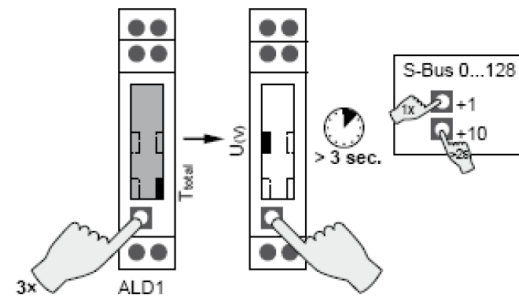
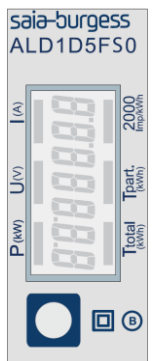
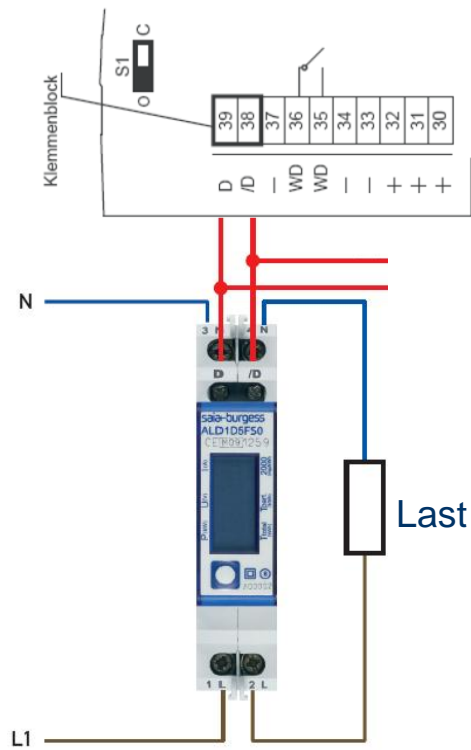


Energy Meter application

Connect Energy Meter

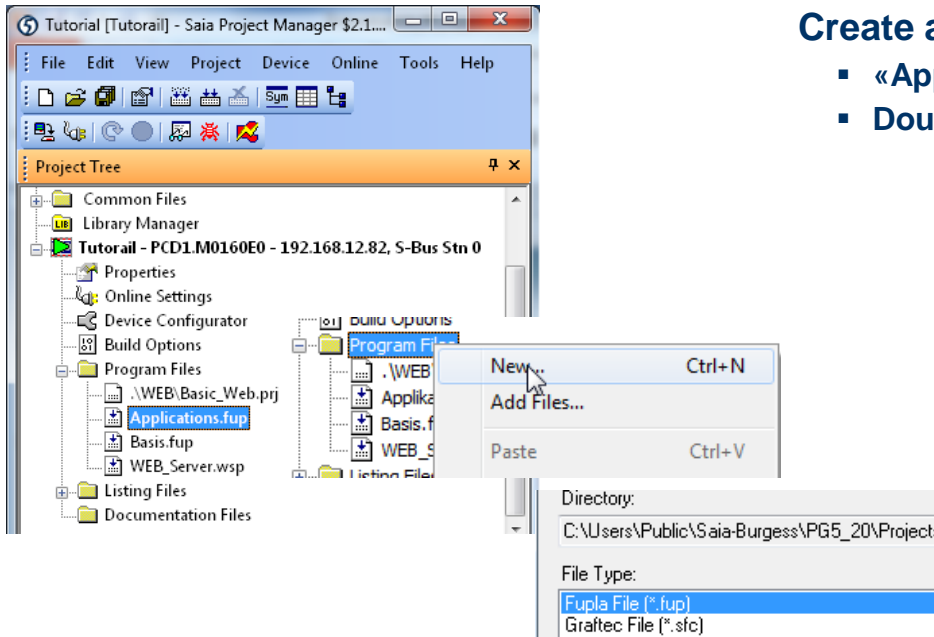
S-Bus Energy Meter

- The Energy Meter is a counter for electricity
- Energy data is transferred via the S-Bus field bus to a controller
- For clear identification of the meter in the S-Bus network, it needs a unique address
- Once the S-Bus meter has been connected to the mains, the address can be set
- S-Bus address 1 is set as illustrated below





Energy Meter application Project Manager



Create a new Fupla file

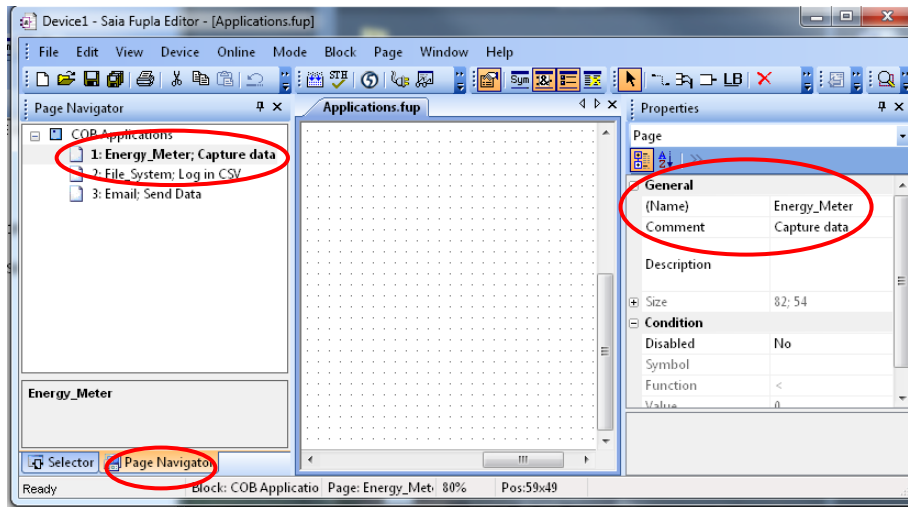
- «Applications.fup»
- Double click to open the file

If this step has already been done in another application tutorial, it may be skipped.

Energy Meter application Project Manager

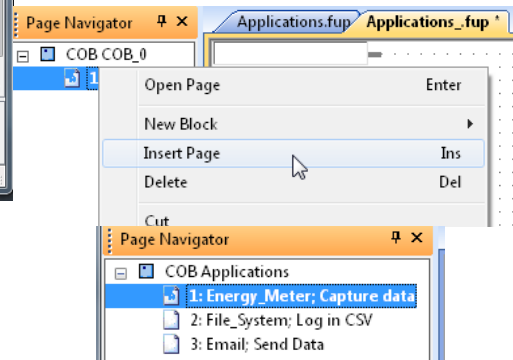
Create a new Fupla page

- Select tab «Page»
- Right click and Insert Page
- Rename the page as Energy_Meter
- Change the comment to Capture Data



If you do not want connectors to be created automatically in a new Fupla page, this can be disabled with: View → Options → New page with side connectors = No

Options	
Workspace	
Snap to grid	Yes
Keep default ratio	No
Horizontal move	Yes
New page with side connectors	No
Adjust dialog and 2D drawing	No
Label size	12; 9





Energy Meter application

Program reading of Energy Meter

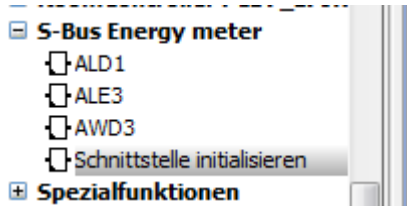
Read Energy Meter via S-Bus

- Before you can read the Energy Meter via S-Bus, it is first necessary to initialize the interface on the PCD.
- The PCD can then use an FBox to read data from the connected Energy Meter
- The PG5 provides ready-made modules for this purpose, which we place in our project



Energy Meter application

Program reading of Energy Meter

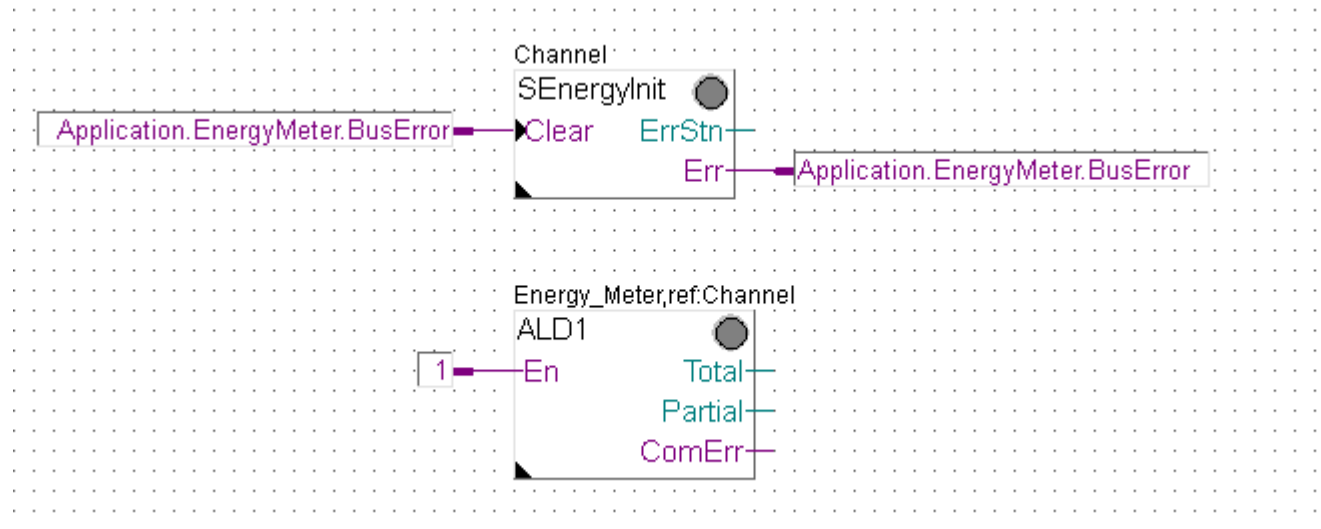


Initialize S-Bus interface for meter

- Position FBox SEnergyylnit
- Place initialization FBox above all subsequent FBoxes on the Fupla page, as it must be processed first
- Designate input and output symbols as shown

Insert S-Bus meter FBox

- Position FBox ALD1 (single-phase Energy Meter)
- Designate FBoxes as shown



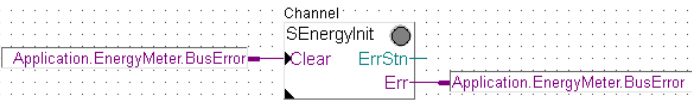
Energy Meter application

Program reading of Energy Meter



Configure initialization (SEnergylnit)

- Select FBox SEnergylnit
- In Options, set Channel0



Adjust Parameters	
Channel	Channel 0
Gateway	No
Transmission speed	38.4 kbps
Response timeout (ms)	0
Static Symbols	

Configure Energy Meter FBox (ALD1)

- Set S-Bus Address 1 (same as on meter)



Properties	
S-Bus Energy meter:ALD1	
General	
(Name)	Energy_Meter
Reference	Channel
Adjust Parameters	
System functions	
BACnet	No
Communication	
S-Bus Address	1
Static Symbols	
Error message	SEnergy.ALD1_0.Status R
Tarif 1 partial View	SEnergy.ALD1_0.Partial R
Total	SEnergy.ALD1_0.Total R

Save, build and download program

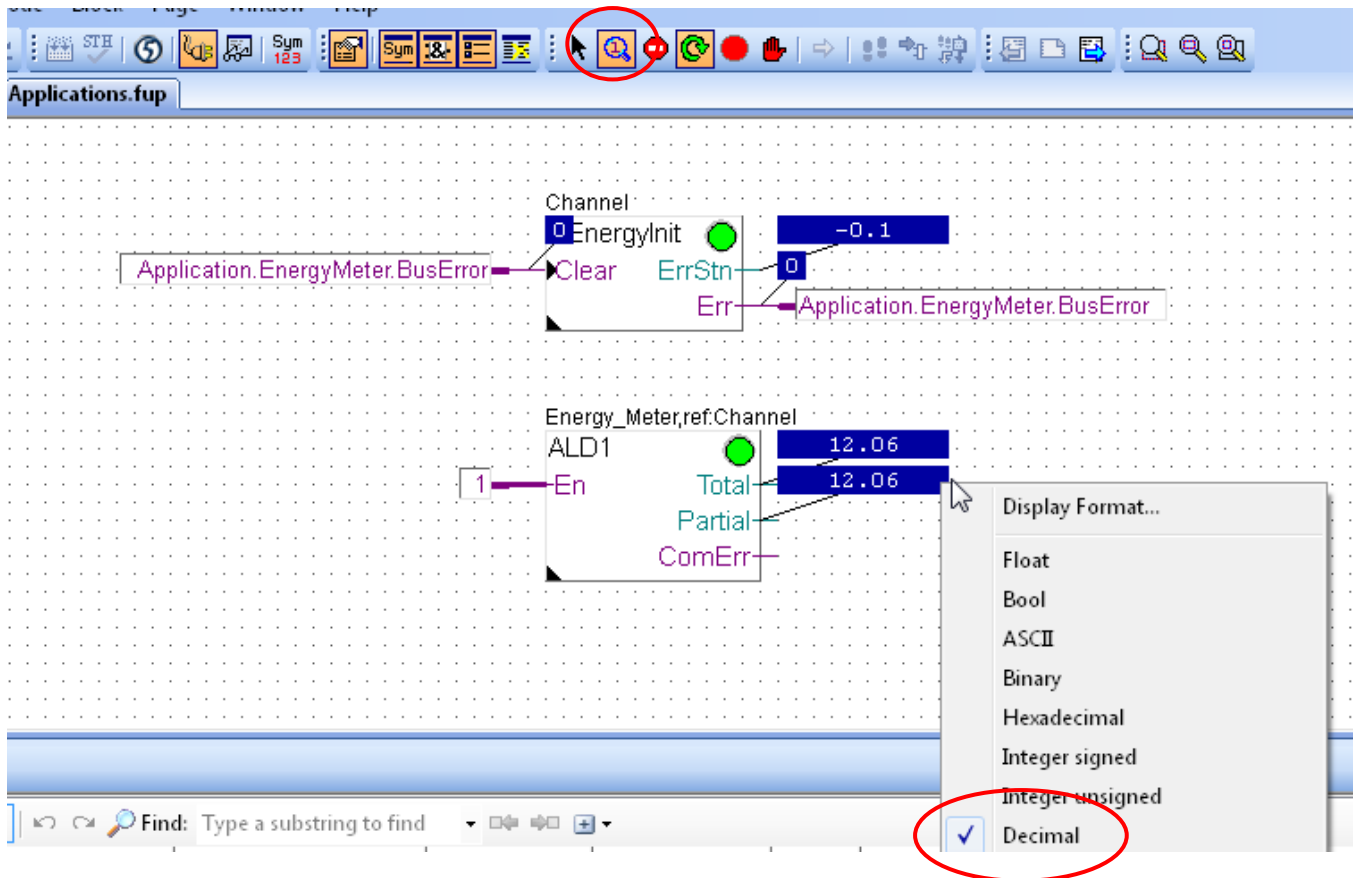


Energy Meter application

Test the connection

Values read from the meter can be displayed visually in the Saia® Fupla Editor

- Right click on values to change number format





Energy Meter application

Create the web project

It should be possible to display current voltage and energy values

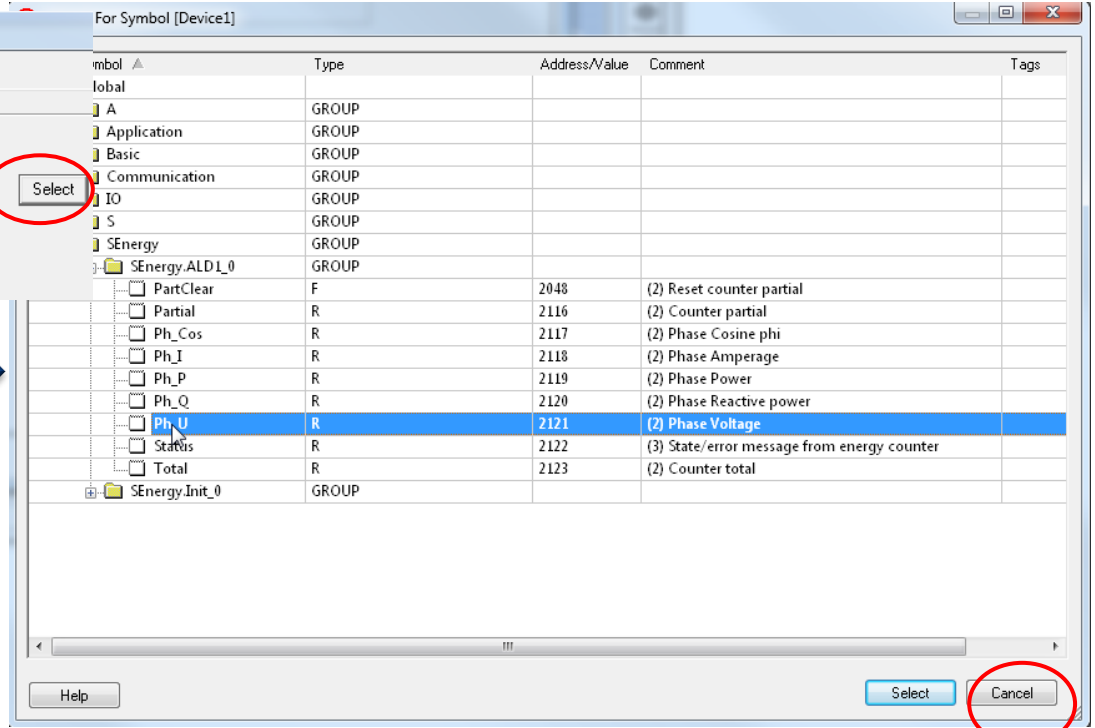
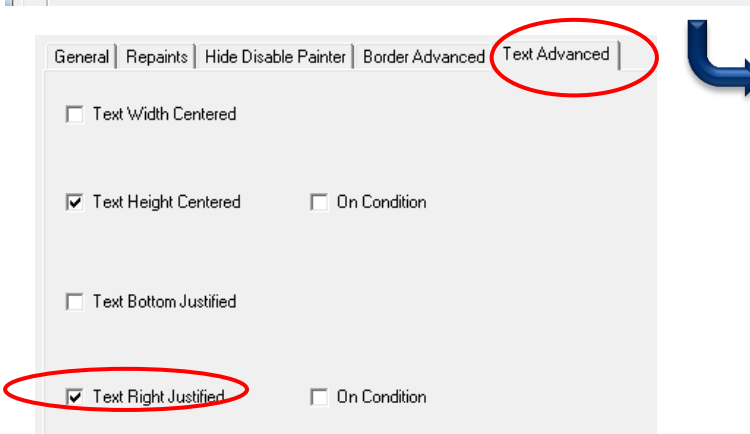
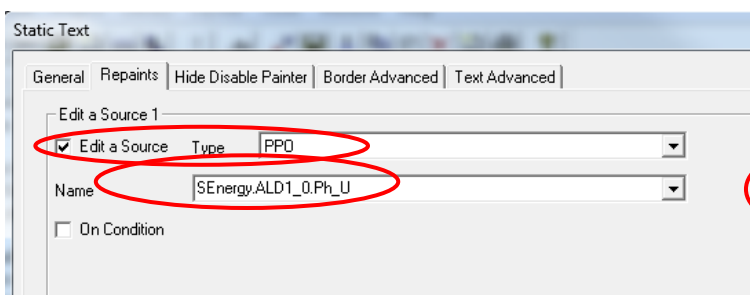
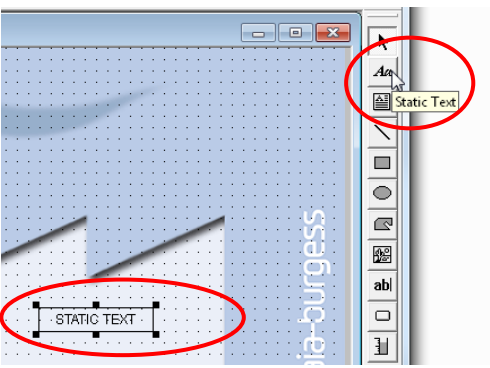
- Open the old web project from Lesson 4

Energy Meter application

Display values in web

Insert the text for voltage

- Insert a Textbox with the «Static Text» tool
- Double click to open
- Select «Repaints» tab
 - Edit a Source → PPO
 - Select symbol for voltage
- Select «Text advanced» tab
 - Activate checkbox «Text right justified»

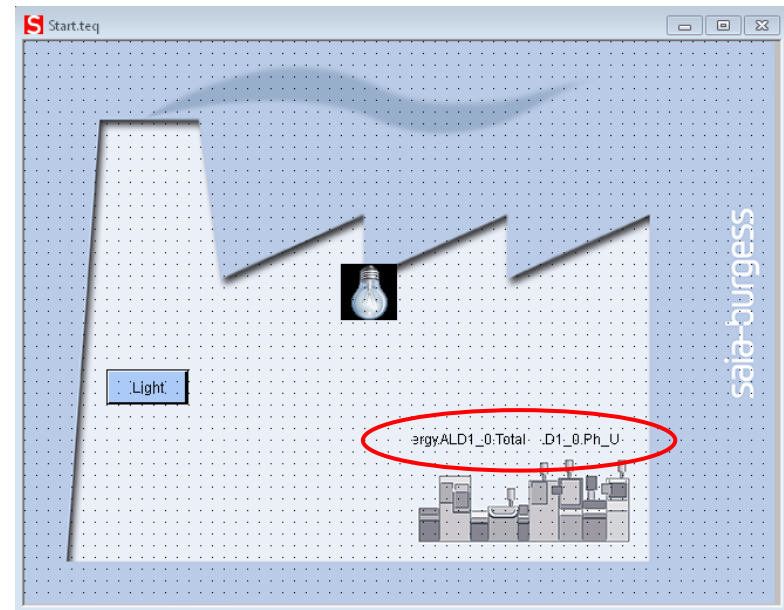
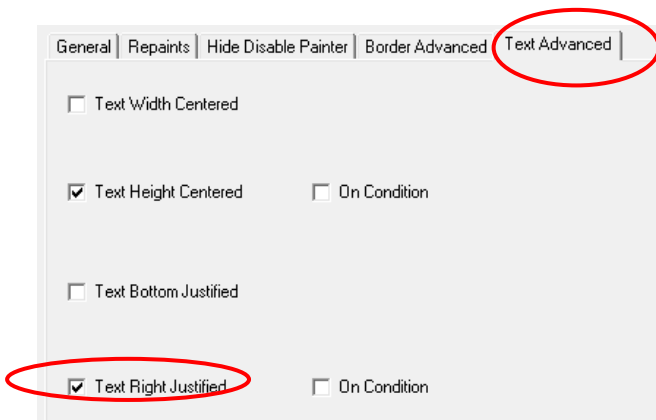
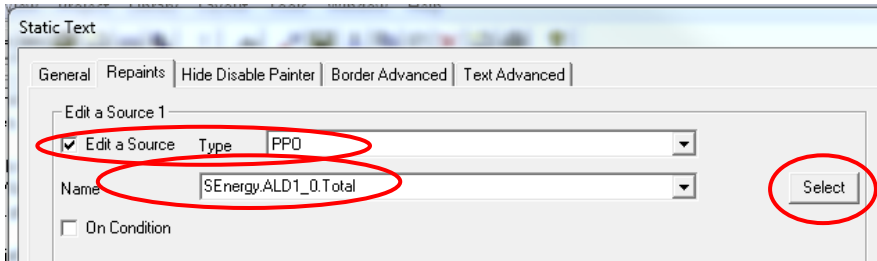
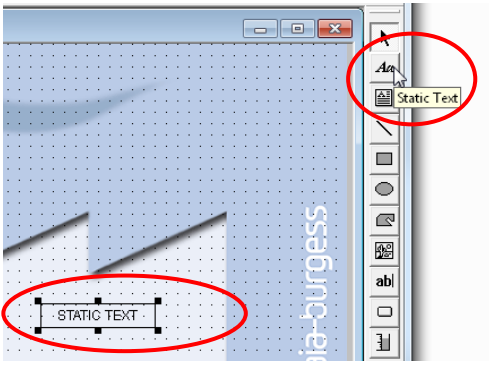


Energy Meter application

Display values in web

Insert the text for energy

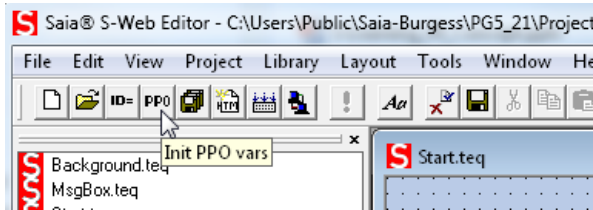
- Insert a Textbox with the «Static Text» tool
- Double click to open
- Select «Repaints» tab
 - Edit a Source → PPO
 - Select symbol for energy
- Select «Text advanced» tab
 - Activate checkbox «Text right justified»





Energy Meter application

Display values in web



Set number format and unit

- Open PPO list
- Set number format
- Insert the physical unit
- Confirm with OK

PPO Initialisation

PPO Name	Min	Max	Format	Unit
Basic.Switch				
IO.DigitalOutput0				
SEnergy.ALD1_0.Ph_U			DEC	V
SEnergy.ALD1_0.Total			DEC.2	kWh

Energy Meter application

Download project



Compile Web Editor project

- Save and compile the web project
- Exit the Web Editor

Compile and download project in PG5 Project Manager



Energy Meter application

Open visualization in browser

