



XAP10RSEXX

CONFIGURATION MANUAL

Oct. '19

Index

Index.....	2
Updated version.....	4
Introduction	5
Assumptions	5
General description.....	5
Requirements and Limitations.....	6
Architecture.....	7
Default parameters.....	8
Getting Started with CODESYS	9
Procedures.....	9
Create a CODESYS account	9
CODESYS V3 Development System installation.....	10
Package Manager	13
Things to know.....	13
Procedures.....	13
Additional CODESYS packages installation.....	13
Updating old CODESYS Packages.....	17
XAP HMI Runtime installation with CODESYS license.....	18
Thing to know.....	18
Creation of a new PLC project	19
Download PLC application	20
Upload PLC Application	22
Exporting SYMBOL File configuration from CODESYS	23
Procedures	23
Communication Setup in Wizard Studio	25
Importing Symbol Files in Tag Editor.....	26
Things to know.....	27
Memory Layout.....	27
Things to know.....	28
Getting start with OPC-UA	29
Things to know	29
Procedures.....	29
Enable OPC-UA.....	29
Test OPC-UA client.....	30
Getting start with Node-RED.....	32



Things to know	32
Procedures	32
Install Node-RED on XAP device	32
User interface	33
Procedures	33
Create a CloudMQTT account	33
Create a new Instance	34
Import the Node-RED example project.....	35
Appendix.....	38
System settings	38
Procedures	38
System settings access from Web browser.....	38
Change the language.....	39
System tab	40
Logs tab	40
Date & Time tab	40
Network tab	41
Services	42
Avahi Daemon	42
Bridge Service	43
Fast Boot	43
Router Service	43
SNMP Server.....	44
SSH Server.....	45
Plugins	46
Management	46
Restore to factory settings	46
Restart	46
Authentication.....	47
Certificate's parameters	47

Updated version



Content subject to change.
Download the updated version: www.productselection.net

Introduction

XAP 1.0 is a rugged and compact controller designed as a powerful IIoT gateway and a programmable unit for building automation functions. It is empowered by a configurable web interface which makes it an outstanding HMI without screen. It integrates the standard IEC 61131 PLC (Codesys), so that any building automation function can be programmed by means of a standard and well-known tool. The powerful software Wizard Studio permits an easy setup of graphic pages, functions and protocols.

Assumptions

We assume that readers have a basic understanding of computers, Microsoft Windows, and the specific network environment where the application will run.

This manual is intended for users or technicians directly involved in the installation of XAP device and its integration to UWP 3.0 systems.



Note: This manual is not intended as CODESYS V3 programming manual, for detailed documentation regarding CODESYS V3 Development System please refer to the CODESYS web site www.codesys.com and to its on-line help.



Note: For detailed information regarding the use of Wizard Studio software and related to the communication with HMI Runtime please refer to the Wizard Studio manual available on productselection.net.

General description

This manual describes

CODESYS V3:

- How to configure a CODESYS V3 environment and Wizard Studio integration
- How to program internal CODESYS V3 PLC available in XAP device
- How to create a project to get communication with XAP device

OPC-UA:

The OPC UA Client communication driver is designed to connect XAP devices to OPC UA servers. This implementation of the protocol operates as a client only in order to public tags that are already defined in a Wizard project.

Node-RED:

Node-RED is a programming tool for wiring together hardware devices, APIs and online services.

Requirements and Limitations

The following firmware and software versions are required to work with the CODESYS V3 PLC Runtime:

Element	Version
Wizard Studio suite	2.8.0 build 441 or higher
HMI Runtime application <i>Note: HMI is an application installed on the XAP device by using Wizard Studio</i>	2.8.0.441 or higher
CODESYS V3 Development System	V3.5 SP15 - <u>32 bit version ONLY</u>



Note: The XAP HMI Runtime is compatible with CODESYS V3.5 Development System only. CODESYS V2.3 Development System is NOT compatible with CODESYS V3 Runtime.

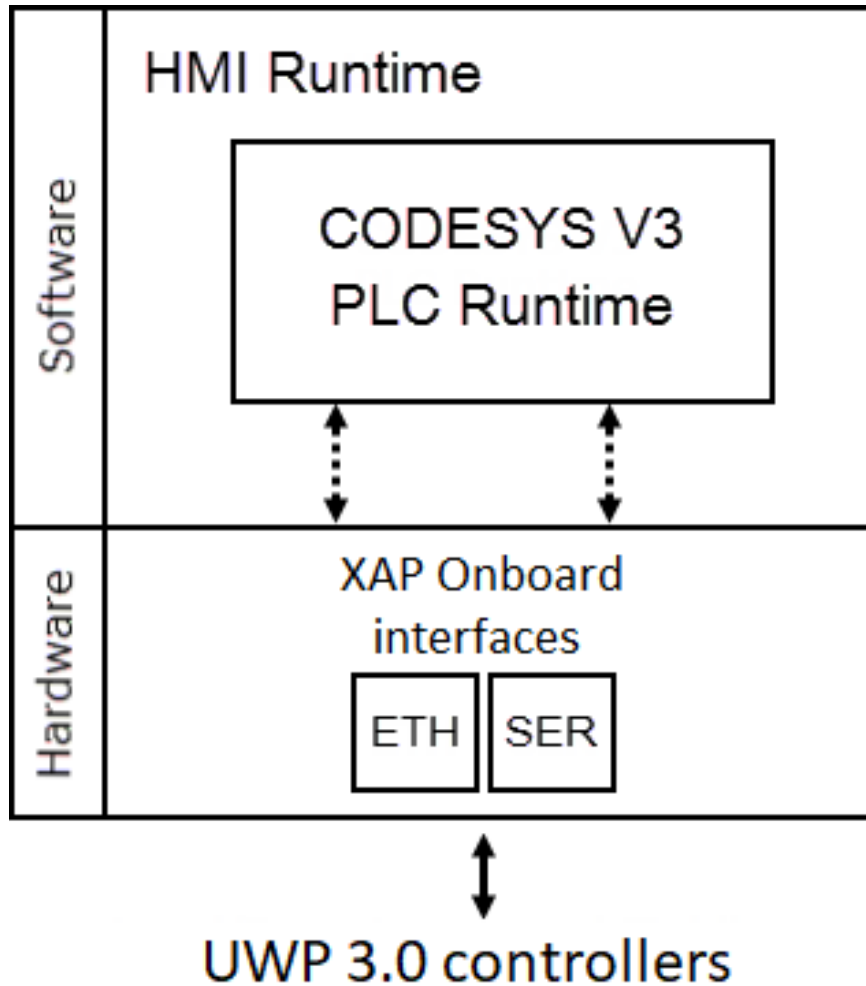
If a newer version of CODESYS V3 Development System is already installed, make sure to use 3.5.15.0 versions of libraries to program XAP device HMIs.

System requirements

Element	Details
Supported Platforms/ Devices	Windows 7 (Service Pack 1 or higher) / 8 / 10 (32/64 Bit), suitable PC hardware for the corresponding Windows platform
Additional Requirements	Microsoft Internet Explorer 11, or higher
Licensing	-
Required Accessories	-

Architecture

HMI and PLC based on Internal PLC (CODESYS) and CODESYS V3 can be applied in different configurations. The picture below shows how HMI and PLC can be configured.



Note: Refer to table above to know which optional plugins and fieldbusses are available for your hardware configuration

Default parameters

The device is set in the factory with the following parameters.

i To access the XAP device for the first time, use these parameters.

PARAMETER	DEFAULT VALUE
ETH0 / WAN	Set as DHCP client
ETH1/LAN	IP Address: 192.168.0.1 Subnet mask: 255.255.255.0
System settings page	https://192.168.0.1/machine_config
Username	admin
Password	Gav@zzi!2015

Note: The username and password are case-sensitive.

WARNING: For security reasons, change the default passwords for both usernames (passwords can be modified from the System Settings > Authentication command)



See the [procedures](#) in this manual.

Getting Started with CODESYS

This chapter provides the necessary information on how to set-up the XAP device and CODESYS V3 PLC system.

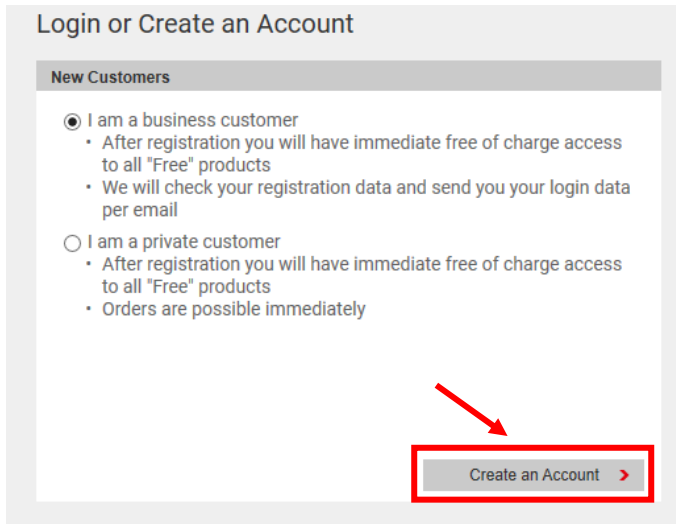
The required operations are listed below and explained in the forthcoming chapters.

- CODESYS V3 Development System installation
- Additional CODESYS packages installation
- HMI Runtime installation on XAP device
- Activation of the CODESYS V3 license on the HMI
- Creation of a new PLC project
- Download/upload PLC application
- Communication Setup in Wizard Studio
- Symbol File configuration with CODESYS V3 Development System

Procedures

Create a CODESYS account

Access to <https://store.codesys.com/customer/account/> select a type of account and click to **Create an Account** to proceed.



Login or Create an Account

New Customers

- I am a business customer
 - After registration you will have immediate free of charge access to all "Free" products
 - We will check your registration data and send you your login data per email
- I am a private customer
 - After registration you will have immediate free of charge access to all "Free" products
 - Orders are possible immediately

Create an Account >

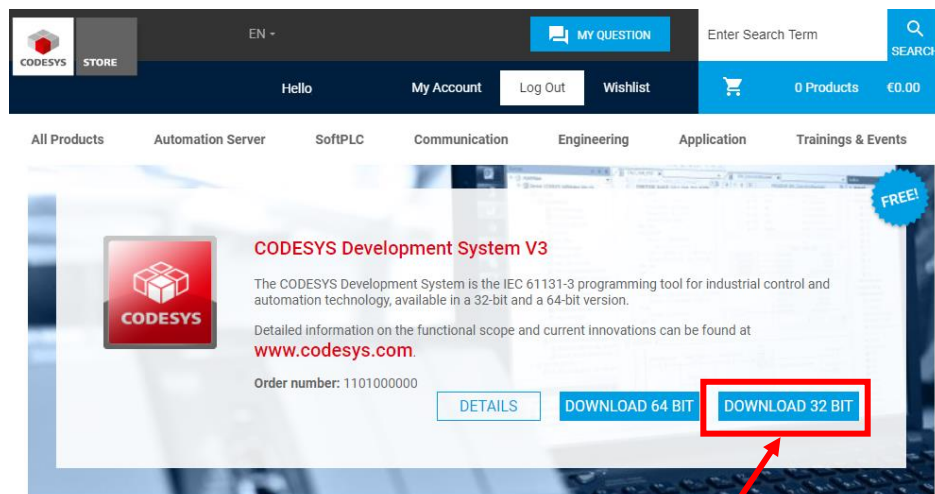
Follow the indication on screen to finish the registration procedure.

CODESYS V3 Development System installation

The **CODESYS V3 Development System** suite can be downloaded for free from the Codesys website after [registration](#). Follow this procedure to download and install the software on your computer.

Step	Action
1	Click to https://store.codesys.com/ to access the CODESYS Store.

Select **CODESYS Development System V3** and click to **DOWNLOAD 32 BIT** option.



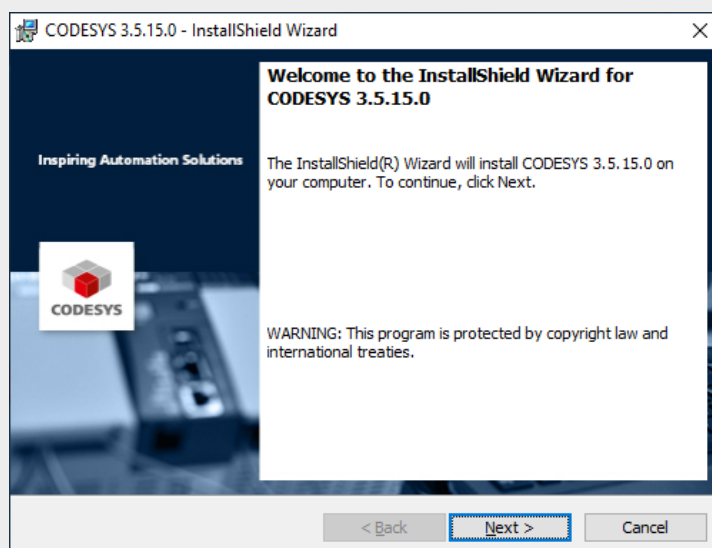
2

! Be sure to download the **32bit version**, the other versions are not supported.

3	In the popup that appears, click on Accept button to confirm the Licence agreement to start the software download.
---	---

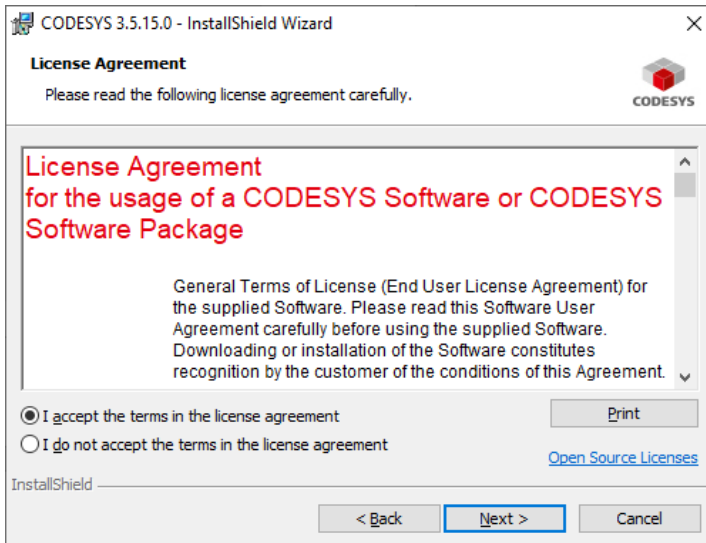
4	Perform the Setup_CODESYSV.exe to start the installation assistant which will guide you.
---	---

5	Click Next > button to continue.
---	--



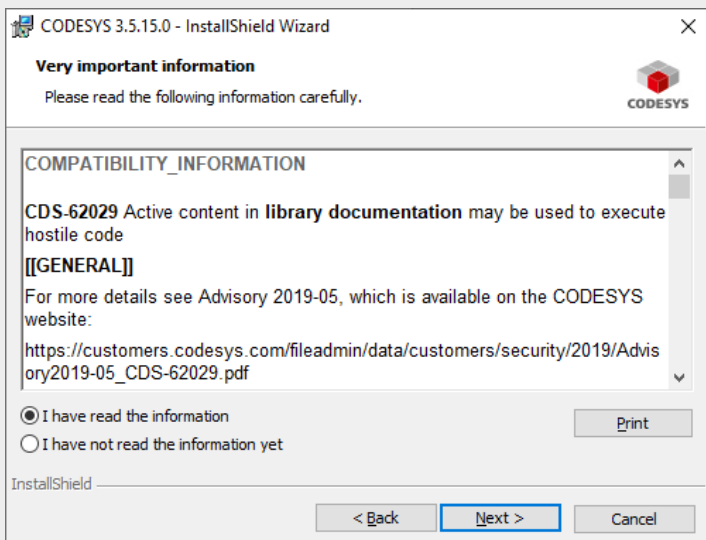
Select *I accept the terms in the license agreement* and click **Next** button to continue

6



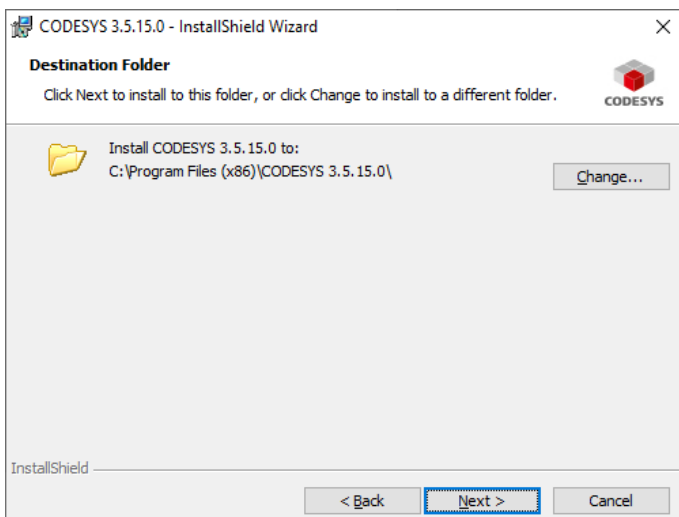
Select *I have read the information* option and click **Next** to continue.

7



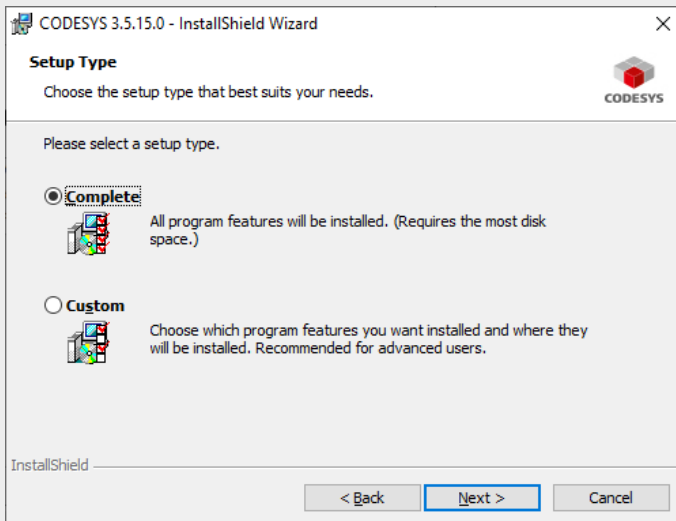
Select the Destination folder and click **Next** button to continue.

8



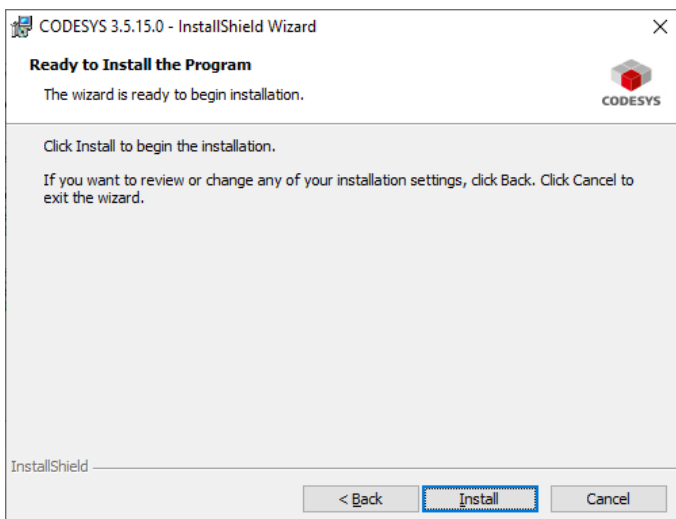
Select **Complete** option and press to **Next**.

9



Click to **Install** to start the installation procedure.

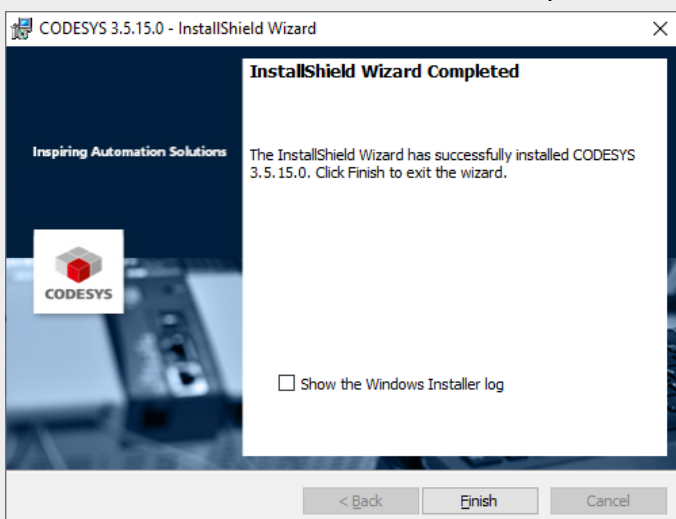
10



Note: The installation procedure takes several times due to your Computer performance.

Click **Finish** button to end the installation procedure.

11



Package Manager

Things to know


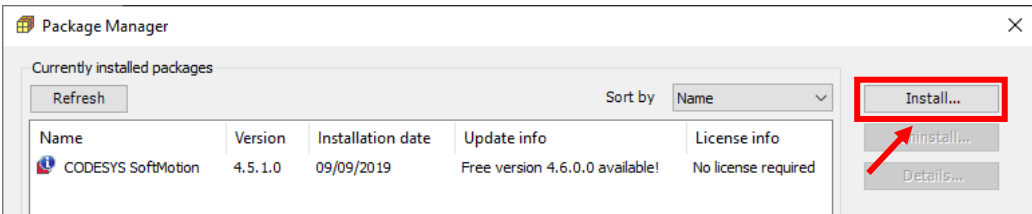
CODESYS Development System includes a tool called **Package Manager** for the installation of the CODESYS Package. Package Manager tool can be launched from CODESYS Tools menu, selecting the proper menu item. This tool can be used both for checking the installed Packages and for installing new ones.

There are two dedicated CODESYS packages that are required to allow the standard CODESYS V3 programming software to program XAP device HMI Runtime. These packages are provided with the Wizard Studio installation suite.

Procedures

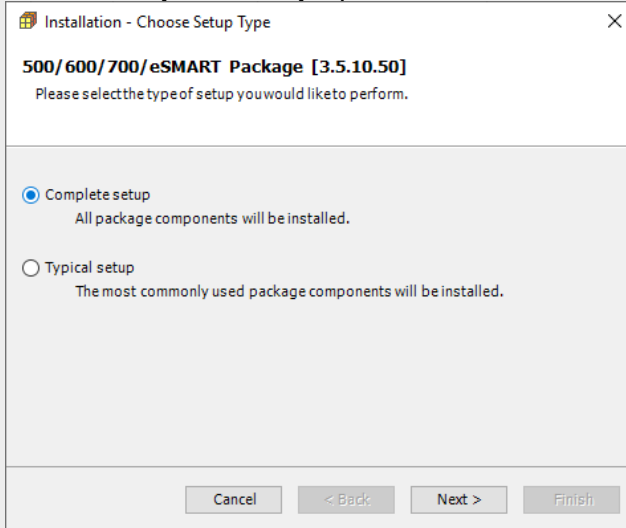
Additional CODESYS packages installation

This document explains where to find and how to install the CODESYS packages, containing the needed information regarding the XAP device to be programmed. These are required to allow the standard CODESYS v3 workbench to programme Codesys based PLCs.

Step	Action
1	 Start CODESYS application.
2	From Tools menu, select Package manager option, in the window that appears, click on Install button: 
3	Browse the folder C:\Program Files (x86)\CG\Wizard Suite2.8.0.441\CODESYS\V3
4	Select the first package called CODESYS_JMobile_3.5.10.50_8.package and click Open to install the package.

Select **Complete setup** option and click **Next** button.

5



Installation - Choose Setup Type

500/600/700/eSMART Package [3.5.10.50]

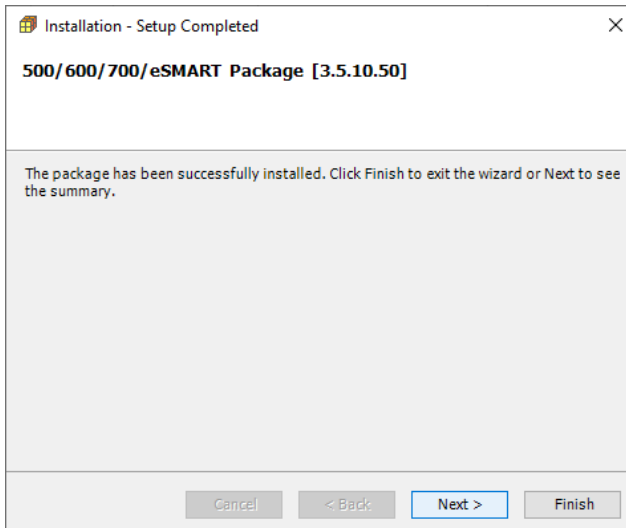
Please select the type of setup you would like to perform.

Complete setup
All package components will be installed.

Typical setup
The most commonly used package components will be installed.

Cancel < Back Next > Finish

6



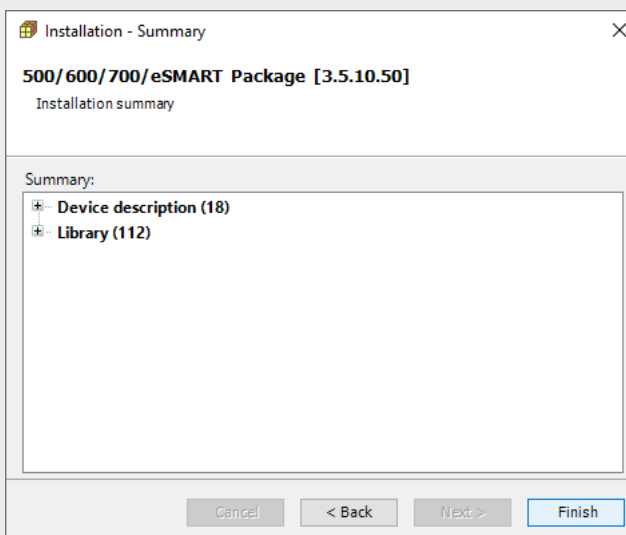
Installation - Setup Completed

500/600/700/eSMART Package [3.5.10.50]

The package has been successfully installed. Click Finish to exit the wizard or Next to see the summary.

Cancel < Back Next > Finish

7



Installation - Summary

500/600/700/eSMART Package [3.5.10.50]

Installation summary

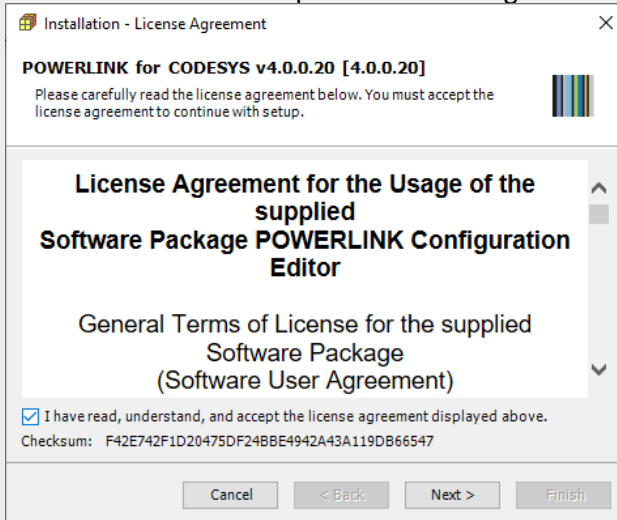
Summary:

- Device description (18)
- Library (112)

Cancel < Back Next > Finish

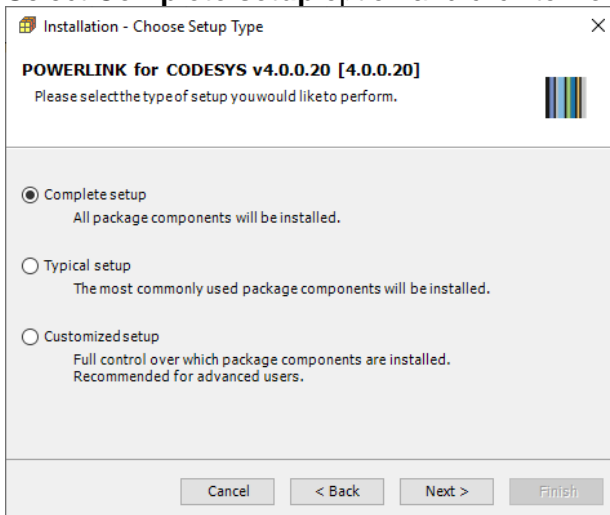
- 8 Select the second package **POWERLINK for CODESYS_4.0.0.20.package** and click **Open** to install it.

Check the box to accept the License agreement under the window.



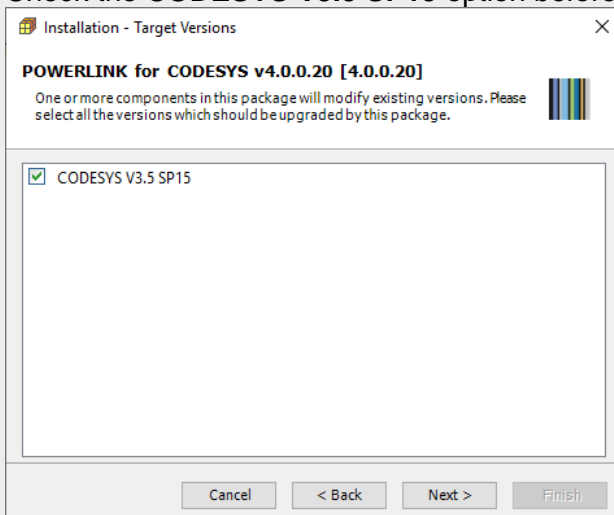
Select **Complete setup** option and click to **Next** to continue.

9



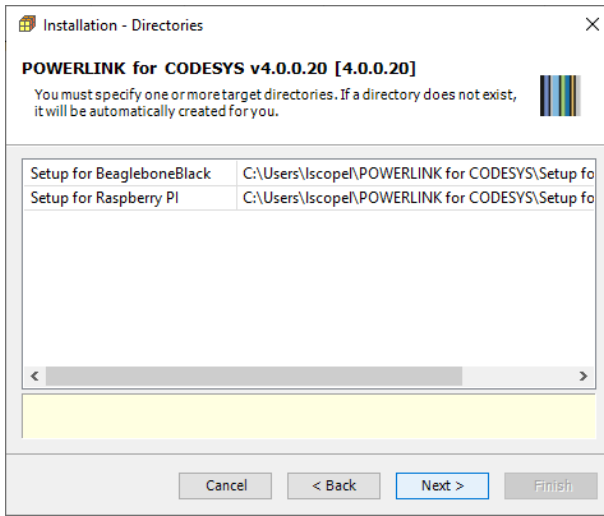
Check the **CODESYS V3.5 SP15** option before continuing and click Next.

10



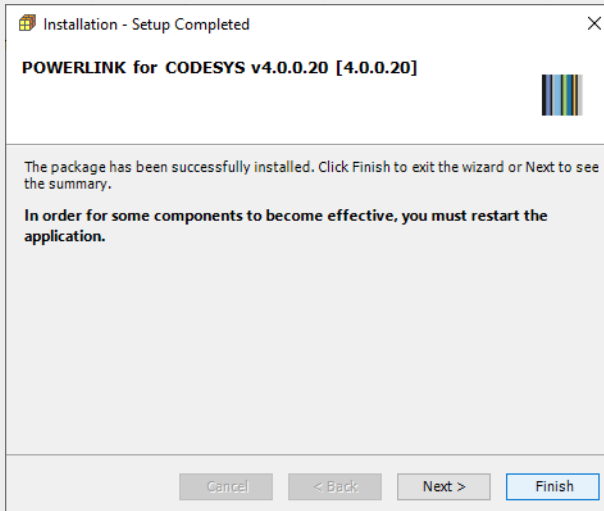
Click **Next** to start the installation procedure.

11



Click to **Finish** to end the installation.

12



Updating old CODESYS Packages

When a new version of Package is released XAP device always tries to guarantee the complete compatibility with the previous versions.



When a new version of the CODESYS Package is available, it can be installed to update the Package information accordingly to the latest CODESYS V3 PLC Runtime features.

If the new Package is not fully compatible with the previous version some changes to adapt the PLC application to the new Package may be required.

The Package update procedure is identical to the first installation of the CODESYS Package, please refer to the proper chapter for specific information.

XAP HMI Runtime installation with CODESYS license

Thing to know

Activate Codesys license on XAP device

As the CODESYS PLC Runtime is part of the HMI Runtime it is necessary to install the HMI Runtime on the HMI to have the PLC Runtime running.


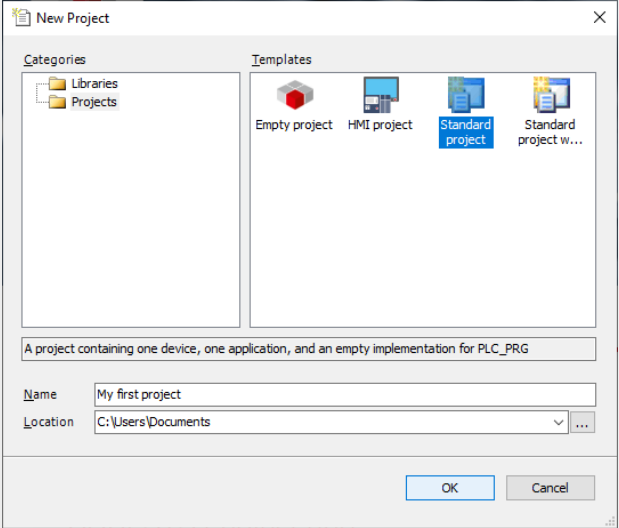
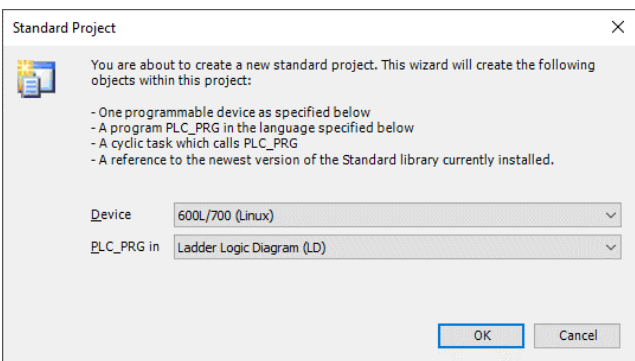
Step	Action
1	In Wizard Studio select Run > Manage Target .
2	From Target field select the XAP device among those available
3	Click on Update runtime button to proceed.
4	Once the HMI runtime is installed into the XAP device it is automatically rebooted. <i>Note: It takes up to three minutes to complete the upgrading process.</i>



For further information on installing the HMI Runtime, please refer to Wizard Studio Manual.

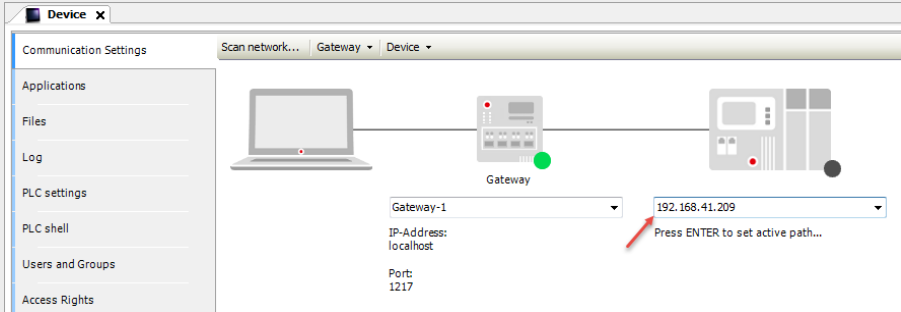
Creation of a new PLC project

When you start the programming system the first time after first installation on the system, you will be asked to choose the default collection of settings and features:

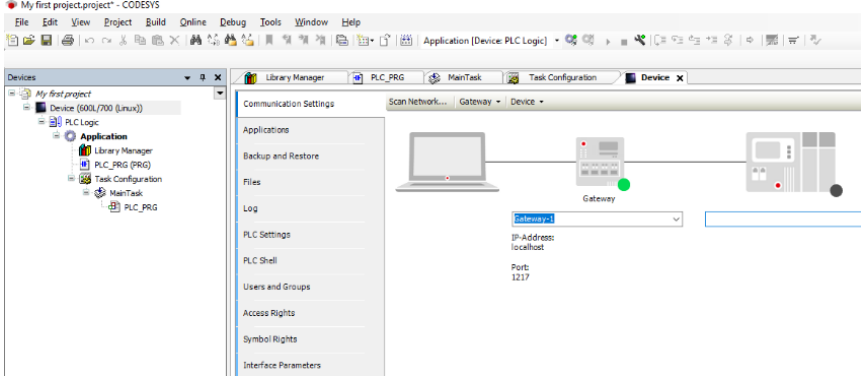
Step	Action
1	Select File > New Project or click on the  icon from the upper tools bar.
2	Select Standard Project in the Templates section. Note: In the "Standard" environment the user interface is adapted for most effective usability and some rarely used features are left out.
3	Select Standard project in the Templates field and enter a Name and a Location path for the project file. Press OK to confirm. 
4	In the wizard dialog, choose device 600L/700 (Linux) and the programming language for PLC_PRG project. 
5	Press OK to open the new project.

Download PLC application

The selection of the PLC where to download the project must be done from Device communication settings tab before proceeding with the download operation.

Step	Action
1	<p>Double click on Device (<device_name>) in the project tree to display the Device properties in the work area. Insert the IP address of the XAP device and press Enter key.</p> 

A green dot over the device graphical representation informs that the device is correctly recognized and available into the network.

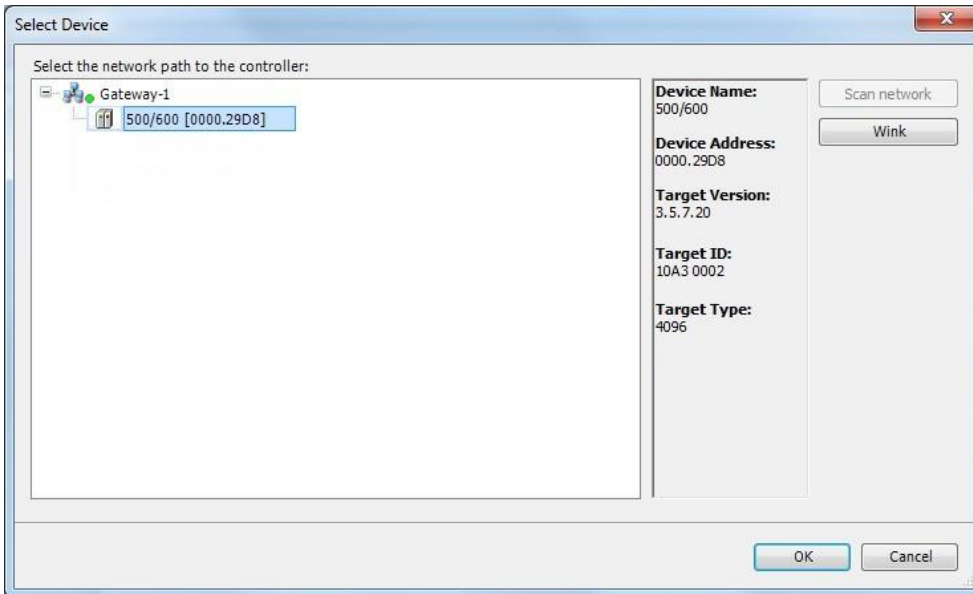
2	
---	--

Note: Communication with the available devices is established through a Gateway, a default Gateway is available, and it is generally not needed to change the standard Gateway settings. For more information about the Gateway set-up please refer to CODESYS V3 documentation.

3	If PLC IP Address is unknown, select the Communication Settings tab then click on the Scan Network... button.
4	The Select Device dialog will be displayed. This dialog lists all the compatible devices available in the network. Select from the list the XAP device to be programmed then press on OK .
5	In case several XAP devices using CODESYS V3 PLC Runtime are present into the network, each XAP device is recognized by a different string between square brackets reported after Device name field.

Example

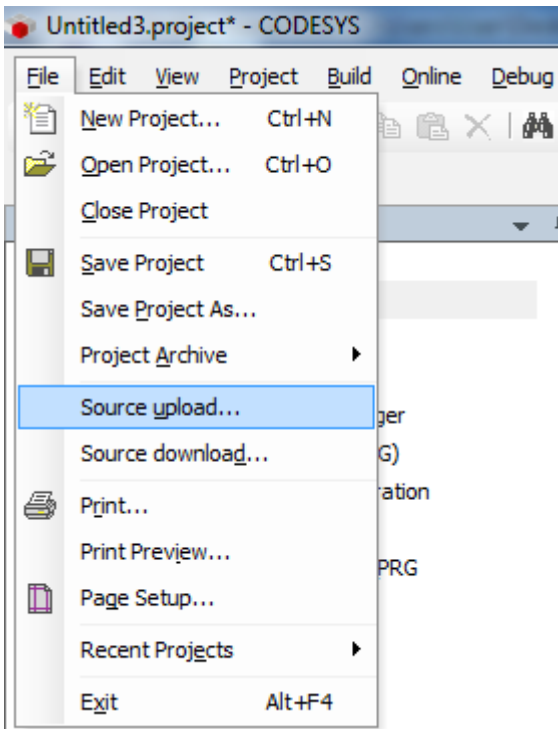
In the next figure the string is “0000.29D8”, the last part of the string “29D8” corresponds to the last 2 bytes of the XAP IP Address in Hex format so, in this case, the corresponding XAP device is the one with IP address xxx.xxx.41.216 as 29Hex corresponds to 41Dec and D8 Hex corresponds to 216 Dec.



Upload PLC Application

The upload of the PLC project is possible only if the project Source has been previously downloaded into the PLC. To download the project source, while Online, select the **Online > Source** download to connected device command.

To upload a PLC project from the XAP device, select the **Source upload** command from the **File** menu, as shown in the following figure, then select the XAP device from **Select Device** window.

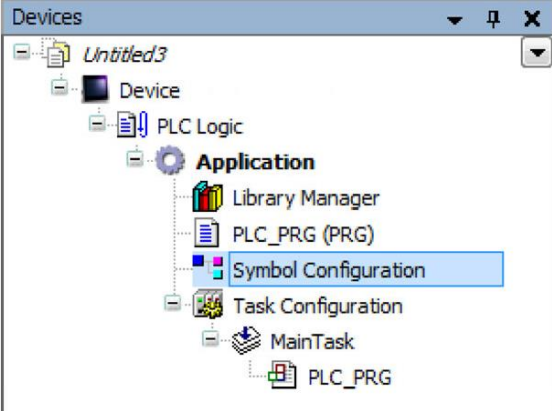
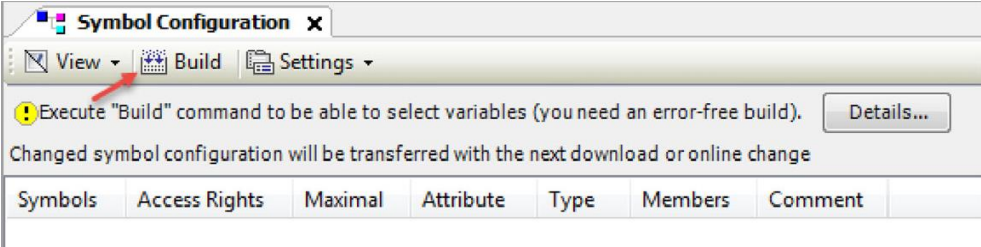


Exporting SYMBOL File configuration from CODESYS

The *Symbol file* is designed to easily share variables between CODESYS V3 and Wizard Studio projects for XAP devices. The *Symbol file* created in CODESYS V3 can be imported into Wizard Studio projects in order to make all the Codesys variables available for use.

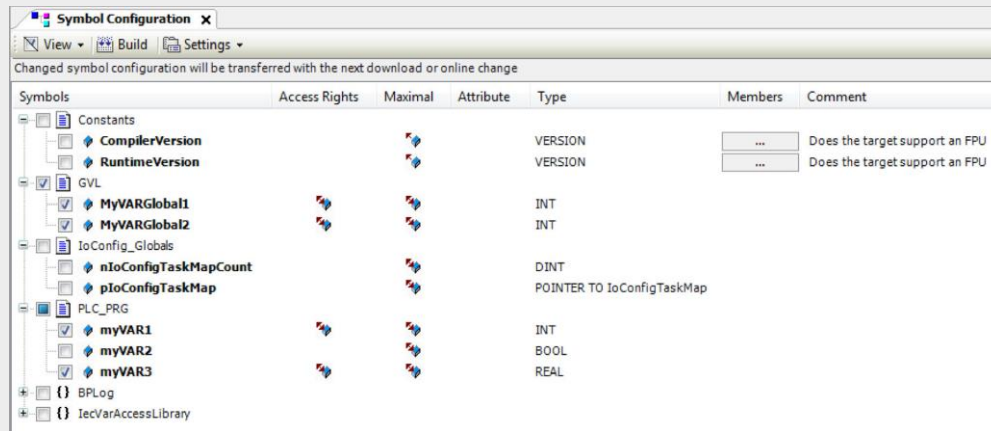
Procedures

When creating the project using CODESYS V3, properly configure the symbol file to contain the required variables. To add the Symbol configuration in CODESYS V3 project, follow the procedure below:

STEP	ACTION
1	<p>Right click on the Application item from the <i>project tree</i>, then into the context menu select Add Object > Symbol configuration. The symbol configuration item will be added to the project tree.</p> 
2	<p>Double click on Symbol configuration item, then click on Build button.</p> 

Symbol configuration item contains a list of all the variables available into the CODESYS V3 project, single variables or groups of variables can be selected by checking the corresponding item in the list.

3

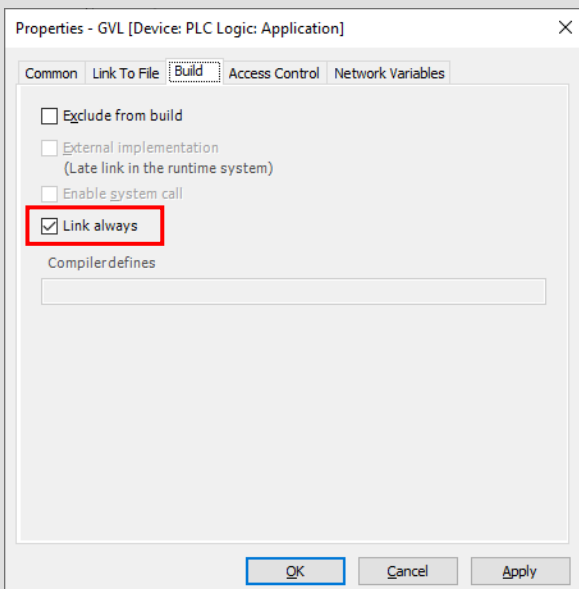


4

After the symbols have been configured, download the project or use the **Generate code** function (**Build > Generate code**) to create an *.xml file* containing all the variables read to be imported in the Tag Editor.

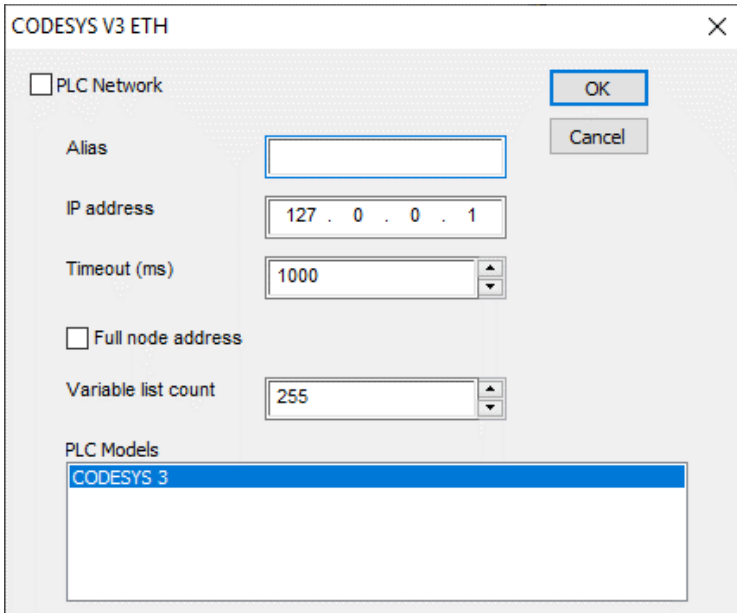
Note: GVL global variables are listed in Symbols Configuration only if they are used in PLC program.

To always list global variables right click on **GVL** and select **Properties**. From **Build** tab check **Link Always** option.



Communication Setup in Wizard Studio

XAP Runtime communicates with the internal CODESYS V3 Runtime using the CODESYS V3 ETH protocol. **localhost 127.0.0.1** should be entered in IP Address parameter; this identifies the PLC as internal CODESYS V3 Runtime.



CODESYS V3 ETH

PLC Network

Alias

IP address

Timeout (ms)

Full node address

Variable list count

PLC Models

CODESYS 3

OK


Cancel

Additional information regarding CODESYS V3 ETH driver are available in Wizard Studio **Help > Communication Drivers** section.

Importing Symbol Files in Tag Editor

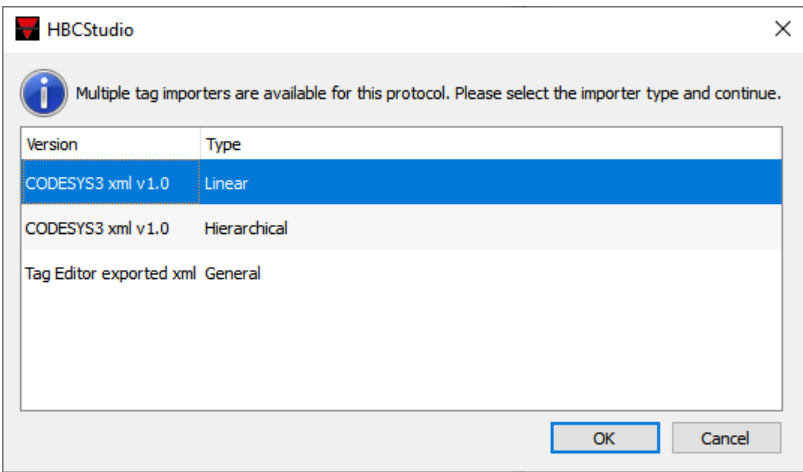
Wizard Studio **Tag Editor** requires direct import of CODESYS V3 symbol file for the definition of the Tags.

To import the *.xml file* containing Symbols, follow the procedure below:

STEP	ACTION
1	<p>In the Wizard Studio, select the CODESYS V3 ETH protocol in Tag Editor and click on the Import Tags button to start the importer.</p> 

The following dialog shows which importer type can be selected.

2



The available options are as follows:

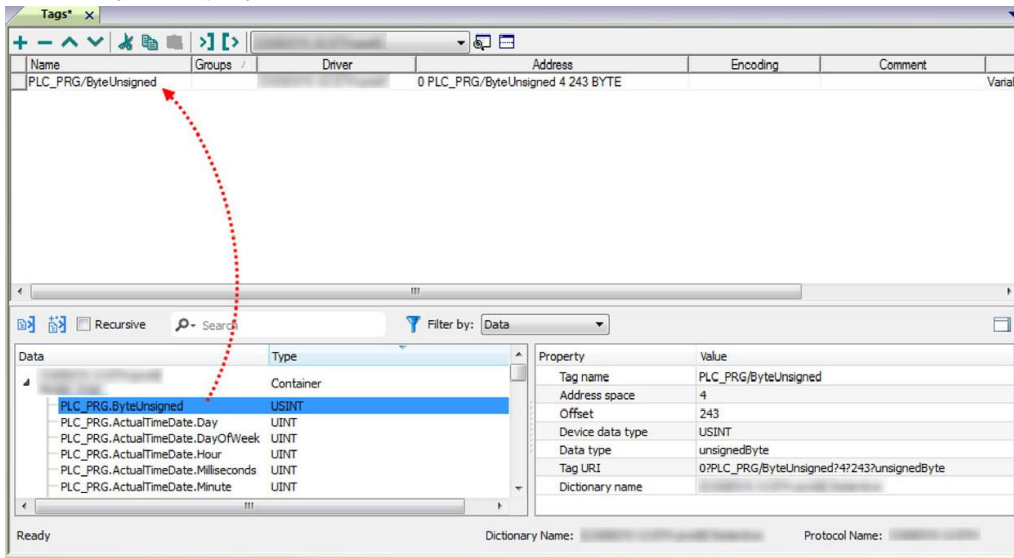
Importer	Description
CODESYS3 xml v1.0 Linear	Requires an .xml file. All variables will be displayed at the same level.
CODESYS3 xml v1.0 Hierarchical	Requires an .xml file. All variables will be displayed according to CODESYS V3 Hierarchical view.
Tag Editor exported xml	Select this importer to read a generic XML file exported from Tag Editor by appropriate button.



3	Once the importer has been selected, locate the symbol file and click Open .
---	---

Tags included in the symbol file are listed in the tag dictionary. The tag dictionary is displayed at the bottom of the screen.

4



Things to know



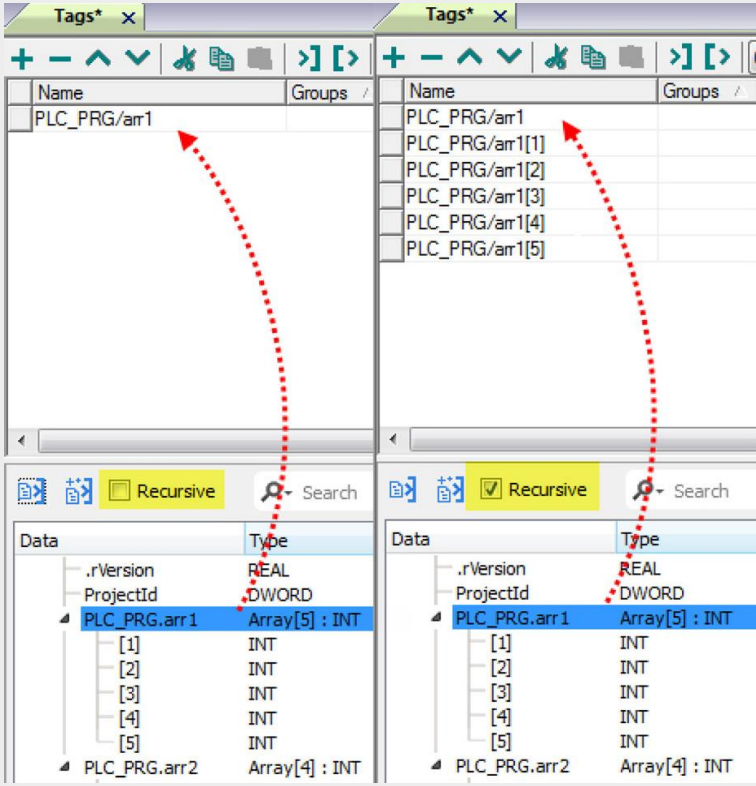
Memory Layout

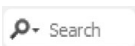
The table below shows detailed information about maximum allowed size of CODESYS V3 project.

Memory Type	Maximum Size
Data, Input, Output, Memory and Code	20 MB
Retain	16 KB
Persistent	16 KB

Things to know

The following table describes the behaviour of the toolbar items:

Toolbar item	Description
	<p>Import Tag(s)</p> <p>Select tags to be imported and click on this icon to add tags from tag dictionary to the project.</p>
	<p>Update Tag(s)</p> <p>Click on this icon to update the tags in the project, due a new dictionary import.</p>
<input type="checkbox"/> Recursive	<p>Recursive</p> <p>Check this box to import all sub-elements of a tag.</p> <p><i>Example of both checked and unchecked result:</i></p> 



Searches tags in the dictionary basing on filter combo-box item selected.

Getting start with OPC-UA

Things to know

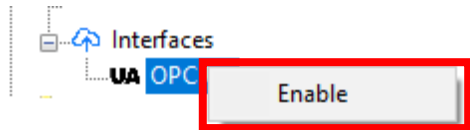

The OPC UA Client communication driver has been designed to connect XAP devices to OPC UA servers. The service can be used to public Tags to OPC UA servers.

Note: the implementation of the protocol operates as a client only.

Procedures


Enable OPC-UA

OPCUA service has to be enabled in the Wizard Studio **project** you are developing. Follow the procedure shown below:

Step	Action
1	From the Project view click the [+] to expand Interfaces tab.
2	Right-click on the OPC UA option and click to Enable button. 
3	Double-click on the OPC UA option to access the settings page .
4	In the Tag groups field, you can select the groups you want to public to OPC UA server; selecting All , all the available tags/groups 
5	In the Network section > Node name field enter an identification name that help to recognize the XAP device in case several XAP devices are available in the network.
6	Download the Wizard Studio project into the XAP device.

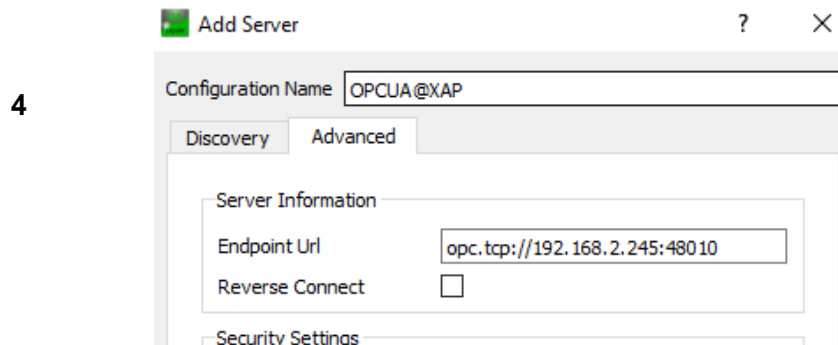
Test OPC-UA client

OPCUA service has to be enabled in the Wizard Studio **project** you are developing. Follow the procedure shown below:

Step	Action
1	Execute UA Expert client 
2	Select Add.. from Server tab
3	In the Add server window, click Advanced tab

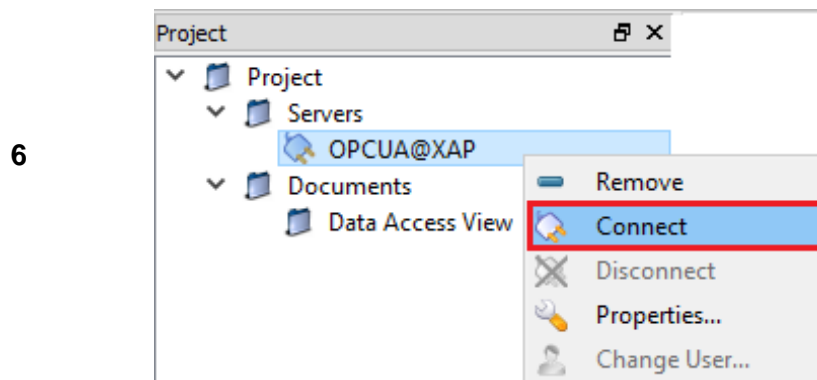
In the **Endpoint Url** field insert the OPC-UA server reference with the following syntax:

opc.tcp://<**XAP IP Address**>:48010



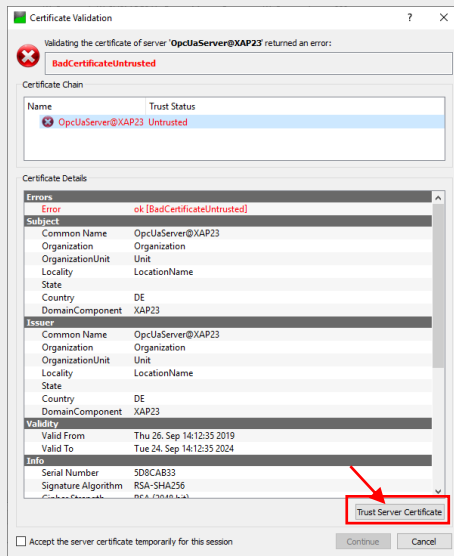
5 Enter an identification name in the **Configuration name** field

In the **Project** view, right click on the server item and click to **Connect** button



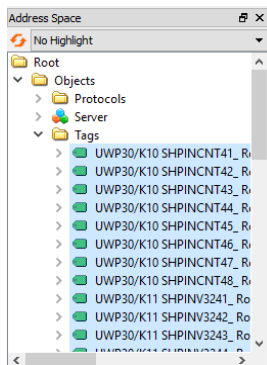
The first time, in the **Certificate Validation** window, click on **Trust Server Certificate** to accept it click on **Continue** button.

7



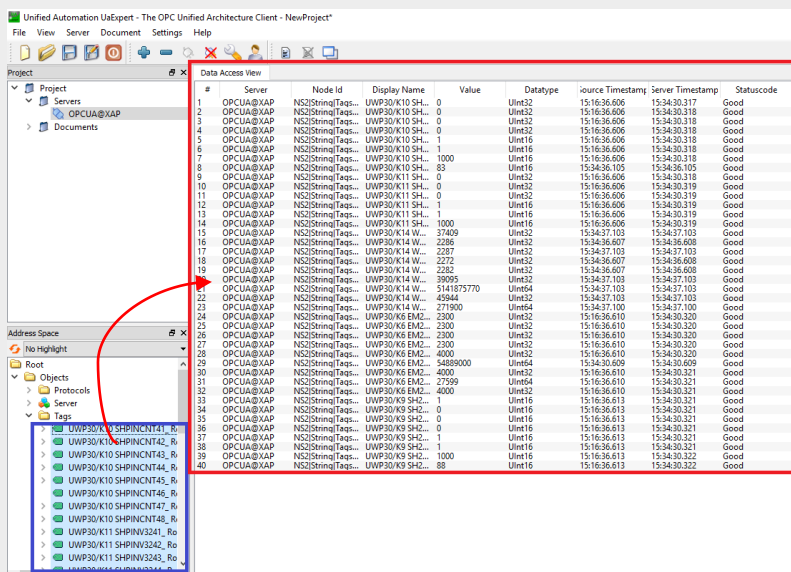
In the **Address space** are shown all the available **Tags**

8



By Drag & drop action add the tags to the **Data Access View** panel

9



Getting start with Node-RED

Things to know

To install node-RED into a XAP device, you need

- an **empty USB Stick**
- the **Node-RED_package.zip** available on productselection.net

Procedures

Install Node-RED on XAP device

Follow this procedure to install Node-RED on XAP device.

*Note: **Autorun scripts from external storage option in XAP machine_config -> System settings -> Services must be enabled.***

Step	Action
1	Extract the content of the folder “ <i>Node-RED_installer</i> ” into the root folder of a USB stick.
2	Plug the USB stick into the XAP device: it buzzes one time to indicate the process is started. <i>Note: If XAP device does not emit any sound this means the USB is not working or the content is not present.</i>
3	The installation procedure usually takes up to three minutes. Once the procedure successfully finishes, the XAP device buzzes three times.
4	Remove the USB sick to automatically reboot the XAP device. <i>Note: Please wait two minutes to get the device up and running</i>
5	After installation, in order to configure node-RED you need to open web browser and digit the following url: <u><a href="http://<XAP IP address>:1880">http://<XAP IP address>:1880</u>

User interface

At the first time, the **Node-RED** interface appears as shown in the picture below:

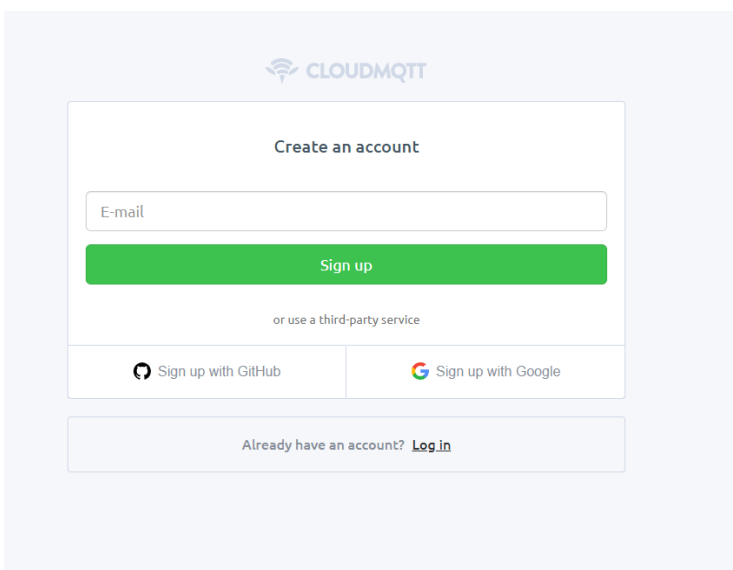


Procedures

To do a communication test with Node-RED and tags that are running on XAP device, you can use a free MQTT solution. Follow the procedures below.

Create a CloudMQTT account

Access to <https://customer.cloudmqtt.com/signup> and provide your information to create a new Free account.



Follow the indication on screen to finish the registration procedure.

Create a new Instance

Step	Action
1	Access to CloudMQTT account.

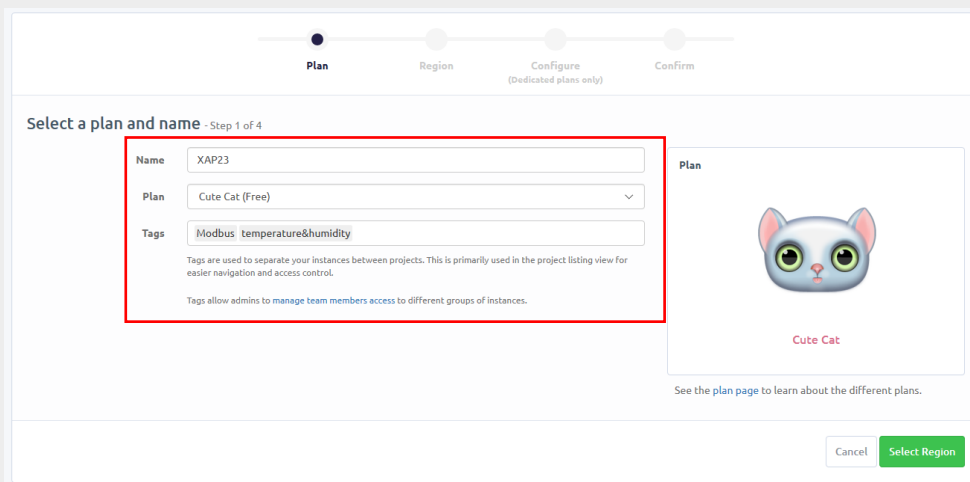
2 Click to  button in the top right corner.

- a) Enter an identification name in **Name** field.
- b) Select **Cute Cat (Free)** value form brop-down menu.

Note: see <https://www.cloudmqtt.com/plans.html> for details about available plans

- c) Enter option tags value in **Tags** field.

3



Select a plan and name - Step 1 of 4

Name: XAP23

Plan: Cute Cat (Free)

Tags: Modbus temperature&humidity

Tags are used to separate your instances between projects. This is primarily used in the project listing view for easier navigation and access control.

Tags allow admins to manage team members access to different groups of instances.

Cute Cat

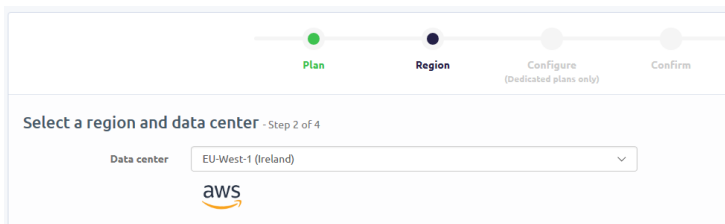
See the [plan page](#) to learn about the different plans.

Cancel Select Region

Click **Select Region** button to continue.

Select the preferred **Data center** form the drop-down menu.

4



Select a region and data center - Step 2 of 4

Data center: EU-West-1 (Ireland)

aws

Click on **Review** button to continue.

5 In the next page, check that all the information provided are valid then click on **Create instance** to finish the procedure.

Import the Node-RED example project

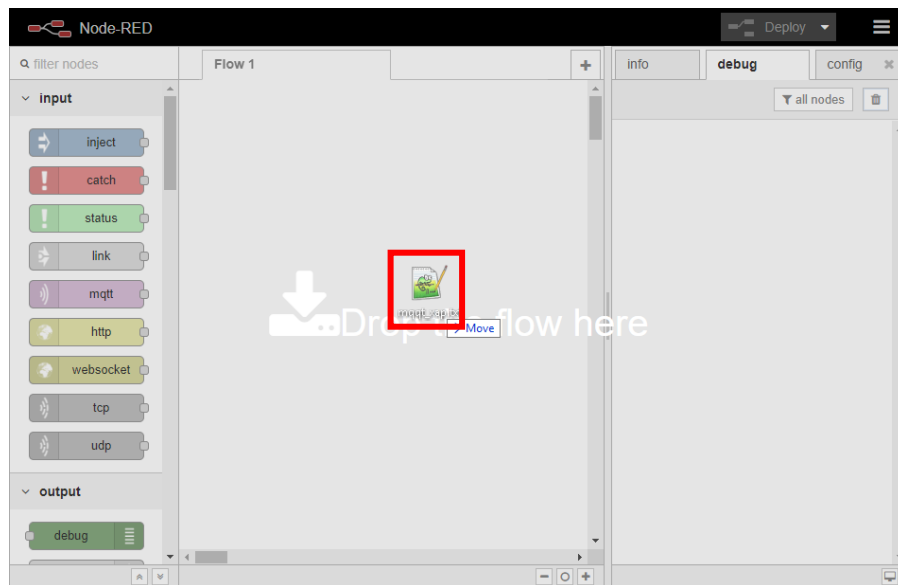
The file *Generic_MQTT_example.txt* is a Node-RED flow available in the “Node-RED package.zip” folder. Follow this procedure to import and set the example within your references:

- ❗ In the Wizard Studio project, the **Security** option (**ProjectView > Security**) must be disabled.
- i You must change all the tags reference and the MQTT server settings in the example file.

Step	Action
1	Open the Node-RED interface in a web browser.

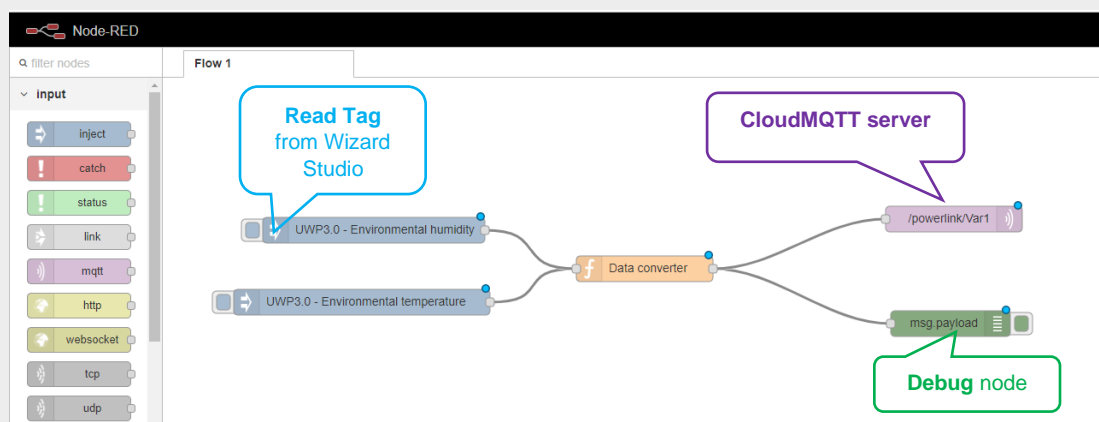
Drag&Drop the *Generic_MQTT_example.txt* file onto Flow area.

2



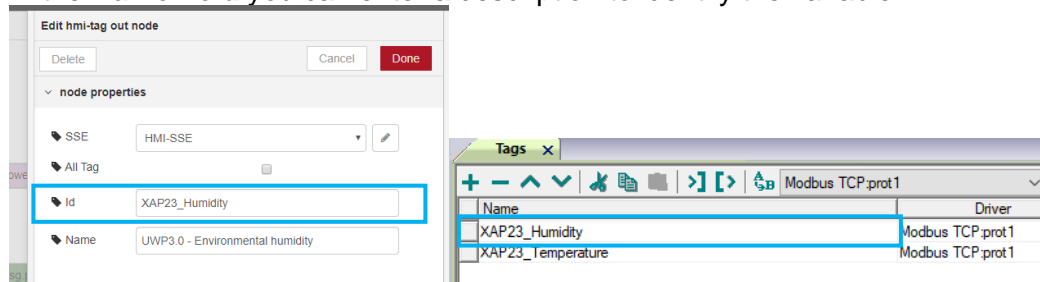
The Node-RED flow related to the imported file is shown:

3



Double click on the **Read Tag node** to enter the settings page:
Set in the **Id** field the same Tag name that is shown in Wizard Studio in **Tags** tab.
In the **Name** field you can enter a description to identify the variable.

4

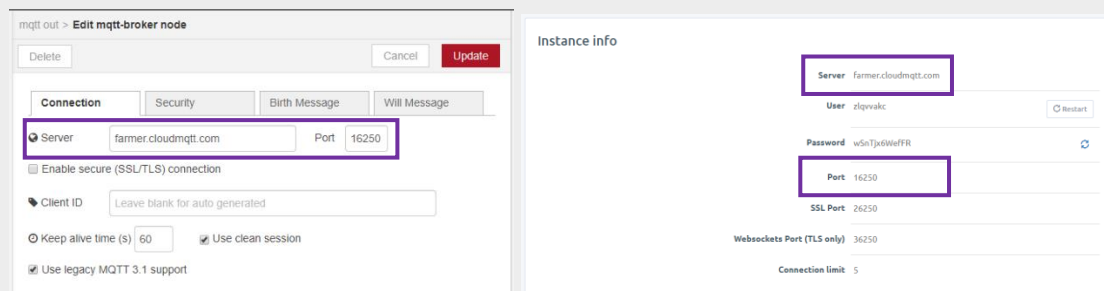


Click on **Done** button to store the changes.

Double click on the **CloudMQTT server node** to enter the settings page.
This node must be set with the CloudMQTT server information. To get these information access to the CloudMQTT and access to the **Instance** settings page:

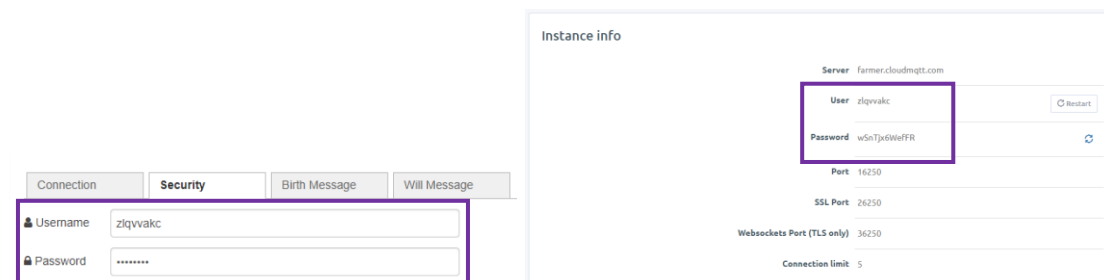
In the **Server** field enter the value present in the Server field.
In the **Port** field enter the value present in the Port field.

5



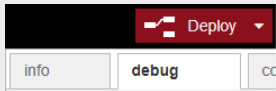
Click the **Connection** tab to enter:
in the **Server** field the value present in the Server field.
in the **Port** field the value present in the Port field.

6

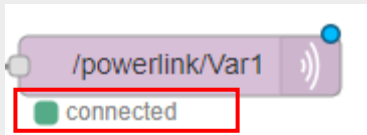


Click on **Update/Done** button to store the changes.

Click to **Deploy** button to compile the project:



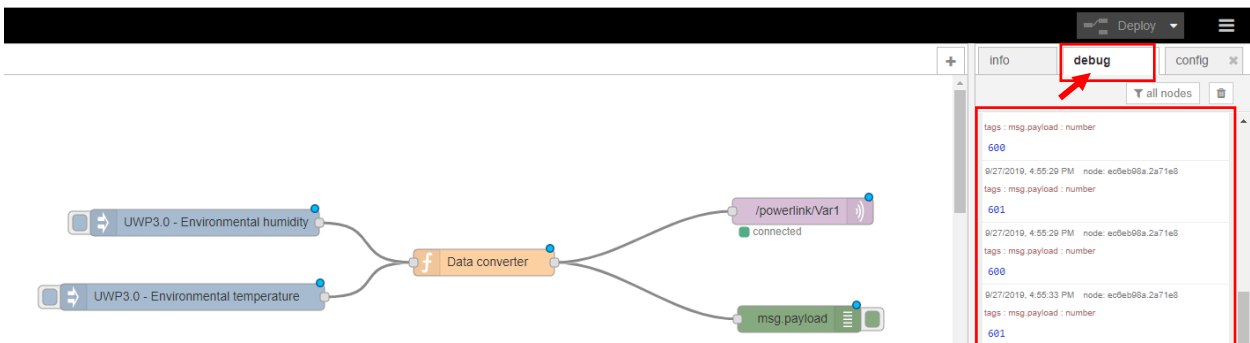
7 The status indicator is shown below the CloudMQTT server node



8 Click to **Debug tag** to see the updated value that are sent to MQTT broker (CloudMQTT) in real-time.

Example

In the example shown below the project is running on Node-RED. The **UWP3.0 – Humidity** and **UWP3.0 – Temperature** tags represent two variables read from Wizard Studio via Modbus TCP protocol: their value is sent to CloudMQTT free portal every time their values changes.



Appendix

System settings

The user interface of System Settings is based on HTML pages and can be accessed remotely using a Web browser.

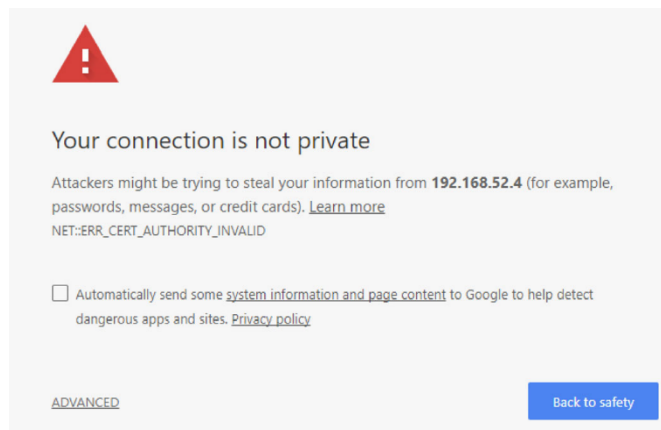
Procedures

System settings access from Web browser

To access **System Settings**, follow this procedure:

STEP	ACTION
1	<p>From any standard web browser, enter the IP address of the XAP device, in the following format:</p> <p><i>https://IP Address/machine_config</i></p>

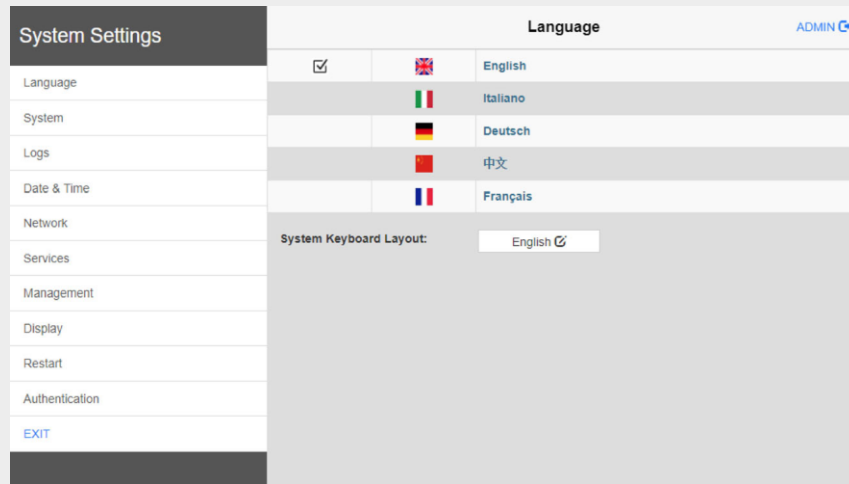
Since the certificate is not signed from a Certificate Authority you will get a warning message: click on **ADVANCED** options and choice to proceeding:










Note: the remote access use encrypted https protocol on port 443. When the connection is established, the XAP device sends a certificate to use for the encryption.

Browse through the options available in the menu on the left: the active item is highlighted and related information is displayed in the right:


3



Language			ADMIN 
<input checked="" type="checkbox"/>		English	
<input type="checkbox"/>		Italiano	
<input type="checkbox"/>		Deutsch	
<input type="checkbox"/>		中文	
<input type="checkbox"/>		Français	

System Keyboard Layout: 

Notes:

To change values, enter in edit mode by clicking the  button on the right top. The edit button is available only inside the dialogs that contains modifiable parameters.

Change the language

By default, the language is set to **English**.

To change the language, from the **left** menu, select the language for the interface.

System tab

The **System** menu collects device information

Parameter	Description
Info	Device information
Status	Device status (Free RAM, Up time, CPU Load)
Timer	Device timers (System on, Back light on)
Plugin	Hardware plugin information

Logs tab

From the **Logs** menu you can set the **persistent log** option if you want to maintain the log files saved after a power reset.

Use **Save button** to export a copy of the log files.

Note: the log files manager cyclically fill 3 files of 4 MB

Date & Time tab

The table below shows the available parameters in order to set Date and time of the device:

Parameter	Description
Current Time zone	Time zone region.
Current Date Local Time	Date and Time can be set manually only when the Automatic Update is disabled.
Automatic Update (NTP)	<p>Enable to keep date and time synchronized from a remote server:</p> <p>NTP Server Specify the Internet NTP Server address:</p> <p>The NTP Client of the HMI Device is a complete implementation of the Network Time Protocol (NTP) version 4, but also retains compatibility with version 3, as defined by RFC-1305, and version 1 and 2, as defined by RFC-1059 and RFC-1119, respectively.</p> <p>The poll process sends NTP packets at intervals determined by the clock discipline algorithm. The process is designed to provide a sufficient update rate to maximize accuracy while minimizing network overhead. The process is designed to operate in a changeable mode between 8 sec and 36 hr.</p>

Network tab

*Note: Network parameters are available in **edit mode**:*

Parameter	Description
General Settings	<p>Device hostname Avahi Hostname (see "Avahi Daemon")</p> <p>Network parameters of the available interfaces:</p>
Network Interface	<ul style="list-style-type: none"> • DHCP • IP Address • Net Mask • Gateway
DNS	<p>DNS Servers Generally provided from the DHCP servers, but can be modified in edit mode</p> <p>Search Domains Optional domains that will be used in concatenation with the provided urls</p>

Services

*Note: Services are available only when logged as **admin**.*

Mouse click on the enable button to enable/disable the service. Click the service name to list the associate parameters.

Avahi Daemon

Avahi is a system which enables programs to publish and discover services and hosts running on a local network. When it is enabled, the XAP device can be reached even using the device's host name (in alternative to the IP Address).

Avahi Daemon runs on UDP port 5353

General Settings

Hostname myDevice
 Avahi Hostname myDevice.local

Network Interfaces

Name	Label	MAC	DHCP	Address	Netmask	Gateway	Bridged
eth0	WAN	00:30:d8:04:63:63	Enabled	192.168.57.98	255.255.0.0	192.168.20.1	
eth1	LAN1	00:30:d8:04:63:64	Enabled				
eth2	LAN2		Enabled				
tap0	VPN		Disabled				

Download to Target

Ready to download

myDevice.local

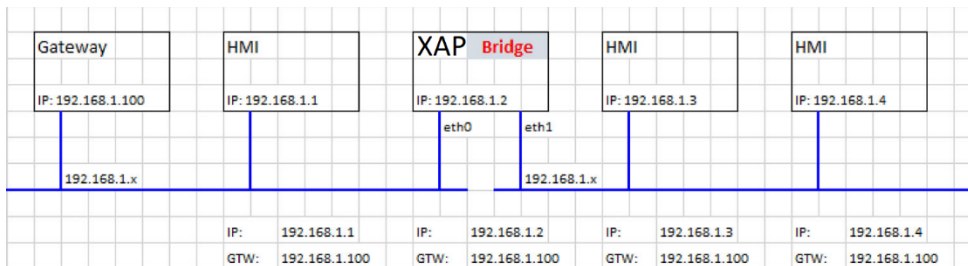
Advanced

Note: On Linux and Apple PCs, the Avahi service comes for free with the OS. On Windows PCs instead, you need to install an Avahi service to be able to reach the panel by his Avahi host name (e.g. you need to install the Apple Bonjour application - Bonjour is a trademark of Apple inc.).

Bridge Service

Using the bridge service is possible connect together the WAN (ETH0) network adapter with the LAN (ETH1) network adapters. When used, the two Ethernet adapters are bridged and both Ethernet adapters are sharing the same IP address.

Bridge Service creates a Linux-based layer-2 Network Bridge between two or more network interfaces. If both WAN and endpoint devices are attached to such bridge, the two networks will be physically joined and endpoints will be available as if they were directly connected to the WAN.



Fast Boot

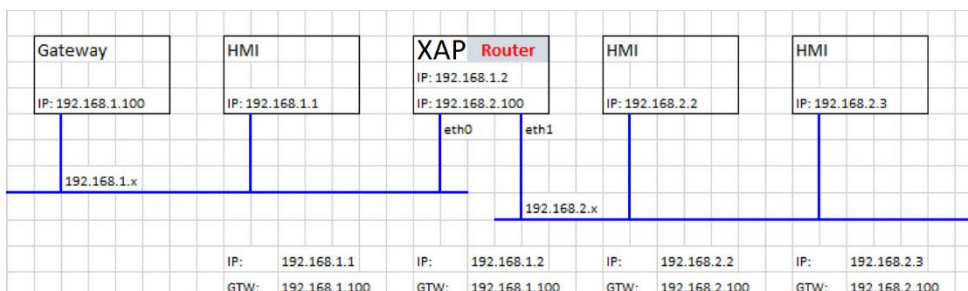
When fast boot is enabled, at the power up the XAP will start the HMI application as fast as possible. In this mode, there are not showed diagnostic information (e.g. the loading bar) but only the minimum necessary features are loaded before loading the User Interface (e.g. System Settings, VNC, SSH, etc. will be load after loading the HMI application).

To obtain best performance, in addition of enabling the fast boot mode, it is recommended to:

- disable any service that is not necessary
- avoid keeping enabled the persistent log
- use static IP address instead of DHCP service

Router Service

This service uses the IP Forwarding and the Network Address Translation to share the connections from WAN (eth0) towards LAN (eth1): the connected endpoints may reach the same networks reachable by the gateway (including Internet if available).

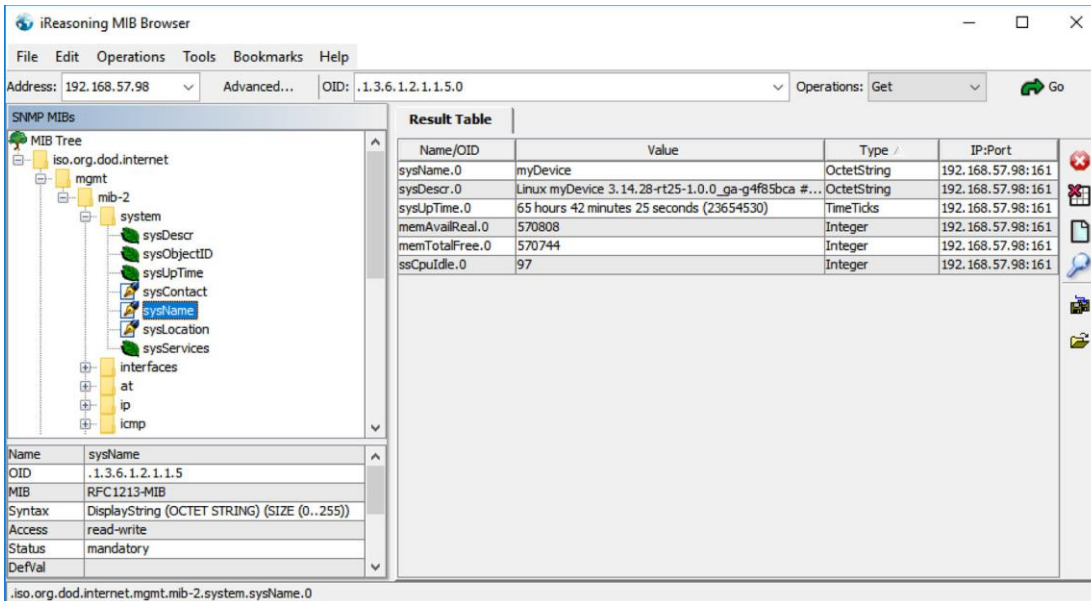


SNMP Server

SNMP is a network protocol that allow to manage network infrastructures. It is commonly used to monitor network devices as switches, routers, etc. connected to a LAN network.

When the SNMP service is enabled, an SNMP Manager can retrieve information from the HMI device using the SNMP protocol. Currently, there are not proprietary MIBs available. Only the standard public community MIBs are available in read only mode.

SNMP Server runs on UDP port 161



The screenshot shows the iReasoning MIB Browser interface. The address is 192.168.57.98 and the OID is .1.3.6.1.2.1.1.5.0. The MIB Tree on the left shows the hierarchy: iso.org.dod.internet > mgmt > mib-2 > system > sysName. The Result Table on the right displays the following data:

Name/OID	Value	Type	IP:Port
sysName.0	myDevice	OctetString	192.168.57.98:161
sysDescr.0	Linux myDevice 3.14.28-rt25-1.0.0_ga-g4f85bca #...	OctetString	192.168.57.98:161
sysUpTime.0	65 hours 42 minutes 25 seconds (23654530)	TimeTicks	192.168.57.98:161
memAvailReal.0	570808	Integer	192.168.57.98:161
memTotalFree.0	570744	Integer	192.168.57.98:161
ssCpuIdle.0	97	Integer	192.168.57.98:161

Below the table, the details for the selected sysName.0 are shown:

Name	sysName
OID	.1.3.6.1.2.1.1.5
MIB	RFC1213-MIB
Syntax	DisplayString (OCTET STRING) (SIZE (0..255))
Access	read-write
Status	mandatory
DefVal	

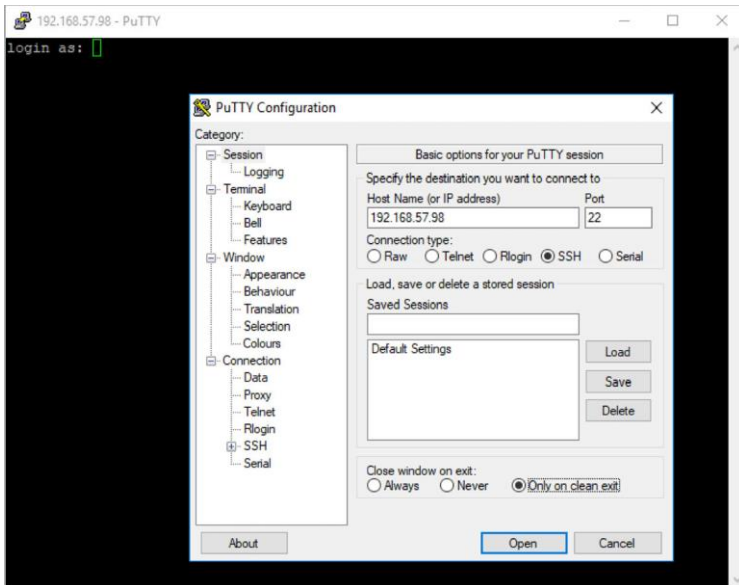
This service is designed to be used during the development phase. For security reasons, remember to disable the service before switch to production.

SSH Server

SSH service has been designed only for advanced users. It provides remote login to HMI device using the secure shell protocol. On PC you can run a SSH Client as, for example, PuTTY that is an open source software distributed under the MIT license.

SSH Server runs on TCP port 22

The default password for the username is “admin”. See the "[Authentication](#)" chapter to additional information.



This service is designed to be used during the development phase. For security reasons, remember to disable the service before switch to production.

Plugins

This page will show the parameters available to configure the optional plugins modules attached to the XAP device. See the description of each plug-in module to additional information.

Management

*Note: Management is available only when logged as **admin**.*

From the management area is possible **Update System Components** of the XAP device.

CAUTION: Working in the Management area is a critical operation and, when not performed correctly, may cause product damages requiring service of the product. Contact Carlo Gavazzi technical support for assistance.

Restore to factory settings

Use the **Clear** command inside the **Data** section to remove HMI Runtime from the XAP device (Factory Restore)

Restart

XAP device restart command

Authentication

Enter in **edit mode** to change the authentication passwords.

Administrator username with full access right is "admin" with default password "admin".
Generic username is "user" with default password "user".

WARNING: For security reasons, change the default passwords for both usernames

x.509 Certificate

XAP device use a self-certificate to encrypt the Internet communication through the HTTPS protocol. You can personalize the certificate with the data of your Company and ask to a Certificate Authority to firm it.

The procedure to personalize and firm your certificate is:

Step	Action
1	Enter in edit mode and fill the necessary parameters, then push GENERATE button to generate a self-signed certificate with your data.
2	Export the "Certificate Signed Request".
3	Sent the "Certificate Signed Request" to a Certificate Authority to firm it (general this is a paid service).
4	Import the signed certificate into the HMI device.

Certificate's parameters

Parameter	Description
Device Name	The name of your device
Organization	The legal name of your organization
Unit	The division of your organization handling the certificate
State	The state/region where your organization is located
Location	The city where your organization is located
Country	The two-letter ISO code for the country where your organization is location
Valid (days)	Validity of the certificate
Key Length	Number of bits of the key used from the cryptographic algorithm

Managed certificates are base64 encoding.

EXIT

Exit from the **System Setting** menu.



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