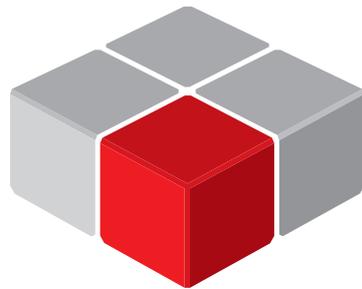


Pageant CODESYS

Quick Start Guide



CODESYS

This manual describes how to setup the CODESYS v3 environment to work with the BEKA Pageant Operator Panel and start developing PLC applications.

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

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1 Software Requirements

The following software packages are required throughout this document and can be accessed via the following links:

- CODESYS Runtime: this is the PLC Runtime installed on the Pageant CPU Module supplied by BEKA. Note that the runtime is already licensed so no activation is required.

The Runtime version installed can be accessed via the configuration menu. Refer to the Pageant Operator Panel System Instructions for details of the menu structure to access this information. **Make note of the runtime version supplied as the version of the CODESYS V3 Development System and the CODESYS Package below need to match.**

The Runtime includes the TargetVisu component to design custom screens and the Modbus RTU Fieldbus stack. Note that the BA3202 CPU Module needs to be purchased to implement Modbus RTU communication.

- The relevant version of the CODESYS Control for Pageant package can be downloaded from https://www.beka.co.uk/pageant_codesys_files.html
- The relevant version of the CODESYS V3 Development System can be downloaded from the Codesys website at (<https://store.codesys.com/en/codesys.html>)

2 CODESYS V3 Development System Installation

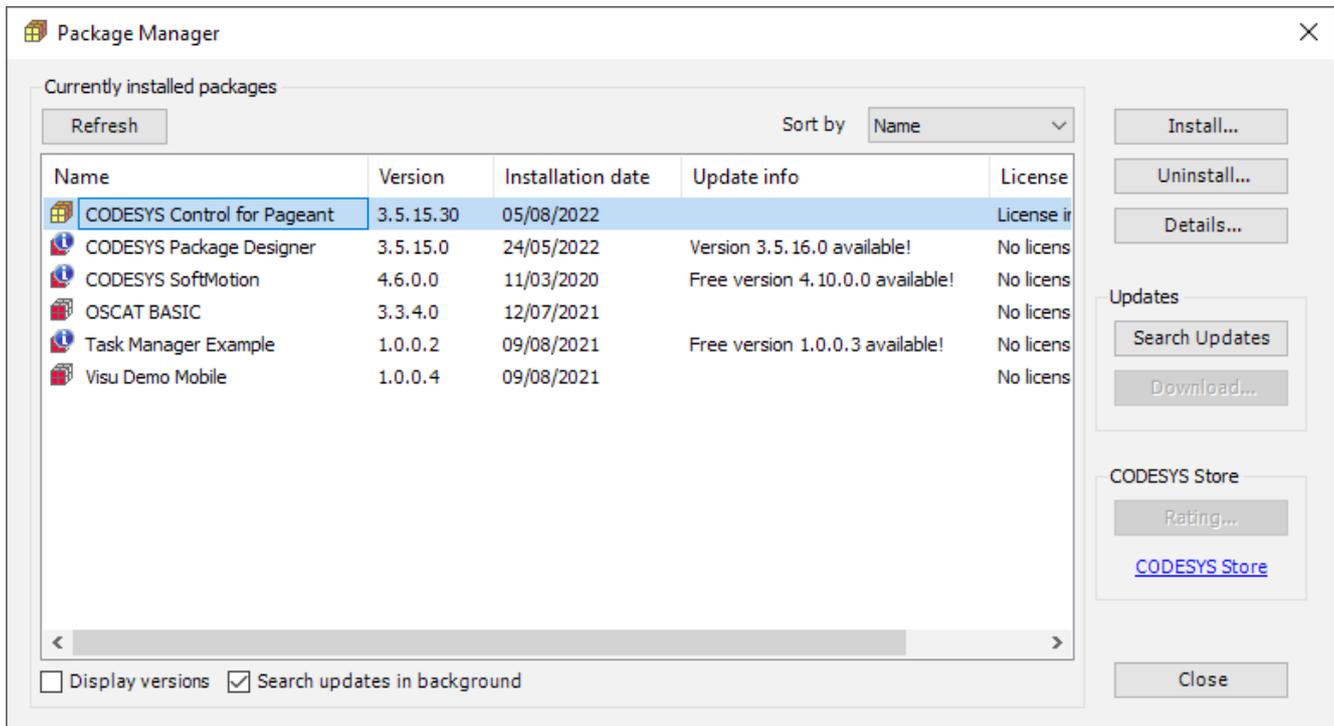
CODESYS V3 Development System software must be used to develop applications on the BEKA Pageant Operator Panel. Once the software is downloaded, follow the on screen instructions to complete the installation.

3 BEKA CODESYS Package Installation

A dedicated CODESYS Package is required to configure the Development System to work with the BEKA Pageant Operator Panel. Once you have downloaded the latest package from the BEKA website, double click on the .package file and the installation procedure will start automatically. The system will ask whether to perform a Complete or Typical setup, any of these will install all the required files. The package contains:

- A BEKASyle Visualization Style: this restricts the colours available in the Visualization elements to the 4 levels of gray supported by the Operator Panel
- The CPU Module and Pageant Operator Panel Device Descriptions
- A BEKA project template to get up and running with the Visualization preconfigured and the Devices inserted in the project Device Tree

Once installed you can start the CODESYS Development System select Tools > Package Manager to check that the Package has been installed. The package should appear in the list of installed packages:

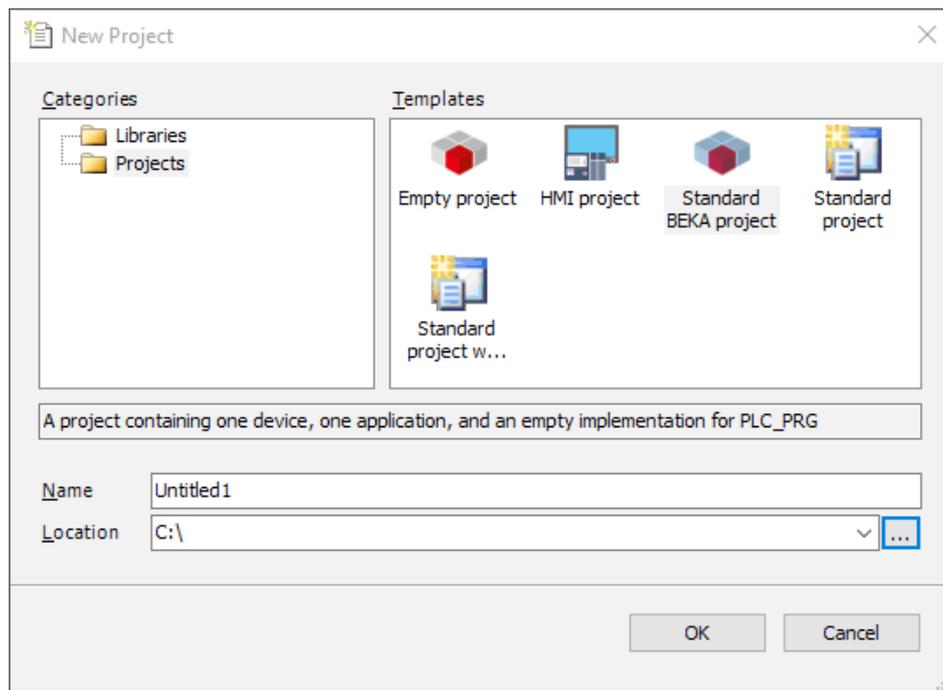


You can use the Package Manager to Uninstall or Install the Package when a new version becomes available.

4 Creation of a new PLC Project

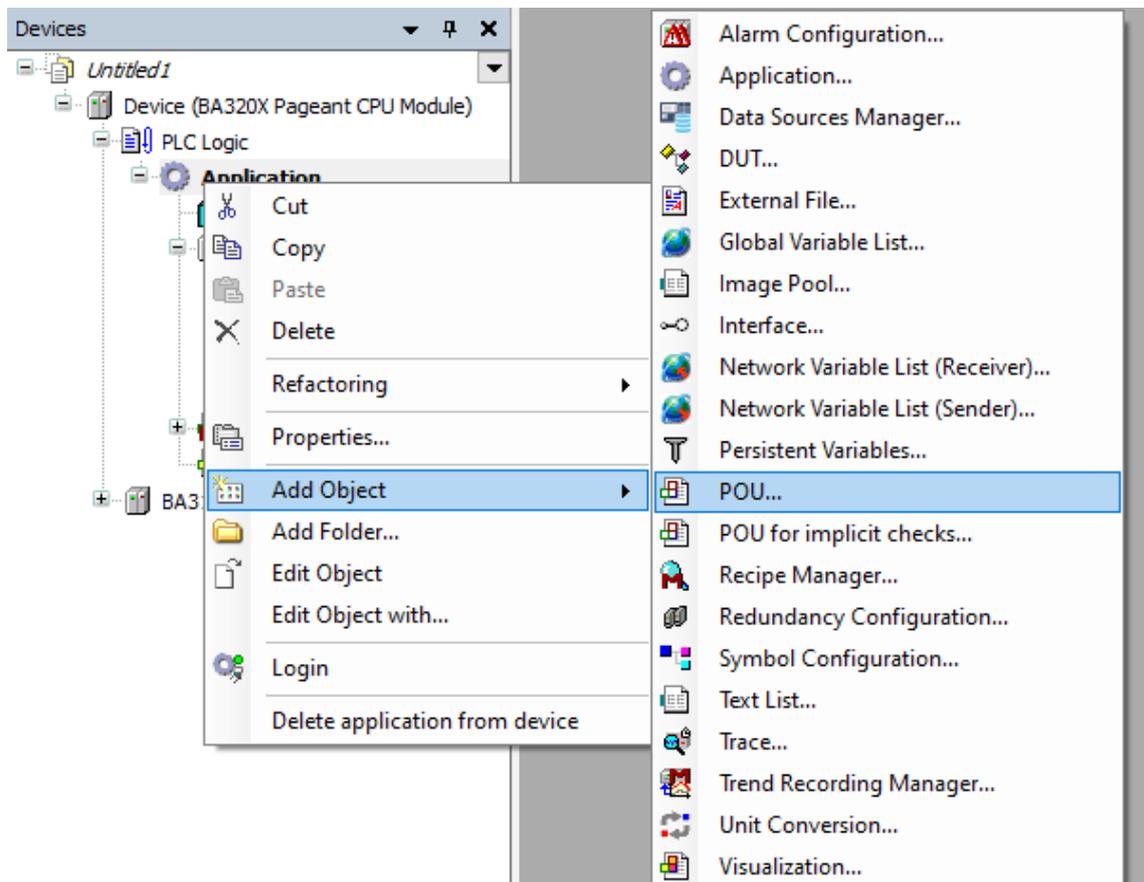
To create a new CODESYS project select File > New Project

Select the “Standard BEKA project”, enter the project name and location then press OK.



Note that the project will open with 2 default task, a cyclic MainTask calling the POU PLC_PRG every 100ms and the a VISU_TASK handling all visualization updates every 100ms.

The PLC_PRG POU is created by default using the Structured Text IEC language, to change this simply delete the PLC_PRG POU in the Device Tree and insert a new POU under the application.



A new PLC_PRG POU can then be created and the implementation IEC language of choice can be selected at the bottom.

Add POU [X]

 Create a new POU (Program Organization Unit)

Name
PLC_PRG

Type

Program

Function block

Extends [] [...]

Implements [] [...]

Final Abstract

Access specifier
[] [v]

Method implementation language
Structured Text (ST) [v]

Function

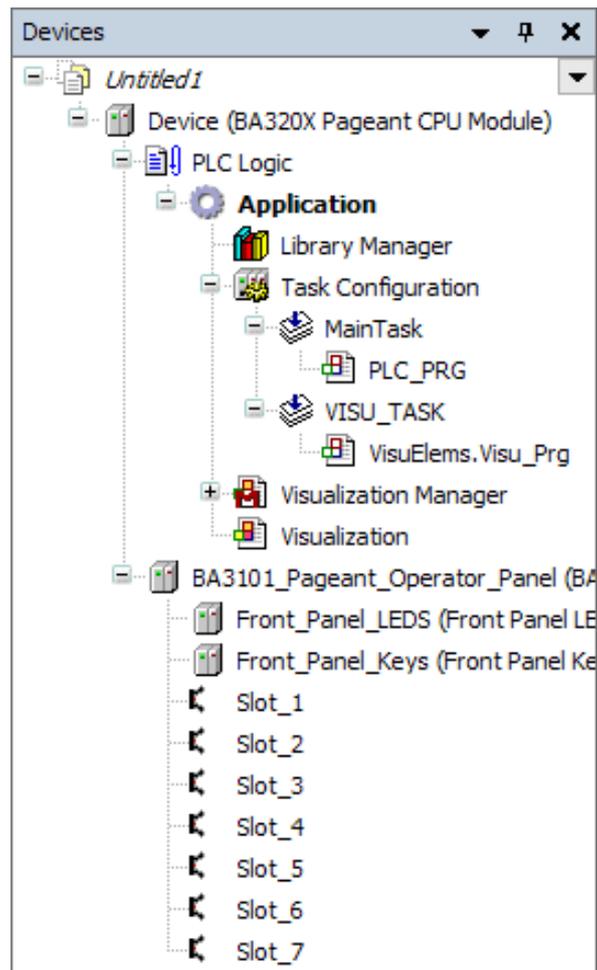
Return type [] [...]

Implementation language

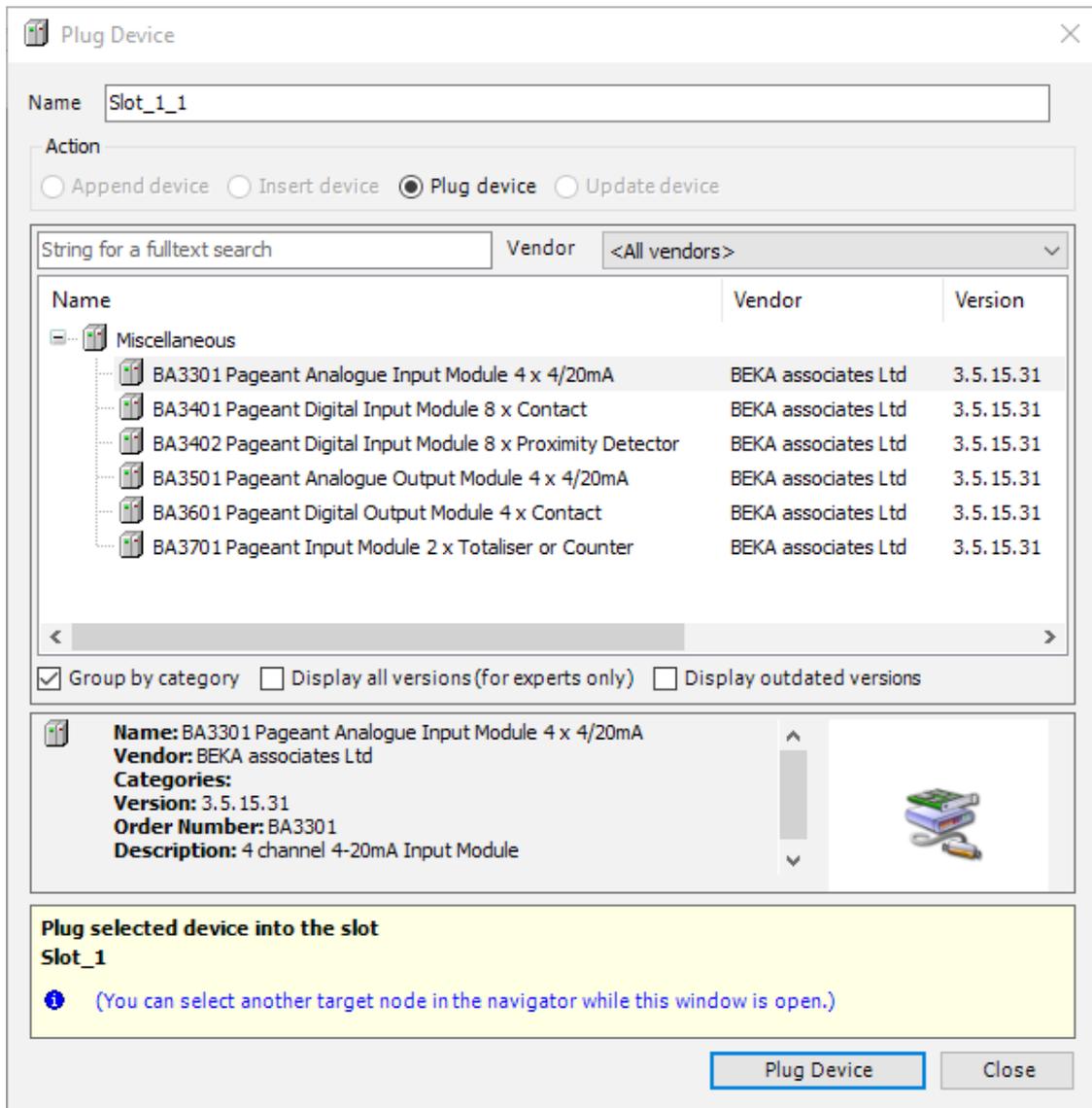
- Structured Text (ST) [v]
- Continuous Function Chart (CFC)
- Continuous Function Chart (CFC) - page-oriented
- Function Block Diagram (FBD)
- Ladder Logic Diagram (LD)
- Sequential Function Chart (SFC)

5 Adding I/O Modules to the project

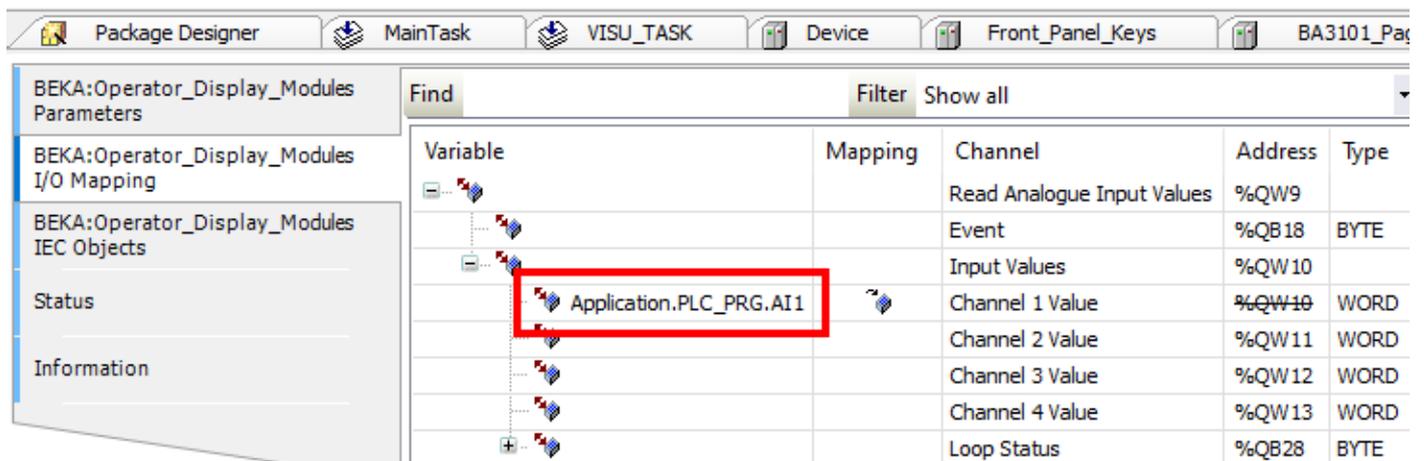
Expand the BA3101_Pageant_Operator_Panel in the Device Tree to show the I/O Modules slots.



I/O Modules can be added under the BA3101 Pageant Operator Panel device, right click on any of the 7 slots corresponding to the slots on the rear panel of the BA3101 Display and select Plug Device. A list of all the I/O modules available will appear, select the Module required for the application and click on Plug Device.



The device will now appear in the corresponding slot of the Device Tree. If you double click on the module, you will have access to the Module parameters (Serial Number, Module Number,...), the I/O map where the inputs and outputs for the module can be mapped to program variables.



6 Display Keys and LEDs

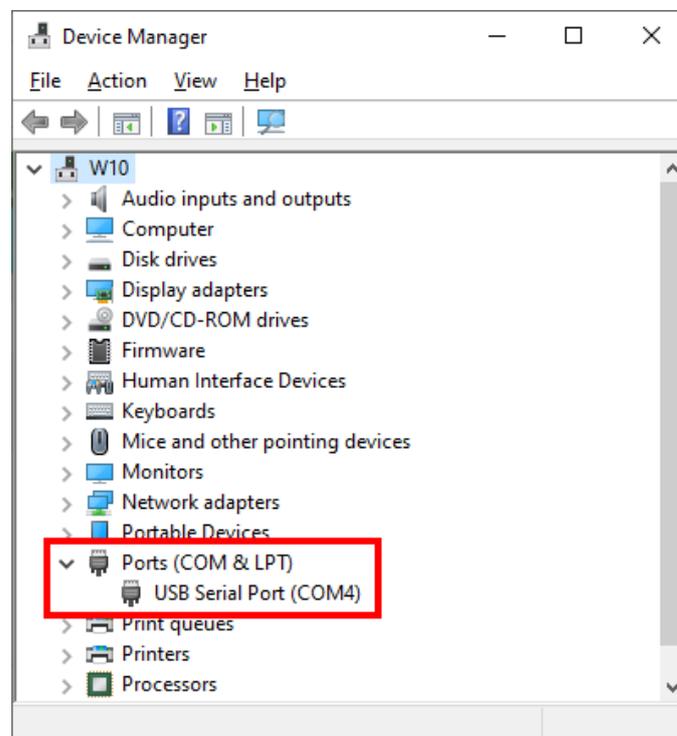
The Front_Panel_LEDs and Front_Panel_Keys devices also appear under the BA3101_Pageant_Operator_Panel, these will give control of the touch buttons and front LEDs of the Pageant Display in a similar manner to the I/O modules.

7 Downloading PLC applications

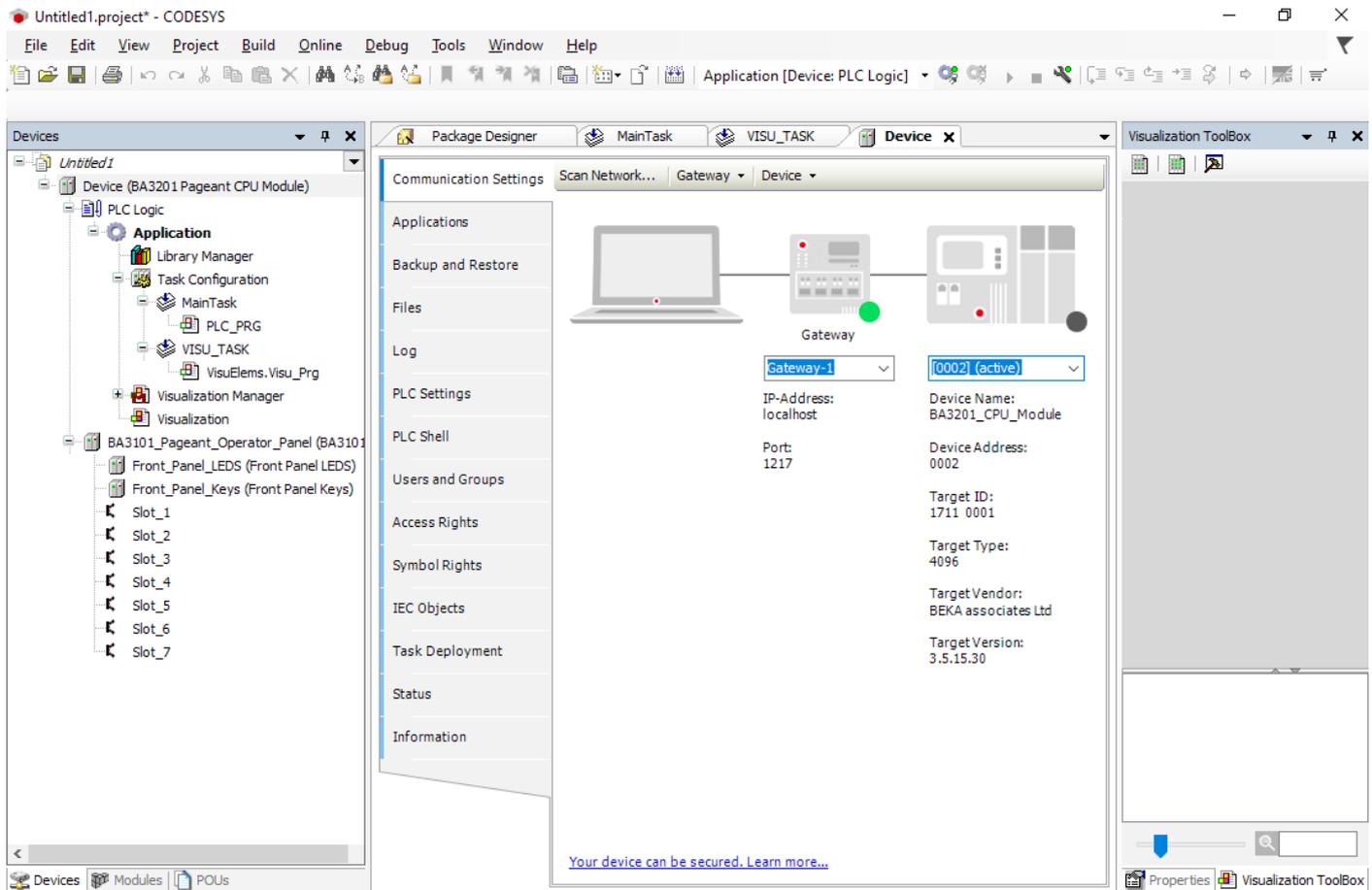
To download PLC applications to the Pageant Operator Panel, you will need the BA3902 Pageant USB Programming Cable

Connect it to your PC 's USB port, the driver should be installed automatically. This cable emulates a serial port, the first thing to do is to find out the COM port number allocated to this cable. Press the Windows Logo Key and type Device Manager.

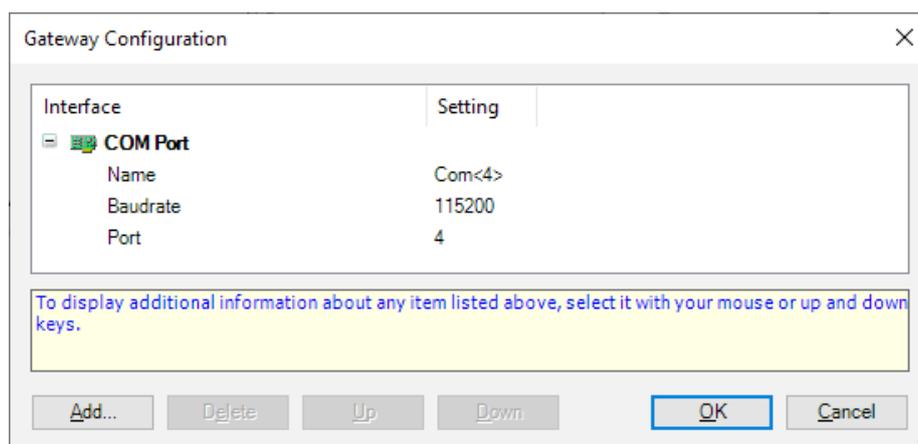
The USB Serial Port should be present under Ports (COM & LPT), make note of the COM port number (COM4 in this example):



In the CODESYS Development Environment, double click on the Device (BA3201 Pageant CPU Module) in the Device Tree on the left hand side, the Communication Settings window will appear:



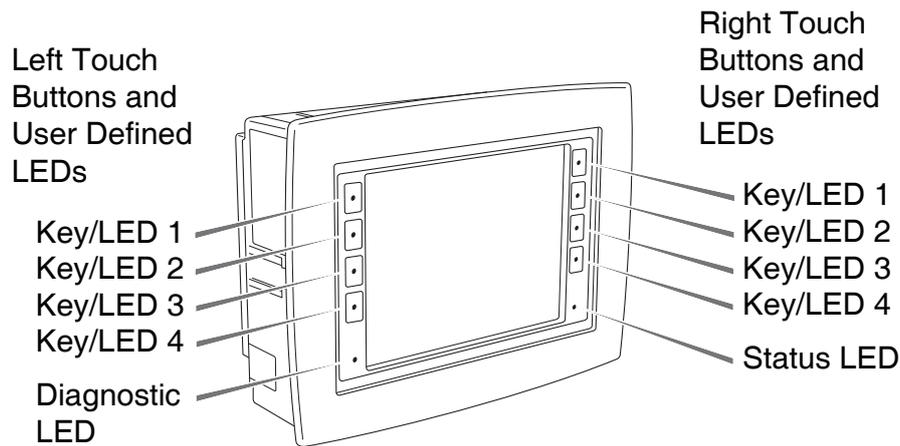
Select Gateway > Configure Local Gateway, add a New Top Level Interface as a COM port. Ensure the settings are set as below, amending the Name, Port and Local Address to match with your COM port number:



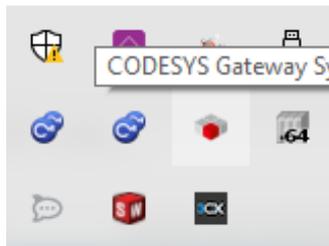
Confirm by clicking OK.

Connect the other end of the BA3902 to the programming port SK3 on the Pageant CPU Module.

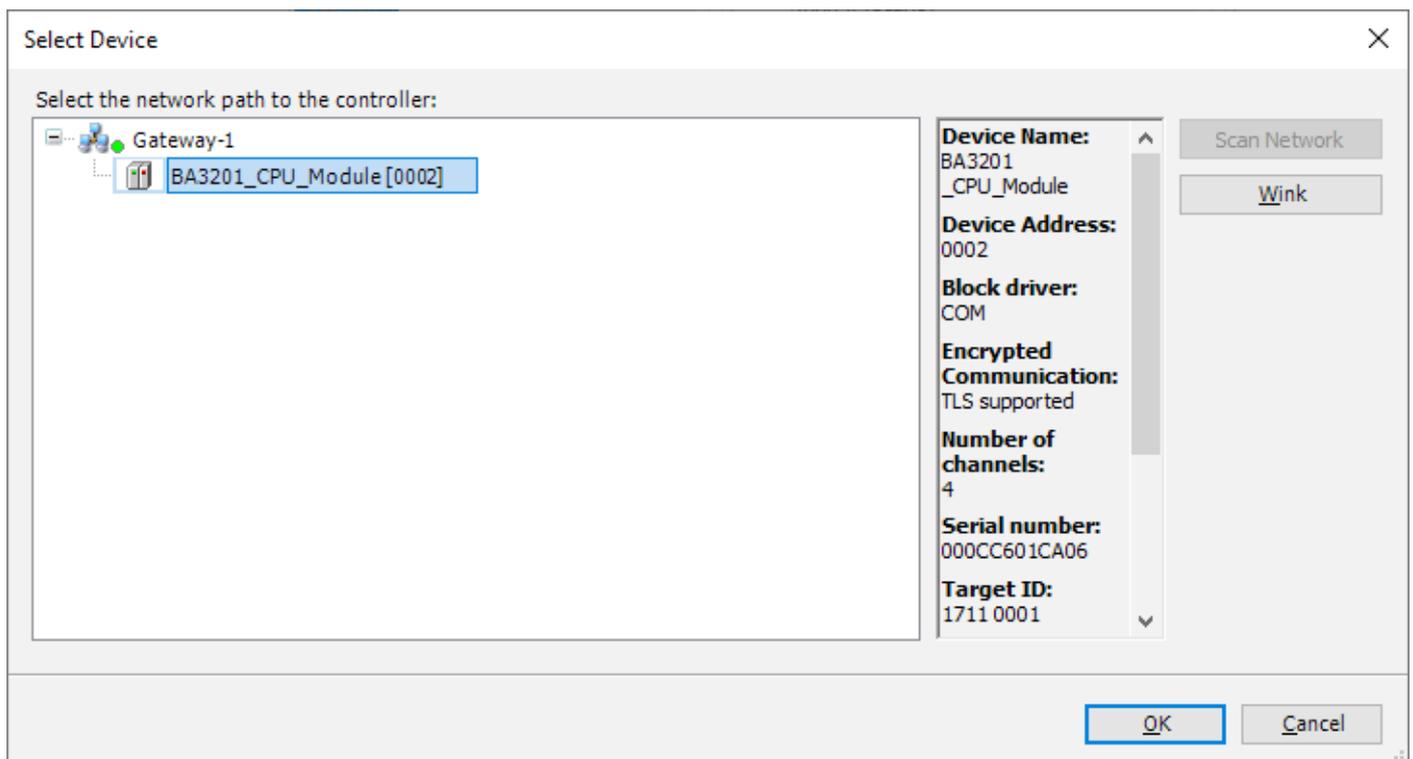
Power up the Pageant Operator Panel and ensure the system has reached the point where the Codesys Runtime has started which is indicated by an Amber or Green Status LED on the Display.



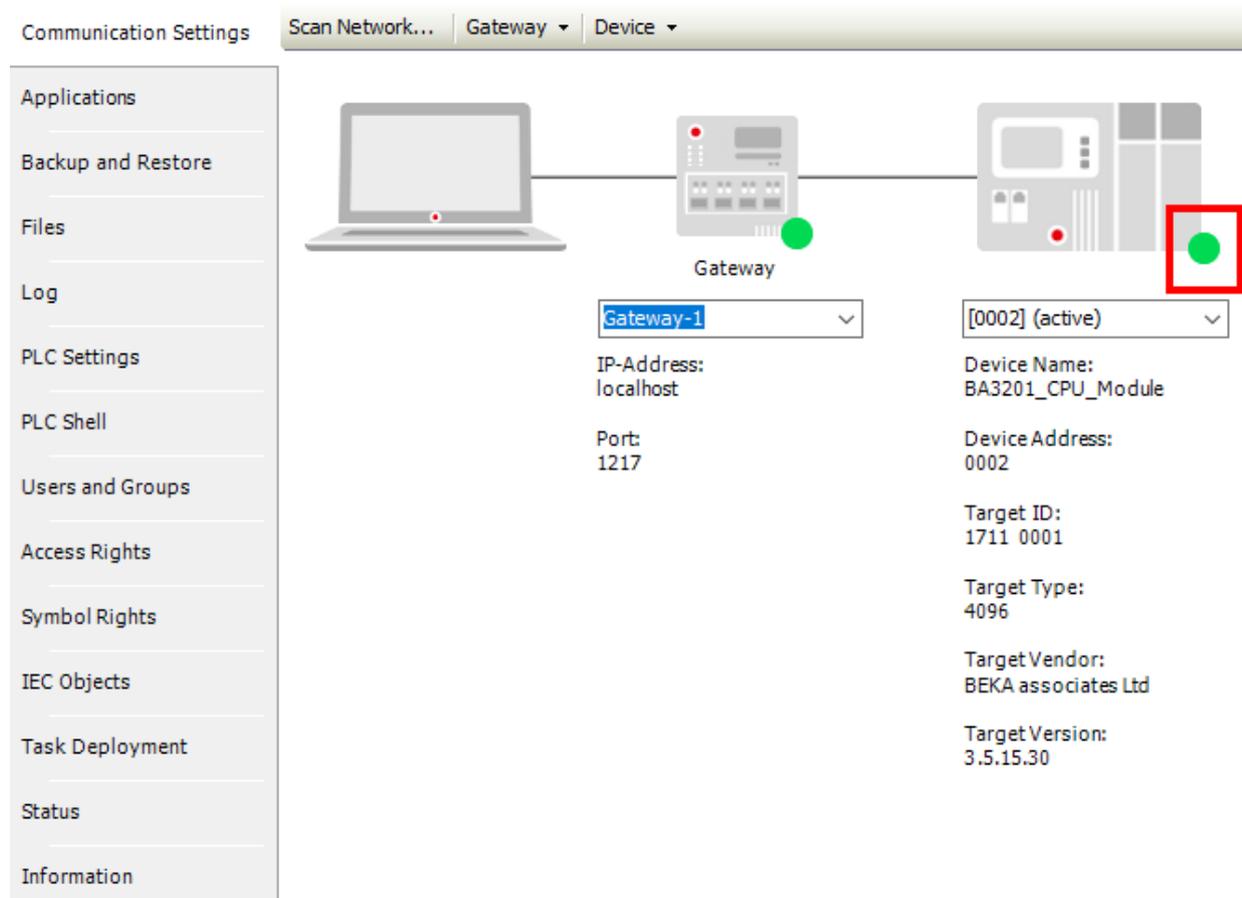
Once the Gateway configuration has been changed, the Codesys Gateway needs to be restarted for the change to take effect. Find the Codesys Gateway in the Windows System Tray, right click and select "Stop PLC". Then Right Click again and select "Start PLC".



On the CODESYS Communication Settings window, select Scan Network, the BA3201 CPU Module should appear under the Gateway:



Select the CPU Module and validate with OK, you will now have a green LED on the device confirming you are connected to the Pageant CPU.

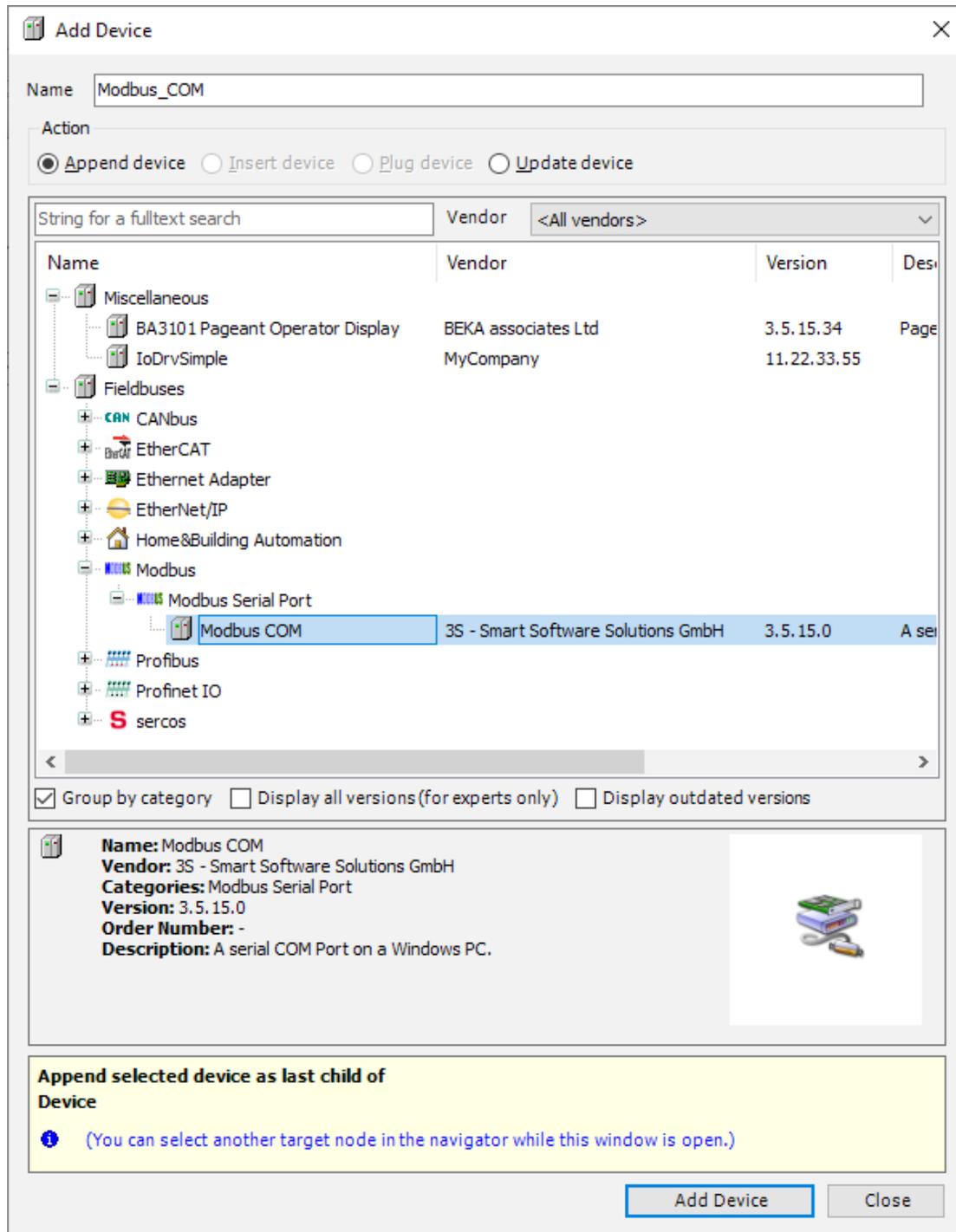


You can now Download and Debug IEC applications to the Pageant Operator Panel.

8 Adding Modbus RTU Connectivity

To add Modbus RTU Connectivity to the IEC application, right click on the Pageant CPU Module at the top of the device tree and select Add Device...

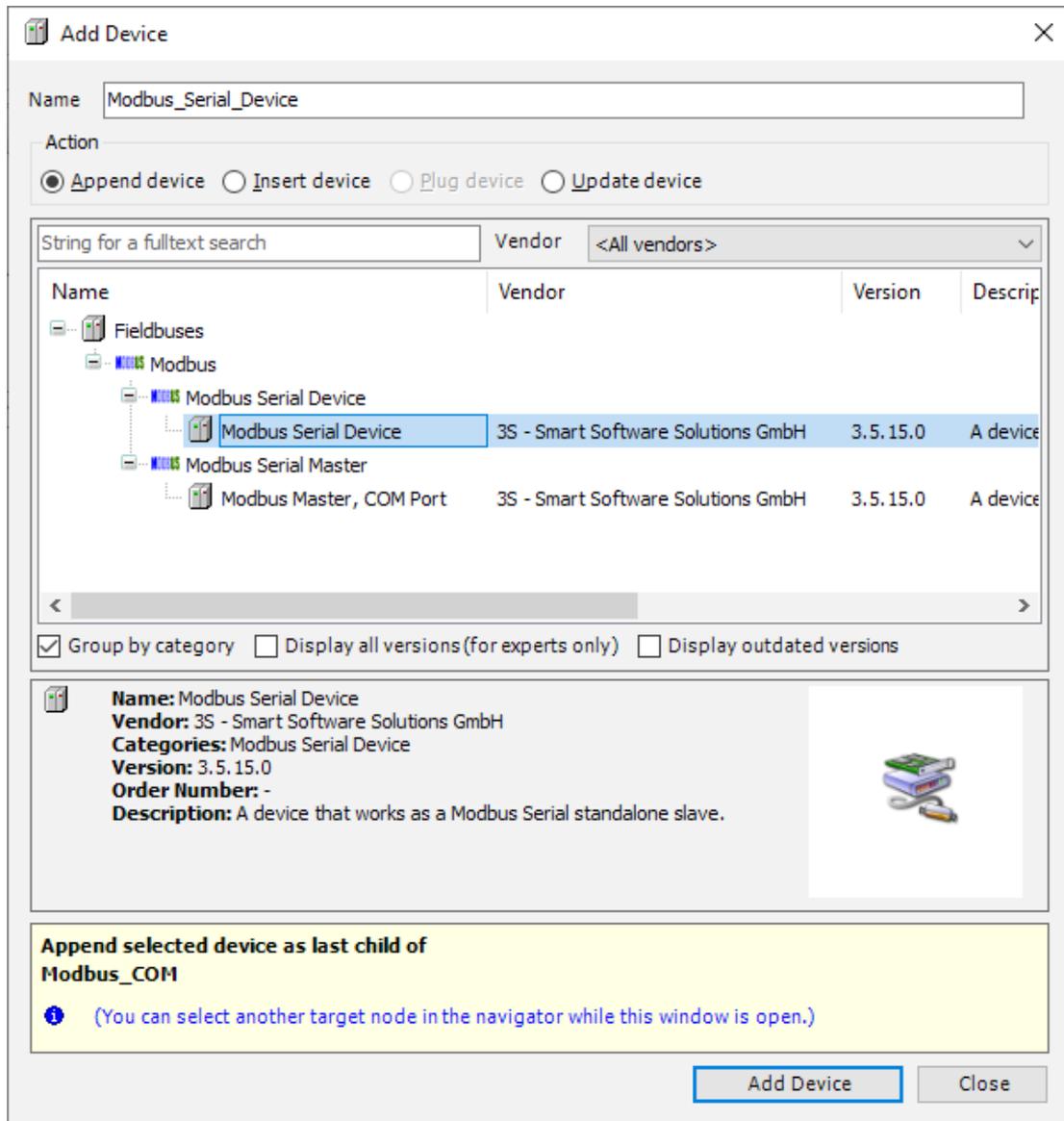
An “Add Device” window will appear, select
Fieldbuses > Modbus > Modbus Serial Port > Modbus COM



Confirm by Clicking on Add Device. A Modbus_COM device now appear in the Device tree on the left hand side. Double Click on this new Device and select the General tab which will display the Serial Port Configuration. **The COM port always needs to be selected as 1**, this is the port allocated inside the CPU module to Fieldbus communications. The other settings (Baud Rate, Parity, Data Bits and Stop Bits) need to match the settings of the other devices on the bus.

Right Click on Modbus_COM in the Device Tree, you can then add either a Modbus Serial Device if the Pageant Operator Panel is a Modbus Slave or Modbus Serial Master if the Pageant Operator Panel is a Modbus Master.

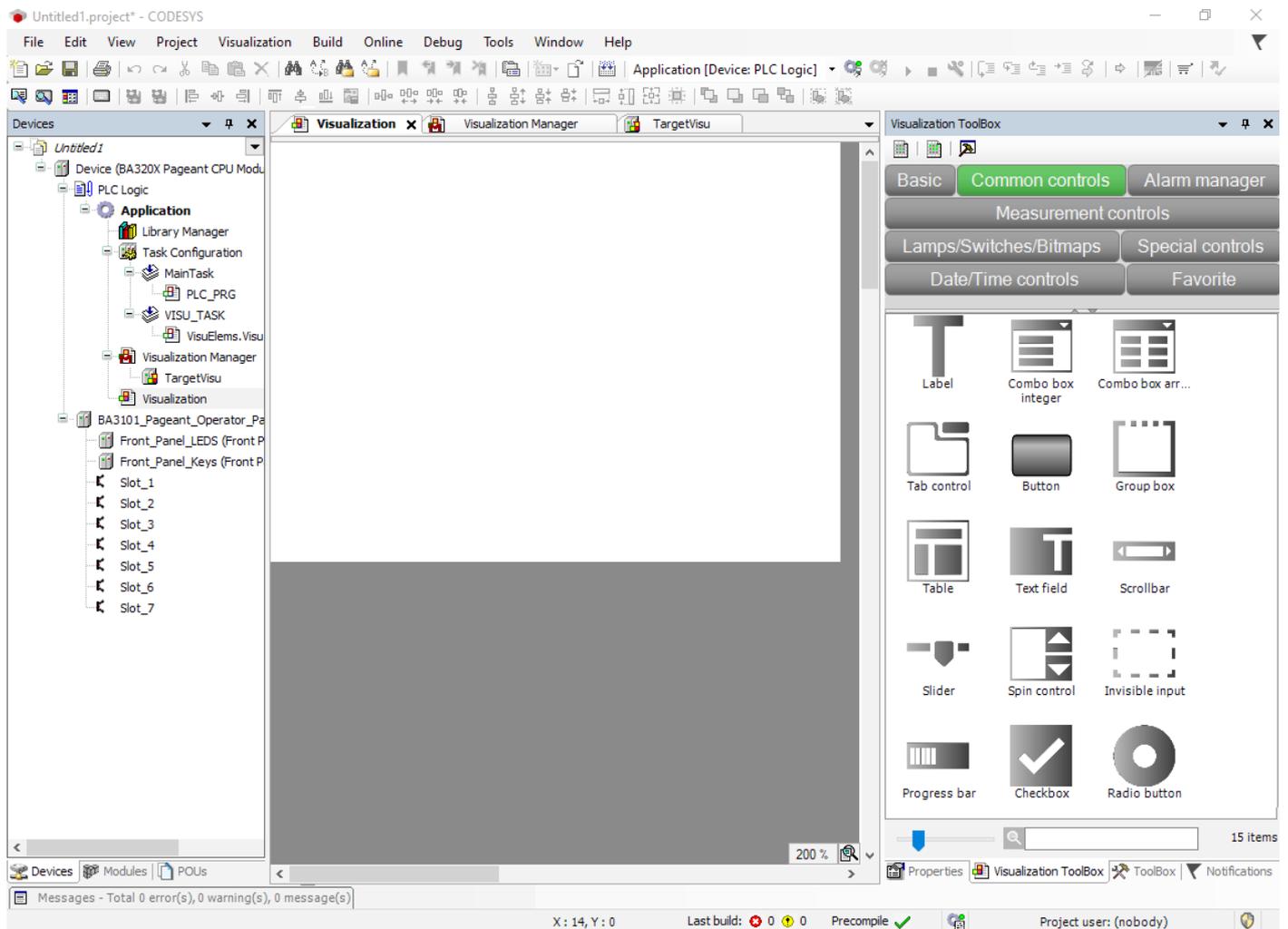
For further details on how to configure the Modbus communications with other devices, please refer to the CODESYS Development System documentation under Fieldbus Support.



9 CODESYS Vizualisation

The CODESYS runtime on Pageant includes the TargetVisu component which gives the ability to design graphical user interfaces.

In the device tree a Visualization screen is already inserted in the project by default. By double clicking on it you will see a blank screen.



The screen sizes is already set up to 320 X 240 pixels to match with the LCD size of the Display and the fonts are restricted to the list of fonts available in the BA3101 Display.

The Pageant CODESYS package includes a BekaStyle Visualization style which restricts the colours to the 4 greyscale available on the BA3101 Display.

Elements from the Visualization Toolbox can be dragged and dropped on the screen to build the User Interface, Please refer to the CODESYS Visualization Help content for more information.

The screenshot displays the CODESYS software interface for a project named 'Untitled1.project*'. The main window shows a visualization editor with a central area containing a text element that says 'Hello world'. The text is centered within a rectangular box with blue handles for resizing. The background is a dark grey.

On the left side, there is a 'Devices' tree view showing the project structure. It includes a 'Device (BA320X Pageant CPU Modu)' with 'PLC Logic' and 'Application' sub-items. The 'Application' sub-item is expanded to show 'Library Manager', 'Task Configuration', 'MainTask', 'PLC_PRG', 'VISU_TASK', 'VisuElems. Visu', 'Visualization Manager', 'TargetVisu', and 'Visualization'. Below this, there is a 'BA3101_Pageant_Operator_Pa' section with 'Front_Panel_LEDS (Front P' and 'Front_Panel_Keys (Front P' sub-items, and a list of 'Slot_1' through 'Slot_7'.

On the right side, there is a 'Properties' panel. It shows a table of properties for the selected text element:

Property	Value
Element name	GenElemInst_5
Type of element	Label
Text ID	67
Texts	
Text	Hello world
Position	
X	88
Y	88
Width	150
Height	30
Text properties	
Horizontal align...	Centered
Vertical alignment	Centered
Text format	Default
Font	Font-Standard
Font color	0, 0, 0
Transparency	255
State variables	
Invisible	

Below the table, there is a note: 'This property contains the name of the instance that will represent the selected visual element in the visualization.'

At the bottom of the interface, there is a status bar showing 'Messages - Total 0 error(s), 0 warning(s), 0 message(s)', 'X : 14, Y : 0', 'Last build: 0 0 0', 'Precompile' with a green checkmark, and 'Project user: (nobody)'.