

u-control studio / u-create PROCON-WEB ES

QSG0001v04-UC20-SL2000-OLAC Quick Start Guide setting up PROCON-WEB runtime

Abstract:

This Quick Start Guide contains instructions on how to install required software and how to create a u-create PROCON-WEB project for UC20-SL2000-OLAC controllers, including process data access via the u-control driver.

Hardware reference

No.	Component name	Article No.	Hardware / Firmware version
1	UC20SL-2000-OLAC-EC	2638920000	-
2	UC20-SL2000-OLAC-EC-CAN	2655590000	-

Software reference

No.	Software name	Article No.	Software version	
1	u-create studio	2660130000	1.20.2 Patch 4 or earlier	4.2.4 or later
2	u-create PROCON-WEB Designer	2705820000 ¹	6.4.4 or later	6.4.5 or later
3	u-create PROCON-WEB ES – runtime for u-control studio	2705820000 ² or demo mode	6.4.4 or later	6.4.5.1 or later
4	PuTTYgen	-	0.74 or earlier	

File reference

No.	Name	Description	Version
1	-	-	-

¹ Different licenses regarding target system and amount of tags are available, please advise with your local sales representative if in doubt which license suits your needs.

² Different licenses are available, or a license might already be included with your hardware purchase. A demo mode with 100 tags and runtime-limitation is also available. Please advise with your local sales representative if in doubt which license suits your needs.

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For any further support please contact your local sales representative:
<https://www.weidmueller.com/countries>

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1 Warning and Disclaimer

Warning

Controls may fail in unsafe operating conditions, causing uncontrolled operation of the controlled devices. Such hazardous events can result in death and / or serious injury and / or property damage. Therefore, there must be safety equipment provided / electrical safety design or other redundant safety features that are independent from the automation system.

Disclaimer

This Application Note / Quick Start Guide / Example Program does not relieve you of the obligation to handle it safely during use, installation, operation and maintenance. Each user is responsible for the correct operation of his control system. By using this Application Note / Quick Start Guide / Example Program prepared by Weidmüller, you accept that Weidmüller cannot be held liable for any damage to property and / or personal injury that may occur because of the use.

Note

The given descriptions and examples do not represent any customer-specific solutions, they are simply intended to help for typical tasks. The user is responsible for the proper operation of the described products. Application notes / Quick Start Guides / Example Programs are not binding and do not claim to be complete in terms of configuration as well as any contingencies. By using this Application Note / Quick Start Guide / Example Program, you acknowledge that we cannot be held liable for any damages beyond the described liability regime. We reserve the right to make changes to this application note / quick start guide / example at any time without notice. In case of discrepancies between the proposals Application Notes / Quick Start Guides / Program Examples and other Weidmüller publications, like manuals, such contents have always more priority to the examples. We assume no liability for the information contained in this document. Our liability, for whatever legal reason, for damages caused using the examples, instructions, programs, project planning and performance data, etc. described in this Application Note / Quick Start Guide / Example is excluded.

Security notes

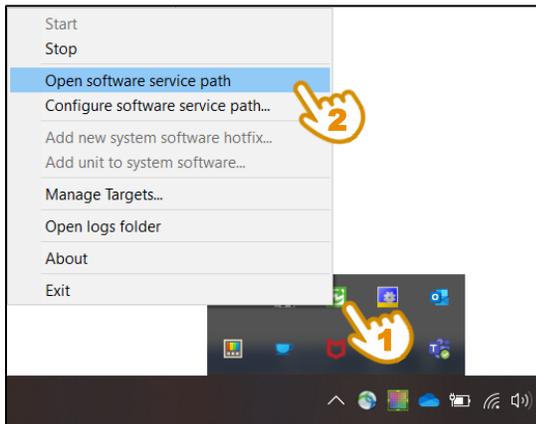
In order to protect equipment, systems, machines and networks against cyber threats, it is necessary to implement (and maintain) a complete state-of-the-art industrial security concept. The customer is responsible for preventing unauthorized access to his equipment, systems, machines and networks. Systems, machines and components should only be connected to the corporate network or the Internet if necessary and appropriate safeguards (such as firewalls and network segmentation) have been taken.

2 Install PROCON-WEB-ES Runtime in u-control studio

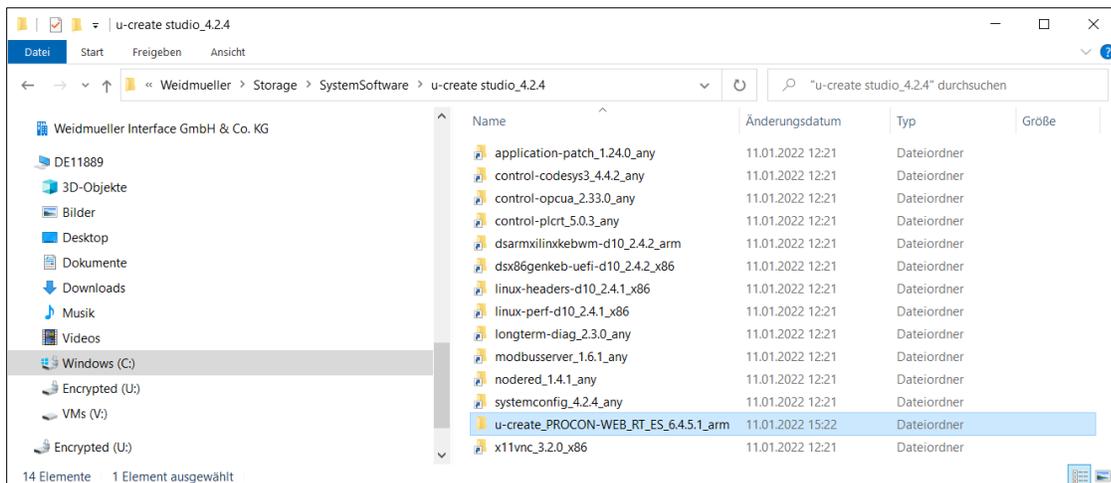


A micro-SD card is required to flash a target to the PLC

To add the PROCON-WEB-ES runtime to a UC20-SL2000 PLC, we first need to install an optional software unit into u-create studio. The software unit “PROCON-WEB-ES Runtime for u-create Studio” is available as for download from the Weidmüller support center at <https://support.weidmueller.com>.



Extract the contents of the zip-archive into the subfolder “\SystemSoftware\u-create studio_x.y.z” of the software service path, accessed via the system tray icon . Replace “x.y.z” with the version number used by your target.



3 Setup the PLC

3.1 Create SSH Key

The UC20-SL2000-OLAC-EC is a Linux based PLC (**O**pen **L**inux **A**utomation **C**ontroller) with a SSH shell enabled. To access this shell and to transfer files to the controller, key-based authentication is used.



While this step is not necessary if you are using PROCON-WEB-ES 6.4.5.1 or later, it is strongly recommended to create your own key pair nonetheless.

PuTTYgen is an easy-to-use key generator that can be used to create a SSH key pair. This process is described in detail in the u-create studio manual. The following five steps describe it in brief:

- 1) Start PuTTYgen.
- 2) Keep the default key type RSA. Click Generate to generate a new key.
- 3) After the key is generated,
 - Copy-paste the key into a text editor.
 - Save the file with the name **admin**.



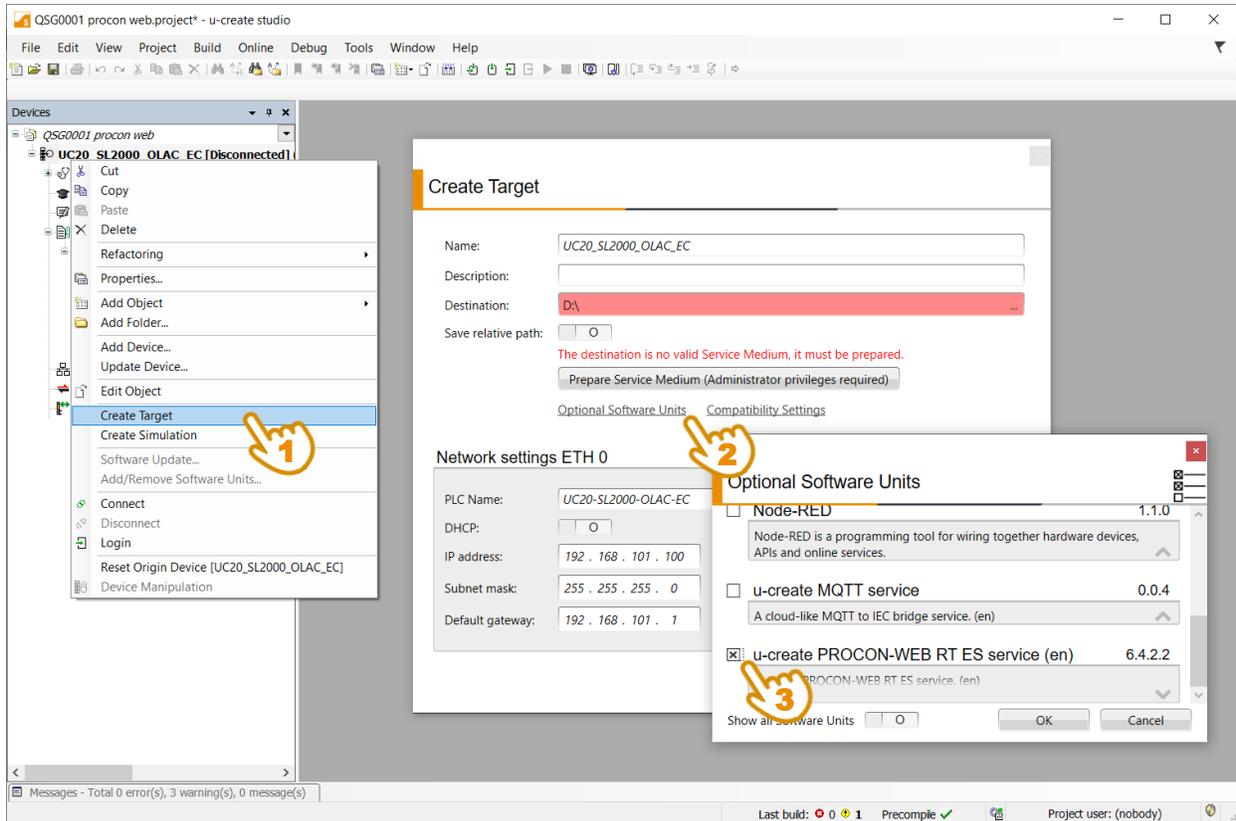
Make sure that filename is just “admin” without any file extension like “.txt”. Some text editors may add an extension by default.

- 4) Click **Save Private Key** and save the key as **admin.ppk** in a secure location.
- 5) Navigate to the subfolder “\Data\dsarmxilinxkebw_m_x.x.x_arm\config\key” of the software service path³, accessed via the system tray icon .
- 6) Replace the original “admin” file with the one you created. Do not use the “admin.ppk” file. This operation requires admin privileges.

³Example: C:\Program Files (x86)\Weidmüller\Storage\Data\dsarmxilinxkebw_m_2.1.2_arm\config\key
Note that there might be multiple folders with this name but different version numbers if you upgraded u-create studio. If in doubt which one to choose, go with the latest version number.

3.2 Generate and Flash the Target

To transfer a project to the u-control PLC, we first need to create a target and flash it onto a service medium. A micro-SD card is used as the service medium.



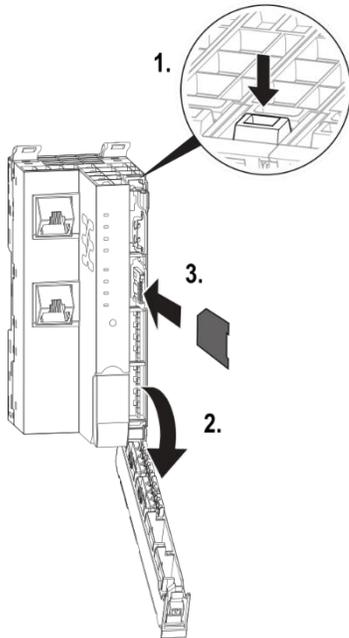
- 1) Right-click onto the “UC20_SL2000...” entry in the project tree and select “Create Target”.
- 2) Select the drive letter of your SD card as the destination for the target creation. You might get a message that the SD card must be configured as a bootable service medium. Follow the on-screen instructions to do this. Admin privileges are required for this.
- 3) Configure the network settings to an IP address and subnet that of the network the PLC is connected to. Make sure your PC is connected to the same network and configured to use an IP in the same range and subnet. You might also use DHCP and have the IP addresses assigned by your router or DHCP server automatically. In case you’ve connected your PC directly to the PLC, you must configure static IP addresses.
- 4) Click on “Optional Software Units” and enable PROCON-WEB Runtime, as shown below.
- 5) Start the target creation by clicking on “Create”.



The create target process will create a bootable SD card. This process may need admin privileges. If an error occurs during the create target process, please close u-create studio and run it as administrator.

To install the created target on the PLC, follow these steps:

- 1) Insert the microSD card into the PLC.



- 2) Power up the PLC and observe the **RUN** LED.
 - a. Orange flashing: Installation is in process.
 - b. Steady green: Installation has been finished.
- 3) Switch off the power and remove the microSD card after the installation finished.
- 4) Power the PLC up again. After bootup, the **RUN** LED will be lit steady green.

3.3 Install PROCON-WEB-ES via Add/Remove Software Unit

u-create studio allows to add Software Units like PROCON-WEB-ES to a PLC already running a target. Removing power from the device and inserting a SD card is not necessary when using this approach.



The Application running on the device will be stopped and the device will be rebooted during the installation of the Software Unit.

Devices running a target created with u-create studio 4.2 or later might require the installation of a Software Unit Key on the device to enable adding certain Software Units after target creation. For Software Units provided by Weidmüller – like PROCON-WEB-ES – this key is part of u-create studio. It is found in the Software Service path under “Keys\1\WMIUC20public.gpg”⁴

The screenshot shows the DevAdmin web interface with the following elements:

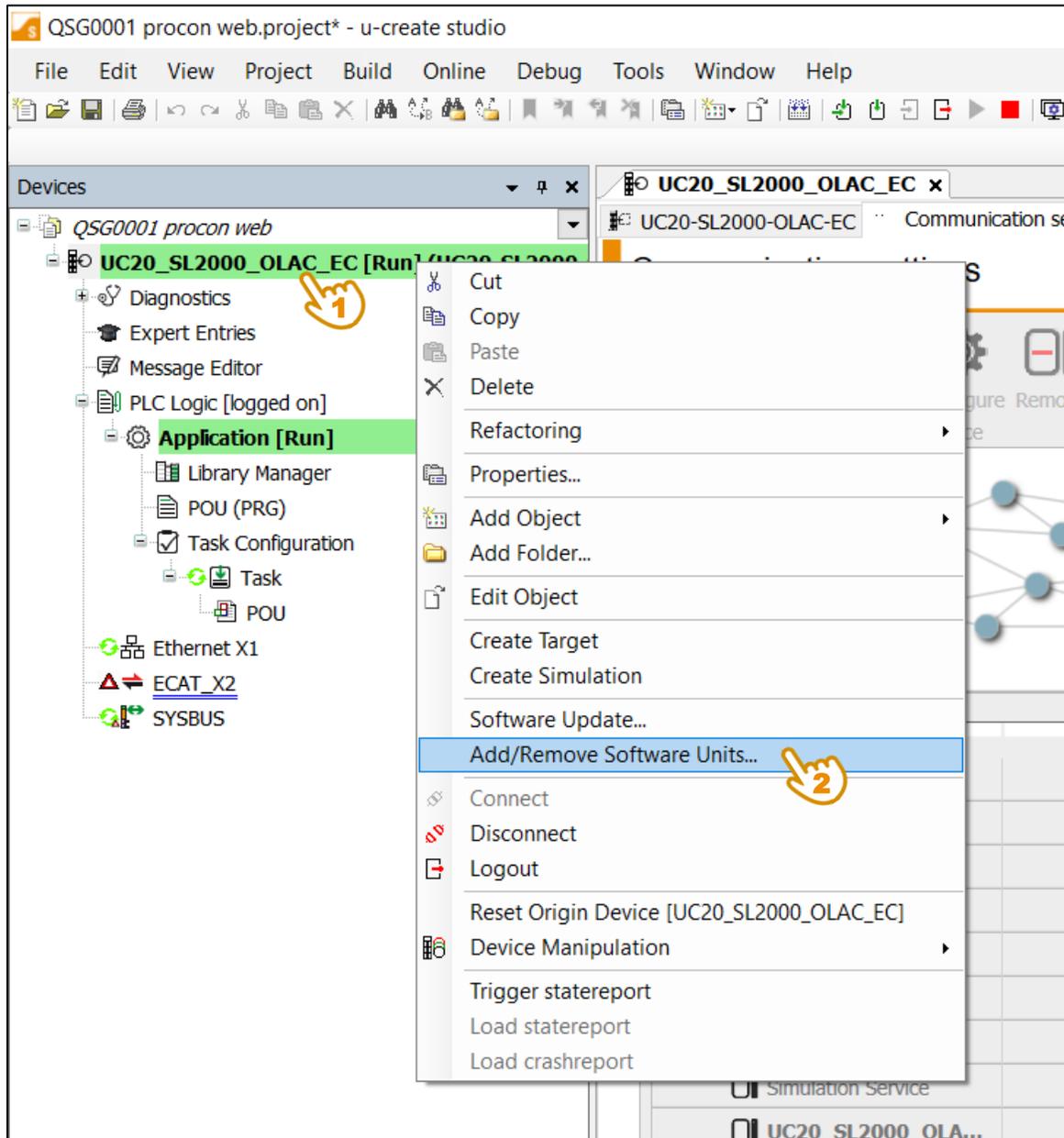
- Navigation tabs: **DevAdmin**, Diag., **Config.** (highlighted with a hand icon labeled '1'), Backup/Restore, System Overview.
- Software Service:**
 - IP Address:
 - Port:
 - Apply Software Service settings button
- Software Unit Key:**
 - Software Unit Key: WMIUC20public.gpg (highlighted with a hand icon labeled '2')
 - Install software unit key button (highlighted with a hand icon labeled '3')

To install it on the PLC, login to the DevAdmin web interface⁵ and scroll to the bottom of the “Config” tab. Click on “Select file”, navigate to the file “WMIUC20public.gpg” and click “open”.

⁴ Example: C:\Program Files (x86)\Weidmueller\Storage\Keys\1\WMIUC20public.gpg. Please note that there might be more than one Key Directory (i.e. \Keys\2, \Keys\3 ..), check if the WMIUC20public.gpg is located in any of these if can't be found under \Keys\1.

⁵ To access the DevAdmin interface enter the IP address of your plc in a web-browser, i.e. <http://192.168.101.100>. The default login credentials are User: Administrator; Password: tobechanged

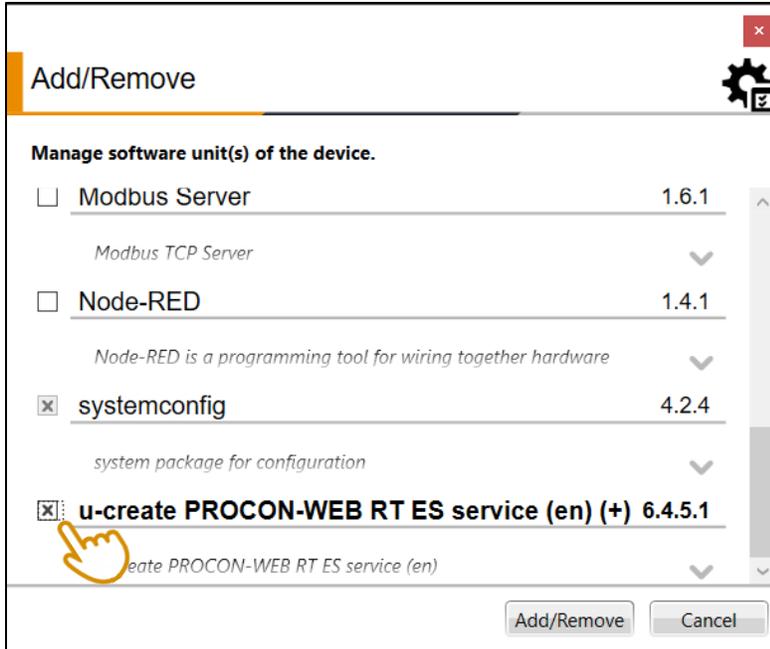
Lastly, hit “Install software unit key”. After a few seconds you should be prompted with a success message.



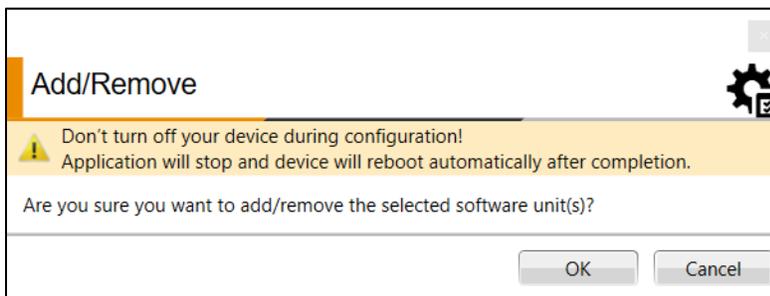
Open the u-create studio project that you’d like to add PROCON-WEB-ES to. Connect and login to the PLC. Right-click the PLC in the device tree and select “Add/Remove Software Units...” from the context menu.



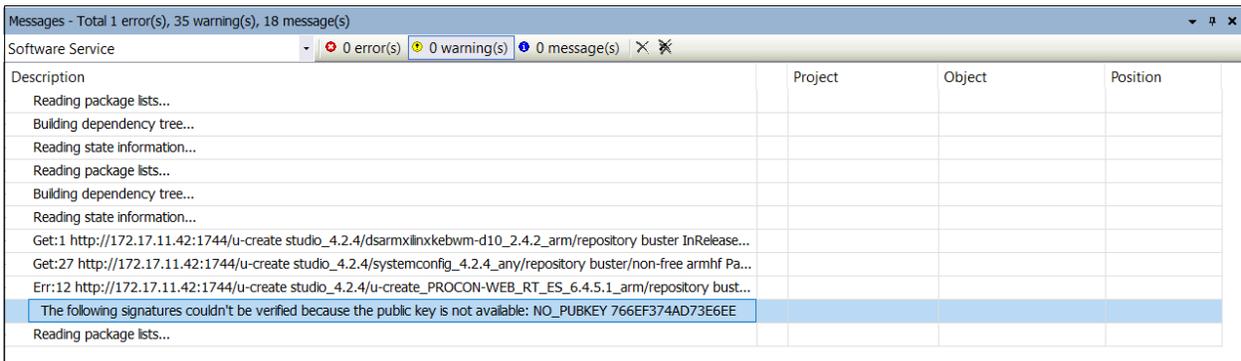
In case you are prompted with an error message “Opening software repository failed”, double check if the u-create studio Software Service is up and running and if your PC firewall allows incoming TCP connections on port 1744.



Select “u-create PROCON-WEB RT ES service” from the list and click “Add/Remove”.



Confirm the warning that the device will be rebooted. u-create studio will proceed with the installation of the software unit on the device.

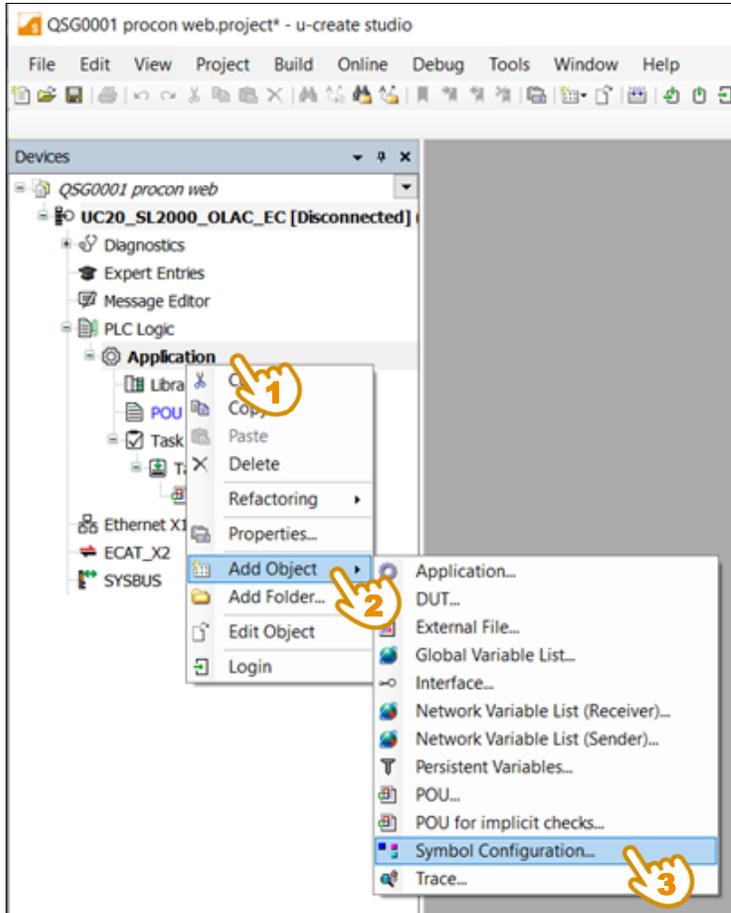


In case the installation fails, check if there is a message like “public key is not available” in the Software Service message log. If so, double check that you’ve correctly installed the software unit key and that it is the right key for your version of u-create studio. Also check the release notes of the software unit if a different key should be used.

4 Export Symbol Configuration

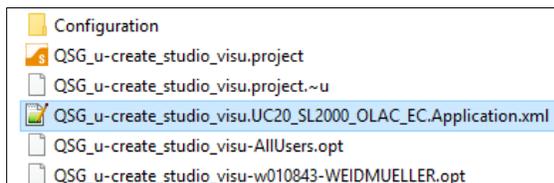
If you want to use process variables in your visualization you need to:

- 1) Add a **Symbol Configuration** to your u-create studio application.



- 2) Use checkboxes to select all variables you want to use in your visualization.
- 3) After changing the symbol configuration click **Build** → **Generate code**.

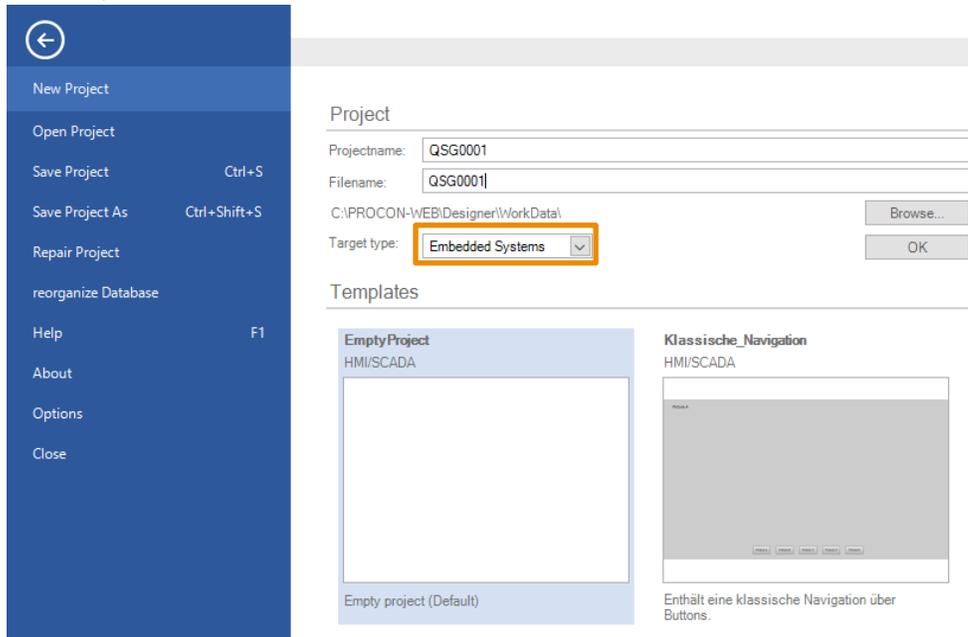
This procedure creates a .xml file in your project directory which contains all symbol configuration information.



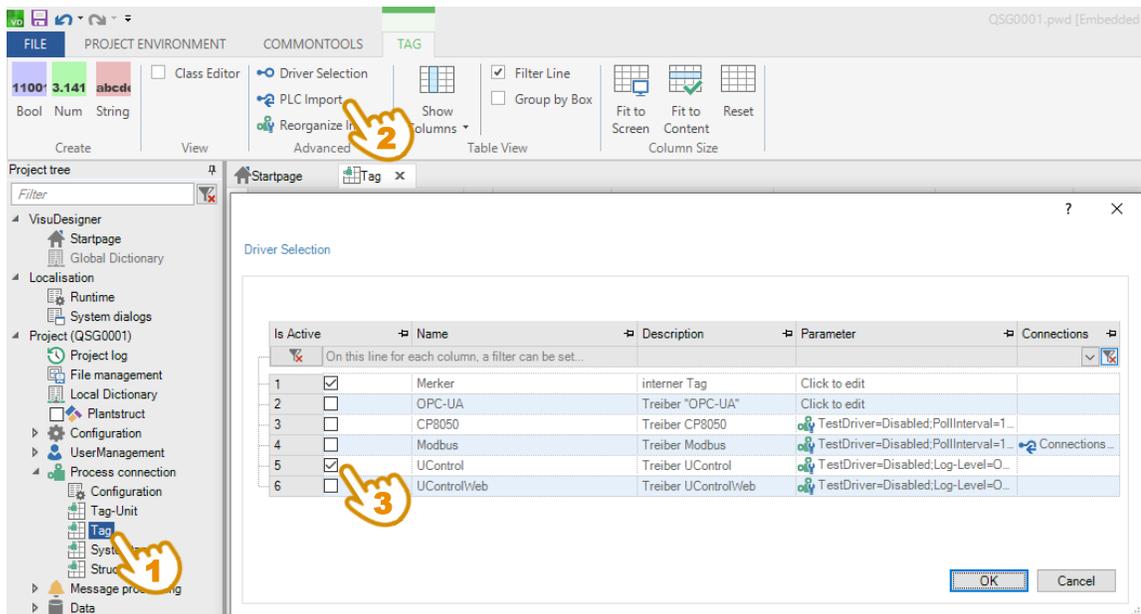
Only Global variables that are actually used in the PLC project are shown in the symbol configuration.

5 Create a Visualization using PROCON-WEB Designer

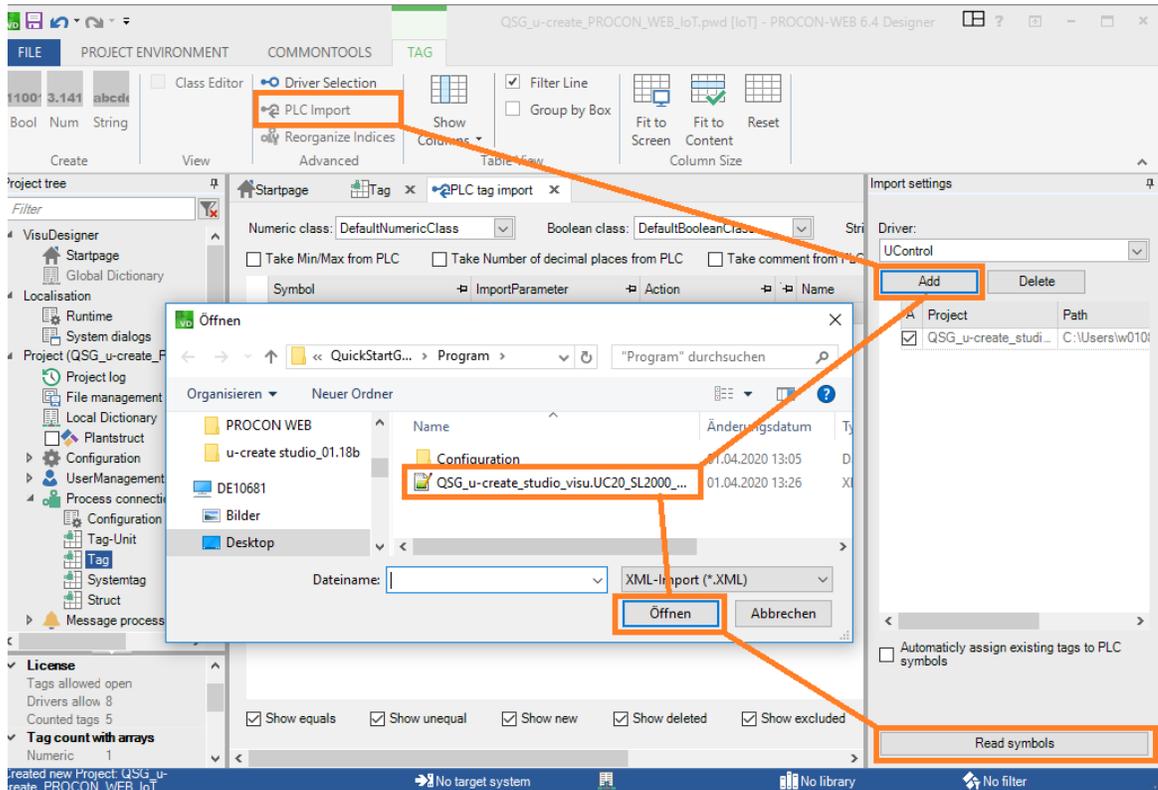
1. Start PROCON-WEB Designer and create a new project and select target type IoT (6.4.4 or earlier) / Embedded Systems (6.4.5 or later). You might also open an existing project of this type.



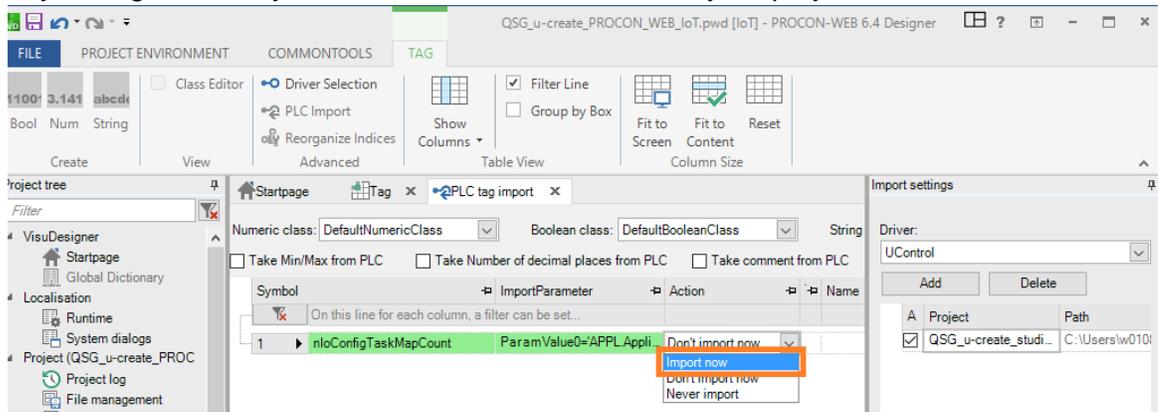
2. Select UControl driver from Driver Selection.



3. Click **PLC Import** and open the .XML file from u-create studio project directory and click **Read symbols**.



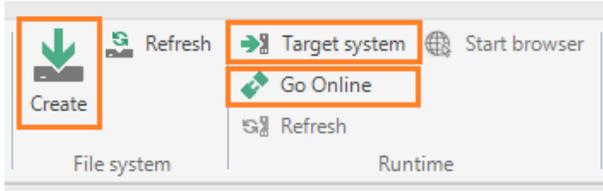
4. Select variables you want to use in your visualization and click **Import now** to add them to your tag list. Now you can use the PLC variables in your project.



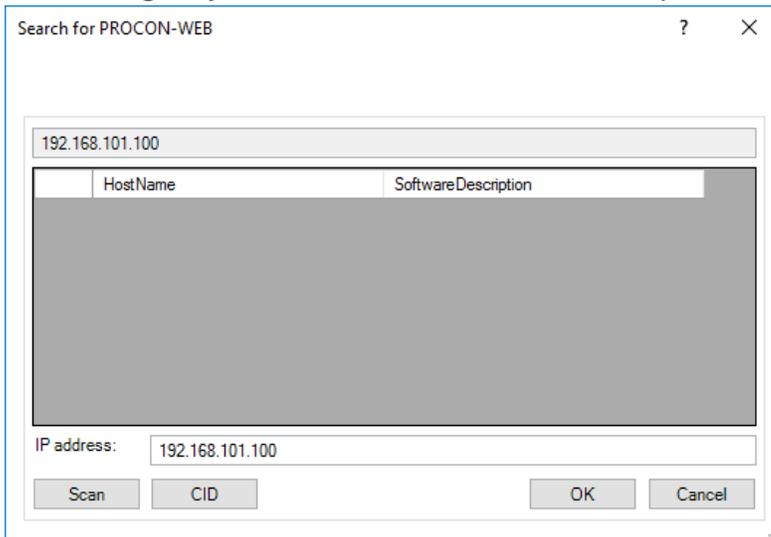
6 Download the Visualization to the PLC

Last step is to download the visualization runtime to the u-control.

1. Click **Create** to generate the runtime.

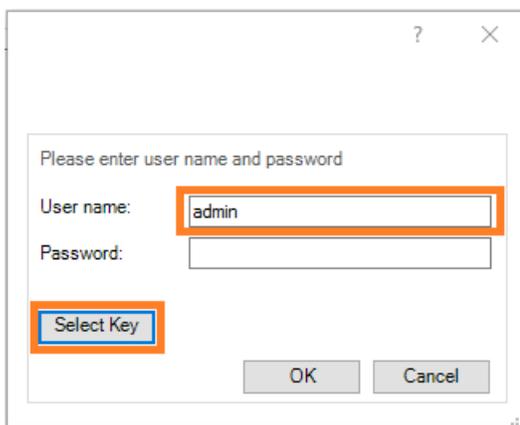


2. Select **Target system** and enter the IP address of your u-control.

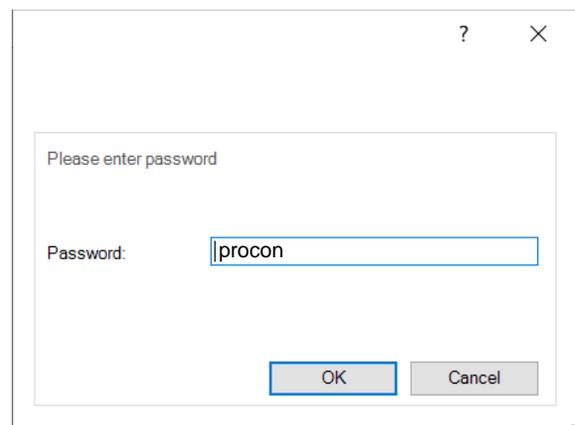


3. Click **Go Online** and enter username **admin** and select your private key file for ssh access. SSH Key file creation is shown in Chapter 3.1. With of PROCON-WEB-ES 6.4.5 and later you do not need to use a key file for authentication. Use the password “procon” instead.

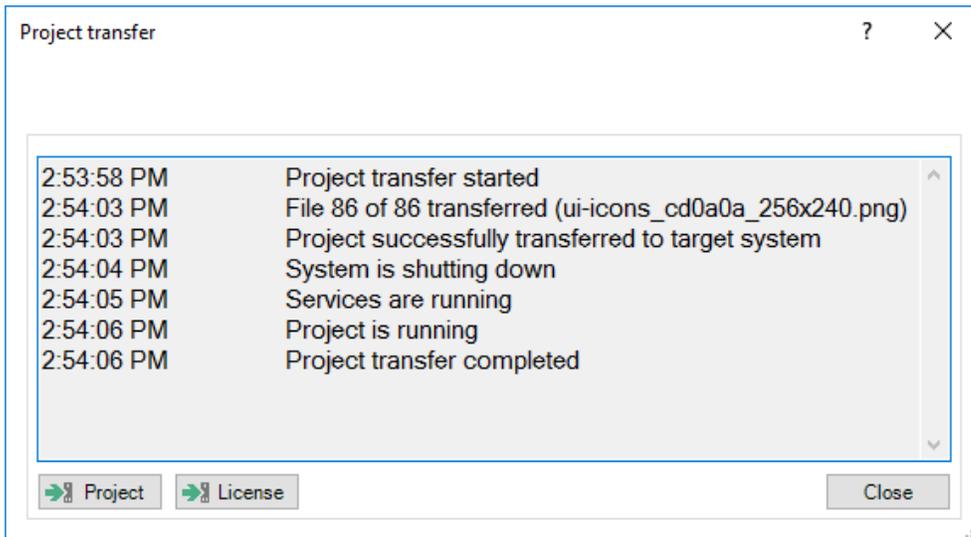
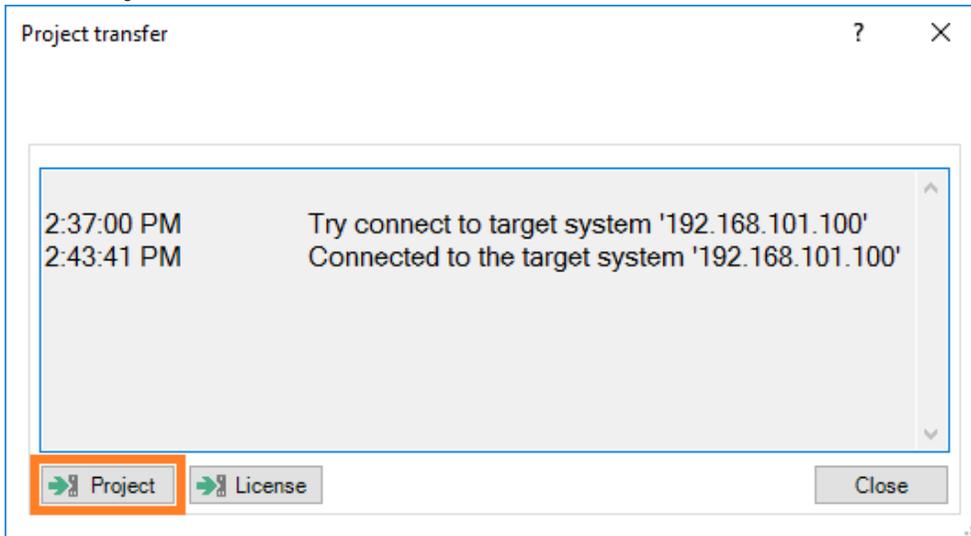
Version 6.4.4 and earlier:



Version 6.4.5 and later:



4. Click **Project** to transfer the visualization to the u-control.



Once the project transfer is completed you can open your visualization in your web browser by entering the IP address of the u-control and port number 16700. Make sure to use http://, not https:// (example: <http://192.168.101.100:16700>).

To monitor the state of the PROCON-WEB runtime system, navigate to the System Management at port 16701 (example: <http://192.168.101.100:16701>).



Log in

System Management

Username
Administrator

Password
.....

Log in

User: Administrator

Password: procon

After logging in you are presented with an overview of the visualization projects which have been downloaded to the controller. You can also check on the status of PROCON WEB services, drivers and display license information.

Goto WebVisu Language Administrator 

System Management

Management

- Projects
- Licenses

Status

- Services
- Drivers
- HMI-Clients

About

- Version

Projects

New Project

Current Project			
Name	Version	Tag Count	Driver Count
QSG0030-temperature-controller-visu	6.4.5	8	1

Project List

<input type="checkbox"/>	Project Name	Status	
<input type="checkbox"/>	QSG0030-temperature-controller-visu	Loaded	⋮
<input type="checkbox"/>	default	Unloaded	⋮