

UC20-SL2000-OLAC-EC / UR20-FBC-EC

Quick Start Guide for connecting EtherCAT with u-create studio

Abstract:

This document is a quick commissioning guideline for the Weidmüller UC20-SL2000-OLAC (Previously UC20-SL2000-AC) with u-create studio connected to a u-remote EtherCAT coupler. It describes how to connect the coupler as an EtherCAT slave device to the controller and how to map variables to the IO-system.

Hardware reference

No.	Component name	Article No.	Hardware / Firmware version
1	UC20-SL-2000-OLAC-EC	2638920000	
2	UR20-FBC-EC	1334910000	/ FW 01.08 or higher
3	UR20-8DI-P-2W	1315180000	-
4	UR20-8DO-P	1315240000	-

Software reference

No.	Software name	Article No.	Software version
1	u-create studio	2660130000	1.18 (or higher)

File reference

No.	Name	Description	Version
1	-	-	-

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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 Components & Connections

2.1 Port assignment



UR20-8DI-P-2W is a remote IO module attached to u-control.
 UR20-8DO-P is a remote IO module attached to u-remote coupler.

1.) UC20-SL2000-AC

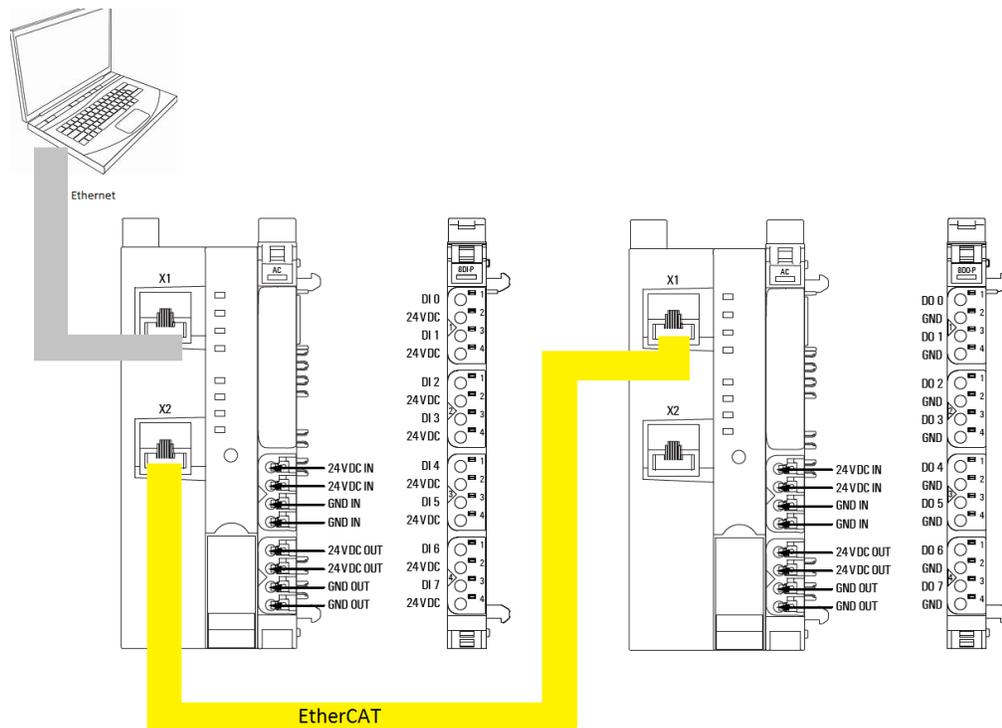
X1:	Ethernet	Default IP: 192.168.101.100 (configure in u-create studio)
X2:	EtherCAT	OUT (connection to first EtherCAT slave)

2.) UR20-FBC-EC

X1:	EtherCAT	IN (connection from controller or prior slave)
X2:	EtherCAT	OUT (connection to next slave)

2.2 Schematic Structure

The application uses an 8DI module at the u-control and an 8DO module at the u-remote, to show how to map variables.



Ethernet Connection: You can access the UC20-SL2000-xx controller via Ethernet. Connect the PC to the controller using a LAN cable and X1 Port.

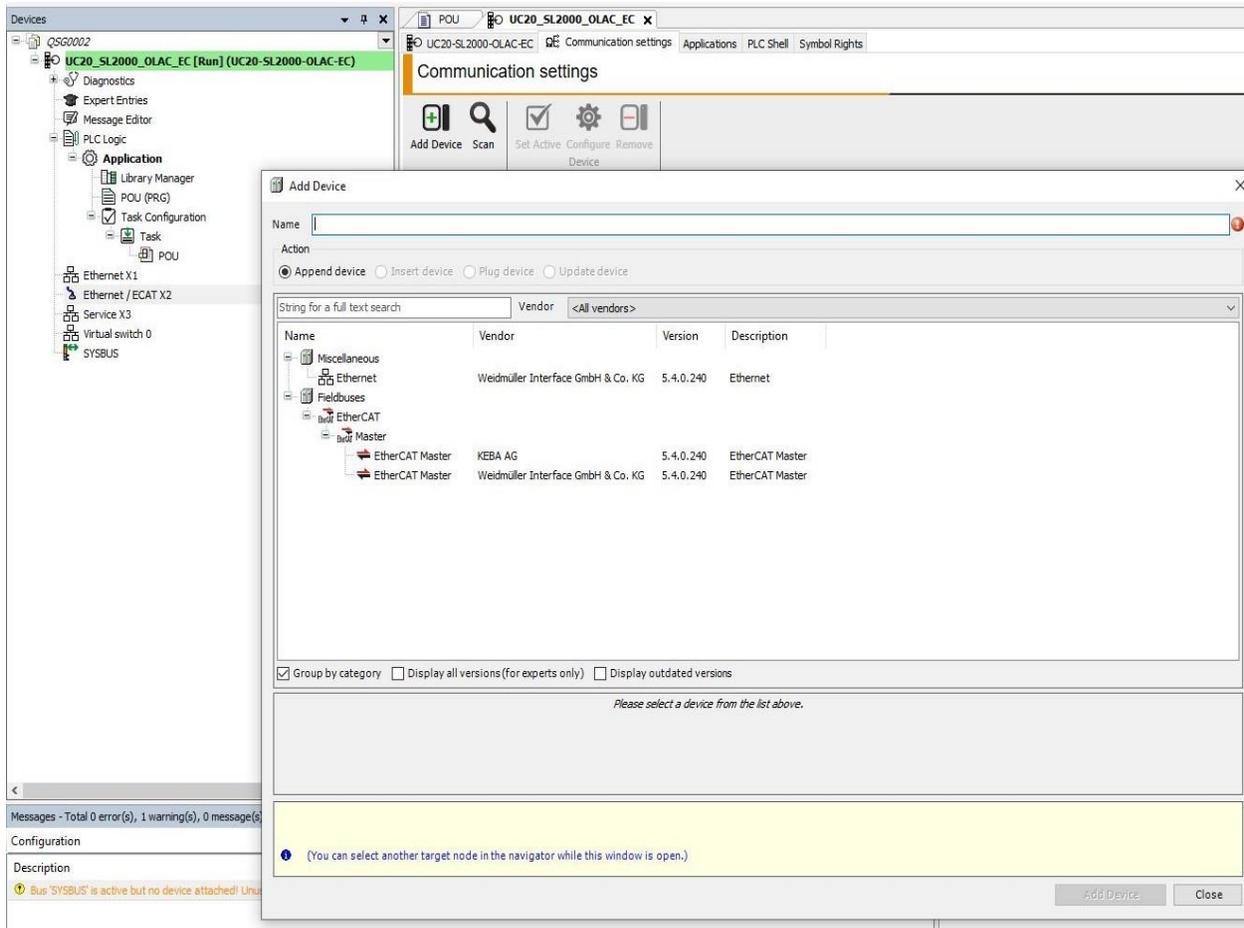
EtherCAT Connection: Connect the UC20 Controller to the u-remote coupler using a LAN cable. Use the X2 Port from the controller and the X1 Port from the u-remote EC coupler.

3 u-create studio – Hardware Setup

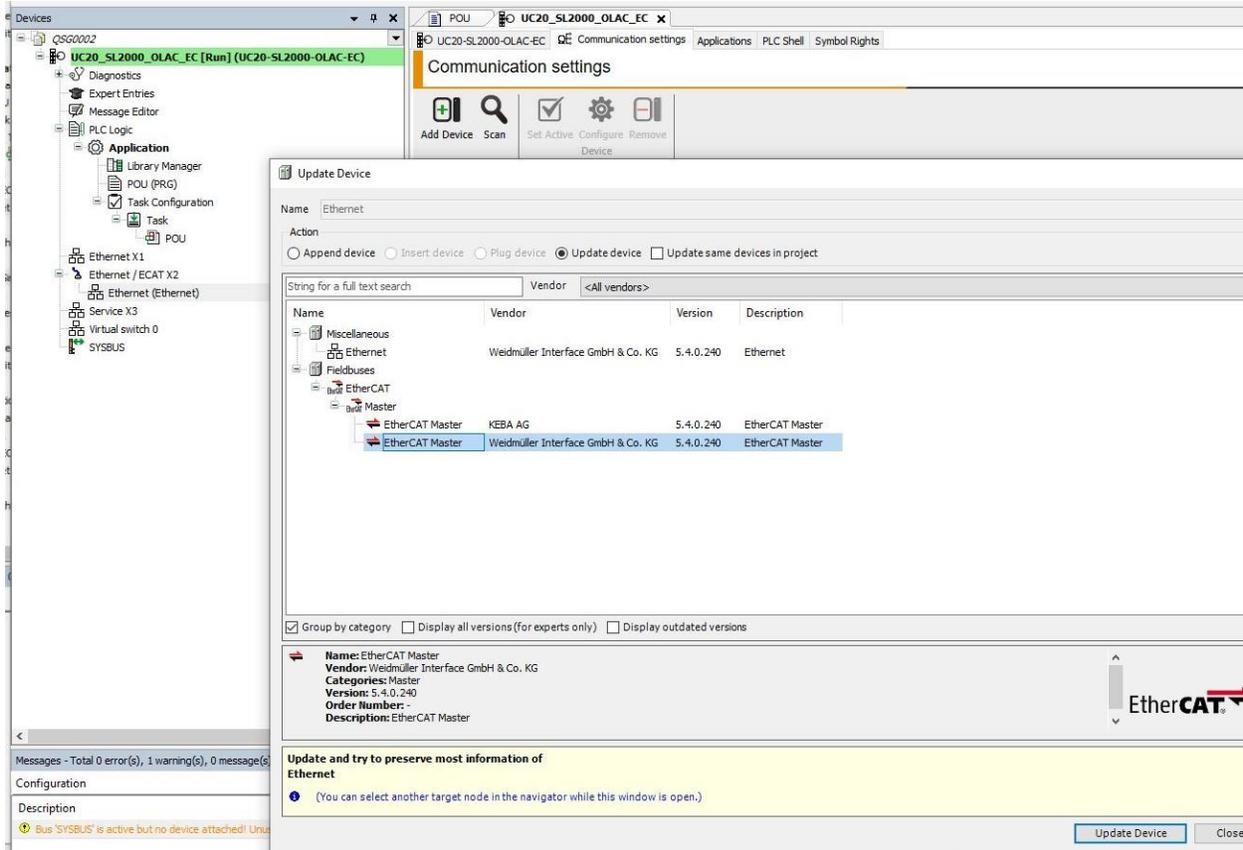
3.1 Create a new project

To create a new project, follow these steps:

- 1.) Start u-create studio.
- 2.) Open File -> New Project (or Strg+N) to create a new project.
- 3.) Choose Default Project OLAC-EC.
- 4.) Now check if you are connected to the controller and that it is running.



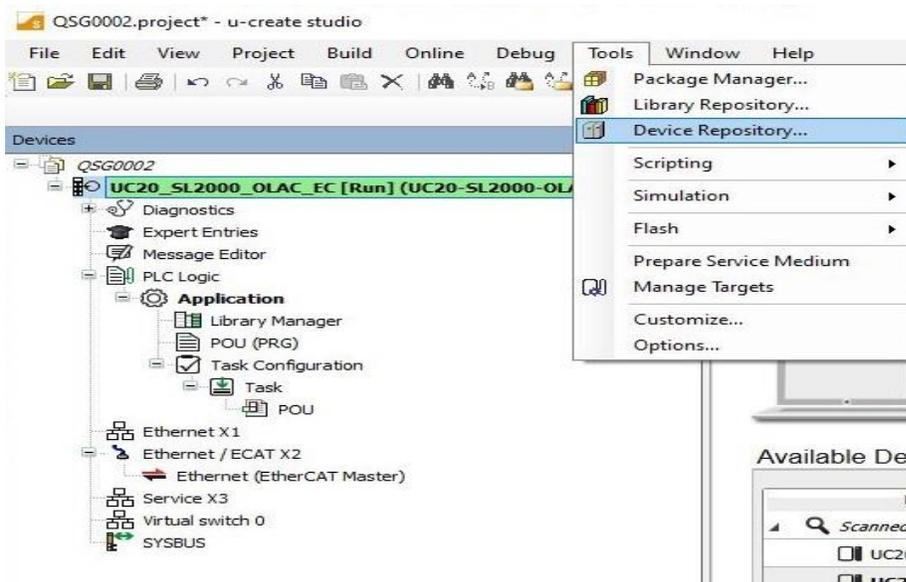
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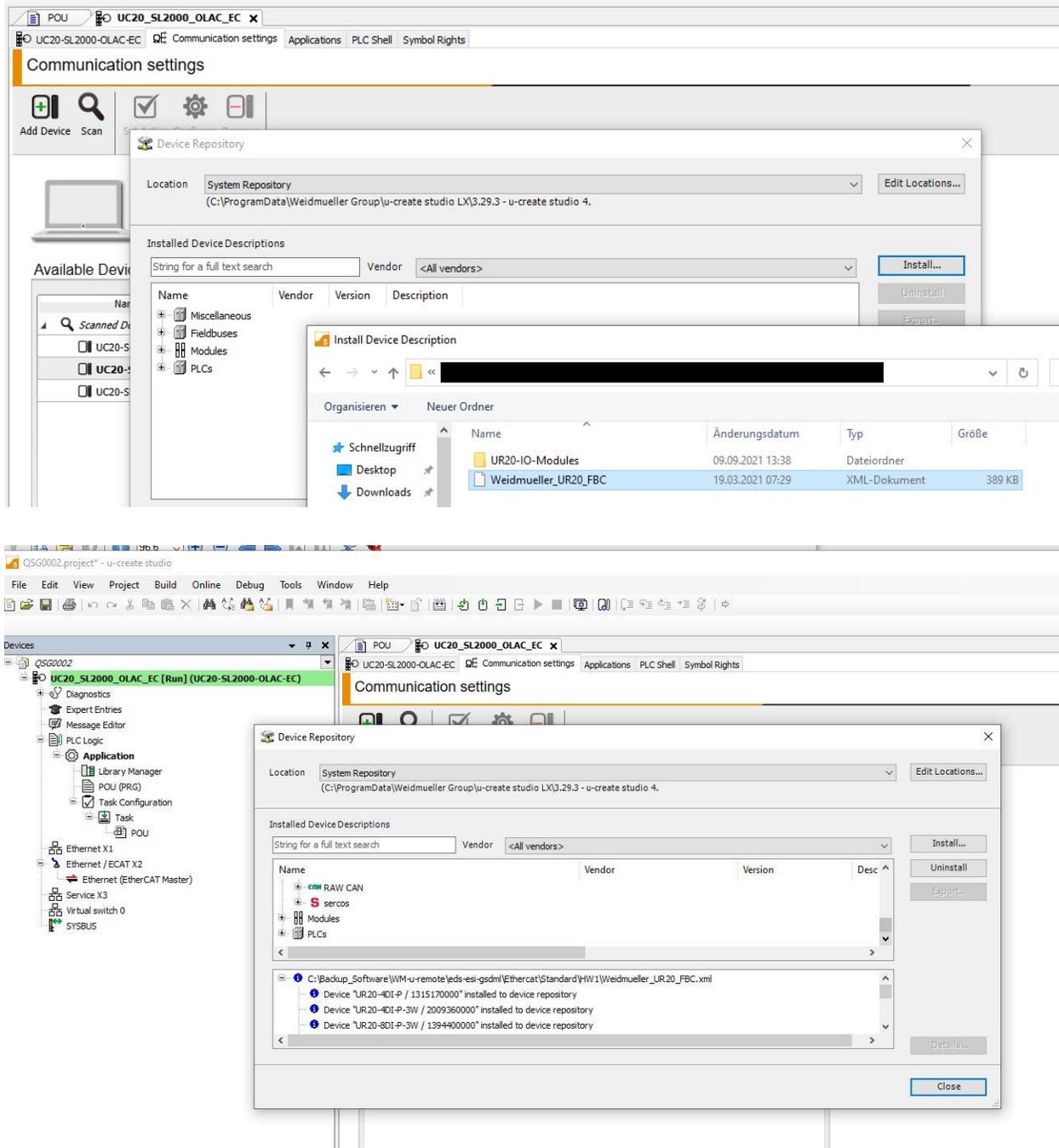
3.2 Install ESI file to the Device Repository



u-create studio comes with integrated devices descriptions for several Weidmüller UR20 “u-remote” products.



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This can also be done with ESI files for 3rd party devices too.

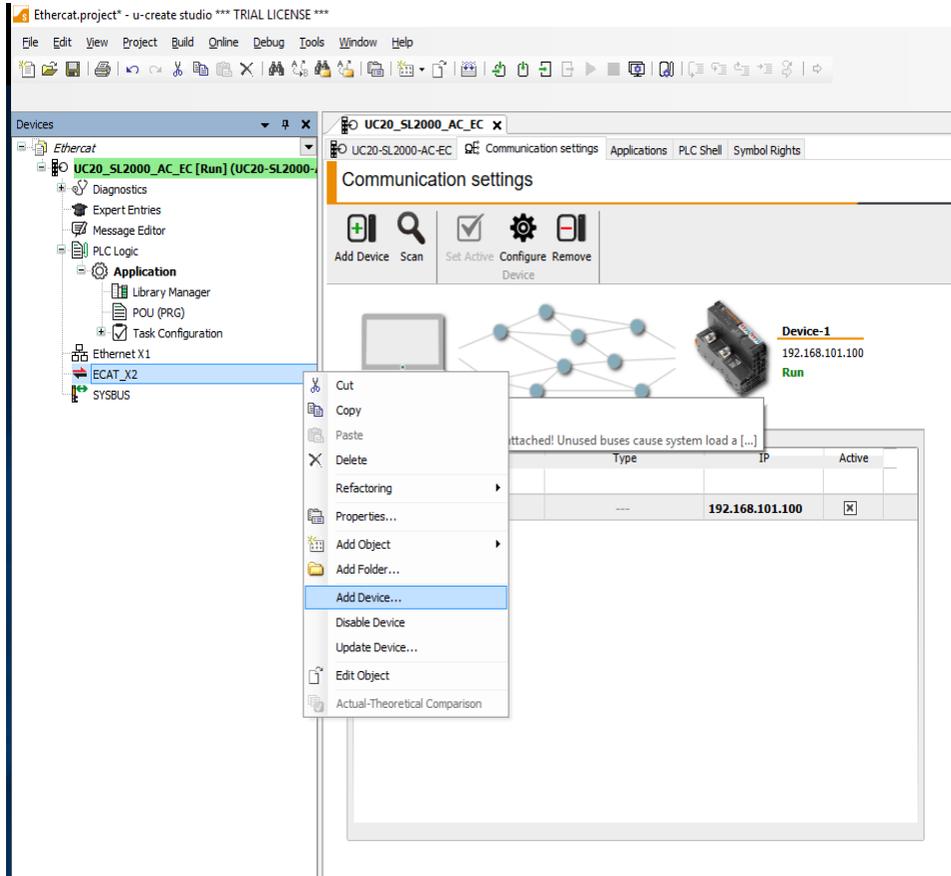
However, it is possible that needed description file is not included, e.g. because of either older u-create studio version or newer u-remote module.

In this case you can download and import necessary ESI-File from the Weidmüller website.

3.3 Connect EtherCAT coupler and module

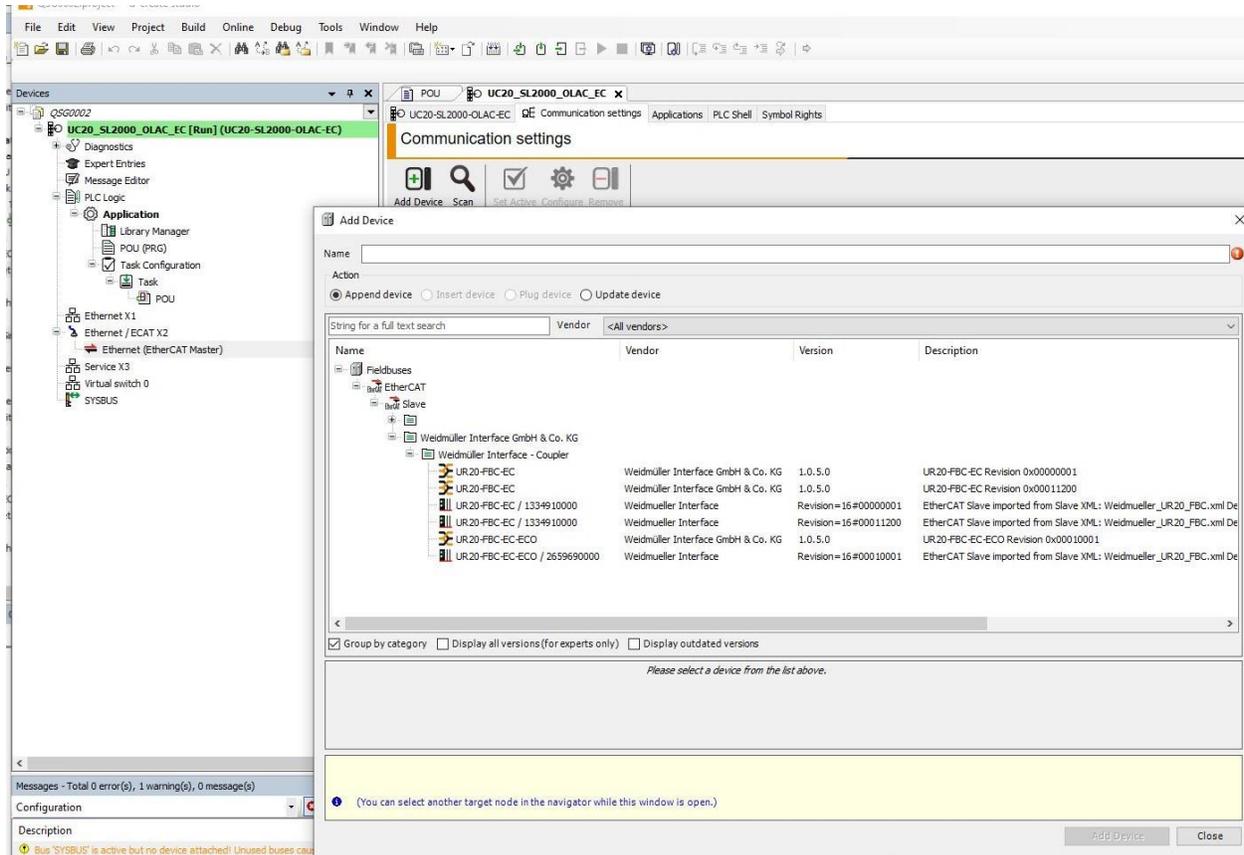
To connect the coupler and module follow these steps:

- 1.) Right click on the ECAT_X2 device and Add device.



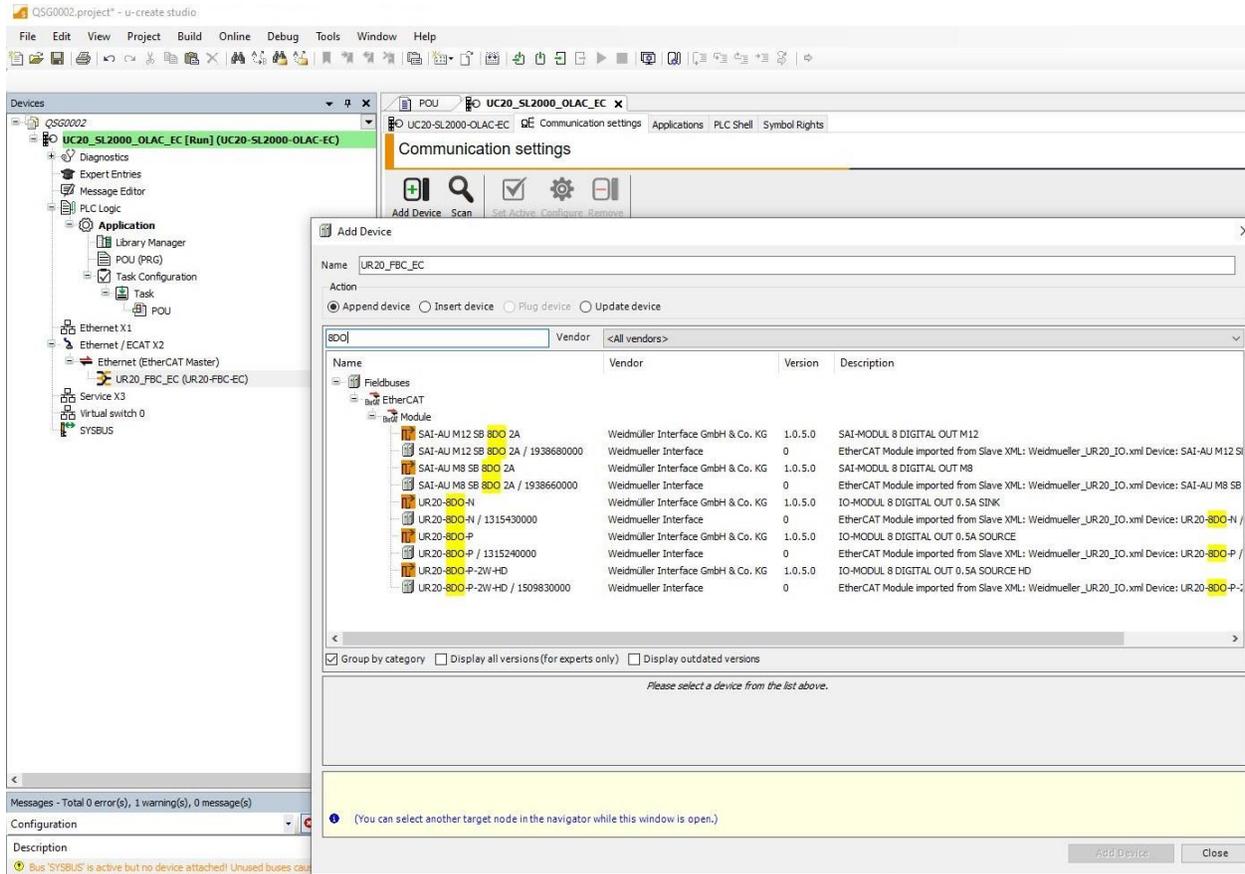
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2.) Choose the right coupler and add the device.



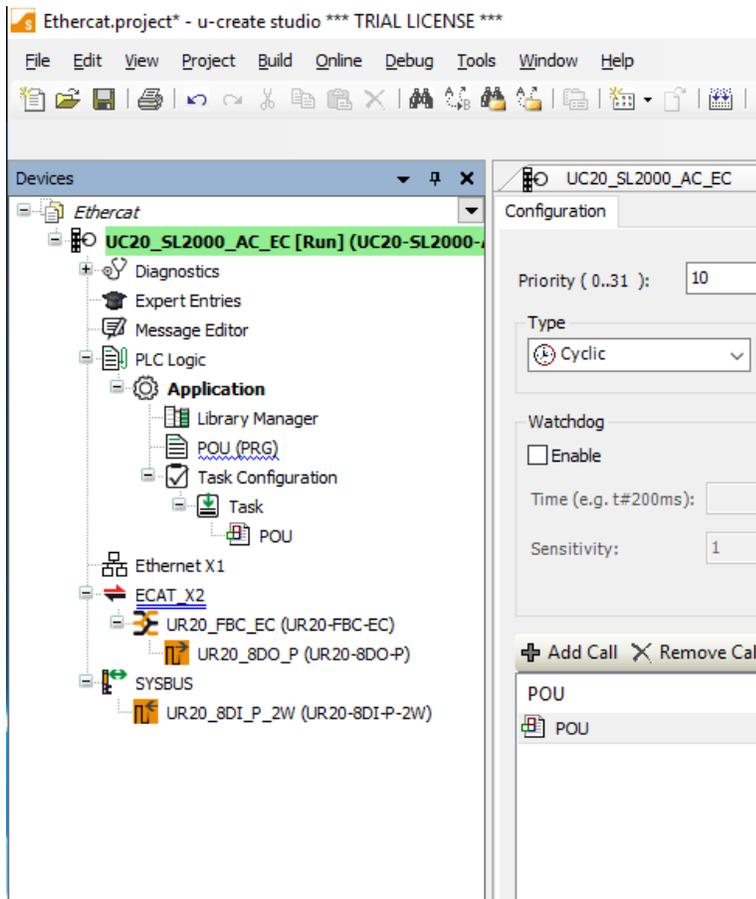
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- 3.) Click on the inserted coupler and add the u-remote module.
In this application it is an 8DO module.



3.4 Attach u-remote module to SYSBUS

Right click on the SYSBUS and Add Device. Choose the module and confirm.

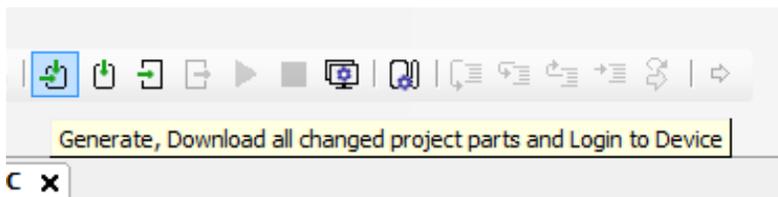


3.5 Download and Login

Generate, Download the program and Login to the device.

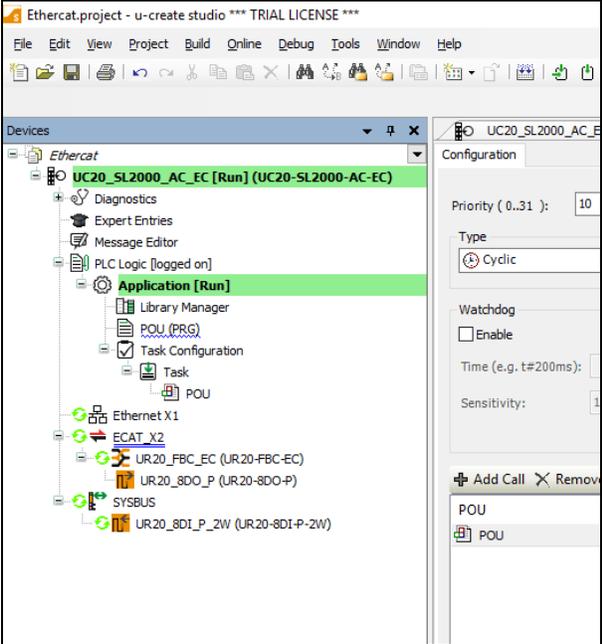
Username : Administrator

Password: tobechanged



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If everything is working fine, then a green icon is shown in the program.



4 u-create studio – I/O-Mapping

4.1 I/O-Mapping by Variable

SYSBUS:

Choose the module where you want to receive data. Then change to the tab I/O Mapping and create the variables.

The screenshot shows the u-create studio interface with the I/O Mapping tab selected. The device tree on the left shows the project structure, including the SYSBUS module. The main table displays the following data:

Endpoint	Variable	Type	Address	Value	Force Value	Force	Description
Digital inputs							
Channel 0 (Bit0)	I_xStart	BOOL	%IXS.0				Start the machine
Channel 1 (Bit1)	I_xStop	BOOL	%IXS.1				Stop the machine
Channel 2 (Bit2)	I_xTest	BOOL	%IXS.2				test
Channel 3 (Bit3)		BOOL	%IXS.3				
Channel 4 (Bit4)		BOOL	%IXS.4				
Channel 5 (Bit5)		BOOL	%IXS.5				
Channel 6 (Bit6)		BOOL	%IXS.6				
Channel 7 (Bit7)		BOOL	%IXS.7				
Diagnosis							
Diagnosis		BOOL	%IB6				

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ECAT_X2:

Double click on the u-remote controller (not directly on the module) and change to tab I/O mapping. Then you can create the variables.

Endpoint	Variable	Type	Address	Value	Force Value	Force	Description
Controlbit 0		BOOL	%QX0.0				Controlbit 0
Controlbit 1		BOOL	%QX0.1				Controlbit 1
Controlbit 2		BOOL	%QX0.2				Controlbit 2
Controlbit 3		BOOL	%QX0.3				Controlbit 3
Controlbit 4		BOOL	%QX0.4				Controlbit 4
Controlbit 5		BOOL	%QX0.5				Controlbit 5
Controlbit 6		BOOL	%QX0.6				Controlbit 6
Controlbit 7		BOOL	%QX0.7				Controlbit 7
Controlbit 8		BOOL	%QX1.0				Controlbit 8
Controlbit 9		BOOL	%QX1.1				Controlbit 9
Controlbit 10		BOOL	%QX1.2				Controlbit 10
Controlbit 11		BOOL	%QX1.3				Controlbit 11
Controlbit 12		BOOL	%QX1.4				Controlbit 12
Controlbit 13		BOOL	%QX1.5				Controlbit 13
Controlbit 14		BOOL	%QX1.6				Controlbit 14
Controlbit 15		BOOL	%QX1.7				Controlbit 15
UR20_8DO_P DO1	Q_xLED10n	BOOL	%QX2.0				UR20_8DO_P DO1
UR20_8DO_P DO2	Q_xLED20n	BOOL	%QX2.1				UR20_8DO_P DO2
UR20_8DO_P DO3	Q_xLED30n	BOOL	%QX2.2				UR20_8DO_P DO3
UR20_8DO_P DO4		BOOL	%QX2.3				UR20_8DO_P DO4
UR20_8DO_P DO5		BOOL	%QX2.4				UR20_8DO_P DO5
UR20_8DO_P DO6		BOOL	%QX2.5				UR20_8DO_P DO6
UR20_8DO_P DO7		BOOL	%QX2.6				UR20_8DO_P DO7
UR20_8DO_P DO8		BOOL	%QX2.7				UR20_8DO_P DO8



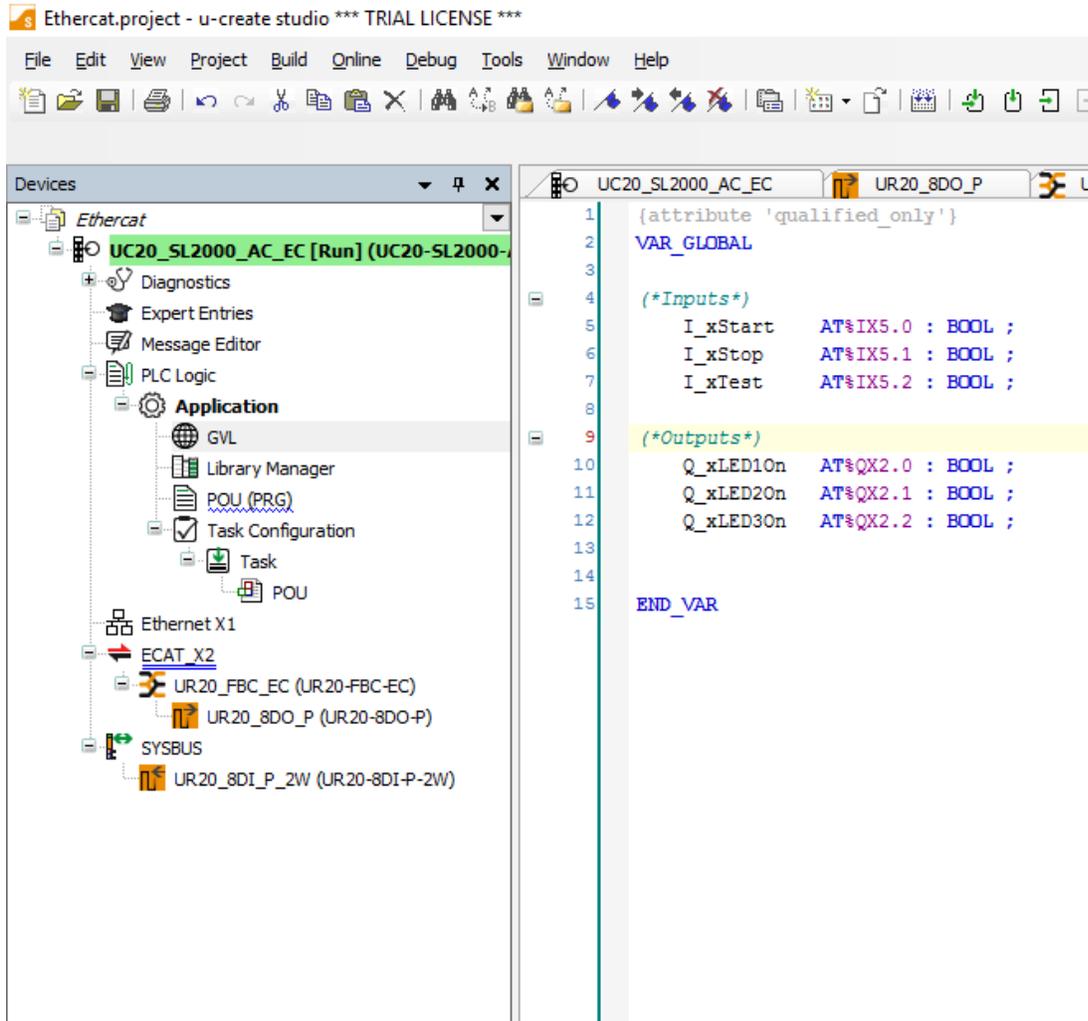
If you have used this method, then we can Program the application.
If you want to use / learn another possibility for I/O-mapping, then read the next subchapter.

4.2 I/O-Mapping by Addresses

It is also possible to map the variables by addresses, but it is not recommended.

To map the variables, follow these steps:

- 1.) Create a “Global Variable List”, right click on Application -> Add Object -> Global Variable List.
- 2.) Create the Variables and choose the address from the IO module.



Now we can Program the application.