

Praxisbeispiel / Application Note

OPC UA with CODESYS

AN 0007 EN

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1 Preface

1.1 Imprint

1.1.1 Contact details

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1.1.2 Document History

Document History

Date	Type	Comments / Changes
28.06.25022		first version

2 General

2.1 Scope of validity

CODESYS V3.5 SPxx Patchxx

2.2 System requirements

CODESYS Runtime with OPC UA Server

2.3 Description

This example shows how to connect to a CODESYS PLC with OPC UA Server using OPC UA Client.

3 Quick Start Guide

3.1.1 Platform-independent standard access to variable data

OPC UA (Unified Architecture) is a new development of the OPC specifications, with which data from machines and plants is not only transported, but also described semantically in a machine-readable manner. OPC UA is a platform-independent standard based on TCP. The protocol stack is available to members of the OPC Foundation. The OPC UA specification recognizes various profiles for scaling the individual features.

Source: CODESYS

3.1.2 CODESYS OPC UA Server

- implements the communication according to the OPC UA specification according to the "Micro Embedded Device Server" profile, based on the communication stack of the OPC Foundation
- is an add-on component to the CODESYS Control Runtime System and is offered to device manufacturers as an option to the CODESYS Control Runtime Toolkit. It can be implemented in all device platforms supported by CODESYS with sufficient performance and an existing TCP/IP stack and real-time clock. For implementation, device manufacturers must obtain the communication stack provided by the OPC Foundation in source code
- is already included in the CODESYS Control SoftPLC systems in the CODESYS Store (without additional license fees)
- receives its data via the symbol configuration in the CODESYS Development System and communicates with suitable OPC UA clients

Source: CODESYS

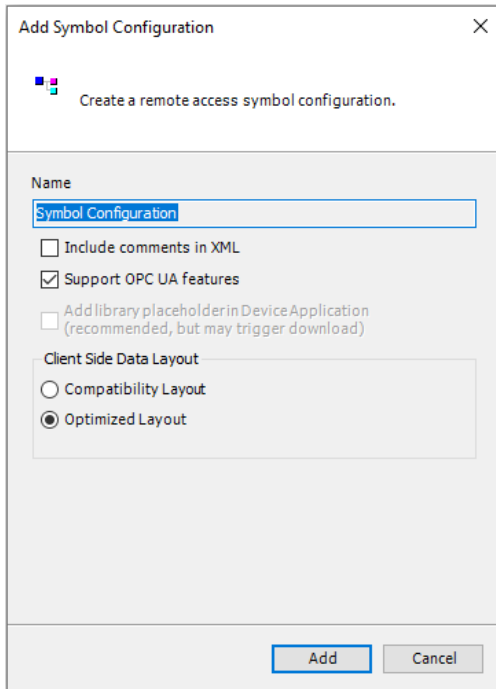
3.1.2.1 OPC UA Clients

For testing we used the following OPC UA clients:

- Windows: UaExpert® (Unified Automation)
- Android: Prosys OPC UA Client
- iOS: FLEX Explorer OPC UA Client (Honeywell International, Inc.)

3.1.2.2 Symbol Configuration in the CODESYS Projekt

To establish a connection to a CODESYS PLC with OPC UA server using an OPC UA client, you must add a symbol configuration to the application in your project. To do this, right-click on the application and select Add object -> Symbol configuration.

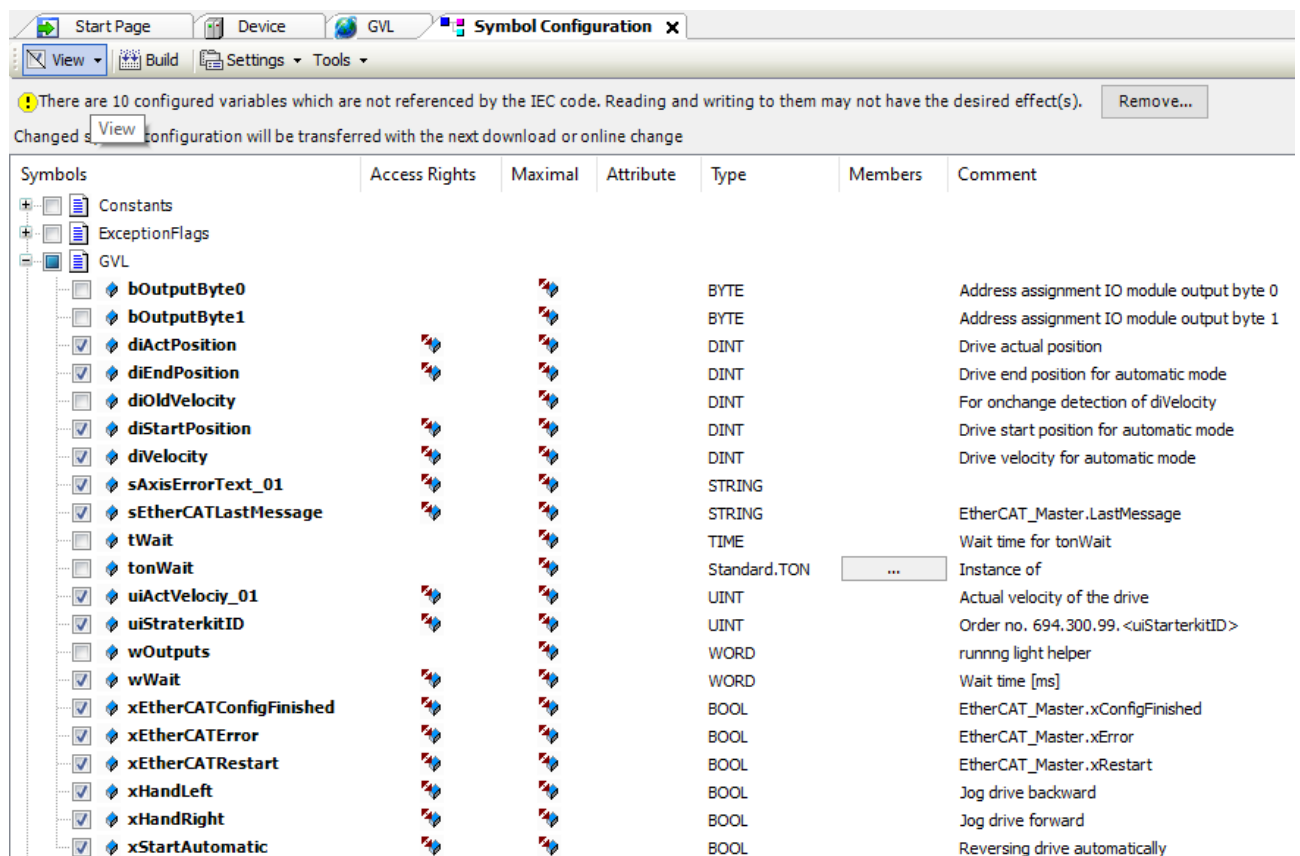


The above settings are correct. Press the "Add" button.

Our starter kit projects contain a symbol configuration for the communication to the HMI as well as for the communication with an OPC UA client.

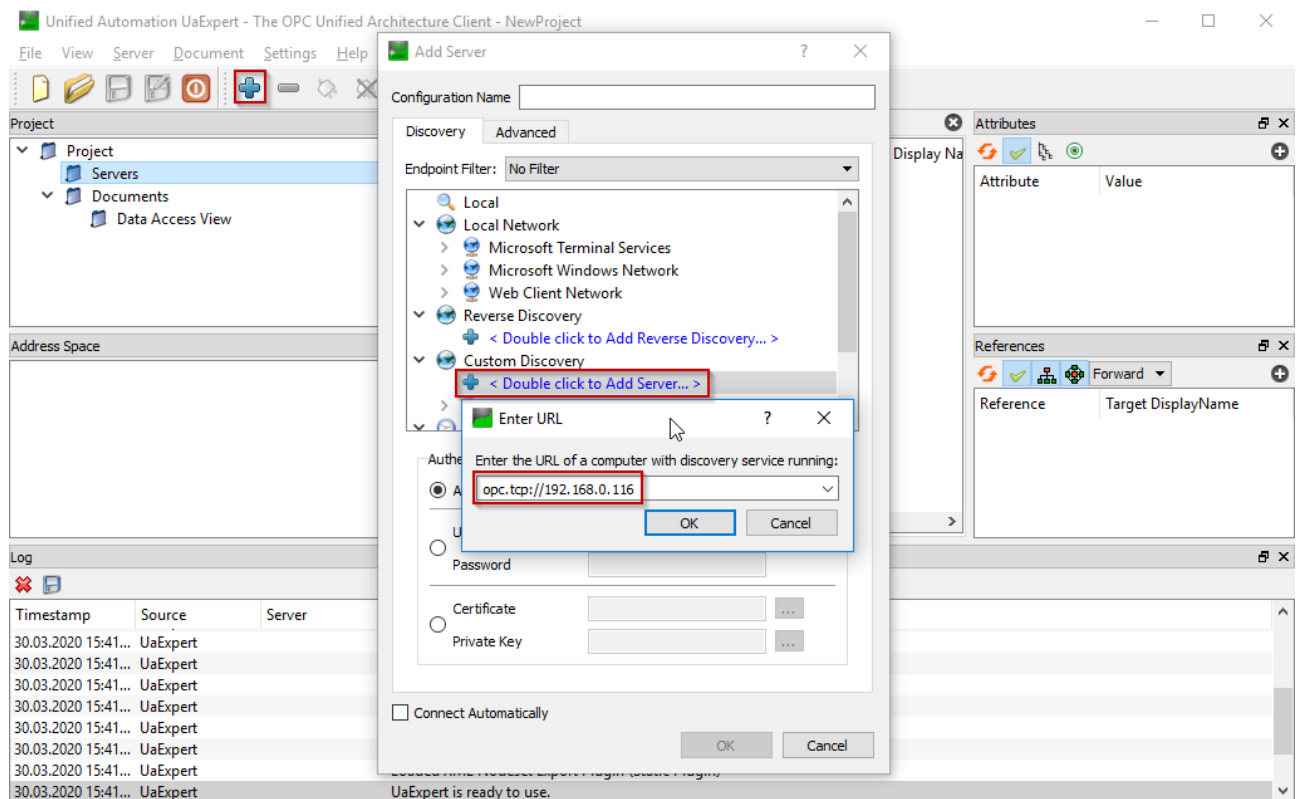
Now the desired variables from the project must be added to the symbol configuration. For this purpose, it is necessary to translate the application. Then the variables can be selected from the variables available in the project and the access rights can be set.

The following screenshot shows the symbol configuration from our starter kit projects:

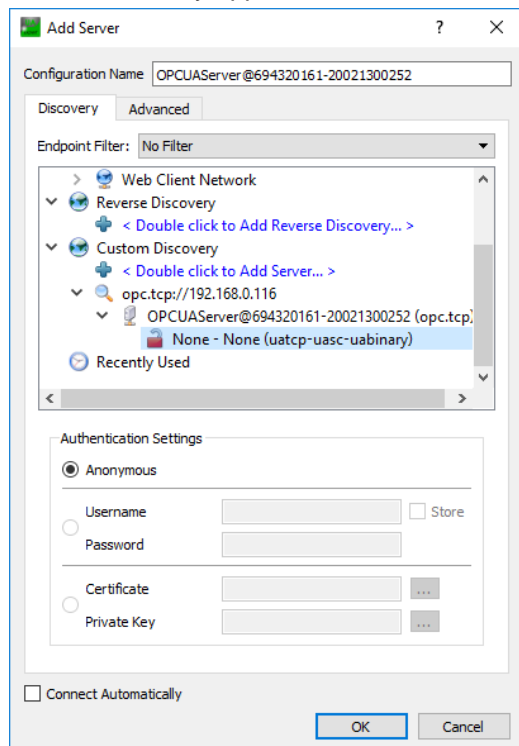


3.1.3 Establishing a connection with the UaExpert program

Start the UaExpert program. Then you have to add the server, in our example the FIO Controller 116. To do this, select the plus icon in the toolbar. In the "Add Server" window, double-click on "<Double click to Add Server...>" under "Custom Discovery". Enter the IP address of the server and confirm with "OK".

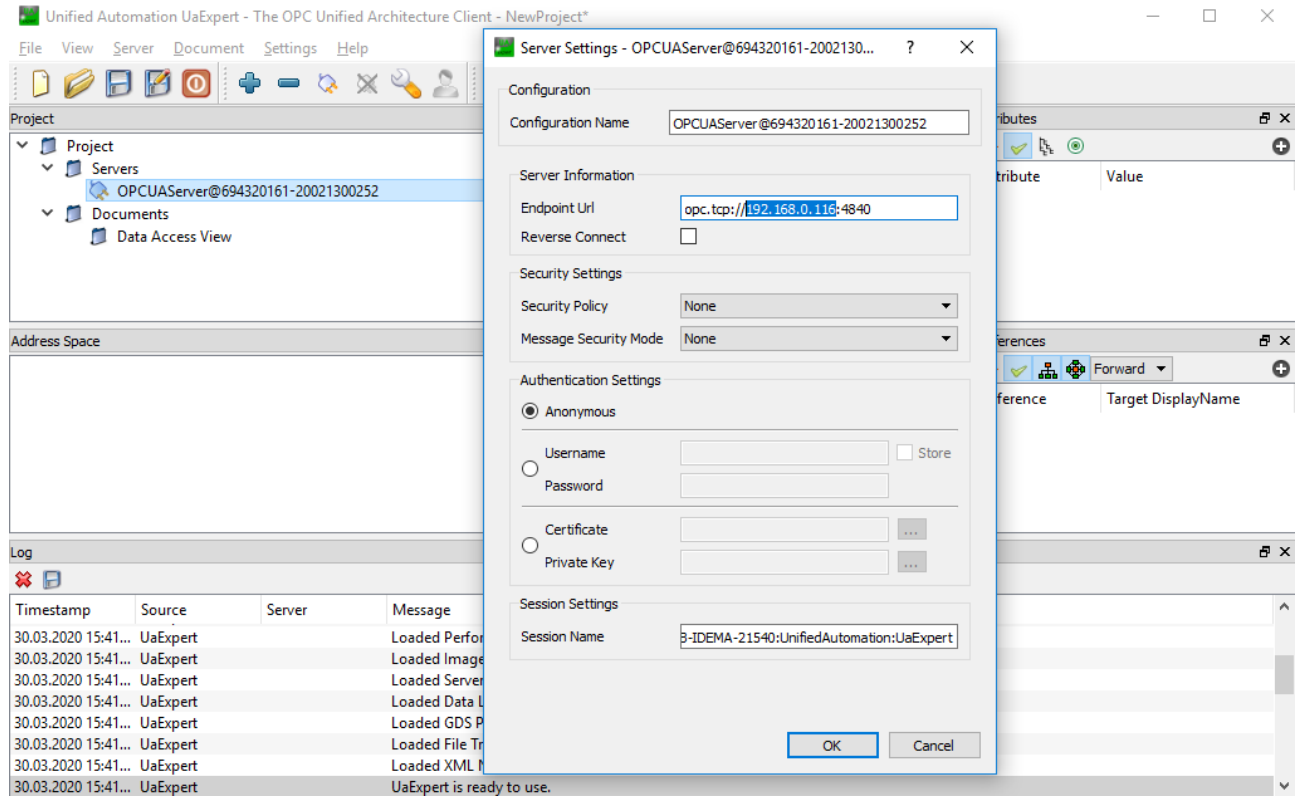


Now a new entry appears under "Custom Discovery". Expand it and select the server.




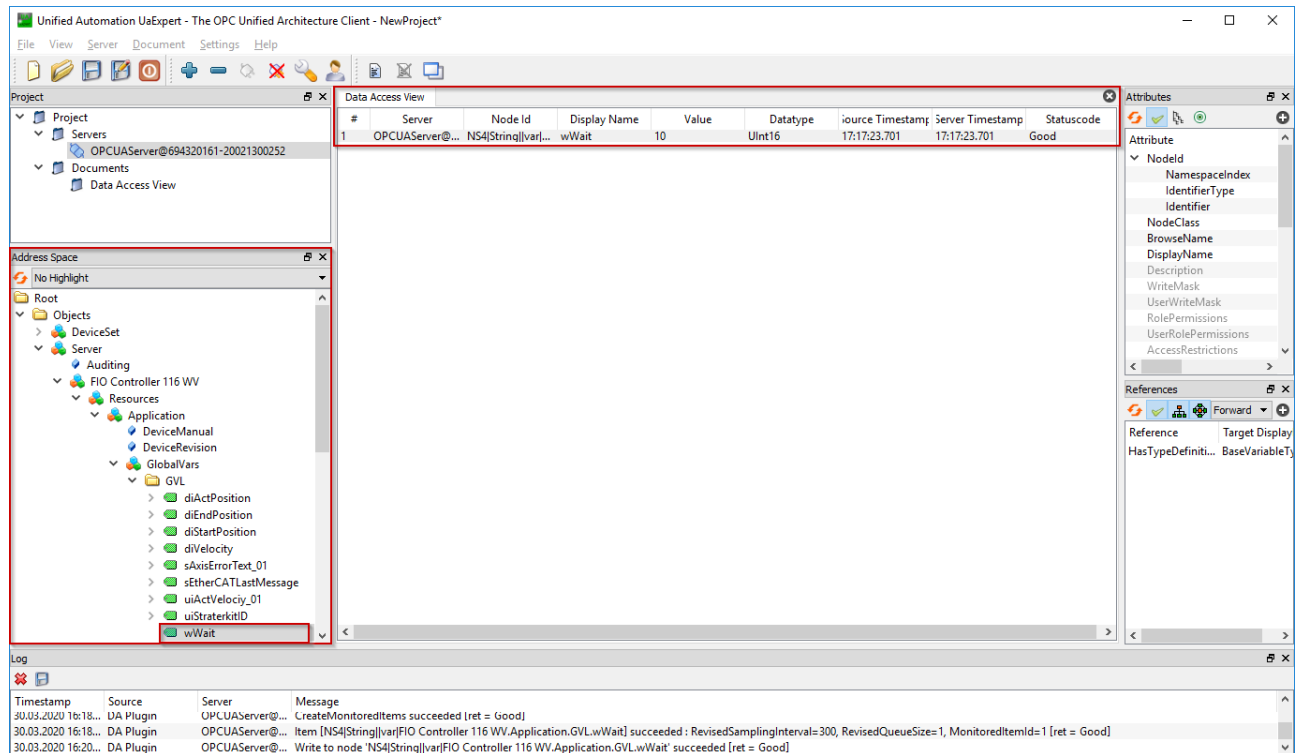
Confirm the selection with OK so that the server is added.

Before you can establish the connection, you have to adjust the URL of the server. Right-click on the server and select "Properties" from the context menu.



Enter the IP address of the server and confirm with OK.

Establish a connection by clicking on the toolbar button  click. If the connection was established successfully, you can now search for variables in the address space and drag and drop them into the "Data Access View" window.



The variable "wWait" influences the speed of the chaser. You can change the value by double-clicking the value in the "Value" column.

4 Appendix

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