SIMATIC NET

PC software
Procedures manuals

Operating Manual

11/2022
G8900-C288-02

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

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The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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OPC UA COML S7

1

Configuring and commissioning a locally configured S7 connection to the S7-1500 CPU via Industrial Ethernet with the OPC UA server and the SIMATIC NET PC software

Question

How do I create an S7 connection for the OPC server via Industrial Ethernet to the S7-1500 CPU with the SIMATIC NET PC software?

Answer

In this example, a normal commercially available Ethernet module will be used to implement the S7 communication via the OPC server with an S7-1500 CPU on Industrial Ethernet.

Note

The method described in this procedures manual applies to all SIMATIC NET Ethernet modules.

The method described in this procedures manual also applies to S7 connections to other partners, e.g. S7-400 CPU.

Requirements

- Make sure that no configuration is loaded via the SIMATIC NET PC software. To do this, remove all existing components in the "Station Configuration Editor" with the "Delete..." button so that the display list is empty.

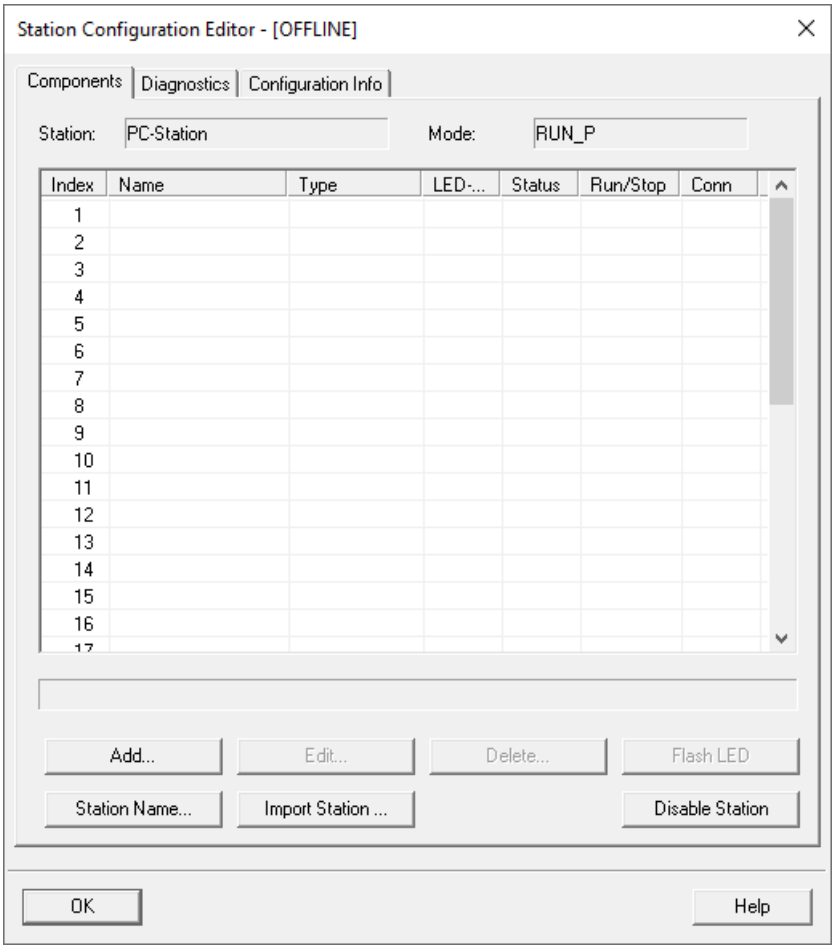

Figure 1-1 Removing configured components in the "Station Configuration Editor"

- Configure the Ethernet network adapter of the S7 programmable controller and load it onto the device. A CPU1516-3 with the IP address "192.168.0.7" is used in this example.

Note

This procedures manual describes how a COML S7 connection to an S7-1500 CPU is established. The configuration of this device and its data blocks are not described here.

Configuring the COML S7 connection

To configure a COML S7 connection, follow these steps:

1. Open the "Communication Settings" configuration program.
2. Select the Ethernet network adapter for the COML S7 connections under "Modules" in the tree topology and navigate to the "Address" property page. Ensure that the IP address shown here is in the same subnet as the S7 programmable controller. Change the IP address directly at the network adapter, if necessary.

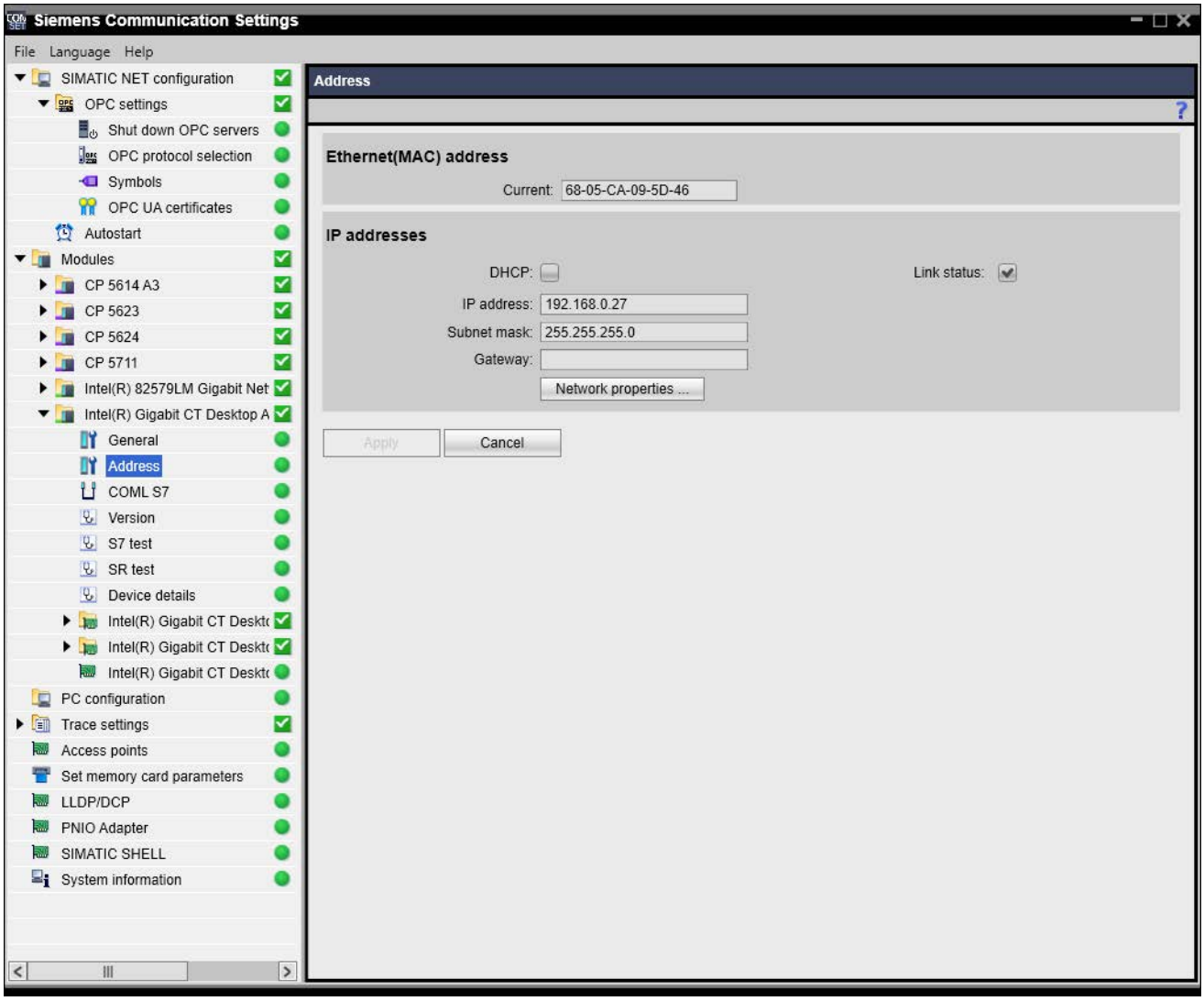

Figure 1-2 Checking the IP address of the Ethernet network card

3. Go to the "COML S7" property page and click the Paste icon at the top to create a new connection.

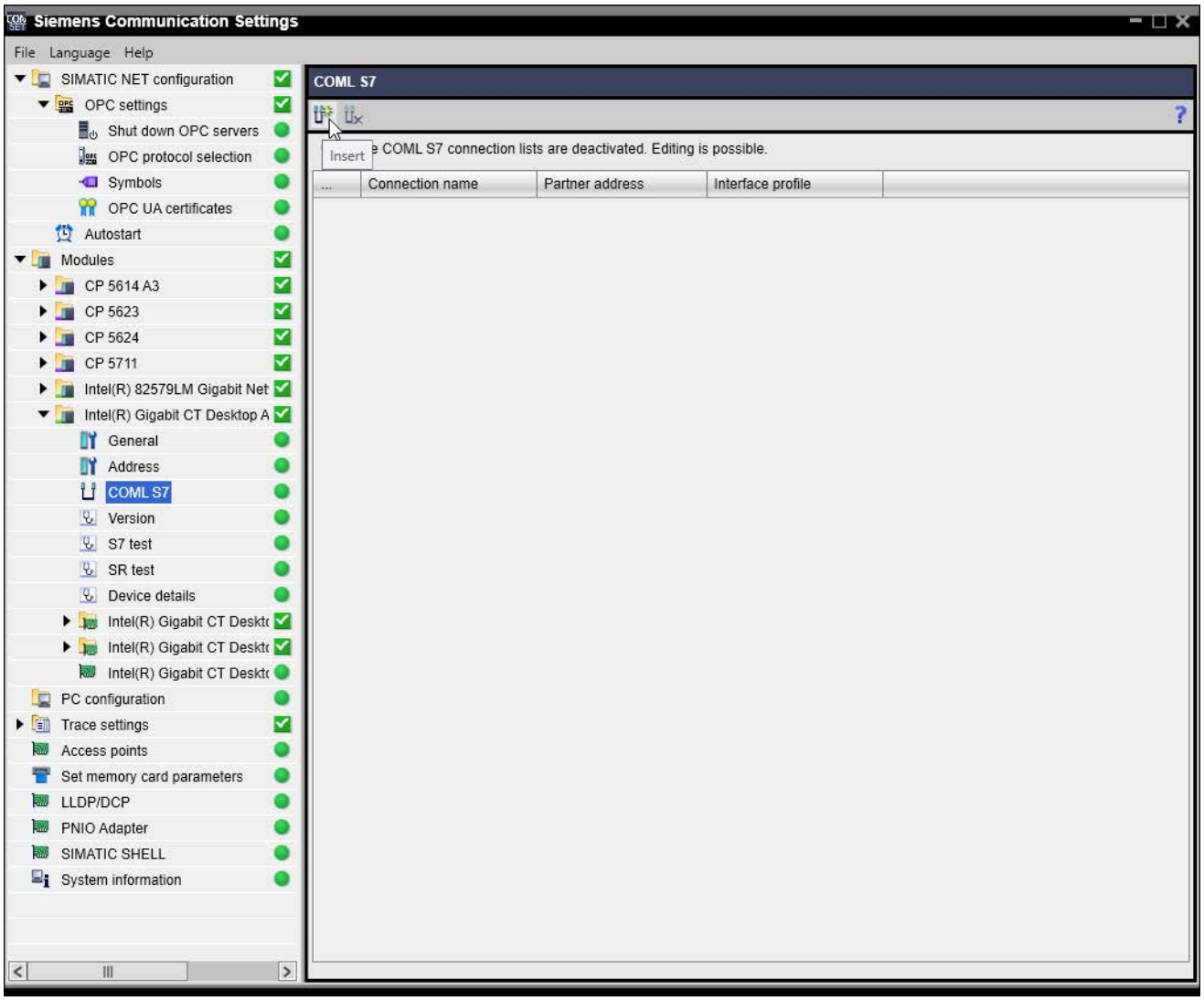

Figure 1-3 Inserting a new COML S7 connection

4. Give the connection a name; in this example "COML S7 1". Select the partner station as "Interface" under "Partner" in the "Connection path" section and enter its IP address. In this example, the interface is an "S7-1500" with the IP address "192.168.0.7".

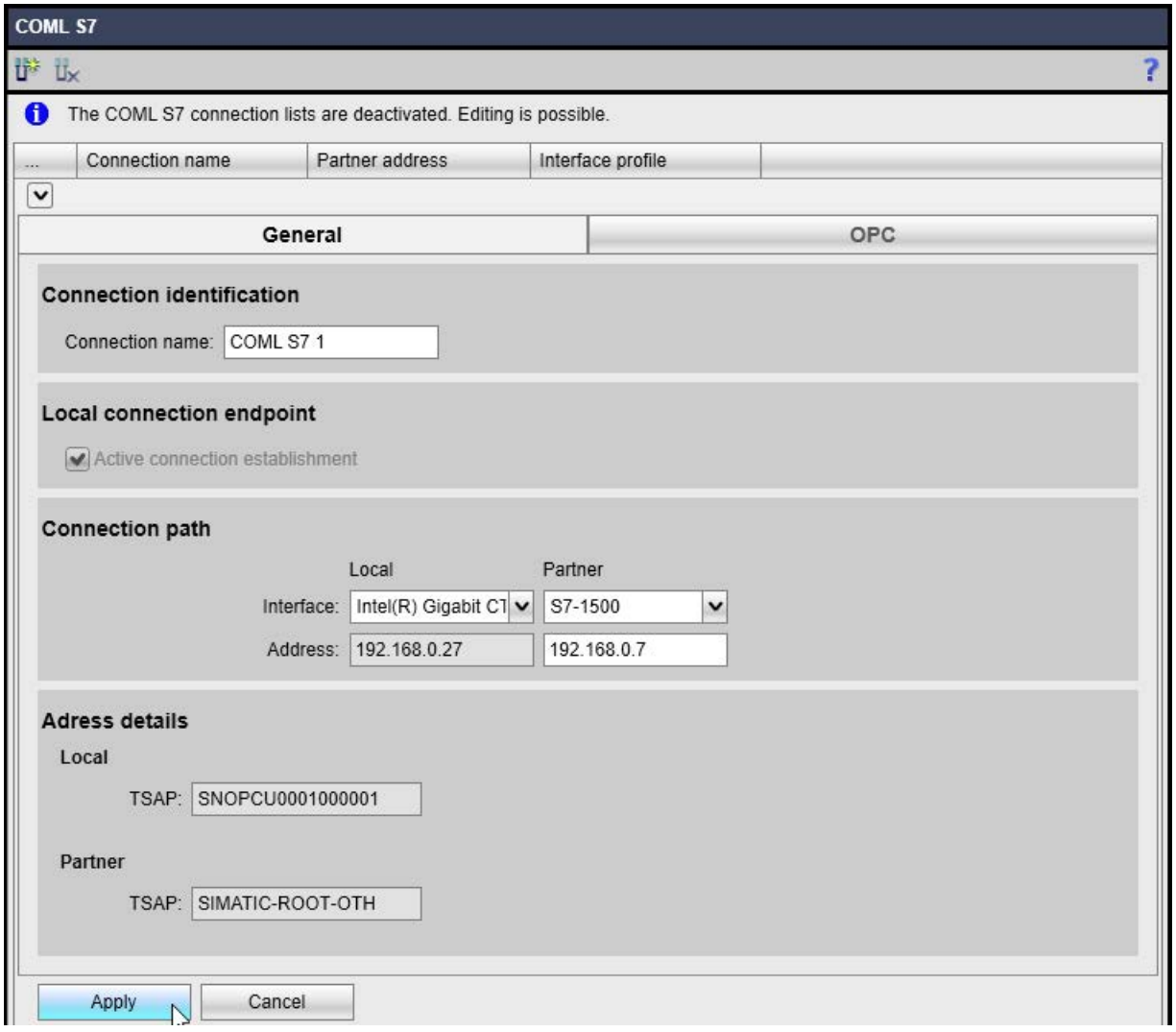

Figure 1-4 Entering the IP address of the partner station

Note

If you use an S7-400/S7-300 CPU as partner for the COML S7 connection, you need to specify its exact position with rack and slot number in addition.

5. Click the "Apply" button to save the connection. The connection is now displayed in the connection list.

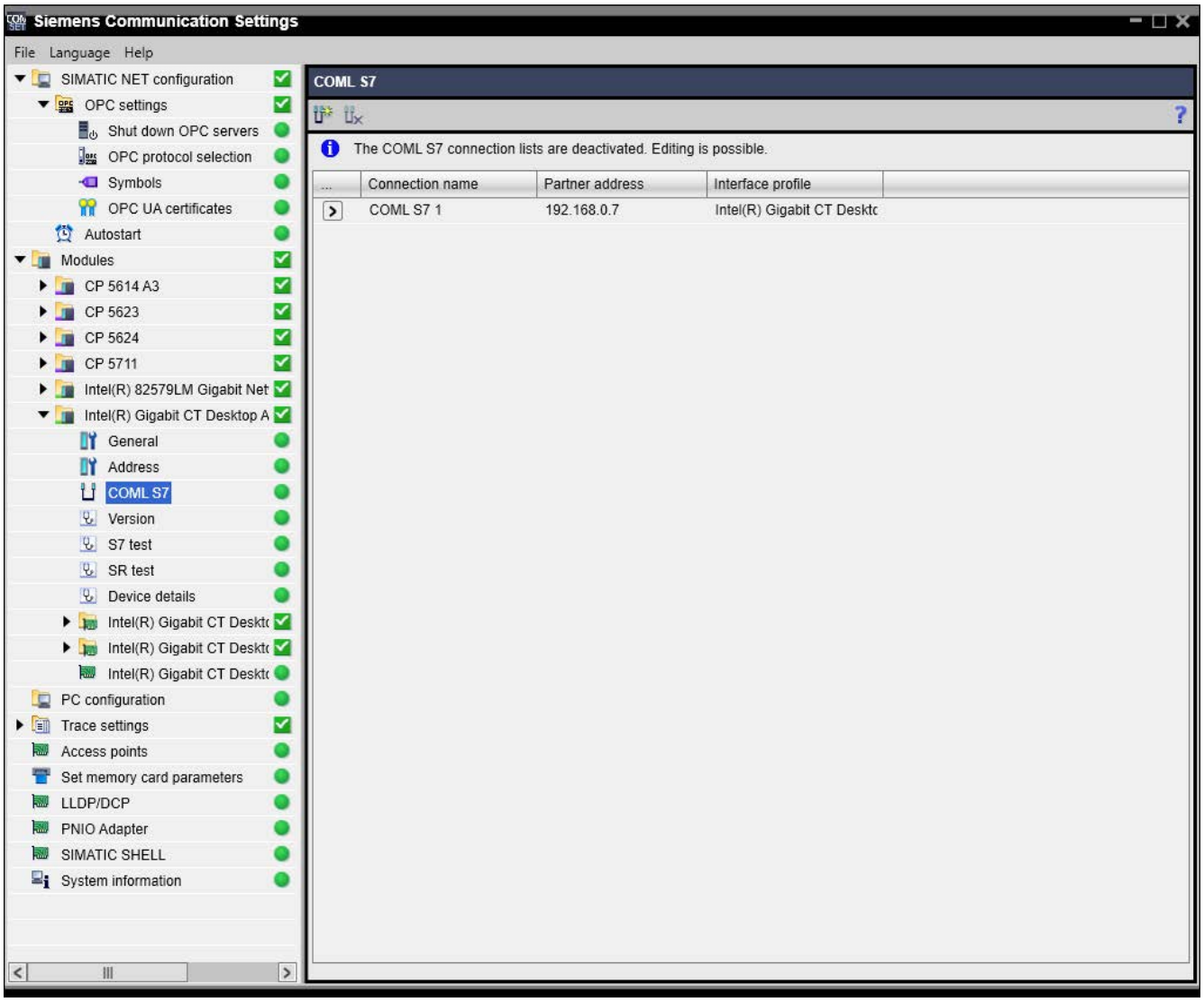

Figure 1-5 Newly created COML S7 connection

6. Open the shortcut menu with a right-click on "Modules". Select the "Enable COML S7 connection lists..." command to enable the COML S7 connections.

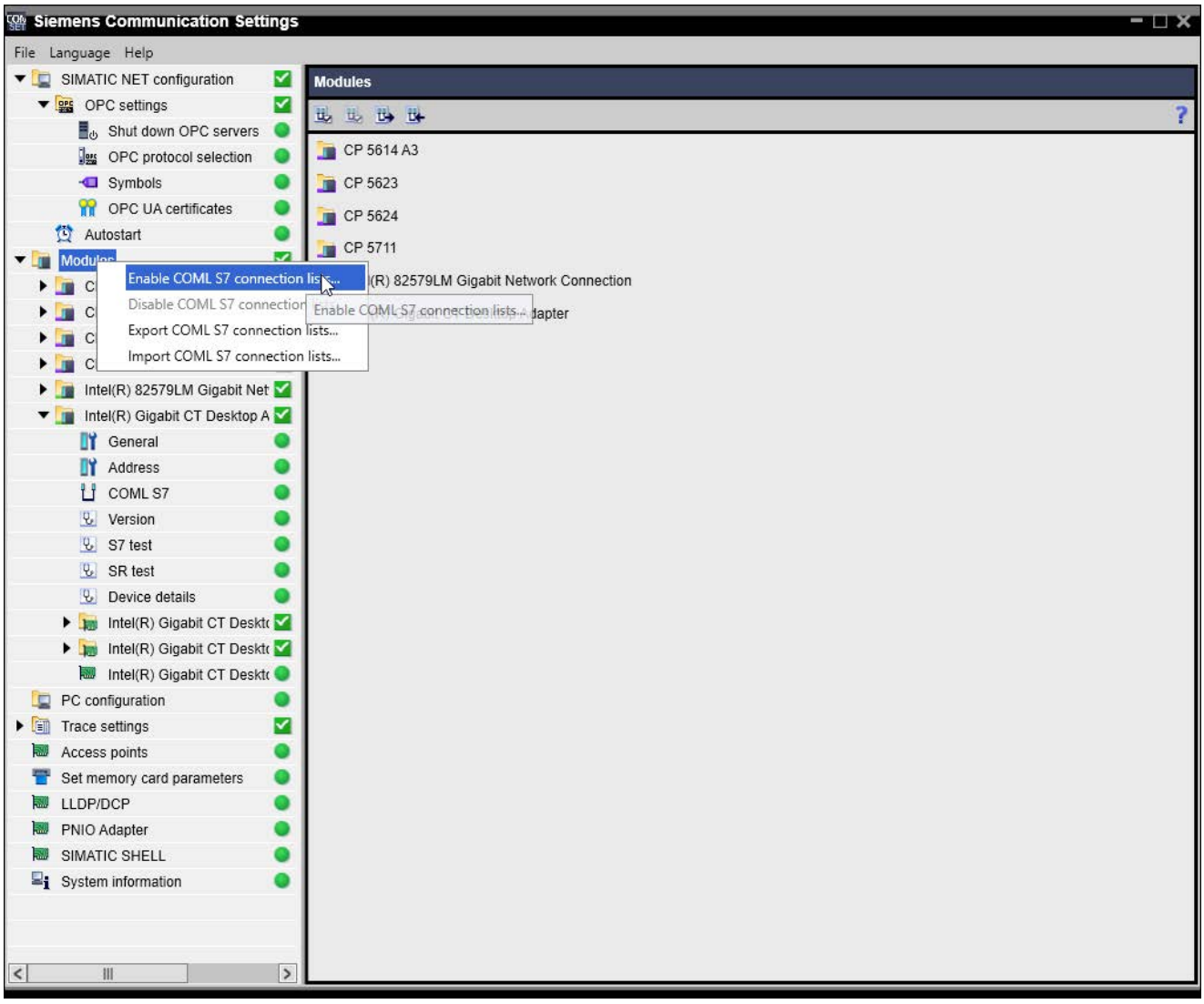

Figure 1-6 Enable COML S7 connection list

7. Confirm the restart of the PC station with "Yes".

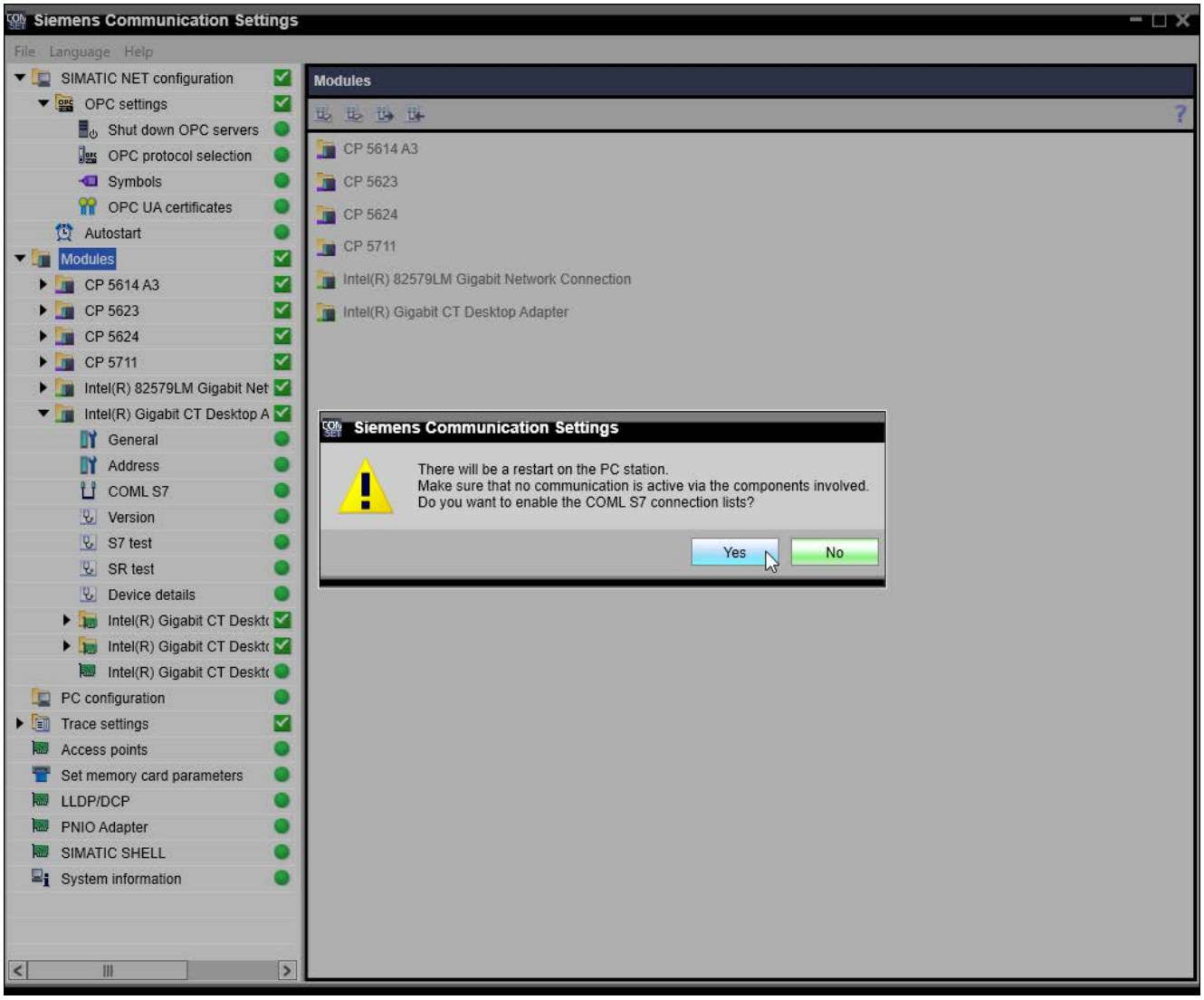

Figure 1-7 Confirming restart of the PC station

Note

To now be able to load a configuration created with the "STEP 7 Professional (TIA Portal)" configuration tool onto the PC station, you first need to disable the COML S7 connections again via the shortcut menu for "Modules".

Note

Access to optimized data blocks is not possible via COML S7 connections.

Note

You can find more information on configuring COML S7 connections via the "Communication Settings" configuration program in the relevant online help.

Testing connections with a sample program

Requirements

Before you can test the configured connection with a sample program, you need to enable the following options in the "Communication Settings" configuration program via the extended parameter list of the connection in the "OPC protocol selection" property window:
- "Allow non-secure connections to the OPC UA server (None)" option
- "Allow anonymous logins to the OPC UA server" option

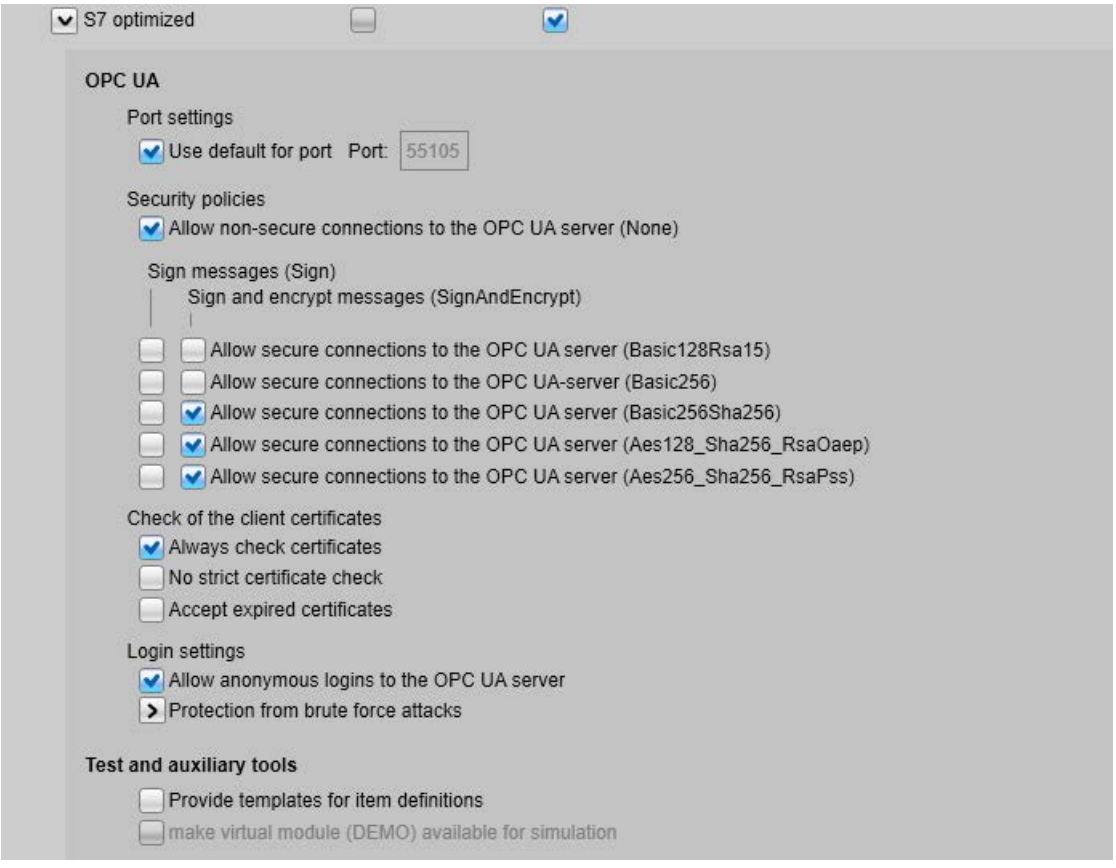

Figure 1-8 Enabling options in the "Communication Settings" configuration program

NOTICE
Activate a non-secure connection only for test purposes Make sure that you disable the previously enabled options in the "Communication Settings" program again after testing the connection.

Testing the connection

Follow the steps below to test the configured connection with the sample program:

1. Start the sample program "publish.exe", which can be found in the folder "<installation path>\Siemens\SIMATIC.NET\opc2\samples\ua\c\publish.c\x64\Release".

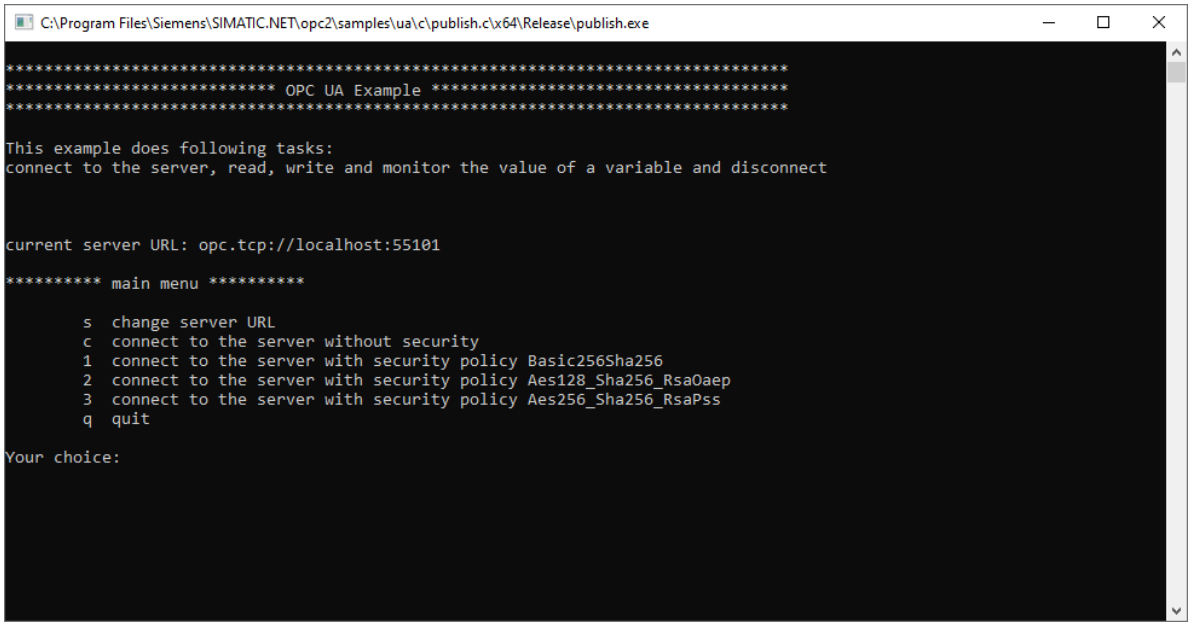

Figure 1-9 Starting the "publish.exe" sample program

2. Press the "s" button and enter the server URL of the OPC UA server. The port number is configured in the "Communication Settings" configuration program. The server URL "opc.tcp://localhost:55105" is used in this example.

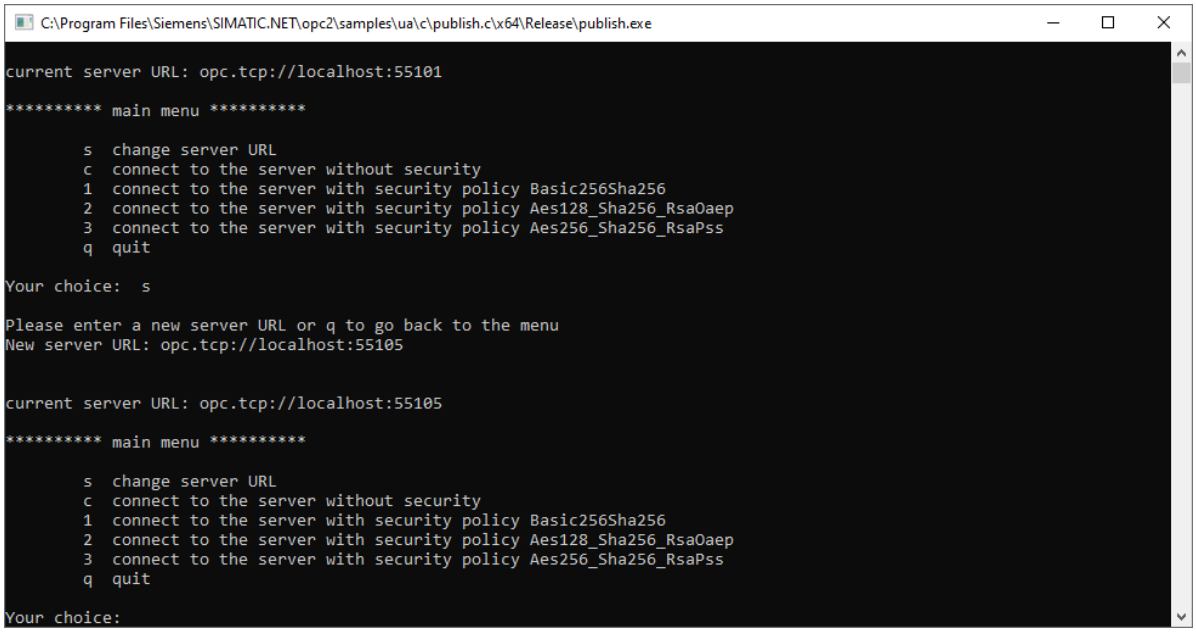

Figure 1-10 Entering the server URL

3. Press the "c" button to establish a connection to the OPC UA server.

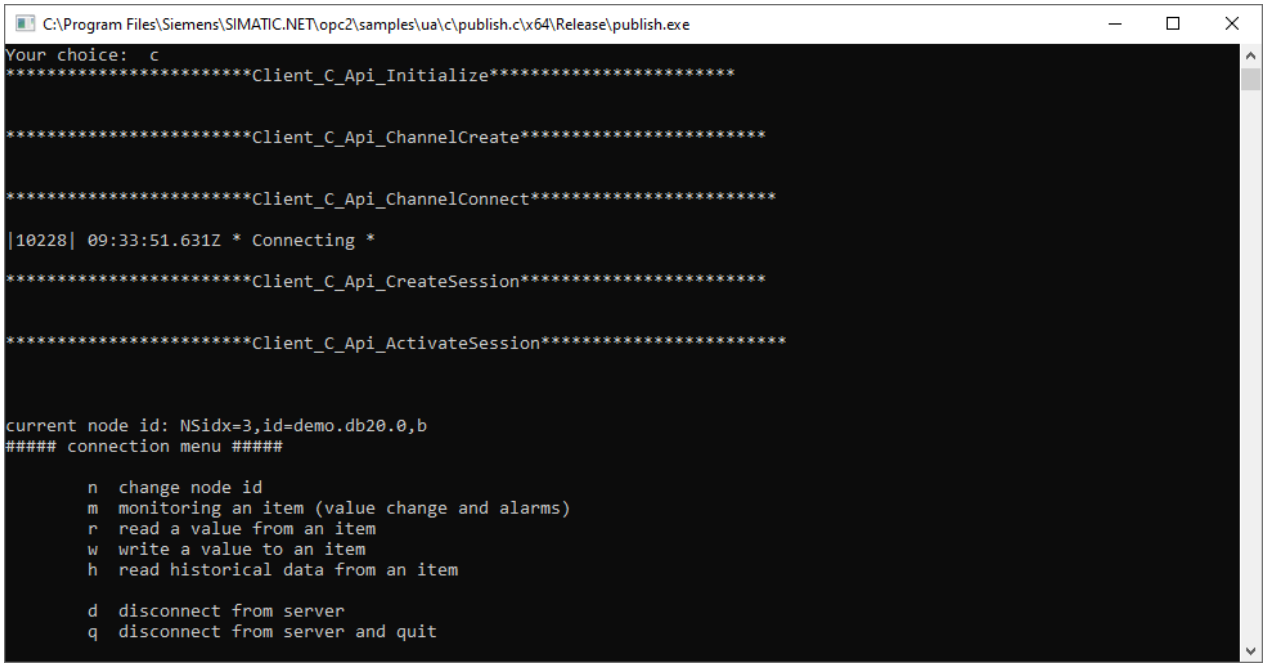

Figure 1-11 Establishing a connection to the OPC UA server

4. Press the "n" button and enter the node ID. In this example, the namespace has the index "3" (NSidx) and the identifier has the value "COML S7 1.i.0,b" (String identifier).

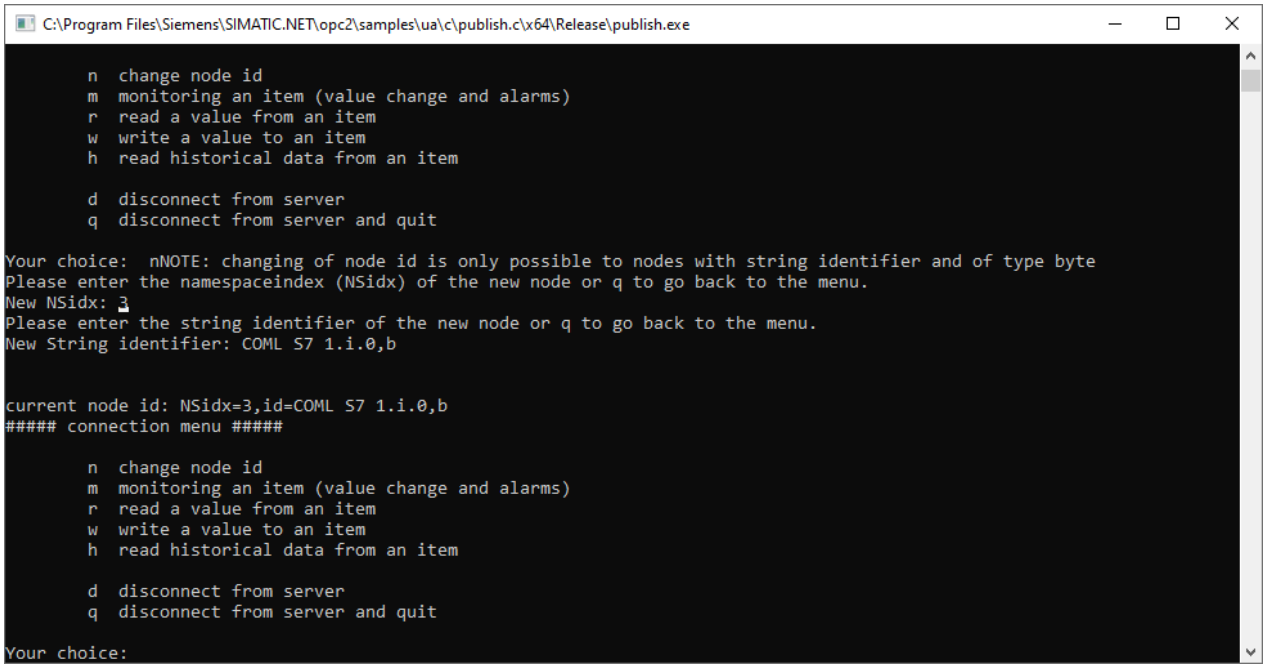

Figure 1-12 Entering the node ID

5. Press the "r" button to read the value of the tag. If the status is "Good", the connection is established.

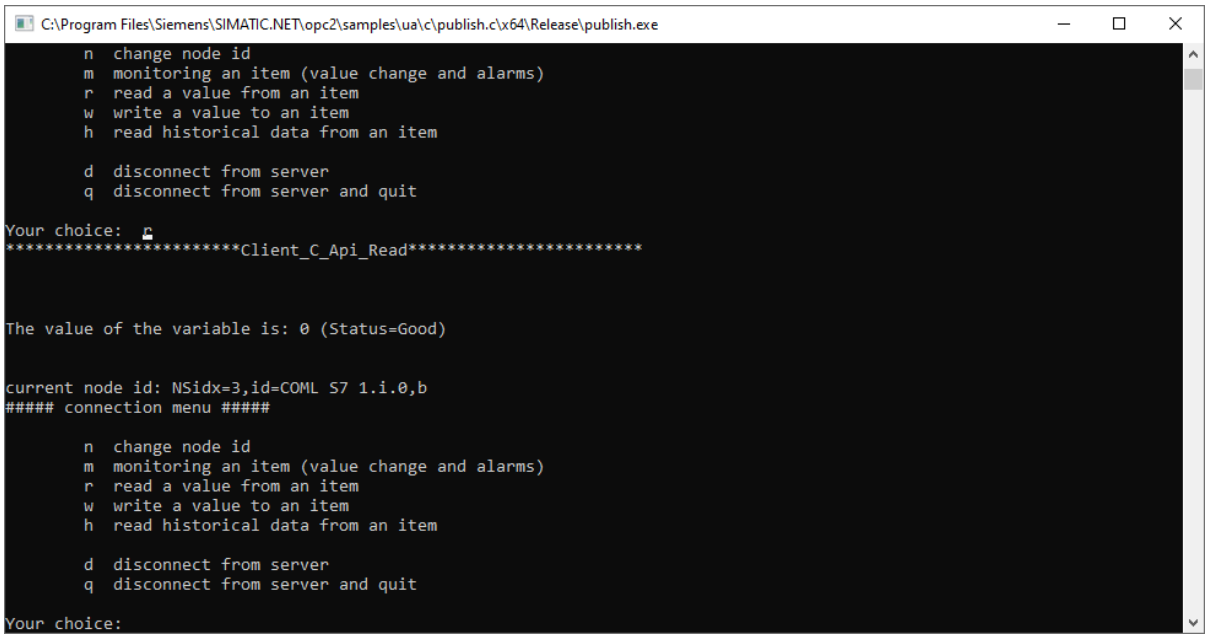

Figure 1-13 Reading the value of the tag

6. Press the "w" button and select via the "a" button the data type "Byte" in order to write a new value to the tag. Enter the new value and confirm it with the Enter key. Then read the new value via the "r" button to check whether the new value of the tag was written via the established connection.

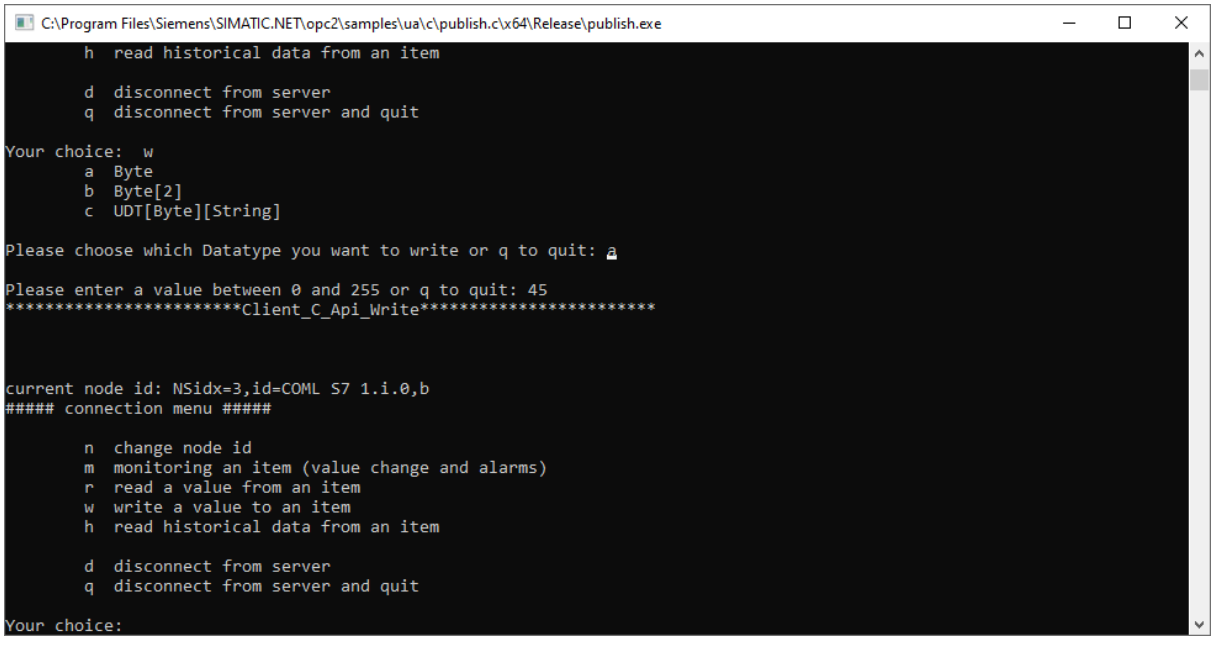

Figure 1-14 Writing the value of the tag

7. Press the "q" button to end the sample program.

Note

For more detailed information on sample programs, refer to the document "Industrial Communication with PG/PC Volume 2 - Interfaces" > "OPC UA interface in C".