

Data Flow Edge Device DX-series

Practices Guide

OPC UA Client Component

DX100-□□□□



Practices
Guide

Revision History

Version	Revised content	Date
Version 1.0	Original production	March 17, 2026
Version 1.1	Changed the asyncua version installed during manual installation of dependent modules.	April 1, 2026
Version 1.2	Added the table of indirect dependent modules and information on the manual installation of modules using whl files.	April 8, 2026

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1.About the OPC UA Client Package

1.1.Overview

This package provides custom components that run with SpeedBee Synapse (hereinafter referred to as Synapse).

It adds components that collect measurement values from industrial equipment and PLCs, and write parameters using the OPC UA protocol. These components support bulk reading of multiple nodes, dynamic writing using the event trigger, and secure communications.

By registering this package, you can use the *OPC UA Collector* and *OPC UA Writing* components.

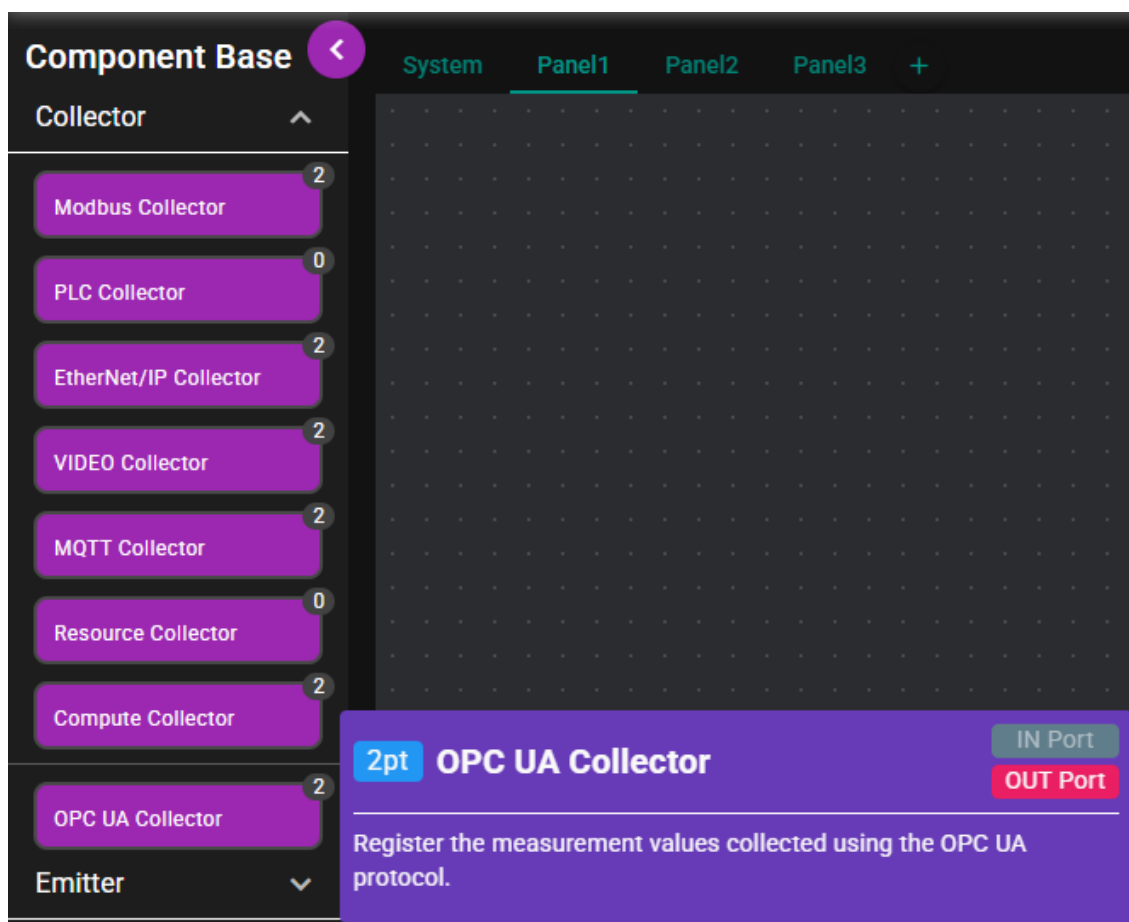
1.2.Basic Information About the Package

The table below provides basic information about the component package.

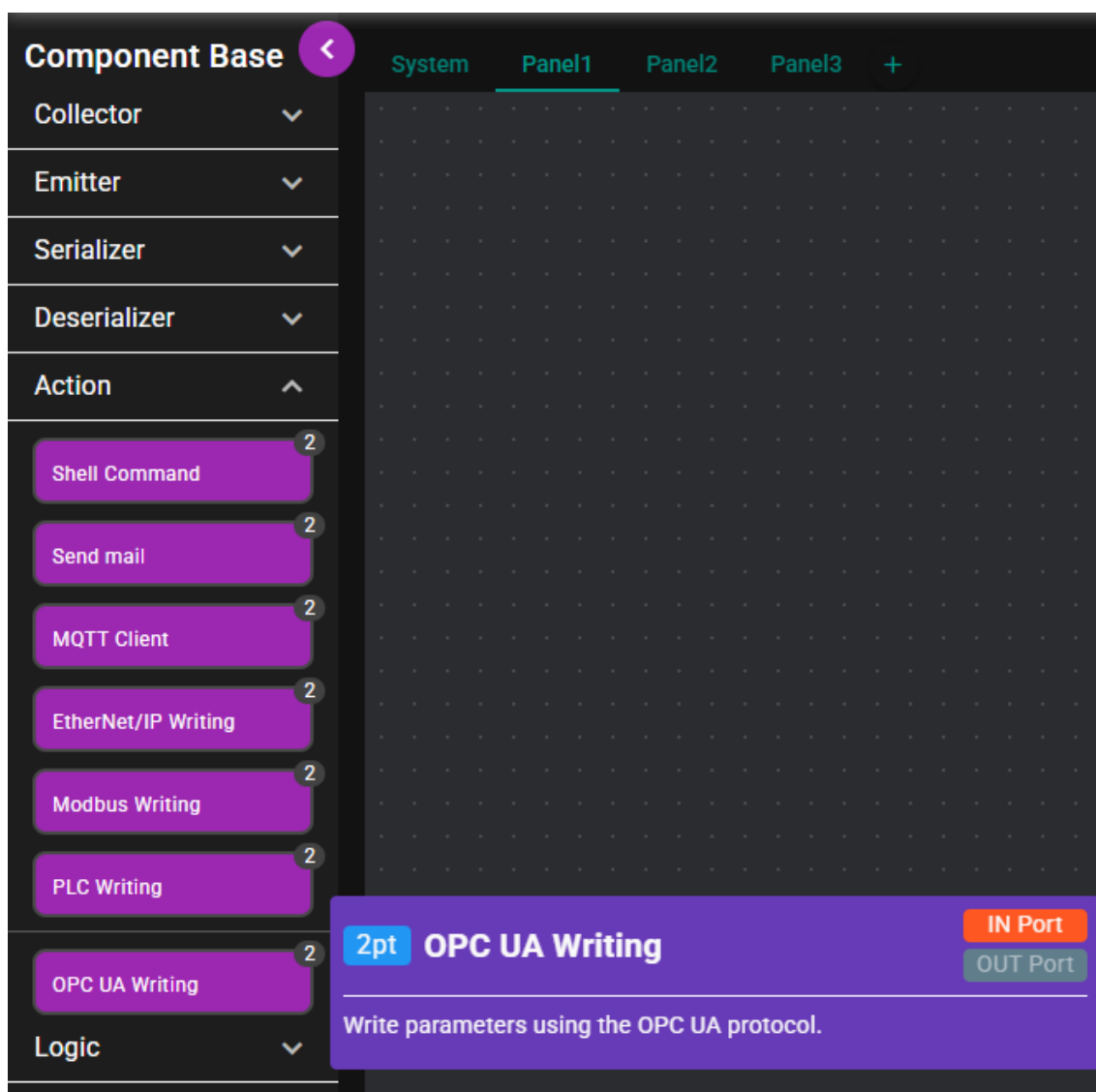
Package file name (*1)	opc_ua_client.sccpkg
Operating environment	Platforms on which Synapse 4.9.9 or later is running
Components to be registered	• OPC UA Collector (*2) • OPC UA Writing (*3)

*1 Refer to 6.2.6.4 *Registering SCCPKG File in and Deleting SCCPKG File from Synapse* in *DX-series SpeedBee Synapse User's Manual (Cat. No. V243)* for information on registering the package.

*2 The registered component will be displayed under the *Collector* category in the component list.



*3 The registered component will be displayed under the *Action* category in the component list.



1.3.Setting Screens

1.3.1.OPC UA Collector



SAVE

CANCEL

Name

☐ Autostart disable

Endpoint

☐ Keep Connection

Connection Timeout (ms)
10000

Read Timeout (ms)
5000

Security Mode
SignAndEncrypt

Security Policy
Basic256Sha256

☐ Anonymous

User Name

Password

Server Certificate

☒ Bulk Read

TEST

Column Name	Node Identifier	Data Type	Collection Interval (ms)	Enable
-------------	-----------------	-----------	--------------------------	--------

 No Data

ADD

Item	Description (Values in red are default values)
Name	Component name (any name that is not duplicated)
Endpoint	Endpoint of the OPC UA server
Keep Connection	When the check box is cleared, connection to the server will be established or closed each time measurement values are collected. Check box selected or cleared
Connection Timeout (ms)	Specify the time until the connection timeout in the range of 100 to 20000 ms.
Read Timeout (ms)	Specify the time until the read timeout in the range of 100 to 20000 ms.
Security Mode	None, Sign, or SignAndEncrypt
Security Policy	None, Basic128Rsa15 (not recommended), Basic256 (not recommended), or Basic256Sha256
Anonymous	Check box selected or cleared

User Name	Connection user name Specify this when the Anonymous check box is cleared.						
Password	Connection password Specify this when the Anonymous check box is cleared.						
Server Certificate	When Security Mode is set to Sign or SignAndEncrypt, specify the certificate file required to ensure secure communications with the server.						
Bulk Read	When the check box is selected, measurement values will be collected at once from nodes with the same collection interval. Check box selected or cleared						
TEST button	Click this button to check the connection to the server using the current settings. The result will be shown at the bottom of the setting screen.						
Column Name	Specify the column name for registering the collected measurement values in Synapse.						
Node Identifier	Specify the target node for collecting measurement values by node ID or browse path. <table border="1"> <tr> <th colspan="2">Entry example</th></tr> <tr> <td>Node ID</td><td> ns=4;s=DXtoNX01 * The namespace index (ns=) must not be omitted. </td></tr> <tr> <td>Browse path</td><td> 4:new_Controller_0/3:GlobalVars/4:DXtoNX01 * The namespace index (4: in this example) must be specified for each element. </td></tr> </table> For the <i>Node ID</i> and <i>Browse path</i> to set, use Unified Automation's <i>UaExpert</i> or other general-purpose client tools to check the relevant information. * <i>UaExpert</i> is a registered trademark of Unified Automation GmbH. * When using the tool, comply with the terms of use and license terms of the tool provider.	Entry example		Node ID	ns=4;s=DXtoNX01 * The namespace index (ns=) must not be omitted.	Browse path	4:new_Controller_0/3:GlobalVars/4:DXtoNX01 * The namespace index (4: in this example) must be specified for each element.
Entry example							
Node ID	ns=4;s=DXtoNX01 * The namespace index (ns=) must not be omitted.						
Browse path	4:new_Controller_0/3:GlobalVars/4:DXtoNX01 * The namespace index (4: in this example) must be specified for each element.						
Data Type	Specify the data type for the target nodes for collecting measurement values. Boolean, SByte, Byte, Int16, UInt16, Int32, UInt32, Int64, UInt64, Float, Double, or String						
Collection Interval (ms)	Specify the periodic collection interval for measurement values in the range of 100 to 600000 ms.						

Enable	Select or clear this check box to enable or disable the collection setting. Check box selected or cleared
Delete button	Click this button to delete the collection setting.
ADD button	Click this button to add a collection setting.

1.3.2.OPC UA Writing

Item	Description (Values in red are default values)
Name	Component name (any name that is not duplicated)
Endpoint	Endpoint of the OPC UA server
Keep Connection	When the check box is cleared, connection to the server will be established or closed each time measurement values are collected. Check box selected or cleared
Connection Timeout (ms)	Specify the time until the connection timeout in the range of 100 to 20000 ms.

Write Timeout (ms)	Specify the time until the write timeout in the range of 100 to 20000 ms.						
Security Mode	None, Sign, or SignAndEncrypt						
Security Policy	None, Basic128Rsa15 (not recommended), Basic256 (not recommended), or Basic256Sha256						
Anonymous	Check box selected or cleared						
User Name	Connection user name Specify this when the Anonymous check box is cleared.						
Password	Connection password Specify this when the Anonymous check box is cleared.						
Server Certificate	When Security Mode is set to Sign or SignAndEncrypt , specify the certificate file required to ensure secure communications with the server.						
TEST button	Click this button to check the connection to the server using the current settings. The result will be shown at the bottom of the setting screen.						
Component Name	Specify the component name that serves as the trigger for writing. This can be selected from the pulldown list if the component connected to the input port has been started.						
Trigger Data	Specify the column name that serves as the trigger for writing. This can be selected from the pulldown list if the component connected to the input port has been started.						
Node Identifier	Specify the target node for writing parameters by node ID or browse path. <table border="1"> <thead> <tr> <th colspan="2">Entry example</th></tr> </thead> <tbody> <tr> <td>Node ID</td><td>ns=4;s=DXtoNX01 * The namespace index (ns=) must not be omitted.</td></tr> <tr> <td>Browse path</td><td>4:new_Controller_0/3:GlobalVars/4:DXtoNX01 * The namespace index (4: in this example) must be specified for each element.</td></tr> </tbody> </table> For the <i>Node ID</i> and <i>Browse path</i> to set, use Unified Automation's <i>UaExpert</i> or other general-purpose client tools to check the relevant information. * <i>UaExpert</i> is a registered trademark of Unified Automation GmbH. * When using the tool, comply with the terms of use and license terms of the tool provider.	Entry example		Node ID	ns=4;s=DXtoNX01 * The namespace index (ns=) must not be omitted.	Browse path	4:new_Controller_0/3:GlobalVars/4:DXtoNX01 * The namespace index (4: in this example) must be specified for each element.
Entry example							
Node ID	ns=4;s=DXtoNX01 * The namespace index (ns=) must not be omitted.						
Browse path	4:new_Controller_0/3:GlobalVars/4:DXtoNX01 * The namespace index (4: in this example) must be specified for each element.						

Value Source	Specify the setting method for the value to write. Fixed , Component, or Event
Write Value	Specify the value (parameter) to write based on the Value Source setting. Fixed: Sets the entered content as the value to write. Component: Sets the data in the selected column as the value to write. Event: Sets the data in the column set as trigger data as the value to write. (Entry not required)
Enable	Select or clear this check box to enable or disable the write settings. Check box selected or cleared
Delete button	Click this button to delete the write setting.
ADD button	Click this button to add a write setting.

1.4. Supplementary Information

1.4.1. Dependent Modules

The packaged components depend on the following Python module.

Module name	Version	whl file name
asyncua	1.1.6	asyncua-1.1.6-py3-none-any.whl

asyncua depends on the following Python modules (indirect dependent modules).

Module name	Version	whl file name
aiofiles	25.1.0	aiofiles-25.1.0-py3-none-any.whl
aiosqlite	0.22.1	aiosqlite-0.22.1-py3-none-any.whl
pyOpenSSL	26.0.0	pyopenssl-26.0.0-py3-none-any.whl
python-dateutil	2.9.0.post0	python_dateutil-2.9.0.post0-py2.py3-none-any.whl
pytz	2026.1.post1	pytz-2026.1.post1-py2.py3-none-any.whl
six	1.17.0	six-1.17.0-py2.py3-none-any.whl
sortedcontainers	2.4.0	sortedcontainers-2.4.0-py2.py3-none-any.whl
typing_extensions	4.15.0	typing_extensions-4.15.0-py3-none-any.whl
wait-for2	0.3.2	wait_for2-0.3.2-py3-none-any.whl

1.4.2. Installation of Dependent Modules

Install dependent modules as prompted by the confirmation dialog box that appears when you register this package in Synapse. asyncua and its dependency modules (indirect dependency modules) will be installed automatically.

-
-
- * Synapse 4.9 and earlier versions do not support automatic installation of dependent modules during package registration. Install *asyncua*=1.1.6 according to 6.2.3.5.8 *Adding External Libraries* in the *DX-series SpeedBee Synapse User's Manual (Cat. No. V243)*. By installing *asyncua*, its dependent modules (indirect dependent modules) are installed automatically.

1.4.3. Installation of Dependent Modules Using whl Files

In an offline environment, install *asyncua* and its dependent modules (indirect dependent modules) using whl files.

Using the whl files obtained in advance, install *asyncua* and its indirect dependent modules according to 6.2.3.5.8 *Adding External Libraries* in the *DX-series SpeedBee Synapse User's Manual (Cat. No. V243)*.

- * You can download whl files from the *Python Package Index (PyPI)* website.
<https://pypi.org/>

1.4.4. Server Certificate

Specify a DER format (*.der) file for the server certificate.

2. How to Use These Components

This section describes how to use these components. To use these components, first register the package in Synapse.

- * Refer to 6.2.6.4 *Registering SCCPKG File in and Deleting SCCPKG File from Synapse* in the *DX-series SpeedBee Synapse User's Manual (Cat. No. V243)*.

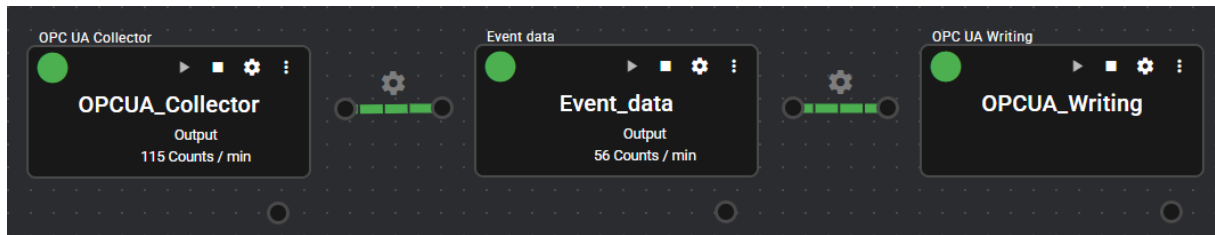
- OPC UA Client (This package)

2.1. OPC UA Client

This section provides examples of using the OPC UA Collector and OPC UA Writing components.

2.1.1. Data Flow Creation

Create a data flow that uses the OPC UA Collector component to collect measured values, uses event data to extract data that matches conditions, and uses the OPC UA Writing component to write parameters, as shown in the figure below.



2.1.2.OPC UA Collector

The OPC UA Collector component collects and registers measured values from nodes.

Target for collecting measurement values:

4:new_Controller_0/3:GlobalVars/4:Temperature

Target for writing parameters:

4:new_Controller_0/3:GlobalVars/4:OverTemperatureAlarm



SAVE

DELETE

CANCEL

Name
OPCUA_Collector

☐ Autostart disable

Endpoint
opc.tcp:// 192.168.1.251:4840

☐ Keep Connection

Connection Timeout (ms)
10000

Read Timeout (ms)
5000

Security Mode
SignAndEncrypt

Security Policy
Basic256Sha256

☐ Anonymous

User Name
admin

Password
.....

Server Certificate
server_certificate.der

☒ Bulk Read

TEST

Column Name	Node Identifier	Data Type	Collection Interval (ms)	Enable
Temperature	4:new_Controller_0/3:GlobalVars/4:Ter	Int16	1000	☒
OverTemperatureAlarm	4:new_Controller_0/3:GlobalVars/4:Ov	Boolean	1000	☒

Records per page: 10 1-2 of 2

ADD

2.1.3.Event Data

Event data evaluates the measurement values received by the input port against judgment conditions and registers those that match the conditions.

In the example below, the measured value greater than “270” is specified as the condition for registration.



SAVE

DELETE

CANCEL

Name

Event_data

☐ Autostart disable

Time to ignore identical events(sec)

0

Event condition

Setting option

Receive and set data definitions

Component	Data name	Trigger name	Condition type	Conditional expression ⓘ	
OPCUA_Collector ▾	Standby ▾	temp	True ▾	270 < \$VALUE	

Records per page: 10 ▾ 1-1 of 1

ADD

2.1.4.OPC UA Writing

The OPC UA Writing component writes parameters to nodes using the measured values received by the input port as the trigger.

Target for writing parameters:

4:new_Controller_0/3:GlobalVars/4:OverTemperatureAlarm

Value Source: Fixed

Write value: true



SAVE

DELETE

CANCEL

Name
OPCUA_Writing

☐ Autostart disable

Endpoint
opc.tcp:// 192.168.1.251:4840

☒ Keep Connection

Connection Timeout (ms)
10000

Write Timeout (ms)
5000

Security Mode
SignAndEncrypt

Security Policy
Basic256Sha256

☐ Anonymous

User Name
admin

Password

Server Certificate
server_certificate.der

TEST

Component Name	Trigger Data	Node Identifier	Value Source	Write Value	Enable
Event_data	ed1-OPCUA_C	4:new_Controller_0/3:Gl	Fixed	true	☒

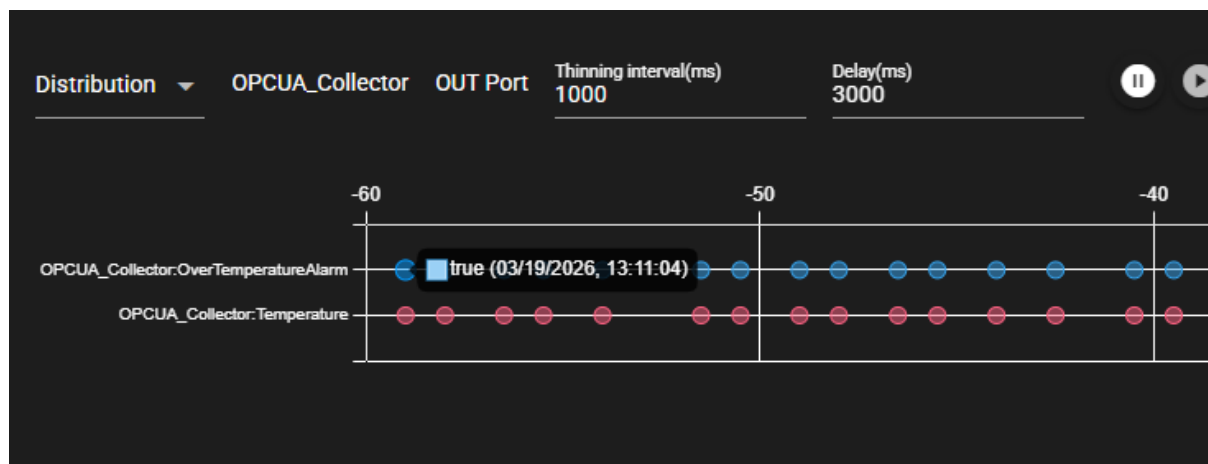
Records per page: 10 1-1 of 1

ADD

2.1.5.Component Execution

Start all components.

Checking the output ports of the OPC UA Collector component using the Data Monitor allows you to confirm that the parameter *true* is written when the measured value is greater than “270”.



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