Data Flow Controller DX-series

Practices Guide
OPC UA Client Component

DX100-□□□□

V306-E1-01

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

CONTENTS

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.

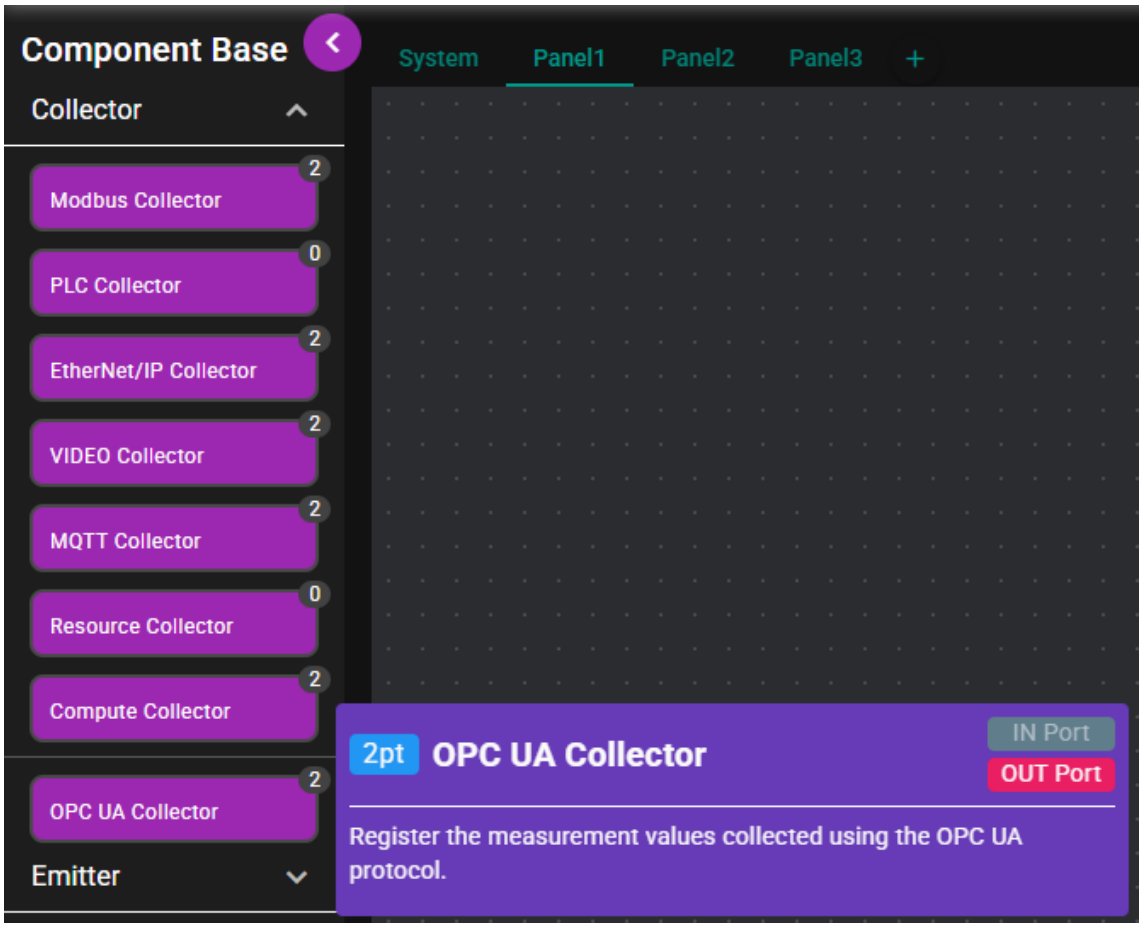
1.2.Basic Information About the Package

The table below provides basic information about the component package.

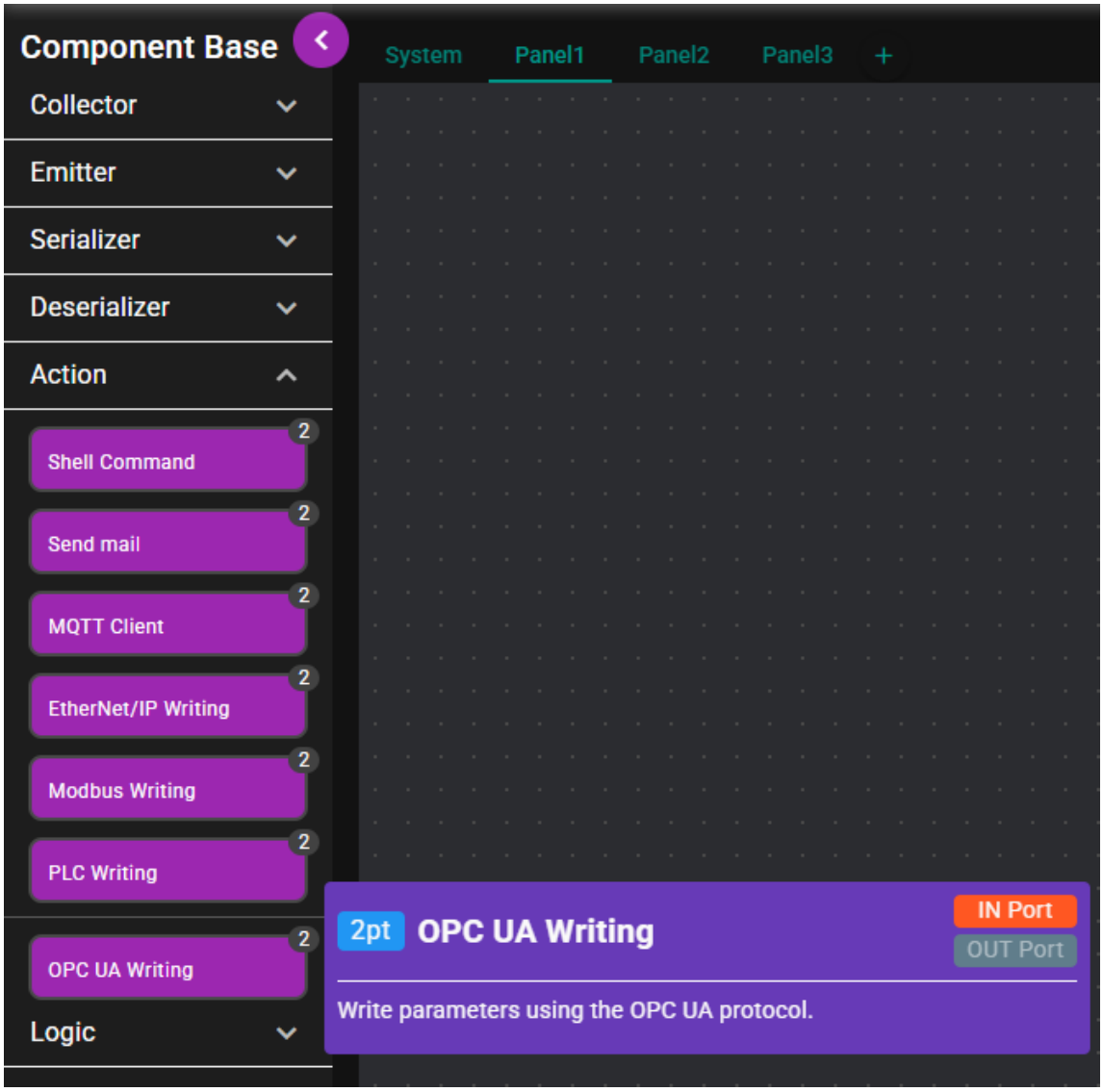
Package file name (*1)	opc_ua_client.sccpkg
Operating environment	Platforms on which Synapse 4.9.9 or later is running
Components to be registered	• OPC UA Collector (*2) • OPC UA Writing (*3)

*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.

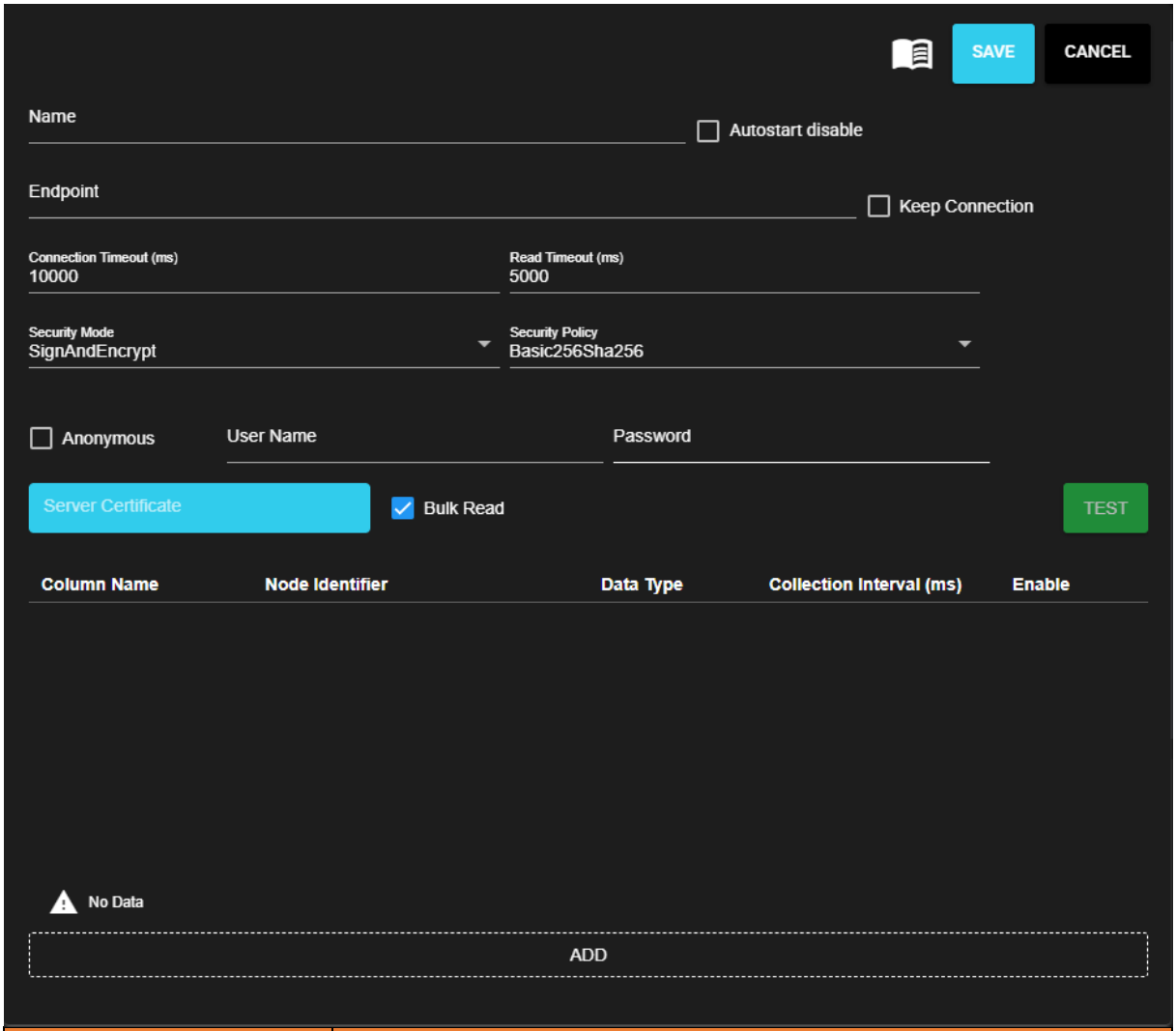


*3 The registered component will be displayed under the *Action* category in the component list.



1.3.Setting Screens

1.3.1.OPC UA Collector

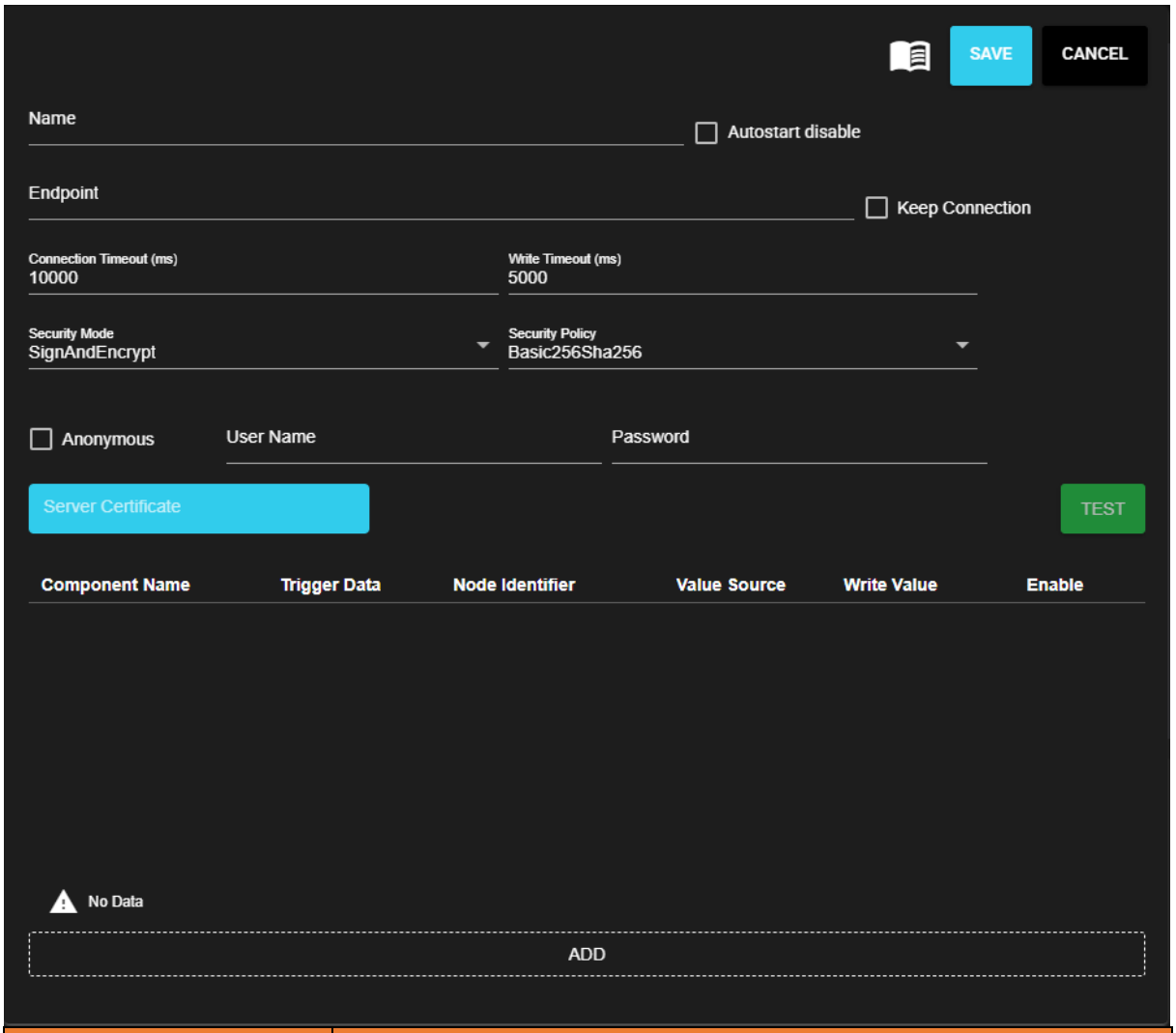


Item	Description (Values in red are default values)
Name	Component name (any name that is not duplicated)
Endpoint	Endpoint of the OPC UA server
Keep Connection	When the check box is cleared, connection to the server will be established or closed each time measurement values are collected. Check box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

<table>
<tr><td>User Name</td><td>Connection user name
Specify this when the Anonymous check box is cleared.</td></tr>
<tr><td>Password</td><td>Connection password
Specify this when the Anonymous check box is cleared.</td></tr>
<tr><td>Server Certificate</td><td>When Security Mode is set to Sign or SignAndEncrypt, specify the certificate file required to ensure secure communications with the server.</td></tr>
<tr><td>Bulk Read</td><td>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</td></tr>
<tr><td>TEST button</td><td>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.</td></tr>
<tr><td>Column Name</td><td>Specify the column name for registering the collected measurement values in Synapse.</td></tr>
<tr><td>Node Identifier</td><td>Specify the target node for collecting measurement values by node ID or browse path.
<table>
<tr><td colspan="2">Entry example</td></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 Node ID and Browse path to set, use Unified Automation’s UaExpert or other general-purpose client tools to check the relevant information.
* UaExpert 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.</td></tr>
<tr><td>Data Type</td><td>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</td></tr>
<tr><td>Collection Interval (ms)</td><td>Specify the periodic collection interval for measurement values in the range of 100 to 600000 ms.</td></tr>
</table>

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.

<table>
<tr><td>Write Timeout (ms)</td><td>Specify the time until the write timeout in the range of 100 to 20000 ms.</td></tr>
<tr><td>Security Mode</td><td>None, Sign, or SignAndEncrypt</td></tr>
<tr><td>Security Policy</td><td>None, Basic128Rsa15 (not recommended), Basic256 (not recommended), or Basic256Sha256</td></tr>
<tr><td>Anonymous</td><td>Check box selected or cleared</td></tr>
<tr><td>User Name</td><td>Connection user name
Specify this when the Anonymous check box is cleared.</td></tr>
<tr><td>Password</td><td>Connection password
Specify this when the Anonymous check box is cleared.</td></tr>
<tr><td>Server Certificate</td><td>When Security Mode is set to Sign or SignAndEncrypt, specify the certificate file required to ensure secure communications with the server.</td></tr>
<tr><td>TEST button</td><td>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.</td></tr>
<tr><td>Component Name</td><td>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.</td></tr>
<tr><td>Trigger Data</td><td>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.</td></tr>
<tr><td>Node Identifier</td><td>Specify the target node for writing parameters by node ID or browse path.
<table><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 Node ID and Browse path to set, use Unified Automation’s UaExpert or other general-purpose client tools to check the relevant information.
* UaExpert 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.</td></tr>
</table>

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)*.

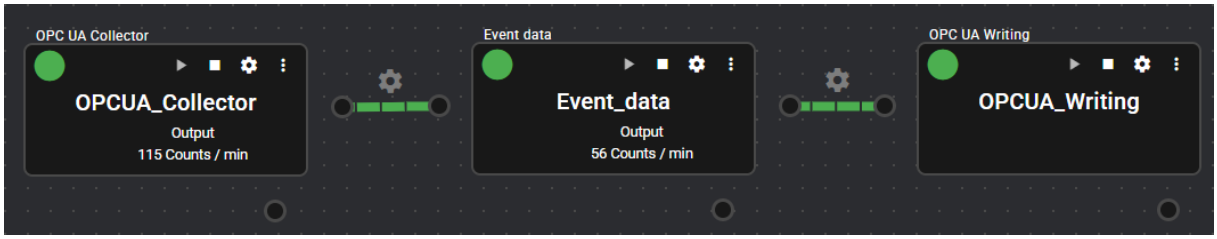
  - OPC UA Client (This package)

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.


OPC UA Collector
OPCUA_Collector
Output
115 Counts / min
Event data
Event_data
Output
56 Counts / min
OPC UA Writing
OPCUA_Writing

2.1.2.OPC UA Collector

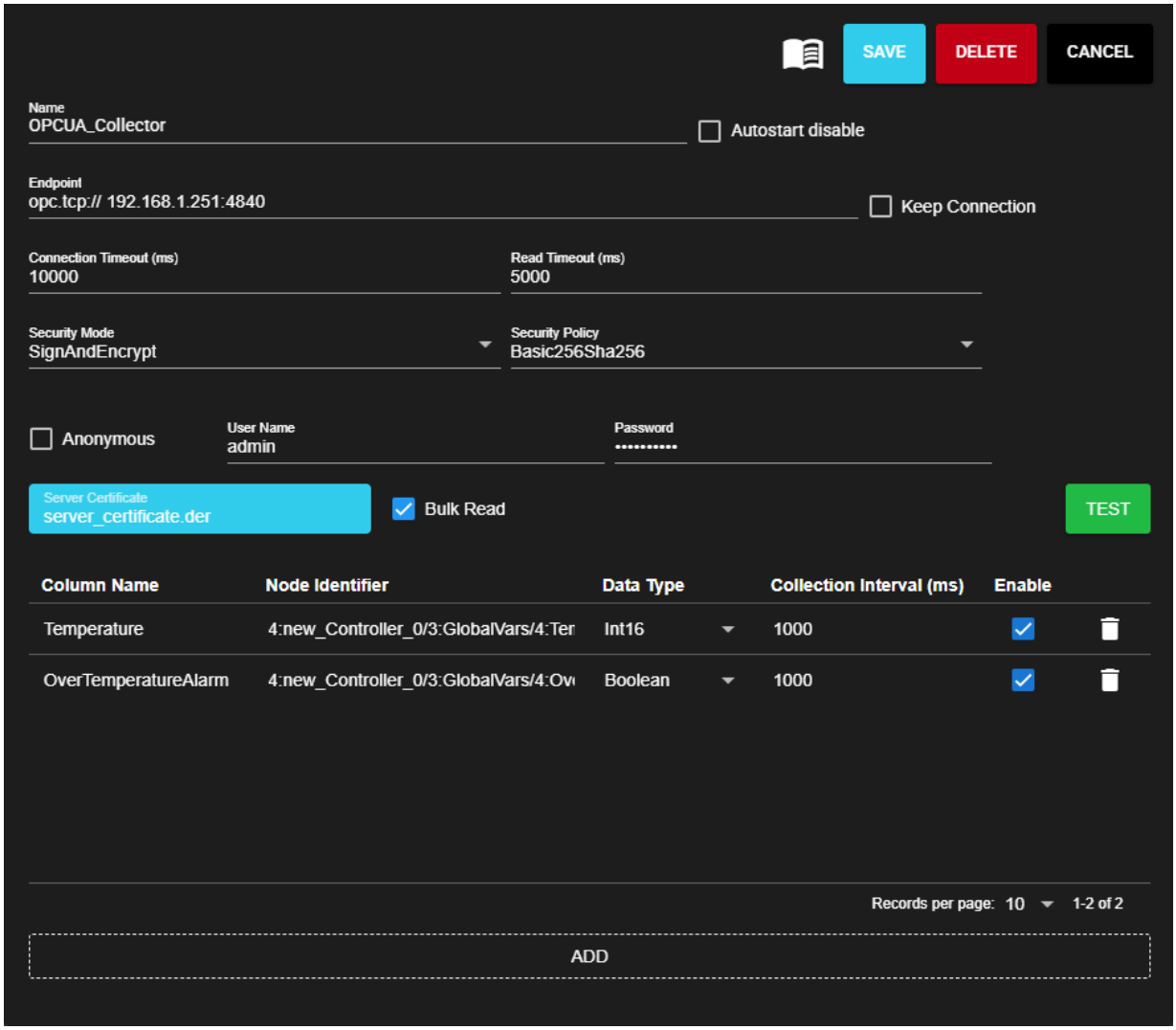
The OPC UA Collector component collects and registers measured values from nodes.

Target for collecting measurement values:

4:new_Controller_0/3:GlobalVars/4:Temperature

Target for writing parameters:

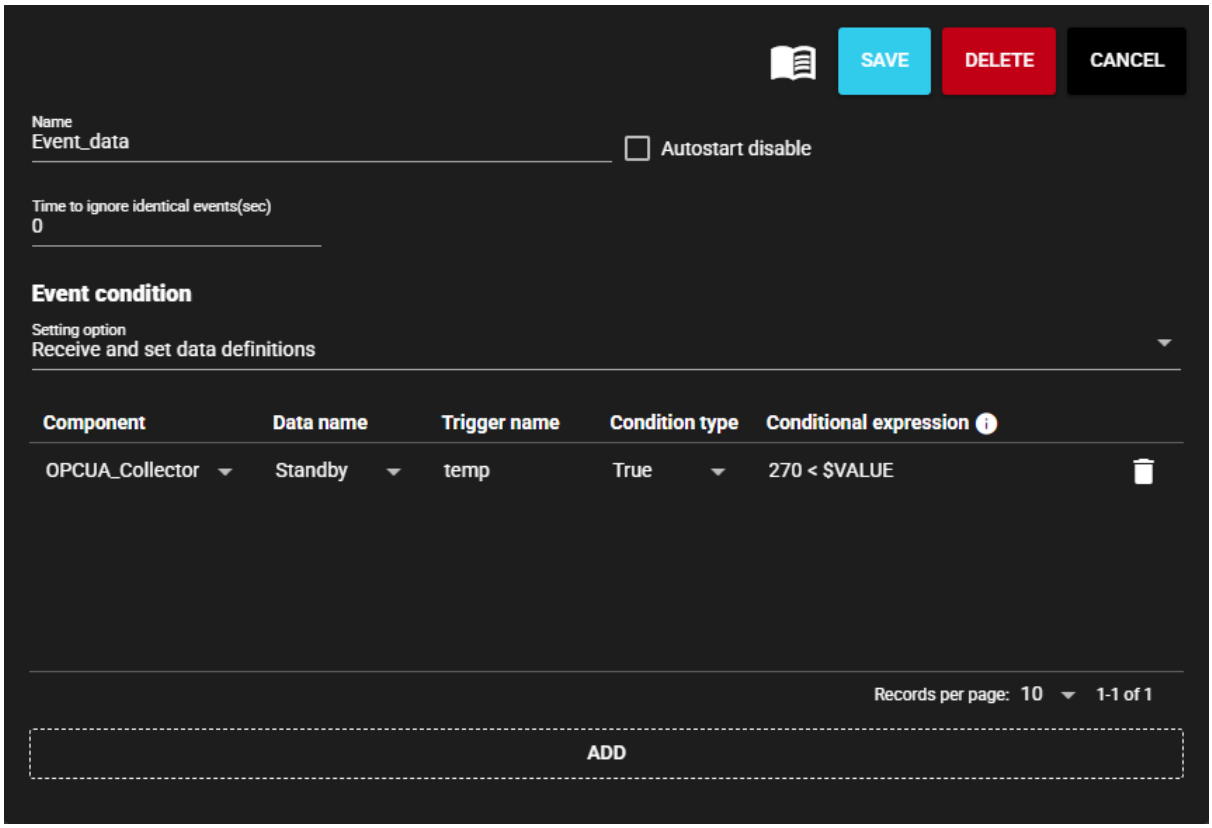
4:new_Controller_0/3:GlobalVars/4:OverTemperatureAlarm



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.



2.1.4.OPC UA Writing

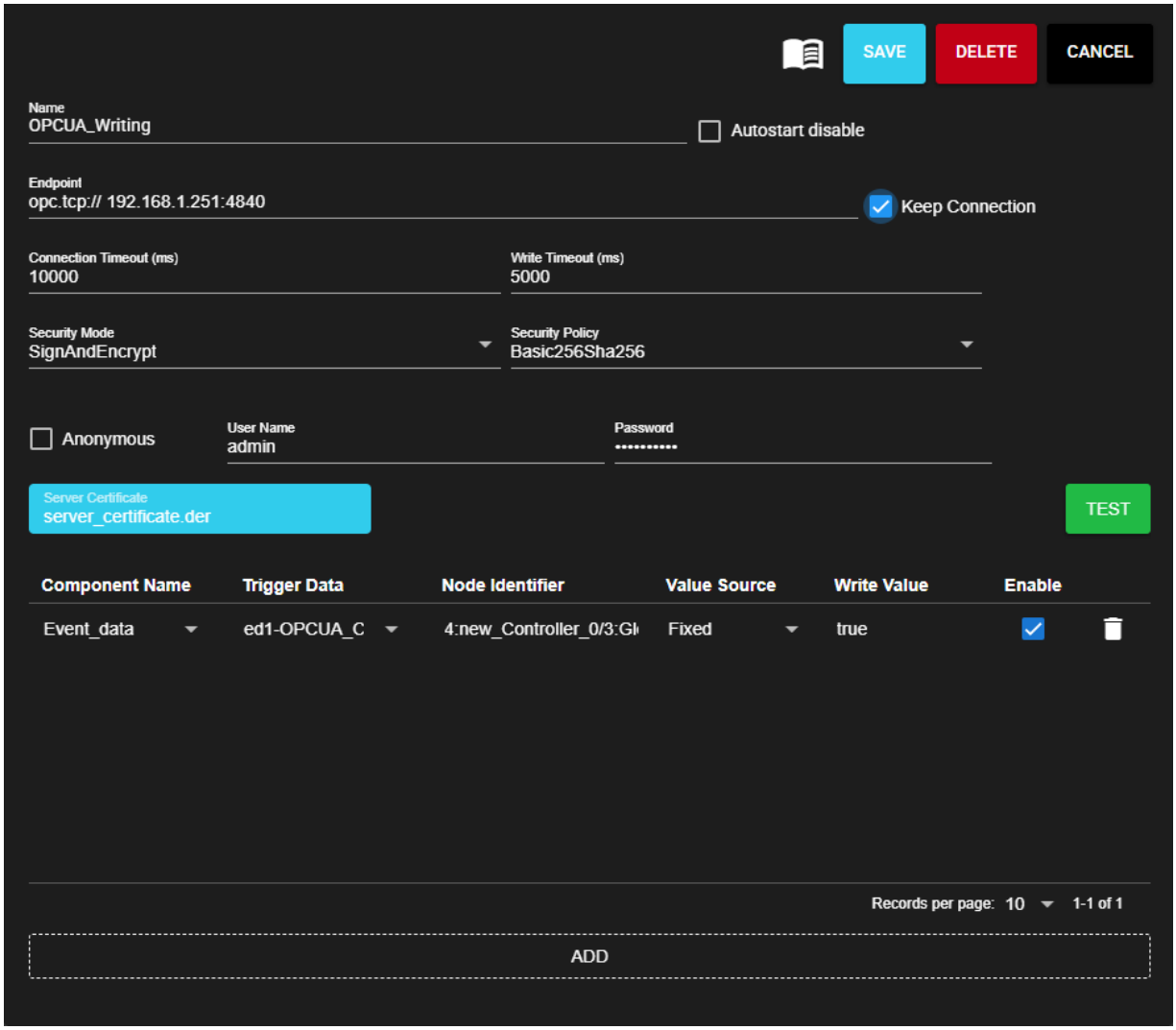
The OPC UA Writing component writes parameters to nodes using the measured values received by the input port as the trigger.

Target for writing parameters:

4:new_Controller_0/3:GlobalVars/4:OverTemperatureAlarm

Value Source: Fixed

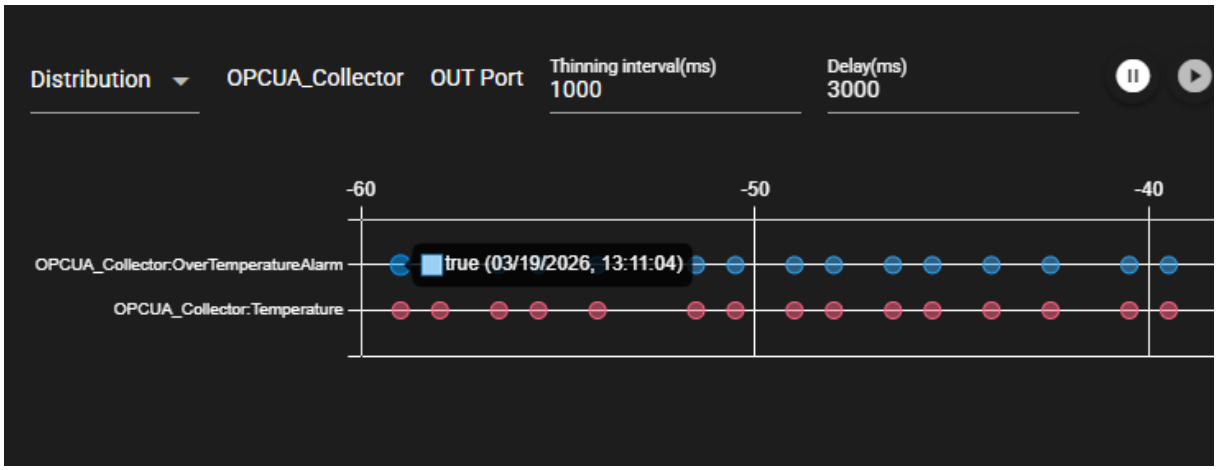
Write value: true



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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Tutorial Video

https://www.fa.omron.co.jp/dx1/video-manual/en/

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