

Data Flow Controller DX-series

# Practices Guide

# Sensor Master Component

**DX100-□□□□**

Practices  
Guide

# Revision History

Version	Revised content	Date
Version 1.0	Original production	April 9, 2026

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# CONTENTS

- 1. About the Sensor Master Component Package..... 3
  - 1.1. Overview ..... 3
  - 1.2. Basic Information About the Package ..... 3
  - 1.3. Setting Screens..... 4
    - 1.3.1. Collector Setting Screen ..... 4
    - 1.3.2. Write Settings Screen ..... 6
  - 1.4. Supplementary Information ..... 8
    - 1.4.1. Supplementary Information on the Collector Component ..... 8
    - 1.4.2. Supplementary Information on the Writing Component ..... 8
- 2. How to Use These Components..... 10
  - 2.1. Creation of Collector Data Flow ..... 10
    - 2.1.1. Sensor Master NXR Collector ..... 10
    - 2.1.2. CSV Serializer ..... 12
    - 2.1.3. File Emitter ..... 12
  - 2.2. Execution of Collector Data Flow ..... 13
  - 2.3. Creation of Write Data Flow ..... 14
    - 2.3.1. PLC Collector ..... 14
    - 2.3.2. Sensor Master NXR Writing..... 15
  - 2.4. Execution of Write Data Flow..... 15

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## 1.About the Sensor Master Component Package

### 1.1.Overview

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

The components included in this package connect to an EtherNet/IP-enabled IO-Link master and read and write I/O data for assembly objects in explicit message communications.

**\* The write functionality provided in this package is a trial version and does not guarantee normal operation or performance.**

### 1.2.Basic Information About the Package

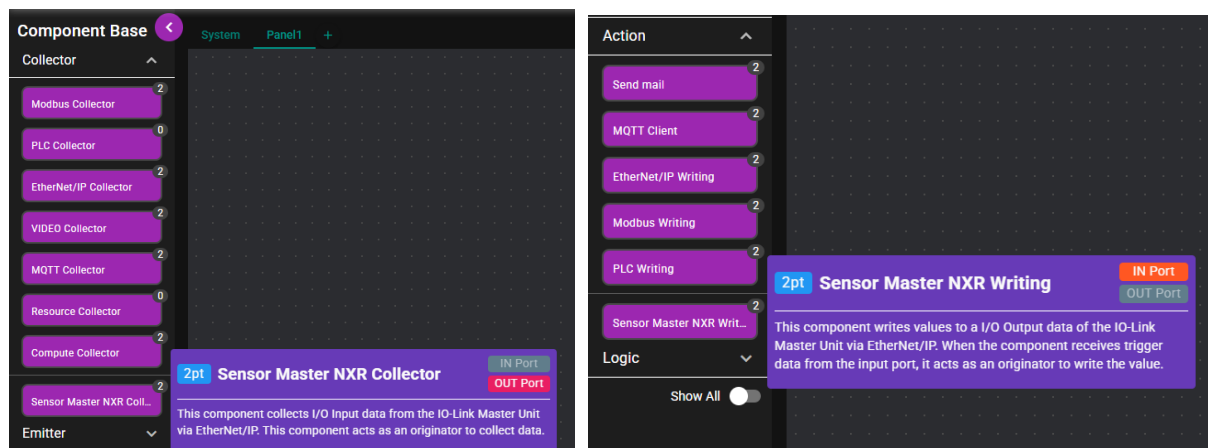
The component package provided is as follows.

Package file name (*1)	sensor_master_component.sccpkg
Operating environment	Platforms on which Synapse 4.9.9 or later is running
Components to be registered	Sensor Master NXR Collector (*2) Sensor Master NXR Writing (*3)

\*1 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)* 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.Collector Setting Screen

The section describes the settings for the collector component.

The screenshot displays the Collector Setting Screen with the following configuration details:

- Name:** [Empty field]  Autostart disable
- Model:** Omron NXR
- Host:** Host
- Port:** 44818
- Connect Timeout(ms):** 500
- Get Interval(ms):** 500

Four data ports are configured:

- Port1:** Endian little. Table with 1 record: col\_name (Data type: BYTE, Enabled: checked).
- Port2:** Endian little. No data available.
- Port3:** Endian little. (Empty table)
- Port4:** Endian little. (Empty table)

Each port table includes a header with 'Column name', 'Data type', and 'Enable'. Port1 also has a trash icon. Below each table is an 'ADD DATA' button. A 'Records per page: 5' indicator is shown for Port1.

Item	Description	
Name	Enter a component name. * The same name as another component name cannot be used.	
Autostart disable	Select this check box to disable the Autostart of the component.	
Model	Select the model of the IO-Link master to connect to.	
Host	Enter the host name or IP address of the IO-Link master to connect to.	
Port	Enter the port of the IO-Link master to connect to. (Default value: 44818)	
Connect Timeout	Enter the connection timeout duration. (Default value: 500)	
Get Interval	Enter the interval between reads for retrieval. (Default value: 500)	
Port tables	Configure the mapping for IO-Link input data.	
	Endian	Specify the endianness for the IO-Link device.
	Column name	Enter name of data.
	Data type	Select the data type of the value to retrieve.
	Enable	Select the check box to retrieve the value.
	Delete	Click this button to delete the row.
	ADD DATA	Click this button to add one row to the settings.

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### 1.3.2. Write Settings Screen

This section describes the setting items for the writing component.

The screenshot displays the 'Write Settings Screen' for an Omron NXR model. At the top right, there are 'SAVE' and 'CANCEL' buttons. The main configuration area includes:

- Name:** A text input field.
- Autostart disable:** A checkbox.
- Model:** A dropdown menu set to 'Omron NXR'.
- Host:** A text input field.
- Port:** A dropdown menu set to '44818'.
- Connect Timeout(ms):** A text input field set to '500'.
- Trigger component:** A dropdown menu.
- Trigger data:** A dropdown menu.
- Digital Output (2byte: +0~+1):** A text input field containing the value '0'.
- Port1:** A section with a title dropdown, and sub-sections for 'Data type' (set to 'BYTE'), 'Value type' (set to 'Fix value'), and 'Fix value' (with a small icon).
- Port2:** A section with a title dropdown, and sub-sections for 'Data type', 'Value type', and 'Fix value'. Below this section, it says 'No data available'.
- Records per page:** A dropdown menu set to '5', with '1-1 / 1' below it.
- ADD DATA:** Two buttons at the bottom, one for Port1 and one for Port2.

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Item	Description	
Name	Enter a component name. * The same name as another component name cannot be used.	
Autostart disable	Select this check box to disable the Autostart of the component.	
Model	Select the model of the IO-Link master to connect to.	
Host	Enter the host name or IP address of the IO-Link master to connect to.	
Port	Enter the port of the IO-Link master to connect to. (Default value: 44818)	
Connect Timeout	Enter the connection timeout duration. (Default value: 500)	
Trigger component	Set the component that serves as the trigger for writing among the data received by the input port.	
Trigger data	Set the data that serves as the trigger for writing among the data received by the input port.	
Non-port output area	Set the value for the non-port output area of the IO-Link output data. [Notation] "Area name (Number of bytes: Byte offset from start address)" * Variable depending on model (The figure shows the NXR-series.)	
Port tables	Configure the mapping for IO-Link output data.	
	Endian	Specify the endianness of the value to write.
	Data type	Data type of the target to which to write the value.
	Value type	- Fixed: Enter a fixed value as the value to write. - Component: Select the data received by the input port as the value to write. - Event: Trigger data value is written.
	Fix value	- Fixed: Half-width number, hexadecimal notation, binary notation - Component: Data received by the input port - Event: Trigger data value (Cannot be entered)
	Delete	Click this button to delete the row.
	ADD DATA	Click this button to add one row to the settings.

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## 1.4. Supplementary Information

### 1.4.1. Supplementary Information on the Collector Component

- Supported model: OMRON EtherNet/IP-enabled NXR-series
- Supported instance number and port size
  - NXR-series: Input Assembly instance number 112
  - IO-Link input ports 1 to 8 × 32 bytes
- The Input Assembly instance contains non-input port data such as status and digital input data. This component also retrieves these values. Column names are automatically generated, so no setting is required.

NXR-series			
Item	Column name	Data type	Remarks
Unit Error Collection Status	unit_err_collect_status	UINT16	
Unit Error Status	unit_err_status	UINT8	
Port Error	port_err	UINT8	
Port Input Data Enabled	port_in_data_enabled	UINT8	
Unit/Input Power Supply Voltage	unit_in_ps_volt	UINT16	
Output Power Supply Voltage	out_ps_volt	UINT16	
PortX Error Status	portX_err_status	UINT16	X = 1 to 8
PortX Pin2 Digital Input Data	portX_pin2_din	BOOL	X = 1 to 8
PortX Pin4 Digital Input Data	portX_pin4_din	BOOL	X = 1 to 8
Integrated IO-Link Input Data	portX_err_status	UINT16	

- This component checks the model at run-time. If the model selected in the setting screen differs from the model of the connection destination host, the component stops due to an error. Communications may fail if you run the component immediately after turning ON the power supply to the IO-Link master. In such cases, re-run the component.
- For data acquisition, this component uses Unconnected Message Manager (UCMM) for explicit communications.
- Supported data types
  - STRING and BOOL are unsupported.
  - If bit-level data acquisition is required, specify the Synapse standard *data conversion component* as the output destination for this component and perform bit decomposition.
  - Array data is unsupported.

### 1.4.2. Supplementary Information on the Writing Component

- Note that the writing component is provided as a trial version and does not guarantee normal operation or performance.
- Supported models: OMRON EtherNet/IP-enabled NXR-series
- Supported instance number and port size

- 
- 
- NXR-series: Output Assembly instance number 134  
IO-Link output ports 1 to 8 × 32 bytes
  - This component checks the model at run-time. If the model selected in the setting screen differs from the model of the connection destination host, the component stops due to an error. Communications may fail if you run the component immediately after turning ON the power supply to the IO-Link master. In such cases, re-run the component.
  - 0 will be written to undefinable areas of ports.
  - For data writing, this component uses Unconnected Message Manager (UCMM) for explicit communications.
  - Supported data types
    - STRING and BOOL are unsupported.
    - Array data is unsupported.
  - Data type and the value to write

This component allows specifying any value to write for any data type, but casts the input value to match the data type during writing.

    - If the data type is an integer and the value is a decimal, the decimal will be truncated.
    - If the data type is an integer and the value is larger than the data type, only the lower bits will be kept to match the bit width.
    - For signed and unsigned integers, the value will be truncated to match the bit width and corrected with two's complement.

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## 2.How to Use These Components

This section describes how to use these components. Before using these components, register the following component 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)*.

- Sensor Master NXR Collector (Packaged component)
- Sensor Master NXR Writing (Packaged component)


### 2.1.Creation of Collector Data Flow

As an example, create a data flow that uses the Sensor Master NXR Collector as the input and uses the File Emitter to locally save data formatted by the CSV Serializer.



#### 2.1.1.Sensor Master NXR Collector

The figure below shows an example of parameter settings for the Sensor Master NXR Collector. Enter the items required for connection, such as the host and port settings, according to the configuration of your IO-Link master. Also, for the port table settings, set the required values for each device connected to the master.


**SAVE**
**CANCEL**

Name  
IO-Link\_Collector  Autostart disable

Model Omron NXR Host 192.168.250.11 Port 44818

Connect Timeout(ms) 500 Get Interval(ms) 500

**Port1** Endian big

Column name	Data type	Enable
output	WORD	<input checked="" type="checkbox"/>
Light_intensity	BYTE	<input checked="" type="checkbox"/>
Status	BYTE	<input checked="" type="checkbox"/>

Records per page: 5 1-3 / 3

ADD DATA

**Port2** Endian little

Column name	Data type	Enable
⚠ No data available		

ADD DATA

**Port3** Endian little

Column name	Data type	Enable

**Port4** Endian little

Column name	Data type	Enable

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### 2.1.2.CSV Serializer

The figure below shows an example of parameter settings for the CSV Serializer. Change the value for each item as needed.

The screenshot shows the configuration interface for the CSV Serializer. At the top right, there are 'SAVE' and 'CANCEL' buttons. The 'Name' field is set to 'CSV'. There is an 'Autostart disable' checkbox which is currently unchecked. The 'Delimiter' is set to 'Comma' and the 'Line feed code' is set to 'LF'. There are two checked checkboxes: 'Add BOM' and 'Add header'. The 'Time zone' is set to 'Local', 'Change unit' is set to 'Time', and 'Change time(sec)' is set to '10'. The 'Max size(KB)' is set to '96' and 'Default float digits' is set to '3'. There are two unchecked checkboxes: 'Output with total nano time' and 'emit data continued from last time on restart.'. The 'Fix column posi...' dropdown is set to 'First'. Below this, there are two columns: 'Fix column name' and 'Fix column value'. At the bottom, there is a warning icon and the text 'No data available', followed by a dashed box containing an 'ADD' button.

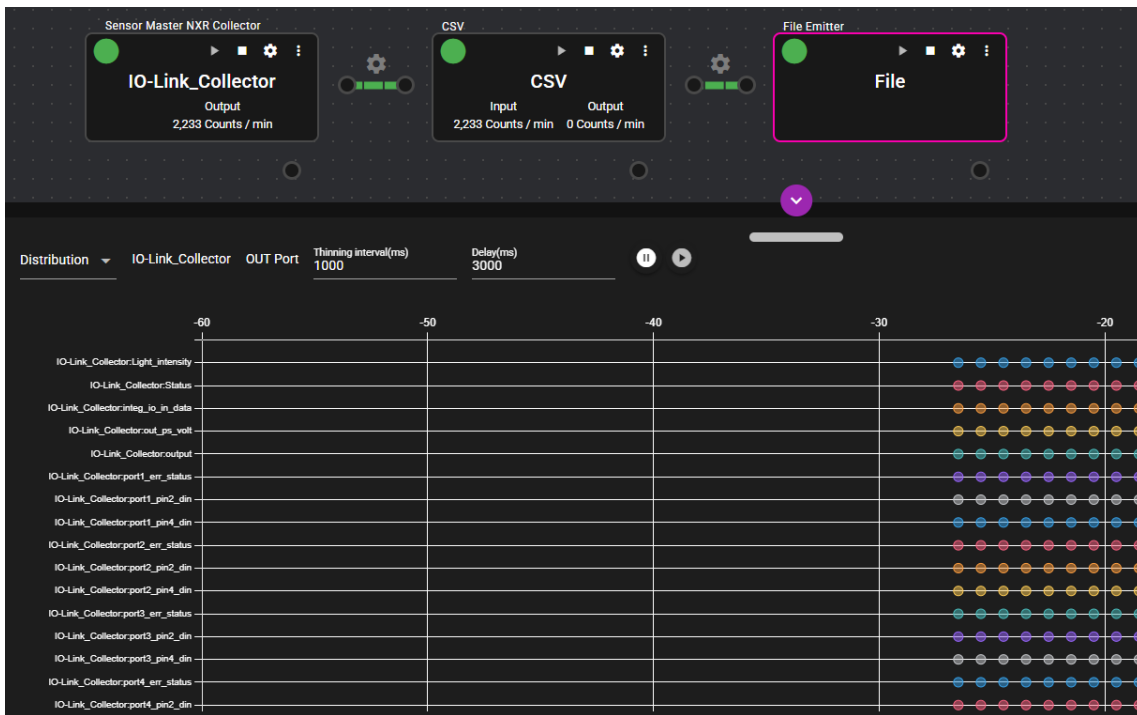
### 2.1.3.File Emitter

The figure below shows parameter settings for the File Emitter. Files will be saved in the directory according to the Save Location and Section settings. Change the value for each item as needed.

The screenshot shows the configuration interface for the File Emitter. At the top right, there are 'SAVE' and 'CANCEL' buttons. The 'Name' field is set to 'File'. The 'Section' is set to 'IOlinkNxr'. There is an 'Autostart disable' checkbox which is currently unchecked. The 'Save Location' is set to 'Project: /opt/speedbeesynapse-data/projects/project3'. Below this, the 'data' field is visible. The 'Retention period (...)' is set to '48' and the 'Time zone' is set to 'Local'. There is an unchecked checkbox for 'emit data continued from last time on restart.'.

## 2.2. Execution of Collector Data Flow

Start all components and check the output ports of the Sensor Master NXR Collector using the Data Monitor to confirm that data is being collected.



CSV files are saved to a local folder via the File Emitter.

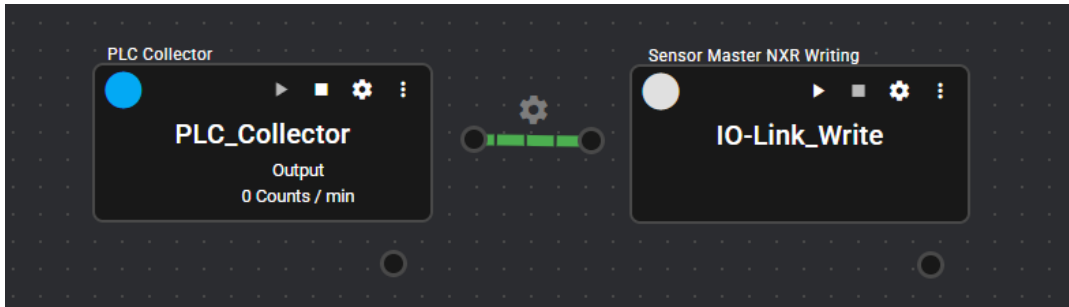
You can view the CSV data by opening the saved CSV files using an editor or similar application.

```
timestamp,IO-Link_Collector:Light_intencity,IO-Link_Collector:Status,IO-Link_Collector:integ_io_in_data,IO-Link_Collector:k_Collector:port_in_data_enabled,IO-Link_Collector:unit_err_collect_status,IO-Link_Collector:unit_err_status,IO-Link_Coll
2026-03-24T11:01:00.491733644+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:00.992314199+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:01.492096513+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:01.991374220+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:02.491997963+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:02.991652535+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:03.492218973+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:03.991663222+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:04.491343758+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
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2026-03-24T11:01:05.491459274+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:05.991968578+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:06.491626738+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:06.992086920+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:07.491800769+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
2026-03-24T11:01:07.991297957+0900,1.16,4.2,64639,0,false,false,0,false,false,0,false,false,0,false,false,0,false,false,0
```

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## 2.3. Creation of Write Data Flow

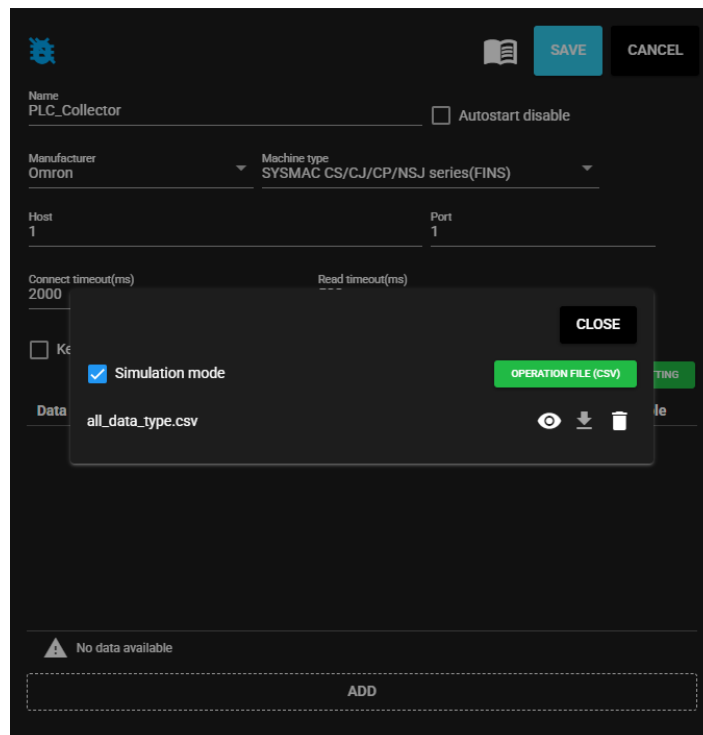
As an example, create a data flow that uses the PLC Collector as the input, and uses the Sensor Master NXR Writing component to write data to the sensor.



### 2.3.1. PLC Collector

Start the PLC Collector in simulation mode. Use *all\_data\_type.csv* as the operation file.

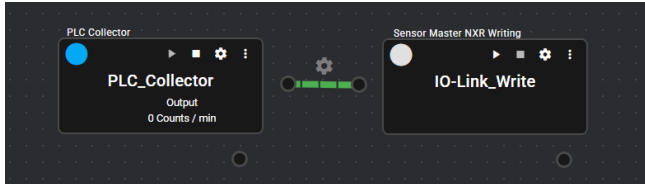
- \* Refer to 5.3.3.10.2 Configuration and switching of simulation mode in the *DX-series SpeedBee Synapse User's Manual (Cat. No. V243)*



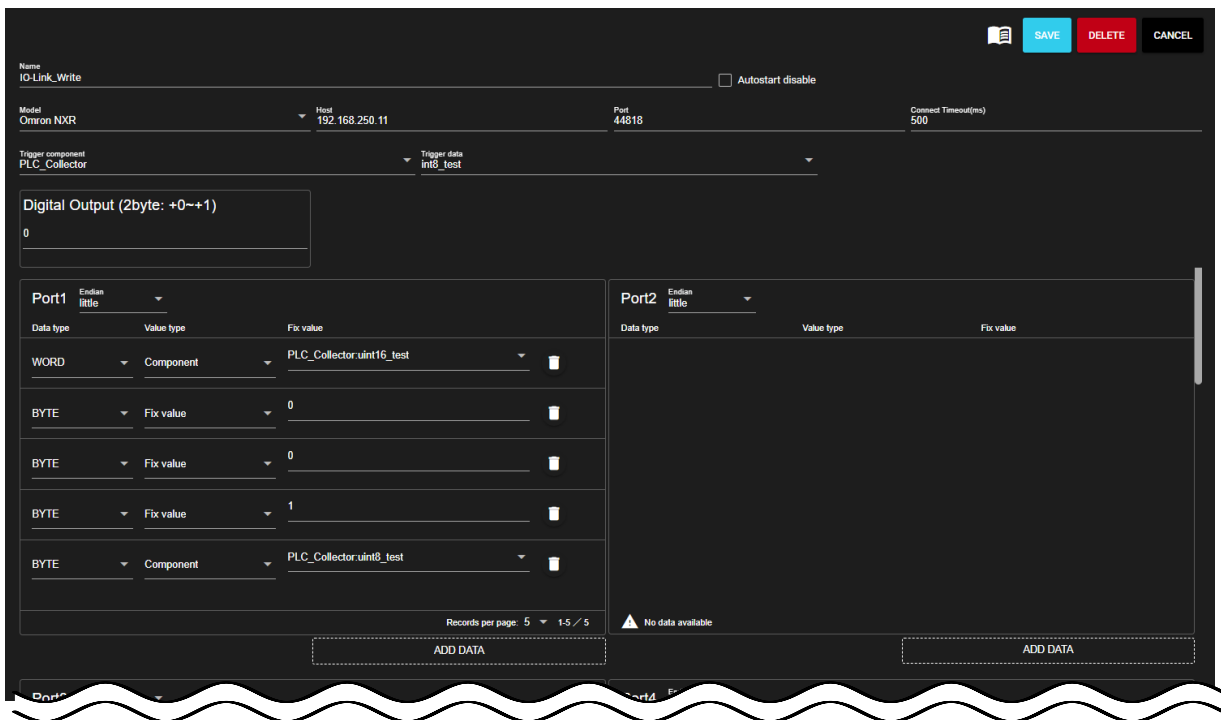
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### 2.3.2.Sensor Master NXR Writing

Drag and drop the Sensor Master NXR Writing component from the componentbase onto the panel, enter the name, host, and port, and save it. On the panel, connect a flow link from the output ports of the PLC Collector to the input ports of the Sensor Master NXR Writing component and start the PLC Collector to output data.



Next, click the gear button on the Sensor Master NXR Writing component to set various parameters. The figure below shows an example of parameter settings. Enter the items required for connection, such as the host and port settings, according to the configuration of your IO-Link master. Also, for the port table settings, set the required values for each device connected to the master.



### 2.4.Execution of Write Data Flow

Start all components. Data will be written to the device when the trigger data is received.

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**Tutorial Video**

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



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