

DX100

Startup Guide



Introduction

This startup guide describes procedure to setup the DX100 controller using Web UI and the use of basic functions in SpeedBee Synapse.

Intended Audience

- Personnel in charge of designing and managing IOT and factory automation systems.
- Personnel in charge of configuring and deploying the DX100.
- Personnel in charge of maintaining the DX100.

Related manuals

Manual Name	Catalog Number
DX Series CPU Unit User Manual	V241
DX Series Web UI Operation Manual	V242
DX Series SpeedBee Synapse	V243
DX Series Dashboard Generator User Manual	N700
DX Series Equipment Monitoring Package User Manual	N701
DX Series Factory Monitoring Package User Manual	N702
DX Series Condition Monitoring Package	N703
DX Series Video Logging Package User Manual	N704

Revision History

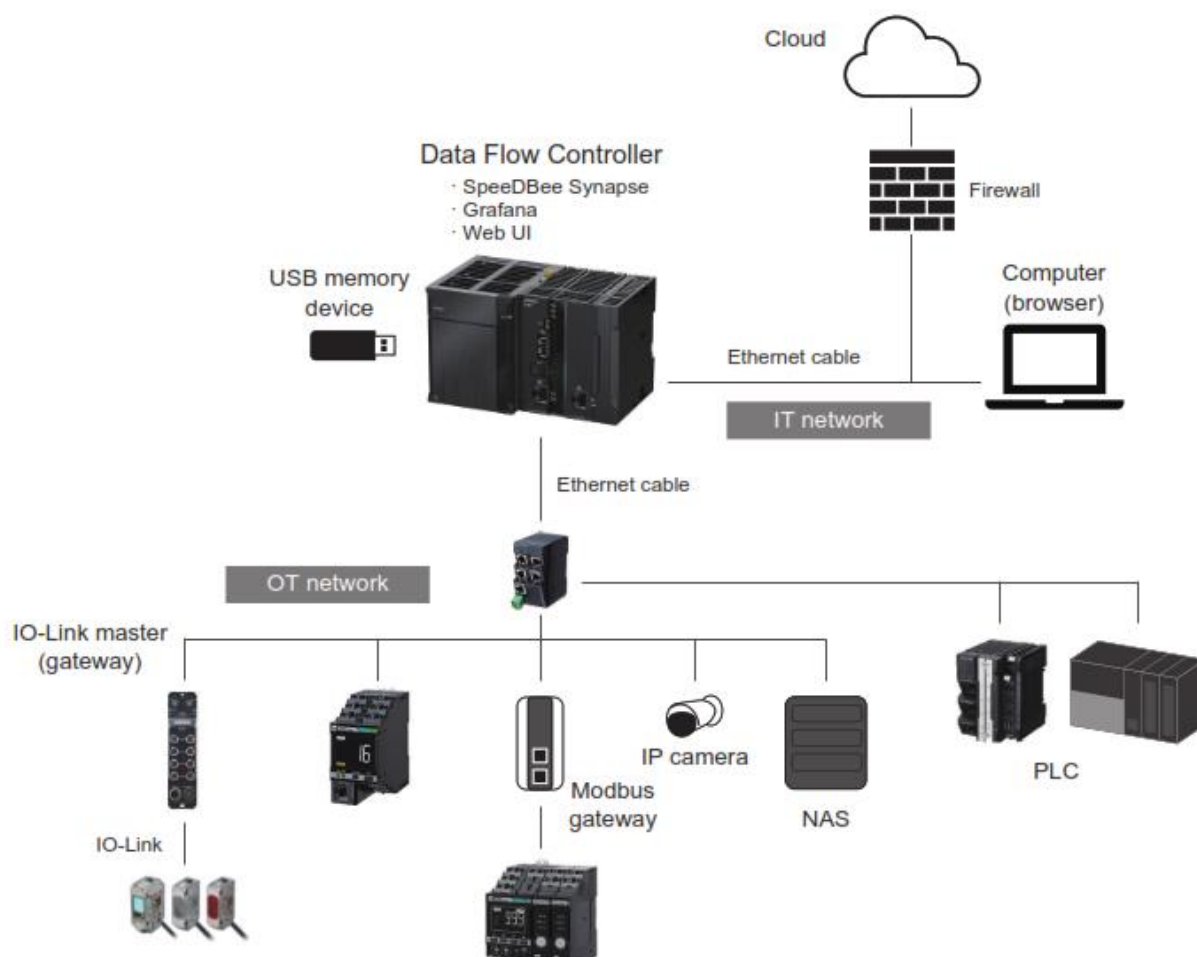
Revision code	Date	Revised
01	January 2026	Original production

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1. System Configuration

The following figure illustrates a typical system configuration that can be used with the DX data flow controller.



The following table includes the hardware devices that are used in this guide

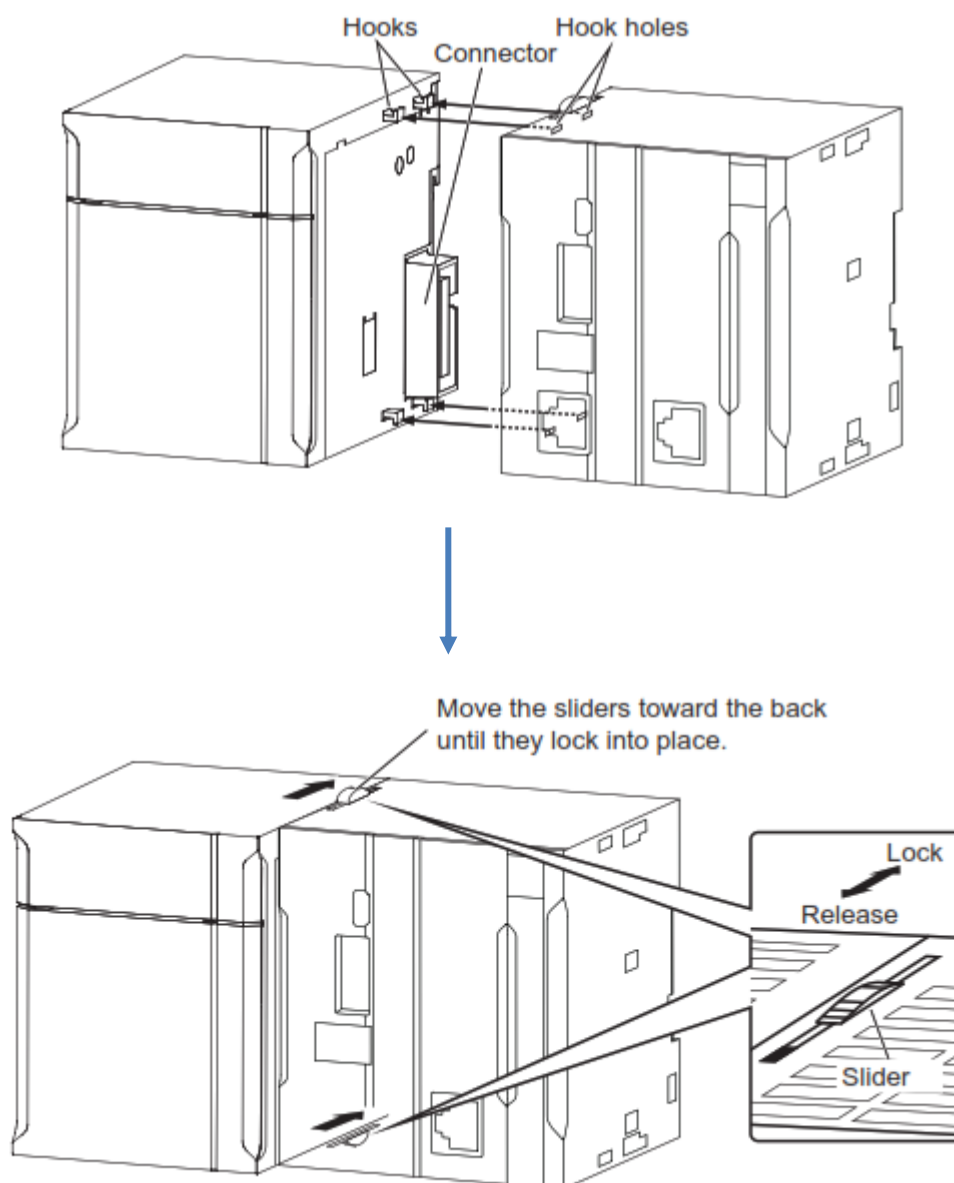
Device	Model
DX Series Data Flow Controller	DX100-0010
NX Series CPU Unit	NX102 – □
Ethernet Switch	W4S1-05D
Ethernet Communication Cables	XS6W-□

2. Installation and Wiring

2.1. Power Supply

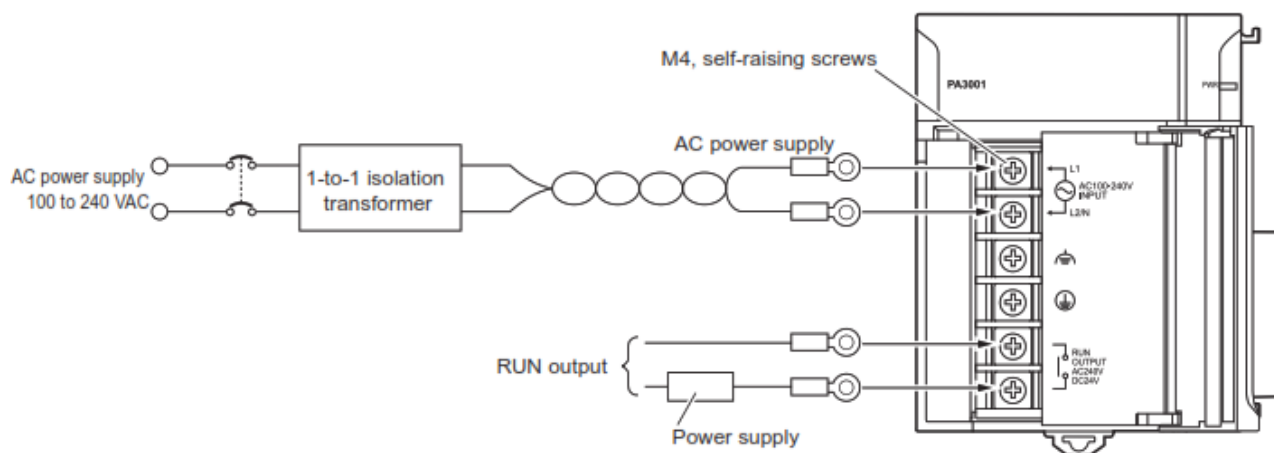
2.1.1. DX100 controller can be used with the following power supply models.

- NJ-PA3001
- NJ-PD3001

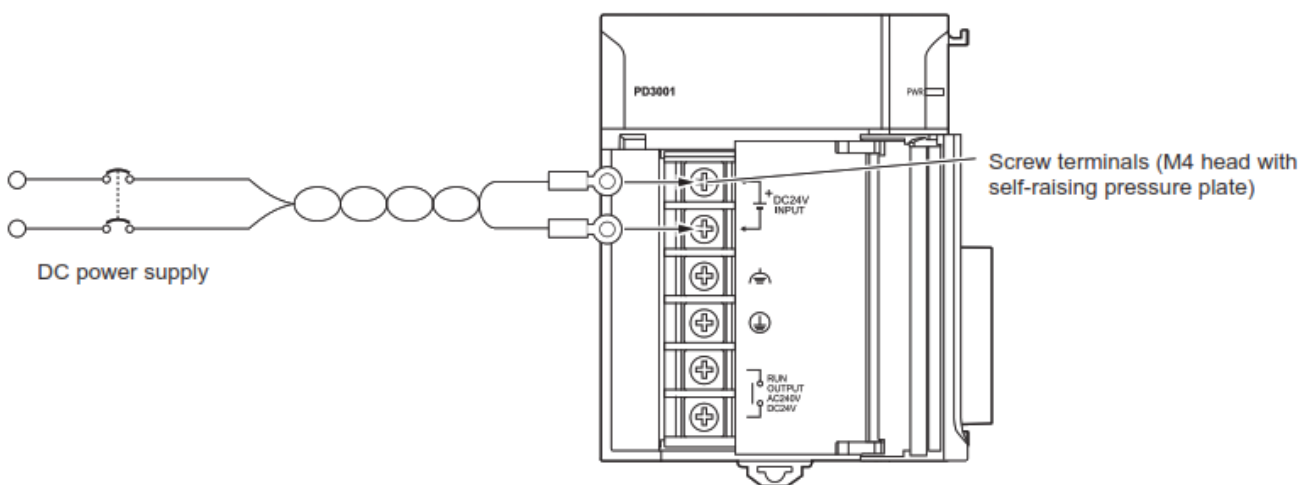


2.1.2. The following diagram illustrates the wiring for the power supply.

● NJ-PA3001 AC Power Supply Unit



● NJ-PD3001 Power Supply Unit



➤ Precautions for correct use

Please refer to the DX CPU Unit user manual (Cat. No. V241) for correct wiring techniques, grounding and other information regarding power supply.

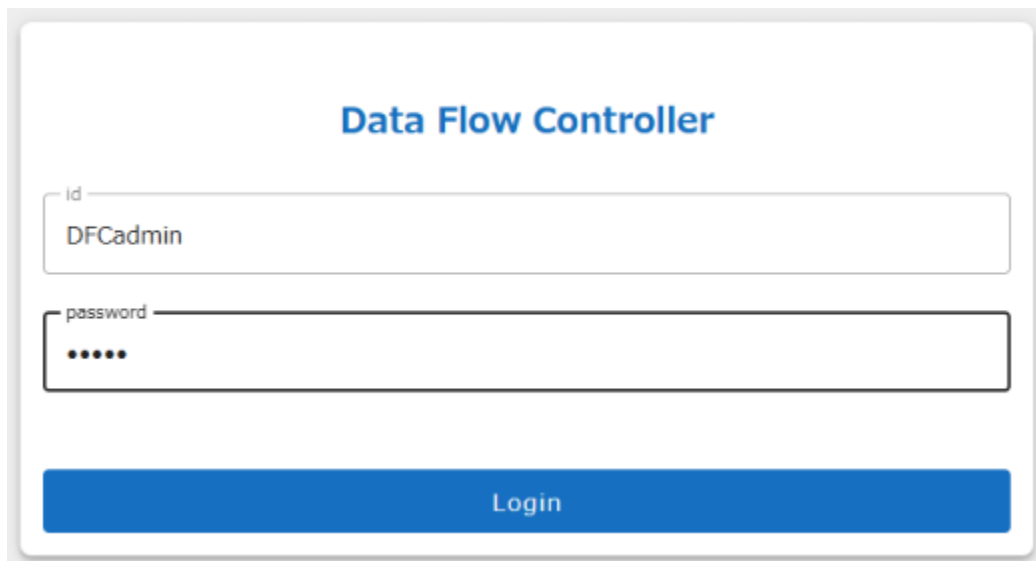
3. Initial Setup

3.1. Login

- 3.1.1. Connect an Ethernet cable to Port 1 of the DX100 controller.
- 3.1.2. Connect the other end of the Ethernet cable to the user computer.
- 3.1.3. Change the static IP of the user computer network adapter to 192.168.250.[]
- 3.1.4. Open a Web Browser on the user computer and type <http://192.168.250.100>. This is the default IP address of port 1.
- 3.1.5. This will open the login screen as shown below. Use the following default login information and click “Login”.

ID – **DFCadmin**

Password - **omron**



Data Flow Controller

id

password

Login

3.1.6. This will open the initial setup screen as shown below.

Data Flow Controller Initial Setup Global - English

Activate

Activation Code *

Activation Code

Update Initial Password

New Password *

New Password

New Password (Re-enter) *

New Password (Re-enter)

System Time Settings

Time Zone *

Tokyo•Osaka•Sapporo (UTC+09:00)

Date & Time *

mm/dd/yyyy --:--:--

Get Current Time

☐ [Terms of Use](#) : Agree to the Terms of Use and start using

Save

3.2. Activating the product

3.2.1. In the “Activate” section enter 0010 as the Activation Code.

3.3. Change the initial password

3.3.1. In the “Update Initial Password” section, enter a secure password.

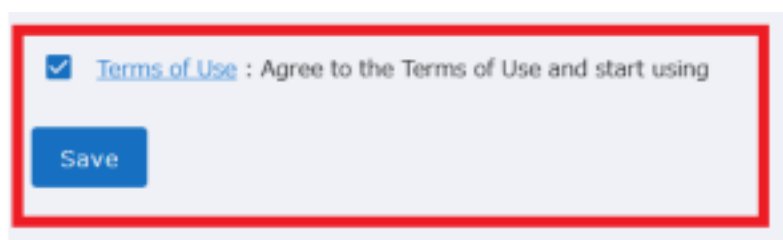
3.4. Set system time

- 3.4.1. In the “System Time Settings” section, select the correct time zone and enter the time manually or click “Get Current Time”. If you use “Get Current Time” then it will acquire the current time of the user PC.

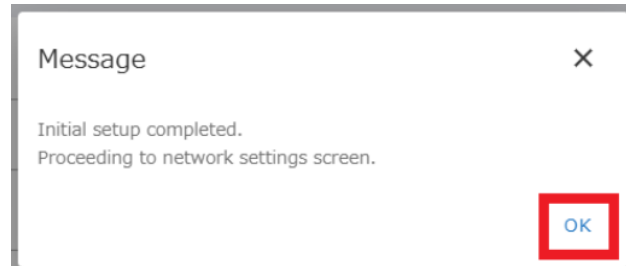
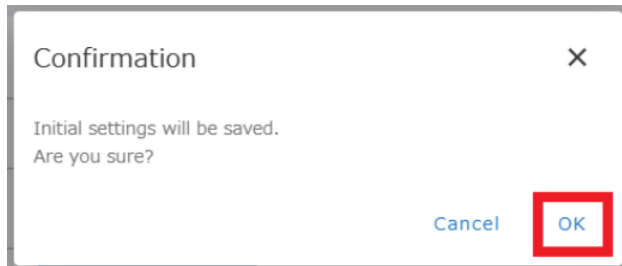
4. Save Settings

- 4.1.1. Review the “Terms of Use”, check the “Agree” box.

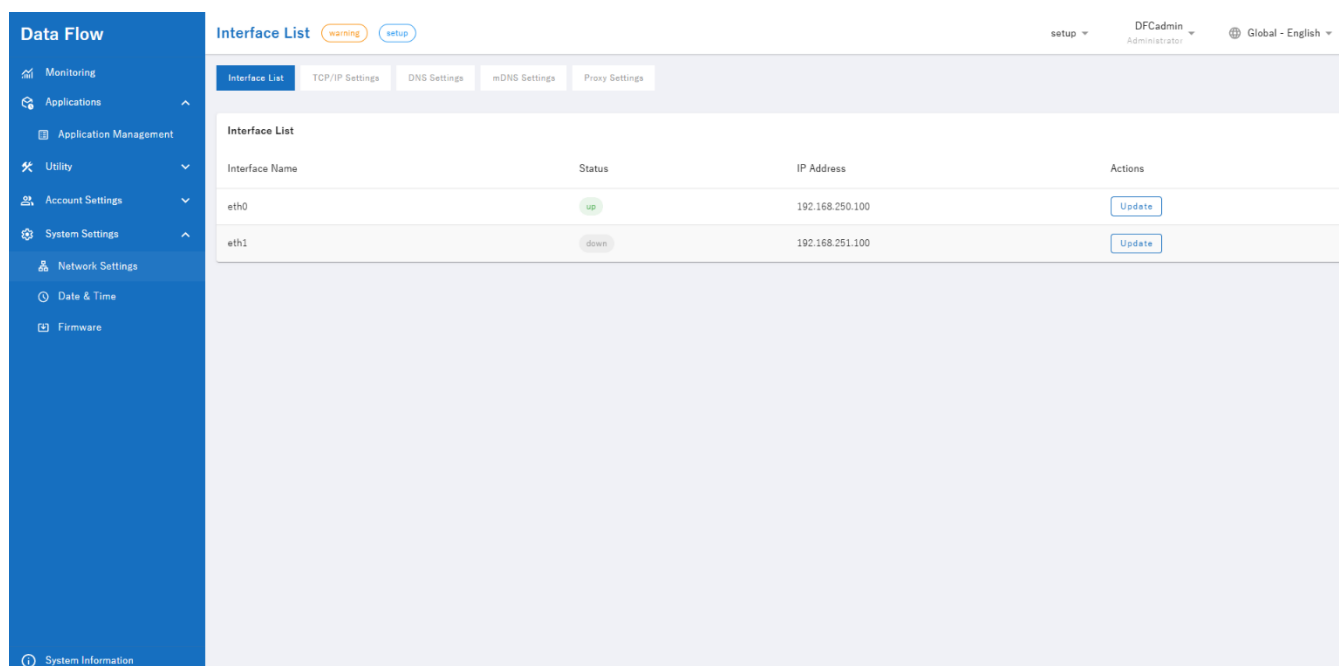
- 4.1.2. Click “Save”.



- 4.1.3. Click “OK” on the confirmation popup windows.



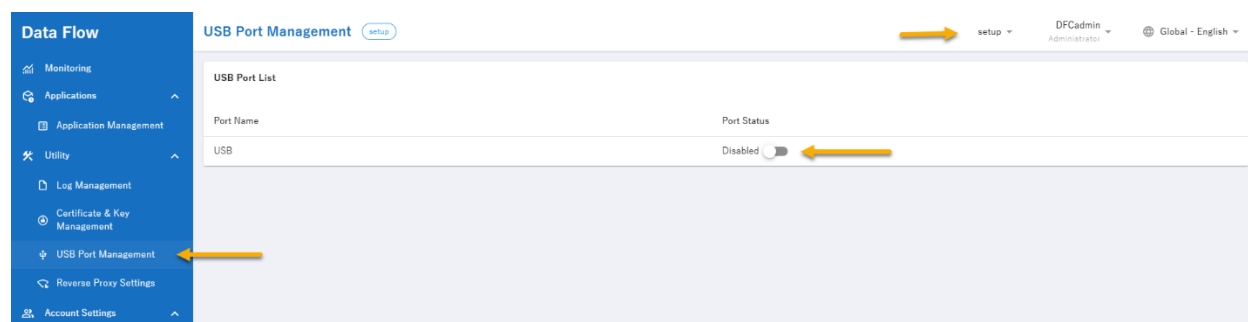
- 4.1.4. This will open the Web UI – Network Settings page as shown below.



4.2. USB Storage.

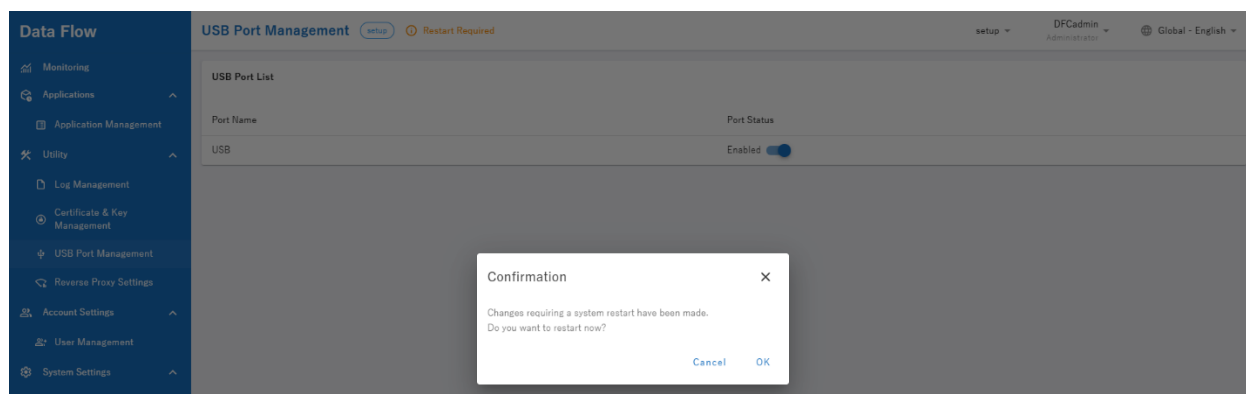
The DX100 controller will require an external USB storage device plugged into its' USB port to save data. The external storage is required to be formatted to FAT32.

4.2.1. Under the "Utility" section click on "USB Port Management".

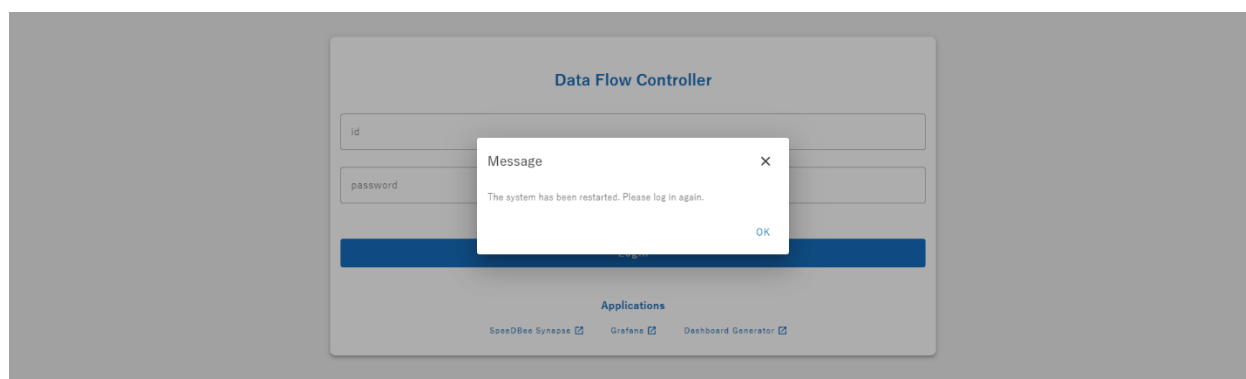
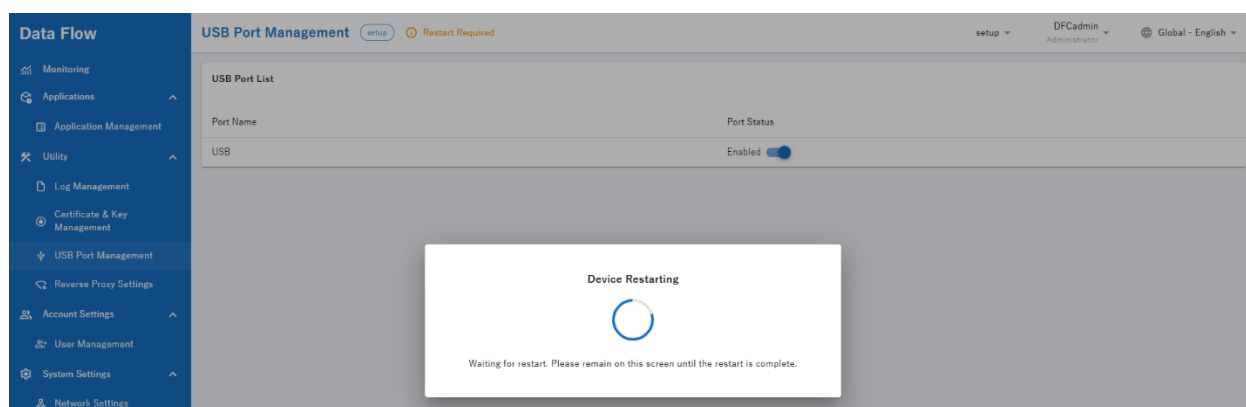


4.2.2. USB port is disabled by default. Ensure the DX100 is in setup mode. Change the "Port Status" switch to Enabled position.

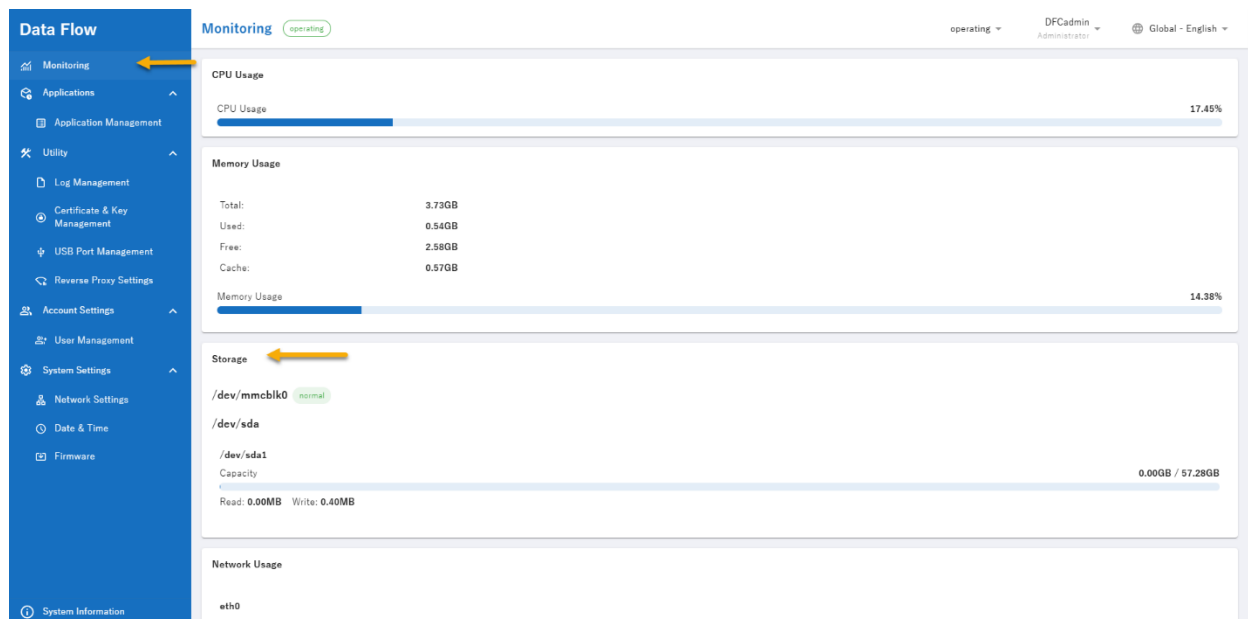
4.2.3. This will open a confirmation dialog box. Click "OK"



4.2.4. The device will be restarted in “Operating” mode. After the device is restarted, it will ask to login again.



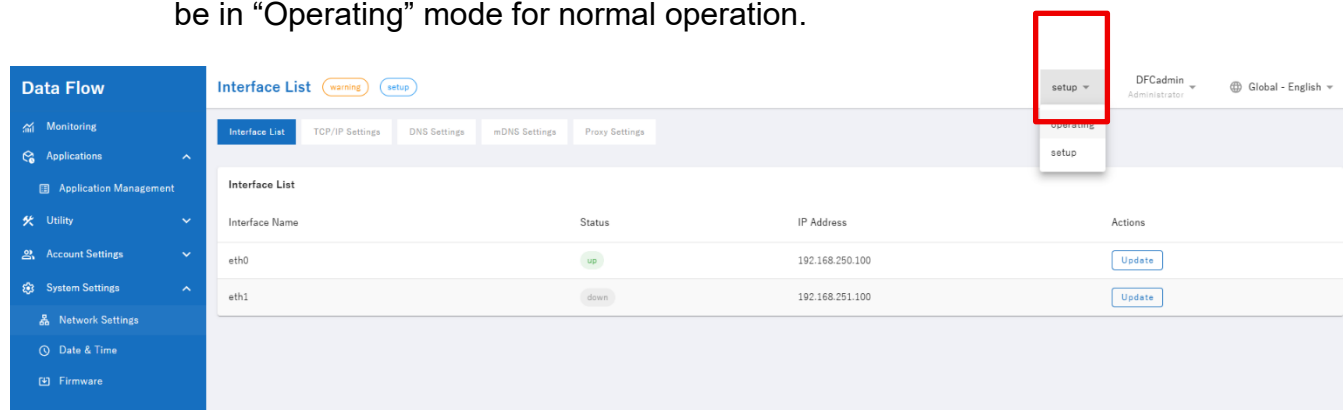
4.2.5. After logged in, the USB memory will be displayed under the “Monitoring” section.



4.4.4.3. Changing the operating mode.

4.4.1.4.3.1. Most changes in Web UI will require the DX100 controller to be in the "Setup mode."

4.4.2.4.3.2. After the changes are completed, the DX100 controller requires to be in "Operating" mode for normal operation.



4.4.3.4.3.3. Click the Mode setting button.

4.4.4.4.3.4. Select "Operating"

4.4.5.4.3.5. Now the DX100 controller is ready to be programmed using SpeedBee Synapse.

5. SpeedBee Synapse

SpeedBee Synapse can collect data from various devices (PLC, etc.) that constitute FA and IoT. Collected data can be converted, analyzed, and linked with other systems by using various functions of SpeedBee Synapse. This enables you to build a system that achieves everything from data collection to data utilization.

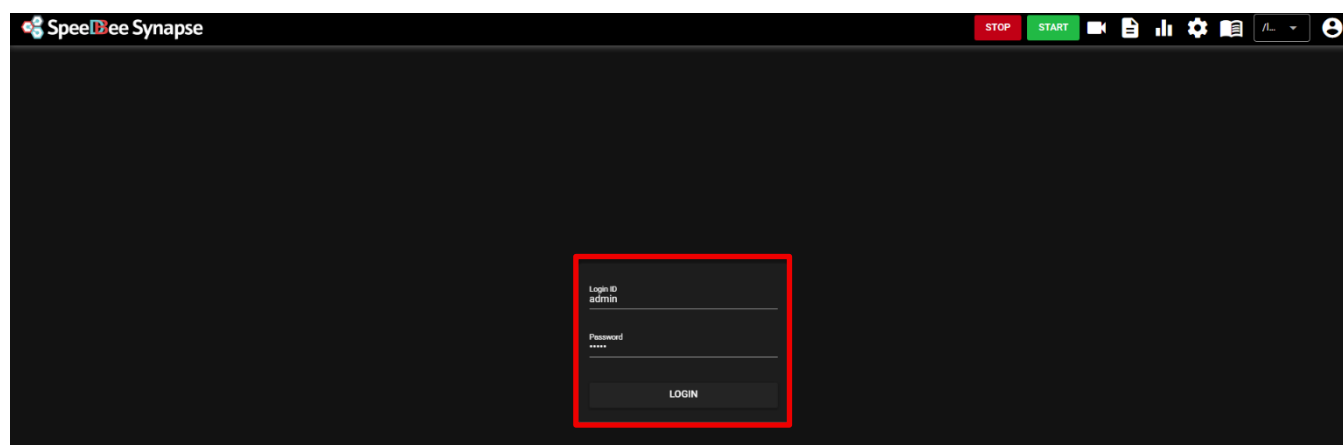
5.1. Login

5.1.1. Open a Web Browser on the user computer and type **http://{device IP address}:8120**. If the default IP address was not changed, then the correct address is **http://192.168.250.100:8120**.

5.1.2. This will open the login screen as shown below. Use the following default login information and click “Login”.

Login ID – **admin**

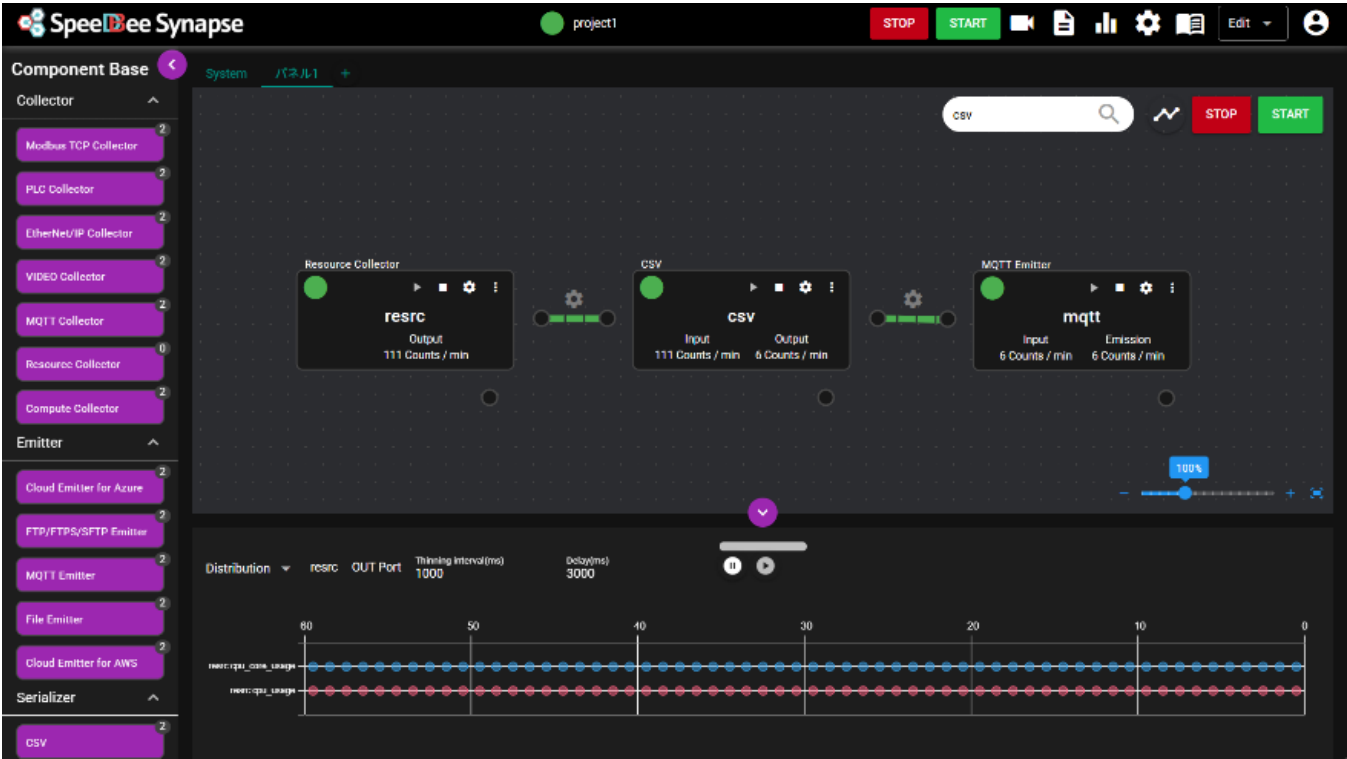
Password - **admin**



5.1.3. If the language is not set to English by default, click on the “Settings” button on the top right and select “English”.



5.1.4. SpeedBee Synapse Main Screen

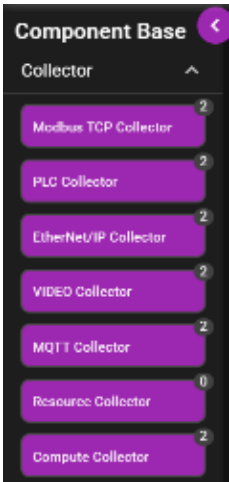


Main screen contains the following sections. Please refer to the user manual catalog no. V243 for a

5.1.5. Header



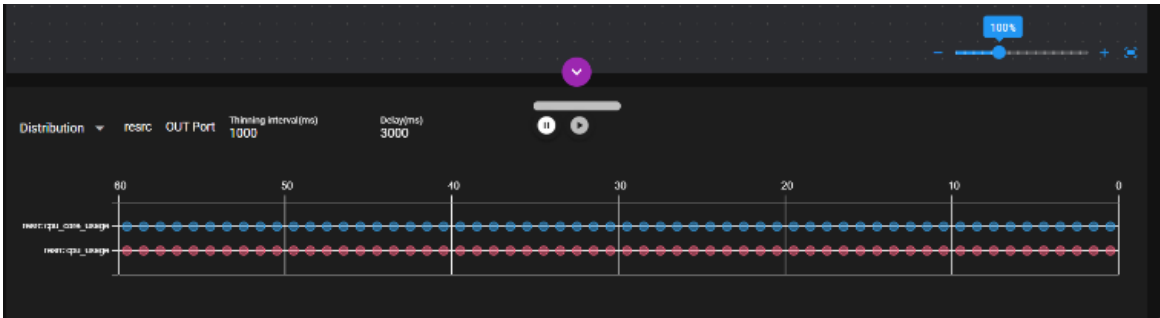
5.1.6. Component base



5.1.7. Panel



5.1.8. Data monitor

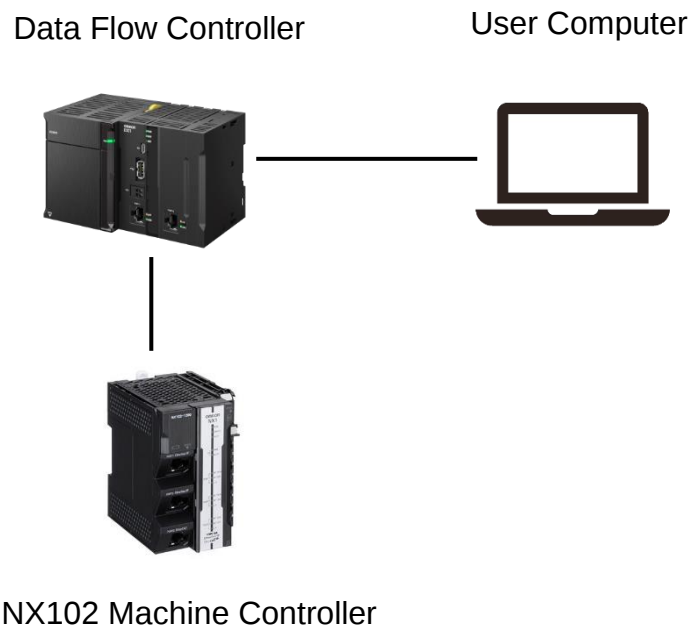


5.2. Creating data flows.

5.2.1. Adding a collector component.

5.2.1.1. The following configuration will be used to collect data from NX102 controller using the Ethernet/IP Collector.

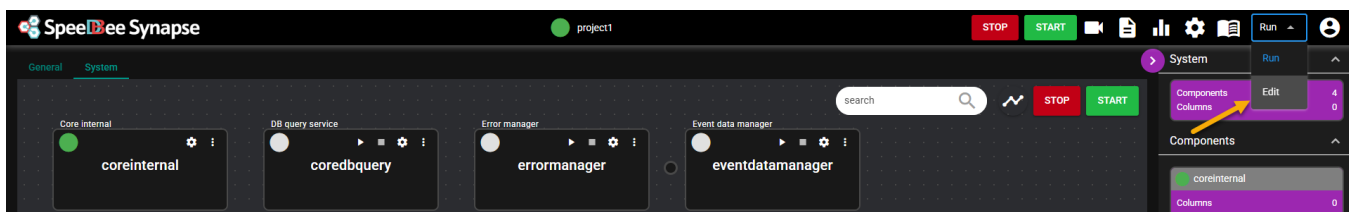
5.2.1.2. Please refer to the “**DX100_Startup_Project.smc2**” for the NX102 controller program.



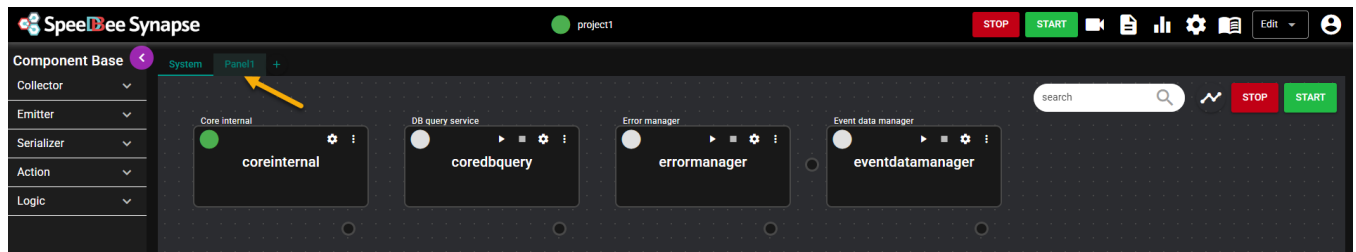
5.2.1.3. The following table illustrates the IP addresses of all devices.

Device	IP Address
DX Series Data Flow Controller	192.168.250.100
NX Series CPU Unit	192.168.250.1
User Computer	192.168.250.150

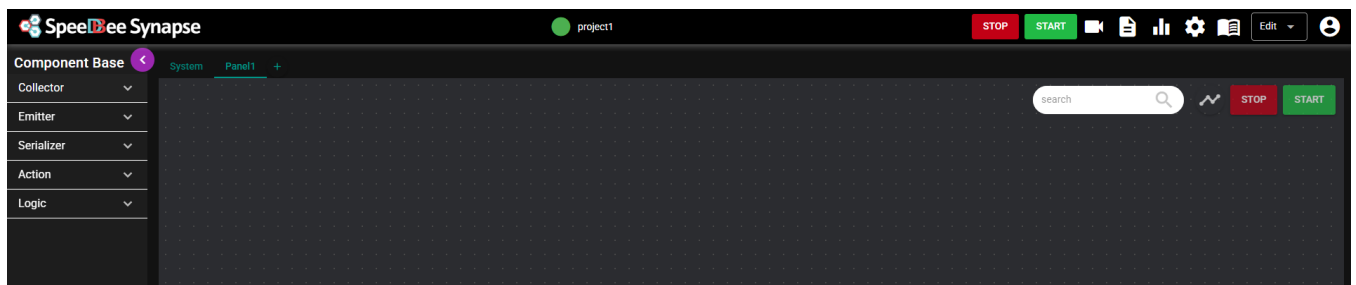
5.2.1.4. Open SpeedBee Synapse and select “EDIT” mode.



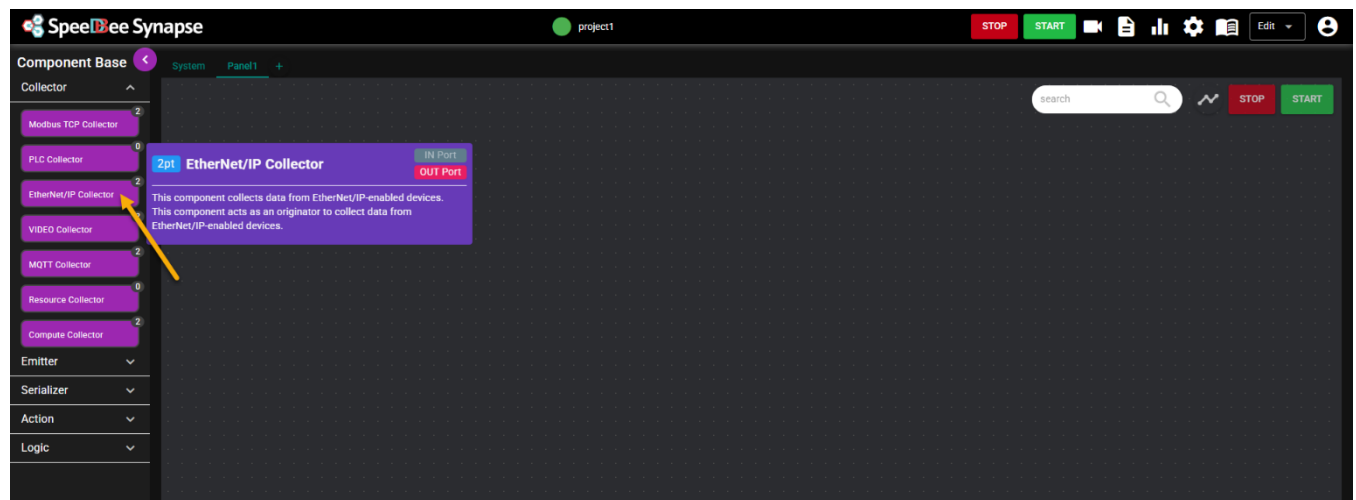
5.2.1.5. It will automatically create a new panel named “Panel1”.



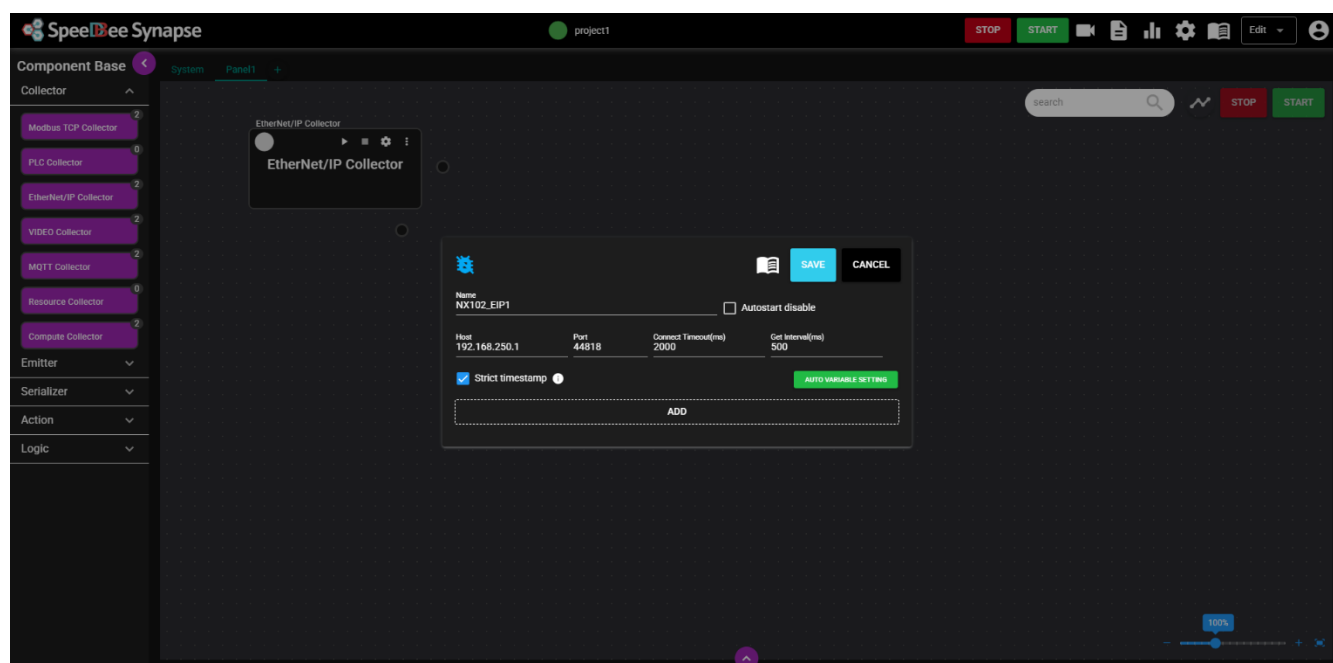
5.2.1.6. Click on “Panel1” and that will open the panel where we will add the components.



5.2.1.7. Expand the “Collector” section of the Component Base and find the “Ethernet/IP Collector”.



5.2.1.8. Drag and place it in the panel. It will open a window to fill in the details regarding the component and the host.



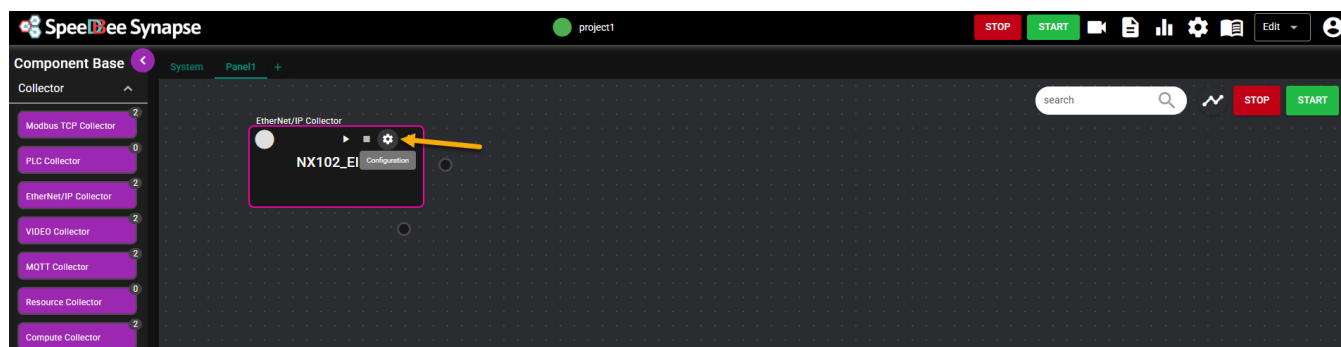
5.2.1.9. After the basic details are completed, click “ADD”. This will open the area to add the variable names or CIP objects that we’ll be collecting data from.

5.2.1.10. The “**DX100_Startup_Project.smc2**” contains a program where random values are generated every one second for the following variable names.

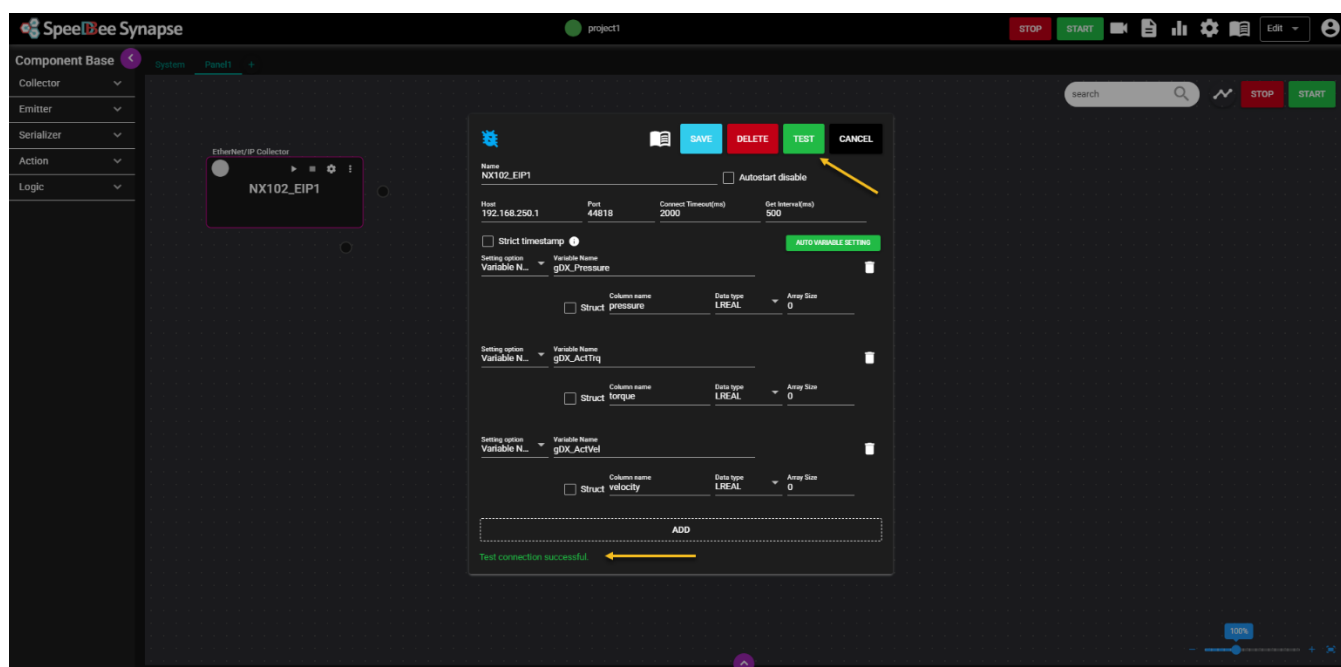
Variable Name	Data Type
gDX_Pressure	LREAL
gDX_ActTrq	LREAL
gDX_ActVel	LREAL
gDX_ActiveEnergy	LREAL
gDX_Random	ARRAY[0..49] OF LREAL

19

5.2.1.13. Click on the “Configuration” button on the component.

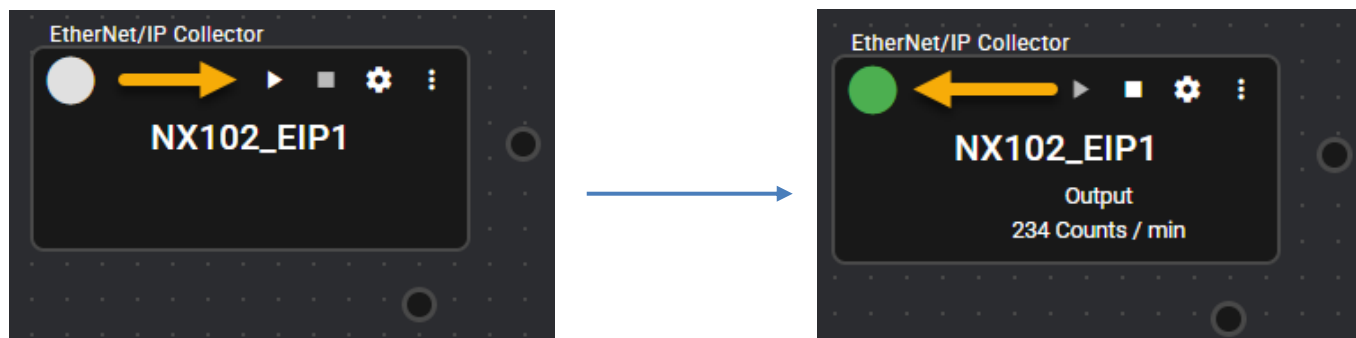


5.2.1.14. Click on “TEST” and it will test if there’s a valid connection to the “Host” IP address. In this example Host IP address is 192.168.250.1.

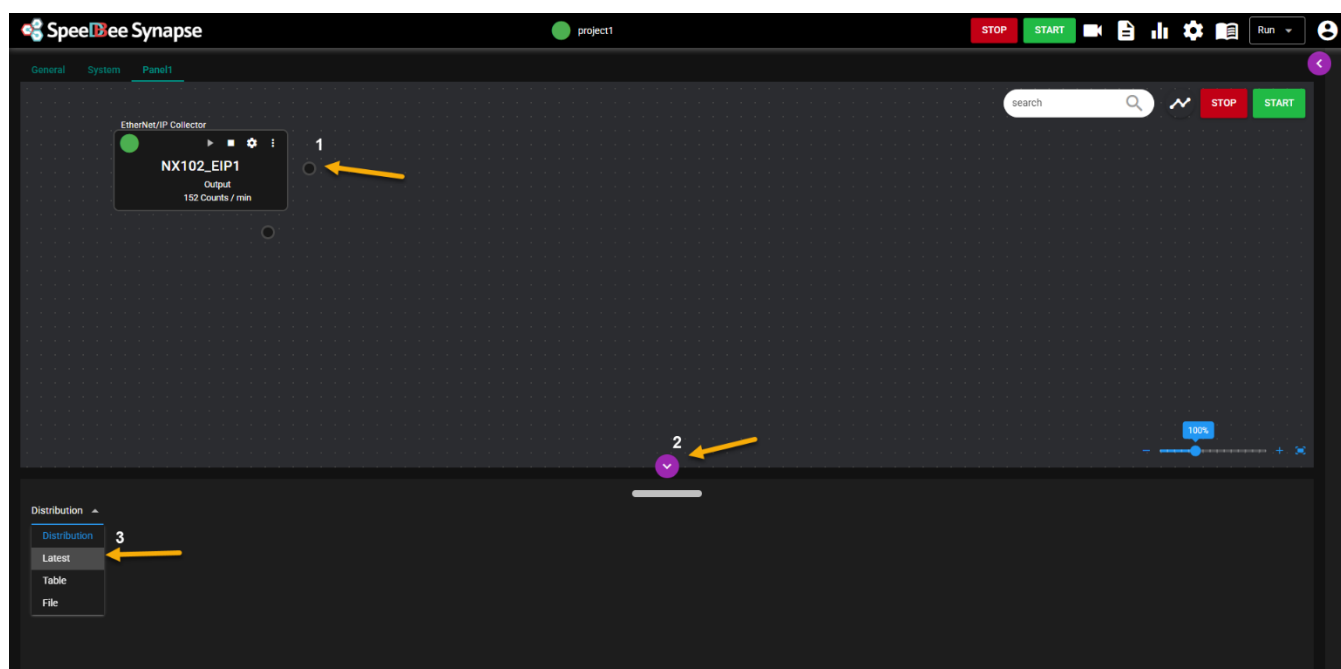


5.2.1.15. Click “SAVE” and it will close the window.

- 5.2.1.16. Click on “Start” in the component and it will start data collection.
Normal operation is indicated by the green indicator at the top left corner.



- 5.2.1.17. Click on “Out Port” (1) of the Ethernet/IP component.
5.2.1.18. Click on the “Up Arrow” (2) to open the data monitor window.
5.2.1.19. Click on the “Latest” (3) in the display type drop down menu.



SpeedSee Synapse

project1

General System Panel1

search

STOP START

Ethernut-IP Collector

NX102_EIP1

Output

340 Counts / min

100%

Latest NX102_EIP1 OUT Port Thresh (interval) Details

1000 3000

NX102_EIP1:pressure 0.156 12/08/2023, 16:18:38

NX102_EIP1:torque 0.458 12/08/2023, 16:18:38

NX102_EIP1:velocity 535.245 12/08/2023, 16:18:38

Components

1

Columns 3

Outputs / min 340

Output bytes / min 2.65 KB

Components

NX102_EIP1

Columns 3

Outputs / min 340

Output bytes / min 2.65 KB

Resource

CPU

MEMORY

DISK

/opt/speedseesynapse-data

project1

STOP
START

Edit

Component Base

Collector

Emitter

Serializer

Action

Logic

System

Panel1

+

EtherNet/IP Collector

NX102_EIP1

Output

23 Counts / min

100%

100%

Table

NX102_EIP1

OUT Port

Threading Interval(ms)

Delay(ms)

1000

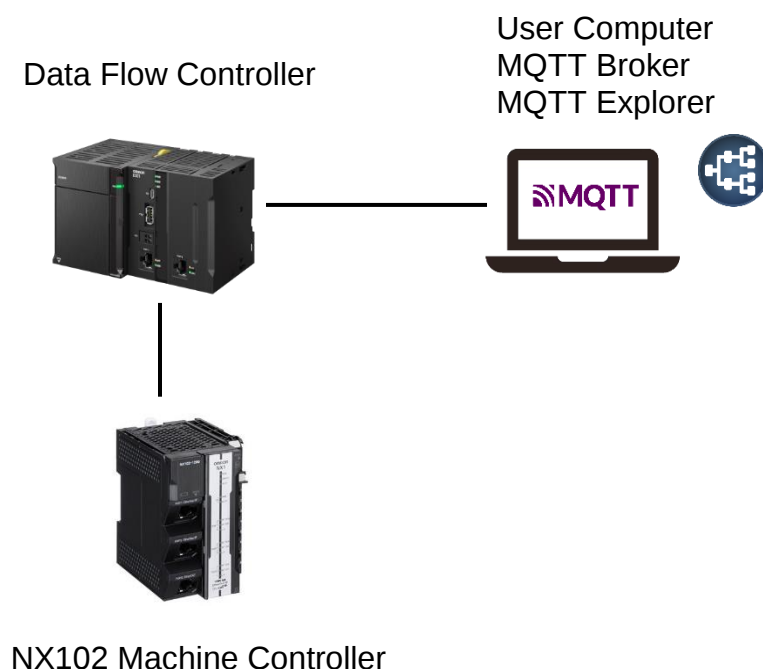
3000

NX102_EIP1	NX102_EIP1:pressure	NX102_EIP1:torque	NX102_EIP1:velocity
12/08/2025, 16:21:15	0.039	0.718	450.466
12/08/2025, 16:21:14	0.693	0.334	131.728
12/08/2025, 16:21:13	0.198	0.316	65.342

1-3 of 6

5.2.2. Adding a serializer component.

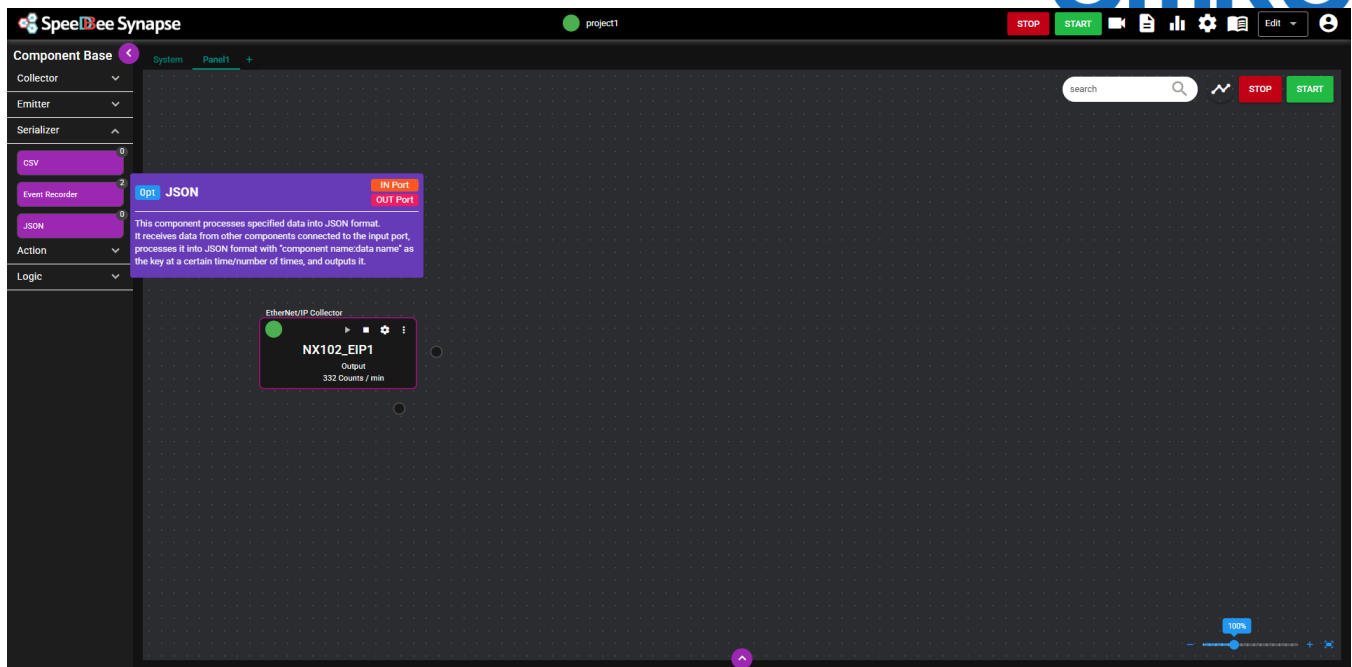
5.2.2.1. The following configuration will be used to serialize the data that is collected by the Ethernet/IP collector to JSON format and emit the data to a MQTT broker.



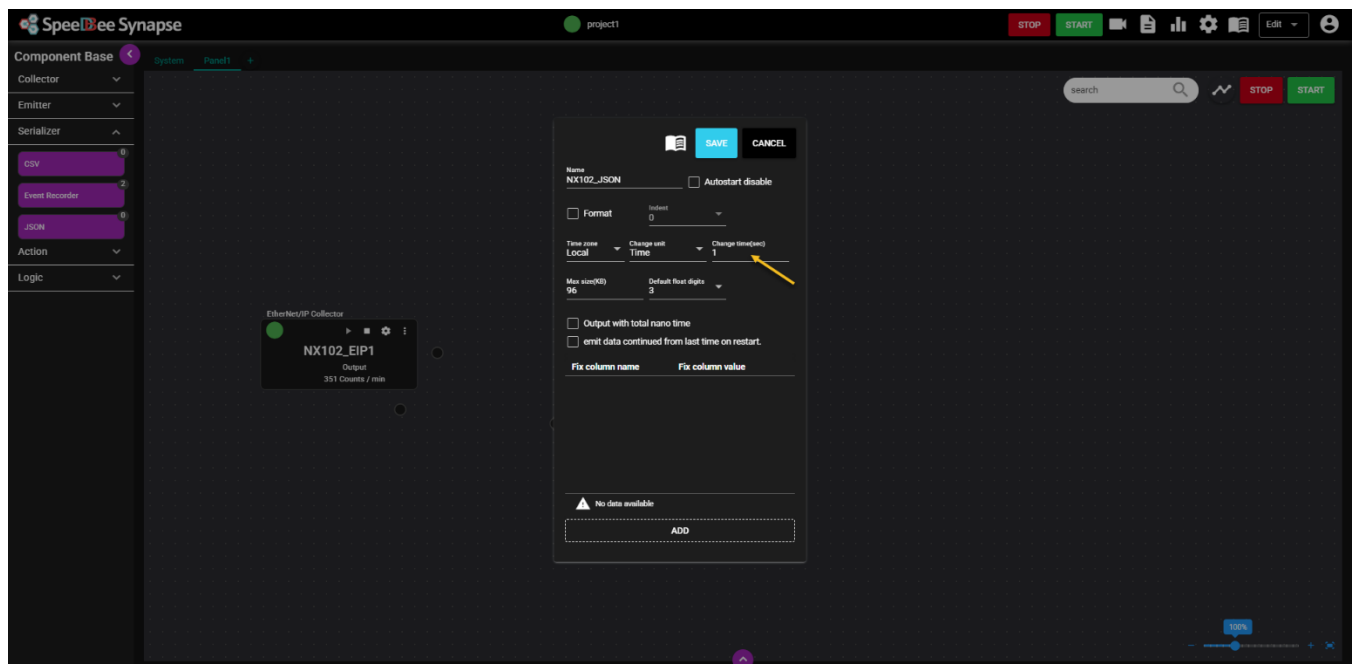
5.2.2.2. The following table illustrates the IP addresses of all devices.

Device	IP Address
DX Series Data Flow Controller	192.168.250.100
NX Series CPU Unit	192.168.250.1
User Computer/MQTT Explorer	192.168.250.150
MQTT Broker	192.168.250.150:1883

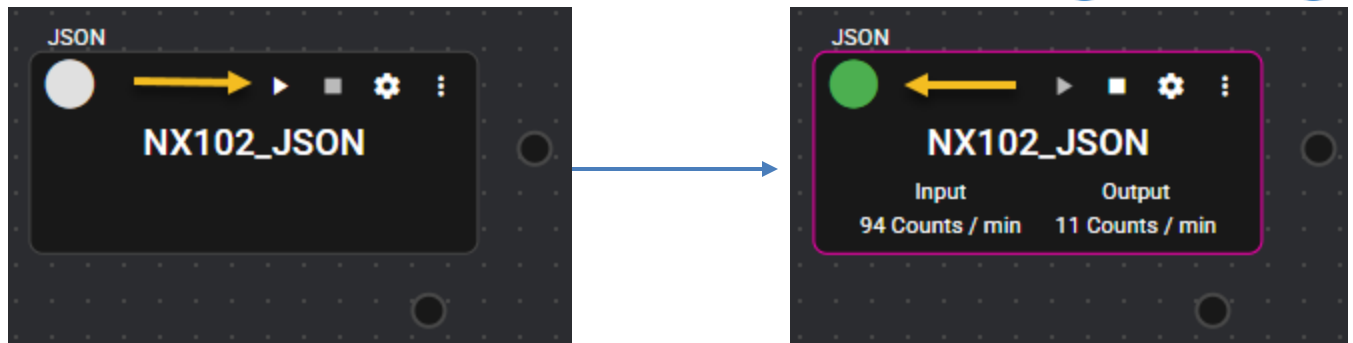
5.2.2.3. In the component base, find the JSON component under the Serializer section.



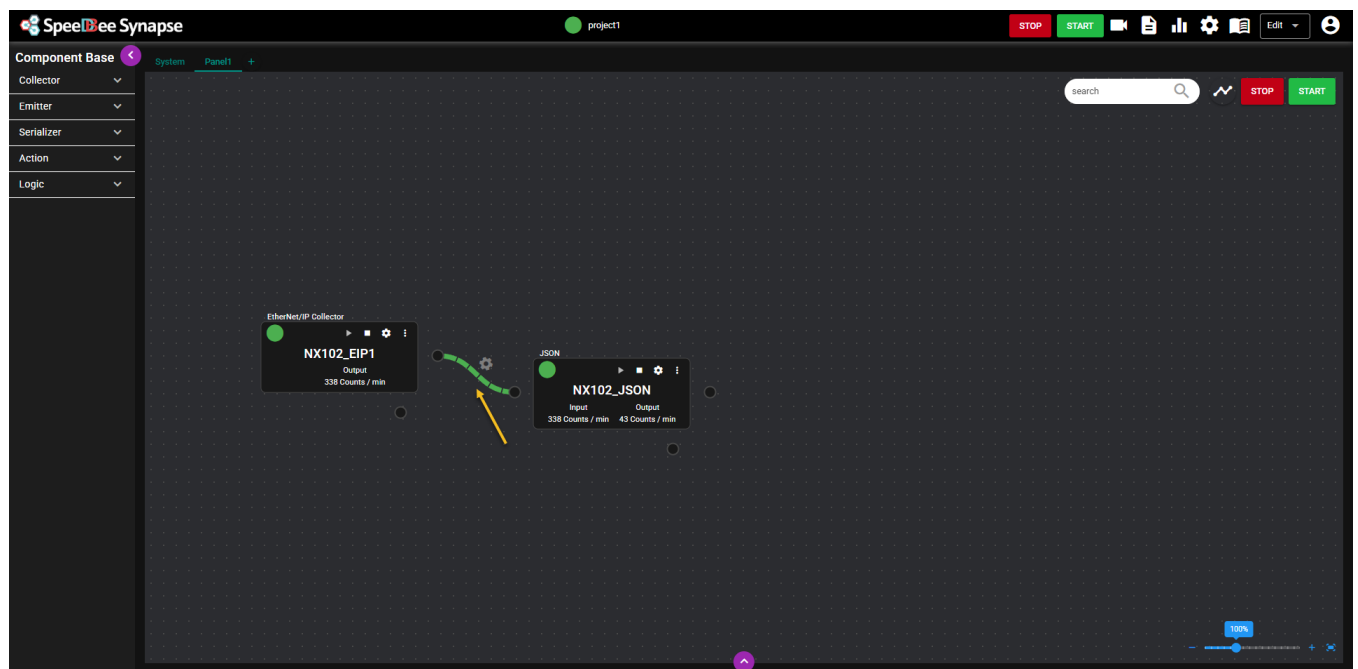
- 5.2.2.4. Drag and place it in the panel. It will open a window to fill in the details regarding the component. In this example, JSON build will occur every 1 second.



- 5.2.2.5. Click "SAVE" and it will close the window.
 5.2.2.6. Click the Start button on the JSON component.
 5.2.2.7. Normal operation is indicated by the green indicator at the top left corner.



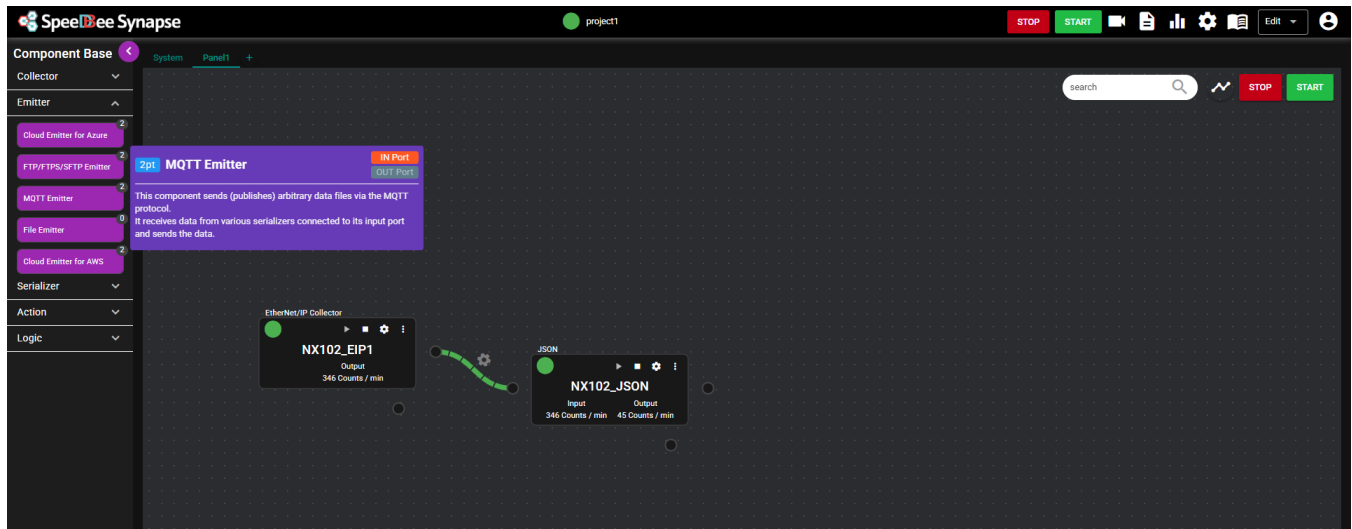
5.2.2.8. Connect the two components by clicking on the output port of the Ethernet/IP collector and dragging it to the input port of the JSON serializer component.



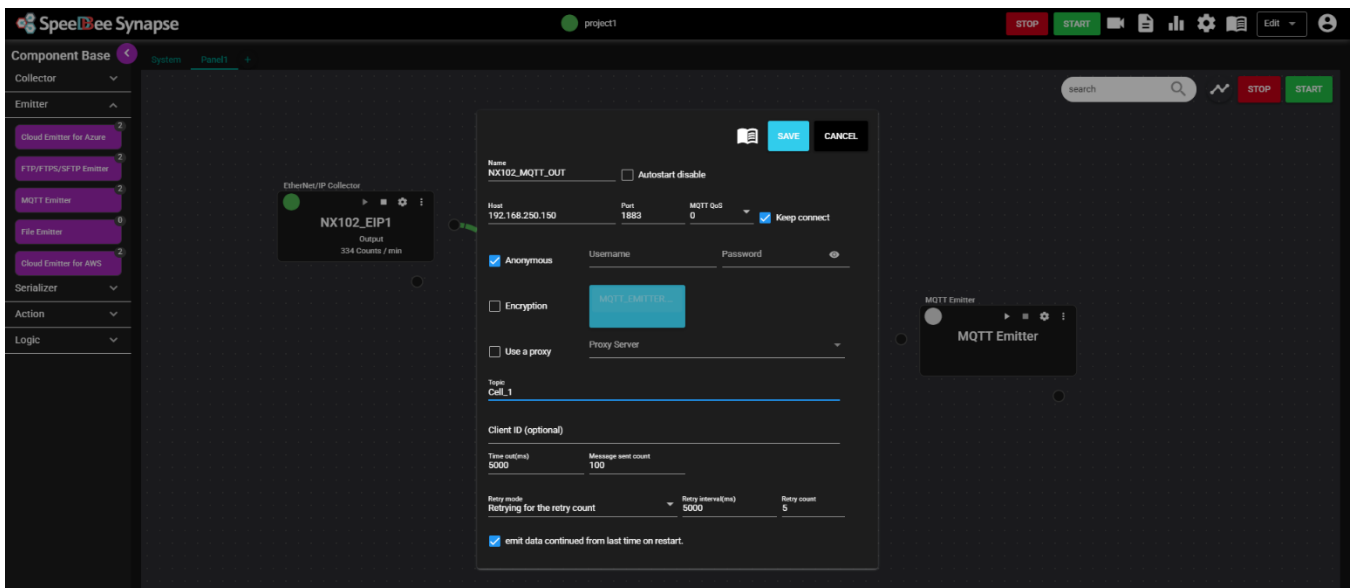
5.2.2.9. Data flow is illustrated by the green flow link.

5.2.3. Adding an emitter component.

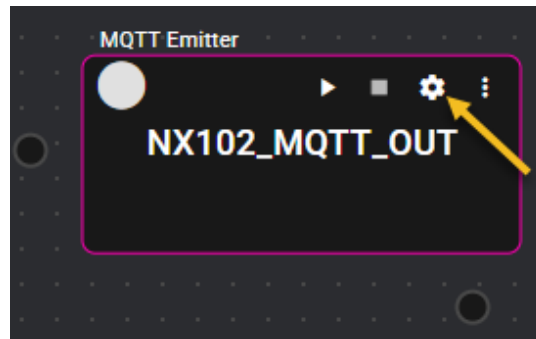
- 5.2.3.1. MQTT broker should be installed on the user computer. The default port for the MQTT broker is 1883.
- 5.2.3.2. MQTT data can be visualized by the use of MQTT Explorer software. In this example, MQTT Explorer is also installed on the user computer.
- 5.2.3.3. In the component base, find the MQTT Emitter component.



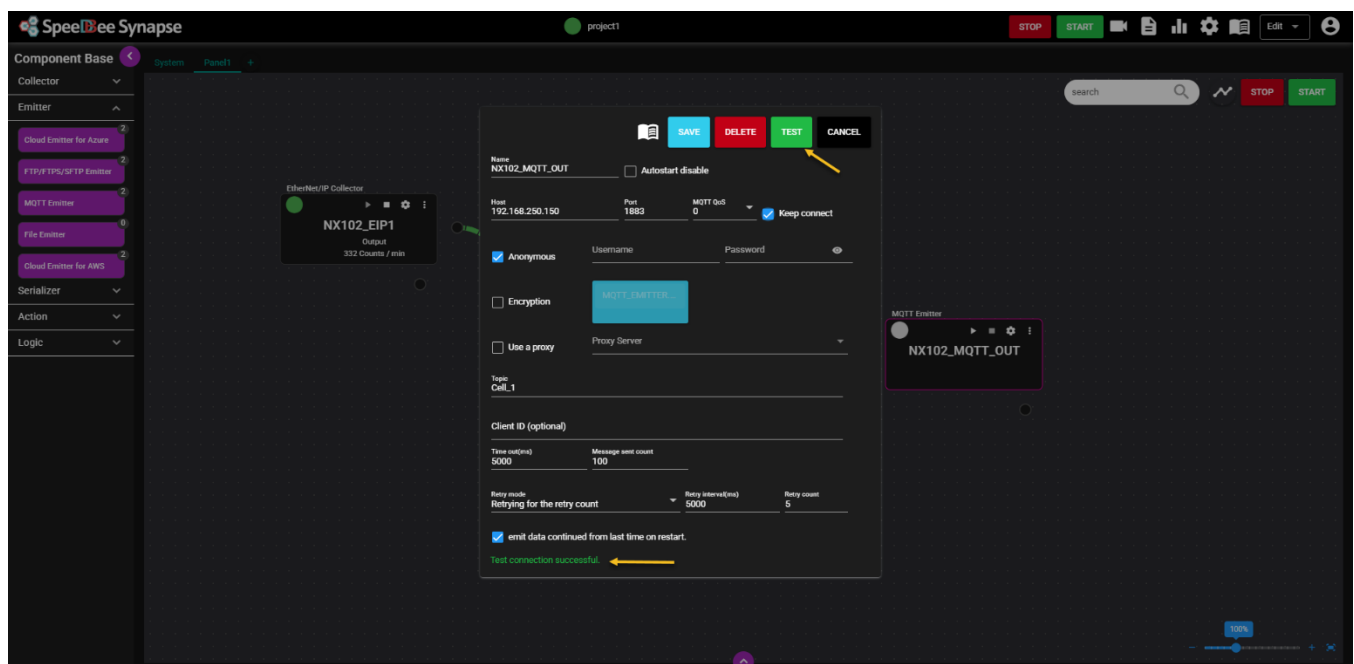
- 5.2.3.4. Drag and place it in the panel. It will open a window to fill in the details regarding the component and the host.



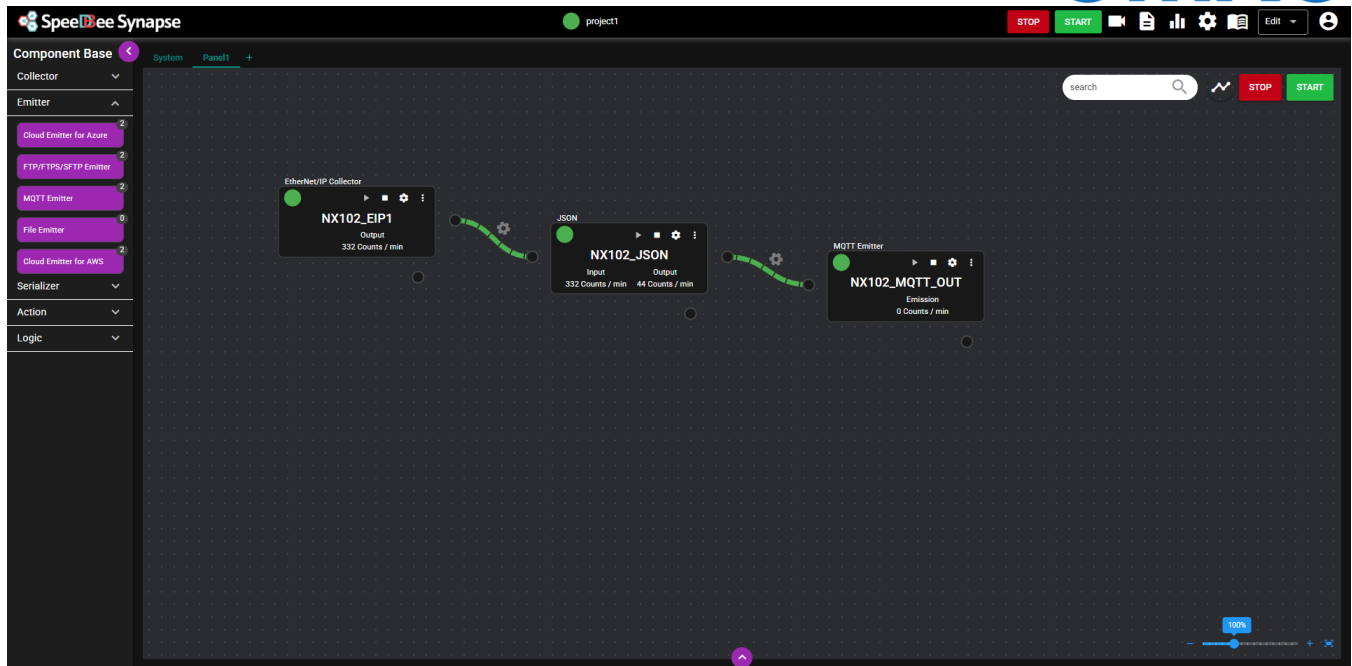
- 5.2.3.5. Click “SAVE” and it will close the window.
- 5.2.3.6. Click on the “Configuration” button on the component.



- 5.2.3.7. Click on “TEST” and it will test if there’s a valid connection to the MQTT broker. In this example IP address of the MQTT broker is 192.168.250.150:1883.

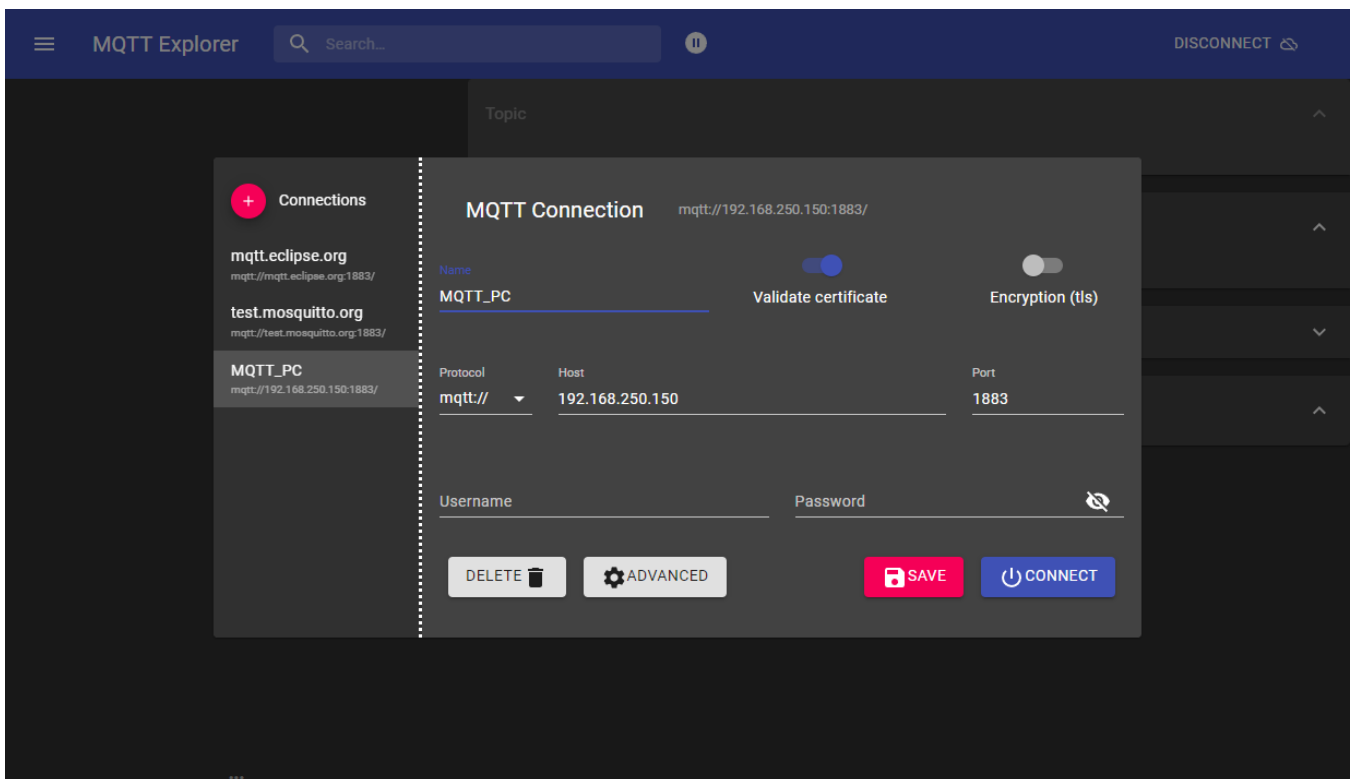


- 5.2.3.8. Click “SAVE” and it will close the window.
- 5.2.3.9. Start the MQTT emitter component.
- 5.2.3.10. Connect the output port of the JSON serializer component to the MQTT emitter component.



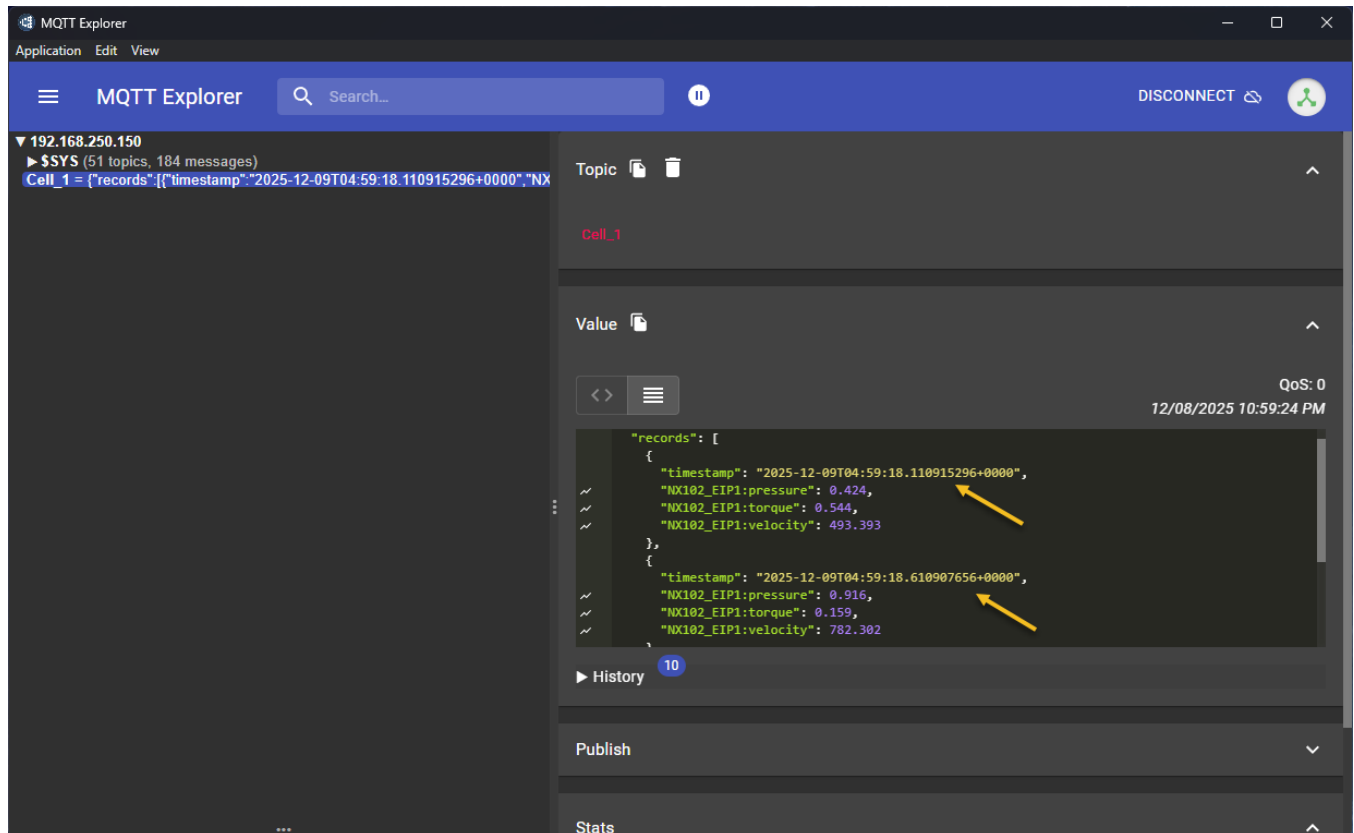
5.2.3.11. All components should have green status lamps and flow links.

5.2.3.12. Open MQTT Explorer and connect to the MQTT broker.



5.2.3.13. Verify if the data is being received by the MQTT broker. In this example,

- 5.2.3.13.1. The Ethernet/IP collector component receives data from the NX102 controller at a 500ms interval.
- 5.2.3.13.2. JSON serializer component builds the JSON record at a 1s interval. Therefore, a single JSON record should include two sets of data which was received by the Ethernet/IP collector.
- 5.2.3.13.3. This is verified by the timestamp of the JSON data received by the MQTT broker.



5.3. Visualize data using Grafana.

Grafana can be used to visualize data that is collected by the DX100 data flow controller. Grafana is pre-installed in DX100 alongside several packages that are ready for immediate use. Please refer to DX Series Dashboard Generator User Manual (Cat. No. N700) for more details.

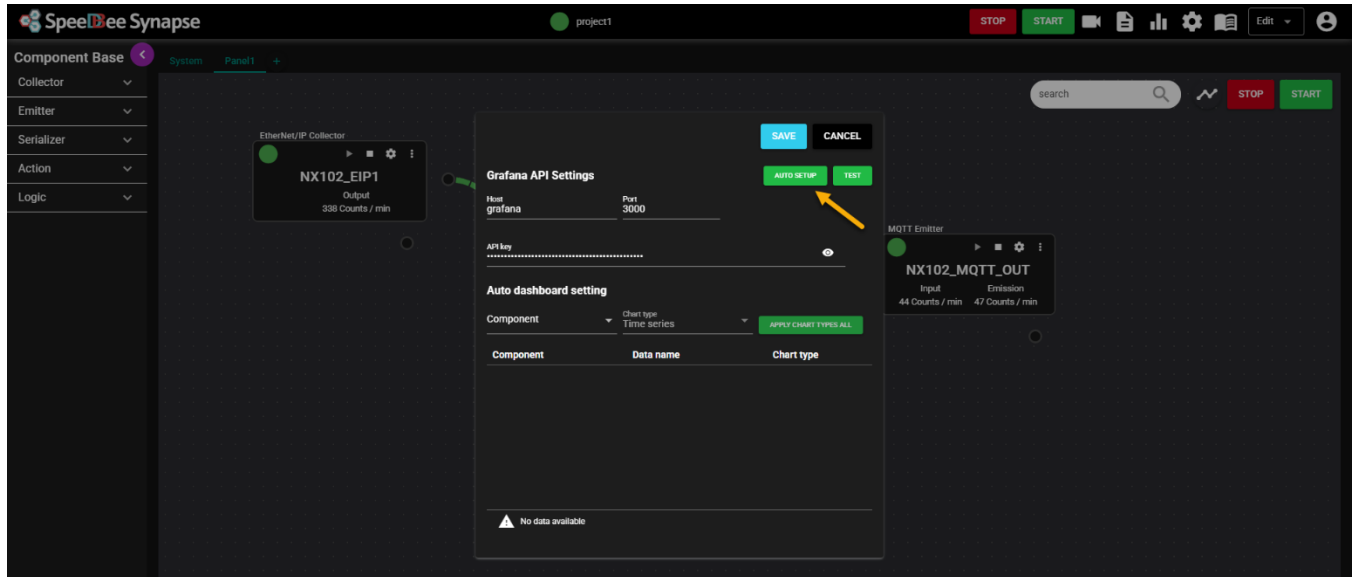
5.3.1. Open SpeedBee Synapse and select “Edit” mode.



5.3.2. Open “Setting Menu” and select “Grafana Setup”

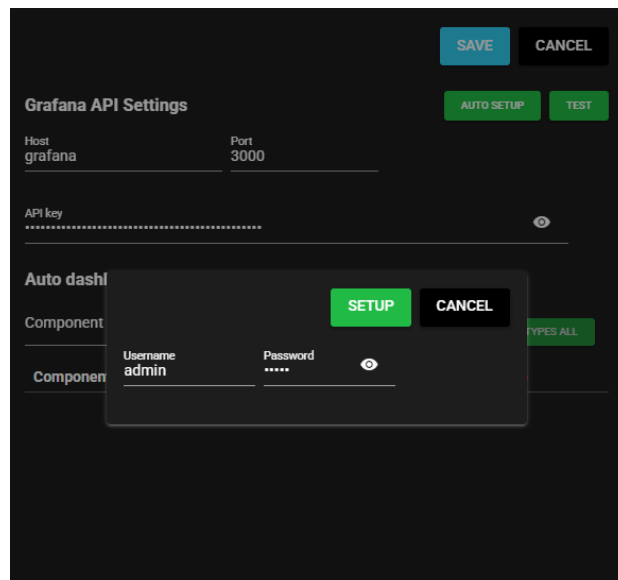


5.3.3. Click “AUTO SETUP”



5.3.4. This will open a window to enter the username and password for Grafana login.

- Default username – admin
- Default password – admin



5.3.5. Click “SETUP” and the API Key will be generated.

5.3.6. Click “TEST”. A successful test notification will appear at the bottom of the window.

Grafana API Settings

Host: grafana Port: 3000

API key:

Auto dashboard setting

Component: Chart type: Time series

APPLY CHART TYPES ALL

Component	Data name	Chart type
No data available		

Test connection successful.

5.3.7. In the “Auto Dashboard Setting” section, select which component that will be used for visualization. In this example we will use “NX102_EIP1” component.

5.3.8. Select the appropriate “Chart Type” for each “Data Name”.

Grafana API Settings

Host: grafana Port: 3000

API key:

Auto dashboard setting

Component: NX102_EIP1 Chart type: Time series

APPLY CHART TYPES ALL

Component	Data name	Chart type
NX102_EIP1	pressure	Stat
NX102_EIP1	torque	Time series
NX102_EIP1	velocity	Table

Records per page: 10 1-3 of 3

5.3.9. This will open a confirmation window. Click “YES”

Confirm

Updated settings.
Do you want to apply the settings to Grafana?

YES NO

- 5.3.10. This will open a new window for the access token settings. Enter Token name and desired expiration time.

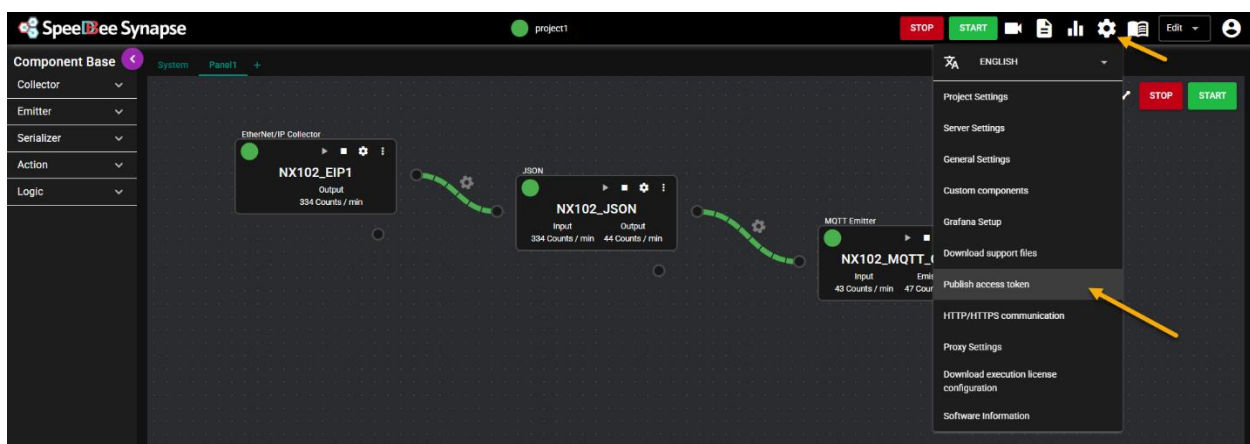
A dark-themed window titled "UPDATE" with a green "UPDATE" button and a black "CANCEL" button. It contains a checked checkbox labeled "Publish and apply access token". Below this are three input fields: "Token name" with the value "DX100_Token1", "Expiration" with the value "1", and "Unit" with a dropdown menu showing "Year". At the bottom, there is a "Host of Data Source URL" field with the value "synapse" and a small information icon.

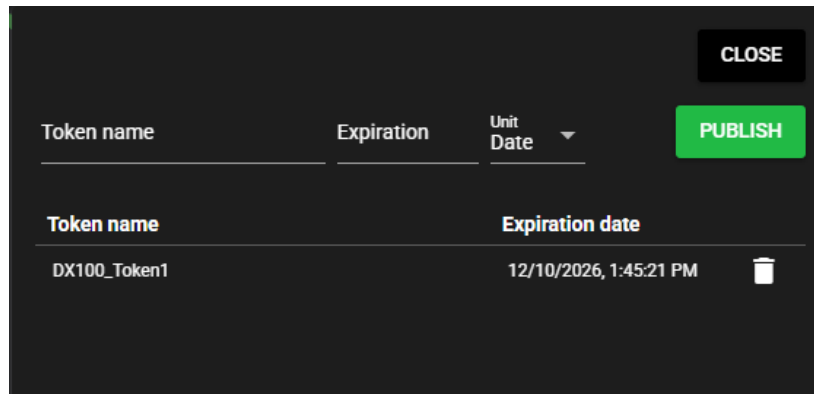
- 5.3.11. Click "UPDATE". This will open another confirmation window.

A dark-themed "Confirm" dialog box. It contains the text: "The dashboard has been updated. Update and restart the DB query service. Is it OK?". At the bottom are two buttons: a blue "YES" button and a black "NO" button.

- 5.3.12. Click "YES".

- 5.3.13. Go to Setting Menu->Publish access token. All access tokens information can be found here.





5.3.14. Click on “Graph” on the header.



5.3.15. This will open Grafana. If login is prompted, enter the login information which was provided in step 5.3.4.

5.3.16. Click on “Dashboard”.

5.3.17. Click on “SpeedBee Synapse”.

5.3.18. Click on the dashboard name “NX102_EIP1”

