MELSEC Communication Protocol

2 years ago · Updated

Supported hardware and firmware

Cloud Notify via MELSEC Communication Protocol is supported on the **StrideLinx router** in **firmware 3.17** and up, for the following Mitsubishi PLCs:

- **MELSEC-L Series: LO2CPU-P***
- **MELSEC-Q Series**
- **MELSEC iQ-R Series: R08CPU***
- **MELSEC iQ-F Series**

** other CPUs in this series may also be supported, but are unconfirmed*

Please upgrade your firmware if you are running an older version.

Activate Cloud Notify

Please first activate Cloud Notify (or start the 30 day free trial) if you haven't already.

The **Second step** in Cloud Notify is **setting up a data source**. This is done by selecting a communication protocol and defining the variables. This article shows you how to do this for a **Mitsubishi PLC** in both **MELSOFT GX Works2** and **GX Works3**.

- Manage variables

PLC settings

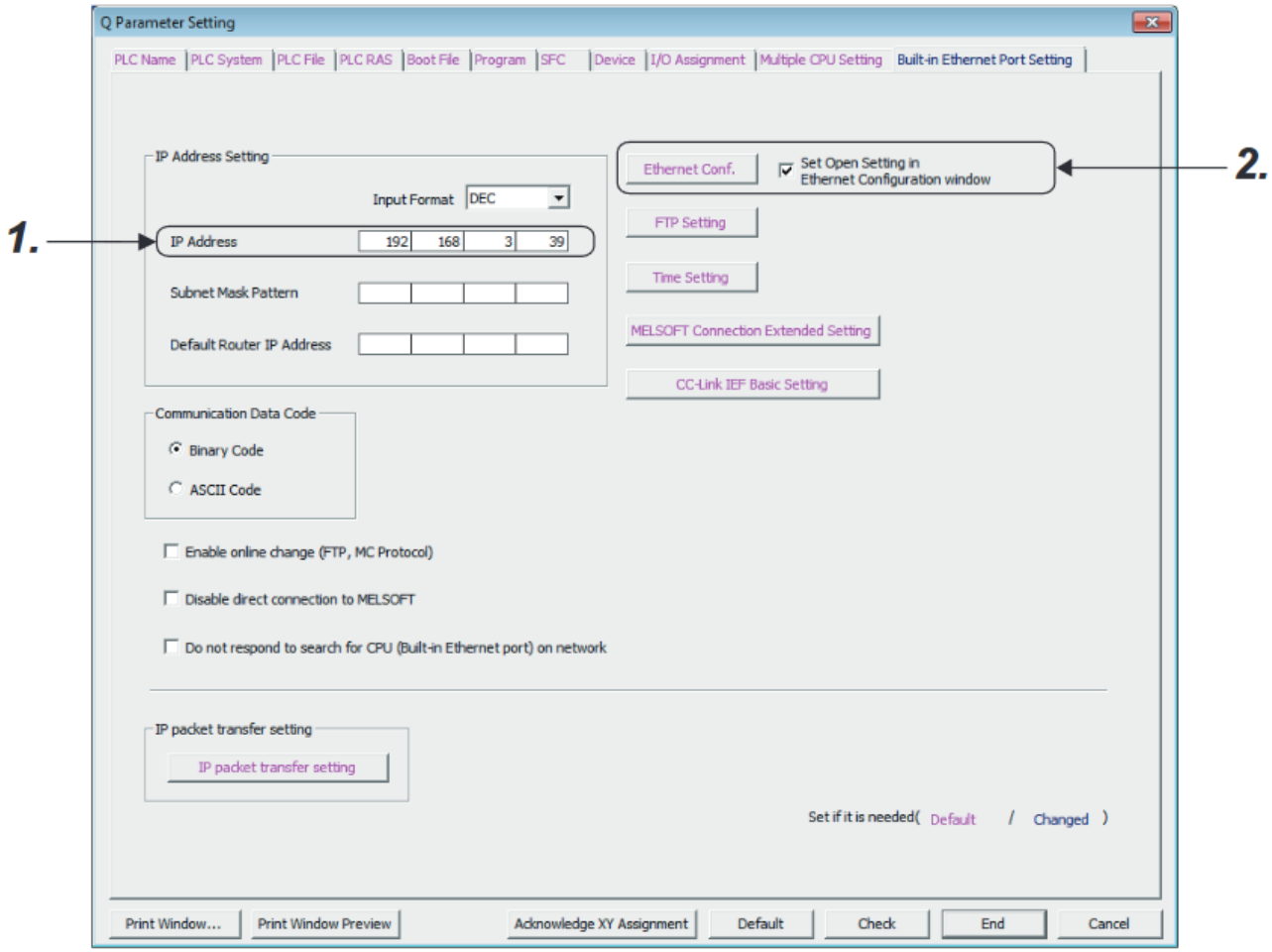
Depending on the type of Mitsubishi PLC you're using, the setup of the PLC has to be performed in either **GX Works2** or **GX Works3**:

- **L** and **Q** series are set up using GX Works2.
- **iQ-F** and **iQ-R** series are set up using GX Works3.

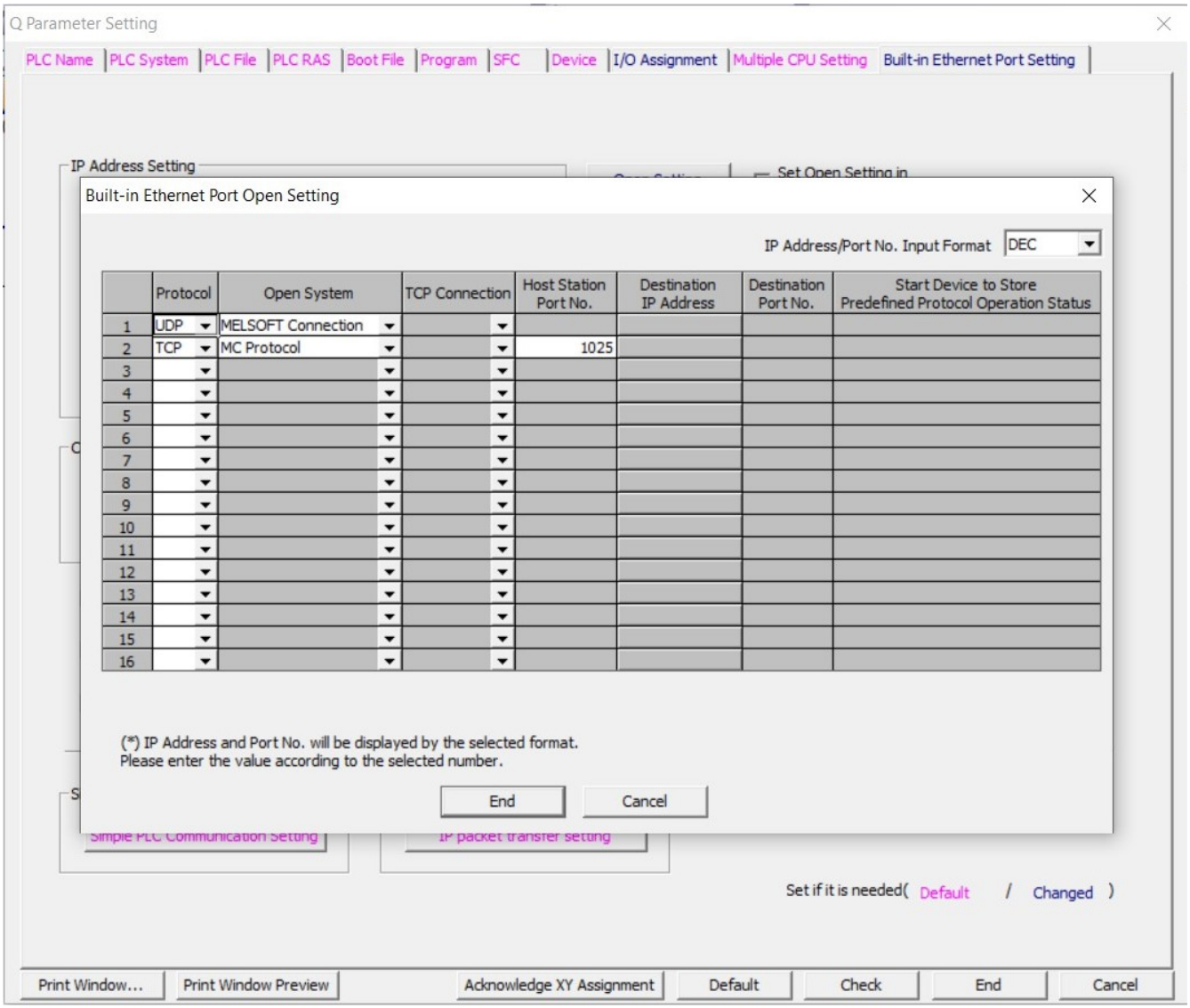
GX Works2

Setting up the CPU Module enables the PLC to communicate with an external device (i.e. the StrideLinx router). This can be done by following the next steps:

- In the Project Window, open **[Parameter]** > **[PLC Parameter]** and go to the tab **[Built-in Ethernet Port Setting]**.
- If you haven't already, enter an **IP address** for the CPU Module *(indicated by #1)* and a **Subnet Mask Pattern** *(usually 255.255.255.0)*.
- Check the option "**Set Open Setting in Ethernet Configuration window**" and press **[Ethernet Conf.]** *(indicated by #2)*.



- On a new row, select protocol "**TCP**", select open system "**MC Protocol**" and choose a **Host Station Port Number** between 1025-4999 or 5010-65534.



TCP or UDP?

We support both the TCP and UDP protocol, but recommend using TCP as this protocol is less error-prone.

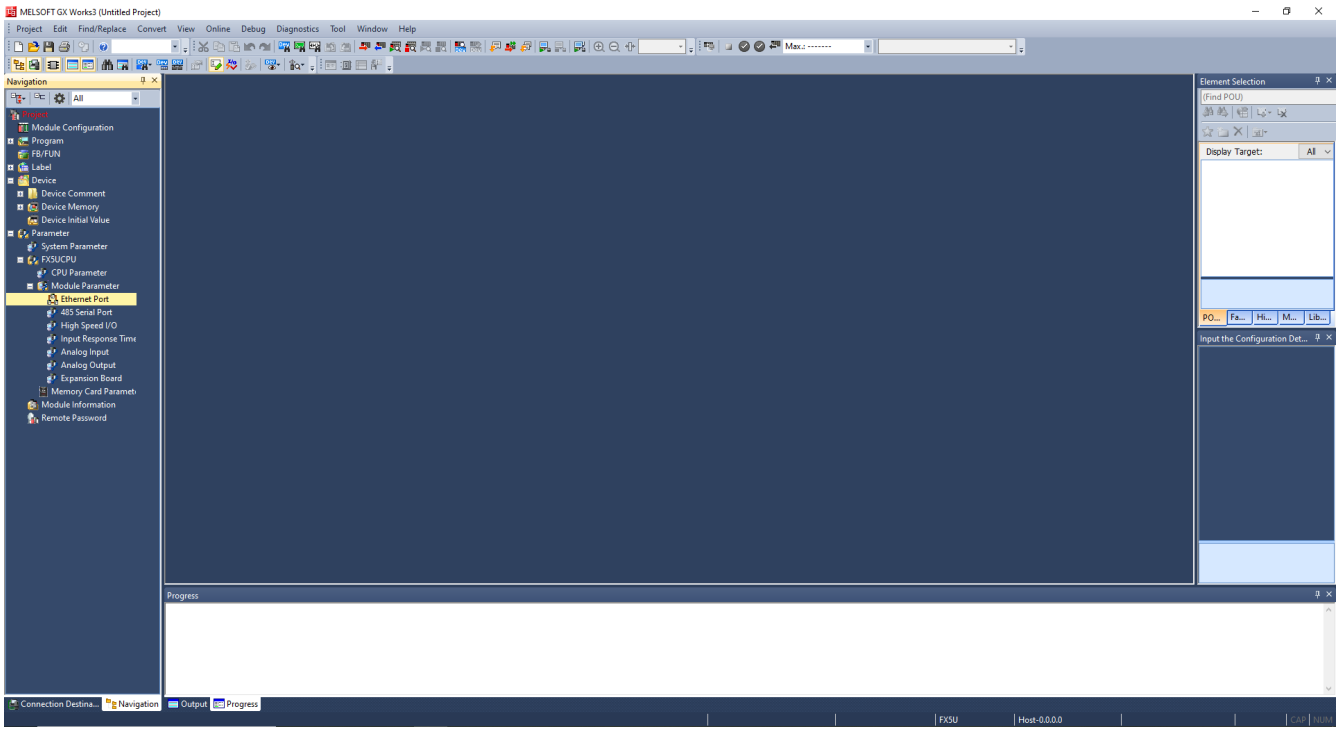
Next step

Your PLC is now ready and you can continue setting up the StrideLinx router by selecting a communication protocol.

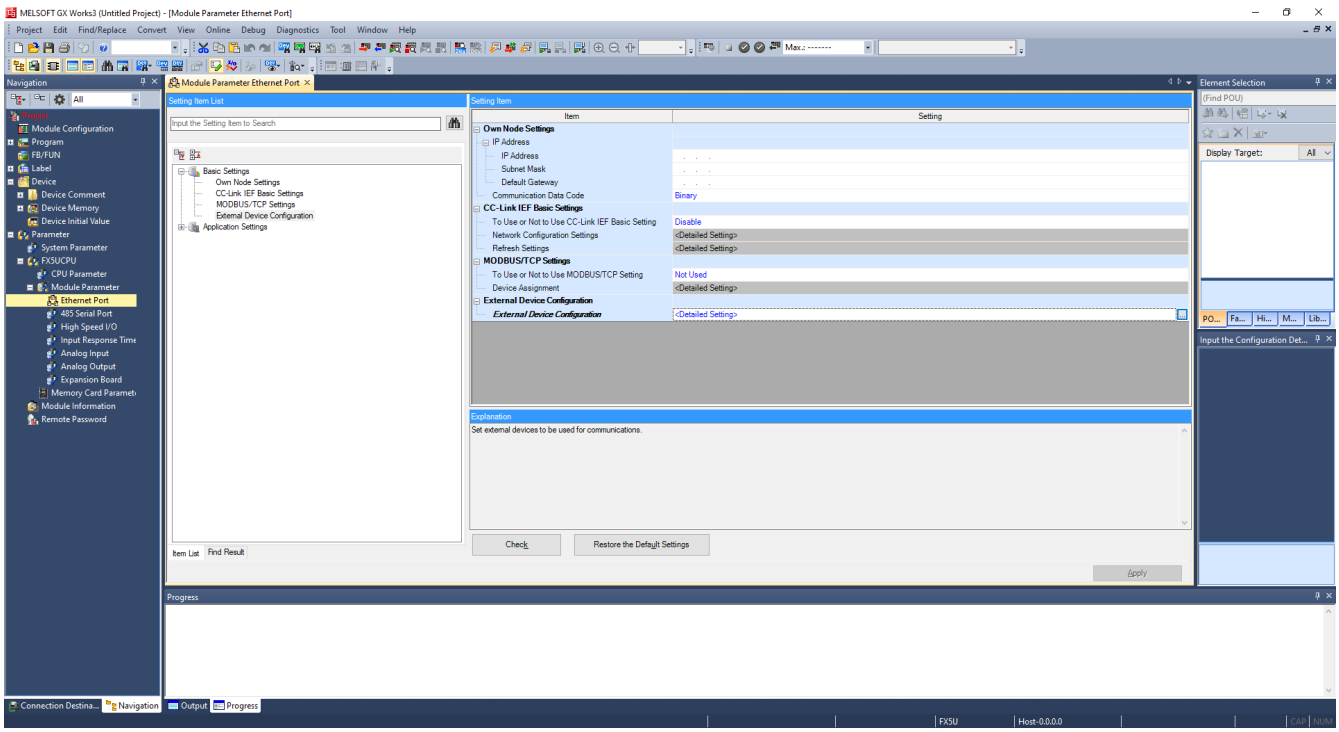
GX Works3

Setting up the CPU Module enables the PLC to communicate with an external device (i.e. the StrideLinx router). This can be done by following the next steps:

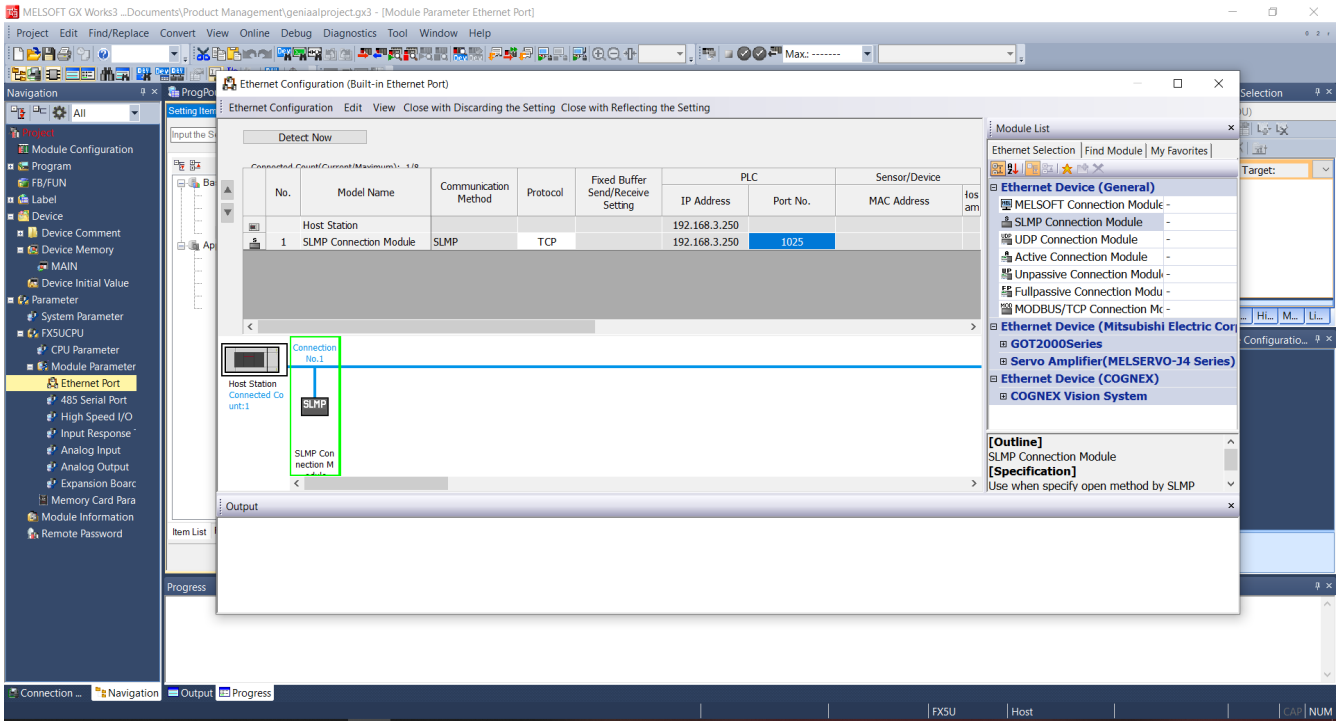
- In the Navigation pane, go to **[Parameter]** > **[CPU]** *(FX5UCPU in the example below)* > **[Module parameter]**.
- **Open** the **[Ethernet Port]** parameters.



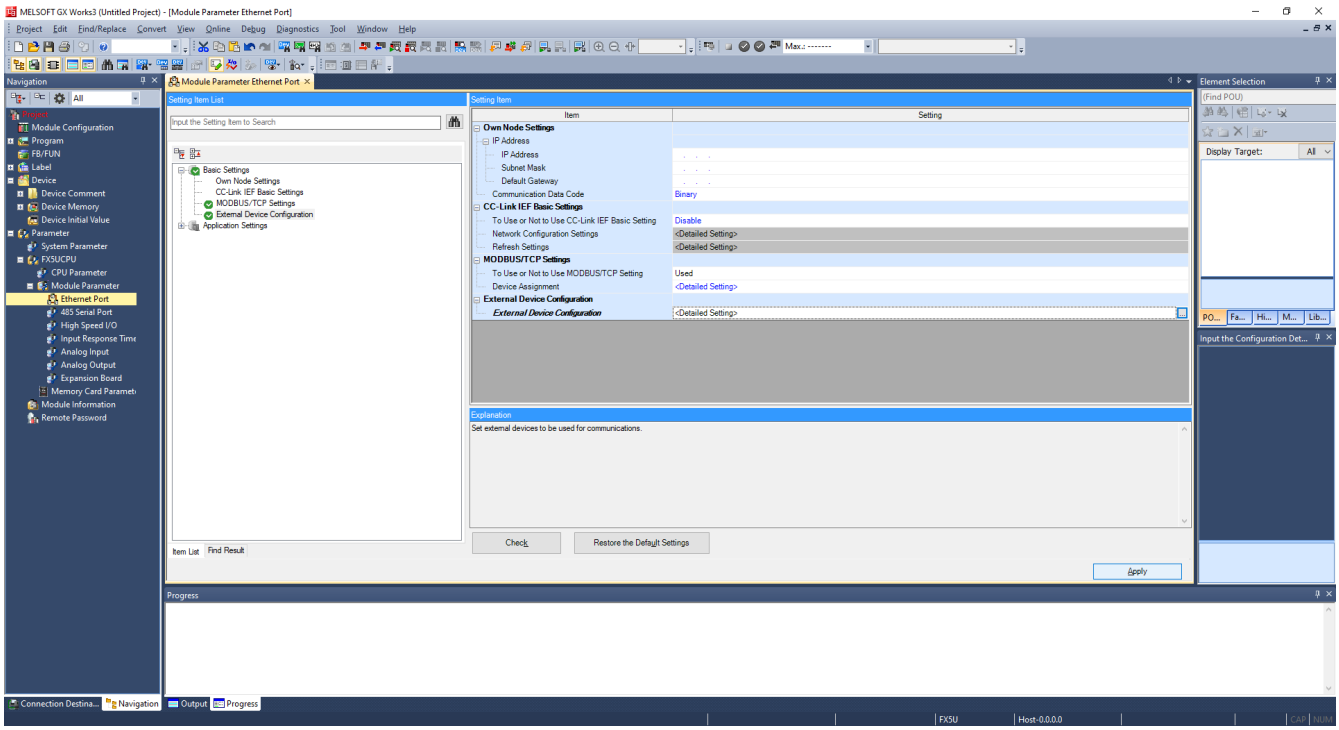
- Expand **[Basic Settings]** in the Item List and double click **[External Device Configuration]**.
- Expand Setting Item **[External Device Configuration]** and **open** the **External Device Configuration** window by double clicking "**<Detailed Setting>**".



- Expand **[Ethernet Device (General)]** in the Module List.
- Drag and drop **[SLMP Connection]** into the grey area. This is the MELSEC Communication Protocol.
- Select protocol **"TCP"** and choose a **Port No.** between 1025-4999 or 5010-65534.
- Save the setting by pressing **[Close with Reflecting the Setting]** at the top.

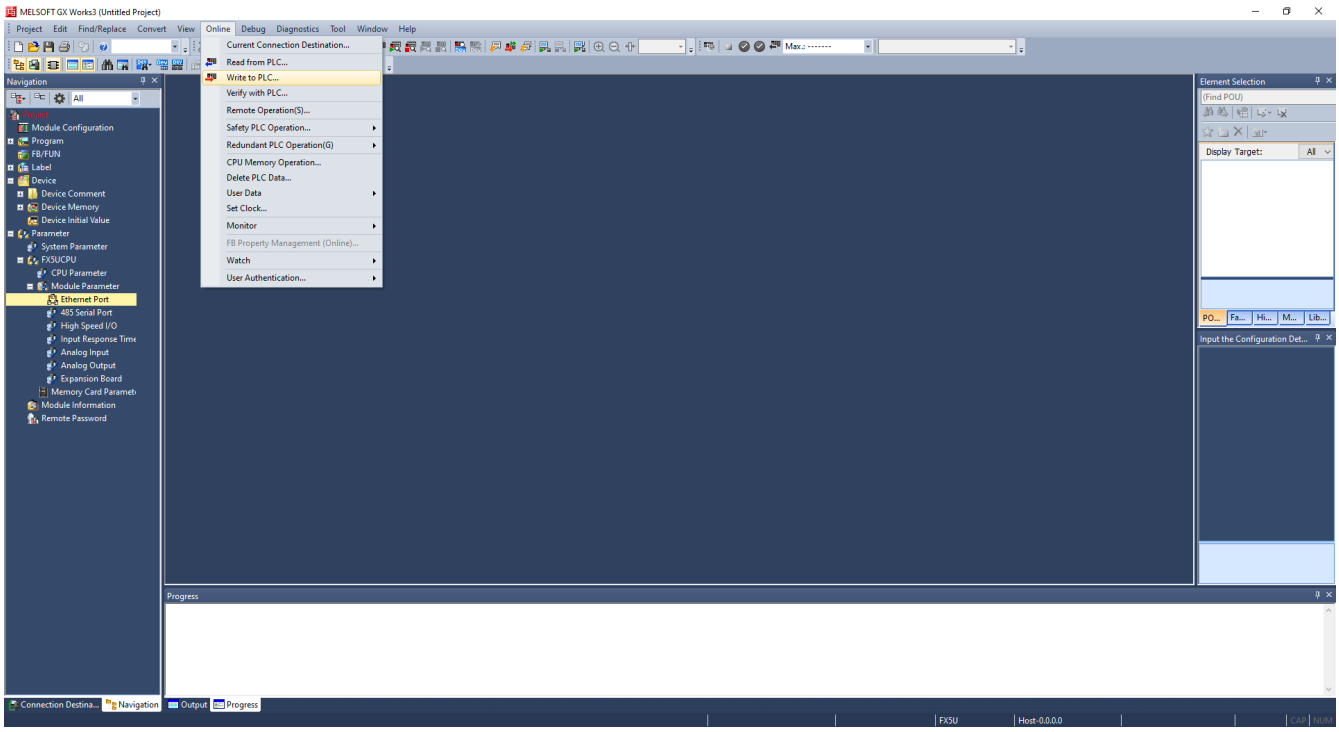


- **[Apply]** the new project setting.

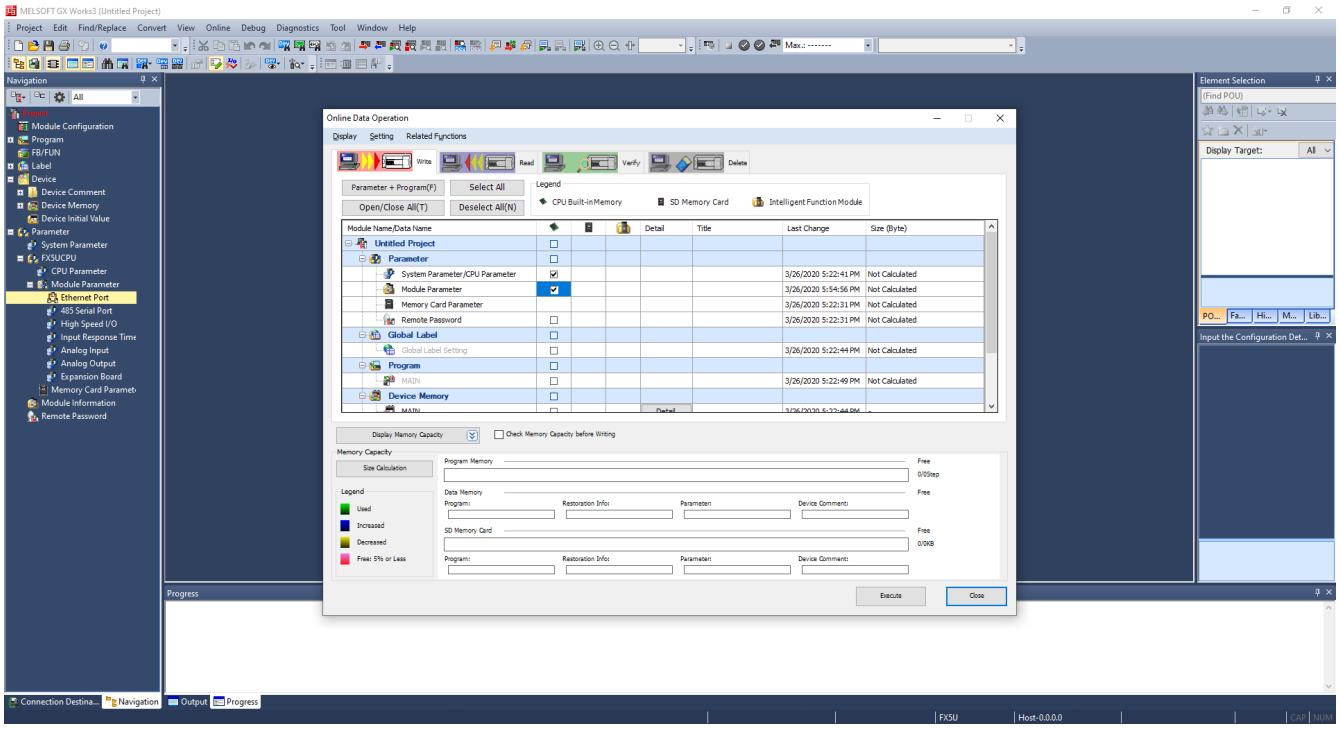


Now all that's left is to write these settings to the PLC.

- In the top menu, press **[Online]** > **[Write to PLC...]**.



- Expand **[Parameter]**, make sure "Module Parameter" is checked, and press **[Execute]**.



TCP or UDP?

We support both the TCP and UDP protocol, but recommend using TCP as this protocol is less error-prone.

Next step

Your PLC is now ready and you can continue setting up the StrideLinx router by selecting a communication protocol.

Select a communication protocol

You first have to select a communication protocol. This is the protocol that the StrideLinx router will use to communicate with the PLC.

- Go to the **StrideLinx Cloud Fleet Manager** app, which is accessible from the **Apps menu** in the top right corner if you are currently in a different StrideLinx Cloud app.
- Open the **Main menu**, go to **Devices**, and select the **concerning device**.
- Click on the **Add a service** + icon in the left menu, select **[Data source]**, and then select **[MELSEC Communication Protocol]**.
- **Enter** the requested information (details below) and click on **[Add]**.

Variable	Description
Name	Enter a name for the data source.
Identifier	The identifier ensures that every data source remains unique, even if they share the same name.
IP address	Enter the IP address of your PLC.
Port	Enter the Port No. that you configured in your PLC. *This is named "Host Station Port Number" in GX Works2.*
MELSEC Serie	The Mitsubishi MELSEC PLC series to which your PLC belongs. *If you're unsure, please consult the Mitsubishi website. "QnUCPU" is Mitsubishi's notation for every MELSEC-Q Series PLC with CPU type Q..U..CPU, for example **Q**04**U**DV**CPU** or **Q**26**U**DEH**CPU**.*
Transport protocol	Select the same protocol that you configured in your PLC.
Network No. and PC No.	If configured in the PLC, enter the correct settings here. If not, leave the default settings. *Applicable when using a custom MELSEC PLC network.*
Request destination module I/O No. and Request destination module station No.	If configured in the PLC, enter the correct settings here. If not, leave the default settings. *Applicable when using a specific I/O module for communication.*

Variable	Description
Authentication type	The Ethernet connection in the PLC may be password protected. Enter the password or leave it empty if no password is configured on the PLC.
Polling sleep time	To notify you as accurately as possible, the StrideLinx router continuously asks the variables' values from the PLC. While the StrideLinx router does wait for the PLC to reply before asking again, in very rare cases this may noticeably impact the PLC's performance. In such a rare situation you may want to change this setting to 100ms or higher. In general "None" is recommended for Cloud Notify to be as accurately as possible.

Add variables

Once you've added a data source and selected a communication protocol, you can start adding variables. You can do this by following the steps below:

- Expand the **Data source** service and go to **[Variables]**.
- You can now choose to:
  - **Manually add** new variables
  - **Import** variables from a file (or device)

> **Tip!**
> It is advisable to add variables in small batches and test them to verify their configuration.

Manually add new variables

- Click on **[+ Add variable]** in the bottom right corner.
- **Enter** the requested information (details below) and click on **[Add]**.

Use GX Works to find these values for each variable that you want to use.

Field	Description
Name	Enter a name for the variable.
Identifier	The identifier ensures that every variable remains unique, even if they share the same name.

Field	Description
Type	Select the variable's data type (bool, int, float, etc).
Device type	Select the variable's device type (register type). Each type requires to be entered in either decimal or hexadecimal notation, details below.

Device type	Notation
SM - Special relay	Decimal
SD - Special register	Decimal
X - Input	Hexadecimal
Y - Output	Hexadecimal
M - Internal relay	Decimal
L - Latch relay	Decimal
F - Annunciator	Decimal
V - Edge relay	Decimal
B - Link relay	Hexadecimal
D - Data register	Decimal
W - Link register	Hexadecimal
TS - Timer (Contact)	Decimal
TC - Time (Coil)	Decimal
TN - Timer (Current Value)	Decimal
TS - Retentive timer (Contact)	Decimal
TC - Retentive timer (Coil)	Decimal
SN - Retentivetimer (Current Value)	Decimal
CS - Counter (Contact)	Decimal
CC - Counter (Coil)	Decimal
CN - Counter (Current Value)	Decimal

Field	Description

Device type	Notation
SB - Link special relay	Hexadecimal
SW - Link special register	Hexadecimal
DX - Direct access input	Hexadecimal
DY - Direct access output	Hexadecimal
Z - Index register	Decimal
R - Block switching method	Decimal
ZR - Serial number access method	Hexadecimal

Device No.	Enter the variable's address.
Factor	Multiplies the value (leave empty if the data type is boolean).
Unit	Displayed text behind the value.

> **Temporary disconnect**
> After this next step, the config push, the device may **temporarily disconnect** and LAN communication may be **temporarily interrupted** while it's applying the new settings. This may take a minute.

You have now made the changes in the StrideLinx Cloud, but these are not yet active in your device. You will need to push your changes to your device for them to take effect.

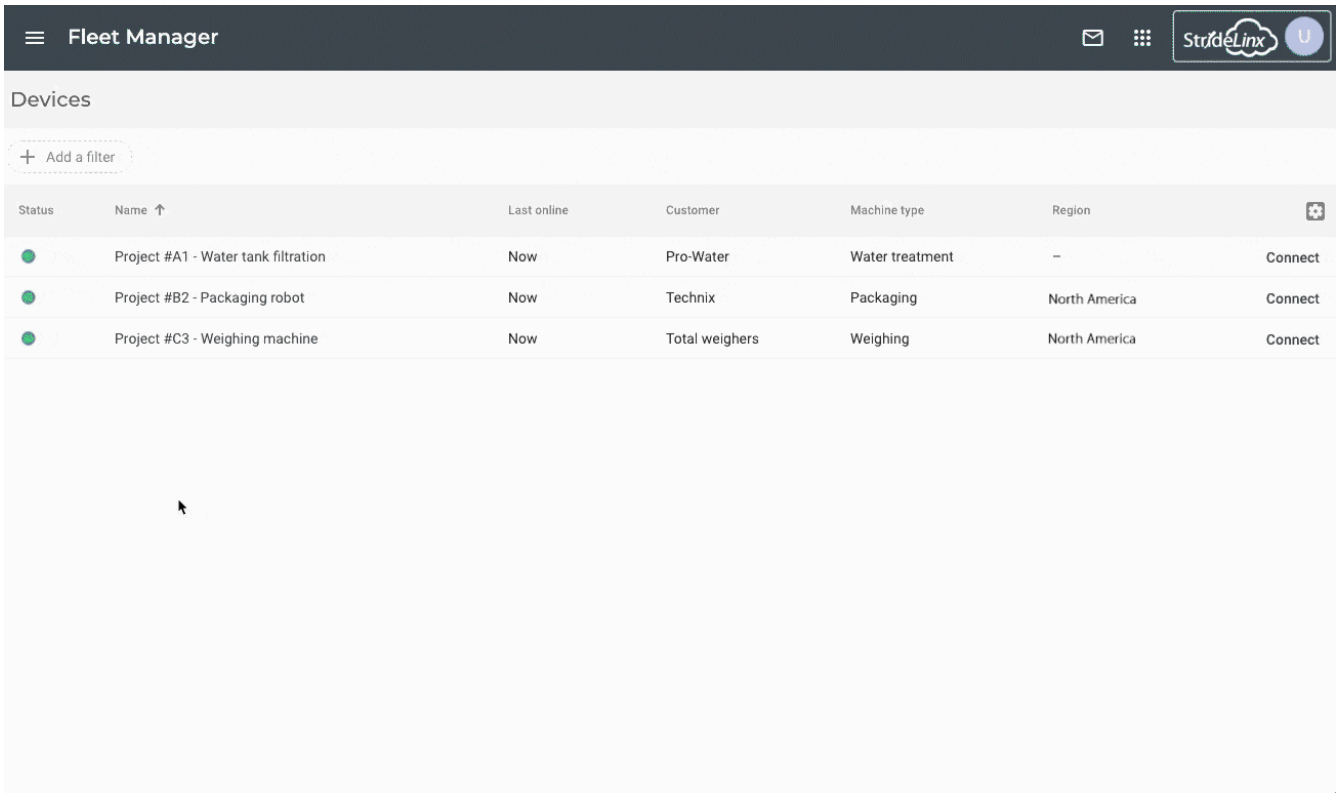
- Click **[Push config to device]** in the top right corner.

> **Next step**
> Now that you've added the variables, you can test if they're configured properly.

Import variables from a file (or device)

You can easily and effortlessly **copy variables from one device to another** by exporting the concerning variables (view the "Manage variables" part of this article) and then importing them in your new device. Alternatively, you can **manually prepare** your variables in the required CSV format to **load them all at once** into your configurator. The CSV file structure is explained in our Import variables article.

- Click on **[Import from CSV-file]** in the top right corner of the screen.
- **Select** a CSV file to import and click on **[Open]**.



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- Click **[Push config to device]** in the top right corner.

> **Next step**
> Now that you've added the variables, you can test if they're configured properly.

Test variables

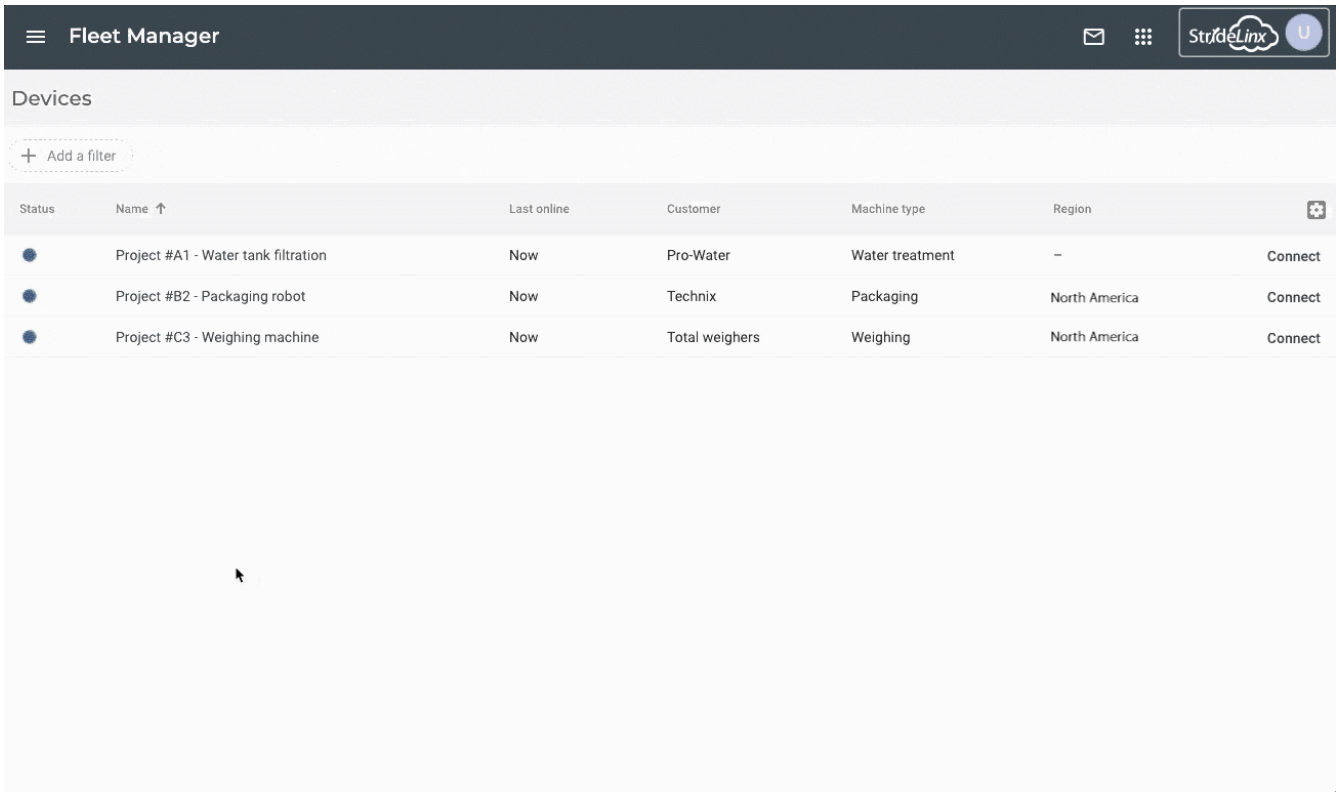
The test utility is used to **check if all the added variables are set correctly**. It shows the **communication status** with the PLC and displays each variable's **current value** if everything is configured correctly. If not, the values will stay empty. The test utility will attempt to update values every 0.5 seconds. Please follow the steps below to test your variables.

- Expand the **Data source** service, go to **[Variables]**, and click on **[Run test]** at the top.

A connection will now be set up to **stream the data directly to your computer**, using:

Port	Transport protocol	Application protocol
443	TCP	WebSocket

You will see live values of all variables, if the configuration is set up correctly.



Unexpected result?

If the test utility shows unexpected values, please check if the **addresses** and **data types** of all variables are entered correctly.

If you get no data at all, please also check that the above listed **port** and **protocols** are not being blocked by your computer's or company's firewall.

Next step

Now that you've tested the variables, you can view our "Set up alarms" guide to start adding alarms.

Manage variables

You can view all defined variables on the variables page:

- Expand the **Data source** service and go to **[Variables]**.

You can **[Edit]** individual variables, **[Remove]** individual or a selection of variables, and **export** all or a selection of variables.

Variables can be selected by clicking the **checkbox** on the left, or you can select them all by clicking the **checkbox** at the top.
