How to Configure Pro-face HMI with Allen-Bradley PLC

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1 Application Description

- **Objective**

  This document describes how to use Pro-face GP-4501TW to control and monitor Allen-Bradley PLC.

- **Goals**

  This document covers the following topics:

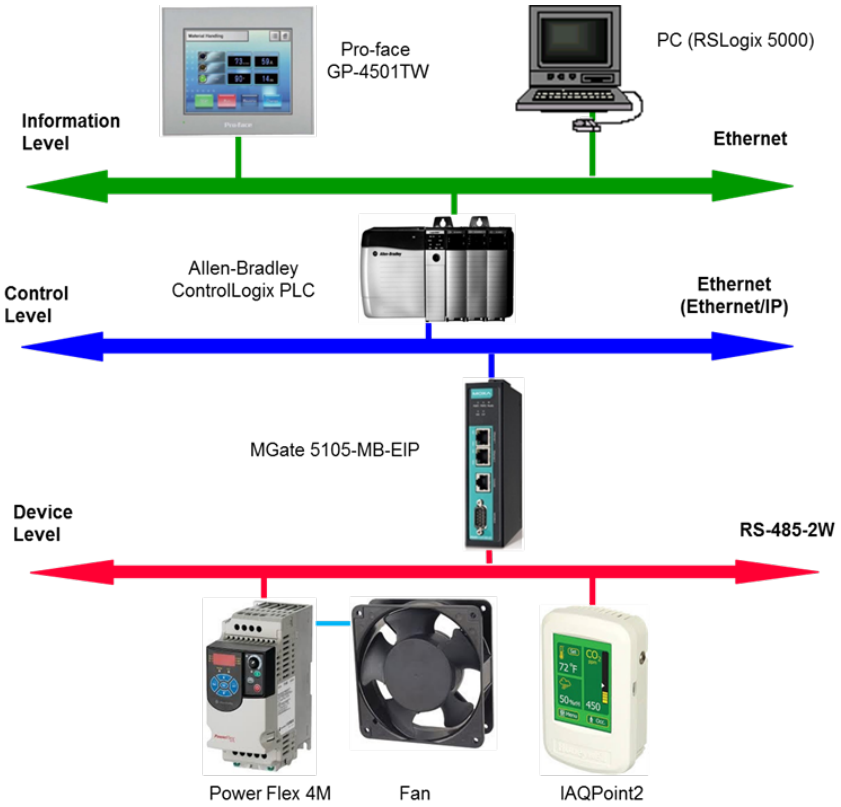
  – How to use Pro-face GP-4501TW.

  – How to use the Pro-face screen editor tool, **GP-Pro Ex**.

  – How to use the Pro-face HMI to control and monitor Allen-Bradley PLC.

2 System Topology

The following figure shows the system architecture in which Modbus end devices, PowerFlex 4M and IAQPoint2, are connected to the serial port on MGate 5105-MB-EIP through RS-485-2W wiring. MGate 5105-MB-EIP , PC that hosts RSLogix 5000, Allen-Bradley ControlLogix PLC, and Pro-face GP-4501 TW which is a HMI device that controls and monitors PLC are connected to the Ethernet network. A fan is connected to PowerFlex 4M that outputs electric current to power the fan. Pro-face GP-4501TW controls and monitors the Allen-Bradley PLC via the Ethernet.



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3 Hardware and Software Requirements

3.1 Hardware Requirement

A. Pro-face GP-4501TW

Pro-face GP-4501TW is a 10.4-inch TFT color, touch screen that displays the user interface.

B. For information on other hardware requirements, refer to the *Configuring Allen-Brandly ControlLogix PLC with Moxa MGate 5105-MB-EIP*.

3.2 Software Requirement

A. GP-Pro EX

This is the screen editor utility published by Pro-face.

Rev.: V3.5

B. For information on other software requirements, refer to the *Configuring Allen-Brandly ControlLogix PLC with Moxa MGate 5105-MB-EIP*.

4 Configuration

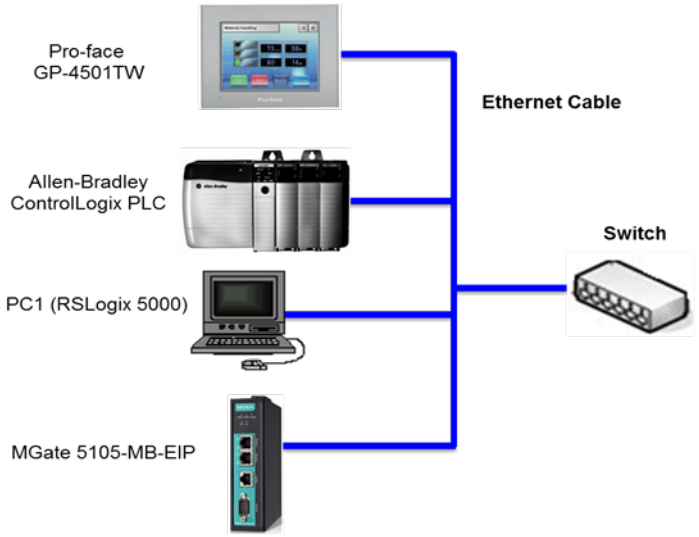
4.1 Hardware Installation

1. **Serial Wiring**

For information on installing PowerFlex 4M and IAQPoint2, refer to the *Configuring Allen-Brandly ControlLogix PLC with Moxa MGate 5105-MB-EIP*.

2. **Ethernet Connection**

Connect all of Ethernet ports on each device to a switch.



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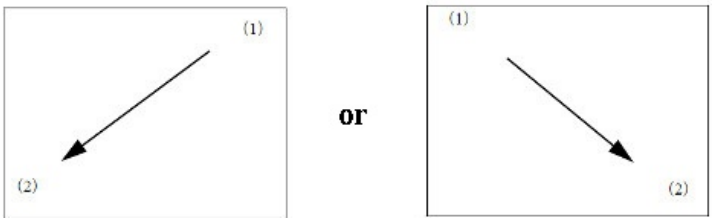
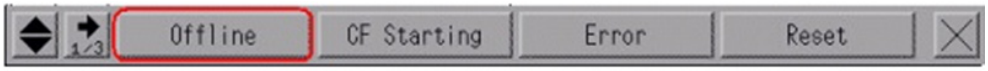
3. Pro-face GP-4501TW IP Setup

a. Touch either the top right hand corner then the bottom left hand corner OR the top left hand corner and then the bottom right hand corner within 0.5 seconds.

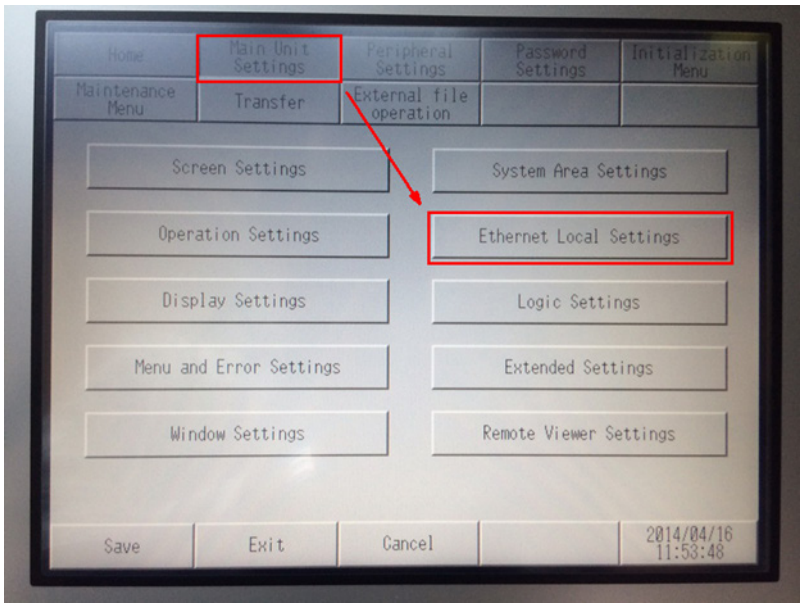
Note: Do not touch both corners at the same time.



b. A menu appears on the screen as shown in the following figure. Touch **Offline**.



c. Touch **Main Unit Settings → Ethernet Local Settings**.



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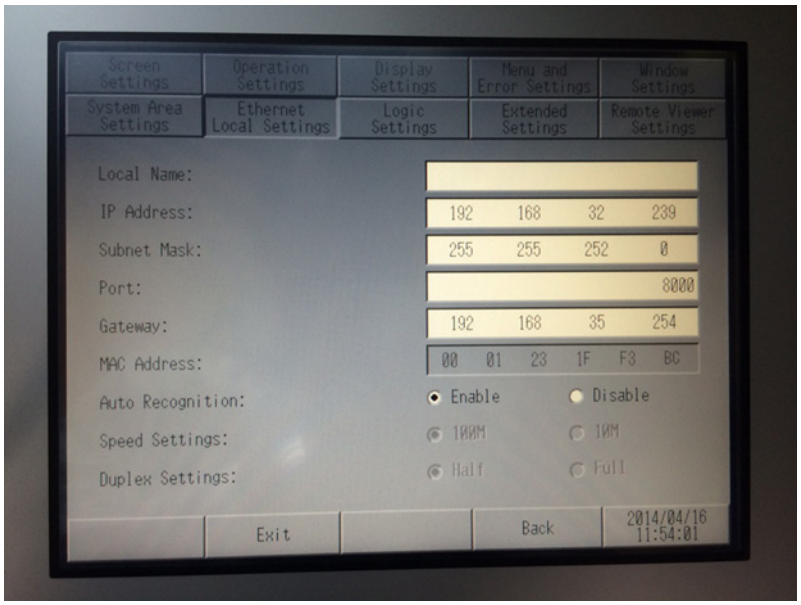
d. Configure the **IP address** and **Subnet Mask** fields.



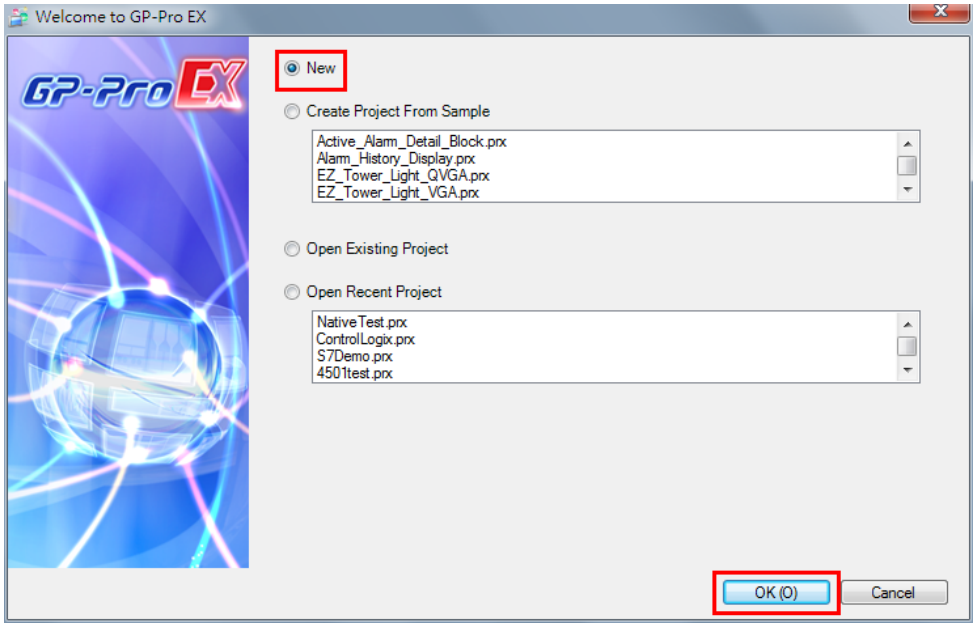
4. For information on other hardware settings, refer to the *Configuring Allen-Brandly ControlLogix PLC with Moxa MGate 5105-MB-EIP*.

4.2 Configuring GP-Pro EX

1. Creating a New Project

a. Start the GP-Pro EX application.

b. The Welcome to GP-Pro EX window appears. Select **New** and click **OK**.



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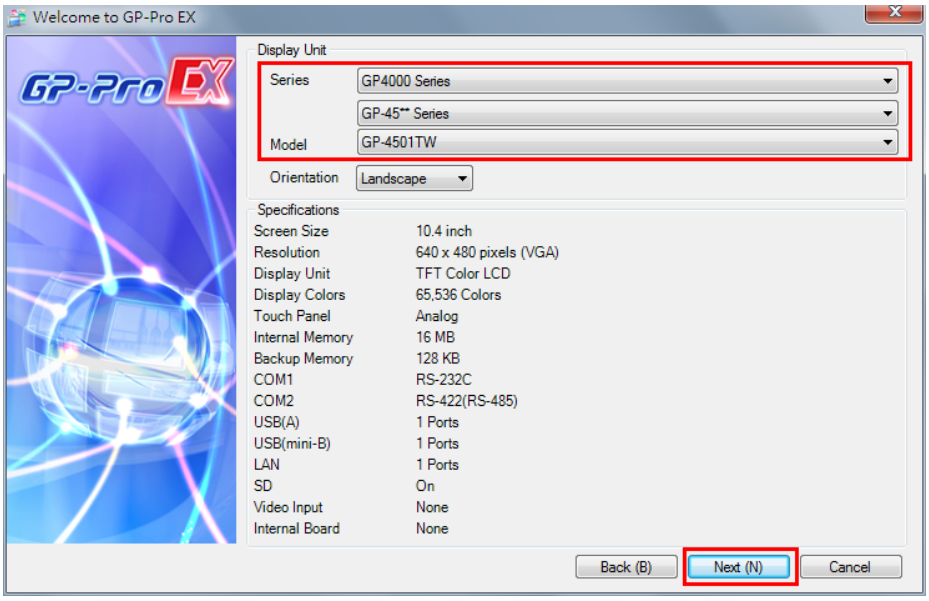
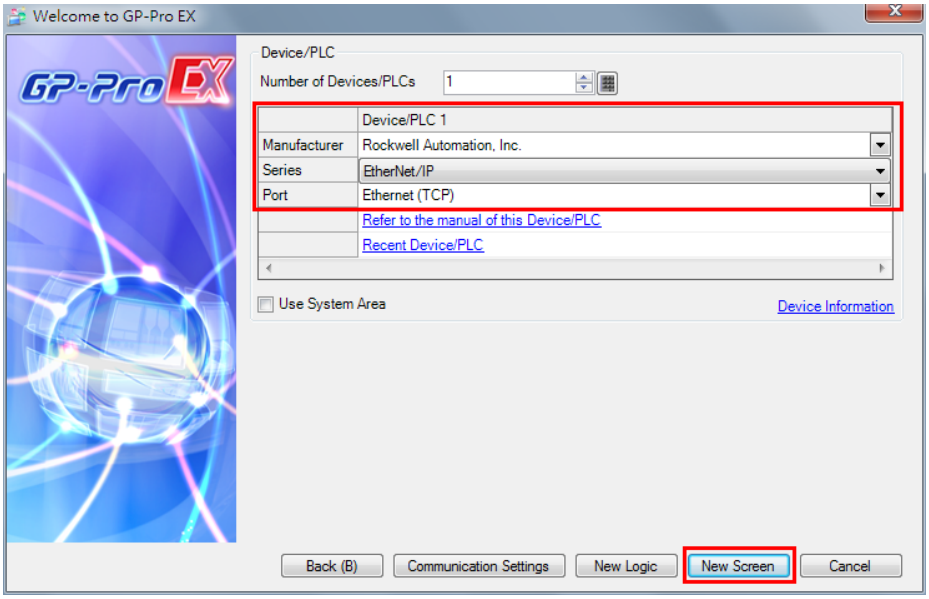
c. Configure the following **Display Unit** settings and click **Next**.

- **Series:** Select **GP 4000 Series** and **GP-45** Series** from the drop-down lists.
- **Model:** Select **GP-4501TW** from the drop-down list.



d. In the Device/PLC screen, configure the following fields and click **New Screen**:

- **Manufacture:** Select **Rockwell Automation Inc.** from the drop-down list.
- **Series:** Select **Ethernet/IP** from the drop-down list.
- **Port:** Select **Ethernet (TCP)** from the drop down list.



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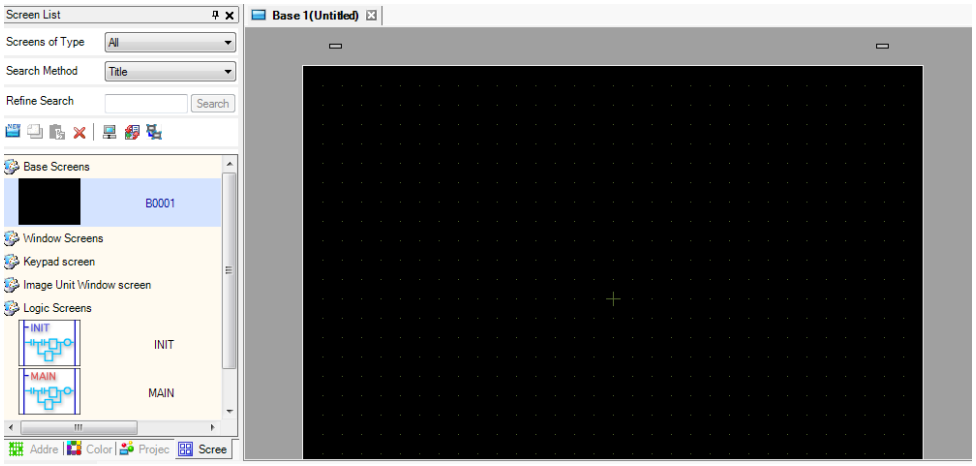
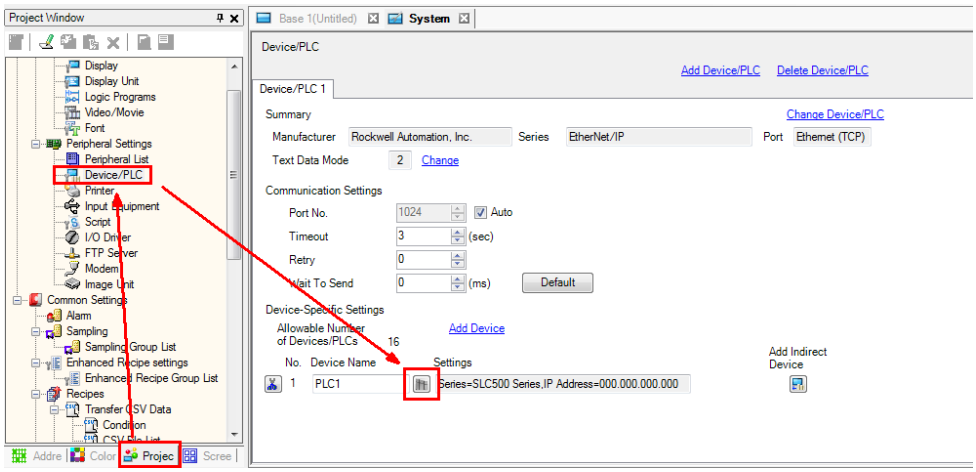
The system closes the Welcome screen and creates a Base Screen as shown in the following figure.



2. PLC Connection Setup

a. Click the **Project** tab and select **Device/PLC**.

b. In the **Device/PLC 1** configuration area, click the icon next to **PLC1** as indicated in the following figure.



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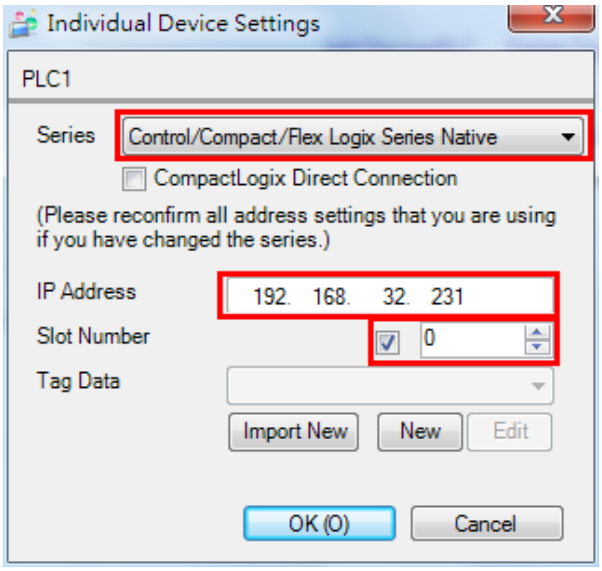
The **PLC1** settings screen appears.

c. In the PCI settings screen, configure the following fields and click **OK**:

- **Series:** Select Control/Compact/Flex Logix Series Native from the drop-down list.
- **IP Address:** Enter the IP address.
- **Slot Number:** Type "0".



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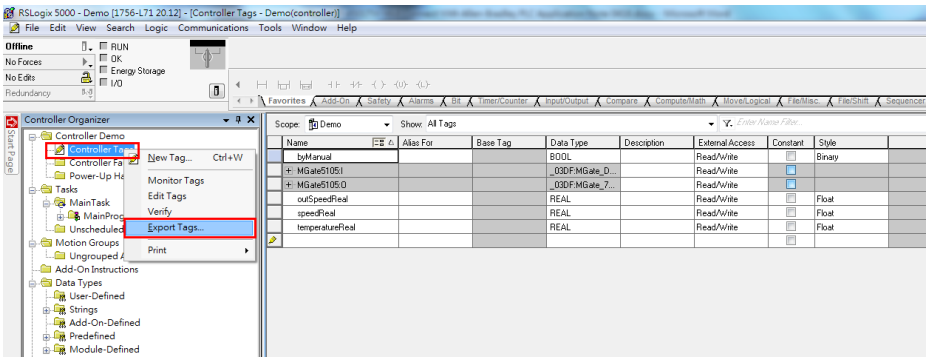
d. Before you can import tags, you must export tags from the RSLogix 5000 project.

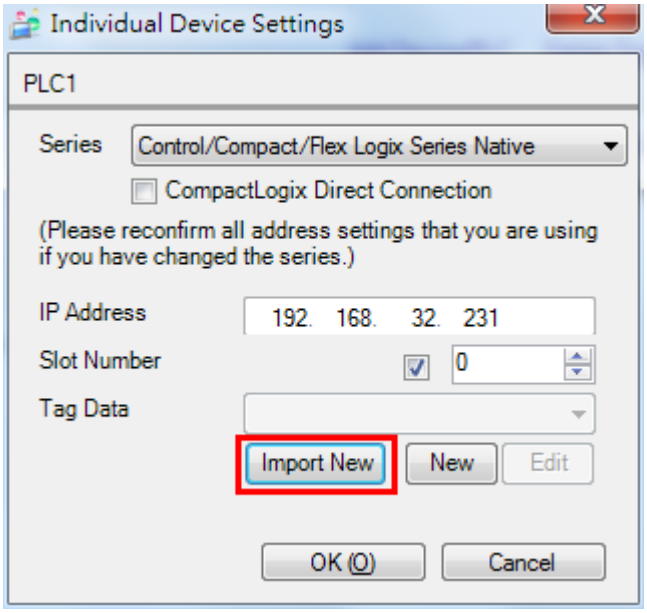
i. Open the Demo project in RSLogix 5000 (for more information, refer to the *Configuring Allen-Brandly ControlLogix PLC with Moxa MGate 5105-MB-EIP*).

ii. Right-click **Controller Tags** and select **Export Tags**.

iii. Save the file using the file name "Demo-Controller-Tags.CSV".



e. In the PLC1 settings screen, click **Import New**.



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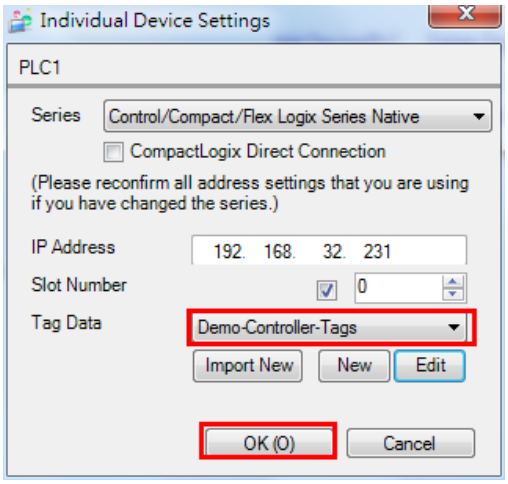
f. In the **Select File to Import From** screen, select **CSV files (*.csv)** from the **File Type** drop-down list and click **Browse** to select a tag file. Then, click **Open**.

g. After the tag file is imported, the **Tag Data** field shows the exported file name in the PLC1 settings screen. Click **OK**.



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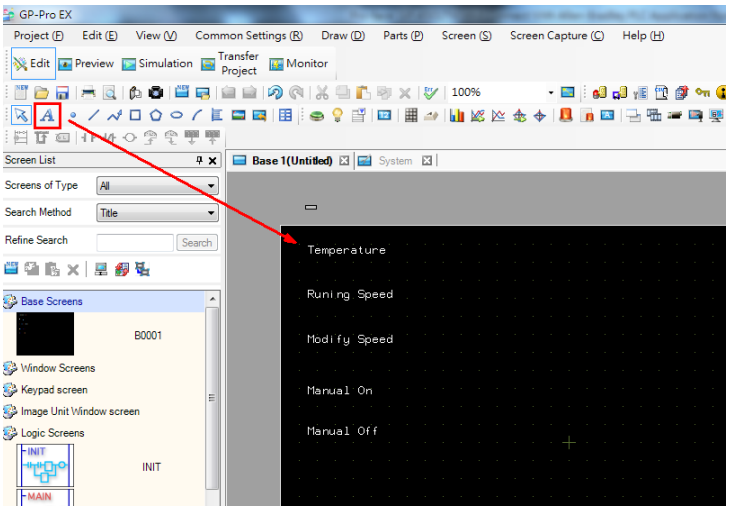
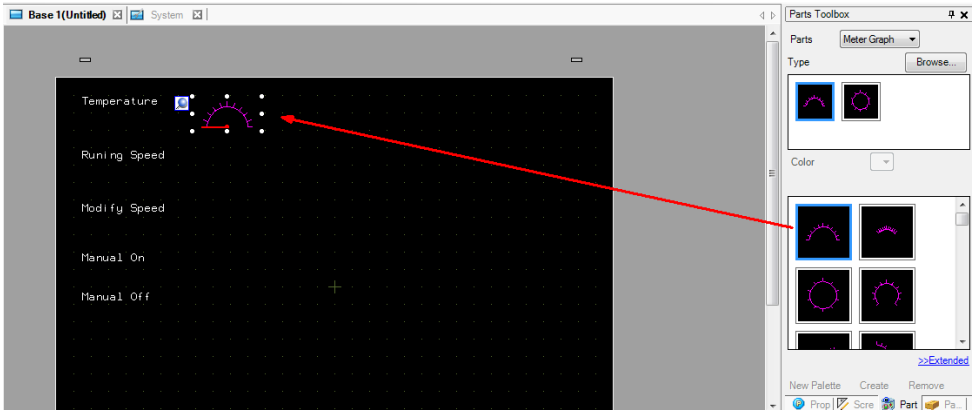
3. Using the Edit Screen

a. In the **Base 1** screen window, use the **Text** tool to create Text Objects as shown in the following figure.



b. In the **Parts Toolbox** pane, select **Meter Graph** from the **Parts** drop-down list and drag a meter element to the screen next to **Temperature**.



c. Double-click the **Meter Graph** element to configure its properties.

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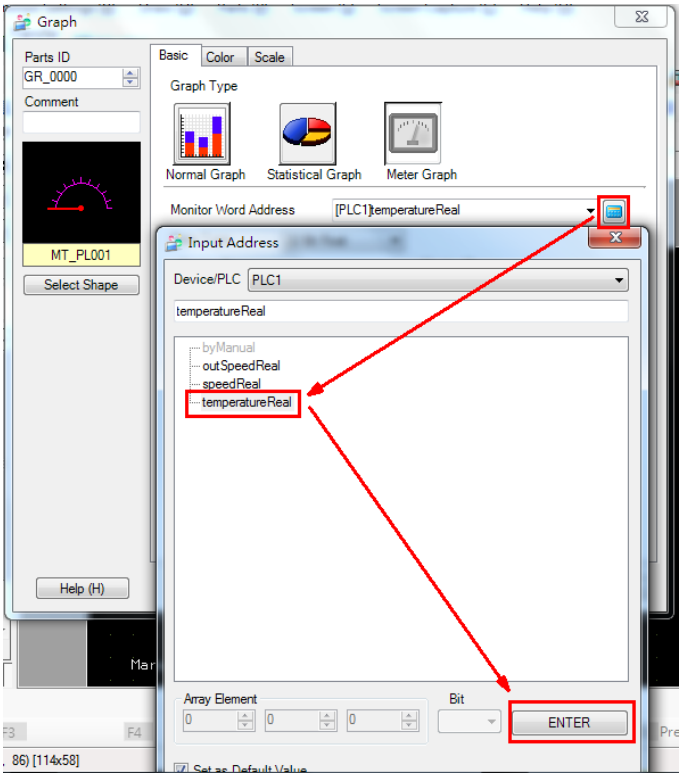
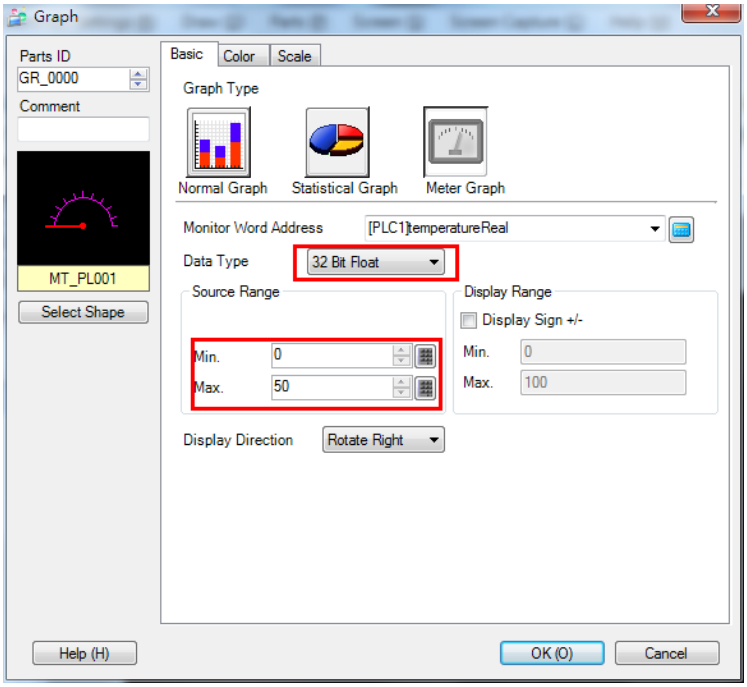
d. Click the icon next to the **Monitor Word Address** field and select the **temperatureReal** tag. Then, click **ENTER**.

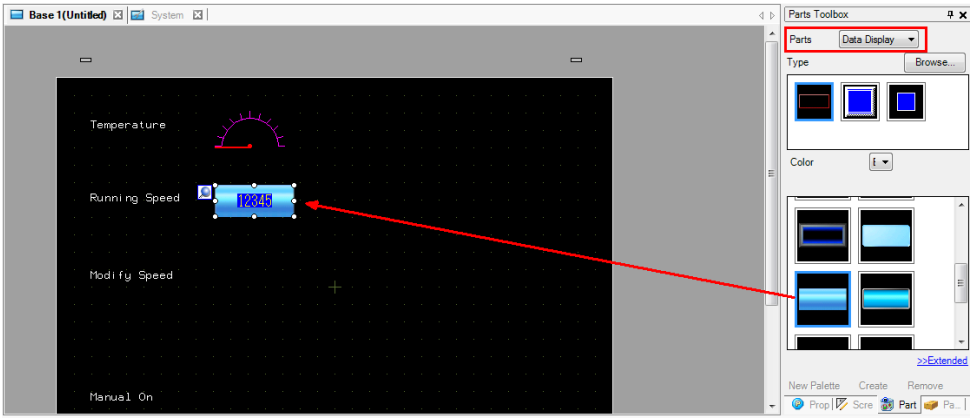


e. In the **Basic** tab, configure the following fields and click **OK**:

- **Data Type:** Select **32 Bit Float** from the drop-down list.
- **Source Range:** Set the **Min** and **Max** fields to "0" and "50" respectively.



f. From the **Parts Toolbox** pane, drag the **Data Display** element to the screen next to **Running Speed**.



g. Double-click the **Data Display** element to configure its properties.

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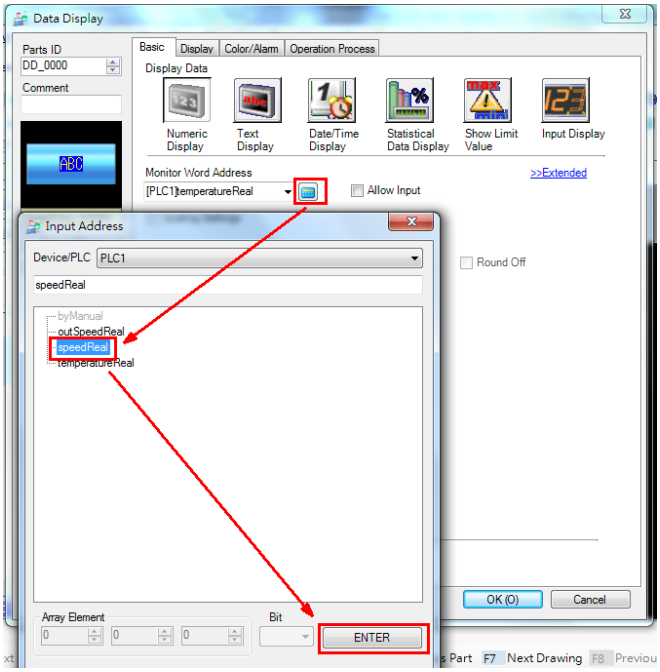
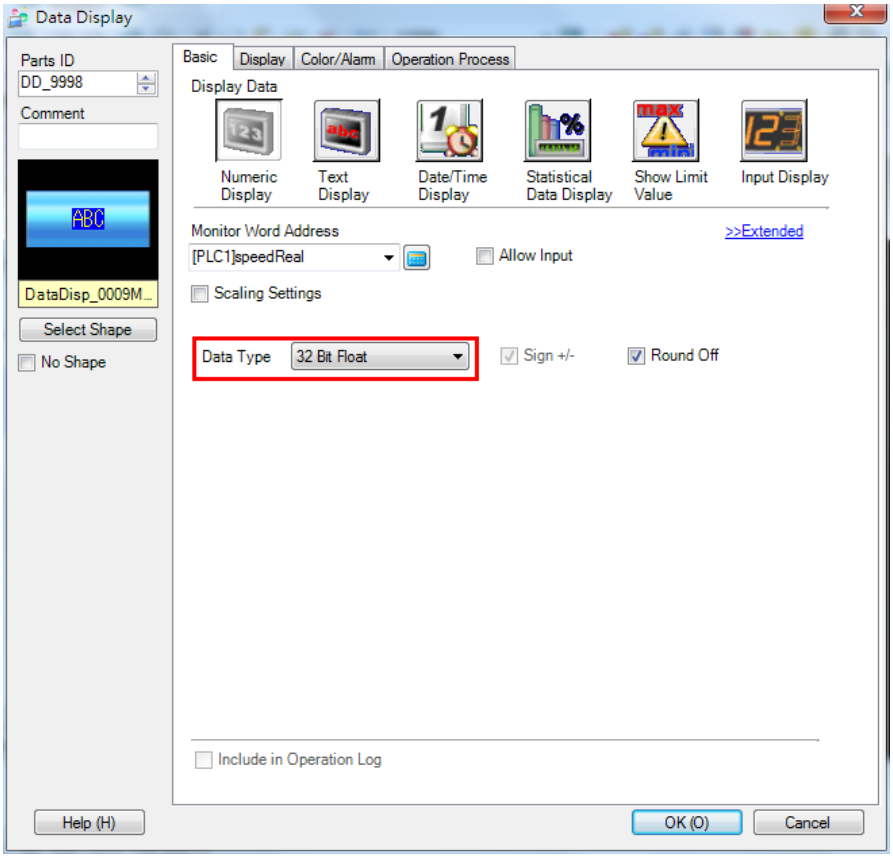
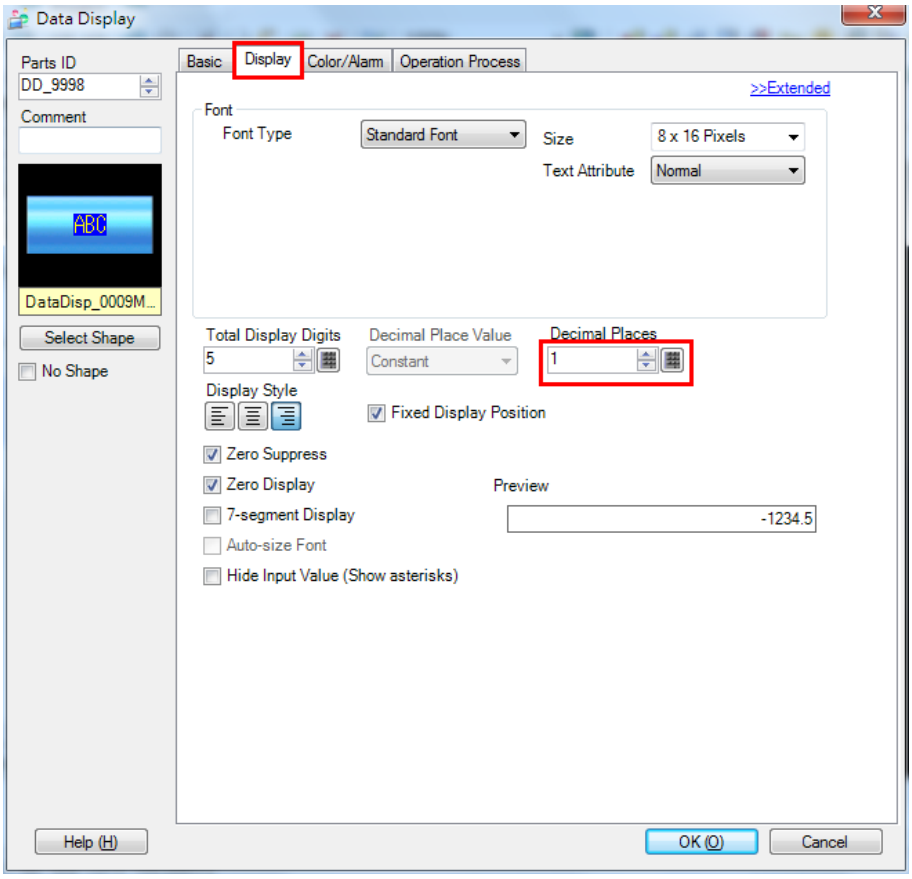
h. Click the icon next to the **Monitor Word Address** field and select the **speedReal** tag. Then, click **ENTER**.



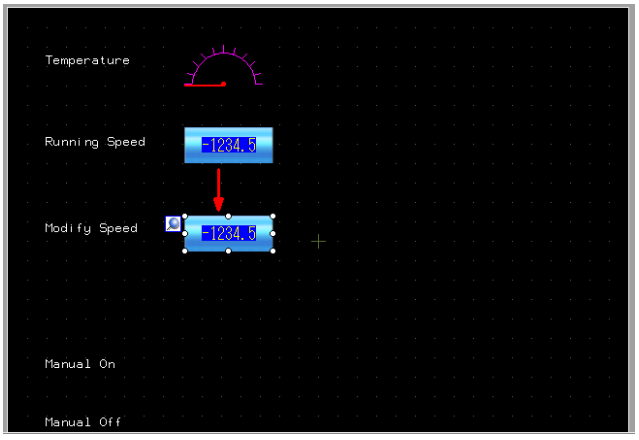
i. From the **Data Type** drop-down list, select **32 Bit Float**.



j. Click the **Display** tab and set the **Decimal places** field to **1**.



k. Copy the **Data Display** element next to **Running Speed** and paste the element next to **Modify Speed**.



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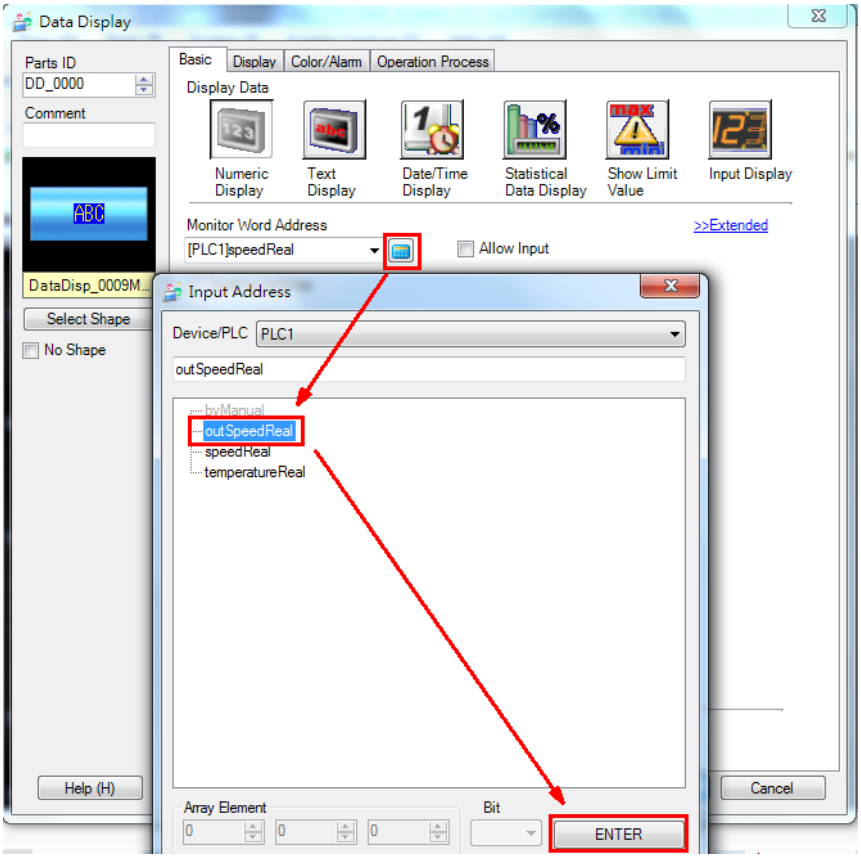
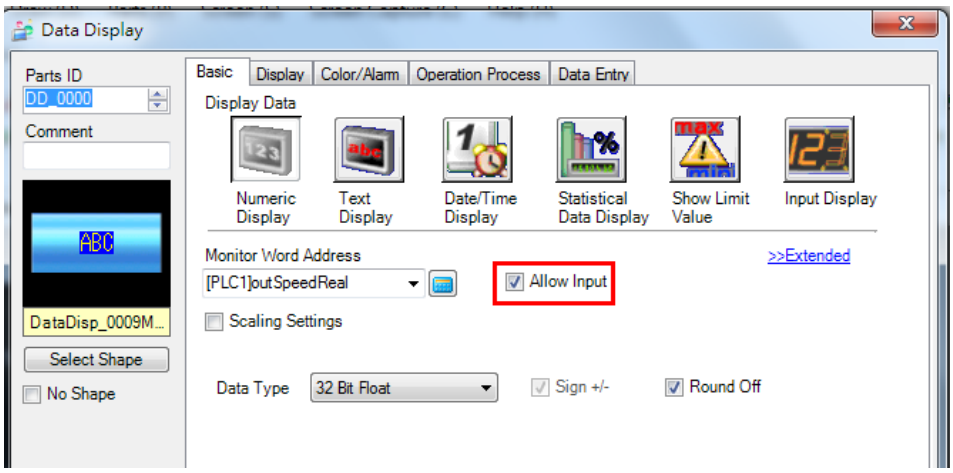
l. Click the icon next to the **Monitor Word Address** field and change name of the tag to **outSpeedReal**. Then, click **ENTER**.



m. Select the **Allow Input** checkbox. This enables you to configure PLC.



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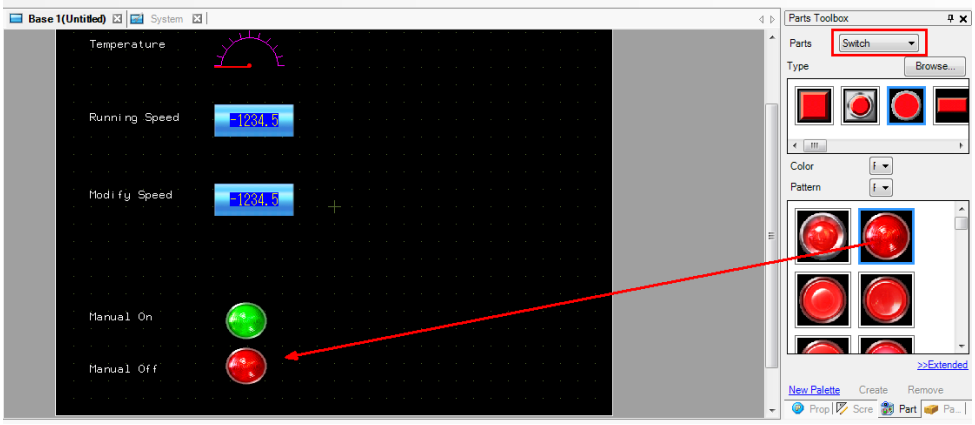
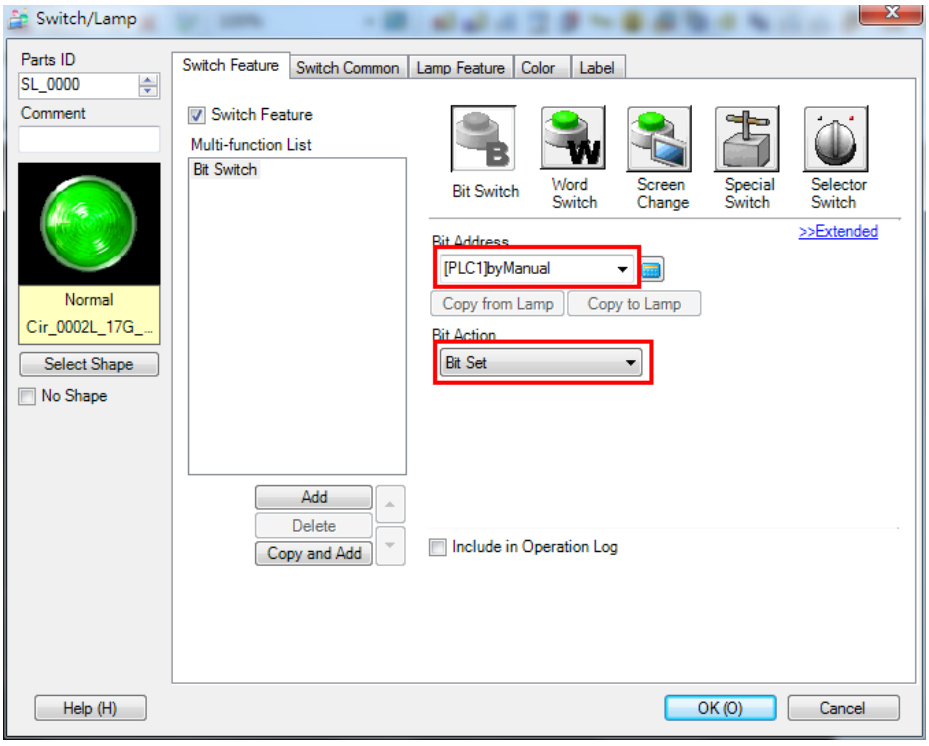
n. From the **Parts Toolbox** pane, select **Switch** from the **Parts** drop-down list and drag a Switch element next to **Manual On** and **Manual Off**. Then, change the color of the Switch element for Manual On to green.



o. Double-click the Manual On Switch element to configure its properties.
In the Switch Feature tab, configure the following fields and click **OK**:

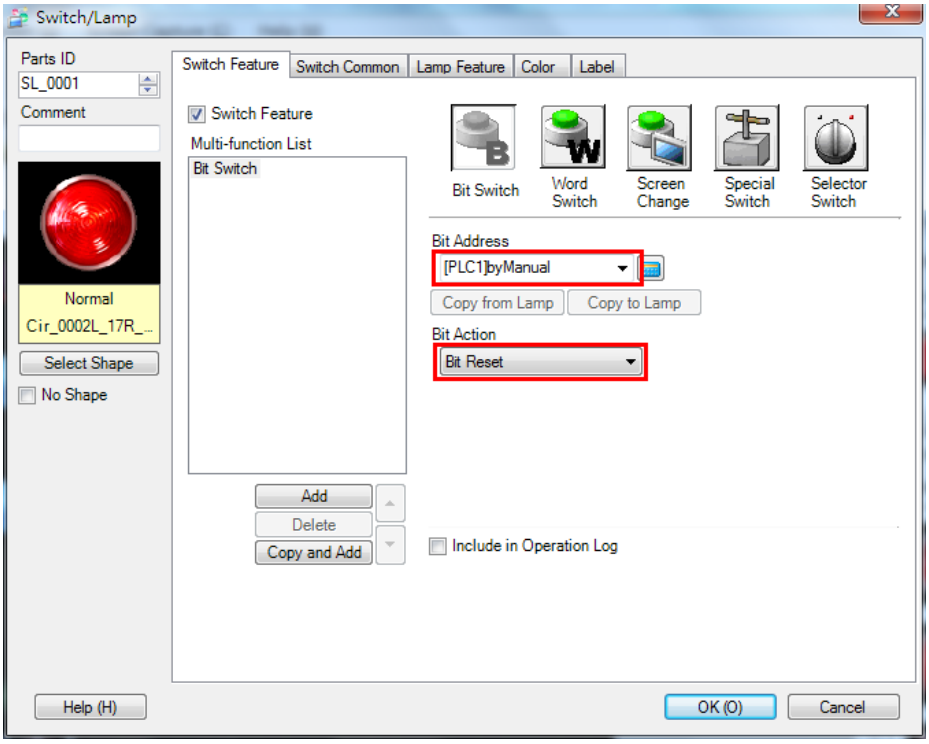
- **Bit Address:** Select byManual from the drop-down list.
- **Bit Action:** Select Bit Set from the drop-down list.



p. Double-click the Manual Off Switch element to configure its properties.

In the Switch Feature tab, configure the following fields and click **OK**:

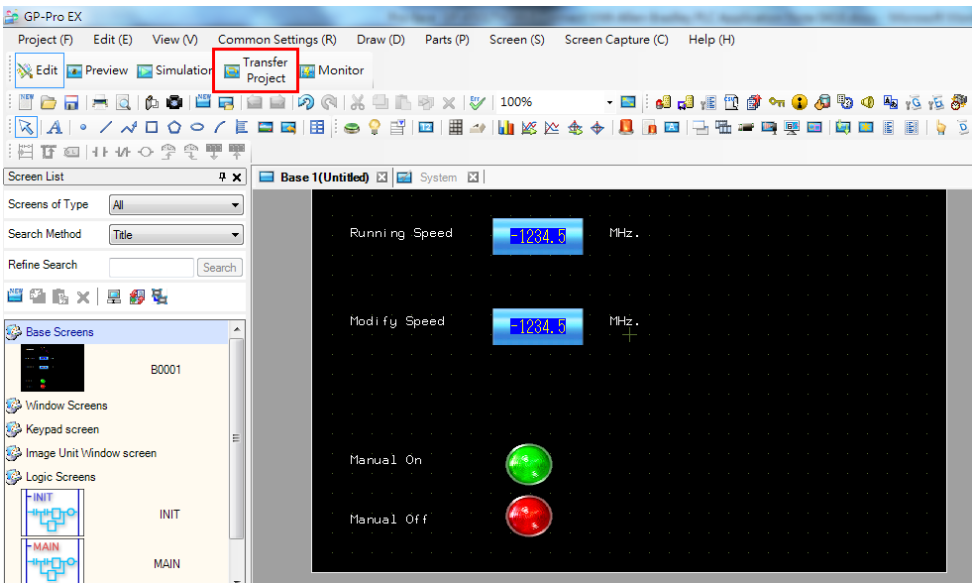
- **Bit Address:** Select **byManual** from the drop-down list.
- **Bit Action:** Select **Bit Reset** from the drop-down list.



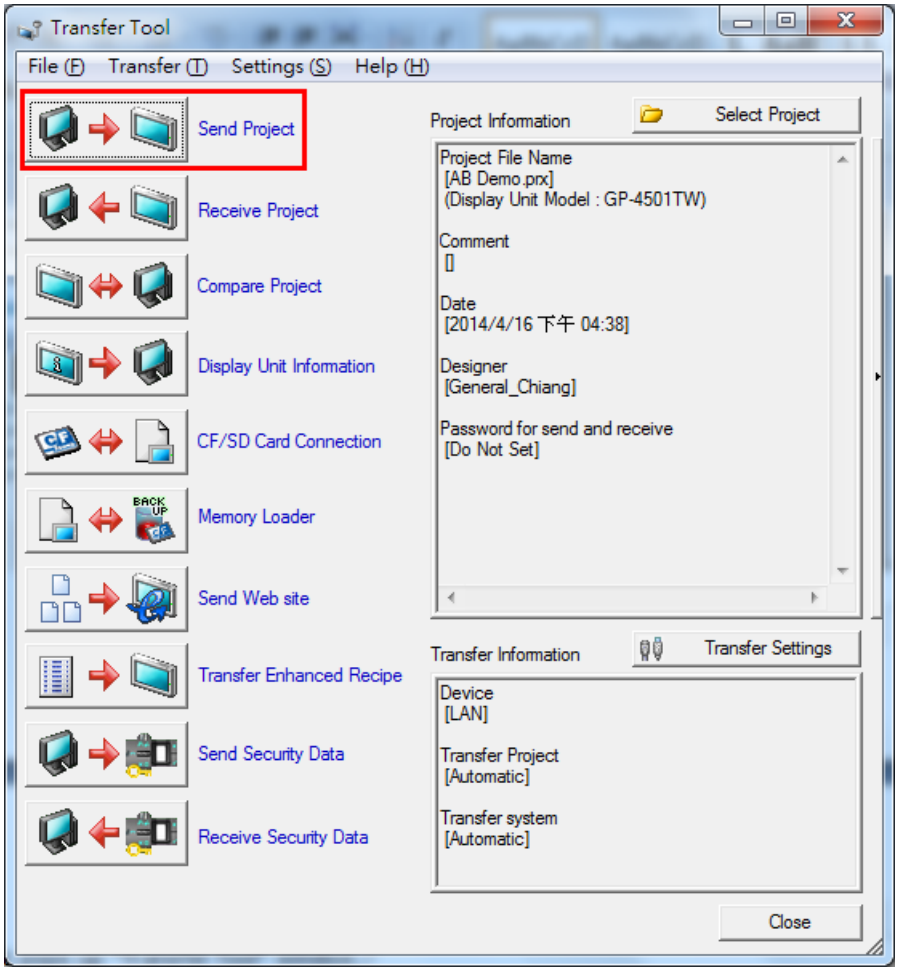
4. **Transferring a Project**

After you edit a screen, save the project.

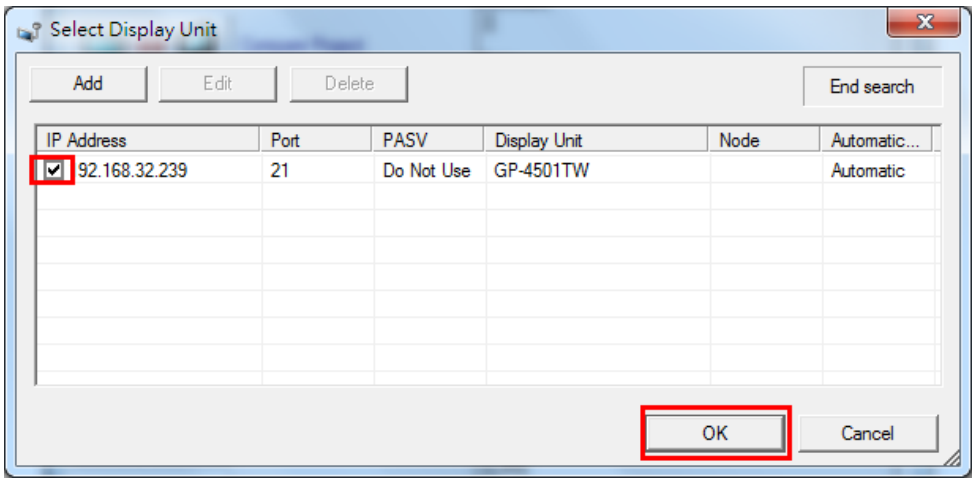
a. Click **Transfer Project** to transfer a project to Pro-face GP-4501TW.



b. In the **Transfer Tool** window, click **Send Project**.



c. The **Select Display Unit** window displays the list of online Pro-face HMI devices. Select to enable the Pro-face GP-4501TW device and click **OK** to transfer the project.



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5 Online Test

The Pro-face GP-4501TW panel displays the temperature (in degree Celsius) that is read from IAQPoint2 and the running speed from Power Flex 4M. The running speed is controlled by Allen-Bradley when the **byManual** tag is set to **Reset**.

Click the Modify Speed Data Display element to display a number keypad as shown in the following figure. Enter "50.0" and click **ENT**. The Modify Speed field displays 50.0.

Double-click the Switch element for Manual On and change the **byManual** tag to **Set**. In the case, the Running Speed field displays 50.0.

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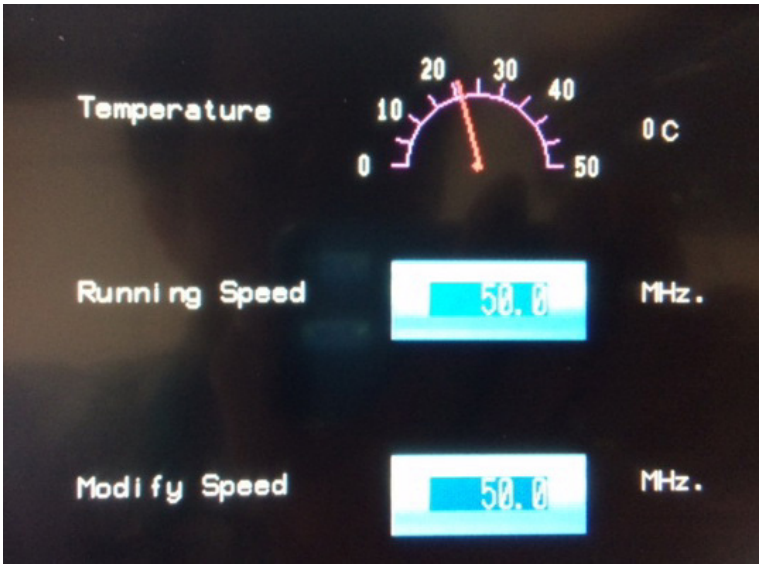

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