29. Pass-through

This chapter explains how to set up Pass-through mode.

29.1. Overview

The Pass-through feature allows PC applications to control PLC via HMI. In this case the HMI is an adaptor.

The Serial Pass-Through feature provides two modes:

- Ethernet
- COM port

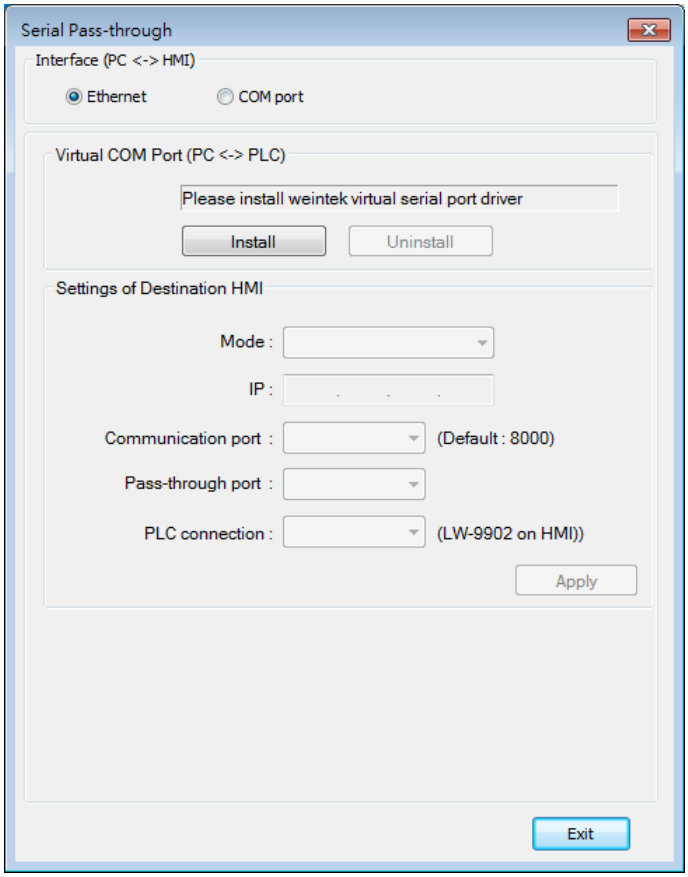
Click [Pass-through] in Utility Manager to open the setting dialog box.

29.2. Serial Pass Through Ethernet Mode

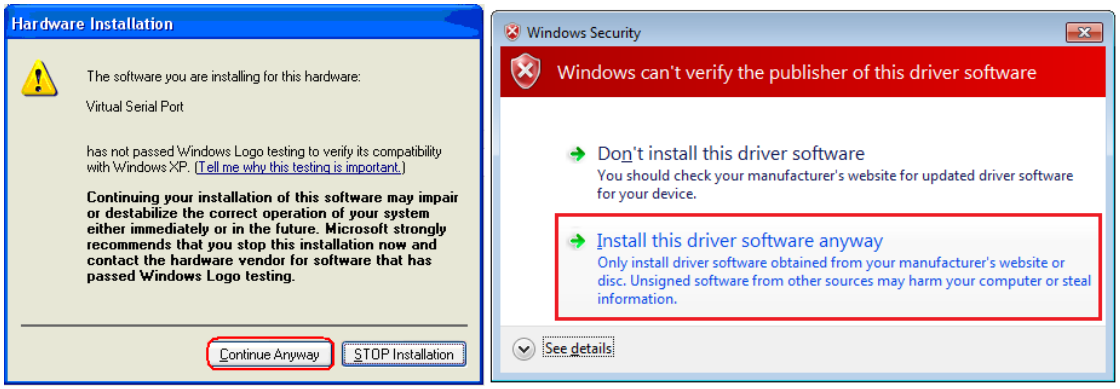
29.2.1. Steps to Install Virtual Serial Port Driver

Before using [Ethernet] mode, please check if Weintek virtual serial port driver has been installed. Please always install the latest patch of Windows Update to ensure proper operation of virtual serial port driver.

1. Open Utility Manager to check if the driver has been installed. If it shows [Please install weintek virtual serial port driver], please click [Install].



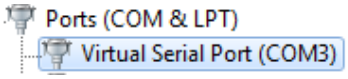
2. If the dialog below pops up during installation asking for verification, please click [Continue Anyway].



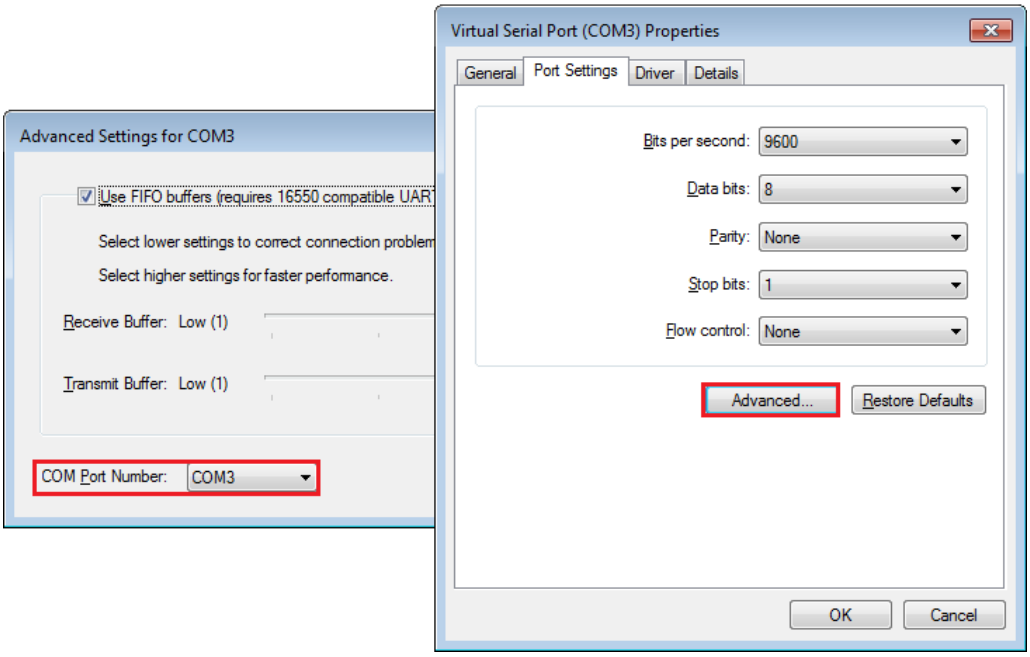
3. When finished, the [Virtual COM Port (PC <-> PLC)] field displays the virtual COM port used.

29.2.2. Steps to Change the Virtual Serial Port Number

1. Open [Device Manager] and find Virtual Serial Port.

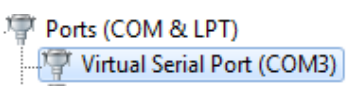


2. To change to another COM Port Number, double-click Virtual Serial Port and open [Port Settings] » [Advanced].

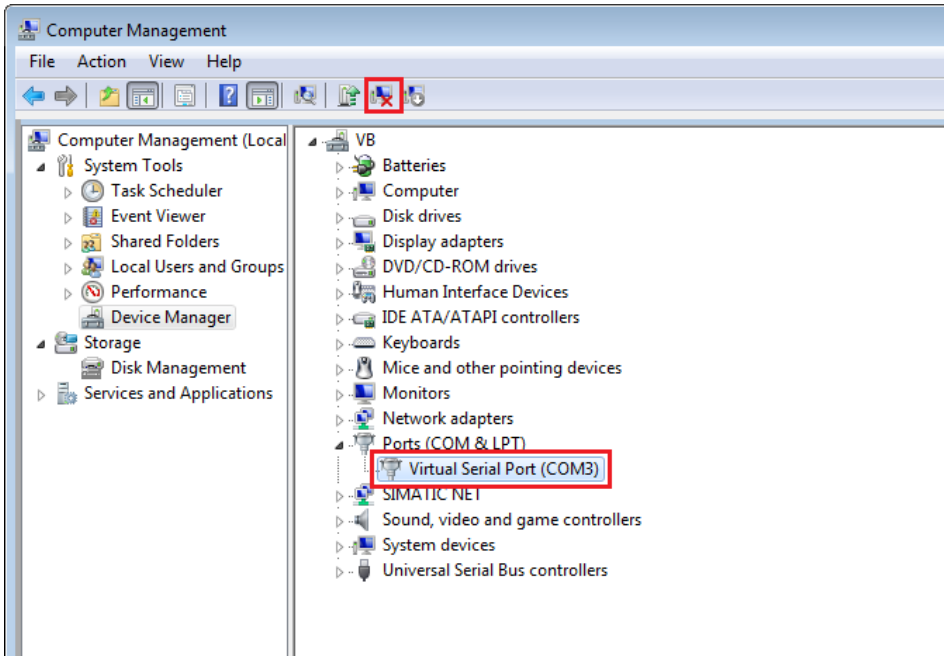


29.2.3. Steps to Uninstall the Virtual Serial Port

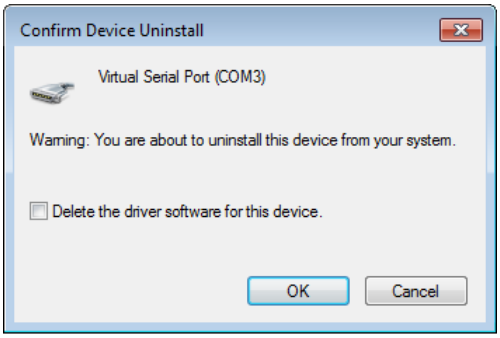
1. Open [Device Manager] and find Virtual Serial Port.



2. To uninstall the Virtual Serial Port, select it and click the [Uninstall] button in the Device Manager toolbar.

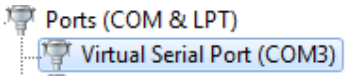


3. Click [OK] to uninstall this Virtual Serial Port.

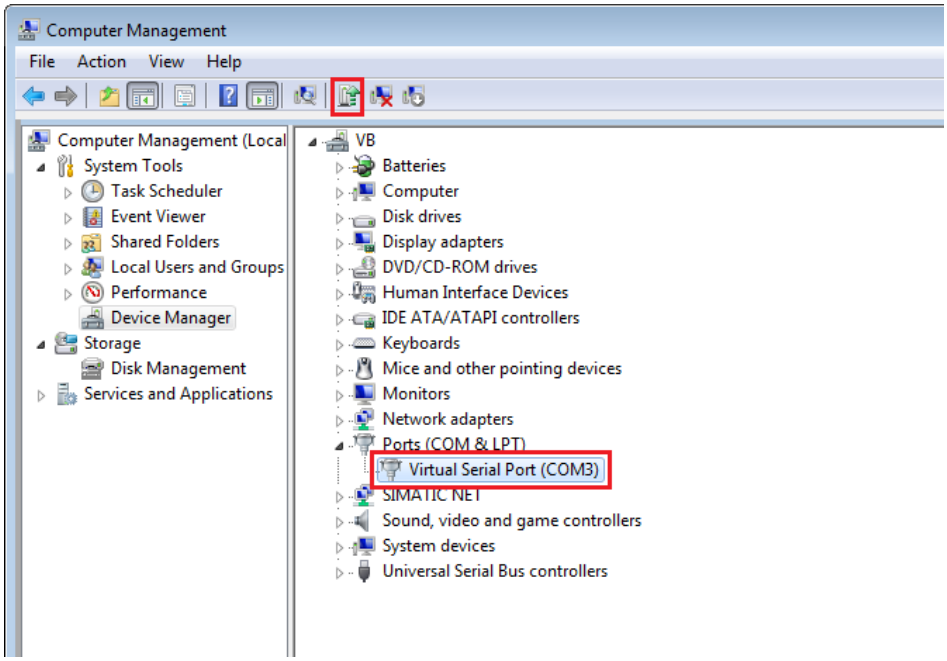


29.2.4. Steps to Update Virtual Serial Port Driver

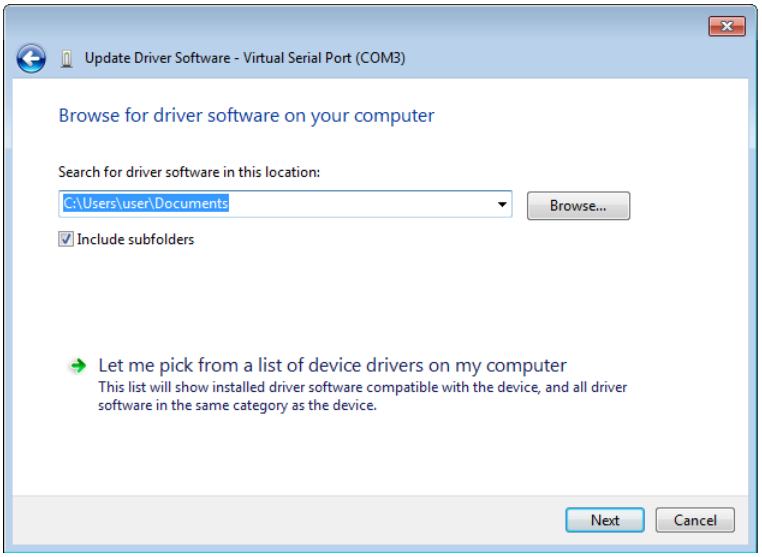
1. Open [Device Manager] and find Virtual Serial Port.



2. To update virtual serial port driver software, select Virtual Serial Port and click the [Update Driver Software] button in the Device Manager toolbar.



3. Browser for the directory of the driver, and then click [Next] to update the driver.



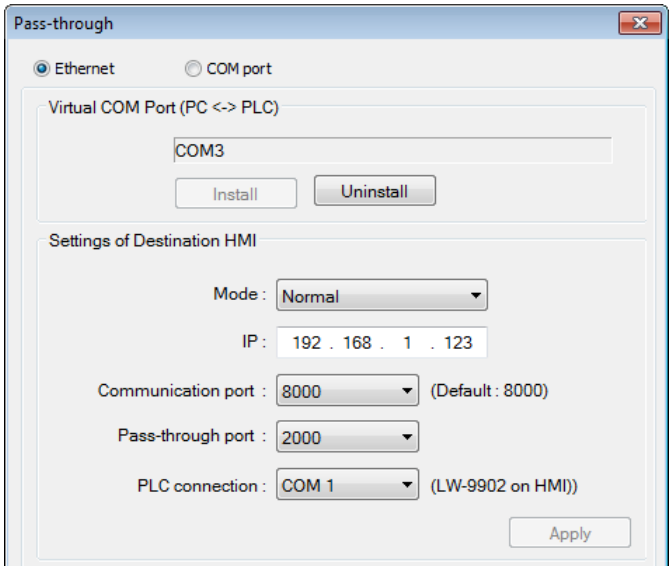
29.2.5. Settings of Ethernet mode

After installing the virtual serial port driver, follow the steps to use Ethernet mode of pass-through feature.

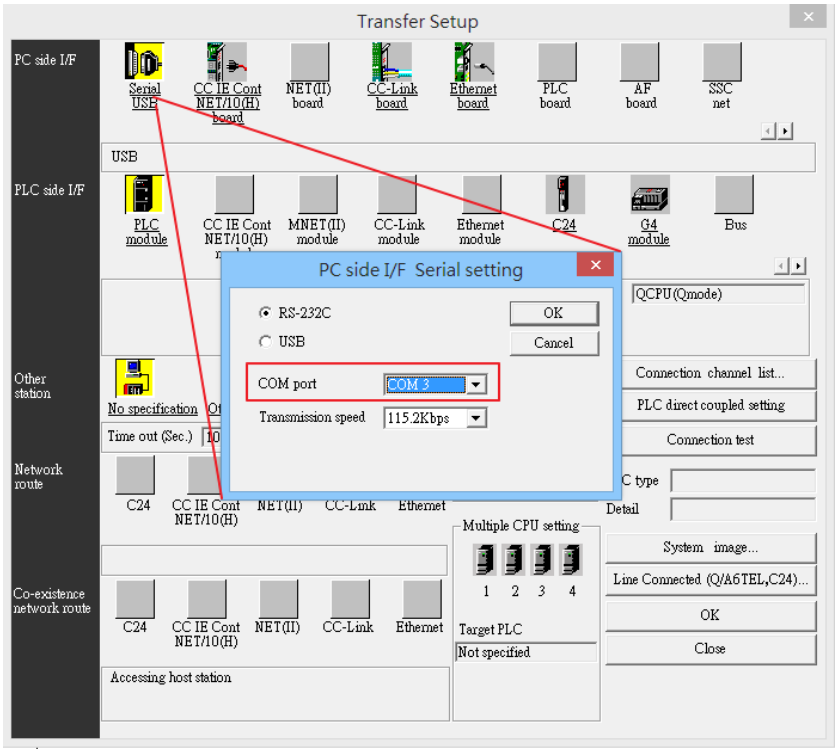
1. Set the IP address of the HMI connected with PLC.

2. Set the communication port and the serial port that connects HMI with PLC.

3. Click [Apply], to apply the settings.



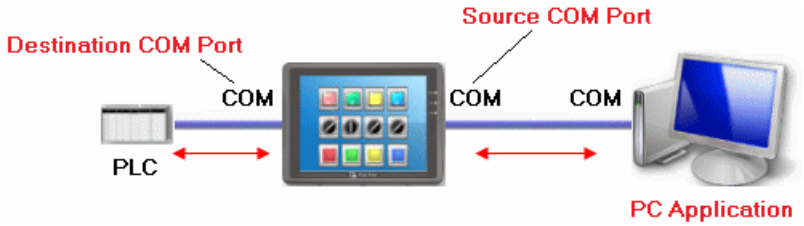
4. When running PC application, set COM port to the used virtual serial port. For example, in Mitsubishi application, if the virtual serial port is COM 3, set [PC side I/F Serial setting] » [COM port] to COM 3.



5. With the correct configurations, upon execution of PLC application on PC, HMI will be

automatically switched to Pass-through mode. During Pass-through, the PLC is controlled by PC via the virtual serial port. Pass-through mode will be turned off when the application ends.

29.3. Serial Pass-Through COM Port Mode



[Source COM Port] The port connects HMI with PC.

[Destination COM Port] The port connects HMI with PLC.

To use [COM port] mode of Pass-through, please set the properties of Source COM Port and Destination COM Port correctly.

Click the icon to download the demo project. Please confirm your internet connection before downloading the demo project.

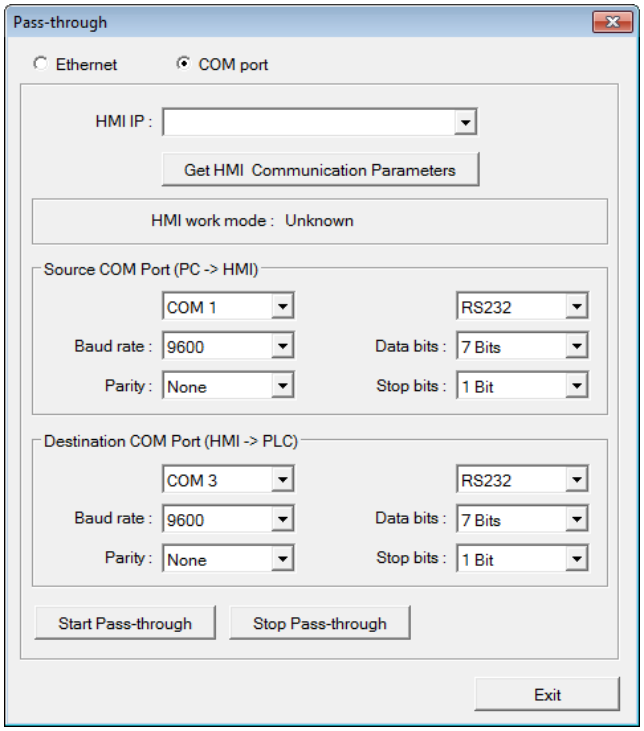
29.3.1. Settings of COM Port Mode

There are two ways to enable [COM port] mode of Pass-through feature.

- Using Utility Manager.
- Using system registers.
  LW-9901: pass-through source COM port (1 ~ 3: COM 1 ~ COM 3)
  LW-9902: pass-through destination COM port (1 ~ 3: COM 1 ~ COM 3)

29.3.2. Using Utility Manager

1. Click [Serial Pass-Through] button in Utility Manager to set the communication parameters as shown in the following figure.



Setting	Description
HMI IP	HMI IP address.
Get HMI Communication Parameters	Reads the settings of Source and Destination COM port. Click this button to update the communication parameters.
Source COM Port (PC->HMI) / Destination COM Port (HMI->PLC)	The communication parameters of Source and Destination COM Port are displayed. The settings will be applied when [Start Pass-through] is clicked.
Baud rate / Data bits / Parity / Stop bits	Source and Destination COM Port parameters should be set to be same. Since [Source COM Port] connects PC, select RS-232 mode in most situations; [Destination COM Port] connects PLC, so the setting depends on the PLC type, and can be one of RS-232, RS-485 2W, or RS-485 4W.

Note

- When pass-through feature is no longer needed, click [Stop Pass-through] to stop it. HMI will then resume communication with PLC.

There are three work modes of HMI.

Mode	Description
Unknown	The work mode before reading the settings of HMI.
Normal	The work mode after reading the settings of HMI. The HMI does not accept any data form the Source COM Port.
Pass-through	The work mode is “Pass-through.” the PC connected via Source COM Port can control the PLC connected via Destination COM Port.

29.3.3. Using System Registers

Another way of enabling pass-through is by writing to LW-9901(Source COM port) and LW-9902 (Destination COM port).When the values of LW-9901 and LW-9902 match the conditions below, HMI will start Pass-through automatically:

- The values of LW-9901 and LW-9902 are 1 to 3 (1 to 3: COM 1 to COM 3).
- The values of LW-9901 and LW-9902 are different.

To change the communication parameters, just change the value in the related registers and set ON the appropriate registers: [LB-9030: update COM 1 communication parameters], [LB-9031: update COM 2 communication parameters] and [LB-9032: update COM 3 communication parameters]. HMI will then update the settings.

Note

- To stop Pass-through, change the values of LW-9901 and LW-9902 to 0.
- For some models (eMT, cMT…etc), COM1 RS232 RTS/CTS share the same pins (Pin no. 7 and 8) with COM3 RS232 RX/TX. When COM3 is not used in the device list, Pin no. 7 and 8 is used for COM1 RS232. To activate Pin no. 7 and 8 for COM3 RS232 RX/TX, please add COM3’s Master Slave driver or Free Protocol driver into the device list in System Parameter Settings.

29.4. Pass-through Control

Generally speaking, during pass-through, HMI closes its connection with the PLC until the pass-through mode ends. However, certain PLC drivers allow communications between HMI and PLC in pass-through mode.

To see whether a driver supports concurrent communication, see “PLC Connection Guide”.

Pass-through control is controlled by LW-9903. The following table shows valid LW-9903 values and their features.

LW-9903	Description
0 (Default)	Normal Mode. Communications between HMI and PLC in pass-through mode is allowed.
2	Stop Mode. No communications between HMI and PLC in pass-through mode

Note

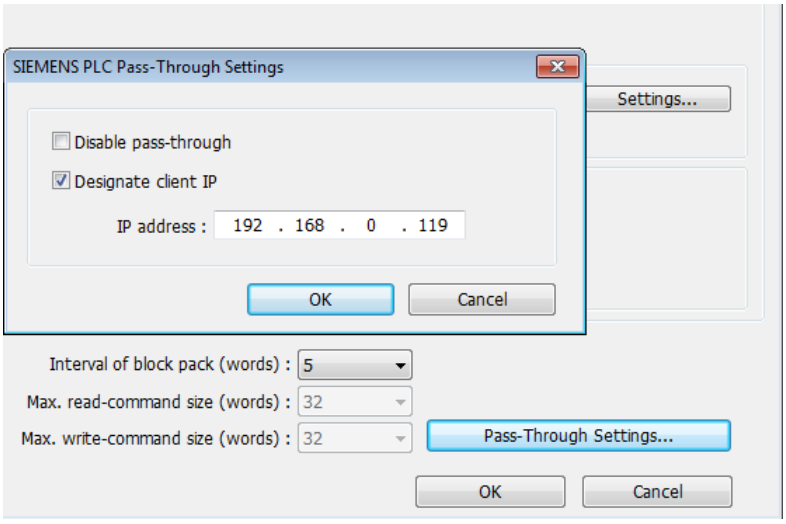
- Due to speed limitation, users may wish to set LW-9903 to 2 to enhance the speed of program download/upload in pass-through mode.

29.5. SIEMENS S7-200 PPI and S7-300 MPI Pass-through Settings

EasyBuilder Pro supports SIEMENS S7-200 PPI and S7-300 MPI pass-through feature.

29.5.1. EasyBuilder Pro Settings

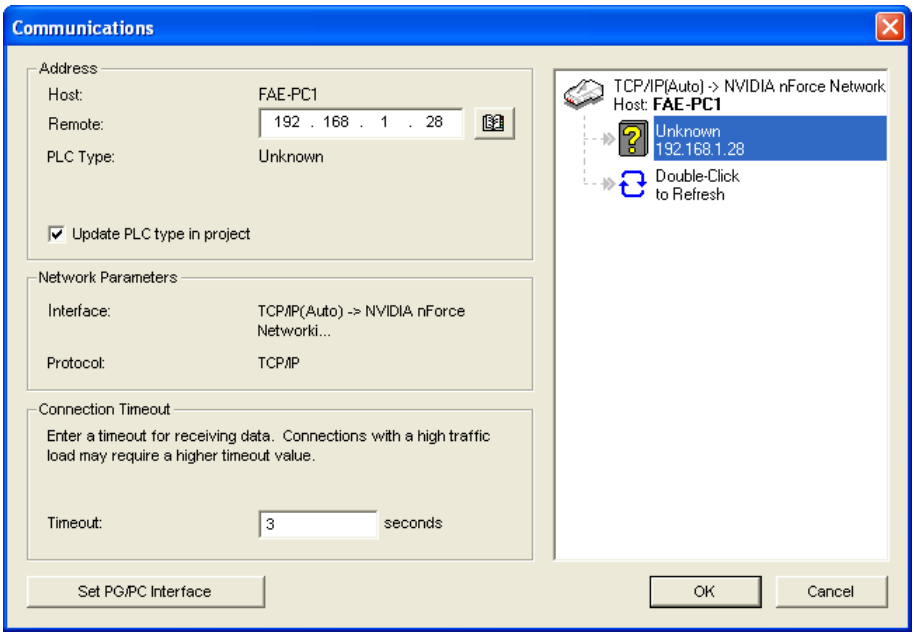
Launch EasyBuilder Pro, go to [System Parameter Settings] » [Device list], and then add SIEMENS S7-200 PPI or S7-300 MPI device. Click [Pass-Through Settings] and the following dialog box appears.



Setting	Description
Disable pass-through	Select this check box to disable pass-through mode. By default this check box is not selected.
Designate client IP	Designate client HMI IP address used in pass-through mode.

29.5.2. S7-200 PPI Connection

Confirm that the HMI used in pass-through communication is started and connected to the network. Launch STEP 7 Micro/Win, open [Communications] dialog box, and then search for the HMI IP address. Connect the HMI to communicate.

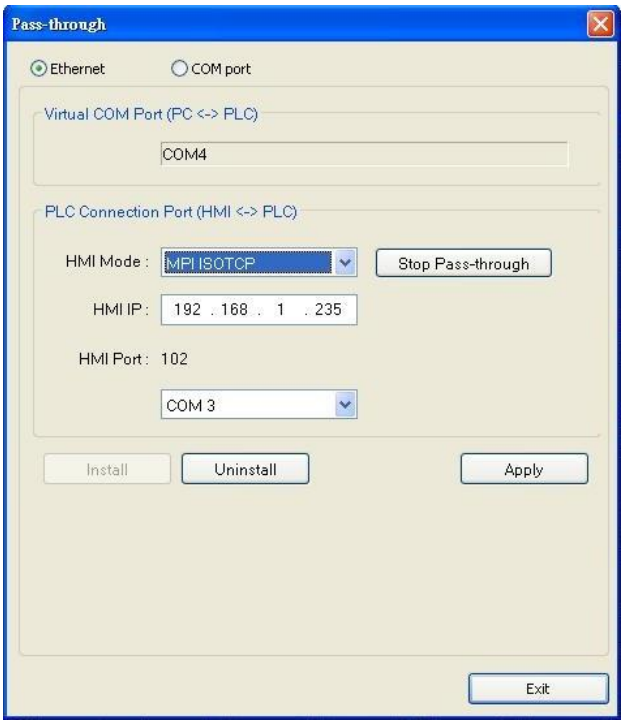


29.5.3. S7-300 MPI Connection

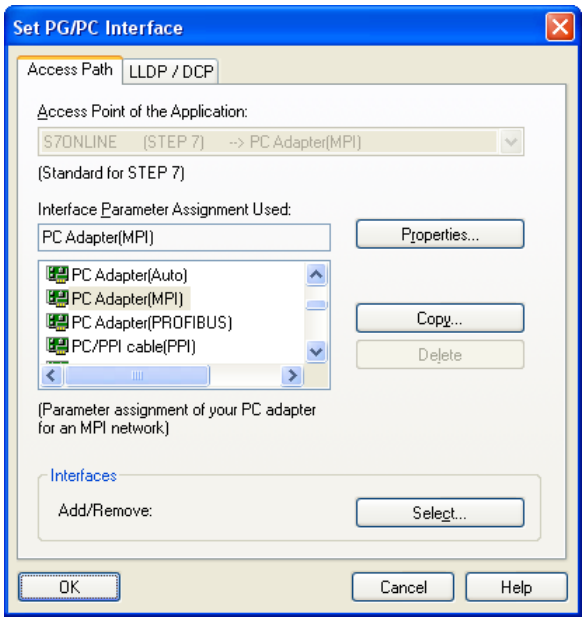
Connect via virtual COM port or Ethernet.

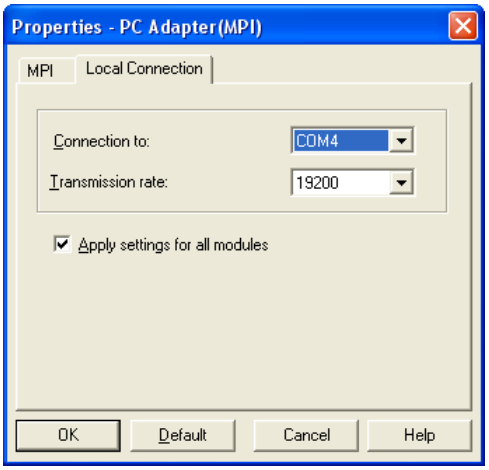
29.5.3.1. Virtual COM Port

1. In Utility Manager run [Pass-Through], in [HMI Mode] select “MPI ISOTCP” to install virtual serial port driver. Set the HMI IP address and the COM port that connects PLC, and then start Pass-through.



2. In STEP 7, go to [Option] » [Set PG/PC Interface]. Confirm that the interface used is “PC Adapter(MPI)”, and then click [Properties]. Select the same COM port as the virtual serial port. In the example COM 4 is used.

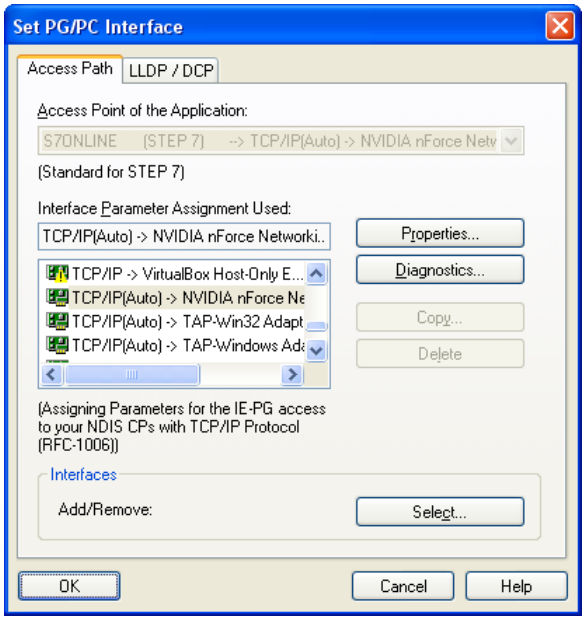




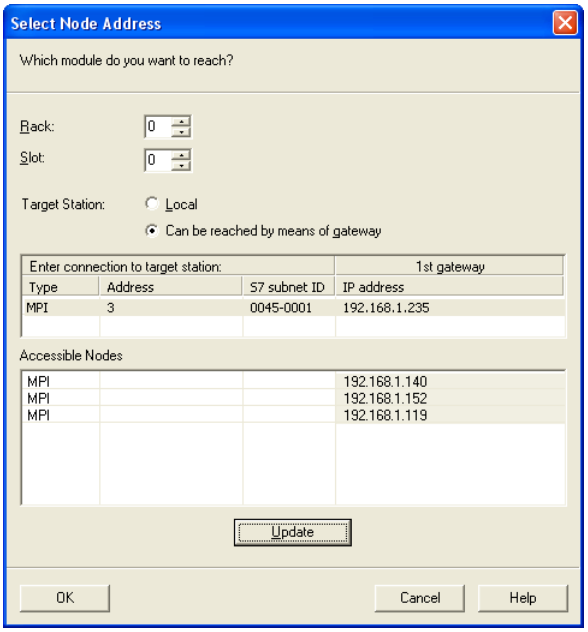
3. When finished, STEP 7 can be used to Upload / Download PLC program via HMI.

29.5.3.2. Ethernet

1. In STEP 7 go to [Option] » [Set PG/PC Interface]. As shown in the following figure, select "TCP/IP(Auto) -> *the name of the network interface card*".



2. Go to [PLC] » [Update station to PG], in [Target Station] select [Can be reached by means of gateway]. From left to right columns enter MPI, PLC station number, S7 Subnet ID, and HMI IP address. When finished, S7 can upload PLC program to STEP 7 via HMI.



29.5.4. Registers of SIEMENS Pass-through

System registers from LW-10850 to LW-10864 are used to set or indicate pass-through status of SIEMENS devices.

For more information see “22 System Registers”.

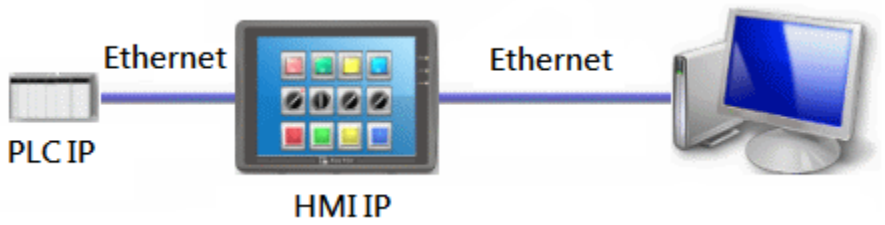
During pass-through mode, LW-10863 indicates errors and LW-10864 displays error code. The following table lists the error codes, the description of each code, and the possible reason. (The client usually refers to STEP 7 PLC program)

Error Code	Description	Possible Reason
0	Successfully executed	
1	Prohibit client from connecting HMI	HMI is already running pass-through and won’t accept any request from other client.
2	Prohibit client from connecting HMI	When LW-10850 is set to 1, the client IP for connecting HMI is different from the IP specified in LW-10858 ~ LW-10861.
3	Invalid communication protocol	Incorrect setting in LW-10853.
4	Invalid PLC station number	The PLC station number specified in LW-10852 does not exist.
5	Delayed communication	PLC connection failure.
6	Busy communication	PLC does not accept pass-through request, please confirm PLC settings.
7	Invalid pass-through request	Environment setup failure.

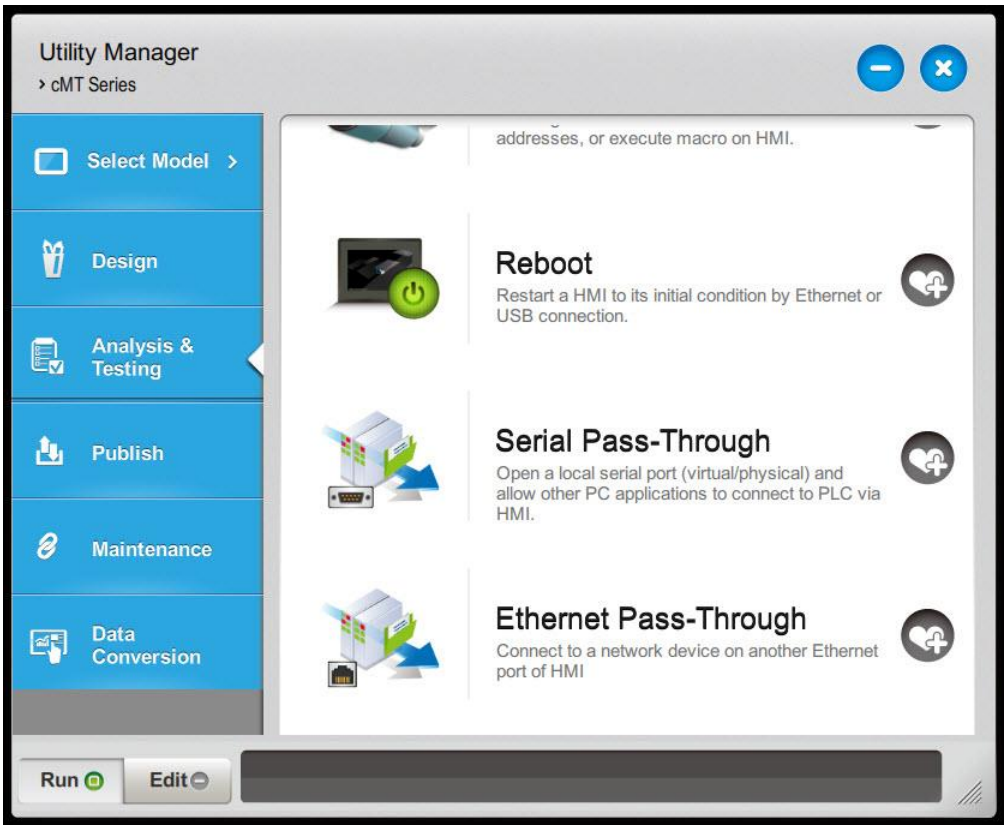
Click the icon to download the demo project. Please confirm your internet connection before downloading the demo project.

29.6. Ethernet Pass-Through

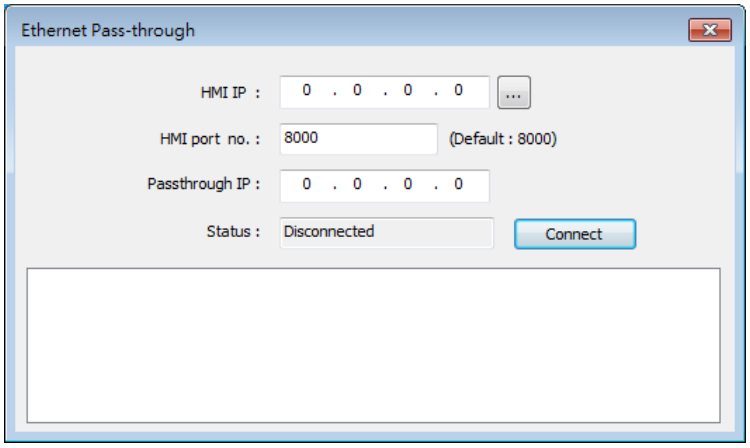
Ethernet Pass-through feature is available when both PLC and PC connect to HMI via Ethernet. Ethernet Pass-through allows running the application on PC to control PLC through HMI. This feature is only supported on cMT / cMT X Series models.



1. Launch Utility Manager, select cMT / cMT X Series, and then open Analysis & Testing tab in which Ethernet Pass-through can be found.



2. Click [Ethernet Pass-through] and then fill in the communication parameters.



Setting	Description
HMI IP	Enter HMI's IP address.
HMI port no.	Enter the port number used to connect to HMI. By default the port number is 8000.
Passthrough IP	Enter the IP address of the device to be controlled under Ethernet Pass-through mode.
Status	After filling in the communication parameters, click [Connect] to see the connection status.

Note

- One HMI can only use one Ethernet Pass-through IP.
- Ethernet Pass-through feature is disabled when system register LB-9044 (disable remote control) is ON.