# 29. Pass-through

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

29.1.	Overview	
29.2.	Serial Pass Through Ethernet Mode	
29.3.	Serial Pass-Through COM Port Mode	
29.4.	Pass-through Control	
29.5.	SIEMENS S7-200 PPI and S7-300 MPI Pass-through Settings	
29.6.	Ethernet Pass-Through	



### 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].

nterface (PC <-> HM)					
Ethernet	COM por	rt			
Virtual COM Port	(PC <-> PLC)				
F	Please install v	veintek virt	ual seri	al port driv	er
ſ	Install		Unins	tall	
Settings of Destin	ation HMI				
Settings of Destin	adon min				
	Mode :			-	
	IP :				
Communic	ation port :		-	(Default:	8000)
				(Delduit.	0000)
Pass-thr	ough port :		*		
PLC o	onnection :		-	(LW-9902	2 on HMI))
					Apply



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



 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.

Ports (COM & LPT)

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

	Virtual Serial Port (COM3) Properties
	General Port Settings Driver Details
Advanced Settings for COM3	<u>B</u> its per second: 9600 ▼
☑ Use FIFO buffers (requires 16550 compatible UAR	<u>D</u> ata bits:
Select lower settings to correct connection problem	Parity: None
Select higher settings for faster performance.	<u>S</u> top bits: 1
Receive Buffer: Low (1)	Elow control: None
<u>T</u> ransmit Buffer: Low (1)	Advanced Restore Defaults
COM Port Number: COM3	
	OK Cancel

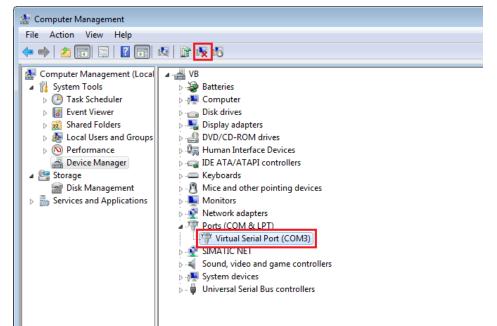
#### 29.2.3. Steps to Uninstall the Virtual Serial Port

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

Ports (COM & LPT)



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.

Confirm Device Uninstall		
Virtual Serial Port (COM3)		
Warning: You are about to uninstall this device from your system.		
Delete the driver software for this device.		
OK Cancel		

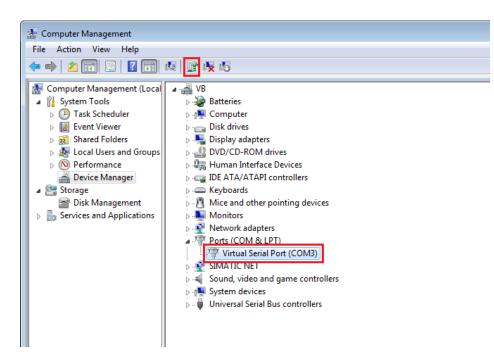
### 29.2.4. Steps to Update Virtual Serial Port Driver

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



 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.

	×
🚱 🧕 Update Driver Software - Virtual Serial Port (COM3)	
Browse for driver software on your computer	
Search for driver software in this location:	
C:\Users\user\Documents	
✓ Include subfolders	
Let me pick from a list of device drivers on my computer This list will show installed driver software compatible with the device, and all driver software in the same category as the device.	
Next Can	cel

### 29.2.5. Settings of Ethernet mode

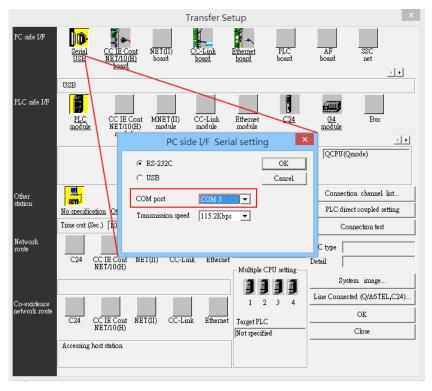
After installing the virtual serial port driver, follow the steps to use Ethernet mode of passthrough feature.

- 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.



Pass-through	
Ethernet     COM port	
Virtual COM Port (PC <-> PLC)	
СОМЗ	
Install	
Settings of Destination HMI	
Mode : Normal 💌	
IP: 192.168.1.123	
Communication port : 8000    (Default : 8	8000)
Pass-through port : 2000	
PLC connection : COM 1 (LW-9902	on HMI))
	Apply
Destination COM Port	
Сом <b>Сом</b> Еther	net
HMLIP	Virtual COM

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.

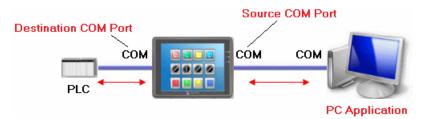


5. With the correct configurations, upon execution of PLC application on PC, HMI will be



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.



Pass-through	×
C Ethernet COM port	
HMI IP :	•
Get HMI Communi	cation Parameters
HMI work mode : Unkn	own
Source COM Port (PC -> HMI)	
COM 1	RS232 -
Baud rate : 9600 💌	Data bits : 7 Bits 💌
Parity: None	Stop bits : 1 Bit
Destination COM Port (HMI -> PLC)	
COM 3 💌	RS232 -
Baud rate : 9600 💌	Data bits : 7 Bits 💌
Parity : None	Stop bits : 1 Bit
Start Pass-through Stop Pass	-through
	Exit

Setting	Description	
HMI IP	HMI IP address.	
Get HMI Communication	Reads the settings of Source and Destination COM	
Parameters	port. Click this button to update the communication	
	parameters.	
Source COM Port (PC->HMI) /	The communication parameters of Source and	
Destination COM Port (HMI-	Destination COM Port are displayed.	
>PLC)	The settings will be applied when [Start Pass-	
	through] is clicked.	
Baud rate /	Source and Destination COM Port parameters	
Data bits /	should be set to be same. Since [Source COM Port]	
Parity /	connects PC, select RS-232 mode in most situations;	
Stop bits	[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	
Normal The work mode after reading the settings of	
	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 passthrough 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.

SIEMENS PLC Pass-Through Settings	Cattings
<ul> <li>Disable pass-through</li> <li>Designate client IP</li> <li>IP address : 192 , 168 , 0 , 119</li> </ul>	Settings
OK Cancel	
Interval of block pack (words) : 5	
Max. read-command size (words): 32	
Max. write-command size (words): 32 🚽 Pass-Through	Settings
ок	Cancel

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

Communications		E
Address Host: Remote: PLC Type:	FAE-PC1 192 . 168 . 1 . 28 Unknown	TCP/IP(Auto) -> NVIDIA nForce Network Host FAE-PC1 Unknown 192.168.1.28 Double-Click to Refresh
Network Parameters		
Interface:	TCP/IP(Auto) -> NVIDIA nForce Networki	
Protocol:	ТСРЛР	
Connection Timeout		
Enter a timeout for receiving d load may require a higher time	ata. Connections with a high traffic out value.	
Timeout:	3 seconds	
Set PG/PC Interface		OK Cancel

### 29.5.3. S7-300 MPI Connection

Connect via virtual COM port or Ethernet.

### 29.5.3.1. Virtual COM Port

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





Ethernet	O COM port	
Virtual COM P	Port (PC <-> PLC)	
	СОМ4	
PLC Connecti	on Port (HMI <-> PLC)	
HMI Mode	MPLISOTCP	Stop Pass-through
HMLIP	: 192.168.1.235	5
HMI Port	: 102	
	СОМ 3	~
Install	Uninstall	Apply

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.

Set PG/PC Interface	2
Access Path LLDP / DCP	
Access Point of the Application:	
S70NLINE (STEP 7)> PC Adapter(N	(PI) 🔽
(Standard for STEP 7)	
Interface Parameter Assignment Used:	
PC Adapter(MPI)	P <u>r</u> operties
PC Adapter(Auto)	
PC Adapter(MPI) PC Adapter(PROFIBUS)	Сору
PC/PPI cable(PPI)	Delete
	Dejete
(Parameter assignment of your PC adapter	
for an MPI network)	
Interfaces	
Add/Remove:	Select
ОК	Cancel Help



per	ties - PC Adapter(MPI)		
PI	Local Connection		
-	nnection to: nsmission rate:	COM4 19200	• •
•	Apply settings for all modules		

Cancel

Help

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

<u>D</u>efault

ΟK

### 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".

Set PG/PC Interface	×
Access Path LLDP / DCP	
Access Point of the Application:	
STONLINE (STEP 7)> TCP/IP(Auto) (Standard for STEP 7)	-> NVIDIA nForce Nety
Interface <u>P</u> arameter Assignment Used: TCP/IP(Auto) -> NVIDIA nForce Networki	P <u>r</u> operties
TCP/IP -> VirtualBox Host-Only E 🔥	Diagnostics
In the second s	Сору
TCP/IP(Auto) -> TAP-Windows Ada	Delete
(Assigning Parameters for the IE-PG access to your NDIS CPs with TCP/IP Protocol (RFC-1006))	
Add/Remove:	Sele <u>c</u> t
ОК	Cancel Help

 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.





Select Nod	e Address		5
Which modu	le do you want to reach?		
<u>R</u> ack: <u>S</u> lot: Target Static	0 4 0 4 m: C Local © Can be react	ned by means of	galeway
Enter conn	ection to target station:		1st gateway
Туре	Address	S7 subnet ID	IP address
MPI	3	0045-0001	192.168.1.235
Accessible N	lodes		
MPI			192.168.1.140
MPI			192.168.1.152
MPI			192.168.1.119
	[	Update	
ОК			Cancel Help

### 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.

	,	
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.

(The client usually refers to STEP 7 PLC program)

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



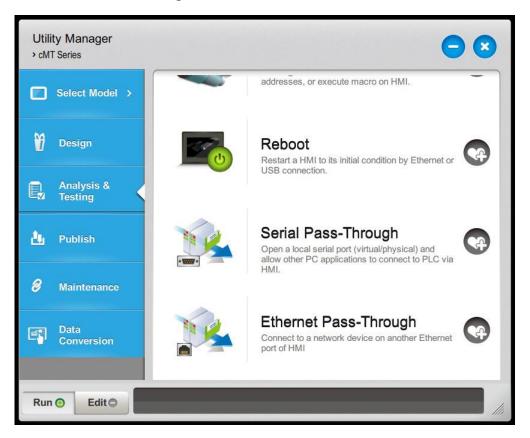
29.6.

**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.





Ethernet Pass-through	
HMI IP :	0.0.0.0
HMI port no. :	8000 (Default : 8000)
Passthrough IP :	0.0.0.0
Status :	Disconnected

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.

