29. Pass-through

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

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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.

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].

Interface (PC <-> HMI)	
Ethernet O	COM port
Virtual COM Port (PC <-	> PLC)
Please	install weintek virtual serial port driver
	Install
Settings of Destination	HMI
М	lode :
	IP:
Communication	port : (Default : 8000)
Pass-through	port :
PLC connec	tion : (LW-9902 on HMI))
	Apply
	Exit

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	Dia
Autoriced Settings for Comp	Dis per secona: 9600
☑ Use FIFO buffers (requires 16550 compatible UAR	Data bits: 8
Select lower settings to correct connection problem	Parity: None
Select higher settings for faster performance.	Stop bits: 1
<u>R</u> eceive Buffer: Low (1)	<u>∃</u> ow control: None ▼
<u>T</u> ransmit Buffer: Low (1)	Advanced <u>R</u> estore 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.

Ports (COM & LPT)

 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 Browse	
✓ 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 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.



Pa	ss-through			
	Ethernet	COM port		
	Virtual COM Po	ort (PC <-> PLC)		
		СОМЗ		
		Install Uninstall		
	Settings of Des	tination HMI		
		Mode : Normal	•	
		IP: 192.168.1	1 . 123	
	Commur	nication port : 8000	(Default : 8000)	
	Pass-1	through port:2000	•	
	PLC	C connection : COM 1	 (LW-9902 on HMI)) 	
			Apply	
Destination C	OM Port			
	col		Ethernet	
	1	0000	Emerner	
PLC			←→	
		HMUP		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.



ass-through		
C Ethernet	COM port	
HMI IP :		
	Get HMI Communication Parameters	
н	MI work mode : Unknown	
Source COM Po	rt (PC -> HMI)	
	COM 1 RS	232 💌
Baud rate :	9600 💌 Data bits : 7 B	its 💌
Parity :	None Stop bits : 1 B	it 💌
Destination CON	1 Port (HMI -> PLC)	
	COM 3 🔹	232 💌
Baud rate :	9600 💌 Data bits : 7 B	its 💌
Parity :	None Stop bits : 1 B	iit 💌
Start Pass-thro	ugh 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	Destination COM Port are displayed.
(HMI->PLC)	The settings will be applied when [Start
	Pass-through] is clicked.
Baud rate /	Source and Destination COM Port parameters should
Data bits /	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 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.

SIEMENS PLC Pass-Through Settings	Settings
 Disable pass-through Designate client IP IP address : 192 . 168 . 0 . 119 	Secongsin
OK Cancel	
Interval of block pack (words) : 5	
Max. read-command size (words) : 32 -	
Max. write-command size (words) : 32 - Pass-Through	Settings

Setting	Description	
Disable pass-through	Select this check box to disable pass-through	
	mode. By default this check box is not selected.	
Designate client IPDesignate 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.

Communications		X
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
✓ Update PLC type in pr	oject	
Network Parameters		
Interface:	TCP/IP(Auto) -> NVIDIA nForce Networki	
Protocol:	ТСРЛР	
Connection Timeout		
Enter a timeout for receiving data. Connections with a high traffic load may require a higher timeout 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 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 I	Port (PC <-> PLC)	
	COM4	
PLC Connect	ion Port (HMI <-> PLC)	
HMI Mode		Stop Pass-through
HMLIF	P: 192.168.1.235	
HMI Por	t: 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	X
Access Path LLDP / DCP	
Access Point of the Application:	
S70NLINE (STEP 7)> PC Adapter(M	(PI) 🔽
(Standard for STEP 7)	
Interface Parameter Assignment Used:	
PC Adapter(MPI)	
PC Adapter(Auto)	
PC Adapter(MPI)	
PC/PPI cable(PPI)	Delete
(Parameter assignment of your PC adapter	
Interfaces	
Add/Remove:	Sele <u>c</u> t
OK	Cancel Help





Properties - PC Adapter(MPI)		
MPI Local Connection		
Connection to:	COM4	-
Iransmission rate:	19200	-
✓ Apply settings for all modules		
OK <u>D</u> efault	Cancel	Help

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".

Set PG/PC Interface	×	
Access Path LLDP / DCP		
Access Point of the Application:		
S70NLINE (STEP 7)> TCP/IP(Auto) -> NVIDIA nForce Netv (Standard for STEP 7)		
Interface <u>P</u> arameter Assignment Used:	Properties	
TCP/IP -> VirtualBox Host-Only E	Diagnostics	
ICP/IP(Auto) -> NVIDIA nForce Ne ICP/IP(Auto) -> TAP-Win32 Adapt	Сору	
TCP/IP(Auto) -> TAP-Windows Ada	Dejete	
(Assigning Parameters for the IE-PG access to your NDIS CPs with TCP/IP Protocol (RFC-1006))		
Add/Remove:	Sele <u>c</u> t	
OK	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			X
Which module do you want to reach?				
Back: 0 Slot: 0 Target Station: C Local				
Enter conn	ection to target station:		1st gateway	
MPI	3	0045-0001	192.168.1.235	
Accessible N	lodes			
MPI MPI MPI			1921681.140 1921681.152 1921681.119	
[Update]				
OK			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 Series models.



1. Launch Utility Manager, select cMT 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.



		.
	0 0 0 0	
HMIIP :		
ort no.:	8000 (Defaul	t : 8000)
ough IP :	0.0.0.0	
Status :	Disconnected	Connect
		Connect

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

HMI IP : HMI port no. : Passthrough IP :

Ethernet Pass-through feature is disabled when system register LB-9044 (disable remote control) is ON.

