LINEEYE

Interface Converter
Instruction Manual

LAN ⇔ RS-232C	SI-60F
LAN ⇔ RS-232C	SI-60
LAN ⇔ RS-422/485	SI-65

(13th Edition)

Introduction

Thank you for your purchase of SI series. To use it correctly, you are advised to read and understand this instruction manual thoroughly. Keep this together with the warranty.

■■ Notice ■■

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- LINEEYE makes no warranty or guarantee, either expressed or implied with respect to its quality, performance, merchantability, or fitness for a particular purpose. LINEEYE shall not be liable for direct, in-direct, special, incidental, or consequential damages resulting from any defect in the product. The warranty and remedies set forth above are exclusive and in lieu of all others.

Safety Information

Be sure to read the following.

LINEEYE has developed and manufactured this product for purpose of using with electrical devices such as a computer, a personal device, a measurement device, semiconductor manufacturing equipment, a vending machine, a sequencer, display equipment and so on. LINEEYE does not manufacture this product under the purpose of using with equipment which may cause malfunction to do harm to the human body: control equipment for nuclear, aircraft equipment, life maintenance equipment, traffic signals, etc. Therefore, LINEEYE makes no guarantee with the mentioned-above use. If you use this product for the purposes mentioned above, please contact LINEEYE considering safety like Fail Safe under your responsibilities.

Danger Level

⚠ Warning	Should the device be used without following these symbols, there is a possibility of accidents, such as a death or a serious injury, occurring.
⚠ Caution	Should the device be used without following these symbols, there is a possibility of accidents, such as an injury and material damage, occurring.

* "Injury" indicates injury, burn, an electric shock, or the like which does not require hospitalization or the extended hospital visit. "Material damage" indicates damage related to a house, a building, furniture, apparatus, livestock or a pet.

⚠ Warning

- **Do not disassemble or modify the converter and AC adapter.**
  This may cause overheating, a fire, an electric shock, injury or unit malfunction.
- **Stop using the converter immediately when smoke, smells, or unusual sound emanates from itself.**
  Continuous use may cause a burn, fire, or electric shock.
- **Keep the products dry. Keep them away from water.**
  Failure to do so may cause overheating, an electric shock, or unit malfunction.
- **Do not insert the metal scrap or the rubbish such as lead wires into the opening.**
  Doing so may cause overheating, an electric shock, or unit malfunction.
- **Never touch the converter and AC adapter with wet hands.**
  Doing so may cause an electric shock.
- **Never use the converter in the place where an inflammable gas leaks.**
  Doing so may cause ignition.
- **Do not conduct the installation or wiring work when power is applied.**
  Doing so may cause an electric shock or unit malfunction.

■ **Do not use the damaged cables.**

Doing so may cause fire by overheating.

■ **Use the included AC adapter or ones specified by LINEEYE.**

Failure to do so may cause overheating, fire, an electric shock, or injury.

■ **Do not connect the power cord to an outlet that has an illegal number of connections.**

Doing so may cause fire by overheating.

⚠ Caution

■ **Do not install the converter in the unstable or vibrating place.**

Doing so may cause unit malfunction or injury.

■ **Do not install the converter in any temperature and humid places, or any places which has the extreme temperature change.**

Doing so may cause unit malfunction.

■ **Do not install the converter in any places exposed to direct sunlight.**

Doing so may cause a burn or unit malfunction by overheating.

■ **Be sure not to short-circuit the pins on the connector.**

Doing so may cause unit malfunction or injury.

■ **Use the included AC adapter with the converter only.**

Failure to do so may cause fire or injury by overheating.

■ **Be sure to hold the converter when you disconnect the AC adapter from it.**

Failure to do so may cause fire or an electric shock by damaging a cord.

■ **Do not place the cord of the AC adapter near heating equipment.**

Doing so may cause fire or an electric shock by melting the cord's cover.

■■■ Contents ■■■

1-1. Overview

SI-60F/SI-60/SI-65 are communication converters to convert asynchronous communications for devices with the serial interface, which is often used in the FA field, into TCP/IP communications on Ethernet LAN. These converters have built-in Lantronix XPort at the LAN interface part, and enable a high- reliability communications.

To create software using socket communications enables to control devices with the serial ports from a PC on the network. Also, installing the included COM port redirector makes you control those devices by using the communications method for the serial.

1-2. Specifications

		SI-60F	SI-60	SI-65
Serial	Interface	RS-232C	RS-232C	RS-422/485
		Dsub9 Pin (Male) #4-40 UNC (inch screw)	Dsub25 Pin (Female) M2.6 mm Screw	5.08mm 6 pole terminal block (Press-to-screw pitch type) *1
		DTE fixed	DTE/DCE Switchable	Able to set the terminator.
	Synchronous Method	Asynchronous		
	Baud Rate (bps)	300/600/1200/2400/4800/9600/19200/38400/57600/115200/230400/460800*1/921600*1		
	Data Frame Structure	Data (7 or 8) + Parity (Even, Odd or None) + Stop (1 or 2)		
	Flow Control	Xon/off, RTS/CTS		Xon/off, Line monitoring
	LED Display	SD, RD,	SD, RD, RS, CS, (6-20)	SD, SD/RD, DRIVER ACTIVE
	Surge Protection	15KV ESD		
LAN	Interface	Ethernet IEEE802.3 RJ-45 connector 10BASE-T/100BASE-TX		
	Protocol	ARP, UDP/IP, TCP/IP, ICMP, SNMP, TFTP, Telnet, DHCP, BOOTP, HTTP, AutoIP		
	LED Display	10BASE-T, 100BASE-TX, Activity, Link, Full/Half duplex		
	Transformer Insulation	1500V		
Management		Web manager, Telnet connection, Serial port connection		
Compatible OS *2		Microsoft Windows x86: XP/2003 Server/Vista/Windows7/2008 Server x64: Vista/Windows7/2008 Server		
Power Supply		DC5 to 25V / 250 to 50mA Supplied from an AC adapter or DC-IN.	DC5 to 12V / 300mA Supplied from an AC adapter or Dsub connector.	DC5 to 12V / 300mA Supplied from an AC adapter or terminal block.
Power Consumption*3		2.8VA	4.2VA	4.9VA
Temperature		Operating: -10 to 50 degree. Storage: -20 to 80 degree.	Operating: -10 to 50 degree *4 5 to 95% RH Storage: -20 to 80 degree.	
Humidity		5 to 95% RH		
External Dimension (mm)		58(W) x 88(D) x 24(H)	65(W) x 95(D) x 24(H)	65(W) x 90(D) x 24 (H)
Weight (g)		170	200	200
Accessories		AC adapter, Utility CD-ROM, Instruction manual, Warranty		

*1 SI-60 cannot be used at 460.8Kbps and 921.6Kbps.

*2 If using the DeviceInstaller(v4.3.0.1)

*3 If using the attached AC adapter (AC100V).

*4 When the power supply voltage, which is supplied from the connector (SI-60) or the terminal block (SI-65), is DC10V or higher, the operating temperature is limited up to +40 degree.

1-3. Unpacking and Product Composition

Make sure of the following when unpacking the product:

Converter	: 1
AC Adapter (DC6V 500mA)	: 1
Utility CD-ROM	: 1
Instruction Manual	: 1
Warranty	: 1

Please let your LINEEYE distributor or LINEEYE know if you find any damage to the product caused by transportation, or if there are accessories lacking.

1-4. CD-ROM Included

The converter includes the following CD-ROM.

■ Utility CD-ROM

This CD-ROM includes the document file such as the instruction manual, the sample program which is helpful to develop software by using the converter.

Also, it includes the following: the document file such as the XPort user's manual, XPort Installer, and the utility software for XPort such as COM port redirector issued by Lantronix.

To learn more detail about the contents, read README_E.TXT on the root folder of CD-ROM.

> Firmware, utility software, and a user's manual for XPort may be updated. You can download the latest versions from website of Lantronix (http://www.lantronix.com).

1-5. Updating the XPort version (XPort-03 to XPort-04)

Updated Xport (Xport-03 to Xport-04) does not affect any specifications of SI-60/65/60F. And, you can use SI-60/65/60F of Xport-03 and Xport-04 together without any concerns.

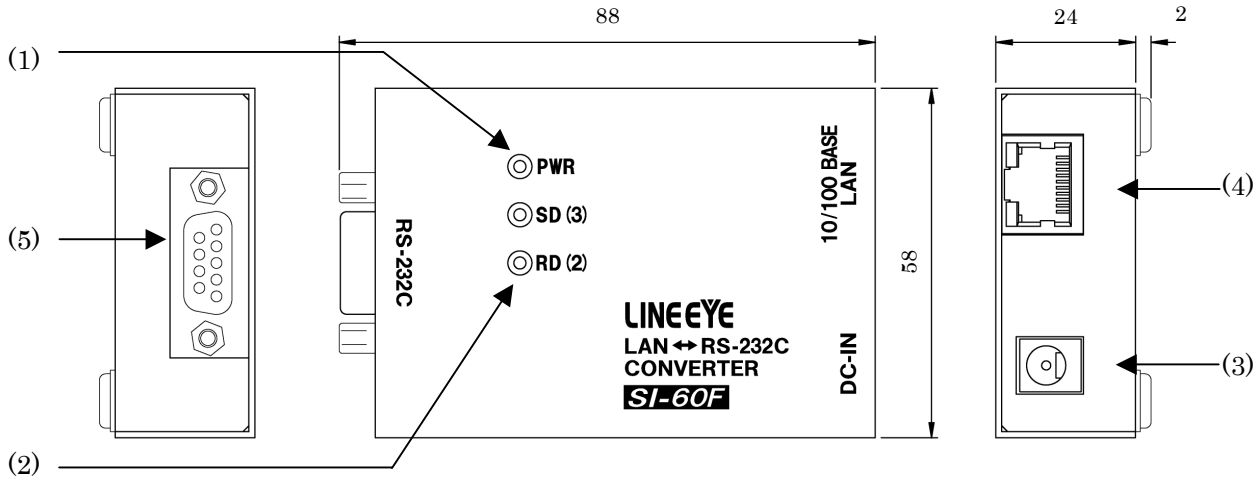
■ Differences

Differences	Description
Product	Xport-03 -> Xport-04 Smoked LED lends but the specifications of LEDs are the same.
Firmware	Ver 6.6.0.2 -> Ver 6.7.0.1 Correct the bug of DNS request. (If there is "-" in the domain name, DNS request cannot work. LINEEYE does not recommend using it.)
Web Manager	Ver 1.7.0.1 ->Ver 1.8.0.1 (Need to be changed to have the same version with Lantronix. There is no change on the Xport.)

2-1. SI-60F Overview and Features

SI-60F is a converter to convert asynchronous communications for devices equipped with the RS-232C interface to TCP/IP communications on Ethernet LAN. It connects RS-232C interface device to a PC without a serial port via LAN, with a small DTE(fixed) Dsub9 pin (male).

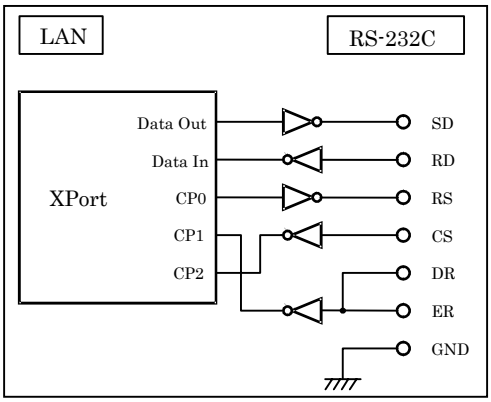
2-2. SI-60F Panel Explanation



(1)	Power LED	Lights when turning on the power.
(2)	Data Status LED	Indicates the data transmission/ reception status for RS-232C. Lights when the pin signal corresponding to Dsub connector is above +3V.
(3)	AC Adapter Jack	Is a socket to connect to the AC adapter.
(4)	Ethernet Connector	Ethernet IEEE802.3 RJ-45connector 10Base-T/100Base-TX auto-detection available. Has a LED which shows a link and activity status.
(5)	RS-232C Connector	Dsub9 pin (male) Screw: #4-40 UNC(inch screw)

■ RS-232C Connector Pin Assignment

Pin No.	Name	I/O Direction *1 DTE	Description
1	CD	-	non-connected
2	RD	In	Reception Data
3	SD	Out	Transmission Data
4	ER	In	Internal connection to 6 pin *2
5	GND	-	Signal Grand
6	DR	In	Internal connection to 4 pin *2
7	RS	Out	Transmission Request
8	CS	In	Transmission Permit
9	CI	-	non-connected



*1 "Out" means a direction to output signals from the converter.
"In" means a direction to input signals to the converter.

*2 Inputs the negated signals to the CP1 terminal on a built-in XPort.

2-3. SI-60F Cable Connection

■ LAN

Connect by the proper UTP cable to the Ethernet connector.

For 10Base-T ---------- Category 3, 4, 5
For 100Base-TX ---------- Category 5

Note: Although the standardized length of a LAN cable is max. 100 meters, use the cable as short as possible if there is much noise.

■ RS-232C

The specification of SI-60F is DTE. Connect by the proper RS-232C cable which fits the shape of the RS-232C connector on the target devices. Then, make sure of the input/output specification of signal pins.

(e.g.) When connecting to the device, which specification is DTE on the input/output of the RS-232C, use the RS-232C cable of straight connection.

We provide the following optional cables.

- **SI-RS259**
  Is the RS-232C cable for connecting the serial port (Dsub9 pin - male) of SI-60F to the device (Dsub25 pin, female) of DCE specification.

- **LE2-8C**
  Is the AUX cable for connecting the AUX port (Mini DIN8 pin, female) of analyzers, (LE-8200/3500/2500/7200/3200/2200/1200) to SI-60F.

■ Power Source

Supply power to the converter in either of two ways.

- Supplies power by plugging the included AC adapter or the optional AC adapter into the AC adapter plug. The included AC adapter is for AC100V power source. When requiring AC200V power source, an optional AC adapter is available.
- When supplying from the external DC power, it needs DC5 to 25V (1.5W) from AC adapter plug.

Note: Connection Plug: Outer diameter is 5.5mm. Inner diameter is 2.1mm. Length of top of the plug is 9.5±0.3mm. (Possible to use both center plus and center minus plug.)

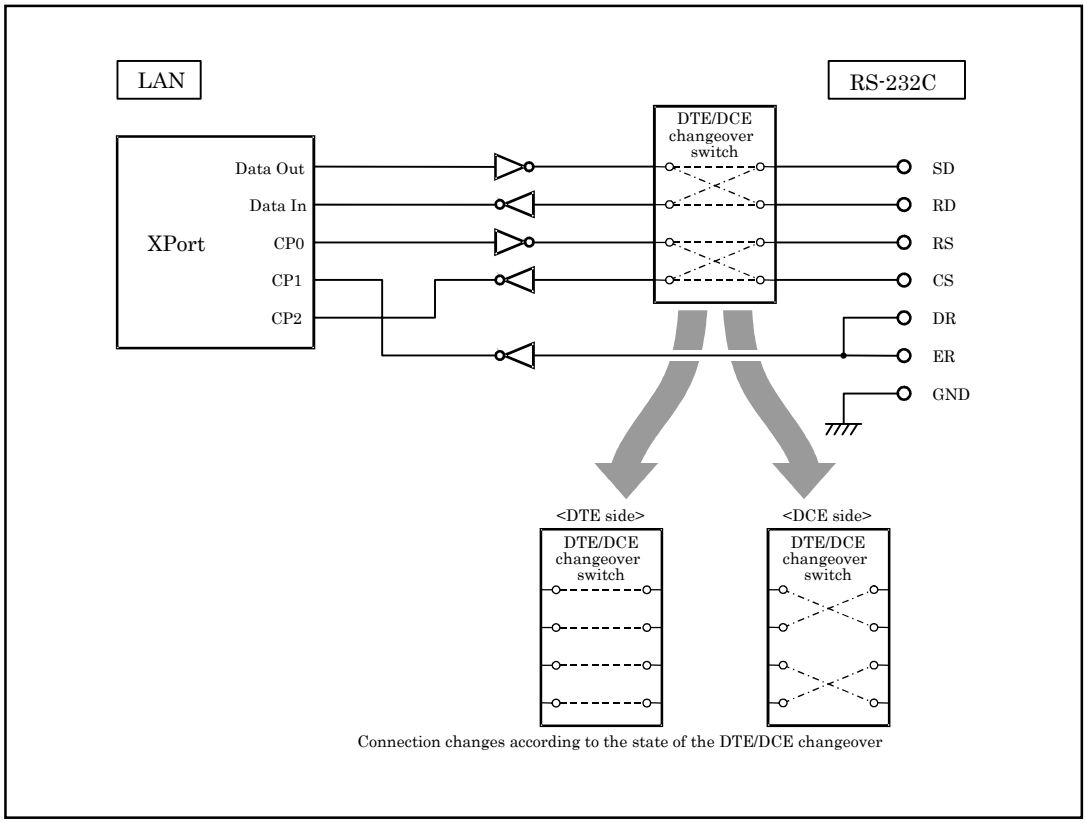
2-4. SI-60F Built-in XPort Setup

Depending on the network environments or the usage, the built-in XPort setup of the converter is required to change. To learn about XPort setup, read “XPort Setup” in Chapter 5.
In addition, when using the COM port redirector, read “COM Port Redirector” in Chapter 6.

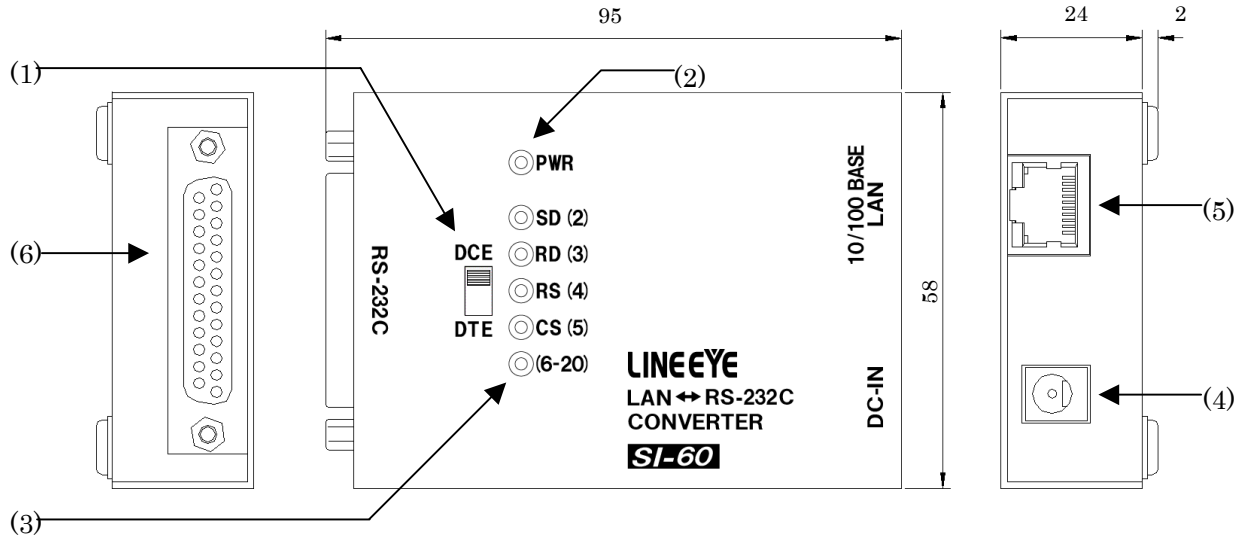
3-1. SI-60 Overview and Features

SI-60 is a communication converter to convert asynchronous communications for devices equipped with the RS-232C interface to TCP/IP communications on Ethernet LAN. Since the slide switch on the converter is designed for DTE/DCE switchable, any devices can be connected to the RS-232C side.

The following chart shows the internal structure of the converter.



3-2. SI-60 Panel Explanation



(1)	DTE/DCE Switch	Changes the RS-232C connector specification of the converter to DTE or DCE.
(2)	Power Supply LED	Lights when powering the converter.
(3)	Data Status LED	Indicates a data transmission/ reception status for the RS-232C. Lights when the pin signal corresponding to Dsub connector is above +3V.
(4)	AC Adapter Jack	Is a socket to connect to the AC adapter.
(5)	Ethernet Connector	Ethernet IEEE802.3 RJ-45connector 10Base-T/100Base-TX auto-detection available. Has a LED which shows a link and activity status.
(6)	RS-232C Connector	Dsub25 pin (Female) M2.6 mm Screw

■ RS-232C Connector Pin Assignment

Pin No. *1	Name	I/O Direction *2		Description
		DTE	DCE	
1	FG	-	-	Frame Grand
2	SD	Out	In	Transmission Data
3	RD	In	Out	Reception Data
4	RS	Out	In	Transmission Request
5	CS	In	Out	Transmission Permit
6	DR	In	In	Internal connection to 20 pin *3
7	GND	-	-	Signal Grand
9	+5V IN	-	-	External power supply input *4
20	ER	In	In	Internal connection to 6 pin *3

*1 Pins not mentioned in this table indicate the non-connected terminals.
*2 "Out" means a direction to output signals from the converter.
"In" means a direction to input signals to the converter.
*3 Inputs the negated signals to the CP1 terminal on a built-in XPort.
*4 Do not connect to the AC adapter when supplying the power through +5V IN (9 Pin).

3-3. SI-60 Cable Connection

■ LAN

Connect by the proper UTP category cable which matches the Ethernet connector.

For 10Base-T ---------- Category 3, 4, 5

For 100Base-TX ---------- Category 5

Note: Although the standardized length of a LAN cable is max. 100 meters, use the cable as short as possible if there is much noise.

■ RS-232C

Connect with the proper RS-232C cable which fits the shape of the RS-232C connector on the target devices. Then, make sure of the input/output specification of signal pins and connection of the RS-232C cable. Set DTE/DCE switch.

(eg.) When connecting to the PC which is DTE specification using the RS-232C cable of straight connection, set as DCE for the switch.

We provide the following optional cables.

- **SI-RS259**

  Is the RS-232C cable for connecting the serial port (Dsub9 pin, male) of the PC to SI- 60 (set DCE for switch).

- **LE2-8C**

  Is the AUX cable for connecting the AUX port (MINI DIN 8 pin, female) of analyzers, (LE-8200/3500/2500/7200/3200/2200/1200) to SI-60 (set DTE for the switch).

■ Power Source

Supply power to the converter in either of two ways.

- Supplies power by plugging the included AC adapter or the optional AC adapter into the AC adapter plug.

  The included AC adapter is for AC100V power source. When requiring AC200V power source, an optional AC adapter is available.

- Supply DC5V to 12V(max. 300mA) from 9pin of RS-232C connector.

Note: Do not connect an AC adapter when supplying from RS-232C connector.

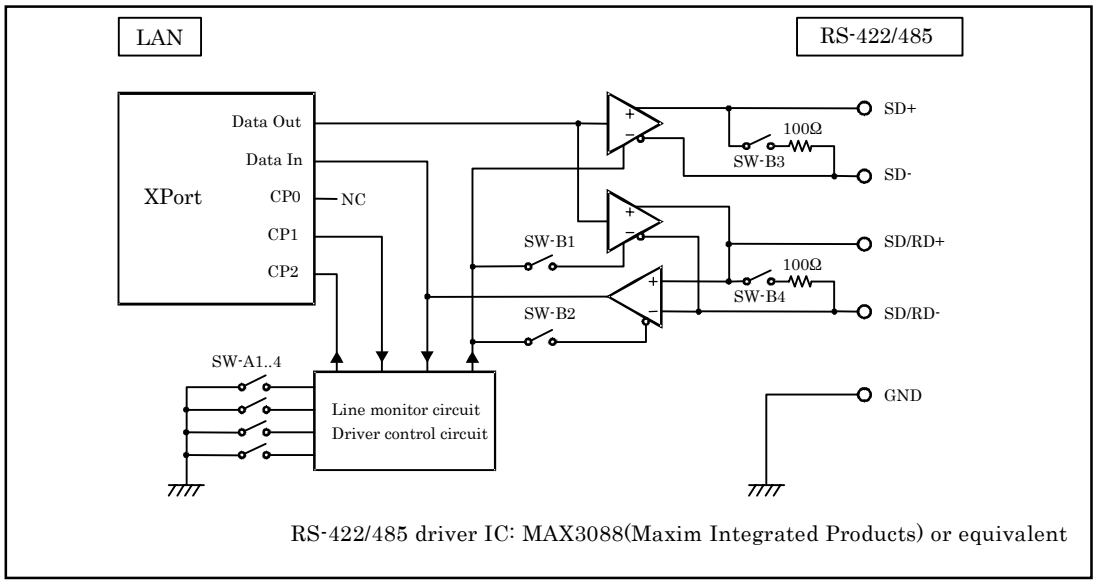
3-4. SI-60 Built-in XPort Setup

Depending on network environments or the usage, the built-in XPort setup of the converter is required to change. To learn about XPort setup, read “XPort Setup” in Chapter 5.
In addition, when using the COM port redirector, read “COM Port Redirector” in Chapter 6.

4-1. SI-65 Overview and Features

SI-65 is a communication converter to convert asynchronous communications for devices equipped with the RS-422/485 interface to TCP/IP communications on Ethernet LAN. Since the converter supports both two-wire and four-wire full duplex, using the device allows you to support various systems.

The following chart shows the internal structure of the converter.



< Line Monitoring Function >

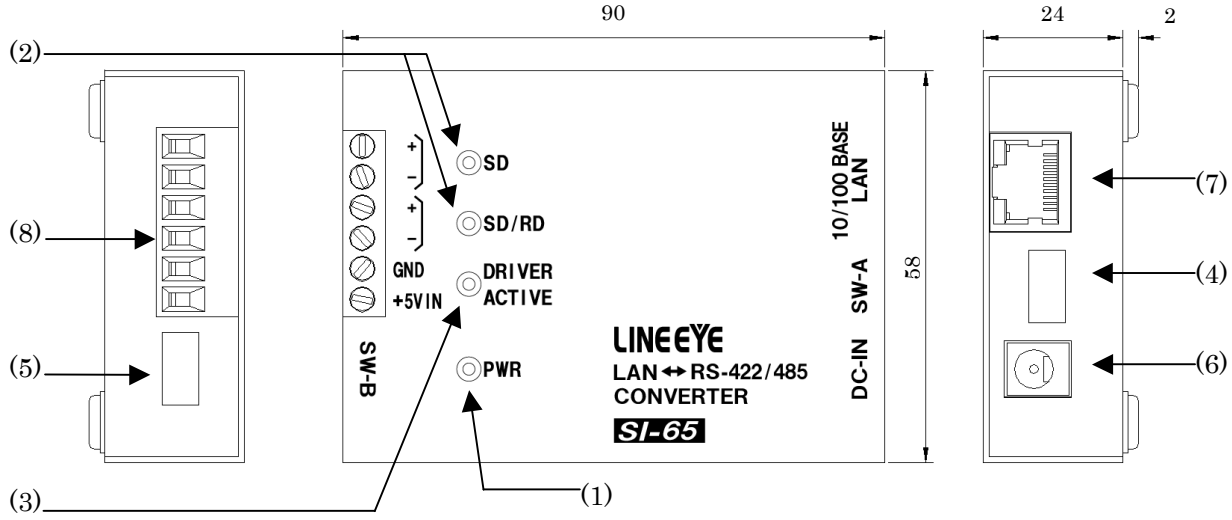
RS-485 communications of two-wire half duplex is required to send data after confirming that any devices have not sent data into the RS-485 line. The line monitoring function allows to detect that any devices have not sent data into the RS-485 line, and to conduct the flow control.

To use this function, the flow control of built-in XPort is required to set to CTS/RTS (Hardware).

RS-485 Line Condition	Flow Control Condition
The period of time from when to detect a space bit of the data in the RS-485 line sent by another device, to when not to get to continuously detect a space bit over internal timer time of the converter, while the RS-485 driver of the converter is not active.	Prohibits sending data from the converter to the RS-485 circuit.
The period of time when not to detect a space bit in the RS-485 line which another device continuously sends over internal timer time of the converter, or when the RS-485 driver of the converter is active.	Permits to send data from the converter to the RS-485 circuit.

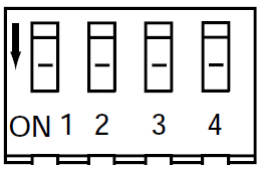
Note: This function allows the flow control to operate in a direction of sending only. The flow control in a direction of receiving does not operate.

4-2. SI-65 Panel Explanation



(1)	Power Supply LED	Lights when turning on the power.
(2)	Data Status LED	Indicates a data transmission/ reception status for RS-422/485. Blinks the SD LED if there is data from LAN to RS-422/485. Blinks the RD LED if there is data from RS-422/485 to LAN.
(3)	Driver Status LED	Lights when the driver for RS-485 is active.
(4)	Dip Switch A	Selects the line monitoring function and driver control.
(5)	Dip Switch B	Selects the communication method, terminator, etc.
(6)	AC Adapter Jack	Is a socket to connect to the AC adapter.
(7)	Ethernet Connector	Ethernet IEEE802.3 RJ-45 connector. 10Base-T/100Base-TX auto-detection available. Has the LEDs which show a link and activity status.
(8)	RS-422/485 Terminal Block	5.08mm pitch 6pole terminal block (Press-to-screw type) Standard Torque: 0.5Nm/M3. (Refer to "4-4. SI-65 cable connection")

*1: Press down the DIP switch to switch on and press up to switch off.



■ 6 Pole Terminal Block Pin Assignment for RS-422/485

Terminal No.	Name	Full Duplex Mode *1		Half Duplex Mode *1	
		I/O Direction *2	Description	I/O Direction *2	Description
1	SD+	Out	Transmission Data +	-	Cannot use *3
2	SD-	Out	Transmission Data –	-	Cannot use *3
3	SD/RD+	In	Reception Data +	I/O	Transmission/Reception Data +
4	SD/RD-	In	Reception Data –	I/O	Transmission/Reception Data -
5	GND	-	Signal Grand *4	←	
6	+5V IN	-	External Power Input *5	←	

*1 Can switch by the dip switch.
*2 "Out" means a direction to output signals from the converter.
"In" means a direction to input signals to the converter.
"I/O" means both directions to input and output.
*3 Do not connect anything when using the half duplex mode.
*4 Connect GND to prevent devices from over voltage damage.
*5 Do not plug the AC adapter when powering from +5V IN (No.6).

4-3. SI-65 Hardware Setup

The two 4-position dip switches on the converter allows you to conduct the following setups: the line monitoring function, the driver control method, terminator enable/disable, and echo back enable/disable.

■ SW-A No. 1-3 (Baud Rate Setup)

Following communication speed (baud rate) you wish to use, this setup is to set the internal timer used for the non-communication monitoring circuit and driver control circuit. Using this timer conducts to monitoring non-communication condition more than 16 bits in RS-485 line and to control the RS-485 driver.

Speed (bps) [ ] indicates a representative example.	SW-A			Internal Timer *1 (ms)
	No.1	No.2	No.3	
Over 300 [300, 600]	OFF	OFF	OFF	57
Over 1200 [1200]	ON	OFF	OFF	14.3
Over 2400 [2400]	OFF	ON	OFF	7.1
Over 4800 [4800]	ON	ON	OFF	3.6
Over 9600 [9600]	OFF	OFF	ON	1.8
Over 19200 [19200]	ON	OFF	ON	0.9
Over 38400 [38400, 57600]	OFF	ON	ON	0.45
Over 115.2k [115.2k, 230.4k]	ON	ON	ON	0.11

*1 The internal timer is accurate at +10 to -10%.

At 460kbps or 920kbps, CPU performance of XPort is required to set to high. For more information, see the XPort user's manual.

SW-A	Meaning	OFF	ON
No.4	RS-422/485 transmission driver control	Active	Auto

■ SW-A No.4 (Driver Control)

Selects two kinds of control methods in the RS-422/485 driver control line of the converter: active and auto.

- OFF (Active) Setting

To keep the driver active, set the CP1 of the Xport IO pin "L"(active). ("H" is for non-active.) The default setting of CP1 is a low level.

- ON (Auto) Setting

This setting detects the first space bit (start bit) in the string which you wish to send from the converter to the RS-422/485 line, and automatically makes the driver active. The active status of the driver keeps from the last space bit in the string being sent until the internal timer time being set. After that, the driver automatically becomes non-active.

SW-B	Meaning	OFF	ON
No.1	Select a line mode	RS-422 (full duplex)	RS-485(half duplex)
No.2	Echo reception of transmission data	With echo back	Without echo back
No.3	Terminal control between SD+ and SD-.	Without terminal control	With terminal control(100 ohm)
No.4	Terminal control between SD/RD+ and SD/RD-.	Without terminal control	With terminal control(100 ohm)

■ SW-B No1 (Line Mode)

Selects the RS-422/485 line specification which is connected to the converter.

- OFF (Full Duplex) Setting

This setting makes the converter operate in the full duplex RS-422 mode. Communicated data is sent from SD+ and SD- terminals, and is received to SD/RD+ and SD/RD- terminals.

- ON (Half Duplex) Setting

This setting makes the converter operate in the half duplex RS-485 mode. Communicated data is sent and received through SD/RD+ and SD/RD- terminals.

■ SW-B No.2 (Echo Back Setup)

When you communicate in the half duplex RS-485 mode, setting this switch to ON prohibits the data, which is sent from the converter to the RS-485 line, is echoed back to the LAN host. Therefore, while the driver is active, the ON setting makes the receiver non-active. The full duplex RS-422 mode does not echo back data even when this switch is in the OFF setting.

Note: Be sure to set this switch to OFF in the full duplex RS-422 mode.

■ SW-B No.3 (Terminal End Between SD+ and SD-)

Setting this switch to ON inserts the terminator 100 ohm between SD+ and SD- (terminal block 1, 2) in a direction of parallel.

■ SW-B No.4 (Terminal End Between SD/RD+ and SD/RD-)

Setting this switch to ON inserts the terminator 100 ohm between SD/RD+ and SD/RD- (terminal block 3, 4) in a direction of parallel.

4-4. SI-65 Cable Connection

■ LAN

Connect by the proper UTP category cable which matches the Ethernet connector.

For 10Base-T ---------- Category 3, 4, 5
For 100Base-TX ---------- Category 5

Note: Although the standardized length of a LAN cable is a maximum 100 meter, use the cable as short as possible.

■ RS-422/485

After confirming the RS-422/485 specification of the target device, connect to the device by using the cable of which conductor size should be AWG24-14, single wire 0.2- 2.5mm², twisted cable 0.12- 1.5mm², L=6mm can be removed. If using the ferrule terminal, ferrule diameter should be 1.5mm or less. Following are the recommendation.

Phoenix Contact Inc. "AI0.25-8YE AWG24"
JST Mfg. Co., Ltd." TUB-05 AWG26-22"

There is not a specific RS-422/485 cable. Following is the recommended cable.

UL2464 signal cable shield twisted pair AWG24-22.

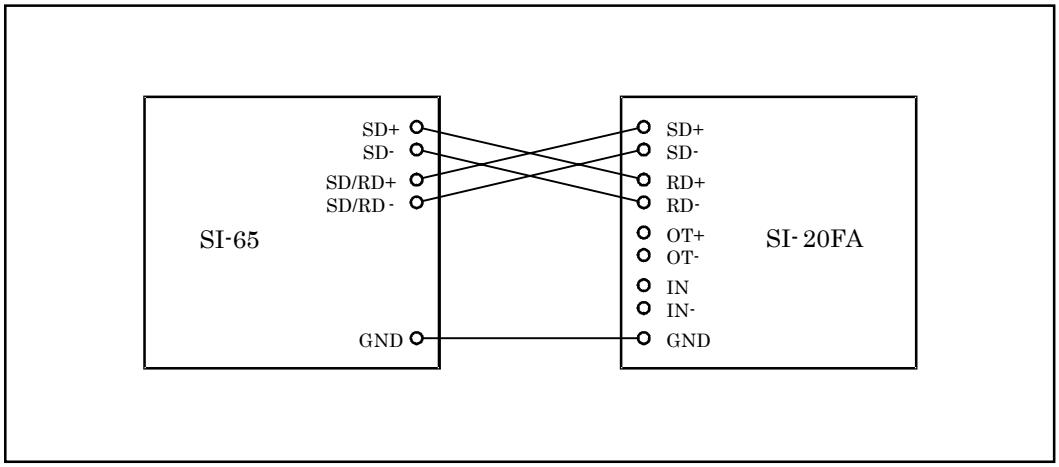
Note: To prevent the devices from over voltage damage, be sure to connect GND.

<Transfer Distance>

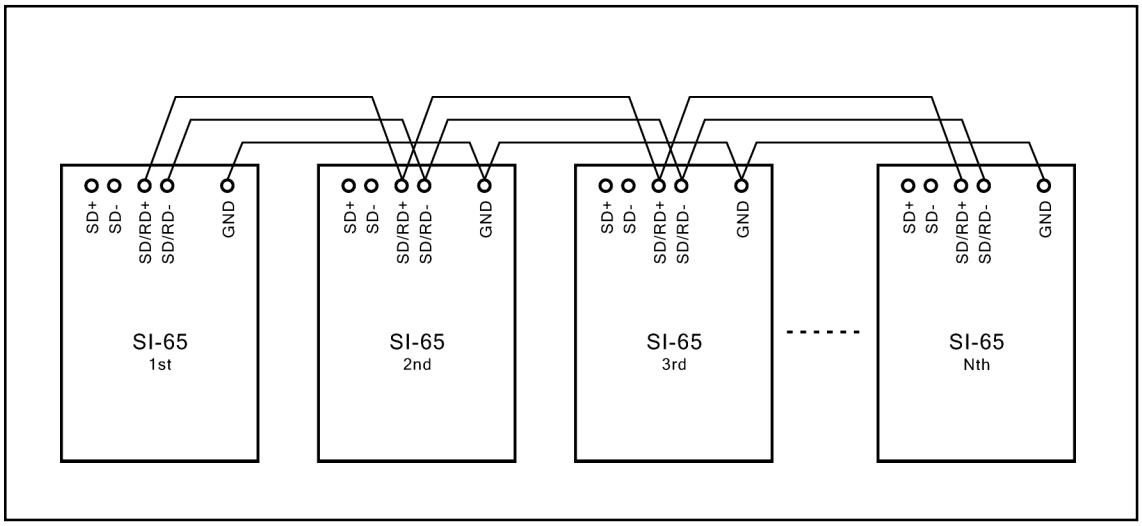
The faster communication speed is, the shorter the transfer distance for RS-422/485 is. See the right table and set communication speed following the actual distance.
Also, the maximum of the actual communication speed changes depending on conditions: environments like noise, cable features used, etc. For actual use, be sure to conduct a communication test to check.

Distance (m)	Speed (bps)
100	Over 920k
200	Over 230.4k
600	Over 115.2k
1200	Over 57.6k
2400	Over 9,600

The following chart shows the connection example to connect the converter to LINEEYE SI-20FA in the full duplex mode by 1 to 1.



The following chart shows a connection example to connect the converter to more than two devices in the half duplex mode by N to N.



■ Power Source

Supply power to the converter in either of two ways.

- Supplies power by plugging the included AC adapter or the optional AC adapter into the AC adapter plug on the converter.
  The included adapter is for AC100V. When requiring AC200V power source, an optional AC adapter, DSA-0151F-09A is available.

- Supplies DC+5 to +12V (max. 300mA) from 6 pin of 6 pole terminal block.

Note1: When powering from the terminal block, do not connect the AC adapter.

Note2: The included AC adapter is AC100V. For AC200V, a wide input AC adapter (optional) is required.

4-5. SI-65 Built-in XPort Setup

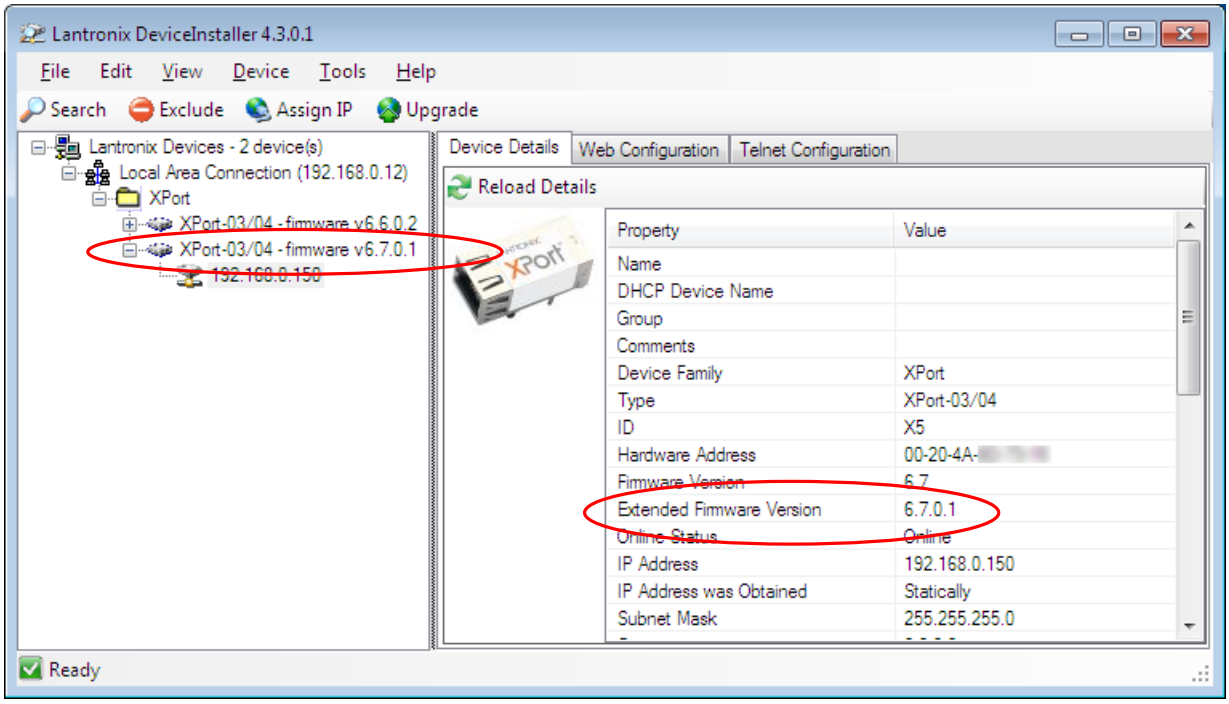
Depending on network environments used or the usage, built-in XPort setup of the converter is required to change. To learn about XPort setup, read “XPort Setup” in Chapter 5. In addition, when using the COM port redirector, read “COM Port Redirector” in Chapter 6.

5-1. Built in XPort

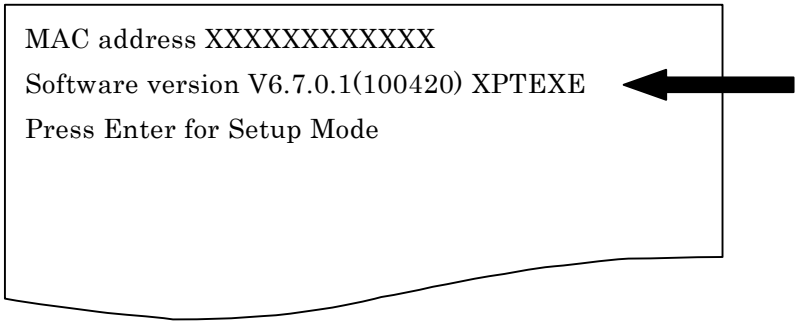
LINEEYE has sold SI-60F/SI-60/SI-65 with XPort-03 or Xport-04 with v1.8 and v6.x (v6.1.0.0 or former). You should have Xport-04 with v6.7.0.1 if you have this instruction manual.
*There is no difference between Xport-03 and Xport-04 on specifications. DeviceInstaller (v4.3.0.1) displays as "Xport-03/04".

How to find the XPort version:
Open the DeviceInstaller(v4.3.0.1) and find "XPort-03/04-firmware v6.x.x.x" or see the "Device Details". You can also check the massage "Software version V6.x.x.x(xxxxxx) XPTEXE" when connecting to the Telnet.

DeviceInstaller

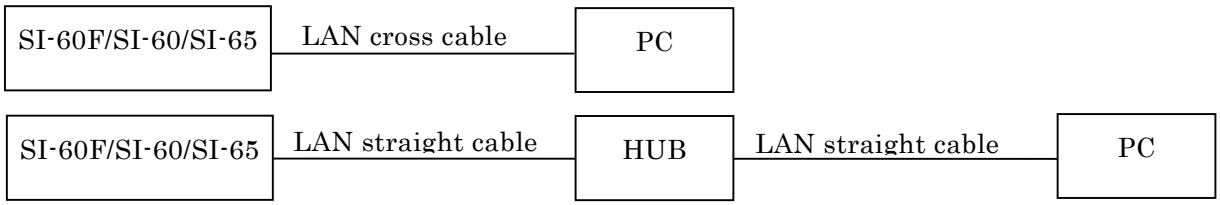


Telnet



5-2. Connection to the Networok

To set the products from the PC via LAN cable, use the cross cable for directly connecting to the PC. And, use the straight cable when using the HUB (etc.) to connect to the PC.



5-3. IP Address Assignment

Before using the converter, you need to assign IP address to the built-in XPort.
There are some IP address assignment methods. Assign by the proper method, concerning the usage and environments, and consulting with your network manager.

■ Auto IP address Assignment by using DHCP and Auto IP function

Set the IP address of Xport as following to use DHCP and Auto IP function.

IP address	0.0.0.0 (factory setting)	0.0.1.0
DHCP	Valid	Valid
Auto IP	Valid	Invalid

■ Using the DHCP Function

When the DHCP function is valid, XPort receives IP address, subnet mask and default gateway address, which were dynamically assigned by DHCP server on the network, at the time of starting XPort operation.

■ Using the AutoIP Function

When AutoIP function is valid and there is no DHCP server on the network, XPort selects an IP address within the class B subnet 169.254.x.x, at the time of starting Xport operation. And it uses the ARP request to check whether or not any devices on the network use the address. If it is not used, the address will be used as the XPort address. If it is used, XPort selects another IP address from the reserved addresses, and check it again by the ARP request.

AutoIP is for small-scale network without DHCP server to assign the IP address. AutoIP cannot be used as DHCP. When the DHCP server is found, XPort will restart after switching to IP address assigned by the DHCP server. Setting the IP address to 0.0.1.0 keeps the DHCP function valid, and only makes the AutoIP function invalid.

> When setting IP address, you may need the hardware address of the converter. The hardware address, which may also be called Ethernet or MAC address, is the original address assigned to network devices. The address is written on the bottom of LAN connector on the converter. Before starting the setup, check the address.

■ Using the Device Installer

The CD-ROM contains a utility "Device Installer" to assign the IP address. "Microsoft .NET Framework 2.0" or ".NET Framework 4.0" are needed for some version of the Device Installer.

Device Installer	.NET Framework	OS	Folder
Ver4.2.0.1	Ver2.0	2000/2003 Server/XP/ Vista(32bit)	Ver4.2.0.1 (Di32DL_4.2.0.1_Web.exe)
Ver4.3.0.1	Ver4.0	X86: XP/2003 Server/Vista Windows7/2008 Server X64: Vista/Window7/2008 Server	Ver4.3.0.1 (setup.exe)

If you already have DeviceInstaller(v4.2.0.1) on Windows XP or Vista, you do not have to update to the DeviceInstaller(v4.3.0.1).

Note: Please use DeviceInstaller (v3.6.0.6) when using Xport firmware v6.x and v1.8 (or former) together. When using DeviceInstaller (v3.6.0.6), v6.x of XPort-03/04 is displayed as "Unknown:x5". Open the DeviceInstaller and connect from the web manager or telnet to setup XPort v6.x. You can install the Device Installer (v3.6.0.6) from CD-ROM, which was attached to the product.

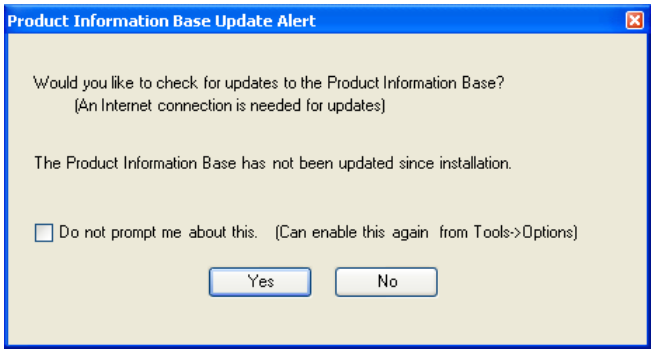
- **Installing the Device Installer**

If you already have different version of DeviceInstaller, please uninstall it.

Note: Please start installing where the Internet is available. ".NET Framwork" will be automatically installed when starting the installation.

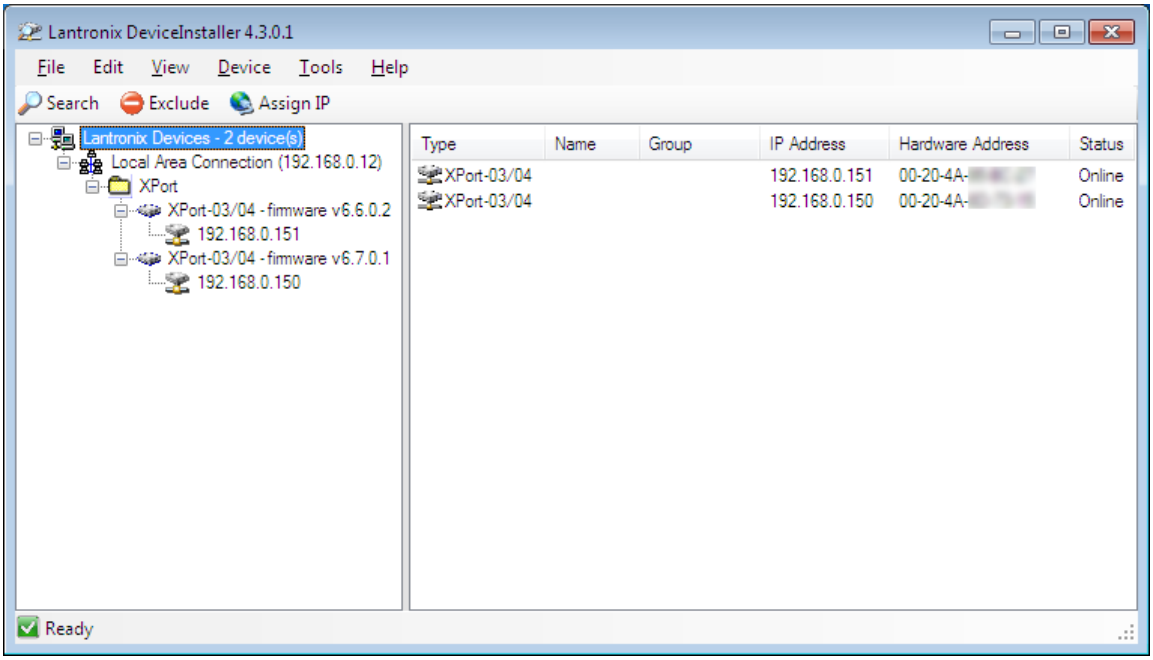
1. Insert the utility CD-ROM into the CD-ROM drive.
2. Select "Run..." from the start menu.
   For the DeviceInstaller V4.3.0.1, enter as following:
   "CD-ROM Drivename:\lantronix\DeviceInstaller\Ver4.3.0.1\setup.exe".
3. Follow the installation wizard instructions.

After Installing the DeviceInstaller, following page will be appeared, and select "No". Only when PIB file (File for corresponding the Device ID and Device name) needs to be updated, select "Yes".



- **Selecting the Device on Device Installer**

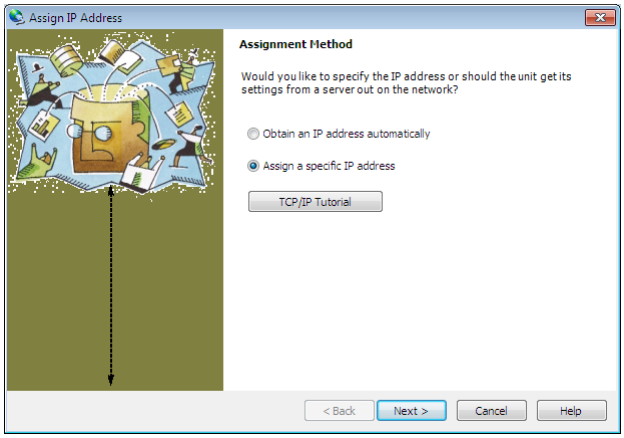
1. Start Device Installer from the start menu. The main window of Device Installer appears. It finds SI-60F/SI-60/SI-65 connected to the network automatically and lists in a table on the main window. (If there are devices other than SI-60F/SI-60/SI-65 using XPort on the network, they are also listed in a table..)



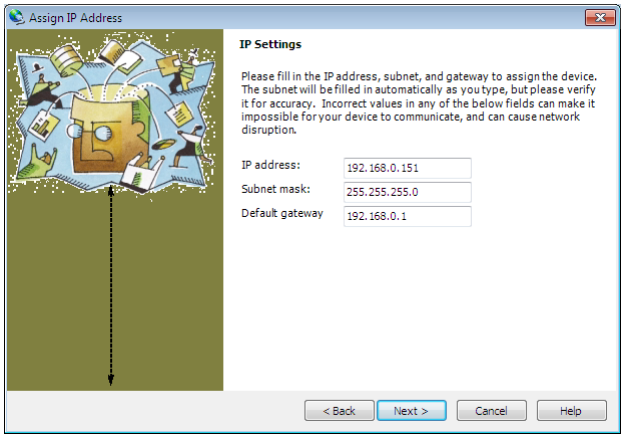
2. Select what matches the hardware address for the device being set from the table.

■ **Fixed IP Assignment Method on Device Installer**

1. Select the device you would like to setup and click “Assign IP” (or from “Device” menu, select “Assign IP Address”). “Assign IP Address” dialog box appears. Select “Assign a specific IP address” and click “Next” button.
   If the IP address is not selected from the listed table on Device Installer, “Device Identification” page will be displayed. Enter the hardware address of the device being set and click “Next” button to display “Assign IP Address” dialog box. (You can find the hardware address at the lower part of LAN connector.)



2. “IP Settings” page appears. Enter the values for IP address, Subnet mask and Default gateway. Then click “Next” button.

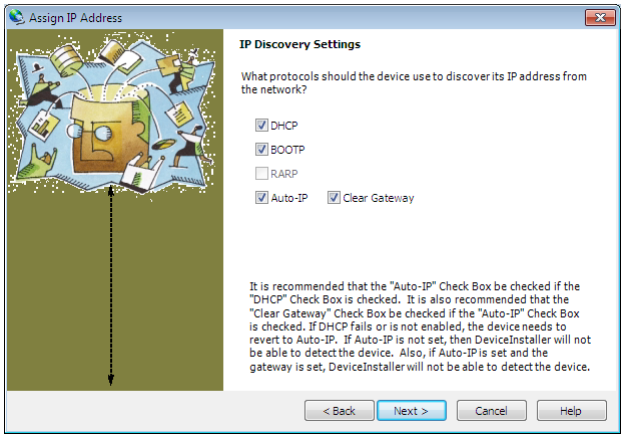


(Input the IP address of router in the “Default gateway” when using Internet .)

3. XPort restarts by pressing “Assign” button on “Assignment” page. Then, the specified IP address will be reflected to the screen.

■ DHCP/Auto IP Setup Method on Device Installer

1. Select a device you would like to setup, then click “Assign IP” icon or select “Assign IP Address” from “Device” menu. “Assignment Method” dialog box appears.
2. Select “Obtain an IP Address Automatically”, and then click “Next” button.
3. “IP Discovery Settings” page appears. Select a function you would like to enable, and then click “Next” button.



4. XPort restart by pressing “Assign” button on the “Assignment” page.

Note: We recommend you to disable DHCP and BOOTP or always keep Auto-IP effective because when failing in the address assignment, Device Installer cannot detect SI-60F/SI-60/SI-65 even if DHCP, BOOTP or both are effective.

The screen and steps will be different in each version of DeviceInstaller. For more details of DeviceInstaller, refer to the online help or XPort user’s manual in the CD-ROM.

■ Using ARP and Telnet

Set the initial setting using the hardware address.

Preparation: To use the products by Windows Vista/7, select "Telnet client" at "Turn Windows features on or off " from the control panel. To set the command prompt, right click on "command prompt" from start menu and mark on "Run as administrator".

Example of command prompt (DOS prompt) by Windows:

1. To make an ARP table entry, enter the following command.

```
arp -s xxx.xxx.xxx.xxx yy-yy-yy-yy-yy-yy
     (xxx.xxx.xxx.xxx     :IP address you wish to set)
     (yy-yy-yy-yy-yy-yy  :Hardware address of the device you wish to set)
```

Note: If above command is not working, try to conduct a ping for another device operating on the network, and then enter the command again.

2. To connect the Telnet to port 1, enter the following command.

Although this connection will be failed, it temporarily changes the XPort IP address to the address you wish to set.

```
telnet xxx.xxx.xxx.xxx 1
     (xxx.xxx.xxx.xxx     :IP address you assigned by the arp command)
```

Note: The IP address set by this operation is the temporary address. If you do not follow the step 3, the IP address will be returned to the previous address after turning off the power.

3. To connect the Telnet to port 9999, enter the following command. The connection will be succeed this time. Press [Enter] key within 5 seconds after displaying "Press Enter for Setup Mode".

```
telnet xxx.xxx.xxx.xxx 9999
     (xxx.xxx.xxx.xxx     :IP address assigned by the arp command)
```

```
MAC address XXXXXXXXXXXX
Software version XX.X (XXXXXX) XPTEXE
Press Enter for Setup Mode
```

4. The setup mode shows the present setup status, and then following menu appears.

```
Change Setup:
        0 Server
        1 Channel 1
        3 E-mail
        5 Expert
        6 Security
        7 Defaults
        8 Exit without save
        9 Save and exit              Your choice ?
```

5. Select "0 Server" from the menu to set an IP address and subnet mask. If needed, set a gateway address too.

   <Example>: The underlined parts indicate the positions to enter.

```
IP Address : (000) 192. (000) 168. (000) 0. (000) 68
Set Gateway IP Address (N) N ← To set the gateway address, enter "Y"
Netmask: Number of Bits for Host Part (0=default) (0) 0
Set DNS Server IP addr  (N) N
Change telnet config password (N) N
Change DHCP device name (not set) (N) N
```

When Netmask is "0", you can use the standard subnet mask, which corresponds the class (A, B, C) of IP address. When Netmask is other than "0", specify the subnet mask by the number of bits at the host part. (Refer to the right table.)

Subnet Mask	Netmask Value
255.255.255.248	3
255.255.255.240	4
255.255.255.0	8
255.255.0.0	16
255.0.0.0	24

6. When the menu appears again, select "9 Save and Exit." Then, XPort will restart after saving the setup.

```
Change Setup:
        0 Server
        1 Channel 1
        3 E-mail
        5 Expert
        6 Security
        7 Default
        8 Exit without save
        9 Save and exit              Your choice ?
Parameters stored ...
```

■ Using the Serial Port Connection (SI-60F/SI-60 Only)

SI-60F/SI-60 allows you to send the special command from the RS-232C port using the setup mode, and set the IP address described in step 4 (above). Refer to the "5-4 Setup Method" -> "Setup Mode Usage" for more information about setup mode.

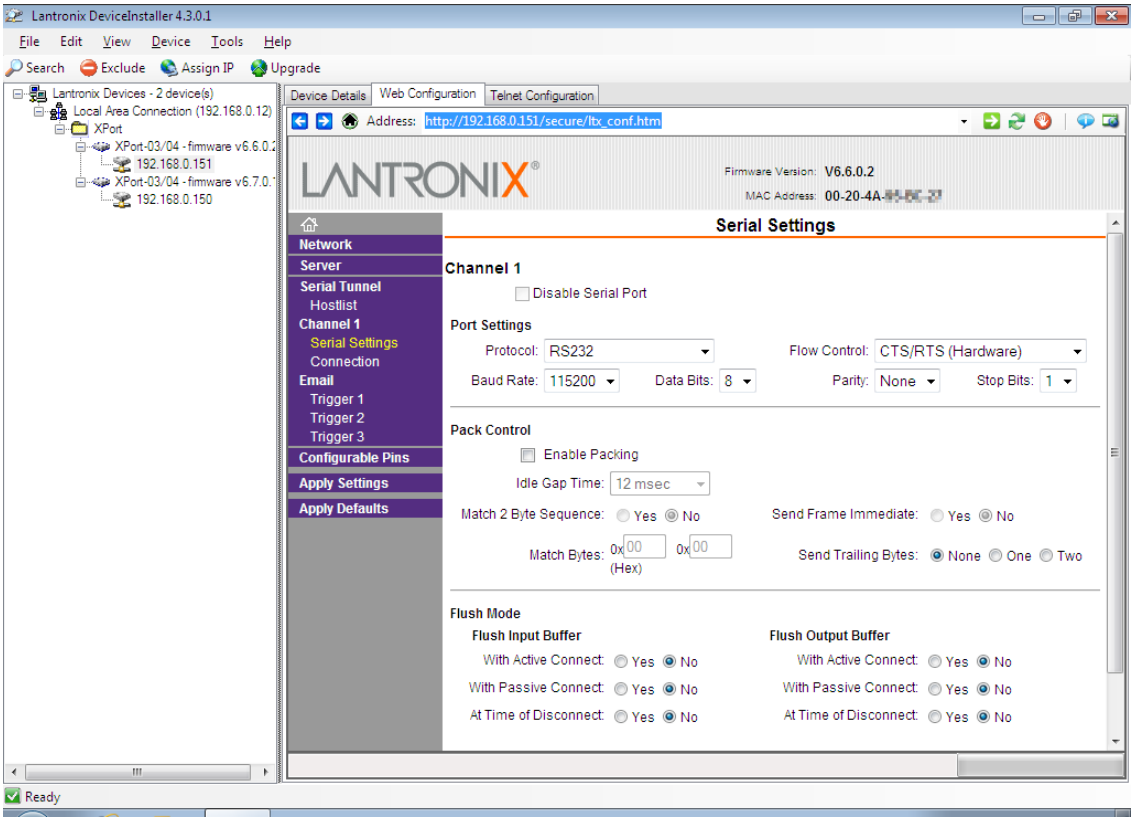
5-4. Setup Method (Serial Communication Conditions)

There are the following methods to change the setting of serial communication of XPort.

■ Web Manager Usage

1. Start DeviceInstaller from the start menu to display DeviceInstaller window.
   Select the device being set. Select "Web Configuration" tab and click "" icon.
   Enter the user name and the password, as you will be required.
   If you have not set your user name and password, enter nothing and click "OK".

Note: You cannot change all of the setup items for XPort by Web manager. To change the items you cannot change by Web manager, use Telnet or Setup Mode. Setting items and screen will be different in each version of Web manager.



2. Change the values, which you have to change on the display of the settings state.
   <Example: Changing the serial port>
   1) Select "Serial Settings".
   2) <u>Set "Protocol" to be "RS-232C". (Set "RS-232C" for SI-65 also.)</u>
   3) After setting the various settings of serial port in the "Port Settings", click "OK" button. ("Done!" will be displayed.)
3. "Done!" appears. After it disappears, click "Apply Settings" to make XPort save the settings and restart.

Note: When using SI-60F/SI-65 with baud rate 460800/921600bps of the serial port, select "Server" and set High to "CPU Performance Mode". Then, set baud rate of "Serial Settings". For more details about setting items and methods, refer to on-line help or user's manual of XPort.

■Setup Mode Usage

Connecting the Telnet or the serial port (SI-60F/SI-60 only) allows you to conduct the setup by accessing to built-in XPort.

Note: SI-65 cannot be connected to RS-232C serial port directly. LINEEYE does not recommend setting SI-65 via serial port.

The Telnet and serial port connection has the different procedures to enter the setup mode. The following shows each procedure for those connections.

- **Telnet Connection Procedure**

1. Start the "DeviceInstaller".
2. Select the target device. Select [Telnet setting] tab and then click [Connection] icon. (It is possible to input the IP address and Port number directly.)
3. When the connection is successful, the following message appears. To enter the setup mode, press the Enter key within 5 seconds. If more than 5 seconds pass without pressing, Telnet connection will be cut.

```
MAC address XXXXXXXXXXXX
Software version XX.X (XXXXXX) XPTEXE

Press Enter for Setup Mode
```

- **Serial Port Connection Procedure**

1. Connect the RS-232C port of SI-60F/SI-60 to the serial port on a PC by the RS-232C cable. Use a cross cable for SI-60F. When using SI-60, confirm the cable specification and conduct the setup for the DTE-DCE change-over switch.

2. Start the communication software on a PC, and set communication conditions to the following values.

Communication speed ---------- 9600 bps
Data Bit ---------- 8 bit
Parity ---------- none
Stop Bit ---------- 1 bit
Flow Control ---------- none

3. To enter the setup mode, send more than 3 characters of "x" from a PC within 1 second after powering the converter. If the converter fails to receive them within a time limit, XPort normally starts operating. To certainly conduct this procedure, power the converter pressing the "x" key on the keyboard of the PC.

4. When the procedure is successful, the following message appears. To enter the setup mode, press the Enter key within 5 seconds. If more than 5 seconds pass without pressing, XPort will start the normal operation.

```
MAC address XXXXXXXXXXXX
Software version XX.X (XXXXXX) XPTEXE
Press Enter for Setup Mode
```

When you enter the setup mode by the Telnet or serial port connection, the present setup status is displayed, then the following menu appears.

```
Change Setup:
     0 Server
     1 Channel 1
     3 E-mail
     5 Expert
     6 Security
     7 Defaults
     8 Exit without save
     9 Save and exit              Your choice ?
```

Set the necessary settings in the "1 Channel 1".(e.g.; server mode, serial port etc.)

Baudrate (9600) ?

Select the serial speed from 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600. Set "High Performance Mode" to be "Y" if the speed is more than 460800.

I/F Mode (4C) ?

Set the serial interface mode in BIT unit and input in HEX.

I/F Mode	7	6	5	4	3	2	1	0
RS-232C							0	0
7bit					1	0		
8bit					1	1		
No Parity			0	0				
Even Parity			1	1				
Odd Parity			0	1				
1stop bit	0	1						
2stop bit	1	1						

Flow (00) ?

Set the serial flow control in HEX.

Flow	Hex
No flow contorol	00
Software Flow(Xon/Xoff)	01
Hardware Flow(RTS/CTS)	02
Software Flow(Xon/Xoff transmit to LAN)	05

Port No (10001) ?

Set the received port number.

ConnectMode (C0) ?

Input the connect mode in Hex.

Connect Mode	HEX
Do not allow connection	**0**0
Allow connection	**C**0
Allow connection in DTR mode	**4**0
Do not connect automatically	0**0**
Connect automatically when receiving data from serial	0**1**
Connect automatically as DTR mode of serial	0**2**
Connect by hand when inputting commands from serial	0**4**
Connect automatically	0**5**

Send '+++' in Modem Mode (Y) ?
Show IP addr after 'RING' (Y) ?
Auto increment source port (N) ?
Remote IP Address : (000) .(000) .(000) .(000)
Remote Port (0) ?
DisConnMode (00) ?
FlushMode (00) ?
DisConnTime (00:00) ?:
SendChar 1 (00) ?
SendChar 2 (00)?

If you do not need to change any settings, just press "Enter".

Select an item you wish to change, and conduct the setup following instructions. After that, select "9 Save and exit" from the menu to reflect the changed value to XPort. To learn more about settings, refer to the on-line help or XPort user's manual of Lantronix, ltd.

Note: To use SI-60F/65 for serial port at baud rate: 460800/921600bps, select "5 Expert" at menu. And, change "CPU Performance Mode" to "2=High" at "CPU performance (0=Regular, 1=Low, 2=Hight: (0)?". And then set the baud rate.

■Use "SILANIOinit"

"SILANIOinit" is useful to set more than one IP address and each setting (setup files) on the Xport. "SILANIOinit" is recorded in the attached CD-ROM as "\LINEEYE\SILANIOinit" folder. To use this application, refer to the "SILANIOinit.txt".

*Since an installer is not attached, copy the "exe" file. To uninstall the application, delete the "exe" file.
*To change the configurations other than IP address, use the Web Manager or setup mode at Telnet connection.
*LINEEYE has no liability if you use other version of Xport, or you downgrade the firmware.
*This application is for LINEEYE products (SI and LANIO series only).

5-5. Setup Example

The following shows the setup examples for the normal operation.
Set the IP address, local port, mode and communication conditions of serial port.
To learn about the description of each setup, read the XPort user's manual. In addition, the item names and setting values are indicated based on the case of using the web manager.

■ SI-60F/SI-60/SI-65 basic setting

IP address

Set the IP address, subnet mask, default gateway. (Refer to "4-1. IP Address Assignment) Receive IP address automatically if you cannot have any IP address from DHPC server.

Serial Settings

Set "Protocol" to be "RS-232C" in serial side. Set Baud Rate, Data Bits, Parity, Stop Bits and Flow Control to be same as the target device.

Local Port (Default; 10001)

Change the local port. Do not assign following port number as local port.
1 – 1024: well-known port
9999: setup menu
14000 – 14009: For redirectors (previously used)
30704: For remote controls of IO unit
30718: For searching DeviceInstaller

Active Connect (Default: None)

Change the client action if necessary. If set other than "None", you need to set Remote Host (IP address) and Remote port (Port No.) for target device.

Local Port (Default: 10001)

Change the local port if necessary. Set available local port No. (not reserved)

■Server

When the converter is used as the target device, set the following items.

Item	Setting Value
Serial Port Settings	
Baud Rate	Communication speed for the serial port
Data Bits	The number of data bits for the serial port
Parity	Parity bit for the serial port
Stop Bits	The number of stop bits for the serial port
Flow Control	Flow control method for the serial port
Connection	
Accept Incoming	Sets “Yes” (passive connection (server))
Active Connect	Sets “None” (no active connection (client))
Endpoint Configuration	
Local Port	Port number

■ Client

The following shows the setup example of when the converter is used as the device which connects to other devices. This example shows when the converter receives the user-defined data from the serial port, it tries to connect to the others.

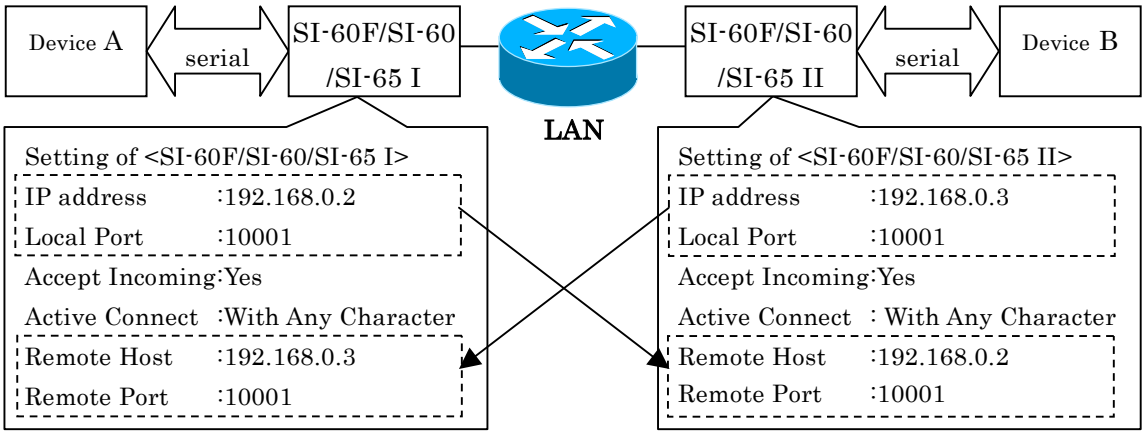
Item	Setting Value
Serial Settings	
Baud Rate	Communication speed for the serial port
Data Bits	The number of data bits for the serial port
Parity	Parity bit for the serial port
Stop Bits	The number of stop bits for the serial port
Flow Control	Flow control method for the serial port
Connection	
Accept Incoming	Sets “No” (no passive connection (server))
Active Connect	Sets “With Any Character” (active connection (client))
Endpoint Configuration	
Local Port	Port number
Remote Host	Sets IP address for target device when client mode.
Remote Port	Sets port number for target device when client mode.

If you set “Yes” for “Accept Incoming” and “With Any Character“ for “Active Connect”, you can have server and client mode (need to set “Remoter Host” and “Remote Port”.)

Active Connect	
None	No auto connection
With Any Character	Auto connection when receiving the data from serial
With Active Mdm Ctrl In	Auto connection as DTR of serial
With Start Character	Auto connection when receiving specified 1Byte code from serial
Manual Connection	Manual connection
Auto Start	Always auto connection

■Extend serial communication by LAN

Connect two sets of SI-60F/SI-60/SI-65 using LAN, and set them as server mode or client mode. When having some kind of data input from A or B of serial port, SI-60F/SI-60/SI-65 will output it from the other side of serial port via LAN.



Note: You cannot check the control lines information of Device A(orB) to Device B(orA). Use the software flow control if necessary.

■UDP/IP Communication

Basically, data transmission/reception is made by TCP/IP(default). Also UDP/IP can transmit/receive data. From Web manager, go to “Connection” and set “Protocol” to be “UDP”.
Note: Once you set “Protocol” to be “UDP”, you cannot communicate by TCP. Otherwise change the setup.
Set “Datagram Type” to be “01”, and set “Remote Host”, “Remote Port” and so on.

5-6. XPort IO pin, CP1 Control

XPort CP1 pin of SI-60F/60 is for the input pin between DR and ER lines of RS-232C. And, Xport CP1 pin of SI-65 is for the output pin of RS-422/485 driver control. To read the input status, send TCP/IP or UDP/IP command to the port number 30704.

■CPI check command of SI-60F/60

"xxh" in the second byte of response shows the input status.

Command : 13h 00h 00h 00h 00h 00h 00h 00h 00h 00h (9byte)

Response : 13h xxh 00h 00h 00h (5byte)

* "xxh" bit 0(LSB)=CP0 statsu, bit 1=CP1 status, bit2=CP2 status
* bit value 1=L level, bit value 0=H level (L=+3V on DR and ER of RS-232C)

■CPI control command of SI-65

"xxh" in the sixth byte of command specifies the output status. "xxh" in the second byte of response shows the result.

Command : 1Bh 02h 00h 00h 00h xxh 00h 00h 00h 00h (9byte)

Response : 1Bh xxh 00h 00h 00h (5byte)

* "xxh" bit 0(LSB)=CP0, bit1=CP1, bit2=CP2
* bit value 1=H level, bit value 0=L level (L= active on RS-422/485 driver)
* CP1 is set as "L" level as factory setting.

Note: Please do not change the Xport setting ("Active Level" etc.)

5-7. Default Setup

When a converter is shipped, the OEM Configurable Pins on built-in XPort are set as follows: **Do not change those settings.**

Items	Setting Values		
	SI-60F	SI-60	SI-65
CP0	HW Flow Control out (CTS)	HW Flow Control out (CTS)	HW Flow Control out (CTS)
CP1	General Purpose I/O (Input)	General Purpose I/O (Input)	General Purpose I/O (Output)
CP2	HW Flow Control In (RTS)	HW Flow Control In (RTS)	HW Flow Control In (RTS)
Active Level	Low	Low	High

Webmanager for XPort firmware v1.8 displays "CP1" for "CP0", "CP2" for "CP1" and "CP3" for "CP2".

Items excepting OEM Configurable Pins have the same setups with the factory default for XPort.

The following shows the main factory default values, which are common for SI-60F/SI-60/SI-65. To learn about the factory default values not mentioned below, read the XPort user's manual.

Items	Settings	Remarks
Network: IP Configuration		
IP Address	0.0.0.0	Enables DHCP and AutoIP
Server: Server Configuration		
Telnet password		No password
Serial Settings: Port Settings		
Protocol	RS232	**Do not change**
Baud Rate	9600	
Data Bits	8	
Parity	None	
Stop Bits	1	
Flow Control	None	
Connection: Connect Mode: Passive Connection		
Accept Incoming	Yes	Always connected
Active Connect	None	Do not connect
Connection: Endpoint Configuration		
Remote Host	0.0.0.0	No settings
Remote Port	0	No settings
Local Port	10001	

Do not apply "Apply Defaults" on Webmanager and "7 Defaults" on Telnet. If you apply these, XPort setting will be back to default value and cannot communicate as SI-60F/SI-60/SI-65.

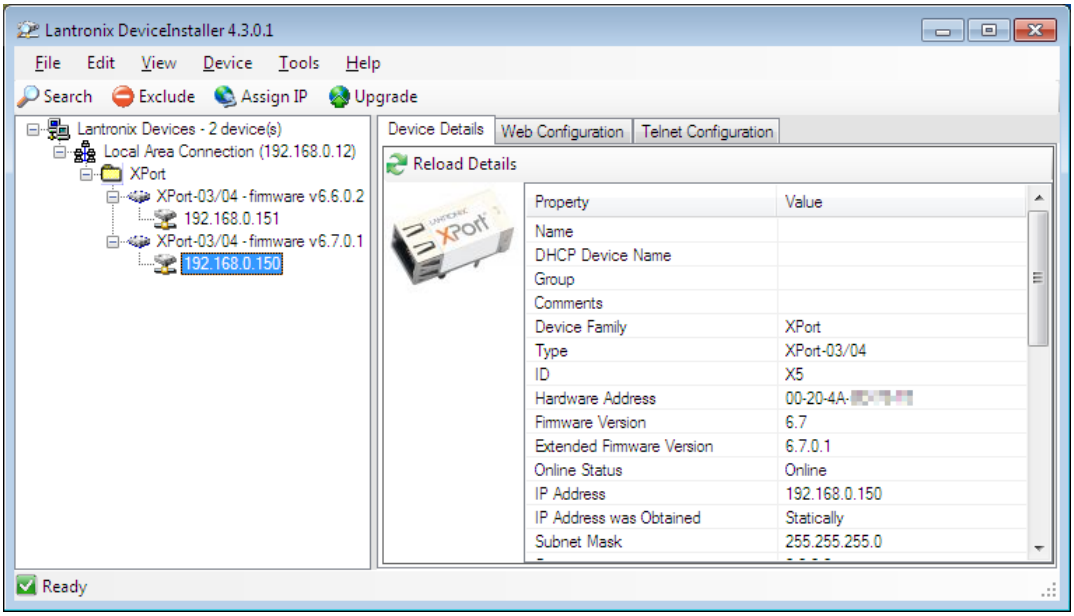
5-8. Default Setup Using the Setup Record

It is possible to have the XPort default value (factory setting) using DeviceInstaller Ver4.x.x.x, if you have the firmware version Ver6.x.

Note: LINEEYE do not guarantee the other versions of DeviceInstaller or firmwares.

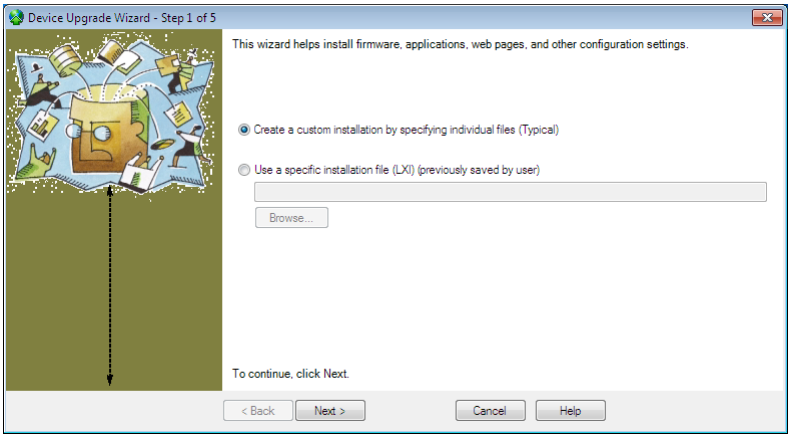
<step>

1. In the DeviceInstaller Ver4.x.x.x, select the XPort IP address to make it to the default value.

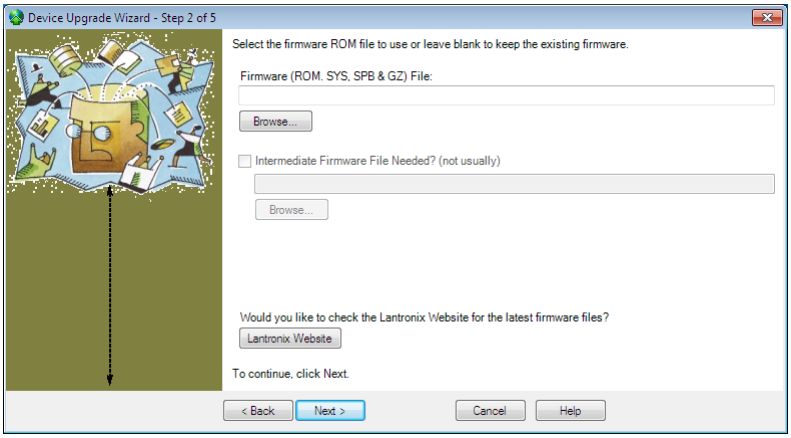


2. Click upgrade icon or go to [Device]→[Upgrade]

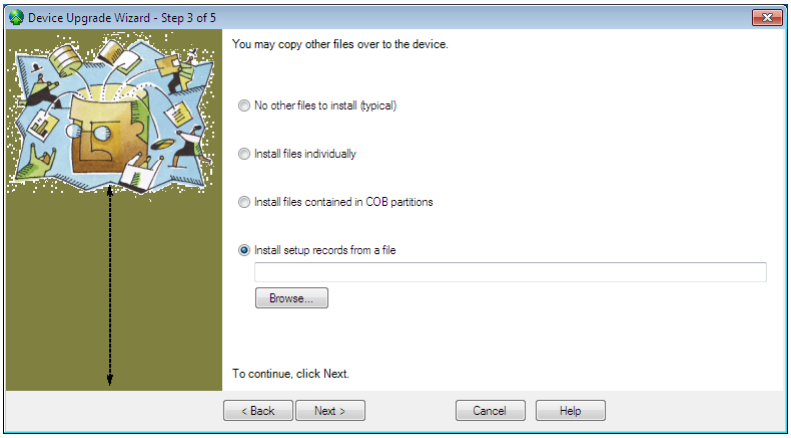
3. [Device upgrade wizard –step 1/5] will appear. Select [custom install] and click [next].



4. [Device upgrade wizard –step 2/5] will appear. Click [next].



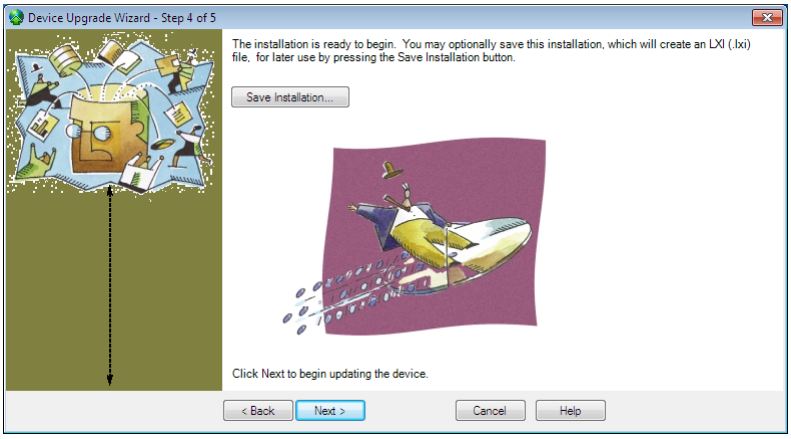
5. [Device upgrade wizard –step 3/5] will appear. Select [Install setup records from a file] and click [Browse].



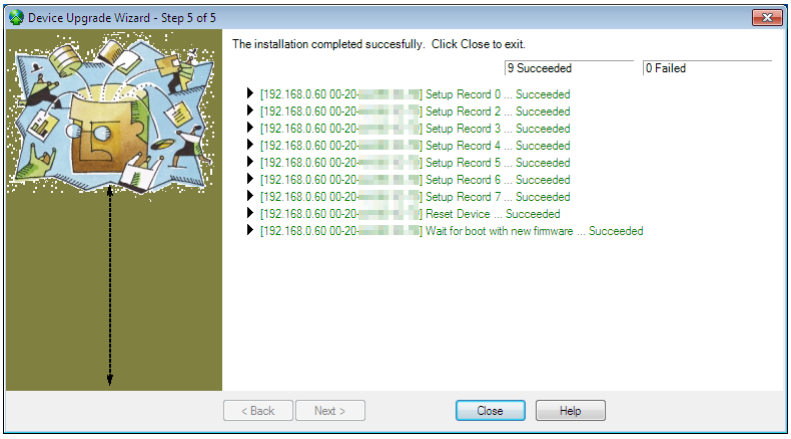
6. Open the file [SI_60_V6701_xxxx.rec](SI-60 Ver6.7.0.1) in the folder of "\LINEEYE\SetupRecord" in the CD. Click [next]. Select the appropriate file.

	SI-60	SI-65	SI-60F
Ver6.7.0.1	SI_60_V6701_xxxxxx.rec	SI_65_V6701_xxxxxx.rec	SI_60F_V6701_xxxxxx.rec

7. [Device upgrade wizard –step 4/5] will appear. Click [next].



8. [Device upgrade wizard –step 5/5] will appear. “installation has finished” will be displayed. Close the window.



It is possible that IP address may be changed for some version of DeviceInstaller. Check the IP address.

Chapter6 COM Port Redirector

6-1. Overview

The included CD-ROM contains Lantronix "COM Port Redirector."
The COM Port Redirector is the utility software to get the serial communication application not supporting the network connection to be able to use on the network.
The redirector creates the virtual COM ports in Windows. Communications for these virtual COM ports are transferred to the serial port on the converter through the network.

Most applications using a COM port operate without troubles because a virtual COM port seems like a real serial port; however, some applications with time limit for data transmission/reception may not operate. This is why a waiting time of communications via network becomes longer than one of communications for the real COM port. In this case, you need to increment a value of a time out using application software, to support socket communications, etc.

Note: The COM Port Redirector works at most of the application software. However, some applications, which have a limit to receive/transmit data, may not work well. In this case, change the timeout of communication longer or change the setting to support socket communications.

Note: The COM Port Redirector cannot be used with other software, which creates the virtual COM port. Be sure not to install the COM Port Redirector to PCs, which have already installed such software.

Each firmware version of COM Port Redirector can be found in the CD-ROM. For COM Port Redirector Ver4.x or later, you need to have an appropriate Microsoft .NET Framework. Please install the .NET Framework before installing it, or be sure the Internet is available when installing it. Refer to the following compatible table, and we recommend you to use the latest version of COM Port Reader

CPR	.NET Framework	Windows OS	XPort Firmware	File
3.1.0.1	-	NT/2000/XP	V1.8/V6.1.0.0/V6.5.0.7/ (V6.6.0.2)/(V6.7.0.1)	Ver3.1.0.1 (red32bit.exe)
4.2.0.0	Ver2.0	2000/2000 Server/XP/ 2003 Server/Vista	V1.8/V6.1.0.0/V6.5.0.7/ V6.6.0.2/V6.7.0.3	Ver4.2.0.0 (Cpr32DL_4.2.0.0 _Web.exe)
4.3.0.0	Ver4.0	x86: XP/2003 Server/Vista/7/2008 Server x64: Vista/7/2008 Server	V1.8/V6.1.0.0/V6.5.0.7/ V6.6.0.2/V6.7.0.3	Ver4.3.0.0 (setup.exe)

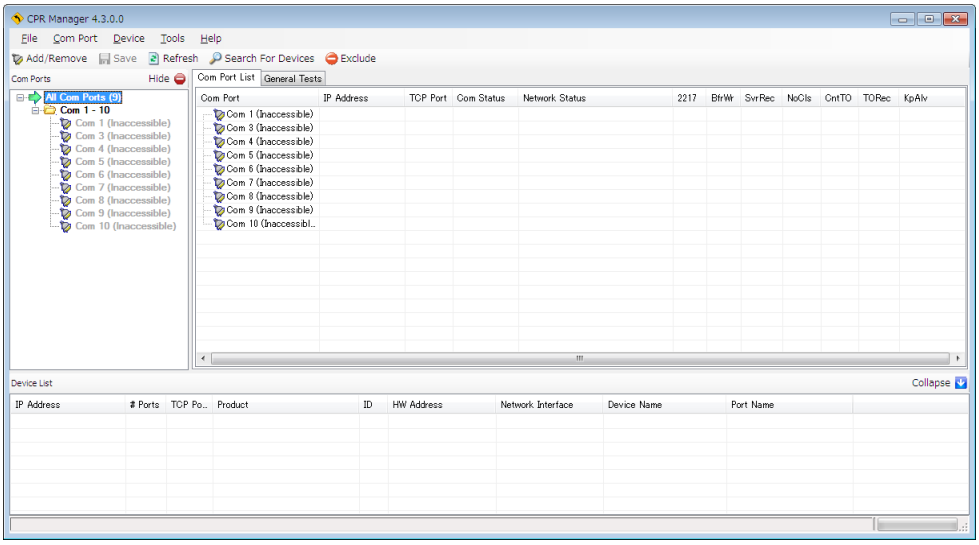
Note: to receive Microsoft .NET Framework, go to "http://www.microsoft.com
Note: Ver4.x.x.x has some problems in Visual Basic6 and MSCOMM, and cannot communicate with COM Port Redirector. In this case, please use Ver3.1.0.1. However, Ver3.1.0.1 cannot use the latest function on firmware Ver6.5.0.7 (or later). To install Ver3.1.0.1, refer to the "ComPortRedirector_V3101.pdf" in the "/lantronix/ComPortRedirector/Ver3.1.0.1" folder. For the details of COM Port Redirector, refer to the "On-Line Help".

6-2. COM Port Redirector Ver4.x.x.x Installation Procedure

To install COM Port Redirector Ver4.x.x.x, follow the procedures below. If you already have other version of COM Port Redirector, please uninstall it. (Following is for Ver4.3.0.0)

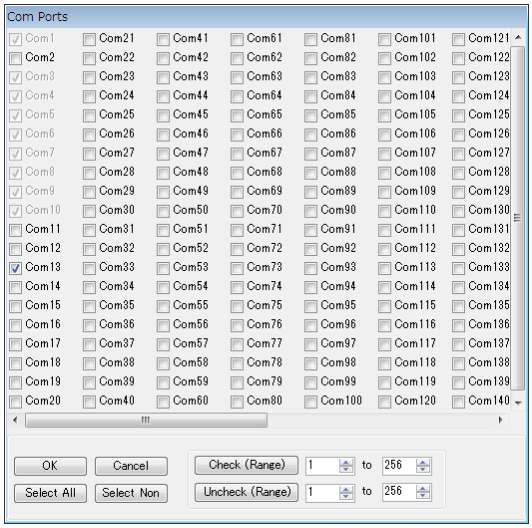
1. Insert the utility CD-ROM into the CD-ROM drive.
   a) Select "RUN…" from the start menu.
   b) Enter "<CD-ROM Drive name>:\lantronix\v67\ComPortRedirector\setup.exe".
   "CD-ROM Drive name" is different depending on what PC you use.
2. To install, follow the installation wizard instructions.

3. After restarting, go to "Lantronix" -> "CRP 4.x" -> "CPR Manager" from the start menu. The "CPR Manager" window appears.



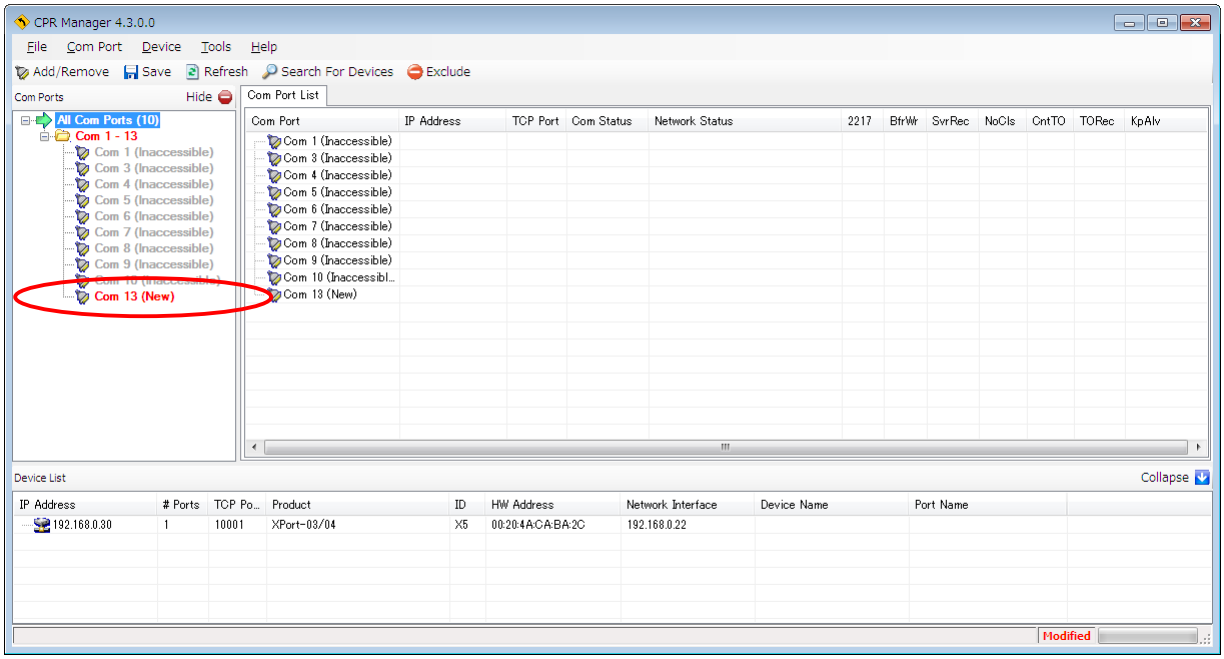
4. Click "Search" icon, or go to "Device" -> "Search".

5. Click "Add and Remove" icon, or go to "Com Port" -> "Add and Remove" to open the dialog to register/delete the virtual COM port. Select the COM number and click "OK".

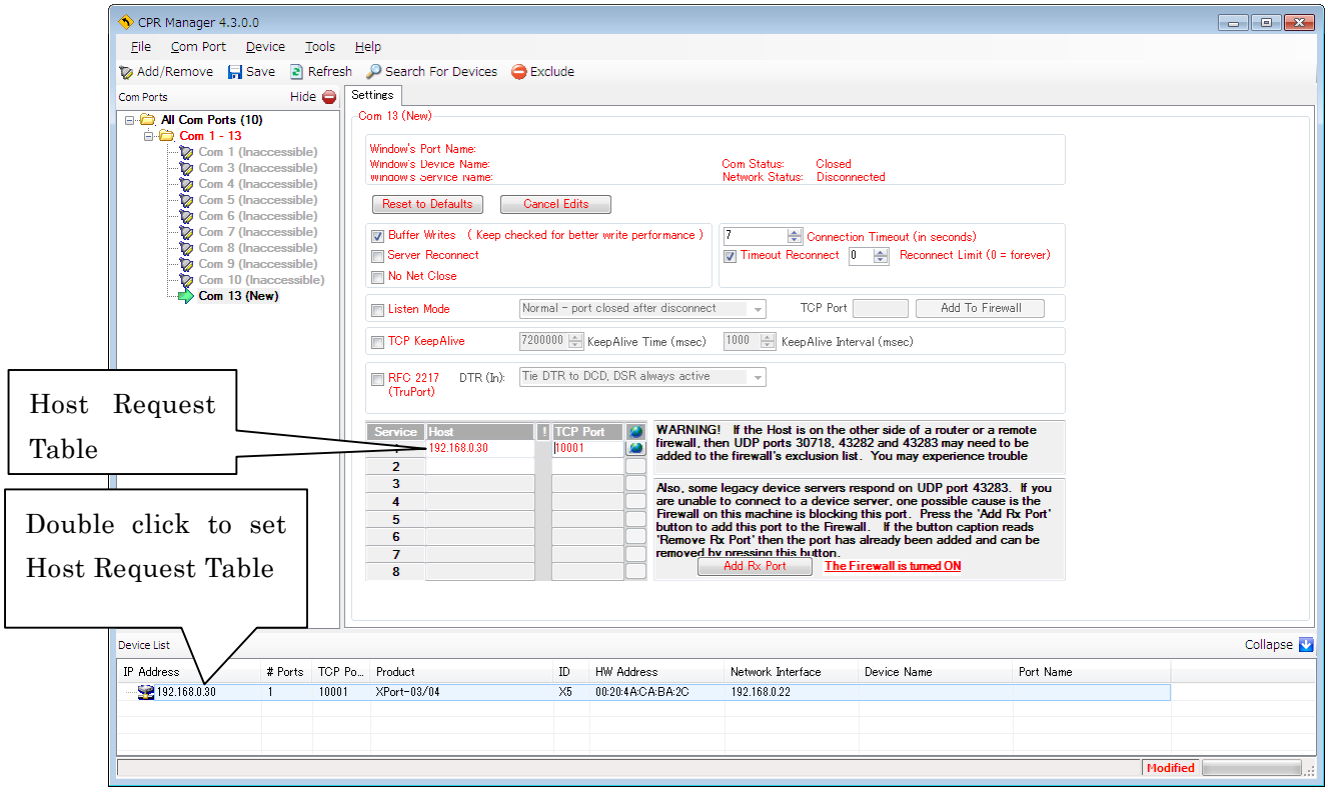


The unselectable check box indicates the actual COM port on a PC, which you cannot use on the COM Port Redirector. The selectable check boxes differ depending on your PC.

6. In the dialog box, check the COM port you wish to use as the virtual COM port.



7. In the “Settings” tab, there is a host list table. Set the IP address and port number at “Host” and “TCP Port” in the “Service1”. Double clicking the Xport on the “Device list” to reflect it in the host list table.



8. Click “Save” icon or go to [Com Port] -> [Save Settings] to save the configurations. If your computer shows a dialog of hardware installation, ignore it and click next.

6-3. SI-60F/SI-60/SI-65 Setup

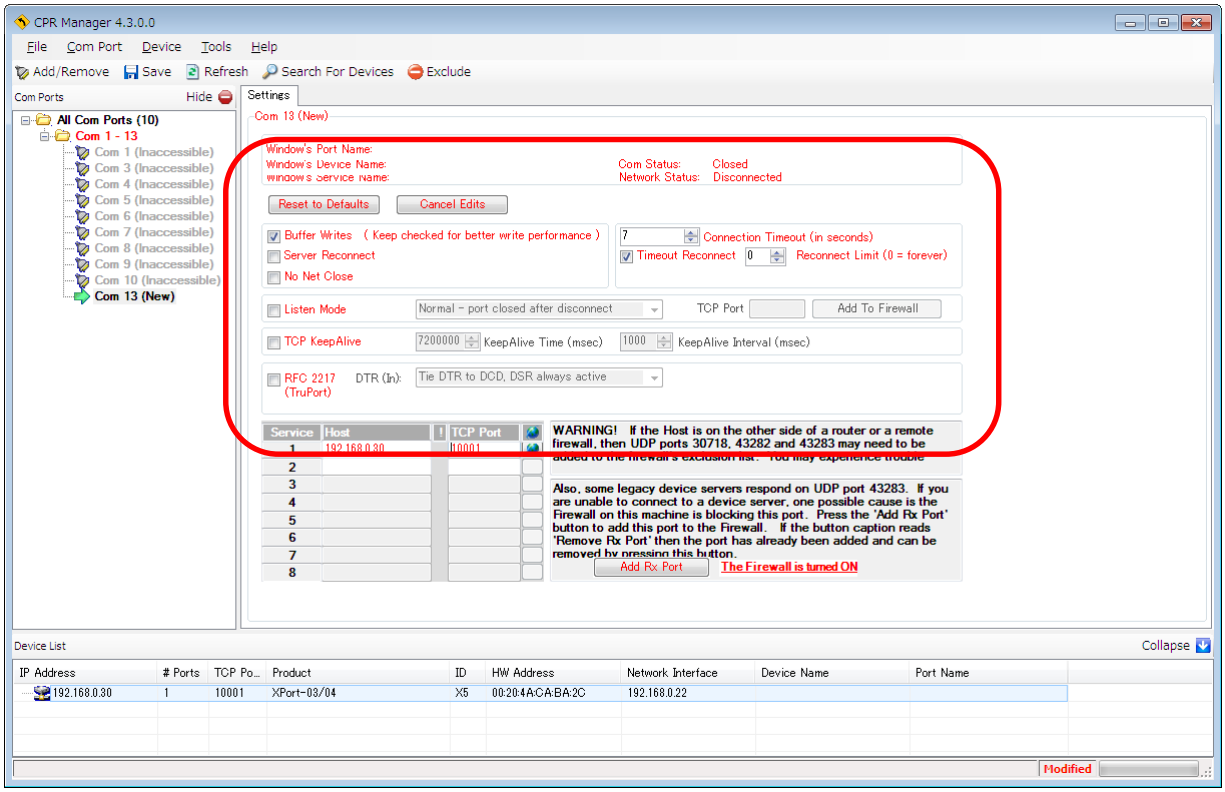
When you use the converter with the COM Port Redirector Ver4.x.x.x, set communication speed, data bit, parity, stop bit, flow control of XPort using DeviceInstaller, Webmanager, Talnet. (Reper to the user's manual of XPort) LINEEYE recommends to have fixed IP addres.
Setting values for application should be same as communication speed, data bet, parity , stop bit, flow control for XPort.

6-4. COM Port Redirector Ver4.x.x.x Setup

1. From start menu, go to "Lantronix" -> "CPR 4.x" -> "CPR Manager. "CPR Manager" window will be displayed.

2. Selects the virtual COM port you wish to set from "ComPorts" in the "CPR Manager" window.

3. In the setting tab for the selected COM port, change the necessary settings.



Item	Description
Buffer Writes	If selected, when an application opens a COM port and starts writing to that port, CPR will buffer those writes and try to send as many as possible in a single TCP packet (speeds processing).
Server Reconnect	Try to connect again when the connection is interrupted. *To use this function, remove the check on "Timeout Reconnect".
No Net Close	Network will not be disconnected even though you close the vartual COM port by the apprication.
Connection Timeout	Set the waiting time(seconds) if connect to next XPort on the host list.
Timeout Reconnect	Tries to reconnect until the connection succeeds or the number of tries reaches the value in Reconnect Limit.
Reconnect Limit	Set time to reconnect. (Range: 0 - 100s) If you set 0, it will attempt to connect continuously.
Listen Mode	Listen mode: Connection recovers when having a request from outside. Normal - port closed after disconnect: Close the TCP port once connection is interrupted. Auto- back to listen mode after disconnect: Become "Listen mode" when connetion is interrupted.
TCP Port	Select the TCP port to use by Listen mode.
TCP KeepAlive	Check the connection status by sending the TCP packet for checking.
KeepAlive Time (msec)	Set the time to send a packet for checking.
KeepAlive interval (msec)	Set the interval of sending a packet for checking. TCP will close the socket if there is no connection after checking 5 times.
Add Rx Port	Add in the except list to avoid UDP port 43283 to be interrupted by a firewall.
Add to Firewall	Add in the except list to avoid ports for Listen mode to be interrupted by a firewall.
Use RFC2217	Setting of aplication soft will be reflected to Xport. Able to know the signal input status. - Serial port settings for device server (baud rate, data length, parity, stop bit, RTS/CTS control) - DSRSerial port signal between DCD and network **Note: Support only XPort-03/04 firmware Ver6.5.0.7 or later.** To use this function, enable the "Telnet Com Port Cntrl" on WebManager. **LINEEYE does not liable for this to use in SI-60F/SI-60.** **Please do not use this for SI-65 because line monitoring function may not work correctly.**
DTR	Set how to use DTR, DCD and DSR when selection "Use RFC 2217" Default is "Tie DTR to DCD, DSR always active" DCD(In) of CPR will be changed when controling serial DTR(CP2) of XPort. DSR(In) is always active. **CP2 has been set as flow control(RTS).**

4. When you finish settings, click [Save] icon or go to [Com Port] – [Save Settings] to save the settings.

Chapter7 Ethernet Connector Specification

7-1. Ethernet Connector Specification (SI-60F, SI-60, SI-65)

■ Ethernet Connector Pin Assignment

Pin No.	Name	I/O Direction *1	Description
1	TX+	Out	Transmission Data +
2	TX-	Out	Transmission Data -
3	RX+	In	Reception Data +
4	-	-	Not Used
5	-	-	Not Used
6	RX-	In	Reception Data -
7	-	-	Not Used
8	-	-	Not Used

*1 "Out" means a direction to output signals from the converter.
"In" means a direction to input signals to the converter.

■ Ethernet Connector LED Display

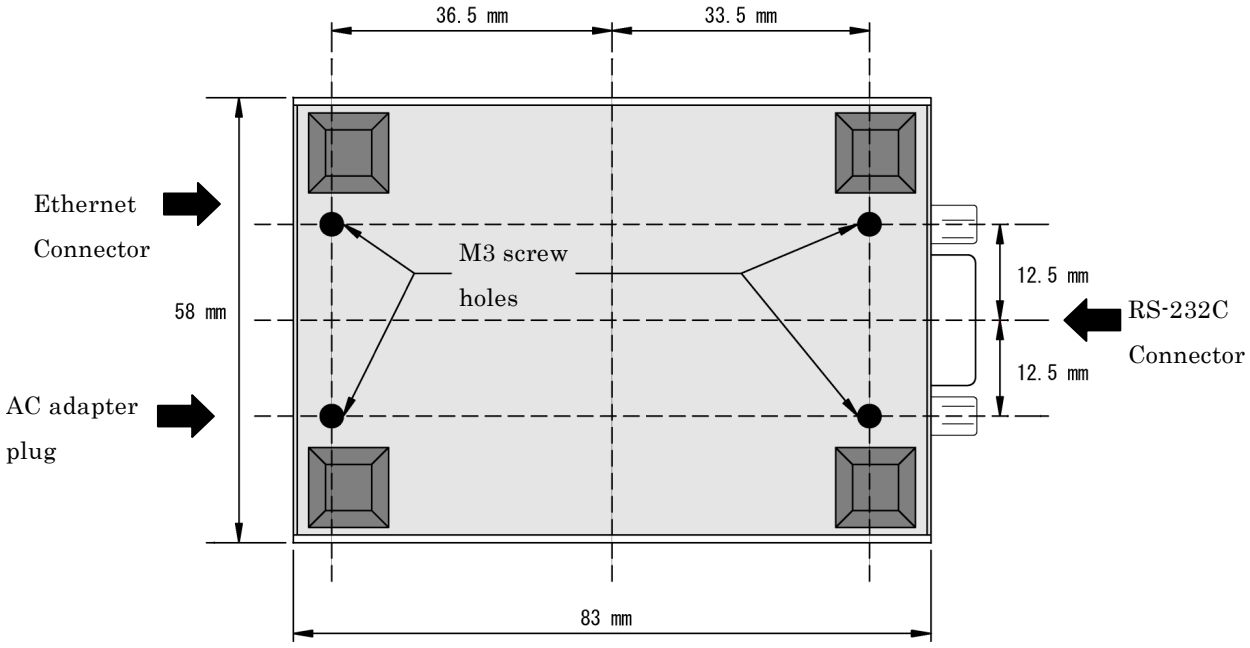
Left LED	Right LED	Meaning
OFF		Does not connect Ethernet.
Solid Amber		Connected 10 Base.
Solid Green		Connected 100 Base.
	OFF	Idle
	Blinking Amber	Communicating in the half-duplex mode. (Lights only when communicating.)
	Blinking Green	Communicating in the full-duplex mode. (Lights only when communicating.)

7-2. Installation Method

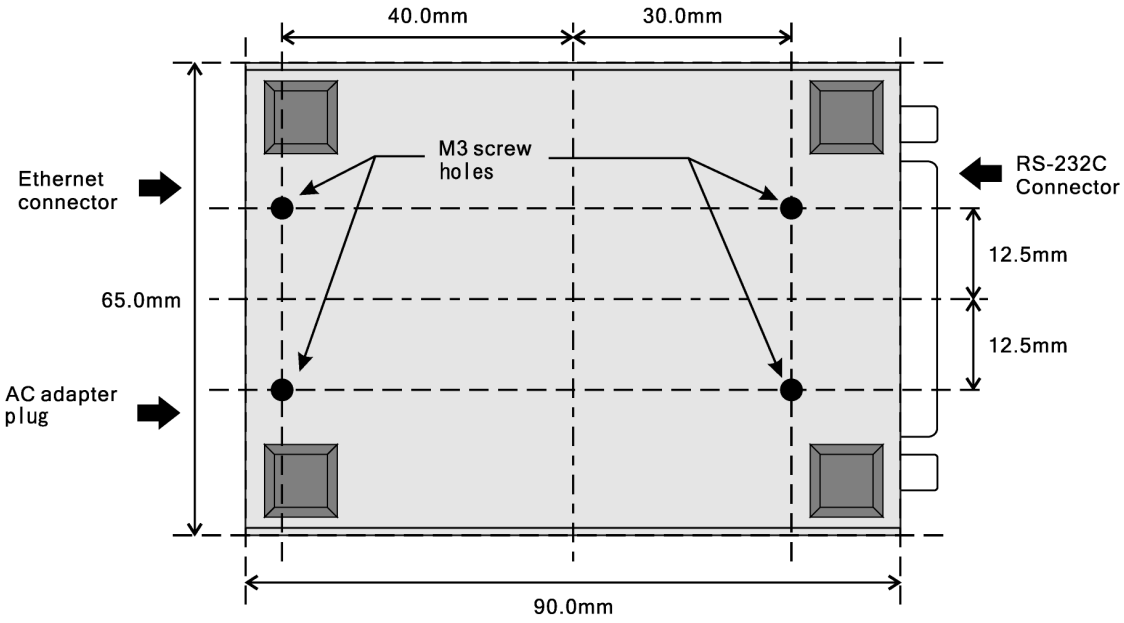
There are the four M3 screw holes on the back of the converter.

When you fix the converter in place, screw the screws into those holes.

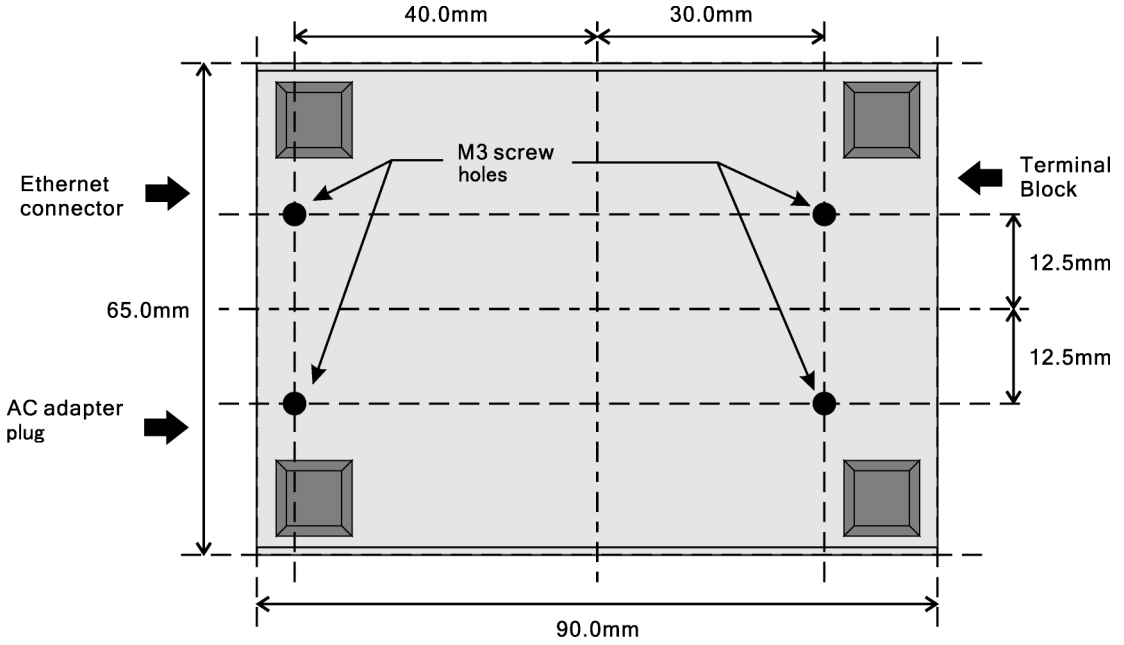
■SI-60F



■SI-60



■SI-65



Note: To fix the converter, screw the screws within 7mm in the surface of the bottom case. When you screw the screws deeper than that, it may damage the board inside.

Optional DIN rail mounting plate (SI-DIN70) can be put into the M3 screw on the back.

Chapter8 Warranty and After-Sales Service

8-1. Troubleshooting

■ The “PWR” LED does not light.

<When using the AC adapter> Is the AC adapter connected correctly?	Check that you plug the AC adapter into the AC adapter plug or wall outlet correctly.
<When powering from the connector or terminal block> Is the RS-232C connector or terminal block connected correctly?	Check that you connect the RS-232C connector or terminal block correctly.

■ Neither the left and right LEDs for the Ethernet connector do not light or blink.

Is the “PWR” LED on the converter lighting?	If not, read ‘The “PWR” LED does not light.’
Is the LAN cable connected correctly?	Check that the connector is connected correctly, or that the cable breaks, etc.
Do you select the proper connection with the straight or cross-over cable for LAN?	Use the proper LAN cable which meets specification of the LAN connector for the target devices.

■ The converter does not respond to the ping command.

Is the “PWR” LED on the converter lighting?	If not, read ‘The “PWR” LED does not light.’
Is either the left or right LED for the Ethernet connecter on the converter lighting or blinking?	If both LEDs turn out the lights, read “Neither the left and right LEDs for the Ethernet connector do not light or blink.”
Do you correctly set IP address, subnet mask and gateway?	Check the setup on the converter.
Do rooters, firewall or others on the network interrupt communications?	Contact your network administrator to check.
Does the security software on the PC interrupt communications?	Check the settings in your OS or security software.

■ Accessing from the Web browser cannot start the Web manager.

Is the “PWR” LED on the converter lighting?	If not, read ‘The “PWR” LED does not light.’
Is either the left or right LED for the Ethernet connecter on the converter lighting or blinking?	If both LEDs turn out the lights, read “Neither the left and right LEDs for the Ethernet connector do not light or blink.”
Does the ping command to the converter receive a response?	If not, read “The converter does not respond to the ping command.”
Do rooters, firewall or others on the network interrupt communications?	Contact your network administrator to check. If you use router, set router IP address in the default gateway of SI-60/65.
Does the security software on the PC interrupt communications?	Check the settings in your OS or security software.

■ Set from the Web browser but cannot reflect when opening it again.

Check the setting of IE. Is the setting of [Tool]-> [Internet Options] -> [Temporary Internet files] set as [Automatically]?	Set as [Every visit to the page].

■ Cannot connect the converter from the network.

Is the “PWR” LED on the converter lighting?	If not, read ‘The “PWR” LED does not light.’
Is either the left or right LED for the Ethernet connecter on the converter lighting or blinking?	If both LEDs turn out the lights, read “Neither the left and right LEDs for the Ethernet connector do not light or blink.”
Does the ping command to the converter receive a response?	If not, read “The converter does not respond to the ping command.”
Do rooters, firewall or others on the network interrupt communications?	Contact your network administrator to check.
Does the security software on the PC interrupt communications?	Check the settings in your OS or security software.
Is the port number set correctly?	Check the setups for the converter, applications, or COM Port Redirector.
Are the items in the connect mode set correctly?	Check the setup on the converter.

■ Cannot communicate on the serial port side.

Is the “PWR” LED on the converter lighting?	If not, read ‘The “PWR” LED does not light.’
<Using SI-60F/SI-60> Is the RS-232C cable connected correctly?	Check that the connector is connected correctly, or that the cable breaks, etc.
<Using SI-60> Is the DTE/DCE change-over switch on the converter set correctly?	Check the specifications for the RS-232C connectors and cables on the target devices, and conduct the proper setup.
<Using SI-65> Is the terminal block connected correctly?	Check that the terminal block is connected correctly, that the cables are disconnected, that the cables connected to the wrong connectors, and so on.
<Using SI-65> Is the DIP switch set correctly?	Set the DIP switch correctly following the connection method, communication conditions, etc.
<Using SI-65> Are the GND terminal on the converter and the signal grand on the target device, connected?	Connect the GND terminal on the converter to the signal grand on the target device.
Is the communication condition set correctly?	Set to the same values the communication speed, data bits, parity, stop bits, flow control, etc on both the converter and target device.

■ Cannot find in the Deviceinstaller

Communication is blocked because of the security software of PC?	Invalid the security software and check it again.
IP address of PC and SI-60/65 is in the same group?	Check the setting of PC and the products. If you forget IP address of the products, read "5-3 IP address"(“ARP and Telnet") and set the IP address again.
IP address of SI-60/65 is duplicated with other equipment.	Check the IP address of SI-60/65.

8-2. Warranty and Repair

■ Warranty

Within a period of 12 months from the date of shipment, LINEEYE warrants that your purchased products (excepting consumable parts such as the batteries and software) are free of charge from any defects in material and workmanship, only when the products are operated in accordance with procedures described in the documents supplied by LINEEYE. If the defects exist during the Warranty period, please send back the products to LINEEYE distributors or LINEEYE office. LINEEYE will repair or exchange them at no charge. In this case, the shipping charge will be at your own expense.

◆The foregoing warranties are the sole warranties given by LINEEYE. Above warranties shall not be applied to the products that have been modified, repaired or altered (excepting by LINEEYE employees) or that have been subjected to unusual physical or electrical stress, misuses, abuse, negligence or accidents.
LINEEYE disclaims all other warranties including the warranties of merchantability, fitness for some particular purposes and noninfringement of third party right. LINEEYE cannot promise that the software is error-free or will operate without any interruption.
When you have some errors while operating the software, please refer to the contents and modified programs shown on our web page (http://www.lineeye.com). Please download it from there.

■ Repair

LINEEYE will repair the products at your own expense.
For malfunction, please contact the LINEEYE distributors where you purchased at. Or, contact us directly.
If your product needs to be repaired, please read details about a repair on our web page and ask for a repair.

8-3. After-Sales Service

Our web site contains information about his product. In addition, LINEEYE provides a support for technical questions by Mail Form (click “contact us” on our web site).

For supports, the user registration is required. Please be sure to register from the registration page on our web site.

The card packed with the product is the user registration card for Japanese customers.
For overseas customers, there is a registration page on our web site.(www.lineeye.com)

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