Panasonic® INSTRUCTION MANUAL

IO-Link Master Unit for CC-Link IE Field
SC-LG2-CEF-P   ◈ IO-Link

MJE-SCLG2CEFP No.0090-63V

Thank you very much for purchasing Panasonic products. Read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

- This document provides a brief summary of mounting, wiring, and other related information. For detailed information, refer to the "**SC-LG2-CEF-P User's Manual**" (our Website: https://panasonic.net/id/pidsx/global).
- CC-Link IE Field is a registered trademark of Mitsubishi Electric Corporation and a trademark managed by CC-Link Partner Association.
- IO-Link is a registered trademark of PROFIBUS User Organization. The ownerships of all other trademarks belong to their respective owners.

⚠WARNING

- Never use this product as a device for personnel protection.
- For personnel protection, use only products that meet the laws and standards for personnel protection that apply in each region or country, such as OSHA, ANSI and IEC.
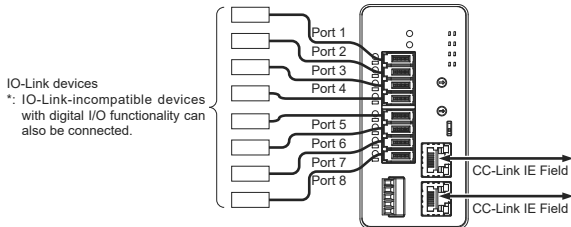
1 STANDARDS / REGULATIONS

- This product complies with the standards / regulations below.

<Conformity Directives / Conforming Regulations>
EU Law:EMC Directive 2014/30/EU
British Legislation:EMC Regulations 2016

- **Applicable Standards**
EN 61000-6-4:2007 +A1:2011,EN 61000-6-2:2005

2 CONTENTS OF PACKAGE

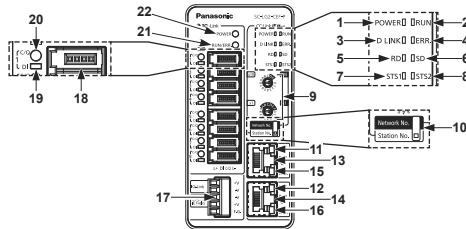|	
☐ Main unit	1 pc.
☐ Instruction Manual (English / Japanese)	1 pc.
☐ Power supply connector	1 pc.
☐ General Information for Safety, Compliance, and Instructions	1 pc.

3 SYSTEM CONFIGURATION

- When IO-Link devices are connected to this product, it can get measurement data and set and get parameters via CC-Link IE Field communication.
- This product can also connect to IO-Link-incompatible devices equipped with digital I/O functionality (ON/OFF signals). It can get the input status of ON/OFF signals for IO-Link-incompatible devices via CC-Link IE Field communication and output ON/OFF signals to IO-Link-incompatible devices.

IO-Link devices
*: IO-Link-incompatible devices with digital I/O functionality can also be connected.

Port 1 / Port 2 / Port 3 / Port 4 / Port 5 / Port 6 / Port 7 / Port 8 → CC-Link IE Field / CC-Link IE Field

Note: Non-Panasonic products can also be connected as IO-Link-compatible devices or IO-Link-incompatible devices.

4 FUNCTIONAL DESCRIPTION

	Name		Function
1		POWER (Green)	Lights up while the power to CC-Link IE Field is ON
2		RUN (Green)	Lights up while CC-Link IE Field is operating normally
3		D LINK (Green)	Lights up when cyclic transmission is executed during data link operation / Blinks when cyclic transmission is stopped during data link operation
4		ERR. (Red)	Lights up when a CC-Link IE Field communication error occurs / Blinks when the station number is changed after the power is turned ON
5		RD (Green)	Lights up while CC-Link IE Field data is being received
6	CC-Link IE Field operation indicator	SD (Green)	Lights up while CC-Link IE Field data is being sent
7		STS1 (Green)	• Normal mode Lights up while the system is normal • Network No. setting mode Lights up when network No. setting is completed Blinks when the system is starting in network No. setting mode
8		STS2 (Red)	• Normal mode Lights up when a system error occurs • Network No. setting mode Lights up when the network No. setting is outside the range
9	Station No. / Network No. setting switch		Rotary switch for setting a station number or network number [Factory setting: Station No. 1, Network No. 1] The function is switched by the operation mode set with the mode setting switch. (Note 1)
10	Mode setting switch		Sets the operation mode. [Factory setting: Normal mode]

	Switch setting	Operation mode
	Network No. setting	Network No. setting mode
	Station No.	Normal mode

11	Port 2 L ER indicator (Yellow)	Lights up when abnormal data is received
12	Port 1 L ER indicator (Yellow)	

	Name	Function
13	CC-Link IE Field port 2	RJ45 connector for CC-Link IE Field connection.
14	CC-Link IE Field port 1	There are no restrictions on the order of port 1 and port 2 wiring.
15	Port 2 LINK indicator (Green)	Lights up during link-up.
16	Port 1 LINK indicator (Green)	

17	Power supply connector	Supplies power			

Pin name		Function
IO-Link	+V	24V power input terminal
	–V	0V power input terminal
CC-link IE Field	–V	0V power input terminal
	+V	24V power input terminal
F.G.		Frame ground

18	IO-Link port (x 8)	

Pin name		Function
L+		+V (device power supply +V)
DI		Digital input (only PNP output type is supported)
C/Q	IO-Link mode	IO-Link communication signal
	SIO mode	Digital input (only PNP output type is supported)
		Digital output (push-pull type)
L–		–V (device power supply 0V)

19	DI indicator (x 8) (Orange)	Lights up when HI level digital input is detected
20	C/Q indicator (x 8) (Green / Red / Orange)	• IO-Link mode Lights green during IO-Link communication Blinks green when no IO-Link device is connected Lights red when a port error occurs Blinks red when an IO-Link communication error occurs • SIO mode Lights orange when HI level digital input is detected Lights orange when HI level digital output is generated Lights red when a port error occurs
21	IO-Link operation indicator	RUN/ERR. (Green / Red) — Lights green while IO-Link communication is normal / Lights red when an IO-Link error occurs
22		POWER (Green / Red) — Lights green when IO-Link power supply voltage is normal / Lights red when IO-Link power supply voltage is 18V or lower / OFF when IO-Link power supply voltage is 11V or lower

Note: For operation mode settings, refer to "**8** SETTING NETWORK NO. AND STATION NUMBER FOR CC-Link IE Field".

## 5 INTERNAL CIRCUIT

- **Circuit configuration**
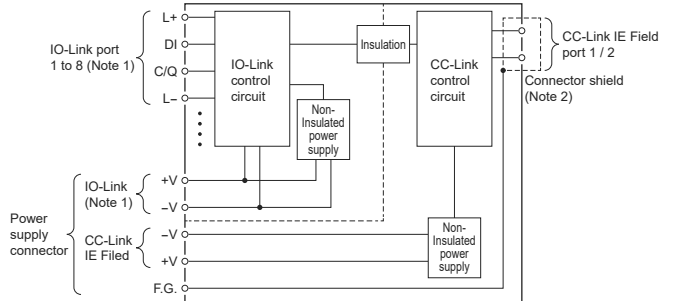
Notes: 1) Power to devices (L+, L-), digital I/O (C/Q), and digital input (DI) are supplied from IO-Link (+V, -V) on the power supply connector.
2) The connector shield of the CC-Link IE Field ports is internally connected to the frame ground (F.G.) of the power supply connector.

6 MOUNTING ON THE DIN RAIL

Mounting procedure

1. Hook the rear of the mounting part onto the 35mm width DIN rail.
2. While pressing the rear of the mounting part down on the 35mm width DIN rail, fit the front of the mounting part onto the DIN rail.

2. Press down / 1. Insert
35-mm-wide DIN rail
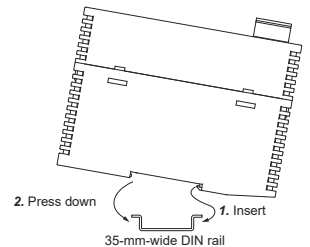
Removal procedure

1. Grasp the product and push forward.
2. Lift the front to remove.

1. Push forward / 2. Lift
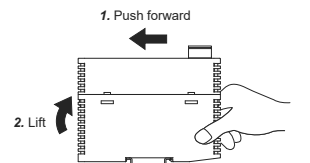
Note: If you attempt to lift the front without pushing the product forward, you may bend the hook on the back of the mounting part.
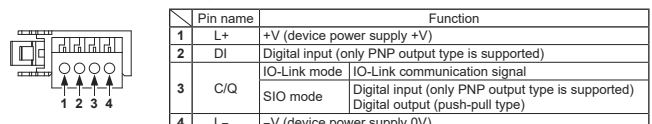
7 CONNECTING THE IO-Link PORTS

- **Mounting simple wire-press connectors (e-CON)**

- This product can connect up to eight devices.
- For the connectors for connecting devices to this product, purchase simple wire-press connector (e-CON) **CN-EP2** (5-piece set) or **CN-EP3** (5-piece set) or the following recommended product.

  <Recommended simple wire-press connector (e-CON)>
  Model 1473562-4 (e-CON) [manufactured by Tyco Electronics Japan G.K.]

- The communication distance must be within the specified range.
- Do not reuse any simple wire-press connectors (e-CON) that have been wire-pressed once. The performance of reused simple wire-press connectors cannot be guaranteed.
- For the wiring method of simple wire-press connectors (e-CON), refer to the instruction manual provided with the connector.

- **Pin assignment diagram of simple wire-press connector (e-CON)**

|	Pin name		Function
1	L+		+V (device power supply +V)
2	DI		Digital input (only PNP output type is supported)
3	C/Q	IO-Link mode	IO-Link communication signal
		SIO mode	Digital input (only PNP output type is supported)
			Digital output (push-pull type)
4	L–		–V (device power supply 0V)

Mounting procedure

1. Insert a simple wire-press connector (e-CON) into the IO-Link port of this product until it snaps in.

SC-LG2-CEF-P
IO-Link port
Simple wire-press connector (e-CON)
CN-EP□ (Option)
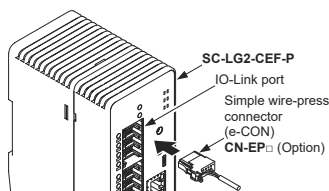
Removal procedure

1. While holding down the lock release lever on the simple wire-press connector (e-CON), extract the connector from this product.
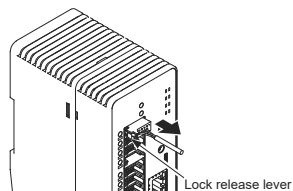
Note: Be sure to hold down the lock release lever when extracting the simple wire-press connector (e-CON) from this product.
Extracting the simple wire-press connector (e-CON) without holding down the lock release lever may damage the connector or break the cable.
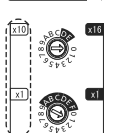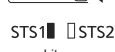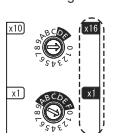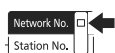
Lock release lever

8 SETTING NETWORK NO. AND STATION NUMBER FOR CC-Link IE Field

- After changing the settings, always turn the power OFF and then ON.
- Set a station number that does coincide with that of any other device connected within the same network number.
- For network settings for CC-Link IE Field, refer to the **"SC-LG2-CEF-P User's Manual"** (our Website: https://panasonic.net/id/pidsx/global).

- Follow the procedure below to configure settings.

Procedure

1. Turn OFF the power.
2. Set the mode setting switch to "Network No." to enable network No. setting mode.

Network No.
Station No.

3. Turn ON the power. CC-Link IE Field operation indicator STS1 (green) will be blinking.

STS1 ■ STS2
Blinking

4. Set the network number with the Station No. / Network No. setting switch. The setting range for network numbers is 1 to 239 (decimal).
(0 and 240 or more will result in an error)
Set the network number in hexadecimal.
   - The "×1" switch sets the 1st digit of the network number. 0 to F (hex) are valid.
   - The "×16" switch sets the 2nd digit of the network number. 0 to E (hex) are valid.
Example: To set to "239" (decimal), set to "EF" (hex).

×10 ×16
×1   ×1

5. Set the mode setting switch to "Station No.".
The network number will be written to this product. Once the network number has been saved to this product, CC-Link IE Field operation indicator STS1 (green) will stop blinking and then remain lit.

Network No.
Station No.

STS1 □ STS2
Lit

6. Turn OFF the power.
7. Check that the mode setting switch is set to "Station No.".

Network No.
Station No.

8. Set the station number with the Station No. / Network No. setting switch. The setting range for the station number is 1 to 120 (decimal). (0 and 121 or more will result in an error)
Set the station number in decimal.
   - The "×1" switch sets the 1st digit of the station number. 0 to 9 (decimal) are valid.
   - The "×10" switch sets the 2nd and following digits of the station number. 0 to C are valid. (A = 10, B = 11, C = 12)
Example: To set to "119" (decimal), set to "B9".

×10 ×10
×1   ×1

9. Turn ON the power. CC-Link IE Field communication will be started with the network number and station number that have been set.

9 CONNECTING THE CC-Link IE Field PORTS

- For the Ethernet cable, use a cable recommended by CC-Link Partners Association.
- The communication distance must be within the specified range.
- Always run the Ethernet cable through a conduit or secure the cable with clamps. If not secured as indicated above, any force or tension on the cable may damage the CC-Link IE Field host device, this product, or the cable.
- For detailed connection specifications, check the Cable Wiring Manual that is published by the CC-Link Partner Association.
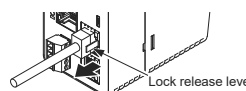
● Ethernet cable

How to connect

1. Hold the connector of the Ethernet cable and align the lock release lever of the Ethernet cable with the groove in CC-Link IE Field port 1 or port 2.
2. Insert the connector until it snaps in.

Ethernet cable
Groove
Lock release lever
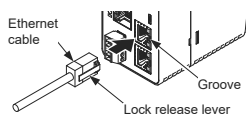
Removal procedure

1. Press on the lock release lever on the Ethernet cable and pull out.

Lock release lever

Note: Attempting to pull out the connector without pressing the lock release lever may cause the lock release lever to break.
Do not use an Ethernet cable if the lock release lever is broken. Do not grasp the cable to pull, as this may cause wire breakage in the cable.

10 CONNECTING THE POWER CABLE

Connection

● **Pin assignment diagram for the power supply connector (accessory)**

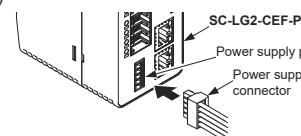|	Pin name	Function
1	+V	24V power input terminal for IO-Link
2	−V	0V power input terminal for IO-Link
3	−V	0V power input terminal for CC-Link IE Field
4	+V	24V power input terminal for CC-Link IE Field
5	F.G.	Frame ground
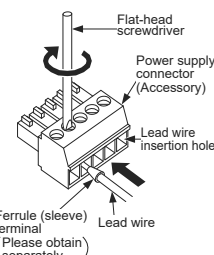
<Recommended power supply connector>
Product equivalent to MC1.5/5-ST-3.5AU
[Manufactured by Phoenix Contact K.K.]

Flat-head screwdriver
Power supply connector (Accessory)
Lead wire insertion hole
Ferrule (sleeve) terminal (Please obtain separately)
Lead wire

- When connecting the power supply connector (accessory), use solid wires, or stranded wires (lead wires) with a ferrule (sleeve) terminal (obtain separately) attached as shown at right, and insert sufficiently into the connection hole.
- Tighten the screws on the power supply connector by turning them clockwise to the torque of 0.22 to 0.25N·m.
- When inserted correctly, the wire is locked and cannot be pulled out. Take care not to pull with excessive force, as the wire may break.
- To disconnect single wires or stranded wires (lead wires), loosen the screws on the power supply connector by turning them counterclockwise, and then pull out the wires (lead wires).
- The following tool and single wires or stranded wires are recommended.
Tightening tool: Flat-head screwdriver [0.4 (blade width) × 2.5mm]
Wire size: 0.25 to 1.3mm² (AWG 23 to 16)

Mounting procedure

1. Insert the power supply connector into the power supply port of this product.

SC-LG2-CEF-P
Power supply port
Power supply connector

11 SPECIFICATIONS

Product name		IO-Link master unit for CC-Link IE Field
Model		**SC-LG2-CEF-P**
Supply voltage		24V DC$^{+10}_{-15}$% Ripple P-P 10% or less
Unit current consumption		On the IO-Link side: 150mA or less, on the CC-Link IE Field side: 200mA or less
Allowable passing current		On the IO-Link side: 3A or less (Note 1)
CC-Link IE Field communication specifications	Communication method	CC-Link IE Field
	Remote station type	Intelligent device station
	Number of cyclic communication link points	RX / RY: Max. 112 points (112 bits) / Max. 112 points (112 bits) RWr / RWw: Max. 132 points (132 words) / Max. 132 points (132 words)
	Transient transmission	For server function only, message size: 2 Kbytes (maximum)
	Number of ports	1000BASE-T Ethernet port × 2
	Communication speed	1Gbps
	Maximum distance between stations	100m
IO-Link specifications	Communication method	IO-Link v1.0 / v1.1
	Number of ports	e-CON-compliant connector port for IO-Link × 8
	Communication speed	COM1 (4.8kbps), COM2 (38.4kbps), COM3 (230.4kbps) Automatically set by IO-Link device
	Maximum cable length	20m
	Current supplied to IO-Link device (L+, L-)	200mA per port (maximum) (Note 1)
	Digital I/O (C/Q) (Note 2)	IO-Link mode	Compliance with the IO-Link standard
		SIO mode	PNP input (maximum inflowing current: 15mA) / Push-pull output (maximum drive capacity: 100mA)
	Digital input (DI)	PNP input (maximum inflowing current: 15mA)
Ambient temperature		-10 to +55℃ (No condensation or icing), Storage: -20 to +70℃
Ambient humidity		35 to 85% RH, Storage: 35 to 85% RH
Grounding method		Power supply connector is equipped with a frame ground (FG) RJ45 connector shield: Directly connected to frame ground Internal circuit: C coupling, casing: floating type
Material		Case: Polycarbonate
Weight		Approx. 210g

Notes: 1) Take care that the total consumption current of connected devices and the unit on the IO-Link side does not exceed the allowable passing current.
Power to devices (L+, L-), digital I/O (C/Q), and digital input (DI) are supplied from IO-Link (+V, -V) on the power supply connector.
2) Both digital I/O (C/Q) and digital input (DI) operation must be set up with CC-Link IE Field.
For information about how to set up digital I/O (C/Q) operation, refer to the "SC-LG2-CEF-P User's Manual" (our Website: https://panasonic.net/id/pidsx/global).

12 CAUTIONS

- This product has been developed / produced for industrial use only.
- Verify that fluctuations of power input supply voltage do not exceed the rating, including sensor amplifiers.
- When noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, ground each frame ground (F.G.) terminal on the equipment individually.
- Make sure that the power is OFF while performing wiring or connection work.
- Risk of damage and burning if the load is incorrectly wired or short-circuiting occurs.
- Do not wire in parallel with a high-voltage line or power line, or run through the same conduit. Risk of malfunctioning due to induction.
- This product is suitable for indoor use only.
- Avoid dust, dirt, and steam.
- Do not use in locations where there are corrosive or other harmful gases.
- Ensure that the product does not come into contact with organic solvents such as thinner.
- Ensure that the product does not come into contact with strong acid or alkaline.
- Ensure that the product does not come into contact with oil or grease.
- This product cannot be used in an environment that contains flammable or explosive gases.
- Performance may not be satisfactory in a strong electromagnetic field.
- Do not drop or otherwise subject to shock. Risk of product damage.
- Do not apply stress such as excessive bending or pulling to the connector base of a cable such as the Ethernet cable, IO-Link connection cable, and power cable. Risk of damage and connection failure.
- Never attempt to disassemble, repair, or modify the product.
- When the product becomes unusable or unneeded, dispose of the product appropriately as industrial waste.
- Design the system to allow the addition of external safety circuits and other means of protection against system trouble.

Panasonic Industry Co., Ltd.

Panasonic Industrial Devices SUNX Co., Ltd.

https://panasonic.net/id/pidsx/global

Please visit our website for inquiries and about our sales network.