Panasonic

NEW

Communication Unit

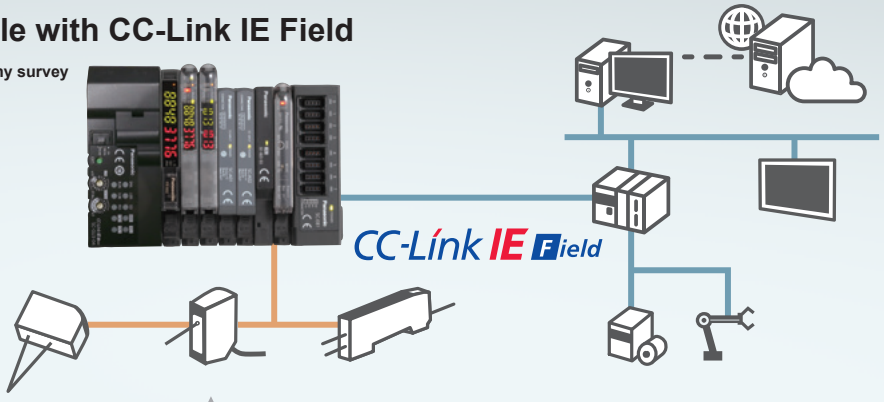
for CC-Link IE Field / CC-Link

SC-GU3-04 / SC-HG1-CEF
SC-GU3-01 / SC-HG1-C

Connect Fiber Sensors and Displacement Sensors to CC-Link IE Field for High-Speed Control

Introducing the industry's first* communication units compatible with CC-Link IE Field

*** As of March 2017, in-company survey**



Real-time communication for various sensors

Head-separated digital pressure sensor
DPS-400 SERIES

Digital fiber sensor
FX-500 SERIES

Digital laser sensor
LS-500 SERIES

Micro laser distance sensor
HG-C SERIES

Rectangular-shaped inductive proximity sensor (amplifier built-in)
GX-F/H SERIES

Compact inductive proximity sensor (amplifier-separated)
GA-311 SERIES

Temperature controller
KT SERIES

Micro photoelectric sensor
PM SERIES

Contact-type digital displacement sensor
HG-S SERIES

Visualize collected sensor data to launch IoT initiatives!

Conditions surrounding the manufacturing industry are rapidly changing as production processes are advancing dramatically based on keywords such as IoT and Industry 4.0. To respond to the IoT trend, "visualization" is the first step to take. Panasonic Industrial Device SUNX offers sensors and communication units that achieve the acquisition and visualization of sensor data.

●Pressure sensors

●Laser sensors

●Fiber sensors

●Displacement sensors

Panasonic Industrial Device SUNX's sensors can connect to both!

CC-Link IE Field

CC-Link

Communication Unit for Open Network SC series

Connection of various sensors to the network

Each SC-GU3 series unit can be connected with up to 16 sensors*.

* Up to 12 units when the system is configured with **FX-500** series / **LS-501** unit

NEW

Communication unit for CC-Link IE Field

SC-GU3-04

CC-Link IE Field

Communication speed: 1 Gbps

Communication unit for CC-Link

SC-GU3-01

CC-Link

Communication speed: 10 Mbps (max.)

Transmission of digital (numerical) data from pressure sensors, photoelectronic sensors, laser sensors, temperature controllers, and the like to the network

Setting of sensor threshold values and operation / confirmation of current values can be performed on the network. This eliminates the need to directly operating individual sensor units.

Head-separated digital pressure sensor

DPS-400 SERIES
DPH-100 SERIES

Units with a pressure range of 1 MPa, ±100 kPa and -101 kPa are available.

Digital fiber sensor

FX-500 SERIES

More than 100 types of fiber heads, including a heat-resistant type, chemical-resistant type and lens-equipped type, are available.

Digital laser sensor

LS-500 SERIES

Four types of sensor heads, such as a thru-beam type, coaxial reflective type and coaxial retroreflective type, are available.

Micro laser distance sensor*

HG-C SERIES

The CMOS laser sensors offer repeatability of 10 µm 0.394 mil to ensure stable detection.

Temperature controller*

KT SERIES

This unit is easy to operate and realizes high-precision temperature control.

* **SC-A01** analog voltage input unit or **SC-A02** analog current input unit is also required.

Transmission of ON/OFF data of proximity sensors and other sensors to the network

The ON/OFF data of sensors can be centrally managed on the network. Should an abnormality occur, the problem cause can be easily identified and located.

Compact inductive proximity sensor (amplifier-separated)

GA-311/GH SERIES

Five types of IP67G sensor head models are available, including an ultra-compact unit with a diameter of 2.8 mm 0.110 in and a sputter-resistant unit.

Rectangular-shaped inductive proximity sensor (amplifier built-in)*

GX-F/H SERIES

These inductive proximity sensors have a large stable detection range to provide an ample detection distance.
The integrally molded construction realizes IP68G protection.

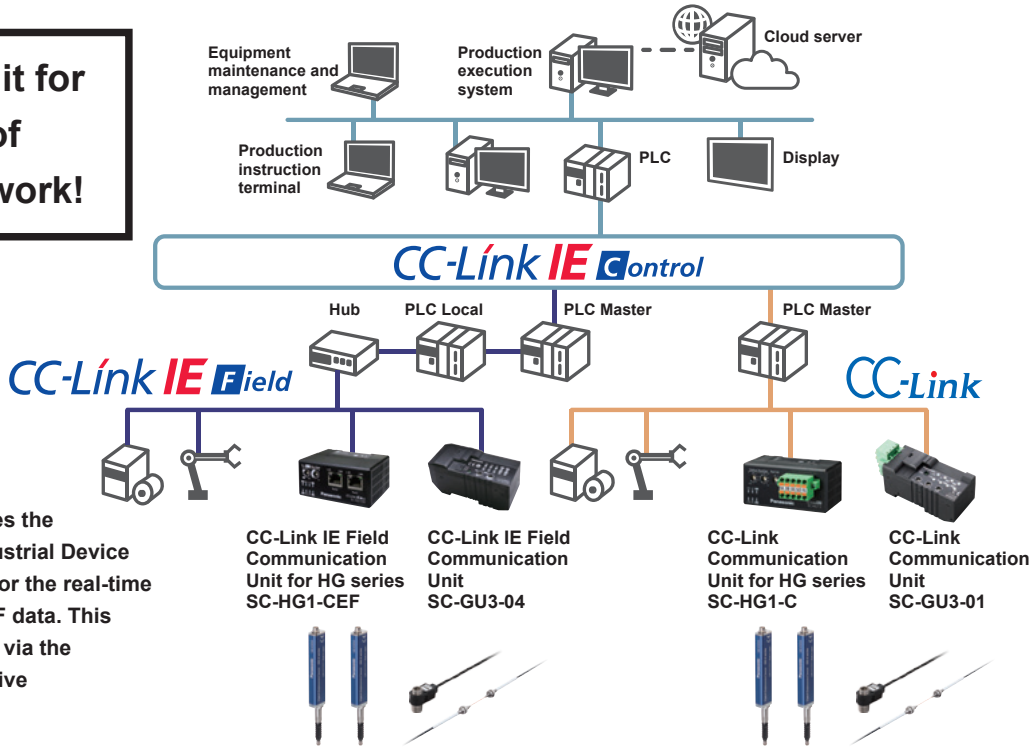
Micro photoelectric sensor*

PM SERIES

These compact units feature three protective circuits.
A large, easy-to-see multi-angle indicator is provided.

* **SC-E1** 1-channel connector input extension unit or **SC-E81** / **SC-E82** 8-channel connector input extension unit is also required.

Communication unit for direct connection of sensors to the network!



Use of the communication unit enables the connection of various Panasonic Industrial Device SUNX sensors to a CC-Link network for the real-time acquisition of digital data and ON/OFF data. This allows you to change sensor settings via the network and also log data for preventive maintenance purposes.

Connection of displacement sensors to the network

Each SC-HG1 series unit can be connected with up to 15 displacement sensors.

NEW

CC-Link IE Field Communication Unit for **HG** series

SC-HG1-CEF

CC-Link IE Field

Communication speed: 1 Gbps

CC-Link Communication Unit for **HG** series

SC-HG1-C

CC-Link

Communication speed: 10 Mbps (max.)

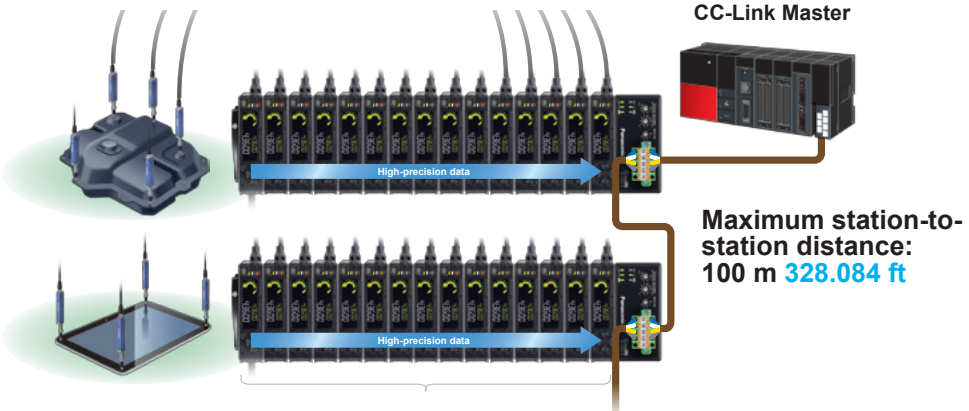
Transmission of digital (numerical) data from contact-type digital displacement sensors to the network

The SC-HG1 series achieves programless transmission of high-precision data.
Internal settings of multiple units can also be changed in a batch via the network.

Contact-type digital displacement sensor

HG-S SERIES

The robust and slim unit body contributes to long service life.
The series uses the optical absolute system to eliminate the problems of "value skipping" and "missing zero point."

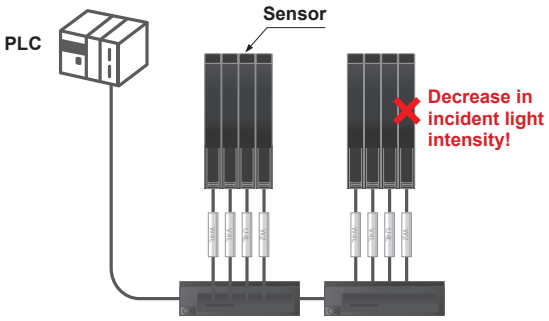


Connection of 1 master unit and up to 14 slave units

Batch saving of sensor settings at equipment startup!

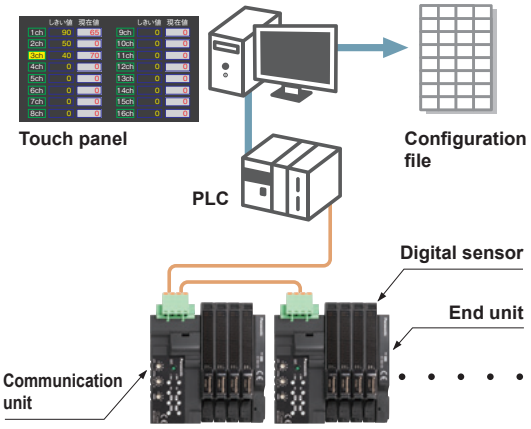
Without communication unit

When multiple sensor units are used, if one of the sensors generates a malfunction, it is necessary to check the settings of the individual sensors. This requires many man-hours.



With communication unit

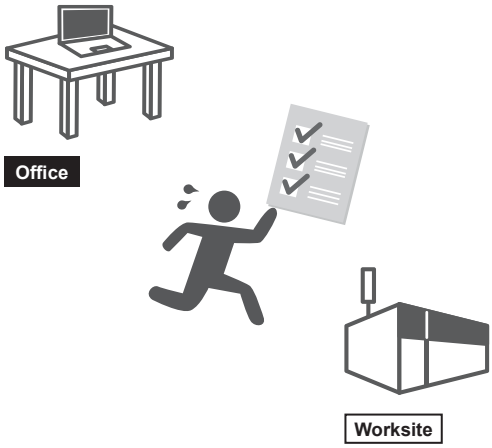
When a sensor malfunction occurs, a list of all sensor statuses is displayed, so the problem can be easily identified. By obtaining the data of the individual sensors and saving it in a settings file, system restoration work becomes easier and input / setting errors can be prevented.



Remote equipment monitoring / operation

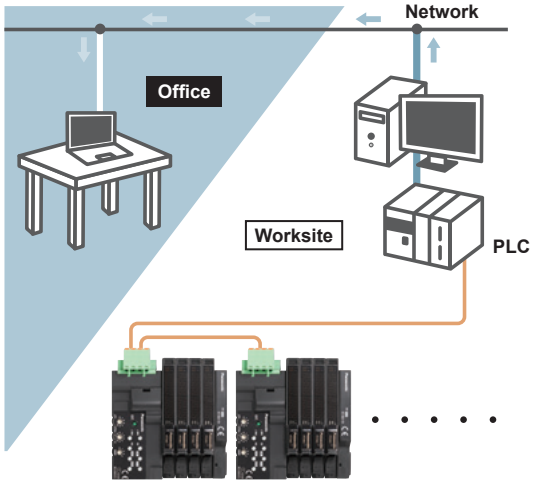
Without communication unit

When a problem occurs, it is necessary to go back and forth between the office and worksite for the confirmation of the settings and other data.



With communication unit

The communication unit connected to the existing network enables the conformation of the settings of the sensors installed in the production equipment without leaving the office. The communication unit enables quick acquisition of status information.

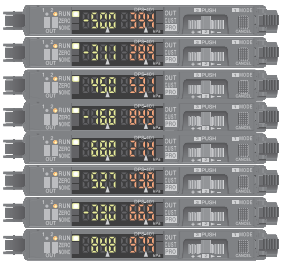


Confirmation from a distant location!

Logging of the current values of digital sensors for use in preventive maintenance!

Without communication unit

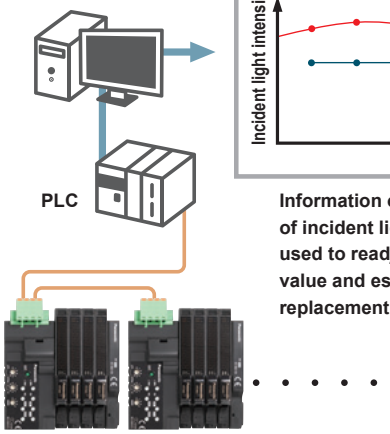
It is difficult to grasp long-term sensor fluctuations only by pre-operation inspection. Manual recording of data also takes time and is cumbersome.

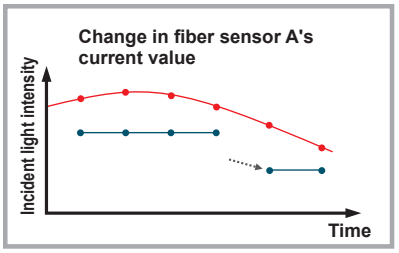


Handwritten daily inspection records

With communication unit

A graph plotted using obtained numerical data allows easy confirmation of the long-term fluctuation trend, thus enabling the prediction of sensor fluctuations to facilitate preventive maintenance.





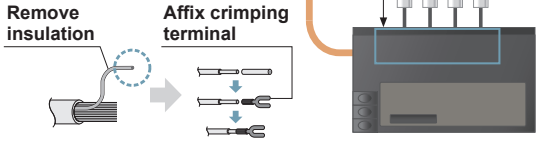
Information of the declining trend of incident light intensity can be used to readjust the threshold value and estimate the sensor replacement timing.

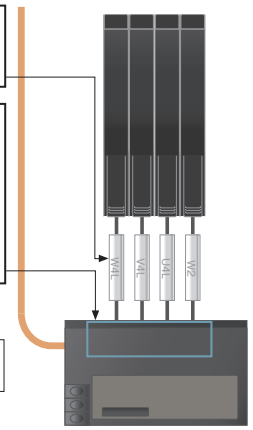
Communication unit contributes to the reduction of wiring and installation work!

Without communication unit

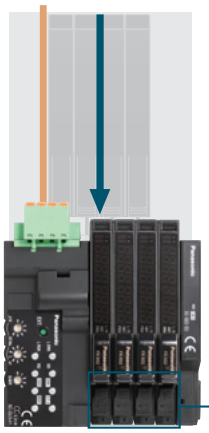
Construction procedures
(1) Affix mark tubes
(2) Wiring

Construction procedures
(1) Remove cable insulation
(2) Crimp on terminal
(3) Clamp screw onto terminal block
(4) In the case of connector terminal block, process the connector for every sensor





With communication unit



Cascade connection by connector
- ◎ No need for cable processing
- ◎ No need to clamp screw onto terminal block
- ◎ No need for mark tubes
- ◎ Easy removal without any tools
- ◎ Reduction in installation space
- ◎ No wasted material when replacing sensors

Easy replacement of a sensor without separating the adjacent sensor amplifier

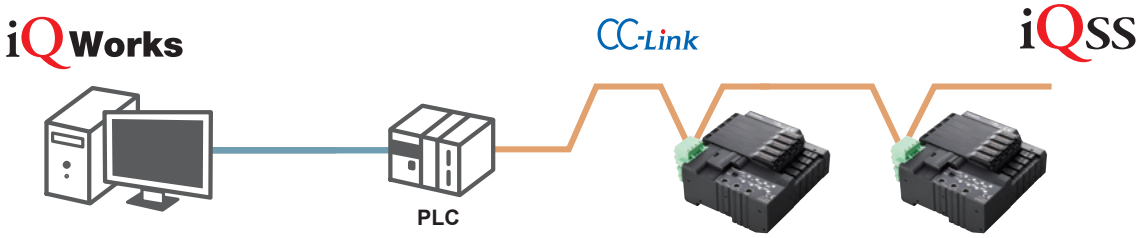
*SC-GU3 series

Sensors are detachable simply by pushing down the lever of cascading connector unit and sliding the sensor amplifier sideways.

Support for Mitsubishi Electric's iQ Sensor Solution

* Supported only by SC-GU3-01 and SC-HG1-C
(As of June 2017)

The SC-GU3-01 and SC-HG1-C Communication Units for CC-Link are compatible with Mitsubishi Electric's iQ Sensor Solution (iQSS) and can be used in combination with products that support iQSS, for example Mitsubishi Electric's MELSEC series.



Digital sensors connected to the communication unit can be operated using Mitsubishi Electric's iQ Works (GX Works 2) software. The following functionalities can be realized by loading CSP+ data. The following functionality is supported by using iQ Works to load CSP+ data.

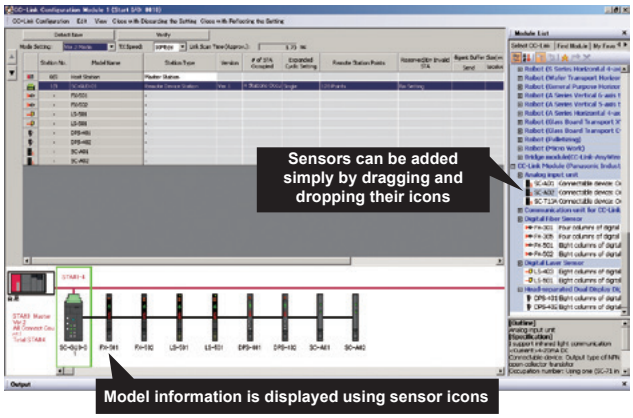
(Note) CSP+: CC-Link family system profile

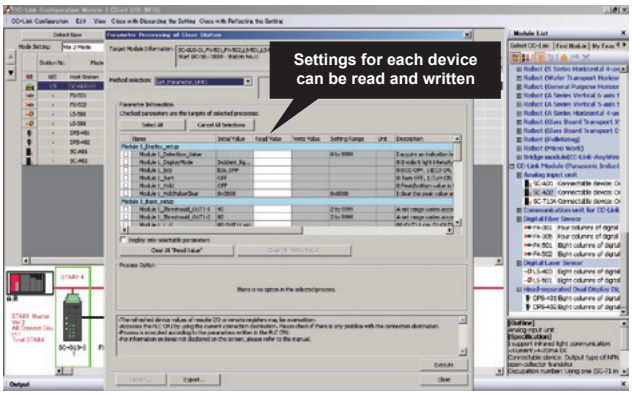
1 **CC-Link configuration information can be used to easily check the configuration of devices (sensor types: fiber, pressure, cascading configuration, number of units) connected to the communication unit.**

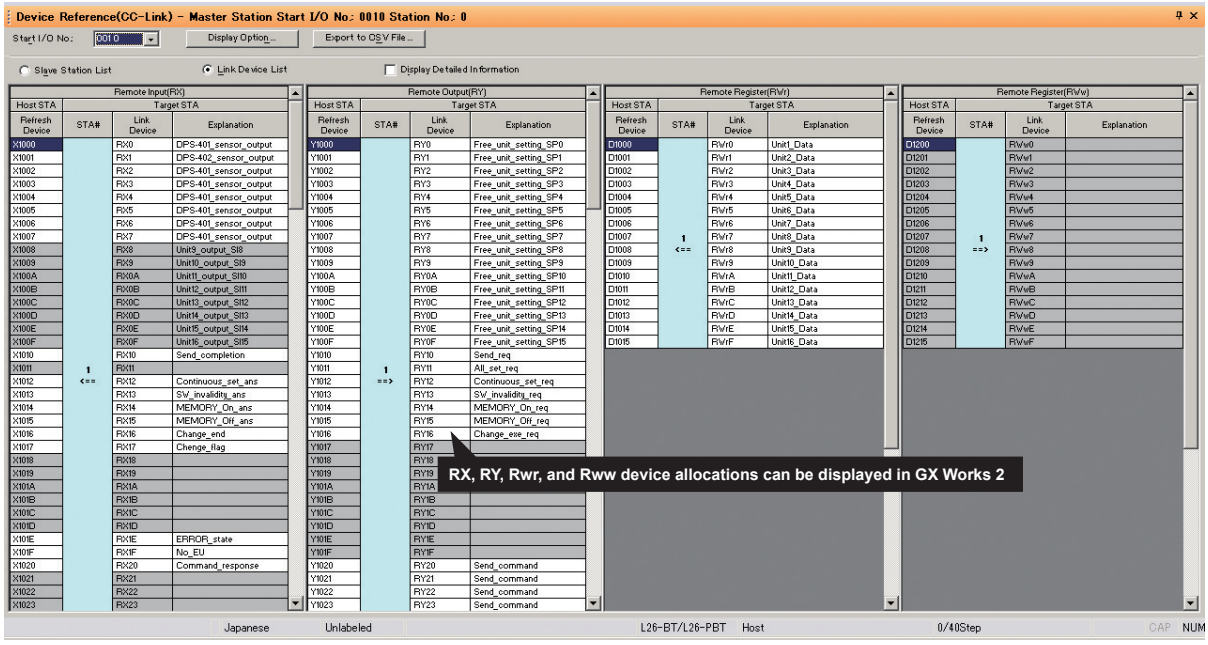
2 **A list of sensor-specific parameter data (write / read) can be acquired and changed.**

3 **Allocation of the devices connected to the communication unit can be displayed by loading CSP+ data.**

*** Requires Mitsubishi Electric's GX Works 2 sequencer engineering software Ver. 1.492 or later.**







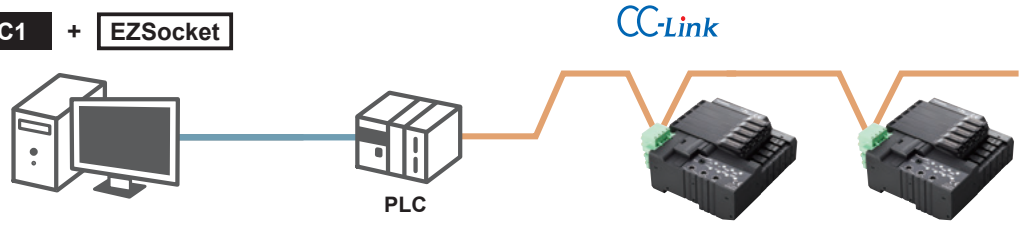
SC-PC1 computer software with support for Mitsubishi Electric's EZSocket

* Supported only by SC-GU3-01
(Soon to be supported by SC-GU3-04 and SC-HG1-C/CEF)
(As of June 2017)

EZSocket

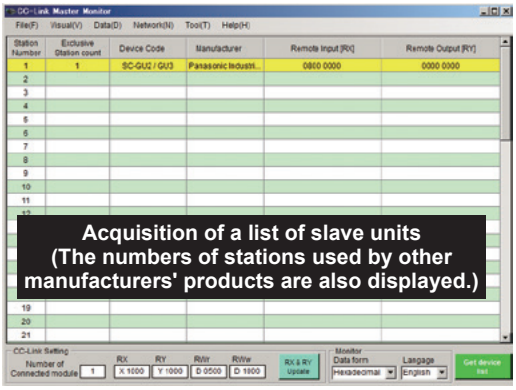
By using the SC-PC1 PC software setting, communication commands can be transmitted via the MELSEC series for the ladderless manipulation of information (including sensor data) for the SC-GU3-01 units connected to CC-Link.

SC-PC1 + **EZSocket**

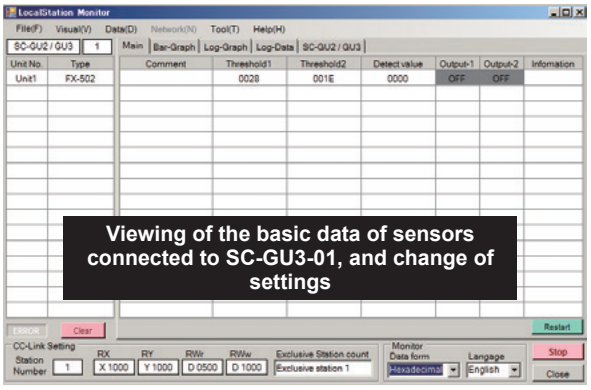


* iQ Works, CC-Link, CC-Link IE Field, iQ Sensor Solution and EZSocket are registered trademarks of Mitsubishi Electric Corporation.

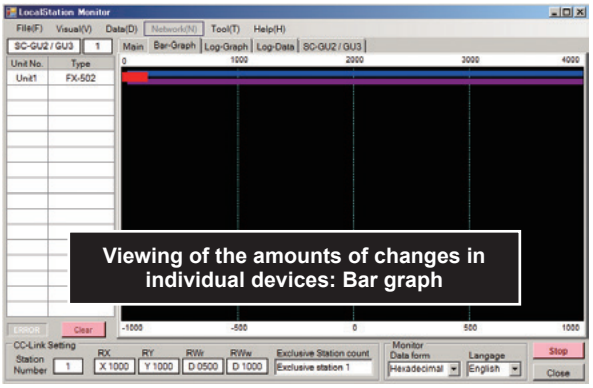
■List of connected devices

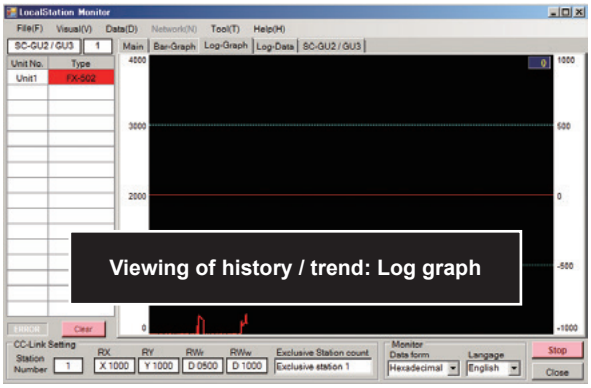


■List of information about connected sensors



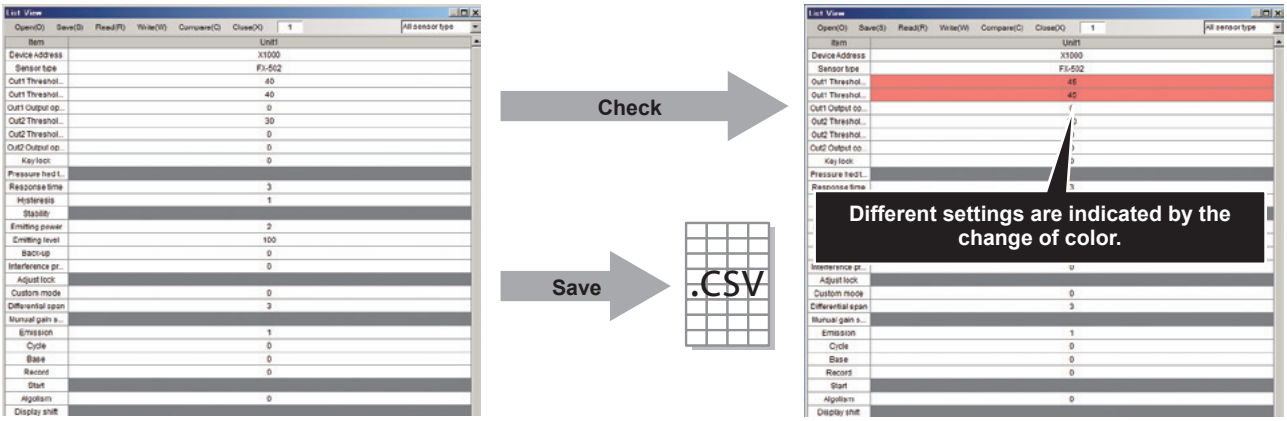
■Graph display





Sensor settings backup

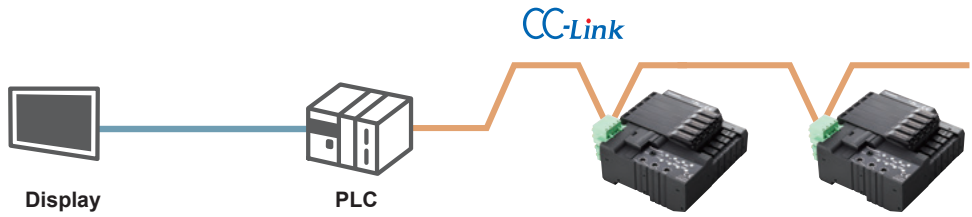
**The SC-PC1 software can load sensor settings information. * The loaded data can be saved in the CSV format.
Furthermore, cross-checking with the settings data of sensors connected to the SC-PC1 is possible.
This function is useful when you want to store the sensor settings data before sending out the devices or when you want to check the sensor settings in the event a problem occurs.**



Sample program for the display of data for when using PLC and display device*

* Program designed for SC-GU3-01
(Soon to be supported by SC-GU3-04 and SC-HG1-C/CEF)
(As of June 2017)

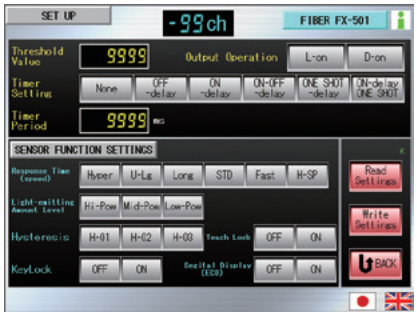
The sample program enables the monitoring of digital sensors, such as incident light intensity and pressure, as well as the writing of data for the change of sensor settings.



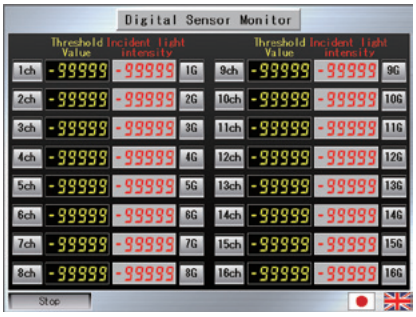
Sample program for the SC-GU3-01 Communication Unit for CC-Link

The sample program (display screen, ladder) includes a process for the confirmation of threshold values / displayed values and the basic settings for sensor amplifiers. It facilitates the development of original programs. The display language of the sample program can be switched to Japanese or English.

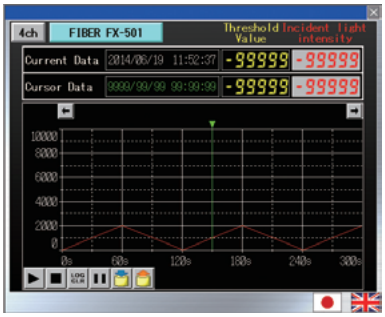
■Sample program for a digital fiber sensor



- Change threshold values and output operating settings.
- Change timer types and times.
- Setting of response time, light emitting amount level, hysteresis, etc.

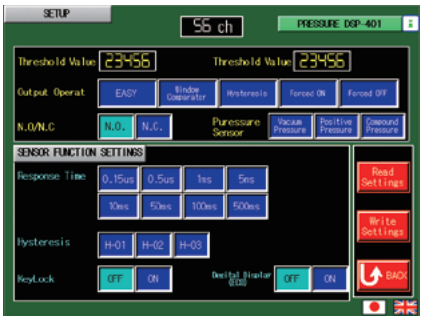


- The colors of channels change according to the sensor outputs.
- A list of threshold values is displayed.
- Current values are displayed.



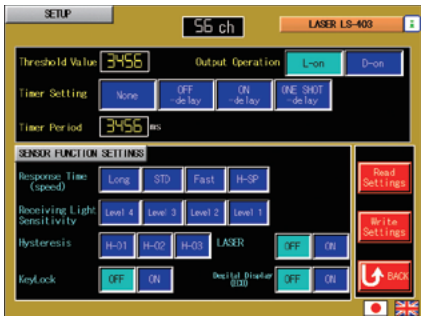
- The change in current value is plotted, so the amount of change can be checked on the timeline.
- Data can be written to a CF card.

■Sample program for a digital pressure sensor



- Change threshold values.
- Configure sensing operation and NO / NC settings.
- Setting of response time, hysteresis, etc.

■Sample program for a digital laser sensor

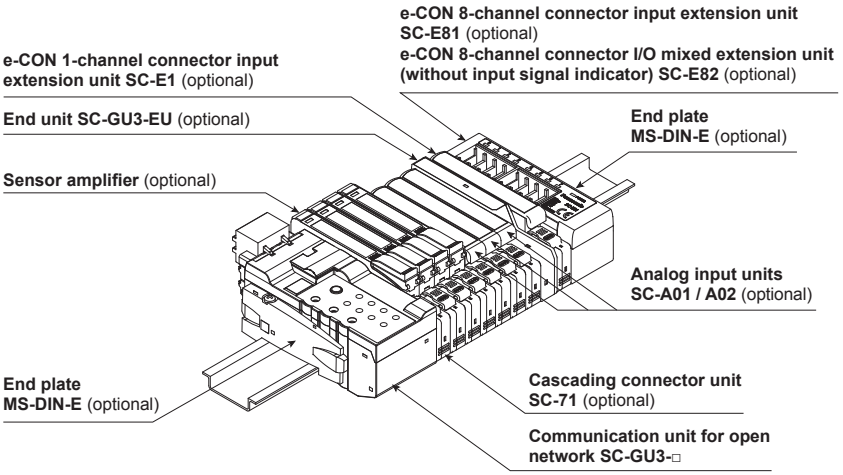


- Change threshold values and output operating settings.
- Change timer types and times.
- Setting of response time, receiving light sensitivity, hysterisy, etc.

Display	PLC	Free downloads
GOT1000 series (Mitsubishi Electric Corporation)	Mitsubishi Electric Corporation	Available for download from the Mitsubishi Electric and Panasonic Industrial Devices SUNX websites
GOT2000 series (Mitsubishi Electric Corporation)	Mitsubishi Electric Corporation	Soon to be available for download from the Panasonic Industrial Devices SUNX website

SC-GU3-□
Example of system configuration

When optical communication is used in a system connected with product models not compatible with optical communication, connect the incompatible units after the SC-GU3-EU. A maximum of 12 units can be connected if the system is connected with a FX-500 series unit or LS-501. A maximum of 16 sensor amplifiers can be connected.



Designation	Appearance	Model No.	Descritption
Communication unit for CC-Link IE Field		**SC-GU3-04**	This is a communication unit, which can convert the output signal of a sensor amplifier into communication data for CC-Link IE Field.
Communication unit for CC-Link		**SC-GU3-01**	This is a communication unit, which can convert the output signal of a sensor amplifier into communication data for CC-Link.
End unit		**SC-GU3-EU**	This end unit can change and check the settings of sensor amplifiers that allow optical communication and monitor operation status.
Cascading connector unit		**SC-71**	This one-touch connector is used to connect the following devices to **SC-GU3-0**□: The **FX-500**/**410**/**310**/**300** fiber sensor, the **LS-500**/**400** laser sensor, the **DPS-400** digital pressure sensor, **SC-E1**, **SC-A01** and **SC-A02**, etc.
e-CON 1-channel connector input extension unit		**SC-E1**	This extension unit can be connected to commercially available devices (Note) including an NPN output type or DC 2-wire type sensor. Includes power and input signal indicators (for one channel). When using in combination with the **SC-GU3** series, use with the **SC-71**.
e-CON 8-channel connector input extension unit		**SC-E81**	This extension unit can be connected to eight NPN output type devices. Includes power and input signal indicators (for eight channels).
e-CON 8-channel connector input extension unit		**SC-E82**	This extension unit can be connected to eight NPN output type devices. Includes a power indicator. (Does not include an input signal indicator)
Analog voltage input unit		**SC-A01**	This extension unit can be connected to NPN output type devices or analog voltage output type devices. When using in combination with the **SC-GU3** series, use with the **SC-71**.
Analog current input unit		**SC-A02**	This extension unit can be connected to NPN output type devices or analog voltage output type devices. When using in combination with the **SC-GU3** series, use with the **SC-71**.
End plate		**MS-DIN-E**	After **SC-GU3-0**□, a sensor amplifier, an analog input unit or an end unit are connected on a DIN rail, make sure to install the end plates in such a way that they hold the unit in place at both ends. Two pcs. per set
Computer software for CC-Link		**SC-PC1**	This software makes it possible to use a computer to monitor current sensor values, save setting information to a CSV file, display log data, save log data to a CSV file, etc.
Cable with connector on one end		**CN-M20-C2**	This cable has a connector for linking to the parallel output signal.

Note: Conditions of connectable DC 2-wire type input device
- Leak current: 1 mA or less (when the power is OFF), Offset voltage: 3 V or less (when the power is ON)
- Product whose load current range includes 5 to 8 mA

SPECIFICATIONS

Item \ Designation	Communication unit for CC-Link IE Field
Model No.	**SC-GU3-04**
CE marking directive compliance	EMC Directive (Note 1), RoHS Directive
Compatible sensor units	Sensor amplifiers (NPN output type) that can connect to the **SC-71** cascading connector unit (optional)
Number of units connectable	Maximum of 16 units can be connected to one **SC-GU3-04** unit (Max. 12 units when **FX-500** / **LS-500** series is connected)
Supply voltage	24 V DC $^{+10}_{-15}$ % Ripple P-P 10 % or less
Current consumption	200 mA or less (excluding connected sensor amplifiers)
Allowable passing current	2A or less (Note 2)
Communication method	CC-Link IE Field
Remote station type	Remote device station
Transmission line types	Line, star (mixing of line and star types is possible), ring
Network No. setting	1 to 239 (decimal) [1 to EF (hex)] (0 and 240 or higher result in an error) (Note 3)
Station No. setting	1 to 120 (decimal) (0 and 121 or higher result in an error)
Communication speed	1 Gbps
Maximum overall cable distance	100 m 328.084 ft
Ambient temperature	-10 to +50 °C +14 to +122 °F (8 to 16 units connected: -10 to +45 °C +14 to +113 °F) (No dew condensation or icing allowed) Storage: -20 to +70 °C -4 to +158 °F
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH
Material	Enclosure: Polycarbonate
Net weight	100 g approx.

Notes: 1) Ground the shield wire of the Ethernet cable at a higher-level device in order to comply with the EMC Directives. This product is not provided with a grounding terminal. For details, refer to the CC-Link IE Field Network Cable Installation Manual published by the CC-Link Partner Association.
2) Take care that the total consumption current of connected sensor amplifiers and other devices does not exceed the allowable passing current.
3) For the Network No. setting of this product, set a value converted to hexadecimal.

Item \ Designation	Communication unit for CC-Link				
Model No.	**SC-GU3-01**				
CE marking directive compliance	EMC Directive, RoHS Directive				
Compatible sensor units	Sensor amplifiers (NPN output type) that can connect to the **SC-71** cascading connector unit (optional)				
Number of units connectable	Maximum of 16 units can be connected to one **SC-GU3-01** unit (Max. 12 units when **FX-500** / **LS-500** series is connected)				
Supply voltage	24 V DC $^{+10}_{-15}$ % Ripple P-P 10 % or less				
Current consumption	120 mA or less (excluding connected sensor amplifiers)				
Allowable passing current	Wire-saving connector 2 A (Note 1), supply connector 6 A (Note 2)				
Communication method	CC-Link Ver.1.10				
Remote station type	Remote device station				
Number of occupied station	Switchable 1 or 4 station				
Communication speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
Total extension length	1,200 m 3,937.008 ft	600 m 1,968.504 ft	200 m 656.168 ft	150 m 492.126 ft	100 m 328.084 ft
Communication cable	Specified cable (twist pair cable with shield) (Note 3)				
Station No. setting	1 to 64 (0 and 65 or higher result in an error)				
Ambient temperature	-10 to +55 °C +14 to +131 °F (No dew condensation or icing allowed), If 4 to 7 units are connected in cascade: -10 to +50 °C +14 to +122 °F, if 8 to 16 units are connected in cascade: -10 to +45 °C +14 to +113 °F Storage: -20 to +70 °C -4 to +158 °F				
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH				
Material	Enclosure: Polycarbonate				
Net weight	80 g approx.				

Notes: 1) Take care that the total consumption current of connected sensor amplifiers and other devices does not exceed the allowable passing current.
2) In case of supplying power to other devices, be sure to set the current less than allowable passing current.
3) Use the CC-Link-specified cable.

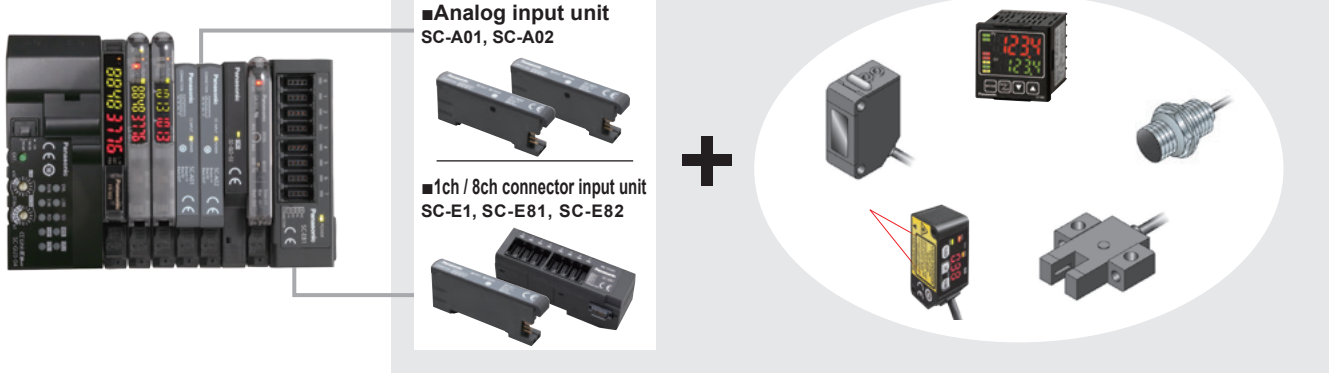
Models connectable to SC-GU3-□

Communication compatibility	Type	Model No.
Models that support optical communications	Digital fiber sensor (Note)	**FX-501**, **FX-502**, **FX301**, **FX-305**
	Digital laser sensor	**LS-403**, **LS-501**
	Digital pressure sensor	**DPS-401**, **DPS-402**
	1ch connector input unit (analog communication unit)	**SC-A01**, **SC-A02**
No optical communications	Digital fiber sensor (Note)	**FX-551**, **FX-411**, **FX-412**, **FX-301** (**B/G/H**), **FX-301-HS**
	Manually Set Fiber Sensor	**FX-311** (**B/G**)
	Digital laser sensor	**LS-401**
	Compact inductive proximity sensor	**GA-311**
	1ch connector input unit	**SC-E1**
	8ch connector input unit	**SC-E81**, **SC-E82**

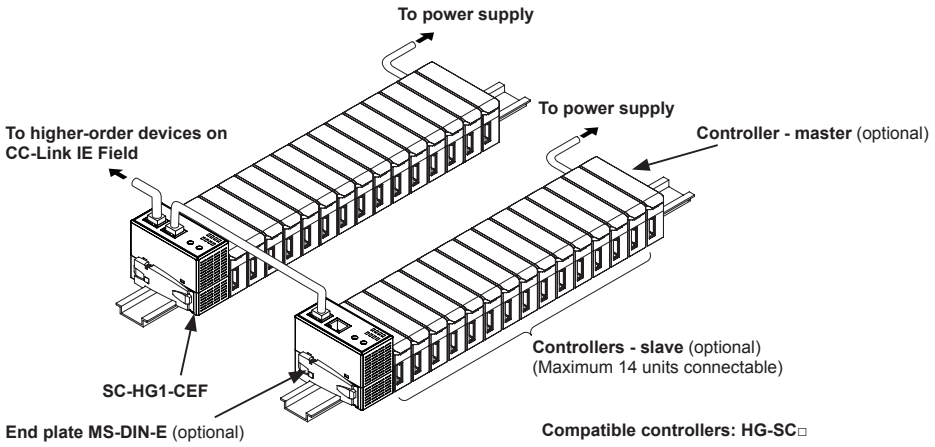
Note: **FX-301** fiber sensor products manufactured before June 2004 are not compatible with optical communication. Those produced from June 2004 are compatible with optical communication.
If "NAVI" is printed only on one side of the product, the unit is not compatible with optical communication. If "NAVI" is printed on both sides of the product, the unit is compatible with optical communication. Please check when using **FX-301** fiber sensors.

When connecting ordinary photoelectronic / proximity sensors or analog sensors

By using the **SC-E1**, **SC-E81** or **SC-E82** e-CON-compatible connector input extension unit, ordinary photoelectronic / proximity sensors and analog sensors can be connected to the **SC-GU3**.
The **SC-A01** and **SC-A02** allow the connection of analog output devices. (1 to 5 V, 4 to 20 mA)



SC-HG1-□
Example of system configuration



Designation	Appearance	Model No.	Description
CC-Link IE Field communication unit for digital displacement sensor		**SC-HG1-CEF**	This communication unit converts the output data from digital displacement sensors to data that can be communicated via CC-Link IE Field.
CC-Link communication unit for digital displacement sensor		**SC-HG1-C**	This communication unit converts the output data from digital displacement sensors to data that can be communicated via CC-Link.
End plate		**MS-DIN-E**	After a communication unit and controllers are connected on a DIN rail, make sure to install the end plates in such a way that they hold the unit in place at both ends. Two pcs. per set

SPECIFICATIONS

Designation / Item / Model No.	CC-Link IE Field Communication Unit for **HG** series **SC-HG1-CEF**
CE marking directive compliance	EMC Directive, RoHS Directive
Compatible controller	**HG-SC**□
Number of units connectable	Maximum of 15 units (one master, 14 slaves) per **SC-HG1-CEF** unit
Supply voltage	24V DC ±10%, including 0.5V ripple (P-P) (Note 1)
Current consumption	200 mA or less
Communication method	CC-Link IE Field
Remote station type	Remote device station
Transmission line types	Line, star (mixing of line and star types is possible), ring
Network No. setting	1 to 239 (decimal) [1 to EF (hex)] (0 and 240 or higher result in an error) (Note 2)
Station No. setting	1 to 120 (decimal) (0 and 121 or higher result in an error)
Communication speed	1 Gbps
Maximum overall cable distance	100 m 328.084 ft
Ambient temperature	-10 to +45 ºC +14 to +113 °F (No dew condensation or icing allowed) Storage: -20 to +60 ºC -4 to +140 °F
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH
Material	Enclosure: Polycarbonate
Net weight	100 g approx.

Notes: 1) Take care that the total consumption current of connected sensor amplifiers and other devices does not exceed the allowable passing current.
2) For the Network No. setting of this product, set a value converted to hexadecimal.

Designation / Item / Model No.	CC-Link Communication Unit for **HG** series **SC-HG1-C**				
CE marking directive compliance	EMC Directive, RoHS Directive				
Compatible controller	**HG-SC**□				
Number of units connectable	Maximum of 15 units (one master, 14 slaves) per **SC-HG1-C** unit				
Supply voltage	24V DC ±10%, including 0.5V ripple (P-P) (Note 1)				
Current consumption	80 mA or less				
Communication method	Switchable CC-Link Ver.1.10 or 2.00				
Remote station type	Remote device station				
Number of occupied station	CC-Link Ver.1.10: 4 stations, CC-Link Ver.2.00: Switchable 2 or 4 stations				
Communication speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
Total extension length	1,200 m 3,937.008 ft	900 m 2,952.756 ft	400 m 1,312.336 ft	160 m 524.934 ft	100 m 328.084 ft
Communication cable	Specified cable (twist pair cable with shield) (Note 2)				
Station No. setting	1 to 64 (0 and 65 or higher result in an error)				
Ambient temperature	-10 to +45 ºC +14 to +113 °F (No dew condensation or icing allowed) Storage: -20 to +60 ºC -4 to +140 °F				
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH				
Material	Enclosure: Polycarbonate				
Net weight	80 g approx.				

Notes: 1) Power is supplied from a connected controller / master controller.
2) Use the CC-Link-specified cable.

Other open-network communication units

Communication unit for DeviceNet
SC-GU3-02

Communication unit for EtherCAT
SC-GU3-03

RS-485 Communication Unit for HG series
SC-HG1-485

Disclaimer

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