Mitutoyo

Interface Unit CC-Link for EJ Counter

User's Manual

- Instructions for use -

Read this document thoroughly before operating the product. After reading, retain it close at hand for future reference.
This English language version of the document contains the original instructions.

- For the related User's Manuals, see "■ Positioning of this document, document map" on page 1".

No. 99MBC141A2
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■ Product names and model numbers covered in this document

● Product name

Product name	Interface Unit CC-Link for EJ Counter

■ Notice regarding this document

- Mitutoyo Corporation assumes no responsibilities for any damage to the product, caused by its use not conforming to the procedure described in this document.
- In the event of loss or damage to this document, immediately contact the agent where you purchased the product or a Mitutoyo sales office.
- Read this document thoroughly before operating the product. In particular, be sure to fully understand "Safety Precautions" on page 6 and "Precautions for Use" on page 6.
- The contents of this document are based on information current as of January 2024.
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- The corporation, organization and product names that appear in this document are their trademarks or registered trademarks.

Contents

About This Document

■ Positioning of this document, document map

The position of this document and its relationship to other product documentation are as follows.

● Interface unit manual

Interface Unit Quick Start Guide	Explains setup, specifications and troubleshooting. This document is included in the product package together with the Interface Unit. (Common to all interface unit models)
Interface Unit CC-Link User's Manual (This Document)	This is the User's Manual that explains the Interface Unit CC-Link in detail.

● Counter manual

EJ Counter Quick Start Guide	Covers handling precautions, operating procedures, specifications, troubleshooting for EJ Counters to which the Interface Unit CC-Link is connected for use. For details, see EJ Counter User's Manual. This document is included in the product package together with the EJ Counter.
EJ Counter User's Manual	This is the User's Manual that provides a detailed explanation of the EJ Counter that is connected to the Interface Unit CC-Link. Not included with product. Please download the manual from Mitutoyo's web site (https://manual.mitutoyo.co.jp).

● Linear Gage manual

LG100 User's Manual	Covers installation procedures, specifications, maintenance and so forth for Linear Gages that can be connected to EJ Counters. Select and purchase Linear Gages according to your application.
LG200 User's Manual	
LGB User's Manual	

■ Intended readers and purpose of this document

● Intended readers

This manual is intended for customers who are installing or using the Interface Unit CC-Link for EJ Counter for the first time.

● Purpose

The purpose of this document is to help you understand the product overview, functions of each part, procedures for use and care of the product.

Conventions Used in This Document

■ Safety reminder conventions warning against potential hazards

⚠CAUTION	Indicates a hazard with a low level of risk which, if not avoided, **could result in minor or moderate injury**.
NOTICE	Indicates a situation which, if not avoided, **may result in property damage**.

■ Conventions indicating prohibited and mandatory actions

	Indicates concrete information about prohibited actions.
	Indicates concrete information about mandatory actions.
	Indicates that grounding needs to be implemented.

■ Conventions indicating referential information or reference location

IMPORTANT	Indicates information that must be known when using the product.
Tips	Indicates further information and details relevant for the operating methods and procedures that are explained in that section.
	Indicates reference location if there is information that should be referred to in this document or an extraneous User's Manual. Example: For details about XX, see "1.3 Part Names" on page 14 in "1 Overview".

■ Other conventions

( ): Round brackets	Represent a paraphrase of an immediately preceding phrase or a supplementary explanation.
" ": Double quotation marks	Represent a highlighted phrase. They also indicate an index where information to be referenced is described.
[ ]: Square brackets	Indicates the name of an operation key.
1, 2, 3	Indicates the order and the contents of tasks.
»	Indicates the action resulted from some operation(s).

■ Example of conventions use

2.1.2 Linking to EJ Counters

Link this product to EJ Counters.
Up to eight EJ Counters can be linked to this product.

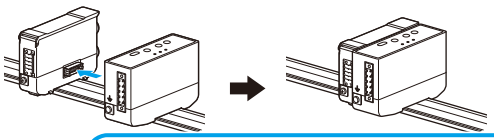
Tips
The interface unit is intended for use with the EJ-102N (Code No. 542-080) and EJ-102NE (Code No. 542-081) EJ Counters. These two types of EJ Counters can be used in mixed configurations.

1 **Remove the protective covers from the counter linkage connectors of this product and the EJ Counter.**

2 **Attach this product to the DIN rail on the side facing the EJ Counter's counter linkage connector (male).**

Tips
For details, see "2.1.1 DIN Rail Attachment / Removal" on page 20.

3 **Link the product to the EJ Counter.**
Slide the product or EJ Counter along the DIN rail to fully mate the counter linkage connector on the product (female) with the counter linkage connector (male) on the EJ Counter.



NOTICE
Do not link more than eight EJ Counters together. Failure to observe this precaution may result in damage.

IMPORTANT
When sliding this product or EJ Counters along the DIN rail, move them slowly.

Indicates an operating procedure to be performed or its outline.

Indicates reference to some other document or section.

Indicates safety information.

Indicates important information that must be known when using the product.

Safety Precautions

Read these "Safety Precautions" thoroughly before operating the product to use it properly.

These safety precautions include such information as to prevent injury to the operator and other persons, damage to property and product defects. Be sure to observe these precautions carefully.

■ Precautions for this product

⚠CAUTION

	Do not disassemble or modify this product. Otherwise you may be subject to electric shock, and there is a risk of fire due to a short circuit caused by metallic powders that have gotten inside the product.

Precautions for Use

■ Use and handling of the product

- **Use this product only by connecting to measuring instruments which supports this product.**

  Do not use this product for measuring instruments which does not support this product.

  For measuring instruments supported by this product, contact the agent where you purchased the product or a Mitutoyo sales office.

- **This product is a measuring instrument.**

  Do not use it for any purposes other than measuring.

- **This product is for industrial usage.**

  Do not use this product for purposes other than for industrial usage.

- **The product is a precision instrument.**

  Handle this product with care. Do not apply excessive shock or force to any of the parts during operation.

■ Environment for placement

This product is designed for indoor use. To ensure that the product is used in a suitable environment, take the following conditions into account when installing it.

- Vibration
  Install this product in an environment where it will be subject to minimal vibration. Using this product in a place with significant vibration for an extended period of time may result in malfunction of the precision components.
- Dust
  Dust in the installation site negatively affects the electrical components. Install this product in an environment where it will be subject to minimal dust.
- Sunlight
  If this product is exposed to direct sunlight, the heat will cause deformations in the main unit, negatively affecting its operation. If installing this product in an environment that is exposed to direct sunlight, such as near a window, is unavoidable, protect it from the sunlight by curtaining it off, etc.
- Ambient temperature and humidity
  Avoid using the product in any place that is subject to sudden changes in temperature or humidity.

When using this product in the following environments, take necessary shielding measures.

- Where noise is generated due to static electricity, etc.
- Where there is strong electrical field intensity
- Where power wires and motor lines pass nearby
- Where there is risk of direct contact with materials such as chips, cutting fluids or water
- Where there is risk of exposure to radiation
- Where there is the risk of exposure to corrosive gas

■ Maintenance

Do not use organic solvents such as thinner or benzine. Gently wipe dirt off of the product with a soft, tightly woven cloth.

■ Power supply

Be sure to connect this product to ground.

Provide a power supply with capacity sufficient to accommodate switch-on surge current.

Tips

This product is supplied with power by the connected EJ Counter.

Electromagnetic Compatibility (EMC)

This product complies with the EMC Directive and the UK Electromagnetic Compatibility Regulations; however, if this receives electromagnetic interference that exceeds these requirements, it will be out of warranty and require appropriate measures.

This product is an industrial product, and is not intended to be used in residential environment. If this product is used in residential environment, this product may cause electromagnetic interference with other instruments. In such a case, it is required to take appropriate measures for preventing such electromagnetic interference.

Export Control Compliance

This product falls into the Catch-All-Controlled Goods and/or Catch-All-Controlled Technologies (including Programs) under Category 16 of Appended Table 1 of Export Trade Control Order or under Category 16 of Appended Table of Foreign Exchange Control Order, based on Foreign Exchange and Foreign Trade Act of Japan.

If you intend re-export of the product from a country other than Japan, re-sale of the product in a country other than Japan, or re-providing of the technology (including Programs), you shall observe the regulations of your country.

Also, if an option is added or modified to add a function to this product, this product may fall under the category of List-Control Goods, List-Control Technology (including Programs) under Category 1 - 15 of Appended Table 1 of Export Trade Control Order or under Category 1 - 15 of Appended Table of Foreign Exchange Control Order, based on Foreign Exchange and Foreign Trade Act of Japan. In that case, if you intend re-export of the product from a country other than Japan, re-sale of the product in a country other than Japan, or re-providing of the technology (including Programs), you shall observe the regulations of your country. Please contact Mitutoyo in advance.

Notes on Export to European Countries

When you intend exporting of this product to any of the European countries, it may be required to provide User's Manual(s) in English and Declaration of Conformity in English (in some cases, the official language of the country to be exported). For detailed information, please contact Mitutoyo in advance.

Disposal of Products outside the European Countries

Please follow the official instruction in each community and country.

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Countries with Separate Collection Systems)

This symbol on the product or on its packaging is based on WEEE Directive (Directive on Waste Electrical and Electronic Equipment), and this symbol indicates that this product shall not be treated as household waste.

To reduce the environmental impact and minimize the volume of landfills, please cooperate in reuse and recycle.

For how to dispose of the product, please contact the agent where you purchased the product or a Mitutoyo sales office.

China RoHS Compliance Information

This product meets China RoHS requirements. See the table below.

产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
本体	×	○	○	○	○	○
配件	○	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

×: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

环保使用期限标识是根据《电器电子产品有害物质限制使用管理办法》以及《电子电气产品有害物质限制使用标识要求(SJ/T11364–2014)》制定的,适用于中国境内销售的电子电气产品的标识。

电器电子产品只要按照安全及使用说明内容在正常使用情况下,从生产日期算起,在此期限内产品中含有的有毒有害物质不致发生外泄或突变,不致对环境造成严重污染或对其人身、财产造成严重损害。

产品使用后,要废弃在环保使用年限内或者刚到年限的产品,请根据国家标准采取适当的方法进行处置。

另外,此期限不同于质量/功能的保证期限。

Warranty

This product has been manufactured under strict quality management, but should it develop problems within one year of the date of purchase in normal use, repair shall be performed free of charge. Please contact the agent where you purchased the product or Mitutoyo sales representative ("SERVICE NETWORK" on page App-1).

If this product fails or is damaged for any of the following reasons, it will be subject to a repair charge, even if it is still under warranty.

- Failure or damage owing to fair wear and tear
- Failure or damage owing to inappropriate handling, maintenance or repair, or to unauthorized modification
- Failure or damage owing to transport, dropping, or relocation of the product after purchase
- Failure or damage owing to fire, salt, gas, abnormal voltage, lightning surge, or natural disaster
- Failure or damage owing to use in combination with hardware or software other than those designated or permitted by Mitutoyo
- Failure or damage owing to use in ultra-hazardous activities

This warranty is effective only where the product is properly installed and operated in conformance with the instructions in this document within the original country of the installation.

EXCEPT AS SPECIFIED IN THIS WARRANTY, ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS, AND WARRANTIES OF ANY NATURE WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OR WARRANTY ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE, ARE HEREBY EXCLUDED TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW.

You assume responsibility for all results due to the selection of this product to achieve your intended results.

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The foregoing limitations shall apply even if the above-stated warranty fails of its essential purpose. BECAUSE SOME COUNTRIES, STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR THE LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, IN SUCH COUNTRIES, STATES OR JURISDICTIONS, MITUTOYO'S LIABILITY SHALL BE LIMITED TO THE EXTENT PERMITTED BY LAW.

1 Overview

This chapter describes the Interface Unit CC-Link for EJ Counter product overview, name and functions of each part.

1.1 Main Functions and Features

This product is an interface unit for use with the EJ Counter.

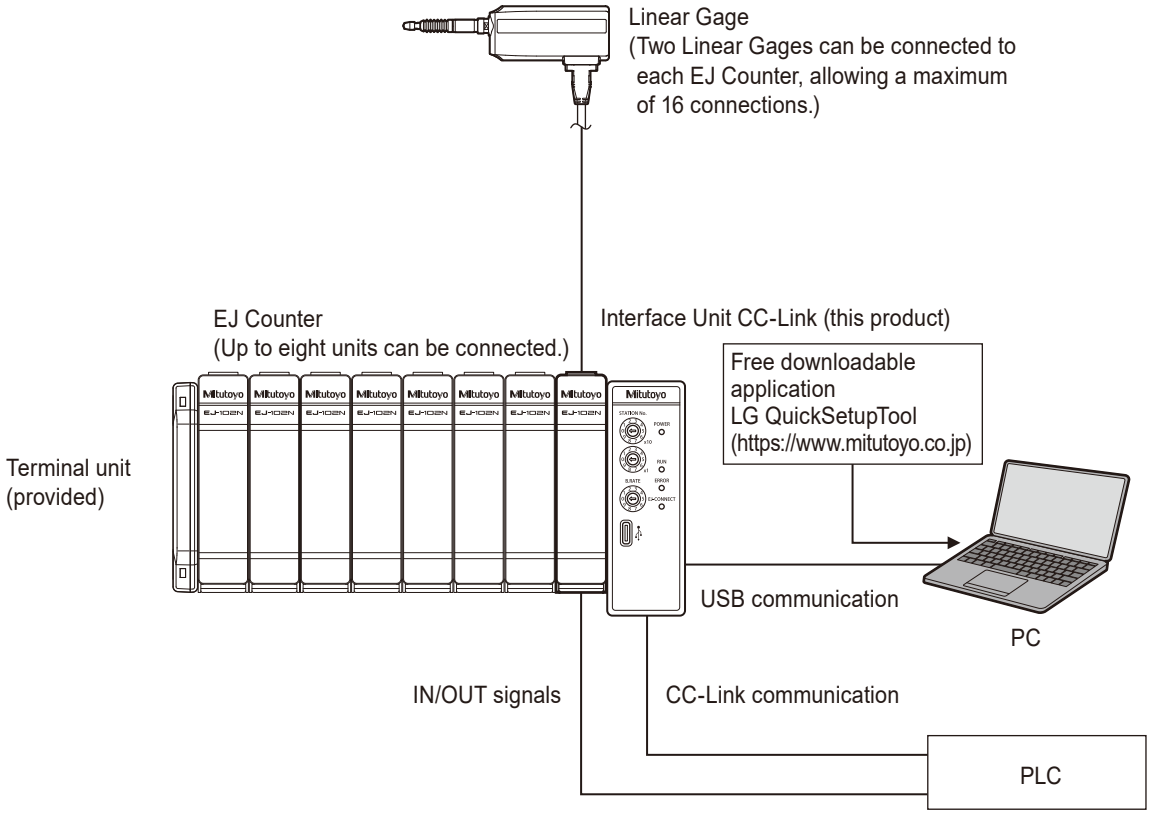
- This is a compact and space-saving interface unit, which is attached to a DIN rail to be used.
- It supports USB and CC-Link communication. It is compatible with CC-Link Ver. 1.10 and Ver. 2.00. Output content available differs depending on the version.
- Linear Gage measurements read by the EJ Counter can be output by USB or CC-Link Ver. 2.00 to external devices such as a PC and or PLC (programmable logic controller). Also, tolerance judgment results obtained by EJ Counters can be output by USB or CC-Link Ver. 1.10/Ver. 2.00 communication.
- The Interface Unit CC-Link can be coupled to up to eight EJ Counters, allowing data output from up to 16 Linear Gages.
- It allows EJ Counter parameter settings to be made by PC or PLC using USB or CC-Link Ver. 1.10/ Ver. 2.00 communication.
- The LG QuickSetupTool application software (freeware) is used to make EJ Counter settings and display measurements using USB communication.

Tips

Please download the LG QuickSetupTool application from Mitutoyo's web site. (https://www.mitutoyo.co.jp)

The LG QuickSetupTool is compatible with the Windows 10 operating system. No assurance is provided of full operability in any given operating environment. While use of this application is free of charge, the user must bear communication charges incurred during download of the software.

1.2 System Configuration



IMPORTANT

Be sure to install the terminal unit.

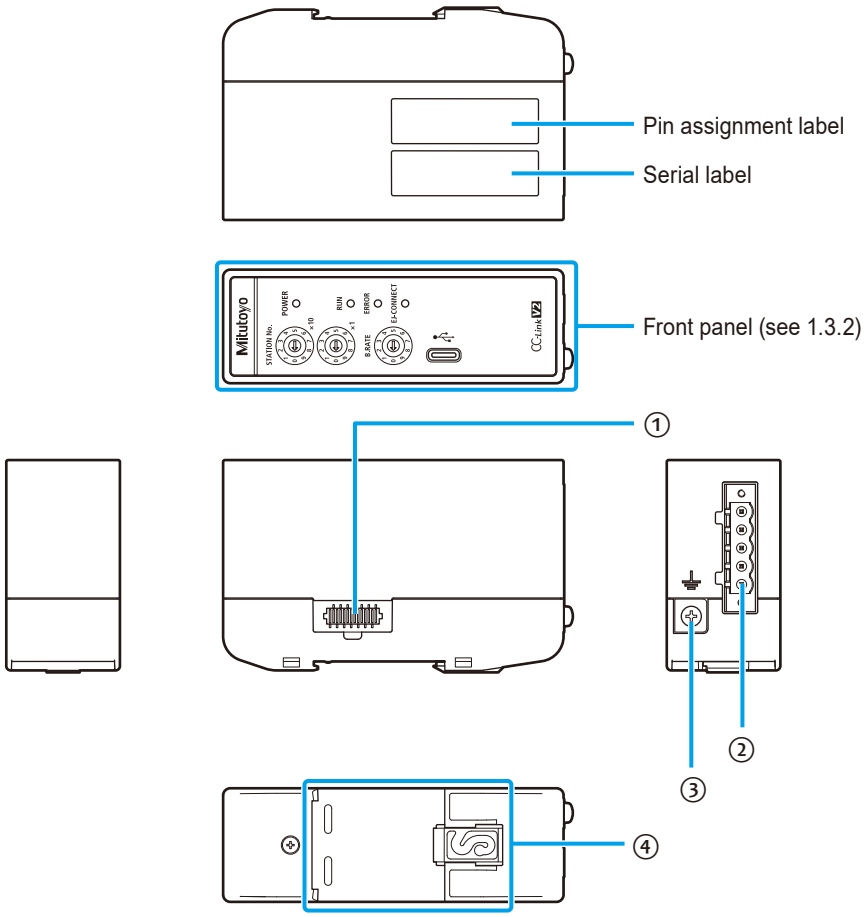
Normal communication between this product and EJ Counters requires installation of the terminal unit.

Tips

- This product must be connected to an EJ Counter for use. It cannot be used by itself.
- For details on the EJ Counter, see the separate "Compact Display Unit for Linear Gage EJ Counter User's Manual".
- Select and purchase Linear Gages according to your application.
- A PC and/or PLC must be provided by the customer.

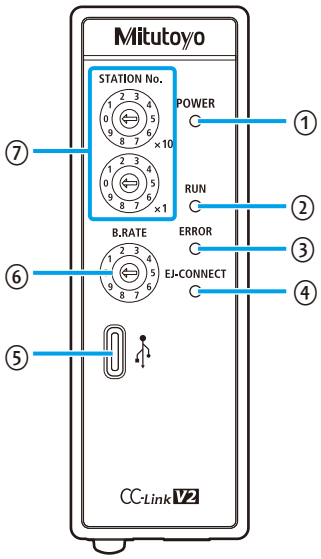
1.3 Part Names

1.3.1 Main Unit



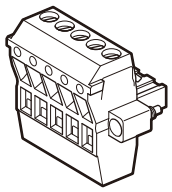
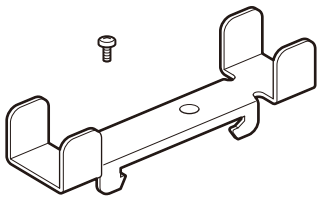
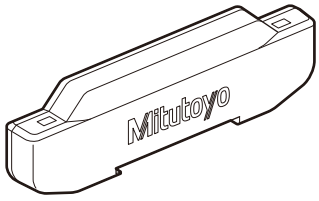
No.	Name	Description
①	Connector for linking counter	Connect to an EJ Counter.
②	CC-Link communication connector	Connect to a CC-Link network using the provided connector plug and commercially-available CC-Link compliant cable.
③	Grounding terminal	Connect to ground using the provided ground wire. **Tips** • The provided ground wire is to be used only for connecting the ground terminal on the interface unit to the ground terminal on the EJ Counter. • Overall grounding of coupled units is to be made using the ground wire provided with the EJ Counter. For details, see 📖 the separate "Compact Display Unit for Linear Gage EJ Counter User's Manual".
④	DIN rail attachment point	Used for attaching this product to a DIN rail.

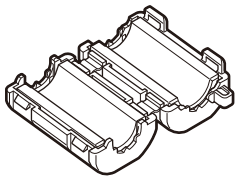
1.3.2 Front Panel



No.	Name	Description
①	[POWER] indicator	Lights when power is supplied to the unit.
②	[RUN] indicator	Lights when the unit is connected to a CC-Link network.
③	[ERROR] indicator	Lights or flashes to indicate a CC-Link communication error. Lit Indicates an error in setting of the CC-Link communication ([STATION No.] switch) at the time of power-on. **Tips** For details, see 📖 "● Station number setting" on page 27". Flashing Indicates the version or baud rate setting ([B.RATE] switch) was changed while the power was on.
④	[EJ-CONNECT] indicator	Lights during communication between the unit and an EJ Counter. Lights off or flashes to indicate an error during communication with an EJ Counter. **Tips** For details about when the indicator is out or flashing (when an error occurs), see 📖 "6 Troubleshooting" on page 75.
⑤	USB connector (Type-C)	Allows USB connection to a PC.
⑥	[B.RATE] switch	Sets the CC-Link version and baud rate. **Tips** For the setting procedure, see 📖 "● Setting the CC-Link version and baud rate" on page 28.
⑦	[STATION No.] switches	Sets the CC-Link station number. The [x10] switch sets the ten's place and the [x1] switch sets the one's place. **Tips** For the setting procedure, see 📖 "● Station number setting" on page 27.

1.4 Standard Accessories

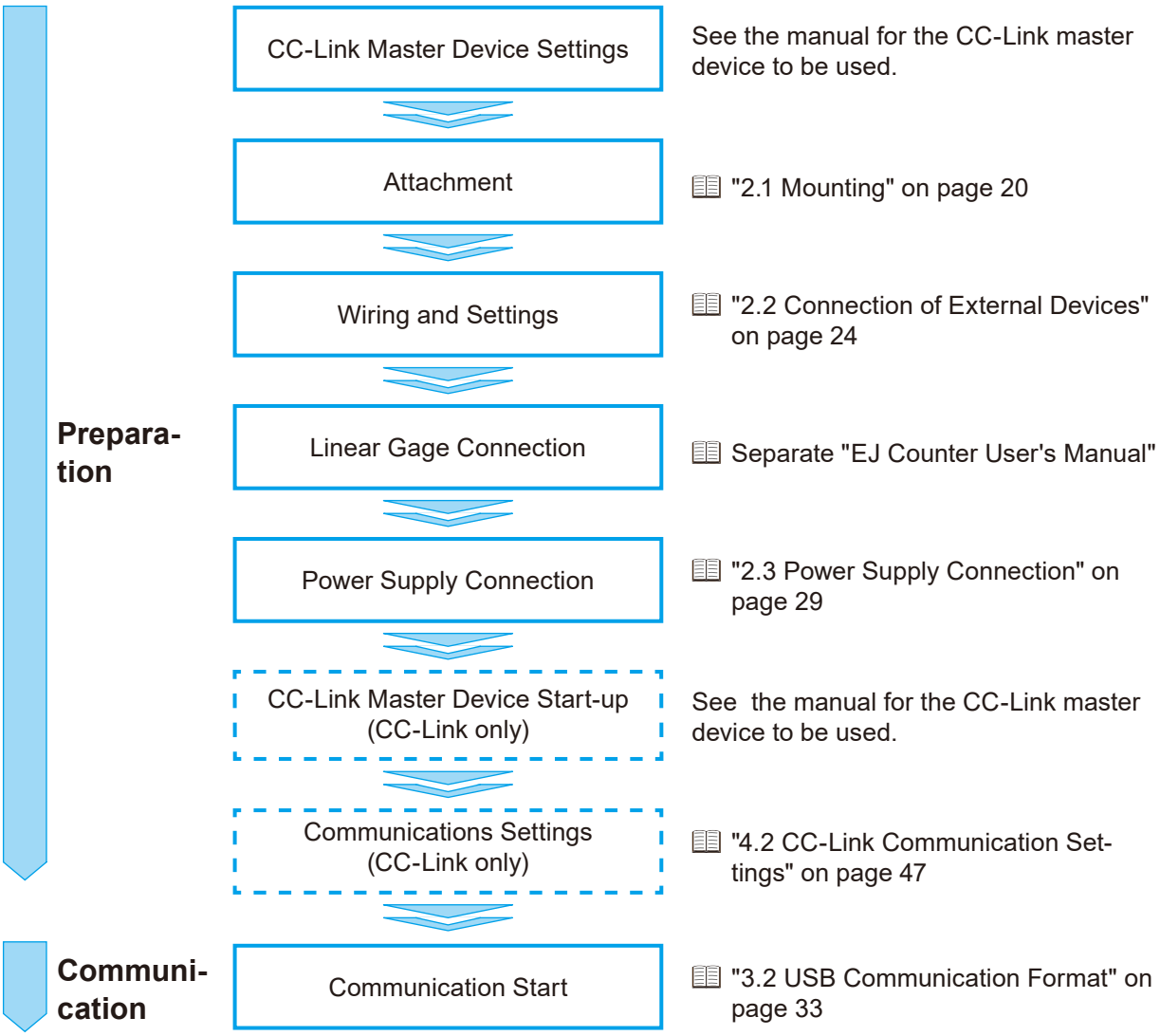
Name	Quantity	Description
Connector plug (PHOENIX CONTACT 1908732 TMSTBP 2,5/ 5-STF-5,08 AU with pin assignment label) 	1	Connection to the unit's connector is made using this connector plug together with a cable rated for CC-Link communication. **Tips** For details, see "2.2.2 CC-Link Connection" on page 25.
DIN rail fixing bracket 	2	Used to fasten the unit and EJ Counter(s) to a DIN rail. Fasten the bracket to the DIN rail using an M4 screw. **Tips** The screw provided with the bracket is suitable for fastening to a TH35-7.5 rail. For details, see "2.1.3 Attaching the DIN Rail Fixing Bracket" on page 22.
Terminal unit 	1	The terminal unit is required for communication between this unit and EJ Counters. Connect it to the EJ Counter furthest from the interface unit. **IMPORTANT** Be sure to install the terminal unit. Normal communication between this product and EJ Counters requires installation of the terminal unit. **Tips** For details, see "2.1.2 Linking to EJ Counters" on page 21.
Terminal resistor for CC-Link communication (Resistance: 110 Ω, 1/2 W, J) 	1	Attach the terminal resistor to the connector plug if the interface unit is the terminal device in the CC-Link network. **Tips** For details, see "2.2.2 CC-Link Connection" on page 25.
Ground wire 	1	Use this wire to connect the ground terminal on the interface unit to the ground terminal on the EJ Counter. **Tips** For details, see "2.3.1 Ground Connection" on page 29.

Name	Quantity	Description
Clamp filter 	1	Attach this filter to the CC-Link cable when connecting the interface unit to a CC-Link network. **Tips** For details, see "2.2.2 CC-Link Connection" on page 25.
Quick Start Guide	1	99MBC146B
WEEE User's Manual	1	
Warranty	1	

1.5 Operation Flow

The basic flow of operation is explained below.

Be sure to perform operations enclosed by solid lines. Perform operations enclosed by dashed lines as necessary.



See the manual for the CC-Link master device to be used.

"2.1 Mounting" on page 20

"2.2 Connection of External Devices" on page 24

Separate "EJ Counter User's Manual"

"2.3 Power Supply Connection" on page 29

See the manual for the CC-Link master device to be used.

"4.2 CC-Link Communication Settings" on page 47

"3.2 USB Communication Format" on page 33

"4.3 CC-Link Communication Format" on page 49

2 Setup

2.1 Mounting

2.1.1 DIN Rail Attachment / Removal

This product is attached to a DIN rail for use.

IMPORTANT

Attach this product to or remove it from the DIN rail a single unit at a time after first disconnecting USB cables and connector plugs.

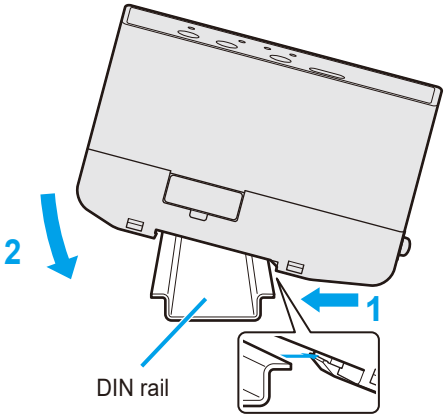
Tips

A DIN rail must be provided by the customer.

Suitable DIN rail type names (IEC 60715): TH35-7.5Al, TH35-7.5Fe, TH35-15Fe

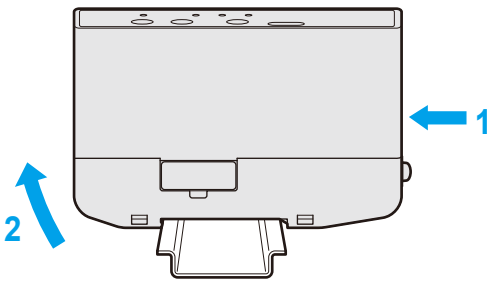
■ Attachment

Press the clip (gray) on the rear side of this product onto the DIN rail, and then hook the clip on the opposite side onto the DIN rail.



■ Removal

Pressing this product in the direction indicated by arrow 1, raise the clip on the opposite side so that it comes clear of the rail.



2.1.2 Linking to EJ Counters

Link this product to EJ Counters.
Up to eight EJ Counters can be linked to this product.

Tips
The interface unit is intended for use with the EJ-102N (Code No. 542-080) and EJ-102NE (Code No. 542-081) EJ Counters. These two types of EJ Counters can be used in mixed configurations.

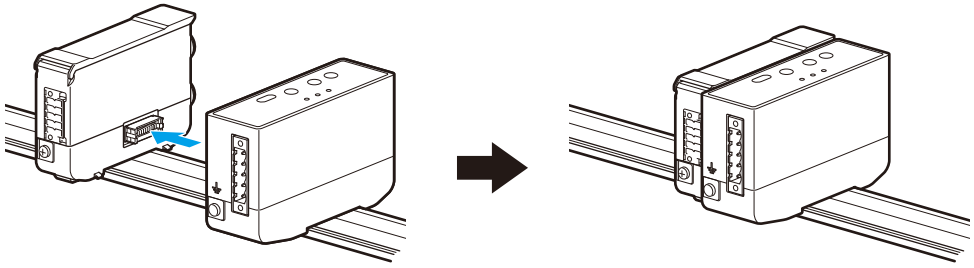
1 Remove the protective covers from the counter linkage connectors of this product and the EJ Counter.

2 Attach this product to the DIN rail on the side facing the EJ Counter's counter linkage connector (male).

Tips
For details, see "2.1.1 DIN Rail Attachment / Removal" on page 20.

3 Link the product to the EJ Counter.

Slide the product or EJ Counter along the DIN rail to fully mate the counter linkage connector on the product (female) with the counter linkage connector (male) on the EJ Counter.



NOTICE
Do not link more than eight EJ Counters together. Failure to observe this precaution may result in damage.

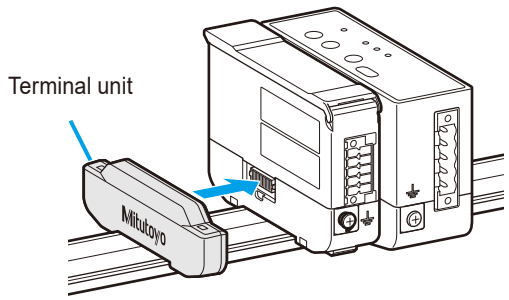
IMPORTANT
When sliding this product or EJ Counters along the DIN rail, move them slowly.

4 **Attach the provided terminal unit to the counter linkage connector (female) on the EJ Counter.**

Connect the terminal unit to the EJ Counter furthest from the Interface Unit CC-Link.

IMPORTANT

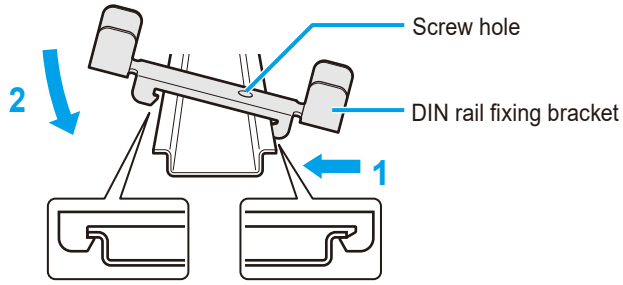
Be sure to install the terminal unit. Normal communication between this product and EJ Counters requires installation of the terminal unit.



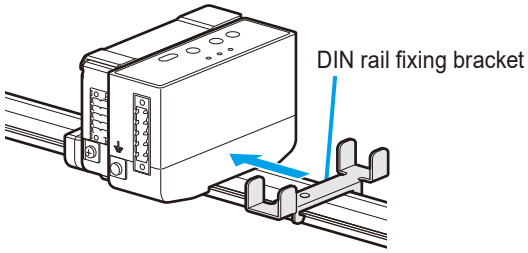
2.1.3 Attaching the DIN Rail Fixing Bracket

This product and EJ Counters are fastened to the DIN rail using the provided DIN rail fixing brackets.

1 **Hook the clip that is closer to the screw hole in the fixing bracket onto the DIN rail, then press toward the opposite side and hook the other clip onto the rail.**



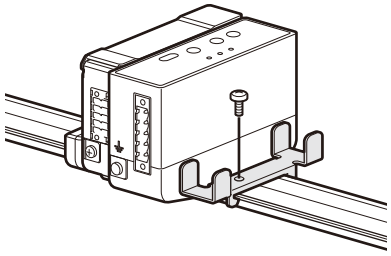
2 **Slide the fixing bracket along the DIN rail to where it comes in contact with this product.**



3 **Fasten the fixing bracket in place by threading the screw provided with the fixing bracket into the screw hole in the bracket, and then tightening the screw so that it presses against the DIN rail, immobilizing the fixing bracket.**

Tips

The screw provided with the bracket is suitable for fastening to a TH35-7.5 rail.
A different screw (M4) must be used for fastening to a TH35-15 rail.



4 **Repeat step 1 through 3 to attach the other fixing bracket also to the side with the terminal unit.**

2.2 Connection of External Devices

Connection between this product and external devices such as a PC or PLC (programmable logic controller) is made by USB or CC-Link network connection.

2.2.1 USB Connection

Use a USB cable to connect the USB connector (Type-C) on the front panel of this product to a USB connector on the PC.

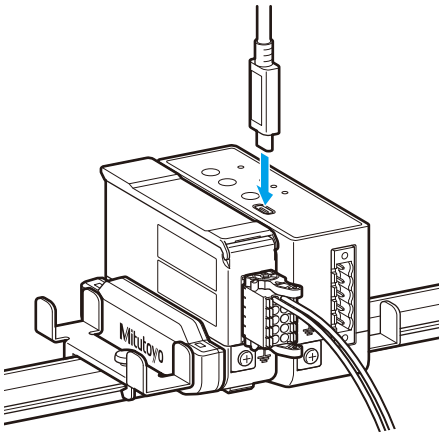
IMPORTANT

For permanent USB cable connection, fasten the cable so that it does not place any strain on the USB connectors.

NOTICE

This product requires a Type-C USB connector.

Note that connectors other than Type-C (such as miniB and microB) cannot be used.



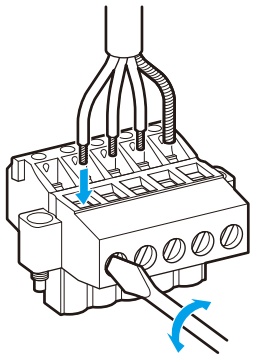
2.2.2 CC-Link Connection

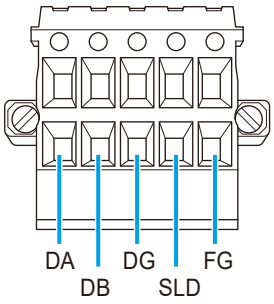
■ Connecting to a CC-Link network

Connect a CC-Link cable to the provided connector plug.

To connect the cable, loosen the screws on the side of the connector plug with a standard screwdriver to open the terminal holes, and then set the cable leads all the way into the terminal holes and re-tighten the screws to secure the leads.

The SLD terminal is for connecting the braided shield of the dedicated CC-Link cable, which should be twisted before connection. Cover the exposed shield with insulating tape as necessary.





Terminal name	Insulation color, other
DA	Blue
DB	White
DG	Yellow
SLD	Shield
FG	N/A

Tips

Recommended connector plugs are as follows.

- PHOENIX CONTACT 1908732 TMSTBP 2,5/ 5-STF-5,08 AU (provided)
- PHOENIX CONTACT 1876628 MSTB 2,5/ 5-STF-5,08 AU
- PHOENIX CONTACT 1916902 MVSTBR 2,5/ 5-STF-5,08 AU
- PHOENIX CONTACT 1908253 MVSTBW 2,5/ 5-STF-5,08 AU
- PHOENIX CONTACT 1962590 TFKC 2,5/ 5-STF-5,08 AU
- PHOENIX CONTACT 1945672 FKC 2,5/ 5-STF-5,08 AU
- PHOENIX CONTACT 1966907 FKCT 2,5/ 5-STF-5,08 AU

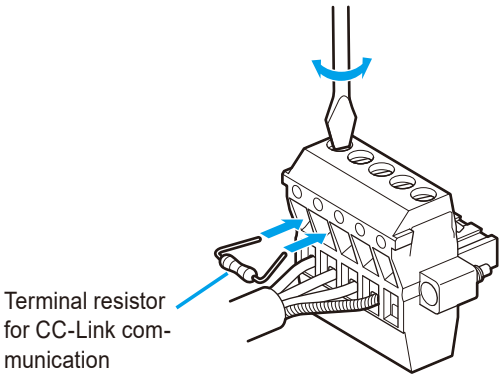
A pin assignment label is affixed to the provided connector plug. However, connectors purchased by the customer will not be provided with such labels.

1 **Attach the provided clamp filter.**

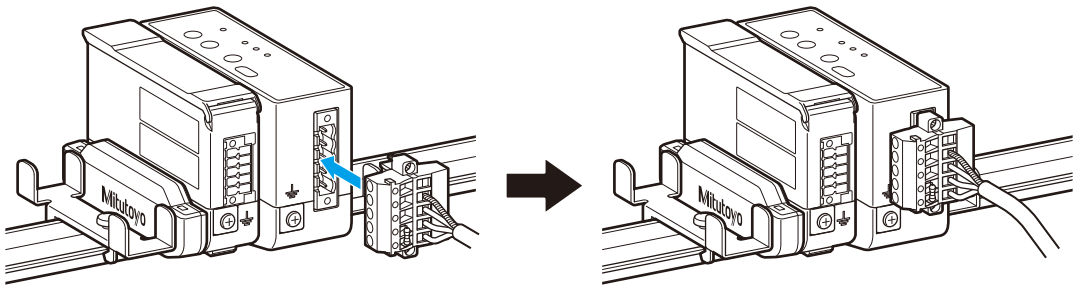
The clamp filter should be attached at a location that is in close proximity to the connector plug on the master device end of the cable.

2 **When this product is to be the terminal device in the CC-Link network, connect the provided terminal resistor for CC-Link communication (110 Ω, 1/2 W, J) across the DA and DB terminals of the connector plug.**

When attaching the terminal resistor for CC-Link communication, first open the connector plug holes by loosing the terminal screws with a standard screwdriver, and then set the leads of the terminal resistor into the holes and re-tighten the screws.



3 **Attach the connector plug to this product's CC-Link communication connector, and then fasten it in place by tightening the screws on the sides of the connector plug using a standard screwdriver.**



■ CC-Link communication settings

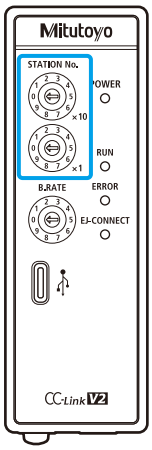
Set this product's station number in the CC-Link network, the CC-Link version and the baud rate.

Tips

- Changes made to the station number, version and baud rate become effective when the product is powered on. Changes made while the product is powered on do not take effect, and will cause the [ERROR] indicator to flash.
- Turn off the power for a moment and then turn it back on again for the setting changes to take effect.

● Station number setting

Set the product's station number with the two [STATION No.] switches.



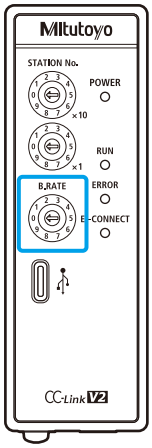
The [x10] switch sets the ten's place and the [x1] switch sets the one's place.
Using a standard screwdriver, set the switch to the desired station number.
The range of possible station number settings depends on the CC-Link version as follows:
CC-Link Ver. 1.10: 1 through 63
CC-Link Ver. 2.00: 1 through 61

Tips

Setting a number outside of range will cause the [ERROR] indicator to light when the power is turned on.

● Setting the CC-Link version and baud rate

The CC-Link version and baud rate are set using the [B.RATE] switch.



CC-Link version and baud rate settings are assigned to the various positions of the [B.RATE] switch.
Using a standard screwdriver, set the switch to the desired number.
CC-Link versions and baud rates are assigned to switch settings as follows.

[B.RATE] switch number	CC-Link version	Baud rate
0	Ver. 1.10	156 Kbps
1		625 Kbps
2		2.5 Mbps
3		5 Mbps
4		10 Mbps
5	Ver. 2.00	156 Kbps
6		625 Kbps
7		2.5 Mbps
8		5 Mbps
9		10 Mbps

Tips

Content that can be output differs depending on the CC-Link version.
For details, see "4.3.2 Input/Output Allocation" on page 50.

2.3 Power Supply Connection

This section describes the power supply connection procedure.

IMPORTANT

Provide a power supply with capacity sufficient to accommodate switch-on surge current.

Tips

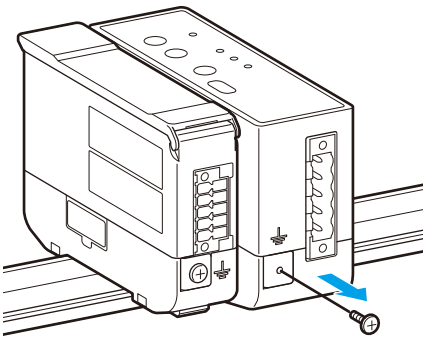
- Prepare for CC-Link communication by making CC-Link communication connections and settings. For details, see "4.2 CC-Link Communication Settings" on page 47.
- This product is supplied with power by the connected EJ Counter.

2.3.1 Ground Connection

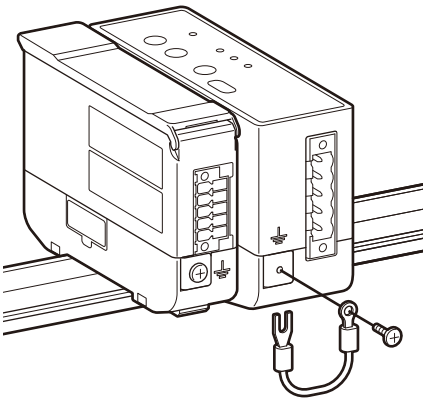
This product is grounded through the connected EJ Counter. Use the provided ground wire for connecting this product to the EJ Counter.

Be sure to connect this product to ground before connecting it to the power supply. Failure to ground the product will make it susceptible to electrical noise.

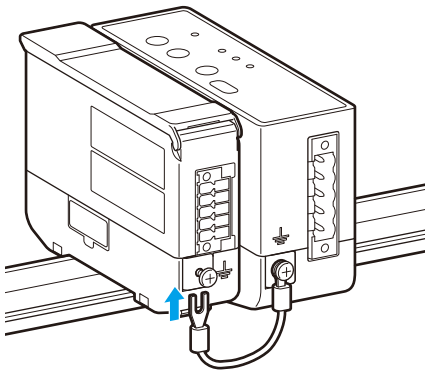
1 Remove the ground terminal screw.



2 Pass the removed terminal screw through the hole in the ground wire's ring lug, and then loosely fasten the lug to the ground terminal.



3 **Loosen the ground terminal screw on the adjacent EJ Counter, and then slip the ground wire's fork lug under the head of the screw.**



4 **Firmly tighten the ground terminal screws on this product and the EJ Counter.**

5 **Connect the EJ Counter's ground wire.**

Tips

For details on the EJ Counter's ground wire, see the separate "Compact Display Unit for Linear Gage EJ Counter User's Manual".

2.3.2 Power ON/OFF

This product is not equipped with a power switch. It is supplied with power by the connected EJ Counter.

To power the product ON/OFF, either switch the EJ Counter ON/OFF, or connect/disconnect the power cable.

When the power is turned on, an ID number is automatically assigned to the EJ Counter, and then it becomes ready for communication with this product.

Tips

- When using CC-Link connection, switch on the CC-Link master device power only after supplying power to this product.
- The ID number assigned to the EJ Counter differs for USB communication and CC-Link communication. For details, see "3.2.1 ID Number Assignment During USB Communication" on page 33 and "4.3.1 ID Number Assignment during CC-Link Communication" on page 49.

3 USB Communication

3.1 USB Specifications

The USB interface provided with this product conforms to the USB 2.0 standard (with Full-speed communication).

It communicates using a virtual COM port on a PC.

Tips

- For details on the content of USB communication, see "3.2.2 Send and Receive Data Format" on page 34 and "3.2.3 List of Commands" on page 36.
- This product cannot output data directly to a printer.
- USB communication can be performed when power is supplied to this product. Power cannot be supplied through the USB terminal.
- The LG QuickSetupTool application software (freeware) is provided to allow EJ Counter settings and display of measurement values to be done by USB communication.
  Please download the software from Mitutoyo's web site. (https://www.mitutoyo.co.jp)
  Note that the software may not be usable in all environments. Further, Mitutoyo makes no assurance or representation of any kind regarding the fitness or usability of the software. While use of this application is free of charge, the user must bear communication charges incurred during download of the software.

■ Compatible connector

Type-C connector

■ Compatible cable

Cable compatible with Type-C connector

Tips

- No USB cable is provided with this product. Use a commercially available cable.
- The software works with Windows 10 standard device drivers.

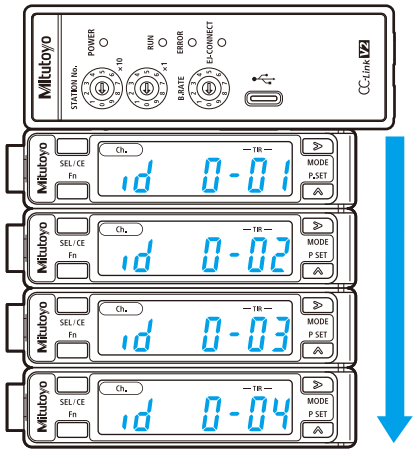
3.2 USB Communication Format

3.2.1 ID Number Assignment During USB Communication

During USB communication, ID numbers from 01 to 08 are automatically assigned to EJ Counters in sequence, starting with the device that is adjacent to this product. However, if arbitrary ID numbers (50 to 99) were set for Parameter Number 19 when the product was last powered on, those values are assigned instead.

Tips

For details about setting parameters, see "5 EJ Counter Parameter Settings" on page 69.



ID numbers are assigned sequentially
(figure shows automatic ID number assignments).

3.2.2 Send and Receive Data Format

■ Send data format (from PC to this product)

Tips

Send data consists of ASCII codes.

● Commands

Commands are made up of three alphanumeric characters.

Example: The command for reading the current value is "GCJ".

● Counter ID and channel (Ch.) numbers

Counter ID and channel numbers are made up of four numeric characters.

The uppermost digit is always 0, followed by two digits indicating the EJ Counter ID, and then a single digit indicating the channel (Ch.).

Example: For an EJ Counter whose ID is 02 on Ch.1, specify "0021".

Tips

- Commands that do not specify an EJ Counter channel (Ch.) should always have "1" as the last digit.
- Use "0011" for commands that do not specify an EJ Counter.
  For details, see "3.2.3 List of Commands" on page 36.
- The content of individual channels are specified by parameter settings.
  For details about setting parameters, see "5 EJ Counter Parameter Settings" on page 69.

● Numeric values (only for commands requiring such values)

When setting preset and tolerance values, use the + or - sign together with 10-digit numbers. The least significant digit corresponds to a resolution of 10 nm (0.0000001 in).

Example 1: To set +10.5 mm, specify "+0001050000".

Example 2: To set -0.001 in, specify "-0000010000".

Tips

- Unit, without decimal point.
- Numeric values must be specified as 10 digits. Pad empty parts with zero (0).
- When setting the resolution of an EJ Counter, any fractional value below the set resolution is discarded.

● Delimiter

Commands are delimited by the 2-byte sequence CRLF ("0x0D 0x0A").

■ Receive data format (to PC from this product)

Tips

Receive data consists of ASCII codes.

● Commands

Commands are made up of three alphanumeric characters.

These are the same as for send commands (except for commands that are undefined).

● Counter ID and channel (Ch.) numbers

Counter ID and channel numbers are made up of four numeric characters.

ID and channel (Ch.) numbers are specified in the same manner as for send data.

However, "0000" is received for commands that do not specify an EJ Counter.

For details, see 📖 "3.2.3 List of Commands" on page 36.

● Numeric values (only for commands requiring such values)

When outputting preset and tolerance values, use the + or - sign together with 10-digit numbers. The least significant digit corresponds to a resolution of 10 nm (0.0000001 in). Values are rounded according to the EJ Counter's resolution setting.

Example 1: To set +10.5 mm, specify "+0001050000".

Example 2: To set -0.001 in, specify "-0000010000".

Tips

- Unit, without decimal point.
- Numeric values must be specified as 10 digits. Pad empty parts with zero (0).
- When setting the resolution of an EJ Counter, any fractional value below the set resolution is discarded.

● Delimiter

Commands are delimited by the 2-byte sequence CRLF ("0x0D 0x0A").

3.2.3 List of Commands

Commands sent from the PC and corresponding content output from this product are explained below.

■ View commands

These commands are used to verify the settings of EJ Counters. They do not affect the EJ Counter settings or display.

IMPORTANT

Do not send these commands during communication with a PLC. Doing so might result in incorrect measurement.

Command format[*1]	Corresponding output[*1*2]	Description
GCJ,****(CRLF)	GCJ,****,(Err-1),+0123456789,(TJ-2),(DataER-2)(CRLF)	Read current values and tolerance judgments[*3*4]
GPR,****(CRLF)	GPR,****,(Err-1),+0123456789,(DataER-2)(CRLF)	Read preset values[*4]
GS1,****(CRLF)	GS1,****,(Err-1),+0123456789,(DataER-2)(CRLF)	Read tolerance value S1[*4]
GS2,****(CRLF)	GS2,****,(Err-1),+0123456789,(DataER-2)(CRLF)	Read tolerance value S2[*4]
GS3,****(CRLF)	GS3,****,(Err-1),+0123456789,(DataER-2)(CRLF)	Read tolerance value S3[*4]
GS4,****(CRLF)	GS4,****,(Err-1),+0123456789,(DataER-2)(CRLF)	Read tolerance value S4[*4]
GST,****(CRLF)	GST,****,(Err-1),(D-1)(D-2)(D-3)(D-4),(DataER-2)(CRLF)	Read the EJ Counter display state[*5]
GER,****(CRLF)	GER,****,(Err-1),(DataC-8),(DataER-2)(CRLF)	Read EJ Counter error flag details[*6]
GEH,****(CRLF)	GEH,****,(Err-1),(DataC-8),(DataER-2)(CRLF)	Read the EJ Counter error flag details history[*7]
GPM,****,(PMNum-2)(CRLF)	GPM,****,(Err-1),(PMNum-2),(PMData-2),(DataER-2)(CRLF)	Read EJ Counter parameter settings[*8]
FNM,0011(CRLF)	FNM,0000,(Err-1),(Data-1)(CRLF)	Read the number of connected EJ Counters[*9]
FCI,0011(CRLF)	FCI,0000,(Err-1),(Data-16)(CRLF)	Reads EJ Counter IDs[*10]

*1 "****" indicates the counter ID and channel (Ch.) numbers.
For details, see "3.2.2 Send and Receive Data Format" on page 34.

*2 "Err-1" is the interface unit's communications error flag.
For details, see "3.3 List of USB Communication Errors" on page 40.

*3 "TJ-2" is the result of tolerance judgment.
When tolerance judgment is enabled, the result of tolerance judgment is output as a value from L1 to L5.
When tolerance judgment is disabled (when the EJ Counter produces as error), L0 is output.
For details on tolerance judgment result, see "3.4 Tolerance Judgment Result" on page 44.

*4 Output of data conforming to the settings of EJ Counter Parameter Numbers 03 (display mode selection) and 22 (unit setting).
For details on numeric data output, see "■ Receive data format (to PC from this product)" on page 35.

*5 "D-1" indicates the display state. "00" indicates standby, "01" indicates count display, and "02" indicates that a parameter preset or tolerance value is being set.
"D-2" indicates peak mode. "00" indicates the current value, "01" indicates MAX (the maximum value), "02" indicates MIN (the minimum value) and "03" indicates TIR (the value of MAX-MIN).
"D-3" indicates the HOLD state. "00" indicates no HOLD, and any other value indicates HOLD.
"D-4" is fixed to "00".
"D-4" indicates the unit. "00" indicates mm, and "01" indicates inch.

*6 For details, see "3.3.2 EJ Counter Error Flags" on page 41.

*7 The EJ Counter error history contains up to the last four errors, and errors are read out starting with the oldest. Note that the error history is deleted even if the error data is not received by the PC.
For details, see "3.3.2 EJ Counter Error Flags" on page 41.

*8 For the command's "PMNum-2" parameter, specify the Parameter Number. In the corresponding output, the setting of the specified Parameter Number is output for "PMData-2". For details about parameters, see "5 EJ Counter Parameter Settings" on page 69.

*9 "Data-1" is the number of connected EJ Counters (1 to 8).

*10 ID numbers of connected EJ Counters are output for "Data-16". "FF" is output if no EJ Counter is connected.
For example, if eight EJ Counters with ID numbers 1 to 8 are connected, "0102030405060708" is output, and if three EJ Counters with ID numbers 1, 2 and 51 are connected, "010251FFFFFFFFFF" is output.

■ Setting and control commands

These commands are used to change EJ Counter settings and control operation of EJ Counters.

IMPORTANT

Do not send these commands during communication with a PLC. Doing so might result in incorrect measurement.

Command format[*1]	Corresponding output[*1*2]	Description
SPR,****,+0123456789 (CRLF)	SPR,****,(Err-1),+0123456789, (DataER-2)(CRLF)	Write preset values[*3]
SS1,****,+0123456789 (CRLF)	SS1,****,(Err-1),+0123456789, (DataER-2)(CRLF)	Write tolerance value S1[*3*4]
SS2,****,+0123456789 (CRLF)	SS2,****,(Err-1),+0123456789, (DataER-2)(CRLF)	Write tolerance value S2[*3*4]
SS3,****,+0123456789 (CRLF)	SS3,****,(Err-1),+0123456789, (DataER-2)(CRLF)	Write tolerance value S3[*3*4]
SS4,****,+0123456789 (CRLF)	SS4,****,(Err-1),+0123456789, (DataER-2)(CRLF)	Write tolerance value S4[*3*4]
SSU,****(CRLF)	SSU,****,(Err-1),(DataER-2)(CRLF)	Cancel the start-up standby state ("--------" display)
SPK,****,(D-2)(CRLF)	SPK,****,(Err-1),(DataC-8), (DataER-2)(CRLF)	Switch the peak mode[*5]
SEC,****(CRLF)	SEC,****,(Err-1),(DataER-2)(CRLF)	Clear the EJ Counter error history
PST,****(CRLF)	PST,****,(Err-1),(DataER-2)(CRLF)	Perform presets (set preset values set with the SPR command)
PZS,****(CRLF)	PZS,****,(Err-1),(DataER-2)(CRLF)	Zero current values
PCL,****(CRLF)	PCL,****,(Err-1),(DataER-2)(CRLF)	Clear preset values
PKC,****(CRLF)	PKC,****,(Err-1),(DataER-2)(CRLF)	Clear peak data (MAX and MIN data)
PEC,****(CRLF)	PEC,****,(Err-1),(DataER-2)(CRLF)	Clear errors[*6]
PSH,****(CRLF)	PSH,****,(Err-1),(DataER-2)(CRLF)	Hold current value[*7]
PCH,****(CRLF)	PCH,****,(Err-1),(DataER-2)(CRLF)	Cancel current value hold[*8]
PDA,****(CRLF)	PDA,****,(Err-1),(DataER-2)(CRLF)	Display EJ Counter ID (displays an EJ Counter's ID number for a preset interval)
PDB,****(CRLF)	PDB,****,(Err-1),(DataER-2)(CRLF)	Specify EJ Counter display axis (switches display axes of the current value on an EJ Counter)
PPM,****,(PMNum-2), (PMData-2)(CRLF)	PPM,****,(Err-1),(PMNum-2), (PMData-2),(DataER-2)(CRLF)	Write parameter settings[*9]
RST,0011,SRST (CRLF)	RST,0000,(Err-1)(CRLF)	System reset[*10]

*1 "*****" indicates the counter ID and channel (Ch.) numbers.
For details, see "3.2.2 Send and Receive Data Format" on page 34.

*2 "Err-1" is the interface unit's communications error flag.
For details, see "3.3 List of USB Communication Errors" on page 40.

*3 Use the + or - sign and specify 10-digit numbers with no decimal point.
For details on numeric data settings, please see "■ Send data format (from PC to this product)" on page 34.

*4 For 3-step tolerance, set tolerance values S1 and S4. Setting of S2 and S3 and read-out are not possible. Attempting to set S2/S3 or perform read-out will result in setting of an error flag (bit 0 of DataER-2) and transmission of error output "+2147483647".
For 5-step tolerance, set tolerance values S1 through S4.
Set the tolerance values in sequence from S1 to S4 or from S4 to S1.

*5 For "D-2", specify the peak mode.
Specify "00" for the current value, "01" for MAX (the maximum value), "02" for MIN (the minimum value), or "03" for TIR (the value of MAX-MIN).
When the peak mode is set properly, "00000000" is output for "DataC-8".

*6 Clear the error state after first eliminating the cause of the error.

*7 The HOLD signal is shared by all linked EJ Counters, and all linked EJ Counters enter the HOLD state.
When canceling HOLD with the PCH command, cancellation is required for EJ Counters on which HOLD is set. Set HOLD against the ID number of the linked EJ Counter that is adjacent to the interface unit.

*8 The HOLD signal is shared by all linked EJ Counters, and HOLD is canceled for all linked EJ Counters.
Cancel HOLD on EJ Counters for which HOLD was set with the PSH command.

*9 Specify the Parameter Number for "PMNum-2" and the setting value for "PMData-2". For details about parameters, see "5 EJ Counter Parameter Settings" on page 69.

*10 A software reset is performed on this product and linked EJ Counters. Do not execute this command during while measurement is in progress.

3.3 List of USB Communication Errors

3.3.1 Interface Unit Communications Error Flags

When a communication error is detected by this product, it outputs the communications error flag (Err-1).

■ Communications error flags (Err-1)

Err-1	Description
5	Commands cannot be executed in this state. EJ Counters are in the standby or error state.
4	This indicates an undefined command. The command sent is undefined or its format is incorrect (missing a comma).
3	The data length of the command is incorrect. The command is missing data or includes unneeded data.
2	The command content is incorrect. The command includes an incorrect ID number or channel specification (contains a character other than a numeral).
1	There was an error in communication between the interface unit and EJ Counters. The ID number specified in a command does not belong to a connected EJ Counter.
0	No error

In the event of a command abnormality (undefined command), the response takes the following format.

CER,****,(Err-1)(CRLF)

For example, if the undefined command "GGG" is sent, the response is as follows.

Send command: GGG,0000(CRLF)

Output data: CER,0000,4(CRLF)

3.3.2 EJ Counter Error Flags

These error flags are output when an EJ Counter detects an error.

■ Error flags (DataER-2)

This error flag (DataER-2) is made up of data in hexadecimal notation. Bits that are set to "1" indicate the location of the alarm or error.

Data ER-2	Judgment	Description
bit 0	0: Normal 1: Alarm or error state	Indicates an error in communication between the interface unit and EJ Counters. Whether or not the command was normally executed cannot be determined. Check the command and execute it again.
bit 1		The EJ Counter is in the Busy state. EJ Counter settings are being made by key operation. Commands cannot be executed. Execute the command after putting the EJ Counter in the counting state.
bit 2		The origin of the requested channel has not been detected. Commands cannot be executed. Execute the command again after performing gage origin detection or disabling origin detection.
bit 3		An alarm occurred on the requested channel or both channels. Commands cannot be executed. The flag is set if the EJ Counter is in the Busy state (DataER-2 bit1), its origin has not been detected (DataER-2 bit 2), or it is in the counter stand-by state.
bit 4		A hardware error occurred on the requested channel or both channels.
bit 5		An alarm or hardware error occurred on one of the channels. The flag is set even if the alarm or hardware error occurred on the channel that was not requested. The command is executed if there is no abnormality the requested channel.
bit 6		Fixed to 0
bit 7		Fixed to 0

■ Error flag details (DataC-8)

Error flag details (DataC-8) are made up of data in hexadecimal notation. Bits that are set to "1" indicate the location of the alarm or error.

Data C-8	Judgment	Description	
bit 0	0: Normal 1: Alarm or error state	Alarm	EJ Counter Busy state (EJ Counter settings are being made by key operation). Put the EJ Counter in the counting state.
bit 1			A-axis origin not detected. Go through A-axis origin detection.
bit 2			B-axis origin not detected Go through B-axis origin detection.
bit 3			Counter stand-by state Cancel the counter standby state, putting the EJ Counter in the counting state.
Bits 4 to 7			Fixed to 0
bit 8		Hardware error	A-axis peak detection error (with peak mode only) If this error occurs continuously, verify measurement conditions (such as plunger movement speed).
bit 9			B-axis peak detection error (with peak mode only) If this error occurs continuously, verify measurement conditions (such as plunger movement speed).
bit 10			Ch.1 counter value overflow. Verify preset values.
bit 11			Ch.2 counter value overflow. Verify preset values.
bit 12			A-axis excess speed error. Verify measurement conditions (such as plunger movement speed).
bit 13			B-axis excess speed error. Verify measurement conditions (such as plunger movement speed).
bit 14			No gage head on the A-axis or discontinuity detection error. Verify gage head connection.
bit 15			No gage head on the B-axis or discontinuity detection error. Verify gage head connection.
bit 16			Internal memory abnormality. If operation is not restored upon clearing the error, there may be an internal malfunction.
bit 17			Power supply voltage abnormality. Clear the error after verifying supply of correct voltage.
bit 18			A-axis counter IC reset error. Occurred because a Linear Gage was connected or removed during operation.
bit 19			B-axis counter IC reset error. Occurred because a Linear Gage was connected or removed during operation.
bit 20			A-axis counter IC overflow. Electrical noise could be a problem.
bit 21			B-axis counter IC overflow. Electrical noise could be a problem.

Data C-8	Judgment	Description	
bit 22	0: Normal 1: Alarm or error state	Hardware error	No A-axis origin signal. When using a Linear Gage with origin, check whether the origin signal is disconnected. When using a Linear Gage without origin, set Parameter Number 05 to 0.
bit 23			No B-axis origin signal. When using a Linear Gage with origin, check whether the origin signal is disconnected. When using a Linear Gage without origin, set Parameter Number 05 to 0.
bit 24			Internal memory access error. If operation is not restored upon clearing the error, there may be an internal malfunction.
bit 25			Wrong number of EJ Counters connected (nine or more devices). Turn the power on after reducing the number of connected EJ Counters to no more than eight.
Bits 26 to 31			Fixed to 0

■ EJ Counter error history

If a hardware error occurs, error flag details are stored in the error history in the EJ Counter. Error details are not stored when alarms occur.

The EJ Counter error history holds up to the last four errors, and errors are read out starting with the oldest.

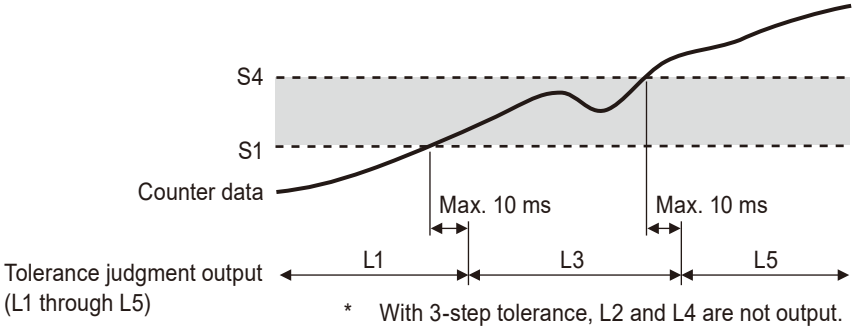
If a hardware error occurs when the error history already contains four errors, the oldest error is discarded.

If the error history is read when there are no errors in the EJ Counter error history, the value 0(0x00000000) is output.

3.4 Tolerance Judgment Result

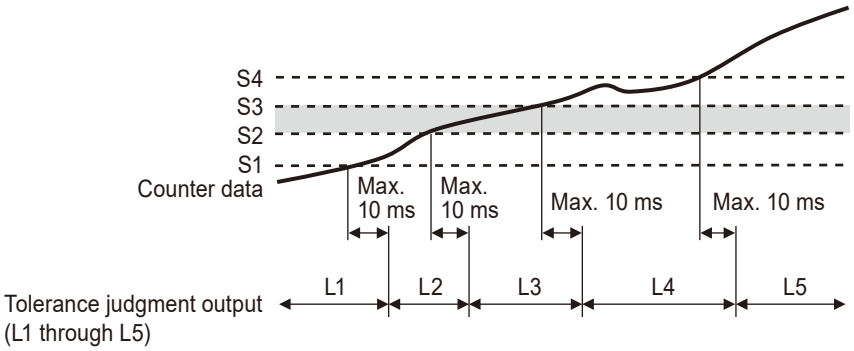
■ Tolerance judgment output

● 3-step tolerance



* With 3-step tolerance, L2 and L4 are not output.

● 5-step tolerance



4 CC-Link Communication

4.1 Outline of CC-Link Communication

This product functions as a CC-Link slave device, and communicates with a CC-Link master device (such as a PLC).

It is compatible with CC-Link Ver. 1.10 and 2.00.

Item	CC-Link Ver. 1.10	CC-Link Ver. 2.00
Station type	Remote device station	
Device type	Generic device (0x7F)	
Number of occupied stations	2	4
Maximum data bits	128 (64 each for RX and RY)	896 (448 each for RX and RY)
Data words	16 words (8 each for RWw and RWr)	128 words (64 each for RWw and RWr)
Extended cyclic setting	N/A	4x
Assignable station numbers	1–63	1–61
Baud rate	156 kbps, 625 kbps, 2.5 Mbps, 5 Mbps, 10 Mbps	
Data transferred	• Tolerance judgment result (L3) For details on tolerance judgment result (L3), see "4.5 Tolerance Judgment Result" on page 66. • EJ Counter parameter settings • EJ Counter connection status • Tolerance judgment/current value output status	• Tolerance judgment results (L1/L2/L3/L4/L5) For details on tolerance judgment result (L1 to L5), see "4.5 Tolerance Judgment Result" on page 66. • Tolerance judgment results (LT1/LT2/LT3) For details on tolerance judgment result (LT1 to LT3), see "4.5 Tolerance Judgment Result" on page 66. • EJ Counter parameter settings • EJ Counter connection status • Tolerance judgment/current value output status • Current value data

4.2 CC-Link Communication Settings

4.2.1 Communications Settings

Before using CC-Link communication, power on the devices to be used and make data allocations.

1 When powering on devices, power on this product before powering on the CC-Link master device.

Tips

For details on powering on this product, see "2.3.2 Power ON/OFF" on page 30.

2 Start up an engineering tool such as GX Works on your PC and make CC-Link communication settings for this product.

Tips

- For details on operation of GX Works, see Mitsubishi Electric's GX Works manual.
- CC-Link settings can be easily made by using the CSP+ (CC-Link System Profile). CSP+ can be downloaded from the CC-Link Association or Mitutoyo's website.

4.2.2 Verifying Communication

Verify that all devices are properly connected and configured, and that I/O data can be properly read and written.

■ Verifying device status

Verify that indicators on the front panel of the product appear as follows.

Name	Status
[POWER] indicator	Lit
[RUN] indicator	Lit
[ERROR] indicator	Off
[EJ-CONNECT] indicator	Lit

Also verify the status of the CC-Link master device.

Tips

For details on the CC-Link master device, see the manual of the CC-Link master device being used.

■ Verifying data

Read CC-Link master device IN and OUT data and verify I/O data is properly read and written.

If I/O signals cannot be read or written, verify that the remote READY flag is ON.

Tips

To set the remote READY flag, make initial settings from GX-Works or other engineering tool.

■ Remote READY flag

When this product is powered ON, the initial data processing request flag goes ON.

Since this product will not output some CC-Link I/O signals while in this state, set initial data processing completed flag ON from the PLC.

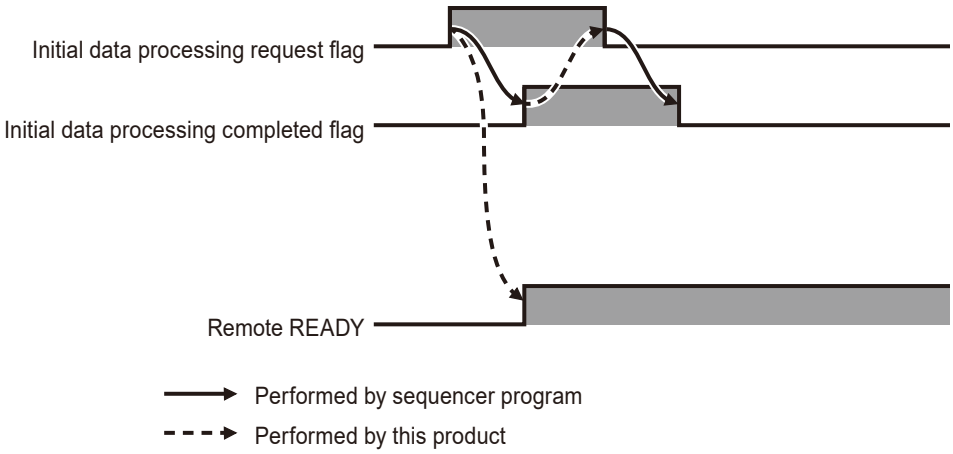
The remote READY flag goes ON at the same time.

Next, set the initial data processing completed flag OFF (for example, by detecting that the initial data processing request flag is OFF, which sets the initial data processing completed flag OFF).

Tips

Signal allocation differs depending on whether the CC-Link Ver. is 1.10 or 2.00.

For details, see "4.3.2 Input/Output Allocation" on page 50.



4.3 CC-Link Communication Format

4.3.1 ID Number Assignment during CC-Link Communication

ID numbers used during CC-Link communication are assigned according to the combination of axes connected to each of the EJ Counters being used.

ID numbers are automatically assigned in sequence from EJ01 to EJ08, starting with the EJ Counter that is adjacent to this product. For the Linear Gage, channel number "Ch.1" is assigned to the A-axis of each EJ Counter, and "Ch.2" is assigned to the B-axis.

The ID number for the axes is formed of combinations of the above in the format "EJxx-Chx".

Example:

The ID number assigned to the B-axis of the second EJ Counter from this product will be "EJ02-Ch.2".

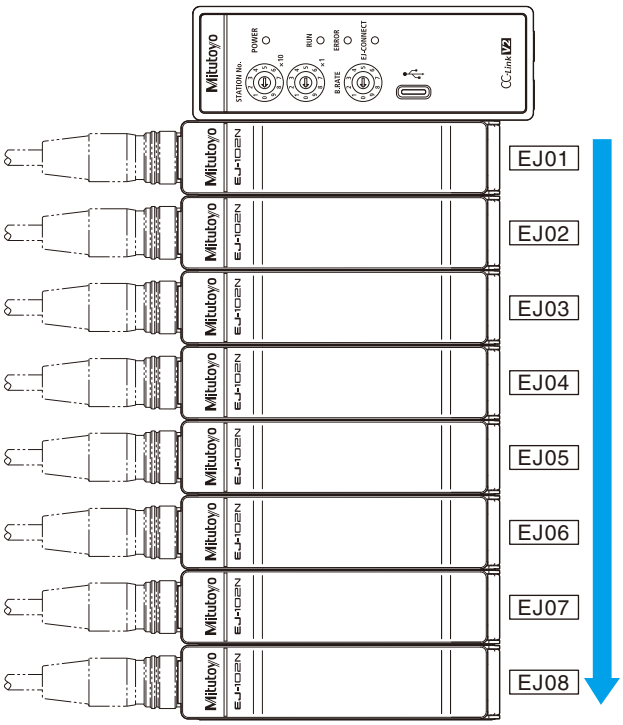
IMPORTANT

Do not change ID numbers by setting EJ Counter parameters during CC-Link communication (while the [RUN] indicator is lit). Changing the ID numbers will prevent normal communication with the EJ Counters.

Tips

Arbitrary ID numbers (50 to 99) set with EJ Counter Parameter Number 19 apply to USB communication.

ID numbers are automatically assigned in sequence beginning with the EJ Counter that is adjacent to this product.



4.3.2 Input/Output Allocation

The following items are allocated by this product according to the CC-Link version being used.

Tips

For details on making allocations, see the manual for the CC-Link master device.

■ Ver. 1.10 input/output signals

● From this product to master device

Address	Name	Notes
RXn0	EJ01-Ch.1 tolerance judgment (L3)	1: In range 0: Out of range **Tips** For details on tolerance judgment (L3), see "4.5 Tolerance Judgment Result" on page 66.
RXn1	EJ01-Ch.2 tolerance judgment (L3)	
RXn2	EJ02-Ch.1 tolerance judgment (L3)	
RXn3	EJ02-Ch.2 tolerance judgment (L3)	
RXn4	EJ03-Ch.1 tolerance judgment (L3)	
RXn5	EJ03-Ch.2 tolerance judgment (L3)	
RXn6	EJ04-Ch.1 tolerance judgment (L3)	
RXn7	EJ04-Ch.2 tolerance judgment (L3)	
RXn8	EJ05-Ch.1 tolerance judgment (L3)	
RXn9	EJ05-Ch.2 tolerance judgment (L3)	
RXnA	EJ06-Ch.1 tolerance judgment (L3)	
RXnB	EJ06-Ch.2 tolerance judgment (L3)	
RXnC	EJ07-Ch.1 tolerance judgment (L3)	
RXnD	EJ07-Ch.2 tolerance judgment (L3)	
RXnE	EJ08-Ch.1 tolerance judgment (L3)	
RXnF	EJ08-Ch.2 tolerance judgment (L3)	
RX(n+1)0	Tolerance judgment ALLGO determination	"1" results if tolerance judgment is OK for all axes (if each axis is available and its tolerance judgment is OK); if any result fails, "0" results.
RX(n+1)1	Not used	
RX(n+1)2	HOLD update complete flag (common to both internal HOLD and external HOLD)	Becomes "1" following data update. Restored to "0" when HOLD clear changes from "1" to "0" (by external input or RYn0).
RX(n+1)3	Not used	
RX(n+1)4	Command normally completed flag	
RX(n+1)5	Command abnormally completed flag	
RX(n+1)6	Command busy flag	
RX(n+1)7 … RX(n+3)F	Not used	
RX(n+3)8	Initial data processing request flag	
RX(n+3)9	Initial data setting completed flag	
RX(n+3)A	Not used	
RX(n+3)B	Remote READY	
RX(n+3)C … RX(n+3)F	Not used	

n: Address assigned from the master device according to station number setting

● From master device to this product

Address	Name	Notes
RYn0	Current value internal HOLD	1: Internal HOLD set 0: Internal HOLD cleared
RYn1 … RY(n+1)3	Not used	
RY(n+1)4	Command request flag	
RY(n+1)5 … RY(n+3)F	Not used	
RY(n+3)8	Initial data processing completed flag	
RY(n+3)9	Initial data setting request flag	
RY(n+3)A … RY(n+3)F	Not used	

n: Address assigned from the master device according to station number setting

● Read registers

Address	Name	Notes
RWrn	Connection status flag	1: Axis available 0: Counter not connected, or axis not available[*1]
RWrn+1	Not used	
RWrn+2	Tolerance judgment/current value output flag	1: Output not possible 0: Output possible[*1]
RWrn+3	Not used	
RWrn+4	Receive data 1	"4.3.3 List of Commands" on page 60
RWrn+5	Receive data 2	"4.3.3 List of Commands" on page 60
RWrn+6	Receive data 3	"4.3.3 List of Commands" on page 60
RWrn+7	Not used	

n: Address assigned from the master device according to station number setting

*1 EJ Counters and channels are assigned to bits as follows.

bit 0: EJ01-Ch.1	bit 1: EJ01-Ch.2	bit 2: EJ02-Ch.1	bit 3: EJ02-Ch.2
bit 4: EJ03-Ch.1	bit 5: EJ03-Ch.2	bit 6: EJ04-Ch.1	bit 7: EJ04-Ch.2
bit 8: EJ05-Ch.1	bit 9: EJ05-Ch.2	bit 10: EJ06-Ch.1	bit 11: EJ06-Ch.2
bit 12: EJ07-Ch.1	bit 13: EJ07-Ch.2	bit 14: EJ08-Ch.1	bit 15: EJ08-Ch.2

● Write registers

Address	Name	Notes
RWwn	Command target unit selection data	Ordinarily, ID numbers from 0x01 to 0x08 are assigned to EJ Counters in sequence, starting with the device adjacent to this product.
RWwn+1	Command target gage (Ch.1/Ch.2) selection data	0: Ch.1 1: Ch.2 **Tips** Data other than bit 0 are invalid.
RWwn+2	Command setting data	"4.3.3 List of Commands" on page 60
RWwn+3	Not used	
RWwn+4	Command send data 1	"4.3.3 List of Commands" on page 60
RWwn+5	Command send data 2	"4.3.3 List of Commands" on page 60
RWwn+6	Command send data 3	"4.3.3 List of Commands" on page 60
RWwn+7	Not used	

n: Address assigned from the master device according to station number setting

■ Ver. 2.00 input/output signals

● From this product to master device

Address	Name	Notes
RXn0	EJ01-Ch.1 tolerance judgment (L3)	1: In range 0: Out of range **Tips** For details on tolerance judgment (L3), see "4.5 Tolerance Judgment Result" on page 66.
RXn1	EJ01-Ch.2 tolerance judgment (L3)	
RXn2	EJ02-Ch.1 tolerance judgment (L3)	
RXn3	EJ02-Ch.2 tolerance judgment (L3)	
RXn4	EJ03-Ch.1 tolerance judgment (L3)	
RXn5	EJ03-Ch.2 tolerance judgment (L3)	
RXn6	EJ04-Ch.1 tolerance judgment (L3)	
RXn7	EJ04-Ch.2 tolerance judgment (L3)	
RXn8	EJ05-Ch.1 tolerance judgment (L3)	
RXn9	EJ05-Ch.2 tolerance judgment (L3)	
RXnA	EJ06-Ch.1 tolerance judgment (L3)	
RXnB	EJ06-Ch.2 tolerance judgment (L3)	
RXnC	EJ07-Ch.1 tolerance judgment (L3)	
RXnD	EJ07-Ch.2 tolerance judgment (L3)	
RXnE	EJ08-Ch.1 tolerance judgment (L3)	
RXnF	EJ08-Ch.2 tolerance judgment (L3)	

Address	Name	Notes
RX(n+1)0	Tolerance judgment ALLGO determination	"1" results if tolerance judgment is OK for all axes (if each axis is available and its tolerance judgment is OK); if any result fails, "0" results.
RX(n+1)1	Not used	
RX(n+1)2	HOLD update complete flag (common to both internal HOLD and external HOLD)	Becomes "1" following data update. Restored to "0" when HOLD clear changes from "1" to "0" (by external input or RYn0).
RX(n+1)3	Not used	
RX(n+1)4	Command normally completed flag	
RX(n+1)5	Command abnormally completed flag	
RX(n+1)6	Command busy flag	
RX(n+1)7 … RX(n+1)F	Not used	

Address	Name	Notes
RX(n+2)0	EJ01-Ch.1 tolerance judgment (L1)	
RX(n+2)1	EJ01-Ch.2 tolerance judgment (L1)	
RX(n+2)2	EJ02-Ch.1 tolerance judgment (L1)	
RX(n+2)3	EJ02-Ch.2 tolerance judgment (L1)	
RX(n+2)4	EJ03-Ch.1 tolerance judgment (L1)	
RX(n+2)5	EJ03-Ch.2 tolerance judgment (L1)	
RX(n+2)6	EJ04-Ch.1 tolerance judgment (L1)	
RX(n+2)7	EJ04-Ch.2 tolerance judgment (L1)	
RX(n+2)8	EJ05-Ch.1 tolerance judgment (L1)	
RX(n+2)9	EJ05-Ch.2 tolerance judgment (L1)	
RX(n+2)A	EJ06-Ch.1 tolerance judgment (L1)	
RX(n+2)B	EJ06-Ch.2 tolerance judgment (L1)	
RX(n+2)C	EJ07-Ch.1 tolerance judgment (L1)	
RX(n+2)D	EJ07-Ch.2 tolerance judgment (L1)	
RX(n+2)E	EJ08-Ch.1 tolerance judgment (L1)	
RX(n+2)F	EJ08-Ch.2 tolerance judgment (L1)	1: In range 0: Out of range
RX(n+3)0	EJ01-Ch.1 tolerance judgment (L2)	
RX(n+3)1	EJ01-Ch.2 tolerance judgment (L2)	**Tips** For details on tolerance judgment (L1 to L5), see "4.5 Tolerance Judgment Result" on page 66.
RX(n+3)2	EJ02-Ch.1 tolerance judgment (L2)	
RX(n+3)3	EJ02-Ch.2 tolerance judgment (L2)	
RX(n+3)4	EJ03-Ch.1 tolerance judgment (L2)	
RX(n+3)5	EJ03-Ch.2 tolerance judgment (L2)	
RX(n+3)6	EJ04-Ch.1 tolerance judgment (L2)	
RX(n+3)7	EJ04-Ch.2 tolerance judgment (L2)	
RX(n+3)8	EJ05-Ch.1 tolerance judgment (L2)	
RX(n+3)9	EJ05-Ch.2 tolerance judgment (L2)	
RX(n+3)A	EJ06-Ch.1 tolerance judgment (L2)	
RX(n+3)B	EJ06-Ch.2 tolerance judgment (L2)	
RX(n+3)C	EJ07-Ch.1 tolerance judgment (L2)	
RX(n+3)D	EJ07-Ch.2 tolerance judgment (L2)	
RX(n+3)E	EJ08-Ch.1 tolerance judgment (L2)	
RX(n+3)F	EJ08-Ch.2 tolerance judgment (L2)	
RX(n+4)0	EJ01-Ch.1 tolerance judgment (L4)	
RX(n+4)1	EJ01-Ch.2 tolerance judgment (L4)	
RX(n+4)2	EJ02-Ch.1 tolerance judgment (L4)	
RX(n+4)3	EJ02-Ch.2 tolerance judgment (L4)	

Address	Name	Notes
RX(n+4)4	EJ03-Ch.1 tolerance judgment (L4)	
RX(n+4)5	EJ03-Ch.2 tolerance judgment (L4)	
RX(n+4)6	EJ04-Ch.1 tolerance judgment (L4)	
RX(n+4)7	EJ04-Ch.2 tolerance judgment (L4)	
RX(n+4)8	EJ05-Ch.1 tolerance judgment (L4)	
RX(n+4)9	EJ05-Ch.2 tolerance judgment (L4)	
RX(n+4)A	EJ06-Ch.1 tolerance judgment (L4)	
RX(n+4)B	EJ06-Ch.2 tolerance judgment (L4)	
RX(n+4)C	EJ07-Ch.1 tolerance judgment (L4)	
RX(n+4)D	EJ07-Ch.2 tolerance judgment (L4)	
RX(n+4)E	EJ08-Ch.1 tolerance judgment (L4)	
RX(n+4)F	EJ08-Ch.2 tolerance judgment (L4)	1: In range 0: Out of range
RX(n+5)0	EJ01-Ch.1 tolerance judgment (L5)	
RX(n+5)1	EJ01-Ch.2 tolerance judgment (L5)	**Tips** For details on tolerance judgment (L1 to L5), see "4.5 Tolerance Judgment Result" on page 66.
RX(n+5)2	EJ02-Ch.1 tolerance judgment (L5)	
RX(n+5)3	EJ02-Ch.2 tolerance judgment (L5)	
RX(n+5)4	EJ03-Ch.1 tolerance judgment (L5)	
RX(n+5)5	EJ03-Ch.2 tolerance judgment (L5)	
RX(n+5)6	EJ04-Ch.1 tolerance judgment (L5)	
RX(n+5)7	EJ04-Ch.2 tolerance judgment (L5)	
RX(n+5)8	EJ05-Ch.1 tolerance judgment (L5)	
RX(n+5)9	EJ05-Ch.2 tolerance judgment (L5)	
RX(n+5)A	EJ06-Ch.1 tolerance judgment (L5)	
RX(n+5)B	EJ06-Ch.2 tolerance judgment (L5)	
RX(n+5)C	EJ07-Ch.1 tolerance judgment (L5)	
RX(n+5)D	EJ07-Ch.2 tolerance judgment (L5)	
RX(n+5)E	EJ08-Ch.1 tolerance judgment (L5)	
RX(n+5)F	EJ08-Ch.2 tolerance judgment (L5)	
RX(n+6)0	EJ01-Ch.1 tolerance judgment (LT1)	
RX(n+6)1	EJ01-Ch.2 tolerance judgment (LT1)	
RX(n+6)2	EJ02-Ch.1 tolerance judgment (LT1)	
RX(n+6)3	EJ02-Ch.2 tolerance judgment (LT1)	
RX(n+6)4	EJ03-Ch.1 tolerance judgment (LT1)	
RX(n+6)5	EJ03-Ch.2 tolerance judgment (LT1)	1: H 0: L
RX(n+6)6	EJ04-Ch.1 tolerance judgment (LT1)	
RX(n+6)7	EJ04-Ch.2 tolerance judgment (LT1)	**Tips** For details on tolerance judgment (LT1 to LT3), see "4.5 Tolerance Judgment Result" on page 66.
RX(n+6)8	EJ05-Ch.1 tolerance judgment (LT1)	
RX(n+6)9	EJ05-Ch.2 tolerance judgment (LT1)	
RX(n+6)A	EJ06-Ch.1 tolerance judgment (LT1)	
RX(n+6)B	EJ06-Ch.2 tolerance judgment (LT1)	
RX(n+6)C	EJ07-Ch.1 tolerance judgment (LT1)	
RX(n+6)D	EJ07-Ch.2 tolerance judgment (LT1)	
RX(n+6)E	EJ08-Ch.1 tolerance judgment (LT1)	
RX(n+6)F	EJ08-Ch.2 tolerance judgment (LT1)	

Address	Name	Notes
RX(n+7)0	EJ01-Ch.1 tolerance judgment (LT2)	
RX(n+7)1	EJ01-Ch.2 tolerance judgment (LT2)	
RX(n+7)2	EJ02-Ch.1 tolerance judgment (LT2)	
RX(n+7)3	EJ02-Ch.2 tolerance judgment (LT2)	
RX(n+7)4	EJ03-Ch.1 tolerance judgment (LT2)	
RX(n+7)5	EJ03-Ch.2 tolerance judgment (LT2)	
RX(n+7)6	EJ04-Ch.1 tolerance judgment (LT2)	
RX(n+7)7	EJ04-Ch.2 tolerance judgment (LT2)	
RX(n+7)8	EJ05-Ch.1 tolerance judgment (LT2)	
RX(n+7)9	EJ05-Ch.2 tolerance judgment (LT2)	
RX(n+7)A	EJ06-Ch.1 tolerance judgment (LT2)	
RX(n+7)B	EJ06-Ch.2 tolerance judgment (LT2)	
RX(n+7)C	EJ07-Ch.1 tolerance judgment (LT2)	
RX(n+7)D	EJ07-Ch.2 tolerance judgment (LT2)	
RX(n+7)E	EJ08-Ch.1 tolerance judgment (LT2)	
RX(n+7)F	EJ08-Ch.2 tolerance judgment (LT2)	
RX(n+8)0	EJ01-Ch.1 tolerance judgment (LT3)	
RX(n+8)1	EJ01-Ch.2 tolerance judgment (LT3)	1: H 0: L
RX(n+8)2	EJ02-Ch.1 tolerance judgment (LT3)	
RX(n+8)3	EJ02-Ch.2 tolerance judgment (LT3)	**Tips** For details on tolerance judgment (LT1 to LT3), see "4.5 Tolerance Judgment Result" on page 66.
RX(n+8)4	EJ03-Ch.1 tolerance judgment (LT3)	
RX(n+8)5	EJ03-Ch.2 tolerance judgment (LT3)	
RX(n+8)6	EJ04-Ch.1 tolerance judgment (LT3)	
RX(n+8)7	EJ04-Ch.2 tolerance judgment (LT3)	
RX(n+8)8	EJ05-Ch.1 tolerance judgment (LT3)	
RX(n+8)9	EJ05-Ch.2 tolerance judgment (LT3)	
RX(n+8)A	EJ06-Ch.1 tolerance judgment (LT3)	
RX(n+8)B	EJ06-Ch.2 tolerance judgment (LT3)	
RX(n+8)C	EJ07-Ch.1 tolerance judgment (LT3)	
RX(n+8)D	EJ07-Ch.2 tolerance judgment (LT3)	
RX(n+8)E	EJ08-Ch.1 tolerance judgment (LT3)	
RX(n+8)F	EJ08-Ch.2 tolerance judgment (LT3)	
RX(n+9)0 … RX(n+27)7	Not used	
RX(n+27)8	Initial data processing request flag	
RX(n+27)9	Initial data setting completed flag	
RX(n+27)A	Not used	
RX(n+27)B	Remote READY	
RX(n+27)C … RX(n+27)F	Not used	

n: Address assigned from the master device according to station number setting

● From master device to this product

Address	Name	Notes
RYn0	Current value internal HOLD	1: Internal HOLD set 0: Internal HOLD cleared
RYn1 … RY(n+1)3	Not used	
RY(n+1)4	Command request flag	
RY(n+1)5 … RY(n+27)7	Not used	
RY(n+27)8	Initial data processing complete flag	
RY(n+27)9	Initial data setting request flag	
RY(n+27)A … RY(n+27)F	Not used	

n: Address assigned from the master device according to station number setting

● Read registers

Address	Name	Notes
RWrn	Connection status flag	1: Axis available 0: Counter not connected, or axis not available[*1]
RWrn+1	Not used	
RWrn+2	Tolerance judgment/current value output flag	1: Output not possible 0: Output possible[*1]
RWrn+3	Not used	
RWrn+4	Receive data 1	"4.3.3 List of Commands" on page 60
RWrn+5	Receive data 2	"4.3.3 List of Commands" on page 60
RWrn+6	Receive data 3	"4.3.3 List of Commands" on page 60
RWrn+7	Not used	
RWrn+8	EJ01–Ch.1 Current value data (upper part)	• Output of data conforming to the setting of EJ Counter Parameter Numbers 03 (display mode selection) and 22 (unit setting). • Data is output in the following format as a sign (1 bit) and a numeric value (31 bits). – Minimum resolution: 0.00001 mm (0.0000001 in), fixed – Unit/ decimal point: None – Sign: "0" when positive, "1" when negative (complement of 2)
RWrn+9	EJ01-Ch.1 Current value data (lower part)	
RWrn+A	EJ01-Ch.2 Current value data (upper part)	
RWrn+B	EJ01-Ch.2 Current value data (lower part)	
RWrn+C	EJ02-Ch.1 Current value data (upper part)	
RWrn+D	EJ02-Ch.1 Current value data (lower part)	

Address	Name	Notes
RWrn+E	EJ02-Ch.2 Current value data (upper part)	• Output of data conforming to the setting of EJ Counter Parameter Numbers 03 (display mode selection) and 22 (unit setting). • Data is output in the following format as a sign (1 bit) and a numeric value (31 bits). – Minimum resolution: 0.00001 mm (0.0000001 in), fixed – Unit/ decimal point: None – Sign: "0" when positive, "1" when negative (complement of 2)
RWrn+F	EJ02-Ch.2 Current value data (lower part)	
RWrn+1 0	EJ03-Ch.1 Current value data (upper part)	
RWrn+1 1	EJ03-Ch.1 Current value data (lower part)	
RWrn+1 2	EJ03-Ch.2 Current value data (upper part)	
RWrn+1 3	EJ03-Ch.2 Current value data (lower part)	
RWrn+1 4	EJ04-Ch.1 Current value data (upper part)	
RWrn+1 5	EJ04-Ch.1 Current value data (lower part)	
RWrn+1 6	EJ04-Ch.2 Current value data (upper part)	
RWrn+1 7	EJ04-Ch.2 Current value data (lower part)	
RWrn+1 8	EJ05-Ch.1 Current value data (upper part)	
RWrn+1 9	EJ05-Ch.1 Current value data (lower part)	
RWrn+1 A	EJ05-Ch.2 Current value data (upper part)	
RWrn+1 B	EJ05-Ch.2 Current value data (lower part)	
RWrn+1 C	EJ06-Ch.1 Current value data (upper part)	
RWrn+1 D	EJ06-Ch.1 Current value data (lower part)	
RWrn+1 E	EJ06-Ch.2 Current value data (upper part)	
RWrn+1 F	EJ06-Ch.2 Current value data (lower part)	
RWrn+2 0	EJ07-Ch.1 Current value data (upper part)	
RWrn+2 1	EJ07-Ch.1 Current value data (lower part)	
RWrn+2 2	EJ07-Ch.2 Current value data (upper part)	
RWrn+2 3	EJ07-Ch.2 Current value data (lower part)	
RWrn+2 4	EJ08-Ch.1 Current value data (upper part)	
RWrn+2 5	EJ08-Ch.1 Current value data (lower part)	
RWrn+2 6	EJ08-Ch.2 Current value data (upper part)	
RWrn+2 7	EJ08-Ch.2 Current value data (lower part)	

Address	Name	Notes
RWrn+2 8 … RWrn+3 F	Not used	

n: Address assigned from the master device according to station number setting

*1 EJ Counters and channels are assigned to bits as follows.

bit 0: EJ01-Ch.1	bit 1: EJ01-Ch.2	bit 2: EJ02-Ch.1	bit 3: EJ02-Ch.2
bit 4: EJ03-Ch.1	bit 5: EJ03-Ch.2	bit 6: EJ04-Ch.1	bit 7: EJ04-Ch.2
bit 8: EJ05-Ch.1	bit 9: EJ05-Ch.2	bit 10: EJ06-Ch.1	bit 11: EJ06-Ch.2
bit 12: EJ07-Ch.1	bit 13: EJ07-Ch.2	bit 14: EJ08-Ch.1	bit 15: EJ08-Ch.2

● Write registers

Address	Name	Notes
RWwn	Command target unit selection data	Ordinarily, ID numbers from 0x01 to 0x08 are assigned to EJ Counters in sequence, starting with the device adjacent to this product.
RWwn+1	Command target gage (Ch.1/Ch.2) selection data	0: Ch.1 1: Ch.2 **Tips** Data other than bit 0 are invalid.
RWwn+2	Command setting data	"4.3.3 List of Commands" on page 60
RWwn+3	Not used	
RWwn+4	Command send data 1	"4.3.3 List of Commands" on page 60
RWwn+5	Command send data 2	"4.3.3 List of Commands" on page 60
RWwn+6	Command send data 3	"4.3.3 List of Commands" on page 60
RWwn+7 … RWwn+3 F	Not used	

n: Address allocated from the master device according to station number setting

4.3.3 List of Commands

You can read/write settings and status of this product and EJ Counters by communication of commands using the read register or write register.

Tips

When checking tolerance judgment results, check them as a set together with the tolerance judgment/current value output status flag (RWrn+2). Results of tolerance judgment are valid only if the tolerance judgment/current value output status flag (RWrn+2) is "0" (ready for output).

■ Read

1 Store command setting data in the prescribed location (remote register RWw) and set the command request flag ON.

» Data is communicated to the EJ Counter, and then the command complete flag goes ON after required data has been obtained.

» Data obtained is stored to receive data 1 to 3.

2 Verify the receive data, and then set the command request flag OFF.

» The command normally completed flag goes OFF.

■ Write

1 Store command setting data in the prescribed location (remote register RWw) and set the command request flag ON.

» Data is communicated to the EJ Counter, and then the command complete flag goes ON after data has been written.

» Data written is stored to receive data 1 to 3.

2 Verify the receive data, and then set the command request flag OFF.

» The command normally completed flag goes OFF.

■ Read commands

Commands	Command setting data RWwn+2	Command target unit selection data RWwn[*1]	Command target gage selection data RWwn+1[*2]	Send data 1 (16 bit)	Send data 2 (16 bit)	Send data 3 (16 bit)	Receive data 1 (16 bit)	Receive data 2 (16 bit)	Receive data 3 (16 bit)
Current value[*3]	0x0010	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	Current value (upper part)	Current value (lower part)	Error flag[*4]
Preset value[*3]	0x0020	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	Preset value (upper part)	Preset value (lower part)	Error flag[*4]
Tolerance value S1[*3]	0x0021	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	Tolerance value S1 (upper part)	Tolerance value S1 (lower part)	Error flag[*4]
Tolerance value S2[*3]	0x0022	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	Tolerance value S2 (upper part)	Tolerance value S2 (lower part)	Error flag[*4]
Tolerance value S3[*3]	0x0023	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	Tolerance value S3 (upper part)	Tolerance value S3 (lower part)	Error flag[*4]
Tolerance value S4[*3]	0x0024	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	Tolerance value S4 (upper part)	Tolerance value S4 (lower part)	Error flag[*4]
EJ Counter display status	0x0030	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	Upper 8 bits: Display status[*5] Lower 8 bits: Peak mode[*6]	Upper 8 bits: HOLD status[*7] Lower 8 bits: Unit[*8]	Error flag[*4]
Read EJ Counter parameter settings	0x0040	0x0001 to 0x0008	0x0000 or 0x0001	Upper 8 bits: Fixed to 0x00 Lower 8 bits: Parameter Number	0x0000	0x0000	Upper 8 bits: Fixed to 0x00 Lower 8 bits: Parameter Number	Upper 8 bits: Fixed to 0x00 Lower 8 bits: Setting value.	Error flag[*4]

Commands	Command setting data RWwn+2	Command target unit selection data RWwn[*1]	Command target gage selection data RWwn+1[*2]	Send data 1 (16 bit)	Send data 2 (16 bit)	Send data 3 (16 bit)	Receive data 1 (16 bit)	Receive data 2 (16 bit)	Receive data 3 (16 bit)
Number of EJ Counters connected	0x00AA	0x0000	0x0000	0x0000	0x0000	0x0000	Upper 8 bits: Number of counters connected Lower 8 bits: Fixed to 0x00	0x0000	0x0000
EJ Counter ID numbers (units 1 to 4)	0x00A4	0x0000	0x0000	0x0000	0x0000	0x0000	EJ01, EJ02 ID numbers[*9]	EJ03, EJ04 ID numbers[*9]	0x0000
EJ Counter ID numbers (units 5 to 8)	0x00A4	0x0000	0x0000	0x0001	0x0000	0x0000	EJ05, EJ06 ID numbers[*9]	EJ07, EJ08 ID numbers[*9]	0x0000

*1: Assign 0x0001 to 0x0008 to EJ Counters in sequence starting with the device adjacent to this product.

*2: Specify "0" for Ch.1, or "1" for Ch.2. (Data bits other than 0 are not valid.)

*3: The current value, preset value and tolerance data are each output as a sign (1 bit) and a numeric value (31 bits).

– Minimum resolution: 0.00001 mm (0.0000001 in), fixed

– Decimal point: None

– Sign: "0" when positive, "1" when negative (complement of 2)

*4: When an error flag is output to receive data 3, the upper 8 bits are the error flag. The lower 8 bits are fixed to "0x00".

*5: "0x00" indicates the standby state, "0x01" indicates counter display, and "0x02" indicates parameter display.

*6: "0x00" indicates current value display, "0x01" indicates MAX value display, "0x02" indicates MIN value display and "0x03" indicates TIR value display

*7: bit 0 indicates the external HOLD state, bit 1 indicates the internal HOLD state, and bit 2 indicates the internal HOLD output state. Each is "1" when ON or during output. Bits 3 to 7 are fixed to 0.

*8: "0x00" indicates mm display, and "0x01" indicates inch display.

*9: If the relevant EJ Counter is not connected, the value read is "0xFF".

■ Setting and write commands

Commands	Command setting data RWwn+2	Command target unit selection data RWwn[*1]	Command target gage selection data RWwn+1[*2]	Send data 1 (16 bit)	Send data 2 (16 bit)	Send data 3 (16 bit)	Receive data 1 (16 bit)	Receive data 2 (16 bit)	Receive data 3 (16 bit)
Write preset values[*3]	0x0060	0x0001 to 0x0008	0x0000 or 0x0001	Preset value (upper part)	Preset value (lower part)	0x0000	Preset value (upper part)	Preset value (lower part)	Error flag[*4]
Write tolerance value S1[*3]	0x0061	0x0001 to 0x0008	0x0000 or 0x0001	Tolerance value S1 (upper part)	Tolerance value S1 (lower part)	0x0000	Tolerance value S1 (upper part)	Tolerance value S1 (lower part)	Error flag[*4]
Write tolerance value S2[*3]	0x0062	0x0001 to 0x0008	0x0000 or 0x0001	Tolerance value S2 (upper part)	Tolerance value S2 (lower part)	0x0000	Tolerance value S2 (upper part)	Tolerance value S2 (lower part)	Error flag[*4]
Write tolerance value S3[*3]	0x0063	0x0001 to 0x0008	0x0000 or 0x0001	Tolerance value S3 (upper part)	Tolerance value S3 (lower part)	0x0000	Tolerance value S3 (upper part)	Tolerance value S3 (lower part)	Error flag[*4]
Write tolerance value S4[*3]	0x0064	0x0001 to 0x0008	0x0000 or 0x0001	Tolerance value S4 (upper part)	Tolerance value S4 (lower part)	0x0000	Tolerance value S4 (upper part)	Tolerance value S4 (lower part)	Error flag[*4]
Cancel the start-up stand-by state (cancel "--------" display)	0x0070	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	0x0000	0x0000	Error flag[*4]
Switch peak mode.	0x0071	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	Upper 8 bits: Peak mode[*4] Lower 8 bits: Fixed to 0x00	0x0000	0x0000	Error flag[*4]
Current value preset	0x0072	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	0x0000	0x0000	Error flag[*4]
Zero current values	0x0073	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	0x0000	0x0000	Error flag[*4]
Clear presets/ zero set	0x0074	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	0x0000	0x0000	Error flag[*4]

Commands	Command setting data RWwn+2	Command target unit selection data RWwn[*1]	Command target gage selection data RWwn+1[*2]	Send data 1 (16 bit)	Send data 2 (16 bit)	Send data 3 (16 bit)	Receive data 1 (16 bit)	Receive data 2 (16 bit)	Receive data 3 (16 bit)
Clear peak data (MAX and MIN data)	0x0075	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	0x0000	0x0000	Error flag[*4]
Clear the EJ Counter error state	0x0076	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	0x0000	0x0000	Error flag[*4]
Set current value internal hold	0x0077	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	0x0000	0x0000	Error flag[*4]
Cancel current value internal hold	0x0078	0x0001 to 0x0008	0x0000 or 0x0001	0x0000	0x0000	0x0000	0x0000	0x0000	Error flag[*4]
Write EJ Counter parameter settings	0x0080	0x0001 to 0x0008	0x0000 or 0x0001	Upper 8 bits: Fixed to 0x00 Lower 8 bits: Parameter Number	Upper 8 bits: Fixed to 0x00 Lower 8 bits: Setting value	0x0000	Upper 8 bits: Fixed to 0x00 Lower 8 bits: Parameter Number	Upper 8 bits: Fixed to 0x00 Lower 8 bits: Setting value	Error flag[*4]
System reset (enable)[*6]	0x00CA	0x0000	0x0000	0xAAAA	0x0000	0x0000	0x0000	0x0000	0x0000
System reset (execute)[*6]	0x00CA	0x0000	0x0000	0x0000	0x0000	0x0000	0x0000	0x0000	0x0000

*1: Specify 0x01 to 0x08 in sequence starting with the device adjacent to this product.

*2: Specify "0" for Ch.1, or "1" for Ch.2. (Data bits other than 0 are not valid.)

*3: The preset value and tolerance data are each set as a sign (1 bit) and a numeric value (31 bits).

– Minimum resolution: 0.00001 mm (0.0000001 in), fixed

– Decimal point: None

– Sign: "0" when value is positive, "1" when negative (complement of 2)

*4: When an error flag is output to receive data 3, the upper 8 bits are the error flag. The lower 8 bits are fixed to "0x00".

*5: Specify "0x00" to switch peak mode to current value, "0x01" to switch to MAX value, "0x02" to switch to MIN value and "0x03" to switch to TIR value.

*6: When 0xAAAA followed by 0x0000 are sent to send data 1 in the same command, a software reset is executed.

4.4 CC-Link Communication Errors

4.4.1 EJ Counter Error Flags

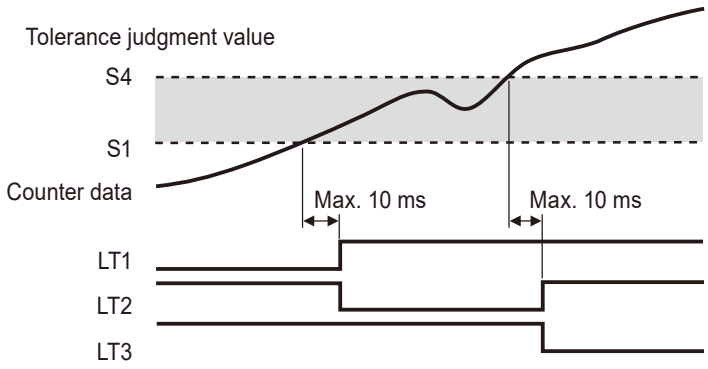
Error flags are made up of data in hexadecimal notation. Bits that are set to "1" indicate the location of the alarm or error.

bit	Judgment	Description
bit 0	0: Normal 1: Alarm or error state	Indicates an error in communication between the interface unit and EJ Counters. Whether or not the command was normally executed cannot be determined. Check the command and execute it again.
bit 1		The EJ Counter is in the Busy state. EJ Counter settings are being made by key operation. Commands cannot be executed. Execute the command after putting the EJ Counter in the counting state.
bit 2		The origin of the requested channel has not been detected. Commands cannot be executed. Execute the command again after performing gage origin detection or disabling origin detection.
bit 3		An alarm occurred on the requested channel or both channels. Commands cannot be executed. The flag is set if the EJ Counter is in the Busy state (DataER-2 bit1), its origin has not been detected (DataER-2 bit 2), or it is in the counter stand-by state.
bit 4		A hardware error occurred on the requested channel or both channels.
bit 5		An alarm or hardware error occurred on one of the channels. The flag is set even if the alarm or hardware error occurred on the channel that was not requested. The command is executed if there is no abnormality the requested channel.
bit 6		Fixed to 0
bit 7		Fixed to 0

4.5 Tolerance Judgment Result

■ Tolerance judgment output

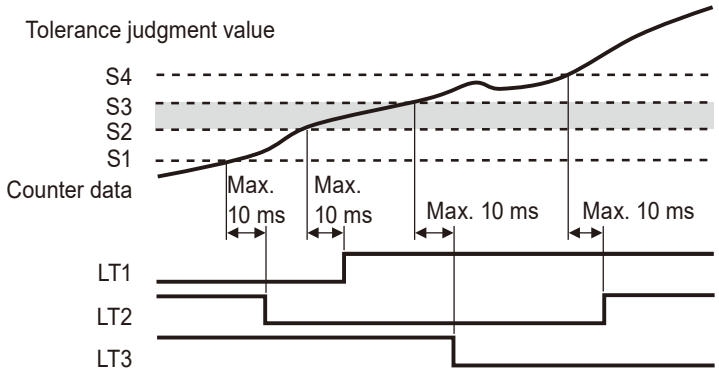
● With 3-step tolerance



	x < S1 (L1)	S1 ≦ x ≦S4 (L3)	S4< x (L5)
LT1	L	H	H
LT2	H	L	H
LT3	H	H	L

* With 3-step tolerance judgment, L2 and L4 are not used. (Fixed to 0)

● With 5-step tolerance



	x < S1 (L1)	S1 ≦ x < S2 (L2)	S2 ≦ x ≦ S3 (L3)	S3 < x ≦ S4 (L4)	S4 < x (L5)
LT1	L	L	H	H	H
LT2	H	L	L	L	H
LT3	H	H	H	L	L

4.6 Communication Response Time

The current value data from the EJ Counter(s) connected to this product are sent to the CPU unit through the CC-Link master unit.

The time required to update data at the CPU unit is as follows.

Tips

The update times indicated below are for reference. The time fluctuates depending on the system used by the customer.

■ Conditions

Baud rate: 10 Mbps

CC-Link Ver.: 1.10 or Ver. 2.00.

Communication unit: L26CPU-BT CPU unit (Mitsubishi Electric)

Number of EJ Counters	Update time (reference)
1 unit	Approx. 12 ms
8 units	Approx. 46 ms

* The update time is the same regardless of whether the number of Linear Gages connected to the EJ Counter is one or two.

* The update time is the same for both CC-Link Ver. 1.10 and Ver. 2.00.

MEMO

5 EJ Counter Parameter Settings

<table>
<tr><th>No.</th><th>Set value</th><th>Per-axis setting</th><th>Set value: Operation</th><th>Default value</th><th>Description</th></tr>
<tr><td>01</td><td>Key protect</td><td>N/A</td><td>00: No key protect
01: Key protect</td><td>00</td><td>Operation of keys other than those used for setting parameters can be disabled to prevent operation errors.
Tips
Operation by external input cannot be disabled.</td></tr>
<tr><td>02</td><td>Origin initial-ization
(Origin clear)</td><td>N/A</td><td>00: Do not initialize.
01: Initialize.</td><td>00</td><td>When a Linear Gage with origin mark is connected, the origin can be initialized without cycling on the power.</td></tr>
<tr><td>03</td><td>Display mode selection</td><td>N/A</td><td>
<table>
<tr><th>Set value</th><th>Ch.1</th><th>Ch.2</th></tr>
<tr><td>00</td><td>A-axis counter</td><td>B-axis counter</td></tr>
<tr><td>01</td><td>Sum (A+B)</td><td>B-axis counter</td></tr>
<tr><td>02</td><td>Differ-ence (A-B)</td><td>B-axis counter</td></tr>
<tr><td>03</td><td>A-axis counter</td><td>Sum (A+B)</td></tr>
<tr><td>04</td><td>A-axis counter</td><td>Differ-ence (A-B)</td></tr>
<tr><td>05</td><td>A-axis speed</td><td>B-axis speed</td></tr>
<tr><td>06</td><td>A-axis counter</td><td>A-axis speed</td></tr>
<tr><td>07</td><td>B-axis counter</td><td>B-axis speed</td></tr>
</table>
</td><td>00</td><td>Selects the values to be displayed on Ch.1 and Ch.2.
Tips
• When using only the A-axis or the B-axis, set 06 or 07.
• If the displayed content is the same both before and after changing the setting, the tolerance value, preset value and preset state settings are maintained.
• In order to set the speed display, set the speed sampling cycle with Parameter Number 17.
• The speed display unit is mm/s (or in/s). Display of lower digits may be fixed depending on the speed sampling time.
• When the minimum value (MIN) is selected for Peak mode, the speed display indicates the maximum speed in the reverse direction.
• Because speed display is simpli-fied, it is not suitable for feedback control.</td></tr>
</table>

No.	Set value	Per-axis setting	Set value: Operation	Default value	Description
04	Linear Gage resolution (minimum reading)	✓	00: 0.005 mm (5 µm), 0.0002 in 01: 0.001 mm (1 µm), 0.00005 in 02: 0.0005 mm (0.5 µm), 0.00002 in 03: 0.0001 mm (0.1 µm), 0.000005 in	01	Set the minimum reading according to the resolution of the connected Linear Gage. Make settings individually for the A-axis and B-axis. **Tips** • Correct values will not be displayed if the settings do not match the resolution of the connected Linear Gage. • The unit for minimum reading is "in" when Parameter Number 22 is set to "1".
05	Origin detection function	N/A	00: Disabled 01: Enabled	00	Selects whether the origin function is enabled or disabled when a Linear Gage with an origin point mark is connected.
06	Counter direction	✓	00: + direction 01: - direction	00	Sets the relationship between the direction in which the numeric value changes and the direction of movement of the Linear Gage plunger. When 00 is set, the numeric value increases as the plunger moves toward top dead center. When 01 is set, the numeric value increases as the plunger moves toward bottom dead center. Make settings individually for the A-axis and B-axis.
07	Origin detection direction	✓	00: + direction 01: - direction	00	When a Linear Gage with an origin mark is connected, selects the direction of the plunger of the Linear Gage for origin detection. Make settings individually for the A-axis and B-axis.

No.	Set value	Per-axis setting	Set value: Operation	Default value	Description
08	Tolerance judgment setting	N/A	00: 3-step tolerance judgment 01: 5-step tolerance judgment 02: No tolerance judgment	00	Selects whether or not the tolerance judgment function is used. When the tolerance judgment is used, selects the number of steps of tolerance judgment. **Tips** Changing the settings does not clear tolerance values S1 to S4, which are maintained. However, the following adjustments may be made in the event that the following inconsistencies occur. When the setting is changed from "3-step tolerance" or "No tolerance" to "5-step tolerance": When S2 < S1 or S4 < S2, S2 is replaced with the value of S1. When S3 < S1 or S4 < S3, S3 is replaced with the value of S4.
09	Display at startup	N/A	00: Counter stand-by 01: Counter displayed	00	Selects whether to display the standby state or the counter display at startup. **Tips** For details about screen display in the counter stand-by state, see the separate "Compact Display Unit for Linear Gage EJ Counter User's Manual".
10	ERR/ALLGO selection (I/O input/output setting)	N/A	00: Used as ERR 01: Used as ALLGO	00	Selects whether to use the ERR or ALLGO signal as the external output function. **Tips** When multiple EJ Counters are linked together, all of them must have the same setting. Correct output will not be obtained if any of the EJ Counters has a different setting.
11	Channel coupling selection (I/O input/output setting)	N/A	00: Do not couple channels 01: Couple channels	00	Selects whether to couple the 1 or 2 SEL external input signal to the EJ Counter's display channel. **Tips** The EJ Counter's [SEL/CE] key also works to couple the signal.

No.	Set value	Per-axis setting	Set value: Operation	Default value	Description
12	Origin re-detection (I/O input/output setting)	N/A	00: Disabled 01: Only effective for the axis that is dependent on the channel selected by 1/2 SEL. 02: Axis dependent on Ch.1 and axis dependent on Ch.2.	00	When setting is enabled, origin re-detection goes on stand-by when the HOLD signal (I/O input) rises. If the HOLD signal rises again while original detection is on stand-by, origin re-detection is canceled. **Tips** This setting affects all axes related to the specified channel. However, this does not include the axis whose channel is displaying speed. Example: • If the channel displaying the sum (A+B) and difference (A-B) is selected, the A-axis and B-axis are affected. • If the channel displaying the B-axis coordinates is selected, the B-axis is affected.
13	Preset by I/O input (I/O input setting)	N/A	00: Executed only for the channel selected by 1/2 SEL. 01: Executed for both channels.	00	Selects whether preset processing by external input is to be applied to just one channel or both channels.
14	Ch affected by the CLEAR signal (I/O input/output setting)	N/A	00: Executed only for the channel selected by 1/2 SEL. 01: Executed for both channels.	00	Selects whether peak clear and error clear are to be applied to just the specified channel or to both channels.
15	Peak value preset	N/A	00: Disabled 01: Enabled	00	Sets whether the peak value is to be set as the standard during peak mode maximum value display or minimum value display. **Tips** Peak value preset cannot be set during run-out display.
16	Smoothing	N/A	00: No smoothing (update at 5 ms intervals). 01: The average of 16 measurements is displayed (update at 80 ms intervals). 02: The average of 32 measurements is displayed (update at 160 ms intervals).	00	Counter values are averaged to minimize flicker of the lowest-order digit.

No.	Set value	Per-axis setting	Set value: Operation	Default value	Description
17	Speed sampling cycle	N/A	00: 10 ms 01: 50 ms 02: 100 ms	00	Selects the sampling interval for speed calculation.
18	Hide the lowest-order digit.	N/A	00: Display all digits. 01: Hide the lowest-order digit.	00	Hides the lowest-order digit. However, data output to the optional interface unit includes the lowest-order digit.
19	Arbitrary ID specification	N/A	00 to 49: ID numbers assigned automatically. 50 to 99: Arbitrary ID numbers assigned (ID numbers specified).	01	Set the ID number required when an optional interface unit is connected. When arbitrary ID numbers are set in the range 50 to 99, the ID numbers set are assigned the next time the power is turned on. **Tips** • After setting Ids, be sure to cycle the power off and on or perform a system reset. • When 00 to 49 is set, ID numbers 01 to 08 are automatically reassigned when the power is cycled off and on or after the system is reset. • If the same ID number is arbitrarily assigned to more than one EJ Counter, [EJ-CONNECT] will flash following power-on or system reset and the interface unit will not function properly. This will require checking ID settings at the EJ Counters themselves.
20	Power saving function	N/A	00: Display always lit 01 to 99: Display goes out after the specified interval passes (specify the interval length in minutes).	00	Turning off display minimizes power consumption. Specify the time that elapses between when the last key is pressed until the display goes out (01 to 99 minutes). When display is turned off, press any key to turn it on again. **Tips** Counter operation for the axes, I/O input and output, and data communication through the optional interface unit continue even when the display is off.
21	Parameter initialization	N/A	00: Do not initialize. 01: Initialize.	00	When this parameter is set to 01, the settings for all parameters other than number 19 (the arbitrary ID) and number 22 (the unit setting) are reset to their default values. Further, the tolerance and preset values are cleared.

No.	Set value	Per-axis setting	Set value: Operation	Default value	Description
22	Unit selection (EJ-102NE only)	N/A	00: mm (mm/s) 01: in (in/s)	00	The unit for displayed values can be set to "mm" or "in". **Tips** • Changing this setting clears the preset and tolerance values. • The default value is not restored even if the parameters are re-initialized. • The resolution of the Linear Gage is fixed to "in".

6 Troubleshooting

When this product does not operate as expected, refer to the cause of the trouble and the solutions shown below:

■ Overall

Problem	Cause	Solution
Power does not go on.	The interface unit is not connected to an EJ Counter.	The interface unit draws power from an EJ Counter. Connect it to an EJ Counter. **Tips** For details, see "2.1.2 Linking to EJ Counters" on page 21 and "2.3 Power Supply Connection" on page 29.
	Power is not supplied to the EJ Counter.	The interface unit draws power from an EJ Counter. Supply power to the EJ Counter.
	Power is not properly connected to the EJ Counter's connection plug.	Properly connect the power to the EJ Counter's connection plug. **Tips** For details, see the separate "Compact Display Unit for Linear Gage EJ Counter User's Manual".
	Power supply capacity is insufficient.	Connect a noise-free power supply with a capacity of 10 V DC–27 V DC (30 W).
	You are attempting to supply power via USB.	This product is not designed to receive power via USB bus. Power must be supplied by an EJ Counter. Supply power to the EJ Counter.
	The counter or interface unit linkage connector is defective.	Replace the defective counter or interface unit with a good one.
The [EJ-CONNECT] indicator does not light. (No communication with the EJ Counter.)	The terminal unit is not connected.	Normal communication requires connection of the terminal unit. Connect the terminal unit. **Tips** For details, see "2.1.2 Linking to EJ Counters" on page 21.
	The interface unit was connected to the EJ Counter while the EJ Counter's power was on.	The interface unit detects the EJ Counter when its power is switched on. Turn off the power, and then turn it back on again.
	Nine or more EJ Counters are linked together.	Turn off the power and then turn it back on after reducing the number of linked EJ Counters to no more than eight.
	The counter or interface unit linkage connector is defective.	Replace the defective counter or interface unit with a good one.

Problem	Cause	Solution
The [EJ-CONNECT] indicator flashes.	When setting arbitrary Ids, the same ID was assigned to more than one EJ Counter.	Make parameter settings by key operation, taking care to assign a unique ID to each EJ Counter.
Connection lost between units.	DIN rail fixing bracket not installed.	Immobilize the interface unit and EJ Counter(s) using the DIN rail fixing bracket. **Tips** For details, see "2.1.3 Attaching the DIN Rail Fixing Bracket" on page 22.

■ USB communication

Problem	Cause	Solution
Unable to connect USB connector.	The USB connector is of the wrong type.	The interface unit uses a Type-C connector. Use a Type-C compatible cable. **Tips** For details, see "2.2.1 USB Connection" on page 24.
Unable to use USB communication.	Your device uses the wrong communication standard.	This product uses the USB 2.0 Full Speed communication standard and works with Windows 10 standard device drivers. Please verify that your device supports the USB 2.0 Full Speed standard.
	Your device has the wrong port setting.	With this interface unit, USB communication uses a virtual COM port. When making port settings on your device, check to make sure the settings work with the application use for communication.
Cannot retrieve current value data.	The EJ Counter has thrown an error, and is not counting.	Clear the error on the EJ Counter. **Tips** For details, see the separate "Compact Display Unit for Linear Gage EJ Counter User's Manual".

■ CC-Link communication

Problem	Cause	Solution
Communication not working.	Connector plug is improperly wired.	Correctly rewire the connector plug. **Tips** For details, see "2.2.2 CC-Link Connection" on page 25.
	The terminal resistor is not connected to the terminal device.	Install the provided CC-Link communication terminal resistor. **Tips** For details, see "2.2.2 CC-Link Connection" on page 25.
	The baud rate setting is incorrect.	Set the baud rate that matches that of the network. **Tips** For details, see "● Setting the CC-Link version and baud rate" on page 28.
	The baud rate setting was changed after power-on.	Turn off the power, and then turn it back on again.
Communication not working ([ERROR] indicator lights or flashes).	Station number settings are incorrect.	Correctly reset the station numbers. The number of stations that can be occupied differs depending on the version. Make sure you are using the correct numbers. **Tips** For details, see "● Station number setting" on page 27.
	Station number settings were changed after power-on.	Turn off the power, and then turn it back on again.
Cannot retrieve current value data.	You are using Ver. 1.10.	Current value data can be transferred using Ver. 2.00. Use Ver. 2.00.
	The EJ Counter has thrown an error, and is not counting.	Clear the error on the EJ Counter. **Tips** For details, see the separate "Compact Display Unit for Linear Gage EJ Counter User's Manual".

Problem	Cause	Solution
The current value is not as expected.	You may be applying the wrong unit (mm/in).	This product transfers only numeric data, which does not include the unit of measurement. Check the unit setting on the EJ Counter. **Tips** For details, see the separate "Compact Display Unit for Linear Gage EJ Counter User's Manual".
	The number of digits is wrong.	This interface unit uses a fixed minimum resolution for data transfer. (0.00001 mm or 0.0000001 in) No decimal point is included in send data. Take the above into consideration and convert data as needed.
	Negative numbers not properly converted.	This interface unit handles negative numbers as twos complements. Use a suitable method for converting data.

Tips

For details on handling output errors, see "3.3 List of USB Communication Errors" on page 40.

7 Specifications

7.1 Basic Specifications

Part No.		21HZA186
Product name		Interface Unit CC-Link
Supported interfaces		USB 2.0 Full Speed
		CC-Link Ver. 1.10
		CC-Link Ver. 2.00
User interface	Display	POWER (green), RUN (green), ERROR (red), EJ-CONNECT (green)
	Switches	Rotary switch x 3 (Station number setting x 2, baud rate setting x 1)
Functions		Common protocol for USB and CC-Link Current value read-out*1, current value hold (software hold), EJ Counter parameter setting, tolerance evaluation setting, preset value setting, preset/zero set clear, peak clear, error clear *1 With CC-Link, only supported by Ver. 2.00.
Power supply specifications	Input voltage	10 V–27 V DC (supplied from EJ Counter) Power cannot be supplied by USB.
	Maximum power consumption	Interface unit by itself: 3 W or less With maximum number of linked EJ Counters: 30 W or less (including 8 EJ Counters and 16 Linear Gages)
Operating temperature (humidity) range		0 °C–50°C (20% RH–80% RH, without condensation)
Storage temperature (humidity) range		-10 °C–60 °C (20% RH–80% RH, without condensation)
CE marking/UKCA marking		EMC Directive/Electromagnetic Compatibility Regulations: EN IEC 61326-1 Immunity test requirement: Clause 6.2 Table 2 Emission limit: Class A RoHS Directive/The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations: EN IEC 63000

7.2 Communication Specification

7.2.1 USB Communication

Item		Specifications
USB 2.0	Baud rate	Full Speed (12 Mbps)*1
	Port used	Virtual COM port
	Connector type	Type-C

*1 Communication time is 5 to 10 ms when acquiring current values, and 20 to 30 ms when setting EJ Counter parameters (reference values).
Actual times will vary depending on the computer operating environment and conditions of use.

7.2.2 CC-Link Communication

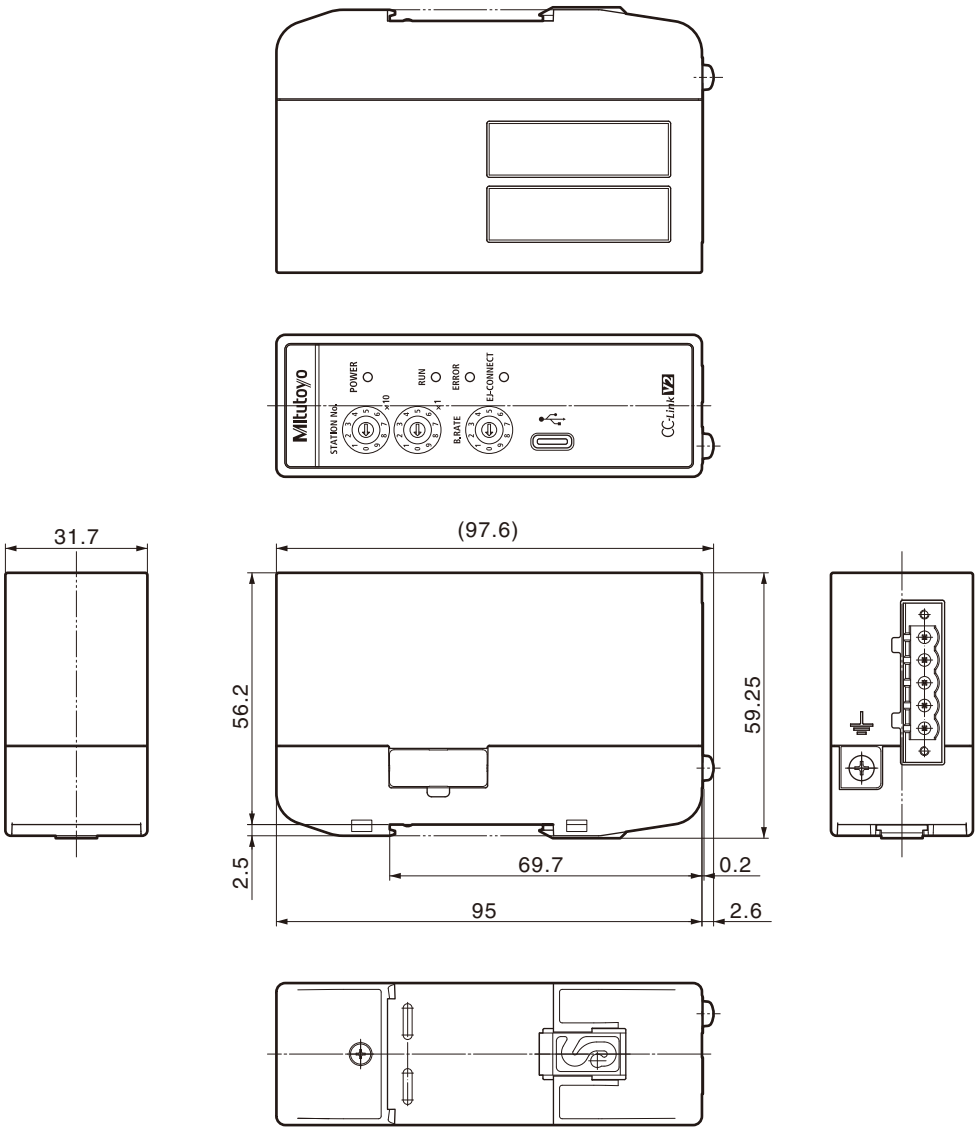
Item		Specifications
Com-mon	Station type	Remote device station
	Connector	2-piece connector (PHOENIX CONTACT) Socket: MSTB 2,5/ 5-GF-5,08 AU (1876631) Plug: TMSTBP 2,5/ 5-STF-5,08 AU (1908732) **Tips** Other CC-Link plugs that fit the socket and meet specifications can also be used. For details on plugs that can be used, see "2.2.2 CC-Link Connection" on page 25.
	Communication cable	CC-Link compliant cable
Ver. 1.10	Device type	Generic device (0x7F)
	Number of occupied stations	2 stations RX/RY: 64 each RWw/RWr: 8 words each
	Station number setting	1–63 (set by rotary switch)
	Baud rate	156 Kbps, 625 Kbps, 2.5 Mbps, 5 Mbps, 10 Mbps (set by rotary switch)
	Data transferred	Tolerance judgment result

Item		Specifications
Ver. 2.00	Device type	Generic device (0x7F)
	Number of occupied stations	4 stations RX/RY: 448 each RWw/RWr: 64 words each
	Extended cyclic setting	4x
	Station number setting	1–61 (set by rotary switch)
	Baud rate	156 Kbps, 625 Kbps, 2.5 Mbps, 5 Mbps, 10 Mbps (set by rotary switch)
	Data transferred	Tolerance judgment result Current value data (no unit, signed 32-bit data)

7.3 Outline Dimensional Drawing

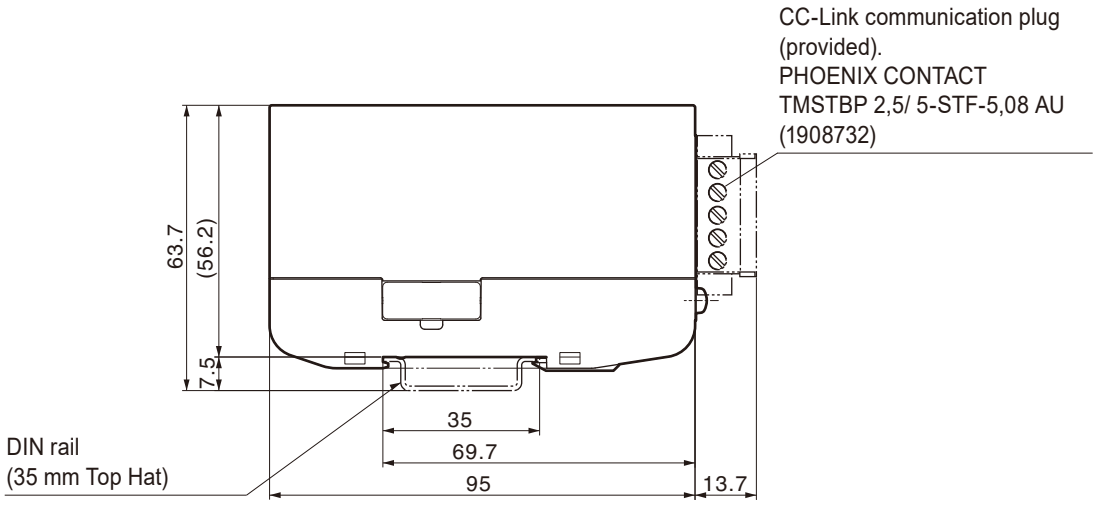
■ Main unit dimensions

Unit: mm



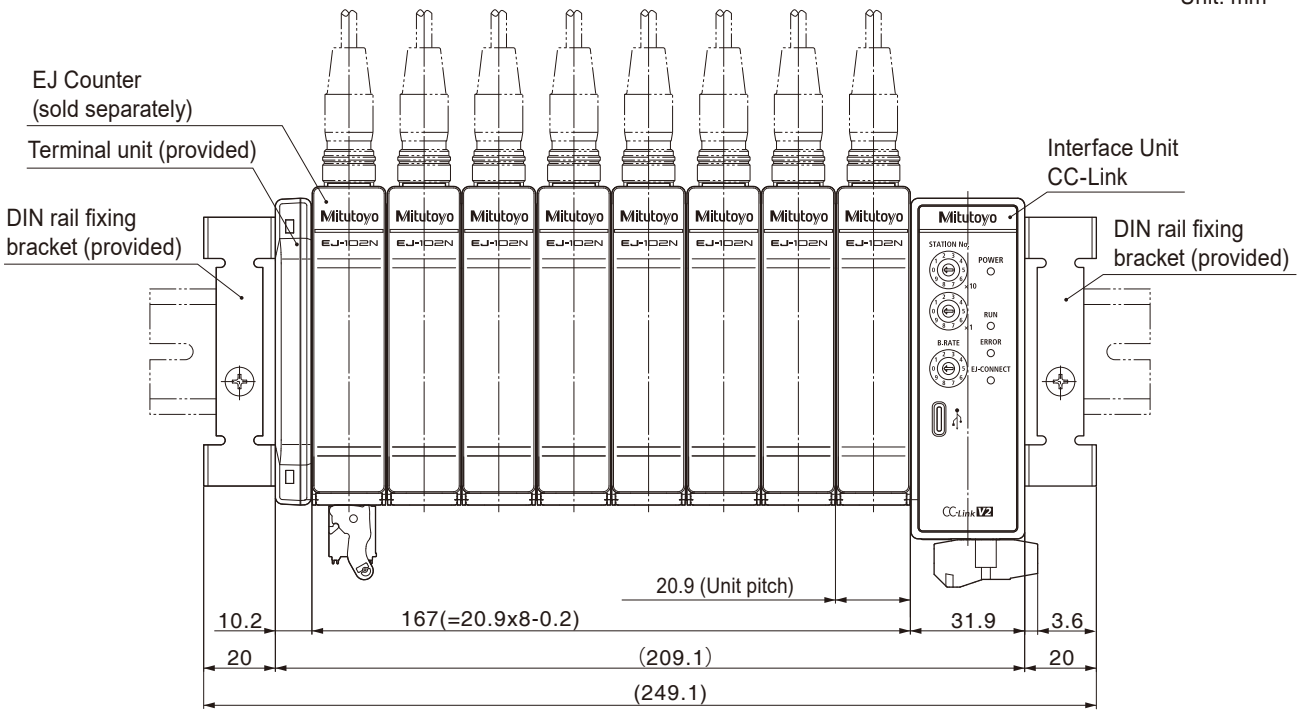
■ DIN rail and connector installation dimensional drawing

Unit: mm



■ Maximum configuration dimensional drawing

Unit: mm



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