

EJ Counter Compact Display Unit for Linear Gage

EJ-102N
EJ-102NE

This document is a simplified guide to use of the EJ-102N/EJ-102NE EJ Counter. For further details about the product and its use, please refer to the downloadable User's Manual at the Mitutoyo website.

► <https://manual.mitutoyo.co.jp>

Read this document thoroughly before operating the product. After reading, retain it close at hand for future reference.

Safety Precautions

When using this product, be sure to observe all precautions regarding indicated specifications, functions and use. Using this product in any other manner may be detrimental to safety.

In the event that the product is damaged, take all appropriate measures to avoid accidents and maintain safety.

CAUTION Shows risks that could result in minor or moderate injury.

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.

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 1 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 1 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.

2.2. Supported Linear Gages

Supported Linear Gage series	Adapter cable (optional)
LG100	Not required
LG200	Not required
LG-F-Z	Required (Part No. 21HZA194)
LGFLGK/LGB/LG	Required (Part No. 21HZA193)

Tips
When using this product connected to a LG-F-series Linear Gage with resolution of 0.0001 mm (0.1 μm), please use with a DC power noise filter. (The noise filter used for testing by Mitutoyo is the Cosel ESP-06-472-D.)

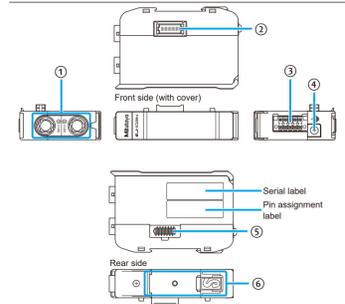
2.3. Optional Accessories

Part No.	Name
21HZA157	DIN rail fixing bracket *1
— *2	Various interface unit *2
21HZA193	Connector adapter cable (for P gages)
21HZA194	Connector adapter cable (for Z gages)
21HZA209	DC jack with pin terminals
357651	AC adapter (12 V DC, 4.1 A)
02ZA0000	AC cable (Japanese type)
02ZA0010	AC cable (UL, CSA, US type)
02ZA0020	AC cable (CEE, European type)
02ZA0030	AC cable (BS, UK type)
02ZA0040	AC cable (CCC compliant: S type, Chinese type)
02ZA0050	AC cable (P-023-IS14, Korean type)

*1 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.
*2 Refer to catalog or downloadable User's manual.

2.4. Part Names

2.4.1. Main Unit



1 Front side (with cover)
2 Serial label
3 Pin assignment label
4 Rear side
5
6

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Authorized representative and importer in the EU:
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Borsgrabenstrasse 8-10, 41469 Neuss, Germany

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). 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.

部件名称 (Part Name)	有害物质 (Hazardous Substances)				
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)
本体 (Main Unit)	×	○	○	○	○
配件 (Accessories)	○	○	○	○	○

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。

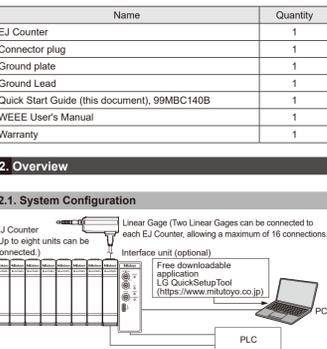
环保使用期限标识是根据《电器电子产品有害物质限制使用管理办法》以及《电子电气产品有害物质限制使用标识要求 (SJ/T 11364-2014)》制定的。适用于中国境内销售的电子电气产品的标识。电器电子产品只要按照安全及使用说明内容在正常使用情况下,从生产日期算起,在此期限内产品中含有的有毒有害物质不致发生外泄或突变,不致对环境造成严重污染或对人体人身、财产造成严重损害。产品使用后,变更前在环保使用期限或有效期内到期年限的产品,请根据国家标准采取适当的方法进行处置。另外,此期限不同于质量/功能的保证期限。

1. Unpacking and Verification of Package Contents
Before using the product, verify that the following items are present.

Name	Quantity
EJ Counter	1
Connector plug	1
Ground plate	1
Ground Lead	1
Quick Start Guide (this document), 99MBC140B	1
WEEE User's Manual	1
Warranty	1

2. Overview

2.1. System Configuration

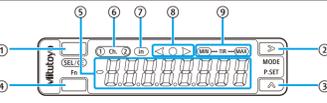


2.2. Supported Linear Gages

No.	Name	Description
①	Linear Gage input connector (INPUT A/B)	Linear Gages can be connected to each of inputs A and B. The Linear Gage connected to INPUT A is referred to as the A-axis, and that connected to INPUT B as the B-axis.
②	Connector for linking counter	Allows connection to another EJ Counter or optional interface unit.
③	I/O connector	For connection to the power supply or external equipment using the provided connector plug.
④	Grounding terminal	For connection to ground using the provided ground lead and ground plate.
⑤	DIN rail attachment point	Used for attaching the counter to a DIN rail.

Tips
When using multiple EJ Counters that are linked together, connect the ground lead to just one EJ Counter, then share the ground with other EJ Counters using ground plates.

2.4.2. Display (Under Cover)



No.	Name	Description
①	[SEL/CE] key	Switches the channel. Moves between items when making various settings. Cancels errors when pressed together with the [Fn] key.
②	[MODE] (>) key	Switches the peak mode. Moves between digits when making various settings. When pressed together with the [Fn] key, enters the parameter setting screen.
③	[PSET] (*) key	Preset. Clears preset or peak values when pressed together with the [Fn] key. When setting preset/ tolerance or parameter values, increases the value of the selected digit.
④	[Fn] key	Starts and ends setting of preset/tolerance values.

Numeric and indicator display screen

No.	Name	Description
⑤	Numeric display	Displays numeric values.
⑥	Displays the channel (Ch.)	The selected channel (Ch.) (Chs). Content of individual channel (Ch.) display varies according to the setting of Parameter Number 03. While on HOLD, the number of the selected channel (Ch.) blinks.
⑦	Unit display (EJ-102NE only)	The LED lights when display in inches is selected. The LED goes out when display in mm is selected.
⑧	Tolerance indicator	Indicates the result of tolerance judgment. < > is displayed when an error occurs.
⑨	Peak indicators	Displays the selected peak mode. When off: The current value is displayed. When only MAX is lit: The maximum value is displayed. When only MIN is lit: The minimum value is displayed. When both MAX and MIN are lit: The run-out width (maximum value - minimum value) is displayed.

IMPORTANT
When using input from a DC power supply:
- When using a commercial power supply, make sure that it is rated for 10 V~27 V and an output current of 5 A or greater. Make sure that the power cable used to connect this product to its power supply does not exceed 30 m in length, and use only a one-to-one connection between the product and the power supply.
- Do not use a DC power supply that is shared with other equipment that draws high power.
- The EJ Counter uses an internal ground which connects to ground internally. When using this product connected to a Linear Gage with resolution of 0.0001 mm (0.1 μm), please use with a DC power noise filter.

When using an AC adapter:
- Prepare the following three optional accessories.
DC jack with pin terminals, AC adapter and AC cable.

1 Connect the power supply cable or DC jack with pin terminals to the provided connector plug.
Pin 1 (A): 10 V DC~27 V DC or red cable terminal of the DC jack
Pin 2 (B): GND or black cable terminal of the DC jack
B (GND) A (10 V~27 V DC)

3. Setup

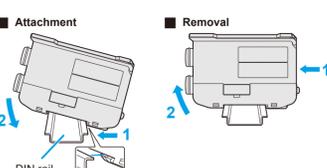
3.1. Mounting

3.1.1. DIN Rail Attachment / Removal

The EJ Counter is attached to a DIN rail for use (TH35).

IMPORTANT

After first removing Linear Gages and connector plugs, the EJ Counter is attached to or removed from the DIN rail a unit at a time

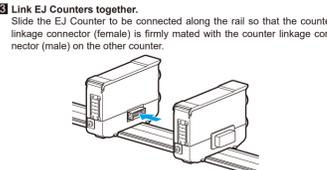


3.1.2. Linking Multiple EJ Counters

1 Remove the protective cover from the counter linkage connectors of EJ Counters to be linked together.

2 Attach EJ Counters to the DIN rail one at a time.

3 Link EJ Counters together.
Slide the EJ Counter to be connected along the rail so that the counter linkage connector (female) is firmly mated with the counter linkage connector (male) on the other counter.



IMPORTANT

When sliding EJ Counters along the DIN rail, move them slowly.

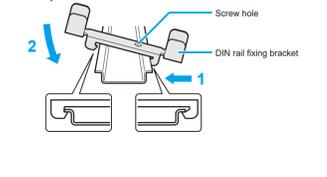
NOTICE

Shows risks that could result in property damage.

- Leave the protective covers in place on EJ Counters that are not to be linked.
- Do not link more than eight EJ Counters together. Failure to observe this precaution may result in damage.

3.1.3. Attaching the DIN Rail Fixing Bracket (Optional)

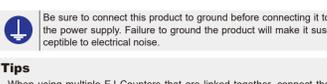
1 Hook the clip that is closer to the screw hole in the fixing bracket onto the DIN rail, then press toward the opposite side and hook the other clip onto the rail.



3.2. Power ON/OFF

To power the product ON/OFF, either switch the power supply itself on/off, or connect/disconnect the power cable.

When the power goes on, an ID number is automatically assigned, and then the product enters the stand-by state.

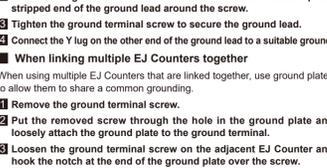


3.3. Linear Gage Connection

Be sure to shut off the power before doing this.

1 Remove the protective cover from the EJ Counter's Linear Gage connector.

2 Plug the connector on the Linear Gage into the Linear Gage connector on the EJ Counter.



3.3.1. Ground Connection

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.

Tips

When using multiple EJ Counters that are linked together, connect the ground lead to just one EJ Counter, then share the ground with other EJ Counters using ground plates.

1 Strip about 15 mm of the sheath from the end of the ground lead opposite from the end with the Y lug.

2 Loosen the ground terminal screw on the counter and wrap the stripped end of the ground lead around the screw.

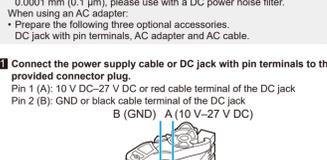
3 Tighten the ground terminal screw to secure the ground lead.

4 Connect the Y lug on the other end of the ground lead to a suitable ground.

5 When linking multiple EJ Counters together
When using multiple EJ Counters that are linked together, use ground plates to allow them to share a common grounding.

6 Remove the ground terminal screw.
7 Put the removed screw through the hole in the ground plate and loosely attach the ground plate to the ground terminal.

8 Loosen the ground terminal screw on the adjacent EJ Counter and hook the notch at the end of the ground plate over the screw.



3.3.2. Power Supply Connection

Make power supply connection by one of the following means.

- Direct input from a DC power supply
- Use the optional AC adapter

IMPORTANT

When using input from a DC power supply:
- When using a commercial power supply, make sure that it is rated for 10 V~27 V and an output current of 5 A or greater. Make sure that the power cable used to connect this product to its power supply does not exceed 30 m in length, and use only a one-to-one connection between the product and the power supply.
- Do not use a DC power supply that is shared with other equipment that draws high power.
- The EJ Counter uses an internal ground which connects to ground internally. When using this product connected to a Linear Gage with resolution of 0.0001 mm (0.1 μm), please use with a DC power noise filter.

When using an AC adapter:
- Prepare the following three optional accessories.
DC jack with pin terminals, AC adapter and AC cable.

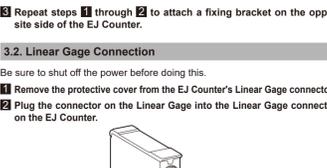
1 Connect the power supply cable or DC jack with pin terminals to the provided connector plug.
Pin 1 (A): 10 V DC~27 V DC or red cable terminal of the DC jack
Pin 2 (B): GND or black cable terminal of the DC jack
B (GND) A (10 V~27 V DC)

4. Operation Procedure

4.1. Power ON/OFF

To power the product ON/OFF, either switch the power supply itself on/off, or connect/disconnect the power cable.

When the power goes on, an ID number is automatically assigned, and then the product enters the stand-by state.

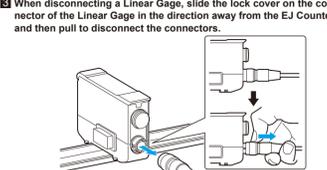


3.2. Linear Gage Connection

Be sure to shut off the power before doing this.

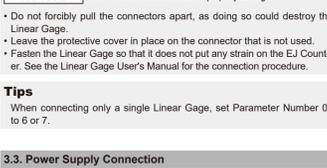
1 Remove the protective cover from the EJ Counter's Linear Gage connector.

2 Plug the connector on the Linear Gage into the Linear Gage connector on the EJ Counter.



3.3. Attaching the Linear Gage Lock Cover

When disconnecting a Linear Gage, slide the lock cover on the connector of the Linear Gage in the direction away from the EJ Counter, and then pull to disconnect the connectors.



NOTICE

Shows risks that could result in property damage.

- Do not forcibly pull the connectors apart, as doing so could destroy the Linear Gage.
- Leave the protective cover in place on the connector that is not used.
- Fasten the Linear Gage so that it does not put any strain on the EJ Counter. See the Linear Gage User's Manual for the connection procedure.

Tips

When connecting only a single Linear Gage, set Parameter Number 03 to 0 or 7.

3.3. Power Supply Connection

NOTICE

Shows risks that could result in property damage.

Never use a power source that is shared with other equipment that draws high power. Incorrect operation or damage may result.

IMPORTANT

When using multiple EJ Counters linked together, connection of power to one EJ Counter also supplies power to the other linked counters.

● When the cable is fitted with pin terminals

Push the pins all the way in to terminals A and B.

Tips

Compatible pin terminals are those with conductive ferrule sleeves that are 10 mm in length.
Recommended part: Phoenix Contact part number 3241129 AJ 0,34-10 TQ

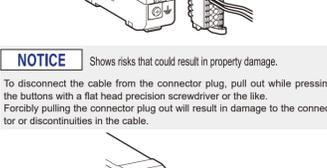
● When the cable ends in stranded wire

Strip the wire tips all the way into terminals A and B while using a tool such as a flat-head precision screwdriver to fully depress connector plugs C and D, and then release the buttons.

Tug on the cable to make sure that the stranded wires are securely fastened to the connector plug.

2 Plug the connector plug into the I/O connector on the EJ Counter.
Align the claws on the levers on the side of the connector plug with the holes on both sides of the I/O connector, and then plug the connector plug into the I/O connector on the EJ Counter.

Push the connector plug in where its claws engage with the holes on both sides of the I/O connector and the lever won't go any further.



NOTICE

Shows risks that could result in property damage.

To disconnect the cable from the connector plug, pull it out while pressing the buttons with a flat head precision screwdriver or the like. Forcibly pulling the connector plug out will result in damage to the connector or discontinuities in the cable.

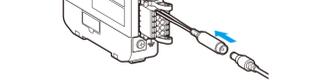
2 Repeat steps **1** through **3** to attach ground plates to other linked EJ Counters.

3 Tighten the ground terminal screws on all of the EJ Counters.

4 Connect the power cable to the AC adapter, and then plug the power or plug into the outlet.

5 Connect the AC adapter to the DC jack with pin terminals.

IMPORTANT
Make sure that the AC adapter does not come loose from the DC jack with pin terminals during measurement.



5. Target of tolerance judgment

The target of tolerance judgment differs according to peak mode.

Peak mode	Target of tolerance judgment
Current value display	Current value
Maximum value display	Maximum value
Minimum value display	Minimum value
Run-out width display	Run-out width

4.2. Measurement Functions

4.2.1. Switching the Display Channel (Ch.)

During counter display screen display, the displayed channel (Ch.) changes each time the [SEL/CE] key is pressed.

Tips

- The factory default is to display the A-axis count on Ch. 1 and the B-axis count on Ch. 2.
- Content of individual channel (Ch.) displays can be changed by the setting of Parameter Number 03.

4.2.2. Preset

Preset replaces the current value with an arbitrary value (preset value).

Tips

- The factory default preset value is 0.
- For details, see **4.2.5. Setting Preset/Tolerance Values**.
- When making zero settings, do so after setting the preset value to 0.

5. Setting preset values

1 Display the channel for which you wish to set the preset value.

2 Set the peak mode to current value display.
Press the [MODE] (>) key so that the peak indicator (MIN/MAX) goes out.

6. Target of tolerance judgment

The target of tolerance judgment differs according to peak mode.

Measurement result < S1	5-step tolerance	Tolerance indicator
S1 ≤ measurement result < S2	S2 ≤ measurement result < S3	< > (L1)
S2 ≤ measurement result < S3	S3 ≤ measurement result < S4	< > (L2)
S3 ≤ measurement result < S4	S4 < measurement result	< > (L3)
S4 < measurement result		< > (L4)
		< > (L5)

4.2.5. Setting Pres