

Environment-Resistant Digital Gage LINEAR GAGE LG100 Series Compact-type Counter EJ Counter



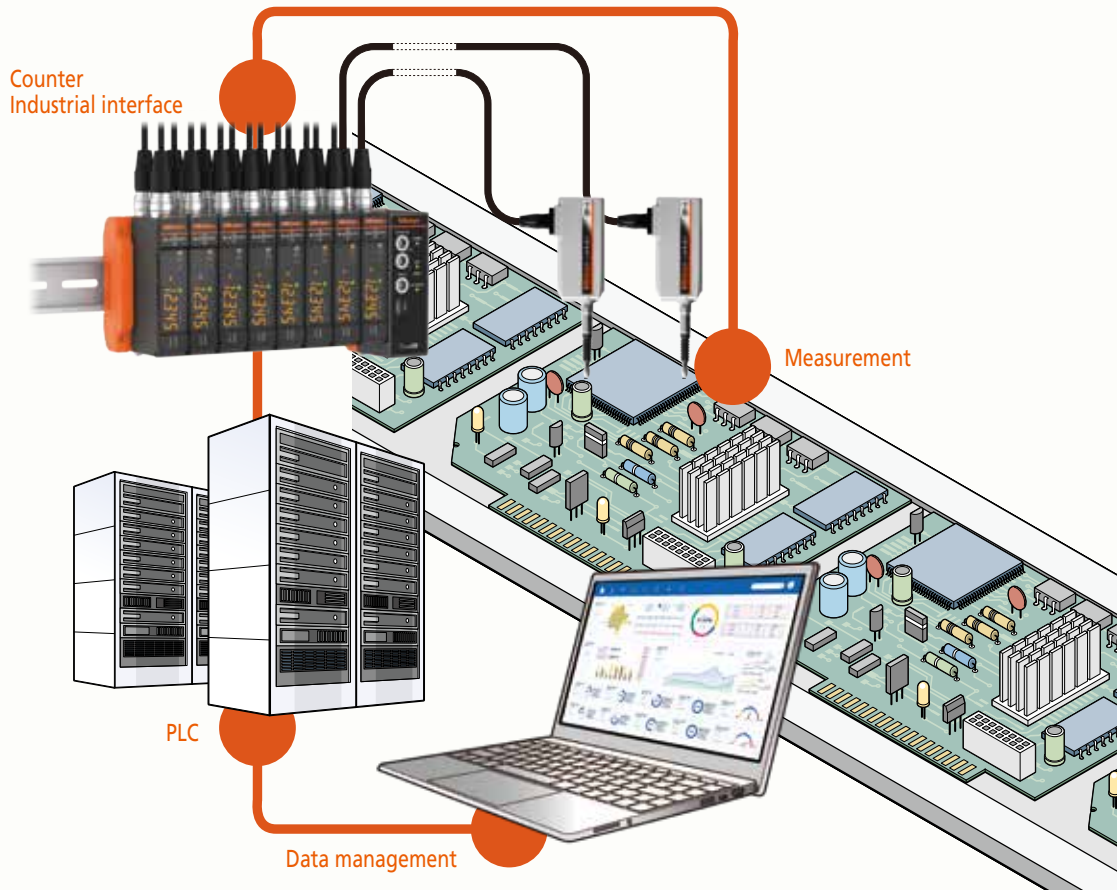
NEW
Products

IP67 G

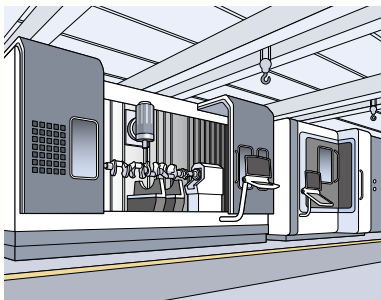
Can be used inline or in measurement rooms

Best-in-class precision and environmental resistance.

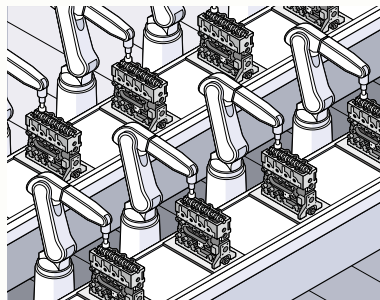
Enables real-time measurement and data management



Can be used in various production settings



Processing



Assembly



Inspection

Linear Gage LG100 Series



542-190/542-191/542-192
(10 mm stroke)



542-193/542-194/542-195
(25 mm stroke)



542-196/542-197
(50 mm stroke)



Industrial interface-mounted compact counter EJ Series

Image of mounting



Counter unit
542-080



Interface unit
CC-Link USB



High accuracy

Precision and accuracy demanded by the automated assembly and inspection markets, are guaranteed. Thanks to our expertise as a manufacturer of measuring instruments, repeatability in the full measurement range (2σ) and narrow-range precision are also guaranteed.

Environment resistance

Sliding durability of more than 50 million times*, with protection level of IP67G. Highly oil-resistant material is used in the rubber cap and cable sheath, so it can be used even in harsh environments.

* 10 mm range models (Actual value from in-house tests)

Function of reference point detection

Reference point signal output functions are featured throughout this series. When incorporating into a device the master setting value is easy to set and is retained after shutdown. Re-setting the origin is possible when there are problems such as excessive speed, ensuring excellent reliability.

Can be connected with 2 types of counter

The ideal counter can be selected according to the application it can be connected to a compact counter (EJ counter) suitable for inline use or building into a device or a multifunctional counter (EH counter)* suitable for use in measurement rooms.

* A conversion plug is required for connecting to multifunctional counter (EH counter).

Combining small form and ease of use

High-speed and space-saving, delivering production site visualization, improved productivity, and information feedback. Up to 8 compact counters (EJ counters) can be linked providing the capacity to connect up to 16 gages. On a DIN rail, each unit can be connected directly without using cables, so it takes up minimal space. All linked units and gages can be driven by a single power source.

CC-Link connection, USB connection

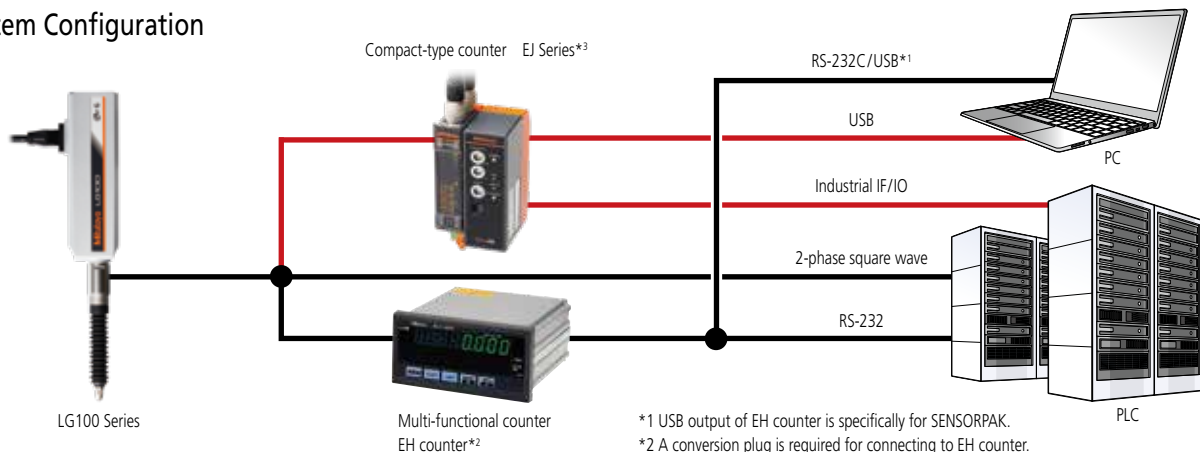
Data can be output through an industrial interface (CC-Link) by linking a compact counter (EJ counter) with an interface unit. Constant data monitoring and positional management are performed. A USB interface is also provided for easy connection with a computer.

Note: The range of interfaces is set to be expanded in the near future.

Inter-axial calculation function

Enables sum difference operations between 2 gages connected to the same counter. Functions such as tolerance judgment and peak hold are also included.

System Configuration



*1 USB output of EH counter is specifically for SENSORPAK.

*2 A conversion plug is required for connecting to EH counter.

*3 Conventional gages can be connected using conversion connectors.
(Please contact us for details of connectable gages.)

SOFTWARE

LG QuickSetupTool

A configuration tool is available for use with the EJ counter when connected via the optional USB interface. All kinds of settings normally carried out with counter operating keys can now be easily applied from a computer.

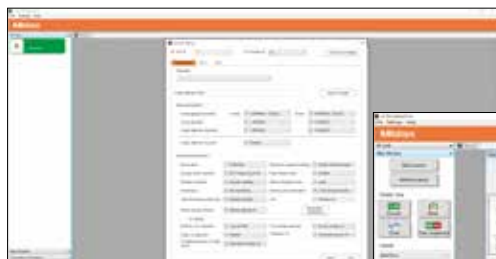
Measurement value display and operation results can also be viewed on a PC.

Note: This software can be used free of charge and downloaded from the Mitutoyo website. <https://www.mitutoyo.co.jp/eng/contact/products/lg/>



Recommended system environment

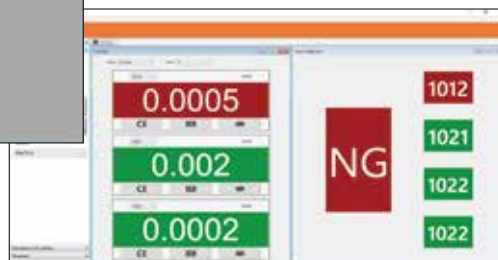
- OS: Windows10 Pro 32 bit/64 bit
- Display: 1600×1200 or more
- Memory: 1024 MB or more
- Communication method: USB2.0 (Full speed)
- USB connector: Type C connector
- Note: USB device drivers are standard Windows drivers.



Parameter setting



Chart



General settings

OPTIONS

Pneumatic lifter



- For 10 mm range models: **02ADE230**
- For 25 mm range models: **02ADE250**
- For 50 mm range models: **02ADE270**

Rubber boot (spare)



- For 10 mm range models: **21HAA331**
- For 25 mm range models: **21HZA176**
- For 50 mm range models: **21HZA184**

Thrust stem set/Spanner wrench



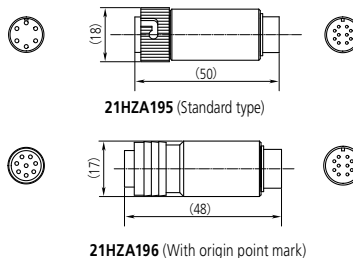
- Thrust stem set (Thrust stem, Clamp nut)
- For 10 mm range models: **02ADB680**
- For 25/50 mm range models: **02ADN370**
- Spanner wrench
- For 10 mm range models: **02ADB683**
- For 25/50 mm range models: **02ADB693**

Extension cable



- Extension cable 5 m: **21HZA197**
- Extension cable 10 m: **21HZA198**
- Extension cable 20 m: **21HZA199**
- Total length (gauge to counter) must not exceed 20 m.

Conversion plug for connecting to EB/EG/EH/EV Counter



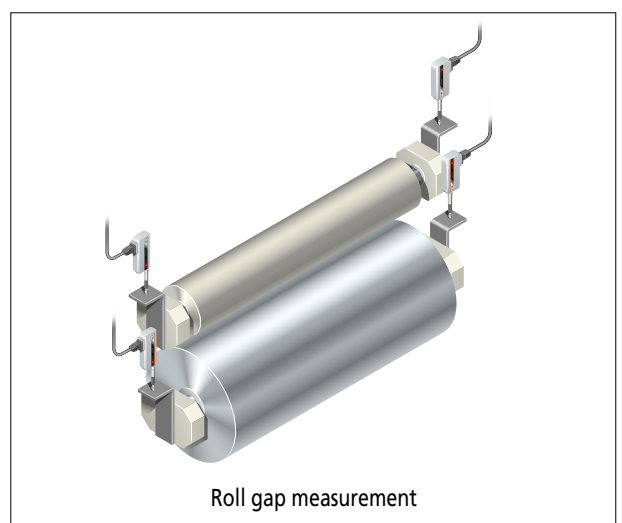
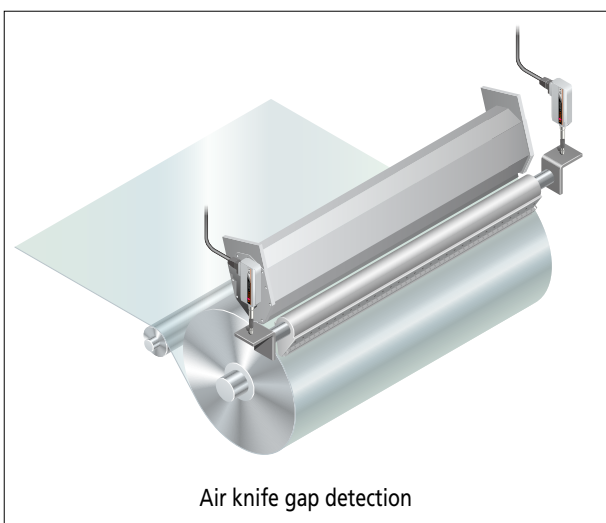
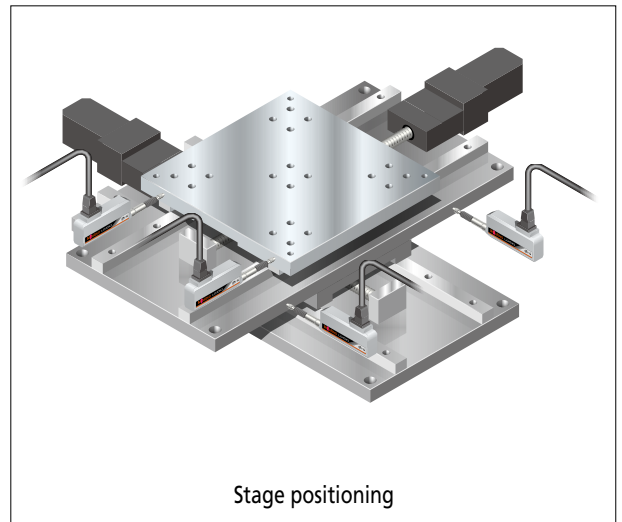
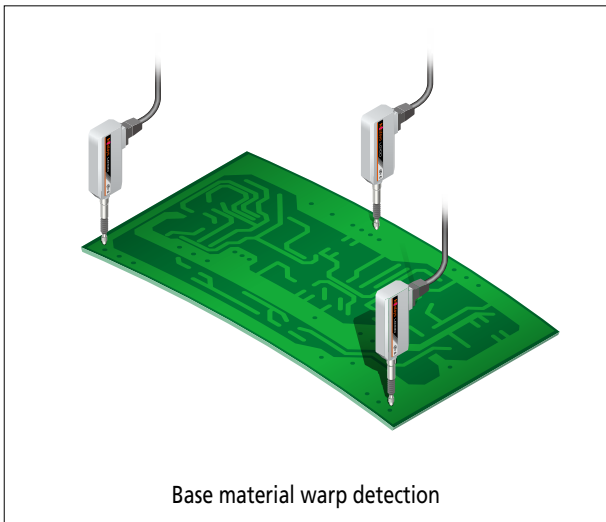
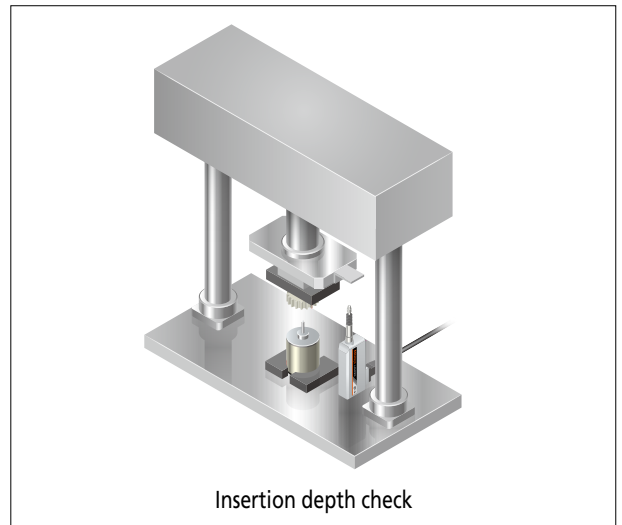
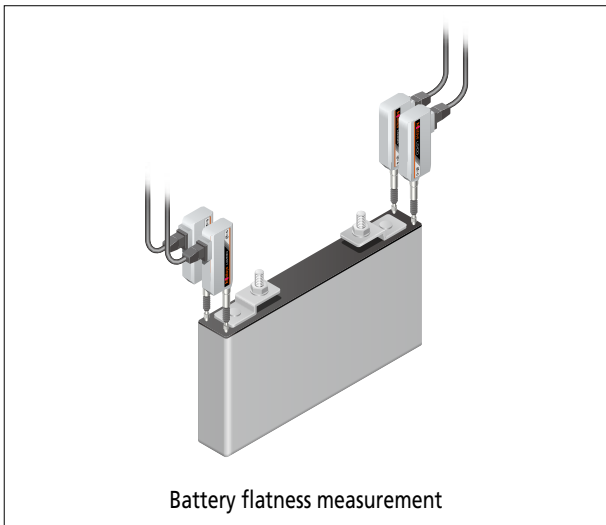
Equipped with the EH Counter



- Standard type (for P counter): **21HZA195**
- With origin point mark (for Z counter): **21HZA196**

For details of other options, please check the Linear Gage Brochure No. **E13007**.

APPLICATION



LG100 Series

SPECIFICATIONS

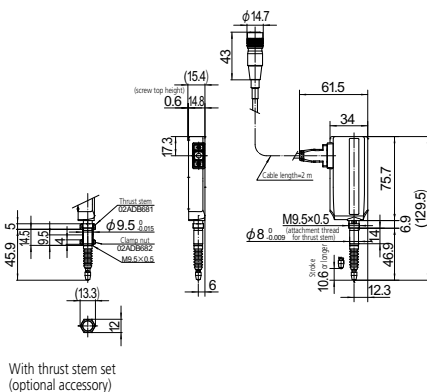
Order No.	542-190	542-191	542-192
Measuring range	10 mm		
Resolution	1 μm	0.5 μm	0.1 μm
Measuring accuracy (20 °C) L=arbitrary measuring length (mm)	1.5 + L/50 μm		0.8 + L/50 μm
Small range accuracy	0.5 μm (Arbitrary 20 μm range)		
Repeatability: 2σ (20 °C)	0.3 μm		
Reference mark repeatability: σ (20 °C)	σ ≤ 0.5 μm (at a constant reference point passing speed less than 300 mm/s in the same direction)		
Measuring force	Contact point downwards	1.4 N or less	
	Contact point horizontal	1.3 N or less	
	Contact point upwards	1.2 N or less	
Maximum response speed	1,500 mm/s	400 mm/s	
Minimum edge intervals	500 ns (2 MHz)	250 ns (4 MHz)	
Output signal pitch	4 μm	2 μm	0.4 μm
Reference mark position (Phase-Z)	Approx. 3 mm from contact point tip (lowest rest point)		
Stem	ø8 mm		
Mass	Approx. 260 g		
Operating temperature (humidity) ranges	0 to 50 °C (RH 20 to 80%, non-condensing)		
Storage temperature (humidity) ranges	-10 to 60 °C (RH 20 to 80%, non-condensing)		
Standard accessories	Wrench for contact point: 538610		

SPECIFICATIONS

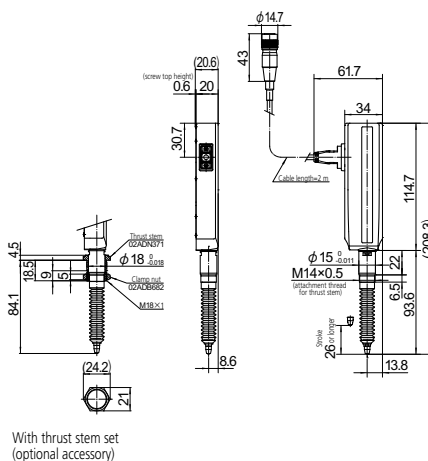
Order No.	542-196	542-197
Measuring range	50 mm	
Resolution	1 μm	0.5 μm
Measuring accuracy (20 °C) L=arbitrary measuring length (mm)	1.5 + L/50 μm	
Small range accuracy	0.5 μm (Arbitrary 20 μm range)	
Repeatability: 2σ (20 °C)	0.3 μm	
Reference mark repeatability: σ (20 °C)	σ ≤ 0.5 μm (at a constant reference point passing speed less than 300 mm/s in the same direction)	
Measuring force	Contact point downwards	5.7 N or less
	Contact point horizontal	5.3 N or less
	Contact point upwards	4.9 N or less
Maximum response speed	1,500 mm/s	
Minimum edge intervals	500 ns (2 MHz)	250 ns (4 MHz)
Output signal pitch	4 μm	2 μm
Reference mark position (Phase-Z)	Approx. 5 mm from contact point tip (lowest rest point)	
Stem	ø15 mm	
Mass	Approx. 400 g	
Operating temperature (humidity) ranges	0 to 50 °C (RH 20 to 80%, non-condensing)	
Storage temperature (humidity) ranges	-10 to 60 °C (RH 20 to 80%, non-condensing)	
Standard accessories	Wrench for contact point: 210187	

DIMENSIONS

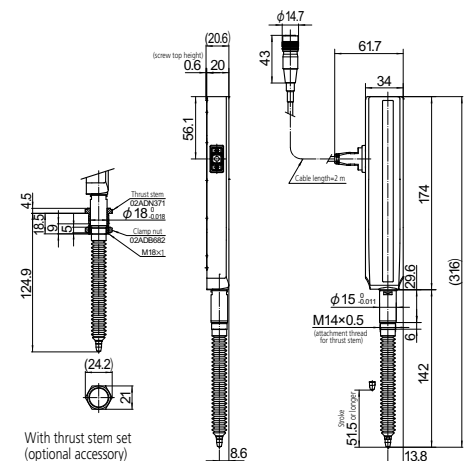
• 542-190/542-191/542-192



• 542-193/542-194/542-195



• 542-196/542-197

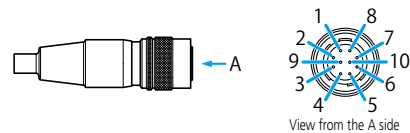


Unit: mm

SPECIFICATIONS

Order No.	542-193	542-194	542-195
Measuring range	25 mm		
Resolution	1 μm	0.5 μm	0.1 μm
Measuring accuracy (20 °C) L=arbitrary measuring length (mm)	1.5 + L/50 μm		0.8 + L/50 μm
Small range accuracy	0.5 μm (Arbitrary 20 μm range)		
Repeatability: 2σ (20 °C)	0.3 μm		
Reference mark repeatability: σ (20 °C)	σ ≤ 0.5 μm (at a constant reference point passing speed less than 300 mm/s in the same direction)		
Measuring force	Contact point downwards	4.6 N or less	
	Contact point horizontal	4.3 N or less	
	Contact point upwards	4.0 N or less	
Maximum response speed	1,500 mm/s	400 mm/s	
Minimum edge intervals	500 ns (2 MHz)	250 ns (4 MHz)	
Output signal pitch	4 μm	2 μm	0.4 μm
Reference mark position (Phase-Z)	Approx. 5 mm from contact point tip (lowest rest point)		
Stem	ø15 mm		
Mass	Approx. 300 g		
Operating temperature (humidity) ranges	0 to 50 °C (RH 20 to 80%, non-condensing)		
Storage temperature (humidity) ranges	-10 to 60 °C (RH 20 to 80%, non-condensing)		
Standard accessories	Wrench for contact point: 210187		

Pin assignment



Pin No.	Signal	Pin No.	Signal
1	PA	7	N.C
2	PĀ	8	PZ
3	N.C	9	+5V
4	PB	10	GND
5	PB̄	Shell	FG
6	N.C		

- Power supply to a Linear gage
Power supply voltage: DC5 V (4.8 V to 5.2 V), Ripple voltage: 0.2 Vpp or less, Maximum current consumption: 80 mA
- Suitable receptacle and jack
Receptacle: HR10A-10R-10S (HIROSE)
Jack: HR10A-10J-10S (HIROSE)

EJ-102N/Interface unit CC-Link/Interface unit USB

SPECIFICATIONS

Order No.	542-080		542-081	
Unit	mm		inch/mm	
Resolution	0.005, 0.001, 0.0005, 0.0001 (mm)		0.0002, 0.00005, 0.00002, 0.000005 (inch)/ 0.005, 0.001, 0.0005, 0.0001 (mm)	
Number of linear gage connection ports	2			
Supported gage signal	Differential square wave, differential square wave with reference point mark			
Maximum input frequency	5 MHz			
User Interface	Display	Negative sign + 8 digits and indicator (1 gage value displayed, manually switchable)		
External I/O	Number of I/O ports	Input: 4 ports (Ch switch, peak clear, data hold, preset) Output: 4 ports (Err/ALLGO, Tolerance judgment)		
	Compatible communication standards	CC-Link, USB (Supported with optional interface units)		
Max. number of linked units	EJ Counter 8 units + 1 (optional) interface unit (Max. number of linear gage connections: 16)			
Power supply	Input voltage	10 V to 27 V DC		
	Power consumption	1 unit only: 3 W or less (Includes 2 linear gages) Max. number of links: 30 W or less (Interface unit and 16 linear gages included)		
Operating temperature (humidity) ranges	0 to 50 °C (RH 20 to 80%, non-condensing)			
Storage temperature (humidity) ranges	-10 to 60 °C (RH 20 to 80%, non-condensing)			
Mass	Approx. 120 g			
CE Marking	EMC Directive: EN 61326-1 Immunity test requirement: Clause 6.2 Table 2 Emission limit: Class A RoHS Directive: EN IEC 63000			

Connectable linear gage series	Conversion cable (optional)
LG100	Not necessary
LGF-Z	Necessary (21HZA194)
LGF/LGK/LGB/LG	Necessary (21HZA193)

SPECIFICATIONS

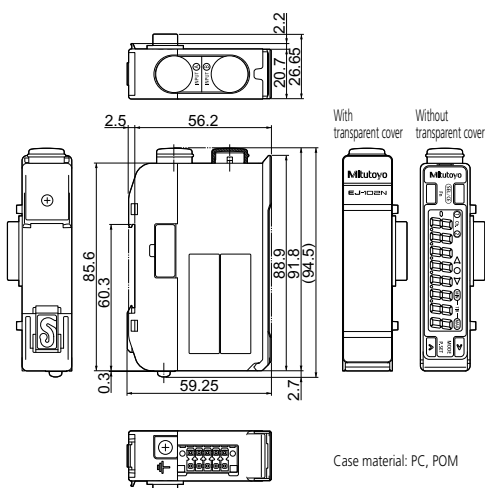
Order No.	21HZA186	
Model No.	Interface unit CC-Link	
Applicable interface	USB 2.0 Full Speed	
	CC-Link Ver. 1.10	
	CC-Link Ver. 2.00	
User Interface	Display	POWER (green), RUN (green), ERROR (red), EJ-CONNECT (green)
	Switch	Rotary switch×3 (Exchange number settings×2, communication speed settings×1)
Functions	Common protocols for USB and CC-Link, Readout of current value*1, Current value hold (software hold), Parameter setting on EJ counter, Tolerance judgment value settings, Preset value settings, preset/zero-set clear, peak clear, error clear *1 Only Ver. 2.00 is supported with CC-Link.	
Power supply	Power is supplied from 542-080/542-081 (Cannot be charged via USB)	
Operating temperature (humidity) ranges	0 to 50 °C (RH 20 to 80%, non-condensing)	
Storage temperature (humidity) ranges	-10 to 60 °C (RH 20 to 80%, non-condensing)	
CE Marking	EMC Directive: EN 61326-1 Immunity test requirement: Clause 6.2 Table 2 Emission limit: Class A RoHS Directive: EN IEC 63000	

SPECIFICATIONS

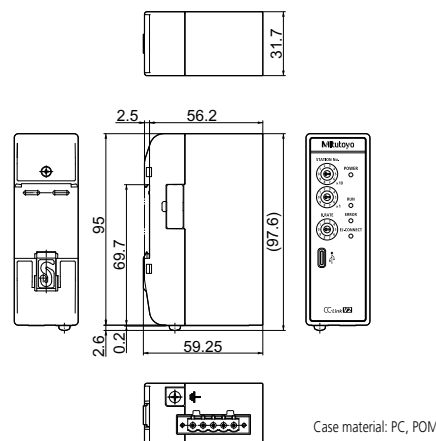
Order No.	21HZA149	
Model No.	Interface unit USB	
Applicable interface	USB 2.0 Full Speed	
User Interface	POWER (green)	
Functions	Readout of current value, Current value hold (software hold), Parameter setting on EJ counter, Tolerance judgment value settings, Preset value settings, preset/zero-set clear, peak clear, error clear	
Power supply	Power is supplied from 542-080/542-081 (Cannot be charged via USB)	
Operating temperature (humidity) ranges	0 to 50 °C (RH 20 to 80%, non-condensing)	
Storage temperature (humidity) ranges	-10 to 60 °C (RH 20 to 80%, non-condensing)	
CE Marking	EMC Directive: EN 61326-1 Immunity test requirement: Clause 6.2 Table 2 Emission limit: Class A RoHS Directive: EN IEC 63000	

DIMENSIONS

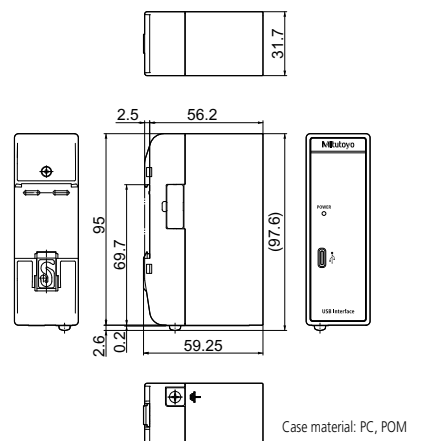
• 542-080/542-081



• Interface unit CC-Link



• Interface unit USB



Unit: mm



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Mitutoyo is not only a manufacturer of top quality measuring products but one that also offers qualified support for the lifetime of the equipment, backed up by comprehensive services that ensure your staff can make the very best use of the investment.

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