


Gage Heads / Display Units

	Gage Heads				
	Measuring range				
Resolution		5 mm / 0.2 in	10 mm / 0.4 in	25 mm / 0.1 in	
0.000005 mm (0.005 μm)	LGH series Page G-13		542-720 542-721 (Low measuring force)  Pages G-13 and G-14		
0.00001 mm (0.01 μm)	LGH series Page G-13		542-715 542-716 (Low measuring force)  Pages G-13 and G-14		
0.0001 mm (0.1 μm)	LGB2 series (nut clamp) Page G-6	542-246	542-158 542-181  Pages G-5 and G-8	542-182  Page G-8	
	L GK series Page G-5 L GF series Page G-8 L G series Long Stroke series (Motor-drive type) Page G-10	Refer to page G-6			
0.0005 mm (0.5 μm)	L GK series Page G-5 L GF series Page G-7		542-171 542-157  Pages G-5 and G-7	542-172  Page G-7	
0.001 mm (1 μm)	L GK series Page G-5 L GF series Page G-7		542-156 542-161  Pages G-5 and G-7	542-162  Page G-7	
	Long Stroke series (Motor-drive type) Refer to page G-10				
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0.005 mm (5 μm)	L GF series Page G-7			542-612  Page G-7	
0.0005 mm (0.5 μm)	L GF-Z series Series with reference point mark Page G-9		542-174  Page G-9	542-175  Page G-9	
0.001 mm (1 μm)	L GF-Z series Series with reference point mark Page G-9		542-164  Page G-9	542-165  Page G-9	
0.01 mm (10 μm)	L GD series ABSOLUTE™ Page G-11		575-326  Page G-11	575-327  Page G-11	
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G

Linear Gages

Ideal for integration into harsh environments such as automation applications

LGK SERIES 542 — Slim type

- Compact model offers the vibration/shock resistance of the proven LGF series. Cross-sectional area is approx 1/5 compared to 542-181.
- Resolution of each model can be selected from 0.1 μm , 0.5 μm , or 1 μm .
- Excellent sliding durability improved to remain serviceable for at least 15 million cycles (in-house testing).
- Excellent shock resistance, 100 G / 11 ms (IEC 60068-2-27)

542-158



542-157



542-156



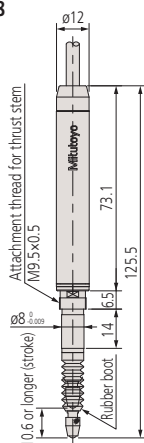
SPECIFICATIONS

Order No.	542-158	542-157	542-156
Measuring range	10 mm (0.4 in)		
Resolution	0.1 μm	0.5 μm	1 μm
Measuring accuracy (20 °C)	(0.8+L/50)μm (L=mm)	(1.5+L/50)μm (L=mm)	
Quantizing error	±1 count		
Measuring force	Contact point downwards	0.8 N or less	
	Contact point horizontal	0.75 N or less	
	Contact point upwards	0.7 N or less	
Position detection method	Photoelectric linear encode		
Response speed	400 mm/s	1500 mm/s	
Output signal	90° phase difference, differential square wave (RS-422A equivalent), minimum edge intervals: 200 ns for 0.1 μm model, 200 ns for 0.5 μm model, 400 ns for 1 μm model		
Output signal pitch	0.4 μm	2 μm	4 μm
Mass	Approx. 175 g		
Contact point	ø3 mm carbide tipped (fixing screw: M2.5 (P=0.45)×5), standard contact point: 901312		
Stem	ø8 mm		
Bearing type	Linear ball bearing		
Output cable length	2 m (directly from casing)		
Connector	Plug: RM12BPE-6PH (HIROSE), Compatible receptacle: RM12BRD-6S (HIROSE)		
Operating temperature (humidity) range	0 to 40 °C (RH 20 to 80 %, non-condensing)		
Storage temperature (humidity) range	-10 to 60 °C (RH 20 to 80 %, non-condensing)		

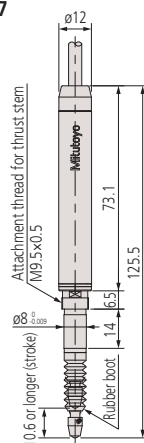
DIMENSIONS

Unit: mm

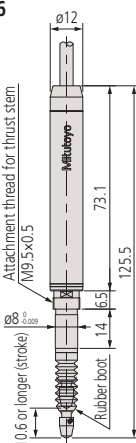
542-158



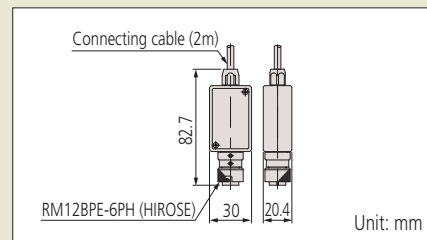
542-157



542-156



Connector



Optional Accessories

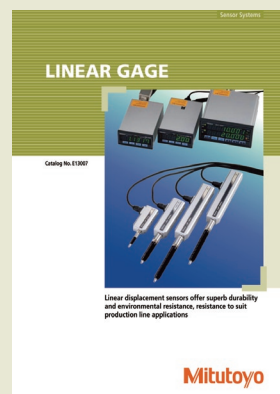
- Air lifter: **02ADE230**
Required air pressure: 0.2 to 0.4 MPa
Spindle extends when air is supplied.



- Rubber boot: **238772** (spare)
Thrust stem set *: **02ADB680**
Thrust stem: **02ADB681**
Clamp nut: **02ADB682**
Special spanner: **02ADB683**
- * Thrust stem set is a combination of thrust stem and a clamp nut. A special spanner is required for tightening. If using multiple gages, a thrust stem set for each gage and one special spanner are required.



- Extension cable (5 m): **902434**
- Extension cable (10 m): **902433**
- Extension cable (20 m): **902432**
Connectable up to 3 pieces, 20m at maximum.

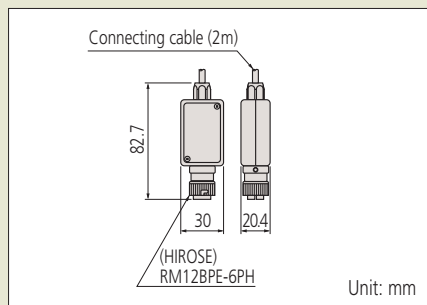


Refer to the Linear Gage Catalog (No. E13007) for more details.

Optional Accessories

- Rubber boot (spare)
For 5 mm range models: **238773**
For 10 mm range models: **238772**
- Extension cable (5 m): **902434**
- Extension cable (10 m): **902433**
- Extension cable (20 m): **902432**
Connectable up to 3 pieces, 20m at maximum.
- Wrench for tightening nut: **200168**

Connector



LGB2 SERIES 542 — Slim Type

- Slim design, nut clamp type (Stem is $\varnothing 9.5$ mm)
- The spindle guide uses high-precision linear ball bearings for extremely smooth movement and exceptional durability.



SPECIFICATIONS

Type	L-shaped		Straight		Low measuring force	Air-driven contact point*
Order No.	542-246	542-244	542-262	542-262H	542-264	542-270*2
Measuring range	5 mm (0.2 in)		10 mm (0.4 in)			
Resolution	0.1 μm	1 μm				
Measuring accuracy (20 °C)	0.8 μm	2 μm		1 μm	2 μm	
Quantizing error	±1 count					
Maximum response speed	380 mm/s	900 mm/s				
Measuring force	Contact point downwards	0.65 N or less		0.8 N or less	0.6 N or less	0.8 N or less
	Contact point horizontal	0.6 N or less		0.75 N or less	0.55 N or less	0.75 N or less
	Contact point upwards	0.55 N or less		0.7 N or less	0.5 N or less	0.7 N or less
Mass	160 g		155 g			170 g
Contact point	ø3 mm carbide tipped (fixing screw: M2.5 (P=0.45)×5), standard contact point: 901312					
Stem	ø9.5 mm					
Bearing type	Linear ball bearing					
Output cable length	2 m (directly from casing)					
Connector	Plug: RM12BPE-6PH (HIROSE), Compatible receptacle: RM12BRD-6S (HIROSE)					
Operating temperature (humidity) range	0 to 40 °C (RH 20 to 80 %, non-condensing)					
Storage temperature (humidity) range	-10 to 60 °C (RH 20 to 80 %, non-condensing)					
Standard Accessories	Wrench for contact point: 538610					

*1: Required air pressure: 0.3 to 0.4 MPa

*2: Spindle extends when air is supplied.

Example of slim gage head low measuring force (made to order)

- Low measuring force, suitable for measurement of soft-material workpieces (consult us for other measuring forces).

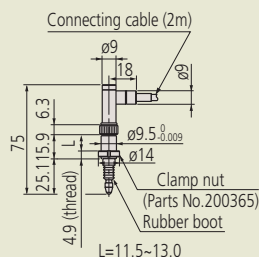
Model	L-shaped model	Air-driven contact point model
Measuring range	5 μ m	10 μ m
Resolution	1 μ m	1 μ m
Measuring force*	Contact point downwards	0.5 N or less
	Contact point horizontal	0.45 N or less
	Contact point upwards	0.4 N or less

* Measuring force at the retraction of the spindle

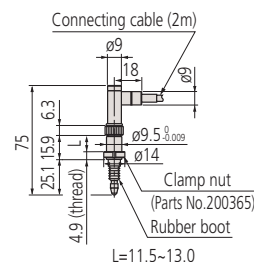
Depending on the operating method, the spindle forward speed of low measuring force model may become slow compared to the standard model. Please check if this restriction is compatible with the application. Please contact Mitutoyo to verify the application.

DIMENSIONS

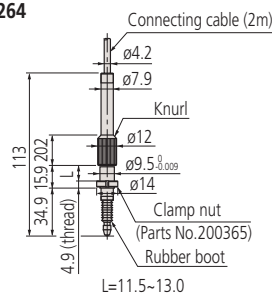
542-246



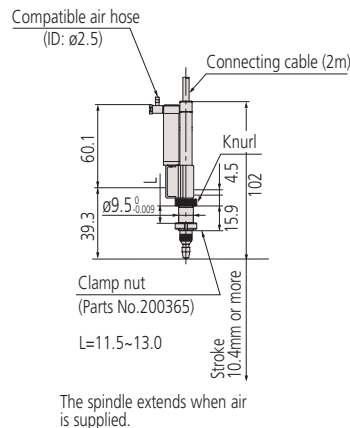
542-244



542-262/542-262H 542-264



542-270



The spindle extends when air is supplied.

Linear Gages

Ideal for integration into harsh environments such as automation applications

LGF SERIES 542 — Economical Design

- Excellent vibration/shock resistance due to the design of the spindle guide.
- Sliding durability improved to remain serviceable for at least 15 million cycles (in-house testing).
- Shock resistance, 100 G / 11 ms (IEC 60068-2-27)
- The LGF-Z series, which is equipped with a reference point mark on the linear encoder (refer to page G-9), and includes a 0.1 μ m resolution type (refer to page G-8) is also available.

542-171, -161



542-172, -162



542-173, -163



542-612, -613

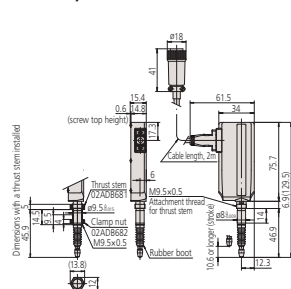


SPECIFICATIONS

Order No.	542-171	542-161	542-172	542-162	542-612	542-173	542-163	542-613
Measuring range	10 mm (0.4 in)		25 mm (1 in)			50 mm (2 in)		
Resolution	0.5 μm	1 μm	0.5 μm	1 μm	5 μm	0.5 μm	1 μm	5 μm
Measuring accuracy (20 °C) L=arbitrary measuring length (mm)	(1.5+L/50)μm				(7.5+L/50) μm	(1.5+L/50)μm		(7.5+L/50) μm
Quantizing error	±1 count							
Measuring force	Contact point downwards	1.2 N or less		4.6 N or less		5.7 N or less		
	Contact point horizontal	1.1 N or less		4.3 N or less		5.3 N or less		
	Contact point upwards	1.0 N or less		4.0 N or less		4.9 N or less		
Position detection method	Photoelectric linear encoder							
Response speed*1	1500 mm/s							
Output	90° phase difference, differential square wave (RS-422A equivalent), minimum edge intervals: 1000 ns for 5 μm model, 500 ns for 1 μm model, 250 ns for 0.5 μm model							
Output square wave pitch	2 μm	4 μm	2 μm	4 μm	20 μm	2 μm	4 μm	20 μm
Mass	Approx. 260 g		Approx. 300 g			Approx. 400 g		
Contact point	ø3 mm carbide tipped (fixing screw: M2.5 (P=0.45)×5), standard contact point: 901312							
Stem	ø8 mm		ø15 mm					
Bearing type	Linear ball bearing							
Output cable length	2 m (directly from casing)							
Connector	Plug: RM12BPE-6PH (HIROSE), Compatible receptacle: RM12BRD-6S (HIROSE)							
Operating temperature (humidity) range	0 to 40 °C (RH 20 to 80 %, non-condensing)							
Storage temperature (humidity) range	-10 to 60 °C (RH 20 to 80 %, non-condensing)							

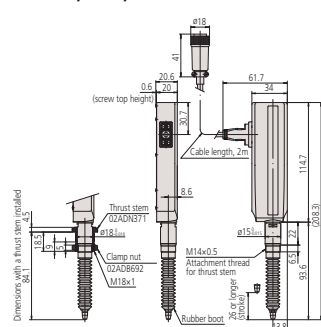
DIMENSIONS

542-171, -161



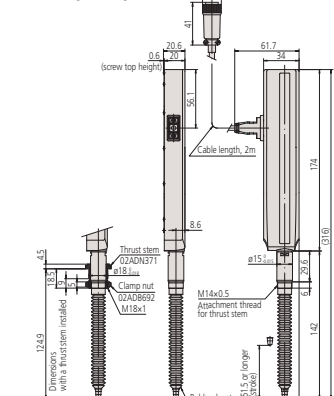
*With thrust stem set (optional accessory)

542-172, -162, -612



*With thrust stem set (optional accessory)

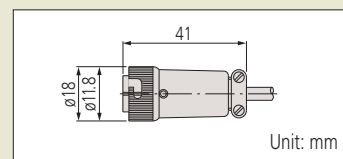
542-173, -163, -613



*With thrust stem set (optional accessory)

Unit: mm

Connector



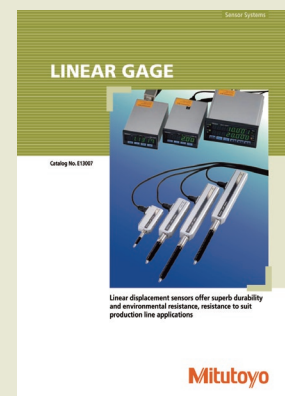
Unit: mm

Optional Accessories

- Air drive unit
For 10 mm range models: **02ADE230**
For 25 mm range models: **02ADE250**
For 50 mm range models: **02ADE270**
Required air pressure: 0.2 to 0.4 MPa
Spindle extends when air is supplied.

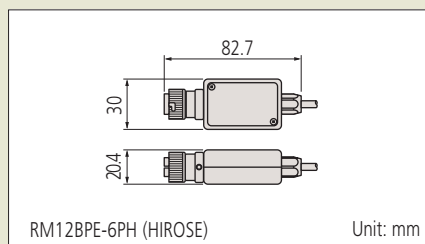


- Rubber boot (spare)
For 10 mm range models: **238772**
For 25 mm range models: **962504**
For 50 mm range models: **962505**
- Thrust stem set*
For 10 mm range models: **02ADB680**
Thrust stem: **02ADB681**
Clamp nut: **02ADB682**
For 25/50 mm range models: **02ADN370**
Thrust stem: **02ADN371**
Clamp nut: **02ADB692**
External dimensions are described in the dimensional drawing of the product.
- Special spanner
For 10 mm range models: **02ADB683**
For 25/50 mm range models: **02ADB693**
- * Thrust stem set is a combination of thrust stem and a clamp nut. A special spanner is required for tightening. If using multiple gages, a thrust stem set for each gage and one special spanner are required.
- Extension cable (5 m): **902434**
• Extension cable (10 m): **902433**
• Extension cable (20 m): **902432**
Connectable up to 3 pieces, 20m at maximum.



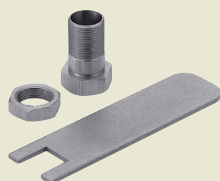
Refer to the Linear Gage Catalog (No. E13007) for more details.

Connector



Optional Accessories

- Rubber boot (spare)
For 10 mm range models: **238772**
For 25 mm range models: **962504**
For 50 mm range models: **962505**
- Thrust stem set
For 10 mm range models: **02ADB680**
Thrust stem: **02ADB681**
Clamp nut: **02ADB682**
For 25 mm range models: **02ADN370**
Thrust stem: **02ADN371**
Clamp nut: **02ADB692**
External dimensions are described in the dimensional drawing of the product.
- Special spanner
For 10 mm range models: **02ADB683**
For 25 mm range models: **02ADB693**
- * Thrust stem set is a combination of thrust stem and a clamp nut. A special spanner is required for tightening. If using multiple gages, a thrust stem set for each gage and one special spanner are required.



- Extension cable (5 m): **902434**
- Extension cable (10 m): **902433**
- Extension cable (20 m): **902432**
Connectable up to 3 pieces, 20m at maximum.

LGF (0.1 μ m resolution) SERIES 542 — Economical Design

- 0.1 μ m resolution type from the reliable LGF Linear Gage series.

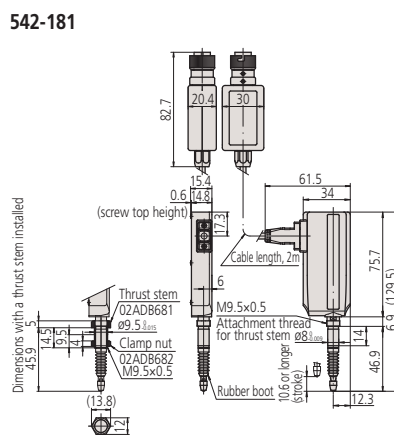


SPECIFICATIONS

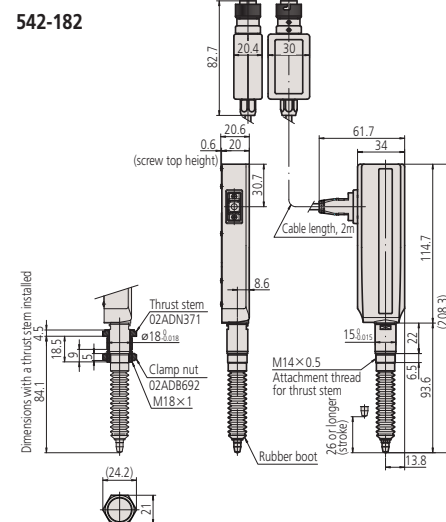
Order No.	542-181	542-182
Measuring range	10 mm (0.4 in)	25 mm (1 in)
Resolution	0.1 μ m	
Measuring accuracy (20 °C)	(0.8+L/50) μ m (L=arbitrary measuring length (mm))	
Quantizing error	± 1 count	
Measuring force	Contact point downwards	1.2 N or less
	Contact point horizontal	1.1 N or less
	Contact point upwards	1.0 N or less
Position detection method	Photoelectric linear encoder	
Response speed*1	400 mm/s	
Output signal	90° phase difference, differential squarewave (RS-422A equivalent) Minimum edge-to-edge interval, 200 ns	
Output signal pitch	0.4 μ m	
Mass	Approx. 310 g	Approx. 350 g
Contact point	$\phi 3$ mm carbide tipped (fixing screw: M2.5 (P=0.45) $\times 5$), standard contact point: 901312	
Stem	$\phi 8$ mm	$\phi 15$ mm
Bearing type	Linear ball bearing	
Output cable length	2 m (directly extended from the main unit)	
Connector	Plug: RM12BPE-6PH (HIROSE), Compatible receptacle: RM12BRD-6S (HIROSE)	
Operating temperature (humidity) range	0 to 40 °C (RH 20 to 80 %, non-condensing)	
Storage temperature(humidity) range	-10 to 60 °C (RH 20 to 80 %, non-condensing)	

DIMENSIONS

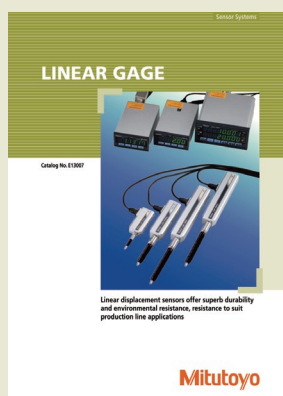
Unit: mm



*With thrust stem set (optional accessory)



*With thrust stem set (optional accessory)



Refer to the Linear Gage Catalog (No. E13007) for more details.

Linear Gages

Ideal for integration into harsh environments such as automation applications

LGF-Z SERIES 542 — with Origin Point Mark

- LGF series with reference point signal output function.
- The master setting is incorporated in the unit and is easy to operate. The origin point can be easily detected even when a fault, such as an over-speed error, occurs.
- Sliding durability improved to remain serviceable for at least 15 million cycles (in-house testing).
- Shock resistance, 100 G / 11 ms (IEC 60068-2-27)
- Resolutions are available in 0.5 μm and 1 μm .

542-174, -164

IP66



542-175, -165

IP66



542-176, -166

IP66

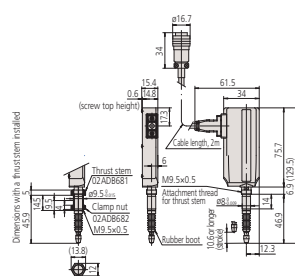


SPECIFICATIONS

Order No.		542-174	542-164	542-175	542-165	542-176	542-166
Measuring range		10 mm (0.4 in)		25 mm (1 in)		50 mm (2 in)	
Resolution		0.5 μm	1 μm	0.5 μm	1 μm	0.5 μm	1 μm
Measuring accuracy (20 °C)		(1.5+L/50) μm (L=arbitrary measuring length (mm))					
Quantizing error		±1 count					
Measuring force	Contact point downwards	1.2 N or less		4.6 N or less		5.7 N or less	
	Contact point horizontal	1.1 N or less		4.3 N or less		5.3 N or less	
	Contact point upwards	1.0 N or less		4.0 N or less		4.9 N or less	
Position detection method		Photoelectric linear encoder					
Reference mark position		3 mm from contact point tip (lowest rest point)		5 mm from contact point tip (lowest rest point)			
Reference mark repeatability (20 °C): σ		σ≤0.5 μm (at a constant reference point passing speed less than 300 mm/s in the same direction)					
Response speed		1500 mm/s					
Output signal		90°phase difference, differential square wave (RS-422A equivalent), minimum edge intervals: 250 ns for 0.5 μm model, 500 ns for 1 μm model					
Output square wave pitch		2 μm	4 μm	2 μm	4 μm	2 μm	4 μm
Mass		Approx. 260 g		Approx. 300 g		Approx. 400 g	
Contact point		ø3 mm carbide tipped (fixing screw: M2.5 (P=0.45)×5), standard contact point: 901312					
Stem		ø8 mm		ø15 mm			
Bearing type		Linear ball bearing					
Output cable length		2 m (directly extended from the main unit)					
Connector		Plug: PRC05-P8M (TAJIMI), Compatible receptacle: PRC05-R8F (TAJIMI)					
Operating temperature (humidity) range		0 to 40 °C (RH 20 to 80 %, non-condensing)					
Storage temperature (humidity) range		-10 to 60 °C (RH 20 to 80 %, non-condensing)					

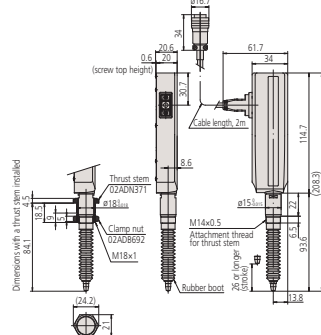
DIMENSIONS

542-174, -164



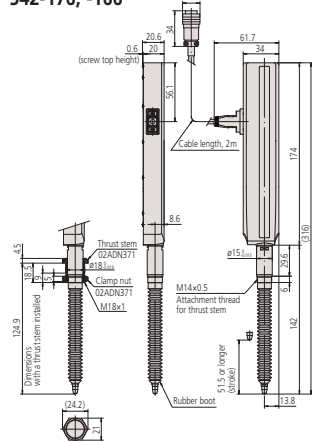
*With thrust stem set (optional accessory)

542-175, -165



*With thrust stem set (optional accessory)

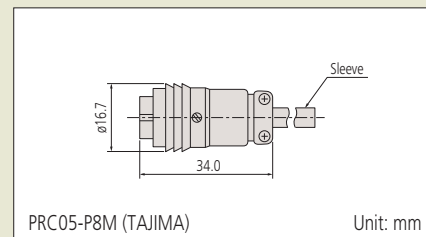
542-176, -166



*With thrust stem set (optional accessory)

Unit: mm

Connector



PRC05-P8M (TAJIMA)

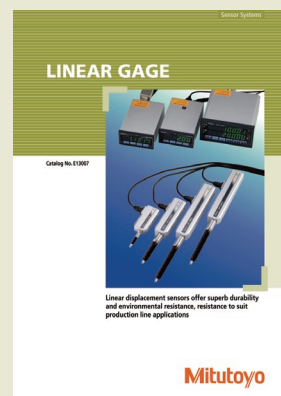
Unit: mm

Optional Accessories

- Air drive unit
 - For 10 mm range models: **02ADE230**
 - For 25 mm range models: **02ADE250**
 - For 50 mm range models: **02ADE270**
- Required air pressure: 0.2 to 0.4 MPa
- Spindle extends when air is supplied.

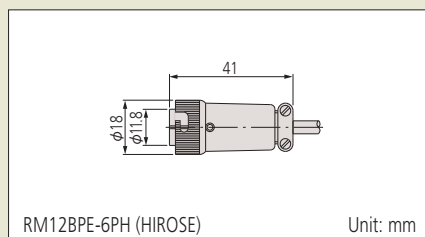


- Rubber boot (spare)
 - For 10 mm range models: **238772**
 - For 25 mm range models: **962504**
 - For 50 mm range models: **962505**
- Thrust stem set *
 - For 10 mm range models: **02ADB680**
 - Thrust stem: **02ADB681**
 - Clamp nut: **02ADB682**
 - For 25/50 mm range models: **02ADN370**
 - Thrust stem: **02ADN371**
 - Clamp nut: **02ADB692**
- External dimensions are described in the dimensional drawing of the product.
- Special spanner
 - For 10 mm range models: **02ADB683**
 - For 25/50 mm range models: **02ADB693**
- * Thrust stem set is a combination of thrust stem and a clamp nut. A special spanner is required for tightening. If using multiple gages, a thrust stem set for each gage and one special spanner are required.
- Extension cable (5 m): **02ADF260**
- Extension cable (10 m): **02ADF280**
- Extension cable (20 m): **02ADF300**
- Connectable up to 3 pieces, 20m at maximum.

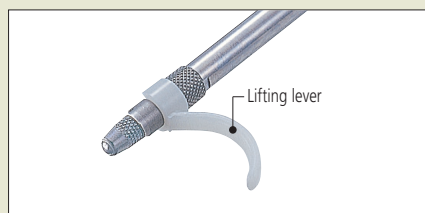


Refer to the Linear Gage Catalog (No. E13007) for more details.

Connector



Lifting lever attachment



Optional Accessories

- Rubber boot: **02ADA004** (for rubber boot type)
 - Extension cable (5 m): **902434**
 - Extension cable (10 m): **902433**
 - Extension cable (20 m): **902432**
- Connectable up to 3 pieces, 20m at maximum.

LG

SERIES 542 — Long Stroke Type

- This is a long stroke linear gage offering a measuring range of 100 mm.
- Three versions are available; standard model, low measuring force model, and rubber boot model (made to order).
- The resolution of each model can be selected to be 0.1 μm or 1 μm .



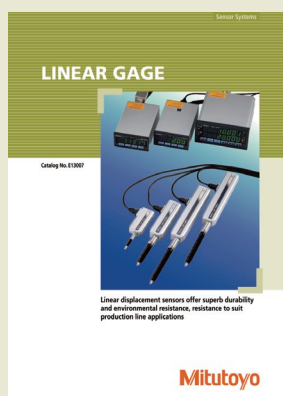
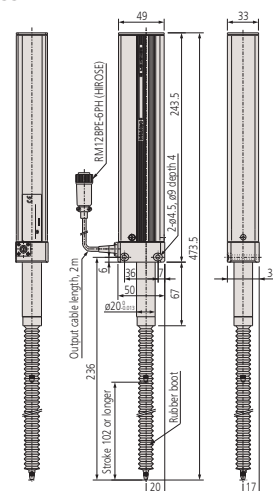
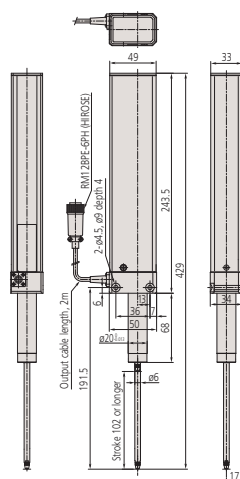
SPECIFICATIONS

Type	Standard spar type	Low measuring force	Rubber boot type	Standard spar type	Low measuring force	Rubber boot type	
Order No.	542-312	542-316	542-314	542-332	542-336	542-334	
Measuring range	100 mm (4 in)						
Resolution	0.1 μm			1 μm			
Measuring accuracy (20 °C)	(2+L/100)μm≤2.5 μm L=arbitrary measuring length (mm) (2+L/100)μm≤2.5 μm L=arbitrary measuring length (mm)						
Quantizing error	±1 count						
Measuring force	Contact point downwards	8.0 N or less	3.0 N or less	8.0 N or less	8.0 N or less	3.0 N or less	8.0 N or less
	Contact point horizontal	6.5 N or less	Not applicable	6.5 N or less	6.5 N or less	Not applicable	6.5 N or less
	Contact point upwards	5.0 N or less	Not applicable	5.0 N or less	5.0 N or less	Not applicable	5.0 N or less
Position detection method	Photoelectric linear encoder						
Response speed*1 (max. electrical response speed)	Approx. 400 mm/s			Approx. 800 mm/s			
Output signal	90° phase difference, differential squarewave (RS-422A equivalent)						
Spindle drive	Helical extension spring						
Spindle guide	Bearing guide						
Stem	ø20 mm						
Contact point	ø3 mm carbide tipped (fixing screw: M2.5 (P=0.45)×5), standard contact point: 901312						
Shock resistance	60 g (in-house testing)						
Cable length	Approx. 2 m (directly extended from the gage unit)						
Spindle sealing method	Scraper type		Rubber boot type	Scraper type		Rubber boot type	
Dust/water resistance	Equivalent to IP54		Equivalent to IP66	Equivalent to IP54		Equivalent to IP66	
Operating temperature (humidity) range	0 to 40 °C (RH 20 to 80 %, non-condensing)						
Storage temperature (humidity) range	-10 to 60 °C (RH 20 to 80 %, non-condensing)						
Input/output connector	For calculation: RM12BPE-6PH (HIROSE) Compatible receptacle: RM12BRD-6S (HIROSE)						
Mass (including cables)	Approx. 750 g		Approx. 780 g	Approx. 750 g		Approx. 780 g	

DIMENSIONS

542-312, -316, -332, -336

542-314, -334



Linear Gages

Ideal for integration into harsh environments such as automation applications

LGD

SERIES 575 — ABSOLUTE / Standard Type

- Absolute position detection makes it possible to maintain the reference point even when the power is switched off.
- Excellent protection against dust and splashing water (IP66) on the factory floor.
- The spindle guide uses high-precision linear ball bearings for extremely smooth movement and exceptional durability.
- Sliding durability improved to remain serviceable for at least 15 million cycles (in-house testing).
- Shock resistance, 100 G / 11 ms (IEC 60068-2-27)

575-326,
575-326-5

IP66



575-327,
575-327-5

IP66



575-328,
575-328-5

IP66



SPECIFICATIONS

Metric						
Order No.*1	575-326	575-326-5	575-327	575-327-5	575-328	575-328-5
Measuring range	10 mm		25 mm		50 mm	
Resolution	10 μm					
Measuring accuracy (20 °C)	20 μm				30 μm	
Quantizing error	±1 count					
Measuring force	Contact point downwards	1.2 N or less		4.6 N or less		5.7 N or less
	Contact point horizontal	1.1 N or less		4.3 N or less		5.3 N or less
	Contact point upwards	1.0 N or less		4.0 N or less		4.9 N or less
Position detection method	ABSOLUTE electrostatic capacitance type linear encoder					
Response speed	Unlimited (not applicable to scanning measurement)					
Output	Digimatic code					
External input	Reference-setting signal (Absolute reference position*2 can be changed externally.)					
Mass*3	Approx. 260 g		Approx. 300 g		Approx. 400 g	
Contact point	ø3 mm carbide tipped (fixing screw: M2.5 (P=0.45)×5), standard contact point: 901312					
Stem	ø8 mm		ø15 mm			
Bearing type	Linear ball bearing					
Output cable length (directly extended from the main unit)	2 m	5 m	2 m	5 m	2 m	5 m
Operating temperature (humidity) range	0 to 40 °C (RH 20 to 80 %, non-condensing)					
Storage temperature (humidity) range	-10 to 60 °C (RH 20 to 80 %, non-condensing)					

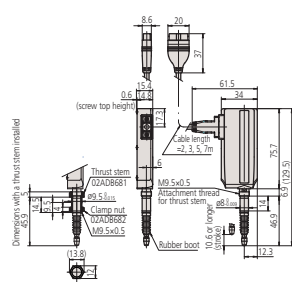
*1: The last digit of the Code No. represents a special cable length in meters.

*2: The absolute reference point is near the lowest rest point at shipment.

*3: Mass including 2 m cable.

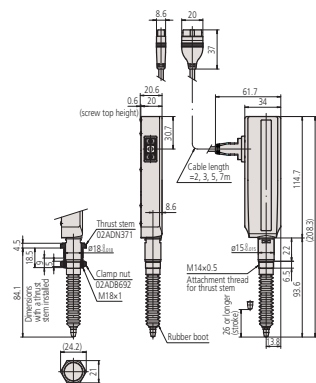
DIMENSIONS

575-326, 575-326-5



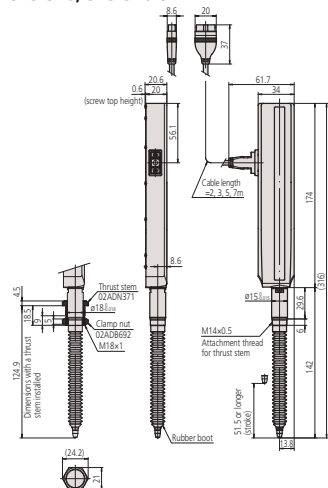
*With thrust stem set (optional accessory)

575-327, 575-327-5
LGD®-1025L-B, -1025L/5-B



*With thrust stem set (optional accessory)

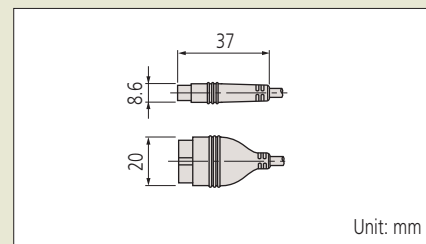
575-328, 575-328-5



*With thrust stem set (optional accessory)

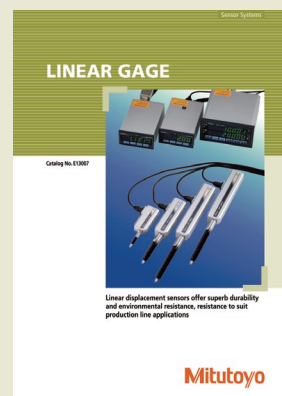
ABSOLUTE™ (Refer to page X for details.)

Connector



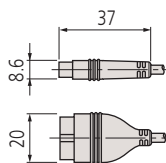
Optional Accessories

- Air drive unit
For 10 mm range models: **02ADE230**
For 25 mm range models: **02ADE250**
For 50 mm range models: **02ADE270**
Required air pressure: 0.2 to 0.4 MPa
Spindle extends when air is supplied.
 - Rubber boot (spare)
For 10 mm range models: **238772**
For 25 mm range models: **962504**
For 50 mm range models: **962505**
 - Extension cable
SPC cable extension adapter: **02ADF640**
Extension cable (0.5 m): **02ADD950**
Extension cable (1 m): **936937**
Extension cable (2 m): **965014**
When connecting an extension cable, an SPC cable extension adapter is required.
 - Thrust stem set *
For 10 mm range models: **02ADB680**
Thrust stem: **02ADB681**
Clamp nut: **02ADB682**
For 25/50 mm range models: **02ADN370**
Thrust stem: **02ADN371**
Clamp nut: **02ADB692**
External dimensions are described in the dimensional drawing of the product.
 - Special spanner
For 10 mm range models: **02ADB683**
For 25/50 mm range models: **02ADB693**
- * The thrust stem set is a combination of thrust stem and a clamp nut. A special spanner is required for tightening. If using multiple gages, a thrust stem set for each gage and one special spanner are required.



Refer to the Linear Gage Catalog (No. E13007) for more details.

Connector



Unit: mm

Optional Accessories

- Rubber boot: **238774** (spare)
- Air drive unit (metric): **903594**
- Air drive unit (inch): **903598**
- SPC cable extension adapter: **02ADF640**
- Extension cable (0.5 m): **02ADD950**
- Extension cable (1 m): **936937**
- Extension cable (2 m): **965014**

When connecting an extension cable, an SPC cable extension adapter is required.

LGS-1012P SERIES 575 — 0.01 mm Resolution Type

- ABSOLUTE electrostatic capacitance type encoder makes it possible to maintain the reference point even when the power is switched off.
- Excellent protection against dust and splashing water (IP66) on the factory floor.

575-303



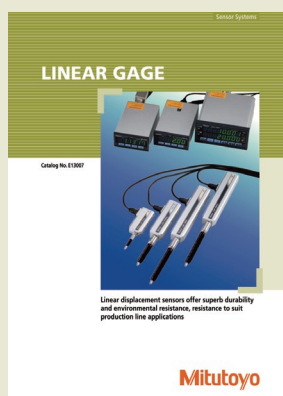
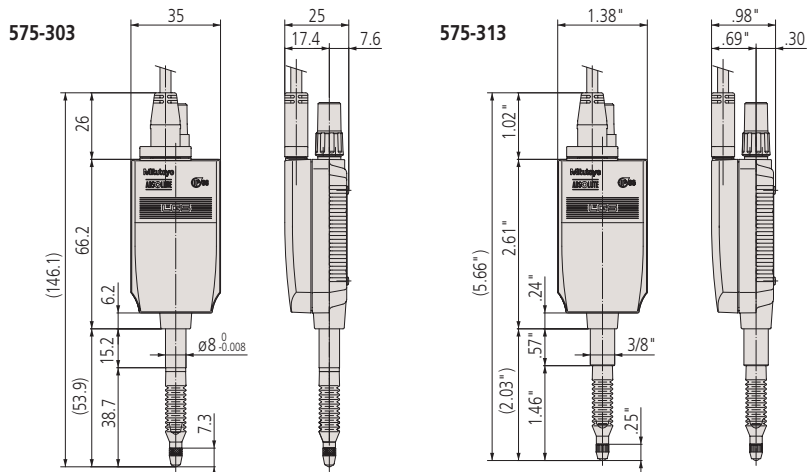
SPECIFICATIONS

Metric		575-303
Order No.		575-303
Measuring range		12.7 mm
Resolution		10 µm
Measuring accuracy (20 °C)		15 µm
Quantizing error		±1 count
Measuring force	Contact point downwards	2 N or less
	Contact point horizontal	1.8 N or less
	Contact point upwards	1.6 N or less
Position detection method		ABSOLUTE electrostatic capacitance type linear encoder
Response speed		Unlimited (not applicable to scanning measurement)
Output		Digimatic code
Mass		Approx. 190 g
Contact point		ø3 mm carbide tipped (fixing screw: M2.5 (P=0.45)×5), standard contact point: 901312
Stem		ø8 mm
Bearing type		Slide bearing
Output cable length		2 m (directly extended from the main unit)
Operating temperature (humidity) range		0 to 40 °C (RH 20 to 80 %, non-condensing)
Storage temperature(humidity) range		-10 to 60 °C (RH 20 to 80 %, non-condensing)

Inch		575-313
Order No.		575-313
Measuring range		0.5 in
Resolution		0.0005 in
Measuring accuracy (20 °C)		0.0008 in
Quantizing error		±1 count
Measuring force	Contact point downwards	2 N or less
	Contact point horizontal	1.8 N or less
	Contact point upwards	1.6 N or less
Position detection method		ABSOLUTE electrostatic capacitance type linear encoder
Response speed		Unlimited (not applicable to scanning measurement)
Output		Digimatic code
Mass		Approx. 190 g
Contact point		ø3 mm carbide tipped (fixing screw: 4-48 UNF), standard contact point: 21BZB005
Stem		ø9.52=3/8 in DIA
Bearing type		Slide bearing
Output cable length		2 m (directly extended from the main unit)
Operating temperature (humidity) range		0 to 40 °C (RH 20 to 80 %, non-condensing)
Storage temperature(humidity) range		-10 to 60 °C (RH 20 to 80 %, non-condensing)

DIMENSIONS

Unit: inch



Refer to the Linear Gage Catalog (No. E13007) for more details.

Linear Gages

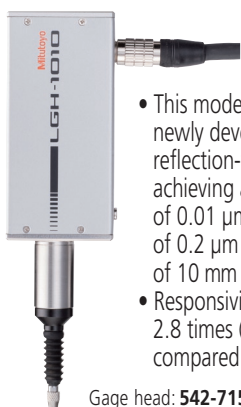
Ideal for integration into harsh environments such as automation applications

LGH (0.01/0.005 μm resolution) SERIES 542 — High-accuracy/resolution Type

- This series has achieved the outstanding accuracy of 0.2 μm combined with a resolution of 0.01/0.005 μm (according to model), practically equivalent to that of a laser interferometer, and a wide measuring range of 10 mm.
- A compact body design makes a significant contribution to a downsizing of this gage itself, which is best suited for calibration/

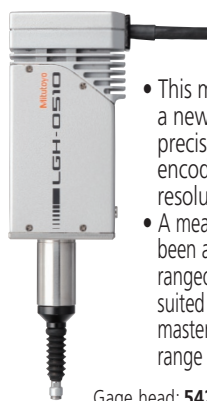
evaluation of master gages as well as measurement of high-precision parts and as a length measuring sensor incorporated into high-precision positioning/control units.

- A low measuring force model is available for those applications where measurement of easily deformed or damaged workpieces is required.
- Every LGH series gage is bundled with a dedicated counter.



Gage head: **542-715**

- This model is equipped with a newly developed photoelectric reflection-type linear encoder, achieving an excellent resolution of 0.01 μm , a measuring accuracy of 0.2 μm and a measuring range of 10 mm at a low price.
- Responsivity has been improved by 2.8 times (250 mm/s \Rightarrow 700 mm/s) compared to the previous model.



Gage head: **542-720**

- This model is equipped with a newly developed ultra-high precision transmission type linear encoder, achieving the outstanding resolution of 0.005 μm (5 nm).
- A measuring accuracy of 0.1 μm has been attained over the wide measuring range of 10 mm. This series is most suited for calibration/evaluation of master gages where its wide measuring range is a great advantage.



Dedicated counter

APPLICATION

Master gage calibration/evaluation



Inspection of high-precision parts

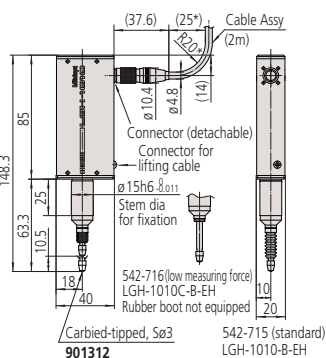


* Needle contact-point mounting example

DIMENSIONS

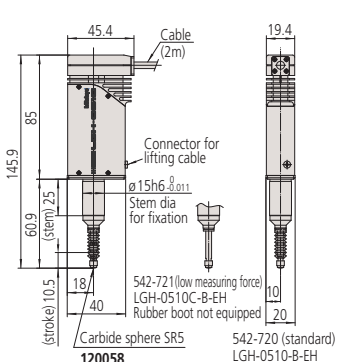
Unit: mm

542-716

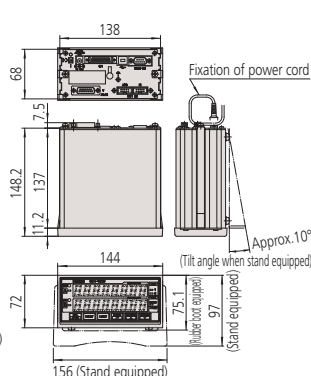


* Minimum bending radius or minimum dressed dimension

542-721



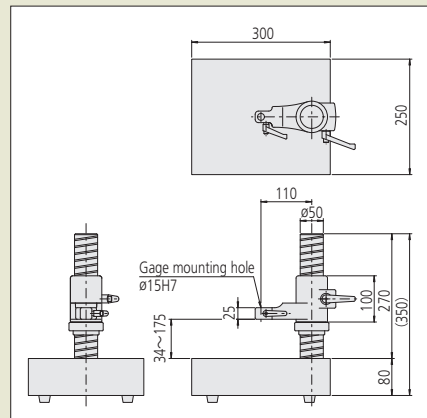
Dedicated counter (set)



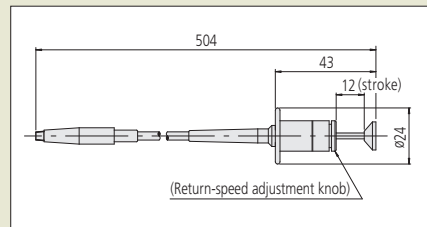
An inspection certificate is supplied as standard. Refer to page X for details.

Optional Accessories

- LGH stand: **971750**



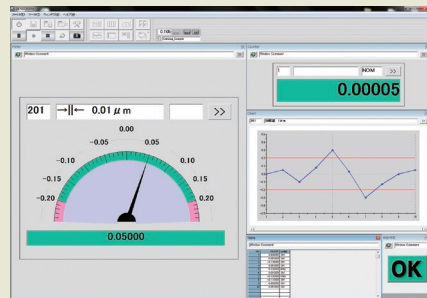
- Spindle lifting cable: **971753**



- I/O connector: **02ADB440**

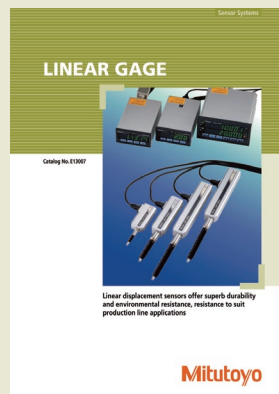


- **SENSORPAK**



Refer to page G-20 for more details.

- Rubber boot: **238772**
(Spare for **542-715** and **542-720**)



Refer to the Linear Gage Catalog (No. E13007) for more details.

SPECIFICATIONS

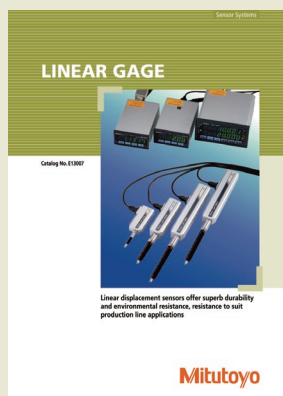
		Resolution 0.01 μm / Accuracy 0.2 μm model	
Order No.		542-715 (Standard)	542-716 (Low measuring force)
Measuring range		10 mm	
Resolution		0.01 μm (0.05 μm, 0.1 μm, 0.5 μm, 1 μm can be selected from the counter)	
Measuring accuracy (20 °C) *1		0.2 μm	
Repeatability (20 °C) *1		0.1 μm (2σ)	
Retrace error (20 °C) *1		0.1 μm	
Measuring force	Contact point downwards	0.65 N or less	Approx. 0.12 N
	Contact point horizontal	0.55 N or less	Not applicable
	Contact point upwards	0.45 N or less	Not applicable
Position detection method		Photoelectric reflection type linear encoder	
Detectable operation speed		In normal measurement: 700 mm/sec; for peak detection: 120 mm/sec	
Mass of gage head		Approx. 370 g	
Contact point		Carbide tipped, Sφ3 mm (M2.5 (P=0.45)×5 mm), standard contact point: 901312	
Stem		ø15 mm	
Bearing		Linear ball type	
Output cable length		Approx. 2 m	
Operating temperature/humidity		0 to 40 °C (Reference temperature 20 °C) / 20 to 80 %RH (non-condensing)	
Storage temperature		-10 to 60 °C / 20 to 80 %RH (non-condensing)	
Counter Specifications			
Display range		±999.99999 mm	
Functions		Zero-setting, presetting, direction changeover, tolerance judgment (3 steps/5 steps), RS-RINK	
Peak hold function		Yes	
Interface		RS-232C, USB (only for SENSORPAK), Digimatic (Printer: DP-1VA LOGGER)*3, I/O Connector	
External output		•RS-232C: counting data •Digimatic output: counting data*3 •I/O connector: counting data (simplified BCD), tolerance judgment result, simplified analog output	
External control		Zero-setting, presetting, data hold, peak measurement mode selection, peak clear	
Power supply		Supplied AC Adapter, or +12 to 24 V DC, max 700 mA	
Current consumption		8.4 W (MAX 700 mA), Ensure at least 1 A power supply per unit.	
Mass of counter		Approx. 900 g (AC Adapter excluded)	
Standard accessories		Wrench for contact point, rubber boot, stand, washer (for counter), AC Adapter, AC cord, DC plug, user's manual, inspection certificate	

		Resolution 0.005 μm / Accuracy 0.1 μm model	
Order No.		542-720 (Standard)	542-721 (Low measuring force)
Measuring range		10 mm	
Resolution		0.005 μm (0.01 μm, 0.05 μm, 0.1 μm can be selected from the counter)	
Measuring accuracy (20 °C) *1		0.1 μm	
Repeatability (20 °C) *1		0.02 μm (2 σ)	
Retrace error (20 °C) *1		0.05 μm	
Measuring force	Contact point downwards	0.65 N or less	Approx. 0.1 N
	Contact point horizontal	0.55 N or less	Not applicable
	Contact point upwards	0.45 N or less	Not applicable
Position detection method		Ultra-high accuracy transmission type linear encoder	
Detectable operation speed		In normal measurement: 250 mm/sec	
Mass of gage head		Approx. 370 g	
Contact point		Carbide sphere SR5 (M2.5 (P=0.45)×5 mm), standard contact point: 120058	
Stem		ø15 mm	
Bearing		Linear ball type	
Output cable length		Approx. 2 m	
Operating temperature/humidity		15 to 25 °C (Reference temperature 20 °C) / 30 to 60 %RH (non-condensing)	
Storage temperature		-10 to 60 °C / 20 to 80 % (non-condensing) *2	
Counter Specifications			
Display range		±99.999995 mm	
Functions		Zero-setting, presetting, direction changeover, tolerance judgment (3 steps/5 steps), RS-RINK	
Peak hold function		No	
Interface		RS-232C, USB (only for SENSORPAK), Digimatic (Printer: DP-1VA LOGGER)*3, I/O Connector	
External output		•RS-232C: counting data •Digimatic output: counting data*3 •I/O connector: counting data (simplified BCD), tolerance judgment result, simplified analog output	
External control		Zero-setting, presetting, data hold	
Power supply		Supplied AC Adapter, or +12 to 24 V DC, max 700 mA	
Current consumption		8.4 W (MAX 700 mA), Ensure at least 1 A power supply per unit.	
Mass of counter		Approx. 900 g (AC Adapter excluded)	
Standard accessories		Wrench for contact point, rubber boot, stand, washer (for counter), AC Adapter, AC cord, DC plug, user's manual, inspection certificate	

*1: Applies when used with counter (excluding quantizing error).

*2: The storage temperature/humidity range after unpacking is the same as the operating temperature/humidity range.

*3: Digimatic output shall be up to 6 digits of data. For data of 7 digits or more, all digits will not be output to the display.



Refer to the Linear Gage Catalog (No. E13007) for more details.

Linear Gages

Ideal for integration into harsh environments such as automation applications

EC Counter SERIES 542 — Panel mount, Single function Type

- This Digimatic display can be connected to Linear gages with Digimatic output (LGD and LGS).
- Employs DIN size (96×48 mm) and mount-on-panel configuration to facilitate system integration.
- It has a data output and tolerance evaluation function.



542-007

SPECIFICATIONS

Order No.	542-007*
Quantizing error	±1 count
Resolution () indicates maximum display range	0.01 mm (±9999.99) / 0.0005 in (±99.9995 in) / 0.001 in (±99.999 in) 0.001 mm (±9999.999) / 0.00005 in (±9.99995 in) / 0.0001 in (±99.999 in) [Automatic setting by gage]
Display	Sign plus 6 digits (Green LED)
Tolerance judgment display	LED display (3 steps: Amber, Green, Red)
External output (switching type)	Tolerance judgment output Data output
Control input	Digimatic output External PRESET, external HOLD
Rating	Power supply voltage: Supplied AC adapter, or 9 to 12 V DC Power consumption: 4.8 W (max. 400 mA) Ensure at least 1 A is available per unit.
Operating temperature range	0 to 40 °C (RH 20 to 80 %, non-condensing)
External dimensions	96 (W) × 48 (H) × 84.6 (D) mm
AC adapter/AC cable	AC adapter: (Japan/North America) 06AEG302JA / (EU) 06AEG302D / (UK) 06AEG302E / (Korea) 06AEG302K / (China) 06AEG302DC
Applicable gage head	LGD, LGS, ID
Mass	220 g

* To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for BS, K for KC, C and No suffix are required for PSE.

EG Counter SERIES 542 — Panel mount, Single function Type

- Produces 3-step/5-step, 3 kinds of tolerance output and BCD output.
- A smoothing function reduces display digit fluctuations (**542-015** and **542-017**)
- Employs DIN size (96×48 mm) and mount-on-panel configuration to facilitate system integration.



542-015



542-017



542-016

SPECIFICATIONS

Order No.	542-015	542-017	542-016
Quantizing error	±1 count		
Maximum input frequency	1.25 MHz, response speed depends on gage specification.		
Resolution () indicates maximum display range	0.01 mm (±9999.99 mm) / 0.0005 in (±99.9995 in) / 0.001 in (±99.999 in) 0.005 mm (±9999.995 mm) / 0.00005 in (±9.99995 in) / 0.0001 in (±99.999 in) 0.001 mm (±999.999 mm) / 0.00005 in (±9.99995 in) / 0.0001 in (±99.999 in) 0.0005 mm (±99.9995 mm) / 0.000005 in (±0.999995 in) / 0.00001 in (±9.99999 in) 0.0001 mm (±9.99999 mm) / 0.000005 in (±0.999995 in) / 0.00001 in (±9.99999 in) [Automatic setting by gage]		
Tolerance judgment display	LED display (3 steps: Amber, Green, Red/ 5 steps: Amber, Amber flashing, Green, Red flashing, Red)		
Tolerance judgment output	L1 to L5 (Open-collector / Switchover between L1 to L5 and BCD output with parameter)		
Control output	Normal operation signal (NOM): open-collector		
BCD output	Open-collector / Switchover between 6-digit (positive/negative-true logic) and tolerance judgment output with parameter		
Control input	Presetting, display hold, peak value clear, tolerance judgment BANK switch		
Rating	Power supply voltage: 12 to 24 V DC Power consumption: 6 W or less (500 mA max.) Ensure at least 1 A is available per unit.		
Operating temperature range	0 to 40 °C (RH 20 to 80 %, non-condensing)		
Storage temperature range	-10 to 50 °C (RH 20 to 80 %, non-condensing)		
External dimensions	96 (W) × 48 (H) × 156 (D) mm		
Applicable gage head	LGF, LGK, LGB, LG* (LGH110 excluded) Models with reference point mark, sine wave output type are excluded.	LGF with reference point mark	LGD, LGS, ID, SD
Number of gage inputs	1		
Mass	Approx. 400 g		

*1: When a gage of 0.1 μm resolution is connected, the maximum display range will be ±99.9999.

Function

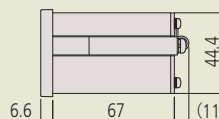
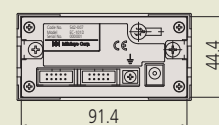
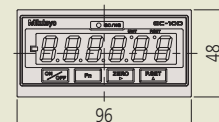
- Preset
- Tolerance judgment (3 steps, 3 kinds)
- Digimatic output

Optional Accessories

- Connecting cable for digimatic mini-processor: **936937** (1 m), **965014** (2 m)
- DC plug: **214938**
- I/O cable (2 m): **C162-155**

DIMENSIONS

Unit: mm



Function

- Preset
- Direction switch
- Tolerance judgment (3/5-step, 3 kinds)
- Peak (max., min., runout) measurement
- Constant number
- Smoothing
- Error display/output
- Key protection

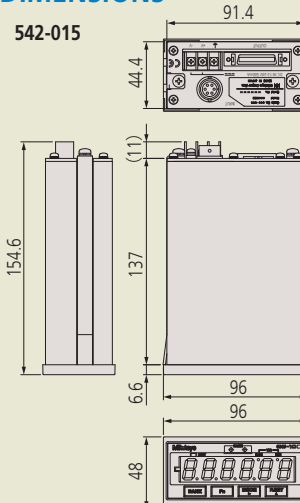
Optional Accessories

- I/O output connector (with cover): **02ADB440**
- AC adapter: **357651**
- AC cable (Japan): **02ZAA000***
- AC cable (USA): **02ZAA010***
- AC cable (EU): **02ZAA020***
- AC cable (UK): **02ZAA030***
- AC cable (China): **02ZAA040***
- AC cable (Korea): **02ZAA050***
- Terminal connecting cable: **02ADD930***

* Required when using AC adapter.

DIMENSIONS

Unit: mm



Function

- Preset
- Tolerance judgment output (3/5-step, 7 kinds)
- Limit value output (2 kinds independently for each of the 7 channels)
- Peak (max., min., runout) measurement
- Diverse data output (Serial BCD, Simplified analog, Digimatic)

Optional Accessories

- I/O output connector (with cover): **02ADB440**
- AC adapter: **357651**
- AC cable (Japan): **02ZAA000***
- AC cable (USA): **02ZAA010***
- AC cable (EU): **02ZAA020***
- AC cable (UK): **02ZAA030***
- AC cable (China): **02ZAA040***
- AC cable (Korea): **02ZAA050***
- Terminal connecting cable: **02ADD930***
- External switch box

The tolerance values or preset values can be easily input. **02ADF180** (with 2 m cable)



* Required when using AC adapter.

EB Counter SERIES 542 — Panel mount, Multi-function Type

- Produces 3-step/5-step, 7 kinds of tolerance output and limit value output independently for each of 7 channels.
- Comes with serial BCD output capability, for connection to a programmable controller or personal computer, etc.
- Dynamic measurement possible with simplified analog output.
- Employs DIN size (96×48 mm) and mount-on-panel configuration to facilitate system integration.



542-092-2



542-094-2



542-093-2

SPECIFICATIONS

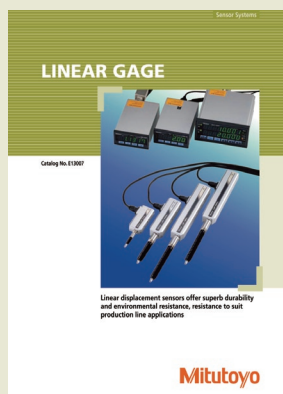
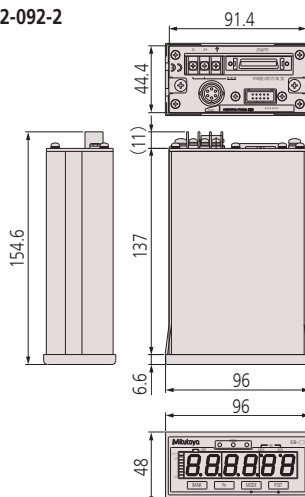
Order No.		542-092-2	542-094-2	542-093-2
Quantizing error		±1 count		
Maximum input frequency		1.25 MHz (2-phase square wave), response speed depends on gage specification.		Response speed depends on gage specification.
Resolution () indicates maximum display range		0.01 mm (±9999.99 mm) / 0.0005 in (±99.9995 in) 0.005 mm (±9999.995 mm) / 0.00005 in (±9.99995 in) 0.001 mm (±999.999 mm) / 0.00005 in (±0.99995 in) 0.0005 mm (±99.9995 mm) / 0.000005 in (±0.999995 in) 0.0001 mm (±9.9999 mm) / 0.000005 in (±0.999995 in)		0.01 mm (±9999.99 mm) / 0.0005 in (±99.9995 in) 0.005 mm (±9999.995 mm) / 0.00005 in (±9.99995 in) 0.001 mm (±999.999 mm) / 0.00005 in (±0.99995 in) 0.0005 mm (±99.9995 mm) / 0.000005 in (±0.999995 in) 0.0001 mm (±9.9999 mm) / 0.000005 in (±0.999995 in) [Automatic setting by gage]
Tolerance judgment display		LED display (3 steps: Amber, Green, Red / 5 steps: Amber, Amber flashing, Green, Red flashing, Red)		
Input/output	Tolerance judgment output	L1 to L5, open-collector		
	Control output	Normal operation signal (NOM), open-collector		
	Control input	Presetting, display hold, peak value clear, tolerance judgment BANK switch, open-collector or no-voltage contact signal (with/without contact point)		
Interface	Serial BCD	Bit serial format, open-collector		
	Analog output	2.5V+Counting value× Voltage resolution (25 mV / 2.5 mV): Full-scale 0 to 5V		
	Digimatic input/output	• Connecting to the external switch box (02ADF180) makes it easy to enter tolerance limits and preset values. Note) This function is not available when the gage is connected to Digimatic Mini-Processor DP-1VA LOGGER (264-505) . • It can be connected to DP-1VA LOGGER (264-505) and to IT-016U .		
Rating	Power supply voltage	12 to 24 V DC, terminal block (M3 screw)		
	Power consumption	6 W or less (500 mA max.) Ensure at least 1 A is available per unit.		
Operating temperature range		0 to 40 °C (RH 20 to 80 %, non-condensing) / -10 to 50 °C (RH 20 to 80 %, non-condensing)		
Applicable gage head		LGF, LGK, LGB, LG*1 Models with reference point mark, sine wave output type are excluded.	LGF with reference point mark	LGD, LGS, ID
Mass		Approx. 400 g	Approx. 400 g	Approx. 400 g

*1: When a gage of 0.1μm resolution is connected, the maximum display range will be ±99.9999.

DIMENSIONS

542-092-2

Unit: mm



Refer to the Linear Gage Catalog (No. E13007) for more details.

Linear Gages

Ideal for integration into harsh environments such as automation applications

EH Counter SERIES 542 — Panel mount, Multi-function Type

- Two types are available for this model: a 1-axis display and a 2-axis display, both of which enable addition or subtraction calculations between two gages.
- Multifunctional counter equipped with zero-setting, presetting, tolerance judgment.
- RS-232C and USB are equipped as standard. Data transfer to a PC is possible. (USB is supported only by Mitutoyo SENSORPAK.)
- A multi-point (max. 20 points) measuring system can easily be configured with the built-in RS Link networking function. Refer to "Quick Guide to Precision Measuring Instruments" on page G-23 for details of the RS link.
- Employs DIN size (144×72 mm) and mount-on-panel configuration to facilitate system integration.



542-075



542-071



542-073



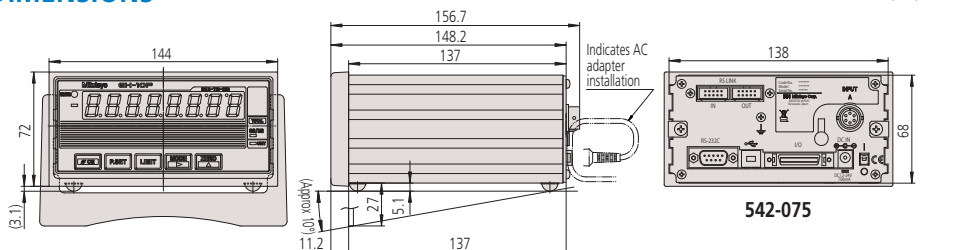
542-072

SPECIFICATIONS

Order No.	542-075*	542-071*	542-073*	542-072*
Number of axes to be displayed	1 axis	2 axes		
Quantizing error	±1 count			
Maximum input frequency	2.5 MHz (2-phase square wave)			—
Resolution () indicates maximum display range	0.01 mm (±9999.99 mm) / 0.0005 in (±99.9995 in) 0.001 mm (±999.999 mm) / 0.00005 in (±9.99995 in) 0.0001 mm (±99.9999 mm) / 0.000005 in (±0.999995 in) [Parameter set]			Automatic setting by gage
Tolerance judgment display	LED display (3 steps: Amber, Green, Red / 5 steps: Amber, Amber flashing, Green, Red flashing, Red)			
Interface	RS-232C/USB/parameter selection via digimatic (only DP-1VA LOGGER, digimatic mini-processor can be connected) (USB used only with SENSORPAK.) Selection by parameter from 3-step, 5-step, or simple BCD Total tolerance judgment output (when tolerance function is enabled) Analog output (1 V to 4 V)			
Input/output	Control output	Open-collector		
	Control input	Display BANK switching, peak mode, presetting, display hold, hold per axis: open-collector or no-voltage contact signal (with/without contact point)		
Rating	Power supply voltage	Supplied AC adapter, or 12 to 24 V DC		
	Power consumption	8.4 W (max. 700 mA) Ensure at least 1 A is available per unit.		
Operating temperature (humidity) range	0 to 40 °C (RH 20 to 80 %, non-condensing)			
Storage temperature (humidity) range	-10 to 50 °C (RH 20 to 80 %, non-condensing)			
AC adpter / AC cable	AC adapter: 357651 / AC cable: 02ZAA000 , AC cable (Japan): 02ZAA000* , AC cable (USA): 02ZAA010* , AC cable (EU): 02ZAA020* , AC cable (UK): 02ZAA030* , AC cable (China): 02ZAA040* , AC cable (Korea): 02ZAA050*			
Applicable gage head	LGF, LGK, LGB, LG Models with reference point mark, sine wave output type are excluded.		LGF with reference point mark	LGD, LGS, ID
Mass	Approx. 760 g	Approx. 800 g	Approx. 800 g	Approx. 800 g

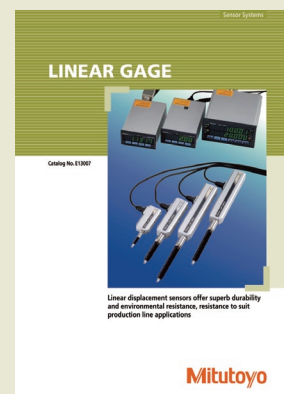
* To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for BS, K for KC, C and No suffix are required for PSE.
For those models of the Order No. with Suffix "1", AC adapter is not attached as a standard accessory.

DIMENSIONS



Optional Accessories

- I/O output connector (with cover): **02ADB440**
- SPC cable (0.5 m): **02ADD950**
- SPC cable (1 m): **936937**
- SPC cable (2 m): **965014**
- Measurement data loading software: **SENSORPAK**
The Digimatic connecting cable doubles as a RS Link cable.



Refer to the Linear Gage Catalog (No. E13007) for more details.

Function

- External Control (Zero-set, Preset etc.)
- Direction switch
- Error display
- Tolerance judgment output
- Diverse data output (RS-232C, BCD, Segment)
- Peak measurement
Maximum value, minimum value, runout, and differential measurement between two gages
Addition, averaging, maximum value, minimum value, and maximum width

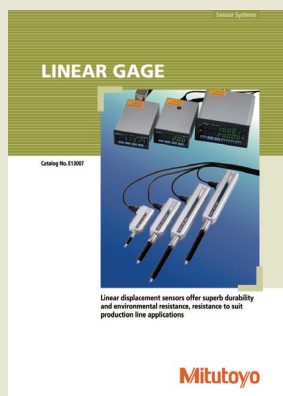
Optional Accessories

- I/O output connector (with cover): **02ADB40**
 - ID-EV External display unit: **02ADD400**
 - SPC cable (0.5 m): **02ADD950**
 - SPC cable (1 m): **936937**
 - SPC cable (2 m): **965014**
 - AC adapter: **357651**
 - AC cable (Japan): **02ZAA000***
 - AC cable (USA): **02ZAA010***
 - AC cable (EU): **02ZAA020***
 - AC cable (UK): **02ZAA030***
 - AC cable (China): **02ZAA040***
 - AC cable (Korea): **02ZAA050***
 - Terminal connecting cable: **02ADD930***
- * Required when using AC adapter.

SENSORPAK



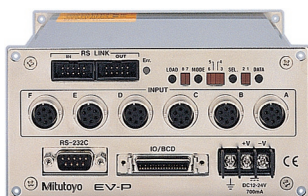
Refer to page G-20 for more details.



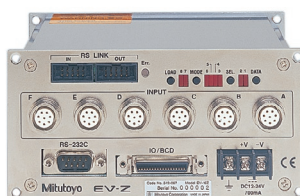
Refer to the Linear Gage Catalog (No. E13007) for more details.

EV-16P/Z/D Counter SERIES 542 — 6-channel, No-display Type

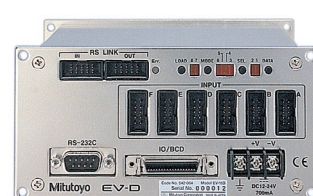
- Up to six gages can be connected to one unit, extendable up to 10 units (60 gages at maximum) using the RS Link function* to facilitate the configuration of a multi-point measurement system.
- * Refer to "Quick Guide to Precision Measuring Instruments" on page G-23 for details of the RS link.
- A range of output modes to choose from: I/O output for tolerance judgment and segment output, BCD data output and RS-232C output are available.
- Other than normal measurement, peak measurement or differential measurement between gages can be performed.



542-063



542-067



542-064

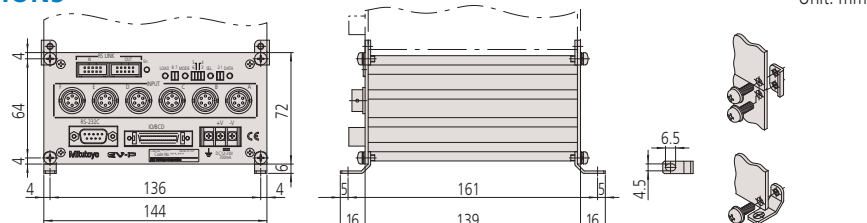
SPECIFICATIONS

Order No.	542-063	542-067	542-064
Number of input channels	6		
Maximum input frequency	1.25 MHz (2-phase square wave), response speed depends on gage specification. Max. counting speed: 5 MHz	1.25 MHz (2-phase square wave), response speed depends on gage specification. Max. counting speed: 5 MHz	Response speed depends on gage specification.
Quantizing error	±1 count		
Resolution () indicates maximum display range	10 μm (±999999.99 mm)/0.0005 in (±9999.9995 in) 5 μm (±999999.995 mm)/0.00005 in (±999.99995 in) 0.5 μm (±9999.9995 mm)/0.00005 in (±99.99995 in)* [Parameter set]	10 μm (±999999.99 mm)/0.0005 in (±9999.9995 in) 5 μm (±999999.995 mm)/0.00005 in (±999.99995 in) 1 μm (±99999.999 mm)/0.00005 in (±99.99995 in) 0.5 μm (±9999.9995 mm)/0.00005 in (±9.999995 in) [Parameter set]	Depends on gage specification.
Error message	Overspeed, gage error etc.		
External display	Dedicated external display unit D-EV (optional) can be connected.		
Number of input switches	4		
Function of input switches	Measurement mode switching, parameter setting		
Input/output	Tolerance judgment output	1 to 6 channels (L1, L2, L3), open-collector	
	BCD output	Parallel BCD output (positive/negative-true logic), open-collector	
	Segment output	Function to set on only the terminals corresponding to the counting values, open-collector	
	Control output	Normal operation signal (NOM), open-collector	
Interface	Control input	Output channel designation (segment, in the BCD mode), presetting, peak value clear, range changeover (at segment output), holding counting value open-collector or no-voltage contact signal (with/without contact point)	
	RS-232C	Measurement data output and control input EIA RS-232C-compatible Use cross cables for home position, DTE (terminal definition). Max. connecting unit: 10	
Rating	RS link	Connecting cable length: Max. 10 m (sum of link cable length) Data transfer time: 1sec./60ch (when transmission rate is 19200 bps)	
	Power supply voltage	12 to 24 V DC, terminal block (M3 screw)	
Operating temperature (humidity) range	Power consumption	8.4 W or less (700 mA max.) Ensure at least 1 A is available per unit.	
	Storage temperature (humidity) range	0 to 40 °C (RH 20 to 80 %, non-condensing)	
Mass	Approx. 910 g	Approx. 910 g	Approx. 830 g
Standard Accessories	Fixing foot (4), connecting bracket (4), fixing screw M4x12 (8)		
Applicable gage head	LGF, LGK, LGB, LG Models with reference point mark, sine wave output type are excluded.	LGF with reference point mark	LGD, LGS

*1: Available when using D-EV.

DIMENSIONS

542-063



Unit: mm

Linear Gages

Ideal for integration into harsh environments such as automation applications

D-EV Display Unit Display unit for the EV counter

- Allows set-up of EV counter without a personal computer or other equipment.
- Able to display each gage measurement value and GO/NG judgment result, total GO/NG judgment result for all gages, setting details, and errors.



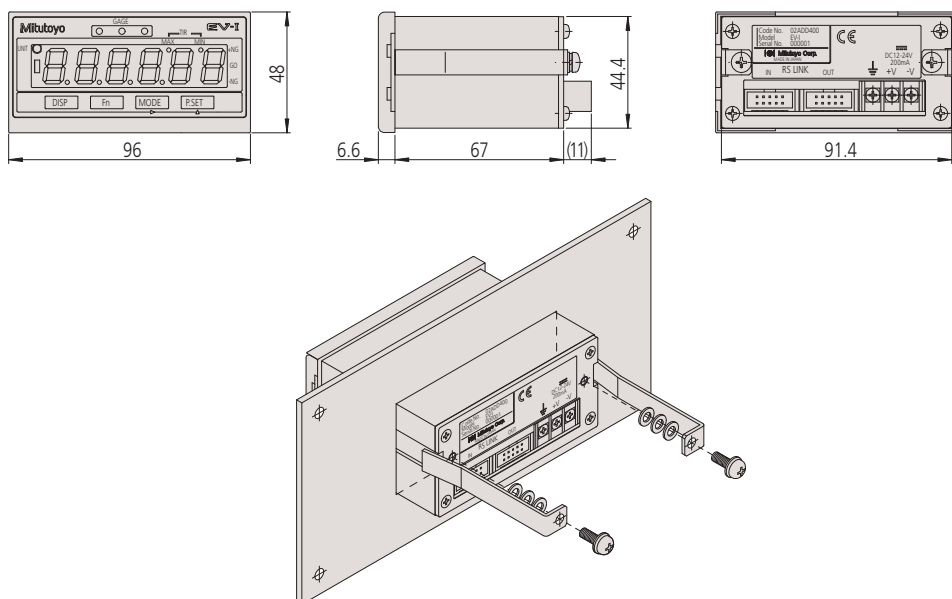
02ADD400

SPECIFICATIONS

Order No.	02ADD400
Number of connections	1 EV counter per unit
Number of digits	Sign plus 6 digits (8 digits internal to EV counter)
LED display	Channel display (also for judgment result display): 3 (3-color LED) Measurement mode display (current data, maximum value, minimum value, runout): 2 Status display: 1 (2 colors)
Operation switches	4
Function of operation switch	Channel switching, measurement mode switching (current data, maximum value, minimum value, runout), parameter setting, presetting, tolerance setting
Input/output	RS Link connectors: 1 each for IN, OUT
Error message	Overspeed, gage error etc.
Power supply	Terminal block (M3 screw), 12 to 24 V DC, 200 mA
Operating temperature (humidity) range	0 to 40 °C (RH 20 to 80 %, non-condensing)
Storage temperature(humidity) range	-10 to 50 °C (RH 20 to 80 %, non-condensing)
External dimensions	96(W)×48(H)×84.6(D) mm
Mass	150 g

DIMENSIONS

Unit: mm



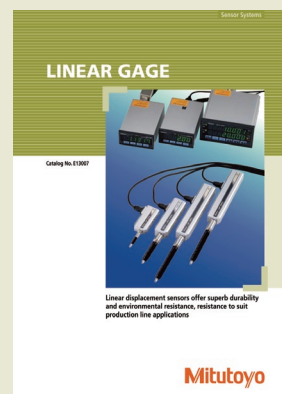
Optional Accessories

- SPC cable (0.5 m): **02ADD950***1
- SPC cable (1 mm): **936937***1
- SPC cable (2 m): **965014***1
- AC adapter: **357651**
- AC cable (Japan): **02ZAA000***2
- AC cable (USA): **02ZAA010***2
- AC cable (EU): **02ZAA020***2
- AC cable (UK): **02ZAA030***2
- AC cable (China): **02ZAA040***2
- AC cable (Korea): **02ZAA050***2

- Terminal connecting cable: **02ADD930***2

*1: Required when connecting with **EV-16P/D/Z**.

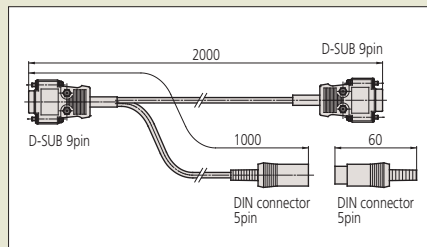
*2: Required when using AC adapter.



Refer to the Linear Gage Catalog (No. E13007) for more details.

Optional Accessories

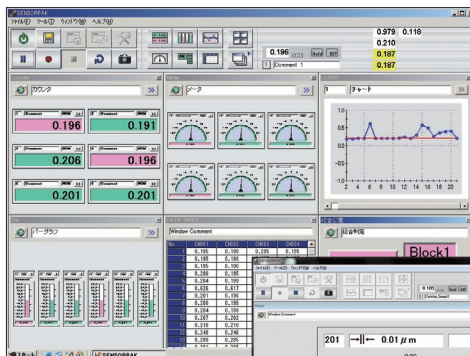
- I/O cable: **21HZA137**



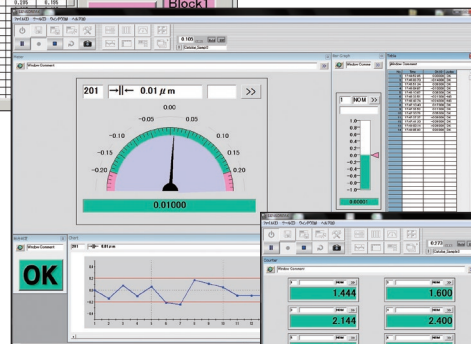
Communication cable (1 pc.)
Connection between PC and counter: 2 m
Input/output cable: 1 m
Input/output connector (1 pc.)

SENSORPAK Measurement data loading software for EH, EV, VL

- This software facilitates loading measurement data onto a personal computer from a linear gage counter with RS-232C output (EH, EV), with USB output (EH), or from a Litematic display (VL).
- 60 channels (max.) of measurement data can be processed.
- Arithmetical calculations and maximum width calculations can be performed using the measurement data.
- Exporting measurement data into MS-Excel format is supported.
- Real time graphical display by means of bar-graph or meter is provided.



Measurement screen



Meter screen

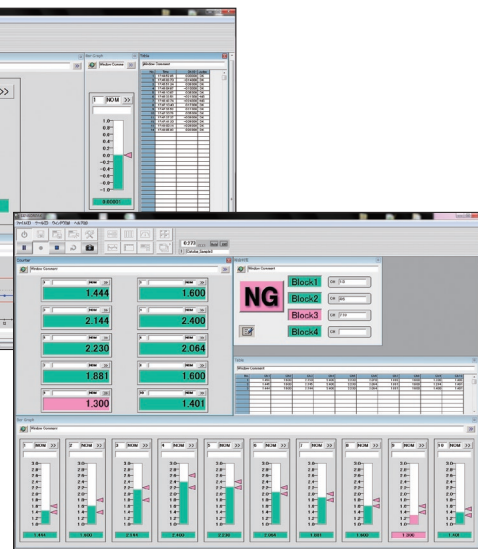
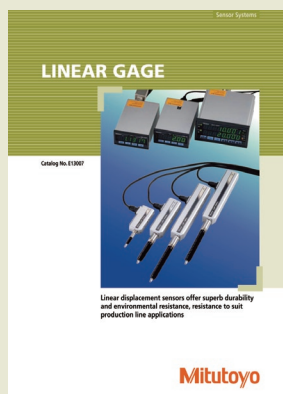


Chart screen

SPECIFICATIONS

Order No.		02NGB072
Product Configuration		Program disk (CD), license key, operation manual
Compatible devices		Mitutoyo RS-LINK compatible devices <ul style="list-style-type: none"> • LGH Series (USB, RS-232C) • EH counter (USB, RS-232C) • EV counter (RS-232C) • Litematic VL (RS-232C)
Connecting cable		Separately prepare the cable with the following specifications: Accessory <ul style="list-style-type: none"> • RS-232C connection: I/O cable (21HZA137)*1 Commercial product <ul style="list-style-type: none"> • USB connection: USB cable (type A - type B) • RS-232C connection: RS-232C cross cable*1
Number of connectable gages		Max. 60 units (when 10 units of EV counter for linear gage are connected via RS-Link)
Functions	Display*2	Display format: counting, bar graph, indicator, chart, and table Display cycle: 1s (when 60 gage units are connected, 1-window display, and no Excel output)
	Calculation	Calculation (up to 30 items) between designated gages is available. Calculation items: Sum, difference, total, average, maximum, minimum, range (maximum-minimum), calculation with a constant
	Tolerance judgment	Per item: Displays the result in colors (3-step tolerance: red/green/red; 5-step tolerance: red/yellow/green/yellow/red) Total judgment: Displays in colors (red/green) by monitoring the multiple gages and calculation result
	Recording*2	Items: channel values, calculation result, tolerance judgment, total tolerance judgment, timestamp Max. number of records: 60000 for software recording (with 6 gages connected); up to 9000 (with 60 gages connected) Output function: Direct output to Excel, CSV file output (compatible with MeasurLink) Recording trigger: key, timer, external TRG
	Input/output*3	Input: TRG for recording (HOLD) Output: Total tolerance judgment result
System Environment		DOS/V compatible PC environment CPU: Pentium4 2 GHz or more, Memory: 2 GB or more, Hard disk: 2 GB or more free space OS: Windows7 (32bit/64bit), Windows 8.1 (32bit/64bit), Windows 10 (64bit)

- *1: If the PC is not equipped with an RS-232C port, please contact the nearest Mitutoyo sales office / service center.
*2: Display cycle and the maximum number of records differ depending on the environment (specification of PC, number of connected gages, display format and communication setting).
*3: With use of the I/O cable (accessory). When an I/O cable is not used, the I/O connector of the counter alternatively functions. (Refer to the user's manual of the counter in use.)



Refer to the Linear Gage Catalog (No. E13007) for more details.

Linear Gages

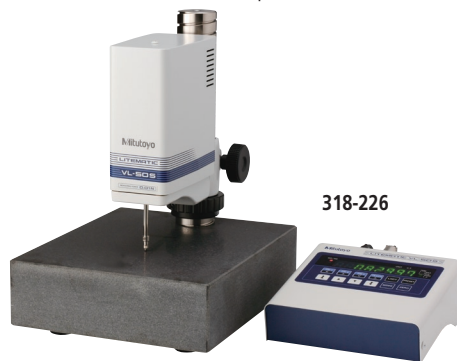
Ideal for integration into harsh environments such as automation applications

VL-50-B/50S-B Litematic SERIES 318 — High-accuracy/resolution Measuring Machine

- The Litematic is primarily designed for measuring easily-deformed workpieces and high-precision parts using an extra-low measuring force of 0.01 N.
- 0.15 N and 1 N models are available as factory-installed options if a greater measuring force is required.
- The motor-driven spindle moves up/down and stops when the contact point touches the workpiece. Then the maximum, minimum and runout values are measured under a constant force.
- High resolution of 0.01 μm , and wide measuring range of 50 mm.
- Measuring system VL-50-B, integrated display type, and VL-50S-B, a separate display type, are available.
- The measuring table supplied with VL-50-B is ceramic, which is corrosion free, for easier maintenance and storage.
- The spindle is made of low thermal expansion material.
- Motor life is approximately 100,000 operations, after which replacement is advisable. This machine is not suitable for continuous use, such as on a production line.



318-221



318-226

SPECIFICATIONS

Order No.	318-221*	318-222*	318-223*	318-226*	318-227*	318-228*
Model	VL-50-B	VL-50-15-B	VL-50-100-B	VL-50S-B	VL-50S-15-B	VL-50S-100-B
Measuring range	0 to 50 mm (0 to 2 in)					
Resolution	0.01/0.1/1.0 μm (0.000005 in/0.000005 in/0.00005 in)					
Display unit	8 digits / 14 mm (0.6 in) character height (without signs)					
Scale type	Reflection type linear encoder					
Stroke	51.5 mm (2 in) (when using a standard contact point)					
Measuring accuracy (20 °C)*1	(0.5+L/100) μm L=arbitrary measuring length (mm)					
Accuracy guaranteed temperature*2	20 \pm 1 °C					
Repeatability*1	σ =0.05 μm					
Measuring force*1	0.01 N	0.15 N*3	1 N*3	0.01 N	0.15 N*3	1 N*3
Feed speed	Approx. 2 mm/s (0.08 in/s) or 4 mm/s (0.16 in/s) (changeable by parameter)					
Fast feed	Approx. 8 mm/s (0.3 in/s)					
Contact point	ϕ 3 mm carbide tipped (fixing screw: M2.5 (P=0.45)×5), standard contact point: 901312					
Measuring table	ϕ 100 (ceramic, grooved, removable)					
Input	Foot switch input (when optional foot switch is used) External Control					
Output	Digimatic output / RS-232C output (changeable by parameter)					
Rating	Power supply: 85 to 264 V AC (depends on AC adapter) Power consumption: Max. 12 W (12 V, 1 A)					
Standard Accessories	AC adapter: 357651 , Power cable: 02ZAA000 , Grounding wire: 934626 , AC cable (Japan): 02ZAA000* , AC cable (USA): 02ZAA010* , AC cable (EU): 02ZAA020* , AC cable (UK): 02ZAA030* , AC cable (China): 02ZAA040* , AC cable (Korea): 02ZAA050* Hex wrench (2 pcs, for fixing contact point and for removing fixing bracket)					

*1: Normal measurement using standard contact point.

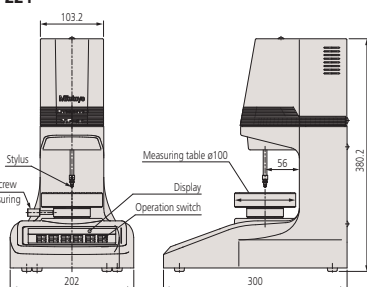
*2: Under less temperature change, and hot or cold direct air flow should be avoided.

*3: 0.15 N, 1 N types are factory-installed option.

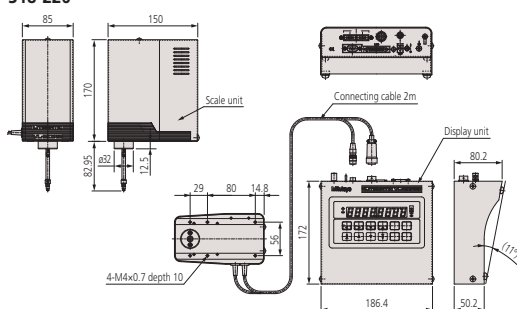
Note: To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for BS, F for SAA, K for KC, C and No suffix are required for PSE.

DIMENSIONS

318-221



318-226

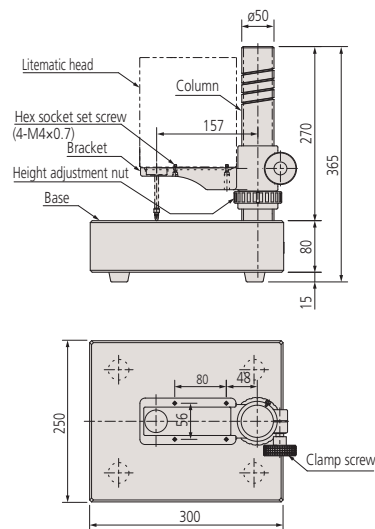


Unit: mm

Optional Stand for VL-50S-B

957460

Unit: mm



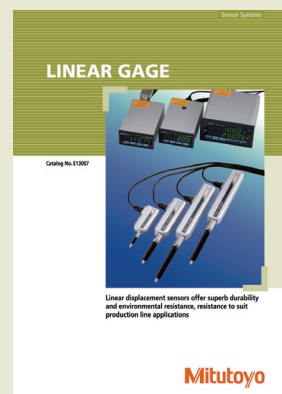
Optional Accessories

- Foot switch: **937179T**
- Dedicated stand: **957460***4
- SPC cable (1 mm): **936937***5
- SPC cable (2 m): **965014***5
- VL weight part: **02AZE375***6
- Recommended spare contact points:
Shell type: **101118** (Approx. 0.02 N)
Carbide tipped spherical contact point, ϕ 7.5:
120059 (Approx. 0.03 N)
Carbide tipped spherical contact point, ϕ 10.5:
120060 (Approx. 0.06 N)
Carbide tipped needle contact point, ϕ 0.45:
120066 (Approx. 0.01 N)

*4: Only **VL-50S** is available.

*5: Refer to page G-23 for details of the RS link.

*6: Not applicable to **318-223** and **318-228**



Refer to the Linear Gage Catalog (No. E13007) for more details.