

BL

BL57-RE / BL57-NE
(with/without reference point)

High accuracy, high response linear scale with signal pitch of 400 nm.
Supports a wide range of applications and offers the highest performance in its class.



- BL57-RE
- Achieves a measuring length of up to 1,060 mm upon request, and offers the highest-level response speed and accuracy in its class.
 - Signal pitch : 400 nm
 - Built-in reference point.
- 〈Applications〉 Precision measuring equipment, precision stages.

- BL57-NE
- Compact size makes machine integration much easier
 - Theoretically unaffected by changes in temperature, humidity, air pressure and air movement. Unparalleled measuring stability achieved by use of low expansion glass
 - Signal pitch : 400 nm
- 〈Applications〉 High-accuracy microscopes, measurement equipment.

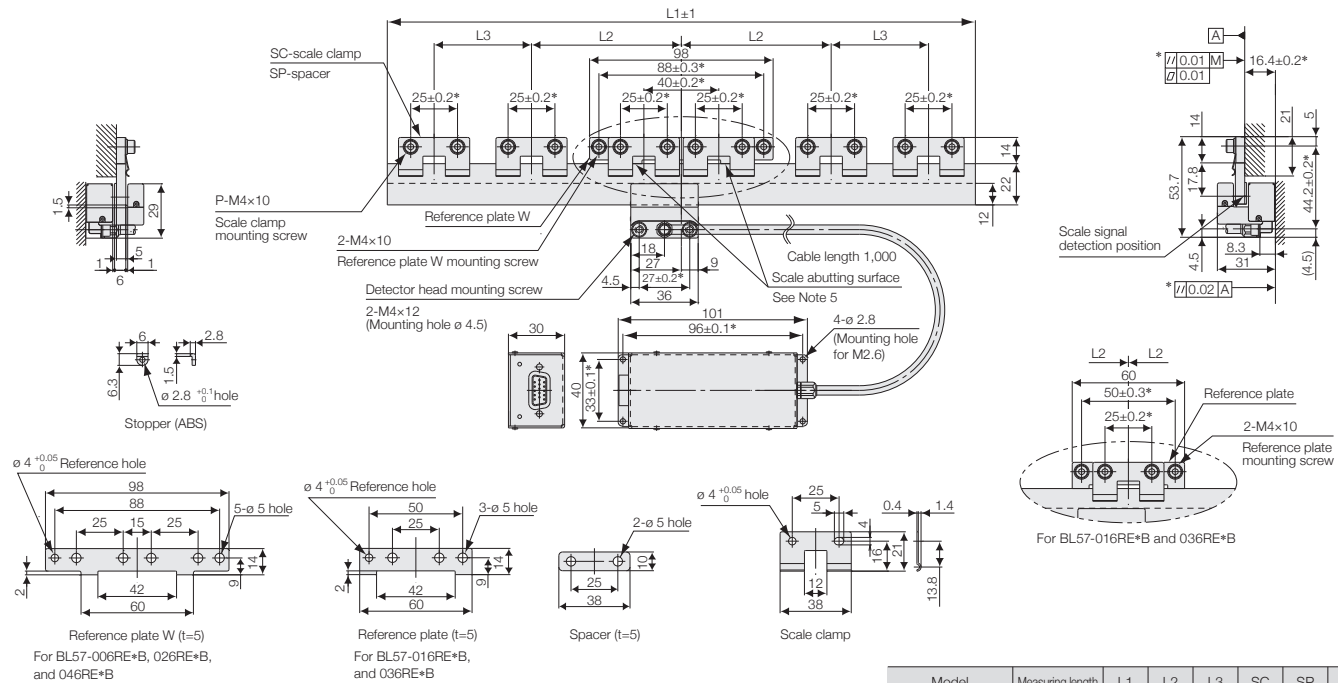
Type example : BL57-106REFB

B	Soda-lime glass
C	Low expansion glass
A	4-split A/B quadrature output
F	4-split 8-split A/B quadrature output
G	20-split 40-split A/B quadrature output
H	Analog 1 Vp-p output
E	Open type scale
R	with reference point; N : without reference point
	Measuring length

*Contact us directly for connection with BD700

External Dimensions

● BL57-xxxRE+B (Measuring length : 60/160/260/360/460 mm)

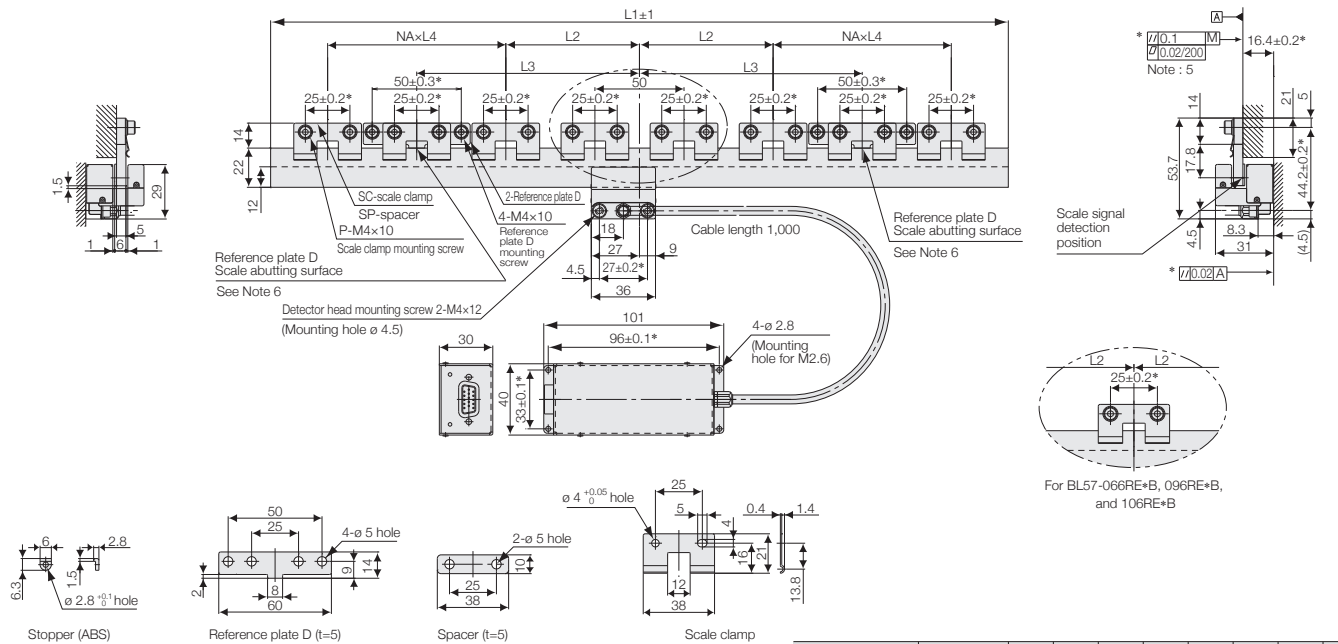


Note 1 : The items marked by an asterisk indicate the machining dimensions on the mounting surface.
Note 2 : The surface properties of the scale mounting surface is Rmax = 6.3S.
Note 3 : The surface properties of the detector head mounting surface is Rmax = 12.5S.
Note 4 : "M" refers to the machine guide.
Note 5 : When mounting the reference plate (reference plate W), adjust the plate so that the parallelism between the corresponding scale abutting surface and the machine guide is 0.01 mm or less.

Model	Measuring length	L1	L2	L3	SC	SP	P
BL57-006RE+B	60	96	—	—	2	—	4
BL57-016RE+B	160	196	75	—	3	2	6
BL57-026RE+B	260	296	120	—	4	2	8
BL57-036RE+B	360	396	75	75	5	4	10
BL57-046RE+B	460	496	120	75	6	4	12

Unit : mm

● BL57-xxxRE+B (Measuring length : 560/660/760/860/960/1,060 mm)



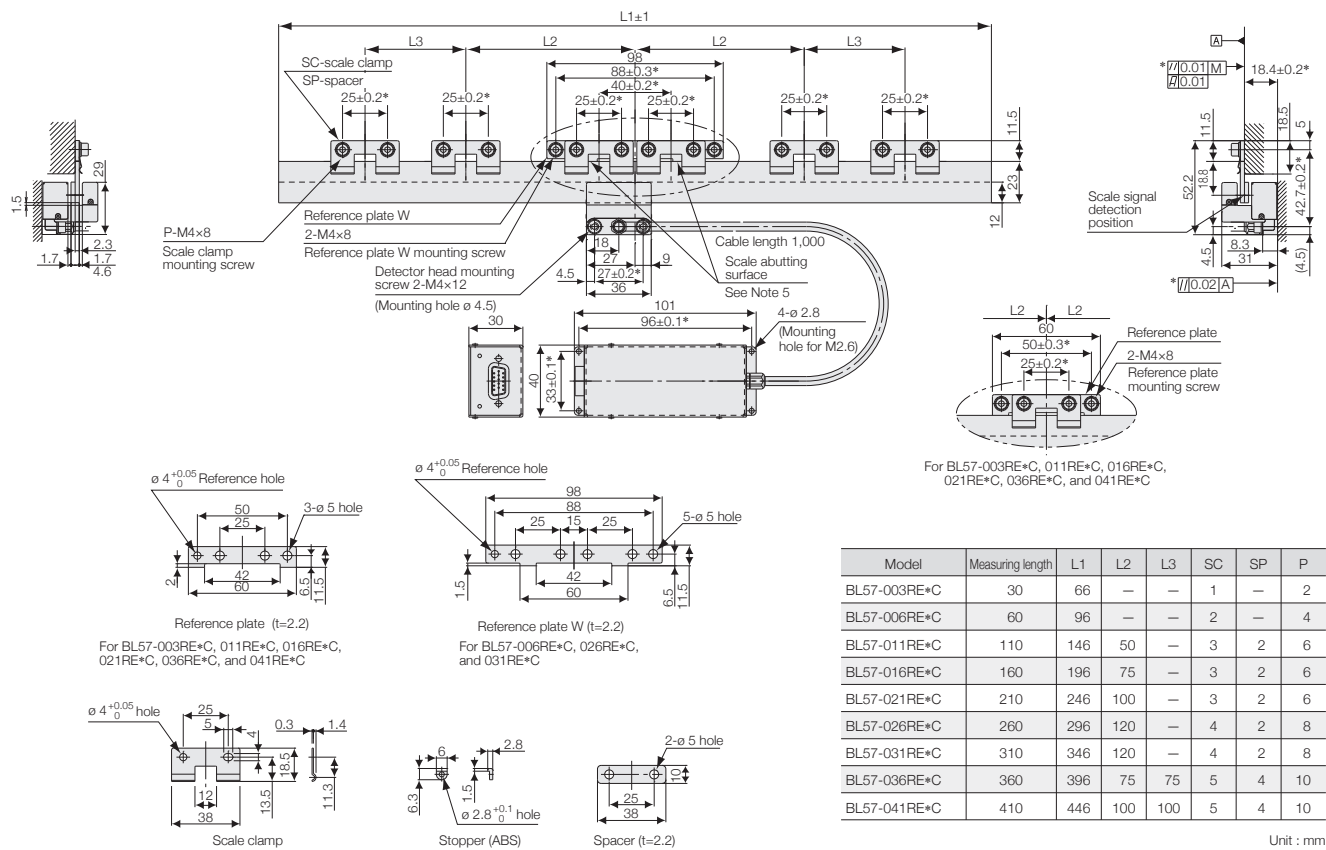
Note 1 : The items marked by an asterisk indicate the machining dimensions on the mounting surface.
Note 2 : The surface properties of the scale mounting surface is Rmax = 6.3S.
Note 3 : The surface properties of the detector head mounting surface is Rmax = 12.5S.
Note 4 : "M" refers to the machine guide.
Note 5 : The flatness of the scale mounting surface must be within 0.02 over the range of 7 (width) x 200 (length) mm.
Note 6 : Mount and adjust the paired reference plates (D) so that their reference surfaces have a parallelism of 0.1 or less with respect to the machine guide.

Model	Measuring length	L1	L2	L3	L4	NA	SC	SP	P
BL57-056RE+B	560	596	100	175	75	2	8	6	16
BL57-066RE+B	660	696	75	225	75	3	9	7	18
BL57-076RE+B	760	796	100	250	75	3	10	8	20
BL57-086RE+B	860	896	100	250	75	4	12	10	24
BL57-096RE+B	960	996	75	300	75	5	13	11	26
BL57-106RE+B	1,060	1,096	75	300	75	6	15	13	30

Unit : mm

External Dimensions

●BL57-xxxRE+C (Measuring length : 30/60/110/160/210/260/310/360/410 mm)



Note 1 : The items marked by an asterisk indicate the machining dimensions on the mounting surface. Note 2 : The surface properties of the scale mounting surface is Rmax = 6.3S.

Note 3 : The surface properties of the detector head mounting surface is Rmax = 12.5S. Note 4 : "M" refers to the machine guide.

Note 5 : When mounting the reference plate (reference plate W), adjust the plate so that the parallelism between the corresponding scale abutting surface and the machine guide is 0.01 mm or less.

Main Specifications [BL57-RE]			
Model	BL57-xxxREF	BL57-xxxREG	BL57-xxxREH
Output signal form	A/B quadrature output		Analog output
Detection principle	Diffraction grating scanning system		
Scale length (Low expansion glass)	Measuring length	30, 60, 110, 160, 210, 260, 310, 360, 410 mm	
	Overall length	Measuring length + 36 mm	
	Max. travel	Measuring length + 10 mm (5 mm on each side)	
Scale length (Soda-lime glass)	Measuring length	60, 160, 260, 360, 460, 560, 660, 760, 860, 960, 1,060 mm	
	Overall length	Measuring length + 36 mm	
	Max. travel	Measuring length + 10 mm (5 mm on each side)	
Scale accuracy (at 20 °C)	±0.5 μm (30 to 160 mm) / ±1.0 μm (210 to 360 mm) / ±1.5 m (410 mm or more)		
Grating pitch	1.6 μm		
Signal pitch	0.4 μm (400 nm)		
Output signal	Differential (compliant with EIA-422)		Differential (only reference point output are compliant with EIA-422)
Resolution	0.1/0.05 μm (selectable)	0.02/0.01 μm (selectable)	0.4 μm (1 Vp-p)
Reference point accuracy (at 20 °C)	±0.4 μm (depending on machine movement accuracy)		
Reference point position	User definable (within the range of measuring length)		
Reference point detection direction	Single direction synchronous reference point		
Thermal expansion coefficient	Low expansion glass : -0.7×10 ⁻⁶ /°C, Soda-lime glass : 8×10 ⁻⁶ /°C		
Light source	Semiconductor laser : Wavelength 790 nm, Output 6 mW		
Radiation power	JIS Class 1 equivalent, DHHS Class 1 equivalent		
Operating temperature	0 to +40 °C (No condensation)		
Storage temperature	-10 to +50 °C		

Model	BL57-xxxREF	BL57-xxxREG	BL57-xxxREH
Max. response speed	1,500 mm/s (0.1 μm) 650 mm/s (0.05 μm)	300 mm/s (0.02 μm) 120 mm/s (0.01 μm)	3,000 mm/s (Note1)
Alarm	Minimum phase difference : 38 ns		Minimum phase difference : 38 ns
Head cable	Cable length : 1 m (Note 4) Bending radius : Static : 10 mm		
Output cable length	15 m Max (Note 2) (to the electronic control section)	15 m Max (Note1) (Note 2)	
Power supply (Note 3)	+5 V (±5%)		
Power consumption	450 mA (no load), 600 mA (with 120 Ω termination)		
Vibration resistance	100 m/s ² (50 to 2,000 Hz)		
Impact resistance	200 m/s ²		

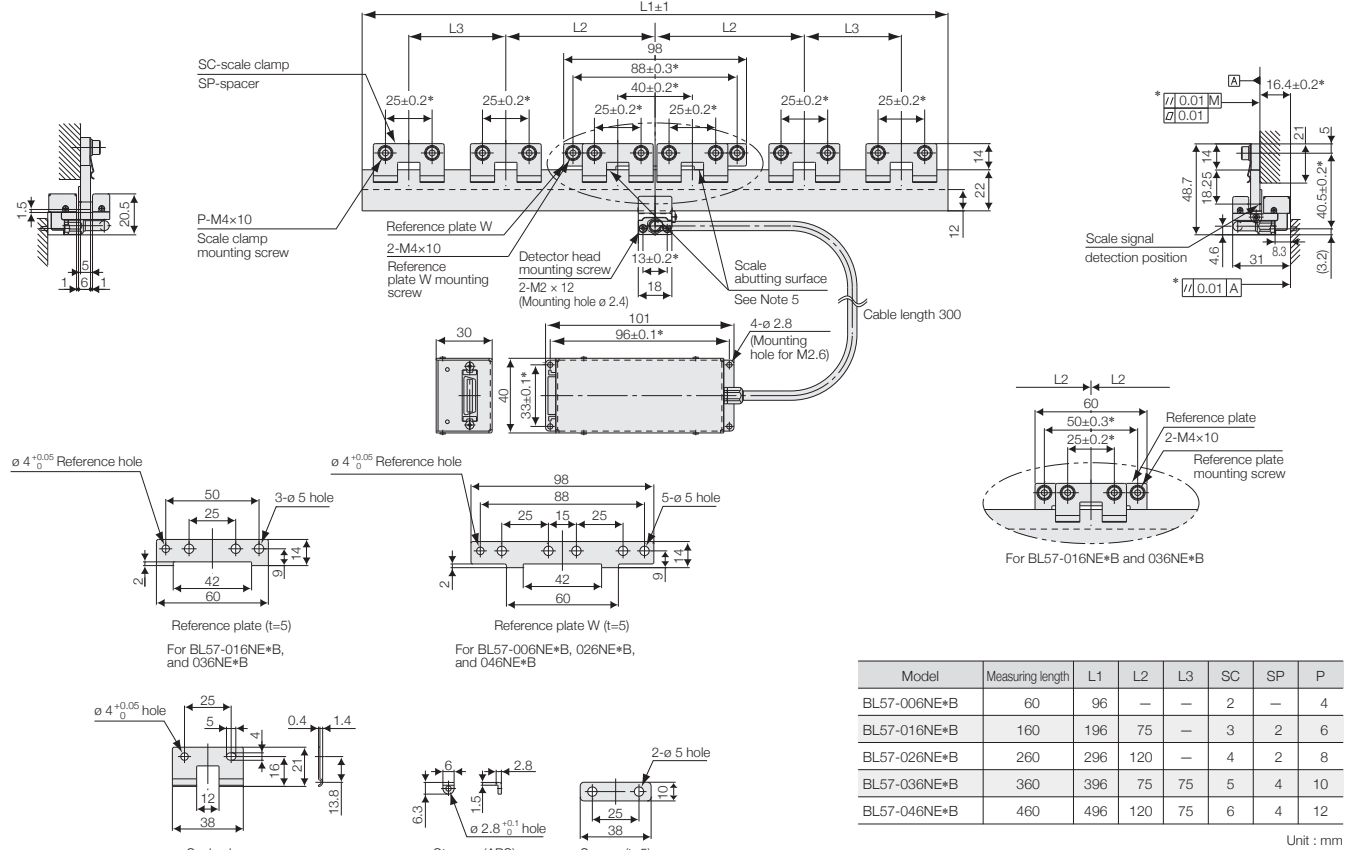
Note 1 : Max. response speed become limited by output cable length (the part beyond the interface box).

Cable length (m)	Max. response speed (mm/s)
3	3,000
9	2,330
15	1,660

Note 2 : A power supply line longer than 10 m is incompatible with EN61000-6-2. Take surge protection measures upon use.
Note 3 : Satisfy the required specifications at the connector input section.
Note 4 : Special models can support up to 3 m. However, the max. response speed is limited depending on the cable length. (In a 3 m cable, the max. response speed is two-thirds that of a 1 m cable.)
Note 5 : Special models can support a measuring length of 420 mm to 560 mm by low expansion glass and 1,070 mm to 1,260 mm by soda-lime glass.
Magnescale reserves the right to change product specifications without prior notice.

External Dimensions

●BL57-xxxNE+B (Measuring length : 60/160/260/360/460 mm)

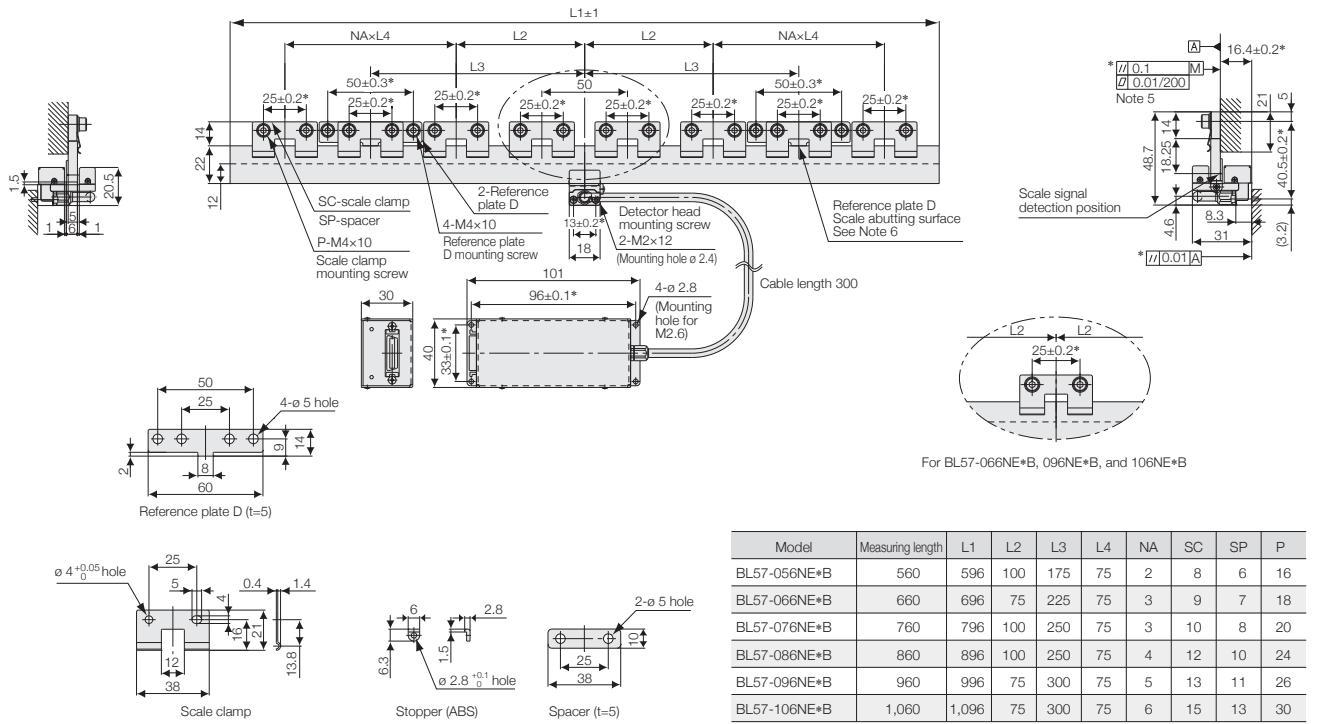


Note 1 : The items marked by an asterisk indicate the machining dimensions on the mounting surface. Note 2 : The surface properties of the scale mounting surface is Rmax = 6.3S.

Note 3 : The surface properties of the detector head mounting surface is Rmax = 12.5S. Note 4 : "M" refers to the machine guide.

Note 5 : When mounting the reference plate (reference plate W), adjust the plate so that the parallelism between the corresponding scale abutting surface and the machine guide is 0.01 mm or less.

●BL57-xxxNE+B (Measuring length : 560/660/760/860/960/1060 mm)



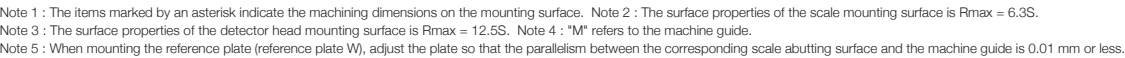
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Note 3 : The surface properties of the detector head mounting surface is Rmax = 12.5S. Note 4 : "M" refers to the machine guide.

Note 5 : The flatness of the scale mounting surface must be within 0.02 over the range of 7 (width) × 200 (length) mm

Note 6 : Mount and adjust the paired reference plates (D) so that their reference surfaces have a parallelism of 0.1 or less with respect to the machine guide.

● BL57-xxxNE*C (Measuring length : 30/70/120/170/220/270/320/370/420 mm)



Model		BL57-xxxNEA	BL57-xxxNEF	BL57-xxxNEG	BL57-xxxNEH
Alarm		High-impedance A/B quadrature output signals when signal level error detected.	High-impedance output when max. response speed exceeded or signal level error detected.		None
Head cable	Cable length	300 mm			
	Bending radius	Static : 10 mm			
Output cable length		15 m Max (Note 2) (to the electronic control section)			15 m Max (Note 1) (Note 2)
Power supply (Note 3)		+5 V (+10 %-5 %)	+5 V (±5%)		
Power consumption		200 mA (no load) 250 mA (with 120 Ω termination)	290 mA (no load) 350 mA (with 120 Ω termination)		250 mA (no load,with 120 Ω termination)
Vibration resistance		100 m/s ² (50 to 2000 Hz)			
Impact resistance		200 m/s ²			

Cable length (m)	Max. response speed (mm/s)
3	3,000
9	2,330
15	1,660

Note 2 : A power supply line longer than 10 m is incompatible with EN61000-6-2.
Take surge protection measures upon use.

Note 3 : Satisfy the required specifications at the connector input section.

Magnescape reserves the right to change product specifications without prior notice.

Contact us for more information



- Ultimate vacuum of 10^{-5} Pa class.
- Emitted gas flow rate of 10^{-6} Pa·m³ class
- Signal pitch 0.4 μm
- Built-in reference point.

*1 : For dimensions of head, scale, and I/F box, see the page on BL57-RE. *2 : Cable length in vacuum and in atmosphere (L1 + L2) is up to 3 m.
*3 : Output cable is not included in the product.

