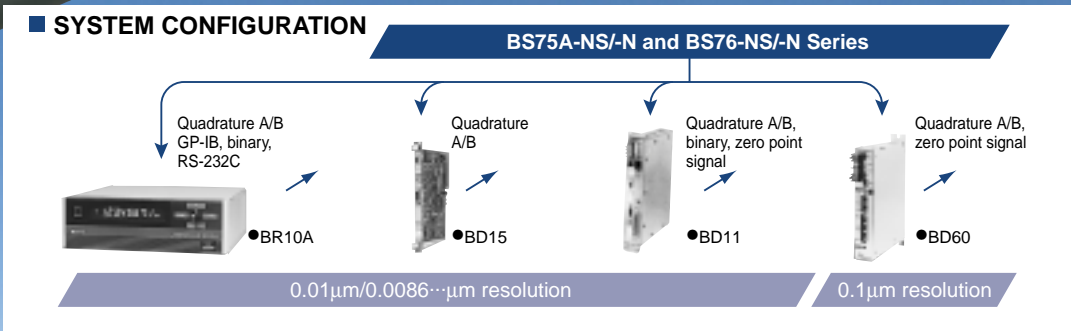
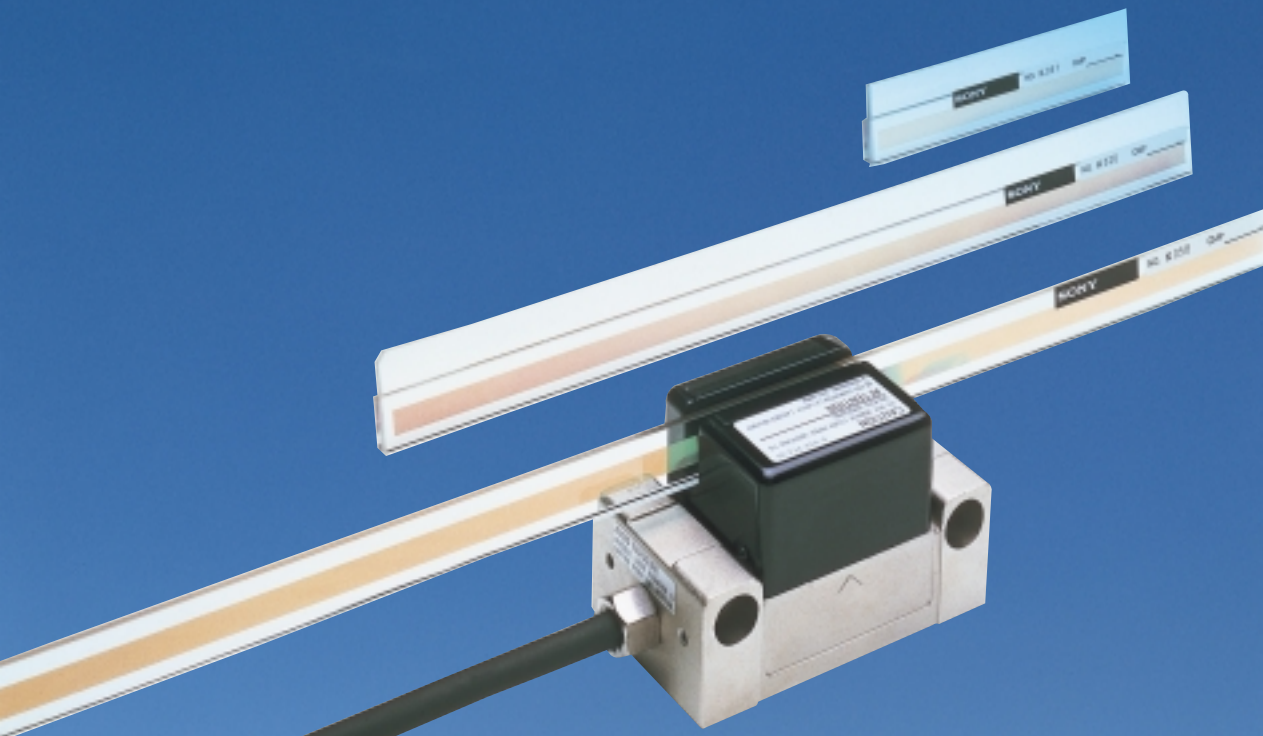


LASERSCALE™		
Scale	Display	Detector
<b>BS75A/76</b>	BR10A	BD11/15 BD60



The BS75A and BS76 Series are high-accuracy laser scales with a low expansion coefficient that provides reliable, high-precision measuring with a resolution selectable from 0.01 µm, 0.05 µm and 0.1 µm.

- Comparable to the laser interferometer in accuracy and resolution.
- Accuracy: 0.05 + 0.2L/100 (µm p-p) or less (BS75A/76-NS Series)  
0.1 + 0.4L/100 (µm p-p) or less (BS75A/76-N Series)  
L = measuring length (mm)
- The scale glass used has an expansion coefficient of  $-0.7 \times 10^{-6} \text{C}^{-1}$
- Selectable accuracy and resolution according to the application.
- Resolution: 0.01 µm (when used with BR10A/BD11)  
0.0086... µm (when used with BR10A/BD15)  
0.1 µm (when used with BD60)
- Measuring length: 30 mm to 410 mm /1.2" to 16.1" (covered by 9 models)
- As easy to handle as Magnescale (installation/adjustment) and just as reliable.
- Little affected by disturbed air and changing atmospheric pressure.
- Usable in vacuum of up to  $10^{-5}$  Pa; Uses vacuum resistant material.
- Various interface modes.
- Major applications
  - Semiconductor manufacturing machines, inspection equipment.
  - Precision machine tools.
  - Precision measuring tools, testing instruments.

# Specifications

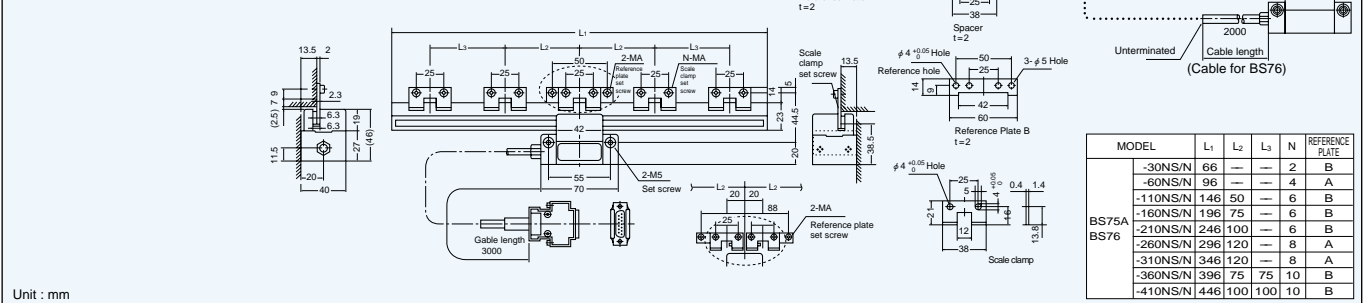
## ■ BS75A/76 scale unit

Model	BS75A		BS76	
	-30NS to -410NS	-30N to -410N	-30NS to -410NS	-30N to -410N
Measuring length (L)	30/60/110/160/210/260/310/410 (mm) 1.2/2.3/4.3/6.2/8.2/10.2/12.2/16.1 (inch)			
Overall length	L + 36 mm/1.4"			
Max. travel	L + 10 mm/0.39" (5 mm/0.20" on both ends)			
Accuracy (at 20°C/68°F) (L:mm)	0.05+0.2L/100 (μm p-p) or less	0.1+0.4L/100 (μm p-p) or less	0.05+0.2L/100 (μm p-p) or less	0.1+0.4L/100 (μm p-p) or less
Return error	0.02 μm (with 0.01 μm-resolution) 0.05 μm (with 0.05 μm-resolution)			
Repeatability	0.01 μm (2σ) (with 0.01 μm-resolution) 0.05 μm (2σ) (with 0.05 μm-resolution)			
Expansion coefficient	-0.7 × 10 <sup>-6</sup> °C <sup>-1</sup>			
Light source	Semiconductor laser			
Detection method	Diffraction grating scan			
Use in vacuum	—		Possible up to 10 <sup>-5</sup> Pa	
Design	Exposed scale			
Operating temperature	+10°C to 30°C/+50°F to 86°F (condensation not allowed)			
Storage temperature	-10°C to 50°C/+14°F to 122°F			
Cable length	3 m (standard)		2 m in vacuum 3 m in the atmosphere	
Mass	0.44/0.44/0.45/0.46/0.47/0.48/0.49/0.50/0.51 (kg) 0.97/0.97/0.99/1.01/1.04/1.06/1.08/1.10/1.12 (lbs)			

## ■ BR10A display unit

Model	BR10A			
	-1F11	-1F12	-1F13	-1F14
No. of display axes	1 axis			
Output resolution	0.0086 μm			
Display resolution	Switch selectable 0.01/0.05 μm and double counting			
Max. response speed	120 mm/s (4.7"/s)			
Display technology	VFD vacuum fluorescent display tube (white display) Minus sign and 8 digits, mode indication			
Display range	±999.99999 mm (±9.9999995") with 0.01 μm resolution			
Scale pitch compensation	Presetable 0.1379 □□□□			
Reset/Preset/Recall	Reset, preset, recall			
Alarm	1. Power interrupt 2. Max. response speed exceeded 3. Data backup error 4. Break in the head cable or head cable disconnected 5. Compensation value not set ("0000") Reset by resupplying power or RESET signal.			
Interface Standard	RS-232C (with pitch compensation → display value)	●	●	●
	Quadrature A/B phase (with pitch compensation)	●	●	●
	GP-IB (with pitch compensation → display value)	●	●	●
	Quadrature output (without pitch compensation)	●	●	●
	32-bit parallel binary output (with pitch compensation)	●	●	●
Power supply	100/110V AC ± 10%, 220/240V AC ± 10%, 50/60 Hz			
Power consumption	70 VA max.			
Operating temperature	0°C to 40°C/32°F to 104°F			
Storage temperature	-10°C to 50°C/14°F to 122°F			
Humidity	No condensation			
Dimensions mm (inch)	320 × 100 × 290 (12.6 × 3.9 × 11.4)			
Mass kg (lbs)	5.7 (12.6)			

## ■ Dimensions



Unit : mm

## ■ BD15/BD11 detector

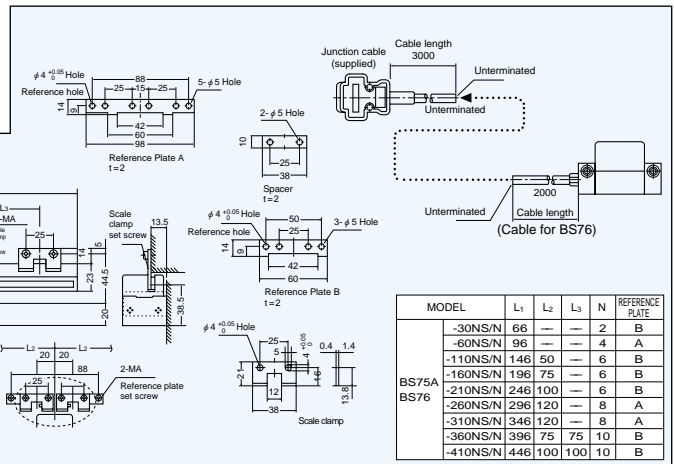
Model	BD15	BD11		
		-1F14	-1F16	-2F16
No. of connectable axes	1	2		
Resolution	0.0086...μm	0.01 μm		
Output pulse width	See Note below.	Min. 200 ns		
Max. response speed	120 mm/s (4.7"/s)	30 mm/s (1.1"/s)		
Quadrature A/B output (without pitch compensation)	●			
Quadrature A/B output (with pitch compensation)		●	●	●
32-bit parallel binary (with pitch compensation)		●	●	●
Zero point signal		●	●	●
Output circuit	Voltage-differential line driver SN75113 (or equivalent)			
Scale pitch compensation	—	Real-time scale pitch compensation		
Alarm	1. Max response speed exceeded. 2. Break in the head cable or head cable disconnected. 3. Compensation value not set ("0000"). Reset by resupplying power or RESET signal.			
Reset	Via external reset connector			
Power supply	+5V DC ± 5%, ±12V DC ± 5%	100V AC to 120V AC ± 10%, 220V AC to 240V AC ± 10%, 50/60Hz		
Power consumption	5.7 W max.	26 VA max.		
Operating/Storage temperature	0°C to 40°C/-10°C to +50°C 32°F to 104°F/14°F to 122°F	0°C to 50°C/-10°C to +60°C 32°F to 122°F/14°F to 140°F		
Dimensions mm (inch)	20 × 172.2 × 261.8 (0.79" × 10.31" × 6.78")	55 × 250 × 320 (2.2" × 9.8" × 12.6")		
Mass kg (lbs)	0.3 (0.66)	3.4 (7.50)		

\*For the details of output pulse width of BD15, consult your nearest distributor of ours.

## ■ BD60 detector

Model	BD60
No. of connectable axes	1
Resolution	0.1 μm
Output pulse width	Min. 200 ns
Max. response speed	300 mm/s (11.8"/s)
Output signal	● Quadrature output (pitch-compensated) ● Zero point signal output ● Alarm signal
Output circuit	Voltage-differential line driver SN75113 (or equivalent)
Scale pitch compensation	Preset 0.1379 □□□□ □ to □ CMP (as stated on the label)
Alarm	1. Scale's max. response speed exceeded. 2. Break in the head cable or head cable disconnected. 3. Compensation value not set ("0000"). Reset by resupplying power or RESET signal.
Reset	Resupply power, use RESET switch or external reset input.
Power supply	+24V* DC±10%
Power consumption	10W max.
Operating temperature	0°C to 50°C/32°F to 122°F
Storage temperature	-10°C to 60°C/14°F to 140°F
Dimensions mm (inch)	32 × 44 × 171 (1.26 × 1.73 × 6.7)
Mass kg (lbs)	0.8 (1.76)

\*For +12V/+5V operation, consult your nearest distributor of ours.



• The specifications and appearances are subject to change without prior notice.

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