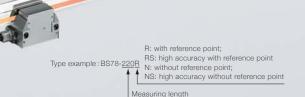
BS78 (with/without reference point)

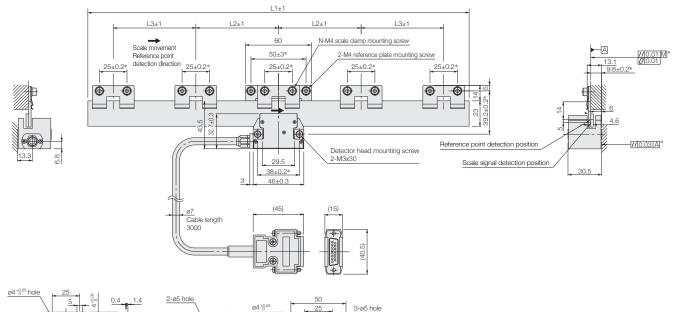
High-speed and high-resolution, while maintaining stable, ultraprecision measuring. Ideal for precision stages, semiconductor inspection/manufacturing systems, and ultraprecision processing machines.

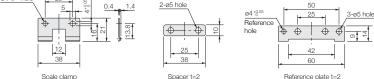


- High-resolution scale with signal pitch of approx. 138nm, outperforming light wave interferometer systems
- High stability, unaffected by humidity, air pressure and air disturbances
- Reference point accuracy : ±0.1µm
- Scale accuracy: ±0.04µm (measuring length: 40 mm)
- Non-contact design eliminates return error.
- Special non-magnetic and vacuum-compatible models available
- Using low expansion glass: -0.7 x 10⁻⁶/°C (measuring length: 10 to 420 mm)



● BS78-xxxR(RS) (Measuring length: 40/120/170/220/370/420 mm)



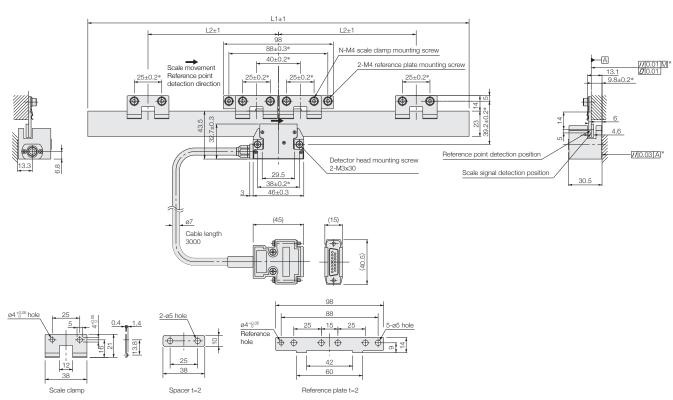


Note 1: The items marked by an asterisk indicate the machining dimensions on the mounting surface Note 2: The surface properties of the scale mounting surface is Rmax = 6.3S.

Note 3: The surface properties of the detector head mounting surface is Rmax = 12.5S.
Note 3: The surface properties of the detector head mounting surface is Rmax = 12.5S.
Note 4: "M" refers to the machine guide.
Note 5: Mount and adjust the paired reference plates so that their reference surfaces have a parallelism of 0.01 or less with respect to the machine guide.
Note 6: Reference point detection direction: Standard (Scale movement direction— with the head stationary)

Model	L1	L2	L3	N
BS78-40R (RS)	66	_	_	2
BS78-120R (RS)	146	50	_	6
BS78-170R (RS)	196	75	_	6
BS78-220R (RS)	246	100	_	6
BS78-370R (RS)	396	75	75	10
BS78-420R (RS)	446	100	100	10
				I India man

● BS78-xxxR(RS) (Measuring length: 70/270/320 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.

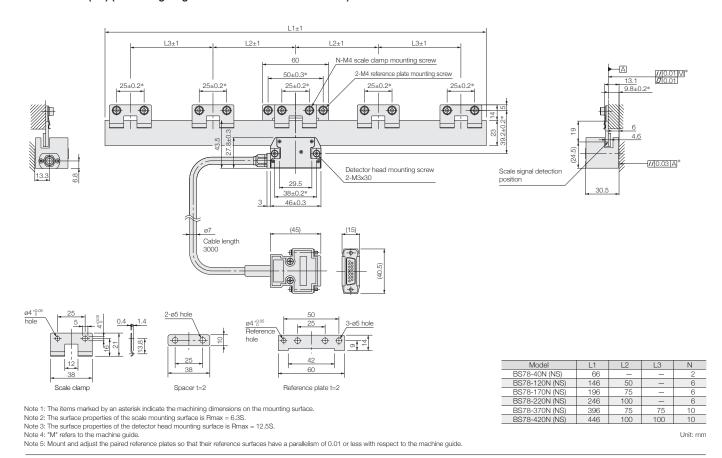
Note 4: "M" refers to the machine guide.

Note 5: Mount and adjust the paired reference plates so that their reference surfaces have a parallelism of 0.01 or less with respect to the machine guide.

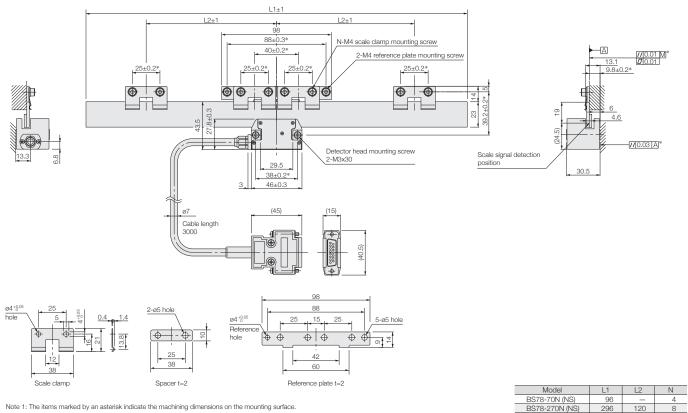
Note 6: Reference point detection direction: Standard (Scale movement direction—with the head stationary)

Model	L1	L2	N
BS78-70R (RS)	96	_	4
BS78-270R (RS)	296	120	8
BS78-320R (RS)	346	120	8
			Unit: mm

● BS78-xxxN(NS) (Measuring length: 40/120/170/220/370/420 mm)



● BS78-xxxN(NS) (Measuring length: 70/270/320 mm)



12

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.

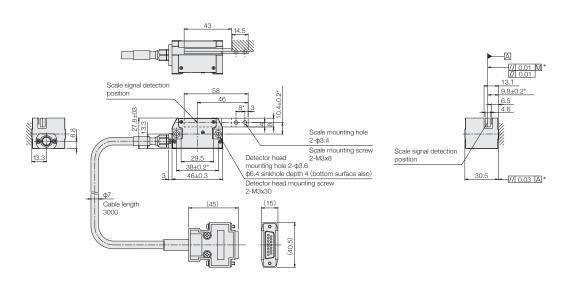
Note 3: The surface properties of the detector head mounting surface is Rmax = 12.5S.

Note 4: "M" refers to the machine guide.

Note 5: Mount and adjust the paired reference plates so that their reference surfaces have a parallelism of 0.01 or less with respect to the machine guide.

External Dimensions

● BS78-10N/NS (Measuring length:10 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 Park = 6.3 S.

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: Mount and adjust the paired reference plates so that their reference surfaces have a parallelism of 0.01 or less with respect to the machine guide.

Unit:	
OHIL.	п

13

		070	
Model		\$78	
Measuring length	10(only N/NS)/40/70/120/170/220/270/320/370/420 mm		
Overall length	58mm (L=10mm:open type scale), L + 26mm $$ (L= 40mm to 420mm) $$ L: Measuring length		
Max. travel	L + 2mm (L=10mm:open type scale), L +10mm (L= 40mm to 420mm) L: Measuring length		
Scale accuracy(at 20°C)	NS type, RS type: ±0.03μm (L=10mm: NS type) ±0.04μm (L=40mm) ±0.14μm (L=70/120mm) ±0.18μm (L=70/120mm) ±0.18μm (L=170/220mm) ±0.44μm (L=420mm) L: Measuring length	N type, R type: ±0.06μm (L=10mm : N type) ±0.08μm (L=40mm) ±0.08μm (L=40mm) ±0.20μm (L=70/120mm) ±0.65μm (L=420mm) L: Measuring length	
Grating pitch	Approx. 0.55µm		
Signal pitch	Арргох. 0.138µm (Арргох. 138nm)		
Reference point accuracy	0.1μm (Only R/RS type)		
Reference point position	At the center, and every 50mm from the center to the left and to the right (BS78 models with measuring lengths of 320, 370, 420mm: 20mm offset from the center at 50mm intervals)		
Reference point detection direction	Single direction		
Return error	This is virtually eliminated. It should be considered to be less than two resolution limits of the detector that is used.		
Repeatability	This is virtually eliminated. It should be considered to be less than one resolution limit of the detector that is used.		
Thermal expansion coefficient	-0.7x10 ⁻⁶ /C		
Light source	Semiconductor laser : Wavelength 790nm, Output 6mW		
Radiation power	DHHS class 1		
Detection principle	Diffraction grating scanning system		
Operating temperature	10 to 30°C (No condensation)		
Storage temperature	-10 to 50°C (Humidity 60% or less)		
Max. response speed	400mm/s (When connected with BD96)		

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

Unit: mm