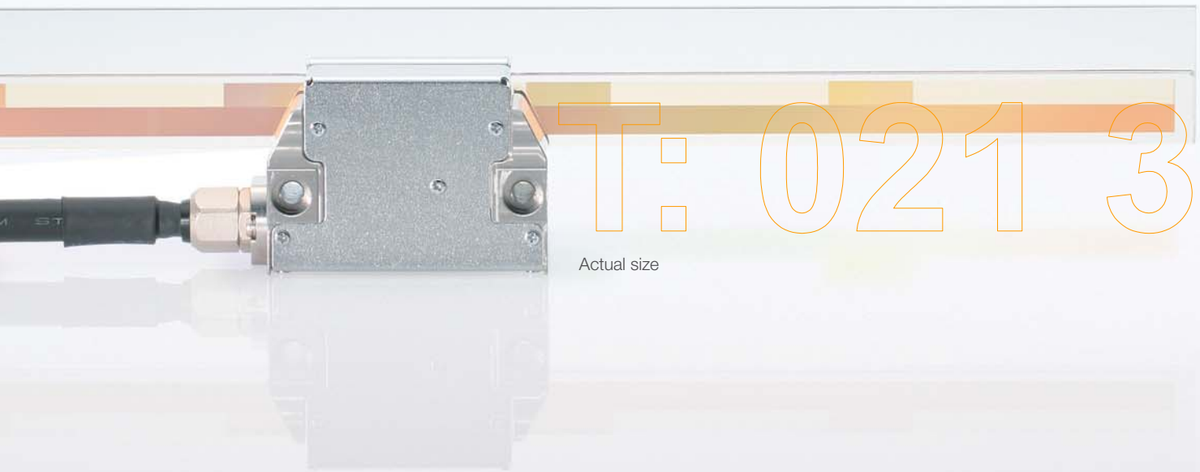
BS

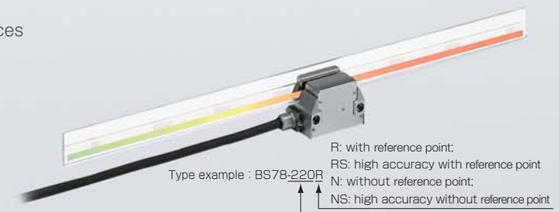
BS78
(with/without origin)

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



Actual size

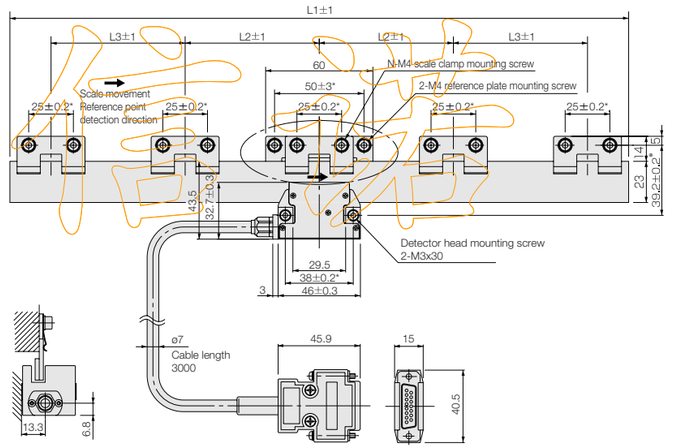
- High-resolution scale with signal wavelength of approx. 138nm, outperforming light wave interferometer systems
- High stability, unaffected by humidity, air pressure and air disturbances
- Reference point accuracy : ±0.1μm
- Scale accuracy : ±0.04μm or better (measuring length : 40 mm)
- Completely non-contact design Return error is virtually eliminated.
- Special non-magnetic and vacuum-compatible models available
- Using low expansion glass : -0.7 x 10^{-6}/°C (measuring length : 10 to 420 mm)

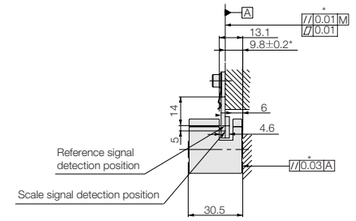


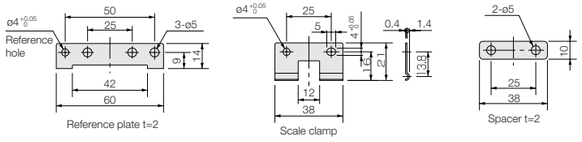
Type example : BS78-220R
R: with reference point;
RS: high accuracy with reference point
N: without reference point;
NS: high accuracy without reference point
Effective length

External Dimensions

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





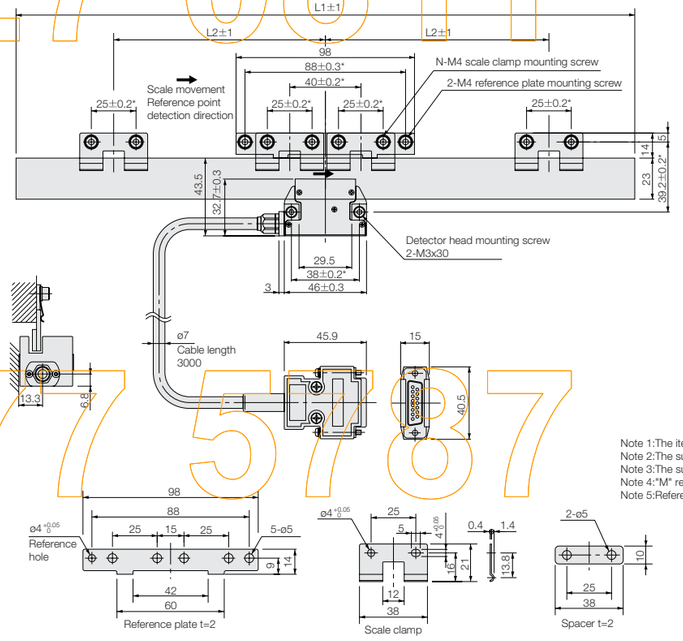


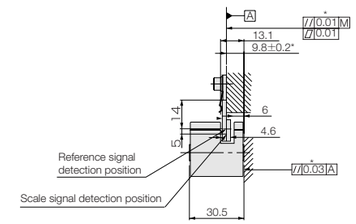
Note 1:The items marked by an asterisk indicate the machining dimensions on the mounting surface.
Note 2:The surface roughness of the scale mounting surface is Rmax = 6.3S.
Note 3:The surface roughness of the detector head mounting surface is Rmax = 12.5S.
Note 4:"M" refers to the machine guide.
Note 5: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

Unit: mm

● **BS78-xxxN(NS)(measuring length:70／270／320)**





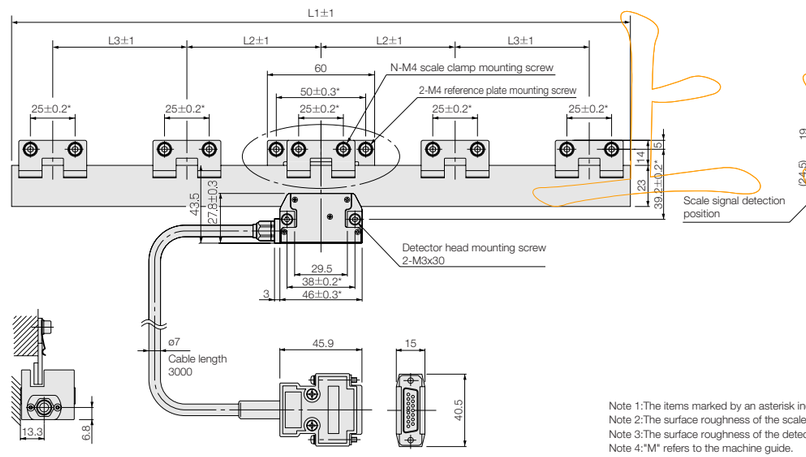
Note 1:The items marked by an asterisk indicate the machining dimensions on the mounting surface.
Note 2:The surface roughness of the scale mounting surface is Rmax = 6.3S.
Note 3:The surface roughness of the detector head mounting surface is Rmax = 12.5S.
Note 4:"M" refers to the machine guide.
Note 5:Reference point detection direction : Standard (Scale movement direction→with the head stationary)

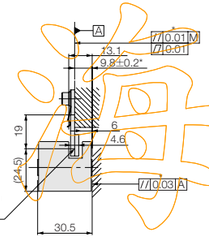
Model	L1	L2	N
BS78-70R (RS)	96	—	4
BS78-270R (RS)	296	120	8
BS78-320R (RS)	346	120	8

Unit: mm

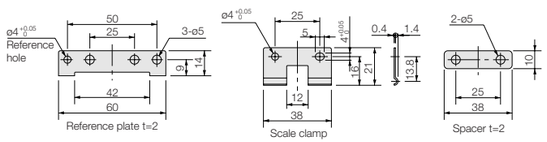
External Dimensions

● BS78-xxx(NS)(measuring length:40／120／170／220／370／420)





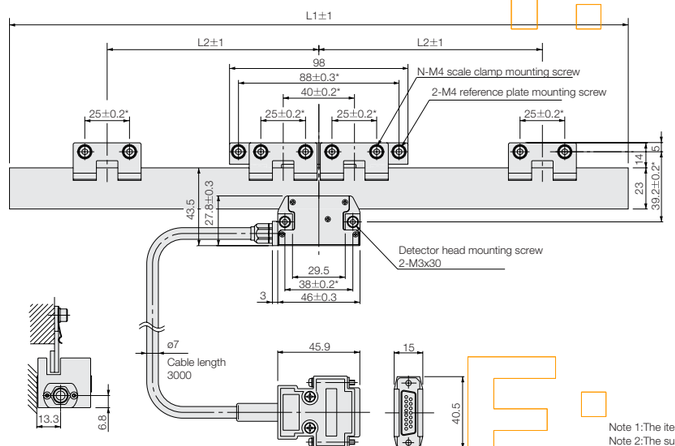
Note 1:The items marked by an asterisk indicate the machining dimensions on the mounting surface.
Note 2:The surface roughness of the scale mounting surface is Rmax = 6.3S.
Note 3:The surface roughness of the detector head mounting surface is Rmax = 12.5S.
Note 4:"M" refers to the machine guide.

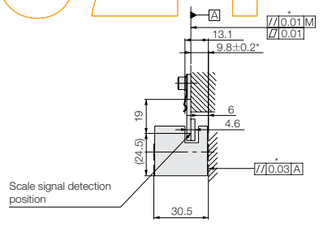


Model	L1	L2	L3	N
BS78-40N (NS)	66	—	—	2
BS78-120N (NS)	146	50	—	6
BS78-170N (NS)	196	75	—	6
BS78-220N (NS)	246	100	—	6
BS78-370N (NS)	396	75	75	10
BS78-420N (NS)	446	100	100	10

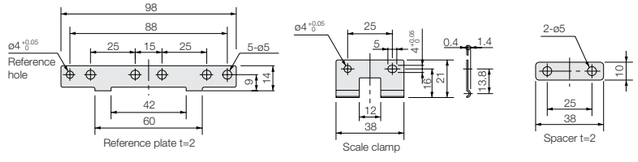
Unit: mm

● BS78-xxx(NS)(measuring length:70／270／320)





Note 1:The items marked by an asterisk indicate the machining dimensions on the mounting surface.
Note 2:The surface roughness of the scale mounting surface is Rmax = 6.3S.
Note 3:The surface roughness of the detector head mounting surface is Rmax = 12.5S.
Note 4:"M" refers to the machine guide.



Model	L1	L2	N
BS78-70N (NS)	96	—	4
BS78-270N (NS)	296	120	8
BS78-320N (NS)	346	120	8

Unit: mm

Main specifications

Model	BS78	
Measuring length	10(only N/NS)/40/70/120/170/220/270/320/370/420	
Overall length	58mm (Measuring length 10mm) Measuring length + 26mm (Measuring length 40mm to 420mm)	
Max. travel length	Measuring length + 2mm (Measuring length 10mm) Measuring length +10mm (Measuring length 40mm to 420mm)	
Accuracy(at 20˚C)	NS type, RS type : ± 0.03μm (NS type) ± 0.04μm ± 0.10μm ± 0.18μm ± 0.25μm ± 0.34μm ± 0.39μm ± 0.44μm	N type, R type : ± 0.06μm ± 0.08μm ± 0.20μm ± 0.35μm ± 0.50μm ± 0.65μm
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	In principle, No Return error.	
Repeatability	In principle, No Return error.	
Temperature coefficient	-0.7×10^{-6}/˚C	
Light source	Semiconductor laser Wavelength, 780nm, Maximum output 10nW	
Radiation power	DHHS class 1	
Detection type	Diffraction grating scan type	
Operating temperature	10˚C to 30˚C (No condensation)	
Storage temperature	-10˚C to 50˚C (Humidity 60% or less)	
Weight	0.4/0.41/0.42/0.43/0.44/0.45/0.46/0.47/0.48kg (including head)	