
















TECHNICAL DATA

Scale model electronic version	Output signals	System resolution [μm]	Accuracy grades [$\mu\text{m}/\text{m}$]	Grating pitch [μm]	Integrated interpolation	Maximum velocity [m/s]	Max. output- frequency [kHz]
MSA xxx.03	 1 Vpp	dep. on external interpolation	$\pm 3, \pm 5$	20	--	2.0	100
MSA xxx.01	 1 Vpp	dep. on external interpolation	$\pm 3, \pm 5$	10	--	2.0	200
MSA xxx.00	 1 Vpp	dep. on external interpolation	$\pm 2, \pm 3, \pm 5$	8	--	2.0	250
							Edge separation a_{min}
MSA xxx.23		5.0	$\pm 3, \pm 5$	20	times 1	2.0	1.25 μs
MSA xxx.33		2.5	$\pm 3, \pm 5$	20	times 2	2.0	625 ns
MSA xxx.63		1.0	$\pm 3, \pm 5$	20	times 5	2.0	250 ns
MSA xxx.73		0.5	$\pm 3, \pm 5$	20	times 10	1.92	250 ns
MSA xxx.61		0.5	$\pm 3, \pm 5$	10	times 5	1.92	250 ns
MSA xxx.71		0.25	$\pm 3, \pm 5$	10	times 10	0.96	250 ns
MSA xxx.51		0.1	$\pm 3, \pm 5$	10	times 25	0.77	125 ns
MSA xxx.81		0.05	$\pm 3, \pm 5$	10	times 50	0.38	125 ns
MSA xxx.30		1.0	$\pm 2, \pm 3, \pm 5$	8	times 2	2.0	250 ns
MSA xxx.70		0.2	$\pm 2, \pm 3, \pm 5$	8	times 10	0.77	250 ns
MSA xxx.80		0.04	$\pm 2, \pm 3, \pm 5$	8	times 50	0.3	125 ns
MSA xxx.90		0.02	$\pm 2, \pm 3, \pm 5$	8	times 100	0.15	125 ns

Standard measuring lengths (ML): [mm]

70, 120, 170, 220, 270, 320, 370, 420, 470, 520, 570, 620, 670, 720,
 770, 820, 870, 920, 970, 1040, 1140, 1240, 1340, 1440, 1540, 1640,
 1740, 1840, 1940, 2040, 2240, 2440, 2640, 2840, 3040 (20 µm grating pitch possible)
 (8 or 10 µm grating pitch only possible up to measuring length 1140 mm)
 (other measuring lengths on request)

Scale unit:

- Glass scale ($\alpha \approx 8,5 \times 10^{-6}/K$)
- Glass ceramic scale ($\alpha \approx 0 \times 10^{-6}/K$)
 up to ML 1440 mm
 (longer measuring lengths on request)

Location of reference mark (RI):

- Distance-coded reference mark (**K**)
 after travelling max. 20 mm the absolute position is available
- Optional: one reference mark at any location
 additional reference marks can be selected by distances of $n \times 50$ mm

Required moving force:

- With standard sealing lips < 2.0 N
- With low drag respectively without any sealing lips < 0.1 N

Environmental sealing acc. EN 60529 resp. IEC 60529:

- With standard sealing lips IP 53
- With DA 300: IP 64 (see page 33)

Permissible vibration: 100 m/s² (40 to 2000 Hz)

Permissible shock: 200 m/s² (8 ms)

Permissible temperature:

-20 °C to +70 °C (storage)
 0 °C to +50 °C (operation)

Weight (approx.):


MSA 470, MSA 570: 460 g + 2,5 g/mm (ML)
 MSA 4x1, MSA 5x1: 295 g + 2,5 g/mm (ML)
 + 175 g (reading head without cable)

MSA 7xx, MSA 8xx: 75 g + 0,57 g/mm (ML)
 + 50 g (reading head MSA 7xx without cable)
 + 65 g (reading head MSA 8xx without cable)

Weight of cable:

30 g/m

Power supply:

- Sinusoidal voltage signals \sim 1 V_{pp}
 +5 V ±5%, max. 150 mA (unloaded)
- Square-wave signals via Line Driver 
 +5 V ±5%, max. 180 mA (unloaded)

RoHS-conformity:

The Linear Encoders of the MSA 4, MSA 5, MSA 7 and MSA 8 series comply with the guideline of the RoHS- directive (2002/95/EG) on the restriction of the use of certain hazardous substances in electrical and electronic equipment