RSF Elektronik

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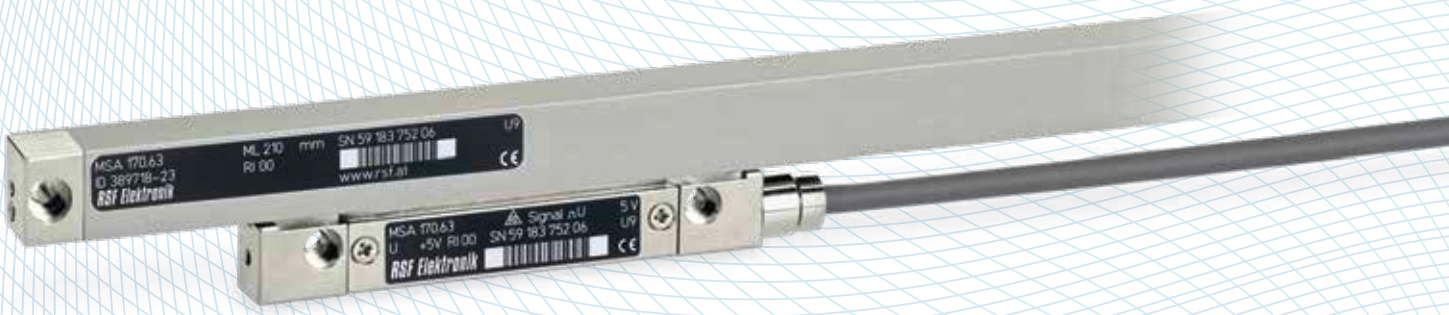
MSA 170
SEALED LINEAR ENCODERS



MSA 170

READING HEAD

Model	MSA 170.03	MSA 170.23	MSA 170.63	MSA 170.73	MSA 170.53	MSA 170.83
Interface	∿ 1 Vpp	⎍ TTLx1	⎍ TTLx5	⎍ TTLx10	⎍ TTLx25	⎍ TTLx50
Measuring step	Depending on external interpolation	5.0 µm	1.0 µm	0.5 µm	0.2 µm	0.1 µm
Signal periode	20 µm	--	--	--		--
Integrated interpolation	--	Times 1	Times 5	Times 10	Times 25	Times 50
Max. velocity	1.0 m/s	1.0 m/s	1.0 m/s	1.0 m/s	0.64 m/s	0.32 m/s
Max. output frequency	50 kHz	--	--	--		--
Edge separation a_{min}	--	3.3 µs	500 ns	300 ns	300 ns	300 ns
Electrical connection	Cable, 3 m with D-sub connector, male, 15-pin or M16 connector, male, 12-pin					
Voltage supply	+5 V ±5 %					
Power consumption max.	▪ Sinusiodal voltage signals ∿ 1 Vpp: 412 mW (without load) ▪ Square-wave via line driver ⎍: 660 mW (without load)					
Current consumption max.	▪ Sinusiodal voltage signals ∿ 1 Vpp: 75 mA (without load) ▪ Square-wave via line driver ⎍: 120 mA (without load)					
Vibration 40 Hz – 2000 Hz Shock 8 ms	▪ 100 m/s² ▪ 150 m/s²					
Operating temperature Storage temperature	▪ 0 °C to 50 °C ▪ –20 °C to 70 °C					
Mass reading head	▪ 35 g (reading head without cable) ▪ Cable: 30 g/m, connector: D-sub connector: 28 g, M12 connector: 15 g					

GRADUATION CARRIER

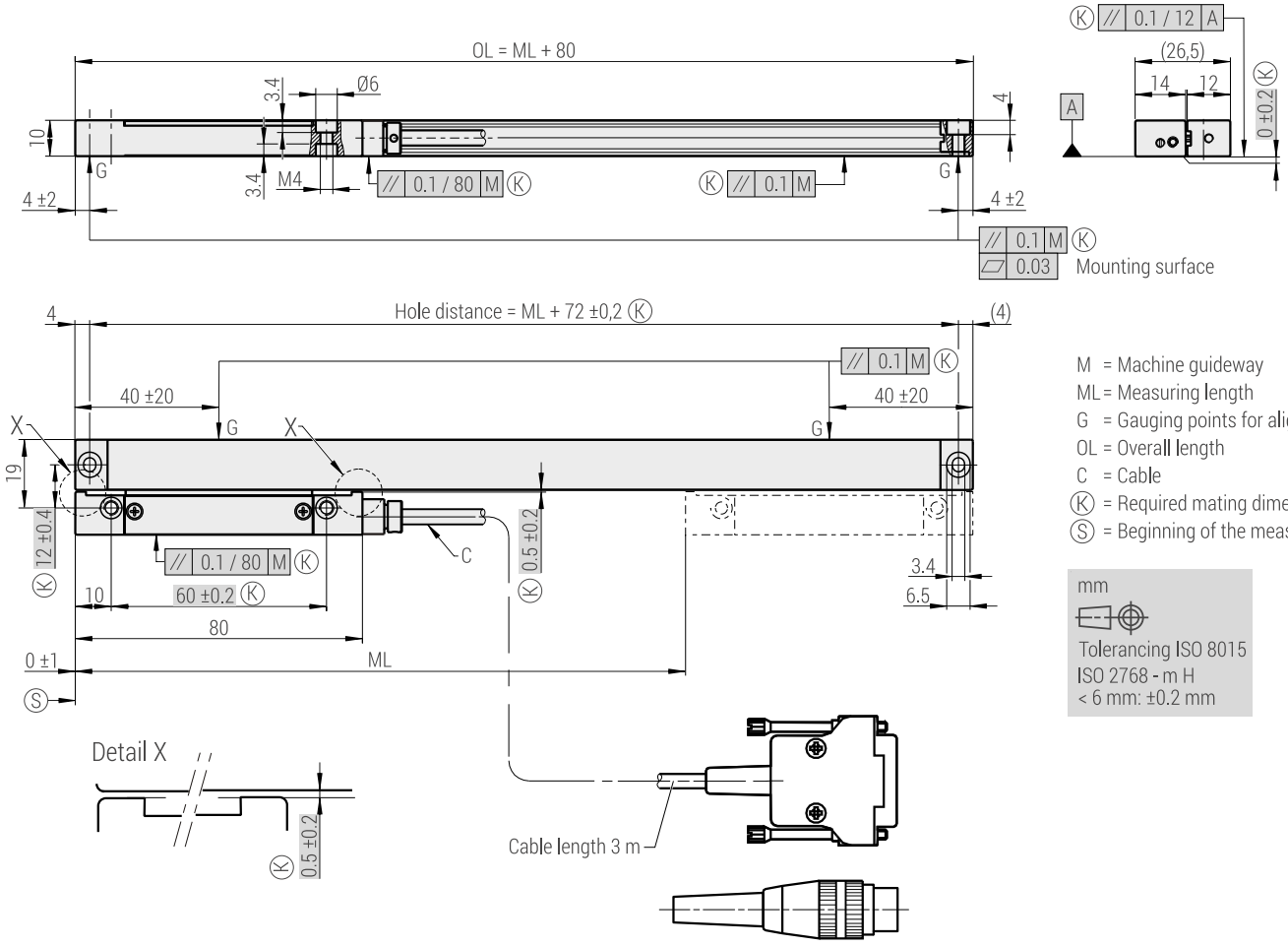
Standard measuring lengths (ML): [mm]	50, 70, 120, 170, 220, 270, 320, 370, 420, 470, 520
Graduation carrier	Glass scale ($\alpha \approx 8.5 \times 10^{-6}$/K), grating period: 20 µm
Accuracy grades (at 20 °C)	▪ ±3 µm/m ▪ ±5 µm/m ▪ ±10 µm/m (at MSA 170.03, MSA 170.23, MA 170.63)
Location of the reference marks (RI):	▪ Distance-coded reference marks (K): after travelling max. 20 mm the absolute position is available. ▪ One reference mark in the middle of measuring length, or 10 mm from either end of measuring length (exclud. ML 50 mm). ▪ Optional: one reference mark on any location, additional reference marks can be selected by distances of n x 25 mm.
Required moving force	< 1.0 N
Environmental protection EN 60529	IP 53, with DA 400: IP 64
Mass scale spar (ca.)	20 g + 0.17 g/mm (ML)

CONFORMITIES AND CERTIFICATIONS

RoHS	2011/65/EU, 2015/863/EU
EMV	2014/30/EU
Product-Certifications	UL, CSA, EN, IEC 61010-1

MSA 170

Dimensions, mounting tolerances:

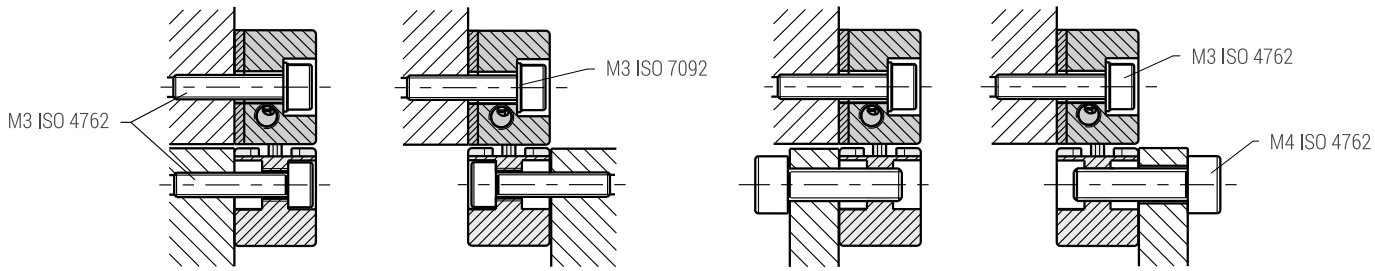


M = Machine guideway
ML = Measuring length
G = Gauging points for alignment
OL = Overall length
C = Cable
Ⓚ = Required mating dimensions
Ⓢ = Beginning of the measuring length

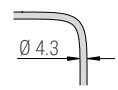
mm

Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ±0.2 mm

Mounting possibilities:

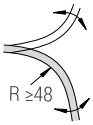


SHIELDING

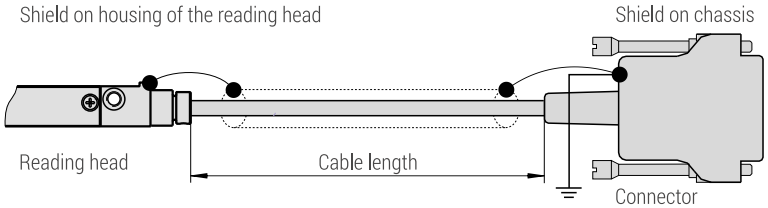


Shielded PUR-cable;
Drag chain qualified.

Bending radius
fixed mounting



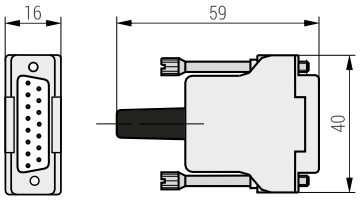
Bending radius
continuous flexing



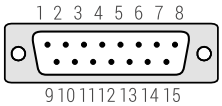
MALE CONNECTORS, PIN ASSIGNMENTS

D-sub connector,-15 pin

Dimensions
(male, 15-pin, mass: 25 g)



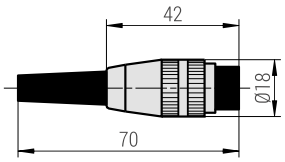
Pin assignment
View on pins



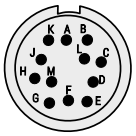
Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Sinusoidal voltage signals 1 Vpp	Occupied	0 V Sensor	Occupied	RI−	A2−	A1−	V+ Sensor	V+	0 V	nc	nc	RI+	A2+	A1+	nc
TTL-signals	Occupied	0 V Sensor	$\overline{US}$	$\overline{RI}$	$\overline{T2}$	$\overline{T1}$	V+ Sensor	V+	0 V	nc	nc	RI	T2	T1	nc

M16 connector, 12-pin

Dimensions
(male, 12-pin, mass: approx. 20 g)



Pin assignment
View on pins



Pin	A	B	C	D	E	F	G	H	J	K	L	M
Sinusoidal voltage signals 1 Vpp	nc	0 V	A1+	A1−	A2	nc	RI+	RI−	nc	V+	A2−	nc
TTL-signals	nc	0 V	T1	$\overline{T1}$	T2	nc	RI	$\overline{RI}$	nc	V+	$\overline{T2}$	$\overline{US}$

- Sensor: the sensor pins are bridged in the chassis with the particular power supply.
- Shield is connected with the chassis.
- Pins or wires marked “occupied” or “nc” must not be used by the customer.

Date 08/2021 ■ Art.No.1340651-01 ■ Doc.No. D1340651-02-A-01 ■ Technical adjustments in reserve!

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