RSF Elektronik

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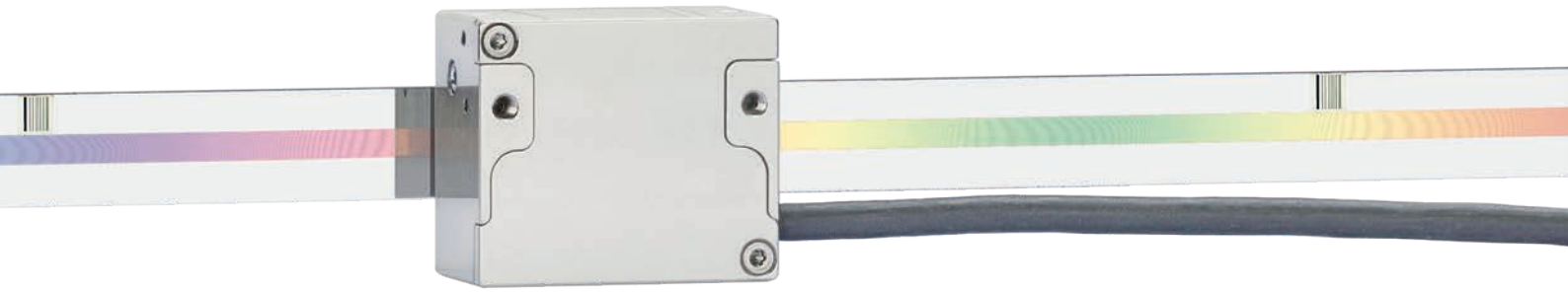
MS 82
INTERFERENTIAL
LINEAR ENCODER

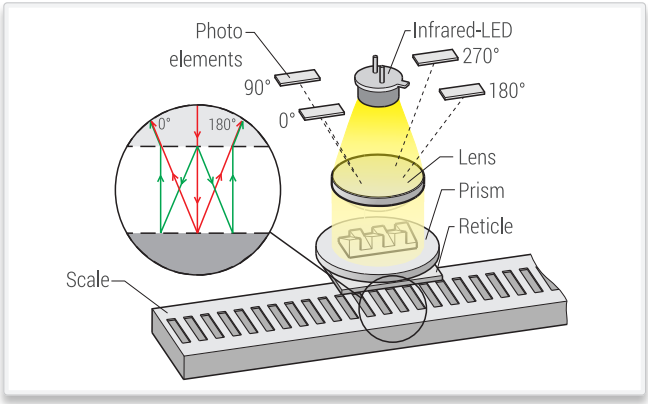


REFLECTION-TYPE PHASE GRATING

The scale consists of a glass or glass ceramic carrier and a reflection-type phase grating. The scanning reticle acts as transmission phase grating.

The light beam, produced by a LED and collimated by a lens, is deflected by prisms and the phase grating of the reticle in different directions.

After reflection and diffraction at the scale grating, the different beams, depending on the change of position phase shifted, interfere after passing the reticle again.
In this way 4 by 90° shifted, sinusoidal measuring signals are produced. Using this interferential measuring principle, one signal period equals half of the grating period.



TECHNICAL DATA

- Two switch tracks for individual special functions
- Non-contact reflective scanning
- For high traversing speed
- Compact dimensions
- Any position of the reference mark within measuring length
- Integrated subdividing: up to times 100
- Scale unit: glass scale or glass ceramic scale with phase grating
- Max. measuring length: 3140 mm

SCANNING HEAD: 4 µm signal period , accuracy grades: ±3 µm/m

Model	AK MS 82 1 Vpp	AK MS 82 TTLx10	AK MS 82 TTLx20	AK MS 82 TTLx25	AK MS 82 TTLx50	AK MS 82 TTLx100
Interface	~	⎍	⎍	⎍	⎍	⎍
Measuring step [µm]	Depending on external interpolation	0.10	0.05	0.04	0.02	0.01
Integrated interpolation	--	Times 10	Times 20	Times 25	Times 50	Times 100
Max. velocity [m/s]	0.8 *	0.8	0.48	0.38	0.19	0.096
Max. output frequency	200 kHz	--	--	--	--	--
Edge separation a_{min}	--	100 ns	100 ns	100 ns	100 ns	100 ns
Electrical connection	Cable, 0.5 m, 1 m or 3 m with D-sub connector, male, 15-pin with integrated electronics					
Voltage supply	+5 V ±5 %					
Power consumption	▪ 1 Vpp: max. 788 mW (without load) ▪ TTL: max. 950 mW (without load)					
Current consumtion	▪ 1 Vpp: 150 mA (without load) ▪ TTL: 180 mA (without load)					
Vibration 55 Hz – 2000 Hz Shock 8 ms	≤ 225 m/s² (EN 60 068-2-6) 500 m/s² (EN 60 068-2-27)					
Operating temperature Storage temperature	0 °C to 50 °C −20 °C to 70 °C					
Mass	▪ Scanning head: 38 g (without cable), cable: 30 g/m, connector: 52 g					

* on request: up tp 1.5 m/s

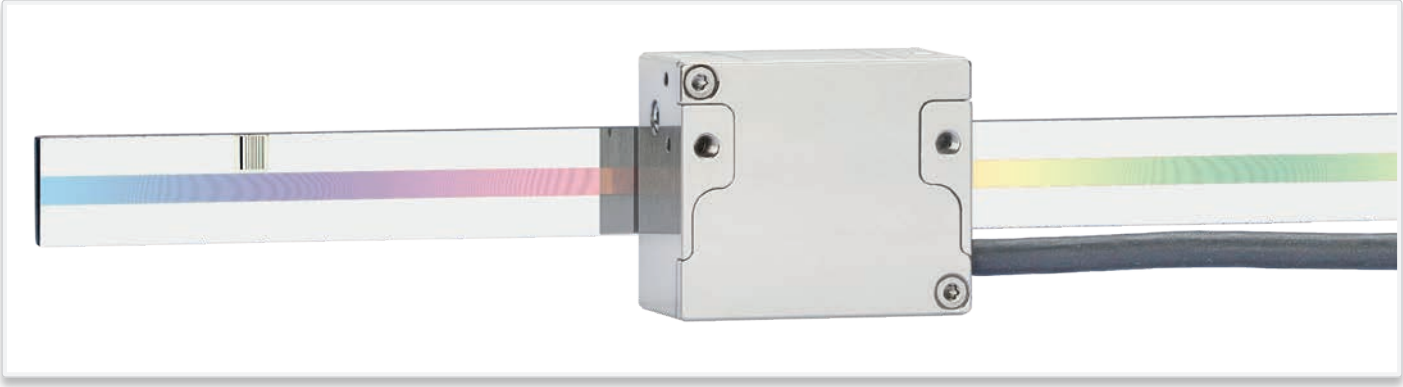
GRADUATION CARRIER

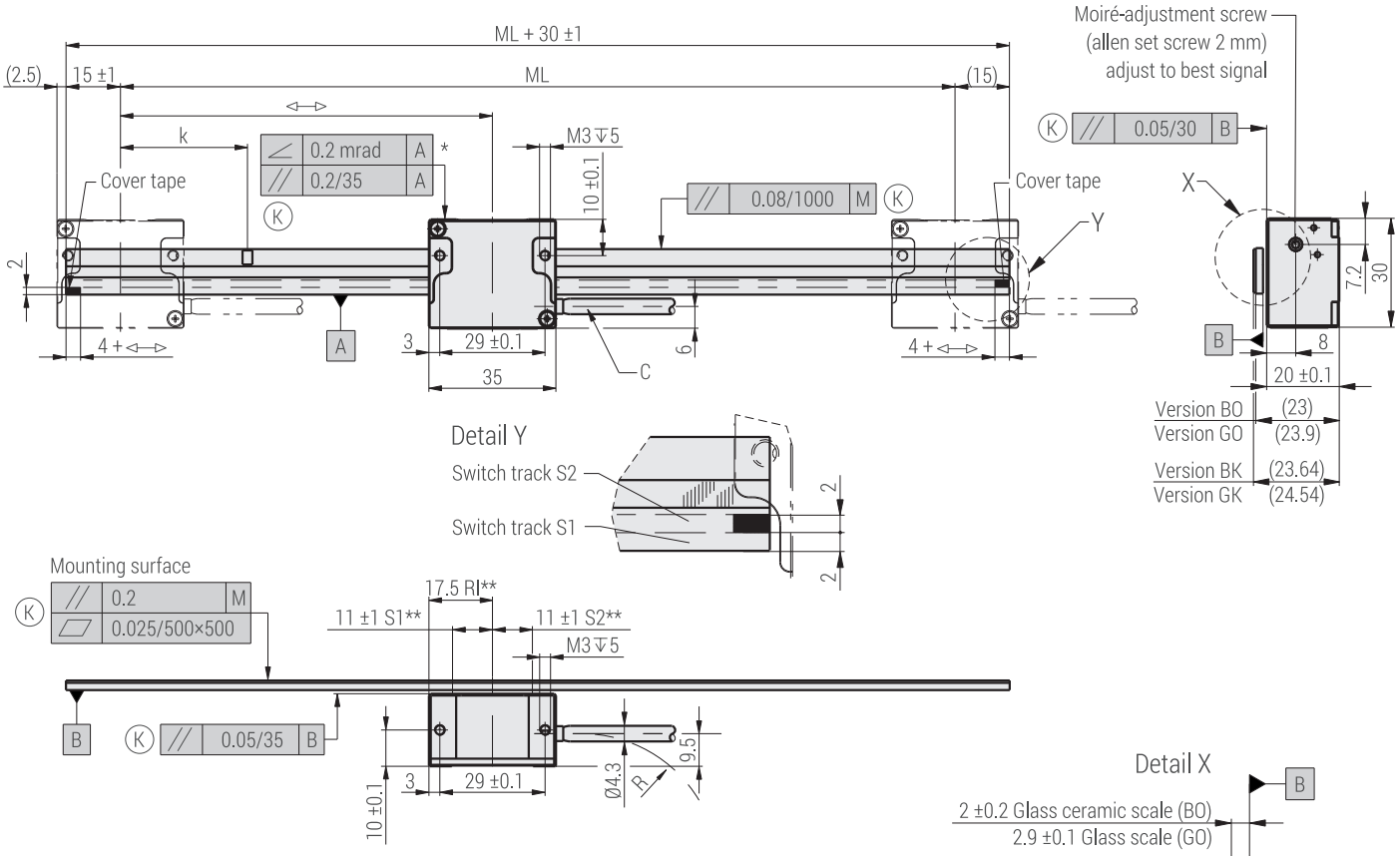
Model	MS 82 GO/GK	MS 82 BO/BK
Graduation carrier	Glass scale	Glass ceramic scale
Coefficient of linear expansion	$\alpha_{therm} \approx 8.5 \times 10^{-6}\ K^{-1}$	$\alpha_{therm} \approx 0 \times 10^{-6}\ K^{-1}$
Grating period	8 µm phase grating (4 µm signal period)	
Accuracy grades *	±3 µm/m	
Measuring length ML	3140 mm	1840 mm (longer lengths on request)
Reference marks (RI)	▪ Any position within the measuring length. RI repeatable only from one direction.	
Switch tracks	**2 switch tracks** (S1, S2) **for individual special functions** (reflection light barrier) The desired switch positions are determined by the customer with adhesive cover tapes. ▪ Version H: TTL output (active high) ▪ Version Z: open collector output (active high impedance) ▪ Version L: TTL output (active low) ▪ Version C: open collector output (active low)	
Mass	GO: 95 g/m GK: 100 g/m	BO: 65 g/m BK: 70 g/m

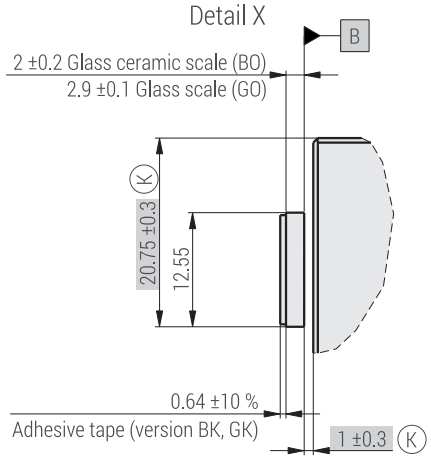
MS 82 BO, BK, GO, GK

- Version BO: Glass ceramic scale
- Version BK: Glass ceramic scale with adhesive tape
- Version GO: Glass scale
- Version GK: Glass scale with adhesive tape

  On request: Other versions with glass- or glass ceramic scale on steel- or aluminum carrier





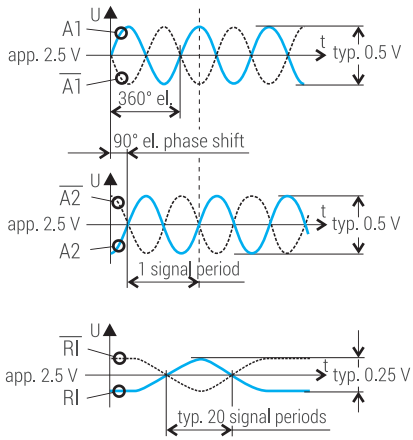


M = Machine guideway
ML = Measuring length
↔ = 0 ... ML
* = Max. change in operation
C = Cable
K = Required mating dimensions
R = Bending radius
REFERENCE MARK:
k = Any position of reference mark (RI)
** = Sensor position
OPTIONAL:
S1, S2 = Switch signals

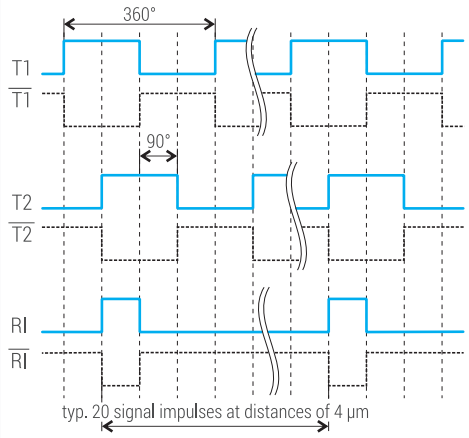
mm
Tolerancing ISO 8015
ISO 2768: 1989 - m H
< 6 mm: ±0.2 mm

INTERFACES

Sinusoidal voltage signals 1 VPP



Square-wave signals „differential“



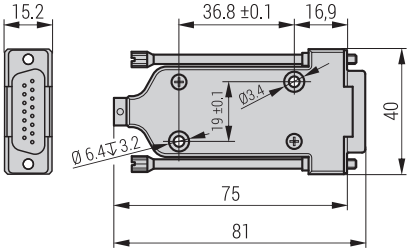
Error signal

PIN ASSIGNMENT

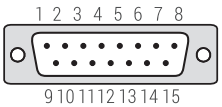
Sub-D connector with integrated interface electronics, male, 15-pin

Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Sinusoidal voltage signals 1 VPP	Test**	0 V Sensor	nc	RI–	A2–	A1–	+5 V Sensor	+5 V	0 V	S1***	S2***	RI+	A2+	A1+	Shield
Square-wave signals via line driver	Test*	0 V Sensor	$\overline{US}$	$\overline{RI}$	$\overline{T2}$	$\overline{T1}$	+5 V Sensor	+5 V	0 V	S1***	S2***	RI	T2	T1	Shield

- Test* = **analog signal switch-over**
  By applying +5 V to the test pin, the test signals (sinusoidal micro-current signals 11 µAPP) are switched to the output connector.
- Test** = **analog signal switch-over**
  By applying +5 V to the test pin, the NOT corrected 1 VPP signals are switched to the output connected.
- *** Version without switch signals (version K) = nc
- Sensor: The sensor-pins are bridged in the chassis with the particular power supply.
- Pins or wires marked “occupied” or “nc” must not be used by the customer.



Pin-assignment
(view on pins)



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