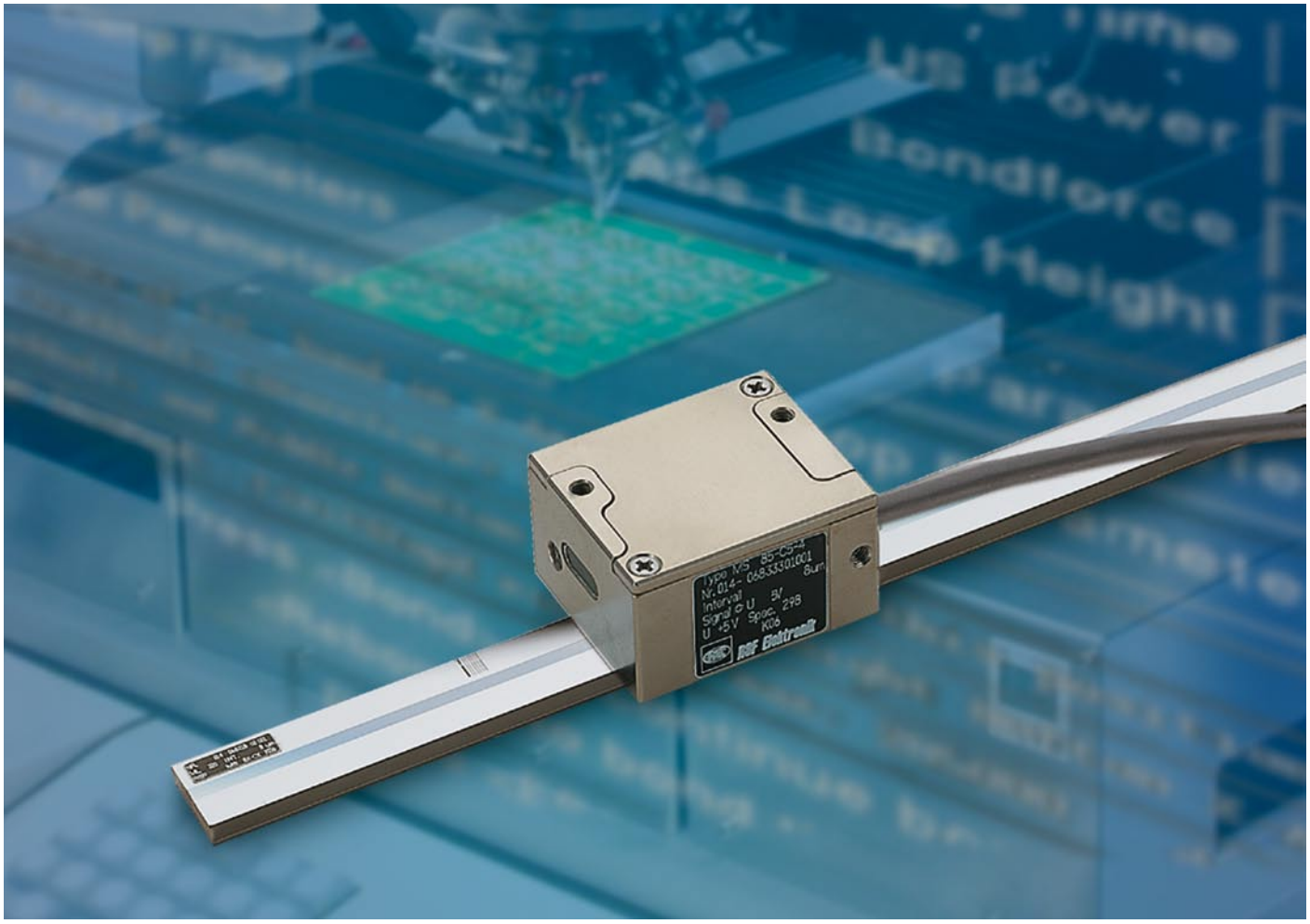
RSF Elektronik

Technik, die zählt
Technology that counts

MS 80

Interferential Linear Encoder



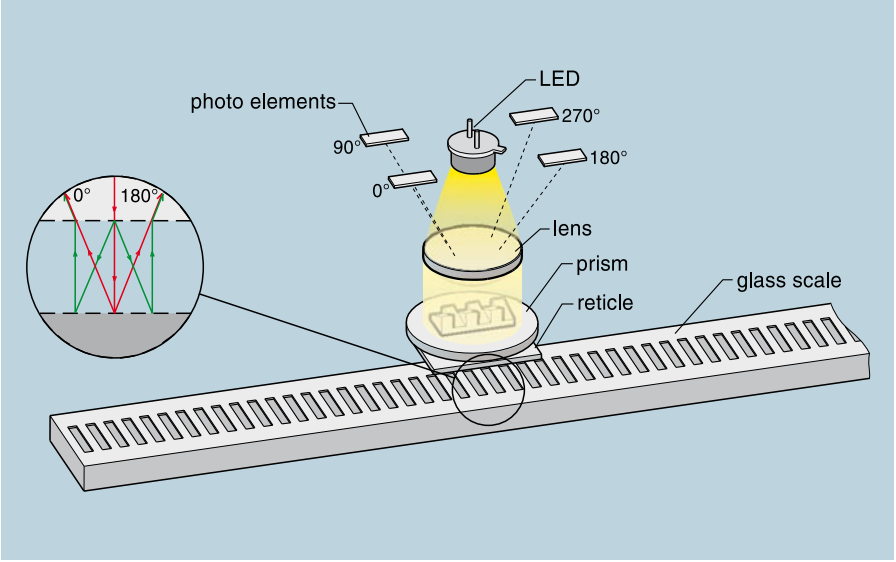
Special highlights:

- Two switch tracks for individual special functions
- Non-contact reflective scanning
- For high traversing speed
- Any position of the Reference Mark within the measuring length
- Integrated Subdividing up to times 100
- Scale version: Glass scale or ROBAX glassceramic with phase grating
- Max. measuring length to 3240 mm

Reflection-type phase grating

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

The light beam, produced by an 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, thus producing 2 by 90° shifted, sinusoidal measuring signals.
Using this interferential measuring principle, one signal period equals half of the scale.



Scanning unit: 4 µm grating pitch, system resolution from 0.1 µm to 0.01 µm

Scale model	System resolution	Accuracy grades	Grating pitch	Integrated Interpolation	Max. velocity	Max. output frequency resp. Edge distance a_{min}
• Sinusoidal voltage signals						
MS 80.00	depending on external interpolation	±3 µm/m	4 µm	-	1.2 m/s	-
• Square wave Line Driver signals with integrated Subdividing						
MS 80.70	0.1 µm	±3 µm/m	4 µm	times 10	0.9 m/s	100 ns
MS 80.40	0.05 µm	±3 µm/m	4 µm	times 20	0.45 m/s	100 ns
MS 80.50	0.04 µm	±3 µm/m	4 µm	times 25	0.36 m/s	100 ns
MS 80.80	0.02 µm	±3 µm/m	4 µm	times 50	0.18 m/s	100 ns
MS 80.90	0.01 µm	±3 µm/m	4 µm	times 100	0.09 m/s	100 ns

Scale unit: Version with glass scale or ROBAX with phase grating

MS 8x.xx GO
Glass scale without carrier

MS 8x.xx GK
Glass scale with adhesive tape

MS 8x.xx BO
ROBAX without carrier

MS 8x.xx BK
ROBAX with adhesive tape

Scale version: glass scale
For applications where the co-efficient of termic expansion should be very small, we recommend the scale version ROBAX glassceramic.

Grating pitch: 8 µm phase grating (4 µm signal periode)

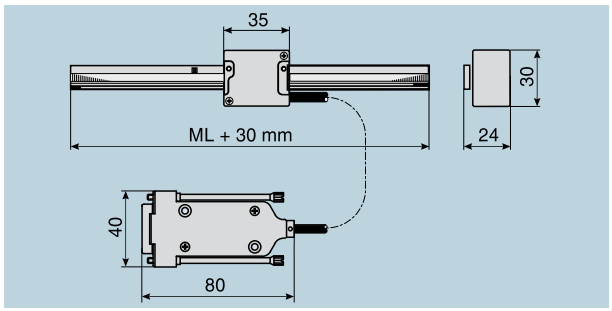
max. measuring length: Glass scale 3240 mm, ROBAX 1540 mm

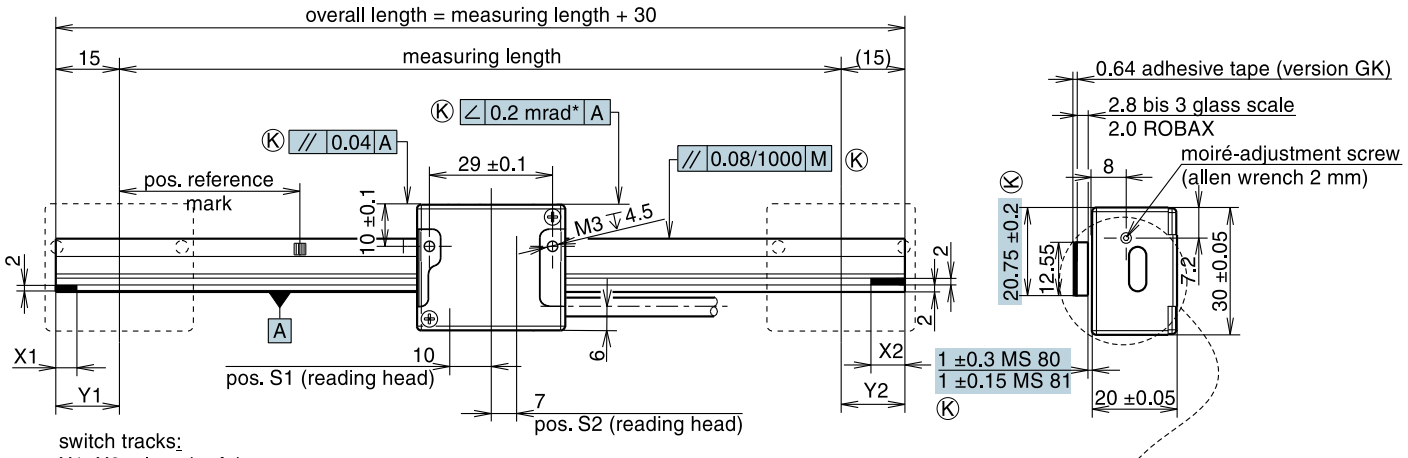
Standard measuring lengths: (mm)
(longer measuring lengths upon request)
170, 220, 270, 320, 370, 420, 470, 520, 620, 720, 770, 820, 920, 1040, 1140, 1240, 1340, 1440, 1540, 1640, 1740, 1840, 2040, 2240, 2440, 2640, 2840, 3040, 3240

Special features:
2 switch tracks (S1, S2) **for individual special functions** (reflection light barrier).
The desired switch positions (Y1, Y2) are determined by the customer with adhesive cover tapes (X1, X2)

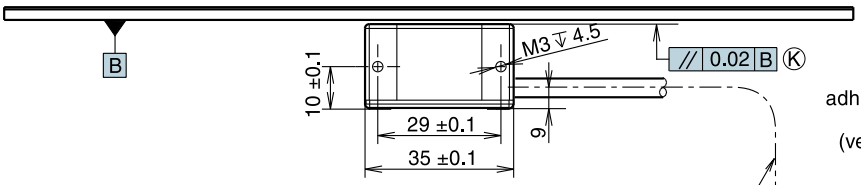
Reference Mark (RI):
Any position within the measuring length
MS 80 = RI repeatable only from one direction.
MS 81 (on request) = RI repeatable from both direction.
This version requires a more precise mounting than MS 80.

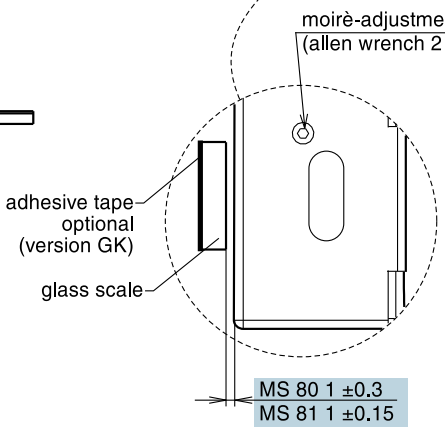
Dimensions, mounting tolerances, mounting possibilities

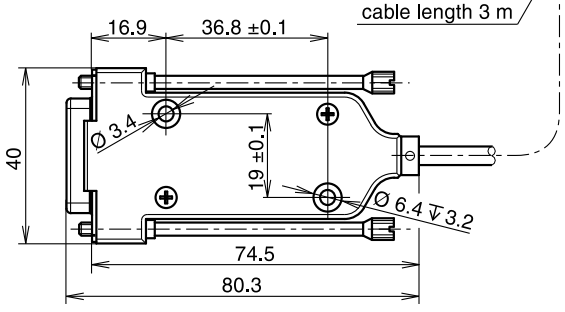




switch tracks:
X1, X2 = length of the cover tape
switch position left Y1 = X1 + 10 mm
switch position right Y2 = X2 + 7 mm





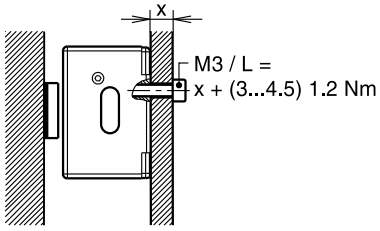


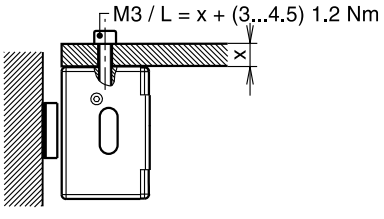
Ⓚ= required mating dimensions

M = machine guideway

* = after moirè-adjustment

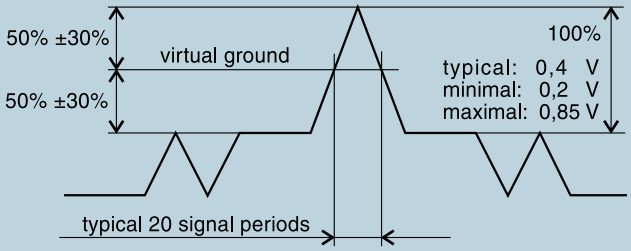
For optimal thermical behavior we recommend to glue the scale at one end or in the near of the reference mark.



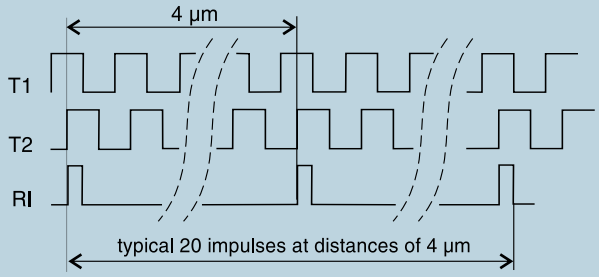


Reference impuls

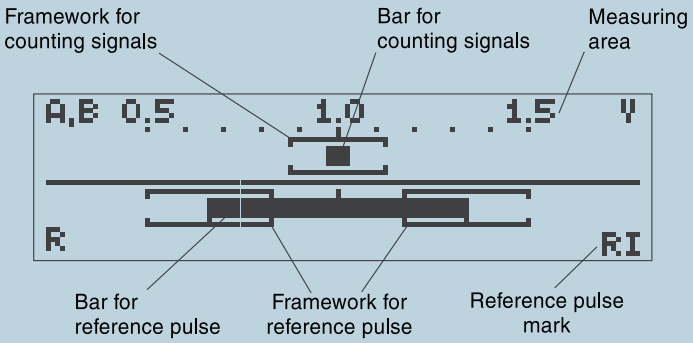
- **Version with sinusoidal voltage signals**



- **Version with integrated Subdividing Electronics**



APG 801 electronic signal test/set-up box for easy mounting control



Connector pin outs

LD15 15-pin

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Square wave signals via Line Driver	Test	GND	nc	$\overline{RI}$	$\overline{T2}$	$\overline{T1}$	+5 V	+5 V	GND	S1	S2	RI	T2	T1	Shield

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Voltage signals	nc	GND	nc	$\overline{RI}$	$\overline{A2}$	$\overline{A1}$	+5 V	+5 V	GND	S1	S2	RI	A2	A1	Shield

- Test = **analog signal switch-over for setup**
  By applying +5V to the test pin, the test signals (analog) are switched to the output connector.
- S1, S2 = Switch signals
- The shield is connected with the chassis