RSF Elektronik

MS 35

EXPOSED LINEAR ENCODER WITH SINGLEFIELD SCANNING

CONTENTS

TERM EXPLANATION

Grating period
A grating is a continuous series of lines and spaces printed on the graduation carrier. The width of one line and one space is called the period of the grating. The lines and spaces are accurately placed on the graduation carrier.

Signal period
When scanning the grating, the scanning head produces sinusoidal signals with a period equal to the grating period.

Interpolation
The sinusoidal signal period can be electronically divided into equal parts. The interpolation circuitry generates a square-wave edge for each division.

Measuring step
The smallest digital counting step produced by an encoder.

Yaw angle, pitch angle, roll angle, displacement, gap tolerance
Mounting tolerances of the scanning head relative to the graduation carrier.

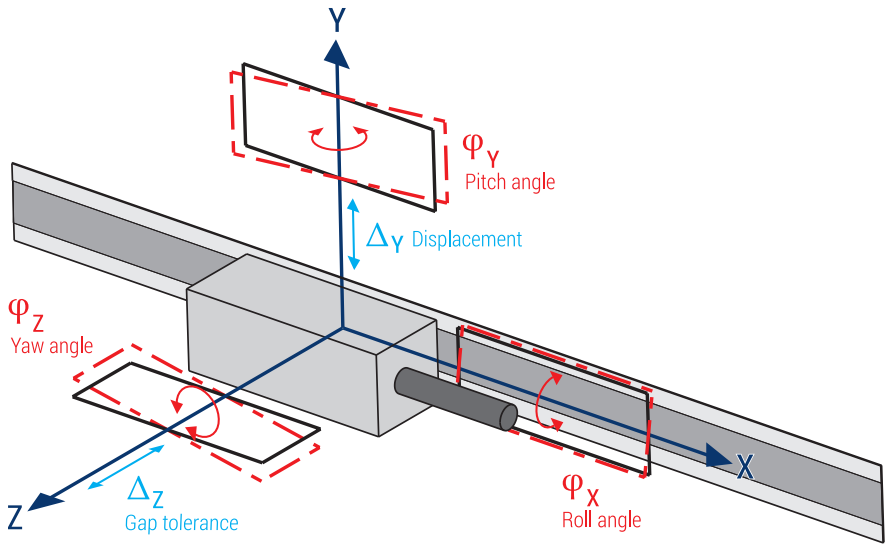
Reference pulse (reference mark)
There is an additional track of marks printed next to the grating to allow a user to find an absolute position along the length of the graduation carrier. A one increment wide signal is generated when the scanning head passes the reference mark on the graduation carrier.
This is called a "true" reference mark since it is repeatable in both directions. Subsequent electronics use this pulse to assign a preset value to the absolute reference mark position.

Fault detection signal ($\overline{US}$)
The fault detection signal indicates fault conditions such as an interruption in the supply lines, failure of the light source, etc. For example, it can be used in the automated production for the machine switch-off.

Online signal stabilization (HSP)
During moving the amplitude, offset-error, amplitude differences and phase shift error are measured and stabilized cyclic.

Abbe error
Measuring error due to lateral distance between the measuring system and the machining level.

Δ .....Delta
φ .....Phi



REQUIREMENTS ON AN EXPOSED LINEAR ENCODER

- CONTAMINATION RESISTANCE
- IMMUNITY AGAINST AGING AND TEMPERATURE CHANGES
- HIGH TRAVERSING SPEED
- EASY MOUNTING
- SMALL DIMENSIONS
- OPERATING CYCLES
- NO MECHANICAL BACKLASH
- ZERO FRICTIONAL FORCE
- HIGH ACCURACY
- HIGH RESOLUTION

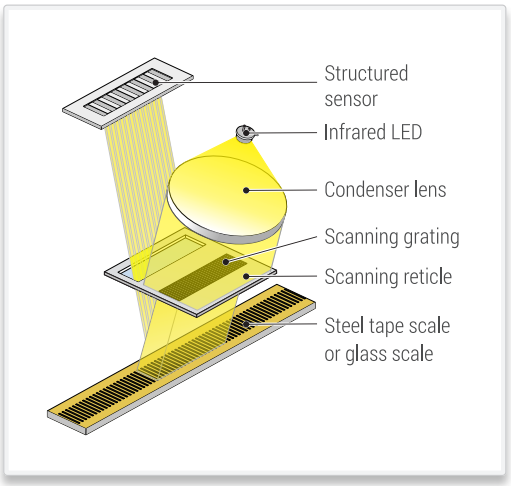
SCANNING PRINCIPLE

The model MS 35 incremental linear encoder works with the imaging, photoelectric measuring principle and a **singlefield reflective scanning** method.

The regulated light of an infrared LED is collimated by a condenser lens and passes through the grid of the reticle. After being reflected from the scale, the infrared LED generates a periodic intensity distribution on the structured sensor.

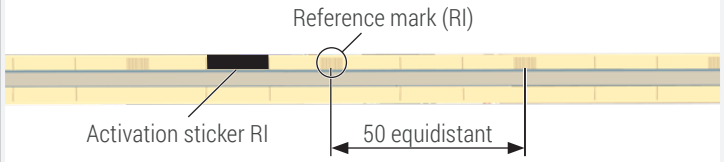
The sensor generates high qualitiy sinusoidal signals which are highly insensitive to possible contaminations.

The regulation of the LED ensures a constant signal amplitude, guaranteeing stability in the case of temperature fluctuations as well as with long-run operation.

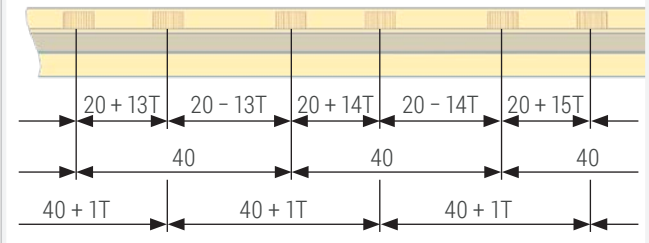


REFERENCE MARKS

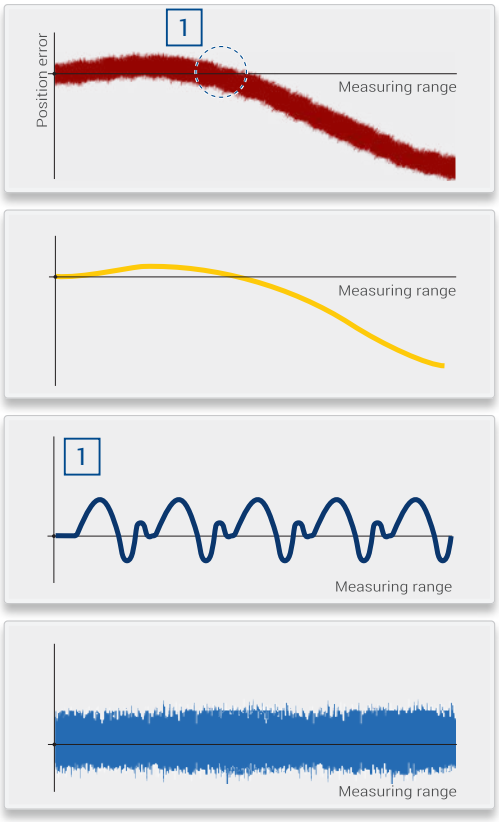
Priciple of the standard reference marks



Principle of the distance-coded reference marks



ACCURACY DEFINITION



Overall error

=

Baseline error

+

Interpolation error

+

Position noise

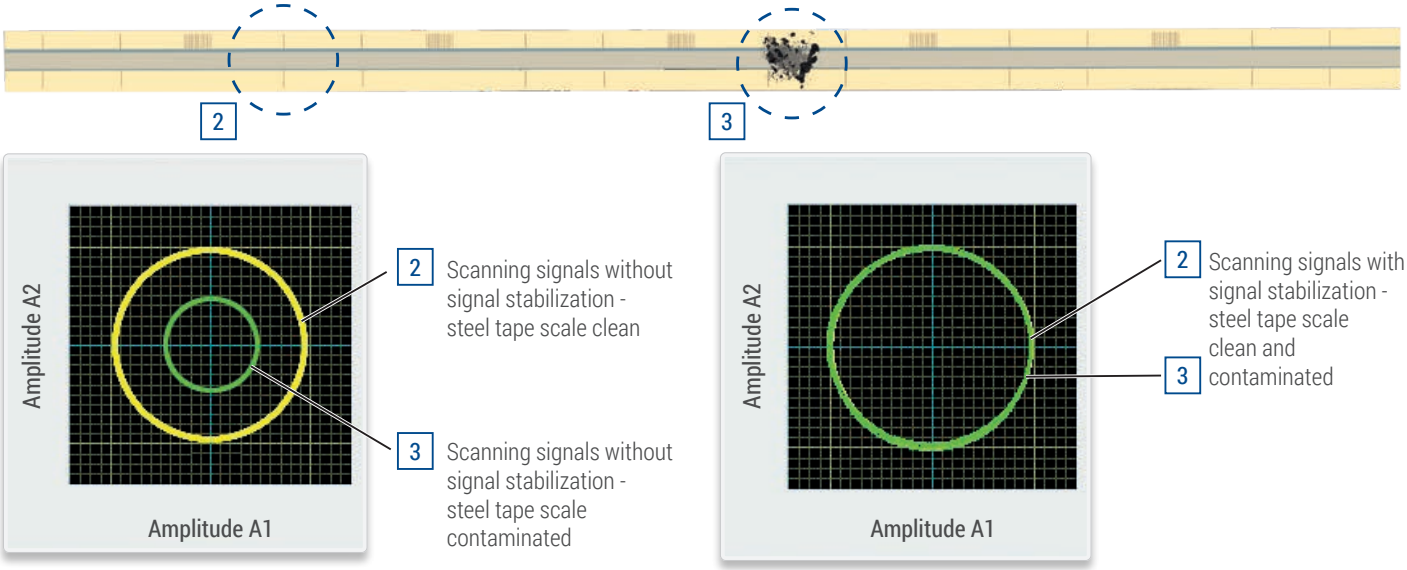
The accuracy of a linear encoder is mainly determined by the baseline error of the scale unit, the interpolation error of the optoelectronic scanning and the position noise.

The baseline error is the error of the scale unit determined in a measurement room under optimum conditions.

The indicated accuracy grade represents the maximum possible baseline error. It is calculated within any section with a maximum length of one meter.

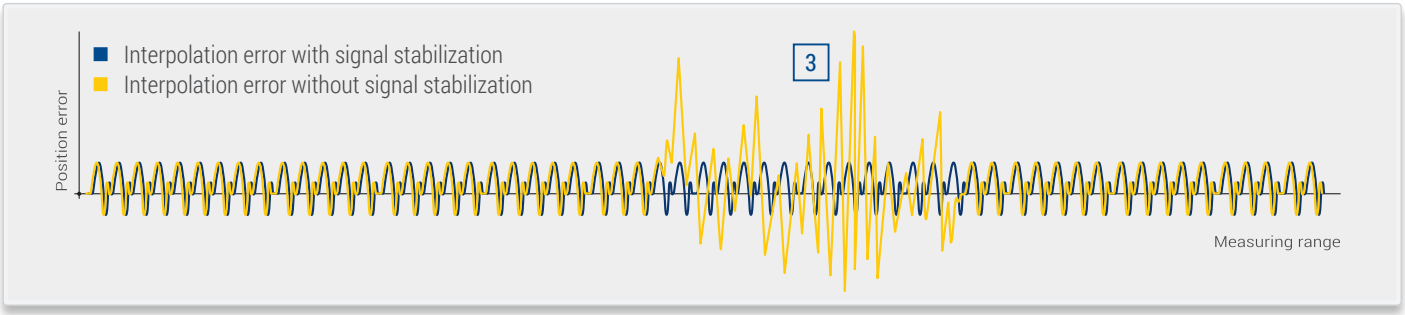
Effect of contamination on the quality and amplitude of scanning signal

Steel tape scale contaminated by fluids, dust, particles, fingerprints etc.

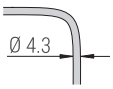


Effect of contamination on the intepolation error

Steel tape scale contaminated by fluids, dust, particles, fingerprints etc.



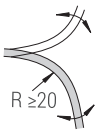
SHIELDING, PIN ASSIGNMENT



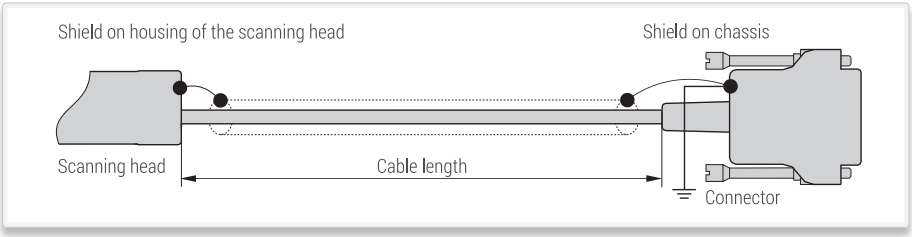
Shielded PUR-cable, Ø 4,3 mm

Drag chain qualified.

Bending radius fixed mounting



Bending radius continuous flexing

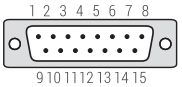


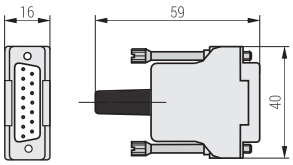
15-pin D-sub

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	Occupied	RI-	A2-	A1-	V+ Sensor	V+	0 V	S1***	S2***	RI+	A2+	A1+	nc
Square-wave signals via line driver	Test**	0 V Sensor	$\overline{US}$	$\overline{RI}$	$\overline{T2}$	$\overline{T1}$	V+ Sensor	V+	0 V	S1***	S2***	RI	T2	T1	nc

- * Test = **analog signal switch-over for setup.**
  By applying +5 V to the test pin, the not stabilized test signals (1 Vpp) are switched to the output connector.
- ** Test = **analog signal switch-over for setup.**
  By applying +5 V to the test pin, the test signals (micro-current signals 11 µApp) are switched to the output connector.
- S1, S2 = switch signals.
- *** Version without switch signals (version K) = without function.
- Sensor: the sensor-pins are bridged in the chassis with the particular power supply.
- The shield is connected with the chassis.
- Pins or wires marked “occupied” or “nc” must not be used by the customer.

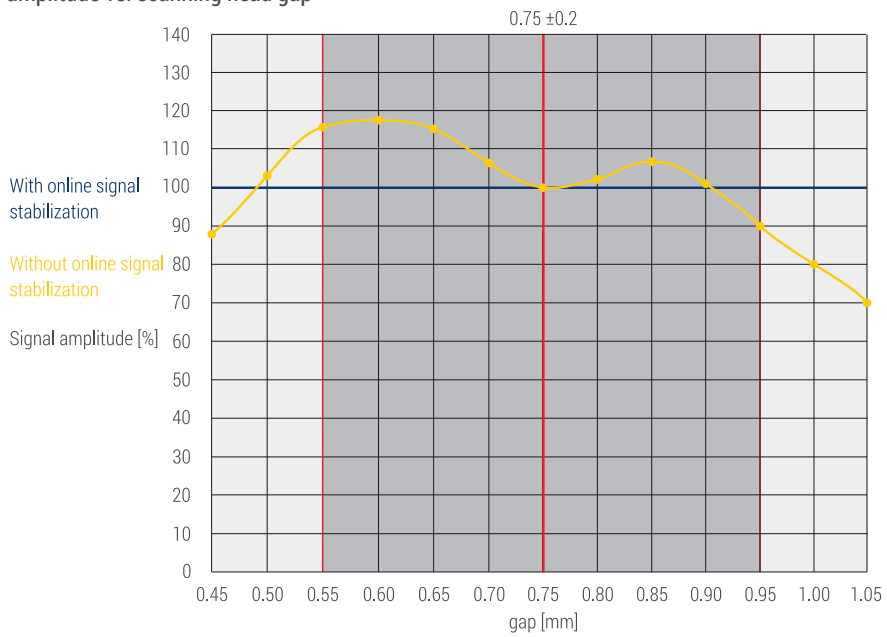
Pin assignment
(view on pins)





Mass: 28 g

Signal amplitude vs. scanning head gap



INTERFACES

SINUSOIDAL VOLTAGE SIGNALS 1VPP

(drawing shows "positive counting direction")

Power supply: +5 V ±10 %, max. 120 mA (unloaded)
Track signals (differential voltage A1+ to A1− resp. A2+ to A2−):
Signal amplitude 0.6 Vpp to 1.2 Vpp; typ. 1 Vpp
(with terminating impendance Zo = 120 Ω between A1+ to A1− resp. A2+ to A2−)

Reference mark
(differential voltage RI+ to RI−):
Useable component 0.5 up to 0.85 V; typical 0.7 V
(with terminating impedance Zo = 120 Ω between RI+ to RI−)

Advantage:
- High traversing speed with long cable lengths possible

SQUARE-WAVE SIGNALS

(drawing shows "positive counting direction")
With the integrated interpolation electronics (for times -1, -5, -10, -20, -25, -50 or -100) the photoelement output signals are converted into two square-wave signals that have a phase shift of 90°.
The output signals are „differential" via line driver (RS 422). One measuring step reflects the measuring distance between two edges of the square-wave signals.

The controls/DRO´s must be able to detect each edge of the square-wave signals. The minimum edge separation a_{min} is listed in the technical data and refers to a measurement at the output of the interpolator (inside the scanning head). Propagation-time differences in the line driver, the cable and the line receiver reduce the edge separation.

Propagation-time differences:

Line driver:	max. 10 ns
Cable:	0.2 ns/m
Line receiver:	max. 10 ns (referred to the recommended line receiver circuit)

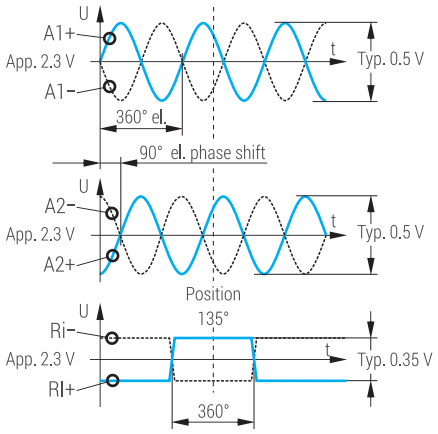
To prevent counting errors, the controls/DRO's must be able to process the resulting edge separation.

Example:
a_{min} = 100 ns, 10 m cable
100 ns - 10 ns - 10 x 0.2 ns - 10 ns = 78 ns

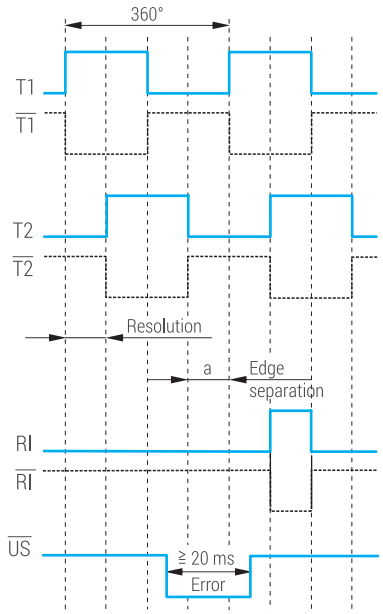
Power supply: +5 V ±10%, max. 200 mA (unloaded)

Advantage:
- Noise immune signals
- No further subdividing electronics necessary

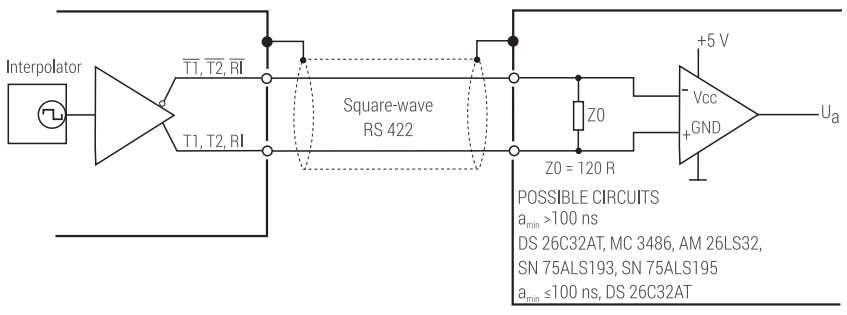
Voltage signals (1 VPP)



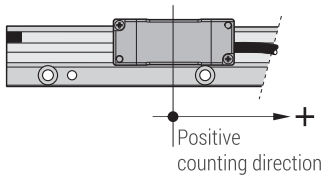
Square-wave signals „differential"



Recommended line receiver circuit



Counting direction



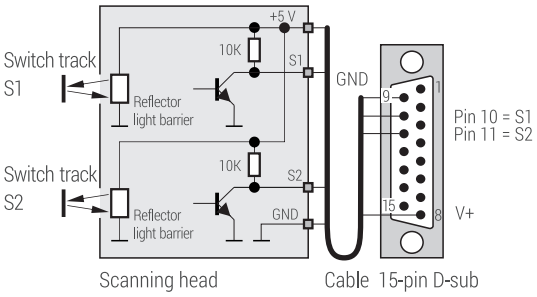
SWITCH SIGNAL OUTPUT

For individual special functions there are two additional switch tracks on the glass/glass ceramic or steel tape scale.
The switching point position can be chosen by the user by placing self-adhesive covering tapes.

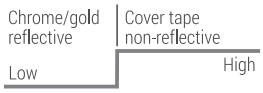
At version with reference mark position selectable by the customer there is just one track for switch signals available.
The second track of this version is used to select the reference mark.
This feature makes the selection of the reference mark position, by the user, very easy.

VERSION H

TTL output (active high)

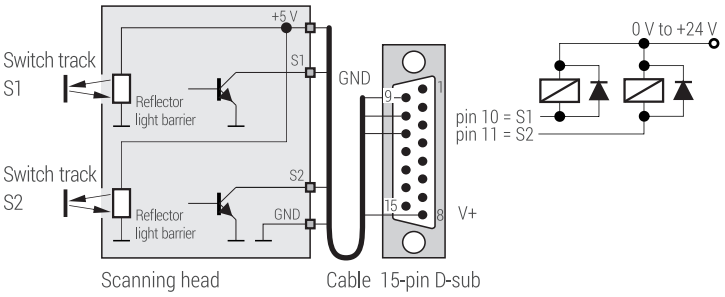


S1, S2 = TTL output
I_{SOURCE} = 0.2 mA (high level > 2 V)
I_{SINK} = 20 mA (low level < 0.8 V)



VERSION Z

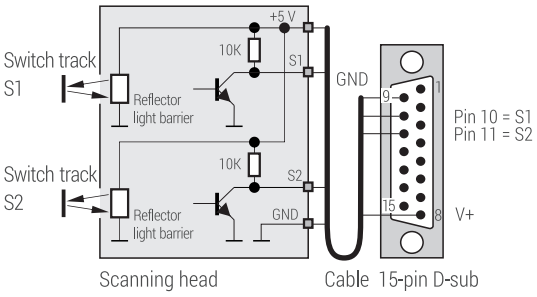
Open collector output (active high impedance)



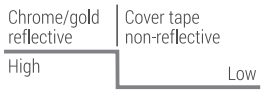
S1, S2 = Open collector output
I_{SINK} = 20 mA (low level < 0.8 V)

VERSION L

TTL output (active low)

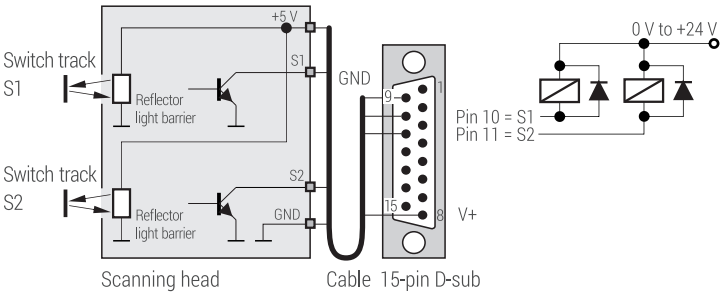


S1, S2 = TTL output
I_{SOURCE} = 0.2 mA (high level > 2 V)
I_{SINK} = 20 mA (low level < 0.8 V)

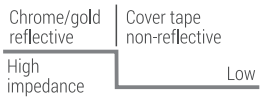


VERSION C

Open collector output (active low)



S1, S2 = Open collector output
I_{SINK} = 20 mA (low level < 0.8 V)



TECHNICAL DATA

- Reference mark accurate and repeatable from both traversing directions
- Two independent switch signals (optical) for individual functions
- One switch signal (optical) for individual functions with reference mark position selectable by customer

SCANNING HEAD

Model	AK MS 35 1 V_{PP}	AK MS 35 TTLx1u	AK MS 35 TTLx5	AK MS 35 TTLx10	AK MS 35 TTLx20	AK MS 35 TTLx25	AK MS 35 TTLx50	AK MS 35 TTLx100
Interface	∿	⎍	⎍	⎍	⎍	⎍	⎍	⎍
Measuring step [µm]	Depending on external interpolation	5.00	1.00	0.50	0.25	0.20	0.10	0.05
Integrarted interpolation	--	Times 1	Times 5	Times 10	Times 20	Times 25	Times 50	Times 100
Max. velocity [m/s]	5.00	4.00	3.20	1.60	1.20	0.96	0.96	0.48
Max. output frequency	250 kHz	--	--	--	--	--	--	--
Edge separation a_{min}	--	800 ns	300 ns	300 ns	200 ns	200 ns	100 ns	100 ns
Interpolation error with signal stabilization	Typical ±45 nm (peak-peak)							
Electrical connection	Cable, 1 m or 3 m mit D-sub connector, male, 15-pin							
Voltage supply	+5 V ±10 %							
Power consumption	▪ 1 V_{PP}: max. 660 mW (without load) ▪ TTL: max. 1100 mW (without load)							
Current consumption	▪ 1 V_{PP}: 120 mA (without load) ▪ TTL: 200 mA (without load)							
Vibration 55 Hz – 2000 Hz Shock 8 ms	≤ 150 m/s² (EN 60 068-2-6) 1000 m/s² (EN 60 068-2-27)							
Operating temperature Storage temperature	0 °C to 60 °C −10 °C to 70 °C							
Mass	▪ Scanning head: 30 g (without cable) ▪ Cable: 30 g/m ▪ Connector: D-sub connector: 28 g							

GRADUATION CARRIER

Model	MS 35 MO/MK	MS 35 MA/MS	MS 35 MP	MS 35 MT	MS 35 GK/GA/GS	MS 35 BK/BA/BS
Graduation carrier	Steel tape scale				Glass scale	Glass ceramic scale
Coefficient of linear expansion	$\alpha_{therm} \approx 10 \times 10^{-6}\ K^{-1}$				$\alpha_{therm} \approx 8.5 \times 10^{-6}\ K^{-1}$	$\alpha_{therm} \approx 0 \times 10^{-6}\ K^{-1}$
Grating period	20 µm					
Accuracy grades *	±5, ±15 µm/m				±3, ±5 µm/m	
Non-linearity	±3 µm/1000 mm				≤±1 µm/70 mm ≤±3 µm/1000 mm	
Baseline error	≤ ±0.75 µm/50 mm (typical)				≤ ±0.30 µm/10 mm	
Measuring length ML	11 940 mm	3640 mm	11 940 mm	3640 mm	3140 mm	1920 mm **
Reference marks	▪ Standard: 50 mm equidistant ▪ At any position, on request			▪ Position selectable by customer ▪ Optional: distance-coded		
Mass	MO: 20 g/m MK: 25 g/m	MA: 530 g/m MS: 1525 g/m	85 g/m + 30 g Klemme	325 g/m + 30 g Klemme	GK: 100 g/m GA: 515 g/m GS: 1605 g/m	BK: 70 g/m BA: 575 g/m BS: 1575 g/m

* At 20 °C

** Longer lengths on request

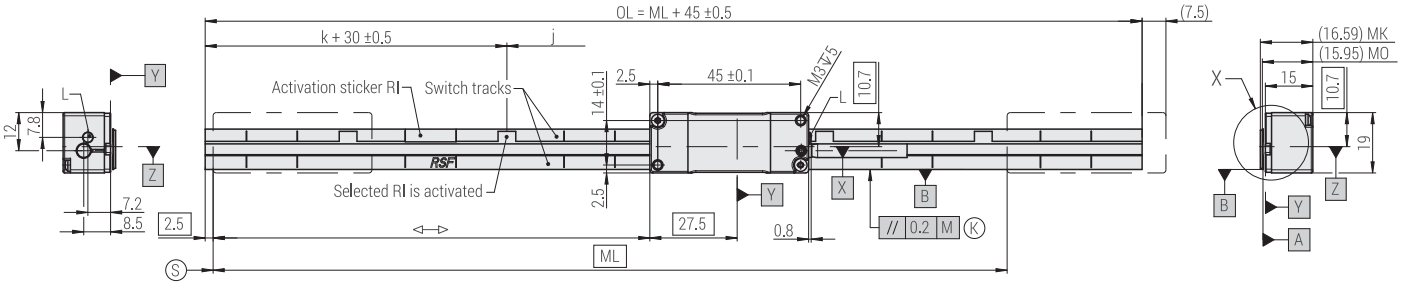
CONFORMITIES AND CERTIFICATIONS

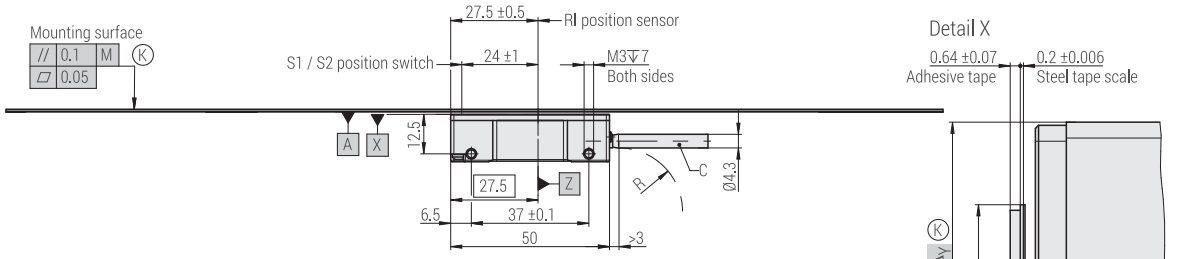
RoHS	2011/65/EU, 2015/863/EU
EMV	2014/30/EU
Product-Certifications	UL, CSA, EN, IEC 61010-1

MS 35 MO, MK

- Version MO: Steel tape scale
- Version MK: Steel tape scale with adhesive tape

Dimensions, mounting tolerances:





M = Machine guideway
ML = Measuring length
OL = Overall length
◁▷ = 0 ... ML
RI = Selectable reference mark(s)
k = Any position of selected reference mark from beginning of the measuring length
j = Additional reference marks separated by n × 50
C = Cable
Ⓚ = Required mating dimensions
L = LED function control
R = Bending radius: stat. R ≥8 mm, dyn. R ≥20 mm
Ⓢ = Beginning of the measuring length
S1, S2 = Switch signal
n = 1, 2, 3, ...

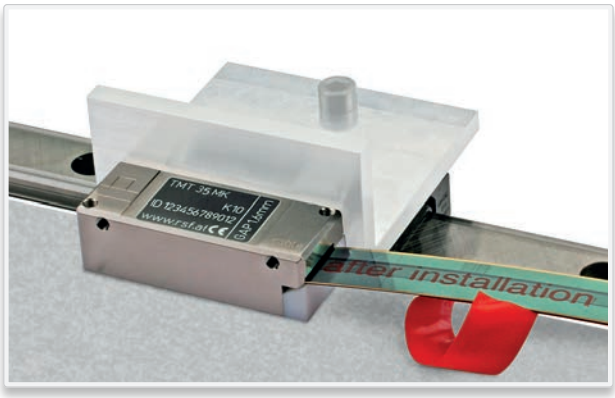
Permissible position deviation scanning head– scale A B
Δ_Y = Displacement, ±0.5 mm
Δ_Z = Gap tolerance, ±0.2 mm
φ_Z = ±0,25 mrad or ±0.014° (yaw angle)
φ_Y = ±5,00 mrad or ±0.29° (pitch angle)
φ_X = ±5,00 mrad or ±0.29° (roll angle)

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

Affixing cover tapes for the switch position and activation of the selectable reference marks see page 16.

Tape mounting tool **TMT MS 35 MK** (optional)
For safe and precise mounting of the steel tape scale.

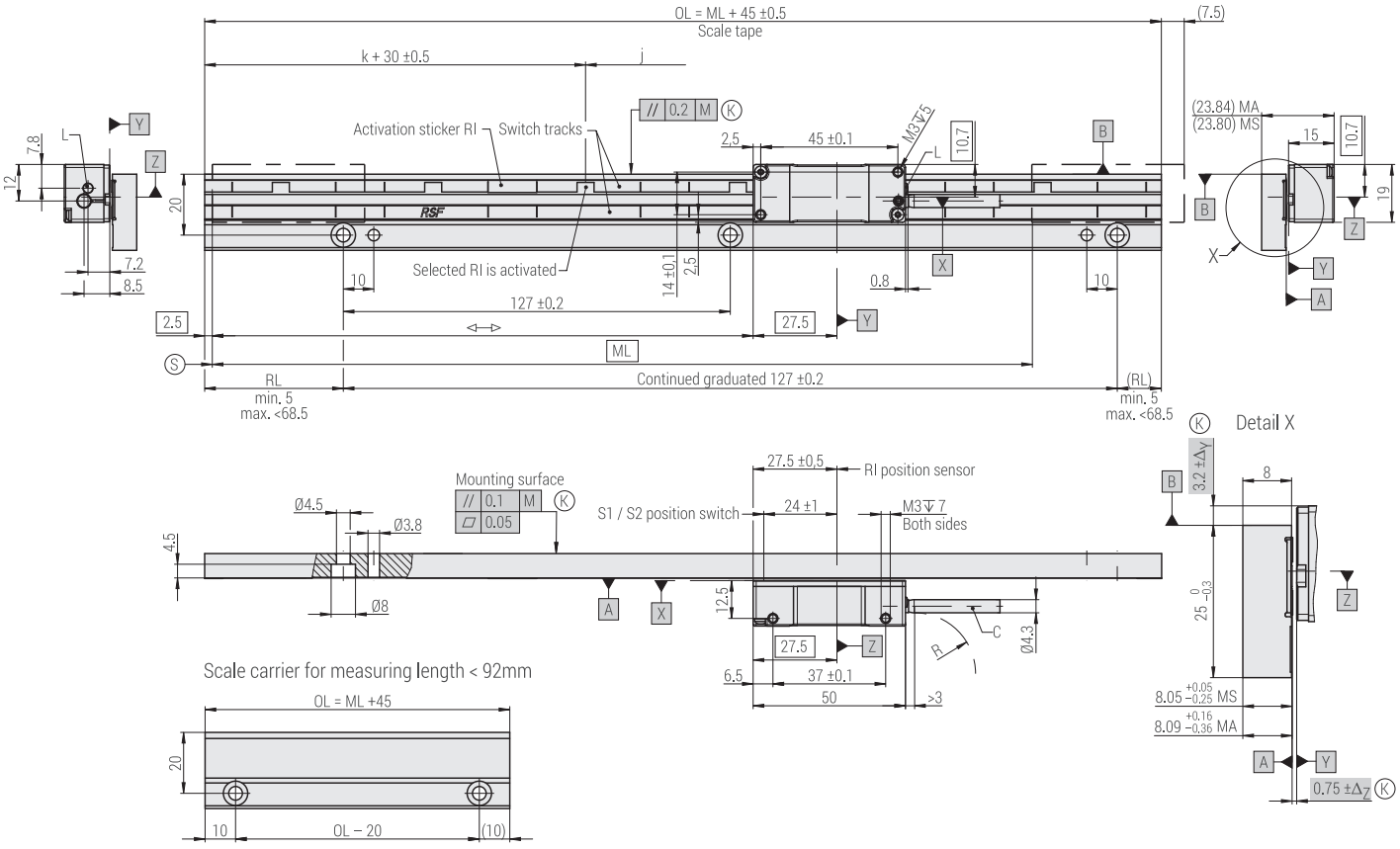
- Mount TMT MS 35 MK instead of the MS 35 scanning head.
- Thread steel tape scale (version MK) and move along the scale length.
- Remove TMT MS 35 MK, mount MS 35 scanning head.



MS 35 MA, MS

- Version MA: steel tape scale on aluminum carrier
- Version MS: steel tape scale on steel carrier
- Carrier bolted

Dimensions, mounting tolerances:



M = Machine guideway
ML = Measuring length
OL = Overall length
◁—▷ = 0 ... ML
RI = Selectable reference mark(s)
k = Any position of selected reference mark from beginning of the measuring length
j = Additional reference marks separated by n × 50
C = Cable
K = Required mating dimensions
L = LED function control
R = Bending radius: stat. R ≥8 mm, dyn. R ≥20 mm
RL = Residual length
S = Beginning of the measuring length
S1, S2 = Switch signal
n = 1, 2, 3, ...

Permissible position deviation scanning head– scale A B
Δ_Y = Displacement, ±0.5 mm
Δ_Z = Gap tolerance, ±0.2 mm
φ_Z = ±0,25 mrad or ±0.014° (yaw angle)
φ_Y = ±5,00 mrad or ±0.29° (pitch angle)
φ_X = ±5,00 mrad or ±0.29° (roll angle)

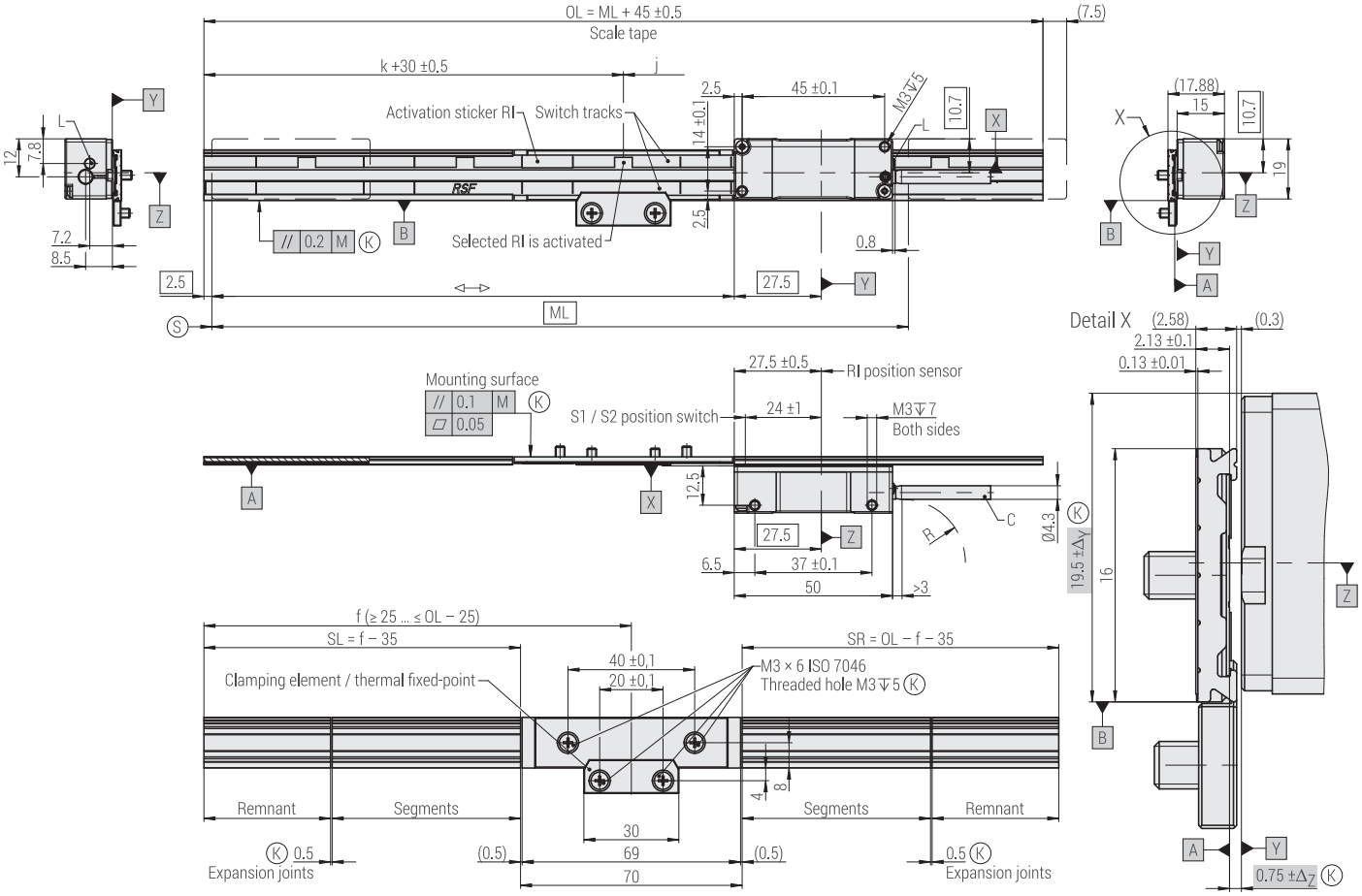
mm
Tolerancing ISO 8015
ISO 2768: 1989 - m H
< 6 mm: ±0.2 mm

Affixing cover tapes for the switch position and activation of the selectable reference marks see page 16.

MS 35 MP

- Steel tape scale in aluminum carrier with clamping element
- Carrier with adhesive tape

Dimensions, mounting tolerances:



M = Machine guideway
ML = Measuring length
OL = Overall length
◁▷ = 0 ... ML
RI = Selectable reference mark(s)
k = Any position of selected reference mark from beginning of the measuring length
j = Additional reference marks separated by n × 50
f = OL/2 (standard)
C = Cable
Ⓚ = Required mating dimensions
L = LED function control
R = Bending radius: stat. R ≥8 mm, dyn. R ≥20 mm
Ⓢ = Beginning of the measuring length
S1, S2 = Switch signal
n = 1, 2, 3, ...

Permissible position deviation scanning head– scale A B
Δ_Y = Displacement, ±0.5 mm
Δ_Z = Gap tolerance, +0.2 mm / −0.15 mm
φ_Z = ±0,25 mrad or ±0.014° (yaw angle)
φ_Y = ±5,00 mrad or ±0.29° (pitch angle)
φ_X = ±5,00 mrad or ±0.29° (roll angle)

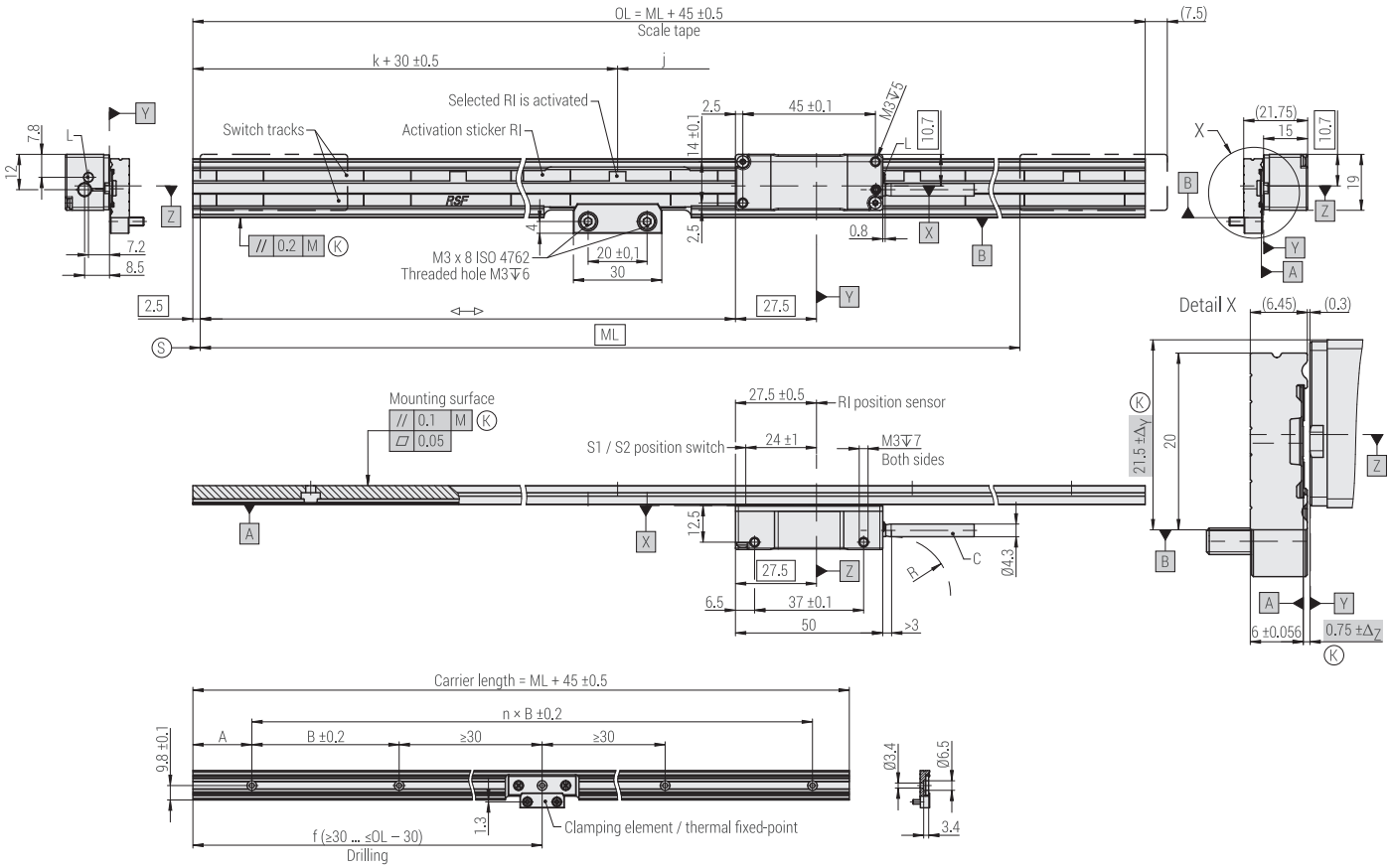
mm
Tolerancing ISO 8015
ISO 2768: 1989 - m H
< 6 mm: ±0.2 mm

Affixing cover tapes for the switch position and activation of the selectable reference marks see page 16.

MS 35 MT

- Steel tape scale in aluminum carrier with clamping element
- Carrier bolted

Dimensions, mounting tolerances:



Measuring length (ML)	A	B
120	40	50
170	40	75
From ML 220	**A**	**B**
x20	40	100
E. g. 320		
x70	65	100
E. g. 770		
xxx40	50	100
e. g. 11040		

M = Machine guideway
ML = Measuring length
OL = Overall length
◁▷ = 0 ... ML
RI = Selectable reference mark(s)
k = Any position of selected reference mark from beginning of the measuring length
j = Additional reference marks separated by n × 50
f = ML / 2 +30 (standard) or any position of the clamping element (on request)
C = Cable
K = Required mating dimensions
L = LED function control
R = Bending radius: stat. R ≥8 mm, dyn. R ≥20 mm
S = Beginning of the measuring length
S1, S2 = Switch signal
n = 1, 2, 3, ...

Permissible position deviation scanning head – scale A B
Δ_Y = Displacement, ±0.5 mm
Δ_Z = Gap tolerance, +0.2 mm / −0.15 mm
φ_Z = ±0,25 mrad or ±0.014° (yaw angle)
φ_Y = ±5,00 mrad or ±0.29° (pitch angle)
φ_X = ±5,00 mrad or ±0.29° (roll angle)

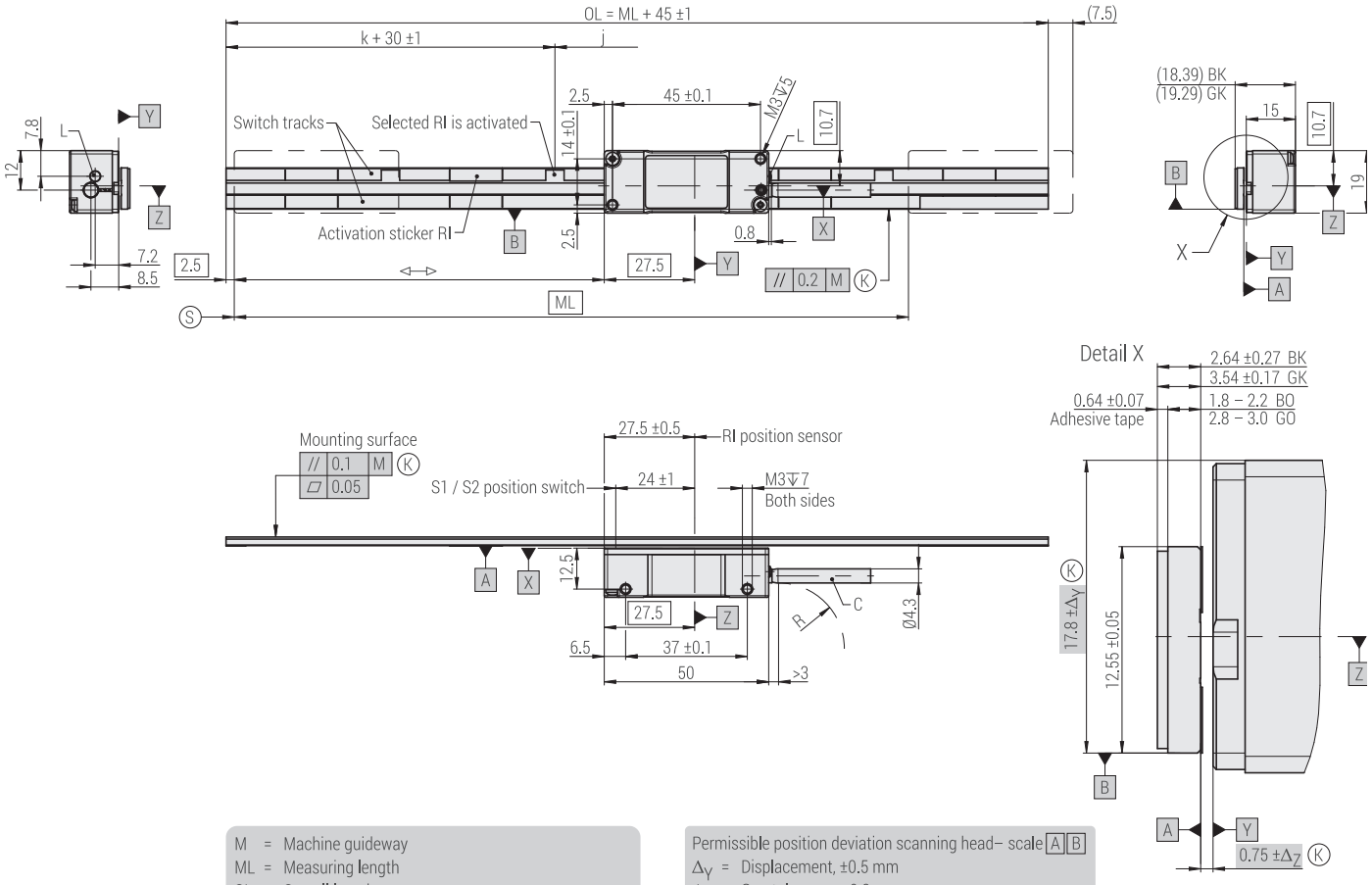
mm
Tolerancing ISO 8015
ISO 2768: 1989 - m H
< 6 mm: ±0.2 mm

Affixing cover tapes for the switch position and activation of the selectable reference marks see page 16.

MS 35 GK, BK

- Version GK: Glass scale with adhesive tape
- Version BK: Glass ceramics scale with adhesive tape

Dimensions mounting tolerances:



M = Machine guideway
ML = Measuring length
OL = Overall length
◁—▷ = 0 ... ML
RI = Selectable reference mark(s)
k = Any position of selected reference mark from beginning of the measuring length
j = Additional reference marks separated by n × 50
C = Cable
Ⓚ = Required mating dimensions
L = LED function control
R = Bending radius: stat. R ≥8 mm, dyn. R ≥20 mm
Ⓢ = Beginning of the measuring length
S1, S2 = Switch signal
n = 1, 2, 3, ...

Permissible position deviation scanning head– scale A B
Δ_Y = Displacement, ±0.5 mm
Δ_Z = Gap tolerance, ±0.2 mm
φ_Z = ±0,25 mrad or ±0.014° (yaw angle)
φ_Y = ±5,00 mrad or ±0.29° (pitch angle)
φ_X = ±5,00 mrad or ±0.29° (roll angle)

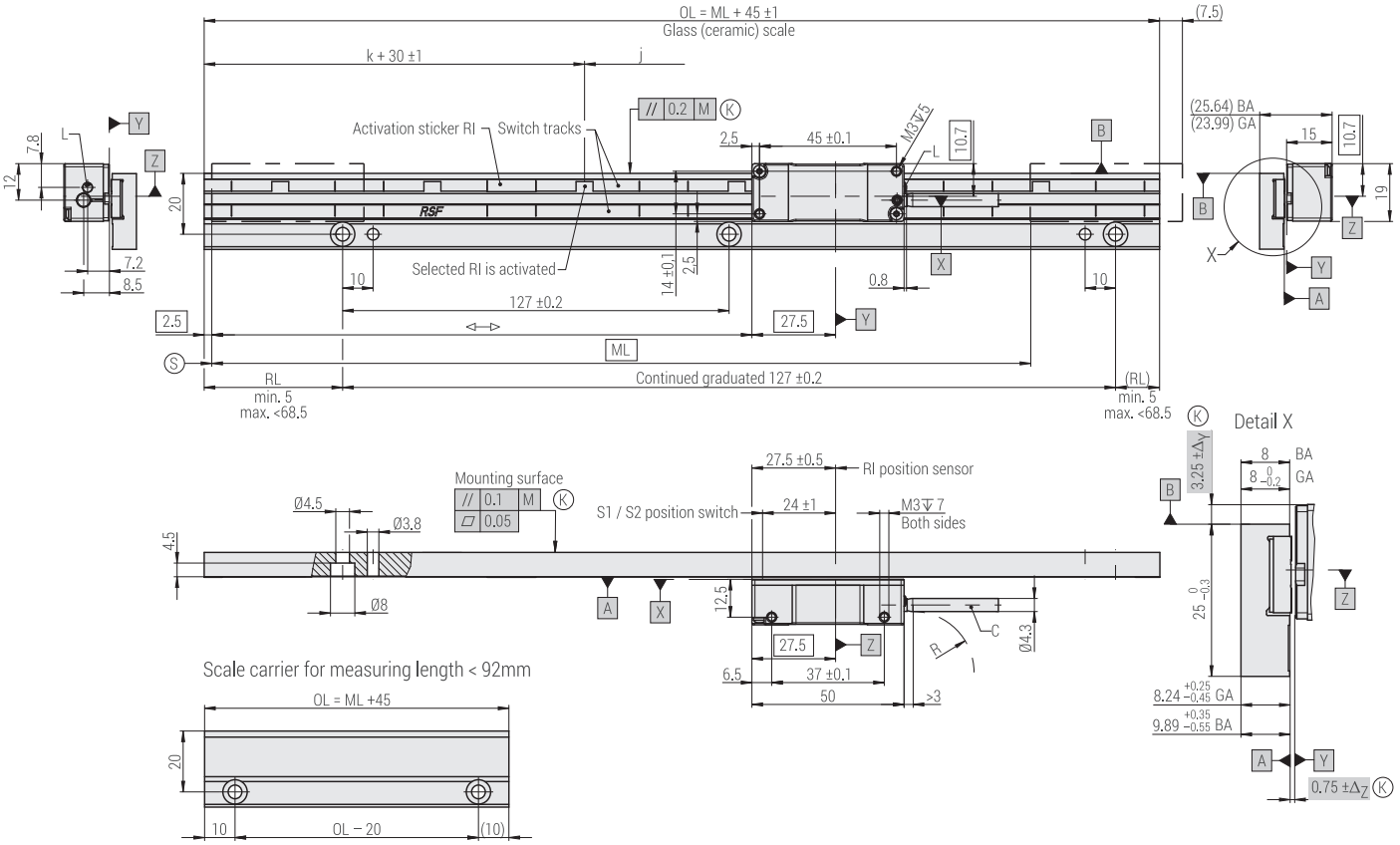
mm
Tolerancing ISO 8015
ISO 2768: 1989 - m H
< 6 mm: ±0.2 mm

Affixing cover tapes for the switch position and activation of the selectable reference marks see page 16.

MS 35 GA, BA

- Version GA: Glass scale in aluminum carrier
- Version BA: Glass ceramics scale in aluminum carrier
- Carrier bolted

Dimensions, mounting tolerances:



M	=	Machine guideway
ML	=	Measuring length
OL	=	Overall length
⟷	=	0 ... ML
RI	=	Selectable reference mark(s)
k	=	Any position of selected reference mark from beginning of the measuring length
j	=	Additional reference marks separated by n × 50
C	=	Cable
(K)	=	Required mating dimensions

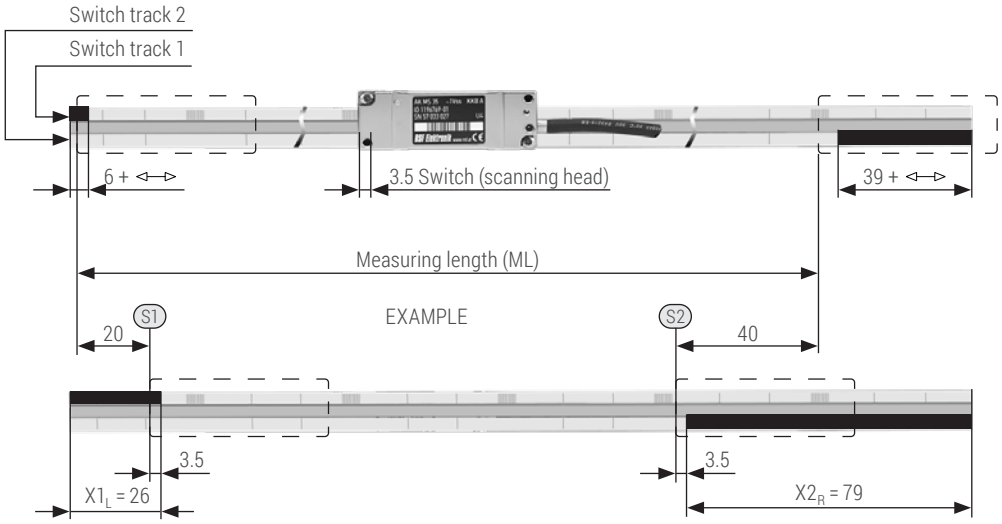
Permissible position deviation scanning head– scale A B

Δ_Y	=	Displacement, ±0.5 mm
Δ_Z	=	Gap tolerance, ±0.2 mm
φ_Z	=	±0,25 mrad or ±0.014° (yaw angle)
φ_Y	=	±5,00 mrad or ±0.29° (pitch angle)
φ_X	=	±5,00 mrad or ±0.29° (roll angle)

Affixing cover tapes for the switch position and activation of the selectable reference marks see page 16.

REFERENCE MARK (RI)- AND SWITCH POINTS-SELECTION

Positioning of the activation tapes



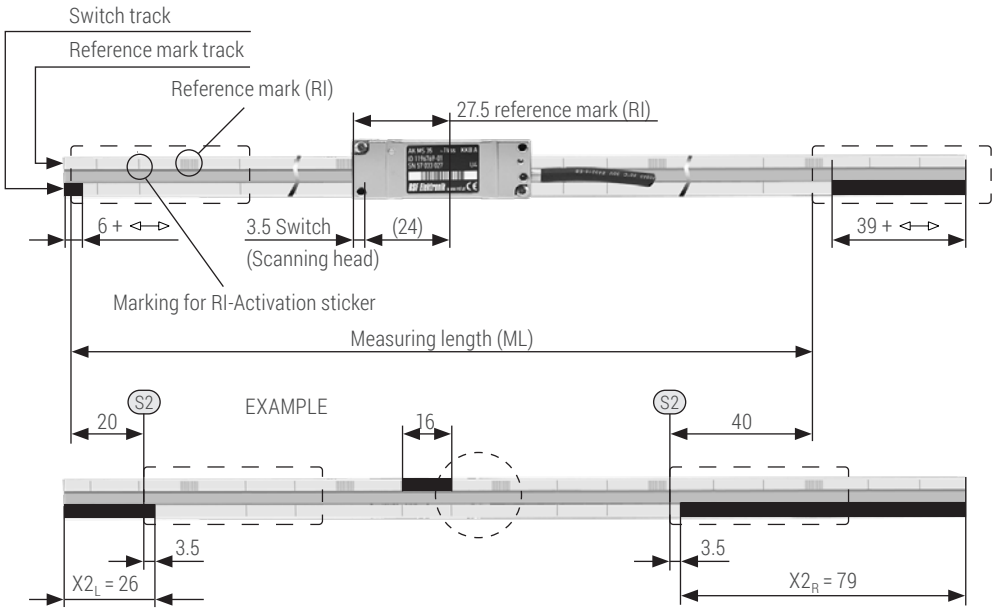
S1 = Switch point signal S1 from beginning of ML
$X1_L$ = Activation tape length
$X1_L$ = S1 + 6

S2 = Switch point signal S1 before end of ML
$X2_R$ = Activation tape length
$X2_R$ = S1 + 39

EXAMPLE

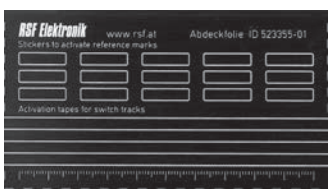
S1: 20 mm from beginning of ML, → $X1_L$ resp. $X2_L$ = 26 mm
S2: 40 mm before end of ML, → $X2_R$ = 79 mm

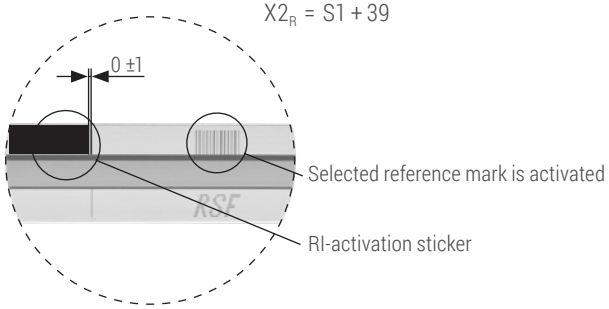
Reference mark (RI)-selection



S2 = Switch point signal S2 from beginning of ML
$X2_L$ = Activation tape length
$X2_L$ = S2 + 6

S2 = Switch point signal S1 before end of ML
$X2_R$ = Activation tape length
$X2_R$ = S1 + 39





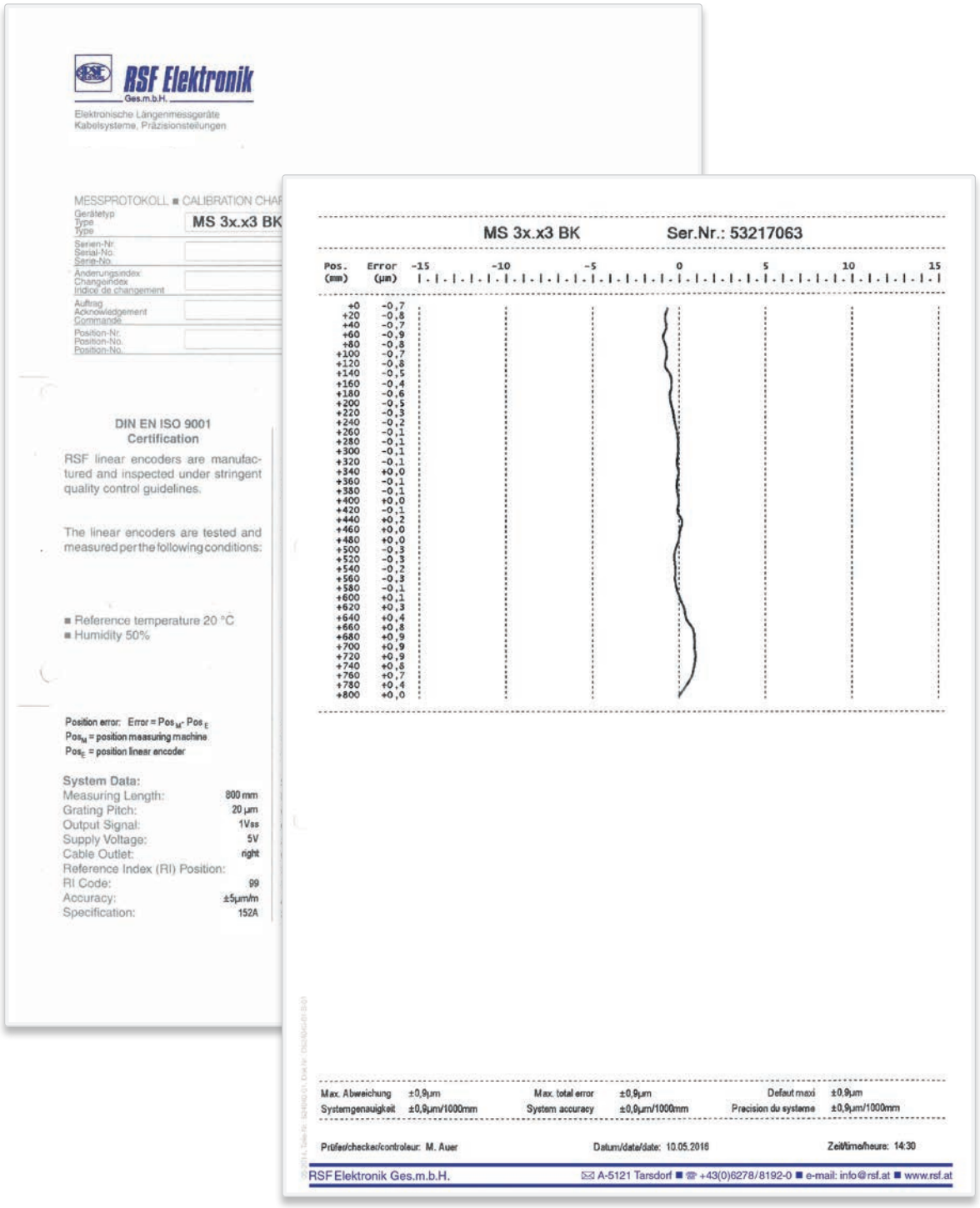
ACCURACY

The accuracy of the linear encoder is classified with a „± tolerance“ in µm/m (e.g. ± 5 µm/m).

The accuracy refers to any meter within the measuring length.
For measuring lengths less than 1000 mm, the accuracy specification applies to the whole measuring length.

For best system accuracy, the encoder should be mounted near the machining level
and as parallel as possible to the motion direction.

Example of a typical calibration chart for a MS 35 scale tape:



RSF Elektronik
Ges.m.b.H.
Elektronische Längenmessgeräte
Kabelsysteme, Präzisionsteilungen

MESSPROTOKOLL ■ CALIBRATION CHAR

Gerätetyp / Type / Type	MS 3x.x3 BK
Serien-Nr. / Serial-No. / Série-No.	
Änderungsindex / Change-index / Indice de changement	
Auftrag / Acknowledgement / Commande	
Position-Nr. / Position-No. / Position-No.	

DIN EN ISO 9001 Certification

RSF linear encoders are manufactured and inspected under stringent quality control guidelines.

The linear encoders are tested and measured per the following conditions:

- Reference temperature 20 °C
- Humidity 50%

Position error: Error = Pos_M - Pos_E
Pos_M = position measuring machine
Pos_E = position linear encoder

System Data:

Measuring Length:	800 mm
Grating Pitch:	20 µm
Output Signal:	1Vss
Supply Voltage:	5V
Cable Outlet:	right
Reference Index (RI) Position:	
RI Code:	99
Accuracy:	±5µm/m
Specification:	152A

MS 3x.x3 BK Ser.Nr.: 53217063

Pos. (mm)	Error (µm)
+0	-0,7
+20	-0,8
+40	-0,7
+60	-0,9
+80	-0,8
+100	-0,7
+120	-0,8
+140	-0,5
+160	-0,4
+180	-0,6
+200	-0,5
+220	-0,3
+240	-0,2
+260	-0,1
+280	-0,1
+300	-0,1
+320	-0,1
+340	+0,0
+360	-0,1
+380	-0,1
+400	+0,0
+420	-0,1
+440	+0,2
+460	+0,0
+480	+0,0
+500	-0,3
+520	-0,3
+540	-0,2
+560	-0,3
+580	-0,1
+600	+0,1
+620	+0,3
+640	+0,4
+660	+0,8
+680	+0,9
+700	+0,9
+720	+0,9
+740	+0,8
+760	+0,7
+780	+0,4
+800	+0,0

Max. Abweichung	±0,9µm	Max. total error	±0,9µm	Defaut maxi	±0,9µm
Systemgenauigkeit	±0,9µm/1000mm	System accuracy	±0,9µm/1000mm	Precision du système	±0,9µm/1000mm

Prüfer/checker/controleur: M. Auer Datum/date/date: 10.05.2016 Zeit/time/heure: 14:30

RSF Elektronik Ges.m.b.H. ✉ A-5121 Tarsdorf ■ ☎ +43(0)6278/8192-0 ■ e-mail: info@rsf.at ■ www.rsf.at

INSPECTION OF FUNCTION

STATUS OF LED	INFORMATION	NOTE
Without external test box		
Function-control main track		
▪ LED displays GREEN	Counting signals very good	After successful mounting
▪ LED blinks GREEN	Counting signals good	At mounting not allowed → allowed during operation
▪ LED blinks RED	Counting signals out of tolerance → error	Check mounting, clean scale
Function-control reference impulse RI		**Only by passing the reference mark**
▪ LED blinks BLUE	RI within tolerance	
▪ LED blinks RED	RI out of tolerance	Check mounting, clean scale
With external test box		
Function-control main track		
▪ LED displays GREEN	Scanning head supplied with power	Evaluation of counting signals via LED not active
Function-control reference impulse RI		**Only by passing the reference mark**
▪ LED blinks BLUE	RI within tolerance	
▪ LED blinks RED	RI out of tolerance	Check mounting, clean scale

Note! If the scanning head passes a further reference mark within 0.5 s the information of the reference mark will not be stated by the function control. Thus the information of the incremental signals will also be displayed at high traversing speed and/or many active reference marks.

EXTERNAL TESTING DEVICE PWT 101

Even though the MS 35 linear encoders allow large mechanical mounting tolerances, it is recommended to control the function of counting signals and reference impulse.

The signals can be controlled directly via the integrated LED function-control or connected to an oscilloscope and checked for conformity with signal specifications. The last mentioned method requires some effort.

The PWT 101 is a testing device for checking the function and adjustment of RSF Elektronik encoders. At encoders with pin assignment according to RSF standard (compare page 05) the pinout adapter PA2 must be used additionally. At alternative pin assignments other pinout adapters could be necessary.

Thanks to its compact dimensions and robust design, the PWT 101 is ideal for mobile use. A 4.3-inch touchscreen provides for display and operation.

Available functions

The performance range of the PWT 101 can be expanded by firmware update. Appropriate firmware files that can be imported to the PWT 101 through a memory card (not included in delivery) will be made available at www.heidenhain.de.

DISTRIBUTION CONTACTS

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Date 01/2024 ■ Art.Nr.510205-27 ■ Dok.Nr. D510205-03-A-26 ■ Technical adjustments in reserve!