

LIK 21 LIK 22 LIK 23

Exposed Linear Encoders
compact model range

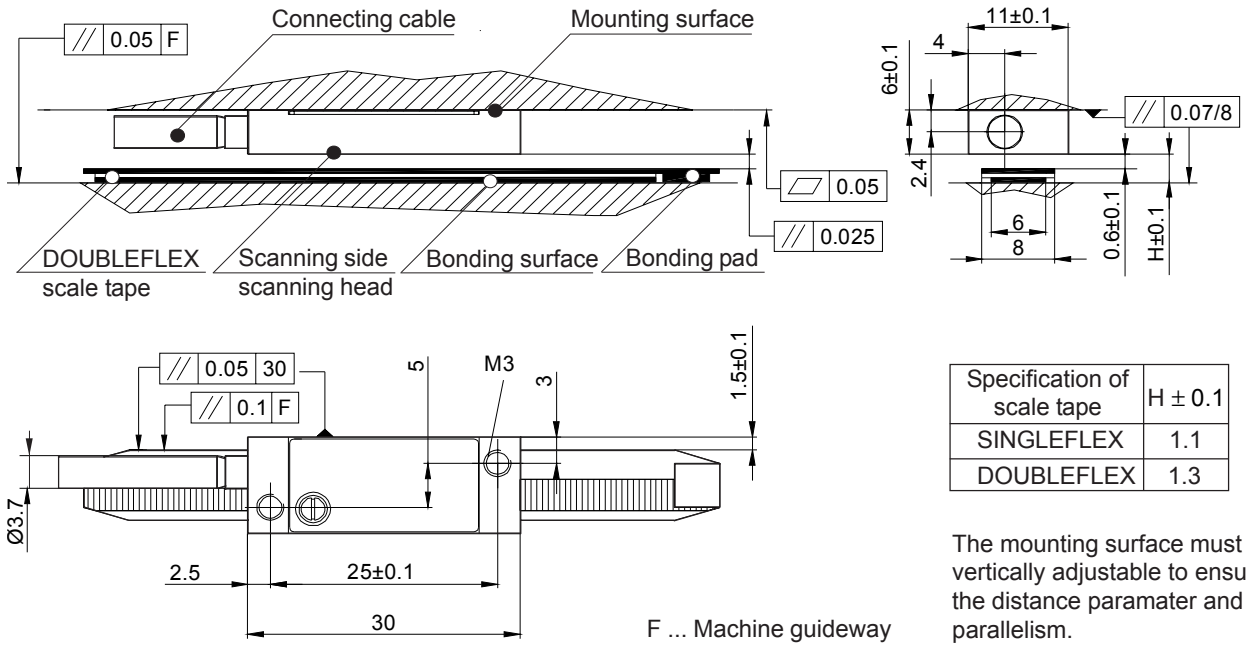
Exposed Linear Encoders- compact model range LIK 21 LIK 22 LIK 23

- Extremely small dimensions of scanning head for crowded installation conditions
- High insensitivity to contamination of scale tapes due to two optical sensors in the scanning head
- High resolution and accuracy
- High interpolation accuracy due to electronic offset-compensation
- Signal processing in the D-Sub-connector
- Integrated signal interpolation up to 100x in the connector

- Optional with installation LED
- Wide mounting tolerances
- Defined thermal behavior of the DOUBLEFLEX scale tape
- Mechanical decoupled DOUBLEFLEX scale tape
- Simple mounting of the scale tapes because of double-side adhesive tapes

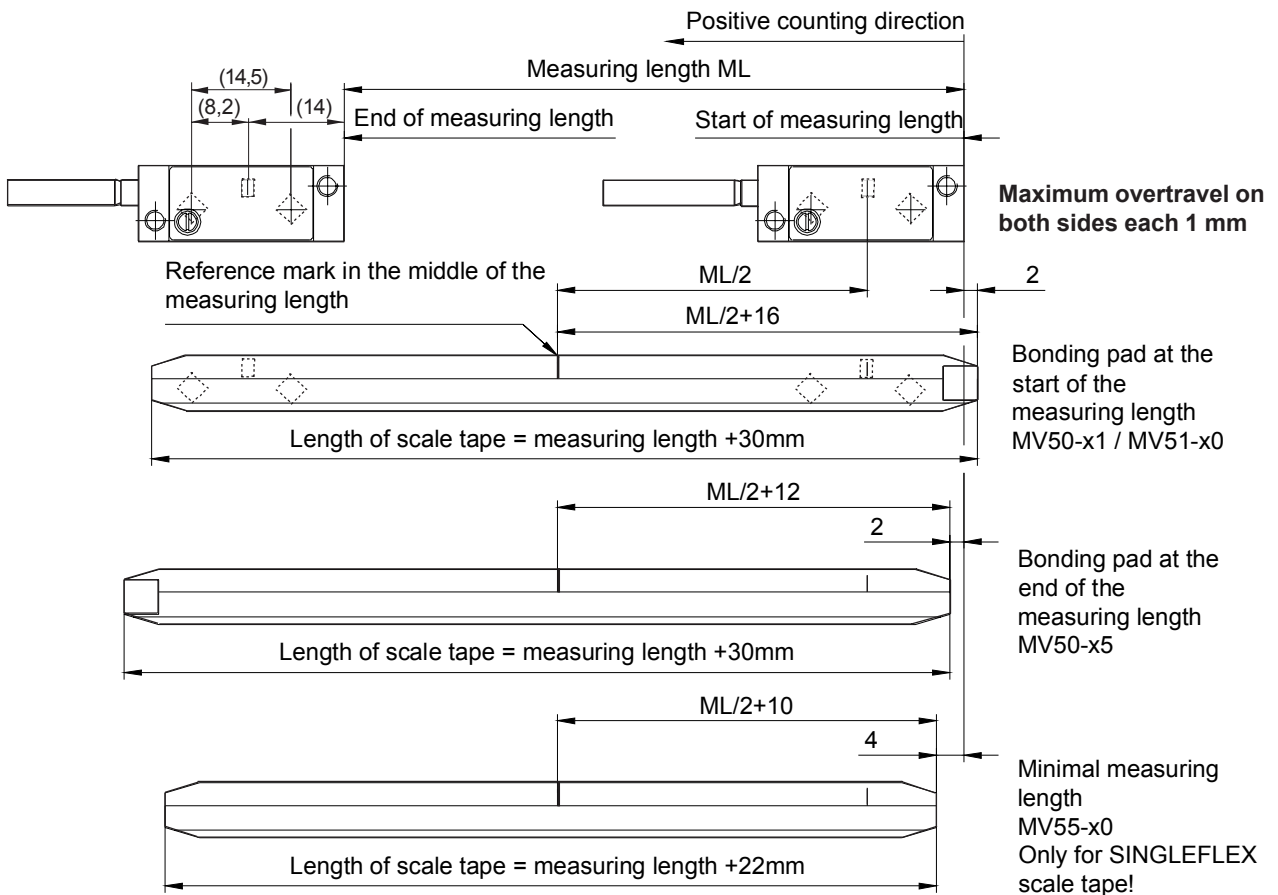
Technical data

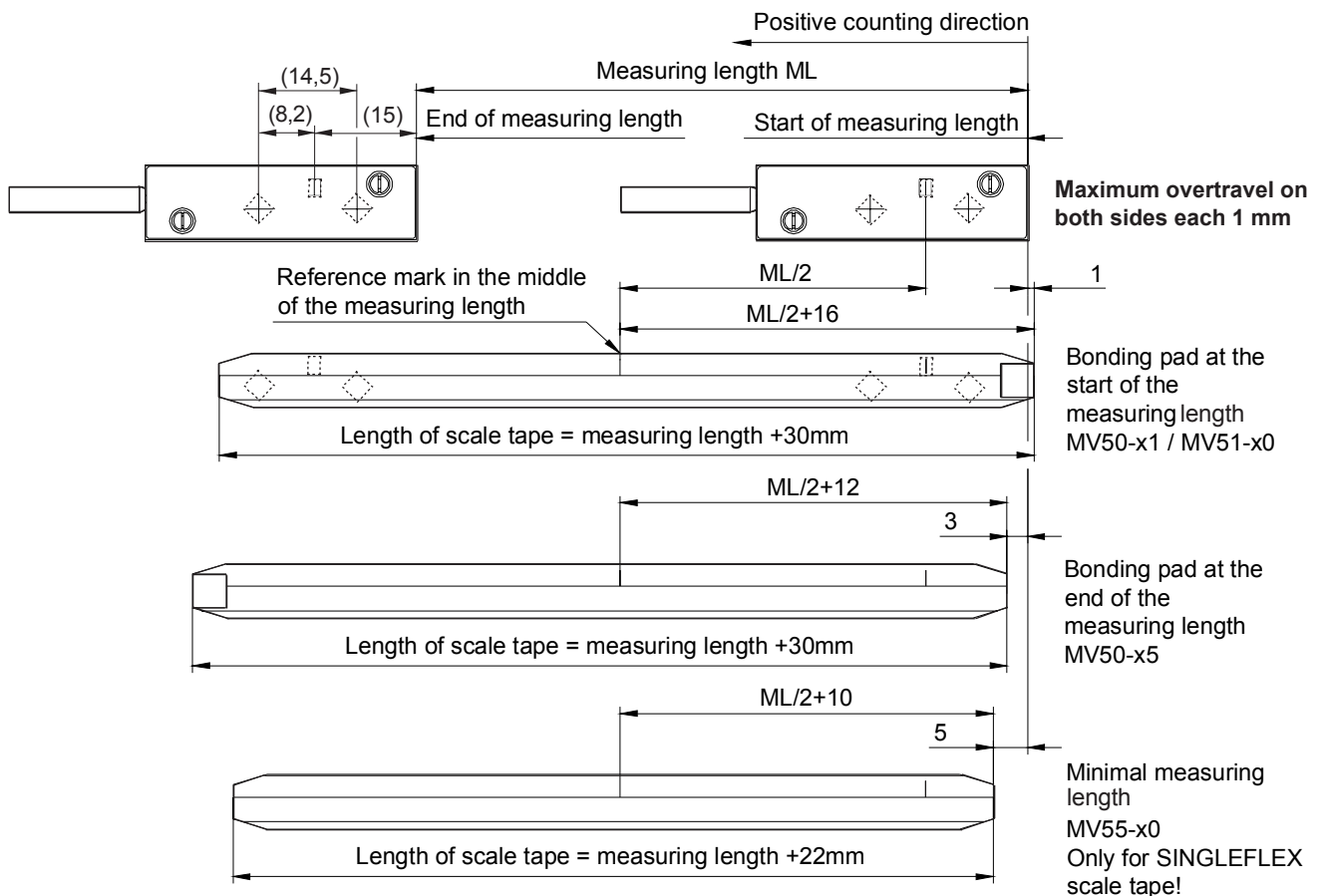
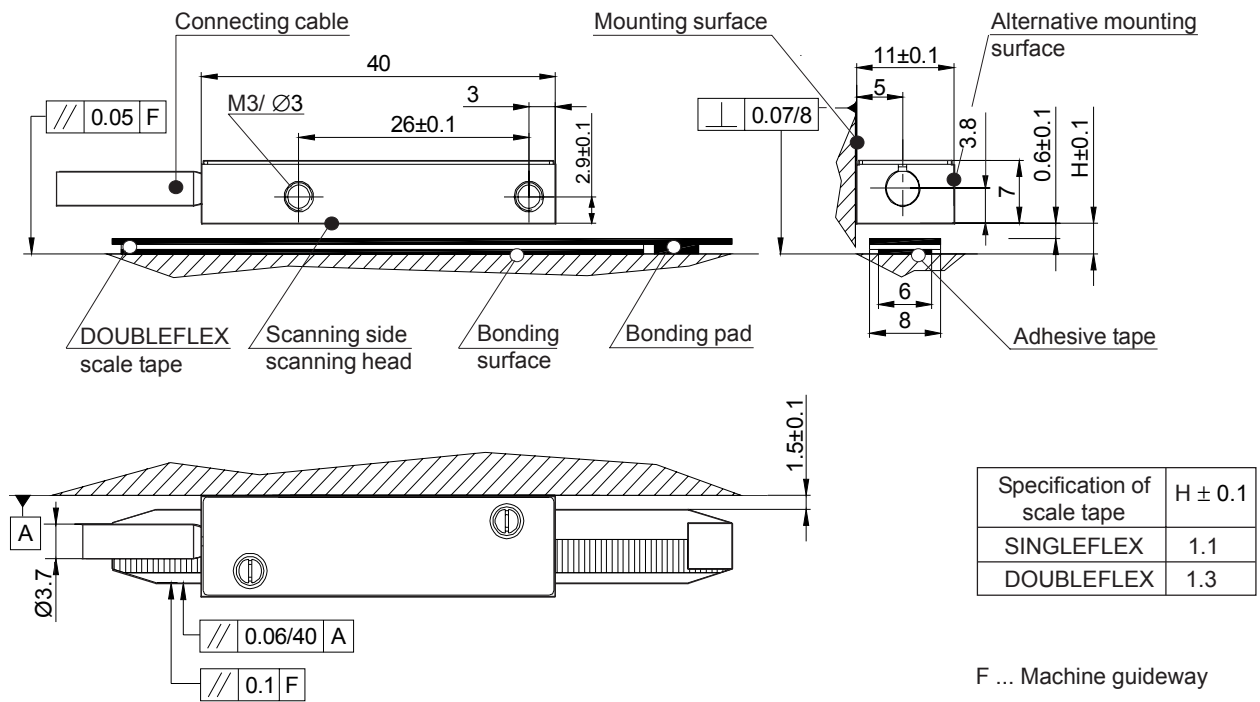
	LIK 21	LIK 22	LIK 23
Mechanical data			
Scanning head dimensions [mm]	30 x 11 x 6	40 x 11 x 7	32 x 11 x 9,5
Weight of scanning head (without cable)	3.2 g	5.5 g	5.0 g
Recommended resolution	0.05 µm; 0.1 µm; 0.2 µm; 0,5 µm; 1.0 µm; 5.0 µm		
Travel speed			
- without interpolation (maximum)	600 m/min resp. 10 m/s		
- with 50x interpolation (maximum)	96 m/min resp. 1.6 m/s		
Measuring length	up to 30 m		
Scale tape			
- Material	steel		
- Grating period (GP)	20 µm standard		
- Reference marks	- periodically every 50 mm, starting from the middle of the measuring length - distance coded at 1000 x GP - at the center of the measuring length - others on request		
Linear expansion coefficient			
- DOUBLEFLEX- scale tape	10.5 x 10 ⁻⁶ deg ⁻¹		
- SINGELFLEX- scale tape	as function of material of the mounting surface		
Accuracy classes			
- DOUBLEFLEX- scale tape	±1 µm; ±2 µm; ±3 µm; ±5 µm		
- SINGELFLEX- scale tape	±5 µm; other on request		
Electrical data			
Scanning frequency	max. 500 kHz		
Output interfaces and connectors			
Voltage output	1V _{pp} / 15 pin D-Sub-connector		
Square wave output (RS 422)	RS 422 with interpolation up to 50x / 15pin D-Sub-connector		
Supply voltage	5V DC ±10%		
Power consumption			
Voltage output	80 mA ¹⁾ ; 100mA ²⁾		
Square wave output	200 mA ¹⁾ ; 220 mA ²⁾		
	¹⁾ ...without installation-LED; ²⁾ ...with installation-LED		
Cable lengths			
Cable permanently connected to the scanning head	up to 3 m (standard lengths: 0.3 m; 0.5 m; 1 m; 1,5 m; 2 m; 3 m)		
Permissible total cable length (with extension cable)	max. 100 m with extension cable		
Cables` permissible bending radius			
	bent once: 8 mm		
	moving constantly: 40 mm		
Ambient conditions			
Operating temperature range	0°C ... 55°C		
Storage temperature range	-20°C ... +70°C		
Vibration (50Hz ... 2000Hz)	≤ 200ms ⁻²		
Shock (11ms)	≤ 400ms ⁻²		

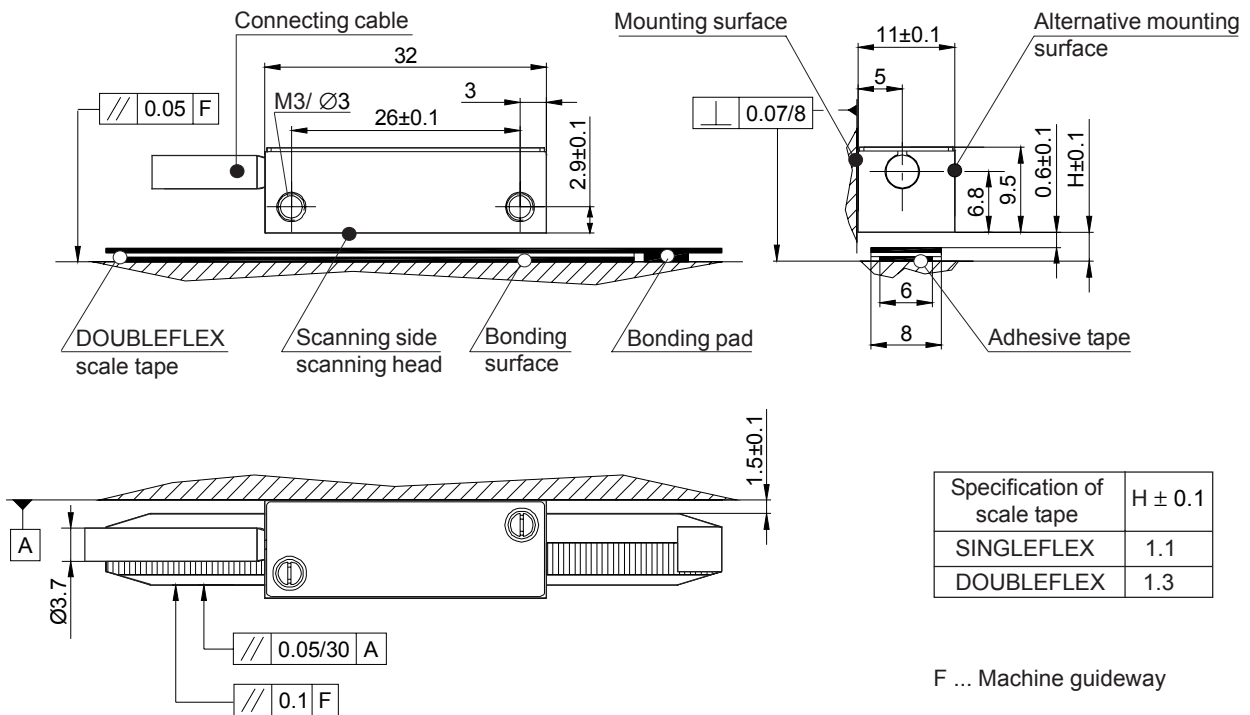


The mounting surface must be vertically adjustable to ensure the distance parameter and the parallelism.

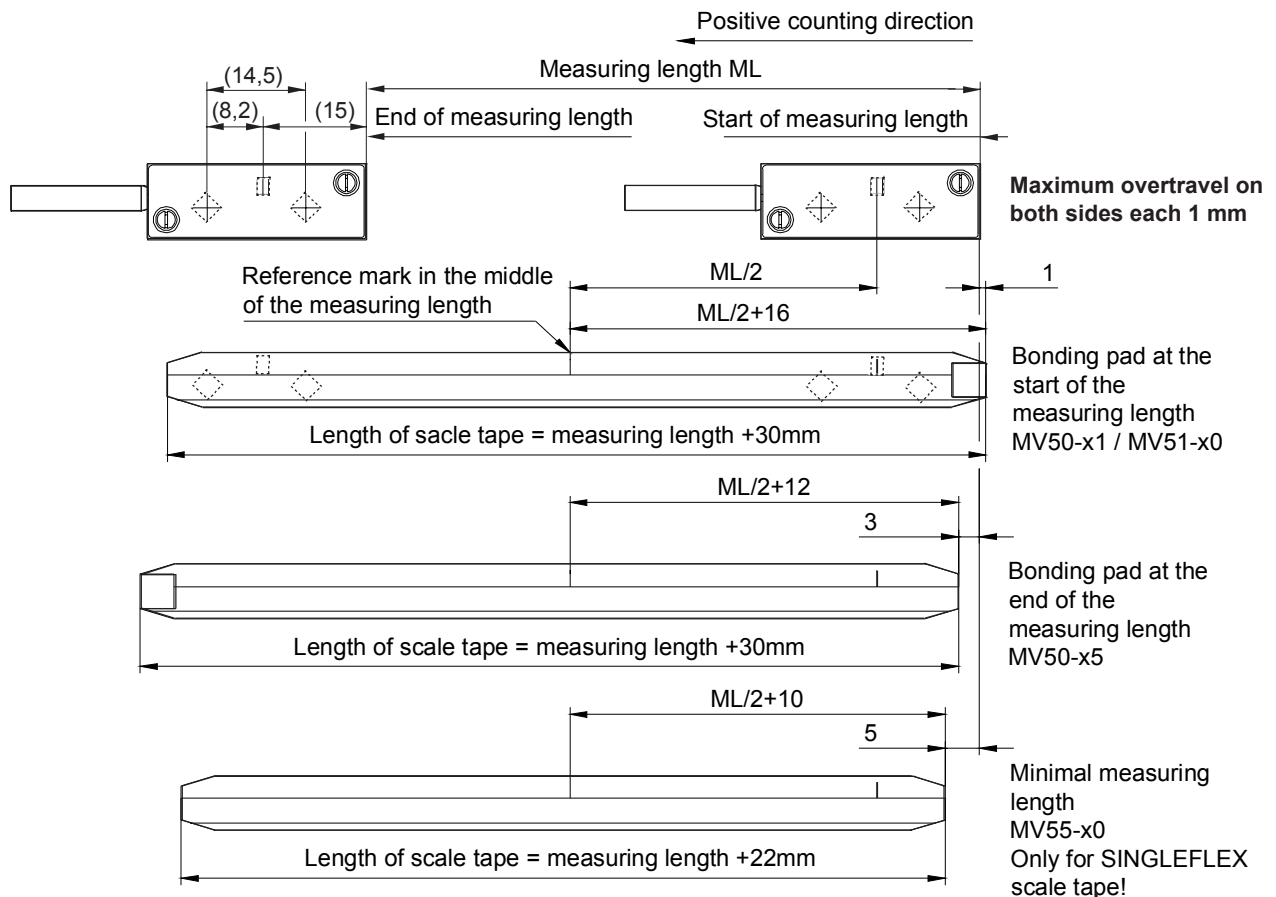
Allocation of scanning head, scale tape and measuring length





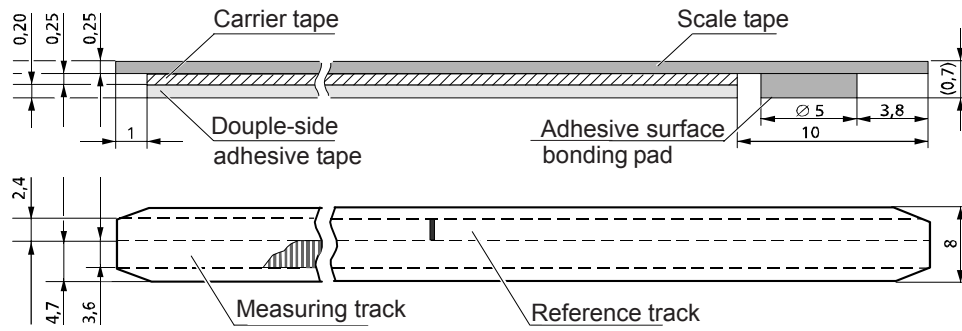


Allocation of scanning head, scale tape and measuring length

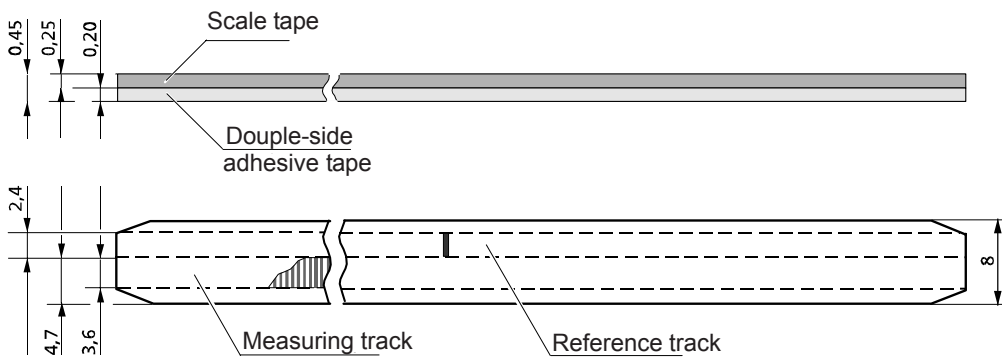


Design of scale tape

DOUBLEFLEX scale tape - invariably **with** bonding pad

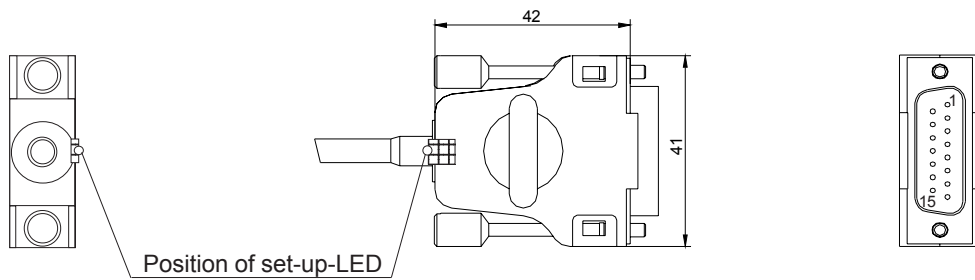




SINGLEFLEX scale tape - invariably **without** bonding pad



Connector, pin assignment

15pin D-Sub-connector



Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Housing
1V_{pp} 	-	-	-	U ₀₋	U ₂₋	U ₁₋	5V	5V	0V	-	-	U ₀₊	U ₂₊	U ₁₊	-	shield
RS 422 	-	-	NAS	Z ₀₋	Z ₂₋	Z ₁₋	5V*	5V*	0V	-	AS	Z ₀₊	Z ₂₊	Z ₁₊	-	shield
Colour	-	-	vt	pk	rd	bn	bu	bu	wh	-	-	gy	bk	gn	-	

* ... bridged in the connector

Ordering key for scanning head

Designation example

LIK 2 1 - L 4 1 - T Z

Sensor

2	Two field sensor
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Dimension (mm)

1	30 x 11 x 6 mm ³
2	40 x 11 x 7 mm ³
3	32 x 11 x 9.5 mm ³

Grating period

-	20 µm
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Output signals

C	sinusoidal signal 1 V _{pp}
L	square wave signal RS 422 with 5x interpolator
M	square wave signal RS 422 with 10x interpolator
I	square wave signal RS 422 with 25x interpolator
N	square wave signal RS 422 with 50x interpolator
P	square wave signal RS 422 with 100x interpolator

1 ... supplied with surcharge
2 ... only for LIK 22 and LIK 23

Connectors on cable

Z	15pin D Sub; electronics in the connector
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Cable fixed to the scanning head (Ø 3.7 mm)

R	0.3 m
S	0.5 m
T	1 m
P	1,5 m
V	2 m
W	3 m
U ¹	other length on request (length max. 3 m)

Version

-	standard
3 ¹	non- magnetic scanning head
K	set-up- LED in the connector
N ¹	non- magnetic scanning head; set- up- LED in the connector

Installation conditions

2	thread M3 in the scanning head
1 ²	bore Ø 3 in the scanning head

Frequency/ Edge separation

X	distinguishing mark for clock frequency of counter on request (only valid for versions with interpolation)
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Ordering key for scale tapes

Designation example

MV 5 0 - 1 1 B P 00770

Material

5	steel tape/ double array sensor
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Design type

0	DOUBLEFLEX, standard ³
1	SINGLEFLEX, standard
5	minimal measuring length with reference mark ^{1,4}

Accuracy class

1	± 1 µm
2	± 2 µm
3	± 3 µm
4	± 5 µm

Position of bonding pad/ construction

0	none ¹
1	bonding pad at the start of measuring length ²
3	without adhesive tape
5**	bonding pad at the end of measuring length ²

measuring length (ML) [mm]

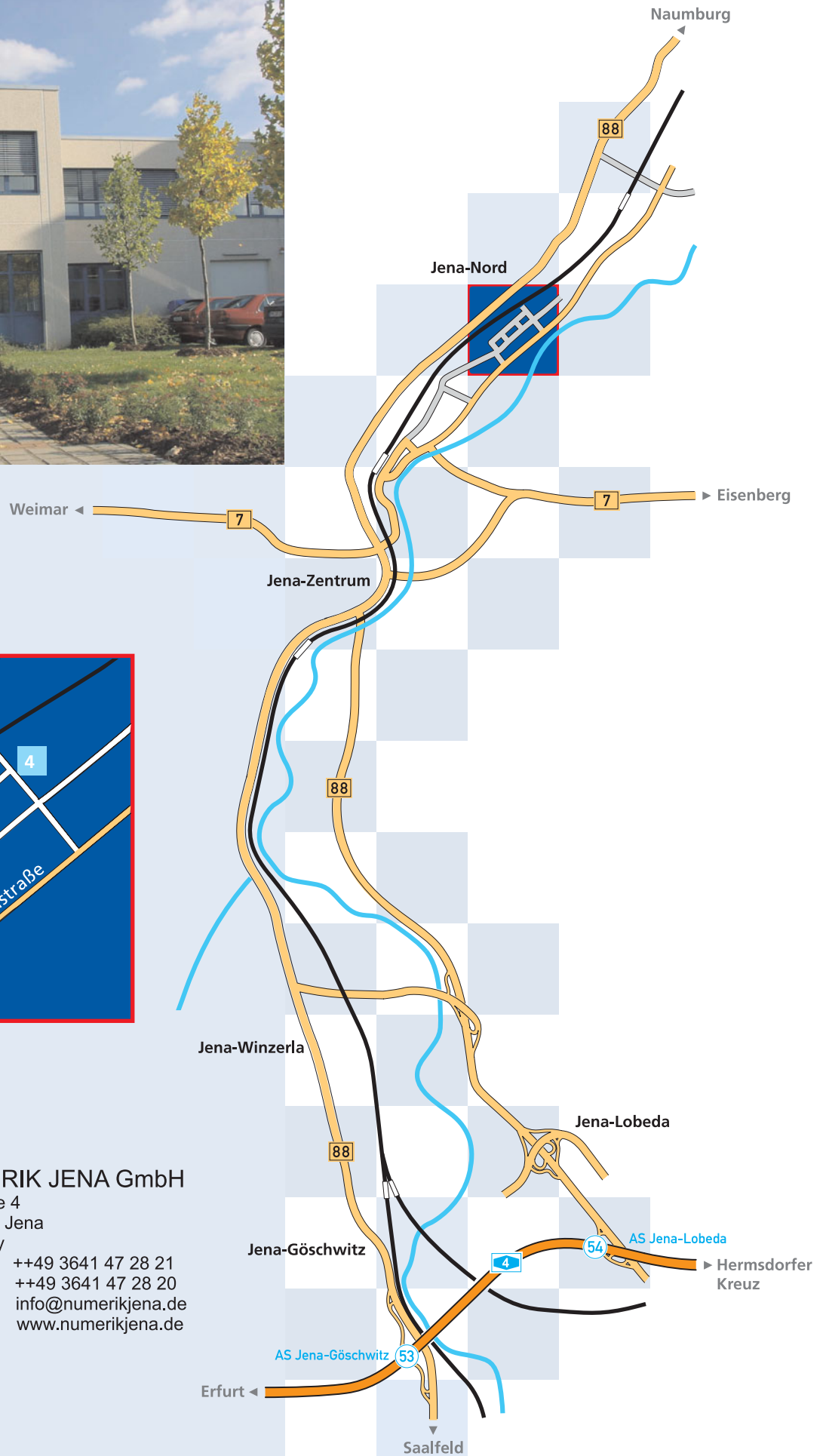
Grating period

P	20 µm
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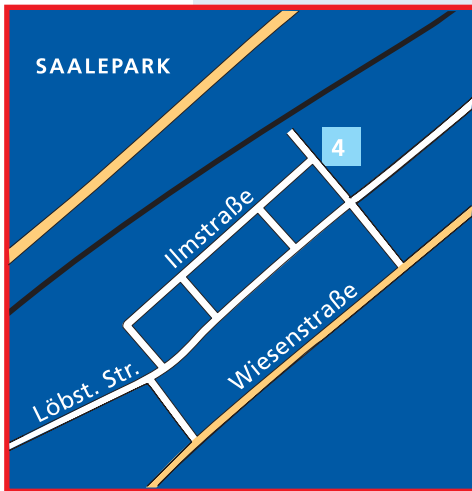
Position of reference mark (RM)

O	none
B	RM in the center of the measuring length
F	RM distance coded at 1000 * GP ⁵
N	RM at 50 mm spacings, starting at the center of measuring length
E**	customized version ⁶

1 ... only for SINGLEFLEX scale tape
2 ... only for DOUBLEFLEX scale tape
3 ... minimal measuring length of DOUBLEFLEX scale tape= 100 mm
maximal measuring length of DOUBLEFLEX scale tape= 7300 mm
4 ... measuring length + 22 mm
5 ... maximal measuring length= 8000mm
6 ... specified in XXX mm from start of measuring length
**... no standard, supplied with surcharge



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