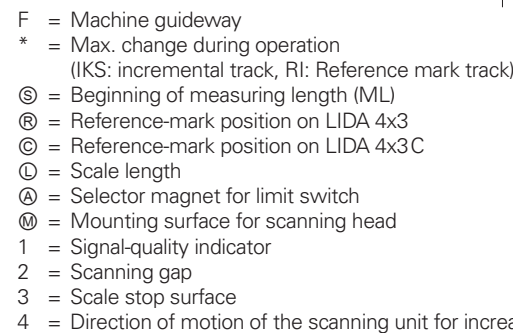


- For measuring steps of down to 10 nm
- Glass or glass ceramic measuring standard
- Measuring standard secured with adhesive film
- Consisting of a linear scale and scanning head



Robax is a registered trademark of Schott-Glaswerke, Mainz, Germany

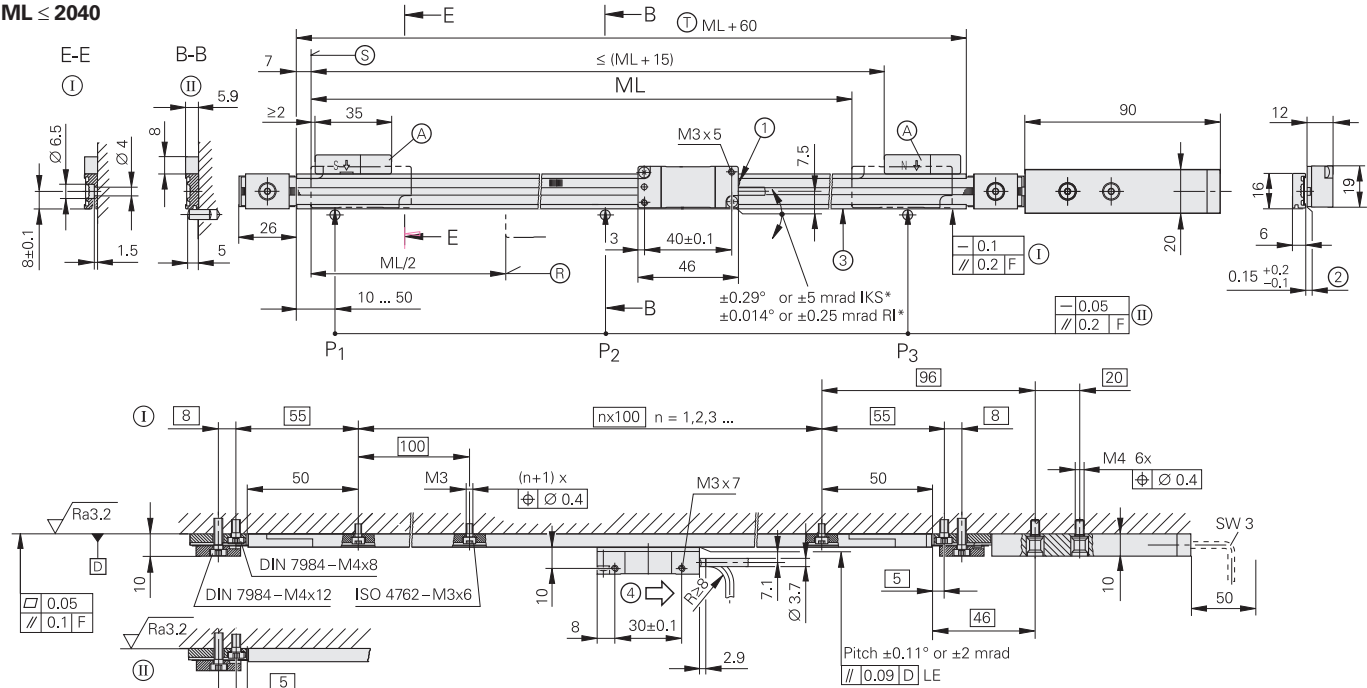
LIDA 475, LIDA 485

Incremental linear encoders for measuring lengths of up to 30 m

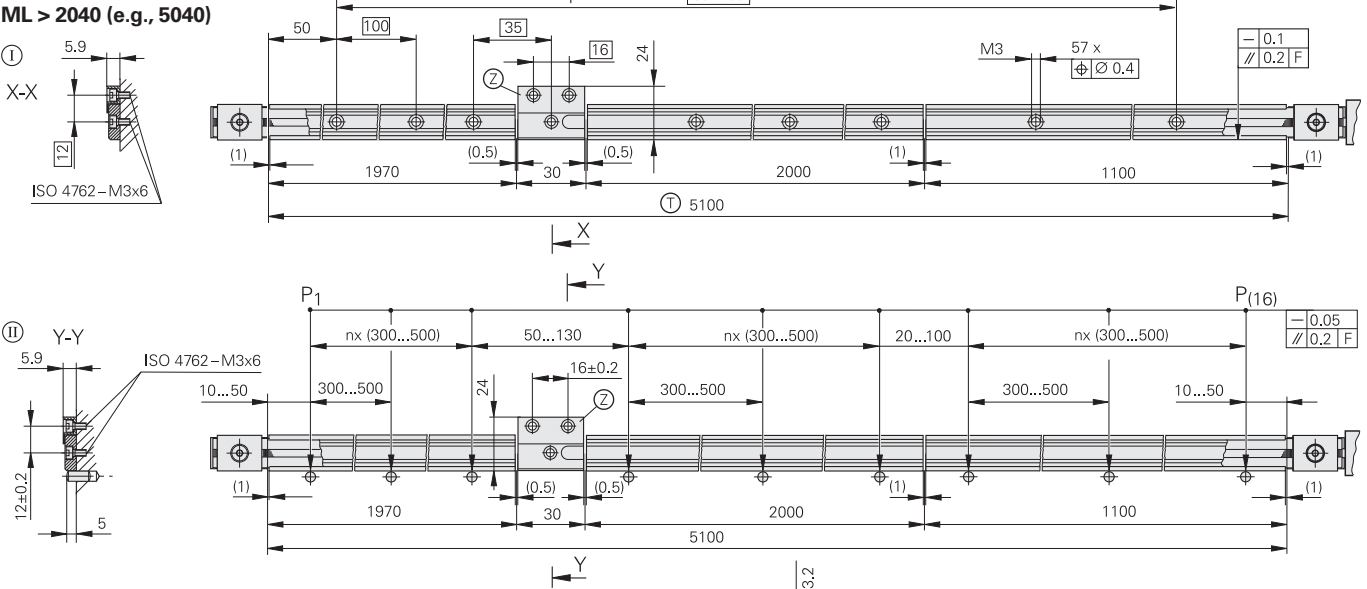
- For measuring steps of down to 10 nm
- Limit switches
- Steel scale tape pulled through aluminum extrusions and tensioned
- Consisting of a linear scale and scanning head



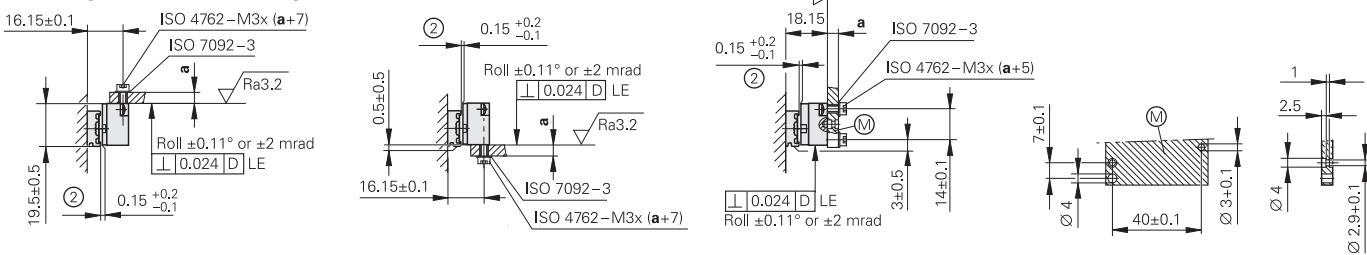
ML ≤ 2040



ML > 2040 (e.g., 5040)



Mounting options for scanning head



mm
Tolerancing ISO 8015
ISO 2768:1989-mH
≤ 6 mm: ±0.2 mm

- ① = Scale carrier sections secured with screws
② = Scale carrier sections adhesively bonded with PRECIMET
F = Machine guideway
* = Maximum change during operation (IKS: incremental track, RI: reference mark track)
P = Measuring points for alignment
S = Beginning of measuring length (ML)
R = Reference mark position
- A = Selector magnet for limit switch
T = Carrier length
Z = Spacer for measuring lengths of 3040 mm or greater
M = Mounting surface for scanning head
1 = Signal-quality indicator
2 = Scanning gap
3 = Carrier stop surface
4 = Direction of motion of the scanning unit for increasing position values

Scale	LIDA 405				
Measuring standard	Steel scale tape with METALLUR scale grating; grating period: 20 µm				
Coefficient of linear expansion	Depends on the mounting surface				
Accuracy grade	±5 µm				
Baseline error	≤ ±0.750 µm/50 mm (typical)				
Measuring length (ML)* in mm	140	240	340	440	540
	1540	1640	1740	1840	1940
	2040				
	Longer meas. lengths (up to 30 040 mm) with one-piece scale tape and individual scale carrier sections				
Reference marks	One at midpoint of measuring length				
Mass	115 g + 0.25 g/mm of measuring length				

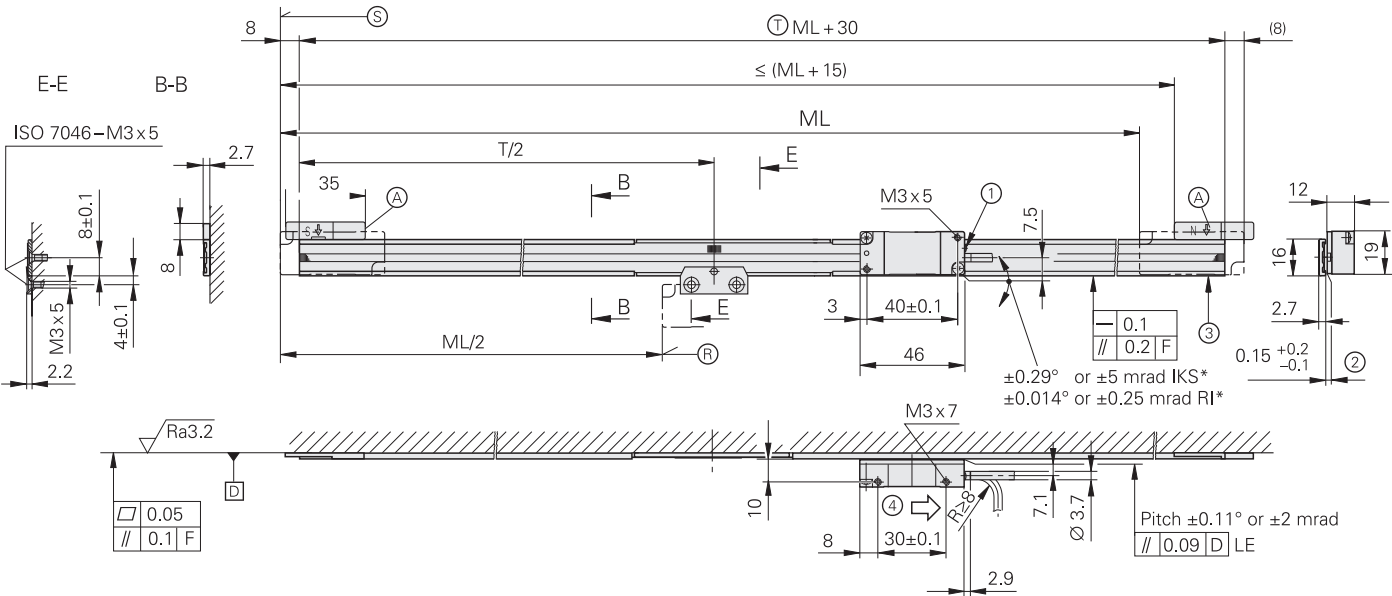
Scanning head	LIDA 48	LIDA 47			
Interface	 1 V _{PP}				
Integrated interpolation* Signal period	– 20 μm	5-fold 4 μm	10-fold 2 μm	50-fold 0.4 μm	100-fold 0.2 μm
Cutoff frequency –3 dB	≥ 500 kHz	–			
Scanning frequency*	–	≤ 400 kHz ≤ 200 kHz ≤ 100 kHz ≤ 50 kHz	≤ 200 kHz ≤ 100 kHz ≤ 50 kHz ≤ 25 kHz	≤ 50 kHz ≤ 25 kHz ≤ 12.5 kHz	≤ 25 kHz ≤ 12.5 kHz ≤ 6.25 kHz
Edge separation <i>a</i> ¹⁾	–	≥ 0.100 μs ≥ 0.220 μs ≥ 0.465 μs ≥ 0.950 μs	≥ 0.100 μs ≥ 0.220 μs ≥ 0.465 μs ≥ 0.950 μs	≥ 0.080 μs ≥ 0.175 μs ≥ 0.370 μs	≥ 0.080 μs ≥ 0.175 μs ≥ 0.370 μs
Traversing speed ¹⁾	≤ 600 m/min	≤ 480 m/min ≤ 240 m/min ≤ 120 m/min ≤ 60 m/min	≤ 240 m/min ≤ 120 m/min ≤ 60 m/min ≤ 30 m/min	≤ 60 m/min ≤ 30 m/min ≤ 15 m/min	≤ 30 m/min ≤ 15 m/min ≤ 7.5 m/min
Interpolation error	±45 nm	–			
Limit switches	L1/L2 with two different magnets; <i>output signals</i> : TTL (without line driver)				
Electrical connection	Cable (0.5 m/1 m/3 m) with 15-pin D-sub connector (male)				
Cable length	See interface description; however, <i>limit</i> : ≤ 20 m (with HEIDENHAIN cable)				
Supply voltage	DC 5 V ±0.5 V				
Current consumption	< 130 mA	< 150 mA (without load)			
Vibration 55 Hz to 2000 Hz Shock 6 ms	≤ 500 m/s ² (EN 60068-2-6) ≤ 1000 m/s ² (EN 60068-2-27)				
Operating temperature	–10 °C to 70 °C				
Mass	Scanning head: 20 g (without cable) Cable: 22 g/m Connector: 32 g				

* Please select when ordering
1) At a corresponding cutoff or scanning frequency

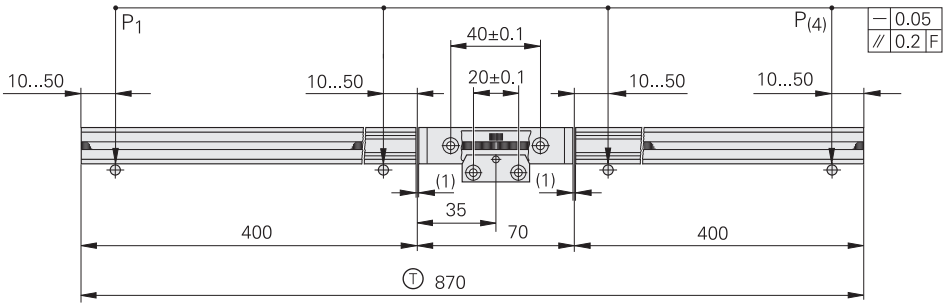
LIDA 477, LIDA 487

Incremental linear encoders for measuring ranges of up to 6 m

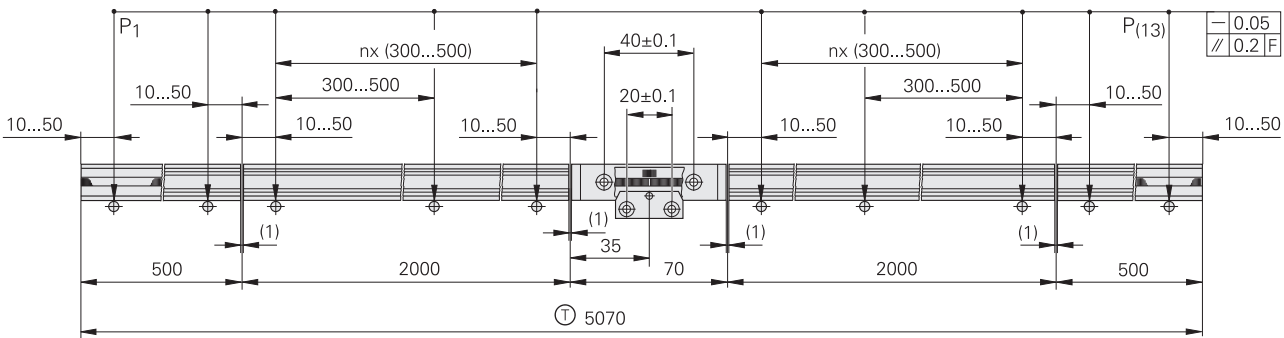
- For measuring steps of down to 10 nm
- Limit switches
- Steel scale tape pulled through adhesive aluminum extrusions and secured at center
- Consisting of a linear scale and scanning head



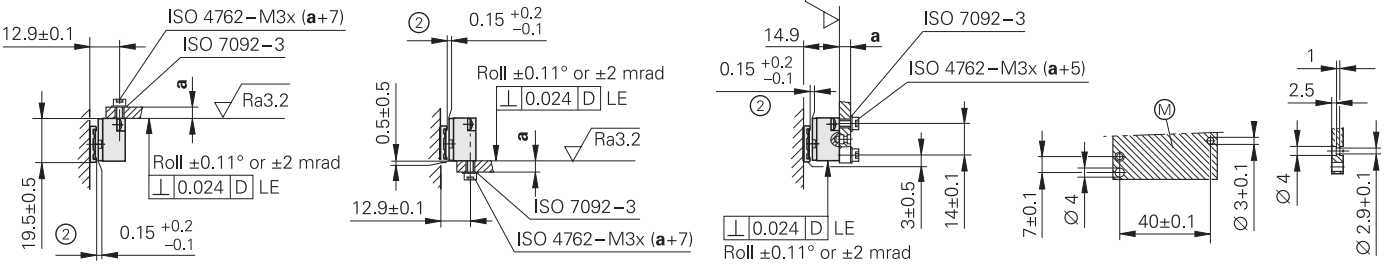
ML ≤ 2040
(e.g., 840)



ML > 2040
(e.g., 5040)



Mounting options for scanning head



mm
Tolerancing ISO 8015
ISO 2768:1989-mH
≤ 6 mm: ±0.2 mm

F = Machine guideway
* = Maximum change during operation
(IKS: incremental track, RI: reference mark track)
P = Measuring points for alignment
S = Beginning of measuring length (ML)
R = Reference mark position
A = Selector magnet for limit switch

T = Carrier length
M = Mounting surface for scanning head
1 = Signal-quality indicator
2 = Scanning gap
3 = Carrier stop surface
4 = Direction of motion of the scanning unit for increasing position values



Scale	LIDA 407									
Measuring standard Coefficient of linear expansion	Steel scale tape with METALLUR scale grating; grating period: 20 µm $\alpha_{\text{therm}} \approx 10 \cdot 10^{-6} \text{ K}^{-1}$									
Accuracy grade*	±3 µm (up to ML 1040); ±5 µm (for ML 1240 or greater); ±15 µm ¹⁾									
Baseline error	≤ ±0.750 µm/50 mm (typical)									
Measuring length (ML)* in mm	240	440	640	840	1040	1240	1440	1640	Scale tape cut from roll*: 2 m, 4 m, 6 m	
	1840	2040	2240	2440	2640	2840	3040	3240		
	3440	3640	3840	4040	4240	4440	4640	4840		
	5040	5240	5440	5640	5840	6040				
Reference marks	One at midpoint of measuring length								Every 50 mm ³⁾	
Mass	25 g + 0.1 g/mm of measuring length									

Scanning head	LIDA 48	LIDA 47			
Interface	 1 V _{PP}				
Integrated interpolation* Signal period	– 20 μm	5-fold 4 μm	10-fold 2 μm	50-fold 0.4 μm	100-fold 0.2 μm
Cutoff frequency –3 dB	≥ 500 kHz	–			
Scanning frequency*	–	≤ 400 kHz ≤ 200 kHz ≤ 100 kHz ≤ 50 kHz	≤ 200 kHz ≤ 100 kHz ≤ 50 kHz ≤ 25 kHz	≤ 50 kHz ≤ 25 kHz ≤ 12.5 kHz	≤ 25 kHz ≤ 12.5 kHz ≤ 6.25 kHz
Edge separation <i>a</i> ²⁾	–	≥ 0.100 μs ≥ 0.220 μs ≥ 0.465 μs ≥ 0.950 μs	≥ 0.100 μs ≥ 0.220 μs ≥ 0.465 μs ≥ 0.950 μs	≥ 0.080 μs ≥ 0.175 μs ≥ 0.370 μs	≥ 0.080 μs ≥ 0.175 μs ≥ 0.370 μs
Traversing speed ²⁾	≤ 600 m/min	≤ 480 m/min ≤ 240 m/min ≤ 120 m/min ≤ 60 m/min	≤ 240 m/min ≤ 120 m/min ≤ 60 m/min ≤ 30 m/min	≤ 60 m/min ≤ 30 m/min ≤ 15 m/min	≤ 30 m/min ≤ 15 m/min ≤ 7.5 m/min
Interpolation error	±45 nm	–			
Limit switches	L1/L2 with two different magnets; <i>output signals</i> : TTL (without line driver)				
Electrical connection	Cable (0.5 m/1 m/3 m) with 15-pin D-sub connector (male)				
Cable length	See interface description; however, <i>limit</i> : ≤ 20 m (with HEIDENHAIN cable)				
Supply voltage	DC 5 V ±0.5 V				
Current consumption	< 130 mA	< 150 mA (without load)			
Vibration 55 Hz to 2000 Hz Shock 6 ms	≤ 500 m/s ² (EN 60068-2-6) ≤ 1000 m/s ² (EN 60068-2-27)				
Operating temperature	–10 °C to 70 °C				
Mass	Scanning head: 20 g (without cable); cable: 22 g/m; connector: 32 g				

* Please select when ordering

¹⁾ ±5 µm after linear-error compensation in the downstream electronics

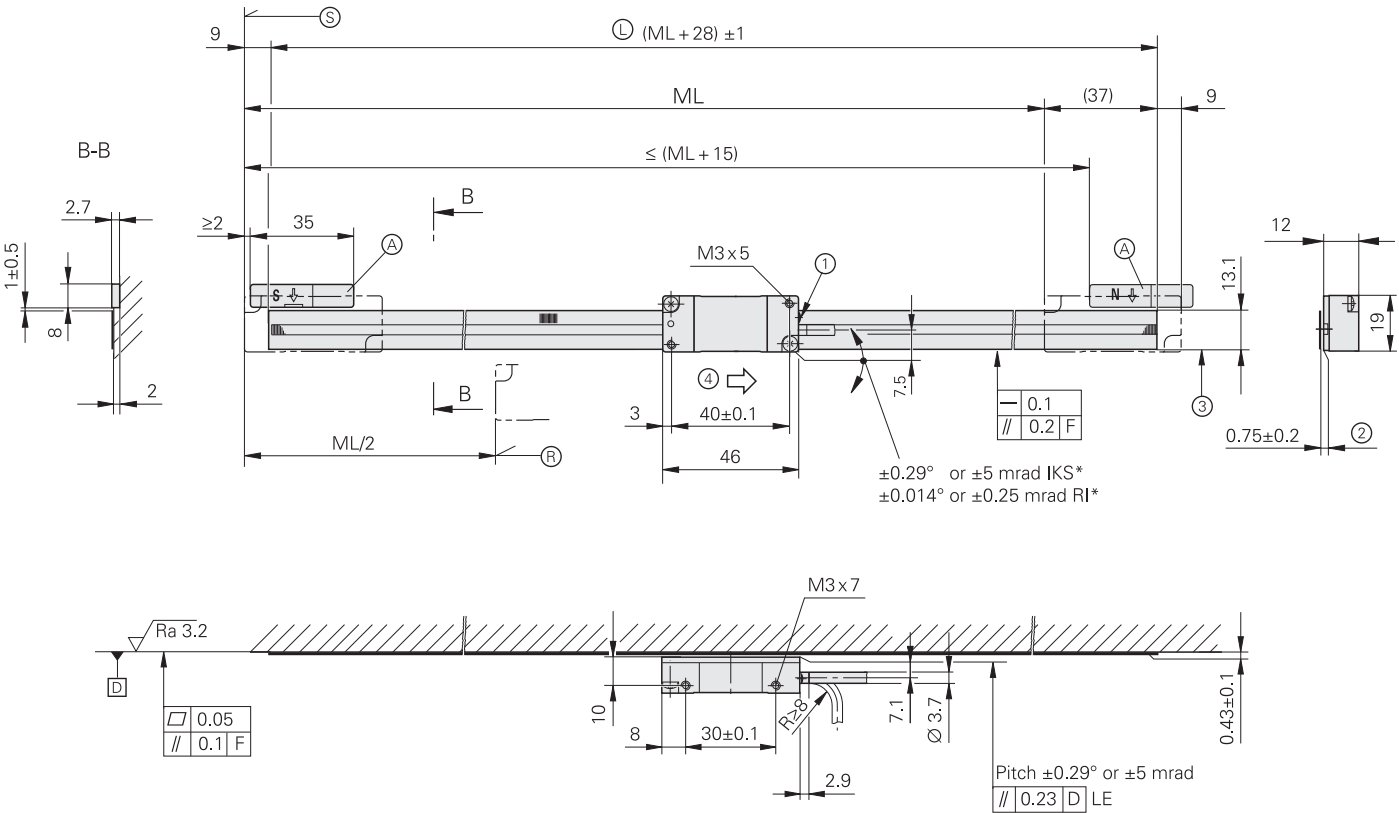
²⁾ At a corresponding cutoff frequency or scanning frequency

³⁾ Only one reference mark may be used during operation. *Recommended*: use the LIDA 4xR special scanning head

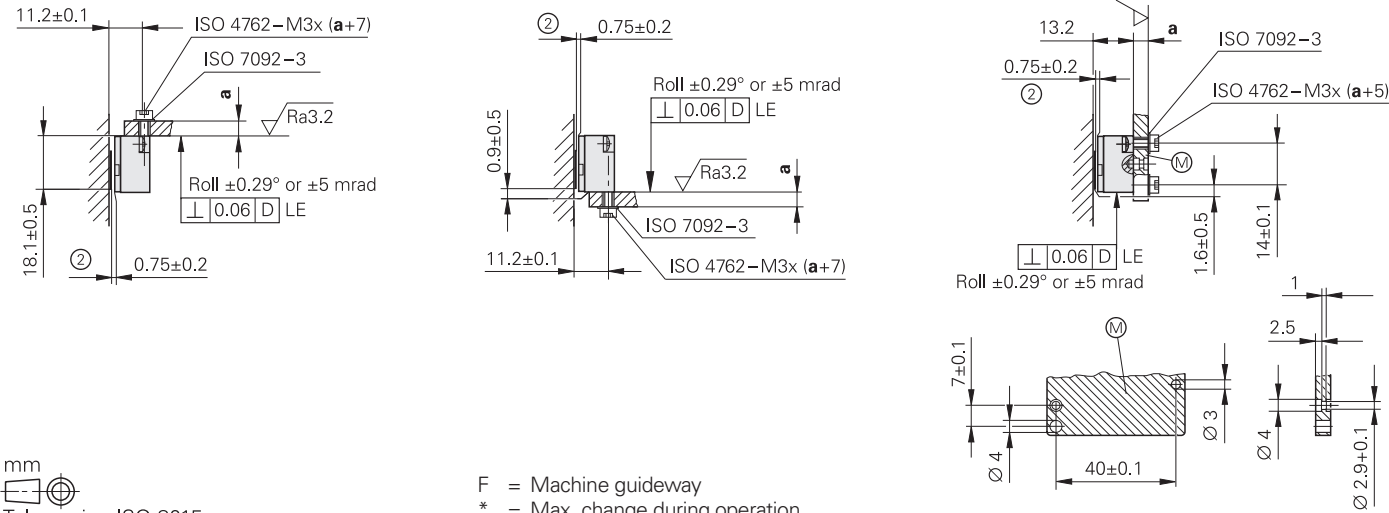
LIDA 479, LIDA 489

Incremental linear encoders for measuring ranges of up to 6 m

- For measuring steps of down to 10 nm
- Limit switches
- Steel scale tape adhesively bonded to mounting surface
- Consisting of a scale tape and scanning head



Mounting options for scanning head



mm
Tolerancing ISO 8015
ISO 2768:1989-mH
≤ 6 mm: ±0.2 mm

- F = Machine guideway
* = Max. change during operation
(IKS: incremental track, RI: Reference mark track)
S = Beginning of measuring length (ML)
R = Reference mark position
L = Scale tape length
A = Selector magnet for limit switch
M = Mounting surface for scanning head
1 = Signal-quality indicator
2 = Scanning gap
3 = Scale-tape stop surface
4 = Direction of motion of the scanning unit for increasing position values

Scale	LIDA 409							
Measuring standard Coefficient of linear expansion	Steel scale tape with METALLUR scale grating; grating period: 20 µm $\alpha_{\text{therm}} \approx 10 \cdot 10^{-6} \text{ K}^{-1}$							
Accuracy grade*	±3 µm, ±15 µm ¹⁾							
Baseline error	≤ ±0.750 µm/50 mm (typical)							
Measuring length (ML)* in mm	70 420	120 520	170 620	220 720	270 820	320 920	370 1020	Scale tape cut from roll*: 2 m, 4 m, 6 m
Reference marks	One at midpoint of measuring length						Every 50 mm ³⁾	
Mass	31 g/m							

Scanning head	LIDA 48	LIDA 47			
Interface	~ 1 V _{PP}	□□TTL			
Integrated interpolation* Signal period	– 20 µm	5-fold 4 µm	10-fold 2 µm	50-fold 0.4 µm	100-fold 0.2 µm
Cutoff frequency –3 dB	≥ 500 kHz	–			
Scanning frequency*	–	≤ 400 kHz ≤ 200 kHz ≤ 100 kHz ≤ 50 kHz	≤ 200 kHz ≤ 100 kHz ≤ 50 kHz ≤ 25 kHz	≤ 50 kHz ≤ 25 kHz ≤ 12.5 kHz	≤ 25 kHz ≤ 12.5 kHz ≤ 6.25 kHz
Edge separation <i>a</i> ²⁾	–	≥ 0.100 µs ≥ 0.220 µs ≥ 0.465 µs ≥ 0.950 µs	≥ 0.100 µs ≥ 0.220 µs ≥ 0.465 µs ≥ 0.950 µs	≥ 0.080 µs ≥ 0.175 µs ≥ 0.370 µs	≥ 0.080 µs ≥ 0.175 µs ≥ 0.370 µs
Traversing speed ²⁾	≤ 600 m/min	≤ 480 m/min ≤ 240 m/min ≤ 120 m/min ≤ 60 m/min	≤ 240 m/min ≤ 120 m/min ≤ 60 m/min ≤ 30 m/min	≤ 60 m/min ≤ 30 m/min ≤ 15 m/min	≤ 30 m/min ≤ 15 m/min ≤ 7.5 m/min
Interpolation error	±45 nm	–			
Limit switches	L1/L2 with two different magnets; <i>output signals</i> : TTL (without line driver)				
Electrical connection	Cable (0.5 m/1 m/3 m) with 15-pin D-sub connector (male)				
Cable length	See interface description; however, <i>limit</i> : ≤ 20 m (with HEIDENHAIN cable)				
Supply voltage	DC 5 V ±0.5 V				
Current consumption	< 130 mA	< 150 mA (without load)			
Vibration 55 Hz to 2000 Hz Shock 6 ms	≤ 500 m/s ² (EN 60068-2-6) ≤ 1000 m/s ² (EN 60068-2-27)				
Operating temperature	–10 °C to 70 °C				
Mass	Scanning head: 20 g (without cable) Cable: 22 g/m Connector: 32 g				

* Please select when ordering
1) ±5 µm after linear-error compensation in the downstream electronics
2) At a corresponding cutoff or scanning frequency
3) Only one reference mark may be used during operation. *Recommended*: use the LIDA 4xR special scanning head