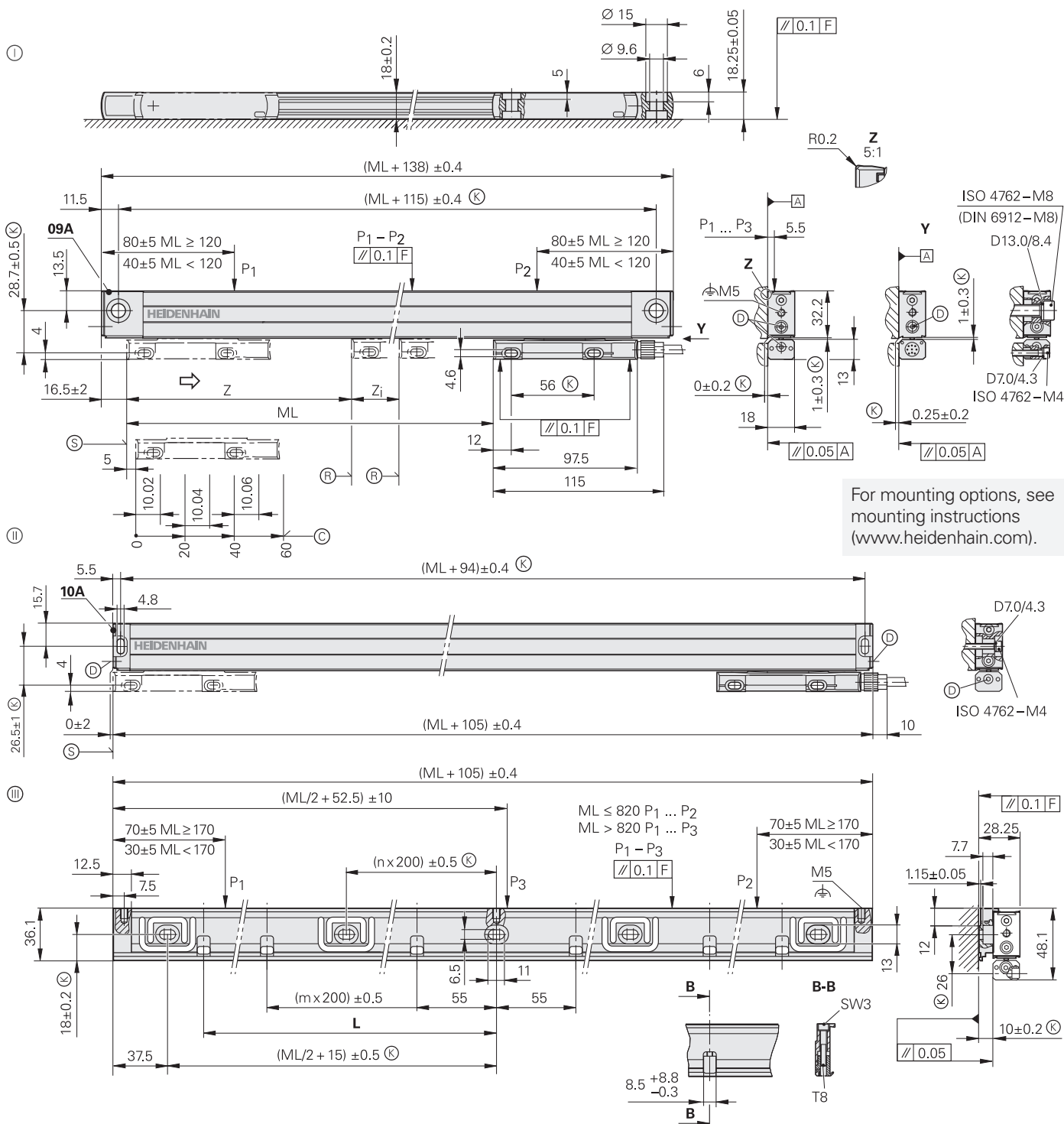


LS 400 series

Incremental linear encoders with slimline scale housing

- Low installation space requirements



ML	70	120	170	220	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1140	1240	1340	1440	1540	1640	1740	1840	2040
L	37.5	55	75	100	115	140	175	200	225	250	275	300	325	350	375	400	425	450	475	500	515	555	610	655	710	760	810	855	910	1010



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

- ⊖ = 09A end block; for mounting with and without mounting spar
- ⊙ = 10A end block; for mounting with mounting spar
- ⊗ = MSL 41 mounting spar
- F = Machine guideway
- P = Measuring points for alignment

- ⊕ = Required mating dimensions
- ⊕ = Reference mark position on LS 4x7;
two reference marks for measuring lengths
- 70 to 1020 | 1140 to 2040
- z = 35 mm | z = 45 mm
- z_i = ML - 70 mm | z_i = ML - 90 mm
- ⊕ = Reference mark position on LS 4x7C
- ⊕ = Inlet for compressed air
- ⊕ = Beginning of measuring length (ML)
- ⇒ = Direction of motion of the scanning unit for ascending position values

LS 4x7 without mounting spar



LS 4x7 with mounting spar

Specifications	LS 487	LS 477																
Measuring standard	Glass scale with DIADUR grating; grating period: 20 µm																	
Coefficient of linear expansion	$\alpha_{\text{therm}} \approx 8 \cdot 10^{-6} \text{ K}^{-1}$ (mounting type ①/②); with mounting spar: $\alpha_{\text{therm}} \approx 9 \cdot 10^{-6} \text{ K}^{-1}$ (mounting type ③)																	
Accuracy grade*	±5 µm; ±3 µm																	
Measuring length (ML)* in mm	Mounting spar* optional up to ML 1240, required with ML 1340 or longer 70 120 170 220 270 320 370 420 470 520 570 620 670 720 770 820 920 1020 1140 1240 1340 1440 1540 1640 1740 1840 2040																	
Reference marks* LS 4x7 LS 4x7C	• Selectable with magnets every 50 mm • One reference mark at midpoint of measuring length • Two reference marks, each 35 mm (for ML ≤ 1020 mm) or 45 mm (for ML ≥ 1140 mm) from the beginning and end of the measuring length Distance-coded																	
Interface	~ 1 V _{PP}				□ TTL													
Integrated interpolation* Signal period	– 20 µm				5-fold –		10-fold –				20-fold –							
Diagnostics interface	Analog				–													
Cutoff frequency –3 dB	≥ 160 kHz				–		–				–							
Scanning frequency* Edge separation <i>a</i>	–				100 kHz ≥ 0.5 µs		50 kHz ≥ 1 µs		100 kHz ≥ 0.25 µs		50 kHz ≥ 0.5 µs		25 kHz ≥ 1 µs		50 kHz ≥ 0.25 µs		25 kHz ≥ 0.5 µs	
Measuring step	Depends on interpolation				1 µm ¹⁾		0.5 µm ¹⁾				0.25 µm ¹⁾							
Electrical connection	Separate adapter cable (1 m / 3 m / 6 m / 9 m) connectable on mounting block																	
Cable length ²⁾	≤ 150 m				≤ 100 m													
Supply voltage without load	DC 5 V ±0.25 V/< 120 mA				DC 5 V ±0.25 V/< 140 mA													
Traversing speed	≤ 120 m/min				≤ 120 m/min		≤ 60 m/min		≤ 120 m/min		≤ 60 m/min		≤ 30 m/min		≤ 60 m/min		≤ 30 m/min	
Required moving force	≤ 5 N																	
Vibration 55 Hz to 2000 Hz	Without mounting spar: ≤ 100 m/s ² (EN 60068-2-6) With mounting spar, cable outlet at right: ≤ 200 m/s ² ; at left: 100 m/s ² (EN 60068-2-6)																	
Shock 11 ms Acceleration	≤ 300 m/s ² (EN 60068-2-27) ≤ 100 m/s ² in direction of measurement																	
Operating temperature	0 °C to 50 °C																	
Protection EN 60529	IP53 when installed as per the mounting information and instructions IP64 with purge air via DA 400																	
Mass	0.4 kg + 0.5 kg/m of measuring length																	

* Please select when ordering
1) After 4-fold evaluation in the downstream electronics
2) With HEIDENHAIN cable