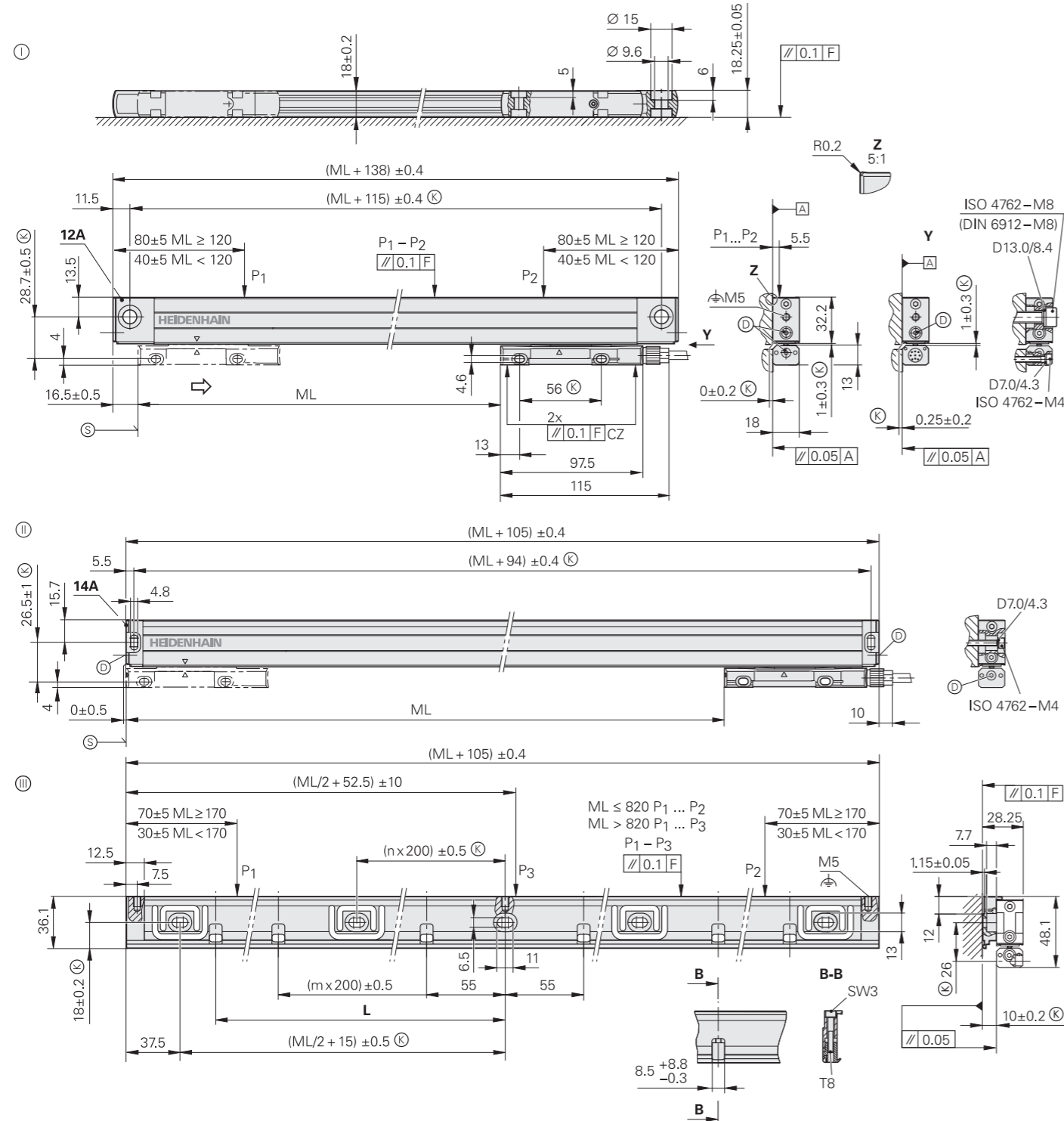


# LC 400 series

Absolute linear encoders with slimline scale housing

• For limited installation space



ML	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
L	37.5	55	75	100	115	140	175	200	225	250	275	300	325	350	375	400	450	500	555	610	655	710	760	810	855	910	1010

- mm  
  
 Tolerancing ISO 8015  
 ISO 2768 - m H  
 < 6 mm: ±0.2 mm
- ⊖ = End block 12A; for mounting with and without mounting spar
  - ⊕ = End block 14A; for mounting with mounting spar (specifications are restricted if attached directly with M4 screws)
  - ⊙ = MSL 41 mounting spar
  - F = Machine guideway
  - P = Measuring points for alignment
  - ⊗ = Required mating dimensions
  - ⊕ = Compressed air inlet
  - ⊙ = Beginning of measuring length ML (= 20 mm absolute)
  - = Direction of motion of scanning unit for ascending position values



Specifications	LC 415	LC 415	LC 485
<b>Measuring standard</b> Coefficient of linear expansion	DIADUR glass scale with absolute track and incremental track, grating period: 20 μm $\alpha_{\text{therm}} \approx 8 \cdot 10^{-6} \text{ K}^{-1}$ (mounting mode ⊖/⊕); <i>with mounting spar</i> : $\alpha_{\text{therm}} \approx 9 \cdot 10^{-6} \text{ K}^{-1}$ (mounting mode ⊙)		
<b>Accuracy grade*</b>	±3 μm, ±5 μm		
<b>Measuring length ML*</b> in mm	Mounting spar* or clamping elements* optional up to ML 1240, required as of ML 1340 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		
<b>Functional safety</b> for applications with up to	<ul style="list-style-type: none"> <li>• SIL 2 as per EN 61508</li> <li>• Category 3, PL "d" as per EN ISO 13849-1:2015</li> </ul>		–
PFH (per axis)	≤ 15 · 10 <sup>-9</sup> (up to 2000 m above sea level)		–
Safe position <sup>1)</sup>	Encoder: ±550 μm (safety-related measuring step SM = 220 μm)		–
	<i>Mechanical connection</i> : fault exclusions for the loosening of the housing and scanning unit (page 21)		
<b>Interface</b>	EnDat 2.2		
Ordering designation	EnDat22		EnDat02
Measuring step <i>At ± 3 μm</i> <i>At ± 5 μm</i>	0.001 μm 0.010 μm		0.005 μm 0.010 μm
Clock freq. (calc. time $t_{\text{cal}}$ )	≤ 16 MHz (≤ 5 μs)		≤ 2 MHz (≤ 5 μs)
<b>Incremental signals</b>	–		~ 1 V <sub>PP</sub> (20 μm)
Cutoff frequency –3 dB	–		≥ 150 kHz
<b>Electrical connection</b>	Separate adapter cable (1 m/3 m/6 m/9 m) connectable on mounting block		
Cable length	≤ 100 m <sup>2)</sup>		≤ 150 m <sup>2)</sup>
Supply voltage	DC 3.6 V to 14 V		
Power consumption (max.)	3.6 V: ≤ 1.1 W; 14 V: ≤ 1.3 W		
<b>Traversing speed</b>	≤ 180 m/min (max. acceleration in measuring direction ≤ 100 m/s <sup>2</sup> )		
<b>Required moving force</b>	≤ 5 N		
<b>Vibration</b> 55 Hz to 2000 Hz affecting the	Scanning unit: ≤ 200 m/s <sup>2</sup> (EN 60068-2-6) Housing without mounting spar: ≤ 100 m/s <sup>2</sup> (EN 60068-2-6) Housing with mounting spar, and cable outlet at right: ≤ 150 m/s <sup>2</sup> , left: ≤ 100 m/s <sup>2</sup> (EN 60068-2-6)		
<b>Shock</b> 11 ms	≤ 300 m/s <sup>2</sup> (EN 60068-2-27)		
<b>Operating temperature</b>	0 °C to 50 °C		
<b>Protection</b> EN 60529 <sup>3)</sup>	IP53 when installed according to instructions in the brochure, IP64 with sealing air from DA 400		
<b>Mass</b>	Encoder: 0.2 kg + 0.55 kg/m of measuring length; <i>mounting spar</i> : 0.9 kg/m		

\* Please select when ordering  
 1) Further tolerances may occur in subsequent electronics after position value comparison (contact manufacturer of subsequent electronics)  
 2) With HEIDENHAIN cable (see the *Interfaces of HEIDENHAIN Encoders* brochure)  
 3) In the application, the LC must be protected from the ingress of particles and liquids