



HEIDENHAIN

**TRUE IMAGE
TECHNOLOGY**



Product Information

LC 116/LC 196
LC 416/LC 496

Generation 1

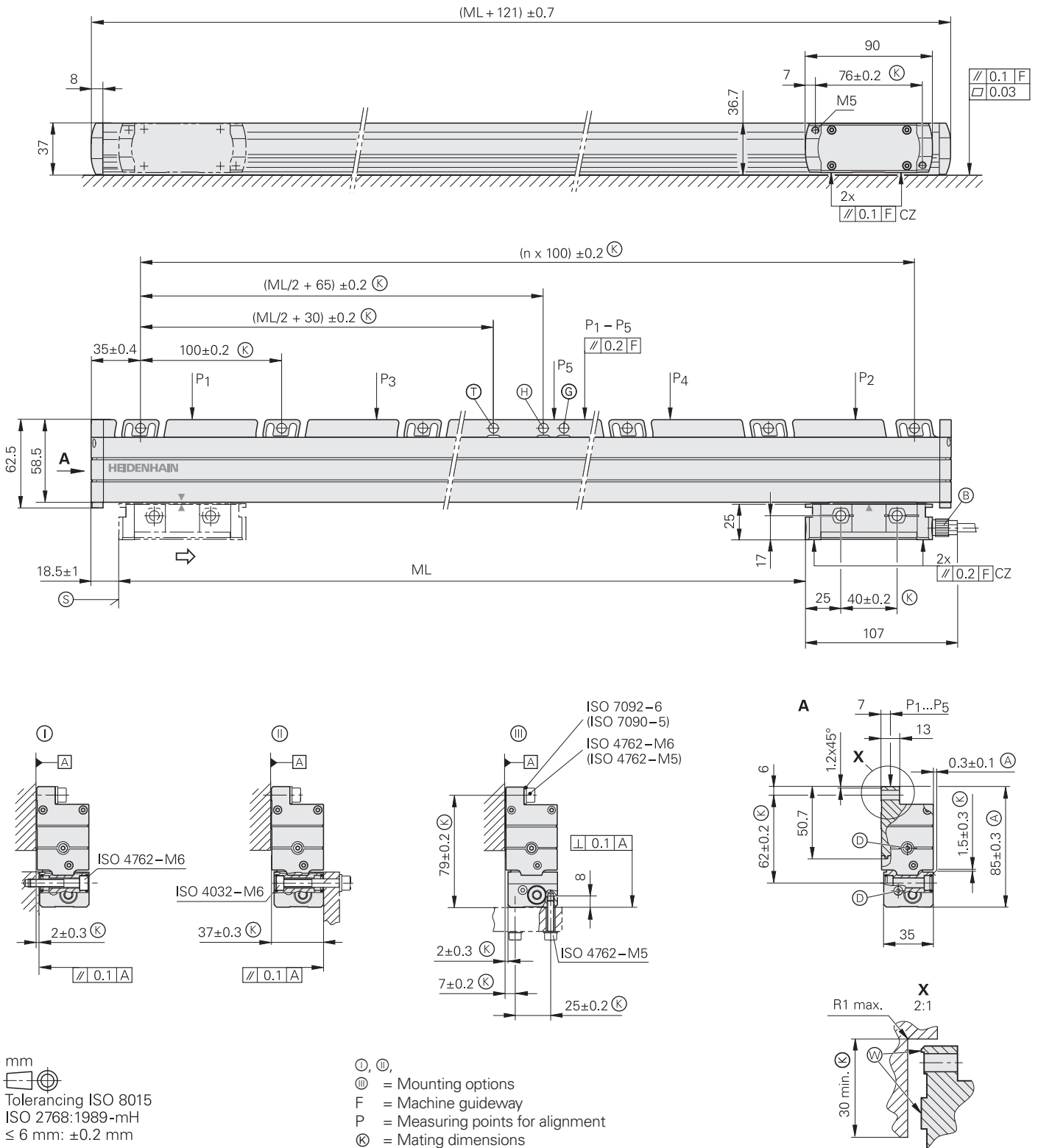
Absolute Linear Encoders
with Optimized Scanning

02/2026

LC 100 series

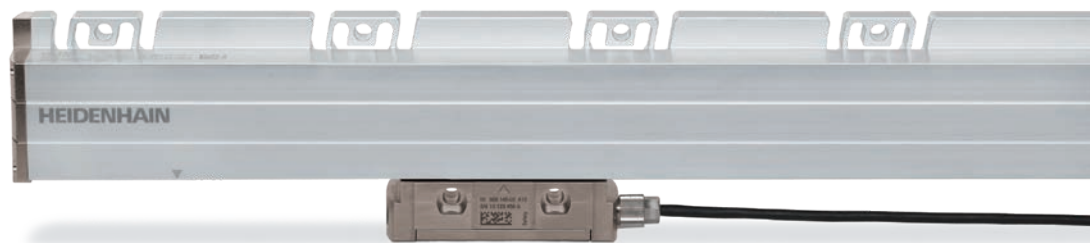
Absolute linear encoders with full-size scale housing

- High vibration tolerance
- Flat-lying installation possible
- With TRUE IMAGE TECHNOLOGY



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

- ⊙, ⊕, ⊖ = Mounting options
- F = Machine guideway
- P = Measuring points for alignment
- Ⓚ = Mating dimensions
- Ⓐ = Alternative mating dimensions
- Ⓑ = Cable connection, usable at either end
- Ⓓ = Compressed air inlet with built-in flow regulator, usable at either end
- Ⓗ = Mechanical fixed point (preferred)
- Ⓖ = Mechanical fixed point (compatible with predecessor model)
- Ⓒ = Mechanical fixed point (repeated at an interval of 100 mm)
- Ⓢ = Beginning of measuring length ML (= 20 mm absolute)
- Ⓜ = Mating surfaces
- ⇒ = Direction of motion of the scanning unit for ascending position values



Specifications	LC 116	LC 196 F	LC 196 M
Measuring standard Coefficient of linear expansion	DIADUR glass scale with absolute track and incremental track; grating period: 20 µm $\alpha_{\text{therm}} \approx 8 \cdot 10^{-6} \text{ K}^{-1}$		
Accuracy grade	±3 µm up to a measuring length of 3040 mm (LC 196 M: up to 2040 mm); ±5 µm		
Measuring length (ML)* in mm	140 1540 4040	240 1640 4240	340 440 540 640 740 840 940 1040 1140 1240 1340 1440 1740 1840 2040 2240 2440 2640 2840 3040 3240 3440 3640 3840
Functional safety for applications with up to	–		
PFH (per axis)	–		
Safe position	–		
	Mechanical coupling: Fault exclusion for loosening of the housing and scanning unit (identical to LC 1x5; see brochure)		
Interface	EnDat 2.2	Fanuc Serial Interface/αi interface	Mitsubishi high speed interface
Ordering designation	EnDat22	Fanuc05	Mit03-04
Measuring step At ±3 µm At ±5 µm	0.001 µm 0.010 µm	αi interface/α interface 0.00125 µm/0.010 µm 0.0125 µm/0.050 µm	0.001 µm 0.010 µm
Clock frequency (calc. time t_{cal})	≤ 16 MHz (≤ 5 µs)	–	–
Measurement of direct-drive motor temperature	–	–	–
Electrical connection	Separate adapter cable (1 m / 3 m / 6 m / 9 m), connectable at either end of mounting block		
Cable length	≤ 100 m ¹⁾	≤ 50 m	≤ 30 m
Supply voltage	DC 3.6 V to 14 V		
Power consumption (maximum)	3.6 V: ≤ 1.1 W; 14 V: ≤ 1.3 W		
Traversing speed	≤ 180 m/min (max. acceleration in the direction of measurement ≤ 100 m/s ²)		
Required moving force	≤ 4 N		
Vibration 55 Hz to 2000 Hz affecting the Shock 11 ms	Housing: ≤ 200 m/s ² (EN 60068-2-6) Scanning unit: ≤ 200 m/s ² (EN 60068-2-6) ≤ 300 m/s ² (EN 60068-2-27)		
Operating temperature	0 °C to 50 °C		
Protection rating EN 60529 ²⁾	IP53 when installed as per mounting information in the brochure; IP64 with purge air (air purity class [3:4:2] as per ISO 8573-1:2010)		
Mass	0.55 kg + 2.9 kg/m of measuring length		

Due to optimized scanning, the encoders have only one pair of sealing lips.

* Please select when ordering

¹⁾ With cable from HEIDENHAIN (see the *Interfaces of HEIDENHAIN Encoders* brochure)

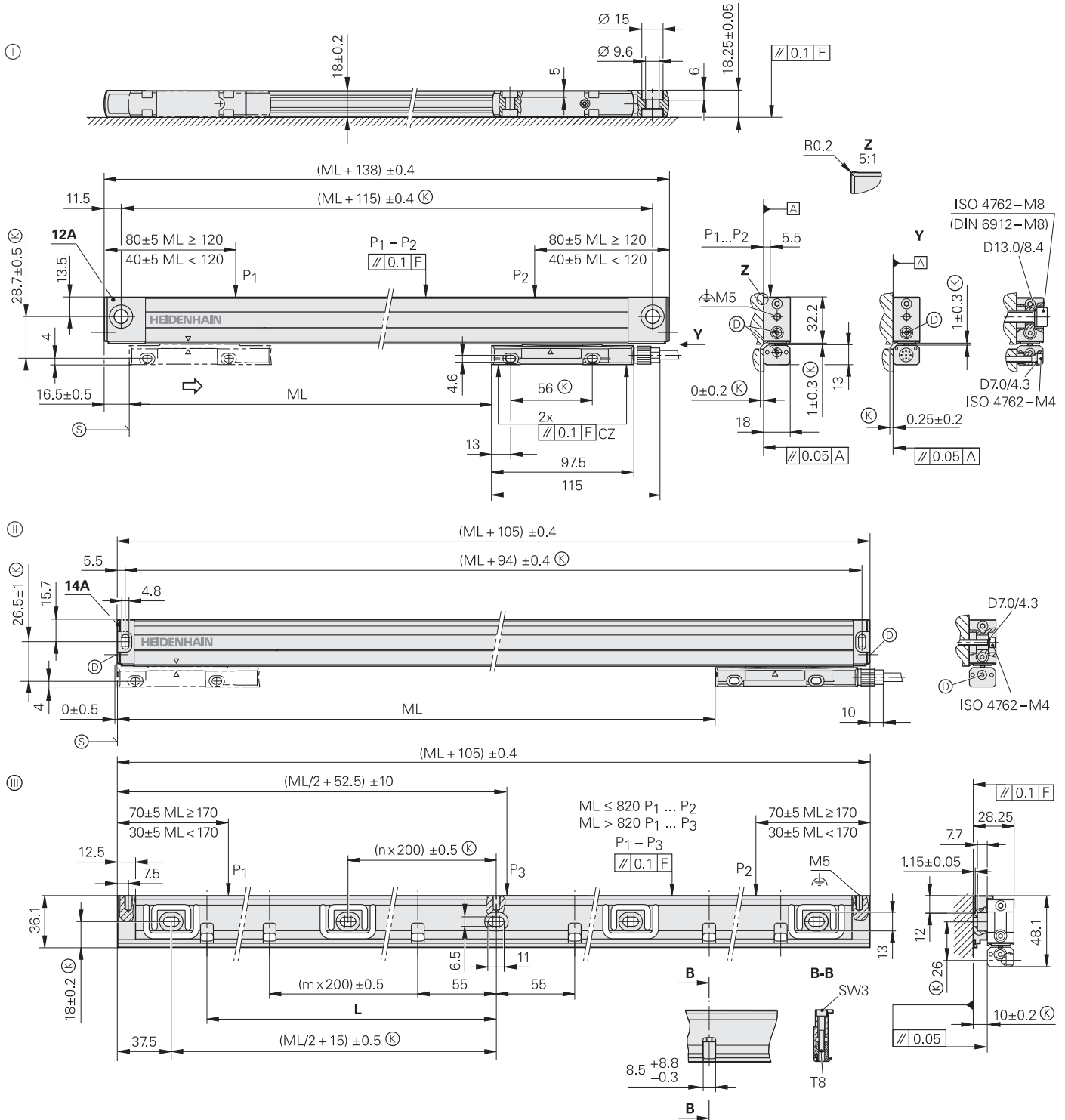
²⁾ In the application, the LC must be protected from the ingress of particles.

In addition, pollution degree 2 must be complied with in the micro-environment (see EN 60664-1).

LC 400 series

Absolute linear encoders with slimline scale housing

- Low installation space requirements
- With TRUE IMAGE TECHNOLOGY



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 2768:1989-mH
≤ 6 mm: ±0.2 mm

- ⊖ = 12A end block; for mounting with and without mounting spar
- ⊙ = 14A end block; for mounting with mounting spar
(if directly fastened with M4 screws, then specifications are subject to constraints)
- ⊕ = MSL 41 mounting spar
- F = Machine guideway
- P = Measuring points for alignment
- ⊗ = Mating dimensions
- ⊕ = Compressed air inlet with built-in flow regulator
- ⊙ = Beginning of measuring length ML (= 20 mm absolute)
- ⇒ = Direction of motion of the scanning unit for ascending position values



Specifications	LC 416	LC 496 F	LC 496 M
Measuring standard 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 option ①/②); with mounting spar: $\alpha_{\text{therm}} \approx 9 \cdot 10^{-6} \text{ K}^{-1}$ (mounting option ③)		
Accuracy grade	±3 µm, ±5 µm		
Measuring length (ML)* in mm	Mounting spar* or clamping elements* up to ML 1240 optional; necessary for ML 1340 or greater 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		
Functional safety for applications with up to	–		
PFH (per axis)	–		
Safe position	–		
	Mechanical coupling: Fault exclusion for loosening of the housing and scanning unit (identical to LC 1x5; see brochure)		
Interface	EnDat 2.2	Fanuc Serial Interface/αi interface	Mitsubishi high speed interface
Ordering designation	EnDat22	Fanuc05	Mit03-04
Measuring step At ±3 µm At ±5 µm	0.001 µm 0.010 µm	αi interface/α interface 0.00125 µm/0.010 µm 0.0125 µm/0.050 µm	0.001 µm 0.010 µm
Clock frequency (calc. time t_{cal})	≤ 16 MHz (≤ 5 µs)	–	–
Measurement of direct-drive motor temperature	–	–	–
Electrical connection	Separate adapter cable (1 m / 3 m / 6 m / 9 m) connectable on mounting block		
Cable length	≤ 100 m ¹⁾	≤ 50 m	≤ 30 m
Supply voltage	DC 3.6 V to 14 V		
Power consumption (maximum)	3.6 V: ≤ 1.1 W; 14 V: ≤ 1.3 W		
Traversing speed	≤ 180 m/min (max. acceleration in the direction of measurement ≤ 100 m/s ²)		
Required moving force	≤ 5 N		
Vibration 55 Hz to 2000 Hz acting on	Scanning unit: ≤ 200 m/s ² (EN 60068-2-6) Housing without mounting spar: ≤ 100 m/s ² (EN 60068-2-6) Housing with mounting spar; cable outlet on the right: ≤ 150 m/s ² , on the left: ≤ 100 m/s ² (EN 60068-2-6)		
Shock 11 ms	≤ 300 m/s ² (EN 60068-2-27)		
Operating temperature	0 °C to 50 °C		
Protection EN 60529 ²⁾	IP53 when installed as per mounting information in the brochure; IP64 with purge air (air purity class [3:4:2] as per ISO 8573-1:2010)		
Mass	Encoder: 0.2 kg + 0.55 kg/m of measuring length; mounting spar: 0.9 kg/m		

* Please select when ordering

¹⁾ With cable from HEIDENHAIN (see the *Interfaces of HEIDENHAIN Encoders* brochure)


²⁾ In the application, the LC must be protected from the ingress of particles.


In addition, pollution degree 2 must be complied with in the micro-environment (see EN 60664-1).

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This Product Information document supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document edition valid when the order is placed.



More information:

To ensure proper and intended use, comply with the specifications in the following documents:

- Brochure: *Linear Encoders for Numerically Controlled Machine Tools* 571470-xx
- Brochure: *Interfaces of HEIDENHAIN Encoders* 1078628-xx
- Brochure: *Cables and Connectors* 1206109-xx
- Product overview: *Interface Electronics* 598160-xx
- Product-specific operating instructions