



HEIDENHAIN



Preliminary
Product Information

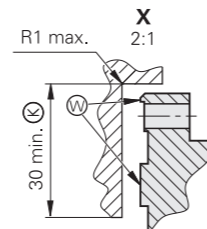
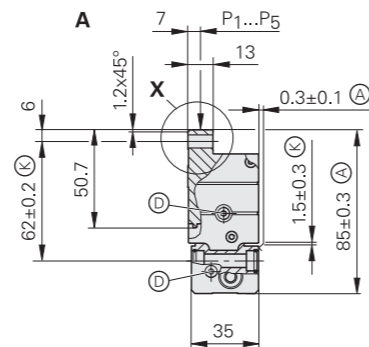
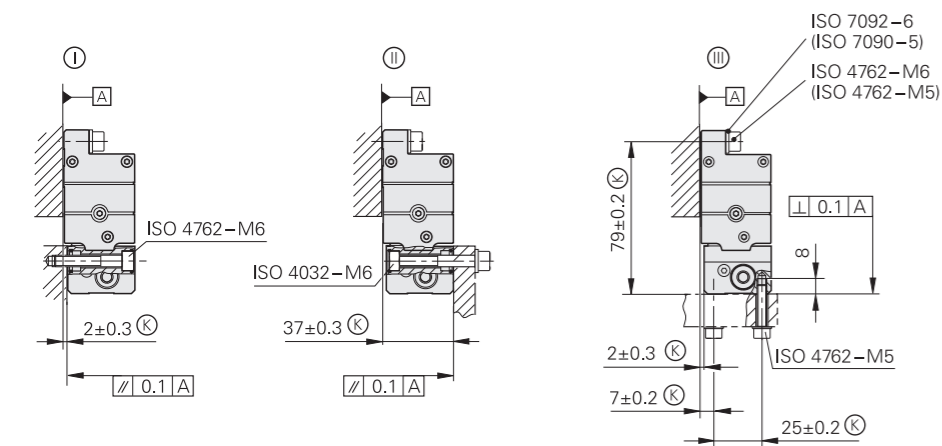
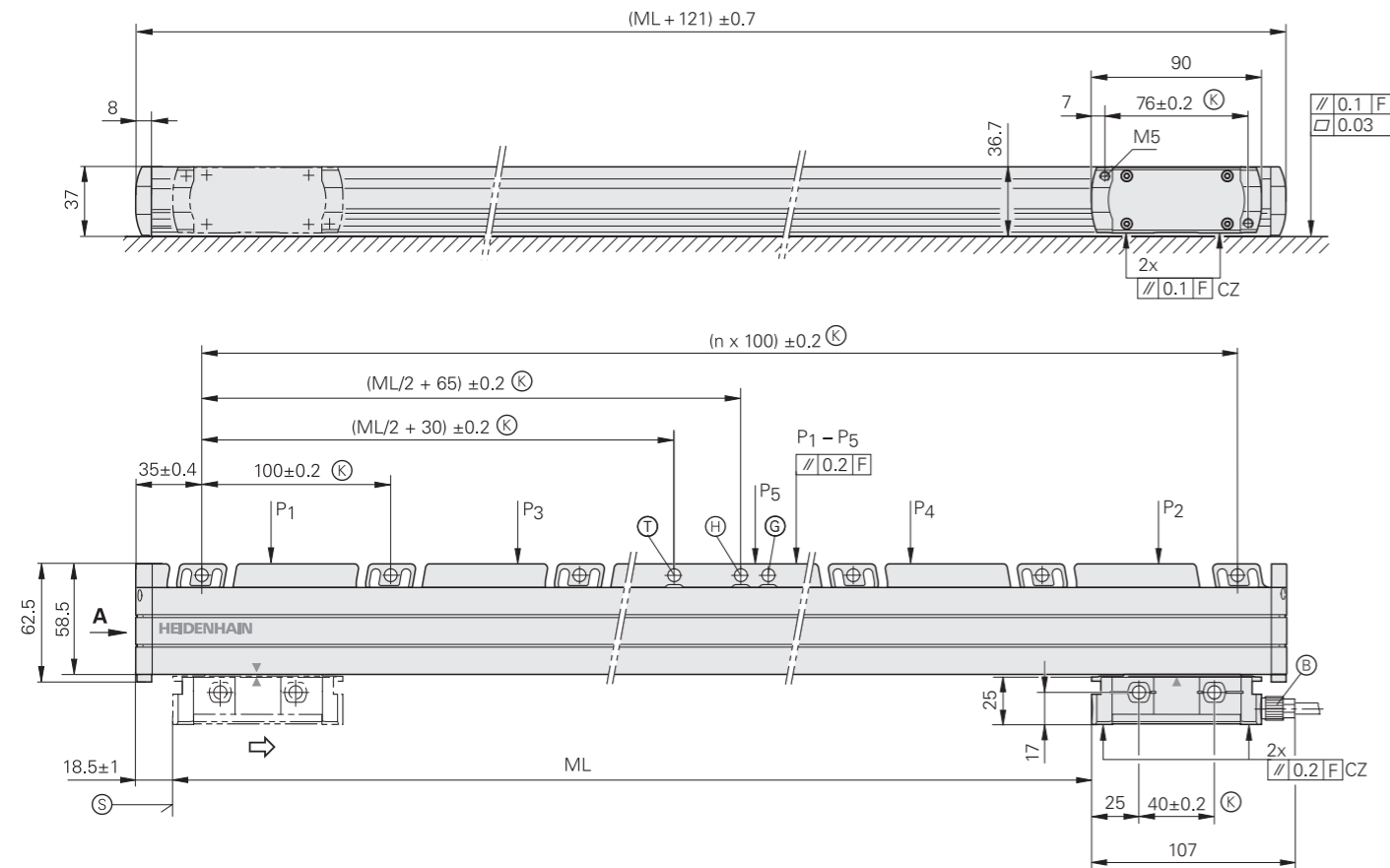
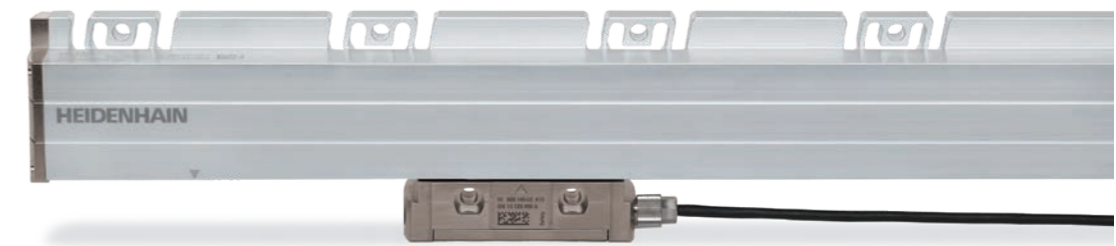
LC 116
LC 196 F
LC 416
LC 496 F

Absolute Linear Encoders
with Optimized Scanning

LC 100 series

Absolute linear encoders with full-size scale housing

- High vibration tolerance
- Flat-lying installation possible
- Optimized scanning



mm
Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ± 0.2 mm

- Ⓢ, Ⓣ, Ⓤ = Mounting options
- F = Machine guideway
- P = Measuring points for alignment
- Ⓚ = Required mating dimensions
- Ⓐ = Alternative mating dimensions
- ⓐ = Cable connection, usable at either end
- ⓑ = Compressed air inlet with integrated throttle, 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 |
|--|---|---|
| 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; ±5 μm | |
| Measuring length (ML)* in mm | 140 240 340 440 540 640 740 840 940 1040 1140 1240 1340 1440 1540 1640 1740 1840 2040 2240 2440 2640 2840 3040 3240 3440 3640 3840 4040 4240 | |
| Interface¹⁾ | EnDat 2.2 | Fanuc Serial Interface/αi Interface |
| Ordering designation | EnDat22 | Fanuc05 |
| 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 |
| Clock frequency (calculation time t_{cal}) | ≤ 16 MHz (≤ 5 μs) | — |
| Electrical connection | Separate adapter cable (1 m/3 m/6 m/9 m), connectable at either end of mounting block | |
| Cable length | ≤ 100 m ²⁾ | ≤ 50 m |
| Supply voltage | DC 3.6 V to 14 V | |
| Power consumption (max.) | 3.6 V: ≤ 1.1 W; 14 V: ≤ 1.3 W | |
| Traversing speed | ≤ 180 m/min (max. acceleration in measuring direction ≤ 100 m/s ²) | |
| Required moving force | ≤ 4 N | |
| Vibration 55 Hz to 2000 Hz affecting the | Housing: ≤ 200 m/s ² (EN 60068-2-6) Scanning unit: ≤ 200 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 class EN 60529 ³⁾ | IP53 when installed in conformity with instructions in the brochure; IP64 with sealing 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⁾ Connectable to Siemens interface via EIB 2391 S or EIB 2392 S

²⁾ With cable from HEIDENHAIN: see the *Interfaces of HEIDENHAIN Encoders* brochure

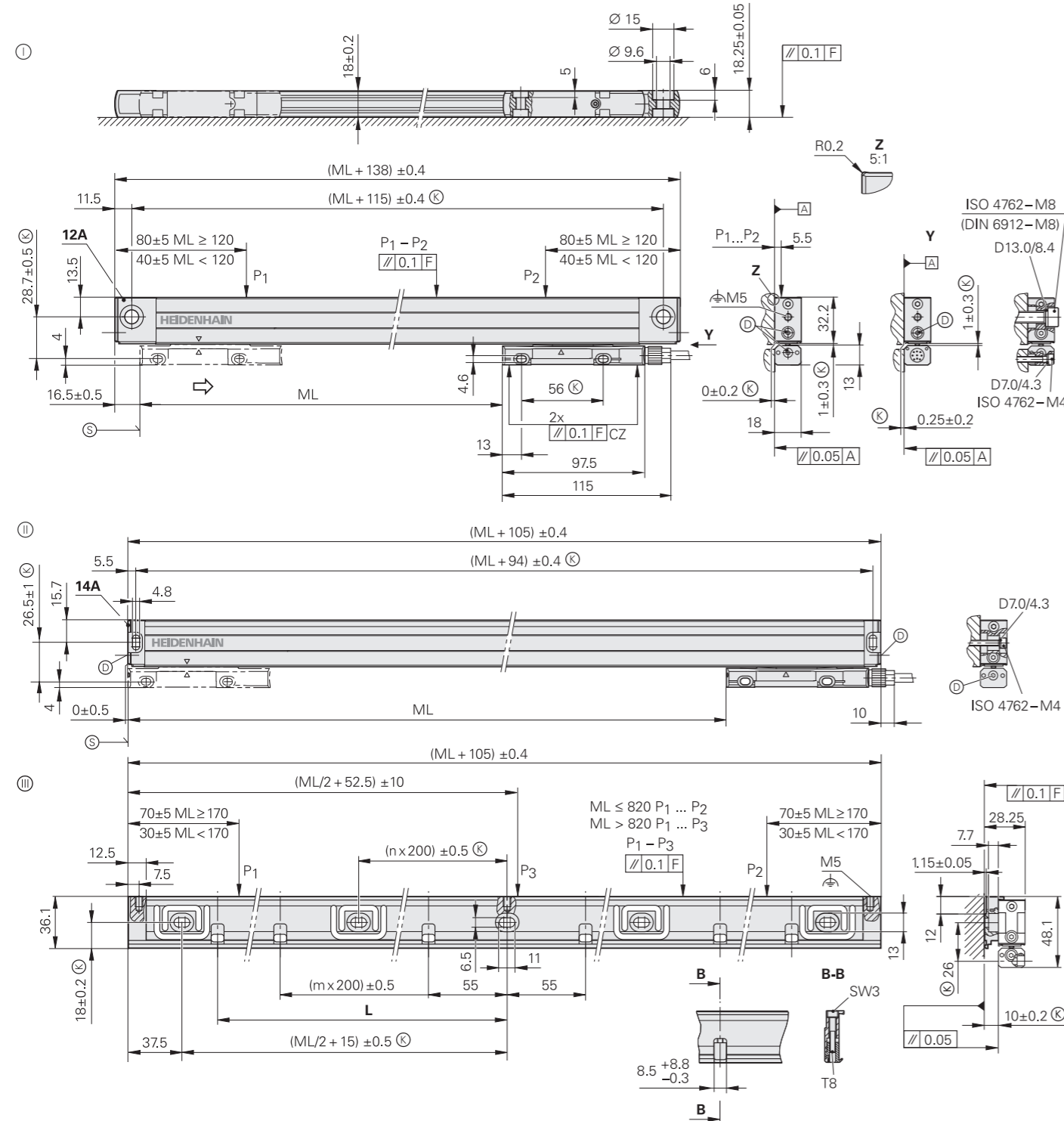
³⁾ In the application, the LC must be protected from the ingress of particles.

In addition, contamination level 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
- Optimized scanning



| 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
- ⓪ = 12A end block; for mounting with and without mounting spar
 - ⓫ = 14A end block; for mounting with mounting spar (if directly attached with M4 screws, then specifications are subject to constraints)
 - ⓬ = MSL 41 mounting spar
 - F = Machine guideway
 - P = Measuring points for alignment
 - Ⓜ = Required mating dimensions
 - Ⓝ = Compressed air inlet with integrated throttle
 - Ⓞ = 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 |
|--|---|---|
| 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 type ⓪/⓫); with mounting spar: $\alpha_{\text{therm}} \approx 9 \cdot 10^{-6} \text{ K}^{-1}$ (mounting type ⓬) | |
| 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 | |
| Interface¹⁾ | EnDat 2.2 | Fanuc Serial Interface/αi Interface |
| Ordering designation | EnDat22 | Fanuc05 |
| 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 |
| Clock frequency (calculation time t_{cal}) | ≤ 16 MHz (≤ 5 μs) | — |
| Electrical connection | Separate adapter cable (1 m/3 m/6 m/9 m) connectable on mounting block | |
| Cable length | ≤ 100 m ²⁾ | ≤ 50 m |
| Supply voltage | DC 3.6 V to 14 V | |
| Power consumption (max.) | 3.6 V: ≤ 1.1 W; 14 V: ≤ 1.3 W | |
| Traversing speed | ≤ 180 m/min (max. acceleration in measuring direction ≤ 100 m/s ²) | |
| Required moving force | ≤ 5 N | |
| Vibration 55 Hz to 2000 Hz affecting the | 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 and cable outlet on the right: ≤ 150 m/s ² , or 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 class EN 60529 ³⁾ | IP53 when installed in conformity with instructions in the brochure; IP64 with sealing 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⁾ Connectable to Siemens interface via EIB 2391 S or EIB 2392 S
²⁾ With cable from HEIDENHAIN: see the *Interfaces of HEIDENHAIN Encoders* brochure
³⁾ In the application, the LC must be protected from the ingress of particles. In addition, contamination level 2 must be complied with in the micro-environment (see EN 60664-1).

HEIDENHAIN

DR. JOHANNES HEIDENHAIN GmbH

Dr.-Johannes-Heidenhain-Straße 5

83301 Traunreut, Germany

 +49 8669 31-0

 +49 8669 32-5061

E-mail: info@heidenhain.de

www.heidenhain.de

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 made.



Further 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