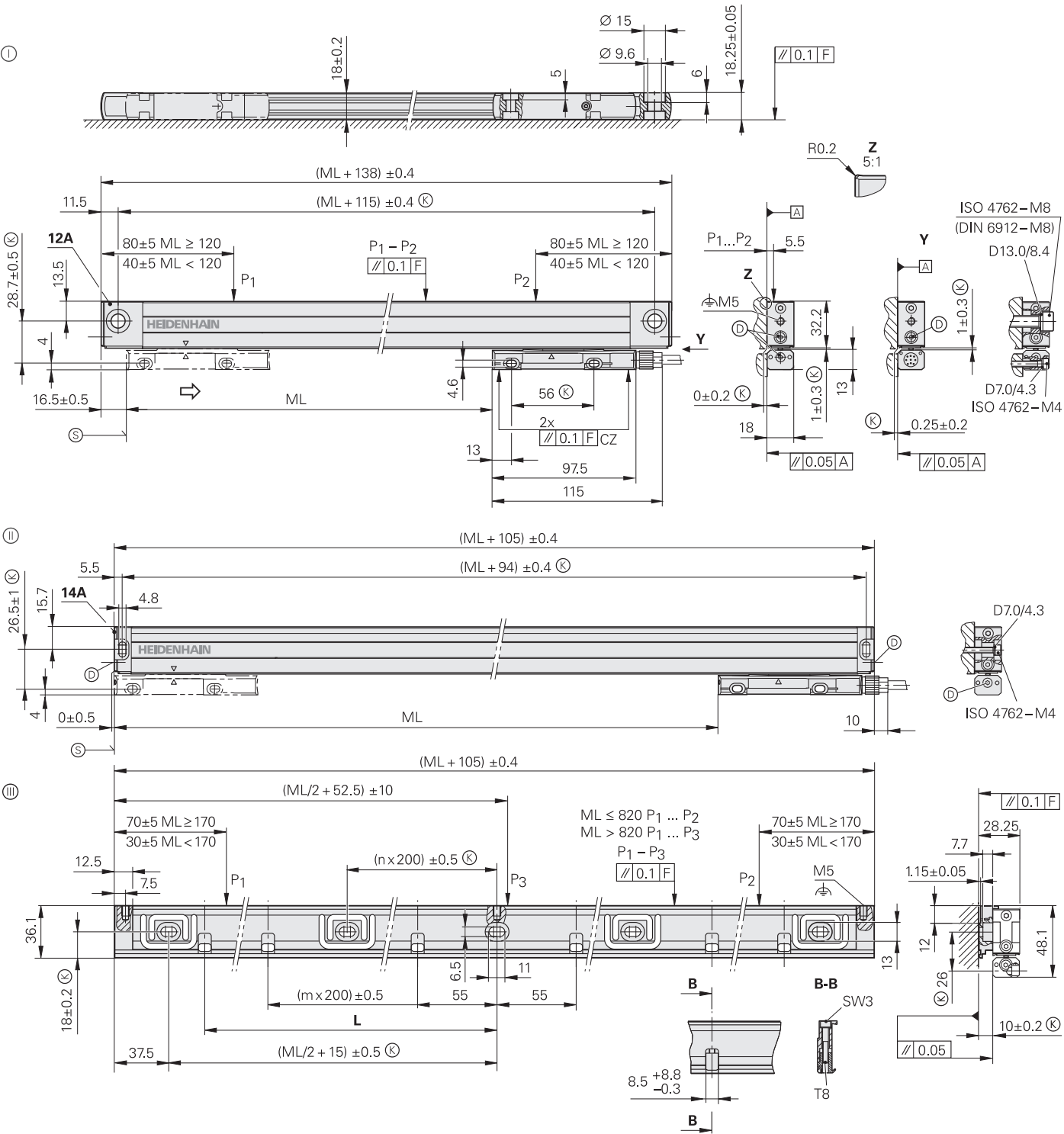


# LC 400 series

Absolute 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 | 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

- ① = 12A end block; for mounting with and without mounting spar
- ② = 14A end block; for mounting with mounting spar  
(if directly fastened with M4 screws, then specifications are subject to constraints)
- ③ = 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 the scanning unit for ascending position values

# LC 400 series

Absolute linear encoders with slimline scale housing

- Low installation space requirements

| Specifications                                                    | LC 495 S                                                                                                                                                                                           | LC 495 S |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>Measuring standard</b><br>Coefficient of linear expansion      | DIADUR glass scale with absolute track and incremental track; grating period: 20 µm<br>$\alpha_{\text{therm}} \approx 8 \cdot 10^{-6} \text{ K}^{-1}$ (mounting option ①/②); with mounting spar: $\alpha_{\text{therm}} \approx 9 \cdot 10^{-6} \text{ K}^{-1}$ (mounting option ③) |          |
| <b>Accuracy grade*</b>                                            | ±3 µm, ±5 µm (typical interpolation error: ±20 nm)                                                                                                                                                                                                                                  |          |
| <b>Measuring length (ML)*</b> in mm                               | Mounting spar* or clamping elements* optional up to ML 1240, required with ML 1340 or longer<br>70    120    170    220    270    320    370    420    470    520    570    620    670                                                                                              |          |
| <b>Functional safety</b><br>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</li> </ul>                                                                                                                                                         | –        |
| PFH (per axis)                                                    | $\leq 25 \cdot 10^{-9}$ (up to 1000 m above sea level)                                                                                                                                                                                                                              | –        |
| Safe position <sup>1)</sup>                                       | Encoder: ±550 µm (safe measuring step (SM) = 220 µm)                                                                                                                                                                                                                                | –        |
|                                                                   | Mechanical connection: fault exclusions for loosening of the housing and scanning unit (page 21)                                                                                                                                                                                    |          |
| <b>Interface</b>                                                  | DRIVE-CLiQ                                                                                                                                                                                                                                                                          |          |
| Ordering designation                                              | DQ01                                                                                                                                                                                                                                                                                |          |
| Measuring step<br>At ±3 µm<br>At ±5 µm                            | 0.001 µm<br>0.010 µm                                                                                                                                                                                                                                                                |          |
| Clock frequency (calculation time $t_{\text{cal}}$ )              | –                                                                                                                                                                                                                                                                                   |          |
| <b>Measurement of direct-drive motor temperature<sup>2)</sup></b> | –                                                                                                                                                                                                                                                                                   |          |
| <b>Electrical connection</b>                                      | Separate adapter cable (1 m / 3 m / 6 m / 9 m) connectable on mounting block                                                                                                                                                                                                        |          |
| Cable length                                                      | $\leq 30 \text{ m}^{3)}$                                                                                                                                                                                                                                                            |          |
| Supply voltage                                                    | DC 10 V to 28.8 V                                                                                                                                                                                                                                                                   |          |
| Power consumption (maximum)                                       | 10 V: $\leq 1.5 \text{ W}$ ; 28.8 V: $\leq 1.7 \text{ W}$                                                                                                                                                                                                                           |          |
| <b>Traversing speed</b>                                           | $\leq 180 \text{ m/min}$ (max. acceleration in the direction of measurement $\leq 100 \text{ m/s}^2$ )                                                                                                                                                                              |          |
| <b>Required moving force</b>                                      | $\leq 5 \text{ N}$                                                                                                                                                                                                                                                                  |          |
| <b>Vibration</b> 55 Hz to 2000 Hz acting on                       | Scanning unit: $\leq 200 \text{ m/s}^2$ (EN 60068-2-6)<br>Housing without mounting spar: $\leq 100 \text{ m/s}^2$ (EN 60068-2-6)<br>Housing with mounting spar; cable outlet on the right: $\leq 150 \text{ m/s}^2$ , or left: $\leq 100 \text{ m/s}^2$ (EN 60068-2-6)              |          |
| <b>Shock</b> 11 ms                                                | $\leq 300 \text{ m/s}^2$ (EN 60068-2-27)                                                                                                                                                                                                                                            |          |
| <b>Operating temperature</b>                                      | 0 °C to 50 °C                                                                                                                                                                                                                                                                       |          |
| <b>Protection</b> EN 60529 <sup>4)</sup>                          | IP53 when installed as per the 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; mounting spar: 0.9 kg/m                                                                                                                                                                                                            |          |

\* Please select when ordering

<sup>1)</sup> Further tolerances may arise in the downstream electronics after position value comparison (contact mfr. of downstream electronics)

<sup>2)</sup> Depending on the serial number index of the encoder; please consult HEIDENHAIN

<sup>3)</sup> Greater cable lengths upon request

<sup>4)</sup> In the application, protect the LC from the ingress of particles and liquids



| LC 495 F                                                              |     |     |     |      | LC 495 M                        |      |      |      |      | LC 495 P                   |      |      |      |  |
|-----------------------------------------------------------------------|-----|-----|-----|------|---------------------------------|------|------|------|------|----------------------------|------|------|------|--|
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
| 720                                                                   | 770 | 820 | 920 | 1020 | 1140                            | 1240 | 1340 | 1440 | 1540 | 1640                       | 1740 | 1840 | 2040 |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
| Fanuc Serial Interface/αi interface                                   |     |     |     |      | Mitsubishi high speed interface |      |      |      |      | Panasonic Serial Interface |      |      |      |  |
| Fanuc05                                                               |     |     |     |      | Mit03-04                        |      |      |      |      | Pana01                     |      |      |      |  |
| αi interface/α interface<br>0.00125 μm/0.010 μm<br>0.0125 μm/0.050 μm |     |     |     |      | 0.001 μm<br>0.010 μm            |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
| With EIB 5211                                                         |     |     |     |      | —                               |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
| ≤ 50 m                                                                |     |     |     |      | ≤ 30 m                          |      |      |      |      | ≤ 50 m                     |      |      |      |  |
| DC 3.6 V to 14 V                                                      |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
| 3.6 V: ≤ 1.1 W; 14 V: ≤ 1.3 W                                         |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |
|                                                                       |     |     |     |      |                                 |      |      |      |      |                            |      |      |      |  |