



# HEIDENHAIN



Product Information

**LF 185**  
**LF 485**

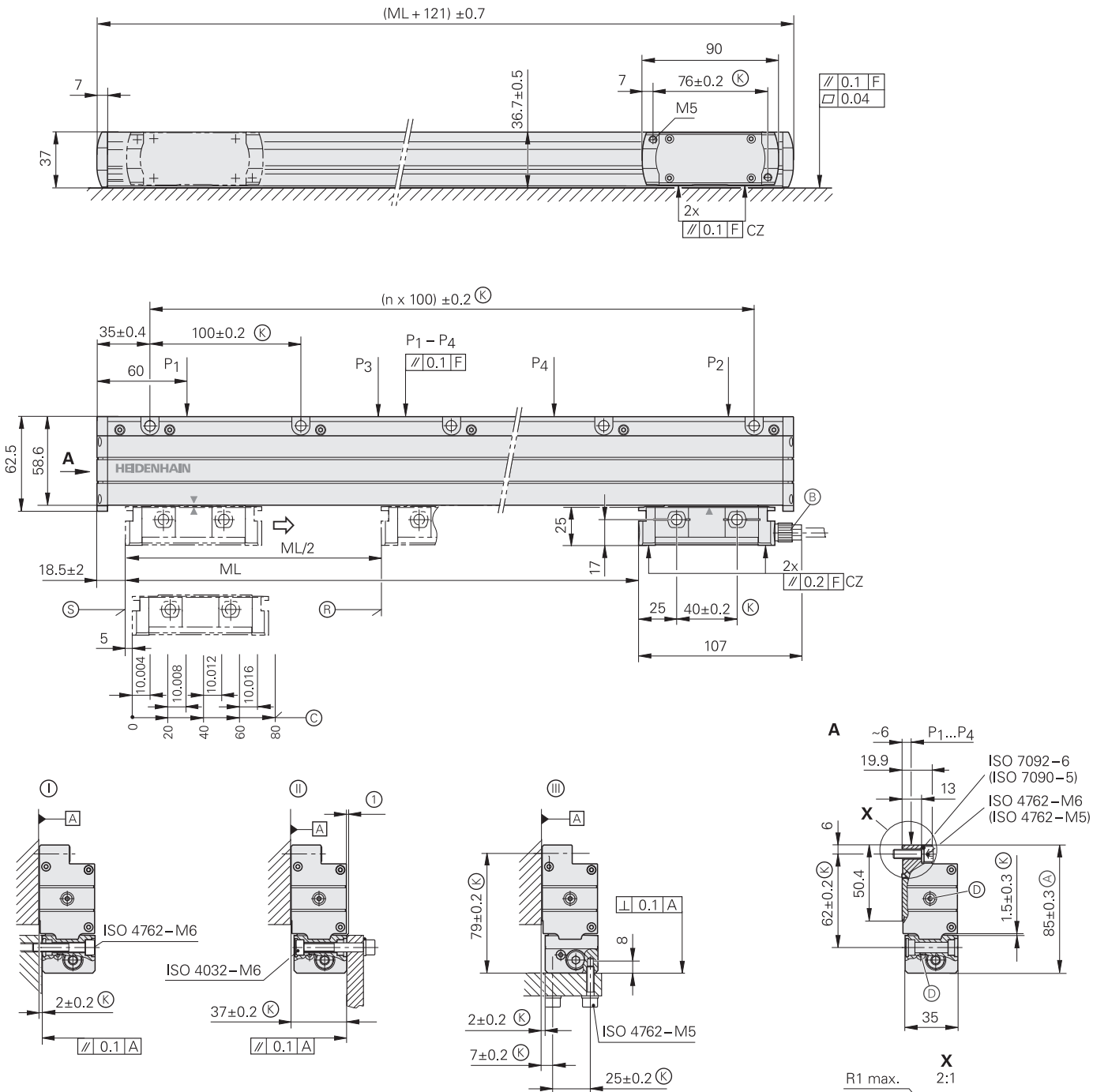
Incremental  
Linear Encoders

02/2026

# LF 185

## Incremental linear encoders with full-size scale housing

- Very high repeatability
- Thermal behavior similar to steel or gray cast iron
- Flat-lying installation possible



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

- ⊙, ⊙<sub>1</sub> = Mounting options
- F = Machine guideway
- P = Measuring points for alignment
- ML = Measuring length
- Ⓚ = Mating dimensions
- Ⓐ = Alternative mating dimension
- Ⓑ = Cable can be connected at either end
- Ⓓ = Compressed air can be connected at either end
- Ⓢ = Beginning of measuring length (ML)
- Ⓡ = Reference mark position for LF 185
- Ⓒ = Reference mark position for LF 185 C
- Ⓦ = Mating surfaces
- ① = No alternative mating dimension (unlike with LS/LC 100)
- ⇒ = Direction of motion of the scanning unit for ascending position values



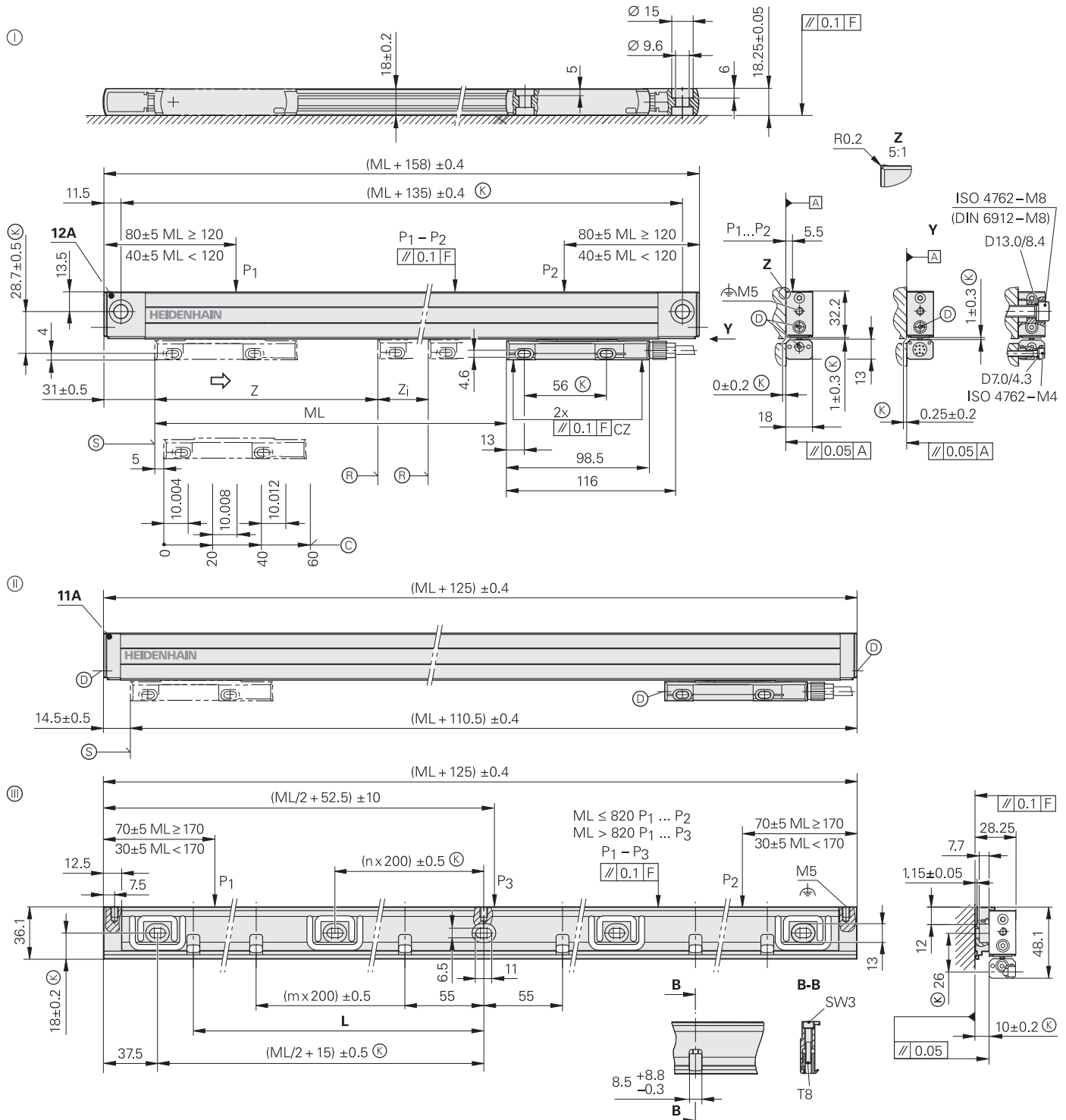
| Specifications                                 |  | LF 185                                                                                                                                                                              |
|------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Measuring standard</b>                      |  | SUPRADUR phase grating on steel, grating period: 8 µm                                                                                                                               |
| Coefficient of linear expansion                |  | $\alpha_{\text{therm}} \approx 10 \cdot 10^{-6} \text{ K}^{-1}$                                                                                                                     |
| <b>Accuracy grade*</b>                         |  | ±3 µm; ±2 µm                                                                                                                                                                        |
| <b>Measuring length (ML)*</b><br>in mm         |  | 140    240    340    440    540    640    740    840    940    1040    1140    1240    1340    1440<br>1540    1640    1740    1840    2040    2240    2440    2640    2840    3040 |
| <b>Interface</b>                               |  | ~ 1 V <sub>PP</sub>                                                                                                                                                                 |
| Signal period                                  |  | 4 µm                                                                                                                                                                                |
| Reference marks*<br>LF 185<br>LF 185C          |  | One reference mark at midpoint; other reference mark positions upon request<br>Distance-coded                                                                                       |
| Diagnostics interface                          |  | Analog                                                                                                                                                                              |
| Cutoff frequency<br>-3 dB                      |  | ≥ 250 kHz                                                                                                                                                                           |
| <b>Electrical connection</b>                   |  | Separate adapter cable (1 m / 3 m / 6 m / 9 m) connectable on mounting block                                                                                                        |
| Cable length                                   |  | ≤ 150 m (with HEIDENHAIN cable)                                                                                                                                                     |
| Supply voltage without load                    |  | DC 5 V ±0.25 V / < 150 mA                                                                                                                                                           |
| <b>Traversing speed</b>                        |  | ≤ 60 m/min (max. acceleration in the direction of measurement ≤ 100 m/s <sup>2</sup> )                                                                                              |
| <b>Required moving force</b>                   |  | ≤ 4 N                                                                                                                                                                               |
| <b>Vibration</b> 55 Hz to 2000 Hz<br>acting on |  | Housing: ≤ 150 m/s <sup>2</sup> (EN 60068-2-6)<br>Scanning unit: ≤ 200 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                     |  | IP53 when installed as per mounting information in brochure<br>IP64 with purge air via DA 400                                                                                       |
| <b>Mass</b>                                    |  | 0.8 kg + 4.6 kg/m of measuring length                                                                                                                                               |

\* Please select when ordering

# LF 485

## Incremental linear encoders with slimline scale housing

- Very high repeatability
- Thermal behavior similar to steel or gray cast iron
- For limited installation space



| ML | 50   | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1120 | 1220 | 1320 | 1420 | 1520 | 1620 | 1720 | 1820 | 2020 |
|----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|
| 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 |

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

- ⊙ = 12A end block; for mounting with and without mounting spar
- ⊙ = 11A end block; for mounting with mounting spar
- ⊙ = MSL 41 mounting spar
- F = Machine guideway
- P = Measuring points for alignment

- ⊙ = Mating dimensions
- ⊙ = Reference mark position on LF 485
- Two reference marks for measuring lengths
- 50 to 1000 | 1120 to 1220
- z = 25 mm | z = 35 mm
- z<sub>1</sub> = ML - 50 mm | z<sub>1</sub> = ML - 70 mm
- ⊙ = Reference mark position on LF 485 C
- ⊙ = Compressed air inlet
- ⊙ = Beginning of measuring length (ML)
- ⇒ = Direction of motion of the scanning unit for ascending position values

LF 485 without mounting spar

LF 485 with mounting spar



| Specifications                              |          | LF 485                                                                                                                                                                                                                                                                          |
|---------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Measuring standard</b>                   |          | SUPRADUR phase grating on steel, grating period: 8 $\mu\text{m}$                                                                                                                                                                                                                |
| Coefficient of linear expansion             |          | $\alpha_{\text{therm}} \approx 10 \cdot 10^{-6} \text{ K}^{-1}$                                                                                                                                                                                                                 |
| <b>Accuracy grade*</b>                      |          | $\pm 5 \mu\text{m}; \pm 3 \mu\text{m}$                                                                                                                                                                                                                                          |
| <b>Measuring length (ML)*</b><br>in mm      |          | Mounting spar* optional<br>50 100 150 200 250 300 350 400 450 500 550 600 650 700<br>750 800 900 1000 1120 1220                                                                                                                                                                 |
| <b>Interface</b>                            |          | $\sim 1 \text{ V}_{\text{PP}}$                                                                                                                                                                                                                                                  |
| Signal period                               |          | 4 $\mu\text{m}$                                                                                                                                                                                                                                                                 |
| Reference marks*                            | LF 485   | <ul style="list-style-type: none"> <li>One reference mark at midpoint of measuring length</li> <li>Two reference marks, each 25 mm (for ML <math>\leq 1000</math> mm) or 35 mm (for ML <math>\geq 1120</math> mm) from the beginning and end of the measuring length</li> </ul> |
|                                             | LF 485 C |                                                                                                                                                                                                                                                                                 |
| Diagnostics interface                       |          | Distance-coded                                                                                                                                                                                                                                                                  |
| Diagnostics interface                       |          | Analog                                                                                                                                                                                                                                                                          |
| Cutoff frequency –3 dB                      |          | $\geq 250 \text{ kHz}$                                                                                                                                                                                                                                                          |
| <b>Electrical connection</b>                |          | Separate adapter cable (1 m / 3 m / 6 m / 9 m) connectable on mounting block                                                                                                                                                                                                    |
| Cable length                                |          | $\leq 150 \text{ m}$ (with HEIDENHAIN cable)                                                                                                                                                                                                                                    |
| Supply voltage without load                 |          | DC 5 V $\pm 0.25 \text{ V}$ / $< 150 \text{ mA}$                                                                                                                                                                                                                                |
| <b>Traversing speed</b>                     |          | $\leq 60 \text{ m/min}$ (max. acceleration in the direction of measurement $\leq 100 \text{ m/s}^2$ )                                                                                                                                                                           |
| <b>Required moving force</b>                |          | $\leq 4 \text{ N}$                                                                                                                                                                                                                                                              |
| <b>Vibration</b> 55 Hz to 2000 Hz acting on |          | Housing with mounting spar: $\leq 150 \text{ m/s}^2$ (EN 60068-2-6)                                                                                                                                                                                                             |
| <b>Shock</b> 11 ms                          |          | Scanning unit: $\leq 200 \text{ m/s}^2$ (EN 60068-2-6)<br>$\leq 300 \text{ m/s}^2$ (EN 60068-2-27)                                                                                                                                                                              |
| <b>Operating temperature</b>                |          | 0 °C to 50 °C                                                                                                                                                                                                                                                                   |
| <b>Protection</b> EN 60529                  |          | IP53 when installed as per mounting information in brochure<br>IP64 with purge air via DA 400                                                                                                                                                                                   |
| <b>Mass</b>                                 |          | 0.4 kg + 0.6 kg/m of measuring length                                                                                                                                                                                                                                           |

\* Please select when ordering

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# HEIDENHAIN

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