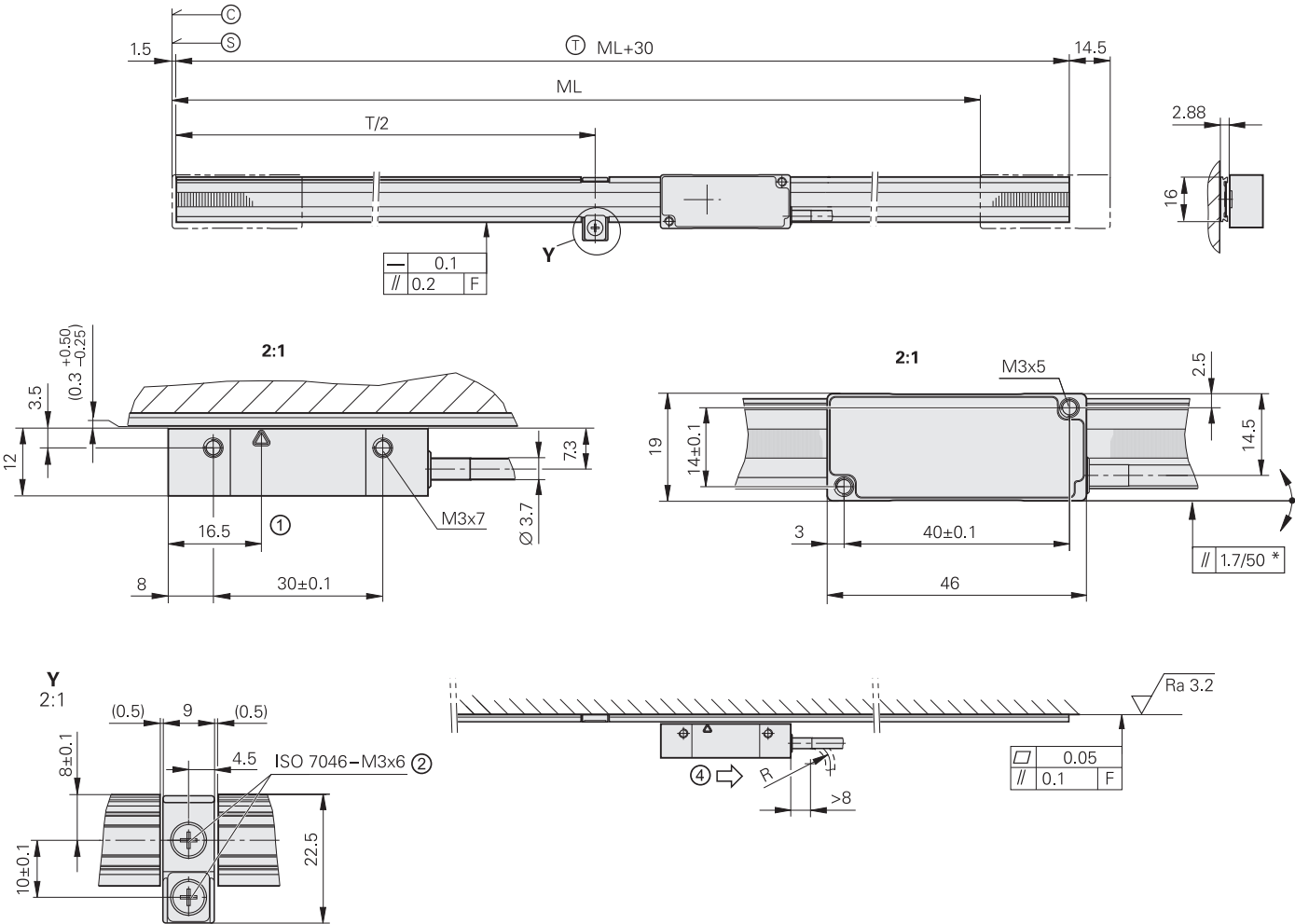


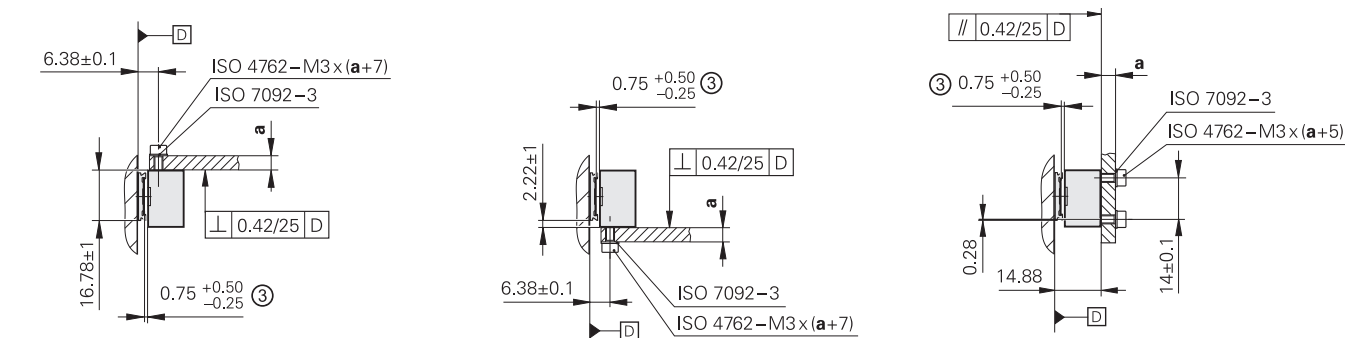


LIC 2117, LIC 2197

- Absolute linear encoders for measuring lengths of up to 3 m
- Measuring step: 100 nm or 50 nm
  - Steel scale tape pulled through aluminum extrusions and fastened at center
  - Consisting of a linear scale and scanning head



Mounting options for scanning head



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

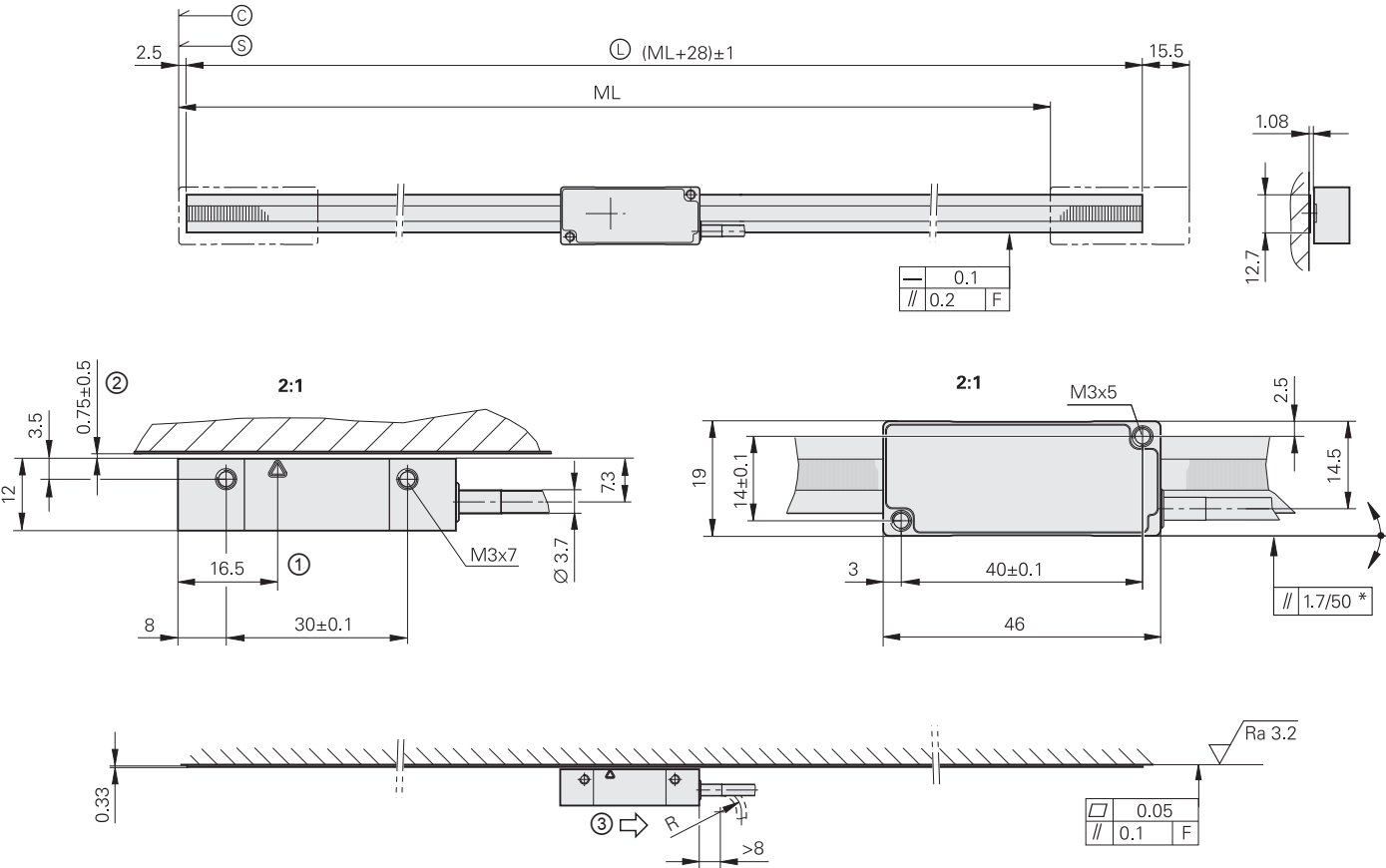
- F = Machine guideway
- \* = Maximum change during operation
- ⊙ = Code start value: ≥ 100 mm
- Ⓢ = Beginning of measuring length (ML)
- Ⓣ = Carrier length
- 1 = Optical centerline
- 2 = M3 threaded mating hole, 5 mm deep
- 3 = Mounting gap between scanning head and scale tape
- 4 = Direction of motion of the scanning unit for increasing position values

| Scale                                                 | LIC 2107                                                                                                       |                                         |                                 |         |                            |                          |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------|---------|----------------------------|--------------------------|
| Measuring standard<br>Coefficient of linear expansion | Steel scale tape with absolute track<br>$\alpha_{\text{therm}} \approx 10 \cdot 10^{-6} \text{ K}^{-1}$        |                                         |                                 |         |                            |                          |
| Accuracy grade                                        | ±15 µm                                                                                                         |                                         |                                 |         |                            |                          |
| Scale tape from roll*                                 | 3 m, 5 m, 10 m                                                                                                 |                                         |                                 |         |                            |                          |
| Mass                                                  | Scale tape: 20 g/m<br>Scale tape carrier: 70 g/m                                                               |                                         |                                 |         |                            |                          |
|                                                       |                                                                                                                |                                         |                                 |         |                            |                          |
| Scanning head                                         | LIC 211                                                                                                        | LIC 219F                                | LIC 219M                        |         | LIC 219P                   | LIC 219Y                 |
| Interface                                             | EnDat 2.2                                                                                                      | Fanuc Serial Interface αi               | Mitsubishi high speed interface |         | Panasonic Serial Interface | Yaskawa Serial Interface |
| Ordering designation*                                 | EnDat22                                                                                                        | Fanuc05                                 | Mit03-4                         | Mit03-2 | Pana02                     | YEC07                    |
| Measuring step*                                       | 100 nm, 50 nm                                                                                                  |                                         |                                 |         |                            |                          |
| Bit width                                             | 32 bits                                                                                                        |                                         |                                 |         |                            |                          |
| Calculation time $t_{\text{cal}}$<br>Clock frequency  | ≤ 5 µs<br>≤ 16 MHz                                                                                             | –<br>–                                  |                                 |         |                            |                          |
| Traversing speed <sup>1)</sup>                        | ≤ 600 m/min                                                                                                    |                                         |                                 |         |                            |                          |
| Interpolation error                                   | ±2 µm                                                                                                          |                                         |                                 |         |                            |                          |
| Electrical connection*                                | Cable (1 m or 3 m) with 8-pin M12 coupling (male) or 15-pin D-sub connector (male)                             |                                         |                                 |         |                            |                          |
| Cable length<br>(with HEIDENHAIN cable)               | ≤ 100 m                                                                                                        | ≤ 50 m                                  | ≤ 30 m                          |         | ≤ 50 m                     |                          |
| Supply voltage                                        | DC 3.6 V to 14 V                                                                                               |                                         |                                 |         |                            |                          |
| Power consumption <sup>1)</sup> (max.)                | At 3.6 V: ≤ 700 mW<br>At 14 V: ≤ 800 mW                                                                        | At 3.6 V: ≤ 850 mW<br>At 14 V: ≤ 950 mW |                                 |         |                            |                          |
| Current consumption (typical)                         | At 5 V: 75 mA<br>(without load)                                                                                | At 5 V: 95 mA (without load)            |                                 |         |                            |                          |
| Vibration 55 Hz to 2000 Hz<br>Shock 6 ms              | ≤ 500 m/s2 (EN 60068-2-6)<br>≤ 1000 m/s2 (EN 60068-2-27)                                                       |                                         |                                 |         |                            |                          |
| Operating temperature                                 | –10 °C to 70 °C                                                                                                |                                         |                                 |         |                            |                          |
| Mass                                                  | Scanning head: ≤ 18 g (without cable)<br>Cable: 20 g/m<br>Connector: M12 coupling: 15 g; D-sub connector: 32 g |                                         |                                 |         |                            |                          |

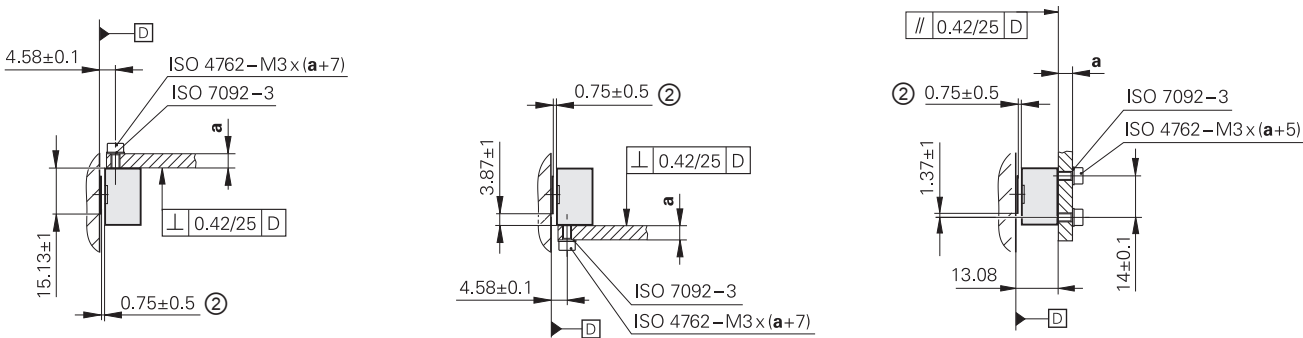
\* Please select when ordering  
1) See General electrical information in the Interfaces of HEIDENHAIN Encoders brochure

LIC 2119, LIC 2199

- Absolute linear encoders for measuring lengths of up to 3 m
- Measuring step: 100 nm or 50 nm
  - Steel scale tape adhesively bonded to mounting surface
  - Consisting of a linear scale and scanning head



Mounting options for scanning head



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

- F = Machine guideway
- \* = Maximum change during operation
- ⊙ = Code start value: ≥ 100 mm
- ⊙ = Beginning of measuring length (ML)
- ⊙ = Scale tape length
- 1 = Optical centerline
- 2 = Mounting gap between scanning head and scale tape
- 3 = Direction of motion of the scanning unit for ascending position values

| Scale                                                 | LIC 2109                                                                                                       |                                         |                                 |         |                            |                          |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------|---------|----------------------------|--------------------------|
| Measuring standard<br>Coefficient of linear expansion | Steel scale tape with absolute track<br>$\alpha_{\text{therm}} \approx 10 \cdot 10^{-6} \text{ K}^{-1}$        |                                         |                                 |         |                            |                          |
| Accuracy grade                                        | ±15 µm                                                                                                         |                                         |                                 |         |                            |                          |
| Scale tape from roll*                                 | 3 m, 5 m, 10 m                                                                                                 |                                         |                                 |         |                            |                          |
| Mass                                                  | 20 g/m                                                                                                         |                                         |                                 |         |                            |                          |
|                                                       |                                                                                                                |                                         |                                 |         |                            |                          |
| Scanning head                                         | LIC 211                                                                                                        | LIC 219F                                | LIC 219M                        |         | LIC 219P                   | LIC 219Y                 |
| Interface                                             | EnDat 2.2                                                                                                      | Fanuc Serial Interface αi               | Mitsubishi high speed interface |         | Panasonic Serial Interface | Yaskawa Serial Interface |
| Ordering designation*                                 | EnDat22                                                                                                        | Fanuc05                                 | Mit03-4                         | Mit03-2 | Pana02                     | YEC07                    |
| Measuring step*                                       | 100 nm, 50 nm                                                                                                  |                                         |                                 |         |                            |                          |
| Bit width                                             | 32 bits                                                                                                        |                                         |                                 |         |                            |                          |
| Calculation time $t_{\text{cal}}$<br>Clock frequency  | ≤ 5 µs<br>≤ 16 MHz                                                                                             | –<br>–                                  |                                 |         |                            |                          |
| Traversing speed <sup>1)</sup>                        | ≤ 600 m/min                                                                                                    |                                         |                                 |         |                            |                          |
| Interpolation error                                   | ±2 µm                                                                                                          |                                         |                                 |         |                            |                          |
| Electrical connection*                                | Cable (1 m or 3 m) with 8-pin M12 coupling (male) or 15-pin D-sub connector (male)                             |                                         |                                 |         |                            |                          |
| Cable length<br>(with HEIDENHAIN cable)               | ≤ 100 m                                                                                                        | ≤ 50 m                                  | ≤ 30 m                          |         | ≤ 50 m                     |                          |
| Supply voltage                                        | DC 3.6 V to 14 V                                                                                               |                                         |                                 |         |                            |                          |
| Power consumption <sup>1)</sup> (max.)                | At 3.6 V: ≤ 700 mW<br>At 14 V: ≤ 800 mW                                                                        | At 3.6 V: ≤ 850 mW<br>At 14 V: ≤ 950 mW |                                 |         |                            |                          |
| Current consumption (typical)                         | At 5 V: 75 mA<br>(without load)                                                                                | At 5 V: 95 mA (without load)            |                                 |         |                            |                          |
| Vibration 55 Hz to 2000 Hz<br>Shock 6 ms              | ≤ 500 m/s <sup>2</sup> (EN 60068-2-6)<br>≤ 1000 m/s <sup>2</sup> (EN 60068-2-27)                               |                                         |                                 |         |                            |                          |
| Operating temperature                                 | –10 °C to 70 °C                                                                                                |                                         |                                 |         |                            |                          |
| Mass                                                  | Scanning head: ≤ 18 g (without cable)<br>Cable: 20 g/m<br>Connector: M12 coupling: 15 g; D-sub connector: 32 g |                                         |                                 |         |                            |                          |

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