

The DS-25 is a member of the DS series of Electric Encoders™ a product line based on Netzer Precision Position Sensor proprietary technology. EE products are characterized by features that enable unparalleled performance:

- Low profile (7 mm)
- Hollow, floating shaft
- No bearings or other contact elements
- High resolution and unparalleled precision
- High tolerance to temperature extremes, shock, moisture, EMI, RFI and magnetic fields
- Very low weight
- Holistic signal generation
- Digital interfaces for absolute position

General

| | |
|--------------------------------|-------------------------------|
| Angular resolution | 17-19 bit |
| Maximum tested static error | ±0.020° |
| Extended accuracy static error | ±0.010° |
| Maximum operational speed | 4,000 rpm |
| Measurement range | Single turn absolute position |
| Rotation direction | Adjustable CW/CCW |
| Build In Test BIT | Optional |

* Default same direction from bottom side of the encoder

Mechanical

| | |
|------------------------------------|--------------------------|
| Allowable mounting eccentricity | ±0.1 mm |
| Allowable axial mounting tolerance | ±0.1 mm |
| Rotor inertia | 11 gr · mm ² |
| Total weight | 10 gr |
| Outer Ø / Inner Ø / Height | 25 / 6 / 7 mm |
| Material (stator, rotor) | Ultem™ polymer / TRVX-50 |

The Electric Encoder™ is unique in being holistic, i.e., its output reading is the averaged outcome of the whole area of the rotor. This feature makes the Electric Encoder™ forgiving to mounting tolerances, mechanical wander etc.

The absence of components such as ball bearings, flexible couplers, glass disc, light sources and detectors, along with very low power consumption makes the Electric Encoder™ virtually failure free.

The internally shielded, DC operated Electric Encoder™ includes an electric field generator, a field receiver, a sinusoidal shaped dielectric rotor, and processing electronics.

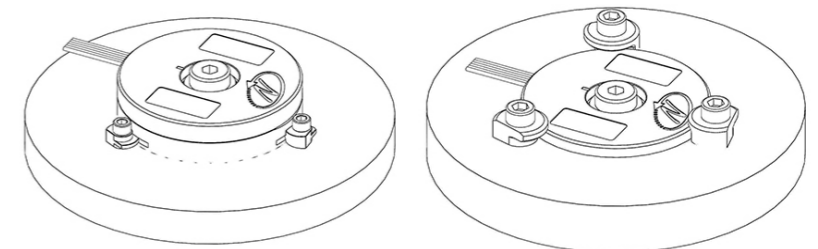
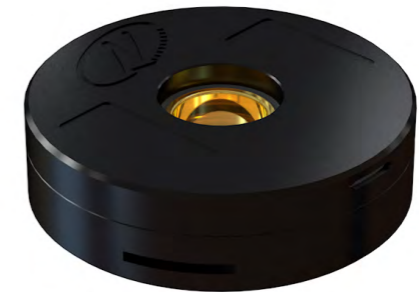
The output of Electric Encoder™ is a digital serial with absolute position single turn. The combination of precision, low profile, low weight and high reliability have made Netzer Precision encoders particularly suitable to a wide variety of industrial automation applications.

Electrical

| | |
|---------------------|--------------------|
| Supply voltage | 5V ± 5% |
| Current consumption | 90 mA |
| Interconnection | #30 shielded cable |
| Cable length | 1,500 mm MAX |

Environmental

| | |
|-----------------------|----------------------------|
| EMC | IEC 6100-6-2, IEC 6100-6-4 |
| Operating temperature | -40°C to +85°C |
| Storage temperature | -50°C to +100°C |
| Relative humidity | 98% Non condensing |
| Shock endurance | 100 g for 11 ms |
| Vibration endurance | 20 g 10 – 2000 Hz |
| Protection | IP 40 |



Sold & Serviced By:

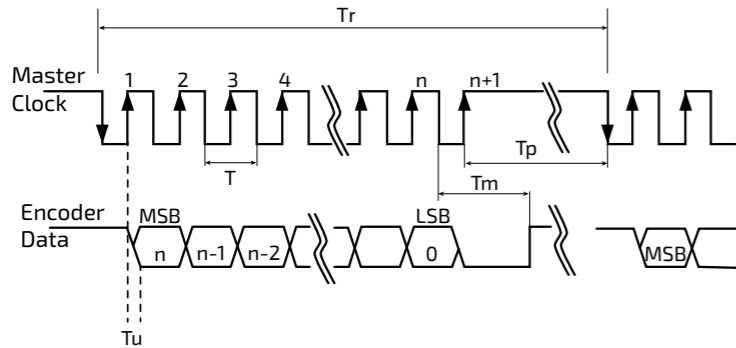
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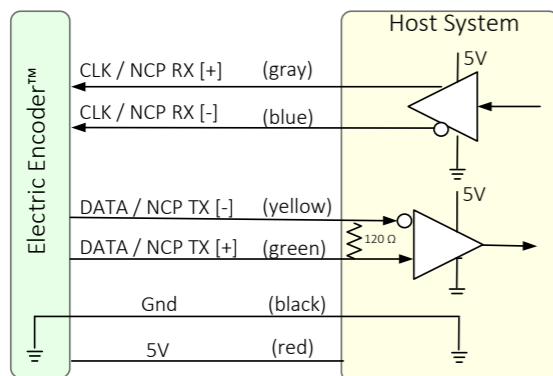


Digital SSI Interface

Synchronous Serial Interface (SSI) is a point to point serial interface standard between a master (e.g. controller) and a slave (e.g. sensor) for digital data transmission.



| | Description | Recommendations |
|---------|----------------------------------|------------------|
| n | Total number of data bits | 12 - 19 |
| T | Clock period | |
| f=1/T | Clock frequency | 0.1 ÷ 5.0 MHz |
| Tu | Bit update time | 90 nsec |
| Tp | Pause time | 26 - ∞ µsec |
| Tm | Monoflop time | >25 µsec |
| Tr | Time between 2 adjacent requests | Tr > n*T+26 µsec |
| fr=1/Tr | Data request frequency | |



SSI / BiSS output signal parameters

| | |
|----------------------|-----------------------------------|
| Output code | Binary |
| Serial output | Differential RS-422 |
| Clock | Differential RS-422 |
| Clock Frequency | 0.1 ÷ 5.0 MHz |
| Position update rate | 35 kHz (Optional - up to 375 KHz) |

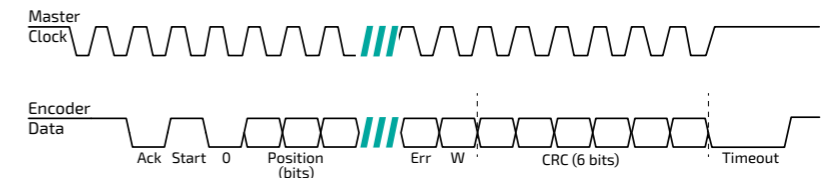
SSI / BiSS interface wires color code

| | | |
|---------|--------|--------------|
| Clock + | Gray | Clock |
| Clock - | Blue | |
| Data - | Yellow | Data |
| Data + | Green | |
| GND | Black | Ground |
| +5V | Red | Power supply |



Digital BiSS-C Interface

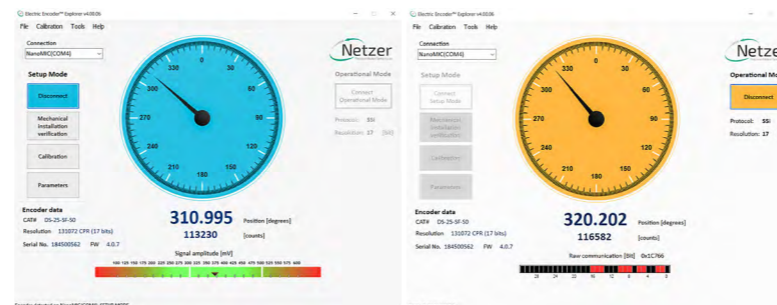
BiSS - C Interface is unidirectional serial synchronous protocol for digital data transmission where the Encoder acts as "slave" transmits data according to "Master" clock. The BiSS protocol is designed in B mode and C mode (continuous mode). The BiSS-C interface as the SSI is based on RS-422 standards.



| Bit # | Description | Default | Length |
|--------|-------------|---------|---------------|
| 27 | Ack | 0 | 1/clock cycle |
| 26 | Start | 1 | 1 bit |
| 25 | "0" | 0 | 1 bit |
| 8...24 | AP | | |
| 7 | Error | 1 | 1 bit |
| 6 | Warn. | 1 | 1 bit |
| 0...5 | CRC | | 6 bits |
| | Timeout | | 25 µs |

Software tools: (SSI / BiSS - C)

Advanced calibration and monitoring options are available by using the factory supplied Electric Encoder Explorer software, This facilitates proper mechanical mounting, offsets calibration and advanced signal monitoring.



Ordering Code

DS - 25 - S F - S 0

DS Product line

Outer Diameter

Output

| | |
|---|------|
| S | SSi |
| I | BiSS |

Resolution

| Code | Bit | CPR |
|------|-----|---------|
| F | 17 | 131,072 |
| G | 18 | 262,144 |
| H | 19 | 524,288 |

BIT (Build In Test): optional

| | |
|-----|------|
| [] | None |
| B | BIT |

Rotor options - Ø ID

| | |
|-----|----------------------------|
| [] | Default, 6 mm |
| M | Rotor metal sleeve, 4.5 mm |

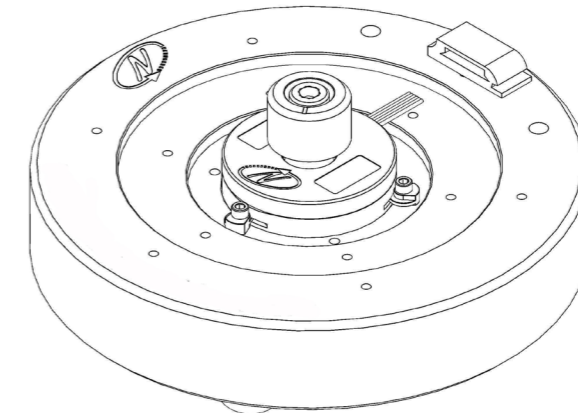
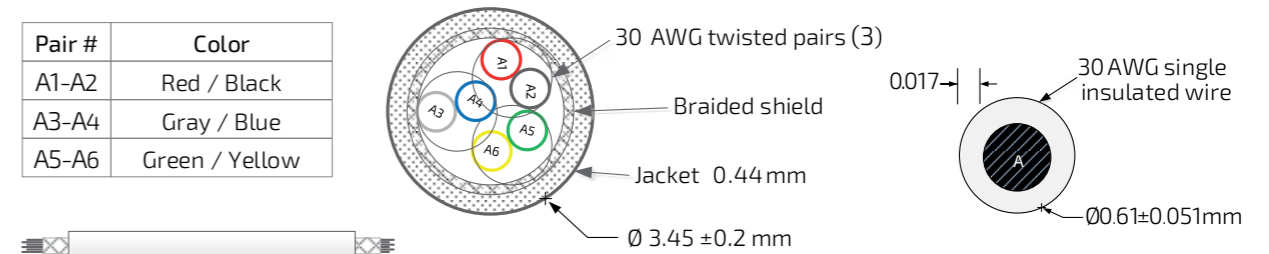
Interconnection

| | |
|---|------------------------------|
| 0 | 250mm Flying leads (default) |
| 1 | 500mm Flying leads |
| 2 | 750mm Flying leads |
| 3 | 1000mm Flying leads |
| C | Connector (optional) |
| S | Shielded cable 250 mm |

Cable Information

Netzer Cat No.: CB 00014
 Cable: 30 AWG twisted pair (3):
 2 (30 AWG 25/44 tinned copper, Insulation: PFE Ø 0.15 to Ø 0.6 ± 0.05 OD)
 Temperature rating: -60 to +150 Deg C
 Braided shield: Thinned copper braided 95% min. coverage
 Jacket: 0.44 silicon rubber (NFA 11-A1) Ø3.45 ±0.2 OD

| Pair # | Color |
|--------|----------------|
| A1-A2 | Red / Black |
| A3-A4 | Gray / Blue |
| A5-A6 | Green / Yellow |



Related documents

DS-25 User Manual : Mechanical , Electrical and calibration setup.

Optional Accessories

Demonstration Kit

DKIT-DS-25-SF-S0 - with SSi interface
 DKIT-DS-25-IF-S0 - with BiSS interface
 Includes, mounted encoder on rotary jig, and RS-422 to USB converter

Sold & Serviced By:

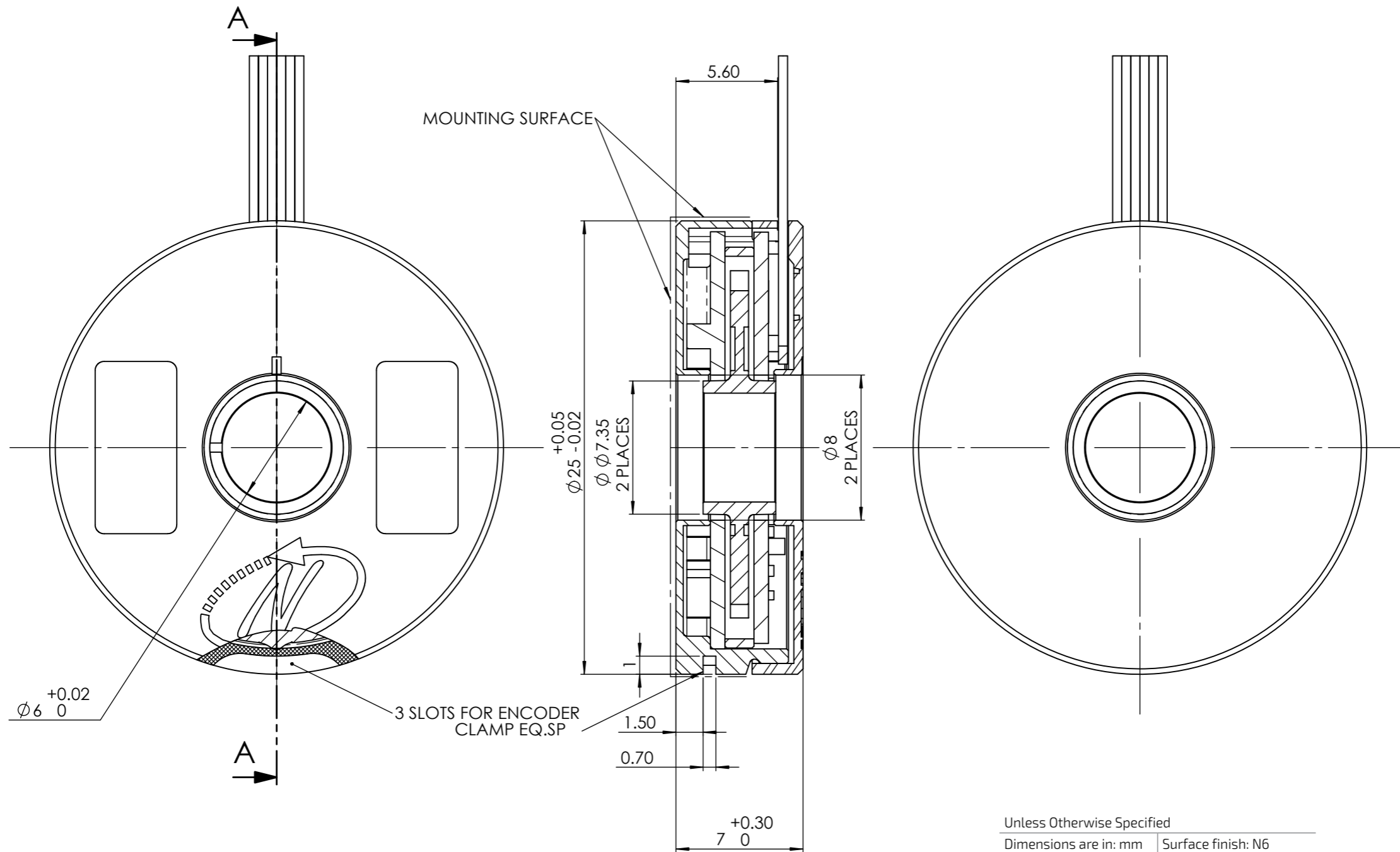
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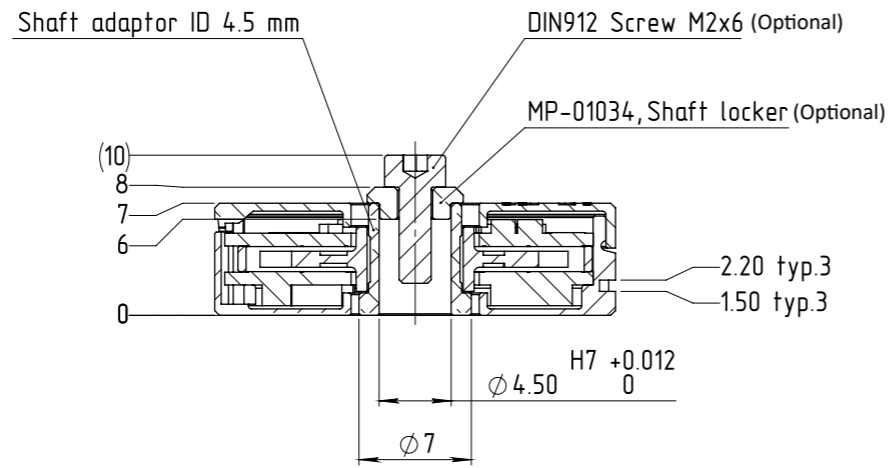
Dimensions are in: mm | Surface finish: N6

Linear tolerances

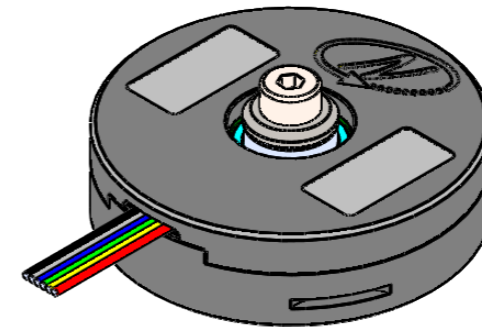
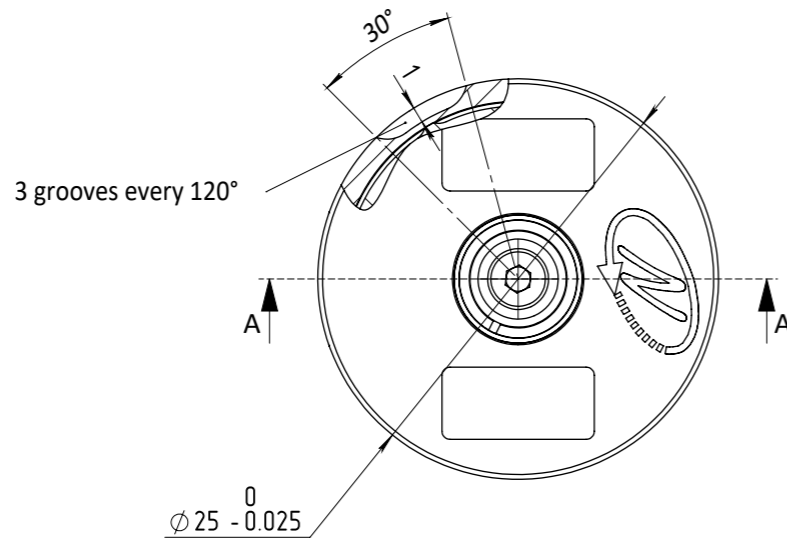
0.5-4.9: ± 0.05 mm | 5-30: ± 0.1 mm

31-120: ± 0.15 mm | 121-400: ± 0.2 mm

DS-25 with rotor metal sleeve



SECTION A-A



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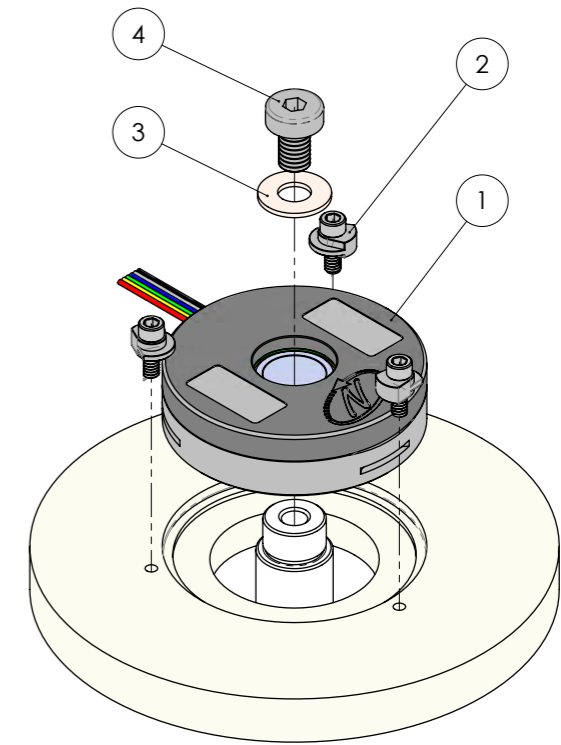
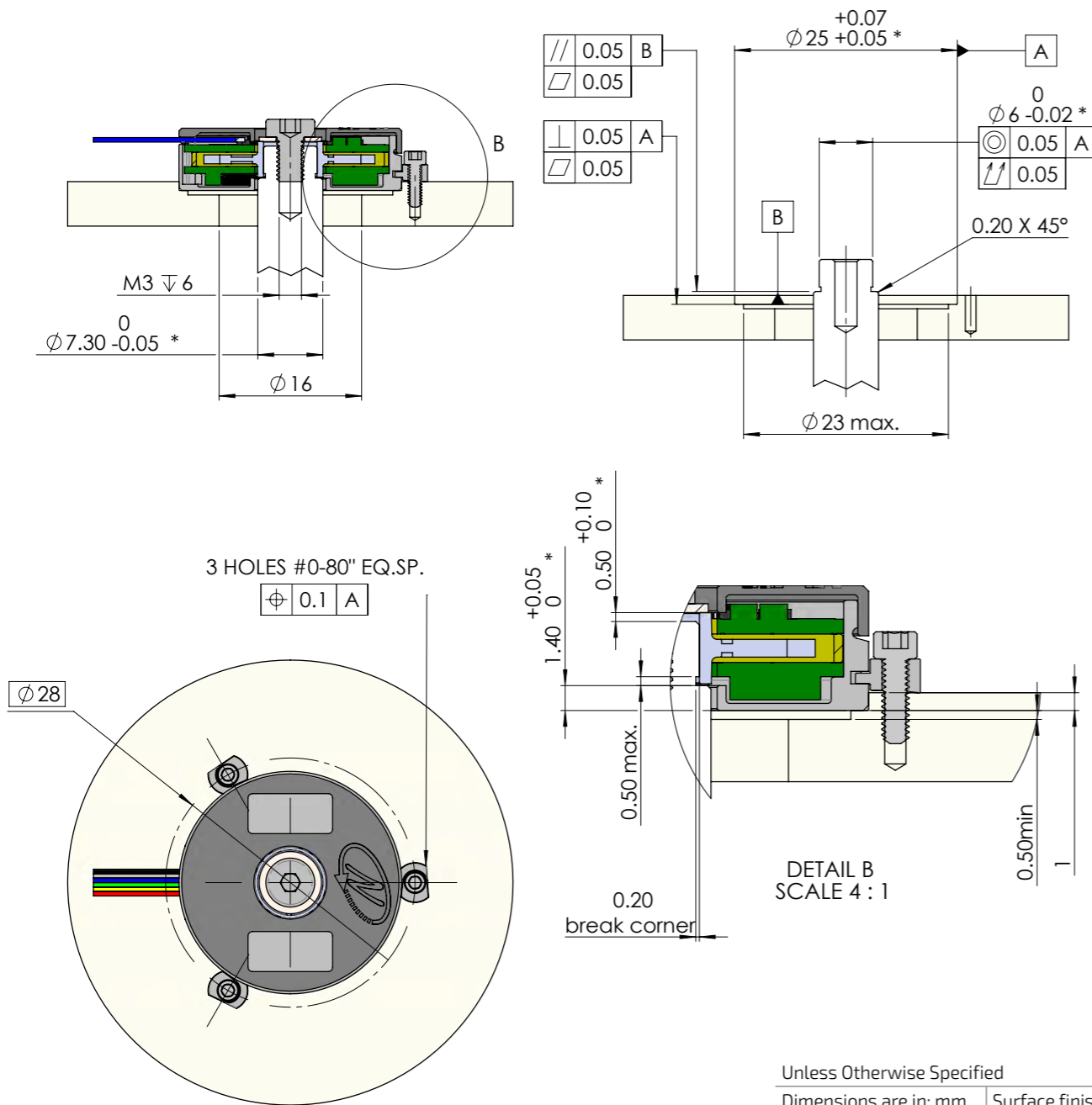
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| | |
|-----------------------|--------------------|
| Dimensions are in: mm | Surface finish: N6 |
| Linear tolerances | |
| 0.5-4.9: ±0.05 mm | 5-30: ±0.1 mm |
| 31-120: ±0.15 mm | 121-400: ±0.2 mm |

Shaft - End installation (step)



| No | Part | Description | QTY. | |
|----|-------------|--|---------------------|---|
| 1 | DS-25 | Included DS-25 encoder | 1 | |
| 2 | EAPK004 | Included Kit 0-80" Kit, 3 x encoder clamps nylon | 1 | |
| 3 | MA-DS25-004 | Optional Shaft end installation kit | Washer DIN125-A3.2 | 1 |
| 4 | | | Screw DIN 7984 M3x5 | 1 |

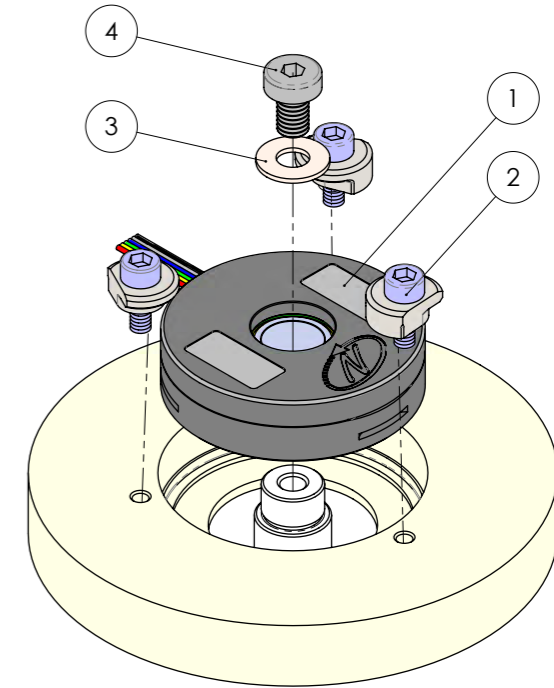
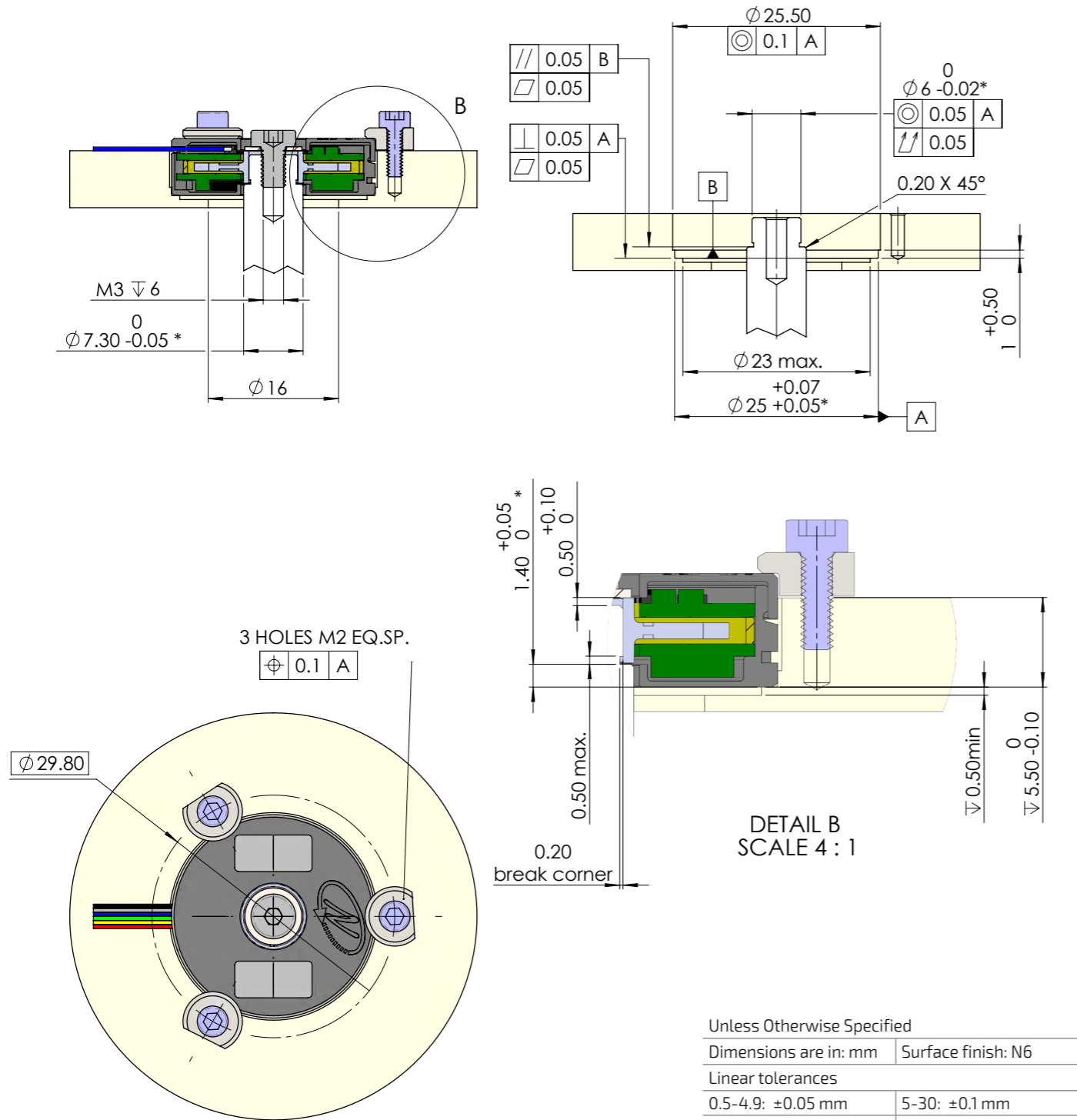
Critical dimensions marked with "**"

WARNING



Do not use Loctite or other glues containing Cyanoacrylate. We recommend to use 3M glue - Scotch-Weld™ Epoxy Adhesive EC-2216 B/A.

Deep, Shaft - End installation (step)



| No | Part | Description | QTY. |
|----|-------------|-------------------------------------|------|
| 1 | DS-25 | Included DS-25 encoder | 1 |
| 2 | EAPK005 | Optional Kit M2 | 1 |
| 3 | MA-DS25-004 | Optional Shaft end installation kit | 1 |
| 4 | | Washer DIN125-A3.2 | 1 |
| | | Screw DIN 7984 M3x5 | 1 |

Critical dimensions marked with "**"

WARNING
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