

Rotational Absolute Magnetic Kit Encoder Version 33 LP and HP Displacement Sensor



FEATURES



- Hall effect principle
- Especially dedicated to harsh conditions (vibrations, shocks, CEM, ...)
- Not sensitive to external magnetic fields and temperature
- Not sensitive to moisture and pollution
- Plug and play
- Small error due to misalignment
- Two versions: High Precision (HP) and Low Precision (LP)
- Protected design, patent EP 2711663
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

DESIGN SUPPORT TOOLS

[click logo to get started](#)

3D
Models
Available

QUICK REFERENCE DATA

| | |
|------------------|---------------------------------|
| Sensor type | ROTATIONAL, magnetic technology |
| Output type | Wires or cables |
| Market appliance | Industrial |
| Dimensions | Diameter 33 mm |

ELECTRICAL SPECIFICATIONS

| PARAMETER | |
|--|---|
| Voltage supply | 5 V \pm 0.25 V |
| Current supply | 110 mA max. at 5 V |
| Output | SSI |
| Connection | Connector (wires on request) |
| Useful electrical angle | 360° (single turn) |
| Absolute accuracy at 25 °C | Version HP: \pm 0.03° > 13 bits Version LP: \pm 0.25° |
| Absolute accuracy at -40 °C to +105 °C | Version HP: \pm 0.05° ~ 13 bits Version LP: \pm 0.5° |
| Resolution | Version HP: \approx 0.004° (\approx 16.52 bits) 94 208 points over 360° Version LP: \approx 0.022° (\approx 14 bits) 16 384 points over 360° |
| Startup time | \leq 20 ms |
| Refresh time | \leq 100 μ s |
| Latency time | \leq 200 μ s |
| Sampling rate | 10 kHz \pm 5 % |

MECHANICAL SPECIFICATIONS

| PARAMETER | |
|-------------------------------------|--|
| Mechanical angle | 360° |
| Maximum speed rotation (HP version) | 50 rpm (up to 700 rpm with decreasing of accuracy, see "Maximum Speed vs. Accuracy" chart) |
| Maximum speed rotation (LP version) | 100 rpm (up to 1000 rpm with decreasing of accuracy, see "Maximum Speed vs. Accuracy" chart) |
| Weight | Version HP: rotor: 6.9 g \pm 1 g; stator: 6.5 g \pm 1 g Version LP: rotor: 2 g \pm 1 g; stator: 2 g \pm 1 g |

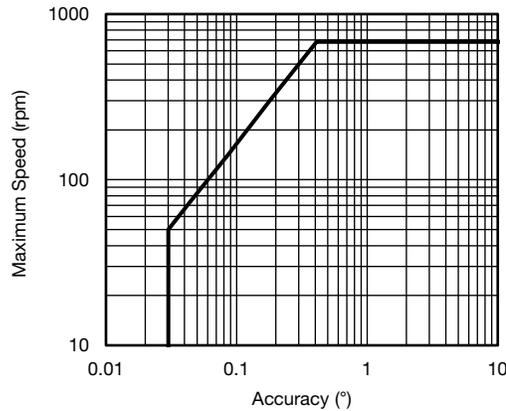
SAP PART NUMBERING GUIDELINES

| TYPE | MODEL | DESIGN | SIZE (mm) | TYPE | FUNCTION | ACCURACY (BITS) | RESOLUTION (BITS) | OUTPUT | PACKAGING |
|----------------|-------|---------|-----------|------|----------|-----------------|-------------------|-------------|-----------|
| R = rotational | AM | K = kit | 033 | M | 1 | 13 | 17 | J = SSI CCW | B = box |
| | | | | | | 09 | 14 | | |

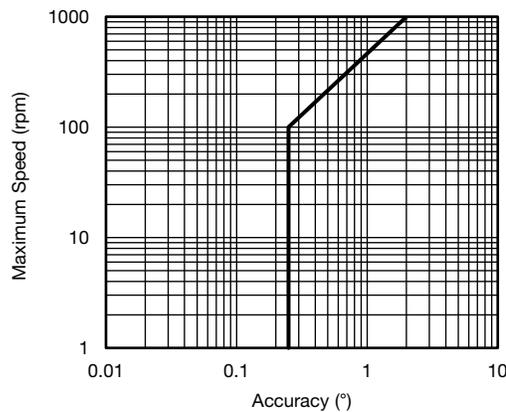


| PERFORMANCE | |
|-----------------------------|---|
| PARAMETER | |
| Operating temperature range | -40 °C to +105 °C (-55 °C to +105 °C on request) |
| Storage temperature range | -45 °C to +105 °C (-55 °C to +105 °C on request) |
| Acceleration | 70 g for 1 s |
| Vibration | 0.05 g ² /Hz, 20 Hz to 2000 Hz for 1 h along the three major axis |
| Shock | 180 g, 14 ms, 1/2 sine |
| EMC | MIL-STD-461F - CS114: conducted susceptibility, bulk cable injection, 10 kHz to 200 MHz table VI army ground level common mode injection and differential mode on positive - RS101: magnetic susceptibility, magnetic field, fig. RS101-2 from 30 Hz to 100 kHz - RS103: radiated susceptibility, electric field, 2 MHz to 18 GHz (level: 50 V/m) - RE102: radiated emissions, electric field, fig. RE102-4 - navy mobile and army - 10 kHz to 16 MHz |
| Humidity | HR ≤ 80 % (non-condensing) |
| Magnetic protection | Version HP: no influence up to 30 mT Version LP: no protection |

MAXIMUM SPEED VS. ACCURACY CHART (for High Precision Version)

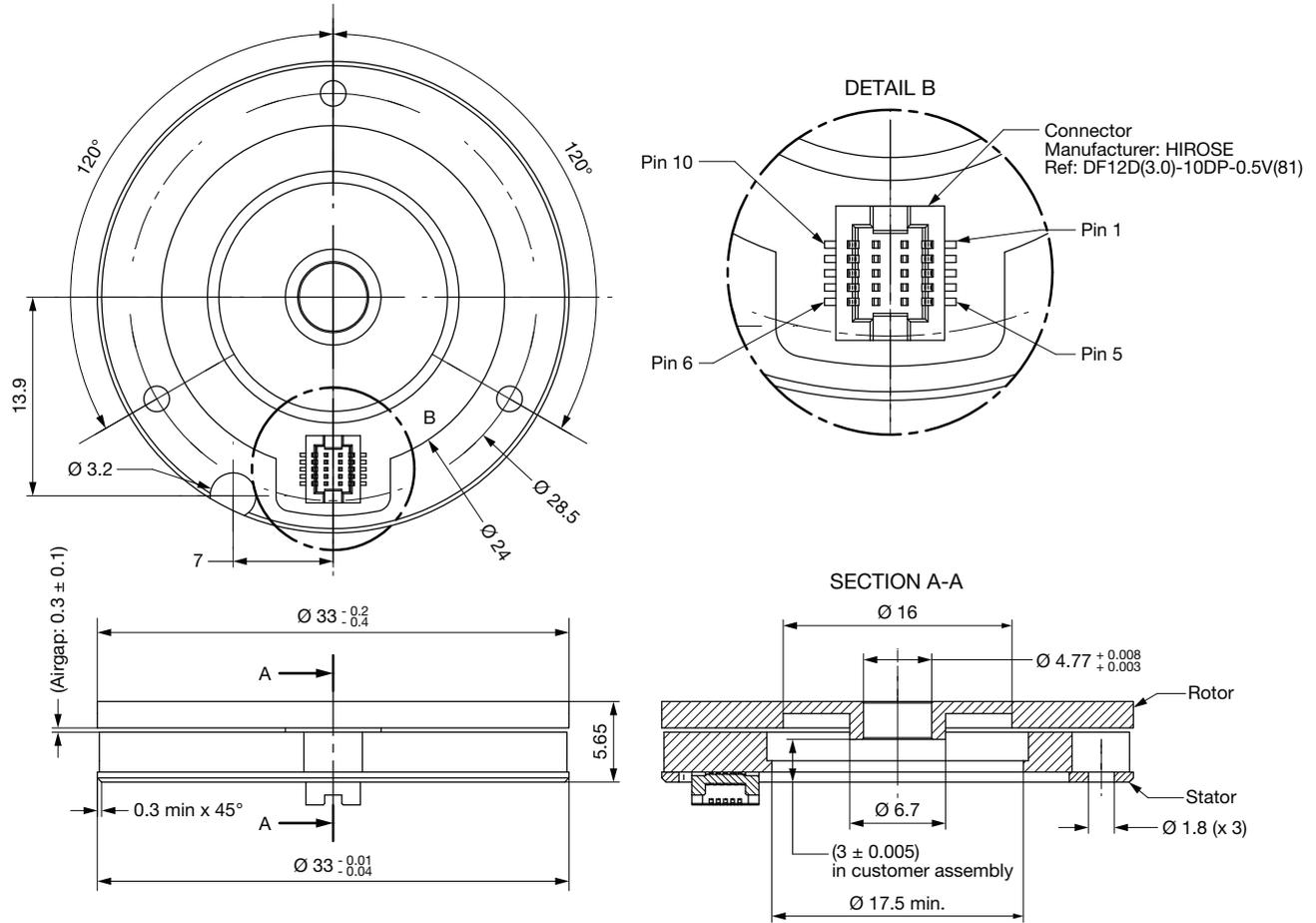


MAXIMUM SPEED VS. ACCURACY CHART (for Low Precision Version)



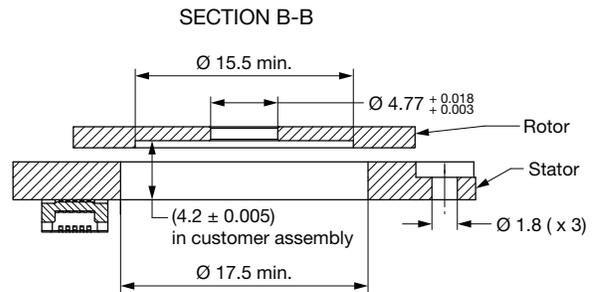
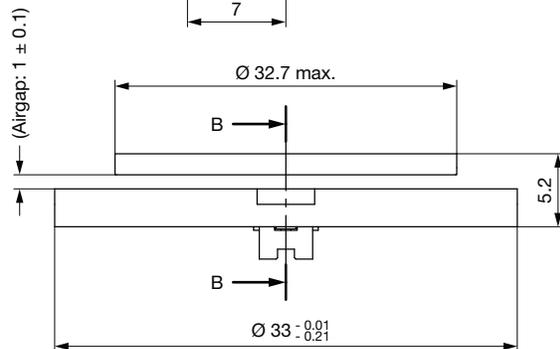
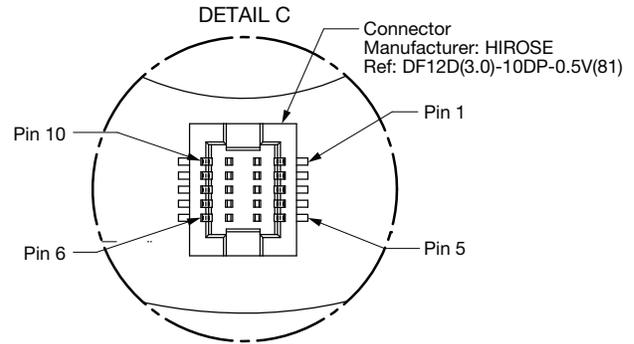
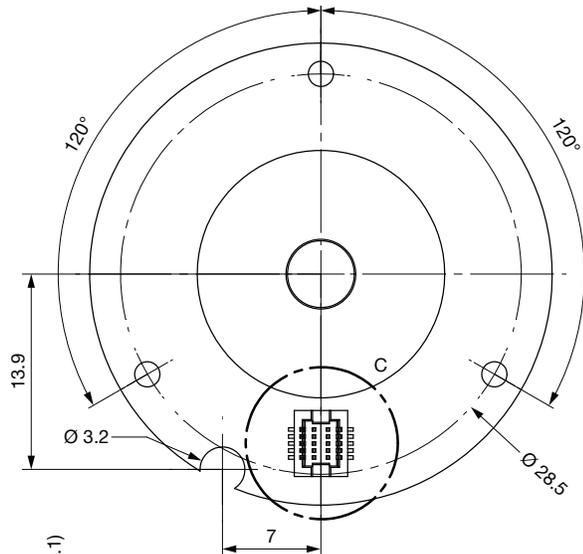
DIMENSIONS in millimeters

VERSION HP



DIMENSIONS in millimeters

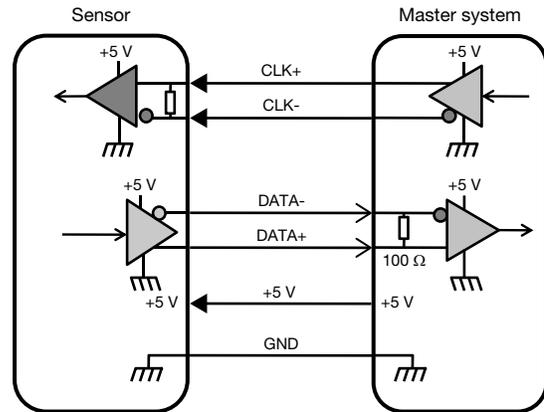
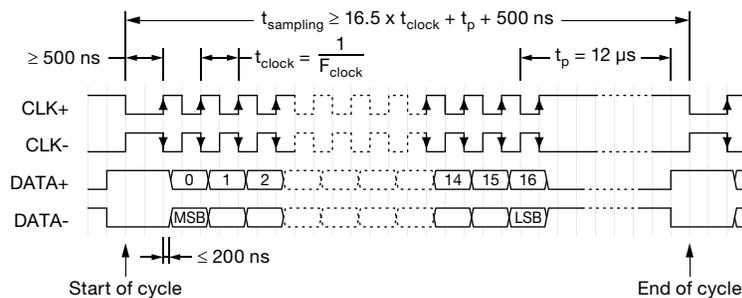
VERSION LP



ELECTRICAL INTERFACE DESCRIPTION - VERSION HP

| 6 WIRES CONNECTION | |
|--------------------|--|
| PIN | NAME |
| 1 | Data- |
| 2 | Data+ |
| 3 | CLK- |
| 4 | CLK+ |
| 5 | GND |
| 6 | +5 V |
| 7 | Reserved for Vishay MCB Industrie production |
| 8 | Reserved for Vishay MCB Industrie production |
| 9 | Reserved for Vishay MCB Industrie production |
| 10 | Reserved for Vishay MCB Industrie production |

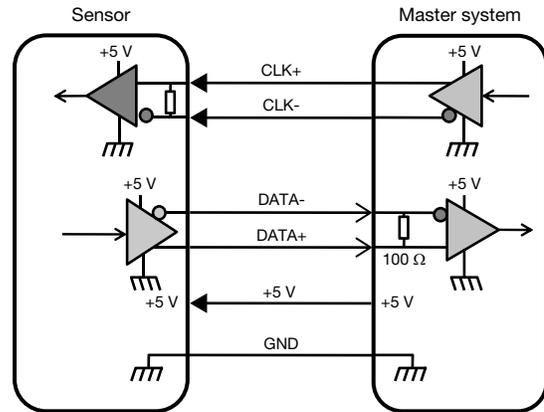
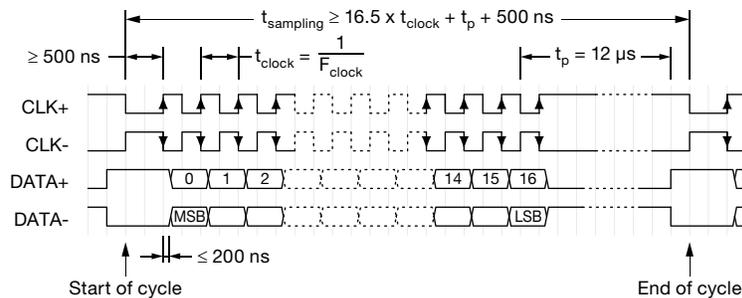
| SSI PARAMETERS | |
|-----------------------------|------------------------------|
| Output code | Binary |
| Data differential interface | RS422 according to EIA-RS422 |
| CLK differential interface | RS422 according to EIA-RS422 |
| Minimum clock frequency | 300 kHz |
| Maximum clock frequency | 4 MHz |
| Data bit (n) | 17 bits |


Timing Diagram


ELECTRICAL INTERFACE DESCRIPTION - VERSION LP

| 6 WIRES CONNECTION | |
|--------------------|--|
| PIN | NAME |
| 1 | Data- |
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| Output code | Binary |
| Data differential interface | RS422 according to EIA-RS422 |
| CLK differential interface | RS422 according to EIA-RS422 |
| Minimum clock frequency | 300 kHz |
| Maximum clock frequency | 4 MHz |
| Data frame | 17 bits |
| Data bit (n) | 14 bits |


Timing Diagram

OPTIONS

- Other design on request (mechanical interfaces, electrical interfaces, ...)



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