

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)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

LINKS TO ADDITIONAL RESOURCES



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 ± 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: ± 0.03° > 13 bits Version LP: ± 0.25°
Absolute accuracy at -40 °C to +105 °C	Version HP: ± 0.05° ~ 13 bits Version LP: ± 0.5°
Resolution	Version HP: ≈ 0.004° (≈ 16.52 bits) 94 208 points over 360° Version LP: ≈ 0.022° (≈ 14 bits) 16 384 points over 360°
Startup time	≤ 20 ms
Refresh time	≤ 100 μs
Latency time	≤ 200 μs
Sampling rate	10 kHz ± 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 ± 1 g; stator: 6.5 g ± 1 g Version LP: rotor: 2 g ± 1 g; stator: 2 g ± 1 g

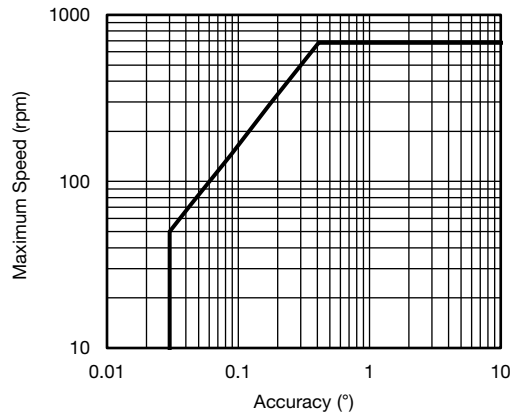
SAP PART NUMBERING GUIDELINES

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		

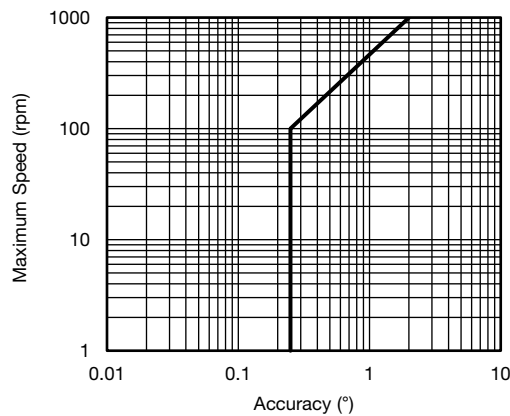


PERFORMANCE	
PARAMETER	
Operating temperature range	-40 °C to +105 °C (-55 °C to +105 °C on request)
Storage temperature range	-45 °C to +105 °C (-55 °C to +105 °C on request)
Acceleration	70 g for 1 s
Vibration	0.05 g ² /Hz, 20 Hz to 2000 Hz for 1 h along the three major axis
Shock	180 g, 14 ms, 1/2 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)

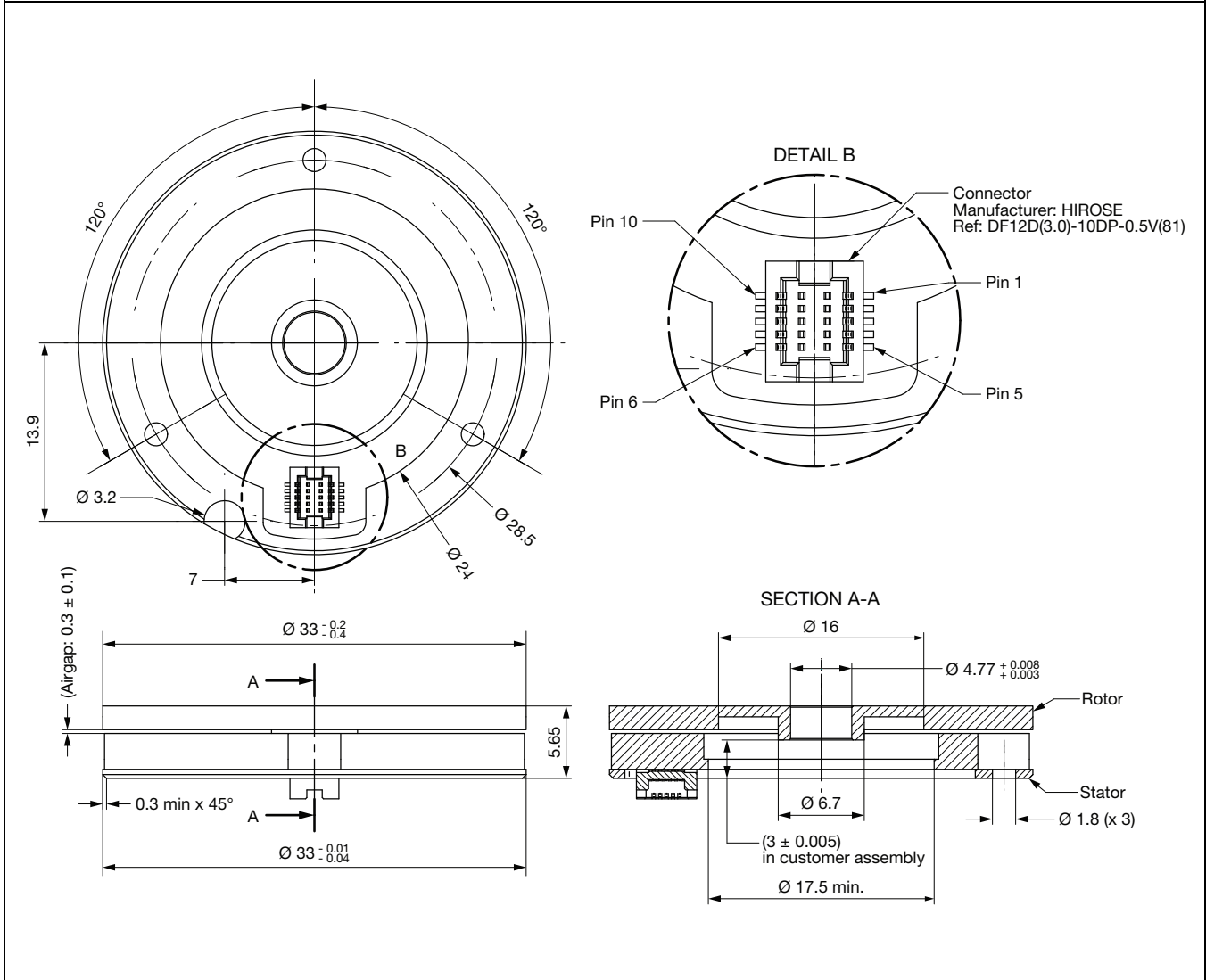


MAXIMUM SPEED VS. ACCURACY CHART (for Low Precision Version)



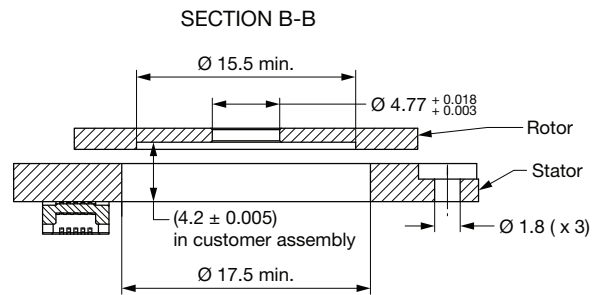
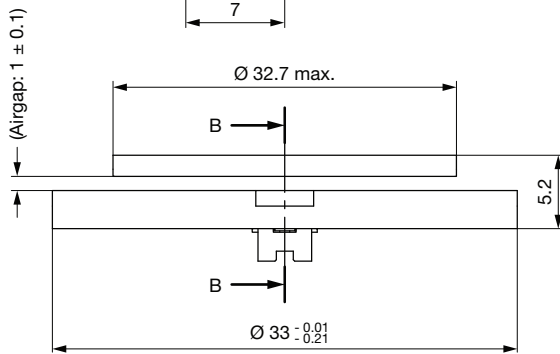
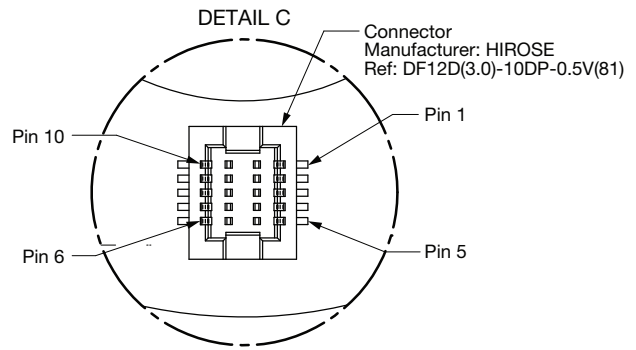
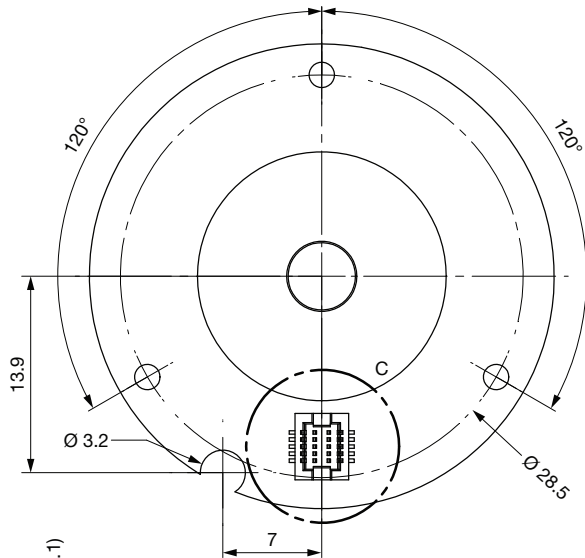
DIMENSIONS in millimeters

VERSION HP



DIMENSIONS in millimeters

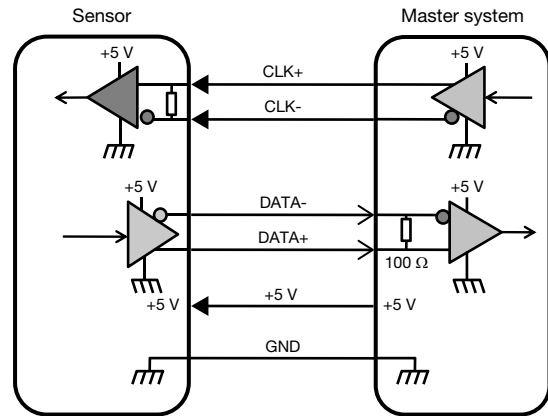
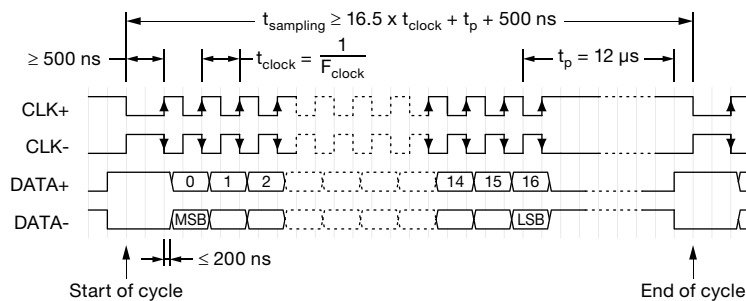
VERSION LP



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

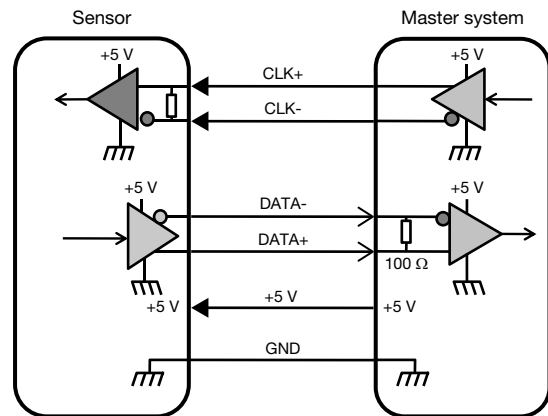
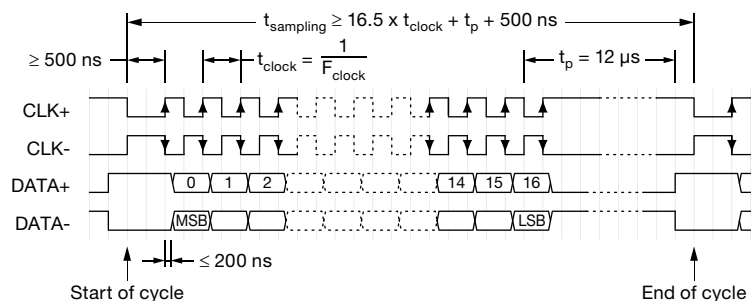
SSI PARAMETERS	
Output code	Binary
Data differential interface	RS422 according to EIA-RS422
CLK differential interface	RS422 according to EIA-RS422
Minimum clock frequency	300 kHz
Maximum clock frequency	4 MHz
Data bit (n)	17 bits


Timing Diagram


ELECTRICAL INTERFACE DESCRIPTION - VERSION LP

6 WIRES CONNECTION	
PIN	NAME
1	Data-
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 frame	17 bits
Data bit (n)	14 bits


Timing Diagram

OPTIONS

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



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.