

## Rotational Absolute Magnetic Encoder, 33 mm and 37 mm 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
- Very high precision (VHP)
- Protected design, patent EP 2711663

### LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

QUICK REFERENCE DATA	
Sensor type	ROTATIONAL, magnetic technology
Output type	Cables
Market appliance	Industrial
Dimensions	Diameter 33 mm and 37 mm

ELECTRICAL SPECIFICATIONS	
PARAMETER	
Voltage supply	5 V ± 0.25 V
Current supply	≅ 200 mA max. at 5 V
Output	SSI
Connection	Shielded cable
Useful electrical angle	360° (single turn)
Absolute accuracy at -40 °C to +85 °C	Standard: ± 0.011° = 15 bits
Resolution	21 bits
Startup time	≤ 200 μs
Refresh time	= 50 μs at sampling rate 20 kHz
Latency time	= 50 μs at sampling rate 20 kHz
Sampling rate	20 kHz ± 5 %

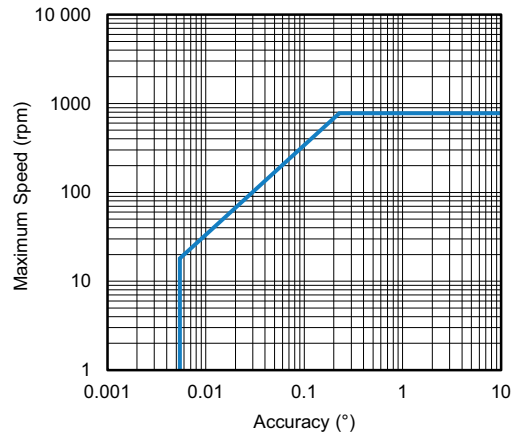
MECHANICAL SPECIFICATIONS	
PARAMETER	
Mechanical angle	360°
Maximum speed rotation	18 rpm (up to 760 rpm with decreasing of accuracy, see "Maximum Speed vs. Accuracy" chart)
Weight	Ø 33 mm: 44.5 g ± 2 g; Ø 37 mm: 56.5 g ± 2 g



SAP PART NUMBERING GUIDELINES									
TYPE	MODEL	DESIGN	SIZE (mm)	TYPE	FUNCTION	ACCURACY (BITS)	RESOLUTION (BITS)	OUTPUT	PACKAGING
R = rotational	AM	E	033	M	1	15	21	I = SSI CW	B = box
			037						

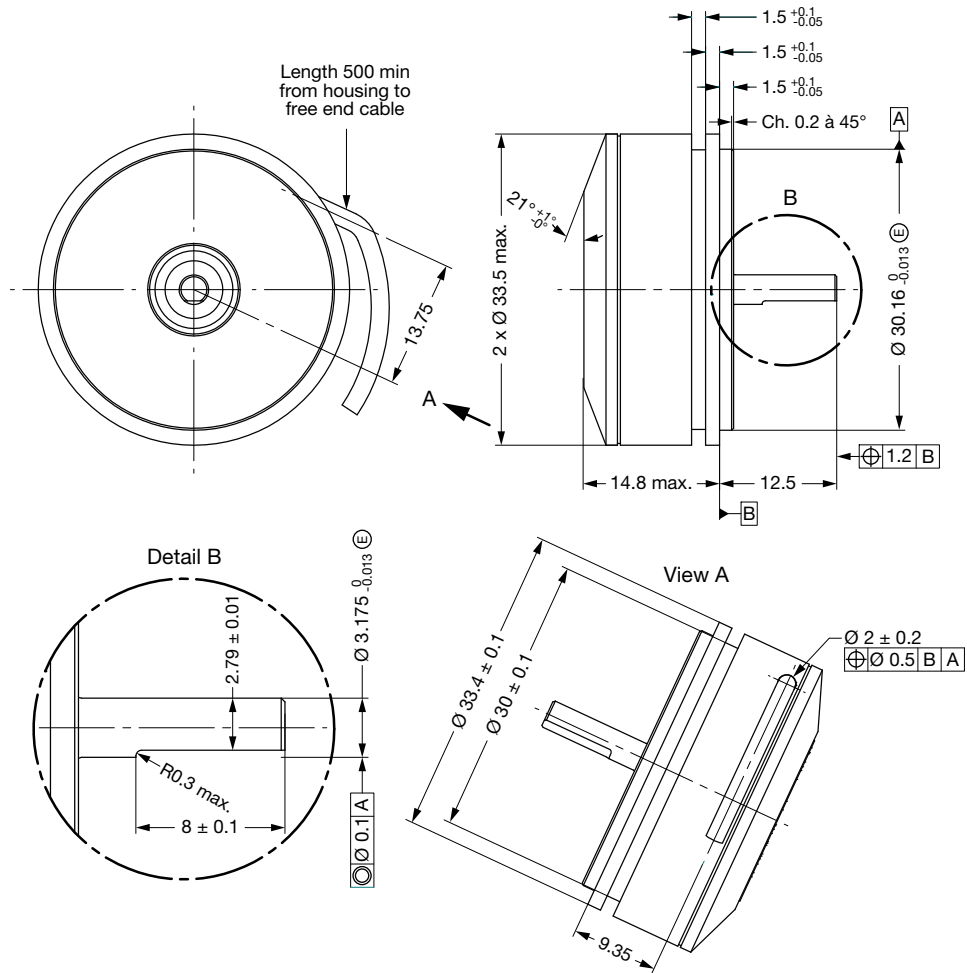
PERFORMANCE	
PARAMETER	
Operating temperature range	-46 °C to +105 °C (-46 °C to +115 °C on request)
Storage temperature range	-54 °C to +105 °C (-54 °C to +115 °C on request)
Vibration	14.8 grms, 10 Hz to 2000 Hz for 20 min along the three major axis
Shock	50 g, 11 ms, 1/2 sine, 3 shocks along the three axis

**MAXIMUM SPEED VS. ACCURACY CHART**



**DIMENSIONS** in millimeters

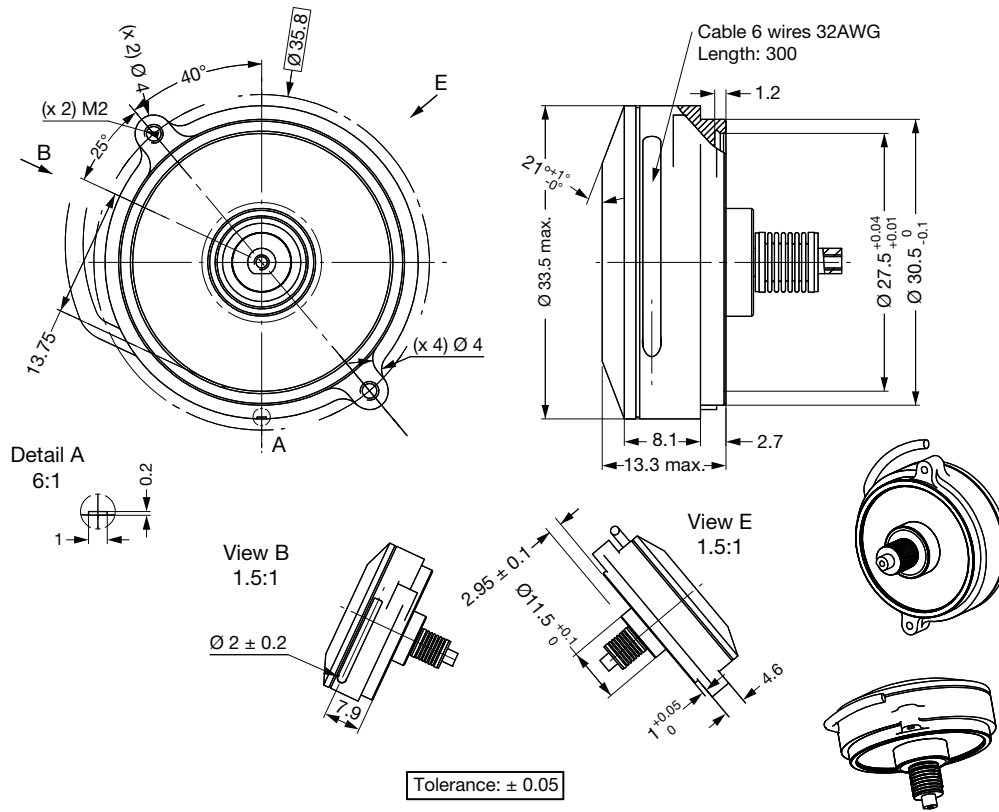
**RAME033**





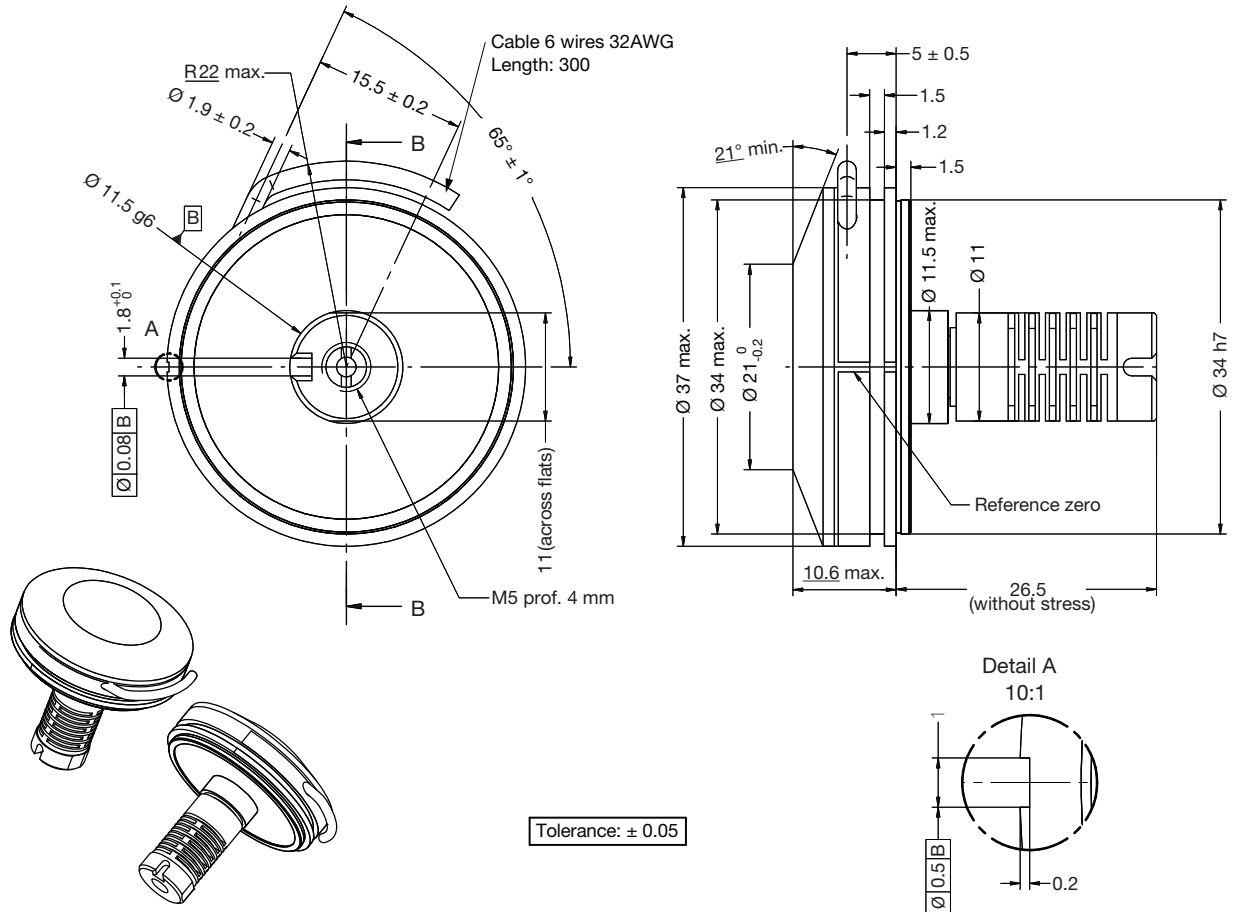
**DIMENSIONS** in millimeters

**RAME033 (ON REQUEST)**



**DIMENSIONS** in millimeters

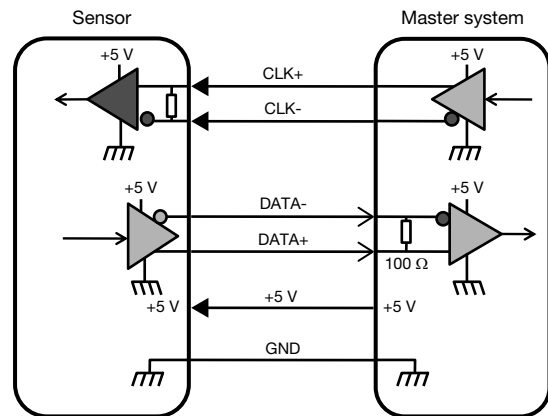
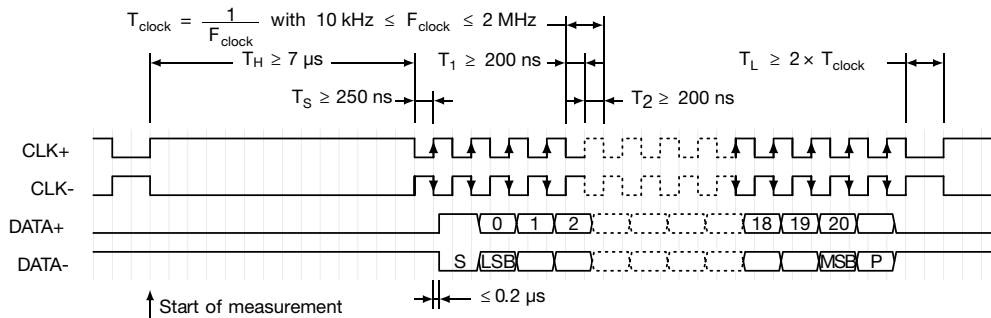
**RAME037**



**ELECTRICAL INTERFACE DESCRIPTION - SSI INTERFACE**

6 WIRES CONNECTIONS	
NAME	WIRE COLOR
GND	Black
+5 V	Red
CLK+	Green
CLK-	White
DATA+	Yellow
DATA-	Blue

SSI PARAMETERS	
Output code	Binary
Data differential interface	RS422 according to EIA-RS422
CLK differential interface	RS422 according to EIA-RS422
Minimum clock frequency	10 kHz
Maximum clock frequency	2 MHz
Data bit (n)	21 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.