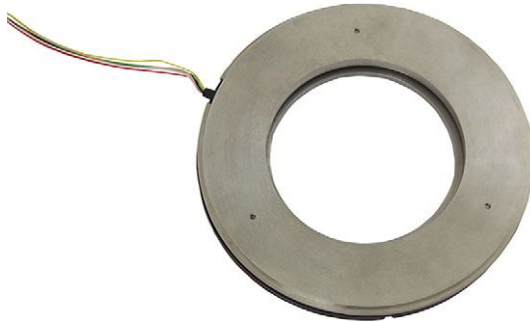


# Rotational Absolute Magnetic Kit Encoder Version 90 mm Displacement Sensor



## FEATURES



- Hall effect principle
- Especially dedicated to hard 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
- Very high precision (VHP)
- Protected design, patent EP 2711663
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://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 90 mm                  |

| ELECTRICAL SPECIFICATIONS             |  |
|---------------------------------------|--|
| PARAMETER                             |  |
| Voltage supply                        | 5 V ± 0.25 V   |
| Current supply                        | ≤ 200 mA max. at 5 V   |
| Output                                | SSI  |
| Connection                            | Ultra-flex AWG32 wires (shielded cable and connector on request) |
| Useful electrical angle               | 360° (single turn)   |
| Absolute accuracy at -40 °C to +85 °C | Standard: ± 0.0055° = 16 bits                                    |
| Resolution                            | 19 bits (524 288 points) (20 bits on request)                    |
| 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    | 8 rpm (up to 150 rpm with decreasing of accuracy, see "Maximum Speed vs. Accuracy" chart) |
| Weight                    | 185 g ± 20 %  |

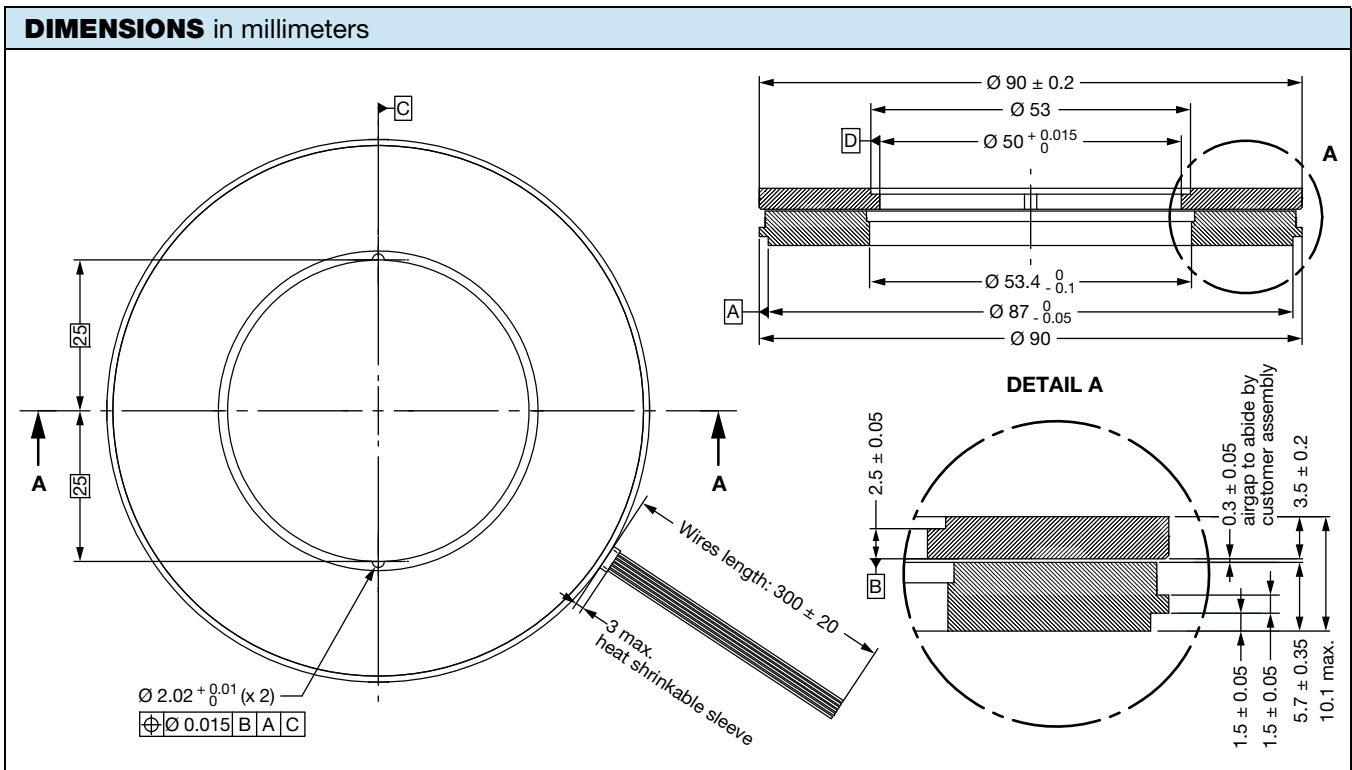
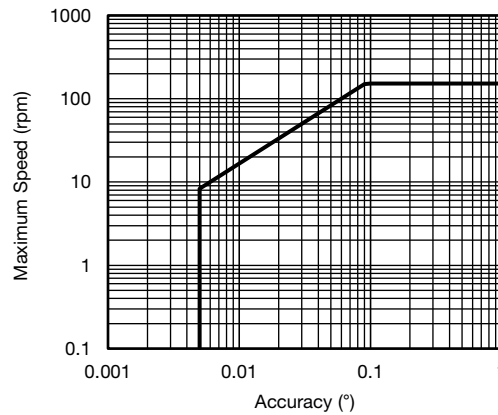
| SAP PART NUMBERING GUIDELINES |       |         |           |                     |          |                 |                   |             |           |
|-------------------------------|-------|---------|-----------|---------------------|----------|-----------------|-------------------|-------------|-----------|
| TYPE                          | MODEL | DESIGN  | SIZE (mm) | TYPE                | FUNCTION | ACCURACY (BITS) | RESOLUTION (BITS) | OUTPUT      | PACKAGING |
| R = rotational                | AM    | K = kit | 090       | M = hard conditions | 1        | 16              | 19                | J = SSI CCW | B = box   |
|                               |       |         |           |                     |          | 16              | 20 <sup>(1)</sup> |             |           |

### Note

<sup>(1)</sup> With design 4 ears

| PERFORMANCE                 |   |
|-----------------------------|---|
| PARAMETER                   |   |
| Operating temperature range | -40 °C to +85 °C  |
| Storage temperature range   | -55 °C to +105 °C   |
| Vibration                   | 0.05 g <sup>2</sup> /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<br>- CS114: conducted susceptibility, bulk cable injection, 10 kHz to 200 MHz table VI army ground level common mode injection and differential mode on positive<br>- RS101: magnetic susceptibility, magnetic field, fig. RS101-2 from 30 Hz to 100 kHz<br>- RS103: radiated susceptibility, electric field, 2 MHz to 18 GHz (level: 50 V/m)<br>- RE102: radiated emissions, electric field, fig. RE102-4 - navy mobile and army - 10 kHz to 18 GHz |
| Magnetic protection         | No influence up to 0.5 mT   |

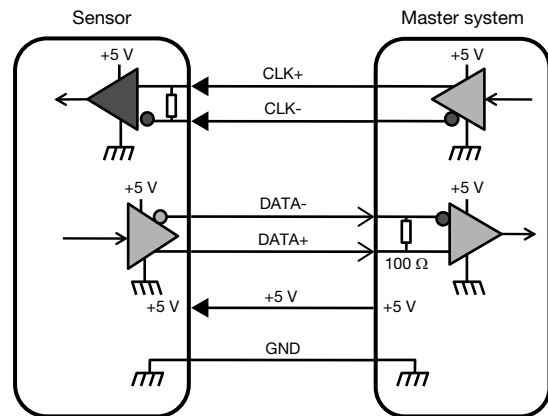
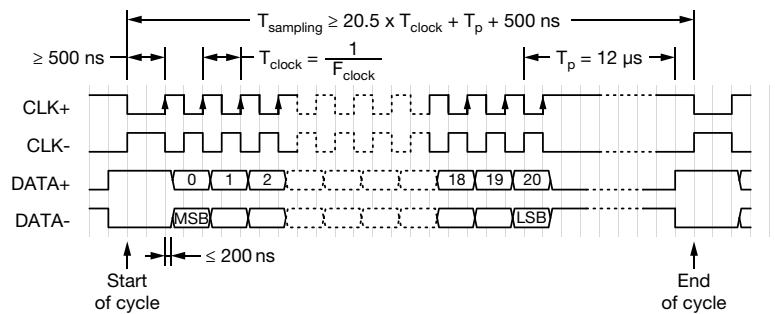
**MAXIMUM SPEED VS. ACCURACY CHART**



**ELECTRICAL INTERFACE DESCRIPTION - SSI INTERFACE**

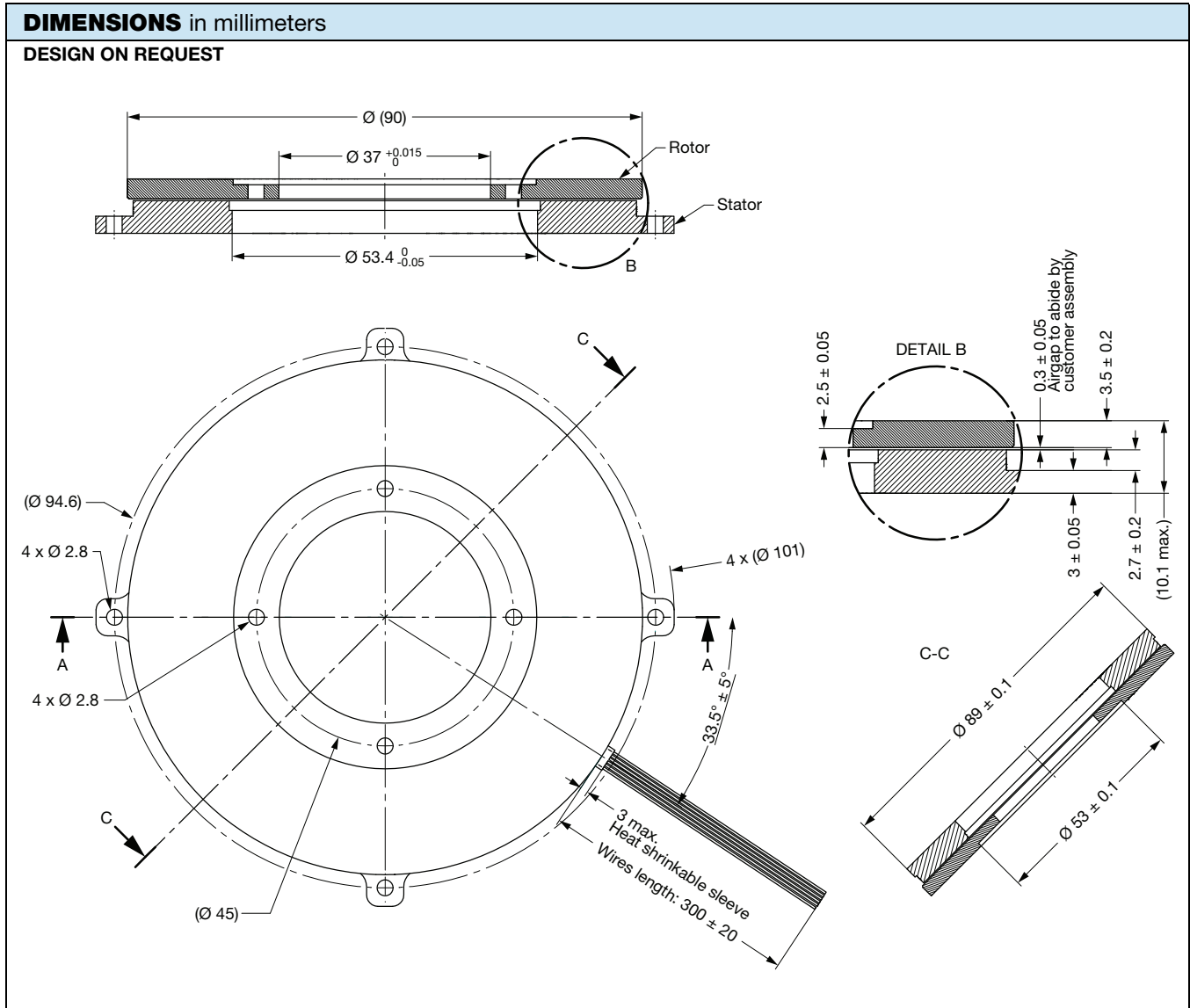
| 6 WIRES CONNECTIONS |            |
|---------------------|------------|
| NAME                | WIRE COLOR |
| GND                 | Black      |
| +5 V                | Red        |
| CLK+                | White      |
| CLK-                | Clear      |
| DATA+               | Green      |
| DATA-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

| 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)                | 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.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. 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.