

## Analog Rectilinear Displacement Sensor



### FEATURES

- Conductive plastic potentiometer technology. Infinite resolution
- Anodized light alloy housing
- Precious metal multi-contact wiper
- Stainless steel floating shaft
- Collar mounting
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### QUICK REFERENCE DATA

|                  |                            |
|------------------|----------------------------|
| Sensor type      | LINEAR, conductive plastic |
| Output type      | Output by wires            |
| Market appliance | Avionics, industrial       |
| Dimensions       | Diameter 1/2" (12.7 mm)    |

### ELECTRICAL SPECIFICATIONS

| PARAMETER                       |   |               |               |                 |                  |
|---------------------------------|---|---------------|---------------|-----------------|------------------|
| Total electrical travel (TET)   | UET - 0 + 0.3 mm                            |               |               |                 |                  |
| Independent linearity standard  | ± 1 %                                       |               |               |                 |                  |
| Independent linearity optional  | ± 3 %, ± 1 %, ± 0.1 %, ± 0.25 %, ± 0.5 %    |               |               |                 |                  |
| Tolerance on R <sub>n</sub>     | ± 10 % (± 20 % on request)                  |               |               |                 |                  |
| Temperature coefficient         | -300 ppm/°C ± 300 ppm/°C                    |               |               |                 |                  |
| Power rating at +70 °C          | 0.2 W/cm of travel (see Power Rating Chart) |               |               |                 |                  |
| Wiper current                   | ≤ 1 mA                                      |               |               |                 |                  |
| Recommended load impedance      | ≥ 1000 R <sub>n</sub>                       |               |               |                 |                  |
| Dielectric strength             | 500 V <sub>RMS</sub> , 50 Hz, 1 min         |               |               |                 |                  |
| Insulation resistance           | ≥ 10 GΩ at 500 V <sub>DC</sub>              |               |               |                 |                  |
| Useful electrical travel (UET)  | 10 mm                                       | 25 mm         | 50 mm         | 75 mm           | 100 mm           |
| Total resistance R <sub>n</sub> | 2.2 kΩ                                      | 1 kΩ to 22 kΩ | 1 kΩ to 47 kΩ | 2.2 kΩ to 47 kΩ | 4.7 kΩ to 100 kΩ |
| Output smoothness               | ≤ 0.1 %                                     | ≤ 0.1 %       | ≤ 0.1 %       | ≤ 0.1 %         | ≤ 0.1 %          |

### MECHANICAL SPECIFICATIONS

| PARAMETER                           |                            |       |       |       |        |
|-------------------------------------|----------------------------|-------|-------|-------|--------|
| Mechanical travel                   | UET - 0 + 3 mm             |       |       |       |        |
| Driving force                       | ≤ 2 N (≤ 1.5 N on request) |       |       |       |        |
| Driving force with probe (optional) | ≤ 3 N to 7 N               |       |       |       |        |
| Backlash                            | < 10 μm                    |       |       |       |        |
| Protection class                    | IP 50                      |       |       |       |        |
| Maximum displacement speed          | 1.5 m/s                    |       |       |       |        |
| Maximum misalignment                | ± 0.2 mm                   |       |       |       |        |
| Useful electrical travel (UET)      | 10 mm <sup>(1)</sup>       | 25 mm | 50 mm | 75 mm | 100 mm |
| Total weight                        | 13 g                       | 18 g  | 23 g  | 28 g  | 33 g   |
| Weight of moving part               | 3 g                        | 4.5 g | 6 g   | 7.5 g | 9 g    |

#### Note

<sup>(1)</sup> Tolerances: - 2 mm, + 0 mm

### PERFORMANCE

| PARAMETER                   |                   |
|-----------------------------|-------------------|
| Operating temperature range | -55 °C to +125 °C |
| Life                        | 10M cycles        |

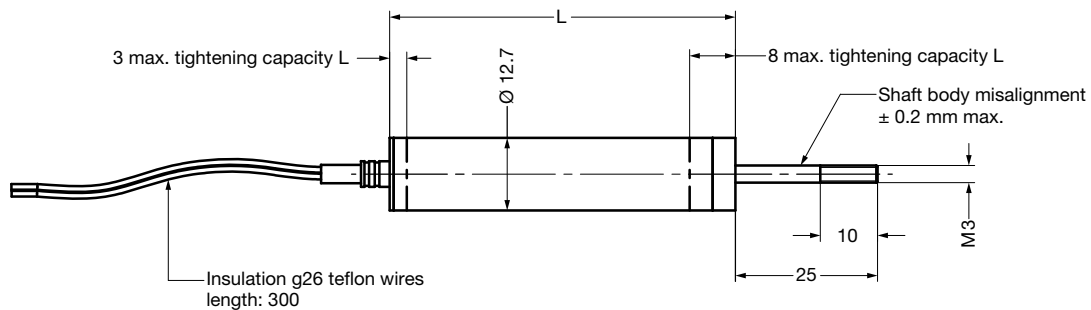
#### Note

- Nothing stated herein shall be construed as a guarantee of quality or durability.



| SAP PART NUMBERING GUIDELINES - PORH12 |      |          |                                 |                    |  |                      |           |
|--|------|----------|---------------------------------|--------------------|--|----------------------|-----------|
| MODEL                                  | TYPE | DIAMETER | LENGTH (mm)                     | SHAFT VERSION      | VALUE  | LINEARITY            | PACKAGING |
| POR                                    | H    | 12       | 010<br>025<br>050<br>075<br>100 | F = floating shaft | Manual transducers<br>102 = 01K<br>472 = 4K7<br>103 = 10K<br>223 = 22K<br>473 = 47K<br>104 = 100K<br><br>In accordance with UET, see "Electrical Specifications" | A = 1 %<br>D = 0.1 % | B = box   |

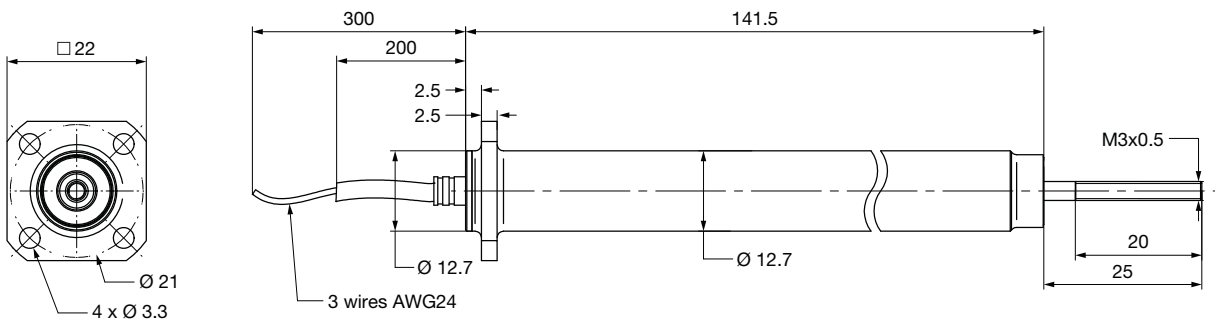
**DIMENSIONS** in millimeters

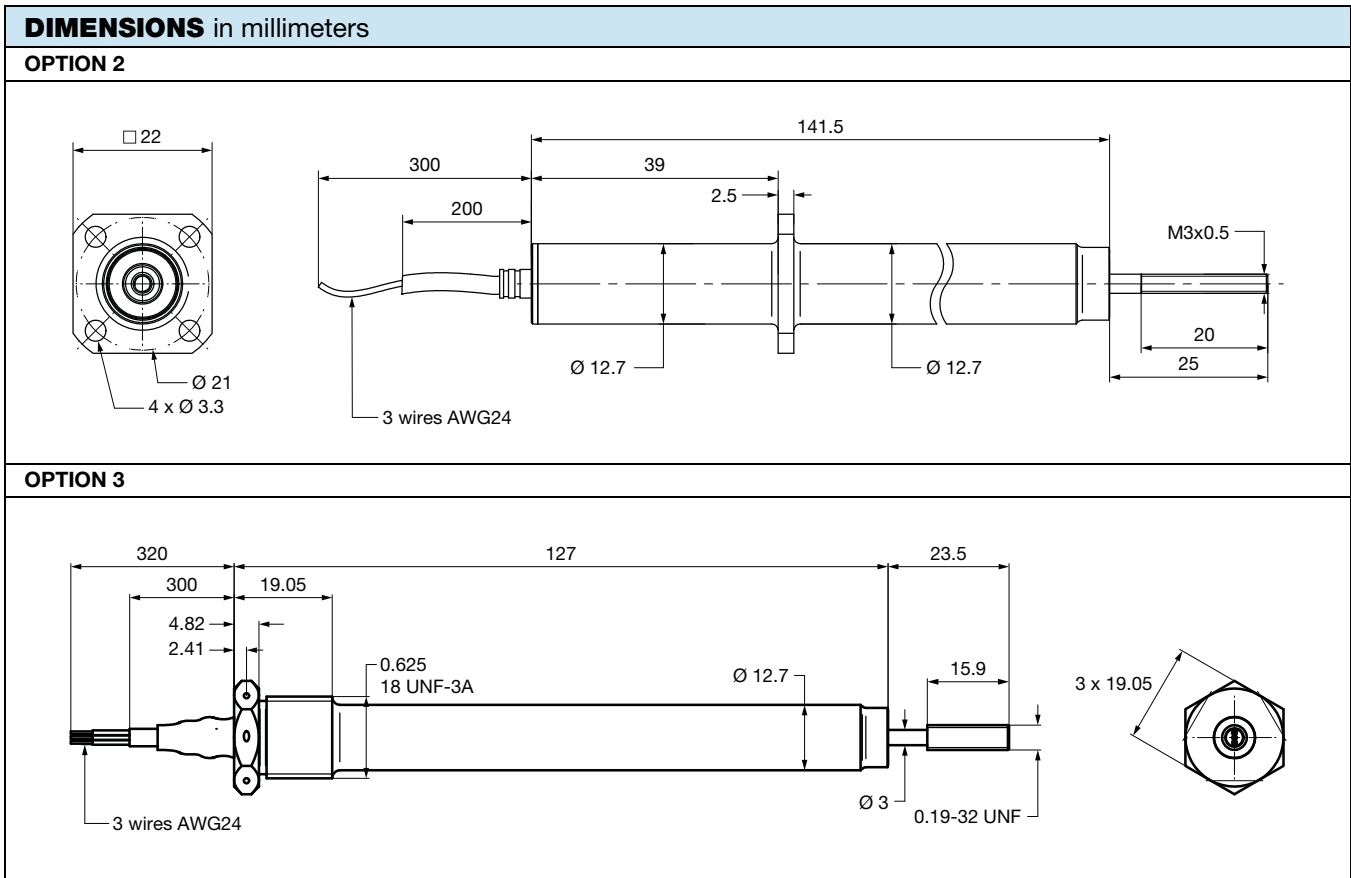


|                          |      |      |      |       |       |
|--------------------------|------|------|------|-------|-------|
| Useful electrical travel | 10   | 25   | 50   | 75    | 100   |
| L ± 0.5 mm               | 45.5 | 60.5 | 85.5 | 110.5 | 135.5 |

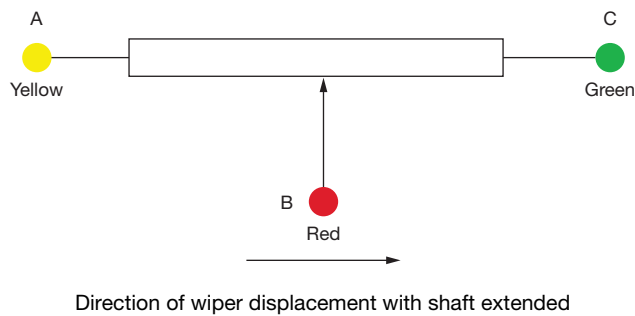
**DESIGNS ON REQUEST (FOR VERSION PORR12)**

**OPTION 1**

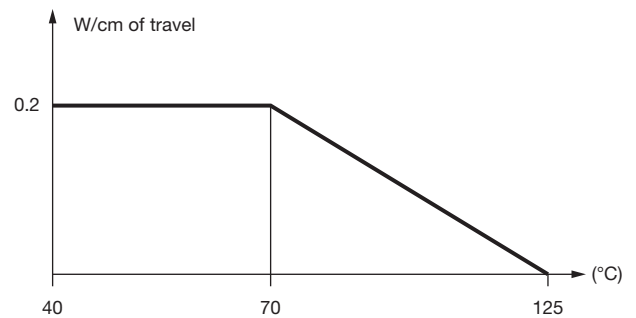




**ELECTRICAL DIAGRAM**



**POWER RATING CHART**

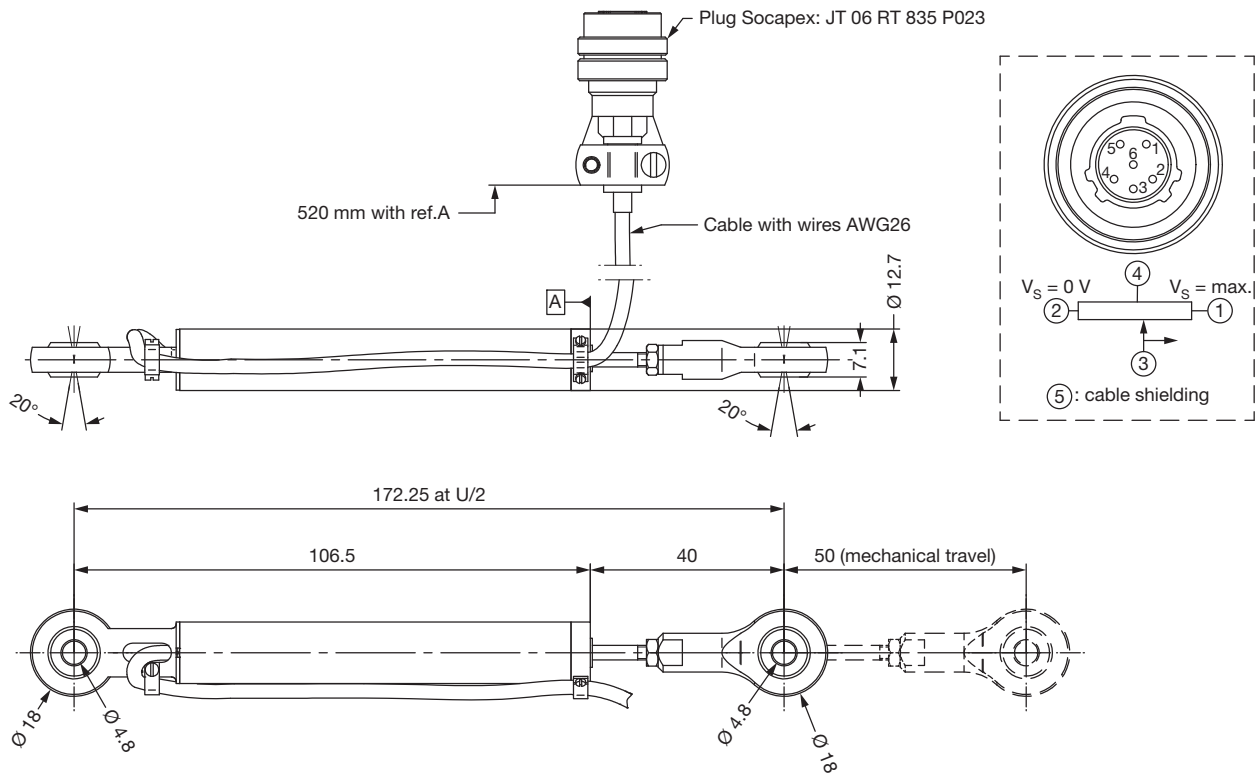


**OPTIONS** (on request)

- Other travels: UET = 72 mm with TET = 75.2 mm and mechanical travel = 81 mm
- Other ohmic value ( $R_n$ ): 2.2 k $\Omega$ ; 5 k $\Omega$ , 6.5 k $\Omega$
- Other linearity
- Electrically independent double track (= redundancy)
- Middle tap
- Electrical phasing (for double track) at U/2:  
 0.5 U  $\pm$  0.7 % U (for PORR12 shaft output at 75.5 mm  $\pm$  1 mm),  
 or 0.5 U  $\pm$  0.5 % U (for PORR12),  
 or up to  $\pm$  0.13 % (track 1 / track 2) (for PORH12)

- Electrical bonding:  $\leq 0.05 \Omega$
- Electrical output by connector:  
plug Socapex: JT 06 RT 835 P023 (or equivalent) with cable length 300 mm, 500 mm, or 750 mm
- Specific design to support temperature pic of 200 °C
- Other length of shaft: 12 mm (pushed shaft)
- Guided shaft
- Probe with return spring and tip on request
- Other design including diameter 9.5 mm: version RH9.5
- Specific reinforced version for hard environment conditions (vibrations, shocks, temperature): version RR12
- Other wire lengths: 330 mm; 355 mm; 380 mm, and 1 m
- Temperature coefficient:  $-200 \text{ ppm}/^\circ\text{C} \pm 200 \text{ ppm}/^\circ\text{C}$  (in function of ohmic value)
- Smaller length: 5 mm; 10 mm; 15 mm; 17 mm (UET = 16 mm)
- Option RH12050 with front pivot and rear pivot

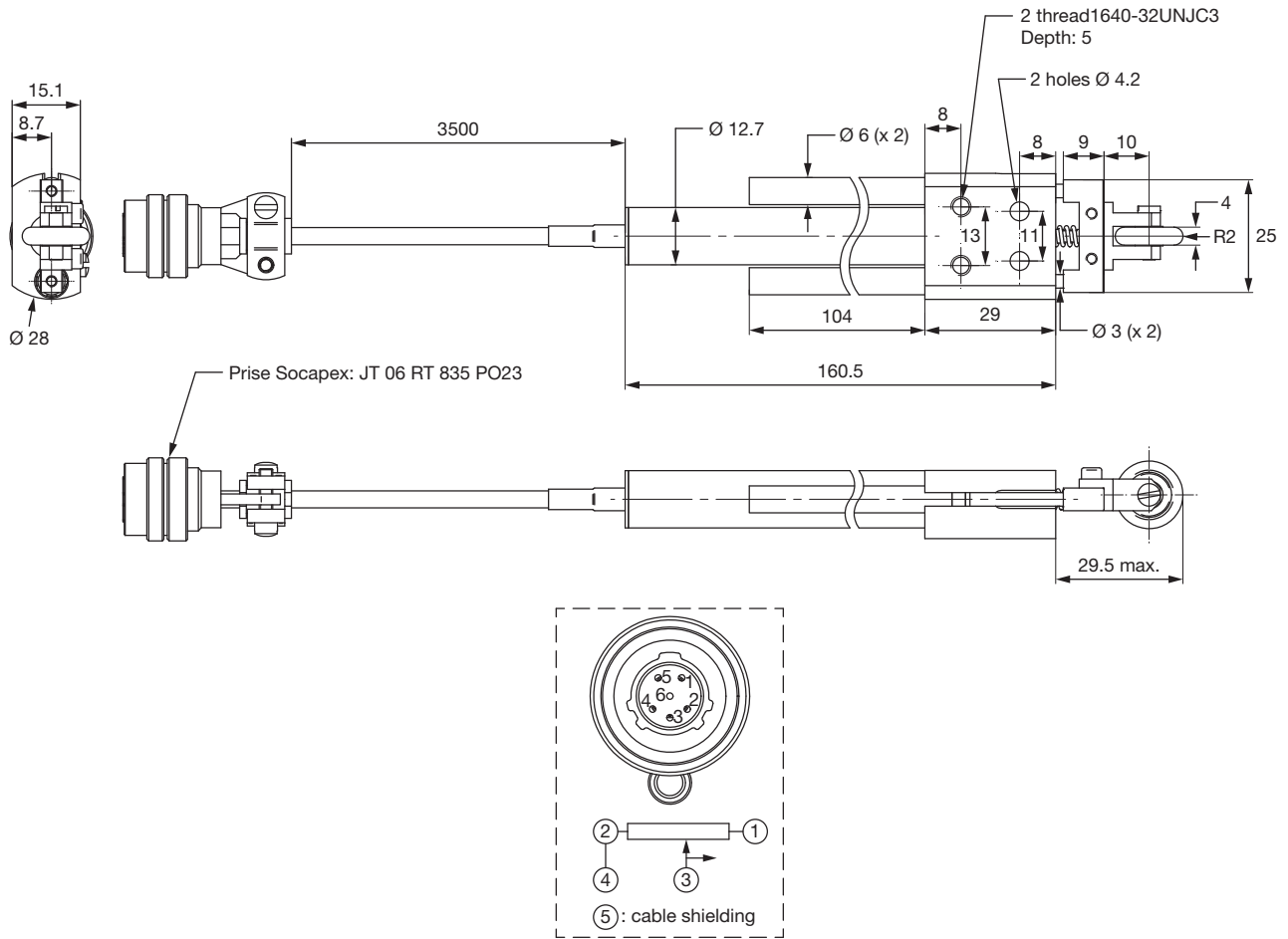
## DIMENSIONS in millimeters



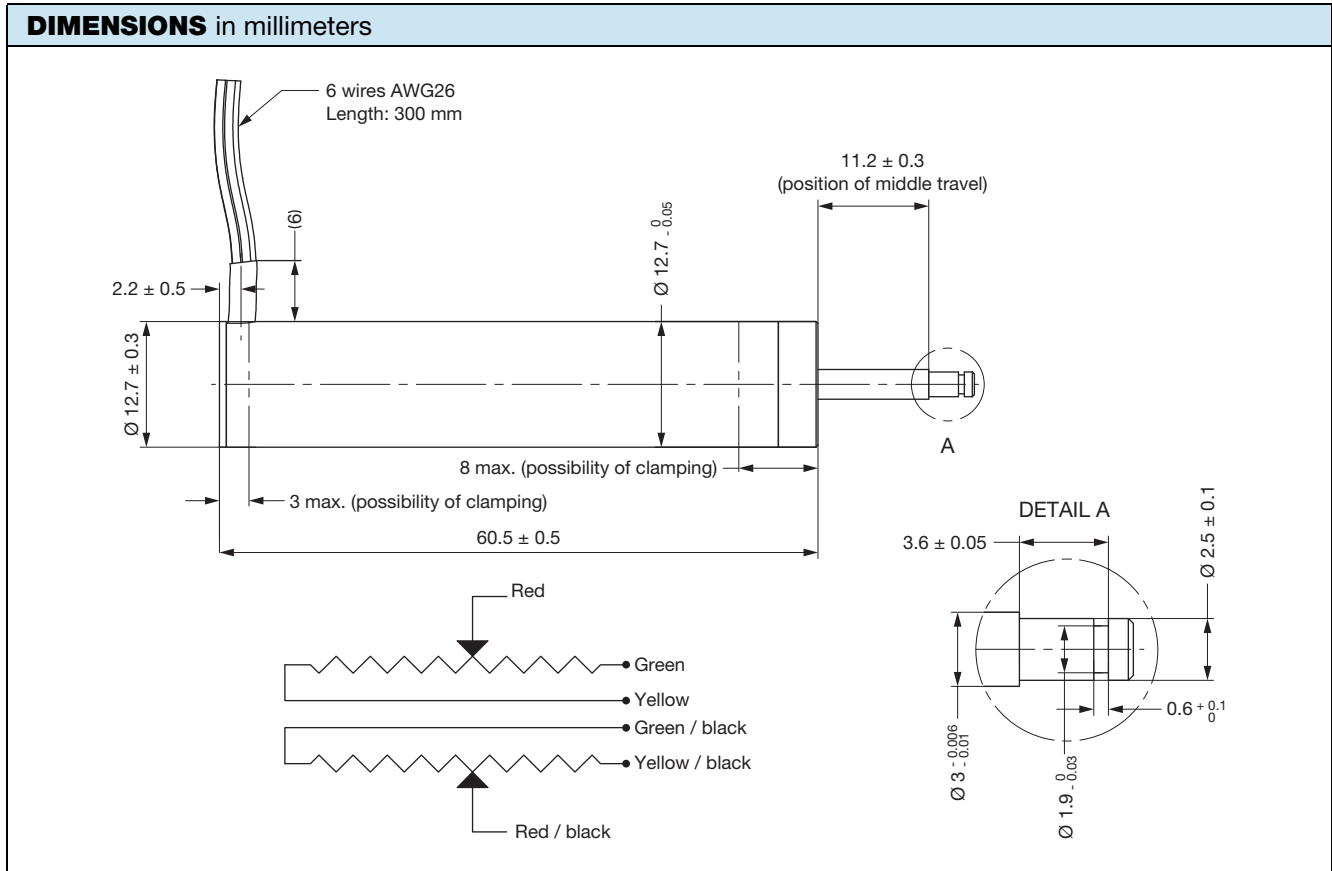


- Option RH12100 with roller pivot

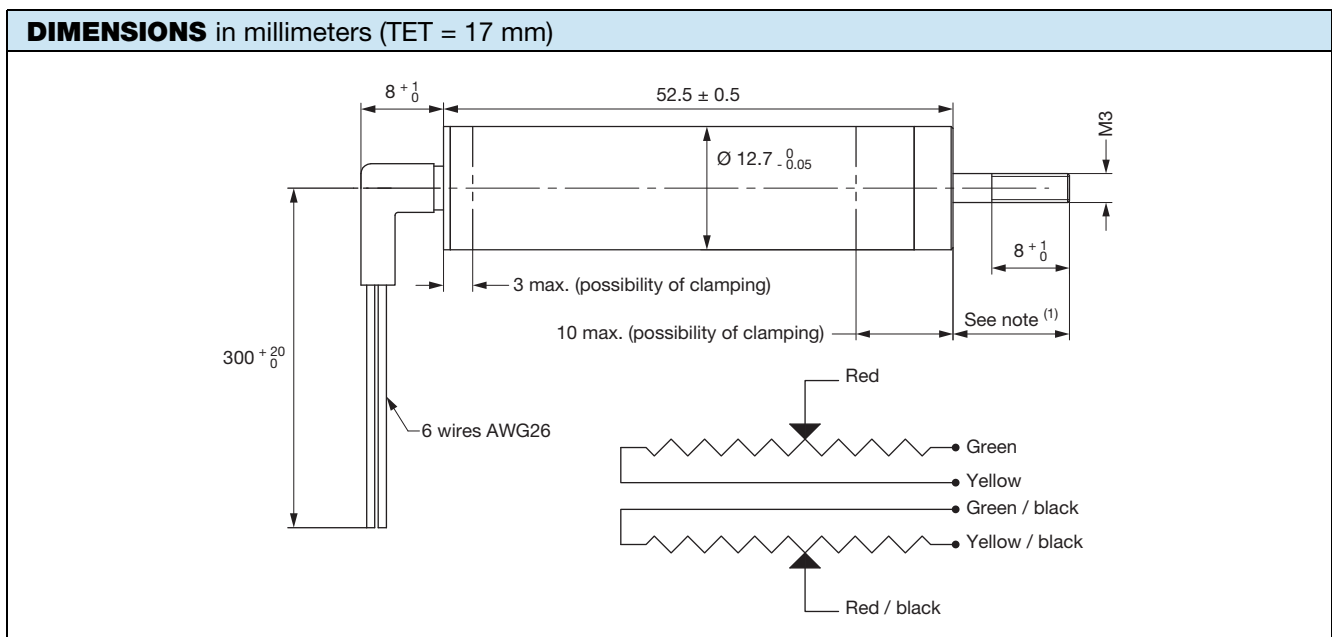
## DIMENSIONS in millimeters



- Option RH12025 with radial output



- Option with bent sheath



**Note**

(1) When the shaft is completely pushed, the length exceeds 8 mm (+ 1 mm / 0 mm)



## 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.