

# Analog Linear Displacement Sensor



## FEATURES

- Conductive plastic potentiometer technology. Infinite resolution
- Anodized light alloy housing
- Precious metal multi-contact wiper
- Stainless steel floating shaft
- Flange 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 cable            |
| Market appliance | Industrial                 |
| Dimensions       | 35 mm                      |

## ELECTRICAL SPECIFICATIONS

| PARAMETER                                    |                                     |        |        |        |        |        |        |        |        |        |        |         |
|----------------------------------------------|-------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Theoretical electrical travel (TET)          | UET - 0 mm + 2 mm                   |        |        |        |        |        |        |        |        |        |        |         |
| Independent linearity standard               | ± 0.1 %                             |        |        |        |        |        |        |        |        |        |        |         |
| Independent linearity optional               | ± 0.05 %                            |        |        |        |        |        |        |        |        |        |        |         |
| Tolerance on R <sub>n</sub>                  | ± 20 %                              |        |        |        |        |        |        |        |        |        |        |         |
| Temperature coefficient                      | -300 ± 300 ppm/°C                   |        |        |        |        |        |        |        |        |        |        |         |
| 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>      |        |        |        |        |        |        |        |        |        |        |         |
| Output smoothness                            | ≤ 0.05 %                            |        |        |        |        |        |        |        |        |        |        |         |
| Useful electrical travel (UET)               | 100 mm                              | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 500 mm | 600 mm | 700 mm | 800 mm | 900 mm | 1000 mm |
| Total resistance R <sub>n</sub> (E3 series)  | 4.7 kΩ                              | 4.7 kΩ | 4.7 kΩ | 4.7 kΩ | 4.7 kΩ | 10 kΩ  | 10 kΩ  | 22 kΩ  | 22 kΩ  | 47 kΩ  | 47 kΩ  | 47 kΩ   |
| Power rating at +70 °C (0.15 W/cm of travel) | 1.5 W                               | 2.25 W | 3 W    | 3.75 W | 4.5 W  | 6 W    | 7.5 W  | 9 W    | 10.5 W | 12 W   | 13.5 W | 15 W    |

## SPECIFIC CHARACTERISTICS

| PARAMETER        |                                                                        |
|------------------|------------------------------------------------------------------------|
| Shaft version    | F = floating<br>G = guided (on request)                                |
| Connector output | S = standard (straight plug)<br>C = with right angle plug (on request) |
| Cable output     | A = axial cable sheath (on request)<br>R = radial cable (on request)   |

## MECHANICAL SPECIFICATIONS

| PARAMETER                      |                                                                           |        |        |        |        |        |        |        |        |        |        |         |
|--------------------------------|---------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Mechanical travel              | UET + 3 mm min.                                                           |        |        |        |        |        |        |        |        |        |        |         |
| Driving force                  | ≤ 5 N in F version (floating shaft)<br>≤ 10 N in G version (guided shaft) |        |        |        |        |        |        |        |        |        |        |         |
| Backlash                       | < 10 μm                                                                   |        |        |        |        |        |        |        |        |        |        |         |
| Protection class               | IP 50 in F version (floating shaft)<br>IP 64 in G version (guided shaft)  |        |        |        |        |        |        |        |        |        |        |         |
| Maximum displacement speed     | 1.5 m/s                                                                   |        |        |        |        |        |        |        |        |        |        |         |
| Shaft / body misalignment      | ≤ ± 0.5 mm in F version                                                   |        |        |        |        |        |        |        |        |        |        |         |
| Mounting                       | Flanges                                                                   |        |        |        |        |        |        |        |        |        |        |         |
| Useful electrical travel (UET) | 100 mm                                                                    | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 500 mm | 600 mm | 700 mm | 800 mm | 900 mm | 1000 mm |
| Weight                         | Shaft + wiper                                                             | 46 g   | 56 g   | 67 g   | 78 g   | 89 g   | 110 g  | 131 g  | 153 g  | 175 g  | 196 g  | 220 g   |
|                                | Sensor                                                                    | 450 g  | 540 g  | 620 g  | 720 g  | 800 g  | 970 g  | 1140 g | 1320 g | 1490 g | 1660 g | 2000 g  |

## PERFORMANCE

### PARAMETER

|                             |                                       |
|-----------------------------|---------------------------------------|
| Operating temperature range | -40 °C to +105 °C                     |
| Storage temperature range   | -55 °C to +125 °C                     |
| Life                        | 20M operations for UET ≤ 250 mm       |
|                             | 10M operations for 250 < UET ≤ 600 mm |
|                             | 5M operations for UET < 600 mm        |

### Note

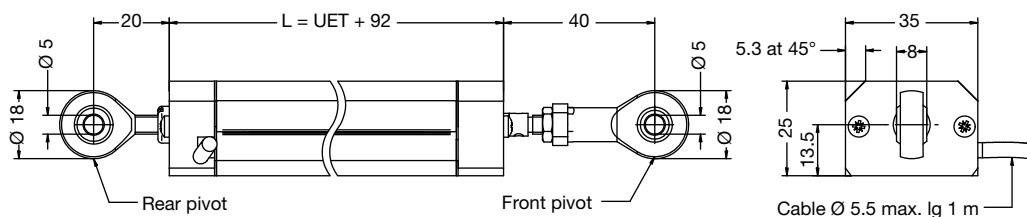
- Nothing stated herein shall be construed as a guarantee of quality or durability.

## SAP PART NUMBERING GUIDELINES

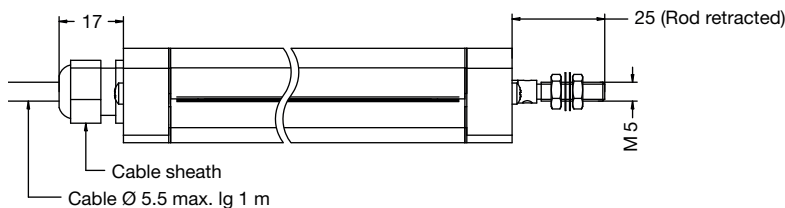
| MODEL | USEFUL ELECTRICAL TRAVEL (mm) | SHAFT VERSION      | VALUE                                                            | LINEARITY | LEADS                           | PACKAGING |
|-------|-------------------------------|--------------------|------------------------------------------------------------------|-----------|---------------------------------|-----------|
| RH28  | 0025                          | F = floating shaft | 472 = 4K7                                                        | D = 0.1 % | S = standard<br>(straight plug) | B = box   |
|       | 0050                          |                    | 103 = 10K                                                        |           |                                 |           |
|       | 0100                          |                    | 223 = 22K                                                        |           |                                 |           |
|       | 0150                          |                    | 473 = 47K                                                        |           |                                 |           |
|       | 0200                          |                    | In accordance<br>with UET, see<br>“Electrical<br>Specifications” |           |                                 |           |
|       | 0250                          |                    |                                                                  |           |                                 |           |
|       | 0300                          |                    |                                                                  |           |                                 |           |
|       | 0350                          |                    |                                                                  |           |                                 |           |
|       | 0400                          |                    |                                                                  |           |                                 |           |
|       | 0500                          |                    |                                                                  |           |                                 |           |
|       | 0600                          |                    |                                                                  |           |                                 |           |
|       | 0700                          |                    |                                                                  |           |                                 |           |
|       | 0800                          |                    |                                                                  |           |                                 |           |
|       | 0900                          |                    |                                                                  |           |                                 |           |
|       | 1000                          |                    |                                                                  |           |                                 |           |

## DIMENSIONS in millimeters

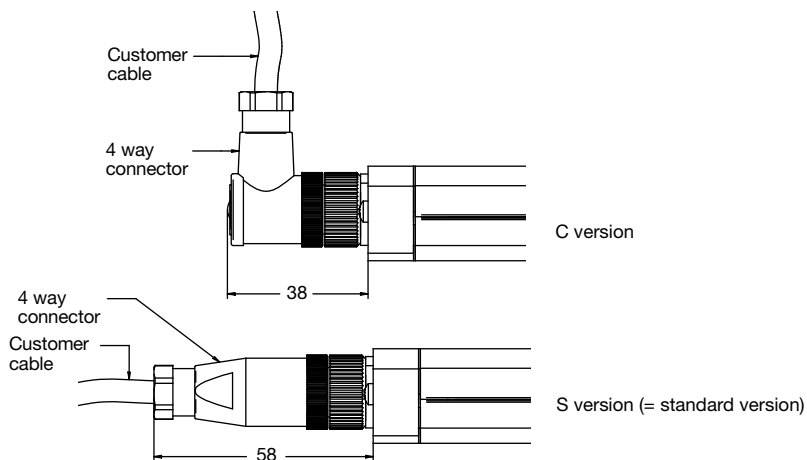
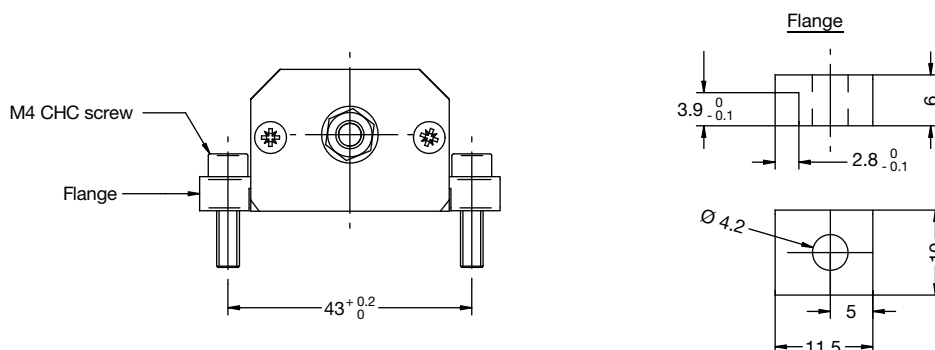
### RADIAL CABLE OUTPUT VERSION (R) (WITH OPTIONAL FRONT AND REAR PIVOTS) (ON REQUEST)



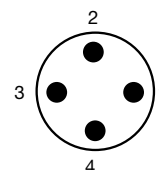
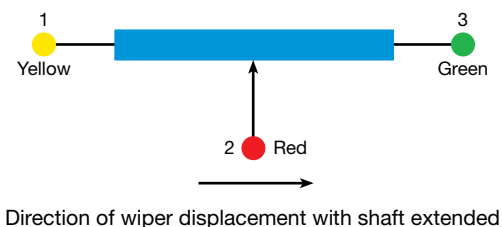
### AXIAL CABLE OUTPUT VERSION (A) (ON REQUEST)



**DIMENSIONS** in millimeters

**CONNECTOR OUTPUT VERSION (WITH STRAIGHT OR RIGHT ANGLE PLUG, S OR C VERSION)**

**MOUNTING**


|                              |              |                  |                  |         |
|------------------------------|--------------|------------------|------------------|---------|
| Useful electrical travel UET | Up to 250 mm | 300 mm to 550 mm | 600 mm to 900 mm | 1000 mm |
| Number of flanges            | 4            | 6                | 8                | 10      |

**ELECTRICAL DIAGRAM**


BINDER 713 Series M12 connector (4 pin)  
for use with a 3 mm to 6 mm diameter cable  
Soldering contacts for 0.75 mm<sup>2</sup> max. wires

**OPTIONS** (on request)

- Independent linearity  $\pm 0.05$  %
- 25 mm and 50 mm electrical travels
- Front pivot
- Rear pivot (with radial cable output only)



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