

## 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 G = guided (on request)
Connector output	S = standard (straight plug) C = with right angle plug (on request)
Cable output	A = axial cable sheath (on request) R = radial cable (on request)

### MECHANICAL SPECIFICATIONS

PARAMETER													
Mechanical travel	UET + 3 mm min.												
Driving force	≤ 5 N in F version (floating shaft) ≤ 10 N in G version (guided shaft)												
Backlash	< 10 μm												
Protection class	IP 50 in F version (floating shaft) 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	240 g
	Sensor	450 g	540 g	620 g	720 g	800 g	970 g	1140 g	1320 g	1490 g	1660 g	1830 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

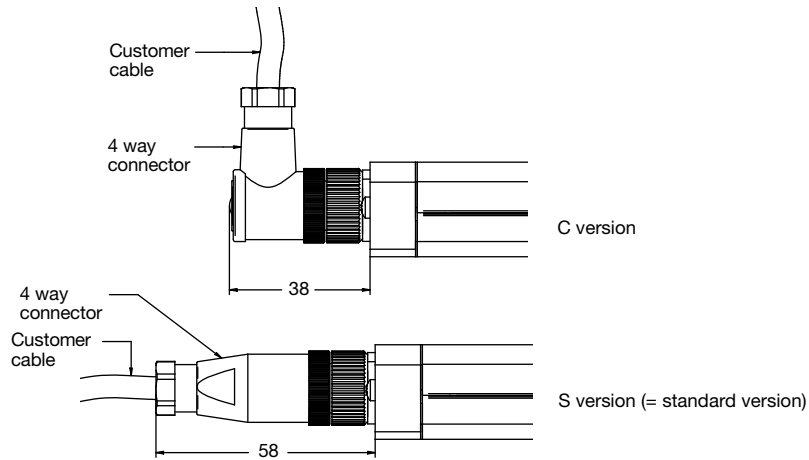
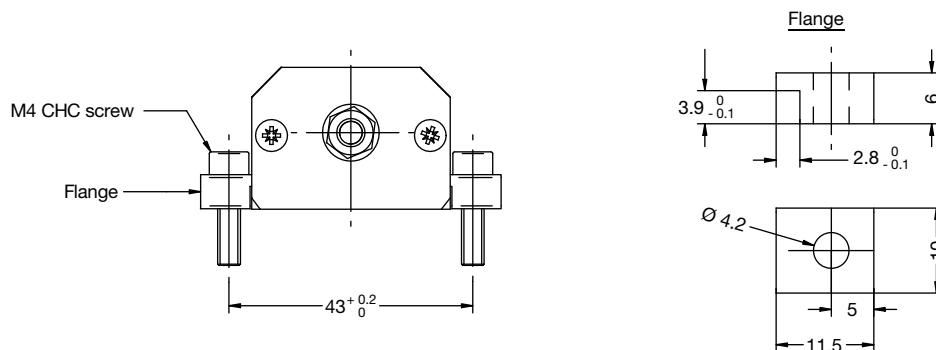
**Note**

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

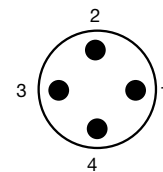
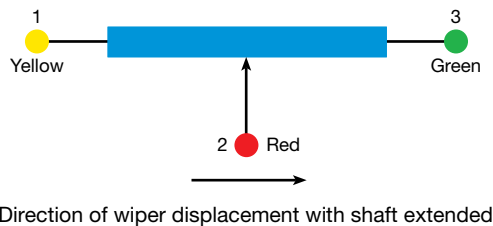
SAP PART NUMBERING GUIDELINES						
MODEL	USEFUL ELECTRICAL TRAVEL (mm)	SHAFT VERSION	VALUE	LINEARITY	LEADS	PACKAGING
RH28	0025	F = floating shaft	472 = 4K7	D = 0.1 %	S = standard (straight plug)	B = box
	0050		103 = 10K			
	0100		223 = 22K			
	0150		473 = 47K			
	0200		In accordance with UET, see "Electrical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

DIMENSIONS in millimeters
<p><b>RADIAL CABLE OUTPUT VERSION (R) (WITH OPTIONAL FRONT AND REAR PIVOTS) (ON REQUEST)</b></p>
<p><b>AXIAL CABLE OUTPUT VERSION (A) (ON REQUEST)</b></p>

**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)



## **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.

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.