

## Displacement Sensor, Ultra Flat



### FEATURES

- Sealed
- Infinite resolution
- High integration capacity
- Durability
- Rectilinear: UFPMA type
- Circular: UFPMC type
- 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 or ROTATIONAL, conductive plastic
Output type	Output by wires or connector
Market appliance	Industrial, avionics
Dimensions	4 mm (thickness max.)

### ELECTRICAL SPECIFICATIONS

PARAMETER	UFPMA	UFPMC
Total resistance ( $R_n$ )	4.7 k $\Omega$	
Tolerance on $R_n$	$\pm 20\%$	
Dissipation	$\leq 0.1$ W/cm of travel <sup>(1)</sup>	$\leq 1$ W to 70 °C
Theoretical electrical travel (TET)	20 mm to 250 mm <sup>(1)</sup>	270°
Tolerance on TET	$\pm 1$ mm	$\pm 3^\circ$
Electrical continuity travel	TET + 4 mm	310°
Linearity	$\pm 2\%$	$\pm 1.5\%$
Temperature coefficient	-300 ppm/°C $\pm$ 300 ppm/°C	
Collector / track current ( $I_c$ )	$\leq 1$ mA	
Recommended current $I_c$	$\leq 100$ $\mu$ A	
Recommended load impedance	$\geq 100 R_n$	
Output smoothness	$< 0.1\%$ (NFC 93 255)	

#### Note

<sup>(1)</sup> See “Specific UFPMA Characteristics” table

### MECHANICAL SPECIFICATIONS

PARAMETER	UFPMA	UFPMC
Design	Flexible insulating films	Flexible insulating films on FR4 substrate
Mechanical travel	= Electrical continuity travel	= Electrical continuity travel (customer stops)
Backlash	$< 0.1$ mm	$< 0.3^\circ$
Mounting	With double-sided adhesive on flat, clean, and dry support	
Speed displacement	$\leq 1.5$ m/s	
Drive	Force $\geq 0.3$ N	Torque $\geq 1$ N cm
Protection class (NFC 20 010)	IP 66	
Maximum alignment fault	$\pm 1$ mm	-

### PERFORMANCE

PARAMETER	UFPMA	UFPMC
Life	25M operations for TET $< 200$ mm	$> 10$ M cycles
	15M operations for TET $\geq 200$ mm	
Operating temperature range	-30 °C to +80 °C	
Storage temperature range	-40 °C to +90 °C	
Support	Flat, clean, and dry	

#### Note

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

**SAP PART NUMBERING GUIDELINES - UFPMA**

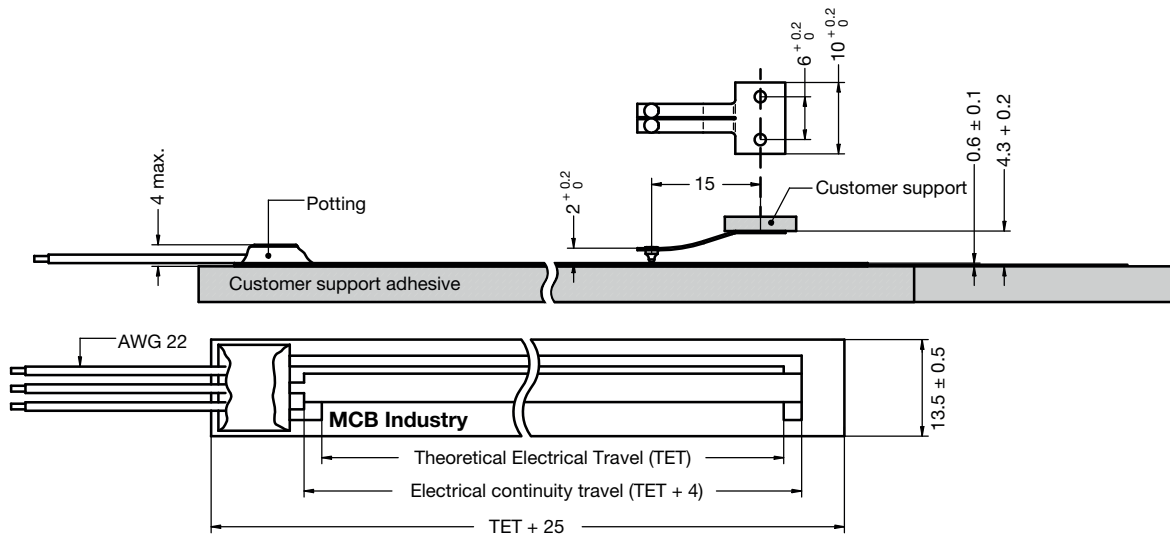
MODEL	TYPE	THEORETICAL ELECTRICAL TRAVEL (mm)	TYPE	VALUE	LINEARITY	LEADS	PACKAGING
UFPM	A = linear	060 100 150 200 250	A = aeronautic, off-road, or medical	472 = 4K7	X = ± 2 % (UFPMA)	W = wires	B = bulk

**CONNECTIONS**

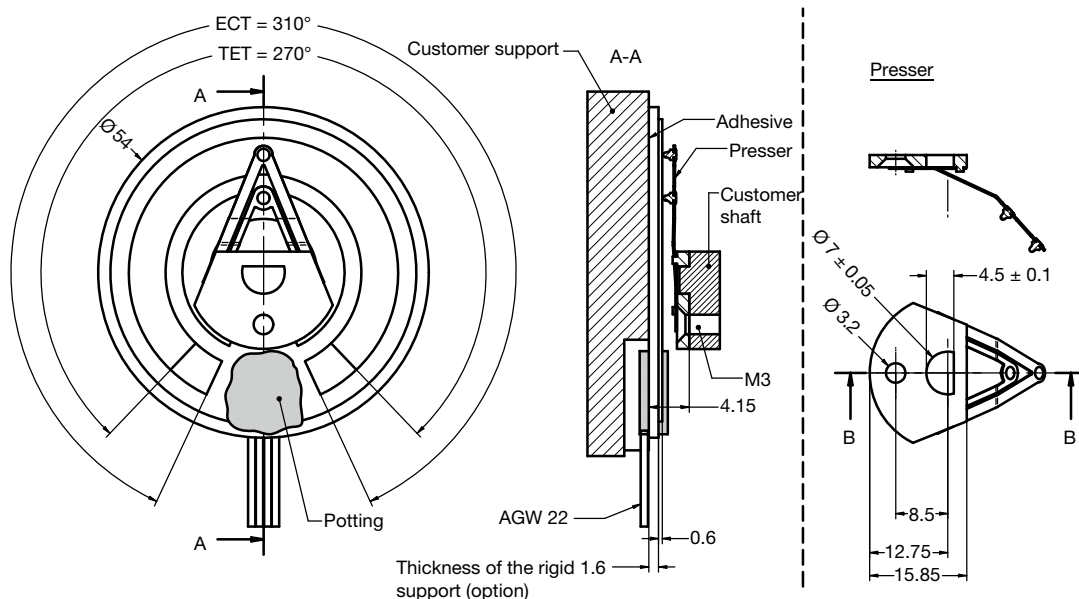
3 x AWG 22 color wires length 300 mm

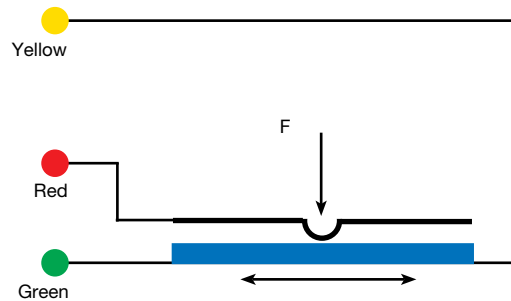
**DIMENSIONS in millimeters**

**UFPMA**



**UFPMC (ON REQUEST)**

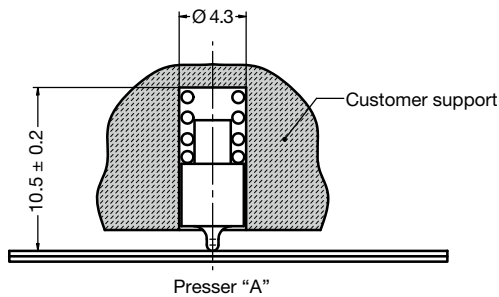


**ELECTRICAL DIAGRAM**


The voltage varies according to the position of the presser on the deformable membrane.

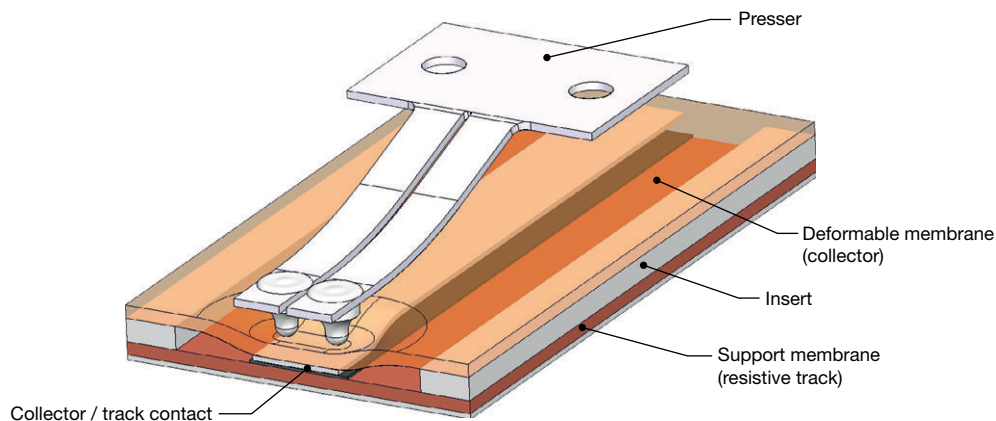
**OPTIONS** (on request)

- Other presser


**SPECIFIC VERSIONS** (on request)

- Other electrical or mechanical characteristics
- Other bases
- Integration in equipment
- Other versions: outdoor design, ...
- Integration in equipment (flat flex cable, contacts, connector, ...)

<b>SPECIFIC UFPMA CHARACTERISTICS</b>			
THEORETICAL ELECTRICAL TRAVEL (TET) (mm)	DISSIPATION AT +40 °C (W)	ELECTRICAL CONTINUITY TRAVEL (ECT) (mm)	FILM LENGTH (mm)
50	≤ 0.5	54	75
100	≤ 1.0	104	125
150	≤ 1.5	154	175
200	≤ 2.0	204	225
250	≤ 2.5	254	275

**OPERATING DESCRIPTION**




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