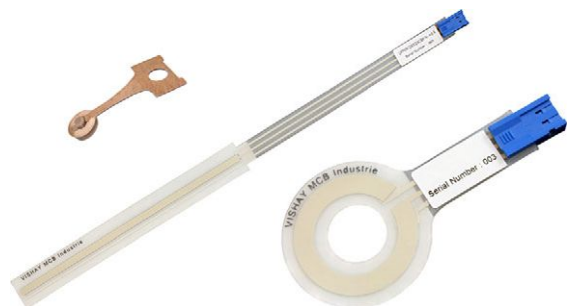


# Displacement Sensor, Ultraflat Industrial Potentiometer Membrane



## FEATURES

- Sealed IP66
- Infinite resolution
- High integration capacity
- Durability
- Rectilinear: UIPMA type
- Rotational: UIPMC type
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS  
COMPLIANT**

## LINKS TO ADDITIONAL RESOURCES



3D Models



Videos



Application Notes

QUICK REFERENCE DATA	
Sensor type	LINEAR or ROTATIONAL, conductive plastic
Output type	Output by connector
Market appliance	Industrial
Dimensions	4 mm (thickness max.)

ELECTRICAL SPECIFICATIONS		
PARAMETER	UIPMA	UIPMC
Total resistance ( $R_n$ )	4.7 k $\Omega$	10 k $\Omega$
Tolerance on $R_n$	$\pm 30\%$	
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>	312°
Tolerance on TET	$\pm 1$ mm	$\pm 3^\circ$
Useful electrical travel (UET)	TET - 2 mm	306°
Electrical continuity travel (ECT)	TET + 4 mm	325°
Linearity	$\pm 2\%$ <sup>(2)</sup>	$\pm 5\%$
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)	

### Notes

- (1) See "Specific UIPMA Characteristics" table  
 (2) Better accuracy on request

MECHANICAL SPECIFICATIONS		
PARAMETER	UIPMA	UIPMC
Design	Flexible insulating films	Flexible insulating films
Mechanical travel	Electrical continuity travel	Electrical continuity travel
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)	IP66 (electrical connection and plug excluded)	
Maximum alignment fault	$\pm 1$ mm	-

PERFORMANCE		
PARAMETER	UIPMA	UIPMC
Life	$> 3$ M cycles (depending on chosen wiper)	
Operating temperature range	-10 °C to +50 °C	
Storage temperature range	-40 °C to +50 °C	
Support	Flat, clean, and dry	

### Note

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

SAP PART NUMBERING GUIDELINES - UIPM							
MODEL	TYPE	UIPMA: THEORETICAL ELECTRICAL TRAVEL (mm) UIPMC: EXTERNAL DIAMETER (mm)	TYPE	VALUE	LINEARITY	LEADS	PACKAGING
UIPM	A = linear	050 100 150 200 250	I = industrial	472 = 4K7	X = ± 2 %	C = connector	B = bulk
UIPM	C = rotational	030	I = industrial	103 = 10K	U	C = connector	B = bulk

ACCESSORY WIPER	
Wiper type A	ACCSUIPMWIPERKB434
Wiper type B	ACCSUFPMWIPERKB422
Wiper type D	ACCSUIPMWIPERKB435 (packaging 10 pcs)
	ACCSUIPMWIPERKG435 (packaging 100 pcs)

**CONNECTIONS**  
 Connector Berg Duflex 67.013.003, contacts 76.785.301  
 The connector of UIPMA / UIPMC is intended for use with Berg terminal ref. 76785-YXX and Berg headers ref. 76384-YXX or 76382-YXX

**DIMENSIONS** in millimeters

**UIPMA**

Bottom view: TET + 14 ± 2, 6.5 ± 1, Active area with adhesive, Flat flex cable, Connector Berg Duflex 67013-003LF Contacts 76785-301LF

Top view: 0.51 ± 0.1 total thickness without protection layer, A Stuck on the customer interface, C, TET + 11, TET + flat flex cable + 14, 1.75 ± 0.5, 10 ± 1, 8 x R2 ± 1, 13.5 ± 0.5, 7 ± 1, Pin 3, Pin 2, Pin 1

Useful Electrical Travel: UET (TET - 2)  
 Theoretical Electrical Travel (TET)  
 Electrical Continuity Travel: ECT (TET + 4)

Identification area: VISHAY - part number - date code  
 Part number: UIPMAxxxI472XCB  
 Date code: YYYYWW  
 (YYYY: the year of manufacture with 4 digits, WW: week number with 2 digits)

**Schematic (1)**

U<sub>supply</sub> (pin 3)  
 Collector (pin 2)  
 Ground (pin 1)  
 Equipotential voltage areas

Warning: do not bend the active area

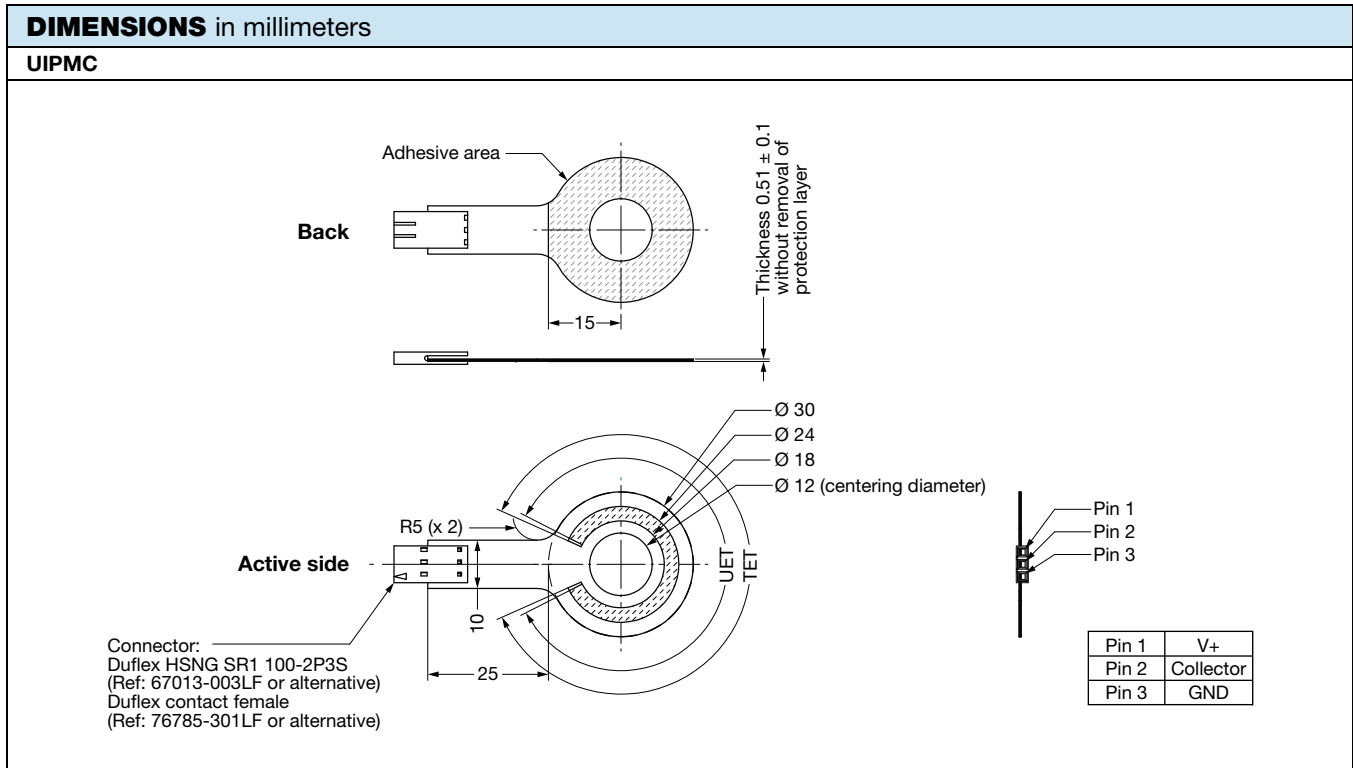
TET (mm)	FLAT FLEX CABLE (mm)
50	100
100	50
150	100
200	100
250	50

**Notes**

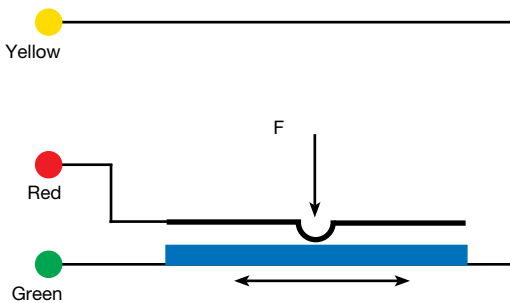
- Tolerancing according to ISO 8015
- General tolerances according to ISO 2768 - mK
- (1) Ground and U<sub>supply</sub> can be swapped to change the slope sign

**MOUNTING REQUIREMENTS FOR UIPMA**

1. The shape of the customer interface over the active area shall be:  $\square 0.05$
2. The roughness of the customer interface over the active area shall be:  $\sqrt{Ra} 1.6$
3. Before sticking the sensor, the interface surface shall be free of all traces of dirt, grease, foreign objects, and burrs.
4. The bending of the flat flex cable shall be:  $\varnothing 3$  mm min.



**ELECTRICAL DIAGRAM**



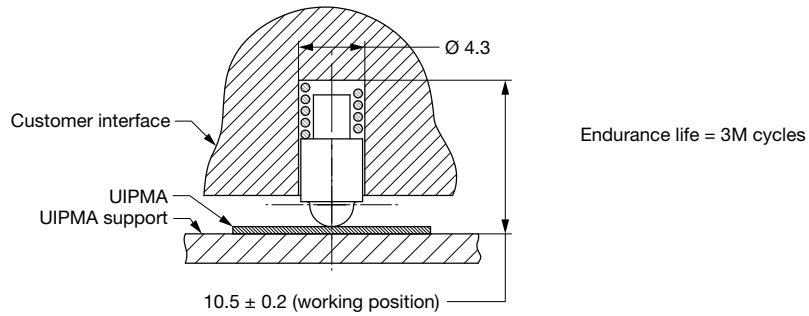
The voltage varies according to the position of the presser on the deformable membrane.

**SPECIFIC VERSIONS** (on request)

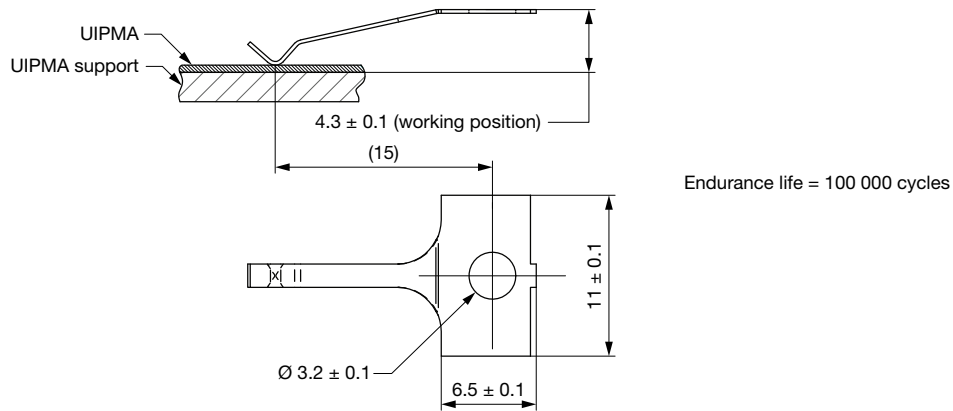
- Other electrical or mechanical characteristics
- Other bases
- Integration in equipment
- Other versions: outdoor design, ...
- Integration in equipment (flat flex cable, contacts, wires, ...)

**PRESSERS**

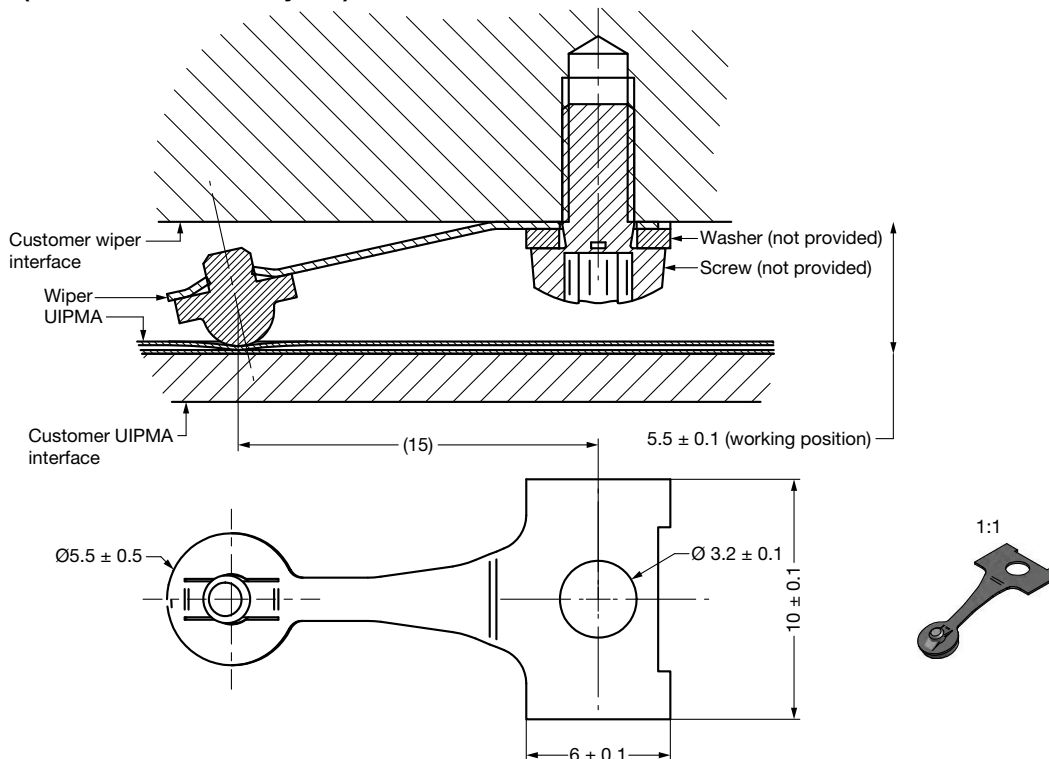
**Wiper Type A**



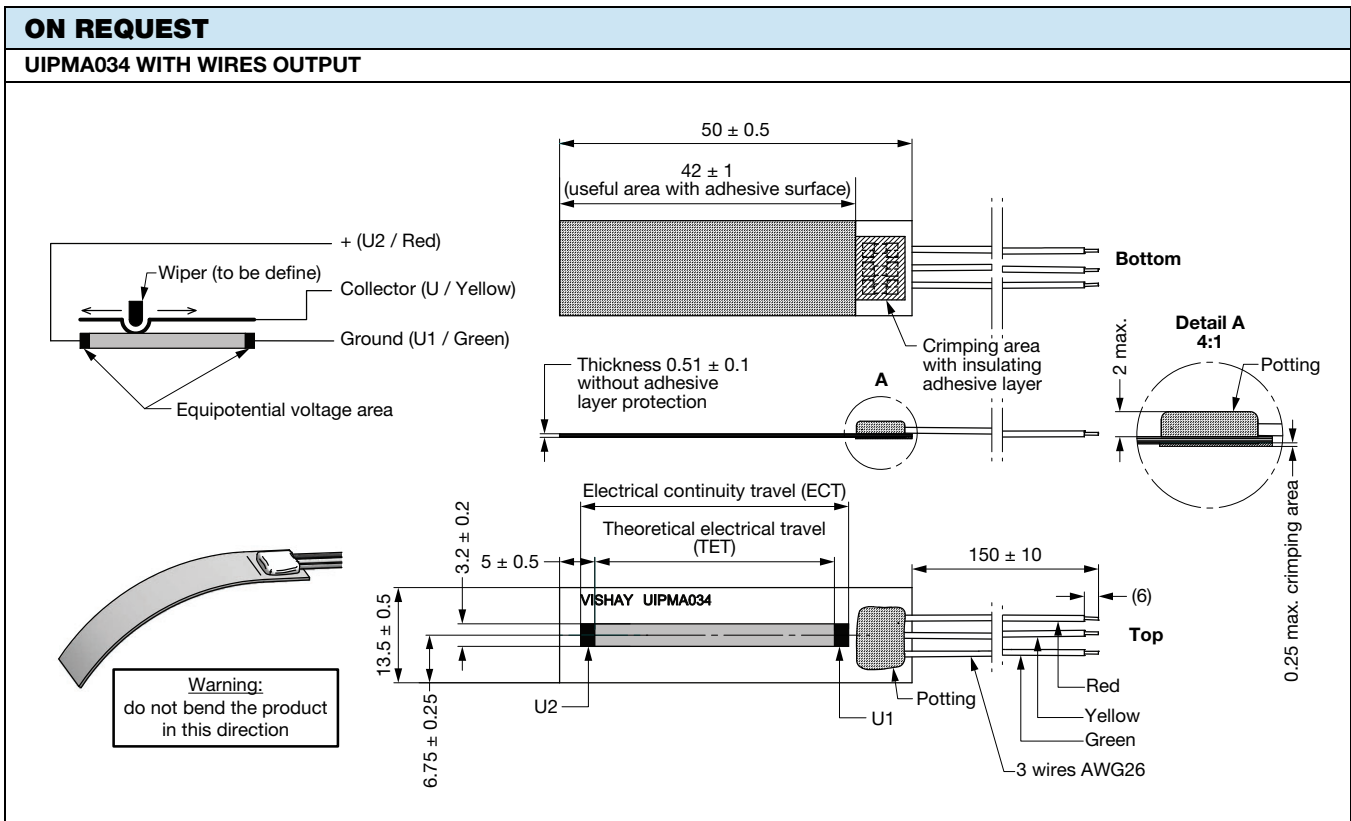
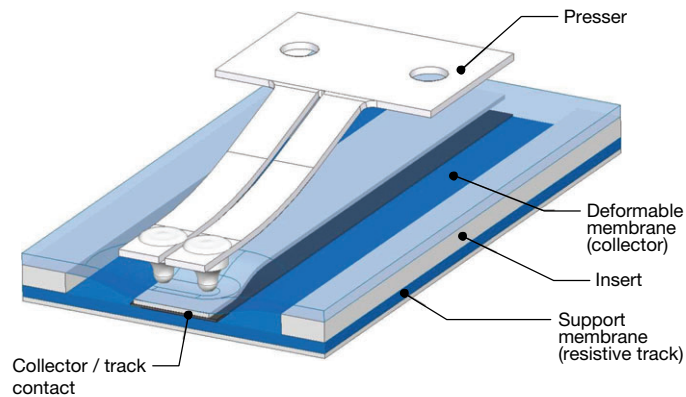
**Wiper Type B**



**Wiper Type D (Endurance Life = 3M cycles)**

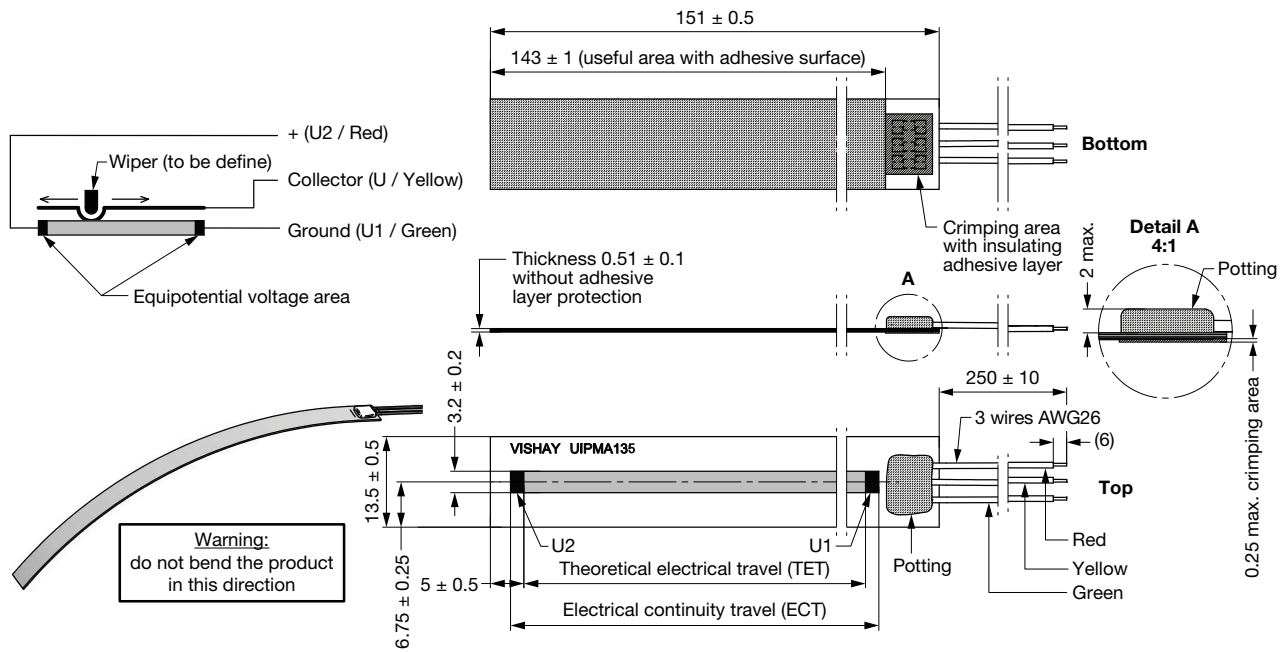


<b>SPECIFIC UIPMA CHARACTERISTICS</b>			
THEORETICAL ELECTRICAL TRAVEL (TET) (mm)	DISSIPATION AT +40 °C (W)	ELECTRICAL CONTINUITY TRAVEL (ECT) (mm)	FILM LENGTH (mm)
50	≤ 0.5	54	75
100	≤ 1.0	104	125
150	≤ 1.5	154	175
200	≤ 2.0	204	225
250	≤ 2.5	254	275

**OPERATING DESCRIPTION**


**ON REQUEST**

**UIPMA135 WITH WIRES OUTPUT**





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