

Displacement Sensor, Ultraflat Industrial Potentiometer Membrane



FEATURES

- Sealed
- 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


**RoHS
COMPLIANT**

DESIGN SUPPORT TOOLS

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3D
Models
Available

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 Ω	10 k Ω
Tolerance on R_n	$\pm 30\%$	
Dissipation	≤ 0.1 W/cm of travel ⁽¹⁾	≤ 1 W to 70 °C
Theoretical electrical travel (TET)	20 mm to 250 mm ⁽¹⁾	312°
Tolerance on TET	± 1 mm	$\pm 3^\circ$
Useful electrical travel (UET)	TET - 2 mm	306°
Electrical continuity travel (ECT)	TET + 4 mm	325°
Linearity	$\pm 2\%$	$\pm 5\%$
Temperature coefficient	-300 ppm/°C \pm 300 ppm/°C	
Collector / track current (I_c)	≤ 1 mA	
Recommended current I_c	≤ 100 μ A	
Recommended load impedance	$\geq 100 R_n$	
Output smoothness	< 0.1 % (NFC 93 255)	

Note

⁽¹⁾ See "Specific UIPMA Characteristics" table

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°
Mounting	With double-sided adhesive on flat, clean, and dry support	
Speed displacement	≤ 1.5 m/s	
Drive	Force ≥ 0.3 N	Torque ≥ 1 N cm
Protection class (NFC 20 010)	IP66	
Maximum alignment fault	± 1 mm	-

PERFORMANCE

PARAMETER	UIPMA	UIPMC
Life	> 3M 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 (on request) 150 200 (on request) 250	I = industrial	472 = 4K7	X = ± 2 %	C = connector	B = bulk
UIPM	C = rotational	030	I = industrial	103 = 10K	J = ± 5 %	C = connector	B = bulk

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 Dimensions:
 - Active area with adhesive: TET + 14 ± 1
 - Flat flex cable: 6.5 ± 1
 - Total thickness without protection layer: 0.51 ± 0.1
 - Connector: Berg Duflex 67013-003LF, Contacts 76785-301LF

Top View Dimensions:
 - 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)
 - Pin 3, Pin 2, Pin 1
 - Warning: do not bend the active area

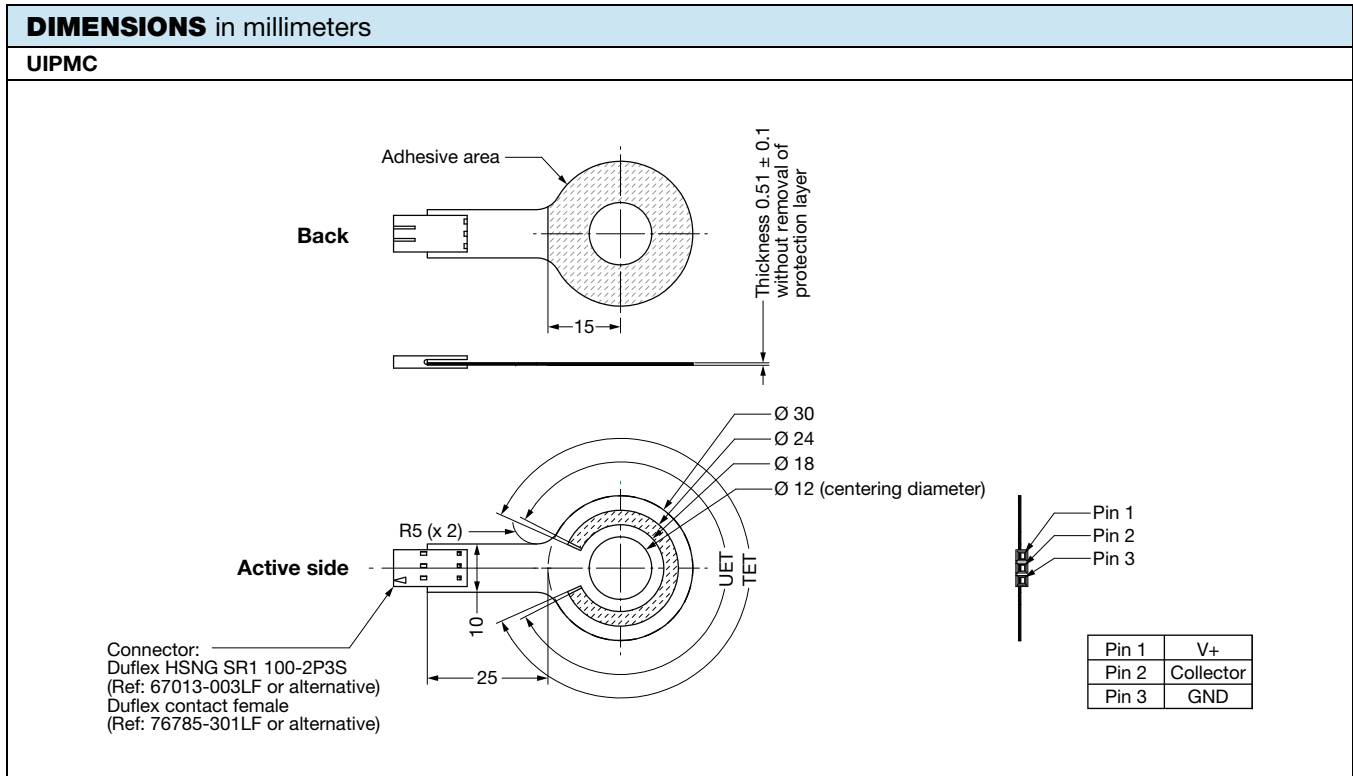
Schematic (1)
 - Wiper
 - U_{supply} (pin 3)
 - Collector (pin 2)
 - Ground (pin 1)
 - Equipotential voltage areas

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

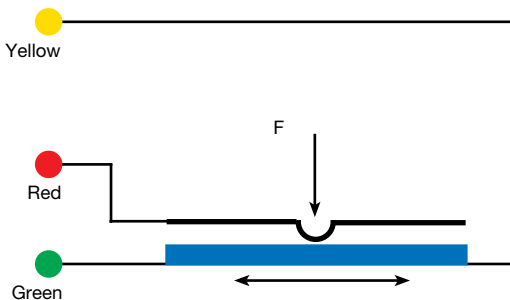
- Notes**
- Tolerancing according to ISO 8015
 - General tolerances according to ISO 2768 - mK
 - (1) Ground and U_{supply} can be swapped to change the slope sign

MOUNTING REQUIREMENTS FOR UIPMA

1. The shape of the customer interface over the active area shall be: 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 position between the ref. B and the useful travel of wiper contact point on the upper face of the sensor shall be: 6.75 ± 0.25
5. The bending of the flat flex cable shall be: \varnothing 3 mm min.



ELECTRICAL DIAGRAM



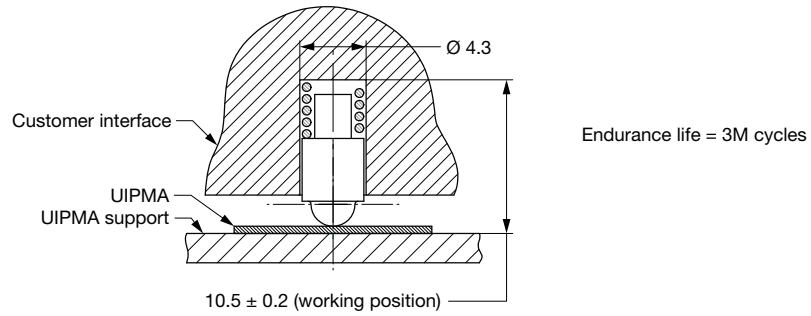
The voltage varies according to the position of the presser on the deformable membrane.

SPECIFIC VERSIONS (on request)

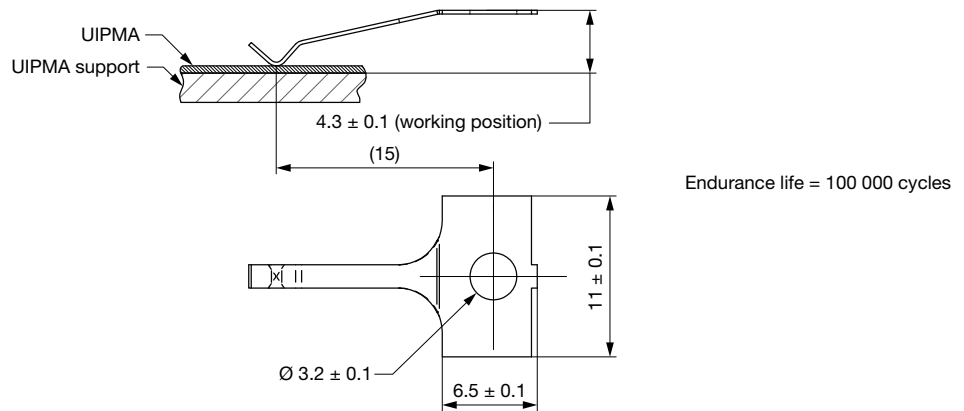
- Other electrical or mechanical characteristics
- Other bases
- Integration in equipment
- Other versions: outdoor design, ...
- Integration in equipment (flat flex cable, contacts, wires, ...)

PRESSERS

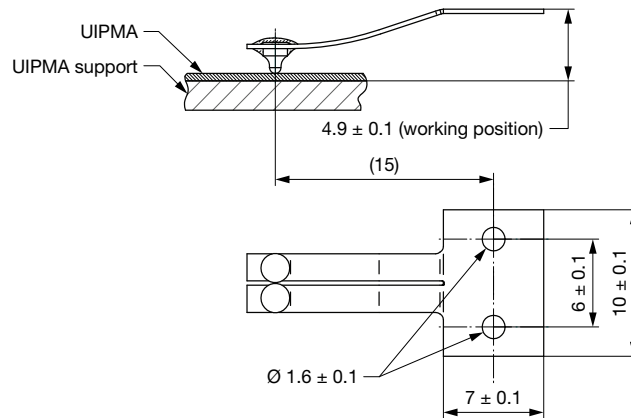
Wiper Type A



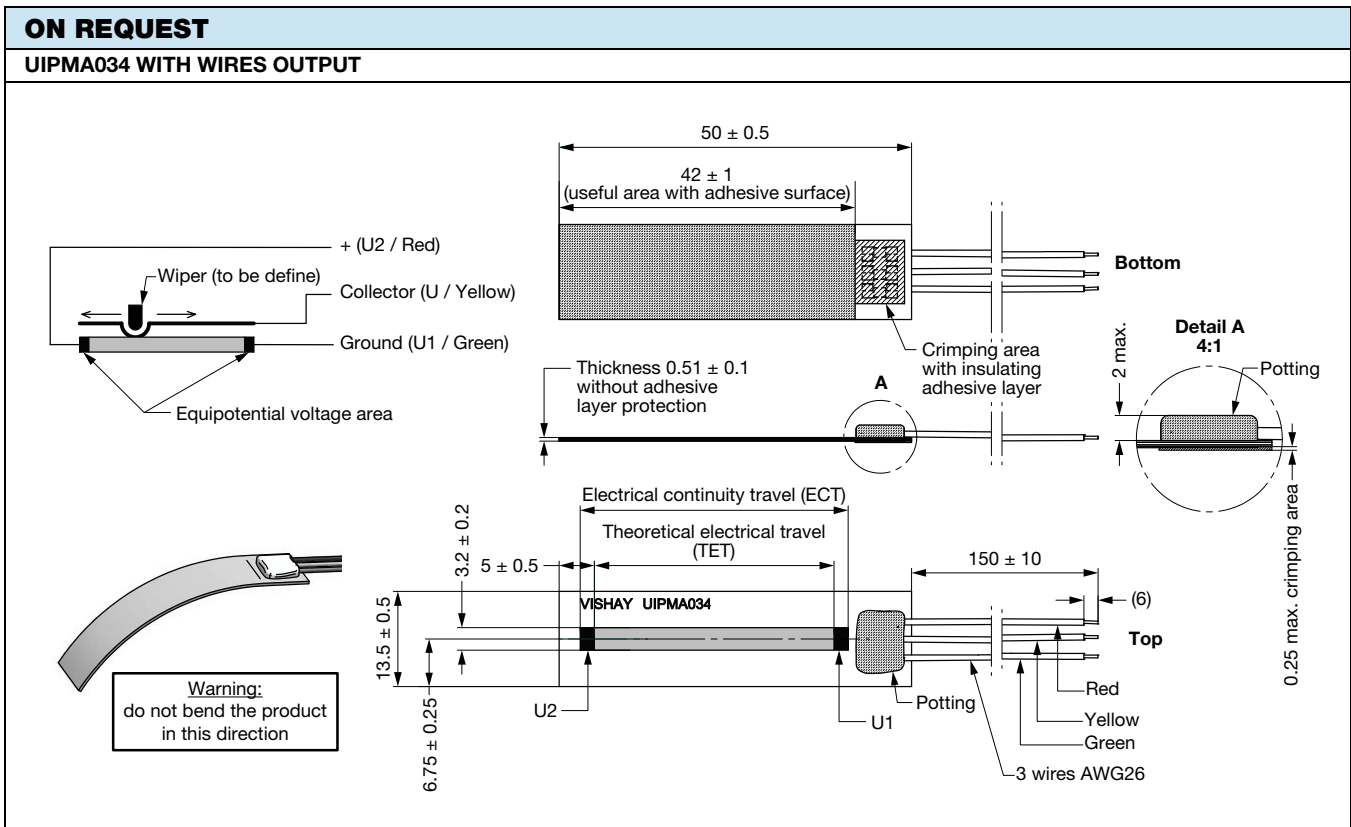
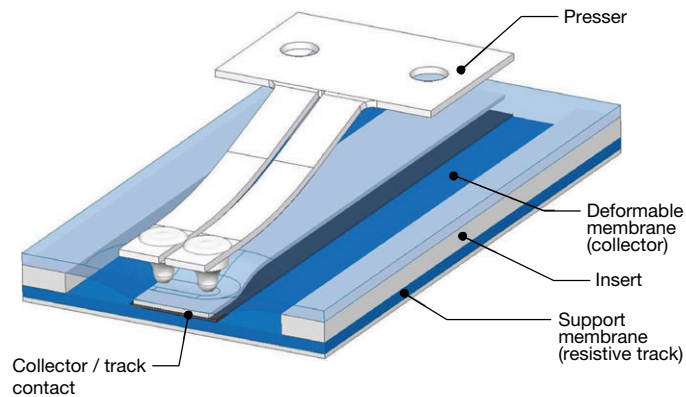
Wiper Type B



Wiper Type C

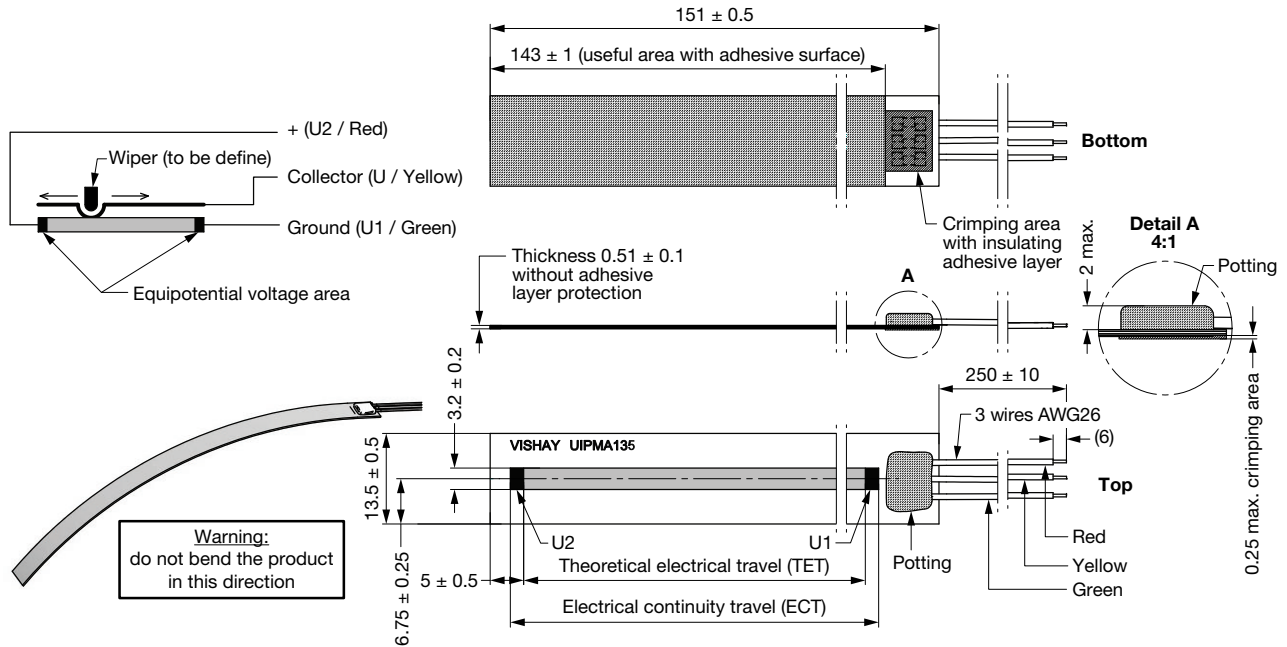


SPECIFIC UIPMA CHARACTERISTICS			
THEORETICAL ELECTRICAL TRAVEL (TET) (mm)	DISSIPATION AT +40 °C (W)	ELECTRICAL CONTINUITY TRAVEL (ECT) (mm)	FILM LENGTH (mm)
50	≤ 0.5	54	75
100	≤ 1.0	104	125
150	≤ 1.5	154	175
200	≤ 2.0	204	225
250	≤ 2.5	254	275

OPERATING DESCRIPTION


ON REQUEST

UIPMA135 WITH WIRES OUTPUT





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