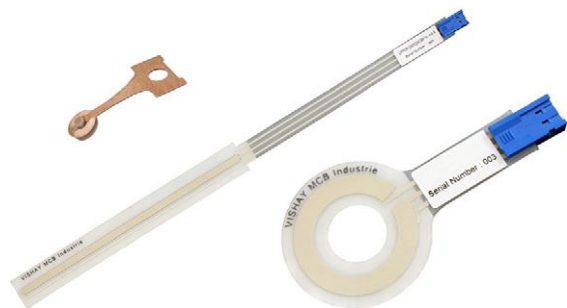


# Displacement Sensor, Ultraflat Industrial Potentiometer Membrane



## 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



| 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)<br>UIPMC: EXTERNAL DIAMETER (mm) | TYPE           | VALUE     | LINEARITY | LEADS         | PACKAGING |
| UIPM                                 | A = linear     | 050<br>100<br>150<br>200<br>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 ± 1, 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, 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

**Schematic (1)**

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

Warning: do not bend the active area

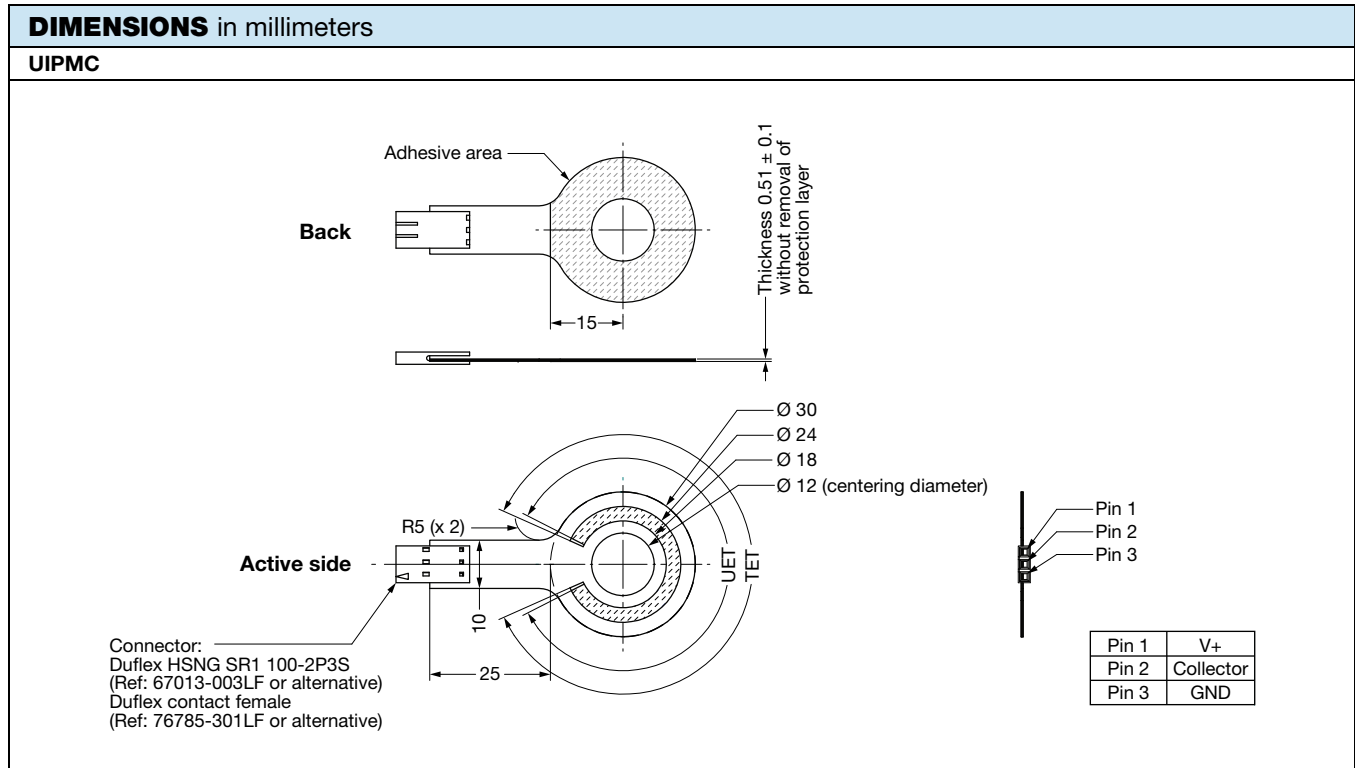
| TET (mm) | FLAT FLEX CABLE (mm) |
|----------|----------------------|
| 50       | 100                  |
| 100      | 50                   |
| 150      | 100                  |
| 200      | 100                  |
| 250      | 50                   |

**Notes**

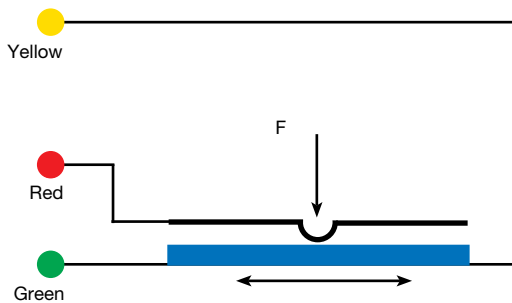
- Tolerancing according to ISO 8015
- General tolerances according to ISO 2768 - mK
- (1) Ground and U<sub>supply</sub> can be swapped to change the slope sign

**MOUNTING REQUIREMENTS FOR UIPMA**

1. The shape of the customer interface over the active area shall be: 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**



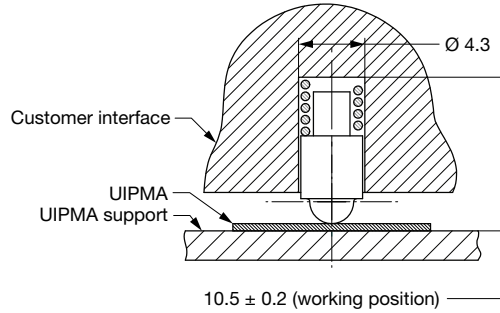
The voltage varies according to the position of the presser on the deformable membrane.

**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, ...)

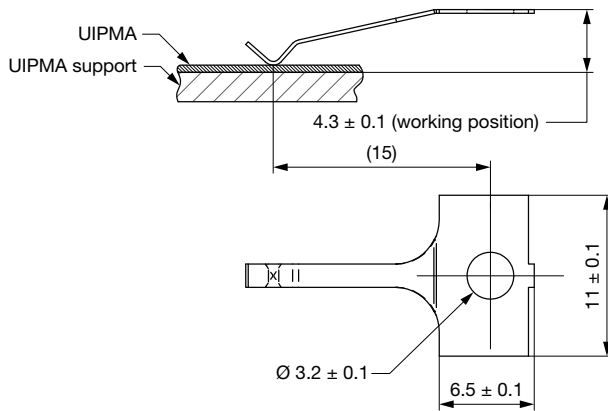
**PRESSERS**

**Wiper Type A**



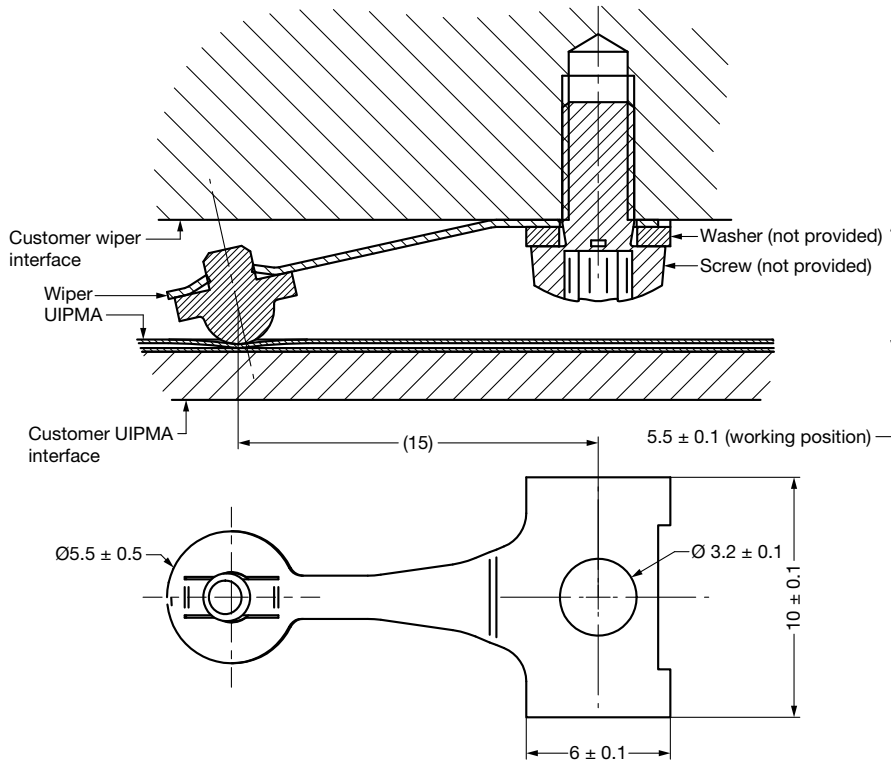
Endurance life = 3M cycles

**Wiper Type B**

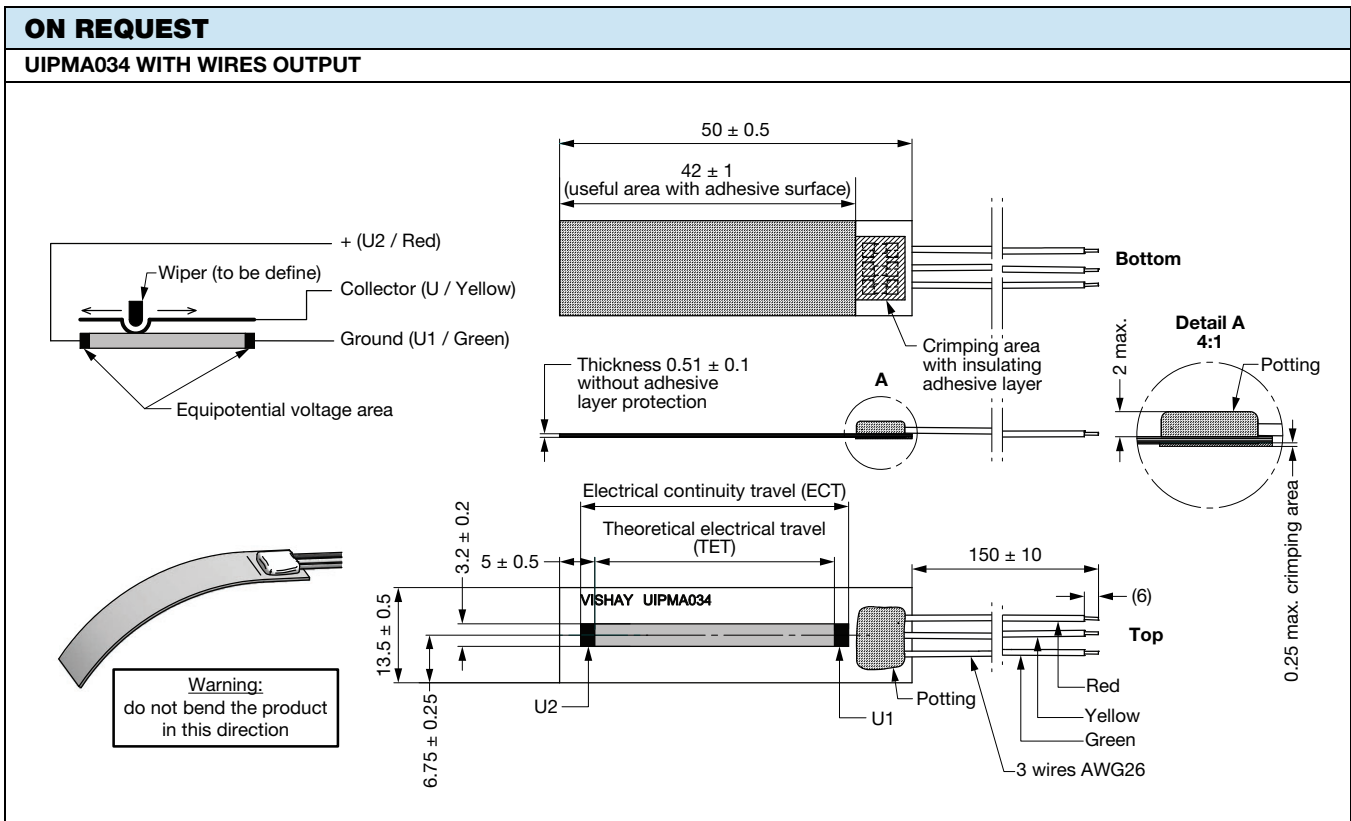
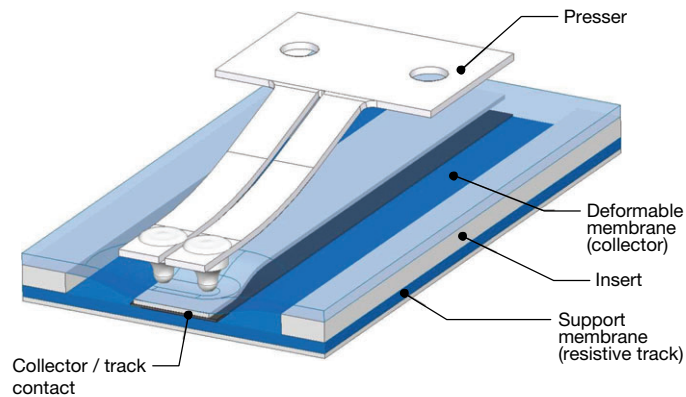


Endurance life = 100 000 cycles

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

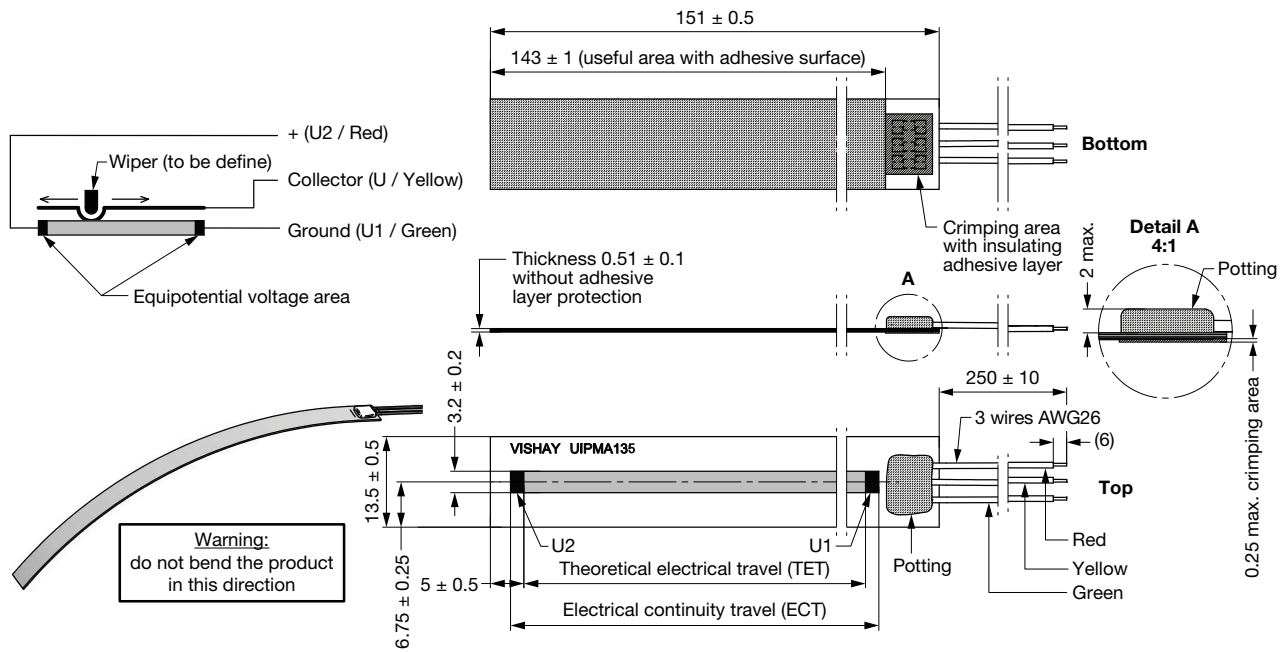


| <b>SPECIFIC UIPMA CHARACTERISTICS</b>    |                           |   |                  |
|--|---------------------------|---|------------------|
| THEORETICAL ELECTRICAL TRAVEL (TET) (mm) | DISSIPATION AT +40 °C (W) | ELECTRICAL CONTINUITY TRAVEL (ECT) (mm) | FILM LENGTH (mm) |
| 50                                       | ≤ 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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