NOVOFOIL
Potentiometric Sensors with membrane collector
Series LFP

Applications
Similar to the classic wiper potentiometer system there are various applications for this system e.g. adjustment systems in car- and truck seats, window lifter, convertible tops, mirror systems, medical devices, positioning of solar panels, robot systems, valve actuators and much more.

Benefits
When using the pin operated version, the cover sheet, which absorbs the forces of the actuating pin, is designed in the form of an FR4-Prepreg. Therefore the sensor can be operated up to +125° C temperatures. Polyester based solutions, available on the market today, do not withstand these temperatures. They are not linearized and are also very critical in the application, because even small dust particles between the sensor and the adhesive surface lead to failures.

Membrane sensor potentiometers are very flat and can be glued to plane surfaces in the required form. Apart from linear designs are also rotary systems producible.

Another advantage is the hermetically sealed structure of the membrane sensor potentiometer. Dirt, dust or humidity can not invade the sensor and therefore the use in a difficult environment is possible. It must be emphasized that the handling is very simple since the sensitive potentiometer track is protected by the cover sheet.

Special features
- flat profile
- resistant to dirt, dust or liquid
- very robust
- very good linearity up to ±0.3 %
- long life
- temperature resistant up to +105° C
- protection class IP 67

Technology
The sensors for linear position measurement consist of an FR4 substrate and a collector foil, which are separated by a spacer. On the FR4 substrate, the potentiometer track is applied in a screen-printing process. On the opposite sheet, the collector foil, a low-ohmic collector track is printed. A mechanical pressure, usually performed by a simple pin, contacts the potentiometer track with the collector track.

Novotechnik is firmly committed to a technology with FR4 substrates. This technique allows the use of standard methods of the potentiometer technology. With our approved screen printing inks and a subsequent linearization step, high life data and very good linearity values can be achieved over the lifetime.

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### Electrical Data

<table>
<thead>
<tr>
<th>Typbezeichnung</th>
<th>LFP-0050</th>
<th>LFP-0100</th>
<th>LFP-0150</th>
<th>LFP-0200</th>
<th>LFP-0250</th>
<th>LFP-0300</th>
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**Defined electrical range**

Standard 50 mm up to 500 mm in 50 mm steps, optional length in 25 mm steps. Customized length are possible. mm

**Electrical range**

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<thead>
<tr>
<th></th>
<th>56.2</th>
<th>106.4</th>
<th>156.6</th>
<th>206.8</th>
<th>257.0</th>
<th>307.2</th>
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<th>407.6</th>
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**Total resistance**

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<th>6</th>
<th>8</th>
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**Resistance tolerance**

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<tr>
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**Independent linearity**

(Optionally selected linearity are possible)

**Repeatability**

Typ. 0.05 mm

**Hysteresis**

Typ. 0.25 mm

**Recommended operating wiper current**

≤ 1 µA

**Max. wiper current in case of malfunction**

5 mA

**Max. permissible applied voltage**

30 V

**Temperature coefficient of the output-to-applied voltage ratio**

Typ. 15 ppm/K

**Insulation resistance (500 VDC)**

≥ 10 MΩ

**Dielectric strength (500 VAC, 50Hz)**

≥ 100 kV

### Mechanical Data

**Mechanical range**

<table>
<thead>
<tr>
<th></th>
<th>60.2</th>
<th>110.4</th>
<th>160.6</th>
<th>210.8</th>
<th>261.0</th>
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**Length element**

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<th>292.8</th>
<th>343.6</th>
<th>394.4</th>
<th>445.2</th>
<th>496.0</th>
<th>546.8</th>
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<tr>
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**Width element**

21.3 mm ±0.5 mm

**Position marker (accessories)**

Mechanical wiper as screw marker M6 with spring-loaded ball

**Position marker fitting pressure**

2 ±1 N

**Electrical connection**

Standard flex with 40 mm and 3-pin bushing plug. Customized connections are possible.

### Environmental Data

**Temperature range**

Standard -25...+105; -40...+125 with limited performance °C

**Operating humidity range**

0..95 (no condensation) % R.H.

**Vibration DIN IEC 68-2-6**

5...2000 Hz

$$a_{max} = 0.75$$

$$a_{max} \leq 20$$

**Shock DIN IEC 68-2-27**

50 g

11 ms

**Life**

> 25 x 10^6 movements

**Adjustment speed**

1.0 m/s max.

**Protection class DIN EN 60529**

Up to IP 67 (0.5 h in 1 m water depth), except connector

**Mounting options**

Optional adhesive foil on the rear side

### Important

All values specified in this data sheet for linearity, lifetime and temperature coefficient are only valid for a sensor used as a voltage divider with virtually no load applied to the wiper ($I_0 \leq 1 \mu A$).