

Record of Revision

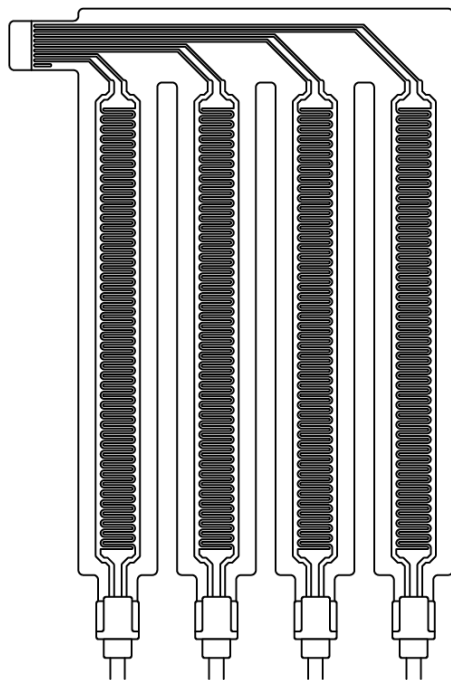
Revision Number	Revision Date
0.6	May 6, 2019
1.0	May 7, 2019
1.1	May 9, 2019
Important changes in this document version:	
<ul style="list-style-type: none">• Updated wording for detectable pressure and measurement range	

plyon[®] flex DevKit Sensor Module

Technical Data Sheet for plyn[®] flex sensors of the 1st generation delivered with the plyn[®] flex Development Kit

The technical information contained herein is believed to be accurate as of the date hereof. Please note that the delivered sensor is a pre-series model. Hence, its characteristics may vary from the ones shown in this datasheet. As conditions and methods of use of the product are beyond our control, and since the information contained herein may to a certain extent differ depending on the respective conditions of use and/or measurement methods applied, we expressly disclaim any and all liability as to any results obtained or arising from any use of the product or reliance on the information contained herein. No warranty of fitness for any particular purpose, warranty of merchantability or any other warranty, express or implied, is made concerning the products described or the information provided herein.

Physical Properties



Property	Value	Unit
Sensor generation:	1	
Sensor module dimension:	85 x 140 3.35 x 5.51	mm in
Size of tactile elements:	9 x 90 0.35 x 3.54	mm in
Tactile elements:	4	
Total sensing area:	36 x 360 1.42 x 14.17	mm in
Sensor thickness:	1.00 0.04	mm in
Minimal detectable pressure ¹ :	5	N/cm ²
Measurement range ¹ :	5 - 20	N/cm ²
Core material:	Silicone Elastomer PET	
Measurement principles:	Resistive (force) Capacitive ² (proximity, touch)	
Material compatibility:	Typical material compatibility of PET films and silicones need to be considered.	

¹ Typical values. Pressure dependent on various factors such as mechanics, actuation interface and readout electronics.

² Capacitive characteristics not shown in this data sheet.

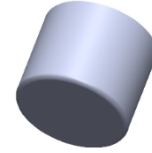
Sensor Characteristics

Methodology

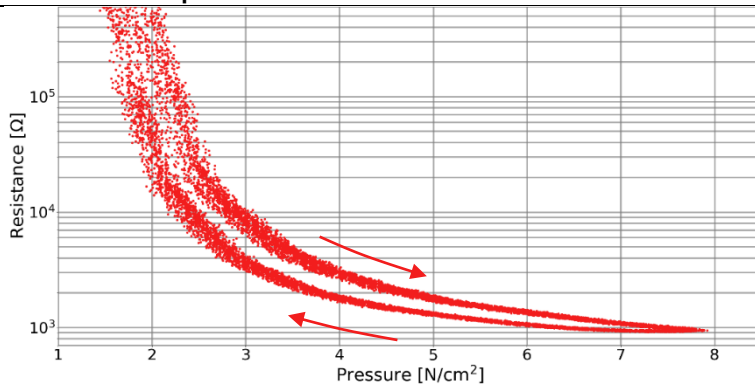
The following sensor characteristics were obtained by repeatedly driving a cylindrical test tool on the sensor. All indentations were performed on the same spot within the sensor. The force exerted by the test tool and the sensor's resistance were sampled at 500 Hz. Each dot corresponds to one measurement point.

Test Tool

Surface Area: 1.13 cm²
 Radius of the Edge: 0.5 mm
 Material: Photopolymer Resin

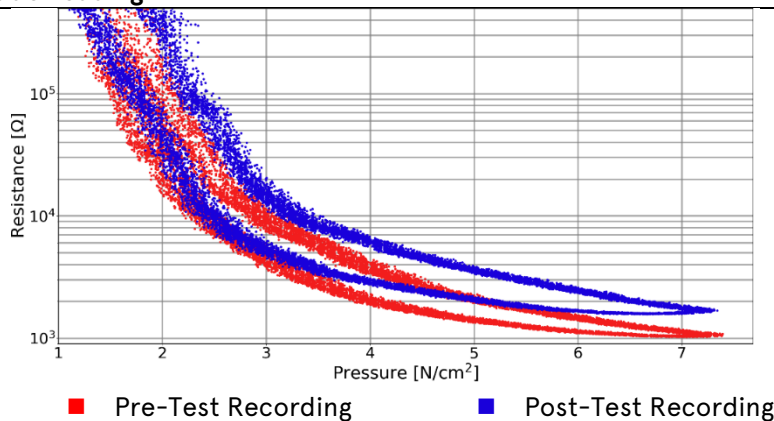


Initial Sensor Response



This graph shows the relation between the sensor's resistance and the applied pressure. The data was recorded over 8 sweep cycles. Each sweep cycle lasted 2.8 seconds, during which resistance and pressure were sampled every 2 milliseconds.

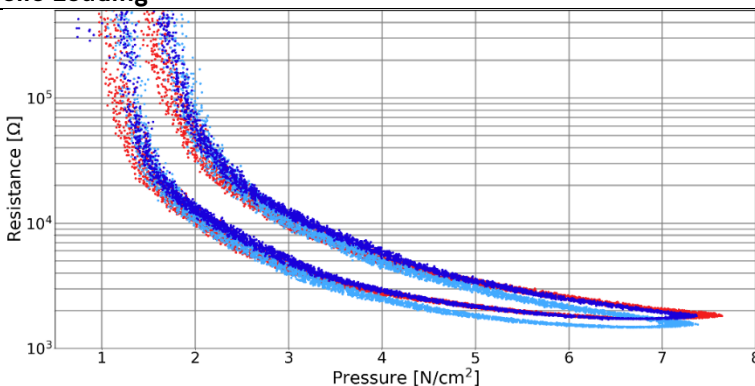
Static Loading



This graph shows the change in sensor characteristics after applying a static load of 20 N/cm² for 48 hours. Prior to recording the post-test curve, the sensor was given a relaxation time of 30 minutes.

■ Pre-Test Recording ■ Post-Test Recording

Cyclic Loading



This graph evaluates the effect of 100,000 indentations on a pre-strained sensor. The indentations were driven with 4 Hz and peak pressures of 31 N/cm². The red curve shows the sensor's response after having already been strained with 300,000 indentations. The blue curves show the sensor's response after an additional 100,000 indentations.

■ After 300,000 Indentations ■ After 400,000 Indentations
 ■ After 400,000 Indentations and 5 Hours Relaxation Time