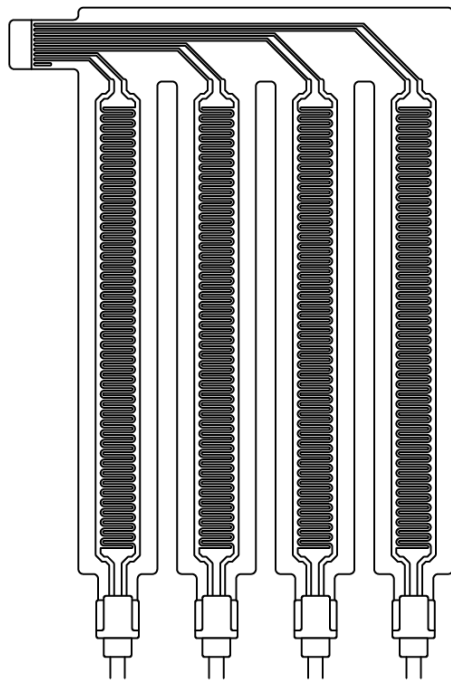


plyon[®] flex DevKit Sensor Module

Technical Data Sheet for pylon[®] flex sensors of the current generation delivered with the pylon[®] 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:	Zebra	
Module dimensions:	85 x 140 3.35 x 5.51	mm in
Size of tactile elements:	9 x 90 0.35 x 3.54	mm in
No. of tactile elements:	4	
Sensor thickness:	1.00 0.04	mm in
Minimal detectable force ¹ :	0.3	N
Measurement range ¹ :	0.3 – 10	N
Operating voltage:	≤ 5	V
Surface materials:	Silicone Elastomer PET	
Measurement principles:	Resistive (force) Capacitive ² (proximity, touch)	
Electrical termination:	1 x Exposed flex tail – 9 Pos. / 0.5 mm 4 x FFC Connector – 2 Pos. / 2.54 mm	
Material compatibility:	Typical material compatibility of PET films and silicones needs to be considered.	

¹ Typical values for a circular test tool with an actuation area of 0.5 cm².

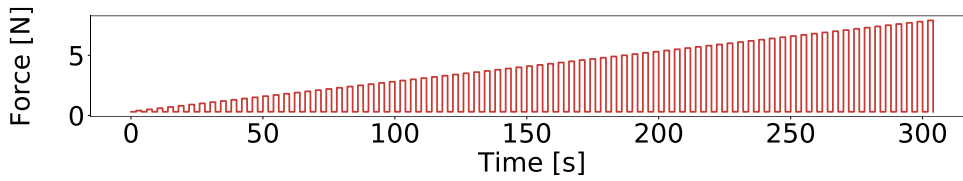
Dependent on several factors such as actuator geometry and readout electronics.

² Capacitive characteristics not shown in this data sheet.

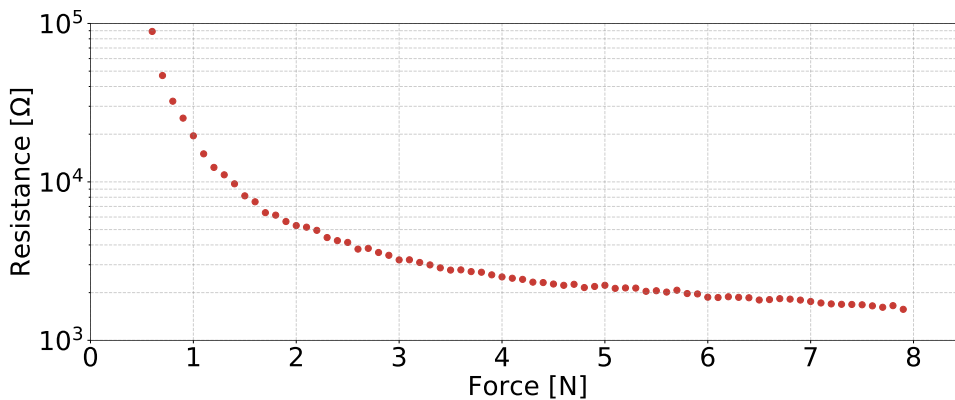
Sensor Characteristics

A circular test tool with 8 mm diameter was used to indent the sensor, resulting in an actuation area of 0.5 cm².

General Sensor Characteristics (Resistance-Force)



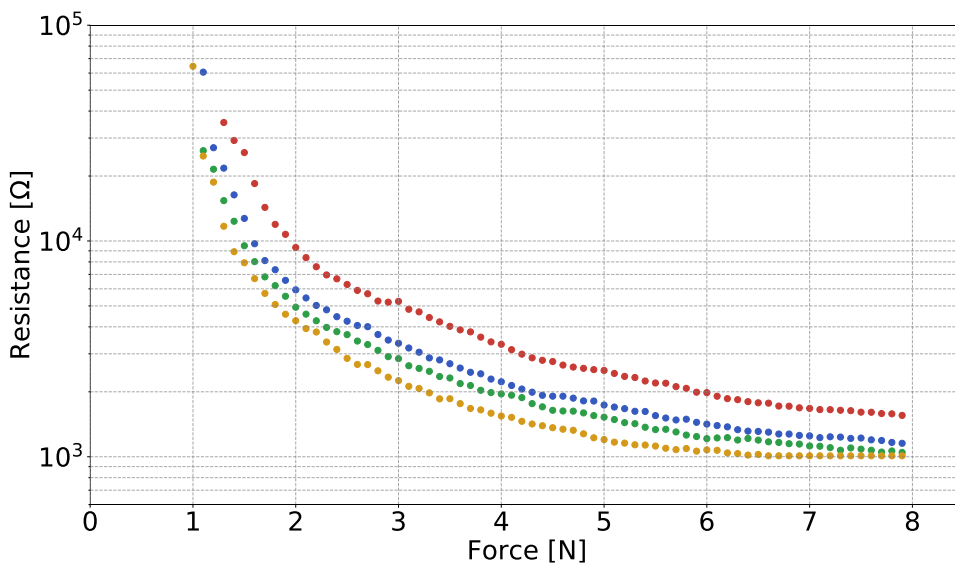
In the following, the sensor resistance is determined for gradually increasing force levels according to the depicted actuation profile.



The resistance is measured in a voltage divider configuration with a 2 kΩ reference resistor.

Characteristics vary across the active area of sensors. At a force of 4 N, measuring 6 different sensing elements at 5 points each, yields a standard deviation of 750 Ω.

Sensor Response under Cyclic Loading



A dynamic force of 10 N is exerted on the sensor at a frequency of 2 Hz. The sensor characteristics are recorded once after 10k, 100k, as well as 500k indentations and plotted alongside the characteristics of the sensor prior to loading.

- Initial response
- After 10,000 actuations
- After 100,000 actuations
- After 500,000 actuations

Sensor Response under Static Loading

	At 4 N	At 7 N
After 10 minutes	16 %	8 %
After 1 hour	18 %	10 %
After 10 hours	28 %	20 %

Deviations in sensor readout after applying a static force of 10 N for different durations are calculated at two force levels along the measurement range.