



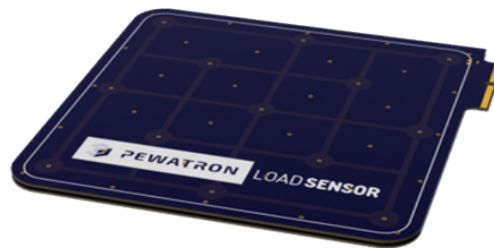
LoadSensor StarterKit

1 Description

Pewatron is launching its newly developed sensor technology for integrated load and weight measurement. In contrast to standard load cells or solutions using strain gauges, no additional mounting is necessary as a result of the concept and the customised design. The two rigid plates at either end of the elastic dielectric form the mounting or the contact surface for the load or weight measurement. Because the geometry of the sensor can be chosen as needed or specified by the customer, the sensor can be integrated directly into the end product. This dispenses with the need for constructing a mounting, as well as the associated material and assembly costs. The capacitive measurement principle in pressure and load sensor technology has actually been known for many years but, despite its many advantages, has only been used in niche areas, primarily due to high costs. Most sensors use a Wheatstone bridge as a basis or have a resistive design. Due to the rapid advancement in electronics for capacitive systems, driven by touch screen development, this has now changed. Capacitive systems are no longer intrinsically expensive and they also offer the advantages of high resolution and low power consumption. Pewatron is now offering customised capacitive load and weight sensors with the aforementioned advantages at an attractive price. For initial tests, and to allow customers to get to know the new sensor technology, Pewatron has developed a starter kit. A sensor area of 170 mm x 170 mm, the integrated electronic evaluation unit and a USB connector are included in the kit, along with the software for visualising and recording the measurement values. Use the capacitive load sensor technology from Pewatron to implement fully integrated sensor technology tailored to your product.

2 Features

- Measuring range 1000N, approx. 100kg
- Accuracy $\pm 5\%$ Span
- Resolution $\pm 1\%$ Span
- Long term drift (10 hours) 0.3% Applied Load
- Supply Voltage +5VDC via USB port
- Output signal: digital , USB



3 Revision History

Sensor Revision A- 30.03.2020

Initial Revision	Released - Rev. 1.3
Sensor Revision B- 0209.2020	Draft, not released - Rev.1.4

4 Dimensions and shape

Parameter	Condition	Value	Unit
Thickness	Max value;	5	mm
Dimensions/ Shape	Mated, max. value	214.0 x 170.0	mm
Dimensions/ Shape	Sensor panel, max. value	180.0 x 170.0	mm
Measurement Area	Measurement area, max. value	170.0 x 170.0 0.029	mm m2
Weight		130	g
Cable		USB-A , Micro USB	--
Materials	Sensor Panel	FR4, silicone, Copper	--
IP Protection Rating	Sensor	30	IP
	Electronic board	00	

5 Operating conditions

Supply voltage 5.0VDC, Ambient temperature 25°C (unless otherwise specified)

Parameter	Condition	Typ Value	Unit
Operating Temperature and humidity	no condensation	0 ... +85	°C
Operating altitude	max value	40 ... 70	%RH
Storage temperature and humidity	no condensation	2000	m.a.s.l.
Safe overload limit	not causing permanent offset	-40 ... +85	°C
Ultimate overload limit	not damaging the device	1.2 X	Span
Supply Voltage	Supplied via USB port, min 500mA	1.5 X	Span
		5	VDC

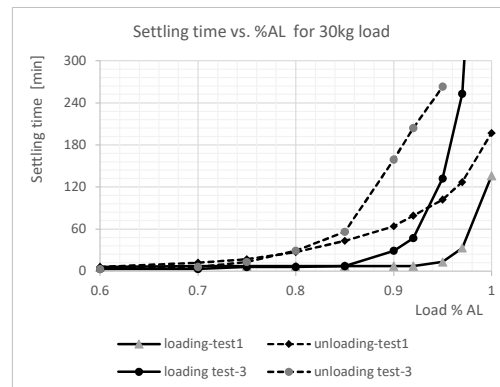
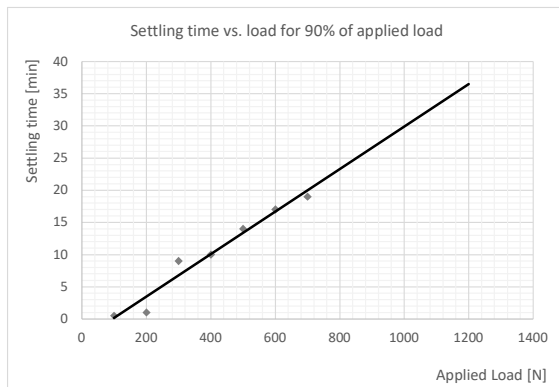
6 Characteristics

Supply voltage 5.0VDC, Ambient temperature 25°C (unless otherwise specified)

Parameter	Condition	Typ value	Unit
Measurement Range (Span)		1000	N
		approx. 100	kg
Accuracy (non-linearity, hysteresis, repeatability)		± 5	% Span
Resolution		± 1	% Span
Rated Output	Digital interface	Micro USB	--
Zero load output (Offset)	not zeroed sensor	5 ... 10	% Span
Non-linearity error		± 2	% Span
Histeresis error		± 5	% Span
Repeatability		1	% Span
Settling time	95% of applied load	1 ... 20	min
Temperature effect (temp drift)	not compensated, (1)	negative	-6 % AL / °K
Long Term Stability	not compensated, for 10h	±(0.1 ... 1)	% AL (Applied Load)

(1) For tested temperature range +10 ... +30°C

7 Performance Characteristics



8 Application and implementation

8.1 Load Sensor zeroing

Following zeroing procedure is needed in order to achieve specified sensor performance

- 1 Install the LoadSensor in the application
- 2 Supply and connect to the PC and run LoadSensor StarterKit software
- 3 Load the sensor within application with minimum 50% of full scale for 1 hour
- 4 Unload the sensor in the application to zero load for min 1h
- 5 Press ZeroCal zeroing button in the Starter Kit software
- 6 Load sensor is ready to use

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