Dynalabs DYN-C-3000-SI Triaxial Capacitive Accelerometers User Manual

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DynaLabs

Dynalabs DYN-C-3000-SI Triaxial Capacitive Accelerometers

Model DYN-C-3000-SI Range [g]: 3, 5
Product Manual

Product Support

If at any time you have questions or problems with the DYN-C-3000-SI sensors, please contact a Dynalabs engineer at:

Phone: +90 312 386 21 89 (9 a.m. to 5 p.m., UTC +3)
E-mail: info@dynalabs.com.tr

Warranty

Our products are warranted against defective materials and workmanship for one year. Defects arising from user errors are not covered by the warranty.

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Introduction

Capacitive accelerometers are based on proven micro-electro-mechanical systems (MEMS) technology. These

capacitive accelerometers are reliable and long-term stable. They have a DC response. The advantage of these sensors is their outstanding temperature stability, high frequency response and low noise-high resolution. These sensors have a reliable aluminum housing with IP68 protection class.
Dynalabs 3000SI series triaxial accelerometers provide an ultra-low noise performance from 0.7 to 1.2 µg/√Hz. These accelerometers provide excellent bias and scale factor stability and a wide frequency range (±3dB) from 550 Hz to 700 Hz.
DYN-C-3000-SI sensors offer the following options;

- Custom Cable Length (5m standard cable)
- Custom Housing Material
- Custom Connector
- Base plate

General Information

Unpacking and Inspection

Dynalabs products provide adequate protection for undamaged products to be transported. Document the damages that occur indirectly during the transport and contact the customer representative.

System Components

The DYN-C-3000-SI has the following components:

- MEMS Sensor
- Calibration Certificate
- Product Manual

Specifications

Table 1: Specifications datasheet

Full-scale acceleration	**(g)**	**3003SI ± 3**	**3005SI ± 5**
White Noise	(µg/√Hz)	0.7	1.2
Noise (Integrated over 0.1Hz to 100Hz)	(µg)	8	13
Dynamic range (0.1Hz to 100Hz)	(dB)	108.5	108.5
Scale Factor Sensitivity	(mV/g)	900	540
Bandwidth (±3dB)	(Hz)	550	700
Operating power consumption	(mW)	90	90

Environmental
Table 2 Environmental specifications datasheet

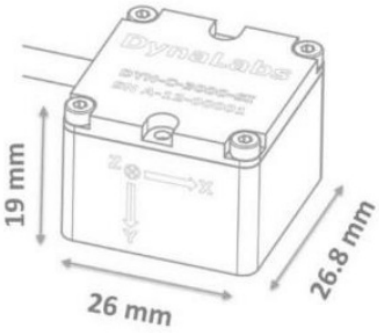
Protection Level	IP 68
Operating Voltage	6 V – 40 V
Operating Temperature	-40 °C to +100 °C
Isolation	Case isolated

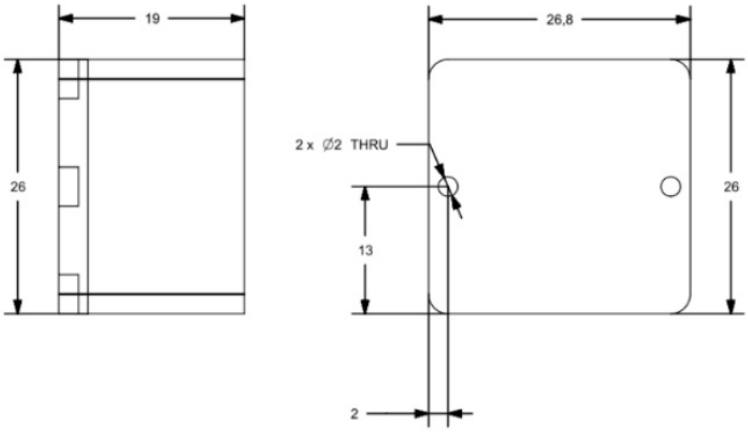
Physical
Table 3 Physical specifications datasheet

Sensing Element	MEMS Capacitive
Housing Material	Aluminum or Steel
Connector (Optional)	D-Sub 9 or 15 pin, Lemo, Binder
Mounting	Adhesive or screw mount
Base plate (Optional)	Aluminum or Steel
Weight (without cable)	28 g (aluminum) 55 g (steel)

Outline Drawing
The dimensional properties of DYN-C-3000-SI sensors are given below.

Technical Drawings





Operation and Installation

General
The general sensor connector configuration is given below; Cable Code/Pin Configuration:

- Red : V + Power supply voltage +6 to +40 VDC
- Black : Ground Power GND
- X-Axis: Yellow : Signal (+) Positive, analog output voltage signal for differential mode
- Purple : Signal (-) Negative, analog output voltage signal for differential mode
- Y-Axis: Blue : Signal (+) Positive, analog output voltage signal for differential mode
- Green : Signal (-) Negative, analog output voltage signal for differential mode
- Z-Axis: White : Signal (+) Positive, analog output voltage signal for differential mode
- Orange : Signal (-) Negative, analog output voltage signal for differential mode

WARNING

- Never connect the power supply and/or the power ground to yellow, purple, blue, green, white and/or orange cables.
- Never connect the power supply to the power ground. Always use a clean power source and check the voltage range.

Sensor Static Calibration Verification

- Using gravity, voltage values are measured in the + and – gravity directions, providing a value of ±1 g. The measurement should be made as follows;
- When the acceleration value of 3000SI series sensors is entered into the data acquisition system, the sensor shows +1 g with the effect of gravity, which is in the direction of the axis to be calibrated.

- When the sensor is positioned in the opposite direction to the axis to be calibrated, the arrow shows -1g as shown below under the effect of gravity.
- Using gravity, the voltage values that provide 1 g in the + and – directions are measured and compared with the catalog value. The calibration value should be close to the catalog value with 10% tolerance. Sensor catalog sensitivity values are given in Table 1.

Declaration of Conformity

CE This declaration of conformity is issued under the sole responsibility of the manufacturer. The product(s) are developed, produced and tested according to following EC- directives:

- 2014/35/EU – Low Voltage Directive (LVD)
- 2006/42/EU – Machinery Safety Directive
- 2015/863/EU – RoHS Directive

Applied standards

- EN 61010-1:2010
- EN ISO 12100:2010
- MIL-STD-810-H-2019 (Test Methods: 501.7- High Temperature, 502.7- Low

Temperature, 514.8- Vibration, 516.8 – Shock)
DYNALABS MÜHENDİSLİK SANAYİ TİCARET LİMİTED ŞİRKETİ declares that above mentioned products meet all the requirements of the above mentioned standards and regulations.

Canan Karadeniz, General Manager

Ankara, 15.07.2021

Documents / Resources

	Dynalabs DYN-C-3000-SI Triaxial Capacitive Accelerometers [pdf] User Manual DYN-C-3000-SI Triaxial Capacitive Accelerometers, DYN-C-3000-SI, Triaxial Capacitive Accelerometers, Capacitive Accelerometers, Accelerometers

References

- User Manual