



DynaLabs DYN-C-3000-SE Triaxial Capacitive Accelerometers User Manual

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DynaLabs

DynaLabs DYN-C-3000-SE Triaxial Capacitive Accelerometers



Product Support

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

Phone: +90 312 266 33 34 (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.

Copyright

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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. These sensors are Single Ended type DC response sensors. The advantage of these sensors is their outstanding temperature stability, low noise- high resolution features and their low cost. These sensors have reliable aluminum housing with IP68 protection class. Dynalabs 3000SE series triaxial accelerometers provide an outstanding noise performance from 25 to 300 $\mu\text{g}/\sqrt{\text{Hz}}$. These accelerometers provide a wide frequency range ($\pm 3\text{dB}$) from 1,500 Hz to 3,000 Hz.

DYN-C-3000-SE 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-SE has the following components:

- MEMS Sensor
- Calibration Certificate
- Product Manual

Specifications

Table 1: Specifications datasheet

Full scale acceleration	(g)	3002SE	3004SE	3008SE	3010SE	3020SE	3040DE	3050SE	3100SE	3200SE	3500SE
		±2	±4	±8	±10	±20	±40	±50	±100	±200	±500
Frequency range (±3dB)	(Hz)	1,500	1,500	1,500	1,500	1,500	1,500	3,000	3,000	3,000	3,000
Non-linearity (full scale)	(%)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Noise (in band)	(µg/√Hz)	25	25	25	80	80	110	130	220	550	1,200
Scale factor (nominal)	(mV/g)	400	200	100	80	40	20	40	20	10	4
Shock survivability	(g)	5,000	5,000	5,000	5,000	5,000	5,000	5,000	6,000	6,000	6,000

Environmental

Table 2 Environmental specifications datasheet

Protection Level	IP 68
Operating Voltage	6 V – 20 V
Operating Temperature	-40 °C to +100 °C
Operating Current Consumption mA	21 mA
Isolation	Case isolated

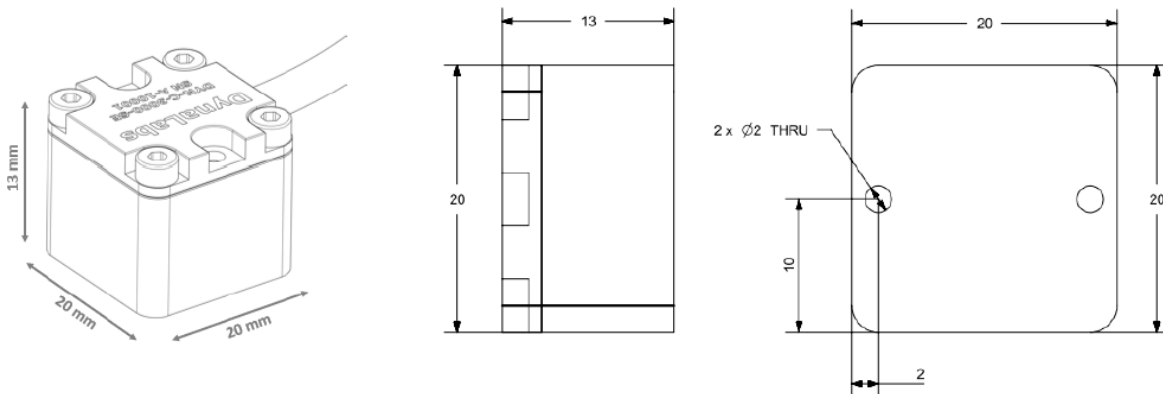
Physical

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)	16g (aluminum) 33g (steel)

Outline Drawing

The dimensional properties of DYN-C-3000-SE sensors are given below.



Operation and Installation

General

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

- Red : V + Power supply voltage +6 to +20 VDC

- Black : Ground Power GND
- X-Axis: Yellow : Signal Analog output voltage signal for single ended
- Y-Axis: Blue : Signal Analog output voltage signal for single ended
- Z-Axis : White : Signal Analog output voltage signal for single ended

WARNING

- Never connect the power supply and/or the power ground to yellow, blue, and/or white 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 – directions, providing a value of 1 g. The measurement should be made as follows;

When the acceleration value of 3000SE 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 a 10% tolerance. Sensor catalog sensitivity values are given in Table 1.

Declaration of Conformity

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.

Documents / Resources

	DynaLabs DYN-C-3000-SE Triaxial Capacitive Accelerometers [pdf] User Manual DYN-C-3000-SE Triaxial Capacitive Accelerometers, DYN-C-3000-SE, Triaxial Capacitive Accelerometers, Capacitive Accelerometers, Accelerometers
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