DynaLabs DYN-C-1000-DE Capacitive Accelerometer User Manual

Contents

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Product Support

If at any time you have questions or problems with the DYN-C-1000-DE 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.

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 Differential Ended type DC response sensors. The advantage of these sensors is their outstanding temperature stability, their lightweight and

they are low cost sensors. These sensors have reliable aluminum housing with IP68 protection class. These sensors feature standard reliable aluminum housing with protection class IP68. Steel housing is also possible. Dynalabs 1000DE series accelerometers provide an outstanding noise performance from 20 to 260 g/Hz. These accelerometers provide a wide frequency range (±3dB) from 1,500 Hz to 3,000 Hz.

DYN-C-1000-DE 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-1000-DE has the following components:

- MEMS Sensor
- Calibration Certificate
- Product Manual

Specifications

Table 1: Specifications datasheet

Full scale acceleration	(g)	1002DE ±2	1004DE ±4	1008DE ±8	1010DE ±10	1020DE ±20	1040DE ±40	1050DE ±50	1100DE ±100	1200DE ±200	1500DE ±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	75	110	35	50	80	170
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	7 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)	18g (aluminum) 43 g (steel)

Outline Drawing

The dimensional properties of DYN-C-1000-DE sensors are given below.

Operation and Installation

General

The general sensor connector configuration is given below;
Cable Code/Pin Configuration:
· Red : V + · Black : Ground
Power supply voltage +6 to +20 VDC Power GND
· X : Yellow : Signal(+) Positive, analog output voltage signal for differential mode.
Blue : Signal(-) Negative, analog output voltage signal for differential mode.

WARNING
Never connect the power supply and/or the power ground to yellow and/or blue 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 1000DE series sensors is entered to the data aqcuisition system, the sensor shows +1 g with the effect of gravity in the direction of the arrow sign. When the sensor is positioned in the opposite direction of the arrow as shown below, it shows -1g 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 MÜHENDSLK SANAY TCARET LMTED RKET declares that above mentioned products meet all the requirements of the above mentioned standards and regulations.

Murat Aykan, Technical Manager Ankara, 15.07.2021

Documents / Resources

DynaLabs Model DYN-C-1000-DE 2g/4g/8g/10g/20g/40g/50g/100g/200g Product Manual	**DynaLabs DYN-C-1000-DE Capacitive Accelerometer** [pdf] User Manual DYN-C-1000-DE Capacitive Accelerometer, DYN-C-1000-DE, Capacitive Accelerometer, Accelerometer