



9 ASC DiSens® ECO-3321 (CAN)
MEMS Capacitive Accelerometer – Digital Interface



■ SPECIFICATIONS

- Triaxial
- MEMS Capacitive
- Measurement Range: ± 2 to ± 40 g
- Frequency Range (± 5 %): DC to 1000 Hz
- Scale Factor: 12800 LSB/g to 256000 LSB/g
- Aluminum Housing
- Made in Germany



■ MEMS CAPACITIVE ACCELEROMETER

The key components in capacitive accelerometers are high-quality micro-electromechanical systems (MEMS). This technology enables the measurement of static (DC) and constant accelerations, which can be used to calculate the velocity and displacement of moving objects. Depending on the design of the spring-mass-damping system, however, it is also possible to detect dynamic (AC) accelerations with amplitudes up to ± 40 g and within a frequency response range of up to 1 kHz (± 5 %) or 2.4 kHz (± 3 dB).

■ DESCRIPTION

The digital accelerometers of type ASC DiSens® ECO featuring an extremely robust design which leads to a shock resistance up to 10,000 g. The integrated electronic circuitry enables the digital interfaces CAN as well as a flexible power supply voltage from 5 to 30 VDC. The sensors of the ASC DiSens® ECO series provide already implemented filter settings enabling a sampling rate of up to 4 kHz at a 3dB-corner frequency of 1 kHz.

The sensors feature a lightweight, reliable aluminum housing with protection class IP67 and a 5-pin circular metric M12 connector.

The triaxial accelerometers allow quick and easy mounting. Due to several options for digital interfaces and filter settings the ASC DiSens® ECO series is ideally suited for condition monitoring and industrial applications.

■ FEATURES

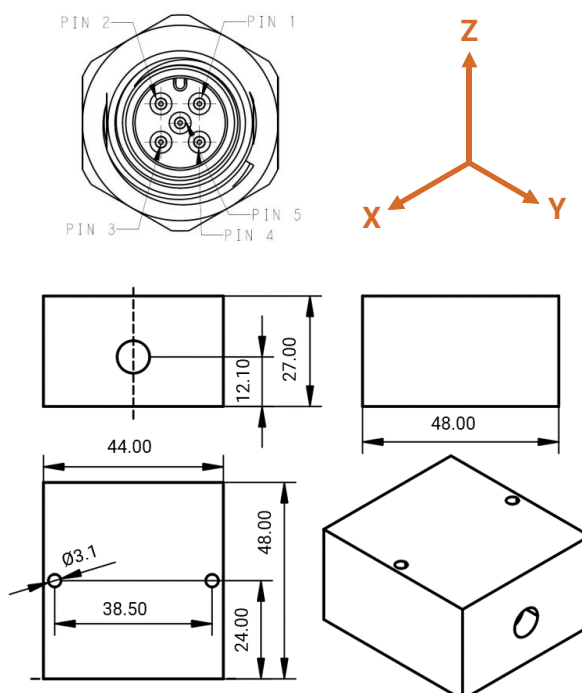
- Configuration of Filter Settings and Measurement Ranges
- Digital Interface CAN
- Use in Applications with Electromagnetic Interference and long Cables

■ OPTIONS

- Customized Cable Length
- Customized Connector

■ APPLICATIONS

- General Industrial Test&Measurement
- Robotics and Automation
- Condition Monitoring





TYPICAL SPECIFICATIONS

Dynamic

Measurement Range	g	±2	±4	±8	±10	±20	±40
Scale Factor (sensitivity, ±8 % max)	LSB/g	256000	128000	64000	51200	25600	12800
Offset (bias)	LSB	±6400	±3200	±1600	±6400	±3200	±1600
Noise Density	µg/√Hz	22.5	25.0	30.0	75.0	80.0	90.0
Sample Rate (configurable)	Hz	3.90625 7.8125 15.625 31.25 62.5 125 250 500 1000 2000 4000					
3dB-Corner Frequency (configurable to corresponding sample rate)	Hz	0.977 to 1000 (¼ of sample rate)					
Frequency Response Range (±5 %)	Hz	DC to 1000					
Frequency Response Range (±3 dB)	Hz	DC to 1500			DC to 2400		
Amplitude Non-Linearity	%	0.1	0.8	1.6	0.1	0.5	1.3
Resolution (1 LSB)	µg	4	8	16	20	40	80
Transverse Sensitivity	%	<1 (typ)					

Electrical

Power Supply Voltage	V	5 to 30					
Operating Power and Current Consumption	W mA	1.5 W (max, regardless power supply voltage) 62.5 mA @ 24 V					
Isolation		Case Isolated					

Environmental

Temperature Coefficient of the Scale Factor (typ)	ppm/K	±100					
Temperature Coefficient of the Offset	mg/K	±0.1 (typ) ±0.15 (max)			±0.2 (typ) ±0.75 (max)		
Operating Temperature Range	°C	-40 to +85					
Storage Temperature Range	°C	-40 to +85					
Shock Limit	g	5000 (0.5 ms, unpowered)			10000 (0.1 ms, unpowered and powered)		
Protection Class		IP67					

Physical

Sensing Element	MEMS Capacitive					
Case Material	Anodized Aluminum					
Connector at Sensor Housing (5-pin circular metric M12 connector, male)	CAN	Pin 1: Shielding Pin 2: Power Supply + Pin 3: Power Supply - (GND) Pin 4: CAN-High Pin 5: CAN-Low				
Mounting	Adhesive Screw Holes					
Weight (without cable)	gram	80				
Cable	13 gram per meter AWG 30 Polyurethane (PUR) Diameter 3.1 mm					



■ SAFETY PRECAUTION FOR INSTALLING AND OPERATING

This data sheet is a part of the product. Read the data sheet carefully before using the product and keep it available for future operation. Handling, electrical connections, mounting or any other work performed at the sensor must be carried out by authorized experts only. Appropriate safety precautions must be taken to exclude any risk of personal injury and damage to operating equipment as a result of a sensor malfunction.

Handling

The sensor is packaged in a reliable housing to protect the sensing elements and integrated electronic components from the ambient environment. However, poor handling of the product can lead to damages that may not be visible and cause electrical failure or reliability issues. Handle the component with caution:

- Avoid shocks and impacts on the housing, such as dropping the sensor on hard surface
- Never move the sensor by pulling the cable
- Make sure that the sensor is used within the specified environmental conditions
- Transport and store the sensor in its original or similar packaging
- The sensor should be mounted on a stable flat surface with all screws tightened or other mounting options
- When adhesives are used to mount the sensors, please select the corresponding products according to permanent or removable mounting, ambient temperature range as well as quality of the mounting surface
- Avoid any deformation during mounting the sensor
- Mounting tolerances may have an influence on the measured result

Electrical

ASC's inertial sensors are working with many established data acquisition systems. However, make sure that a proper DAQ is used, for the corresponding operation principle of the sensor. Furthermore, suitable precautions shall be employed during all phases of shipment, handling and operating:

- Active sensor pins are susceptible to damage due to electrostatic discharge (ESD)
- Make sure that the sensor is used within the specified electrical conditions
- Check all electrical connections prior to initial setup of the sensor
- Completely shield the sensor and connecting cable
- Do not perform any electrical modifications at the sensor
- Do not perform any adaptations on the wiring or connectors while the device under power
- Never plug or unplug the electrical connection while the sensor is under power
- When a certain pin is not used during operation, make sure that the pin is insulated

Quality

- We have a quality management system according to ISO 9001:2015.
- The Deutsche Akkreditierungsstelle GmbH (DAkkS) has awarded to our calibration laboratory the DIN EN ISO/IEC 17025:2018 accreditation for calibrations and has confirmed our competence to perform calibrations in the field of mechanical acceleration measurements. The registration number of the certificate is D-K-18110-01-00.
- All ASC products are CE-compliant.