

Servo Balanced Quartz Accelerometer

ASC QBA-1515

Uniaxial and on Request: Biaxial, Triaxial

Servo Balanced Quartz

Measurement Range: ± 30 g

Resolution: $< 1 \mu\text{g}$

Bandwidth: > 300 Hz

Stainless-Steel Housing (IP67)

Made in Germany



CE UKCA

Description

The accelerometers ASC QBA-1515 are based on proven, high performance servo balanced quartz sensing elements featuring a standard measurement range of ± 30 g. The integrated electronic circuitry enables a single-ended analog current output of 4-20 mA and flexible power supply voltage from 9 to 36 VDC. The accelerometers feature a resolution of better than $1 \mu\text{g}$ as well as an excellent long-term stability of the scale factor (K1: 1200 ppm) and bias (K0: 1200 μg).

The sensors are assembled in an application-specific, robust and reliable stainless-steel housing (V2A material number 1.4301) with protection class IP67 and circular metric M12 connector for a detachable cable. On request a customized connecting cable can be fabricated. The accelerometers are available in vertical mounted, uniaxial VX, VY or VZ sensitive directions as well as in biaxial and triaxial axes configuration on request.

These accelerometers have been developed to provide high accuracy and long-term stability in structural health monitoring applications. Beyond civil engineering, the devices can be used in a wide range of further high-end performance and measurement applications including train vibration and tilt control, conveying systems, seismic detection, automotive testing or navigation systems in the aviation and aerospace industries.

Features

- Tactical Grade Performance
- Ultra Low-noise Current Output
- Excellent Offset and Scale Factor Long-term Stability
- ITAR-free

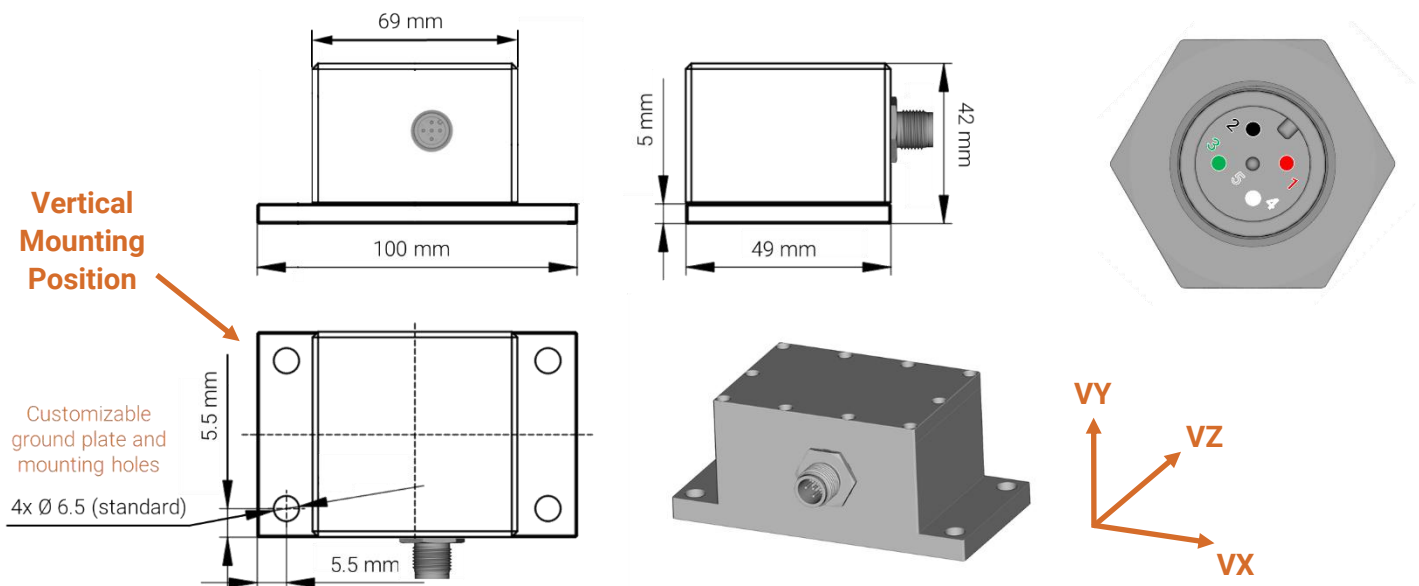
Options

- Selectable Axes Configuration
- Customized Mounting Options
- Customized Measurement Ranges

Applications

- Seismic Monitoring
- Structural Health Monitoring
- Civil Engineering

More applications in several markets are figured out on our web page www.asc-sensors.de



Typical Specification

Dynamic	Unit	Values	Remarks
Measurement Range	g	±30	Adjustable on request
Full Scale Output	mA	4 to 20	
Scale Factor (sensitivity)	µA/g	277	According to the measurement range
Bias (max)	mg	±8	
Noise	µg	<7 <70 <1500	0.1 Hz to 10 Hz 10 Hz to 500 Hz 500 Hz to 10 kHz
Resolution/Threshold	µg	1	
Bandwidth	Hz	>300	
Linearity	% FSO	<0.1	

Electrical

Power Supply Voltage	V	9 to 36	Internally regulated to operating voltage
Operating Current Consumption	mA	<50	Depending on power supply voltage and operating temperature Current peak up to 400 mA during start-up phase
Isolation	Integrated electronic circuitry is isolated from the sensor housing		

Environmental

Temperature Coefficient of the Scale Factor	ppm/K	<180	
Temperature Coefficient of the Offset (max)	µg/K	±70	
Long-term Stability Scale Factor	ppm	±1200	One-year repeatability
Long-term Stability Bias	mg	±1.2	One-year repeatability
Operating Temperature Range	°C	-40 to +70	
Storage Temperature Range	°C	-55 to +96	
Shock Limit	g	250	
Vibration Limit (sine)	g	25	30 to 2000 Hz
Protection Class		IP67	

Physical

Sensing Element	Servo Balanced Quartz		
Case Material	Stainless-Steel		
Connector at Sensor Housing (circular metric M12 connector, male)	5-pin M12	Pin 1: power supply voltage 9 to 36 VDC Pin 2: power supply GND Pin 3: output signal 4 to 20 mA Pin 4: signal GND Pin 5: not connected	
		<u>Please note:</u> ensure that power supply GND (pin 2) and signal GND (pin 4) are connected at a single point, preferably at the data acquisition system to achieve optimal EMI and noise performance.	
Mounting	Adhesive Screw Holes		Mounting holes are adjustable
Weight	gram	<1000	Uniaxial

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Sensor Calibration

Factory Calibration (supplied with the sensor)

Part Number of the Calibration	#12054	
Number of Sensitive Directions	Uniaxial	
Measurement Range (sensor)	g	±30
Applied Frequency Range	Hz	1 to 100
Number of Frequency Points	15	
Number of Measuring Cycles	3	
Input Amplitude	m/s ²	5
Reference Frequency for Determination of Scale Factor	Hz	16

DAkkS Calibration according DIN ISO 17025 (order separately)

Part Number of the Calibration	#14512	
Number of Sensitive Directions	Uniaxial	
Measurement Range (sensor)	g	±30
Applied Frequency Range	Hz	0.5 to 150
Number of Frequency Points	26	
Number of Measuring Cycles	6	
Input Amplitude	m/s ²	5
Reference Frequency for Determination of Scale Factor	Hz	16

Remarks:

- The conversion factor 1 g corresponds to 9.80665 m/s².
- If any other calibration procedure is required, don't hesitate to contact us.
- DAkkS accredited calibration certificates prove the traceability to national standards as required by the family of standards DIN EN ISO 9000 and DIN EN ISO/IEC 17025.

Ordering Information

Series	Sensitive Directions	Model	Housing Material	Range [g]	Axes Configuration
ASC QBA	1 (Uniaxial)	51	5 (Stainless-Steel)	030	VZ (Uniaxial, standard)
	2 (Biaxial, on request)				VY (Uniaxial)
	3 (Triaxial, on request)				VX (Uniaxial)

Example:

ASC QBA-1515-030-VZ

All types of ASC QBA-series are fabricated for operating with a detachable connector cable which is not part of the product. On request a customized connecting cable can be fabricated. Ordering information are based on standard configurations. All customized versions will lead to a corresponding product match code.

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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
- An incorrect wiring of the signal or power supply connections will lead to damages of the sensor
- Completely shield the sensor and connecting cable according to your application
- 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**.

Made in Germany



analyzing



monitoring



testing



measuring