bkvibro AS-068 Acceleration Sensor with Constant Current Power Instruction Manual

Contents

Brüel & Kjær Vibro
a spectris company

bkvibro AS-068 Acceleration Sensor with Constant Current Power

Acceleration Sensor with constant current power

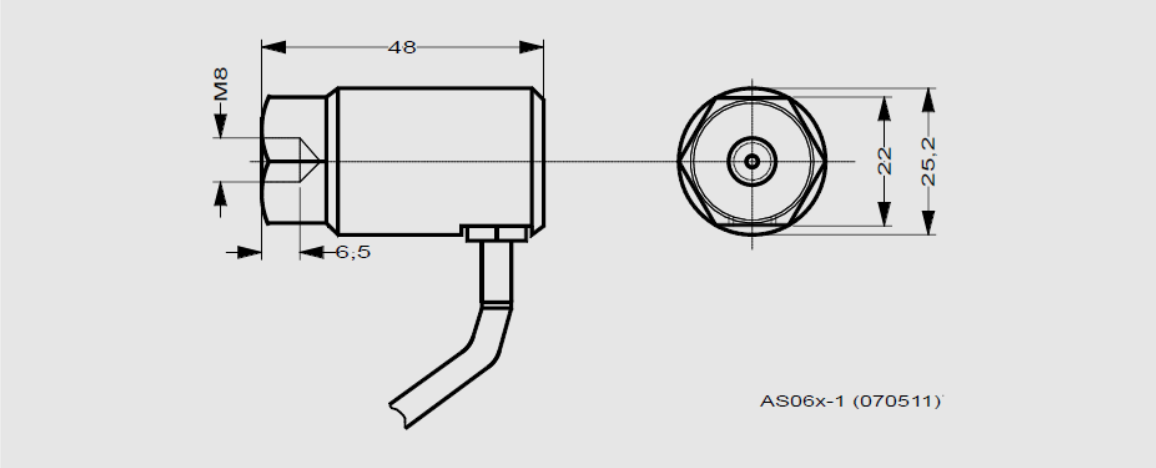


Fig. 1 Dimensions

Mechanic

- **Weight**
  - approx. 130 g (without cable)
- **Housing material**
  - Stainless steel 1.4301

Application

The AS-068 is mainly used for measurement of vibration acceleration at rotating machines such as turbines, pumps, compressors, etc.

Installation and Commissioning

Installation and commissioning primarily concern work on electrical equipment. These works may be performed exclusively by electricians or workers instructed and supervised by an electrician in accordance with electrotechnical regulations/directives.

Change of System Specification

Any change of system specification has its effects on monitoring process with stationary systems and on the measuring sequence with portable measuring systems.
Exclusively use sensor as specified in data sheet. Any use other than specified is considered inappropriate. Mounted sensors must not be used as steps.

Sensors and the cables are used in a way not described in the relevant user manuals, function and protection may be impaired and serious personal damage, death or serious, irreversible injuries may result.

- Handle the systems with care in order to prevent damage to the systems or personal damage due to falling.
- Use system exclusively as originally intended. Any use other than originally intended is prohibited. Brüel & Kjær Vibro does not assume any liability for damages resulting from inappropriate use. The user is solely responsible. For originally intended use, see system documentation.
- Ensure that system is exposed only to admissible environmental influences specified in technical system data sheet.
- Maintain electrical equipment in regular intervals. Remedy defects, e. g. loose wires, defective connectors, immediately

Hot surfaces
In line with the user manuals, sensors and cables can be operated in extensive ambient temperature ranges, whereby they can become hot through self-heating on housing walls and can produce burning. When mounted at external heat or cold sources (e.g. machine parts), systems, sensors and cables can adopt dangerous temperatures, whereby burning, among other things, can occur in the event of contact .

Recommendations to User
If the use of the system in conjunction with machines or plant sections can produce risks outside of Brüel & Kjær Vibro's responsibility, the user is expected to prepare and distribute safety technical instructions or warnings and to ensure that the personnel concerned has received and understood same.

Note
If system is integrated into a machine or designed to be assembled, commissioning must not take place until the machine the system is to be integrated in conforms to the EC directives.

Measuring Principle

The acceleration sensor operates according to the piezo-electric compression principle. A piezo-ceramic disc and an internal sensor mass form a spring-mass system in the sensor.

If this system is subjected to vibrations the mass produces an alternating force on the ceramic disc. As a result of the piezo effect this produces an electrical charge that is proportional to vibration acceleration.

An integrated amplifier converts this charge signal into a usable voltage signal.

Delivery extend

- Sensor AS-068
- Threaded stud M8 x 1,25 x 14
- Threaded stud M8 x 1/4″ 28 UNF
- Documentation

Connecting cable

- Length (typical)
  - 5 m, 10 m, 20 m (optional protecting tubing for 5 m, 10 m)
- Construction
  - 2-conductor stranded + shield
- Outer material insulation
  - ETFE
- Outer insulation color
  - black
- Outside diameter
  - 3,3 mm (0,15 mm)
- No. of conductors
  - 2
- Conductor cross-section area
  - 0,14 mm2 (7 x 0,16 mm)
- Conductor insulation
  - ETFE

Conductor layout

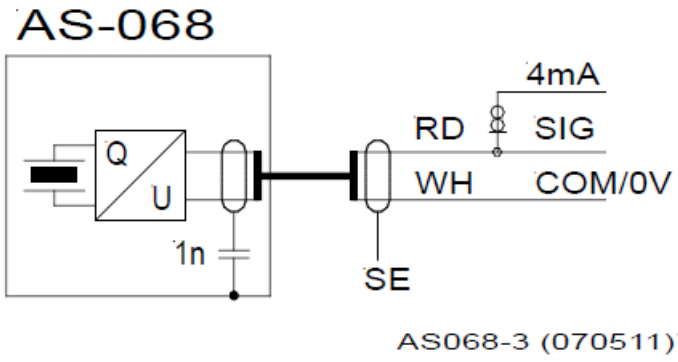


Fig. 3 Wiring diagram

- **Constant Power supply IB**
  - 4 mA (2 mA … max. 10 mA) polarized
- Voltage supply UB
  - + 24 V (+ 18 V…+ 30 V) DC polarized

Mounting Coupling General rule:

The weight of the acceleration sensor should always be lower at least by a factor ten than the weight of the object onto which it is mounted.

The acceleration sensor is an additional parasitic mass which loads the object on which it is mounted and this changes the vibration behaviour if it is too large.

Mounting of acceleration sensor
The acceleration sensor requires a friction-locked, contact resonance-free, rigid mounting to the object, particularly for measurements at high frequencies.

- The sensor is to be attached using the supplied threaded stud, either:

Selectable with:

- Threaded stud M8 x 1,25 x 14 or
- Threaded stud M8 / 1/4“ 28 UNF

The sensor can be mounted in any position.

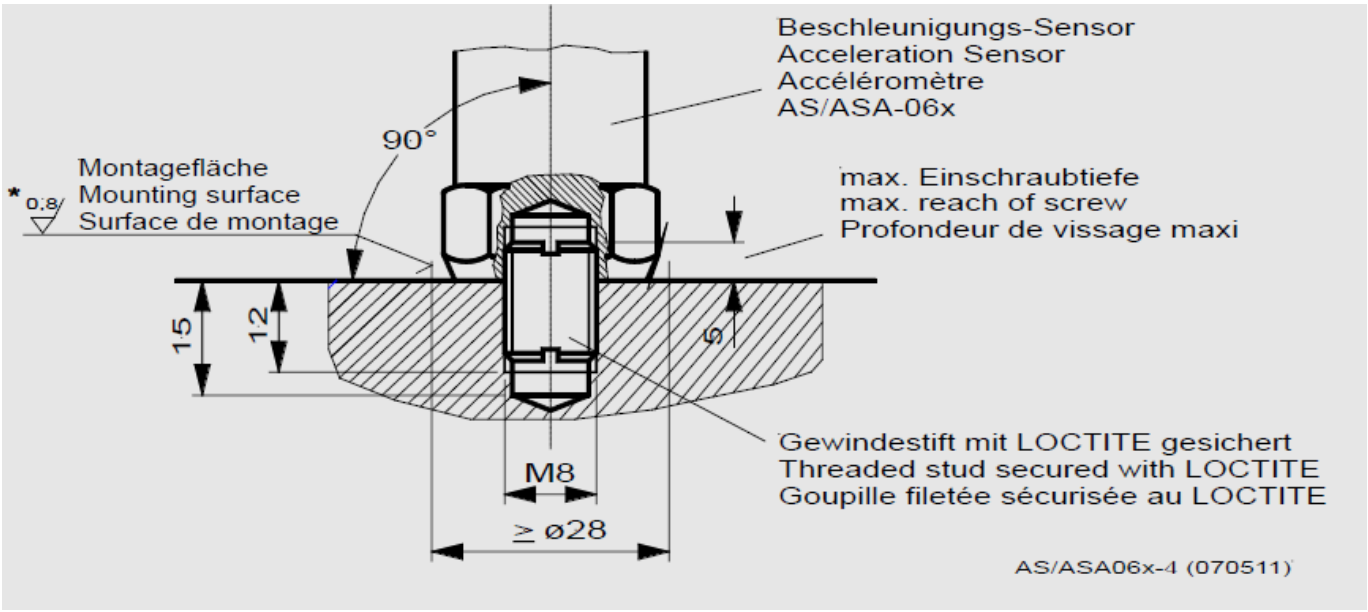


Fig. 4 Mounting

- The mounting surface in the area of the sensor must be flat and machined.
- Provide a size M8, resp. 1/4“ threaded hole 12 mm deep in the surface of the machine.
- Apply a thin film of silicone grease on the mounting surface to prevent contact resonance.
- Screw the M8, resp. 1/4“, stud into the mounting surface in accordance with Fig. 4 and secure it with adhesive, e.g. LOCTITE 243 medium strength, or LOCTITE 270 high strength
- Maintain a max. length of the threaded stud 5 mm for acceleration sensors
- Screw the sensor onto the threaded stud.
  Observe max. tightening torque in accordance with stud.
- Recommended maximum torque for the supplied threaded stud is 3,5 Nm.

Technical Data

Electrical

- **Sensitivity (at 80 Hz /233°C)**
  - 10 mV/g 5 %

1,02 mV/m/s2 5%

- **Accuracy of Sensitivity**
  - 4 Hz … 10 kHz : 5 %
  - 1,5 Hz / 13 kHz : 3 dB
  - -50°C … +120°C : 5 %
- **Transverse sensitivity (80 Hz)**
  - 8 … 10 %
- **Resonance frequency**
  - > 20 kHz

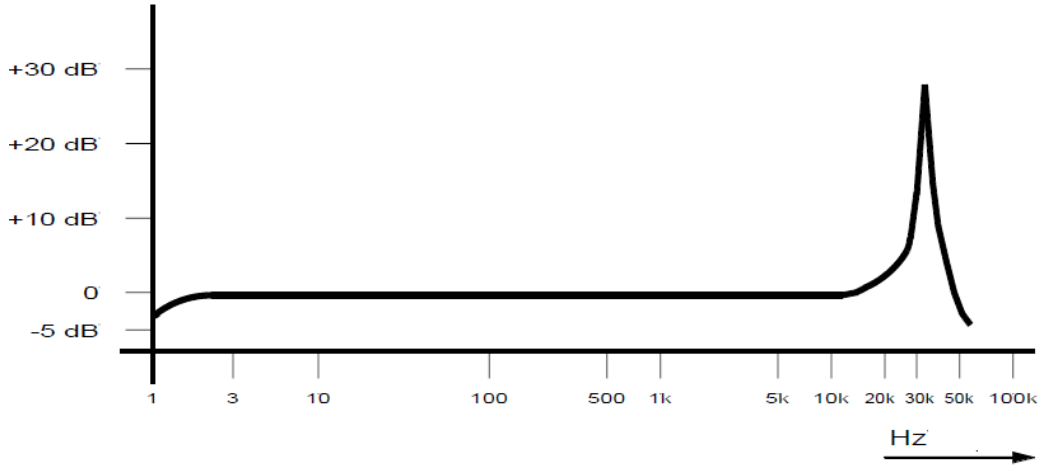
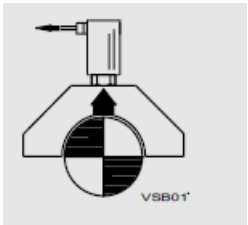


Fig. 2 Typical frequency response of sensitivity

- **Measuring range (IB = 4 mA)**
  - 500 g (UB > +24 V)
  - 400 g (UB = +20 V)
  - 200 g (UB = +18 V)

Polarity



A movement of the bearing housing in the direction shown below produces a positive signal.

- **Dynamic internal resistance of output**
  - 300 (Operating frequency range)
    approx. 2 k(Resonance frequency)
    (Level control 1 Veff IB = 4 mA
- **Open-circuit potential (- 50 °C … + 125 °C)**
  - +12,5 V 1,5 V

- **Strain sensitivity**
  - < 0,002 g/ (m/m)
- **Magnetic field sensitivity**
  - < 80 Hz: 0,001 g/mT
  - < 1 kHz: 0,014 g/mT
- **Insulation resistance (Housing supply voltage 0 V)**
  - 20 M
- **Operating temperature range**
  - -50 °C … +125 °C
- **Storage temperature range (in original packaging)**
  - -20 °C … +70 °C
- **Overload capacity**
  - continuous 500 g shock 5000 g (all directions)
- **Protection class acc. to EN 60529**
  - IP 67

    IP68 (2h at 5 bar) for version without steel protective conduit

EMC
61326-1

Through electro-magnetic stray fields (acc. to EN 61000-4-3) influences on the measured values may arise.
In case of disturbing influences of this type a grounded protective conduit is recommended for the signal cable.

WEEE-Reg.-No. DE 69572330
After use, dispose of the systems, cables and sensors in an environmentally friendly manner, in accordance with the applicable national provisions WEEE-Reg.-№ DE 69572330

Declaration of conformity

Brüel & Kjær Vibro

EU-Konformitätserklärung / *EU- Declaration of conformity*

Hiermit bescheinigt das Unternehmen / *The company*

Brüel & Kjær Vibro GmbH
Leydheckerstraße 10
D-64293 Darmstadt

CE

die Konformität des Produkts / *herewith declares conformity of the product*

Beschleunigungs-Sensor / *Acceleration Sensor*

Typ / *Type*

AS-062, AS-068

mit folgenden einschlägigen Bestimmungen / *with applicable regulations below*
EU-Richtlinie / *EU-directive*

2014/30/EU EMV-Richtlinie / *EMC-Directive*

2011/65/EU + (EU) 2015/863 Richtlinie zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten/ *EU Directive for the restriction of the use of certain hazardous substances in electrical and electronic equipment*

Angewendete harmonisierte Normen / *Harmonized standards applied*

EN 61326-1: 2013
EN IEC 63000:2018

Bereich / Division
Brüel & Kjær Vibro GmbH

Unterschrift / Signature
CE-Beauftragter / *CE-Coordinator*

Ort/*Place* **Darmstadt**
Datum / *Date* **20.01.2021**

i.A. (Niels Karg)

Contact

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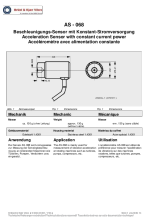
Technical alterations reserved documentation technique !

Documents / Resources

	bkvibro AS-068 Acceleration Sensor with Constant Current Power [pdf] Instruction Manual AS-068, Acceleration Sensor with Constant Current Power, AS-068 Acceleration Sensor, Acceleration Sensor, Sensor, AS-068 Acceleration Sensor with Constant Current Power, Sensor with Constant Current Power, Constant Current Power, Current Power

References

- Condition Monitoring Solutions - Brüel & Kjær Vibro