bkvibro AS-668 Measuring Machine Vibration Acceleration Sensor Instructions

Contents

Brüel & Kjær Vibro

bkvibro AS-668 Measuring Machine Vibration Acceleration Sensor

Hint

NOTE!
This manual is a part of the product. Read the manual carefully before using the product and keep it accessible for future use.

Pictograms and their Meanings

This symbol warns of dangerous situations which can result from misuse of the product.

User Qualification
Ensure that all work in conjunction with our systems is performed by skilled, expert and authorized workers (for ATEX systems according to EN 60079-14). Among these works are:
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.

Intended Use
If sensors and 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.

- Exclusively use sensor as specified in data sheet. Any use other than specified is considered inappropriate. Brüel & Kjær Vibro does not assume any liability for damages resulting from inappropriate use. The user is solely responsible.
- Mounted sensors must not be used as steps.
- 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 person concerned has received and understood it.

Warning: If the 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.

Prohibition of Unauthorized Modifications
System and accessories must not be changed either in construction nor safety technology without the express consent of Brüel & Kjær Vibro. Any unauthorized modification excludes Brüel & Kjær Vibro's liability for resulting damages.

Application

The AS-668 is mainly used for the measurement of vibrations at rotating machines such as turbines, pumps, compressors, etc.

Measuring Principle

The acceleration sensor operates according to the piezo-electric principle. A piezo element 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 piezo element. As a result of the piezo effect, an electrical charge is produced that is proportional to vibration acceleration.
An integrated amplifier converts this charge signal into a usable voltage signal.

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 mass, which loads the object on which it is mounted, and this changes the vibration behaviour if it is too large. The sensor requires a friction-locked, contact resonance-free, rigid mounting to the object, particularly for measurements at high frequencies. The cable must be attached on a non-tension basis and load-free in connection.

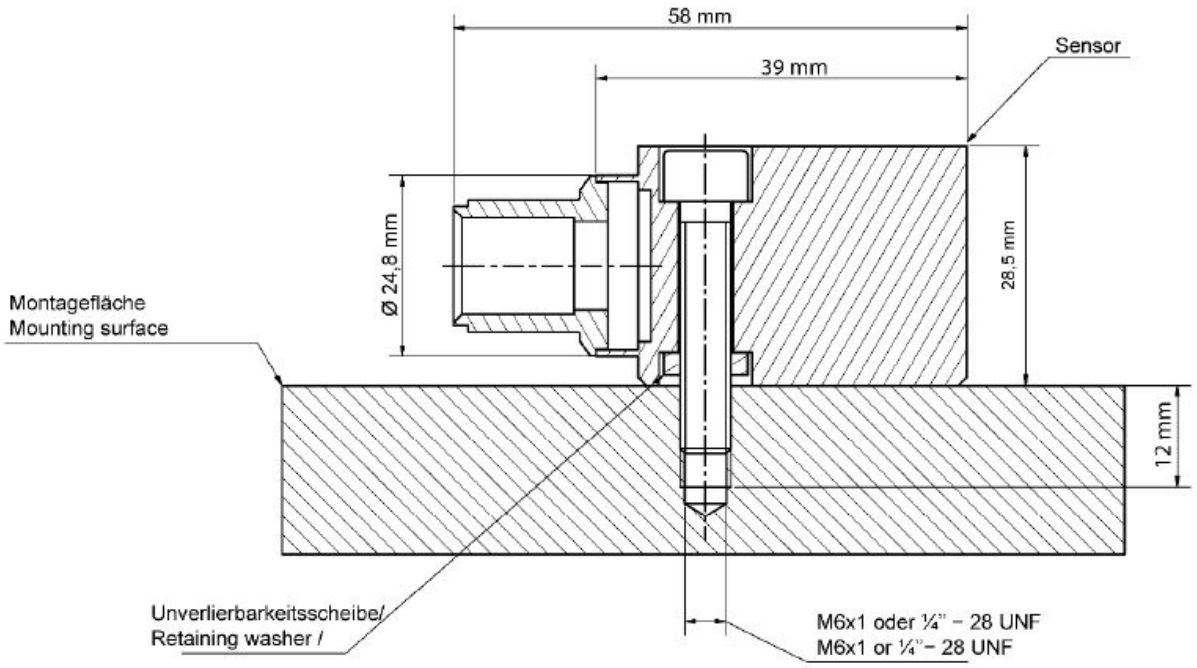


Figure 4-1) Mounting (all length in [mm])

The sensor must be mounted with one of the supplied screws (M6x1 – 30 mm length or ¼“ – 28 UNF x 1 1/4″ length). The mounting position on the machine is arbitrary.

1. The mounting surface must be machined flat in the area of the sensor (roughness depth 0.8 µm, flatness 0,05 mm) and have a minimum diameter of 65 mm.
2. Supply installation surface with threaded bore (M6x1 or ¼'' – 28 UNF) according to drawing (fig.4-1).
3. The bore must be countersunk and cleaned.
4. Screw-threaded stud into installation surface according to drawing (fig. 4-1) and secure (LOCTITE 243 intermediate strength or LOCTITE 270 high strength).
5. Apply thin layer of silicone grease to the installation surface to reduce contact resonance.
6. Screw sensor onto the threaded stud with a mounting torque of 3.5 Nm and secure (LOCTITE 243 medium strength or LOCTITE 270 high strength).

EMV

EN 61326-1 Through electromagnetic stray fields, 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.

Calibration

In the event of a calibration request, we offer the following services:

- Factory calibration by Brüel & Kjær Vibro
- Calibration traceable to national standards by our DAkkS accredited calibration laboratory

Disposal

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

Technical Data

Features

- Robust design
- M12 plug
- Constant current supplied General purpose

Applications

The sensor is suitable for the recording of high and low-frequency signals. Typical applications are, for example, the monitoring of transmissions or cooling fans in wind turbines, heavy-duty and planetary gears or large fans.

Product Description

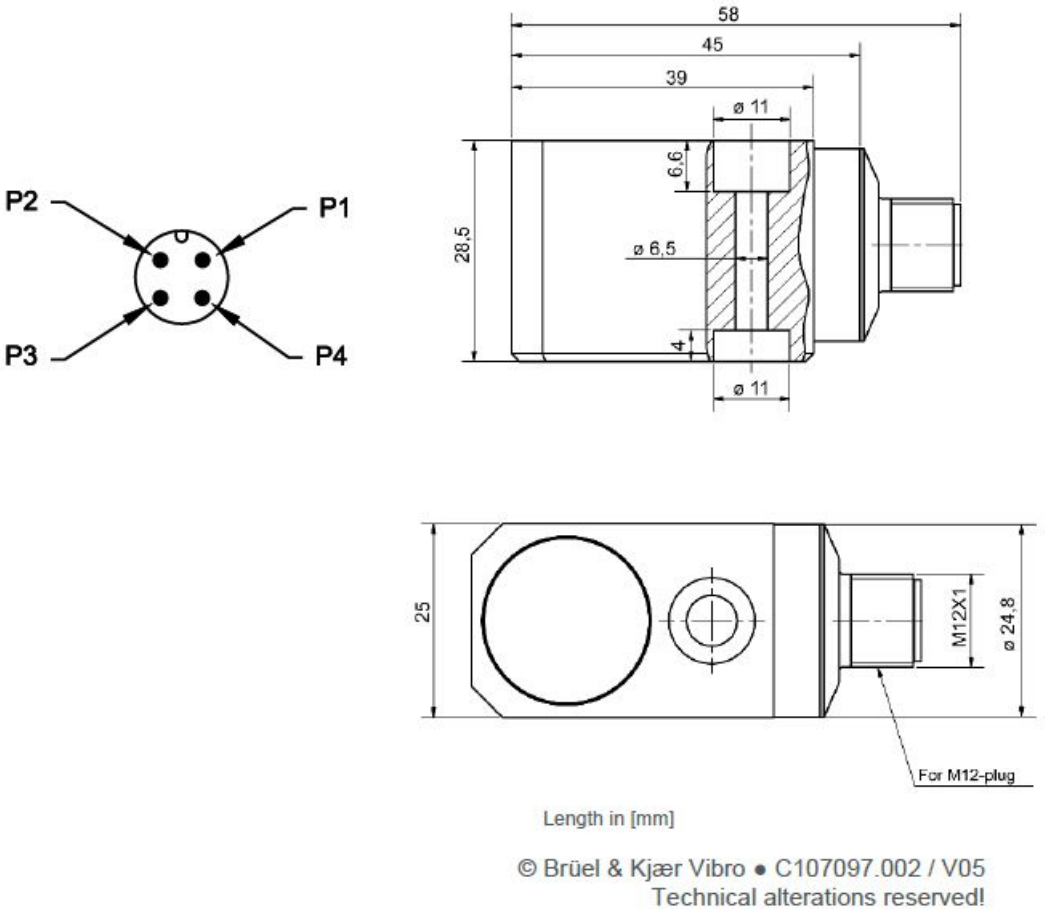
Scope of delivery:

- Sensor AS-668 with socked head screw M6x1 – 30mm length according to ISO4762 (hexagon socket) and retaining washer pre-assembled
- Hexagon socket ¼'' – 28 UNF x 1 1/4″ length enclosed
- Documentation

Connection

Plug connection (M12 male)

- Pin 1: SIG
- Pin 2: 0V / GND
- Pin 3: not connected
- Pin 4: not connected



The following performance data apply, to the extent that nothing else is indicated, under standard conditions (Ambient temperature = 25 °C, Constant current = 4 mA).

Dynamic

- Sensitivity, nom. (at 80 Hz): 100 mV/g ±10 %
- Frequency response: 0,5 Hz .. 13 kHz: ±3 dB 1,5 Hz .. 10 kHz: ±10 %
- Measurement range: 60 g Peak
- Resonance frequency: typically 30 kHz
- Amplitude linearity: < 1 %
- Cross sensitivity: typically 5 %

Electric

- Maximum output voltage: 27 V
- Constant current supply (secure against reverse polarity): 2 mA .. 10 mA (24 V nom.)
- Output resistance: 100
- Bias voltage: typically 12,9 VDC
- Across entire temperature range: 12,4 VDC .. 13,4 VDC
- Grounding: Housing isolated against sensor electronic

Surroundings

- Operating temperature range: -55 °C .. +125 °C
- Operating temperature with connection cable AC-140…: -30 °C … +90 °C
- Storage temperature range in original packaging: -20 °C .. +70 °C
- Overload capacity: Constant, sinusoidal: 500 g Shock: 5.000 g
- Housing design: Hermetically sealed stainless steel housing
- Degree of protection acc. EN 60529: IP68 (2 h at 5 bar) (incl. Nema 6) (only with connection cable AC-1403 or AC-1404)

Physical values

- Measurement principle: Piezoelectric principle, compression type
- Weight: 175 g
- Housing material: stainless steel 1.4404
- Mounting screw: ISO 4762 M6x1 – 30 mm length or¼'' – 28 UNF x 1 1/4″ length
- Mounting torque: 3,5 Nm
- Connection: M12 plug, male, 4-pole

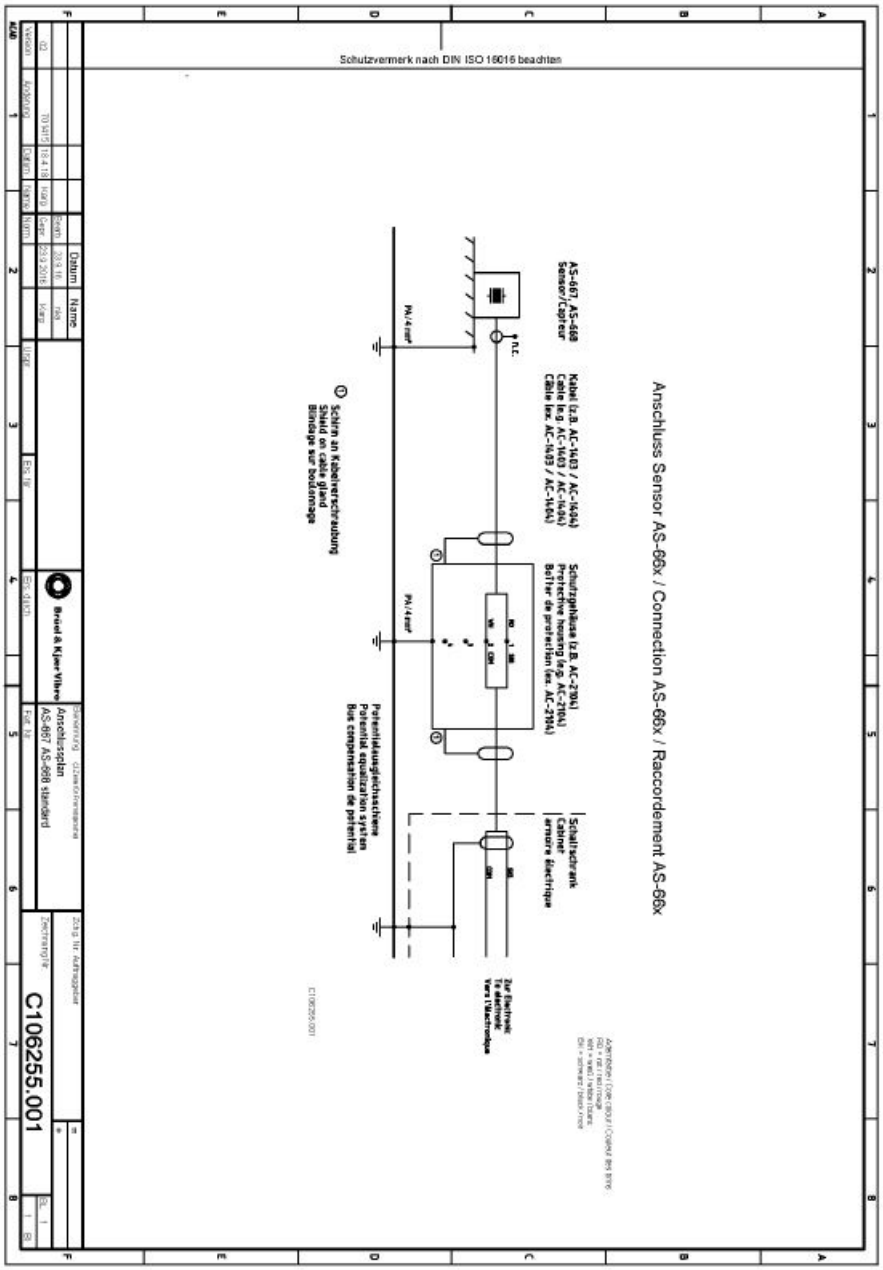
Order code

- AS-668

Accessories

- AC-1403: double-wired connection cable with straight plug (M12)
- AC-1404: double-wired connection cable with angled plug (M12)

Connection Diagram



CE Declaration

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-66x

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* **08.10.2021**

i.A. (Niels Karg)

Name and content of harmful substances in the product

Name of parts	Toxic and hazardous substances or elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr(VI))	Polybrominated biphenyls (PBB)	Polybrominated diphenylethers (PBDE)
Piezo	X	o	o	o	o	o

This table is based on SJ/T11364 The provisions
0: indicates that said harmful substances contained in all of the homogeneous materials for this part is below the limit requirements of GB/T 26572.
X: indicates that said harmful substances contained in at least one of the homogeneous materials used for this part is above the limit requirements of GB/T 26572 Standard limits.

Documents / Resources

	bkvibro AS-668 Measuring Machine Vibration Acceleration Sensor [pdf] Instructions AS-668, Measuring Machine Vibration Acceleration Sensor, Vibration Acceleration Sensor, Acceleration Sensor, AS-668, Sensor