

EN Instruction
AS-668 Acceleration sensor



Für den späteren Gebrauch aufbewahren / Keep it accessible for future use

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1 Hint



Figure 1-1) Acceleration sensor AS-668



NOTE!

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

1.1 Pictograms and their Meanings



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

1.2 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.

1.3 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.

1.3.1 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 it.



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.

1.3.2 Prohibition of Unauthorized Modifications

System and accessories must not be changed neither 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.

2 Application

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

3 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.

4 Mounting

4.1 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.

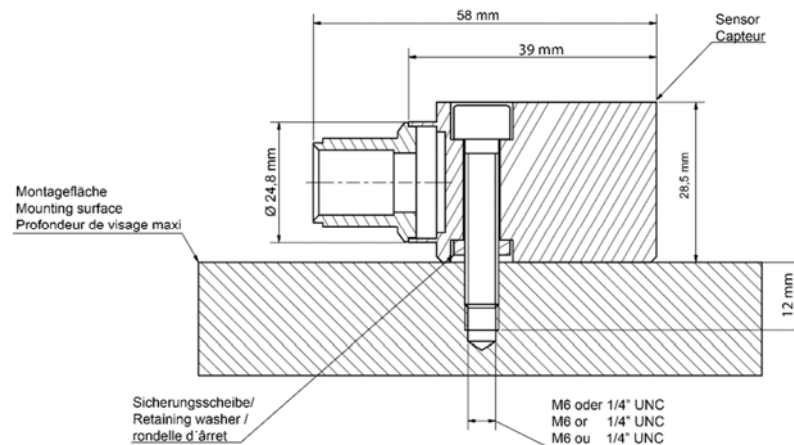


Figure 4-1) Mounting (all length in [mm])

The sensor must be mounted with the enclosed screw (M6). 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 28 mm.
2. Supply installation surface with threaded bore M6 according to drawing (fig.4-1).
3. The bore must be countersunk and cleaned.
4. Turn in the Screw 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).

5 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.

6 Calibration

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

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

7 Disposal



After use, dispose of the systems, cables and sensors in an environmentally friendly manner, in accordance with the applicable national provisions.

WEEE-Reg.-Nr. DE 69572330

8 Technical Data

Features

Robust design
M12 plug
Constant current supplied
General purpose



Applications

The accelerometer AS-668 is ideally suitable for general measurements on rotating machinery. It covers a broad application range like monitoring of turbines, fans, pumps, generators, etc.

Product description

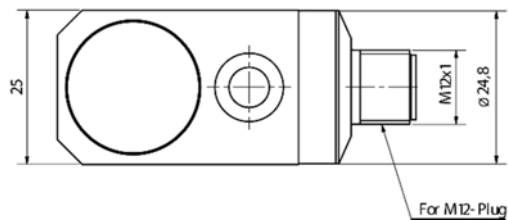
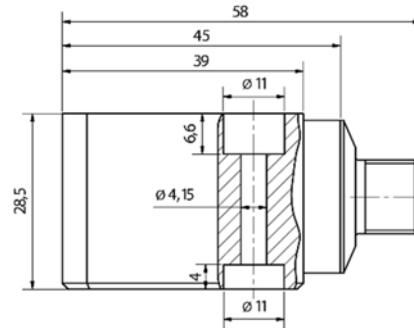
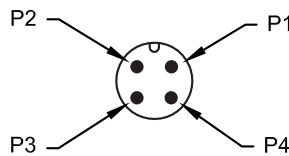
Scope of delivery

- Sensor AS-668
- Socked head screw M6x30 according to ISO4762 (hexagon socket)
- Documentation

Connection

Plug connection (M12 male)

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



Length in [mm]

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
Output resistance:	100 Ω
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
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:	IP66 / IP67

Physical values

Measurement principle:	Piezoelectric principle, compression type
Weight:	175 g
Housing material:	stainless steel 1.4404
Mounting screw:	ISO 4762 M6x30 or ¼"-28UNFx30
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)

9 Connection Diagram

