



Vibration Monitoring Unit HE200 series

MADE IN
GERMANY

SIL2

PL-d



IECEE

EAC



IECEX

EAC Ex



- Vibration velocity (mm/s, rms)
- ATEX / IECEx / EACEx Zone 2 / 22 and 1 / 21
- 2 Relay-Switching Outputs
- Analogue current output: 4-20 mA
- Frequency range: 10 Hz-1,000 Hz
1 Hz-1,000 Hz



Date of manufacture: _____

Type description: _____

Serial number: _____

Instruction Manual

Vibration monitoring unit Type HE200

Standard and ATEX / IECEx / EACEx

Version: 2020-09-28

Attention!

Prior to commissioning the product, the instruction manual must be read and understood.

All rights, including translation, are reserved.
Subject to changes.

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2 Safety information

2.1 General

The safety information is designed to protect people and property from damage and hazards resulting from unintended use, incorrect operation or other negligent handling of devices, especially in potentially explosive atmospheres. For this reason, you should read this instruction manual carefully before undertaking any work on the product or commissioning it. The instruction manual must be accessible to operating personnel at any time.

Please check that all documentation is in place prior to commissioning or other work on the product. If not all documentation has been handed over in full, or if further copies are required, then they can also be sourced in other languages.

The product has been constructed to the state of the art. Nevertheless, it is impossible to rule out dangers emerging from this product which could endanger people, machines and systems, should it be subject to inappropriate handling, non-intended use or use and maintenance by insufficiently trained persons.

Every person employed by the operator and involved in the set-up, operation and maintenance of this product must have read and understood this instruction manual.

The product may only be assembled, disassembled, installed and repaired by instructed, sufficiently trained and authorised personnel.

2.2 Symbols used



This symbol indicates a risk of explosion.



This symbol indicates a risk of electric shock.



This symbol indicates safety-related information.



This symbol points to non-safety-related information.

3 Scope of this instruction manual

This instruction manual for the HE200-type vibration monitoring unit applies to the following versions:

Standard, Zone-1-21 and Zone-2-22.

The functionality of the versions is identical. The Zone-1-21 and Zone-2-22 versions possess additional certifications and labels which permit use in potentially exclusive atmospheres.

For further information, see chapter "Fields of application and example labels" on page 7.

4 Vibration Monitoring Unit Type HE200

The HE200 type vibration monitoring unit is used to measure and monitor absolute bearing vibrations in machines in line with DIN ISO 10816.

It offers the following features:

- Two limit values and associated delay timings can be adjusted separately.
- The two relay outputs will signal any exceeding of the relevant defined limit values. This can be used to generate a pre-alarm and a main alarm.
- Measurement parameter: The effective value (rms) of the vibration velocity (mm/s).
- Analogue current output: Interference-free DC signal from 4-20 mA, proportional to the measuring range of the monitoring unit.

5 Intended Use

Type HE200 is used to protect machines and mechanical equipment against undue strong vibrations. Its use is only permissible within the specifications stated in the data sheet. It is used exclusively for measuring mechanical vibrations. **Main fields of application:** Fans, ventilators, blowers, electric motors, pumps, centrifuges, separators, generators, turbines and similar oscillating mechanical equipment.



If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

6 Scope of supply

All versions include:

- Vibration monitoring
- Cylinder head screw with hex socket, M8 x 20 mm
- Spring washers for M8
- Seal label
- Operating instructions

7 Documents and Certificates

You can find the following documents and certificates for **HE200** type at www.hauber-elektronik.de where they can be viewed and downloaded:

- EC type examination certificate ATEX; no.: %PLACEHOLDER%
- EC type examination certificate IECEX; no.: %PLACEHOLDER%
- EACEx certificate, No.: %PLACEHOLDER%
- EAC declaration
- Functional safety certificate (SIL 2)
- Safety manual SIL2

8 Transfer of liability when operating in potentially explosive atmospheres

The owner of the system is exclusively liable for the appropriate configuration of the electrical connections with respect to explosion protection regulations and correct commissioning.

If the system is installed by a sub-contractor on behalf of the owner, the system may only be commissioned after the sub-contractor has issued written confirmation in the form of a certificate of installation that the system has been installed correctly and professionally in accordance with the applicable legal regulations.

The operator is obliged to notify the responsible authorities of the initial commissioning of explosion-protected systems or system components and their re-commissioning following extensive changes or maintenance.

10 Functional safety instructions

10.1 Safety level / key indicators

The HE200 vibration monitoring hardware was tested by TÜV Süd. The results meet the criteria according to SIL2 and PI-d.

Safety marking placeholder1
Safety marking placeholder2

10.2 General notes



A reboot of the vibration monitoring unit must be performed annually in order to test the relay switching.

10.3 Instructions for the Fail Safe State

When the power supply is switched on, the vibration monitoring unit will perform a self-test. During operation, self-tests are performed automatically in cycles. If a self-test fails, the vibration monitoring unit switches to the Fail Safe State. In the Fail Safe State all status LEDs are lit, all relays are open and the analogue current output supplies 0 mA.

11 Technical data

11.1 General data



Each sensor has one of the listed measuring and frequency ranges. Further ranges on request.

Please indicate the measuring and frequency range in your request.

Measuring range:	0-8 mm/s rms (only for frequency range > 10 Hz) 0-10 mm/s rms 0-16 mm/s rms 0-20 mm/s rms 0-25 mm/s rms 0-32 mm/s rms 0-50 mm/s rms 0-64 mm/s rms 0-128 mm/s rms
Measuring accuracy:	± 10% (as per DIN ISO 2954)
Transverse sensitivity:	< 5%
Frequency range:	10 Hz–1,000 Hz (standard) 1 Hz–1000 Hz
Calibration point:	159.2 Hz and 90% amplitude of measuring range
Maximum acceleration:	±16.5 g
Lifetime:	10 years
MTTF value:	%placeholder%

Tab. 1: General data

11.2 Electrical data

Output signal:	1 x 4-20 mA (proportional to the measuring range)
Switching contact:	2 x potential-free relay contacts (pre- and main alarm)
Relay switching load:	1A / 30 V DC
Power supply:	24 V DC ± 10%
Power input (max.):	100 mA
Apparent ohmic resistance/load (max.):	500 Ω
Automatic:	As soon as the vibration values fall below the limit values, the relays automatically re-energize.
Fuse:	30 V DC, 3A, medium time lag*
* Ensure that the supply line is protected by a UL-approved fuse for UL-compliant sensor operation.	

Tab. 2: Electrical data

11.3 Permitted operating temperature range

Version		Ambient temperature (T_A)	Measuring head (T_M) (in fastening area)
Standard	Connector	$-40^{\circ}\text{C} \leq T_A \leq 60^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_M \leq 85^{\circ}\text{C}$
	Integrated cable	$-40^{\circ}\text{C} \leq T_A \leq 60^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_M \leq 85^{\circ}\text{C}$
	Integrated HT cable*	$-40^{\circ}\text{C} \leq T_A \leq 60^{\circ}\text{C}$	$-35^{\circ}\text{C} \leq T_M \leq 125^{\circ}\text{C}$
Zone 2/22 UL Hazloc Dev. 2	Connector	$-40^{\circ}\text{C} \leq T_A \leq 60^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_M \leq 85^{\circ}\text{C}$
	Integrated cable	$-40^{\circ}\text{C} \leq T_A \leq 60^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_M \leq 85^{\circ}\text{C}$
	Integrated HT cable*	$-40^{\circ}\text{C} \leq T_A \leq 60^{\circ}\text{C}$	$-35^{\circ}\text{C} \leq T_M \leq 125^{\circ}\text{C}$
Zone 1/21	Integrated cable	$-40^{\circ}\text{C} \leq T_A \leq 60^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_M \leq 85^{\circ}\text{C}$
	Integrated HT cable*	$-40^{\circ}\text{C} \leq T_A \leq 60^{\circ}\text{C}$	$-20^{\circ}\text{C} \leq T_M \leq 125^{\circ}\text{C}$

Tab. 3: Permitted operating temperature range

*HT = High Temperature Version

11.4 Operating range of the vibration monitoring unit

The operating range is independent of the measuring range. It is deduced from the maximum acceleration, which is 16.5 g across all frequencies. The maximum measurable vibration velocity is determined by the formula

$$v_{max} = \int a_{max}$$

The following applies to sinusoidal vibration

$$v_{max} = \frac{a_{max}}{2\pi f}$$

For further information, see chapter "Fig. 1:" on page 11. shows the operating range of the vibration monitoring unit, which is limited by the maximum measurable vibration velocity in mm/s depending on the frequency in Hz.

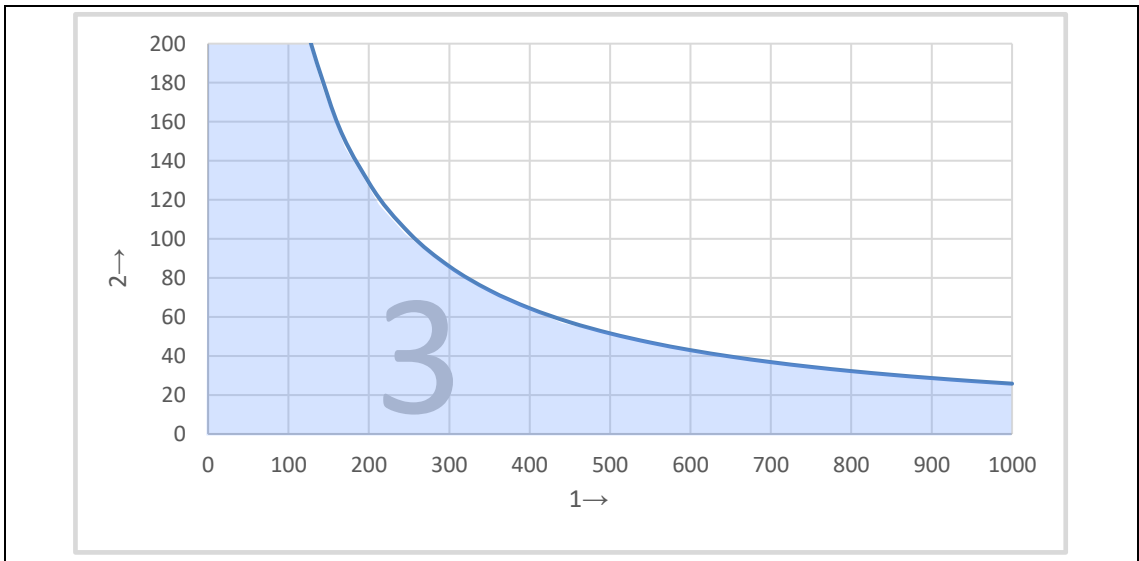


Fig. 1: Operating range diagram

- 1 Frequency in Hz
- 2 Vibration velocity in mm/s
- 3 Operating range of the vibration monitoring unit

Reading example:

Frequency (Hz)	Maximum measurable vibration velocity (mm/s)
250	103
400	64
1000	25

Tab. 4: Operating range reading examples

11.5 Typical frequency response

10 Hz–1,000 Hz (standard)

The frequency response is recorded using a reference sensor.

- 4 Hz. . . 1,200 Hz acceleration sensor

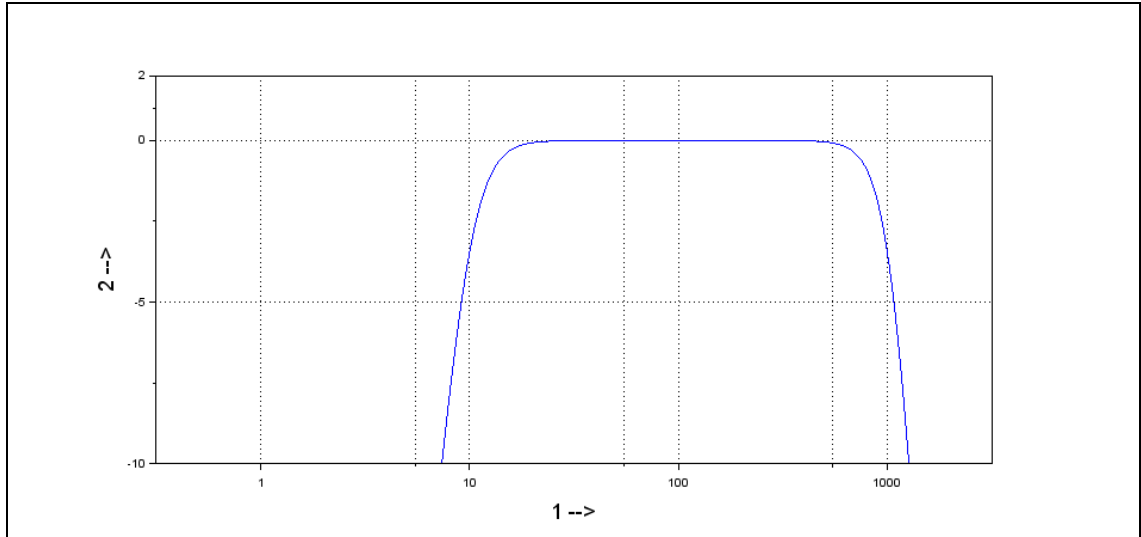


Fig. 2: Typical frequency response 10 Hz–1,000 Hz

- 1 Frequency in Hz
- 2 Amplification in dB

1 Hz to 1,000 Hz

The frequency response is recorded using two reference sensors.

- 1 Hz. . . 10 Hz laser sensor
- 10 Hz. . . 1,200 Hz acceleration sensor

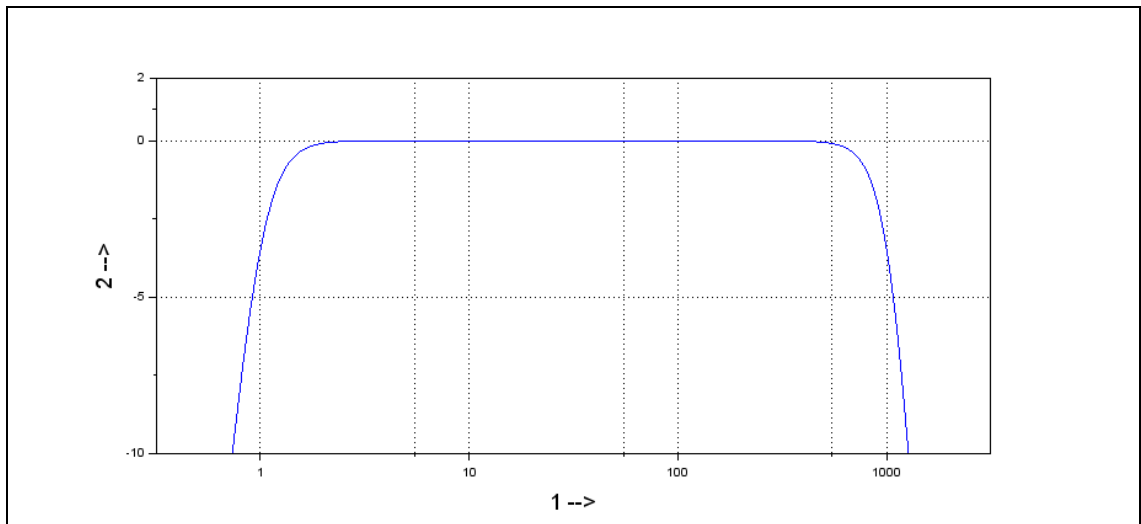


Fig. 3: Typical frequency response 1 Hz–1,000 Hz

- 1 Frequency in Hz
- 2 Amplification in dB

11.6 Mechanical data



For more information see Section "Coding HE200" on page 23.

Housing material:	Stainless steel V2A, material no.: 1.4305 (standard)
Fastening:	Cylinder head Allen screw M8 x 20 mm Thread pitch: 1.25 mm (standard)
Mounting:	Housing must be earthed via the M8 fastening
Cover tightening torque	5 Nm
Measuring direction:	Along the fastening axis
Weight:	ca. 500 g
Protection class:	IP 66/67 (Cover and plug connection closed)

Tab. 5: Mechanical data

11.7 Housing dimensions

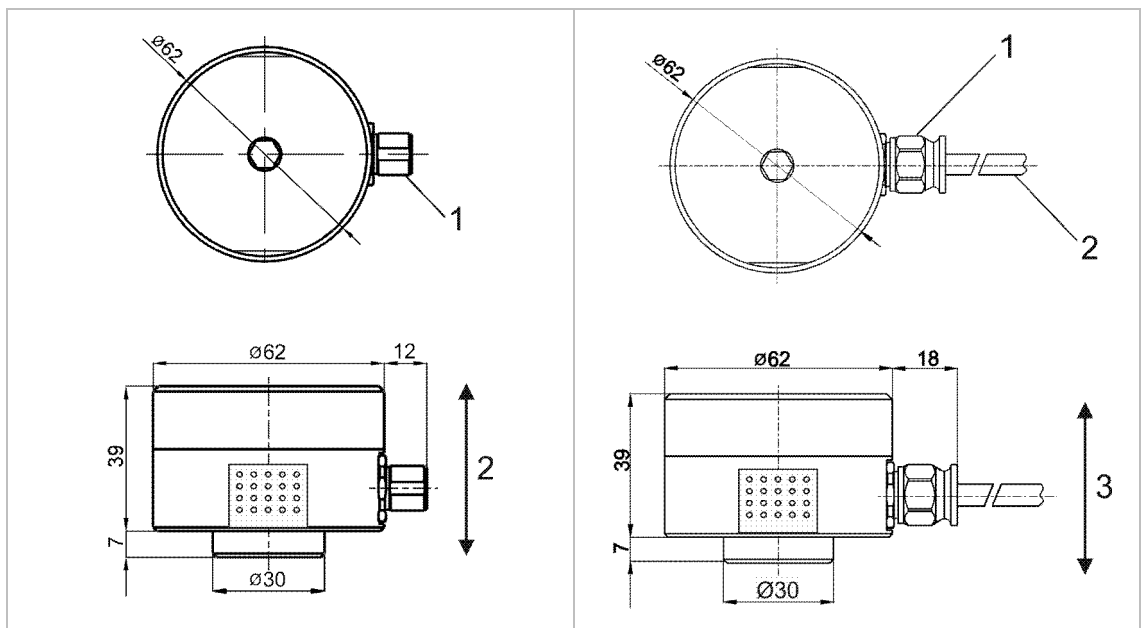


Fig. 4: Housing with M12 connector


Fig. 5: Housing with integrated cable

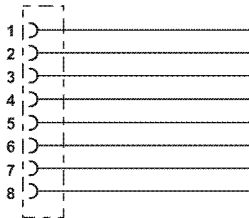
All dimensions in mm

- 1 M12 connector
- 2 Measuring direction

- 1 Cable gland
- 2 Connecting cable
- 3 Measuring direction

12 Connection

Version:	M12 connector																		
	<table style="width: 100%; border: none;"> <tr><td style="width: 15%;">Pin 1:</td><td>24 V DC</td></tr> <tr><td>Pin 2:</td><td>GND</td></tr> <tr><td>Pin 3:</td><td>4-20 mA output signal</td></tr> <tr><td>Pin 4:</td><td>NC</td></tr> <tr><td>Pin 5:</td><td>Relay 1</td></tr> <tr><td>Pin 6:</td><td>Relay 1</td></tr> <tr><td>Pin 7:</td><td>Relay 2</td></tr> <tr><td>Pin 8:</td><td>Relay 2</td></tr> <tr><td>NC:</td><td>Not connected</td></tr> </table>	Pin 1:	24 V DC	Pin 2:	GND	Pin 3:	4-20 mA output signal	Pin 4:	NC	Pin 5:	Relay 1	Pin 6:	Relay 1	Pin 7:	Relay 2	Pin 8:	Relay 2	NC:	Not connected
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Pin 5:	Relay 1																		
Pin 6:	Relay 1																		
Pin 7:	Relay 2																		
Pin 8:	Relay 2																		
NC:	Not connected																		

Version:	Integrated cable																											
	<table style="width: 100%; border: none;"> <tr><td style="width: 15%;">Pin 1:</td><td>white</td><td>24 V DC</td></tr> <tr><td>Pin 2:</td><td>brown</td><td>GND</td></tr> <tr><td>Pin 3:</td><td>green</td><td>4-20 mA output signal</td></tr> <tr><td>Pin 4:</td><td>yellow</td><td>NC</td></tr> <tr><td>Pin 5:</td><td>grey</td><td>Relay 1</td></tr> <tr><td>Pin 6:</td><td>pink</td><td>Relay 1</td></tr> <tr><td>Pin 7:</td><td>blue</td><td>Relay 2</td></tr> <tr><td>Pin 8:</td><td>red</td><td>Relay 2</td></tr> <tr><td>NC:</td><td></td><td>Not connected</td></tr> </table>	Pin 1:	white	24 V DC	Pin 2:	brown	GND	Pin 3:	green	4-20 mA output signal	Pin 4:	yellow	NC	Pin 5:	grey	Relay 1	Pin 6:	pink	Relay 1	Pin 7:	blue	Relay 2	Pin 8:	red	Relay 2	NC:		Not connected
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Pin 8:	red	Relay 2																										
NC:		Not connected																										

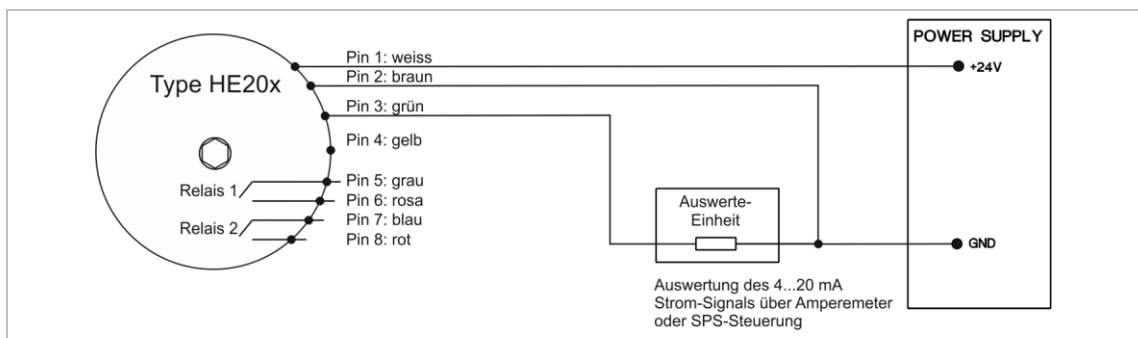


Fig. 6: Wiring diagram



The wiring diagram shows the alarm status or the current status!
Relays 1 and 2 are open.

13 Functional description



In an explosive atmosphere the vibration monitoring unit HE200 will only be opened in a de-energized state.

The HE200 type has two limit values Lim1 and LIM2 and the corresponding delay times, which can be adjusted separately. If the defined limit value is exceeded and after the set delay time has expired, the corresponding relay is opened. This can be used to generate a pre-alarm and a main alarm.

A subsequent fall below the limit value is also signalled at relay outputs 1 and 2, i.e. the respective relay contact automatically closes.

The HE200 type also has an analogue current output. This supplies direct current of 4-20 mA proportional to the vibration amplitude.

13.1 Operating conditions

Operating state	Reading	Relay	LED status
OK	≤ Limit value	Closed	green
WARNING	> Limit value, delay time runs	Closed	green + yellow
ALARM	> Limit value, delay time expired	Open	red
Fail Safe State	0 mA	Open	red + yellow + green
De-energized	0 mA	Open	All LEDs off

Tab. 6: Operating conditions

13.2 Alarm and limit setting

By pressing the "Save Config" button, the current configuration is displayed by the LEDs around the HEX switches. For further information, see chapter "Limit values and delay times" on page 16.

The limit values and delay times are calibrated using the respective HEX switch. As soon as a switch position is changed, the LEDs around the Hex switch start to blink. The number of blinking LEDs represents the current position of the HEX switch. To save the configuration, press and hold down the "Save Config" button for three seconds. Acceptance of the configuration is signalled by steady lighting up of the LEDs in the selected HEX switch position. After about five minutes the LEDs turn off automatically.

13.3 Limit values and delay times

SET Position ↓	Limit values (mm/s)									
	Measuring range →	0 – 8 mm/s	0 – 10 mm/s	0 – 16 mm/s	0 – 20 mm/s	0 – 25 mm/s	0 – 32 mm/s	0 – 50 mm/s	0 – 64 mm/s	0 – 128 mm/s
0		0.0	0	0	0	0	0	0.00	0	0
1		0.5	0.625	1	1.25	1.563	2	3.13	4	8
2		1.0	1.25	2	2.5	3.125	4	6.25	8	16
3		1.5	1.875	3	3.75	4.688	6	9.38	12	24
4		2.0	2.5	4	5	6.25	8	12.50	16	32
5		2.5	3.125	5	6.25	7.813	10	15.63	20	40
6		3.0	3.75	6	7.5	9.375	12	18.75	24	48
7		3.5	4.375	7	8.75	10.938	14	21.88	28	56
8		4.0	5	8	10	12.5	16	25.00	32	64
9		4.5	5.625	9	11.25	14.063	18	28.13	36	72
10		5.0	6.25	10	12.5	15.625	20	31.25	40	80
11		5.5	6.875	11	13.75	17.188	22	34.38	44	88
12		6.0	7.5	12	15	18.75	24	37.50	48	96
13		6.5	8.125	13	16.25	20.313	26	40.63	52	104
14		7.0	8.75	14	17.5	21.875	28	43.75	56	112
15		7.5	9.375	15	18.75	23.438	30	46.88	60	120

Tab. 7: Limit values

The **SET rotary button** has 16 positions, representing the limit value of an alarm. The measuring range of the vibration monitoring unit is divided into 16 linear steps.

In general: $Threshold\ value = \frac{top\ limit\ of\ measuring\ range}{16} \times SET\ Position$

Example: Limit setting

Measuring range: 0-32 mm/s
 SET rotary button Pos.: 8 (9)
 Limit value: 16 mm/s (18 mm/s)

Delay times

TIME Position	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Delay time (secs)	0	1	2	3	4	5	7.5	10	12.5	15	17.5	20	25	30	45	60

Tab. 8: Delay times

14 Assembly and disassembly

14.1 General notes

Assembly and disassembly work on and with the monitoring unit may only be performed by an authorised specialist familiar with the safety regulations governing handling electrical components! When using EX-certified monitoring units in potentially explosive atmospheres, the professional must also be familiar with the relevant safety regulations!



Before assembly and disassembly disconnect the monitoring unit from the power supply! Separate plug connections must always be de-energized! If EX-certified monitoring is operated in a potentially explosive atmosphere, there is otherwise an explosion hazard, due to spark formation!



The monitoring unit housing must be earthed via the fastening - through the machine earth of the mounting surface or through a separate protective conductor (PE)!

14.2 Fixing the vibration monitoring unit to the mounting surface

Prerequisites

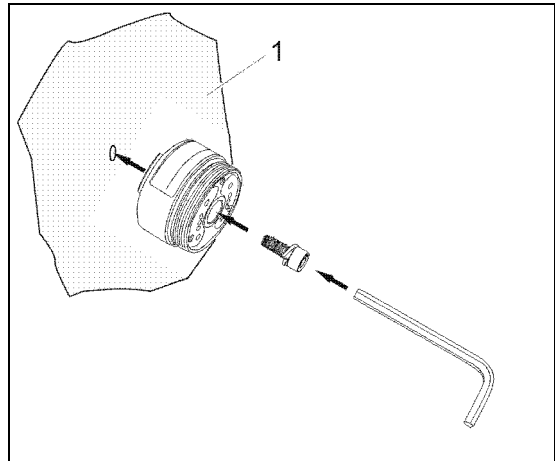
- Mounting surface is clean and flat; i.e. free of paint, rust, etc.
- Threaded hole in mounting surface:
15 mm, M8

Tools and material

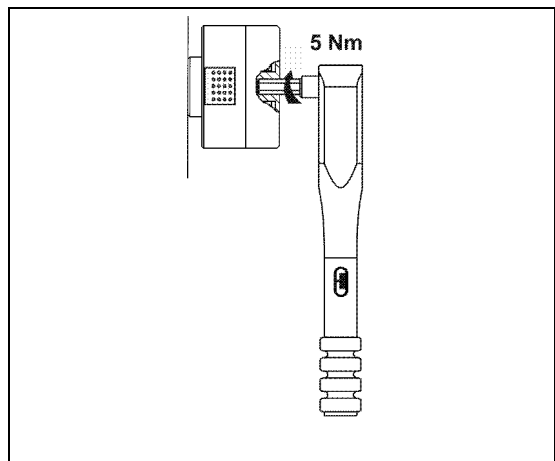
- Hex socket key SW 6, SW 8
- Torque wrench SW 6, SW 8
- Cylinder head screw with hex socket M8x20
- Spring washers for M8

Work steps and instructions

- Unscrew housing cover from housing base;
hex socket key SW 8
- Attach monitoring unit using cylinder head screws and spring washers with 8 Nm on mounting surface;
Torque wrench SW 6
- Screw the housing cover back onto the housing base and tighten to 5 Nm;
Torque wrench SW 8



Fastening on mounting surface (1)



Tighten housing cover with torque wrench



In order to avoid cold welding of the housing cover to the housing base, the thread is treated ex-works with an assembly paste for stainless steel connections.

14.3 Tamper protection
Attach seal labels

The "SEALED" seal label reveals any unauthorised opening of the housing cover.

After installation of the housing cover by the system operator, the seal label shall be attached to the side above the housing joint.

If any tampering is attempted, the seal label is destroyed and the tampering will be visible to the system operator

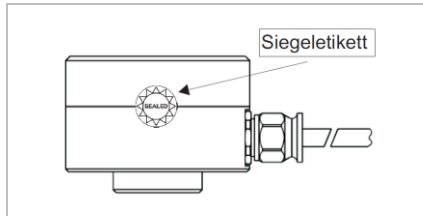


Fig. 7: Seal label

15 Installation and commissioning

15.1 General notes

Installation and commissioning of the vibration monitoring unit may only be performed by an authorised specialist familiar with the safety regulations governing handling electrical components. When installing and commissioning EX-certified monitoring units in potentially explosive atmospheres, the professional must also be familiar with the relevant safety regulations!



The commissioning will only be carried out with the housing cover correctly screwed on (tightening torque = 5 Nm)! If EX-certified monitoring is operated in a potentially explosive atmosphere, there is otherwise an explosion hazard, due to spark formation!



Protect the connection cable and any extension cable from electrical interference and mechanical damage! Comply with the local regulations and directives.

15.1.1 Standard earthing concept

With the standard earthing concept, the sensor cable shield has no connection to the sensor housing (dashed circle). The sensor housing has the same potential as the machine earth.

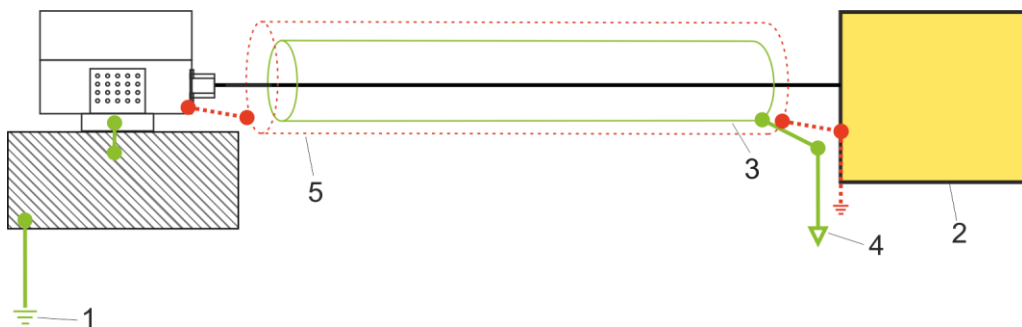


Fig. 8: Standard earthing concept

- 1 Machine earth
- 2 Evaluation unit (measuring instrument, SPS, ...)
- 3 Cable shield
- 4 Evaluation unit earth potential
- 5 Optional flexible metal tubing (only available for version with integrated cable)

15.1.2 Alternative earthing concept

With the alternative earthing concept, the sensor cable shield has a connection to the sensor housing. The sensor housing uncoupled from the machine earth by means of an EMC adapter (red). With the alternative earthing concept an electrically secure earth connection is only ensured for versions with an M12 connector. For variants with an integrated cable, the alternative earthing concept cannot be used.

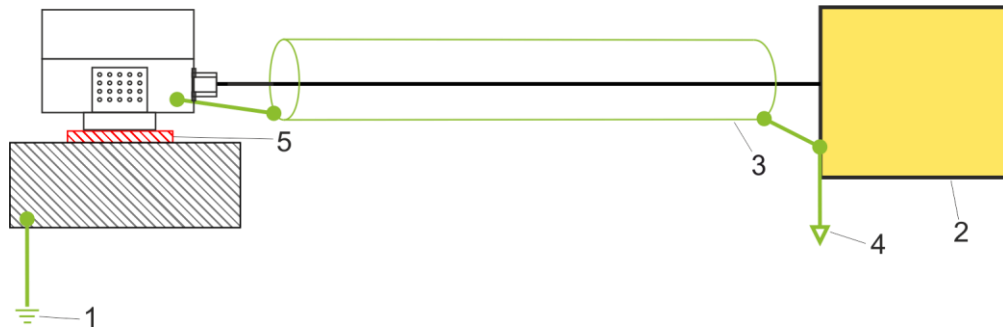


Fig. 9: Alternative earthing concept

- 1 Machine earth
- 2 Evaluation unit (measuring instrument, SPS, ...)
- 3 Cable shield
- 4 Evaluation unit earth potential
- 5 EMC adapter (Hauber item no. 10473)



In your request, please notify us if you would like to use the alternative earthing concept. We will then provide you with the appropriate sensor cable and the EMC adapter.

16 Maintenance and repair

16.1 General notes



Repair and cleaning work on vibration monitoring units may only be performed by an authorised specialist familiar with the safety regulations governing handling electrical components.



Before repair and cleaning disconnect the monitoring unit from the power supply! Separate plug connections must always be de-energized!



Immediately replace defective connection cables!
A defective vibration monitoring unit must be completely replaced!



The vibration monitoring unit HE200 is maintenance-free!

16.2 Troubleshooting Table

Fault	Cause	Action
No measured value (4-20 mA)	No power supply	Check power source and/or supply
	Discontinuity in connecting cable	Replace connecting cable
	Fuse defective	Replace fuse
	Connection has incorrect polarity	Connection of correct pole
	Vibration monitoring unit defective	Replace vibration monitoring unit
Relay does not switch	Wrong limit value set	Set correct limit value
	No power supply	Check power source and/or supply
	Discontinuity in connection	Replace connecting cable
	Fuse defective	Replace fuse
	Connection has incorrect polarity	Connection of correct pole
	Defective monitoring unit	Replace monitoring unit
False reading	Vibration monitoring unit not friction-locked.	Friction lock vibration monitoring unit.
	Vibration monitoring unit installed in wrong place	Install vibration monitoring unit in correct place
EMC problems		See also Alternative earthing concept, page 20.

Tab. 9: Troubleshooting Table

17 Transport, storage and disposal

The sensor must be protected by suitable packaging against damaging environmental influences and against mechanical damage during transport.

The sensor must not be stored in ambient temperatures beyond the permitted operating temperature.

The product contains electronic components and must be disposed of in a proper manner according to local regulations and legislation.

18 Coding HE200

HE200.	00.	16.	01.	00.	00.	000
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HE series

200 = Monitoring SIL2
4-20 mA ~ mm/s rms + free limit values

ATEX / IECEx / EACEx

00 = no ATEX / IECEx / EACEx
01 = ATEX / IECEx / EACEx (Zone 1 / 21)
02 = ATEX / IECEx / EACEx (Zone 2 / 22)

Measuring range

8 = 8 mm/s rms
10 = 10 mm/s rms
16 = 16 mm/s rms
20 = 20 mm/s rms
25 = 25 mm/s rms
32 = 32 mm/s rms
50 = 50 mm/s rms
64 = 64 mm/s rms
128 = 128 mm/s rms

Frequency range

00 = 10-1000 Hz (standard)
01 = 1-1000 Hz

Housing material

00 = 1.4305 (V2A) (standard)
01 = 1.4404 (V4A)

Temperature range

00 = -40°C to 85°C
01 = -35°C to 125°C
02 = -20°C to 125°C

Connection

000 = M12 connector (standard)
020 = 2 m integrated cable
050 = 5 m integrated cable
100 = 10 m integrated cable



Is your desired configuration not listed? Please get in touch with us, we can offer you a customer-specific solution.

19 EU declaration of conformity

We	HAUBER-Elektronik GmbH Fabrikstraße 6 72622 Nürtingen-Zizishausen Germany
declare of our own accord that the product	vibration sensor/monitoring unit, evaluation devices
to which this declaration refers, satisfies the basic health and safety protection requirements of the directives and standards cited below.	

Directive 2014/30/EU Electromagnetic Compatibility	EN 61000-6-3:2005 EN 61000-6-3:2007 + A1:2011
NG (atmospheres not at risk of explosion)	Type range 640; 642; 648; 650; 651; 652; 656; 663; 664; 673; 674; 675; 677; 687; HE100; HE101; HE102; HE103; HE400

Potentially explosive atmospheres	Category: ⚠ II 2 G / ⚠ II 2 D
Directive 2014/34/EU Devices and protection systems for intended use in potentially explosive atmospheres	

Type	HE200	⚠ II 2 G Ex db IIC T4 Gb ⚠ II 2 D Ex tb IIIC T120°C Db	NB 2572 PTZ 16 ATEX 0029 X IECEx PTZ 18.0009 X
Type conformity Annex VII	Standard(s)	EN 60079-0:2012 +A11:2013 EN 60079-1:2014 EN 60079-11:2012 EN 60079-31:2014 IEC 60079-0 7th ed. IEC 60079-1:2014 7th ed. IEC 60079-11:2011 7th ed. IEC 60079-31:2013 7th ed.	
CE 0063			

Nürtingen, 08/03/2019 Ort und Datum <i>Place and date</i>	 _____ Tobias Bronkal Geschäftsführender Inhaber <i>Managing Proprietor</i>
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