



Vibration Control Type HE100

**MADE IN
GERMANY**

CE EAC



- Vibration Velocity (mm/s, rms)
- Analog Current Output: 4...20 mA
- Frequency Range: 10 Hz...1000 Hz
1 Hz...1000 Hz

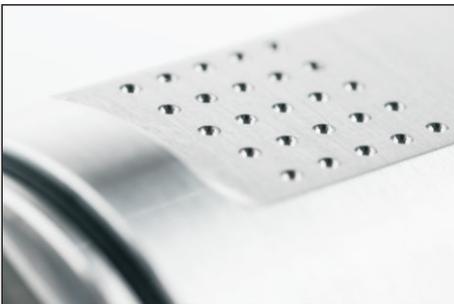


Please note:

Work on the following product variants, to be soon available, is already in process.

- ATEX Zone 1 / 21
- ATEX Zone 2 / 22

Respectively, an updated & completed manual edition will simultaneously be available.



Instruction Manual

Vibration Control Type HE100

Standard

Edition: 27.07.2016

Attention!

Before Start-Up Procedure the Instruction Manual must be read and understood!

Should any question arise, please contact:

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Content

1 Safety Information	4
2 Instruction Manual Scope	5
3 The Vibration Control Type HE100.....	5
4 Intended Use	5
5 Documents and Certificates	5
6 Application Fields	5
7 Delivery Contents	6
8 Electrical Data	7
9 Mechanical Data.....	9
10 Connections.....	10
11 Mounting and Demounting	11
11.1 Fastening at the Mounting Surface	11
12 Installation and Start-Up	12
13 Maintenance and Repairs.....	12
14 Grounding Concepts to avoid Ground Loops	13
15 Encoding Type HE100.....	14

1 Safety Information

In General

The safety instructions serve the protection of persons and things from damage and danger that arise from not intended use and further misuse of products especially in explosion endangered areas. Therefore read the instruction manual carefully, before working with or starting-up the product. To the operating personnel the instruction manual has to be accessible anytime.

Before the starting-up or miscellaneous works with the product please check, whether all the documents are available completely. If not all the documents are committed completely or further copies are required, they can be obtained in different languages.

Our product is designed to the latest state of the art. Nevertheless there are a number of residual risks. This means that each person in the operators firm, concerned with mounting and dismounting, installation, start-up, operating or maintenance of the product, has to have read and understood the instruction manual.

This means furthermore that each person in the operators firm, concerned with mounting and dismounting, installation, start-up, operating or maintenance of the product, has to be an authorized expert, familiar with the safety instructions for handling electrical components.

Used Symbols



This symbol indicates a risk from electrical current.



This symbol indicates a (non-safety relevant) information.

2 Instruction Manual Scope

The present instruction manual of the Vibration Control Type HE100 is presently applicable for the following variants: Standard.

3 The Vibration control Type HE100

The Vibration control Type HE100 is applied for the measurement of machines absolute bearing vibration, referring to DIN ISO 10816. It offers the following features:

- Principle of operation: Two-wire system.
- Measured Variable: Root mean square (rms) of vibration velocity in mm/s, according DIN ISO 2954.
- Analog Current Output: Interference-free direct-current signal of 4...20 mA, proportionately to the measuring range of the control.
- Cable break at the control cable detectable by a succeeding evaluation device: Value of the direct current signal < 3,5 mA.

4 Intended Use

The Type HE100 exclusively serves for the measurement of mechanical vibrations of machines and mechanical facilities. The operation is valid exclusively within the specifications mentioned in this manual. **Main areas of application:** Industrial fans, ventilators, blowers, electric motors, pumps, centrifuges, seperators, generators, turbines, and similar, oscillatory mechanical equipment.

5 Documents and Certificates

Following Type HE100 Documents and Certificates can be accessed at

www.hauber-elektronik.de/english:

- EU Declaration of Conformity

6 Application Fields

Application Fields	Labelling
Non explosion endangered areas	none

7 Delivery Contents

Variant	Delivery Contents
Standard	<ul style="list-style-type: none"> • Vibration Sensor Type HE100 • Factory Calibration Certificate / Test Report • Instruction Manual
Available Supplies	<ul style="list-style-type: none"> • Evaluation Devices Types 651, 652, 656 • Handheld Meter Type 641 • Various Adapters, e.g. M8 -> M10 • Allocable Mating Connector • Connection Cable, M12-Socket, 4-pole, 0,34 mm², L= 2 m, 5 m oder 10 m or on request • Magnet Foot • EMC-Adapter

8 Electrical Data

Measuring Range:	0... 16 mm/s rms (Standard) 0... 32 mm/s rms (Modification) 0... 64 mm/s rms (Modification)
Measuring accuracy:	± 10 % (according DIN ISO 2954)
Transverse sensitivity:	< 5 %
Frequency range:	10 Hz...1000 Hz (Standard) 1 Hz...1000 Hz (Modification)
Output signals:	4...20 mA (Proportional to the Measuring Range)
Voltage supply:	10...30 V DC
Power input (max.):	25 mA
Burden/Load (max.):	500 Ω
Fusing:	Microfuse (Time delay, 32 mA)



Each Type HE100 has **one** of the listed measuring ranges.

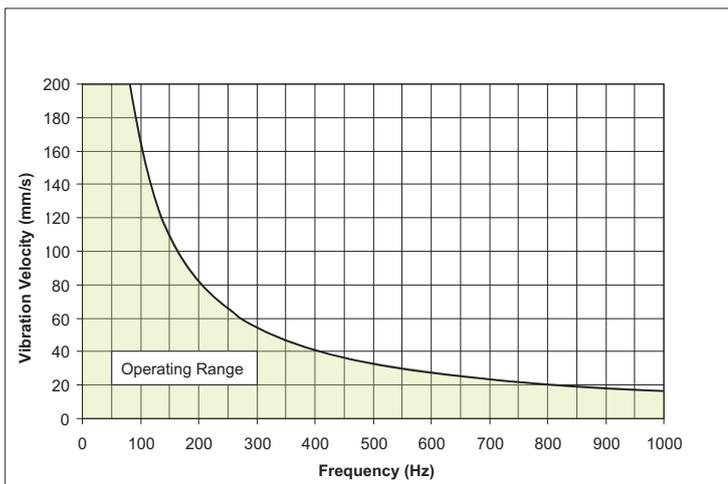
Further measuring range modifications on request.

Please indicate the measuring & frequency range in your inquiry / RFQ.

Valid Operating Temperature Range of following Variant

	Standard
Ambient Temperature	-40 °C ... +125 °C
Measuring Head- Temperature (at the Fastening)	-40 °C ... +125 °C

Operating Range of Vibration Control Type HE100



Reading example:

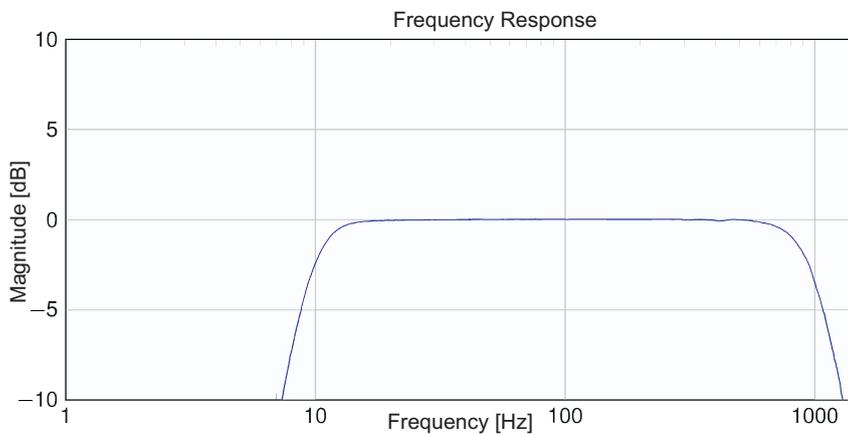
Frequency (Hz)	Max. measurable Vibration Velocity
250	65
400	40
1000	18

The operating range is independent of the measuring range. The diagram shows that with increasing frequency the height of the measurable vibration velocity decreases.

Typical Frequency Response 10 Hz...1000 Hz (Standard)

The frequency response is recorded by one reference sensor.

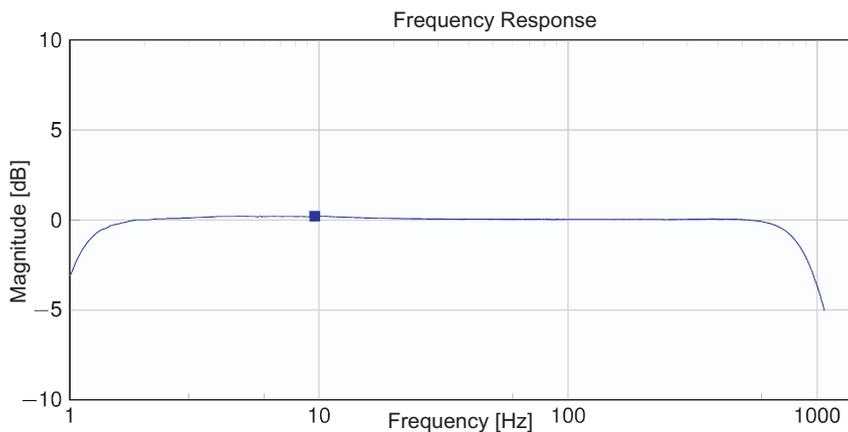
- 4 Hz. . . 1200 Hz acceleration sensor



Typical Frequency Response 1 Hz...1000 Hz

The frequency response is recorded by two reference sensors.

- 1 Hz. . . 10 Hz laser sensor
- 10 Hz. . . 1200 Hz acceleration sensor



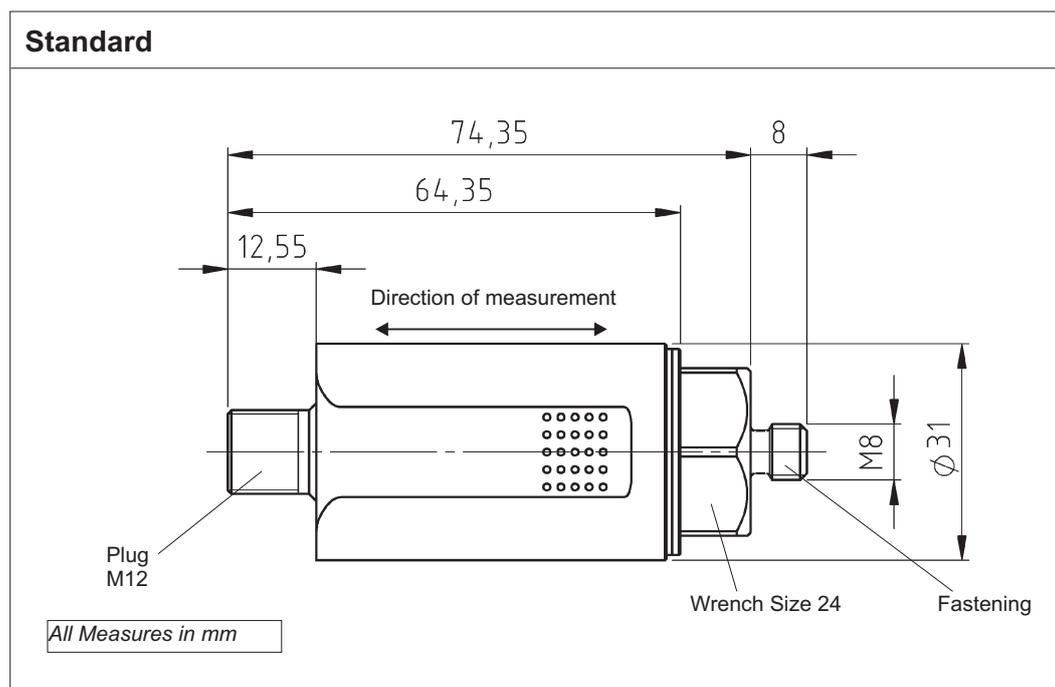
Calibration

The calibration of Vibration Control Type HE100 is performed at 90% of measuring range. The calibration frequency is 159.2 Hz.

9 Mechanical Data

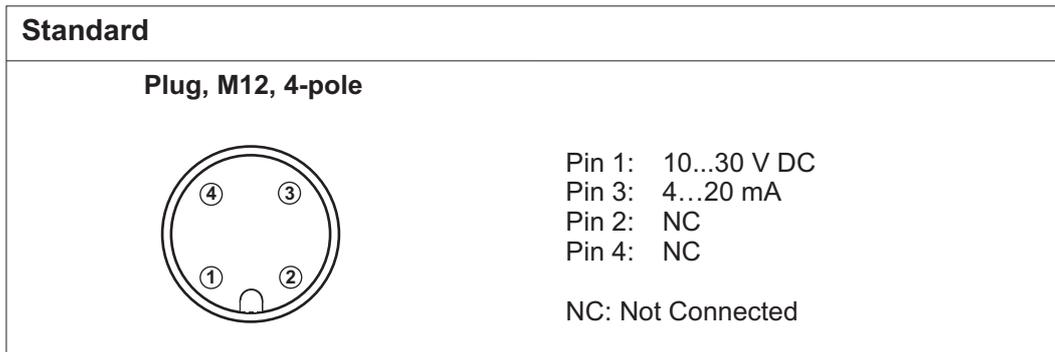
Housing Material:	Stainless Steel V2A; material no: 1.4305 Note: You can find a variety of materials, under the Cap.15: Encoding.
Fastening:	Wrench Size: 24 (hexagon), M8 x 8 mm, Thread pitch: 1,25 mm Note: You can find a variety of materials, under the Cap.15: Encoding.
Securing:	The control must be grounded via the fastening (see Cap.11).
Weight:	ca. 200 g
Protection Style:	IP 66/67

Housing Dimensions and Direction of Measurement

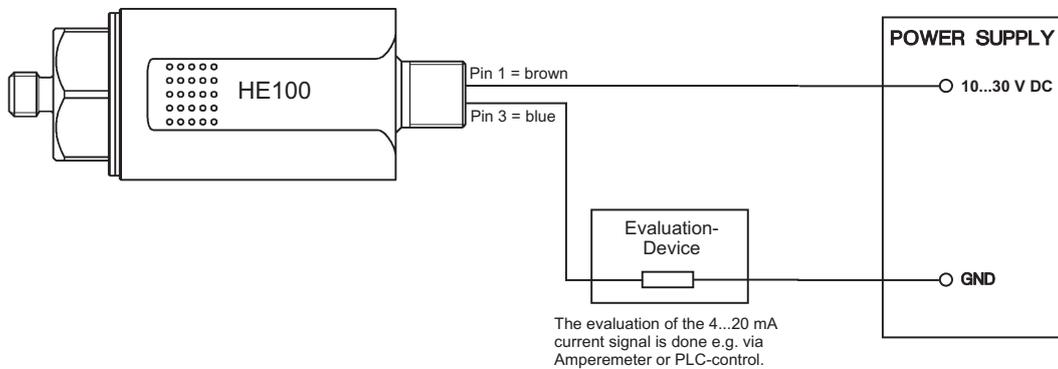


Direction of Fastening = Direction of Measurement

10 Connections



Connection Plan for all Variants



The system works according to Two-wire-technology. This means, the overall function (Power supply and Current-signal) is realized using 2 wires (Pin 1 and Pin 3).

To avoid capacitive Coupling Interferences, the Pins 2 and 4 have to stay **open** resp. **free!**

11 Mounting and Dismounting

Mounting and Dismounting works, at and with, the control may only be executed, by an authorized expert, familiar with the safety instructions, for handling electrical components.



The sensor housing must be earthed via the fastening - i. e. via machine earth or via a separate earth wire (PE)!

11.1 Fastening at the Mounting Surface

Preconditions

- Mounting surface clean and flat, i.e. free from paint, rust, etc.
- Measuring head surface of the vibration monitoring, must lay flat on the mounting surface.

Tools and Materials

- Allen wrench, SW24 (Hex)

Working Steps

- Tighten control **friction-locked** into the threaded hole of the mounting surface.
The tightening torque should be 8 Nm.



To obtain exact measuring values, the control has to be tighten **friction-locked** at the mounting surface!

Avoid auxiliary mounting constructions! If unavoidable, implement it as stiff as possible!

12 Installation and Start-Up

Installing and starting-up the Vibration Control may only be executed by an authorized expert, familiar with the safety instructions for handling electrical components.



Prior to starting-up the Vibration Control, the mains must be secured with a microfuse (time delay, 32 mA)!

The connection cable and possible extension cables must be protected against electrical influences and mechanical damages. Here local regulations and commissions absolutely have to be considered.

13 Maintenance and Repair

Repairing the Vibration Control may only be executed by an authorized expert, familiar with the safety instructions for handling electrical components.



Defective connection cables immediately have to be replaced!
A defective control has to be changed completely!



Note: The Type HE100 and its variants are maintenance free!

Error Table

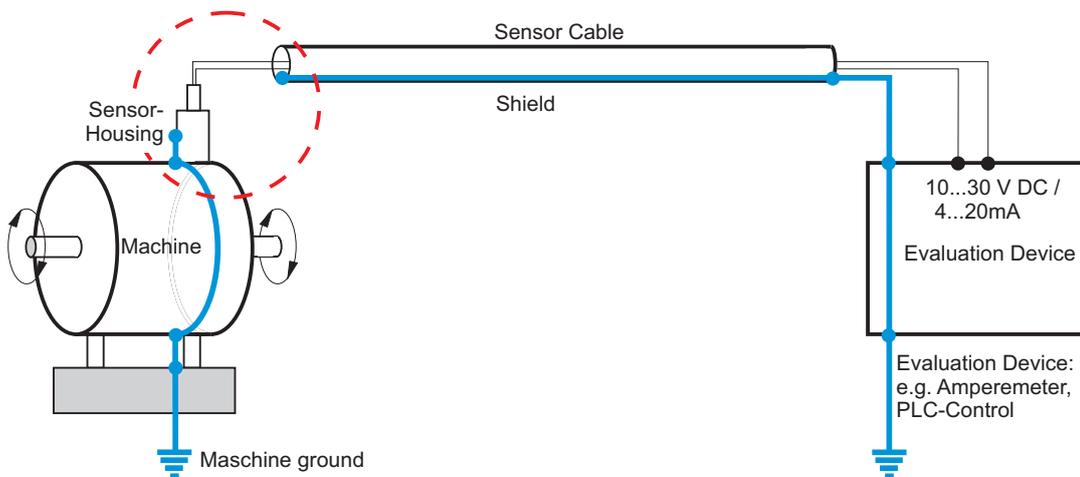
Error	Cause	Activity
No measured Value (4-20 mA)	No Power Supply	Check Power Supply and / or connection cable
	Connection cable interrupted	Replace connection cable
	Fuse defective	Replace fuse
	Connection wrong polarity	Provide correct polarity
	Vibration Control defective	Replace Vibration Control
Wrong measured Value	Vibration Control mounting not friction-locked	Mount Vibration Control friction-locked
	Vibration Control mounting at wrong position	Mount Vibration Control at correct position
EMC-Problems		see. Cap. 14: Grounding Concepts

14 Grounding Concepts to avoid Ground Loops

Ground loops are among the most frequent problems for measurement setups with sensitive sensor technology. They arise through unwanted potential differences inside the current circuit between sensor and evaluation device. As countermeasure we recommend our Standard-Grounding Concept or, according to application, our Alternative-Grounding Concept.

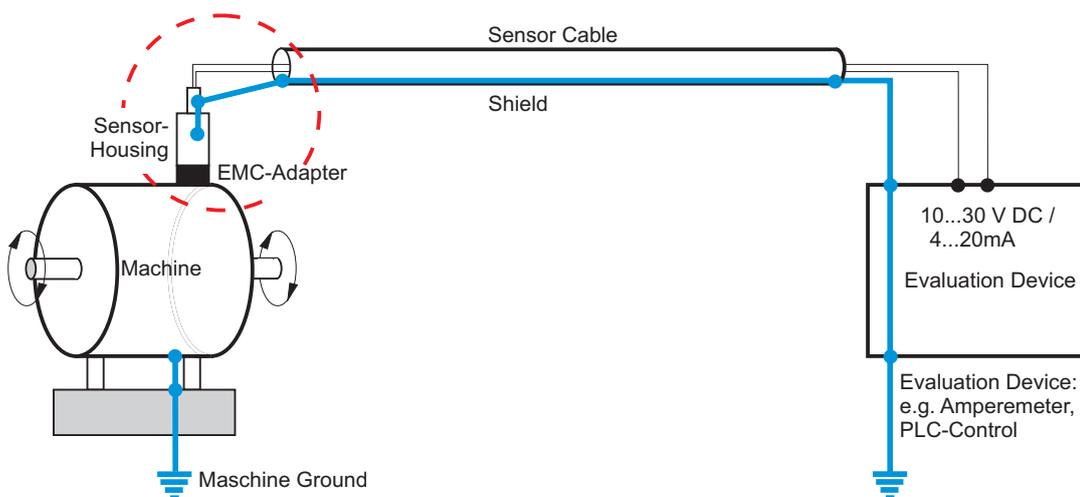
Standard-Grounding Concept

In the Standard-Grounding Concept the shield of the sensor cable has no connection to the sensor-housing (dotted circle). The sensor housing lies on the same potential as the machine ground.



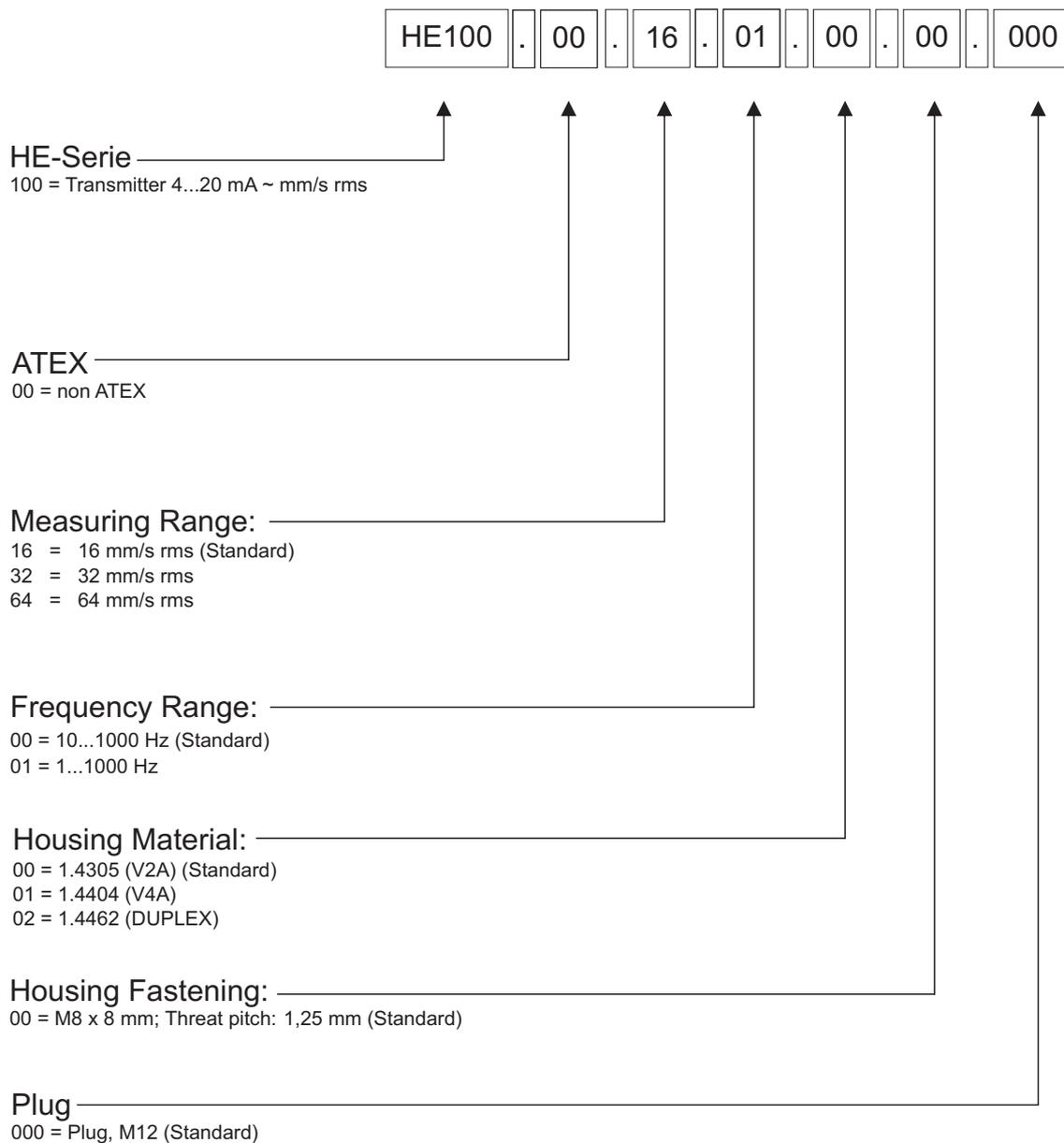
Alternative-Grounding Concept

In the Alternative-Grounding Concept the shield of the sensor cable has connection to the sensor-housing (dotted circle). The sensor housing is decoupled from the machine ground via EMC-adapter (black).



Please indicate in your inquiry / RFQ., if you intend to use the **Alternative-Grounding Concept**. We will then offer you the respective Sensor Cable and EMC-Adapter.

15 Encoding Type HE100



Example:
 HE100.00.16.01.00.00.000

Transmitter 4...20mA mm/s rms, none ATEX,
 with 16 mm/s and 1...1000 Hz, Housing Material V2A 1.4305,
 Fastening M8x8mm & Threath pitch: 1,25mm and Plug, M12.