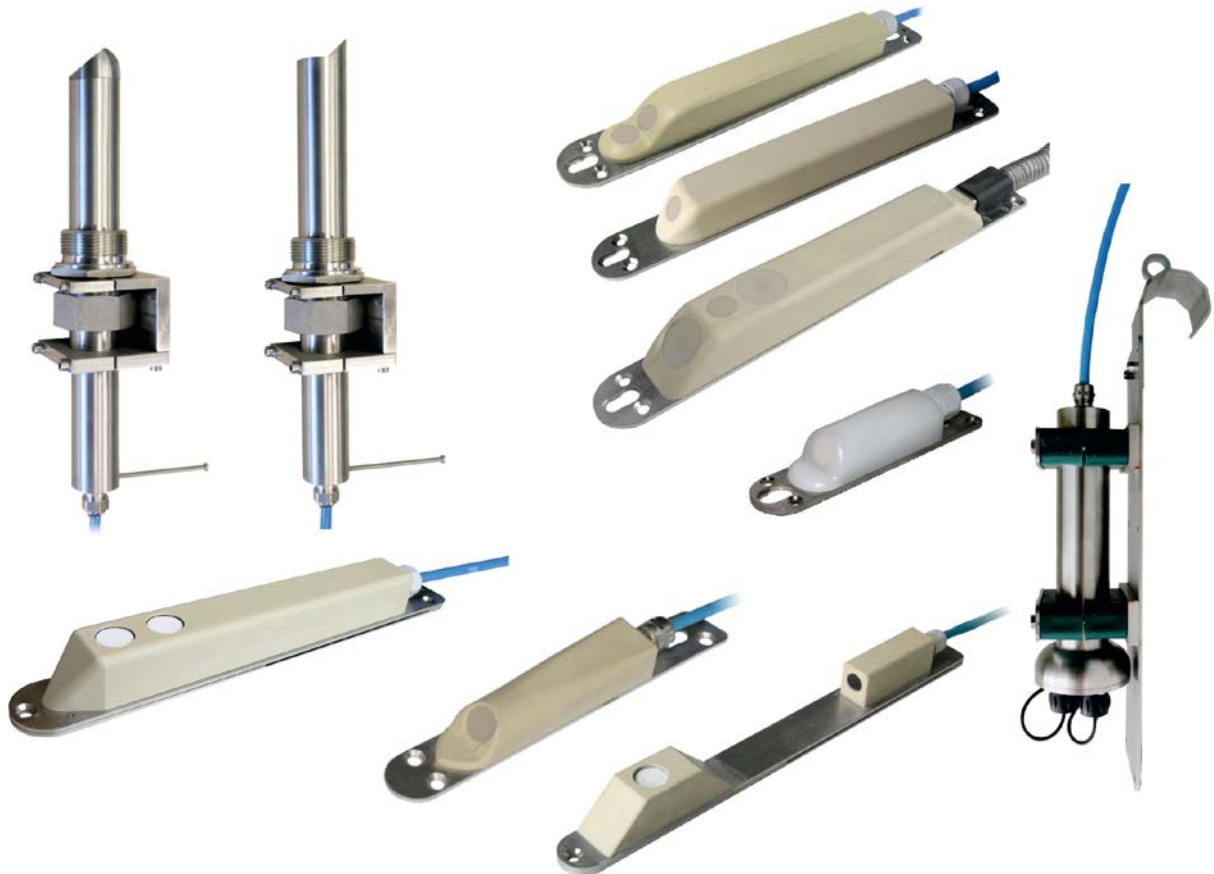


## Technical Instructions for Correlation Sensors and external Electronic Box

(Original technical instructions – German)



as of Firmware Version:

1.58 (POA-V2)

1.59 (OCL-L1)

1.58 (CS2)

1.64 (EBM)

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### **Important Note**

*This instruction manual may exclusively - even in parts - be copied or translated in any other way with the express written consent of NIVUS GmbH.*

---

### **Translation**

If the device is sold to a country in the European Economic Area (EEA) this instruction handbook must be translated into the language of the country in which the device is to be used.

Should the translated text be unclear, the original instruction handbook (German) must be consulted or the manufacturer contacted for clarification.

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### **Names**

The use of general descriptive names, trade names, trademarks and the like in this handbook does not entitle the reader to assume they may be used freely by everyone. They are often protected registered trademarks even if not marked as such.

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## 1 General



---

### ***Important***

*READ CAREFULLY BEFORE USE*

*KEEP IN A SAFE PLACE FOR LATER REFERENCE*

---

This Technical instruction is an original instruction for Correlation Sensors and external Electronic Box is intended for the initial start-up or the connection of the sensors. This manual is oriented exclusively to qualified expert personnel.

Read this Technical instruction carefully and completely prior to installation and connection since it contains relevant information on this product. Observe the notes and particularly follow the warning notes and safety instructions. Keep this manual in a safe place and make sure it is available for the users of this product at any time.

If you should have problems to understand information contained within this Technical Instruction either contact the manufacturer or one of the distributors for further support. The manufacturer cannot be held responsible for damage to persons or material due to incorrectly understood information in this instruction.

In case of selling the sensors, this Technical instruction shall be provided to the purchaser since it is a part of the standard delivery.

The sensor installation is described in the separate >Installation Instructions for Correlation and Doppler Sensors<. This document is part of the standard delivery and must be read necessarily prior to sensor installation.

Detailed information on how to operate the complete system can be found in the accompanying instruction transmitter instruction manual.

## Personnel requirements

Installation, commissioning and maintenance shall be executed only by personnel meeting the demands as follows:

- Expert personnel with relevant training and appropriate qualification
- Personnel authorised by the plant operator



---

## Qualified personnel

*within the context of this documentation or the safety notes on the product itself are persons who are sufficiently familiar with installation, mounting, starting up and operation of the product and who have the relevant qualifications for their work; for example.*

- *Training, instruction or authorisation to activate/deactivate, isolate, ground, and mark electric circuits and devices/systems according to the safety engineering standards.*
  - *Education and instruction according to the standards of safety engineering regarding the maintenance and use of adequate safety equipment.*
  - *First aid training*
- 

## Applicable documentation

For the installation and operation of the complete system extra instruction manuals or technical descriptions may be required apart from this manual.

- Instruction manual for the flow measurement unit NivuFlow 750
- Technical Instructions for iXT or MPX
- Installation Instruction for correlation and Doppler sensors

These manuals are provided with the auxiliary units or sensors.

## 2 Safety Instructions

### 2.1 Used signs and definitions



The general warning symbol indicates the risk of personal injuries or death. In the text section the general warning symbol is used in conjunction with the signal words described below.

**DANGER**

---

***Warning of danger to persons***

*Indicates an immediate high risk which may result in death or severe personal injury if not avoided.*

---



**DANGER**

---

***Danger of electric shock***

*Indicates a possible danger by electrical power with moderate risk which may result in death or severe personal injury if not avoided.*

---



**WARNING**

---

***Warning of danger to persons***

*Indicates a possible danger with moderate risk which may result in death or (severe) personal injury if not avoided.*

---



**CAUTION**

---

***Warning of personal injuries or material damage***

*Indicates a possible danger with moderate risk which may result in minor or moderate personal injury or material damage if not avoided.*

---



---

***Important Notes***

*Indicates situations that may result in damage to property and/or loss of data, if not avoided.*

*Contains information that needs to be highlighted.*

---



---

***Notes***

*Indicates situations that do not result in personal injury.*

---

## 2.2 Safeguards and precautions

### WARNING



#### **Preventing electromagnetic discharge**

*It is indispensable to eliminate the risk of explosive atmospheres by using a gas warning unit prior to executing installation or maintenance works.*

*Please observe to avoid electrostatic charge during this procedure!*

*Avoid unnecessary movements to reduce the risk of building up electrostatic energy.*

*Make sure to discharge static electricity from your body before you begin to install the sensors.*

### WARNING



#### **Germ contamination**

*Please note that due to the operation in the waste water field the measurement system and cables may be loaded with dangerous disease germs. Respective precautionary measures must be taken to avoid damage to one's health.*

*Wear protective clothing.*

### WARNING



#### **Observe regulations for health and safety at work**

*Before starting installation work, observing the work safety regulations need to be checked.*

*Failure to do so may cause personal injury.*

### WARNING



#### **Do not disable safety devices!**

*It is strictly prohibited to disable the safety devices or to change the way they work.*

*Failure to observe may cause personal injury as well as to system damage.*

## 2.3 Liability Disclaimer

The manufacturer reserves the right to change the contents of this document including this liability disclaimer without prior notice and cannot be held responsible in any way for possible consequences resulting from such changes.

For connection, initial start-up and operation as well as maintenance of the sensors the following information and higher legal regulations of the respective country (e.g. VDE regulations in Germany) such as applicable Ex regulations as well as safety requirements and regulations in order to avoid accidents shall be observed.

The safety-related values of the connected the sensors shall comply with the technical specifications or the specifications contained in the according EC type examination certificate.

Interconnecting several active devices within an intrinsically safe circuit may result in different safe maximum values. In such cases the intrinsic safety may be impaired!



All operations on the device which go beyond installation or connection measures in principle shall be carried out by NIVUS staff or personnel authorised by NIVUS due to reasons of safety and guarantee.

Operate the sensors only in technically perfect working order.

### **Improper Use**

Not being operated in accordance with the requirements may impair the safety. The manufacturer is not responsible for failures resulting from improper use.

## **2.4 User's Responsibilities**



---

*In the EEA (European Economic Area) national implementation of the framework directive 89/391/EEC and corresponding individual directives, in particular the directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work, as amended, are to be observed and adhered to.*

*In Germany the Industrial Safety Ordinance must be observed.*

---

The customer must (where necessary) obtain any local **operating permits** required and observe the provisions contained therein. In addition to this, he must observe local laws and regulations on

- personnel safety (accident prevention regulations)
- safety of work materials and tools (safety equipment and maintenance)
- disposal of products (laws on wastes)
- disposal of materials (laws on wastes)
- cleaning (cleansing agents and disposal)
- environmental protection.



---

*This technical description is part of the standard delivery and must be available to the user at any time.*

*The safety instructions contained therein must be followed.*

---

## 2.5 Device Identification

The instructions in this manual apply only for the type of sensor or the units depicted on the title page.

The article number can be found where the cable enters the sensor body as well as on a nameplate on the end of the cable. This nameplate is protected against weathering and abrasion by using a transparent shrunk-on hose and contains the following:

- name and address of manufacturer
- CE label
- type and serial number
- year of manufacture
- Ex label (on Ex-version sensors only) as mentioned in chapter 3.2.

In case of enquiries and ordering replacement parts it is important to specify article number as well as the serial number of the respective transmitter or sensor. This ensures correct and quick processing.

⇒ You can find the declaration of conformity at the end of this manual.

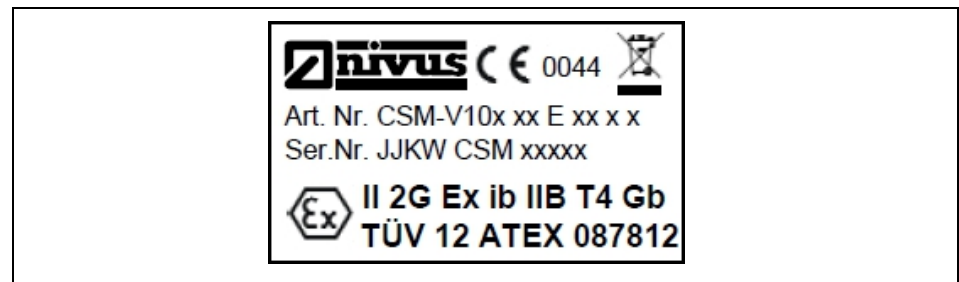


Fig. 2-1 Nameplate flow velocity sensor, type CSM

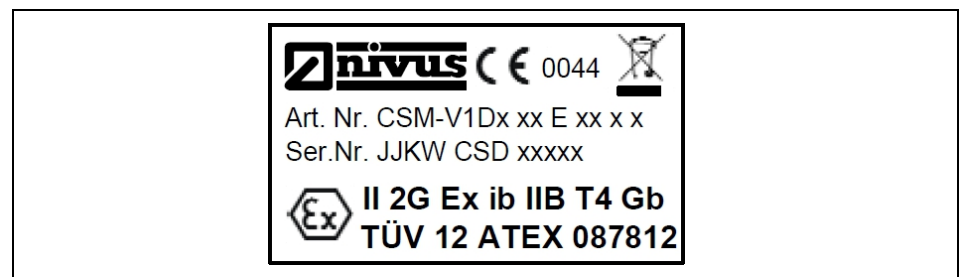


Fig. 2-2 Nameplate flow velocity sensor, type CSMD

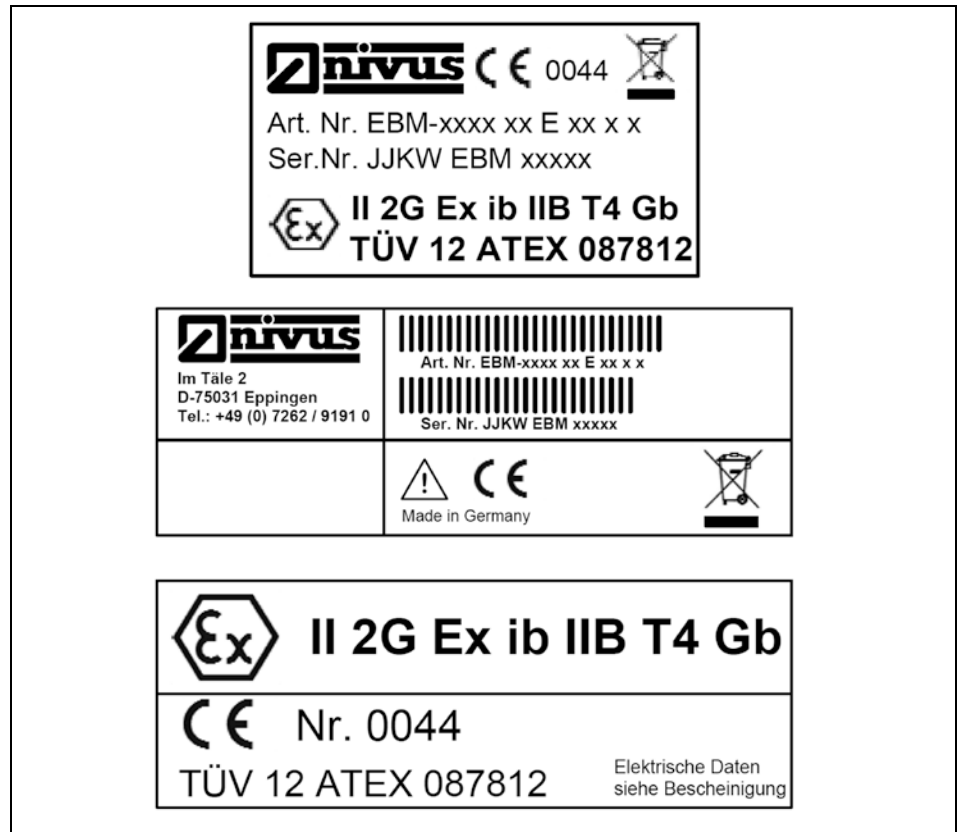


Fig. 2-3 Nameplate Electronic Box, type EBM

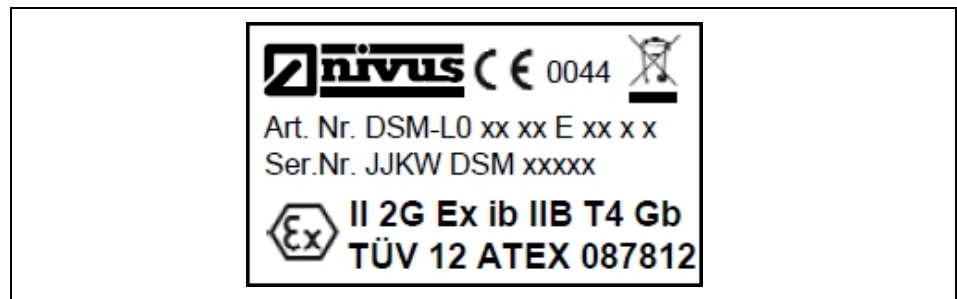


Fig. 2-4 Nameplate level sensor, type DSM

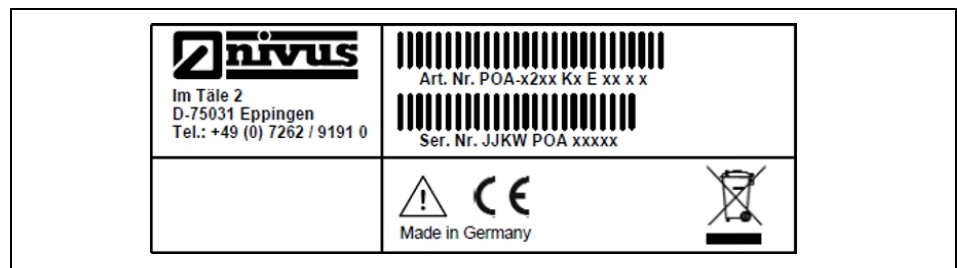


Fig. 2-5 Nameplate flow velocity sensor, type POA

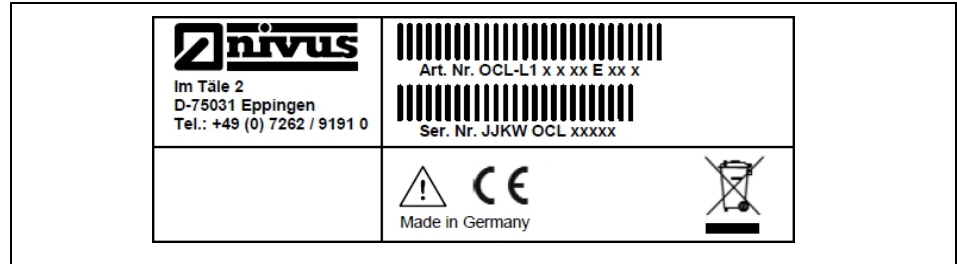


Fig. 2-6 Nameplate level sensor, type OCL-L1

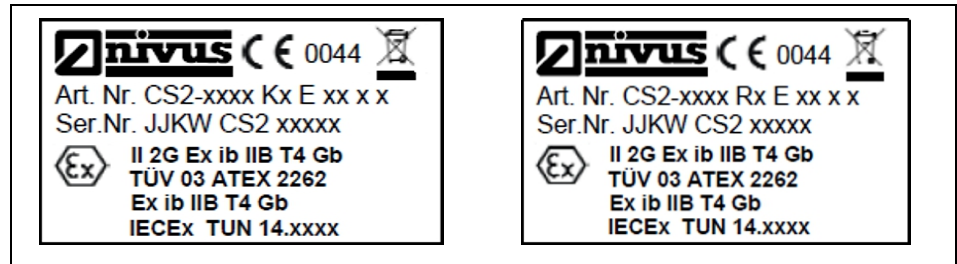


Fig. 2-7 Nameplates flow velocity sensor, type CS2

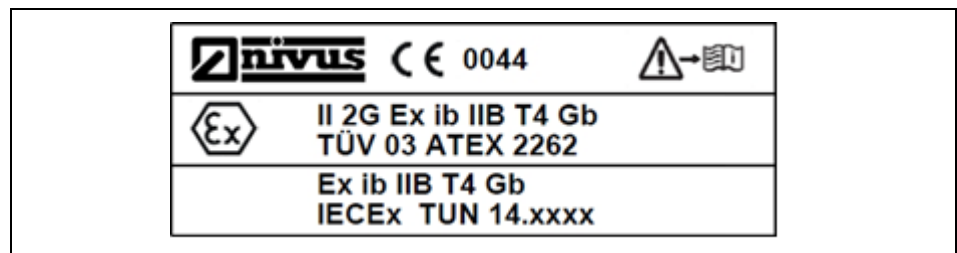


Fig. 2-8 Ex-label for each sensor; type POA, CS2, OCL-L1

## 2.6 Sensor Versions

The sensors are available in various constructions (wedge and pipe sensors) and additionally vary in terms of Ex-Version, cable lengths, sensor connection (cable end for direct connection or configured plug / plug-on filter element) as well as various special versions and materials.

The article number can be found where the cable enters the sensor body as well as on a nameplate on the end of the cable. This nameplate is protected against weathering and abrasion by using a transparent shrunk-on hose.

CSM-	<b>Type</b>	Sensor with spatial allocation of flow velocities			
		<b>V100</b>	<b>Without Level Measurement</b>		
		<b>KT</b>	Wedge sensor made of PVDF; ground plate 1,4571		
		<b>XX</b>	Special construction		
	<b>V1D0</b>	<b>mit Druckmesszelle</b>			
		<b>KT</b>	Wedge sensor made of PPO with PEEK sensor face; ground plate 1.4571		
		<b>XX</b>	Special construction		
		<b>Approvals (ATEX)</b>			
		<b>0</b>	none		
		<b>E</b>	Ex zone 1		
	<b>Cable Length</b>				
	<b>07</b>	7 m			
	<b>15</b>	15 m (only type V1D0)			
	<b>Sensor Connection</b>				
	<b>C</b>	Connection to electronic box, type RD			
	<b>D</b>	Connection to electronic box, type RD incl. pressure compensation element			
CSM-					

Fig. 2-9 Type key for water-ultrasonic sensors, type CSM

<b>EBM-V1L1</b> Electronic box for connection of 1x CSM and 1x DSM Sensor incl.suspension bracket and mounting plate, IP 68					
<b>Construction</b>					
<b>RD</b>	Wedge sensor				
<b>XX</b>	Special construction				
<b>Approvals (ATEX)</b>					
<b>0</b>	none				
<b>E</b>	Ex zone 1				
<b>Cable Lengths</b>					
<b>03</b>	3 m				
<b>10</b>	10 m				
<b>15</b>	15 m				
<b>20</b>	20 m				
<b>30</b>	30 m				
<b>50</b>	50 m				
<b>99</b>	100 m				
<b>XX</b>	Special length upon request				
<b>Sensor Connection</b>					
<b>S</b>	Connection to PCM Pro and PCM 4				
<b>K</b>	Cable end pre-configured for connection to OCM Pro CF				
<b>EBM-V1L1</b>					

**Fig. 2-10 Type key for Electronic Box, type EBM**

<b>DSM-L0</b> Air-ultrasonic sensor for non-contact level measurement					
<b>Construction</b>					
<b>K</b>	Wedge sensor				
<b>X</b>	Special construction				
<b>Sensor Version</b>					
<b>S</b>	Standard version made of PPO, ground plate 1.4571				
<b>X</b>	Special construction				
<b>Transmitting Frequency</b>					
<b>12</b>	Standard frequency				
<b>XX</b>	Special construction				
<b>Approvals (ATEX)</b>					
<b>0</b>	none				
<b>E</b>	Ex zone 1				
<b>Cable Lengths</b>					
<b>07</b>	7 m				
<b>15</b>	15 m				
<b>Sensor Connection</b>					
<b>B</b>	Connection to electronic box				
<b>DSM-L0</b>					<b>B</b>

**Fig. 2-11 Type key for air-ultrasonic sensors, type DSM**

POA-	<b>Type</b>	Sensor with spatial allocation of flow velocities covering a maximum of 16 scan layers
	<b>V200 without Level Measurement</b>	
	<b>KT</b>	Wedge sensor made of PPO with PEEK sensor face; ground plate 1.4571
	<b>KP</b>	Wedge sensor made of high resistant full PEEK, ground plate 1.4571
	<b>KX</b>	Wedge sensor, special construction (e.g. made of high resistant full PEEK with ground plate made of Hastelloy or Titanium).
	<b>RT</b>	Pipe sensor made of PPO with PEEK sensor face; pipe body 1.4571
	<b>RP</b>	Pipe sensor made of high resistant full PEEK; pipe body 1.4571
	<b>RX</b>	Pipe sensor, special construction
	<b>V2H1 with ultrasound from bottom up for Level Measurement</b>	
	<b>KT</b>	Wedge sensor made of PPO with PEEK sensor face; ground plate 1.4571
	<b>KP</b>	Wedge sensor made of high resistant full PEEK, ground plate 1.4571
	<b>KX</b>	Wedge sensor, special construction (e.g. made of high resistant full PEEK with ground plate made of Hastelloy or Titanium).
	<b>RT</b>	Pipe sensor made of PPO with PEEK sensor face; pipe body 1.4571
	<b>RP</b>	Pipe sensor made of high resistant full PEEK; pipe body 1.4571
	<b>RX</b>	Pipe sensor, special construction
	<b>V2D0 with Pressure Measurement Cell for Level Measurement</b>	
	<b>KT</b>	Wedge sensor made of PPO with PEEK sensor face; ground plate 1.4571
	<b>KX</b>	Wedge sensor, special construction
	<b>V2U1 with Pressure Measurement Cell and ultrasound from bottom up for Level Measurement</b>	
	<b>KT</b>	Wedge sensor made of PPO with PEEK sensor face; ground plate 1.4571
<b>KX</b>	Wedge sensor, special construction	
<b>Approvals (ATEX)</b>		
<b>0</b>	none	
<b>E</b>	Zone 1	
<b>Cable Length (max. 150 m / with pressure measurement cell up to 30 m)</b>		
<b>10</b>	10 m	
<b>15</b>	15 m	
<b>20</b>	20 m	
<b>30</b>	30 m	
<b>50</b>	50 m	
<b>99</b>	100 m	
<b>XX</b>	Special length upon request	
<b>1B</b>	10 m, FEP coated*	
<b>2B</b>	20 m, FEP coated*	
<b>3B</b>	30 m, FEP coated*	
<b>5B</b>	50 m, FEP coated*	
<b>9B</b>	100 m, FEP coated*	
<b>XB</b>	Special length / special construction*	





<b>OCL-L1</b>	Active air-ultrasonic sensor				
	<b>Construction</b>				
	<b>K</b>	Wedge sensor			
	<b>X</b>	Special construction			
	<b>Sensor Version</b>				
	<b>S</b>	Standard version made of PPO, cable: PUR			
	<b>X</b>	Special construction			
	<b>Transmitting Frequency</b>				
	<b>12</b>	120 kHz			
	<b>XX</b>	Special construction			
	<b>Approvals</b>				
	<b>0</b>	none			
	<b>E</b>	Ex zone 1			
	<b>Cable Length (max. 150 m)</b>				
<b>10</b>	10 m				
<b>15</b>	15 m				
<b>20</b>	20 m				
<b>30</b>	30 m				
<b>50</b>	50 m				
<b>99</b>	100 m				
<b>XX</b>	Special length upon request				
<b>Sensor Connection</b>					
<b>K</b>	Cable end pre-configured for connection to OCM Pro CF				
<b>S</b>	Connection plug for PCM Pro and PCM 4				
<b>OCL-L1</b>					<b>K</b>

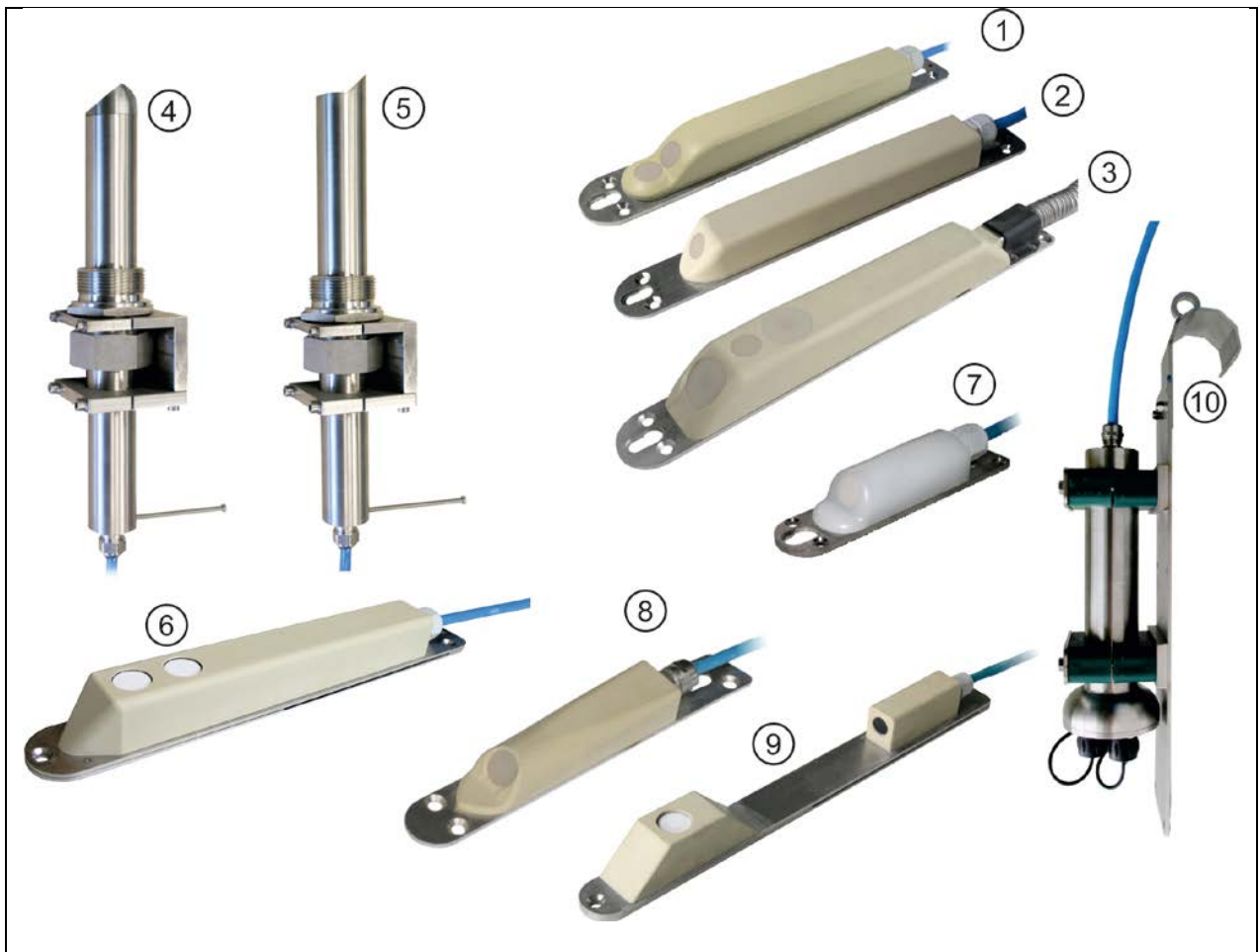
Fig. 2-14 Type key for air-ultrasonic sensors, type OCL-L1

CS2-	Type	<b>Correlation sensor for large dimensions</b>			
	V100	<b>without level measurement</b>			
	RP	Pipe sensor made of high resistant full PEEK; pipe body 1.4571			
	RX	Pipe sensor, special construction			
	SP	Rod sensor made of highly resistant full PEEK, pipe material 1.4571			
	V200	<b>without level measurement</b>			
	KT	Wedge sensor made of PPO with PEEK sensor face; ground plate 1.4571			
	V2H1	<b>with ultrasound from bottom up for level measurement</b>			
	KT	Wedge sensor made of PPO with PEEK sensor face; ground plate 1.4571			
	V2D0	<b>with pressure measurement cell for level measurement</b>			
	KT	Wedge sensor made of PPO with PEEK sensor face; ground plate 1.4571			
	V2U1	<b>with pressure measurement cell and ultrasound from bottom up for level measurement</b>			
	KT	Wedge sensor made of PPO with PEEK sensor face; ground plate 1.4571			
		<b>Approval (ATEX)</b>			
	0	none			
	E	Zone 1			
		<b>Cable Length (max. 150 m / with pressure measurement cell up to 30 m)</b>			
	10	10 m			
	15	15 m			
	20	20 m			
	30	30 m			
	50	50 m			
	99	100 m			
	XX	Special length upon request			
		<b>Sensor Connection</b>			
	K	Connection to OCM Pro CF, Type V20 and V2H			
	L	Connection to OCM Pro CF, Type V2D and V2U			
	R	for pipe sensors for connection to OCM Pro CF, Type V10			
	F	Connection to PCM Pro and PCM 4 for type V2D and V2U, incl. plug and replaceable filter element			
	S	Connection to PCM Pro and PCM 4 for type V20 and V2H, incl. plug			
		<b>Pipe Length</b>			
	0	(only for wedge sensor)			
	2	20 cm (standard)			
	3	30 cm (minimum length for stop ball valve)			
	4	40 cm (minimum length for retractable fitting)			
	X	Special pipe length in dm, price per dm			
	G	20 cm + extension thread			
CS2-					

**Fig. 2-15 Type key for water-ultrasonic sensors, type CS2**

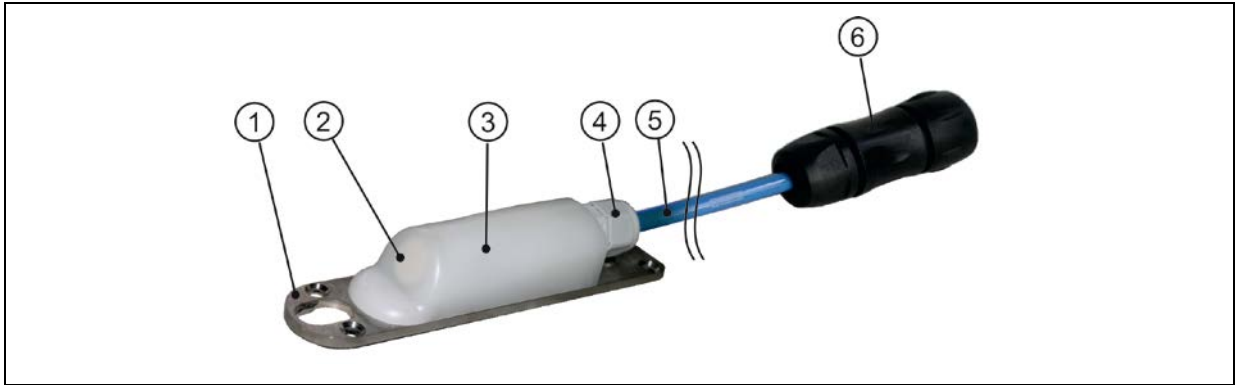
### 3 Overview and Intended Use

#### 3.1 Overview



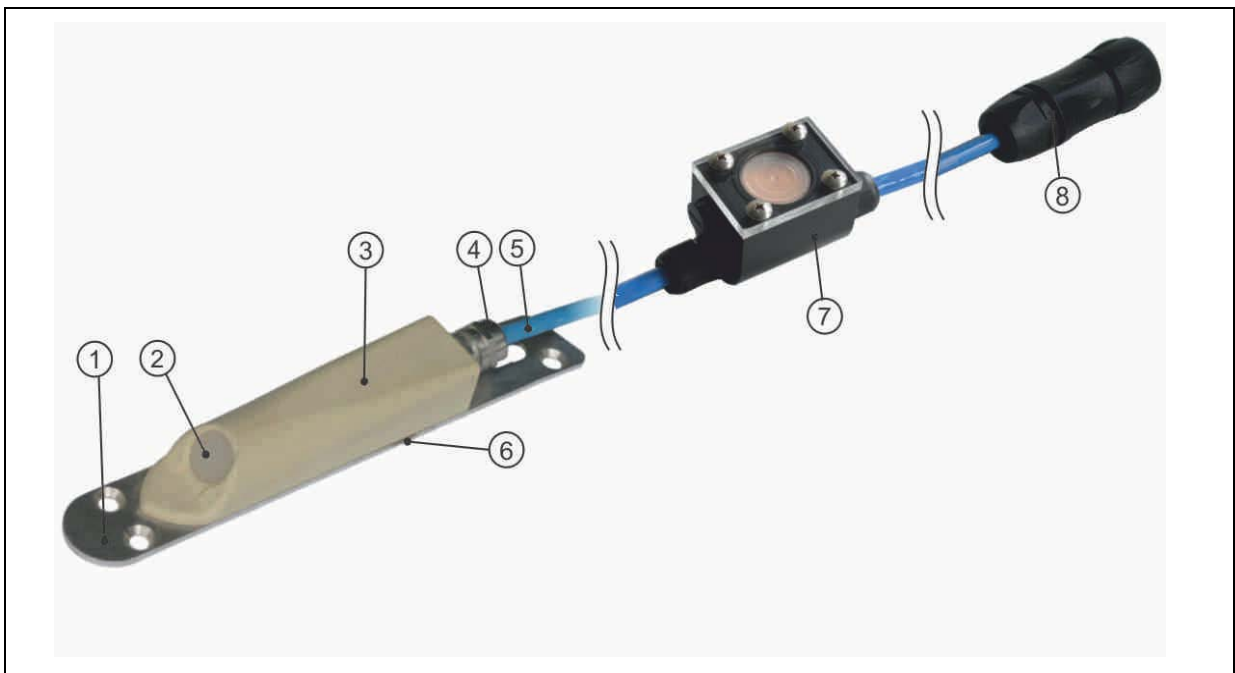
1. Flow velocity wedge sensor, type POA-V2H1/V2U1
2. Flow velocity wedge sensor, type POA-V200/V2D0
3. Flow velocity wedge sensor, type CS2
4. Pipe sensor, type CS2, with sensor screw connection and retaining element
5. Pipe sensor, type POA, with sensor screw connection and retaining element
6. Air-ultrasonic sensor, type OCL-L1
7. Flow velocity wedge sensor, type CSM
8. Flow velocity wedge sensor, type CSMD
9. Air-ultrasonic sensor, type, DSM
10. Electronic Box, type EBM

**Fig. 3-1** Sensor overview and Electronic Box



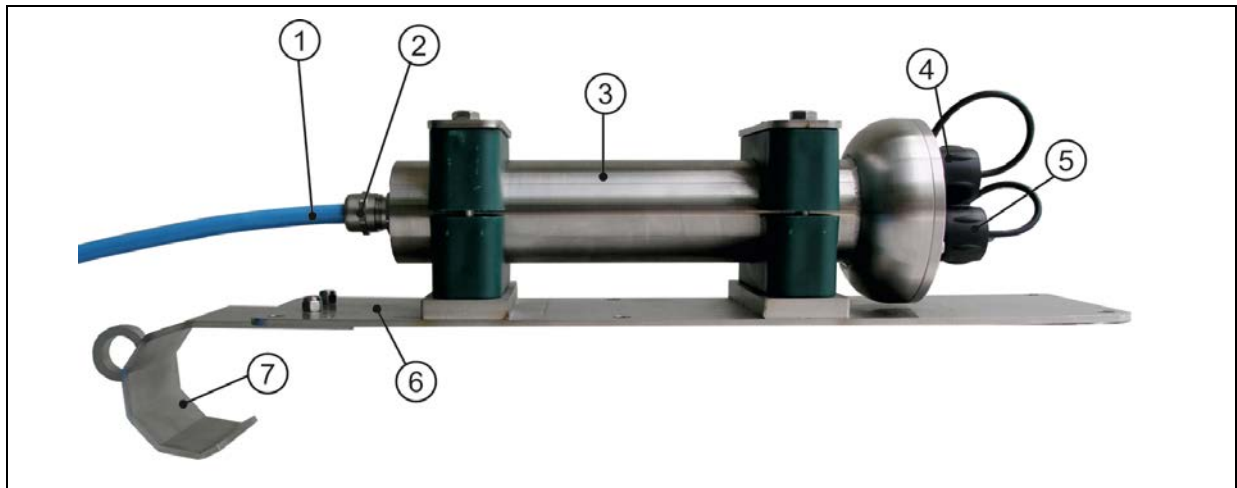
1. Ground plate
2. Sensor for flow velocity measurement
3. Sensor body
4. Cable gland
5. Sensor cable
6. Plug with spigot nut

**Fig. 3-2 Overview wedge sensor, type CSM**



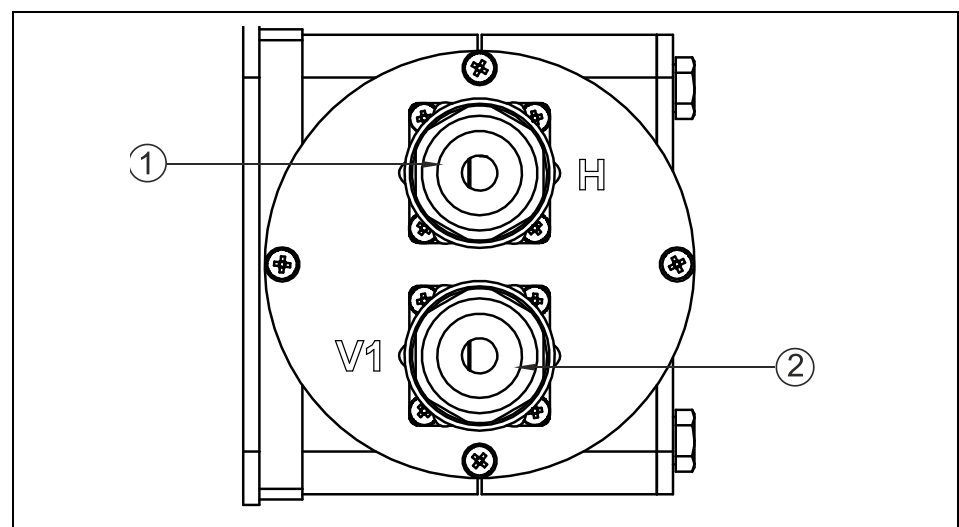
1. Ground plate
2. Sensor for flow velocity measurement
3. Sensor body
4. Cable gland
5. Sensor cable
6. Sensor for level measurement using pressure
7. Pressure compensation element
8. Plug with spigot nut

**Fig. 3-3 Overview wedge sensor, type CSM-D**



1. Cable connection to the measurement device OCM Pro CF or PCM Pro / PCM 4
2. Cable gland
3. Electronic Box body
4. Plug for water-ultrasonic sensor, type CSM
5. Plug for air-ultrasonic sensor, type DSM
6. Mounting plate
7. Suspension bracket

**Fig. 3-4 Overview external Electronic Box, type EBM**



1. Socket for air-ultrasonic sensor Type DSM
2. Socket for flow velocity sensor Type CSM

**Fig. 3-5 Overview socket wiring Electronic Box, type EBM**

**WARNING**



**Seal unused connection sockets**

*Unused connection sockets on the Type EBM Electronic Box shall be sealed watertight by using the screw cover fastened on each socket prior to installation. Otherwise the protection grade of the entire unit is no longer guaranteed. Damages resulting due to not using the covers are not covered by the manufacturer's liability.*

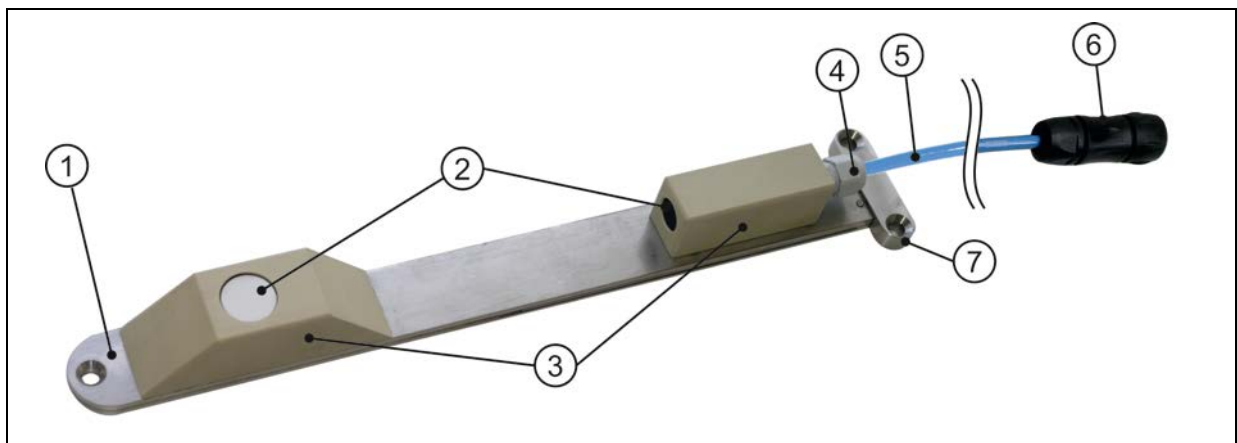
*Covers being damaged or lost due to the use of force can be ordered from NIVUS at extra costs.*



*Keep threads of plugs and sockets carefully free of dirt, sand or similar and clean the threads with a soft and lint-free cloth prior to connection if required.*

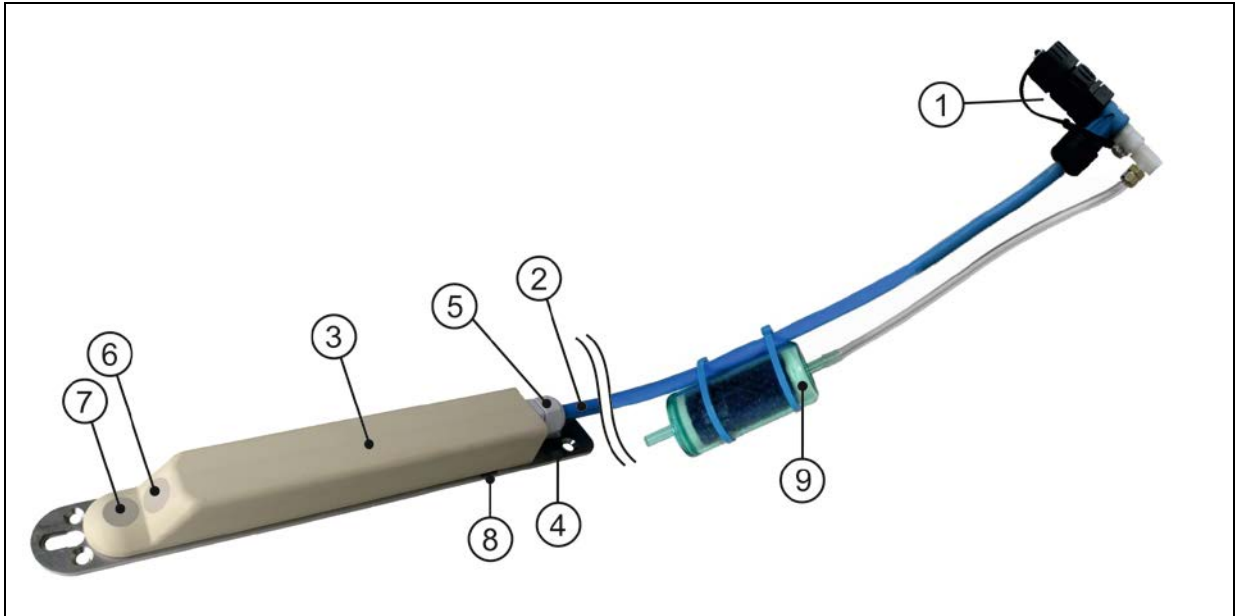


*If placed in flood shafts or channels the transmitter must be secured in order to prevent it from being washed away unintentionally (use suspension gear, plastic or steel rope, chain or similar).*



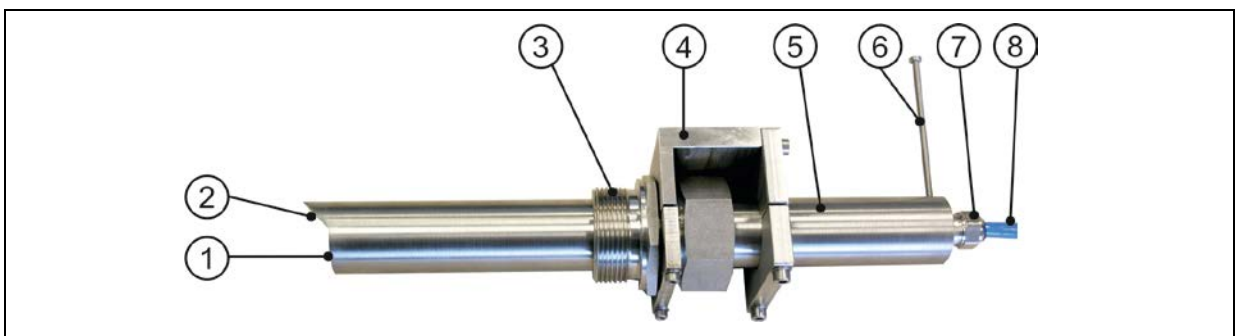
1. Ground plate
2. Sensors for level measurement using air-ultrasonic
3. Sensor body
4. Cable gland
5. Sensor cable
6. Plug with spigot nut
7. Fastening clamp for installation on ceiling

**Fig. 3-6 Overview air-ultrasonic sensor, type DSM**



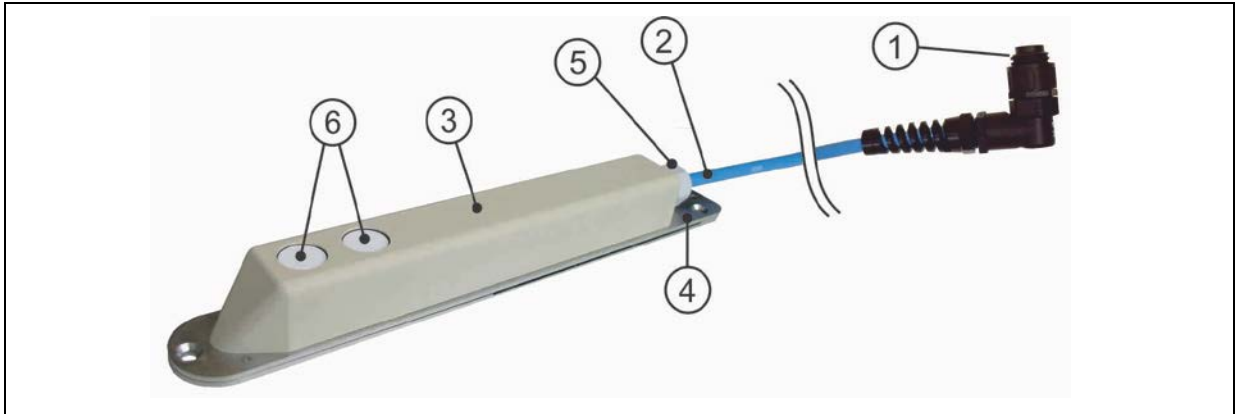
1. Plug with spigot nut (optional)
2. Sensor cable
3. Sensor body
4. Ground plate
5. Cable gland
6. Sensor for flow velocity measurement
7. Sensor for level measurement using water-ultrasonic (optional)
8. Sensor for level measurement using pressure (optional)
9. Air filter (optionally fixed with plug)

**Fig. 3-7 Overview wedge sensor, type POA-V2H1/V2U1**



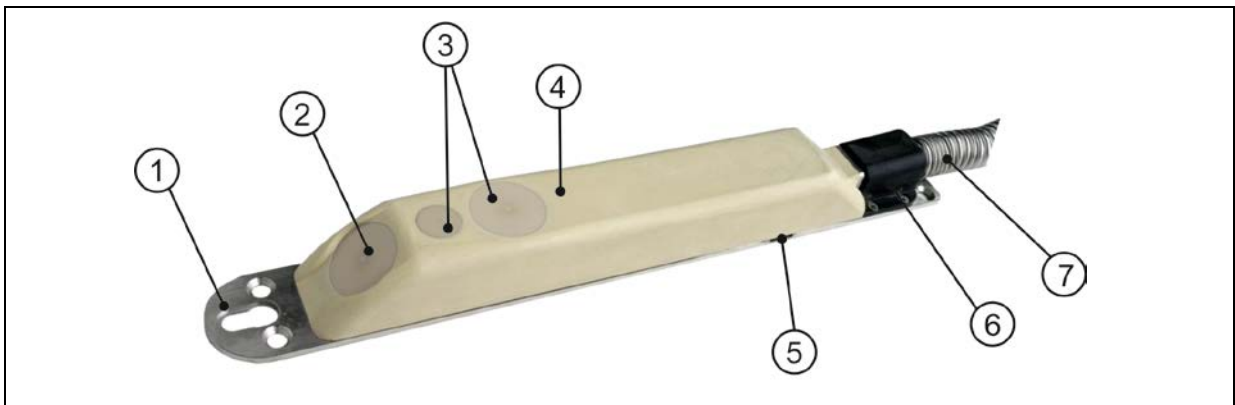
1. Sensor for level measurement using water-ultrasonic (optional)
2. Sensor for flow velocity measurement
3. Sensor screw joint (movable)
4. Retaining element
5. Sensor body
6. Installation help, screw M4
7. Cable gland
8. Sensor cable

**Fig. 3-8 Overview pipe sensor, type POA**



1. Plug with spigot nut
2. Sensor cable
3. Sensor body
4. Ground plate
5. Cable gland
6. Sensors for level measurement using air-ultrasonic

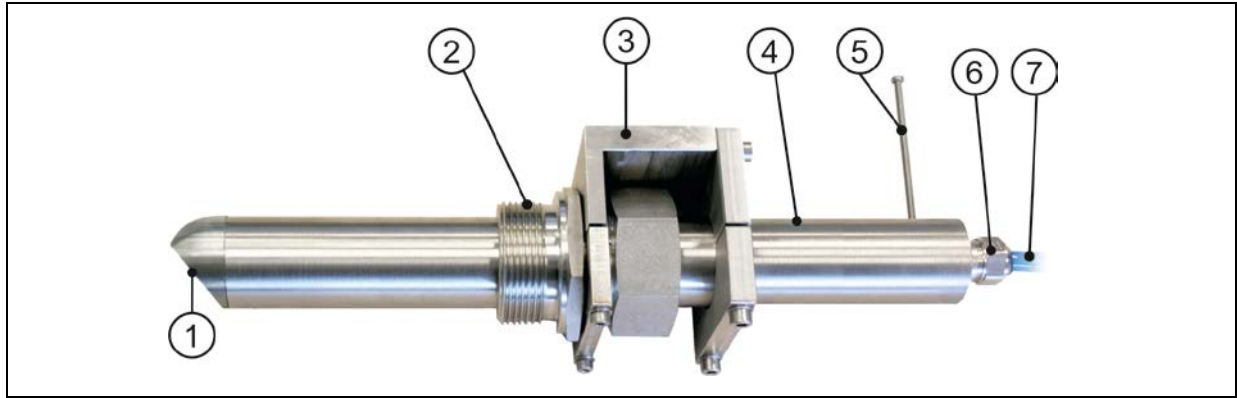
**Fig. 3-9 Overview air-ultrasonic sensor, type OCL-L1**



1. Ground plate
2. Sensor for flow velocity measurement
3. Sensor for level measurement using water-ultrasonic (optional)
4. Sensor body
5. Sensor for level measurement using pressure (optional)
6. Cable protection
7. Protection hose for sensor cable (optional)

**Fig. 3-10 Overview wedge sensor, type CS2**





1. Sensor for flow velocity measurement
2. Sensor screw joint (movable)
3. Retaining element
4. Sensor body
5. Installation help, screw M4
6. Cable gland
7. Sensor cable

Fig. 3-11 Overview pipe sensor, type CS2

### 3.2 Intended Use



#### **Important Note**

*The sensors and the Electronic Box are exclusively intended to be used for purposes as described above. Modifying or using the sensors or Electronic Box for other purposes without the written consent of the manufacturer will not be considered as use in accordance with the requirements.*

*Damages resulting from this are left at user's risk.*

#### Ex-Approval

The Ex-version of the sensors is designed to be used in areas with explosive atmospheres (zone 1).

Approval ATEX / IECEx :



II 2 G Ex ib IIB T4 Gb / Ex ib IIB T4 Gb

#### CAUTION



#### **Damages invalidate the Ex protection.**

*Damage might invalidate the Ex protection.*

*The sensor then is not allowed to be used in Ex zone 1 any longer.*

*Protect the sensor from shocks, drops or other damage.*



#### **Important Note**

*The approval is only valid in connection with the respective indication on the sensors nameplate. The Ex-version sensors are matched to the NIVUS transmitters regarding the assessment of intrinsically safe electrical systems according to EN 60079-25.*

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*In case of using other manufacturer's transmitters the operator is obliged to implement a system assessment according to EN 60079-25.*

*The required specifications for Ex-version sensors can be taken from the EC-type examination certificate TÜV 03 ATEX 2262 or TÜV 12 ATEX 087812*

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## WARNING



*When connecting the sensor to the transmitter the metal sensor ground plate must not exceed 1 GΩ grounding resistance!*

*In this case make sure to eliminate the risk of explosive atmospheres by using a gas warning unit prior to installation or maintenance works. Please observe to avoid building up electrostatic energy during the works!*

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### **CSM Sensor**

The sensor type CSM is designed for flow velocity measurement of slight to heavily polluted media in part filled or full pipes and channels with low levels. The CSM sensor can be operated exclusively in connection with the accompanying Electronic Box EBM. For Type CSM-V100 an additional level measurement is required.

### **DSM Sensor**

The sensor type DSM is designed to measure level of liquid media using ultrasound from top down in pipes featuring small dimensions. The sensor can be operated exclusively in connection with the accompanying Electronic Box EBM.

### **EBM Electronic Box**

The Electronic Box Type EBM is conceived to connect the sensors Type CSM and DSM. It contains the detached electronic sensor components and is designed to be connected to Type PCM Pro / 4 or OCM Pro transmitters.

### **POA Sensor**

The sensor type POA is designed to measure flow of slight to heavy polluted media in part filled and full sewers, pipes and other channels. Level measurement is additionally possible depending on the sensor type.

### **OCL-L1 Sensor**

The sensor type OCL-L1 is designed to measure level of liquid media using ultrasound from top down.

### **CS2 Sensor**

The sensor type CS2 is designed for flow velocity measurement of slight to heavily polluted media in part filled or full pipes and channels and featuring large dimensions and a minimum filling level of 10 cm. Level measurement is additionally possible depending on the sensor type.

Please necessarily observe the maximum permissible limit values as specified in chapter 4. Any cases varying from these conditions without written consent of NIVUS GmbH are entirely left at owner's risk.

## 4 Specifications

### 4.1 Water-ultrasonic sensor, type CSM-V100

Measurement principle	correlation with digital pattern detection
Measurement frequency	1 MHz
Protection	IP 68
Ex-Approval (optional)	II 2 G Ex ib IIB T4 Gb
Operating temperature	-20 °C to +50 °C (-4 °F to 122 °F) -20 °C to +40 °C (-4 °F to 104 °F) for applications in Ex Zone 1
Storage temperature	-30 °C to +70 °C (-22 °F to 158 °F)
Operating pressure	max. 4 bar
Cable length	7 m, for connection to Electronic Box
Type of cable	2x (2x28 AWG/7-(ST)12Y)+4x28 AWG/7
Medium contacting materials	Polyurethane, PVDF, stainless steel 1.4571, PA
Measurement range	-100 cm/s to +600 cm/s
Number of scan layers	Max. 16
Zero point drift	absolutely stable zero point
Error limits (per scan layer)	<1 % of measurement value (v > 1m/s) < 0.5 % of measurement value +5 mm/s (v <1 m/s)
Measurement min.fill level	3 cm
Sonic beam angle	±5 degrees
<b>Temperature measurement</b>	
Measurement range	-20 °C up to +60 °C
Measurement uncertainty	±0,5 K

### 4.2 Water-ultrasonic sensor, type CSM-V1D0

Measurement principle	correlation with digital pattern detection
Measurement frequency	1 MHz
Protection	IP 68
Ex-Approval (optional)	II 2 G Ex ib IIB T4 Gb
Operating temperature	-20 °C to +50 °C (-4 °F to 122 °F) -20 °C to +40 °C (-4 °F to 104 °F) for applications in Ex Zone 1
Storage temperature	-30 °C to +70 °C (-22 °F to 158 °F)
Operating pressure	max. 1 bar
Cable length	7/15 m for connection to Electronic Box
Type of cable	1x (2xAWG24/7 CAT 7) + 1 PA hose 1.5/2.5mm + (4xAWG26/7)
Medium contacting materials	Polyurethane, stainless steel 1.4571, PPO GF30, PA, Pressure compensation element: POM-C, PMMA, PA, stainless steel 1.4571
Measurement range	-100 cm/s to +600 cm/s
Number of scan layers	Max. 16
Zero point drift	absolutely stable zero point
Error limits (per scan layer)	<1 % of measurement value (v > 1m/s) < 0.5 % of measurement value +5 mm/s (v <1 m/s)
Measurement min.fill level	5.5 cm
Sonic beam angle	±5 degrees

<b>Level measurement - Pressure</b>	
Measurement range	0 to 500 cm
Zero point drift	max. 0.75 % of final value (0–50 °C)
Measurement uncertainty	≤0.5 % of final value
<b>Temperature measurement</b>	
Measurement range	-20 °C up to +60 °C
Measurement uncertainty	±0,5 K

### 4.3 Electronic Box, type: EBM

Protection rating	IP 68 (with connection sockets locked)
Ex-Approval	II 2 G Ex ib IIB T4 Gb
Operating temperature	-20 °C to +50 °C (-4 °F to 122 °F) -20 °C to +40 °C (-4 °F to 104 °F) for applications in Ex Zone 1
Storage temperature	-30 °C to +70° C (-22 °F to 158 °F)
Operating pressure	max. 1 bar
Cable length	3/10/20/30/50/100 m
Type of cable	LiYC11Y 2x1.5 + 1x2x0.34
Outside cable diameter	8.4 mm ±0.25 mm
Medium contacting materials	Polyurethane, stainless steel 1.4571, PP

### 4.4 Air Ultrasonic-Sensor Mini, type DSM

Measurement principle	Ultrasonic transit time
Measurement frequency	125 kHz / 200 kHz
Protection rating	IP 68
Ex-Approval	II 2 G Ex ib IIB T4 Gb
Operating temperature	-20 °C to +50 °C (-4 °F to 122 °F) -20 °C to +40 °C (-4 °F to 104 °F) for applications in Ex Zone 1
Storage temperature	-30 °C to +70° C (-22 °F to 158 °F)
Operating pressure	max. 1 bar
Cable length	7/15 m for connection to Electronic Box
Type of cable	2x (2x28 AWG/7-(ST)12Y)+4x28 AWG/7
Medium contacting materials	Polyurethane, stainless steel 1.4571, PPO GF30, PA
Measurement range	0 to 200 cm (0 to 6.56 ft)
Dead zone (as from ground plate)	4 cm (1.57 in)
Measurement uncertainty	< ±5 mm
Zero point drift	absolutely stable zero point
<b>Temperature measurement</b>	
Measurement range	-20 °C to +50 °C (-4 °F to 122 °F)
Measurement uncertainty	±0.5 K

#### 4.5 Water-ultrasonic combi sensor, type POA

Measurement principle	<ul style="list-style-type: none"> <li>- ultrasonic transit time (level)</li> <li>- piezo-resistive pressure measurement (level)</li> <li>- correlation with digital pattern detection (flow velocity)</li> </ul>
Measurement frequency	1 MHz
Protection	IP 68
Ex-Approval (optional)	<p>II 2 G Ex ib IIB T4 Gb (ATEX) Ex ib IIB T4 Gb (IECEX)</p>
Operating temperature	<p>-20 °C to +50 °C ( -4 °F to 122 °F) -20 °C to +40 °C ( -4 °F to 104 °F) for applications in Ex Zone 1</p>
Storage temperature	-30 °C to +70 °C (-22 °F to 158 °F)
Operating pressure	max. 4 bar (combi sensor with pressure element max. 1 bar)
Cable length	<p>10/15/20/30/50/100 m for sensors without plug (sensor connection type "K" and "L") extendable up to 250 m max. (820 ft). Using sensors with integrated pressure measurement cell (Level measurement, type V2D0 und V2U1) requires to use a pressure compensation element after a cable length of 30 m (99 ft). Element may also be used to connect extension.</p>
Type of cable	<ul style="list-style-type: none"> <li>- Combi sensors with pressure measurement: LiYC11Y 2x1.5 + 1x2x0.34 + PA 1.5/2.5</li> <li>- Sensors without pressure measurement: LiYC11Y 2x1.5 + 1x2x0.34</li> </ul>
Outside cable diameter	<ul style="list-style-type: none"> <li>- Combi sensors with pressure measurement: 9.75 mm ±0.25 mm</li> <li>- Sensors without pressure measurement: 8.40 mm ±0.25 mm</li> </ul>
Sensor types	<ul style="list-style-type: none"> <li>- Flow velocity sensor with v-measurement using cross correlation and temperature measurement to compensate the temperature effect on the velocity of sound.</li> <li>- Combi sensor with flow velocity sensor using cross correlation, level measurement via water ultrasonic and temperature measurement to compensate the temperature effect on the velocity of sound.</li> <li>- Combi sensor with flow velocity sensor using cross correlation, level measurement via pressure and temperature measurement to compensate the temperature effect on the velocity of sound (wedge sensor only).</li> <li>- Combi sensor with flow velocity sensor using cross correlation, level measurement via water ultrasonic as well as redundant pressure measurement and temperature measurement to compensate the temperature effect on the velocity of sound (wedge sensor only).</li> </ul>
Types of construction	<ul style="list-style-type: none"> <li>- Wedge sensor for installation on channel bottom</li> <li>- Pipe sensor for installation in pipes with sensor screw joint and retaining element</li> </ul>
Medium contacting materials	<p>Polyurethane, stainless steel 1.4571, PPO GF30, PA (wedge sensor only), PTFE (pipe sensors only) Option: sensor made of PEEK, resistant against chemical substances, Hastelloy® C-276 mounting plate, Titanium mounting plate, FEP coated cable</p>
Measurement range	-100 cm/s to +600 cm/s
Number of scans	Max. 16

Zero point drift	absolutely stable zero point
Error limits (per scan layer)	<1 % of measurement value ( $v > 1\text{ m/s}$ ) < 0.5 % of measurement value +5 mm/s ( $v < 1\text{ m/s}$ )
Minimum filling level	6,5 cm
Sonic beam angle	$\pm 5$ degrees
<b>Level measurement – Water ultrasonic</b>	
Measurement range	0 to 200 cm (0 to 6.56 ft)
Zero point drift	absolutely stable zero point
Measurement uncertainty	< $\pm 2$ mm
<b>Level measurement - Pressure</b>	
Measurement range	0 to 500 cm
Zero point drift	max. 0.75 % of final value (0–50 °C)
Measurement uncertainty	$\leq 0.5$ % of final value
<b>Temperature measurement</b>	
Measurement range	-20 °C to +50 °C (-4 °F to 122 °F)
Measurement uncertainty	$\pm 0.5$ K

#### 4.6 Air Ultrasonic-Sensor, type OCL-L1

Measurement principle	Ultrasonic transit time
Measurement frequency	120 kHz
Protection rating	IP 68
Ex-Approval	II 2 G Ex ib IIB T4 Gb (ATEX) Ex ib IIB ic (IECEX)
Operating temperature	-20 °C to +50 °C (-4 °F to 122 °F) -20 °C to +40 °C (-4 °F to 104 °F) for applications in Ex Zone 1
Storage temperature	-30 °C to +70 °C (-22 °F to 158 °F)
Operating pressure	max. 1 bar
Cable length	10/15/20/30/50/100 m
Type of cable	LiYC11Y 2x1.5 + 1x2x0.34
Outside cable diameter	8.4 mm $\pm 0.25$ mm
Type of construction	Wedge sensor for installation in channel vertex
Medium contacting materials	Polyurethane, stainless steel 1.4571, PPO GF30, PA
Measurement range	0 to 200 cm (0 to 6.56 ft)
Dead zone (as from ground plate)	14 cm (5.51 in)
Measurement uncertainty	< $\pm 0.5$ % of final value
<b>Temperature measurement</b>	
Measurement range	-20 °C to +50 °C (-4 °F to 122 °F)
Measurement uncertainty	$\pm 0.5$ K

#### 4.7 Water-ultrasonic combi sensor, type CS2

Measurement principle	<ul style="list-style-type: none"> <li>- ultrasonic transit time (level)</li> <li>- piezo-resistive pressure measurement (level)</li> <li>- correlation with digital pattern detection (flow velocity)</li> </ul>
Measurement frequency	1 MHz
Protection	IP 68
Ex-Approval (optional)	II 2 G Ex ib IIB T4 Gb (ATEX) Ex ib IIB T4 Gb (IECEX)
Operating temperature	-20 °C to +50 °C (-4 °F to 122 °F) -20 °C to +40 °C (-4 °F to 104 °F) for applications in Ex Zone 1
Storage temperature	-30 °C to +70 °C (-22 °F to 158 °F)
Operating pressure	max. 4 bar (combi sensor with pressure element max. 1 bar)
Cable length	10/15/20/30/50/100 m for sensors without plug (sensor connection type "K" and "L") extendable up to 250 m max. (820 ft). Using sensors with integrated pressure measurement cell (level measurement, type V2D0 und V2U1) requires to use a pressure compensation element after a cable length of 30 m (99 ft). Element may also be used to connect extension.
Type of cable	<ul style="list-style-type: none"> <li>- Combi sensors with pressure measurement: LiYC11Y 2x1,5 + 1x2x0,34 + PA 1,5/2,5</li> <li>- Sensors without pressure measurement: LiYC11Y 2x1,5 + 1x2x0,34</li> </ul>
Outside cable diameter	<ul style="list-style-type: none"> <li>- Combi sensors with pressure measurement: 9.75 mm ±0.25 mm</li> <li>- Sensors without pressure measurement: 8.4 mm ±0.25 mm</li> </ul>
Sensor types	<ul style="list-style-type: none"> <li>- Flow velocity sensor with v-measurement using cross correlation and temperature measurement to compensate the temperature effect on the velocity of sound.</li> <li>- Combi sensor with flow velocity sensor using cross correlation, level measurement via water ultrasonic and temperature measurement to compensate the temperature effect on the velocity of sound.</li> <li>- Combi sensor with flow velocity sensor using cross correlation, level measurement via pressure and temperature measurement to compensate the temperature effect on the velocity of sound (only for wedge sensors).</li> <li>- Combi sensor with flow velocity sensor using cross correlation, level measurement via water ultrasonic as well as redundant pressure measurement and temperature measurement to compensate the temperature effect on the velocity of sound (only for wedge sensors).</li> </ul>
Types of construction	<ul style="list-style-type: none"> <li>- Wedge sensor for installation on channel bottom or channel wall</li> <li>- Pipe sensor for installation in pipes with sensor screw joint and retaining element</li> </ul>
Medium contacting materials	Polyurethane, stainless steel 1.4571, PPO GF30, PEEK, PA (only wedge sensors), PTFE (only pipe sensors)
Measurement range	-100 cm/s to +600 cm/s (-3.28 fps to 19.7 fps)
Number of scans	Max. 16
Zero point drift	absolutely stable zero point
Error limits (per scan layer)	<1 % of measurement value (v > 1m/s) < 0.5 % of measurement value +5 mm/s (v <1 m/s)

Minimum filling level	8,0 cm
Sonic beam angle	±5 degrees
<b>Level measurement – Water ultrasonic</b>	
Measurement range	0 to 500 cm (0 to 16.4 ft), lowest absolutely measurable level 8 cm (0.26 ft)
Zero point drift	absolutely stable zero point
Measurement uncertainty	< ±2 mm
<b>Level measurement - Pressure</b>	
Measurement range	0 to 500 cm
Zero point drift	max. 0.75 % of final value (0–50 °C)
Measurement uncertainty	≤0.5 % of final value
<b>Temperature measurement</b>	
Measurement range	-20 °C to +50 °C
Measurement uncertainty	±0.5 K

### Storing

Strictly observe the storing conditions below:

- max. temperature: +70° C (158° F)
- min. temperature: - 30° C (-22° F)
- max. humidity: 100 %

When storing, protect the sensors from corrosive or organic solvent vapours, radioactive radiation and strong electromagnetic radiation..

## 4.8 Equipment

### 4.8.1 Delivery

The standard delivery of the correlation sensors contains:

- The instruction manual with the certificate of conformity. Here, all necessary steps to correctly install and to operate the sensors are listed.
- One correlation sensor as on the delivery note

Check additional accessories depending on your order and by using the delivery note.

### 4.8.2 Receipt

Check the delivery according to the delivery note for completeness and intactness immediately after receipt. Report any damage in transit to the carrier instantly. Send an immediate, written report to NIVUS GmbH in Eppingen as well. Incomplete delivery shall be directly reported to the headquarters in Eppingen or your local distributor in written form within two weeks.




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*Mistakes cannot be rectified later!*

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## **4.8.3 Transport**

Protect the Sensors from shock and impact loads and vibrations. The transportation must be carried out in the original packaging.

## **4.8.4 Return**

The sensors must be returned at customer cost to NIVUS Eppingen in the original packaging free of charge.

Returns with insufficient postage will not be accepted!

## **4.8.5 Installation of Spare Parts and Parts subject to wear and tear**

We herewith particularly emphasize that replacement parts or accessories, which are not supplied by us, are not certified by us, too. Hence, the installation and/or the use of such products may possibly be detrimental to the device's ability to work.

Damages caused by using non-original parts and non-original accessories are left at user's risk.

## 5 Installation

### 5.1 Installation Instructions

- Observe appropriate installation!
  - Follow applicable legal or operational guidelines!
- Inappropriate use may result in injuries and/or damage on instruments!

#### Hints to avoid electrostatic discharge (ESD)

##### CAUTION



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##### **ESD Risks:**

*Maintenance procedures which do not require power supply of the system shall not be executed before the complete measurement system has been disconnected from mains power in order to minimise danger and ESD risks.*

*Disconnect the measurement system from mains power!*

---

The sensitive electronic components inside the sensor may get damaged by static electricity. The manufacturer recommends the following steps to prevent the device from getting damaged due to electrostatic discharge:

- Discharge static electricity from your body before touching the instrument's electronic components.
- Avoid unnecessary movements to reduce the risk of building up static electricity.

### 5.2 Electrical Installation

##### WARNING



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##### **Disconnect the unit from mains power**

*All work on electrical connections may only be carried out with the supply voltage turned off.*

*Observe electrical data specified on the nameplate.*

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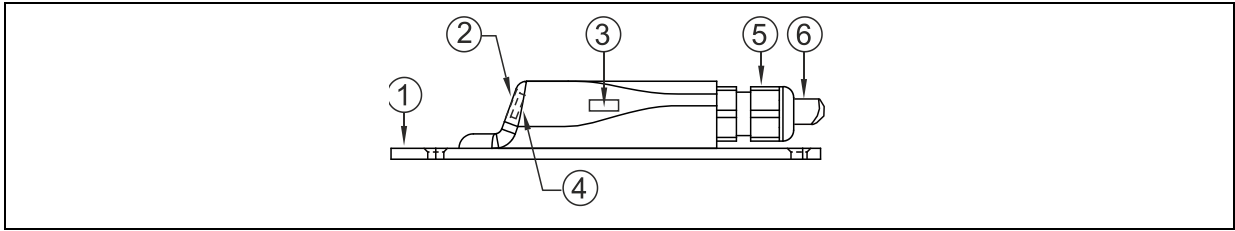
##### **Note:**

*Observe the national installation instructions.*

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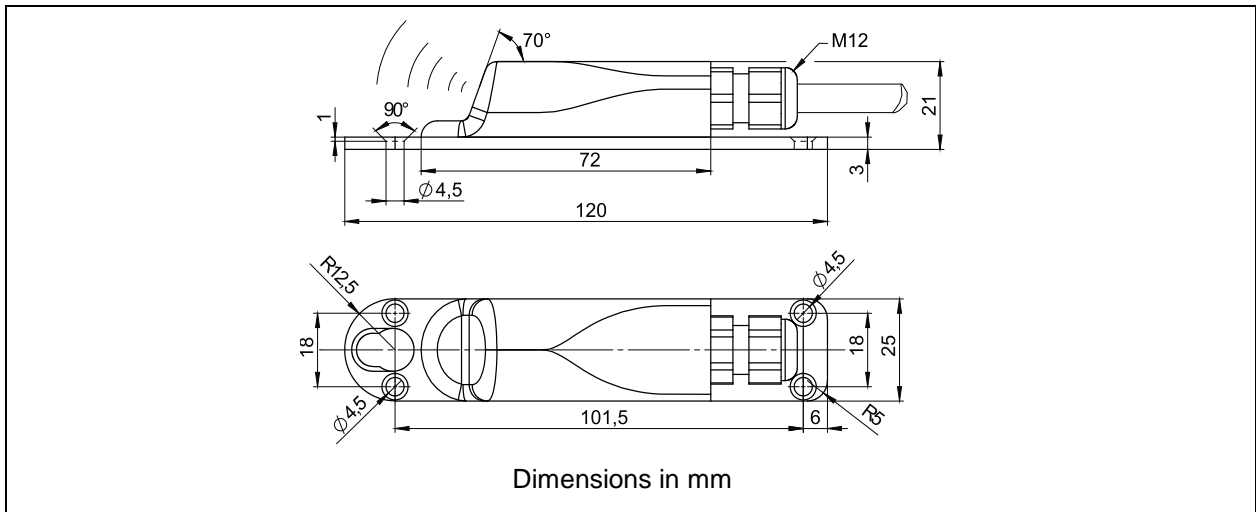
For electric installation the regulations in the respective countries must be referred to.

### 5.3 Sensor Design and Dimensions

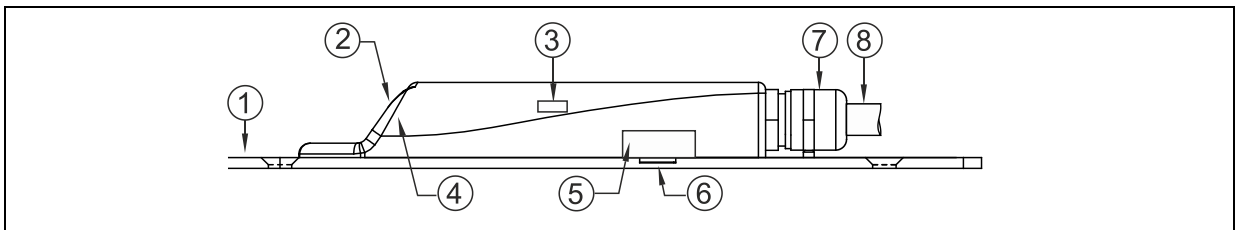


- 1 Ground plate
- 2 Acoustic coupling layer
- 3 Temperature sensor
- 4 Flow velocity sensor
- 5 Cable gland
- 6 Sensor cable

**Fig. 5-1 Basic construction CSM wedge sensor**

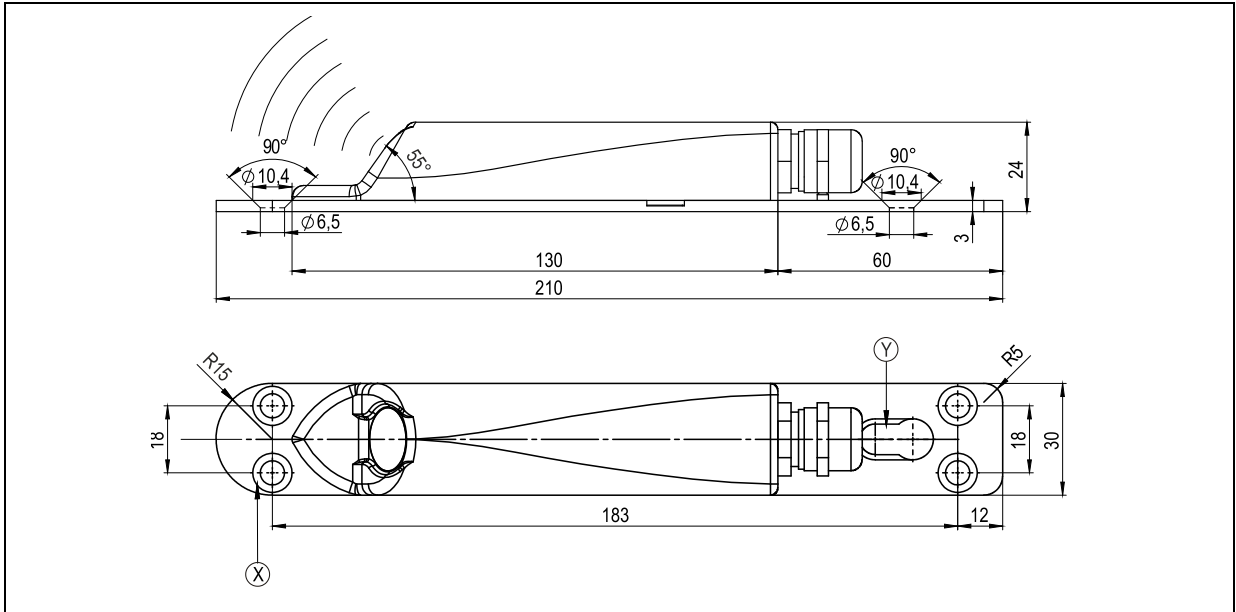


**Fig. 5-2 Dimensions CSM wedge sensor**

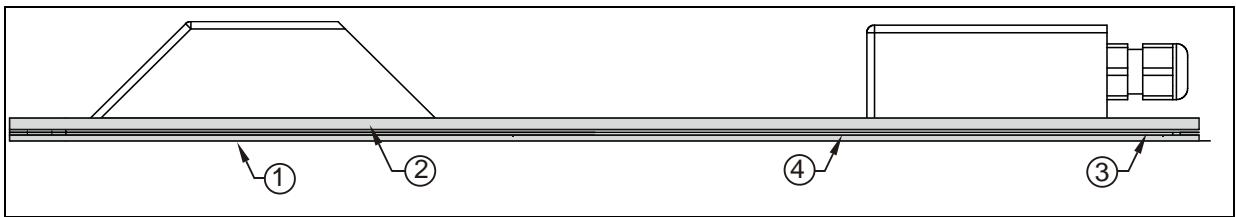


- 1 Ground plate
- 2 Acoustic coupling layer
- 3 Temperature sensor
- 4 Flow velocity sensor
- 5 Pressure sensor
- 6 Duct to pressure measurement
- 7 Cable gland
- 8 Sensor cable

**Fig. 5-3 Basic construction CSMD wedge sensor V1D0**

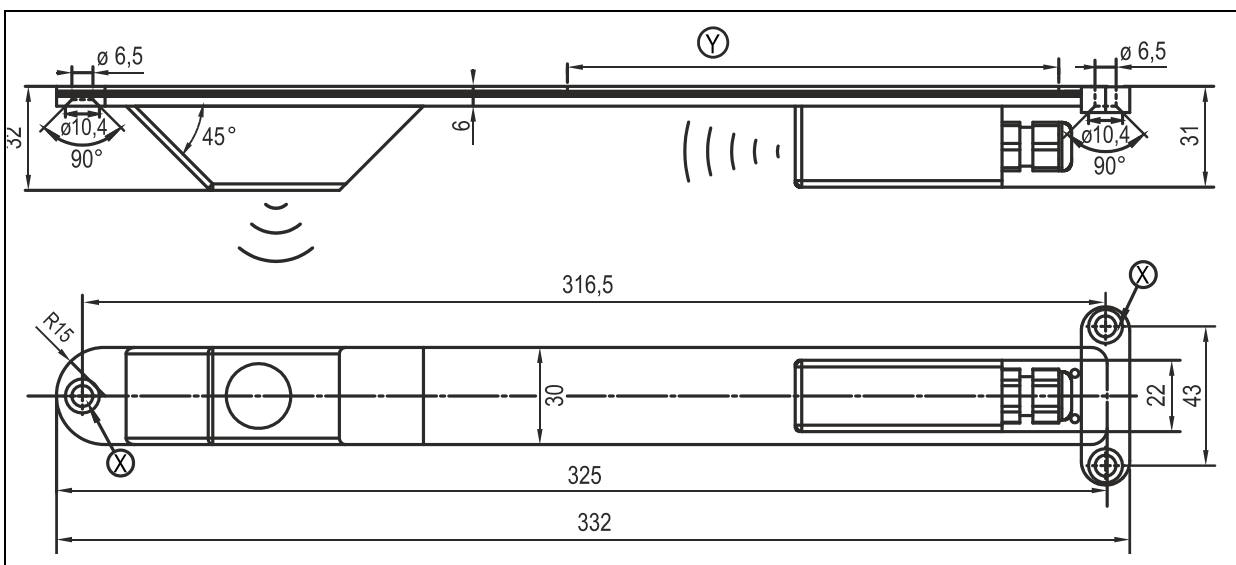


**Fig. 5-4 Dimensions CSMD wedge sensor V1D0**



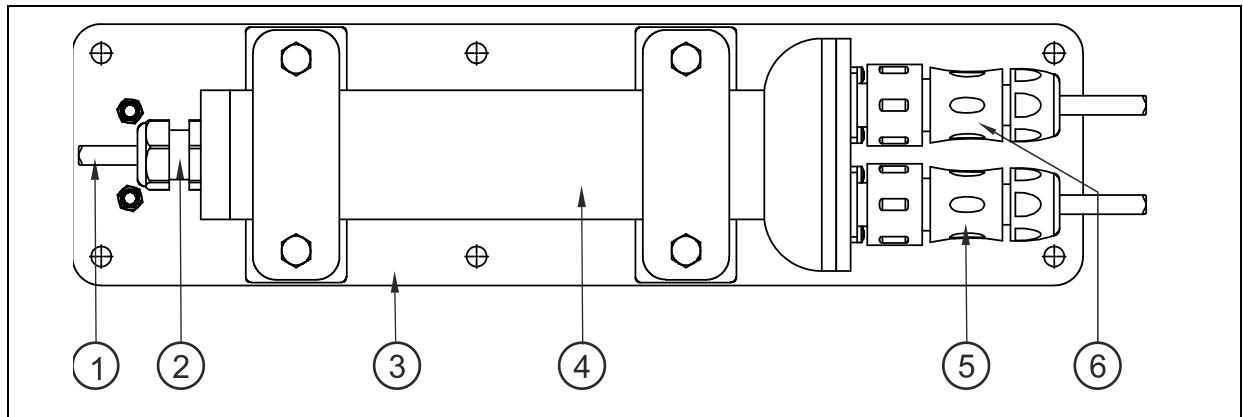
- 1 Ground plate 1
- 2 Mounting plate 2 (base plate)
- 3 Insertion section for pipe mounting plate
- 4 Mounting plate (spacer plate)

**Fig. 5-5 Basic construction of air-ultrasonic sensor, type DSM**



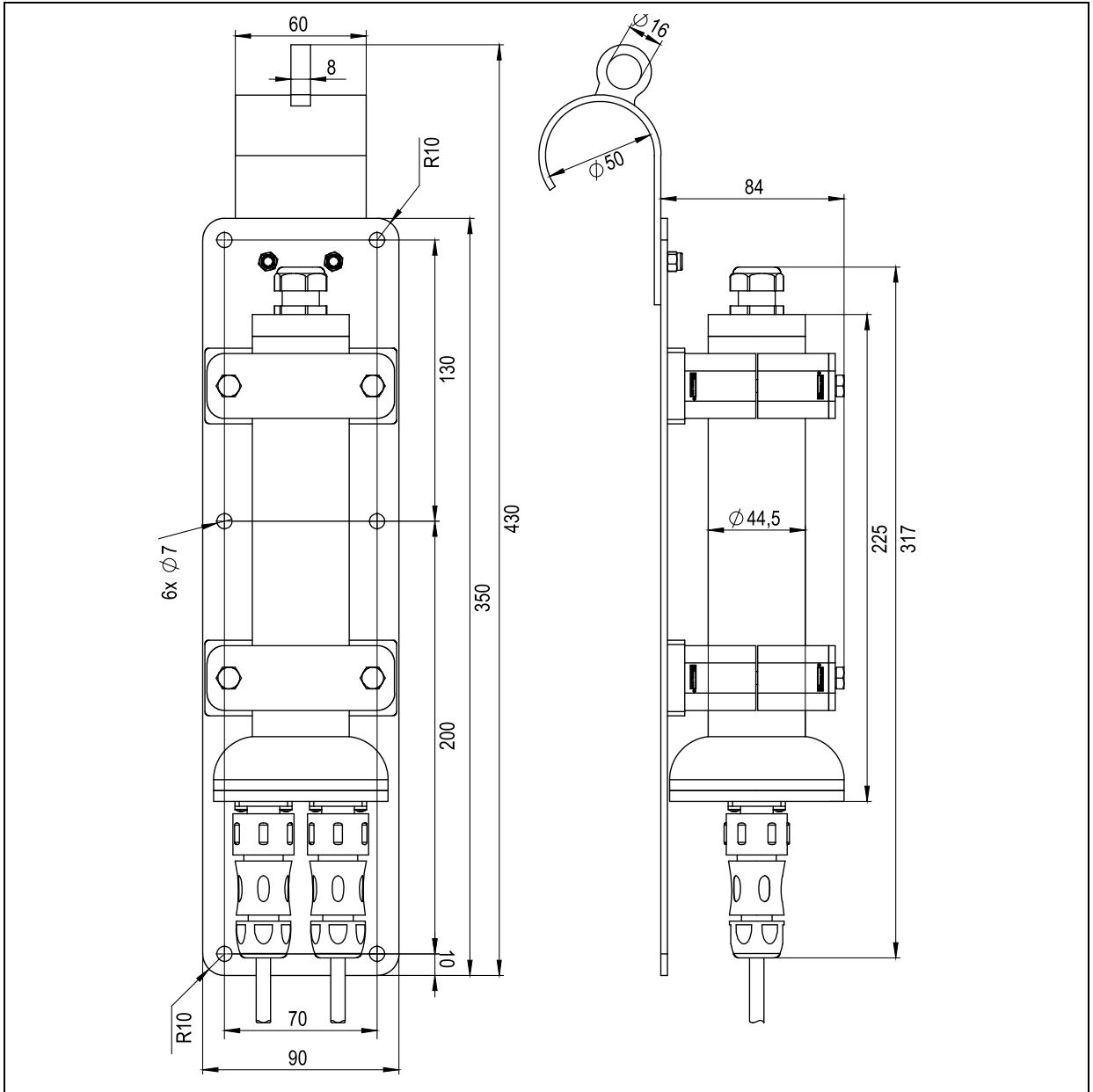
- X = Fastening shoe and countersunk hole for direct fastening  
Y = Insertion section for pipe mounting plate

**Fig. 5-6 Dimensions air-ultrasonic sensor, type DSM**

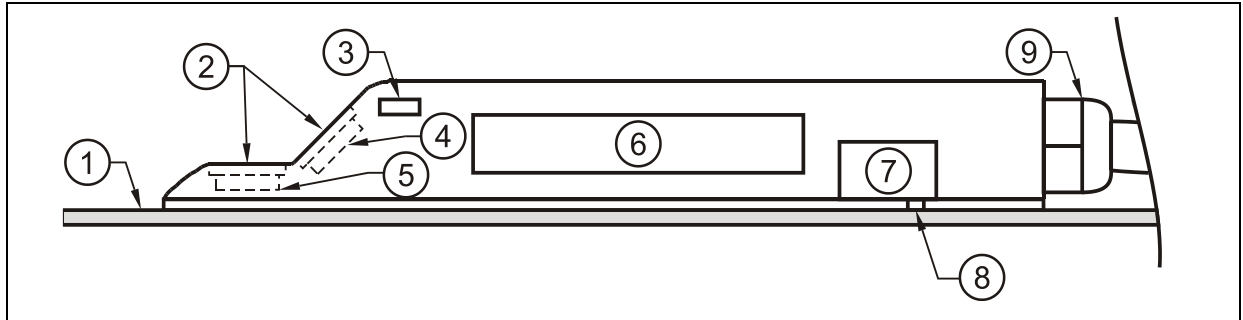


- 1 Cable
- 2 Cable gland
- 3 Ground plate
- 4 Electronic body
- 5 Plug for water-ultrasonic sensor, type CSM
- 6 Plug for air-ultrasonic sensor, type DSM

**Fig. 5-7 Basic construction of Electronic Box, type EBM**

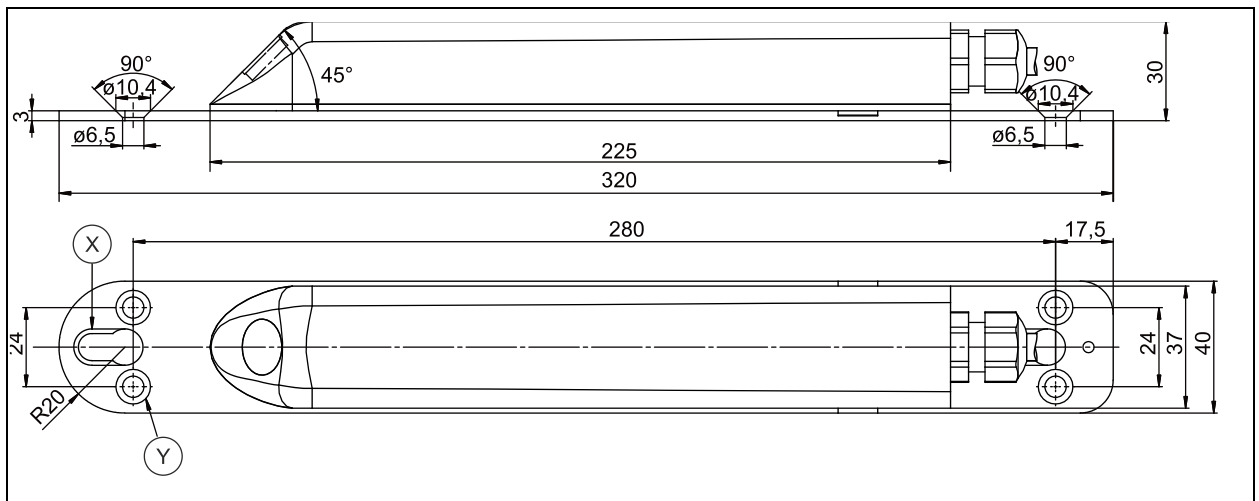


**Fig. 5-8 Dimensions of Electronic Box, type EBM**



- 1 Ground plate
- 2 Acoustic coupling layer
- 3 Temperatur sensore
- 4 Flow velocity sensor
- 5 Level / height sensor (optional)
- 6 Electronics
- 7 Pressure sensor (optional)
- 8 Duct to pressure measurement (optional)
- 9 Cable gland

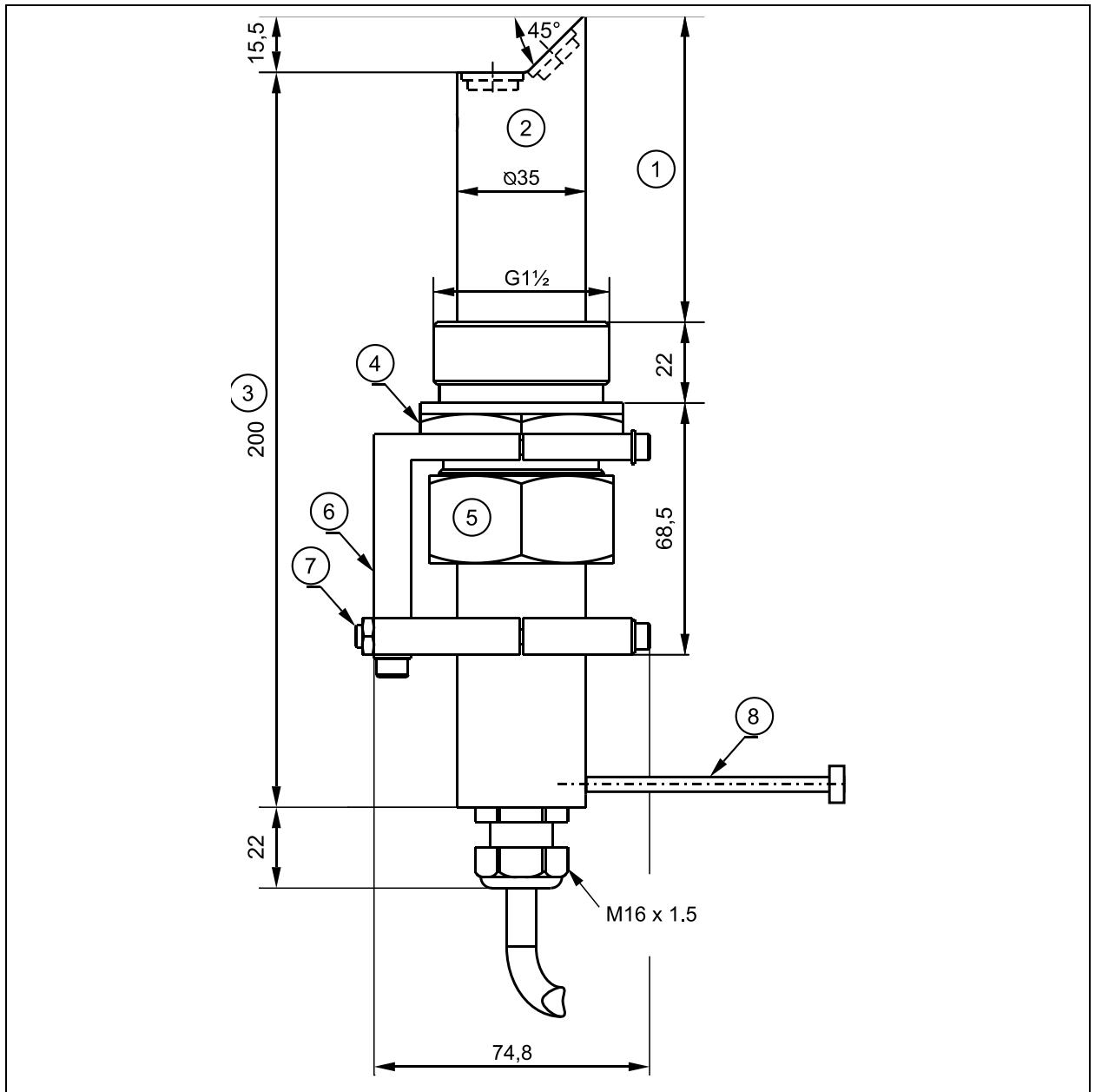
**Fig. 5-9 Basic construction POA wedge sensor**



X = Slotted holes for fastening on pipe mounting system

Y = 4 x countersunk holes DIN 66-5, however with  $d1 = 6.5$  mm for direct fastening

**Fig. 5-10 Dimensions POA wedge sensor V200/V2D0**

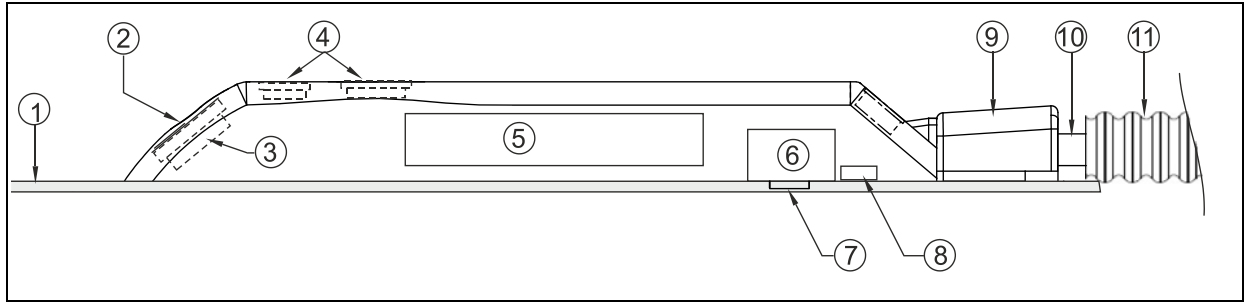


- 1 Movable
- 2 Pipe sensor
- 3 300 mm (use of a ball stop valve)
- 4 Wrench size 55
- 5 Wrench size 50
- 6 Retaining element
- 7 Set screw
- 8 Screw "installation help" in/with flow direction

**Fig. 5-11 Dimensions POA pipe sensor**

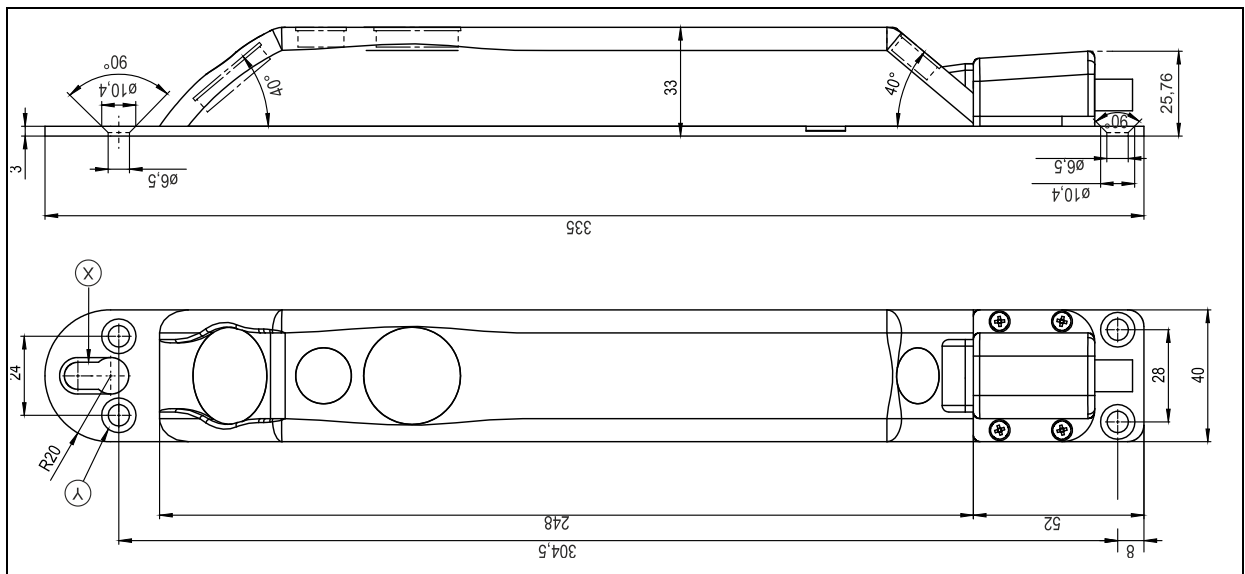






- 1 Ground plate
- 2 Acoustic coupling layer
- 3 Flow velocity sensor positive flow direction
- 4 Level / height sensor water-ultrasound (optional)
- 5 Electronics
- 6 Pressure sensor (optional)
- 7 Duct to pressure measurement (optional)
- 8 Temperatur sensor (sensors without pressure cell only)
- 9 Protective cover for sensor cable and protection hose fastening
- 10 Sensor cable
- 11 Protection hose(optional)

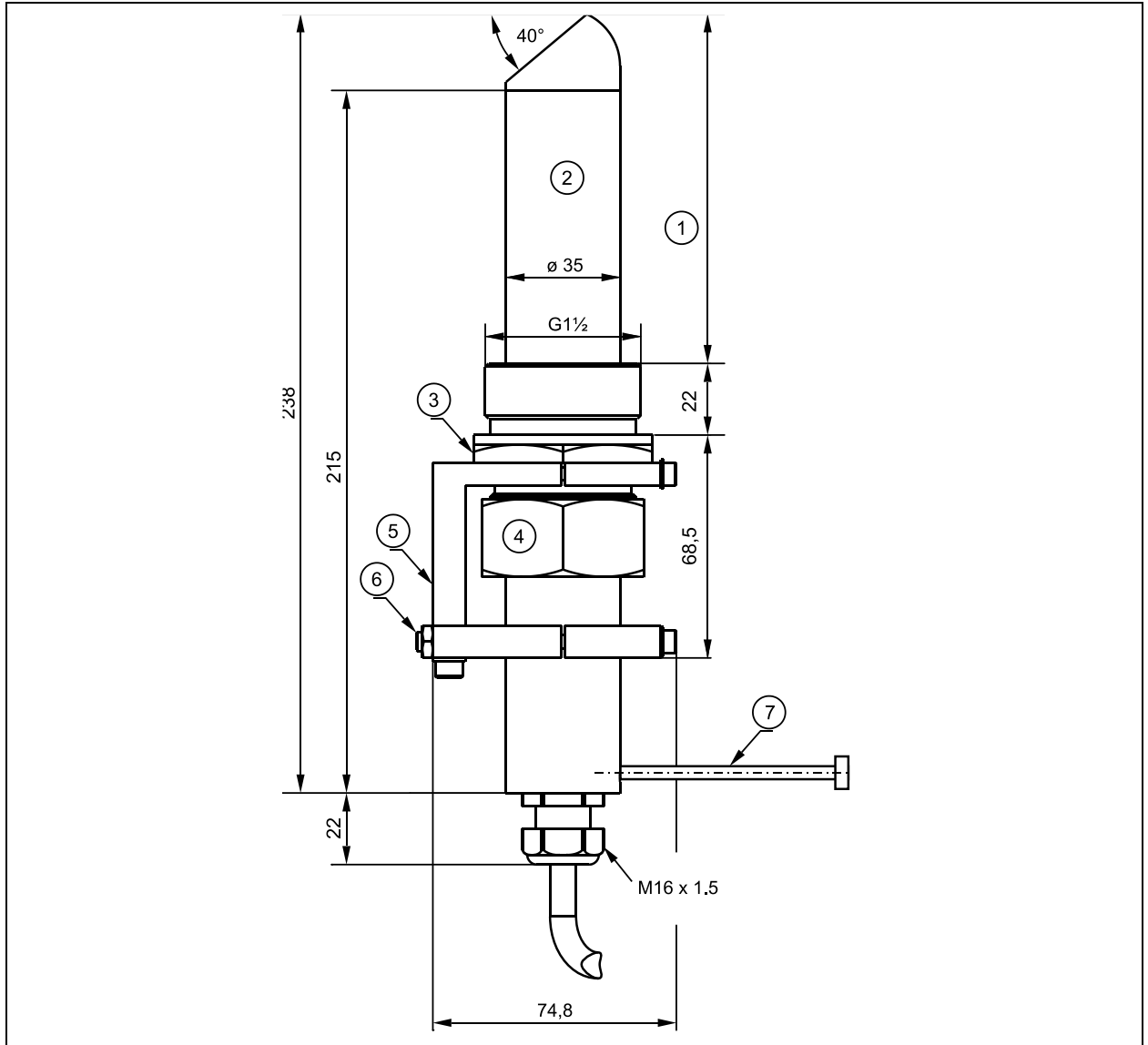
**Fig. 5-14 Basic construction CS2 wedge sensor**



X = Slotted holes for fastening on pipe mounting system

Y = 4 x countersunk holes DIN 66-5, however with  $d_1 = 6.5$  mm, for direct fastening

**Fig. 5-15 Dimensions CS2 wedge sensor**



1. Movable
2. Sensor
3. Wrench size 55
4. Wrench size 50
5. Retaining element
6. Grub screw
7. Screw "installation help" - 180° to flow direction

**Fig. 5-16 Dimensions CS2 pipe sensor**

## 5.4 Sensor Installation

### WARNING



*Leakage due to removing components*

*Removing or loosening from ground plate or cable gland result in leakage and therefore will cause measurement and sensor failure.*

*Do absolutely not remove any parts of the sensor!! Otherwise warranty as well as Ex protection will expire!*

The installation of the sensors is described in the separately "Installation Manual for Sensors".

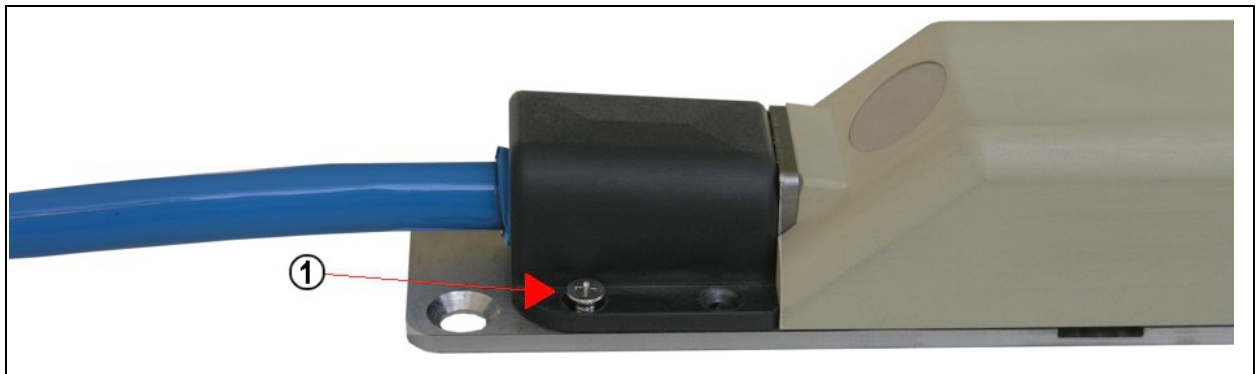
Please refer to:

- selecting sensor positions
- required calming sections
- sensor installation and fastening
- cable layout

Please anyway observe the hints on sensors with integrated pressure cell in this manual (chapters 5.7 and 5.8).

## 5.5 Mounting the protection hose for the sensor, type CS2

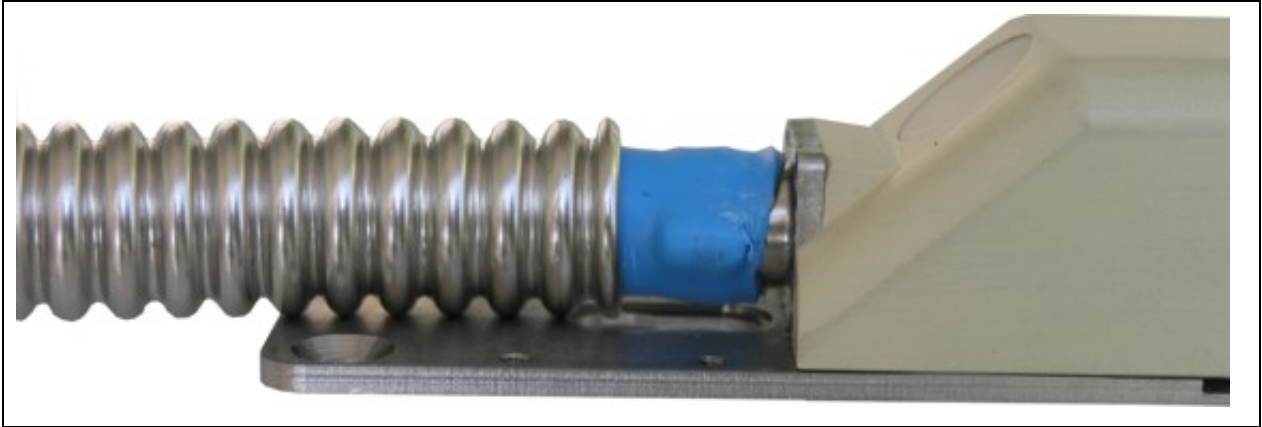
It is possible to optionally install a cable protection hose on the sensor. To do this unscrew the 4 screws of the protective cover (see Fig. 5-17)



1 Protective cover screws

**Fig. 5-17 Unscrewing the protective cover**

Push the protection hose over the cable subsequently as depicted in Fig. 5-18.



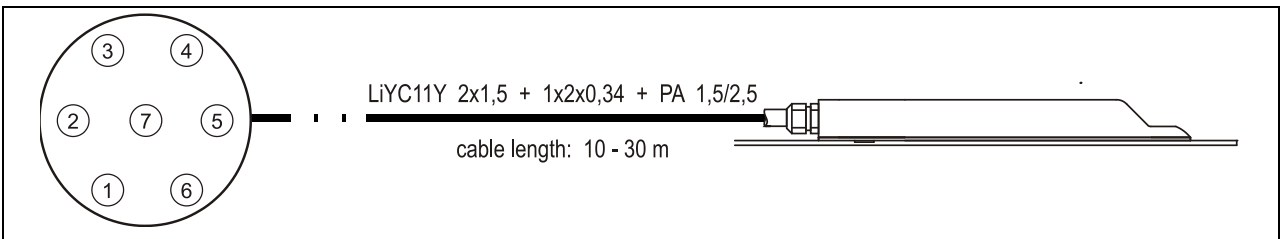
**Fig. 5-18 Pushing the protection hose over the cable**

Fasten the protective cover again by using the 4 screws subsequently.



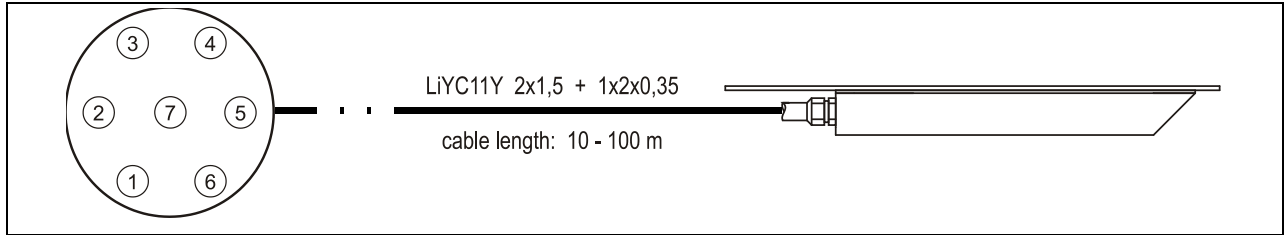
**Fig. 5-19 Fastening the protective cover**

## 5.6 Plug wiring and Sensor Cable



- |   |                               |
|---|-------------------------------|
| 1 | UE (voltage input, max. 9.9V) |
| 2 | RxTx + (RS485)                |
| 3 | not connected                 |
| 4 | not connected                 |
| 5 | RxTx - (RS485)                |
| 6 | UE-GND (power supply ground)  |
| 7 | shield (cable shield)         |

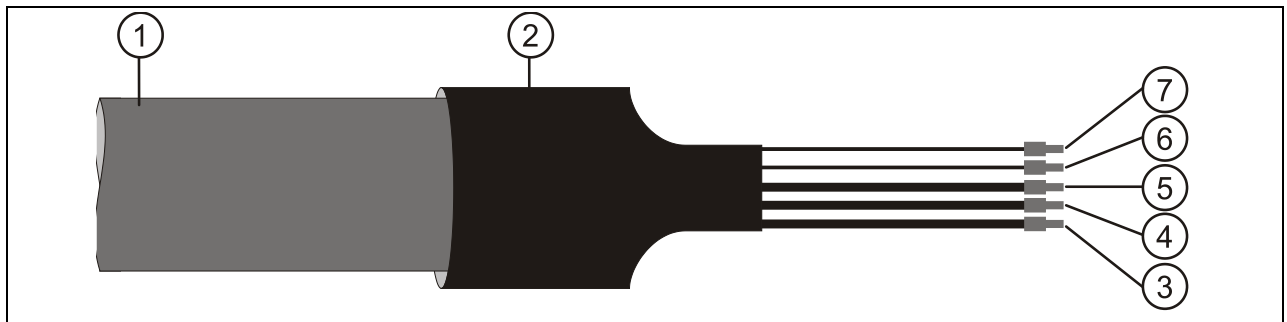
**Fig. 5-20 Plug wiring water-ultrasonic sensors (POA, CS2)**



- 1 UE (voltage input, max. 9.9V)
- 2 RxTx + (RS485)
- 3 + mA (2-wire sensors)
- 4 - mA (2-wire sensors)
- 5 RxTx - (RS485)
- 6 UE-GND (power supply ground)
- 7 shield (cable shield)

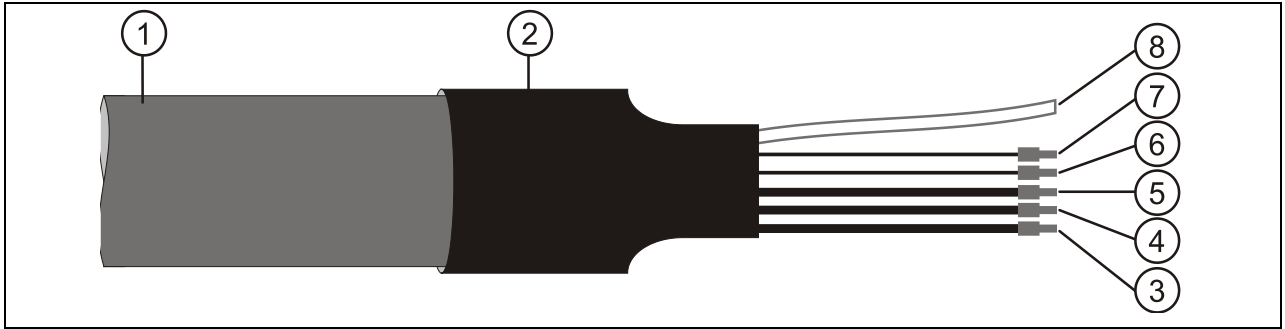
**Fig. 5-21 Plug wiring air-ultrasonic sensors**

For correct sensor positions, required calming sections, sensor installation and fastening as well as cable layout please refer to the separate "Installation Instructions for Correlation and Doppler Sensors".



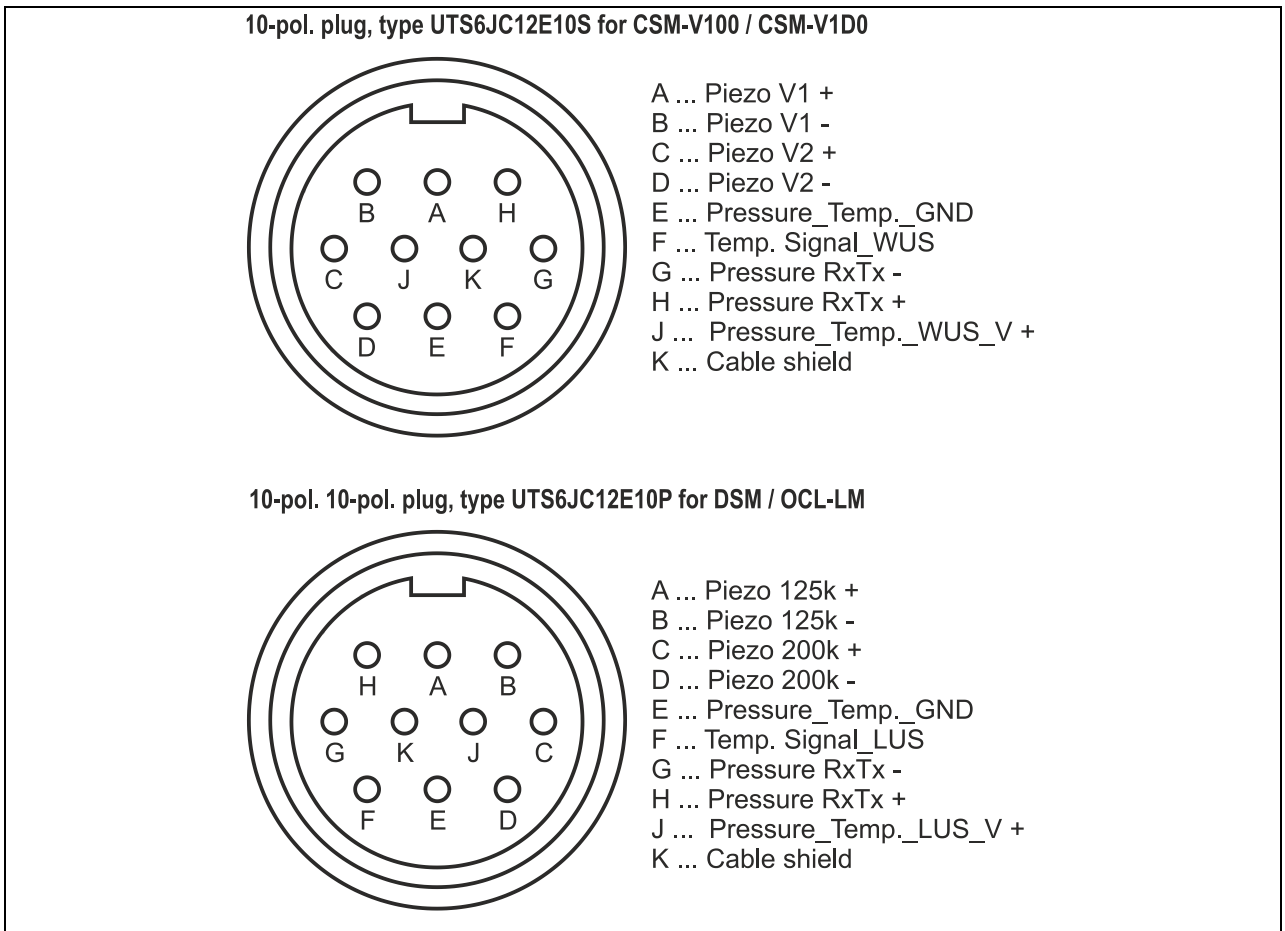
- 1 cable jacket
- 2 shrunk-on hose
- 3 black; cable shield (no ground)
- 4 red; power supply +; max. 10,5V
- 5 blue; power supply -
- 6 white; RxTx +
- 7 green; RxTx -

**Fig. 5-22 Cable end configuration; sensors without press. meas. cell**

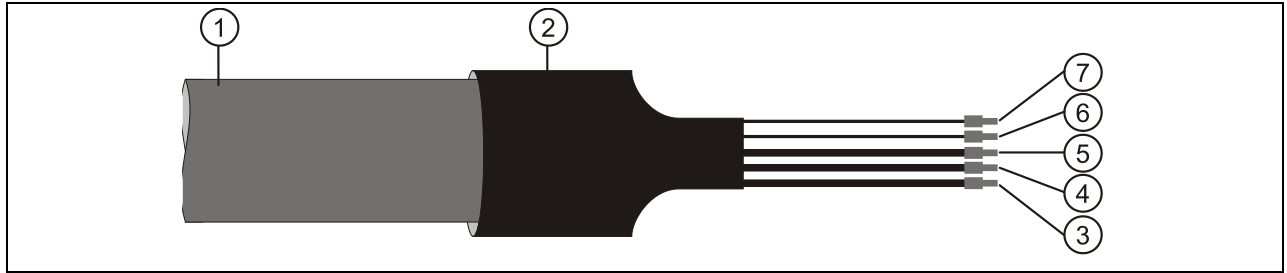


- 1 cable jacket
- 2 shrunk-on hose
- 3 black; cable shield (no ground)
- 4 red; power supply +; max. 10,5V
- 5 blue; power supply -
- 6 white; RxTx +
- 7 green; RxTx -
- 8 air compensation hose

**Fig. 5-23 Cable end configuration; sensors with press. meas. cell**



**Fig. 5-24 Plug wiring CSM and DSM**



- 1 cable jacket
- 2 shrunk-on hose
- 3 black; cable shield (no ground)
- 4 red; power supply +; max. 10,5V
- 5 blue; power supply -
- 6 white; RxTx +
- 7 green; RxTx -

**Fig. 5-25 Cable end configuration; Electronic Box**

## 5.7 Cable extension

### WARNING



#### **Electrical connection**

*Cable extension and sensor connection should be accomplished by authorised expert staff only.*

### WARNING



#### **Possible electrical interference**

*If you wish to extend cables by using a terminal box use a box made of metal. The shields of outgoing as well as incoming cables must be wired to the ground connection of the terminal box.*

*Inappropriate connections leading to increased contact resistance or the use of unsuitable cables may result in interferences or even measurement failures.*

Sensors with integrated pressure cell and sensor connection type „L“ (see Fig. 2-12) are equipped with a specially prepared cable type LIY11Y 2x1.5 mm<sup>2</sup> + 1x2x0.34 mm<sup>2</sup> + PA 1,5/2,5. Sensors without pressure measurement cell as well as the external Electronic Box with sensor connection type "K" are equipped with cables type LIY11Y 2x1.5 mm<sup>2</sup> + 1x2x0.34 mm<sup>2</sup>. These cables can be extended without any problem by using single shielded signal cables.

Sensors with integrated pressure cell and sensor connection types "F" or "S" are equipped with the respectively wired plugs; type „F“ are equipped with an additional air filter with a dehydration agent on the connection plug (see Fig. 5-26). These sensors cannot be extended.



The signal cable fixed on the sensor is not designed to be laid in the ground permanently. If you wish to lay signal cables into soils, concrete or similar please use additional protective pipes or hoses with sufficient inner diameters. Please select inner diameter, bending radius and layout of protective pipes and hoses in a way which enables to remove old signal cables and to draw in new ones without any problems.



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*When extending the sensors please note that the allowed total resistance of the power supply lines must not exceed at*

- sensors with 10 m (30 ft) fixed cable: 2.100 Ohm
- sensors with 20 m (60 ft) fixed cable: 1.850 Ohm
- sensors with 30 m (90 ft) fixed cable: 1.600 Ohm

*(feed + return wires!).*

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(In special cases even higher cable lengths may be possible taking special cross-sectional cable areas into account. Please request more information on these particular cases from NIVUS).

If an application requires the use of 2 or 3 flow velocity sensors, it is possible to extend the sensor cables using one common signal cable.



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*It is not allowed to use common extensions in case of different applications or to use a common signal cable to extend separate level and flow velocity measurements.*

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*The maximum cable length for air-ultrasonic sensors type OCL is 100 m (328 ft). This sensor cable shall not be extended.*

---

NIVUS recommend cable type A2Y(L)Y 6x2x0.8 (or more wires) for extension purposes. Two wires are required for bus communication. Connect remaining wires in parallel in a way to obtain 2 lines for power supply (same number of wires for each line).

The maximum permissible length of the fixed cable between flow velocity sensor and transmitter is 150 m.

The maximum cable length may be extended to up to 250 m as follows: use sensors with 30 m (98.4 ft) fixed cable and extend the cable by using a connection box together with an extension cable with a larger cross-section than the fixed cable.

It is possible to use cables of other types with a minimum cable cross-section of 0.8 mm<sup>2</sup> and a common shield. Please contact NIVUS if in doubt regarding appropriate cable types.

In case of using type A2Y(L) 2Y as mentioned above, the extension of both signal lines (RxTx) is made with one wire each.

The power supply UE and earth UE-GND extension is carried out with one or more parallel connected wires per line depending on the distance.

The number listed below is the minimum per connection!

It is required twice!      1x for UE + and  
    1x for UE-GND

Parallel wires for UE + as well as GND have to be soldered together depending on supply line.

Extension to	Min. number of wires for power supply and ground	Required total number of wires for extension (no reserves)
30 m (98.4 ft)	per 1	4
50 m (164 ft)	per 1	4
70 m (229.7 ft)	per 2	6
100 m (328 ft)	per 2	6
150 m (492 ft)	per 3	8
200 m (656 ft)	per 4	10
250 m (820 ft)	per 5	12
300 m (984 ft)	per 6 (consult NIVUS before)	14
400 m (1312 ft)	per 8 (consult NIVUS before)	18
500 m (1640 ft)	per 10 (consult NIVUS before)	22

Extension by using equivalent cables with other cross-sectional areas on request.

## 5.8 Pressure compensation element for CSM Sensors

### WARNING



#### ***Ingress of moisture***

*Never operate sensors with integrated pressure cell without or with used drying capsules.*

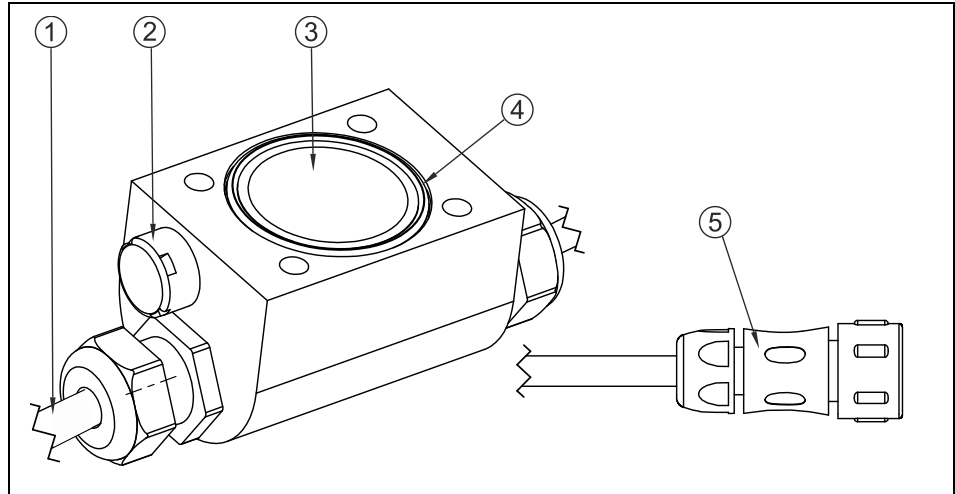
*Moisture leaking into the cell will irreversibly damage the built-in electronic components of the sensor!*

*The drying capsules avoid ingress of moisture!*

*Please regularly check and replace the drying capsules if required.*

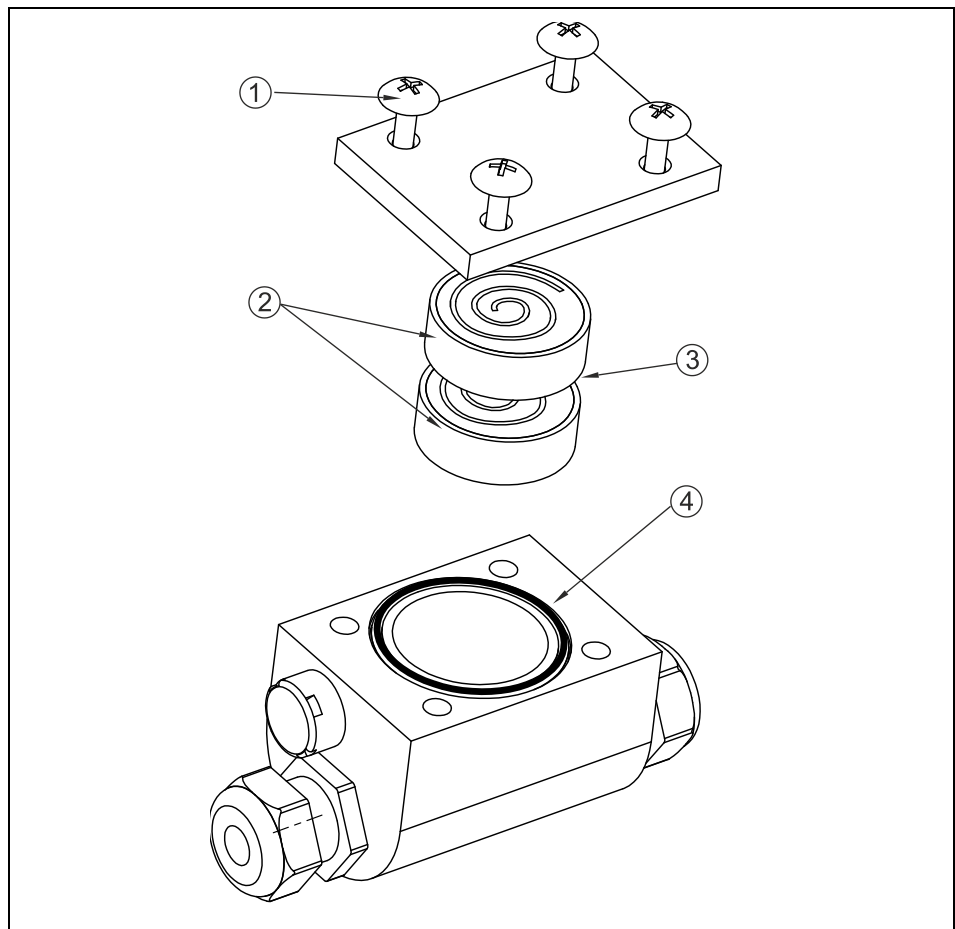
The pressure compensation element for CSM sensors is equipped with 2 drying capsules. These capsules prevent moisture from leaking in and preserve electronic components. The drying capsules shall be checked and replaced if required regularly (depending on the ambient conditions).

Please observe the maintenance hints in chapter 7.3!



- 1 Cable to sensor
- 2 Pressure compensation diaphragm
- 3 2 drying capsules with acrylic glass cover
- 4 O-ring – please observe the ring is placed correctly!
- 5 Plug for connection to Electronic Box

**Fig. 5-26 Pressure compensation element for connecting to EBM**



- 1 Crosshead screws to open the cover (acrylic glass)
- 2 2 replaceable drying capsules
- 3 Insert with board surface down
- 4 O-ring – observe correct placement – keep free of dirt

**Fig. 5-27 Exploded view drawing of pressure compensation element**

## 5.9 Pressure compensation element for POA- and CS2- sensors

### WARNING



#### *Penetration of moisture*

*Operating sensors with integrated pressure measurement cell without pressure compensation element for a longer period of time may lead to irreversible damage of sensor electronics.*

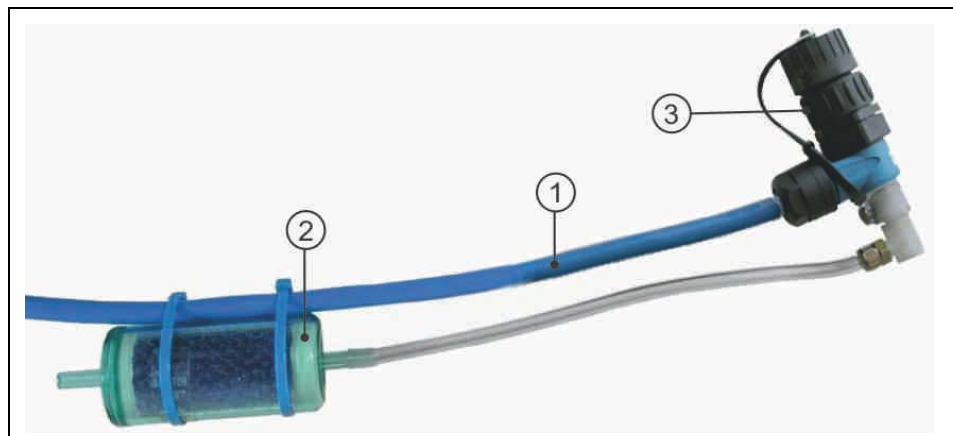
Use NIVUS pressure compensation elements exclusively to operate sensors with integrated pressure cell.

Sensors with integrated pressure measurement cell and sensor connection types „F“ or „S“ have a configured plug, type „F“ additionally have a preconfigured filter element, which works as a pressure compensation element (see Fig. 5-26). This sensor cables shall not be extended.

For sensors with pressure measurement cell (types V1D, V2D, V1U, V2U see Fig. 2-12) the maximum uninterrupted cable length is 30 m (90 ft). For cable extension a connection box with pressure compensation (pressure compensation element) has to be installed.

This pressure compensation element has to be installed even if the cable of a sensor with integrated pressure measurement cell is connected directly to the OCM Pro transmitter.

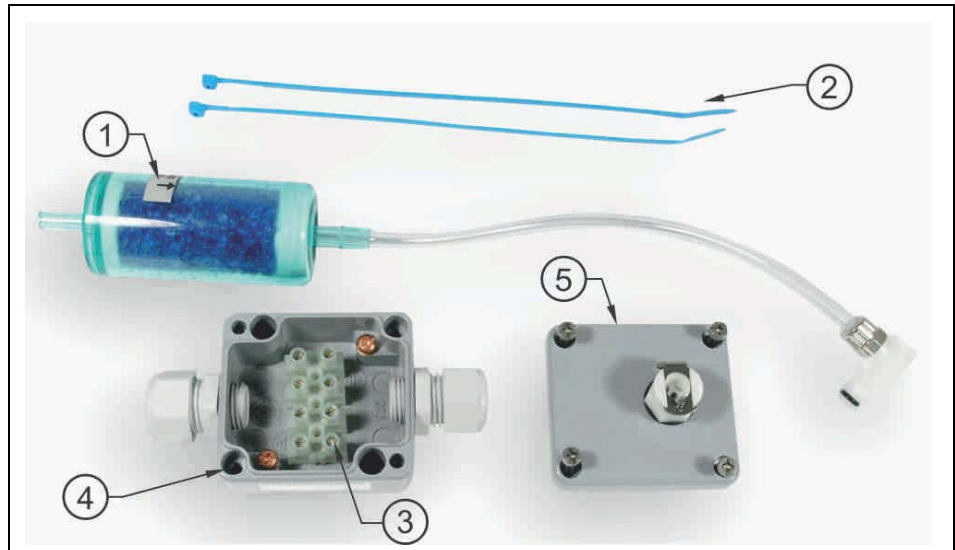
It is available directly from NIVUS under order article no. >ZUB0 ZDAE<.



- 1 Sensor cable
- 2 Filter element
- 3 Plug

**Fig. 5-28 Connection plug with air filter for connection to PCM**

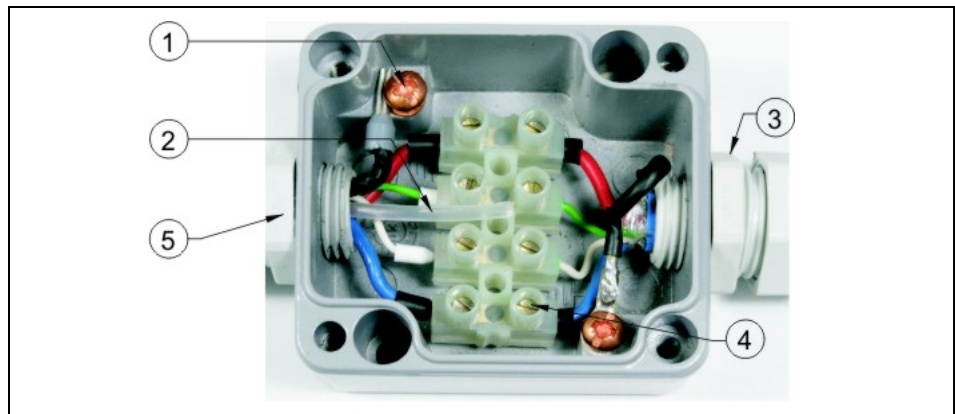
The pressure compensation element supplied by NIVUS consists of several components:



- 1 Filter element with air hose and air plug
- 2 Cable clips
- 3 Terminal clamps
- 4 Connection box
- 5 Box cover incl. self-locking socket for air hose plug

**Fig. 5-29 Components of air compensation element**

The 5-wire cable coming from the combi sensor must be connected 1:1 to the terminal clamp strip in the connection box. In this case please observe only to connect the power supply (red + blue) and the signal bus lines (white + green) to the terminal clamp strip. The cable shield (black) must **NECESSARILY** be connected to one of the both shield connection clamps within the box (Fig. 5-30).



- 1 Shield
- 2 Air hose
- 3 Transmitter side
- 4 Terminal clamps
- 5 Flow velocity sensor side

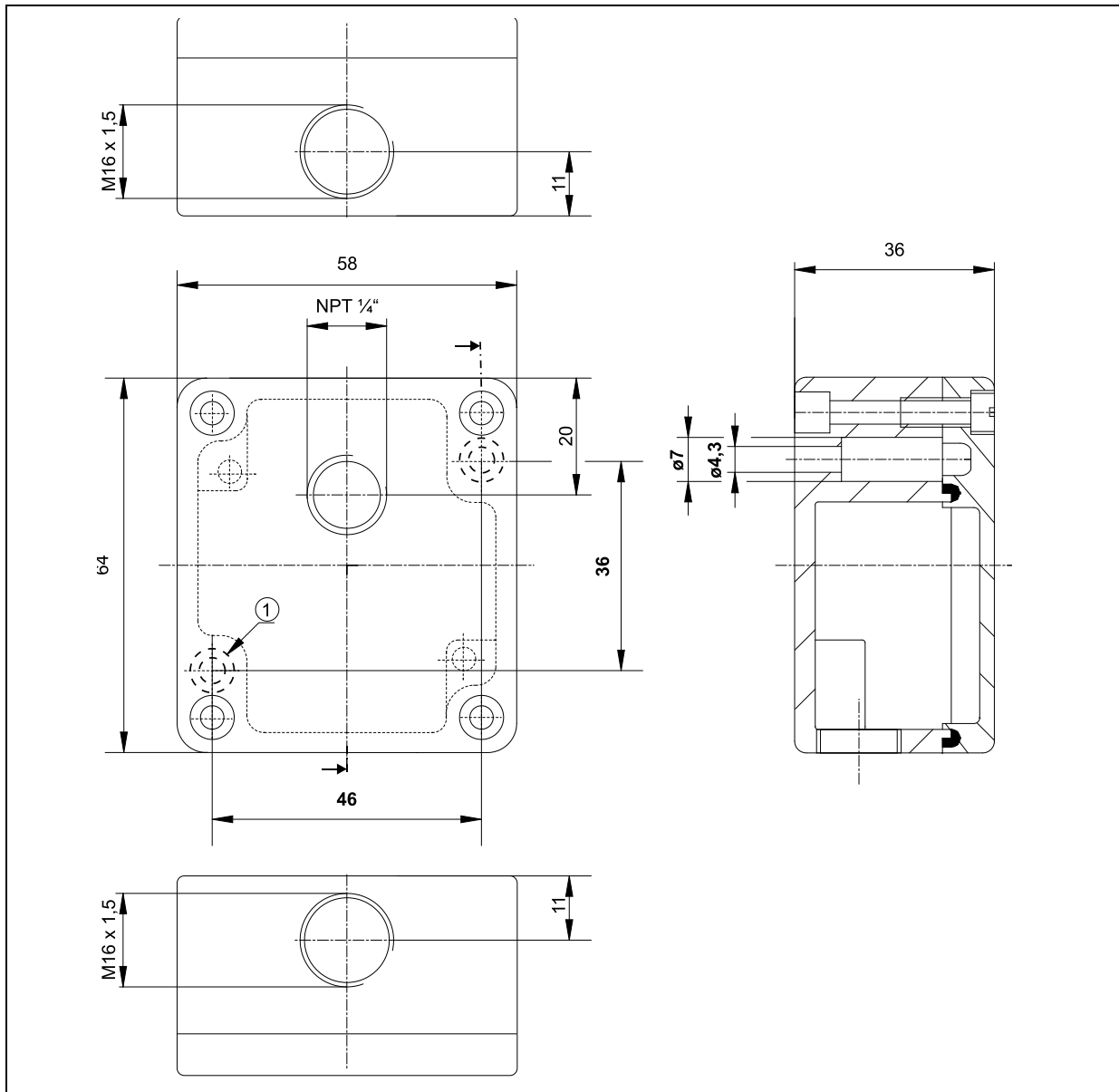
**Fig. 5-30 Open connection box**



The connection box with air compensation has to be installed in an area without corrosive gases and which is durably protected from being flooded.

Never operate the measurement incl. pressure compensation element with unplugged air hose plug automatic self-locking mechanism of the integrated socket → will shift the zero point of the level measurement).

The opening of the filter element must look downwards always!



1 Holes for fastening

**Fig. 5-31 Connection box dimensions**

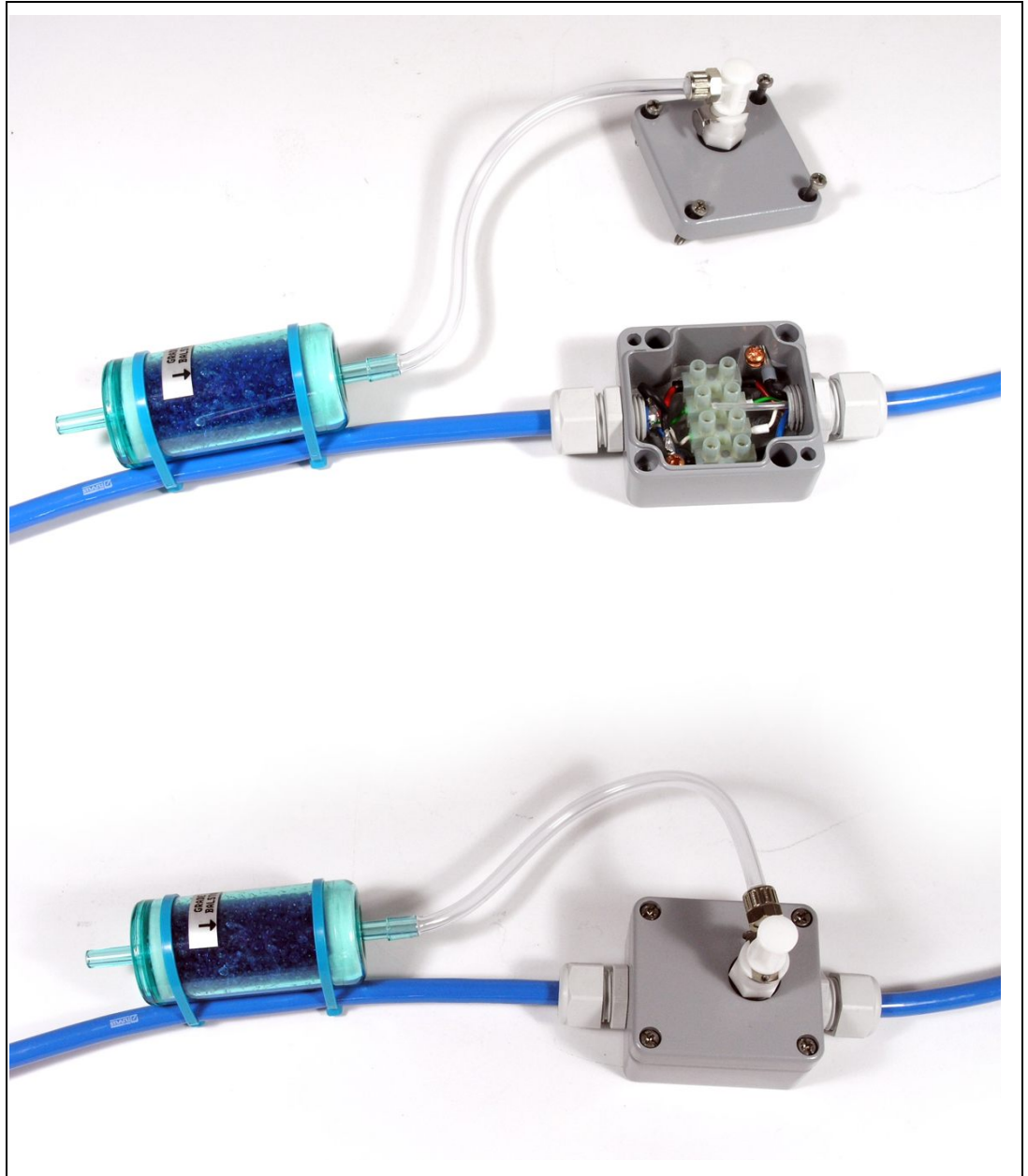


**Important Note:**

Please necessarily connect the shields of feed and return cable to the shield connections of the metal connection box.

Otherwise faulty results or even measurement failures may occur.

Extension from connection box to transmitter is carried out as described below by using A2Y or similar appropriate shielded signal cables. After correct connecting the cables correctly fix the air filter with the cable clips on one of both cables in a way that the opening of the filter element looks downwards. Snap the air hose plug into the socket on the box lid and screw the lid onto the box subsequently.



**Fig. 5-32 Assembled pressure compensation element**

## 6 Table of Resistiveness

### WARNING



#### **Damage due to aggressive media**

*As a basic principle, damage might occur in case of using chloride media (pitting corrosion in stainless steel ground plate or sensor jacket), hydrogen sulphide (H<sub>2</sub>S – risk of diffusion through cable sheath or sensor body resulting in destruction of copper wires and conductor paths) as well as various organic solvents (may dissolve cable sheath or sensor body)!*

*Sensors and cables shall be installed exclusively in media according to the table of resistiveness below.*

*Sensor installation and cable layout shall be executed exclusively in media according to the table of resistiveness below! Otherwise the measurement system may be damaged irreversibly.*

The medium contacting parts of the sensors consist of:

- V4A (ground plate or pipe sensor jacket)
- PPO GF30 (sensor body)
- PEEK (sensor crystal cover)
- Polyurethane (cable sheath and glands)
- PTFE (gasket of sensor screw joint)
- PA GF30 (protective cover for wedge sensor type CS2)

#### **The following materials are used additionally for sensors with pressure measurement cell:**

- Hastelloy® C-276
- Viton® (PA/PR)

The sensor technology is resistant to normal domestic sewages, dirt and rain water as well as mixed water from municipalities and communities. Also in many industrial plants (e.g. Huels, BASF etc.) the resistance does not present any problems. The sensor technology nevertheless is not resistant to all substances and substance mixtures.

Please observe that substance mixtures (several substances being present simultaneously) under certain circumstances may cause catalytic effects which might not occur if the individual substances are in use. Due to infinitely possible combinations these catalytic effects cannot be verified entirely.

If in doubt please contact your NIVUS representative and request a free material sample for long time testing purposes.

For use in special applications with high aggressive or solvent-containing media there are sensors made of full PEEK available with ground plates made of Hastelloy or Titanium as well as pipe sensors made of high resistant special steel. Sensor cables which have to be immersed into the medium are available with a special FEP coating (resistant to organic solvents or hydrogen sulphide).



MEDIUM	FORMULA	CONCENTRATION	HDPE	PPO GF30	PUR	PEEK	FEP	V4A	Haselloy C 276	Viton (PA/PR)	PVDF
Acetaldehyde	C <sub>2</sub> H <sub>4</sub> O	40 %	3/3	4	4	1	(1)	(1)	0	4/4	4/4
Acetic acid	C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	10 %	1/1	2	3	1	1/1	1/1	1	(3)	1/1
Acetic acid methyl ester	C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	tech. clean	1/0	3	0	1	1/0	1/1	1	4/4	0/0
Acetone	C <sub>3</sub> H <sub>6</sub> O	40 %	1/1	4	4	1	(1)	1/1	1	4/4	3/3
Allyl alcohol	C <sub>3</sub> H <sub>6</sub> O	96 %	1/3	2	0	1	1/1	1/1	0	4/4	0/0
Aluminium chloride	AlCl <sub>3</sub>	10 %	1/1	2	0	1	1/1	3/4	1	1/0	1/1
Aluminium chloride	(NH <sub>4</sub> )Cl	aqueous	1/1	1	0	1	1/1	1/2L	1	1/1	1/1
Ammonium hydroxide	NH <sub>3</sub> + H <sub>2</sub> O	5 %	1/1	2	4	1	1/1	1/1	1	(2)	1/1
Aniline	C <sub>6</sub> H <sub>7</sub> N	100 %	1/2	3	4	1	1/1	1/0	1	2/4	1/2
Benzene	C <sub>6</sub> H <sub>6</sub>	100 %	3/4	3/4	2	1	1/1	1/1	1	3/3	1/1
Benzyl alcohol	C <sub>7</sub> H <sub>8</sub> O	100 %	3/4	3	2	1	1/1	1/1	1	1/0	1/1
Boric acid	H <sub>3</sub> BO <sub>3</sub>	10 %	1/1	1	1	1	1/1	1/1	1	1/1	1/1
Bromic acid	HBrO <sub>3</sub>	conc.	0/0	0	3	1	0/0	(4)	0	(2)	1/1
Butanol (butyl alcohol)	C <sub>4</sub> H <sub>10</sub> O	tech. clean	1/1	2	3	1	1/1	(1)	1	3/4	1/1
Calcium chloride	CaCl <sub>2</sub>	spirituous	1/0	1	1	1	1/1	1/2L	1	1/1	1/1
Carbon disulphide	CS <sub>2</sub>	100 %	4/4	2	0	1	1/1	1/1	1	1/0	1/0
Carbon tetrachloride (TETRA)	CCl <sub>4</sub>	100 %	4/4	3	4	1	1/1	1/1L	1	1/1	1/1
Chloric gas	Cl <sub>2</sub>		4/4	3	3	1	1/1	1/0	0	1/1	1/1
Chloric methane	CH <sub>3</sub> Cl	tech. clean	3/0	4	4	1	1/0	1/1L	0	4/4	0/0
Chlorine water	Cl <sub>2</sub> x H <sub>2</sub> O		3/0	2	0	1	(1)	2/0L	1	1/0	0/0
Chlorobenzene	C <sub>6</sub> H <sub>5</sub> Cl	100 %	3/4	3	4	1	1/1	1/1	1	3/4	1/1
Chloroform	CHCl <sub>3</sub>	100 %	3/4	4	4	1	1/1	1/1	1	4/4	1/1
Chromate	CrO <sub>3</sub>	10 %	1/1	1	0	1	1/1	1/2	1	1/1	0/0
Citric acid	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>	10 %	1/1	1	1	1	1/1	1/1	1	1/1	1/1
Diesel oil	—	100 %	1/3	2	0	1	(1)	(1)	0	1/1	1/1
Essential oils	—		0/0	1	1	1	(1)	1/1	0	1/0	0/0
Ethanol	C <sub>2</sub> H <sub>6</sub> O	96 %	1/0	1	1	1	1/1	1/1	1	3/0	0/0
Ethyl acetate	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	100 %	1/3	3	3	1	1/1	(1)	0	4/4	1/2
Ethyl alcohol	C <sub>2</sub> H <sub>6</sub> O	100 %	1/0	1	1	1	1/1	1/1	0	3/0	0/0
Ethylene chloride	C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub>		3/3	4	3	1	1/1	1/1L	1	3/0	1/2
Ferric-(III)-chloride	FeCl <sub>3</sub>	saturated	1/1	2	3	2	1/1	4/4	0	1/1	1/1
Formaldehyde solution	CH <sub>2</sub> O	10 %	1/1	1	2	1	1/1	1/1	1	3/0	1/1
Gasoline, unleaded	C <sub>5</sub> H <sub>12</sub> - C <sub>12</sub> H <sub>26</sub>		2/3	3	2	1	1/1	1/1	1	(1-3)	1/1
Glycerol	C <sub>3</sub> H <sub>8</sub> O <sub>3</sub>	0,9	1/1	1	2	1	1/1	1/1	1	1/1	1/1
Heptane, n-	C <sub>7</sub> H <sub>16</sub>	0,9	2/3	1	1	1	1/1	1/1	1	1/1	1/1
Hexane, n-	C <sub>6</sub> H <sub>14</sub>	100 %	2/3	1	2	1	1/1	1/1	1	1/1	1/1
Hydrochloric acid	HCl	1-5 %	1/1	1	3	1	1/1	4/4	1	1/1	1/1
Hydrofluoric acid	HF	50 %	1/1	2	3	1	1/1	4/4	2	1/3	1/1
Isopropanol	C <sub>3</sub> H <sub>8</sub> O	tech. clean	1/1	1	2	1	1/1	(1)	1	1/1	0/0
Lactic acid	C <sub>3</sub> H <sub>6</sub> O <sub>3</sub>	3 %	1/1	1	0	1	1/1	1/1	1	1/1	1/2
Magnesium chloride	MgCl <sub>2</sub>	aqueous	1/1	1	2	1	1/1	1/0L	1	1/1	1/1
Methanol	CH <sub>4</sub> O		1/1	1	2	1	1/1	1/1	1	3/4	0/0
Methyl benzene (toluene)	C <sub>7</sub> H <sub>8</sub>	100 %	3/4	3	3	1	1/1	1/1	0	3/3	1/1
Mineral oil	—		1/1	1	1	1	1/1	1/1	1	1/1	1/1
Nitric acid	HNO <sub>3</sub>	1-10 %	1/1	1	3	1	1/1	1/1	1	1/1	1/1
Nitrobenzene	C <sub>6</sub> H <sub>5</sub> NO <sub>2</sub>		3/4	3	4	1	1/1	1/1	0	4/4	1/2
Oleic acid	C <sub>18</sub> H <sub>34</sub> O <sub>2</sub>	tech. clean	1/3	1	1	1	(1)	1/1	0	2/2	1/1
Oxalic acid	C <sub>2</sub> H <sub>2</sub> O <sub>4</sub> x 2H <sub>2</sub> O	aqueous	1/1	2	0	1	1/1	1/3	2	1/1	1/1
Ozone	O <sub>3</sub>		3/4	2	2	1	1/1	0/0	0	1/0	1/1
Petroleum	—	tech. clean	1/3	3	1	1	(1)	1/1	0	1/0	0/0
Phenol	C <sub>6</sub> H <sub>6</sub> O	100 %	2/3	3	2	1	1/1	1/1	1	2/3	1/1
Phosphoric acid	H <sub>3</sub> PO <sub>4</sub>	85 %	1/1	1	0	1	1/1	1/3	1	1/1	1/1
Potassium hydroxide	KHO	10 %	1/1	1	3	1	1/1	1/1	1	4/4	1/1
Potassium nitrate	KNO <sub>3</sub>	aqueous	1/1	1	0	1	1/1	1/1	1	1/1	1/1
Quicksilver-(II)-chloride	HgCl <sub>2</sub>	aqueous	1/1	1	0	1	1/1	(4)	1	1/1	1/1
Sodium bisulphite	NaHSO <sub>3</sub>	aqueous	1/1	1	0	1	(1)	1/1	1	1/0	1/1
Sodium carbonate	Na <sub>2</sub> CO <sub>3</sub>	aqueous	1/1	1	3	1	1/1	1/1	1	1/1	1/1
Sodium chloride	NaCl	aqueous	1/1	1	2	1	1/1	1/2	1	1/1	1/1
Sodium hydroxide	NaHO	50 %	1/1	1	3	1	1/1	1/3	1	3/3	0/0
Sodium sulphate	Na <sub>2</sub> SO <sub>4</sub>	aqueous	1/1	1	0	1	1/1	1/1	1	1/1	1/1
Sulphuric acid	H <sub>2</sub> SO <sub>4</sub>	40 %	1/1	1	3	1	1/1	2/3	1	1/1	1/1
Trichloroethylene (TRI)	C <sub>2</sub> HCl <sub>3</sub>	100 %	3/4	4	4	1	1/1	1/1L	1	1/3	1/1

## 6.1 Resistiveness Legend

### Resistiveness

There are two values per medium:

left number = value at +20 °C / right number = value at +50 °C.

- 0            no specifications available
- 1            very good resistance/suitable
- 2            good resistance/suitable
- 3            limited resistance
- 4            not resistant
- K            no general specifications possible
- L            risk of pitting corrosion or stress corrosion cracking
- ( )          estimated value

### Material Names

- HDPE      Polyethylene, high density
- FEP        Tetrafluorethylene-Perfluorpropylene
- V4A        Stainless steel 1.4401 (AISI 316)
- PPO GF30 Polyphenyloxylene with 30% glass fibres
- PU         Polyurethane
- PEEK      Polyetheretherketone
- PA GF30   Polyamide with 30 % glass fibre contents
- PVDF      Polyvinylidenfluoride

## 7 Maintenance and Cleaning

### WARNING



#### **Germ contamination**

*Due to using the sensors mostly in the waste water field which may be contaminated with hazardous germs, please ensure to take respective precautions getting in contact with system, transmitter, cables and sensors.*

In heavily polluted media tending to sedimentation it may be necessary to clean the flow velocity sensor regularly. To do so, please use a brush with plastic bristles, a broom or similar.

Polluted plugs (sensor connection F or S) and sockets must be cleaned and dried before reconnect a sensor. Remove touch dry dirt with compressed air or by using a brush with plastic bristles (no metal!). If required, maintain the contacts by using a contact spray.

### WARNING



#### **Damage by hard objects**

*No hard objects such as wire brushes, rods, scrapers or similar shall be used to clean the sensor. Cleaning by using a water jet is allowed up to a max. pressure of 4 bar (see Specifications) (e.g. using a water hose). Never clean flow velocity sensors with pressure measurement cell (types V2D and V2U) by using a water jet!*

*Using a high pressure cleaner may damage the sensor resulting in measurement failure and is therefore absolutely not allowed.*

### 7.1 Water-US Combi Sensor with Pressure Measurement

#### WARNING



#### **Do not remove parts**

*Removing or loosening of the ground plate or cable gland results in leakage and therefore will cause measurement and sensor failure.*

*Only the cover of the pressure measurement is allowed to be removed. Do absolutely not remove other parts of the sensor!!*

#### WARNING



#### **Damage of pressure measurement cell during cleaning**

*Never clean the pressure cell using a water jet, screw driver or similar! It is not permitted to touch the probe with the fingers or other objects (see Fig. 7-1)*

*This will irreversibly damage the pressure cell!!*

*It is allowed to clean the pressure measurement by using slight flushing movements in a vessel filled with water.*

*Bei Verletzung dieses Verbotes erlischt die Gewährleistung seitens des Herstellers! If in doubt please let NIVUS do the cleaning*

If the measurement medium contains substances (e.g. grease, lime) which may sediment on the pressure opening, they must be removed in order to prevent measurement faults.

The duct to the pressure measurement which is milled into the ground plate must be flushed with water immediately after each de-installation to avoid sedimentation. To do this, immerse the probe into water several times.

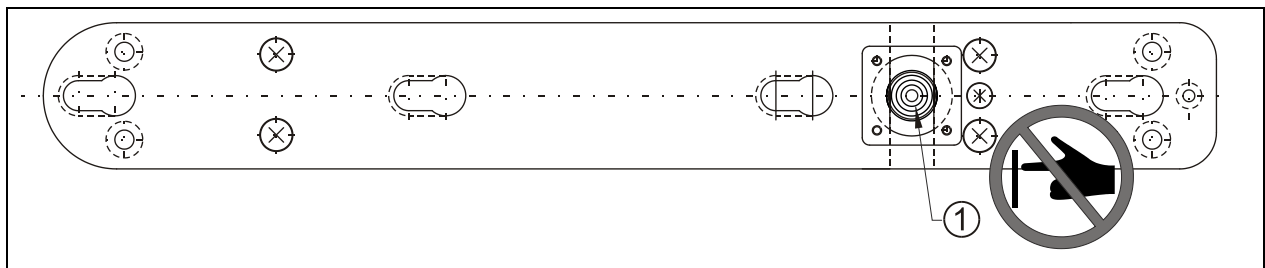
The cover on the pressure measurement can be removed for more extensive cleaning purposes.

The opened pressure cell must be cleaned very carefully. Slightly move the pressure probe in a container filled with water (e.g. bucket) to flush. Strictly avoid touching the probe with fingers, brushes, tools, water jets and similar! Disregarding invalidates the manufacturer warranty!



**Important Note:**

*If sedimentation which cannot be removed prevents correct measurement the sensor must be maintained by NIVUS.*



1 Pressure sensor

**Fig. 7-1 Wedge sensor with pressure measurement cell, bottom view**

Due to physical reasons, level measurements performed by sensors with pressure measurement cell are subject to long-term drift (see chap. 5.9). NIVUS therefore recommend to calibrate sensors with integrated pressure measurement cell twice a year regarding the respective zero point. The best results are going to be achieved if the water level is as low as possible or if the sensor has been removed from the measurement medium. The calibration procedure is described in according Instruction Manuals of OCM Pro or PCM transmitters.

The combination sensors with pressure measurement cell are equipped with an additional air filter with a dehydration agent on the connection plug. This dehydration agent is subject to normal wear which depends on measurement duration, measurement interval, air pressure fluctuation and environmental conditions. The filter wear is indicated by the dehydration agent turning from dark blue to pale violet.

The air filter has to be controlled each time before use, replacing the battery or reading out data. If the colour is beginning to change the air filter must be replaced by a new one of the same type.

Spare filters are available from NIVUS under Art. No. ZUB0 FILTER02 (also see chapter 0).

## 7.2 Air-Ultrasonic Sensor

These sensors are normally non-contacting. Hence, it is necessary to check if the transmitting pad is not covered and the sound beam is free to reach the water surface after immersion (flooding) into the measurement medium only. In case of pollution clean the sensor with water and a cloth or a soft brush.

### WARNING



---

**Do not remove any parts**

*Except the ground plate<sup>2</sup> (see Fig. 5-5 or Fig. 5-12) on the bottom absolutely no other parts are allowed to be removed from the air-ultrasonic sensor!*

*Removing or loosening of ground plate or cable gland result in leakage and therefore will cause measurement and sensor failure.*

---

## 7.3 Pressure Compensation Element for CSM Sensors

When using CSM sensors with pressure measurement cell and pressure compensation element the built-in drying capsules (see Fig. 5-27) need to be regularly checked and replaced if required. Inspection intervals depend on the prevailing air humidity and may vary between 2 and 12 weeks depending on application.

As soon as the drying capsules are used up their colour will change from orange to white. The capsules then need to be replaced.

- ORANGE = new capsule / not yet used up
- WHITE = capsule used up – please replace both capsules

To replace the drying capsules unscrew the 4 crosshead screws on the acrylic cover. Before inserting new capsules remove the protective aluminium foil.

Please observe to insert the capsules with the board side down.

The O-ring of the pressure compensation element (see Fig. 5-26, point 4) is for sealing and must always remain in the groove.

Keep the O-ring free of dirt. When closing the acrylic cover avoid dirt, sand or similar between the pressure compensation element and the cover. Otherwise the tightness of the pressure compensation element can be affected.



---

*When replacing the drying capsules please observe the glued O-ring to remain in the groove. Necessarily keep the ring free of dirt since otherwise the pressure compensation element may leak.*

---

**Spare capsules are available from NIVUS (see chapter 9).**

## 7.4 Pressure Compensation Element for POA and CS2 Sensor

Inspect the filter element regularly when mounting POA or CS2 sensors with pressure measurement cell and pressure compensation element (see Fig. 5-28). Inspection intervals depend on the prevailing air humidity and may vary between 2 and 12 weeks depending on application.

If the desiccant colour should change by more than 50 % replace the filter or the desiccant. Both can be purchased from NIVUS (see chapter 0).

## 7.5 Customer Service Information

For annual inspection of the entire measurement system contact our customer service:

**NIVUS GmbH - Customer Service**

Phone +49 (0) 7262 9191 - 922

Kundencenter@nivus.com

## 8 Dismantling/Disposal



---

### **EC WEEE-Directive logo**

*This symbol indicates that the Directive 2002/96/EG on waste electrical and electronic equipment requirements shall be observed on the disposal of the equipment.*

---

### **Improper disposal may be harmful to the environment.**

Always dispose equipment components and packaging materials according to applicable local regulations on environmental standards for electronic products.

## 9 Accessories (optional)

Pressure compensation element ZUB0 DAE	For connection of sensors with integrated pressure measurement cell Material: aluminium, plastics Protection rating: IP54
Replacement filter ZUB0 FILTER02	With plug and connection hose for connecting sensors with integrated pressure measurement cell to PCM series transmitters and to the pressure compensation element ZUB0 DAE.
Spare capsules ZUB0 TROCKENK	20 Spare capsules, individually packed, for pressure compensation element of the CSM sensor
Pipe mounting system ZUB0 RMS2... ZUB0 RMS3... ZUB0 RMS4...	For temporary, non-permanent clamping installation of wedge sensors POA-, CSM-, and DSM- in pipes DN 200 up to maximum DN 800
Sensor Adapters ZUB0 KLEMM...	Metal connection box incl. clamps for adaptation of PCM Sensors (incl. plug) to OCM Pro transmitters (in Ex and non-Ex areas) or for connection of pre-configured OCM Pro sensor cables to a PCM Pro (in Ex and non-Ex areas)
Manual extraction tool ZUB0 AA	For manual removal of 1 ½" pipe sensors under process conditions, pressure-tight up to 4 bar (not suitable for installation or fastening).
Ball stop valve ZUB0 HAHNR15	For removal of pipe sensors from pipes without pressure
Tapping saddle ZUB0 ABS01... ZUB0 ABS02... ZUB0 ABS03...	for installation of 1.5" pipe sensors in pipelines
Mounting plates ZUB0 ABP15....	For installation of pipe sensors in pipes made of GRP and concrete
Welding nozzles ZUB0 STU15...	For pipe sensors made of steel or stainless steel

You can find more accessories for sensor installation in our current price list.

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## 11 Certificates and approvals



The approvals are only valid in connection with the respective indication on the sensor nameplate.

The complete EC-type examination certificates (incl. supplements) can be downloaded from [www.nivus.com](http://www.nivus.com).



Translation

- (1) **EC-TYPE EXAMINATION CERTIFICATE**
- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - **Directive 94/9/EC**
- (3) EC-Type Examination Certificate Number



**TÜV 03 ATEX 2262**

- (4) Equipment: Sensor type POA/... resp. OCL/...
- (5) Manufacturer: Nivus GmbH
- (6) Address: D-75031 Eppingen, Im Täle 2
- (7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Certification Body, notified body number N° 0032 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
- The examination and test results are recorded in the confidential report N° 03 YEX 550797.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- EN 50 014: 1997**                      **EN 50 020: 2002**
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment or protective system must include the following:

II 2 G EEx ib IIB T4

TÜV NORD CERT GmbH & Co. KG  
TÜV CERT-Certification Body  
Am TÜV 1  
D-30519 Hannover  
Tel.: 0511 986-1470  
Fax: 0511 986-2555

Hanover, 2003-09-18

Head of the  
Certification Body





## SCHEDULE

(13)

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 03 ATEX 2262**

(15) Description of equipment

The sensor type POA/... resp. OCL/... is intended together with the associated measuring transformers for the measurement of the flow speed and the flow level in partly or fully filled pipes and channels via supersonic technology.

### Electrical data

Signal and supply circuit  
(plug/prefabricated cable)

in type of protection Intrinsic Safety EEx ib IIB  
only for the connection to associated measuring  
transducer type OCP/... according to TÜV 00 ATEX 1572

Maximum values:  $U_i = 10.5 \text{ V}$   
 $I_i = 500 \text{ mA}$

or

type PCP/... according to TÜV 03 ATEX 2268  
Maximum values:  $U_i = 9.9 \text{ V}$   
 $I_i = 640 \text{ mA}$

The effective internal inductance and capacitance are negligibly small.

(16) Test documents are listed in the test report No.: 03 YEX 550797.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones



Translation

## 1. SUPPLEMENT to

### EC TYPE-EXAMINATION CERTIFICATE No. TÜV 03 ATEX 2262

of the company: NIVUS GmbH  
Im Täle 2  
D-75031 Eppingen

In the future, the sensors type POA/... resp. OCL/... may also be manufactured and operated according to the test documents listed in the test report.

The amendments concern the electrical data.

Electrical data

Signal- and supply circuit  
(plug/prefabricated cable)

in type of protection Intrinsic Safety EEx ib IIB  
only for the connection to associated measuring  
transducer type OCP/... according to TÜV 00 ATEX 1572  
Maximum values:  $U_i = 10,5 \text{ V}$   
 $I_i = 640 \text{ mA}$

or

type PCP/... according to TÜV 03 ATEX 2268  
Maximum values:  $U_i = 9,9 \text{ V}$   
 $I_i = 629 \text{ mA}$

The effective internal inductance and capacitance are negligibly small.

All other data apply unchanged for this amendment.

Test documents are listed in the test report N° 04 YEX 551201.

TÜV NORD CERT GmbH & Co. KG  
TÜV CERT-Certification Body  
Am TÜV 1  
D-30519 Hannover  
Tel.: 0511 986-1470  
Fax: 0511 986-2555

Hannover, 2004-01-30

Head of the  
Certification Body

**Translation**  
**2. SUPPLEMENT**

<b>to Certificate No.</b>	<b>TÜV 03 ATEX 2262</b>
Equipment:	Sensors types POA-x2xx xx E xx x x, OCL-L1 x x xx E xx K and CS2-xxxx xx E xx x x
Manufacturer:	NIVUS GmbH
Address:	Im Täle 2 75031 Eppingen, Germany
Order number:	8000555804
Date of issue:	2010-06-21

In the future, the sensors type POA/... resp. OCL/... may be produced and operated according to the documents listed in the test report.

The changes refer to

- the execution of the sensor electronics for the new sensor types
- a new dual sensor with type designation CS2-xxxx xx E xx x x in an new sensor housing with 4 ultrasonic transducers
- the changes of the origin type designations: POA-x2xx xx E xx x x and OCL-L1 x x xx E xx K
- a new RS485 interface with data for the protection level ib
- the marking.

The new marking reads: II 2 G Ex ib IIB T4

The permissible ambient temperature range of the sensors is -20 °C ... 40 °C.

Electrical data

Signal- and supply circuit .....	in type of protection Intrinsic Safety Ex ib IIB
(Plug in connector/cable tail	only for connection to
connection wires:	a certified intrinsically safe circuit
red: +	maximum values:
blue: GND)	$U_i = 10.5 \text{ V}$
	$I_i = 640 \text{ mA}$
	The connection to the following measuring transducers
	is permissible:
	type OCP/... according to TÜV 00 ATEX 1572 or
	type PCP/... according to TÜV 03 ATEX 2268
	The effective internal capacitance and inductance of the
	electronics are negligibly small.

RS485 interface .....	in type of protection Intrinsic Safety Ex ib IIB
(Plug in connector/cable tail	maximum values:
connection wires:	$U_o = 6 \text{ V}$
white: RxTx+	$I_o = 154 \text{ mA}$
green: RxTx-	$P_o = 230 \text{ mW}$
blue: GND)	characteristic line: linear
	The effective internal capacitance and inductance of the
	electronics are negligibly small.

2. Supplement to Certificate No. TÜV 03 ATEX 2262

---

Ex ib	IIB	
max. permissible external inductance	9.5 mH	1 mH
max. permissible external capacitance	5.1 $\mu$ F	13 $\mu$ F

At connection of the RS485 interface to belonging measuring transducers with active intrinsically safe circuits, the rules for the interconnection of intrinsically safe circuits have to be observed.

maximum values:

$$U_i = 12.06 \text{ V}$$

$$I_i = 176 \text{ mA}$$

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2006

EN 60079-11:2007

(16) The test documents are listed in the test report No. 10 203 555804.

(17) Special conditions for safe use

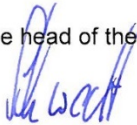
none

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body



Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

**Translation**  
**3. SUPPLEMENT**

<b>to Certificate No.</b>	<b>TÜV 03 ATEX 2262</b>
<b>Equipment:</b>	Sensors types POA-xxxx xx E xx x x, OCL-L1 x x xx E xx K and Vector Profiler CS2-xxxx xx E xx x x
<b>Manufacturer:</b>	NIVUS GmbH
<b>Address:</b>	Im Täle 2 75031 Eppingen, Germany
<b>Order number:</b>	8000398817
<b>Date of issue:</b>	2012-03-27

In the future, the sensors type POA-... bzw. OCL-... bzw. CS2-... may be produced and operated according to the documents listed in the test report.

The changes refer to

- the execution of the sensor electronics,
- a new sensor of the generation „Vector Profiler“ type CS2-xxxx Rx E xx x x,
- a new sensor type POA-xxxx Rx E xx x x
- new key sensor bodies for the sensors POA-... and
- the marking.

The new marking reads: II 2 G Ex ib IIB T4 Gb

The electrical data as well as all other details remain unchanged.

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2009                      EN 60079-11:2007

(16) The test documents are listed in the test report no. 12 203 087811.

(17) Special conditions for safe use

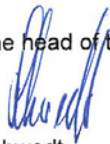
none

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body



Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

Translation  
**4. SUPPLEMENT**

<b>to Certificate No.</b>	<b>TÜV 03 ATEX 2262</b>
Equipment:	Sensors types POA-x2xx xx E xx x x, OCL-L1 x x xx E xx K and CS2-xxxx xx E xx x x
Manufacturer:	NIVUS GmbH
Address:	Im Täle 2 75031 Eppingen
Order number:	8000442088
Date of issue:	2015-06-11

In the future, the sensors types

POA-x2xx xx E xx x x  
 OCL-L1 x x xx E xx K and  
 CS2-xxxx xx E xx x x

may also be manufactured and operated according to the documents listed in the test report.  
 The changes refer to

- changes in the layout and regarding components,
- constructional changes at the housings and
- the electrical data.

A standard update was performed.

Electrical data

Signal and supply circuit ..... in type of protection Intrinsic Safety Ex ib IIB  
 (Cable tail;  
 connection wires:  
 red [+], blue [GND])  
 only for connection to a certified intrinsically safe circuit  
 Maximum values:  
 $U_i = 10.5 \text{ V}$   
 $I_i = 640 \text{ mA}$   
 $P_i = 6.72 \text{ W}$   
 The connection to the following measuring transducers  
 is permissible:  
 type OCP-... according to TÜV 00 ATEX 1572 or  
 type PCP-E... according to TÜV 03 ATEX 2268 or  
 type IXT0-... according to TÜV 14 ATEX 142076  
 The effective internal capacitance and inductance of the  
 electronics are negligibly small.

RS485 interface ..... in type of protection Intrinsic Safety Ex ib IIB  
 (Cable tail;  
 connection wires:  
 white: RxTx+  
 green: RxTx-  
 blue: GND)  
 maximum values:  
 $U_o = 6 \text{ V}$   
 $I_o = 81.9 \text{ mA}$  (long time; for calculation of  $P_o$ )  
 $I_o = 154 \text{ mA}$  (short time; for calculation of  $L_o, C_o$ )  
 $P_o = 123 \text{ mW}$   
 characteristic line: linear  
 The effective internal capacitance and inductance of the  
 electronics are negligibly small.



4. Supplement to Certificate No. TÜV 03 ATEX 2262

---

Ex ib	IIB	
max. permissible external inductance	9.5 mH	1 mH
max. permissible external capacitance	5.1 $\mu$ F	13 $\mu$ F

At connection of the RS485 interface to belonging measuring transducers with active intrinsically safe circuits, the rules for the interconnection of intrinsically safe circuits have to be observed.

maximum values:

$$U_i = 12.06 \text{ V}$$

$$I_i = 176 \text{ mA}$$

$$P_i = 531 \text{ mW}$$

All other data apply unchanged.

The equipment incl. of this supplement meets the requirements of these standards:

EN 60079-0:2012

EN 60079-11:2012

(16) The test documents are listed in the test report No. 15 203 123378.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body



Meyer

Hanover office, Am TÜV 1, 30519 Hannover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

The system sensor family Mini consists of the following components:

- Electronic Box Mini type **EBM**
- Correlation Sensor Mini type **CSM** and
- Distance Sensor Mini type **DSM**

**Translation**

(1) **EC-Type-Examination Certificate**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 94/9/EC**



(3) **Certificate Number** TÜV 12 ATEX 087812

(4) for the equipment: System sensor family Mini

(5) of the manufacturer: NIVUS GmbH

(6) Address: Im Täle 2  
75031 Eppingen  
Germany

Order number: 8000391048

Date of issue: 2012-02-17

(7) The design of this equipment or protective system and any acceptable variation thereto are specified in the schedule to this EC-Type-Examination Certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 12 203 087812.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2009

EN 60079-11:2007

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:

 **II 2 G Ex ib IIB T4 Gb**

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body

Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590

This certificate may only be reproduced without any change, schedule included.  
Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH

(13) **SCHEDULE**

(14) **EC-Type-Examination Certificate No. TÜV 12 ATEX 087812**

(15) Description of equipment

In conjunction with the belonging measuring transducers, the system sensor family Mini is used for measurement of the flow speed and the flow level in partly or fully filled pipes and channels via supersonic technology.

The system sensor family Mini consists of the following components:

- Electronic box Mini type EBM,
- Correlation sensor Mini type CSM and
- Distance sensor Mini type DSM or filling level sensor type OCL-LM

The permissible ambient temperature range of the system is -20 °C ... 40 °C.

Electrical data

Signal and supply circuit ..... in type of protection Intrinsic Safety Ex ib IIB  
 (Connection wires (pig tail): only for connection to a certified intrinsically safe circuit  
 red [+], blue [GND] Maximum values:  
 $U_i = 10.5 \text{ V}$   
 $I_i = 640 \text{ mA}$   
 The connection to the following measuring transducers is permissible:  
 type OCP-... according to TÜV 00 ATEX 1572 or  
 type PCP-E... according to TÜV 03 ATEX 2268  
 The effective internal capacitance and inductance of the electronics are negligibly small.  
 The capacitances and inductances of the connected cable have to be taken into account.

Interface RS485 ..... in type of protection Intrinsic Safety Ex ib IIB  
 (Connection wires (pig tail):  
 white [RxTx+]  
 green [RxTx-]  
 blue: GND) Maximum values:  
 $U_o = 6 \text{ V}$   
 $I_o = 154 \text{ mA}$   
 $P_o = 230 \text{ mW}$   
 Characteristic line: linear  
 The effective internal capacitance and inductance of the electronics are negligibly small.

Ex ib	IIB	
	max. permissible external inductance	9.5 mH
max. permissible external capacitance	5.1 µF	13 µF

Schedule EC-Type Examination Certificate No. TÜV 12 ATEX 087812

At connection of the interface RS485 to belonging measuring transducers with active intrinsically safe circuits, the rules for interconnection of intrinsically safe circuits have to be taken into account.

Maximum values:

$U_i = 12.06 \text{ V}$

$I_i = 176 \text{ mA}$

The interconnection of the electronic box Mini type EBM with the sensors

- Correlation sensor Mini type CSM and
- Distance sensor Mini type DSM (or filling level sensor type OCL-LM)

via a cable of the manufacturer with a length of 10 m is permissible.

(16) The test documents are listed in the test report No. 12 203 087812

(17) Special conditions for safe use

None

(18) Essential Health and Safety Requirements

no additional ones

**Translation**  
**1. SUPPLEMENT**

<b>to Certificate No.</b>	<b>TÜV 12 ATEX 087812</b>
Equipment:	System sensor family Mini
Manufacturer:	NIVUS GmbH
Address:	Im Tale 2 75031 Eppingen
Order number:	8000426406
Date of issue:	2014-04-30

In the future, the "System sensor family Mini" may also be manufactured and operated according to the documents listed in the test report.

The changes refer to

- a new sensor type CSM-V1D0 with integrated pressure sensor and,
- the electrical data.

A standard update was performed.

Electrical data

Signal and supply circuit ..... (Connection wires (pig tail): red [+], blue [GND])	in type of protection Intrinsic Safety Ex ib IIB only for connection to a certified intrinsically safe circuit Maximum values: $U_i = 10.5 \text{ V}$ $I_i = 640 \text{ mA}$ $P_i = 6.72 \text{ W}$ The connection to the following measuring transducers is permissible: type OCP-... according to TÜV 00 ATEX 1572 or type PCP-E... according to TÜV 03 ATEX 2268 The effective internal capacitance and inductance of the electronics are negligibly small. The capacitances and inductances of the connected cable have to be taken into account.
--	--

Interface RS485 ..... (Connection wires (pig tail): white [RxTx+] green [RxTx-] blue: GND)	in type of protection Intrinsic Safety Ex ib IIB  Maximum values: $U_o = 6 \text{ V}$ $I_o = 81.9 \text{ mA}$ Angle current: 50 mA Angle voltage: 4 V $P_o = 200 \text{ mW}$ Characteristic line: angular The effective internal capacitance and inductance of the electronics are negligibly small.
--	--

	Ex ib		IIB	
	max. permissible external inductance	10 mH	1 mH	
max. permissible external capacitance	3.8 µF	11.2 µF		

1. Supplement to Certificate No. TÜV 12 ATEX 087812

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At connection of the interface RS485 to belonging measuring transducers with active intrinsically safe circuits, the rules for interconnection of intrinsically safe circuits have to be taken into account.

Maximum values:

$U_i = 12.06 \text{ V}$   
 $I_i = 176 \text{ mA}$   
 $P_i = 531 \text{ mW}$

The interconnection of the electronic box Mini type EBM with the sensors

- Correlation sensor Mini type CSM-V100 or CSM-V1D0 and
- Distance sensor Mini type DSM (or filling level sensor type OCL-LM)

via a cable of the manufacturer with a length of 15 m is permissible.

All other data apply unchanged for this supplement.

The equipment incl. of this supplement meets the requirements of these standards:

EN 60079-0:2012                      EN 60079-11:2012

(16) The test documents are listed in the test report No. 14 203 129937.

(17) Special conditions for safe use

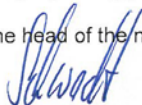
none

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body



Schwedt

Hanover office, Am TÜV 1, 30519 Hannover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

## EU Konformitätserklärung

*EU Declaration of Conformity*

*Déclaration de conformité UE*

NIVUS GmbH  
Im Täle 2  
75031 Eppingen

Telefon: +49 07262 9191-0  
Telefax: +49 07262 9191-999  
E-Mail: info@nivus.com  
Internet: www.nivus.de

Für das folgend bezeichnete Erzeugnis:

*For the following product:*

*Le produit désigné ci-dessous:*

<b>Bezeichnung:</b>	<b>Ultraschallsensoren CSM / DSM</b>
<i>Description:</i>	<i>ultrasonic sensors</i>
<i>Désignation:</i>	<i>capteurs ultrasoniques</i>
<b>Typ / Type:</b>	<b>CSM-... / DSM-...</b>

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:

*we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:*

*nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:*

- 2014/30/EU
- 2011/65/EU

Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug die nachfolgend genannten anderen technischen Spezifikationen:

*The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:*

*L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:*

- EN 61326-1:2013

Diese Erklärung wird verantwortlich für den Hersteller:

*This declaration is submitted on behalf of the manufacturer:*

*Le fabricant assume la responsabilité de cette déclaration:*

**NIVUS GmbH**  
**Im Täle 2**  
**75031 Eppingen**  
**Allemagne**

abgegeben durch / *represented by / faite par:*

**Marcus Fischer** (Geschäftsführer / *Managing Director / Directeur général*)

Eppingen, den 20.04.2016

Gez. *Marcus Fischer*

# EU Konformitätserklärung

*EU Declaration of Conformity*

*Déclaration de conformité UE*

NIVUS GmbH  
Im Täle 2  
75031 Eppingen

Telefon: +49 07262 9191-0  
Telefax: +49 07262 9191-999  
E-Mail: info@nivus.com  
Internet: www.nivus.de

Für das folgend bezeichnete Erzeugnis:

*For the following product:*

*Le produit désigné ci-dessous:*

<b>Bezeichnung:</b>	<b>“Ex“ Ultraschallsensoren CSM / DSM</b>
<i>Description:</i>	<i>“Ex” ultrasonic sensos</i>
<i>Désignation:</i>	<i>“Ex” capteurs ultrasoniques</i>
<b>Typ / Type:</b>	<b>CSM-xxxxxxE... / DSM-xxxxxxE...</b>

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:

*we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:*

*nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:*

- 2014/30/EU
- 2014/34/EU
- 2011/65/EU


Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug die nachfolgend genannten anderen technischen Spezifikationen:

*The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:*

*L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:*

- EN 61326-1:2013
- EN 60079-0:2012 +A11:2013
- EN 60079-11:2012

Ex-Kennzeichnung / *Ex-designation* / *Marquage Ex* :

 II 2G Ex ib IIB T4 Gb

EG-Baumusterprüfbescheinigung / *EC-Type Examination Certificate* / *Attestation d'examen «CE» de type:*

TÜV 12 ATEX 08 7812

Notifizierte Stelle (Kennnummer) / *Notified Body (Identif. No.)* / *Organisme notifié (N° d'identification)*

TÜV Nord CERT GmbH, Am TÜV 1, 30519 Hannover, Allemagne

(0044)

Diese Erklärung wird verantwortlich für den Hersteller:

*This declaration is submitted on behalf of the manufacturer:*

*Le fabricant assume la responsabilité de cette déclaration:*

**NIVUS GmbH**  
**Im Täle 2**  
**75031 Eppingen**  
**Allemagne**

abgegeben durch / *represented by* / *faite par:*

**Marcus Fischer** (Geschäftsführer / *Managing Director* / *Directeur général*)

Eppingen, den 26.07.2017

Gez. *Marcus Fischer*



# EU Konformitätserklärung

*EU Declaration of Conformity*

*Déclaration de conformité UE*

NIVUS GmbH  
Im Täle 2  
75031 Eppingen

Telefon: +49 07262 9191-0  
Telefax: +49 07262 9191-999  
E-Mail: info@nivus.com  
Internet: www.nivus.de

Für das folgend bezeichnete Erzeugnis:

*For the following product:*

*Le produit désigné ci-dessous:*

<b>Bezeichnung:</b>	<b>Externe Elektronikbox EBM</b>
<i>Description:</i>	<i>external electronic Box</i>
<i>Désignation:</i>	<i>boîtier électronique externe</i>
<b>Typ / Type:</b>	<b>EBM-...</b>

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:

*we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:*

*nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:*

- 2014/30/EU
- 2011/65/EU

Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug die nachfolgend genannten anderen technischen Spezifikationen:

*The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:*

*L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:*

- EN 61326-1:2013

Diese Erklärung wird verantwortlich für den Hersteller:

*This declaration is submitted on behalf of the manufacturer:*

*Le fabricant assume la responsabilité de cette déclaration:*

**NIVUS GmbH**  
**Im Täle 2**  
**75031 Eppingen**  
**Allemagne**

abgegeben durch / *represented by / faite par:*

**Marcus Fischer** (Geschäftsführer / *Managing Director / Directeur général*)

Eppingen, den 20.04.2016

Gez. *Marcus Fischer*

# EU Konformitätserklärung

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E-Mail: info@nivus.com  
Internet: www.nivus.de

Für das folgend bezeichnete Erzeugnis:

*For the following product:*

*Le produit désigné ci-dessous:*

<b>Bezeichnung:</b>	<b>“Ex“ externe Elektronikbox EBM</b>
<i>Description:</i>	<i>“Ex” external electronic Box</i>
<i>Désignation:</i>	<i>“Ex”boîtier électronique externe</i>
<b>Typ / Type:</b>	<b>EBM-xxxxxxE...</b>

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:

*we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:*

*nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:*

- 2014/30/EU
- 2014/34/EU
- 2011/65/EU


Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug die nachfolgend genannten anderen technischen Spezifikationen:

*The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:*

*L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:*

- EN 61326-1:2013
- EN 60079-0:2012 +A11:2013
- EN 60079-11:2012

Ex-Kennzeichnung / *Ex-designation* / *Marquage Ex* :

 II 2G Ex ib IIB T4 Gb

EG-Baumusterprüfbescheinigung / *EC-Type Examination Certificate* / *Attestation d'examen «CE» de type:*

TÜV 12 ATEX 087812 (1. Ergänzung)

Notifizierte Stelle (Kennnummer) / *Notified Body (Identif. No.)* / *Organisme notifié (N° d'identification)*

TÜV Nord CERT GmbH, Am TÜV 1, 30519 Hannover, Allemagne

(0044)

Diese Erklärung wird verantwortlich für den Hersteller:

*This declaration is submitted on behalf of the manufacturer:*

*Le fabricant assume la responsabilité de cette déclaration:*

**NIVUS GmbH**  
**Im Täle 2**  
**75031 Eppingen**  
**Allemagne**

abgegeben durch / *represented by* / *faite par:*

**Marcus Fischer** (Geschäftsführer / *Managing Director* / *Directeur général*)

Eppingen, den 26.07.2017

Gez. *Marcus Fischer*

## EU Konformitätserklärung

*EU Declaration of Conformity*

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75031 Eppingen

Telefon: +49 07262 9191-0  
Telefax: +49 07262 9191-999  
E-Mail: info@nivus.com  
Internet: www.nivus.de

Für das folgend bezeichnete Erzeugnis:

*For the following product:*

*Le produit désigné ci-dessous:*

<b>Bezeichnung:</b>	<b>Ultraschall-Aktivsensoren POA / OCL / CS2</b>
<i>Description:</i>	<i>Ultrasonic active sensors</i>
<i>Désignation:</i>	<i>Capteurs actifs ultrasoniques</i>
<b>Typ / Type:</b>	<b>POA-... / OCL-... / CS2-...</b>

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:

*we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:*

*nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:*

- 2014/30/EU
- 2011/65/EU

Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug die nachfolgend genannten anderen technischen Spezifikationen:

*The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:*

*L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:*

- EN 61326-1:2013

Diese Erklärung wird verantwortlich für den Hersteller:

*This declaration is submitted on behalf of the manufacturer:*

*Le fabricant assume la responsabilité de cette déclaration:*

**NIVUS GmbH**  
**Im Täle 2**  
**75031 Eppingen**  
**Allemagne**

abgegeben durch / *represented by / faite par:*

**Marcus Fischer** (Geschäftsführer / *Managing Director / Directeur général*)

Eppingen, den 20.04.2016

Gez. *Marcus Fischer*

# EU Konformitätserklärung

*EU Declaration of Conformity*

*Déclaration de conformité UE*

NIVUS GmbH  
Im Täle 2  
75031 Eppingen

Telefon: +49 07262 9191-0  
Telefax: +49 07262 9191-999  
E-Mail: info@nivus.com  
Internet: www.nivus.de

Für das folgend bezeichnete Erzeugnis:

*For the following product:*

*Le produit désigné ci-dessous:*

<b>Bezeichnung:</b>	<b>“Ex“ Ultraschall-Aktivsensoren POA / OCL / CS2</b>
<i>Description:</i>	<i>“Ex” Ultrasonic active sensors</i>
<i>Désignation:</i>	<i>“Ex” capteurs actifs ultrasoniques</i>
<b>Typ / Type:</b>	<b>POA-x2xxxxE... / OCL-L1xxxxE... / CS2-xxxxxxE...</b>

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:

*we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:*

*nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:*

- 2014/30/EU
- 2014/34/EU
- 2011/65/EU

Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug die nachfolgend genannten anderen technischen Spezifikationen:

*The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:*

*L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:*

- EN 61326-1:2013
- EN 60079-0:2012 +A11:2013
- EN 60079-11:2012

Ex-Kennzeichnung / *Ex-designation* / *Marquage Ex* :

 II 2G Ex ib IIB T4 Gb

EG-Baumusterprüfbescheinigung / *EC-Type Examination Certificate* / *Attestation d'examen «CE» de type:*

TÜV 03 ATEX 2262 (4. Ergänzung)

Notifizierte Stelle (Kennnummer) / *Notified Body (Identif. No.)* / *Organisme notifié (N° d'identification)*

TÜV Nord CERT GmbH, Am TÜV 1, 30519 Hannover, Allemagne

(0044)

Diese Erklärung wird verantwortlich für den Hersteller:

*This declaration is submitted on behalf of the manufacturer:*

*Le fabricant assume la responsabilité de cette déclaration:*

**NIVUS GmbH**  
**Im Täle 2**  
**75031 Eppingen**  
**Allemagne**

abgegeben durch / *represented by* / *faite par:*

**Marcus Fischer** (Geschäftsführer / *Managing Director* / *Directeur général*)

Eppingen, den 26.07.2017

Gez. *Marcus Fischer*