Heinrichs
KOBOLD Group

Magnetic-inductive Flow meter **EPX**

Installation and operation manual

This operating manual contains important information for the operation in potentially explosive atmospheres
Please read the instructions carefully and store them in a safe place

Contents

1 Introduction

It is essential that you read these operating instructions, as well as the associated standard and Ex-supplementary transmitter instructions, prior to installation and commissioning of the device. The operating instructions must be read completely and fully understood.
If you do not have a copy of the latter instructions or any part is missing, please request one from Heinrichs Messtechnik GmbH or download the instructions from our website.
Custom designs and special applications are not be addressed in this manual.
All devices are thoroughly tested and checked for order compliance and functionality prior to shipping. If however you have any queries or problems concerning your purchased product, please contact our head office in Cologne.

Heinrichs Messtechnik GmbH accepts no liability for any loss or damage of any kind arising from improper operation of any product, improper handling or use of any replacement part, or from external electrical or mechanical effects, overvoltage or lightning. Any such improper operation, use or handling shall automatically invalidate the warranty for the product concerned.

1.1 Hazard warnings

The purpose of the hazard warnings listed below is to ensure the safety of the device operators and maintenance personnel, and that the flowmeter and any devices connected to it are not damaged.

The safety advisories and hazard warnings in this document are defined in the four categorised terms below, and are aimed to prevent putting operators and maintenance personnel at risk, or to avoid material damage. The used terms have, with respect to this document and the products described within, the following meanings:

Danger

means that failure to take the prescribed precautions **will result** in death, severe bodily injury, or substantial material damage.

Warning

means that failure to take the prescribed precautions **could result** in death, severe bodily injury, or substantial material damage.

Caution

means that failure to take the prescribed precautions **could result** in incorrect operation, malfunction or damage to the device.

Note

means that the accompanying text contains important information about the product, handling of the product or is about a section of the documentation that is of particular importance.

1.2 Installation, commissioning and maintenance

The devices described in this manual are to be installed and serviced only by qualified technical personnel such as a qualified Heinrichs Messtechnik electronics engineer or service technician.

Warning
Repairs on safety relevant components, in terms of explosion protection, my only be carried out by the manufacturer, his representative or under the supervision of an expert.

Warning
To avoid danger of electric shock, service personnel should abide to the safety regulations pertaining to the use of electrical and automated technical devices and with the applicable laws and regulations in their own country before connecting this device to any periphery device or power supply.

2 Identification

2.1 Manufacturer

Heinrichs Messtechnik GmbH
Robert-Perthel-Str. 9 · D-50739 Köln
Tel: +49 (221) 49708 – 0, Fax: +49 (221) 49708 - 178
Internet: http://www.heinrichs.eu, e-mail: mailto:info@heinrichs.eu

2.2 Product type

Magnetic-inductive flowmeter based on Faraday's “Law of Magnetic Induction” for the use in potentially explosive atmospheres.

2.3 Application

Bi-directional measurement of fluids with a minimum conductivity of 5µS / cm

2.4 Product Name

EPX

2.5 Version No.

File: EPX_BA_01_en

2.6 Date of issue

27/09/2016

3 Explosion protection

3.1 General information about explosion protection

In accordance to guideline 94/9/EG (ATEX)

Example designation CE 0158 Ex II 2G Ex ia IIB T4 Gb

Equipment groups

I	Equipment group I applies to equipment intended for use in underground parts of mines as well as those parts of surface installations of such mines endangered by firedamp and/or combustible dust.
II	Equipment group II applies to equipment intended for use in other places liable to be endangered by explosive atmospheres. This group is subdivided into three categories.

Equipment category

Designation for gases	Designation for dust	Definition
1G (0)	1 D (20)	Equipment in this category is intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are present continuously, for long periods or frequently.
2 G (1)	2 D (21)	Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur.
3G (2)	3D (22)	Equipment in this category is in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists, or air/dust mixtures are unlikely to occur or, if they do occur, are likely to do so only infrequently and for a short period only.

(The numbers in round brackets correspond to the IEC Zones.)

In accordance to EN 60079-0 ff / IEC 60079-0 ff

Ex = Explosion-proof electrical equipment

Types of protection

	General requirements	EN 60079-0
„d“	Flameproof enclosure	EN 60079-1
„q”	Sand filling	EN 60079-5
„e“	Increased safety	EN 60079-7
„i“	Intrinsic safety (ia, ib)	EN 60079-11
„n“	Non-incentive electrical equipment	EN 60079-15
„m“	Encapsulation	EN 60079-18
„t"	Dust explosion protection through enclosure (ta, tb or tc)	EN 60079-31

Explosion group

Gas group	
IIA	Acetone, benzene, fuel oil, ethanoic acid
IIB	City gas, ethylene, isoprene
IIC	Acetylene, hydrogen, carbon toulphide
Dust group	
IIIA	Inflammable fluff or fibers
IIIB	Non conductive dust
IIIC	Conductive dust

Temperature classes

Maximum surface temperature		Temperature class
450 °C	842 °F	T1
300 °C	572 °F	T2
200 °C	392 °F	T3
135 °C	275 °F	T4
100 °C	212 °F	T5
85 °C	185 °F	T6

Equipment Protection Level (EPL)	
Gas: Ga, Gb or Gc	Dust: Da, Db or Dc

(Explosion protection designations [square brackets] refer to “Related electrical equipment or circuits.”)

3.2 Ex-Approval and sensor markings

FTZÚ 16 ATEX 0064 X (Compact version)
- o II 2G Ex e ia IIC Gb
- o II 2D Ex tb IIIC Db

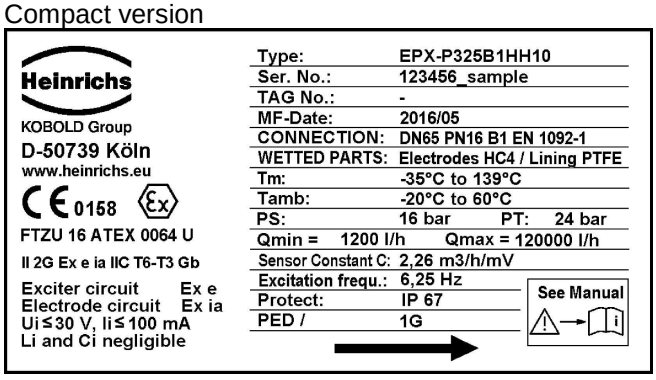
FTZÚ 16 ATEX 0065 X (separate version with terminal box)
- o II 2G Ex e ia IIC T6 … T3 Gb
- o II 2D Ex tb IIIC T 80°C … T 155°C Db

3.2.1 Area of application

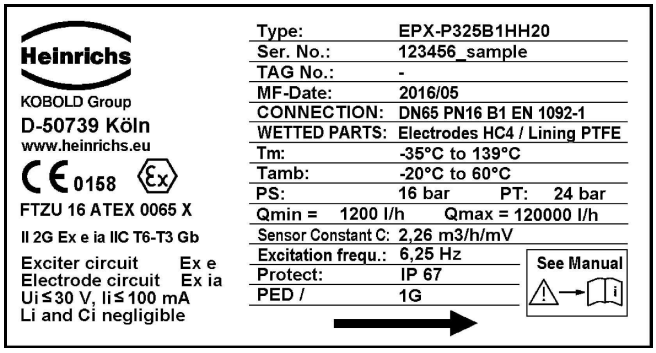
In Zone 1: Gas-Ex, equipment protection level Gb in the ignition protection group IIA and IIB
In Zone 21: Dust Ex, equipment protection level Db in the ignition protection group IIIA, IIIB and IIIC.

3.2.2 Markings / Rating plates

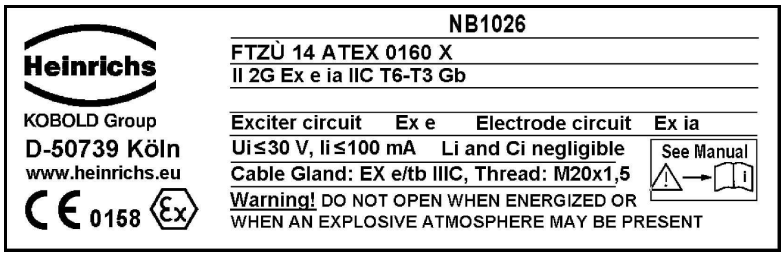
Compact version



Separate version:
Sensor



Terminal box



The rating plate contains the following information:

Logo	Manufacturer`s logo
Address	Manufacturer`s address (internet address)
CE	CE-Marking according to EU-directives with identification number and monitoring authority
EX	Ex relevant classification, with approval number, device identification and safety specific technical data
Type	Type designation (Model code)
Ser. No.	Serial number (for traceability purposes)
Tag No.	Operators TAG number (when conveyed during the ordering process)
MF-Date	Year of construction and calendar week
Connection	Flange designation with pressure rating
Wetted Parts	Materials of parts exposed to the measuring substance, for example electrodes, gaskets and pipe lining.
T m	Medium-temperature range
T amb	Ambient temperature range
PS	Max. permitted process pressure
Qmin	Lower flow limit
Qmax	Upper flow limit
C	Sensor constant
Protect	Device protection class according to DIN EN 60529:2000 (IP-protection)
PED	**Information on pressure equipment directive (PED).** - For devices with a process connection =< DN25: o According to Art. 3 sec. 3 of the DGRL, a CE-Marking is not necessary. Under PED (**P**ressure **E**quipment **D**irective) the reason for exception in accordance to Art. 3 sec. 3 of the DGRL. The device is classified as SEP (**S**ound **E**ngineering **P**ractice). - For devices with a process connection > DN 25: o CE-Marking with the identification number of the notified body responsible for the certification of the manufacturer's production. o Specifications of the considered fluid group (**1G**) according to the pressure equipment directive. Fluid group 1 complies to „dangerous fluids".
Arrow	Installed position of the Sensor with reference to the flow direction

The sensor rating plate contains the basic information necessary for use in explosive atmospheres. Please adhere to the provisions and warnings stated in the respective operating manuals during installation of the magnetic-inductive flow sensor.

3.2.3 Warning signs

a) Warning on the rating plate.

"WARNING! – DO NOT OPEN WHEN ENERGIZED, OR
WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT"

b) Warning on the removable terminal box cover:

"KEEP COVER TIGHT WHEN CIRCUITS ALIVE"

The thread size of the cable gland is noted on the rating plate of the terminal box

3.3 Ex-Approval and protection levels of the transmitter UMF3

Equipment which is suitable for use in potentially explosive atmospheres are marked accordingly on the rating plate. Since the transmitter and the sensor are approved separately, each has their own individual rating plate. For any combination of Transmitter and sensor, the lowest protection class applies!

3.3.1 Approval Certificate:

BVS 15 ATEX E 067 X

3.3.2 Protection class markings:

Transmitter mounted as compact version
Ex d e ib [ia IIC Ga] IIB T4/T3 Gb
Ex tb ib [ia Da] IIIC T125°C / T150°C Db
Ex d e ib IIB T4/T3 Gb
Ex tb ib IIIC T125°C / T150°C Db

Separately mounted Transmitter with terminal box
Ex d e [ib Gb] [ia IIC Ga] IIB T4/T3 Gb
Ex tb [ib Db] [ia Da] IIIC T125°C / T150°C Db
Ex d e [ib IIB] T4/T3 Gb
Ex tb [ib] IIIC T125°C / T150°C Db

Separately mounted Transmitter with pigtail cable (max. 10m)
Ex d ib [ia IIC Ga] IIB T4/T3 Gb
Ex tb ib [ia Da] IIIC T125°C / T150°C Db
Ex d ib IIB T4/T3 Gb
Ex tb ib IIIC T125°C / T150°C Db

3.4 Relevant standards

- **IEC 60079-0**:2011 Ed. 6, modifications Cor. 2012 + Cor. 2013 / EN 60079-0:2012 + A11:2013 Explosive atmospheres – Part 0: Equipment - General requirements
- **IEC 60079-1**:2014 Ed. 7 / EN 60079-1:2014 Explosive atmospheres – Part 1: Equipment protection by flameproof enclosure "d"
- **IEC 60079-7**:2006 Ed.4 / EN 60079-7:2007 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
- **IEC 60079-11**:2011 Ed. 6 + Cor. 2012 / EN 60079-11:2012 Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
- **IEC 60079-31**:2013 Ed. 2 / EN 60079-31:2014 Explosive atmospheres –Part 31: Equipment dust ignition protection by enclosure "t"

Before montage and commissioning of the transmitter takes place, the safety information in the standard and Ex-supplementary operating manuals must be read thoroughly and understood.

4 Area of application

The induction sensor EPx has been designed to measure volume flow rates of electrically conductive liquids in closed piping systems. Measurements can be achieved in both flow directions, with high measurement accuracy over a wide range of flow rates (0.1 to 10 m/s). The minimum required conductivity of the measured medium is 20 µS/cm. The sensor is intended for, among other applications, use in explosive atmospheres (see the specifications below). In combination with a sealed terminal box, the sensor is ready for connection to the electronic unit of the induction flow meter (the so-called distributed meter version).

5 Safety warnings

5.1 Installation, mounting, commissioning and operating personnel

Installation, mounting, commissioning and maintenance of safety relevant, in terms of explosion-protection, are to be performed by a technician trained to work with explosion-proof devices, or by a Heinrichs Messtechnik service technician.
It is a necessity that the qualified personal have read and understood this operating manual and follow its instructions.

The principle rules and regulations in the country of the operator must be observed.

The technical data on the rating plates as well as the safety warnings in the separate operating manual of the associated transmitter are to be observed!

5.2 Intended use

The electromagnetic flowmeter is to be used solely for measuring the volume flow of liquids, suspensions and pastes with a conductivity of ≥ 5 µS/cm (≥ 20 µS/cm demineralized cold water). The responsibility for the use and installation of the flowmeter lies solely by the operator. Heinrichs Messtechnik will accept no liability for any damage resulting from its improper or unintended use. Damage caused by improper use will lead to loss of warranty.

Before using corrosive or abrasive fluids, the operator must test the resistance of all wetted materials. We will be happy to assist you in testing the corrosion resistance of wetted parts (for special fluids including cleaning fluids). However, sole responsibility for ensuring that the device is used in accordance with the manufacturer's recommendations rests with the system operator. Minor changes of temperature, concentration or the degree of contamination in the process may cause changes in corrosion resistance. Therefore the manufacturer accepts no responsibility for any damage with respect to corrosion resistance of wetted materials in a certain application.

5.3 Packaging / storage / transport

Be careful not to damage the device whilst removing it from its packaging. The device should be stored in a clean dry room until installation so as to prevent impurities from entering the device. Make certain that the ambient temperature in the room in which the device is stored lies within the prescribed range.
Upon receipt of the product, check the contents of the packaging and the product accessories against the information on the delivery slip and order form so as to ensure that all ordered components have been delivered.

If, after the unpacking of the device, it is to sent elsewhere to be installed, the original packaging and transport protection inserts should be used.

Transit damage identified before or after the unpacking of the goods is to be reported immediately. Delayed notification of the damage cannot be honoured. Besides a fault description, the type of device in question and its serial number will be required.

5.4 Warranty

Your flowmeter was manufactured in accordance with the highest quality standards and was thoroughly tested prior to shipment. However, in the event any problem arises with your device, we will be happy to resolve the problem for you as quickly as possible under the terms of the warranty which can be found in the terms and conditions of delivery. Your warranty will only be honoured if the device was installed and operated in accordance with the instructions for your device. Any mounting, commissioning and/or maintenance work is to be carried out by qualified and authorized technicians only.

5.5 Return of the device for repairs or servicing

Note: According to German waste disposal legislation, it is the owner's or customer's responsibility to dispose of hazardous waste. Thus, before any devices is sent back to Heinrichs Messtechnik for servicing or repairs the following measures must be carried out:

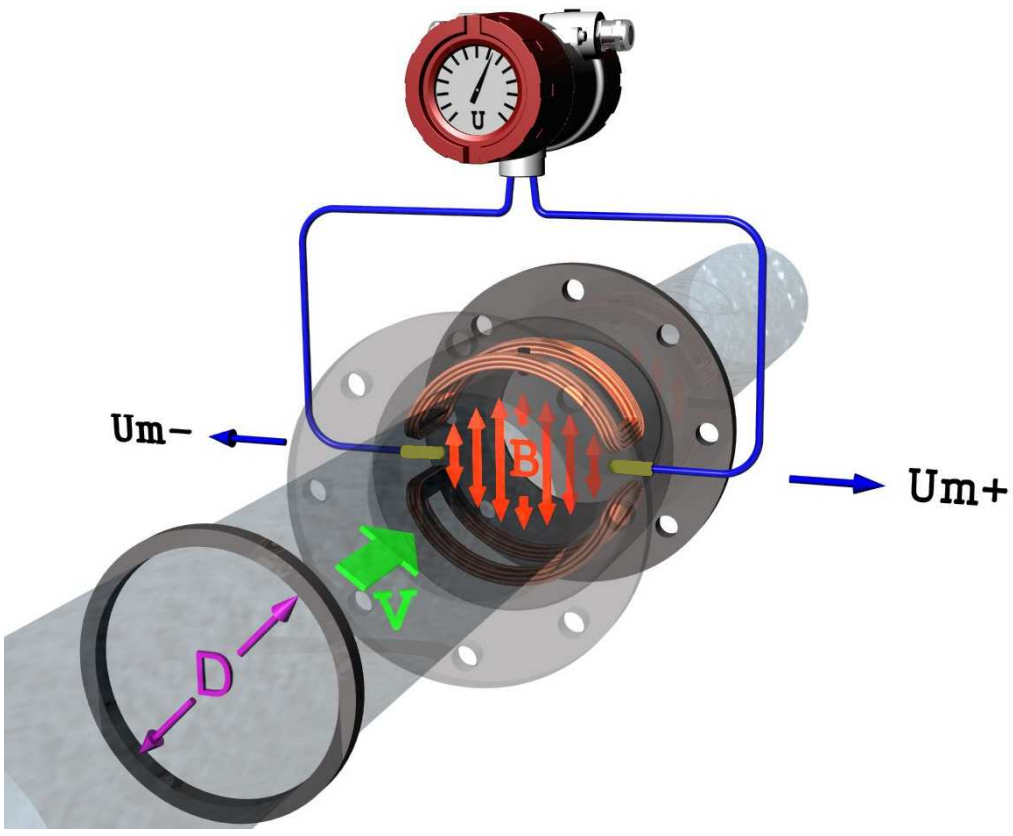
- When returning the unit for an inspection, please enclose as detailed a description as possible of the fault and the specific application, as well as the chemical-physical properties of the measurement medium.
- Remove all residue of measurement medium which may be present. paying special attention to the gasket grooves and crevices. This is especially important if the medium is detrimental to health and safety, for example: corrosive, poisonous, carcinogenic or radioactive etc.
- Costs, which result from insufficient cleaning, (disposal and/or personal injuries) will be invoiced to the customer.

A decontamination certificate, to be found in Kapitel 10 „Declaration of Decontamination", must be completed and enclosed in the return delivery!

6 Mode of Operational and system design

6.1 Mode of operation

According to the faraday principle of electrodynamic induction, a conductive fluid flowing through a tube with an insulating lining and a flow velocity **V,** produces a voltage **Um** on the two electrodes to be found at right angles to the direction of flow and the magnetic field **B** generated by the field coils. The strength of this voltage **Um** is proportional to the mean flow velocity and therefore the volume flow rate.



6.2 System configuration

The electromagnetic flowmeter EPX consists of a sensor, which picks up an induced measuring signal from the medium flowing through the pipe, and a transmitter which transforms this signal into standardized output signals (4-20 mA or pulses). The sensor is installed in the pipe while the transmitter is mounted directly on the sensor (integral mount) or separately at an external location (remote mount), depending on the device version.

Compact version

Separated version

6.2.1 Integrally mounted transmitter

This type of configuration ensures easy and trouble-free installation.

6.2.2 Remote mounted transmitter

This type of configuration is recommended for confined spaces or if the temperature of the measured fluid is high. The connection between the sensor and the transmitter is established with a cable with separately shielded circuits for field coils and electrodes.

- **Transmitter version with a pigtail cable (maximal cable length 10 m)**

The maximum cable length between the transmitter and sensor may not exceed 10 m.
The sensor is equipped with a terminal box, whereas the transmitter has a direct cable entry.

Before the system can be commissioned, the cable from the transmitter must be connected to the sensors terminal box.
The wiring diagram for this purpose can be found in chapter 8.4.2 „Transmitter mounted separately with a pigtail cable“ on page 23.

For systems where a cable length longer than 10 m is required, the transmitter with the terminal box solution must be chosen.

- **Transmitter version with a terminal box**

For cable lengths of 10 m or longer, it is mandatory that the cable is wired on both sides in a separately mounted terminal box.

In this case separate cables must be used for supplying the field coil with power and the electrode circuits.

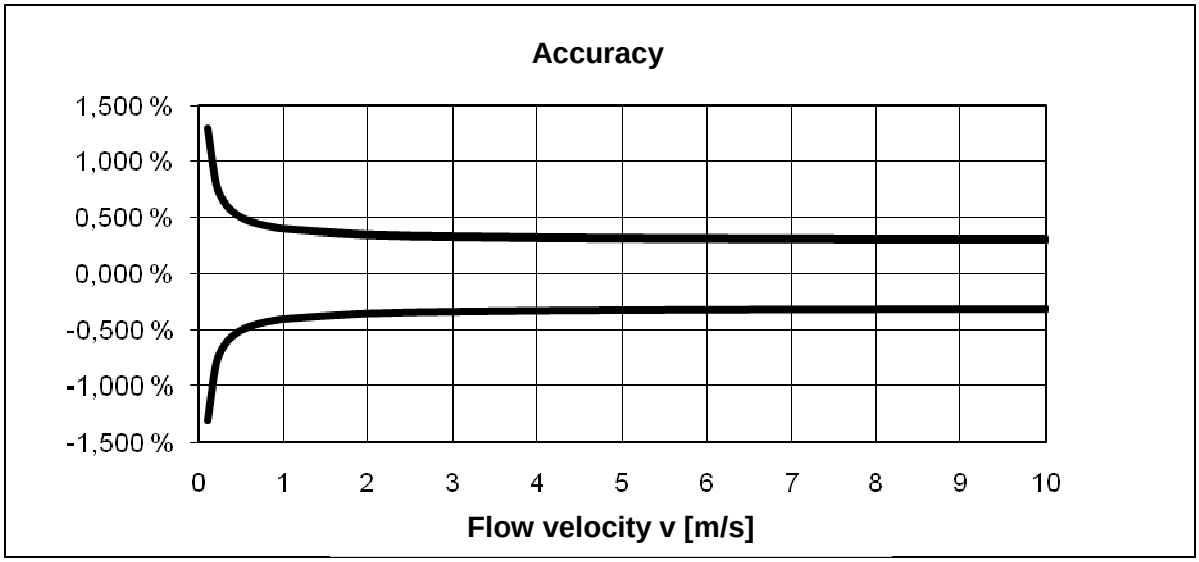
The wiring diagram for this purpose can be found in chapter 8.4.3 „Transmitter mounted separately with a terminal box“ on page 25.

7 Performance characteristics

7.1 Measuring accuracy

7.1.1 Measured error

+/- [0.3 % of actual value + 0.0001 * (Q at 10 m/s)]



7.1.2 Repeatability

+/- [0.15 % of actual value + 0.00005 * (Q at 10 m/s)]

7.1.3 Reference conditions

In accordance with DIN EN 29104

- Fluid temperature 22 °C ± 4 K
- Ambient temperature 22 °C ± 2 K
- Inlet section ≥ 10 x DN and outlet section ≥ 5 x DN
- Sensor and transmitter are earthed

7.2 Fluid conductivity

≥ 5 µS/cm (≥ 20 µS/cm for demineralized water)

7.3 Influence of ambient temperature

See Operating Instructions of the corresponding transmitter

7.4 Influence of fluid temperature

None

7.5 Materials

7.5.1 Wetted parts

Component	Material
lining	Hard rubber, Soft rubber, PTFE , ECTFE
Measuring and grounding electrodes	Stainless Steel 1.4571, Tantalum, Titanium, Platinum-Rhodium, Hastelloy C276
Earthing ring	Stainless Steel 1.4571, Hastelloy C4, Tantalum

7.5.2 Non-wetted parts

Component	Material
Flow tube	Stainless Steel 1.4571
Enclosure DN 15 – DN300	Painted Steel Ex IIG, Stainless steel Ex IID
Flange	Painted Steel, Stainless steel
Terminal box for remote mount Sensor and transmitter	Aluminium pressure casting, painted

7.5.3 External power supply / electrical connections

See rating plate and/or the operating manual of the transmitter.

8 Installation/conditions for use

8.1 Receipt of goods and transport

8.1.1 Receipt of goods

- Check the packaging and contents for damage.
- Inspect the supplied goods to ensure complete delivery and compare the consignment with your order specifications.

8.1.2 Transport

Please observe the following tips when unpacking your device, or transporting it to its measuring point:

- If possible the devices should be forwarded in the packaging in which they were delivered.
- Do not remove any protection disks or caps from the process connections. This is particularly important in the case of sensors with a PTFE flow tube lining. The protection caps should only be removed immediately before installation of the device in the pipe.
- Never lift the devices by the mounted transmitter housing or terminal box for transport. When transporting heavy devices, use slings. Place these around both process connections. Do not use chains as these can damage the surface coating and the housing.
- When transporting devices without lugs, and when looping the slings around the flow tube, the center of gravity of the entire device can be higher than both attachment points of the slings. When transporting the device ensure that it does not rotate or slip accidentally. This could cause injury.
- Sensors with a nominal sizes of more than DN 150 should not be lifted by the sheet metal of the shell with a forklift truck. This could dent the sheet metal of the shell and damage the internal solenoid coils. There is also the risk that the device could roll off the forks.

8.2 Installation requirements

The installation location in the pipe must be selected so that the sensor is always fully filled with the fluid and cannot run empty. This can best be guaranteed if it is installed in an ascending pipe or drain.

The measuring principle is generally independent of the flow profile of the fluid provided no standing vortices reach into the area of measurement, such as from elbows or half-open sliding valves upstream from the sensor. In these cases measures must be taken to normalize the flow profile. Practical experience has shown that in most cases a straight **inlet section of ≥ 5 x DN** and an **outlet section of ≥ 2 x DN** of the nominal sizes of the sensor is sufficient. The occurrence of strong electromagnetic fields in the vicinity of the installed sensor must be avoided.

For the Implementation of forward and backward flow measurements, both sides of the sensor must be provided with a straight pipe section with the nominal sizes of the sensor and a length of 5 DN of the nominal sizes of the sensor. It is advisable to install actuators, such as regulating or shut-off devices, downstream from the sensor. The forward flow direction is marked on the sensor with an arrow. When mounting sensors, always observe the specified screw torques.

After the installation of the sensor and the electrical connections between the sensor and the transmitter have been made, the system can be taken into operation. To prevent measuring errors caused by gas pockets in the fluid and damage to the lining of the sensor caused by negative pressure, the following points must be observed.

8.2.1 Bypass pipes

To allow for a problem-free dismount, emptying and cleaning of the sensor, a bypass pipe may be installed. The bypass with a blind flange permits the fluid pipe to be cleaned without having to dismount the flowmeter. This is recommended for highly soiled fluids.

8.2.2 Sensor tube lining

If the flow tube is lined with PTFE, the flowmeter must be installed with special care. The tube lining is bordered at the flanges (seal). This must not be damaged or removed as it prevents the fluid from penetrating between the flange and flow tube destroying the electrode insulation.

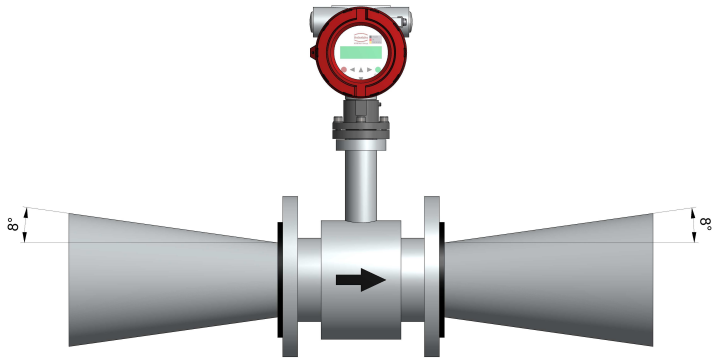
8.3 Installation

Screws, bolts, nuts and seals are not supplied by Heinrichs Messtechnik GmbH and must therefore be provided by the operator. The sensor is to be installed between the pipes. Please observe the required torques stated Section **Fehler! Verweisquelle konnte nicht gefunden werden.** "**Fehler! Verweisquelle konnte nicht gefunden werden.**" on page **Fehler! Textmarke nicht definiert.**. The installation of additional grounding rings is described in Section 8.3.4 "Earthing – potential equalisation" on page19. Use for the flanges only gaskets in accordance with DIN 2690. Mounted gaskets must not reach into the pipe cross-section.

Caution!
Do not use conductive sealing compounds such as graphite. This could result in a conductive layer building up on the inside of the flow tube, short-circuiting the measuring signal.

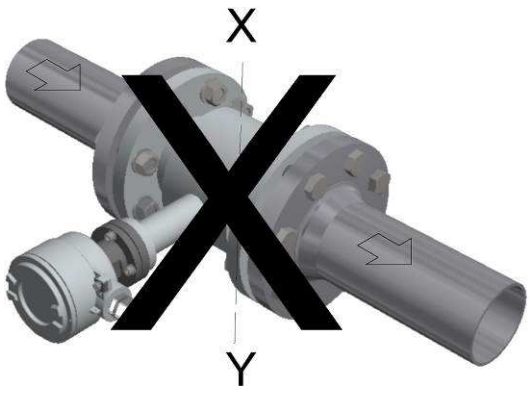
8.3.1 Installation in pipelines with larger nominal sizes

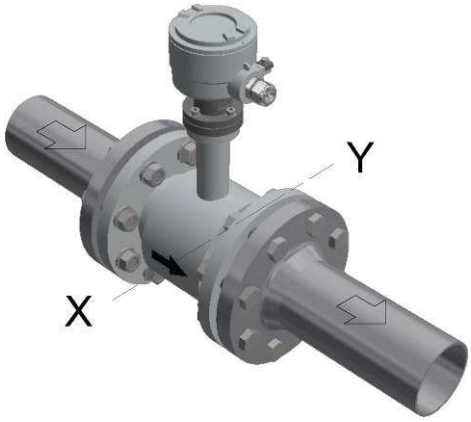
The flowmeter can also be installed in pipes with larger nominal sizes by using pipe tapers (e.g. flange transition pieces in accordance with DIN EN 545). However, the resulting pressure loss must be taken into consideration. To avoid flow interruptions in the flow tube, a reducing angle of ≤ 8° for the tapers should be exceeded.



8.3.2 Horizontal or vertical Installation

The installed position of the flowmeter is arbitrary, however the intended x-y electrode axis should run approximately horizontal. A vertical Electrode axis should be avoided, since gas pockets or solid particles carried along in the fluid could affect the accuracy of the device.





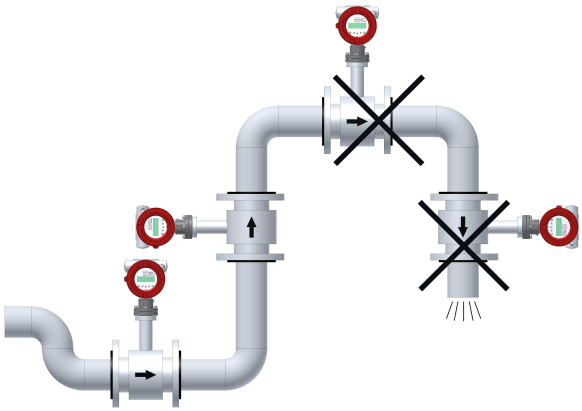
8.3.3 Installation examples

To avoid measuring errors evoked by gas pockets or lining damage caused by negative pressure, the following points must be observed:

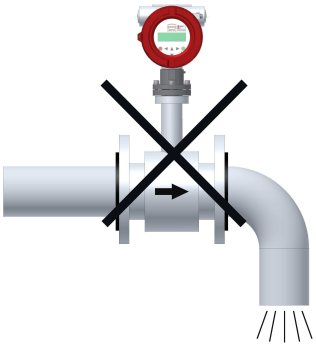
Vibrations

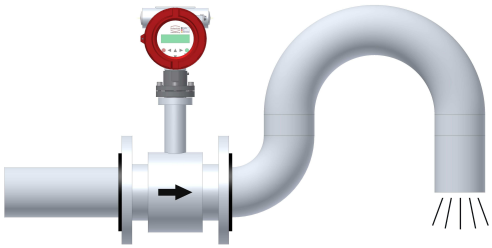
To eliminate the effects of vibrations and prevent premature damage to the transmitter, the sensor shall be supported in the near vicinity of the flanges.

Horizontal pipeline routing
Install preferably in slightly ascending pipes.

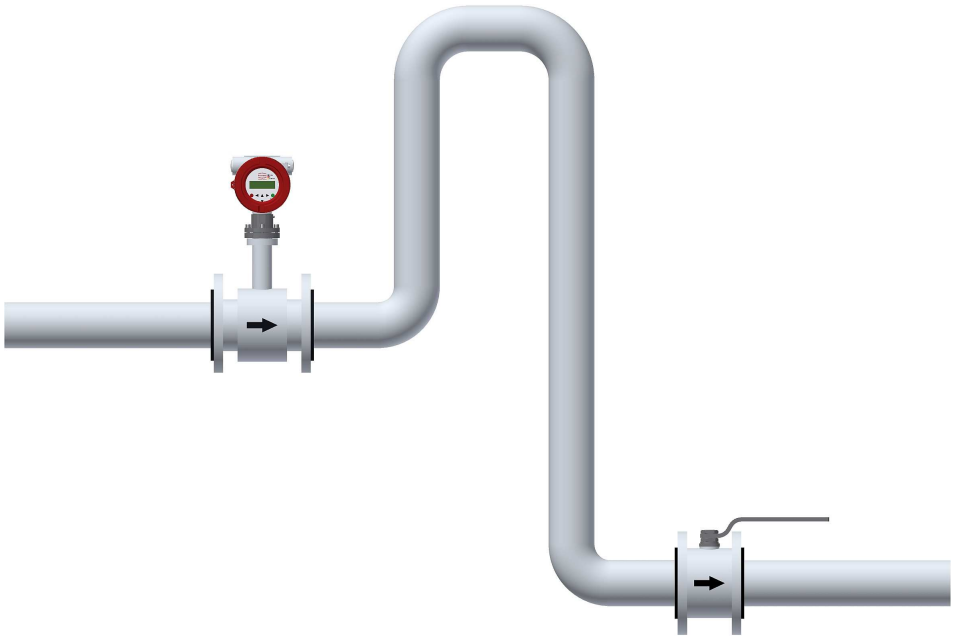


Open inlet or outlet
Where possible, the device should be installed in a syphon. The empty pipe detection circuit of the transmitter is an additional safety feature for recognizing empty or partially filled pipes.
Caution! There is the danger of accumulation of solids in the siphon. The installation of a cleaning aperture in the pipe is therefore advisable.

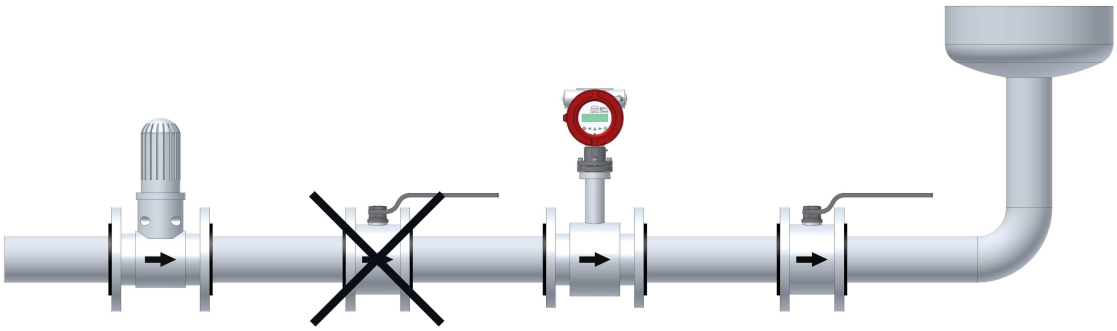




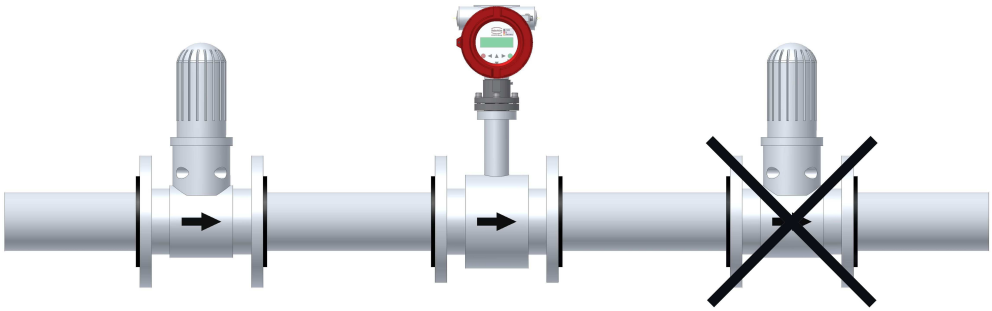
Down pipes
Where down pipes are to be found in the pipe system, a syphon or a ventilation valve should be placed after the sensor. By these means, negative pressure can be avoided in the pipeline, which may otherwise damage the sensor lining. This measure will also prevent a breakdown of the flow reducing the risk of air inclusions in the measurement medium.



Long pipelines
In long pipelines there is always a danger of pressure surges. Therefore regulating and shut-off devices should be placed behind the sensor. However, when installed in vertical piping, especially when using sensors with PTFE-lining and high operating temperatures, the regulating and shut-off devices should be placed in front of the sensor (danger of vacuum).



Installation of pumps
To avoid negative pressure and eventual damage to the tube lining, never install flowmeters on the suction side of pumps.



If necessary, arrange for pulsation dampeners when using piston, diaphragm or hose pumps.
Please consider the space requirements beforehand with respect to a potential deinstallation of the device.

8.3.4 Earthing – potential equalisation

The sound grounding concept of the flowmeter is a necessity for both safety reasons as well as to ensure a faultless operation. In accordance with VDE 0100 Part 410 and VDE 0100 Part 540 the grounding connections must be at protective conductor potential. **For metrological reasons, this potential must be identical to the potential of the fluid**. The grounding cable should not transmit any interference voltage. For this reason do not simultaneously ground other electrical devices with this cable.

The measuring signal tapped at the electrodes amounts to only a few millivolts. Correct grounding of the electromagnetic flowmeter is therefore an important prerequisite for exact measurement. The transmitter requires a reference potential to evaluate the measured voltage on the electrodes. In the simplest case the non-insulated metal pipe and/or the connecting flange may be used as a reference potential.

Where pipes are lined with electrically insulating materials or pipes are made of plastic, the reference potential can be obtained from a grounding ring or grounding electrode. These establish the necessary conductive connection to the fluid and are made of a chemical-resistant material. The material used should be identical to that of the measuring electrodes

Earthing with earthing electrodes

The device can be optionally equipped with grounding electrodes. With plastic pipes this version is the easiest grounding method. As the surface of the grounding electrode is relatively small, the use of grounding rings on both sides of the sensor is preferable in systems in which high equalizing currents along the pipeline can be expected to occur.

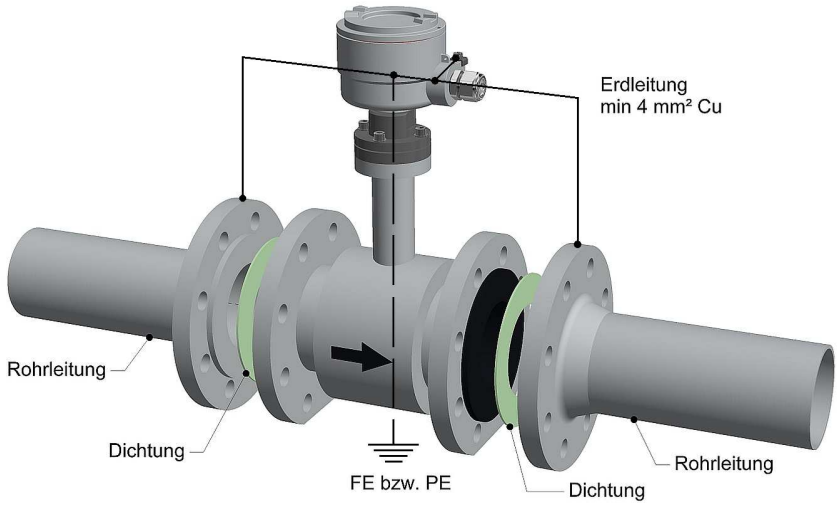
Earthing with earthing rings

The outside diameter of the grounding ring should be at least equal to the diameter of the flange or be dimensioned in such a way that the grounding ring is positioned inside the flange bolts and is centered by these. The terminal lugs routed to the outside must be connected to the FE terminal in the junction box of the sensor. During installation ensure that the inner diameter of the seals do not protrude over the grounding disk!

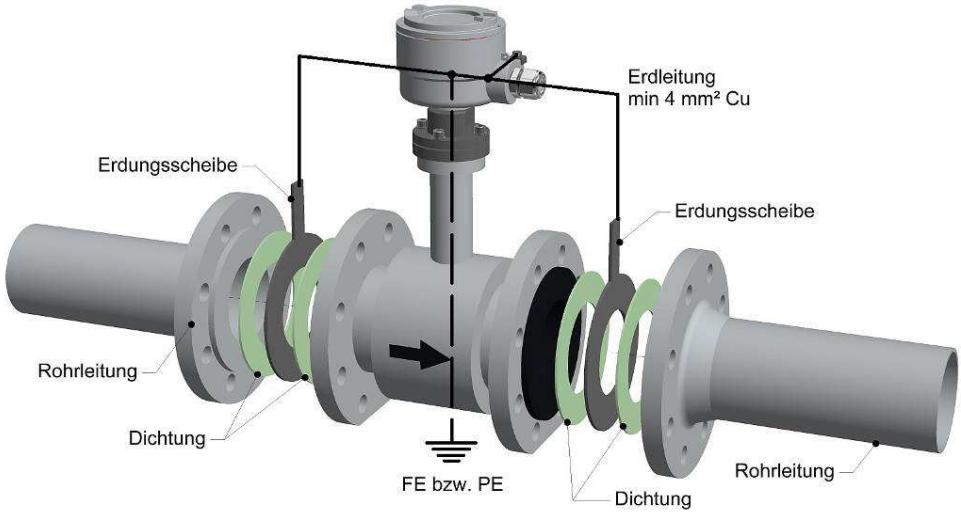
The grounding cables are not included in the scope of your delivery and must be provided by the plant operator. The grounding rings can be ordered as accessories. Refer to Section 9.5 "Dimensions of the grounding ring**" on page 34 for dimensions.**

Examples for grounding the EPX

Metal piping without internal coating



Plastic piping, or interanlly coated metal piping



8.3.5 Torques for screws and bolts

Due to the fact that the flow pipe lining is made of plastic or vulcanized materials such as hard rubber. Or PTFE, electromagnetic flowmeters must be installed in pipe system with special care since these materials are malleable under pressure. If the flange screws are overtightened, the sealing surface will deform. If the seals are to function properly, the correct torque is highly important.
Tighten the screws crosswise so that the process connections are tight. When tightening the screws for the first time approx. 50 percent of the required torque should be reached, for the second time the torque should be 80 percent. The required torque should reach 100 percent when the screws are tightened for the third time. For higher torques it is advisable to use protectors.

The maximum permissible torques can be obtained from the following table

For nominal sizes according to EN 1092-1

Nominal size [inch]	ANSI Pressure rating [lbs]	Screws	Maximal tightening torque [Nm]			
			Sensor lining			
			Hard rubber			
10(LW 6,8,10mm)	PN 16		-	-	15	
15	PN 40	4 x M12	-	15		
25	PN 40	4 x M12	-	25		
32-40	PN 40	4 x M16	-	45		
50	PN 40	4 x M16	-	65		
65	PN 16	4 x M16	32	85		
65	PN 40	8 x M16	32	45		
80	PN 16	8 x M16	40	55		
80	PN 40	8 x M16	40	55		
100	PN 16	8 x M16	43	55		
100	PN 40	8 x M20	59	80		
125	PN 16	8 x M16	56	75		
125	PN 40	8 x M24	83	110		
150	PN 16	8 x M20	74	100		
150	PN 40	8 x M24	104	135		
200	PN 10	8 x M20	106	140		
200	PN 16	12 x M20	70	95		
250	PN 10	12 x M20	82	110		
250	PN 16	12 x M24	98	130		
300	PN 10	12 x M20	94	125		
300	PN 16	12 x M24	134	180		

For nominal sizes according to ASME

Nominal size [inch]	ANSI Pressure rating [lbs]	Screws	Maximal tightening torque [Nm]			
			Sensor lining			
			Hard rubber	PTFE	PFA	
½"(cw 6,8,10mm)	Class 150		-	-	6	
½"	Class 150	4 x ½"	-	6		
½"	Class 300	4 x ½"	-	6		
1"	Class 150	4 x ½"	-	11		
1"	Class 300	4 x 5/8"	-	15		
1 ½"	Class 150	4 x ½"	-	25		
1 ½"	Class 300	4 x ¾"	-	35		
2"	Class 150	4 x 5/8"	-	45		
2"	Class 300	8 x 5/8"	-	25		
3"	Class 150	4 x 5/8"	60	80		
3"	Class 300	8 x ¾"	38	50		
4"	Class 150	8 x 5/8"	42	55		
4"	Class 300	8 x ¾"	58	65		
6"	Class 150	8 x ¾"	79	105		
6"	Class 300	12 x ¾"	70	75		
8"	Class 150	8 x ¾"	107	145		
10"	Class 150	12 x 7/8"	101	135		
12"	Class 150	12 x 7/8"	133	180		
14"	Class 150	12 x 1"	135	260		

8.3.6 Remote mount transmitter

A separately installed transmitter and sensor is necessary if:

- the installation area is difficult to access,
- space is restricted,
- the fluid and ambient temperatures are high,
- there is strong vibration.

Caution!

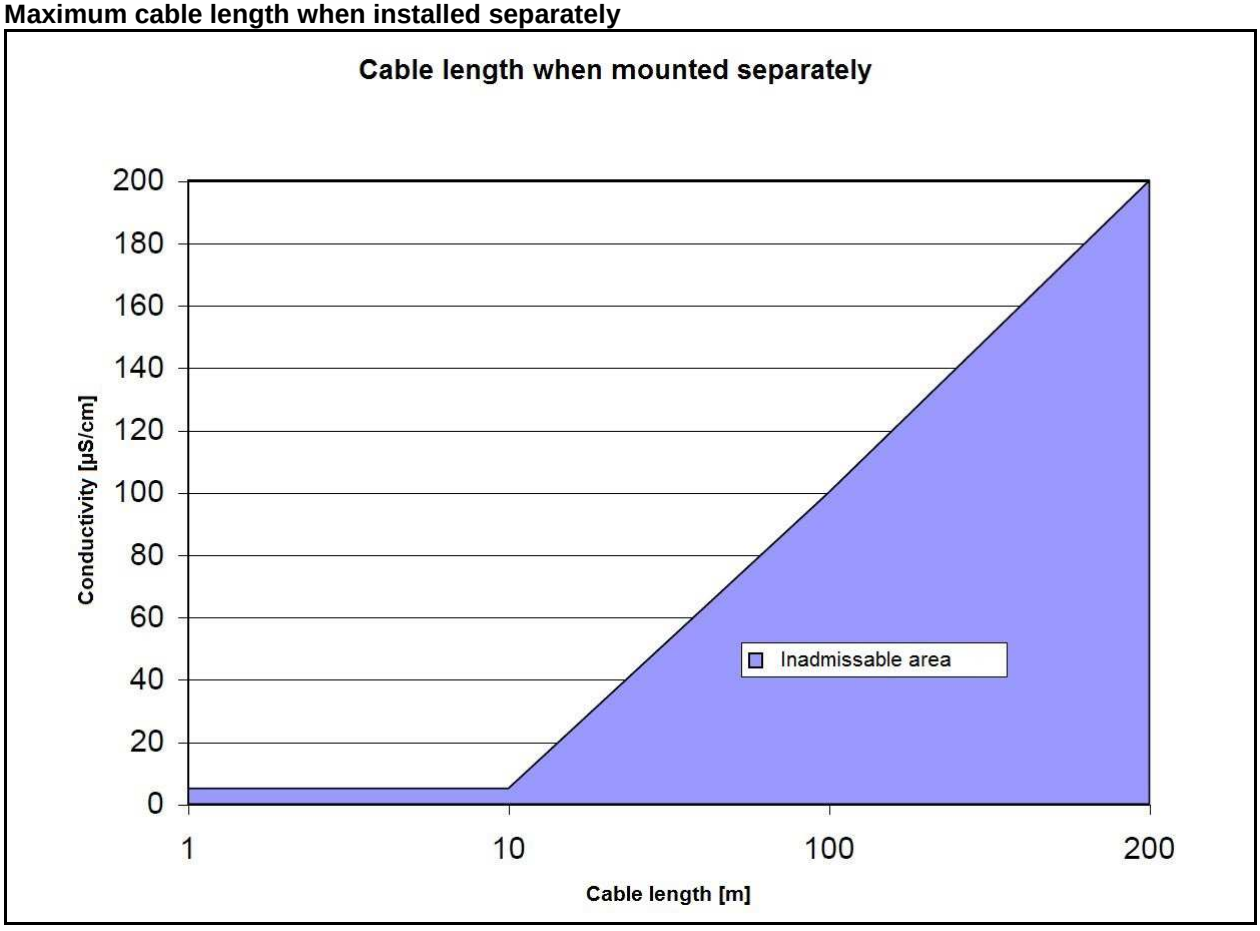
The cable between transmitter and sensor must be shielded. The outer cable shield must be electrically connected at both ends with special EMC cable glands (e.g. type Hummel HSK-M-EMV).

For the remote mount version, the minimum permissible conductivity of the fluid is determined by the distance between the sensor and the transmitter. To ensure accuracy, a maximum cable length of 200 m should not be exceeded.

The electrode cable must be fixed during installation. If the conductivity of the fluid is low, cable movements may change the capacity considerably and thus disturb the measuring signals.
Do not lay the cables close to electrical machines or switching elements.

Do not connect or disconnect the field coil cable before the primary power of the flowmeter has been disconnected.

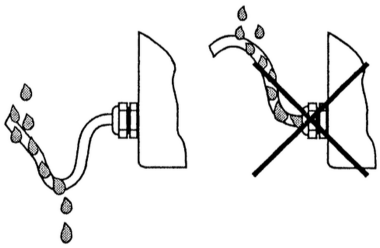
Maximum cable length when installed separately

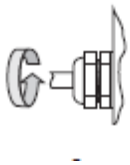


8.4 Wiring

Please observe the following wiring hints. (Inappropriate wiring will invalidate any warranty claims)

- Cable glands are not included in the standard scope of delivery
- Customer used cable glands must adhere to the applied Ex-provisions, and be suitable for the specified screw-threads
- The cable glands must be appropriate for the diameter of the used cable
- Make sure that the cable is routed to the cable gland in the form of a loop (Water trap") see picture on the right.
- The cable glands should not be positioned with the opening pointing vertically upwards.
- The used blind plugs may not be removed or replaced with cable glands, when the corresponding bushing is not in use with electrical cables.
- The sealing or tightening of the cable glands must be performed in accordance with the manufactures guidelines. Too tight or too loosely tightened cable glands could lead to water or other liquids penetrating into the enclosure.





Installation work or maintenance and repair work on the sensor, transmitter or the terminal box may only be carried out in a non-explosive atmosphere! Before any dismantling can take place, it must be ensured that the device is no longer energised

For the use of remote mounted transmitters:

Only sensors and transmitters with the same serial number may be interconnected. The connection of units with different serial numbers can lead to incorrect measurements.

Ensure that the stripped and twisted inner cable shield ends in the terminal box are kept as short as possible up to the terminals themselves If necessary these must be covered with an insulating sleeve to prevent short circuits.
The outer cable shield must be connected to the EMC cable gland connectors at both ends of the cable.

Important tightening torques for cable glands

- KLE (cable glands) to the enclosure 12 Nm
- Cap nut to the KLE (cable glands) 8 Nm

8.4.1 Mounted transmitter

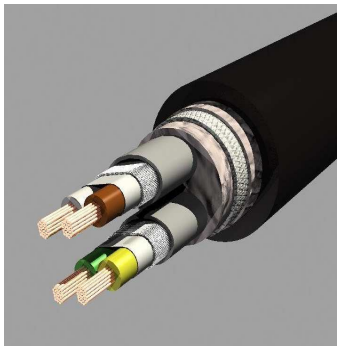
On the integral mounted transmitter the connections to the sensor are internally wired. The terminal assignment is described in the operating manual of the UMF3 transmitter.

8.4.2 Transmitter mounted separately with a pigtail cable

Transmitter with pigtail cable (maximum cable length 10 m)

In this version the UMF3 transmitter, the sensor cable is conducted out of the transmitter as a pigtail. The cable is permanently fixed to the transmitter, and is regarded as part of the internal wiring of the transmitter. The cable length is defined during the order process.

For connecting to the transmitter the sensor is equipped with a terminal box. The terminal box is certified for use in potentially explosive areas and complies with the specifications of the protection class “e“. It contains certified terminals and other elements of the WAGO 264 series.



The Sensor cable is a double chamber cable with separated circuits for the exciter coils and electrode circuits.

Caution!
The pigtail is an integral part of the approval, and may neither be replaced, repaired nor may it be removed from the transmitter UMF3. A repair or replacement may only be carried out by the manufacturer. Please also observe for this purpose the warnings in the UMF3 Ex-supplement manual
The securing Cap nut of the pigtail cable gland may not be removed or loosened.

The terminal box lid is secured in position by a socket screw located at the head top. The lid may only be removed in a non-explosive environment. Prior to replacing the lid make sure that the lid threads are free of any contaminants that might damage them. When opening or closing the lid or its securing screw, never use excessive force. Operational temperature stress may result in additional tightening of the lid connection. In such cases, use a hammer with a rubber head and knock gently on the lid to release the tight fit.

The wiring between the sensor and the terminal box are considered a part of the internal wiring and may only be made or replaced by the manufacturer.

Terminal box sensor

Transmitter with pigtail cable

Wiring plan

SP-	Exciter coil wire (-) yellow
SP+	Exciter coil wire (+) green
PE	Shield earth conductor
2	FE (Sensor grounding conductor)
1	Electrode (intrinsically safe circuits Ex i) brown
3	Electrode (intrinsically safe circuits Ex i) white

Electrical specifications of the sensor

Ui ≤ 30V
Ii ≤ 100mA
Ci and Li negligible

The sensor does not possess its own energy source.

Applying the outer cable shield to the EMC cable gland

The electrical connections to and from the transmitter are conducted through cable glands which are approved for the use in potentially explosive atmospheres and comply with the specifications of the protection class “e” or “tb IIIC”. For an optimal disturbance rejection, the outer cable shield of the sensor cable must be electrically connected to the special metal cable gland.

8.4.3 Transmitter mounted separately with a terminal box

For cable lengths of 10 m or longer, it is mandatory that the cable is wired on both sides in a separately mounted terminal box.

In this case separate cables must be used for both supplying the field coil with power, as well as for the electrode circuits.

Cable specifications IP 65 cable, Ø = 6 mm:

- Electrode cable: LiYCY 2x 0,75 (blue)
- Field coil cable: H03VVF-F 3G 075/70 (grey)

Cable glands feed-through with sealing inserts for two cables each with a diameter of 6 mm.

The terminal box lid is secured in position by a socket screw located at the head top. The lid may only be removed in a non-explosive environment. Prior to replacing the lid make sure that the lid threads are free of any contaminants that might damage them. When opening or closing the lid or its securing screw, never use excessive force. Operational temperature stress may result in additional tightening of the lid connection. In such cases, use a hammer with a rubber head and knock gently on the lid to release the tight fit.

The wiring between the sensor and the terminal box are considered a part of the internal wiring and may only be made or replaced by the manufacturer.

Terminal box - sensor / transmitter

Transmitter with terminal box

Wiring plan

SP-	Exciter coil wire (-) yellow
SP+	Exciter coil wire (+) green
PE	Shield earth conductor
2	FE (Sensor grounding conductor)
1	Electrode (intrinsically safe circuits Ex i) brown
3	Electrode (intrinsically safe circuits Ex i) white

Electrical specifications of the sensor

Ui ≤ 30V
Ii ≤ 100mA
Ci and Li negligible

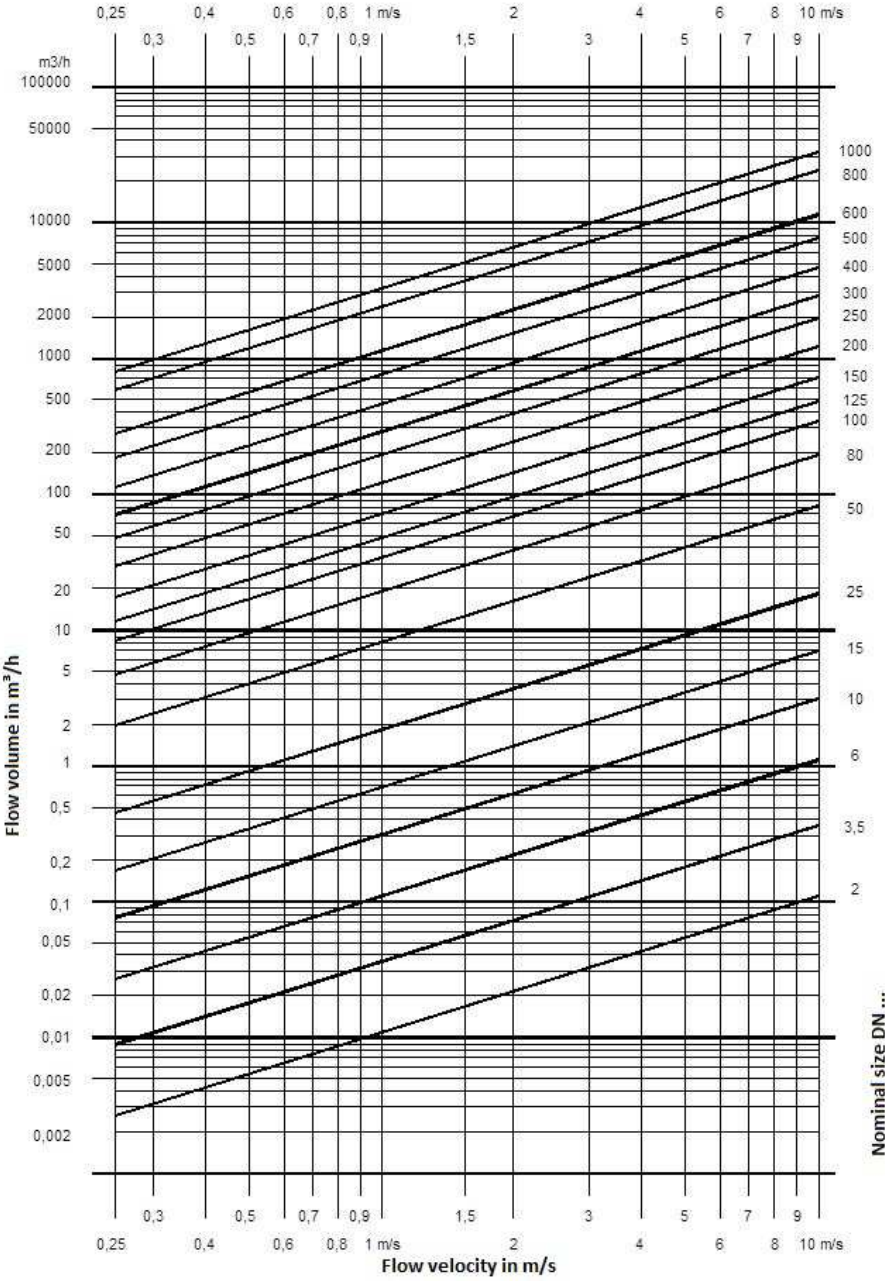
The sensor does not possess its own energy source.

Nominal size and ranges

Volume flow depends on the flow velocity and the nominal size of the flowmeter. The following flow rate nomogram shows the flow range which can be measured by a device with a specific nominal size as well as which nominal size is suitable for a specific flow rate. The electromagnetic flowmeter has been designed in such a way that it operates within the range of the flow velocities occurring in practical applications. The flow velocities have an upper range value of between 0.5 m/s and 10 m/s.

The nominal size DN of the sensor must be selected, if possible, in such a way that the flow velocity does not drop below the upper range value of 0.5 m/s. In case of fluids with solid particles, the flow velocity should range between 3 m/s and 5 m/s in order to prevent sedimentation depositing in the sensor.

The flow nomogram shows the volume flow in m³/h and the flow velocity in m/s in relation to the nominal size DN of the sensor. The y-axis shows the flow values in m³/h. The nominal size DN of the sensor has been selected as a parameter for the plotted straight lines. The upper range measuring value m³/h is taken as a basis for determining the sought nominal size DN. This value is given on the y-axis. The value for the flow velocity in m/s is shown on the x-axis. The straight line of the nominal size DN is found at the intersection of the two variables.



Measuring ranges					
Nominal size		**Min/Max flowrate (0.1 - 10m/s)**		**Recommended Measuring range (0.5 - 5m/s)**	
[mm]	[inch]	Qmin (0.1m/s)	Qmax (10m/s)	Qmin (0.5m/s)	Qmax (5m/s)
15	1/2"	0.065 m³/h	6.5 m³/h	0.325 m³/h	3.25 m³/h
20	3/4"	0.12 m³/h	12 m³/h	0.6 m³/h	6 m³/h
25	1	0.18 m³/h	18 m³/h	0.9 m³/h	9 m³/h
32	-	0.3 m³/h	30 m³/h	1.5 m³/h	15 m³/h
40	1-1/2	0.45 m³/h	45 m³/h	2.25 m³/h	22.5 m³/h
50	2	0.72 m³/h	72 m³/h	3.6 m³/h	36 m³/h
65	-	1.2 m³/h	120 m³/h	6 m³/h	60 m³/h
80	3	1.8 m³/h	180 m³/h	9 m³/h	90 m³/h
100	4	2.8 m³/h	280 m³/h	14 m³/h	140 m³/h
125	-	4.3 m³/h	430 m³/h	21.5 m³/h	215 m³/h
150	6	6.5 m³/h	650 m³/h	32.5 m³/h	325 m³/h
200	8	11.5 m³/h	1150 m³/h	57.5 m³/h	575 m³/h
250	10	18 m³/h	1800 m³/h	90 m³/h	900 m³/h
300	12	25.2 m³/h	2520 m³/h	126 m³/h	1260 m³/h

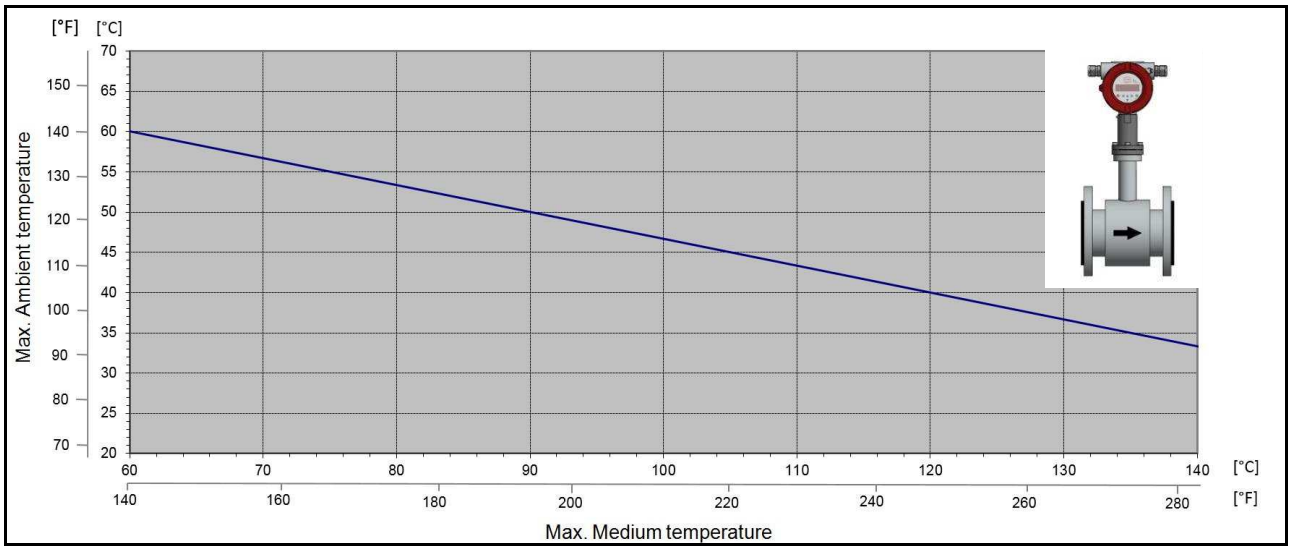
8.5 Ambient conditions

8.5.1 Ambient temperature limits

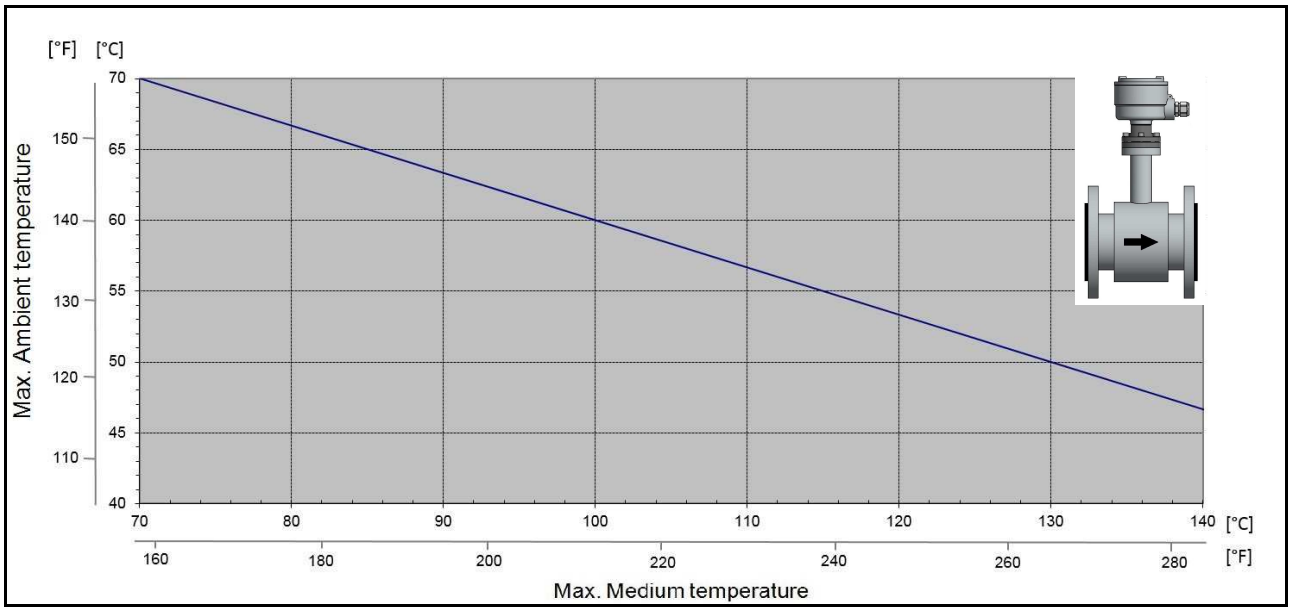
Medium temperature > 60 °C

When thermally insulating the sensor, it is important to avoid including the transmitter or the terminal box into the insulation.
Since the sensors are an element of the pipeline, when installed these are normally thermally isolated to save energy and prevent accidental physical contact. Due to the process temperature heat is introduced through the support for securing the transmitter or the terminal box. For this reason the thermal insulation of the sensor should not extend over more than the half of this support. It is essential to prevent inclusion of the installed transmitter or the terminal box in the thermal insulation. The maximum permissible fluid temperature range is stated on the rating plate of the respective version.

Maximum ambient temperature in dependence of the medium temperature for the mounted transmitter version.



Maximum ambient temperature for the sensor in dependence of the medium temperature for the remote mounted transmitters.



Remote mounted transmitter

By remote mounted transmitters, the permissible ambient temperature for the sensor shall not exceed -20 °C to + 60 °C.

By remote mounted transmitters, it must be ensured that the temperature in the vicinity of the terminal box does not exceed 70 °C

8.5.2 Storage temperature range

The storage temperature range is identical to the ambient temperature range.

8.5.3 Climate category

In accordance with DIN EN 60654-1; Non weather-protected **Class D1** locations with direct exposure to an open-air climates.

8.5.4 Ingress protection

The sensor meets the requirements of the protection class **IP 67**. The following must be observed to ensure compliance with protection class IP67 when the device has been installed or serviced:

- The housing seals must be clean and undamaged when placed in the sealing groove. If necessary the seals must be cleaned or replaced.
- Tighten the cover of the terminal box also tightening the safety bug screw to secure the lid or tighten the screw cap of the transmitter (integral mount version).
- The cables used for connection must comply with the specified outer diameter for the cable glands used.
- Tighten the cable glands firmly, taking the specified torque into account
- Loop the cable in front of the cable gland. Any moisture running along the cable can then drip off and not penetrate the device. Always install the device so that the opening of the cable gland does not face upwards.
- Any unused cable glands must be closed with a plug which is suitable for the respective protection class.

The sensors are also available in an **IP 68** version (only as a non-Ex version). The maximum permissible immersion depth in water is **5 m**. In this case the transmitter is installed separately from the sensor. The cable at the sensor is connected by the manufacturer and the terminal box is resin filled. For the connection cable a special cable suitable for IP68 applications is used.

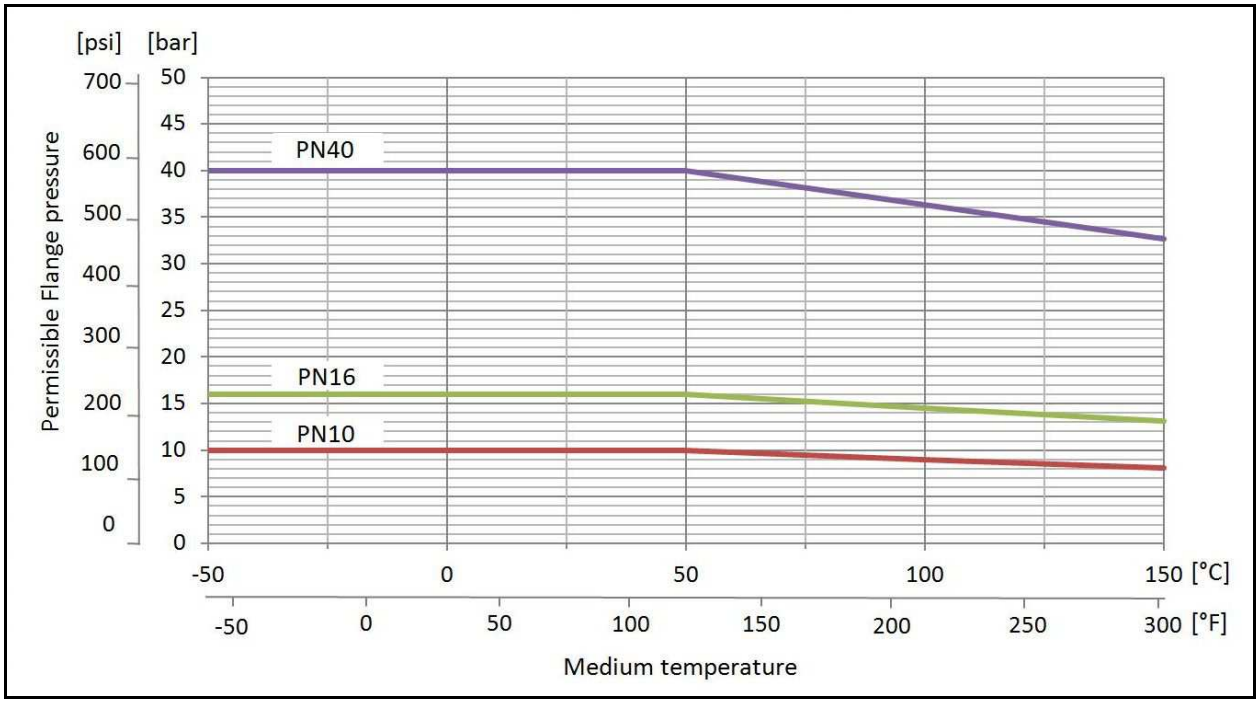
8.5.5 Shock and vibration resistance

The flowmeter should be protected from extreme shocks and vibrations, which could cause damage.
Maximum permissible shock/vibration: 15 m/s^2 (10 to150 Hz

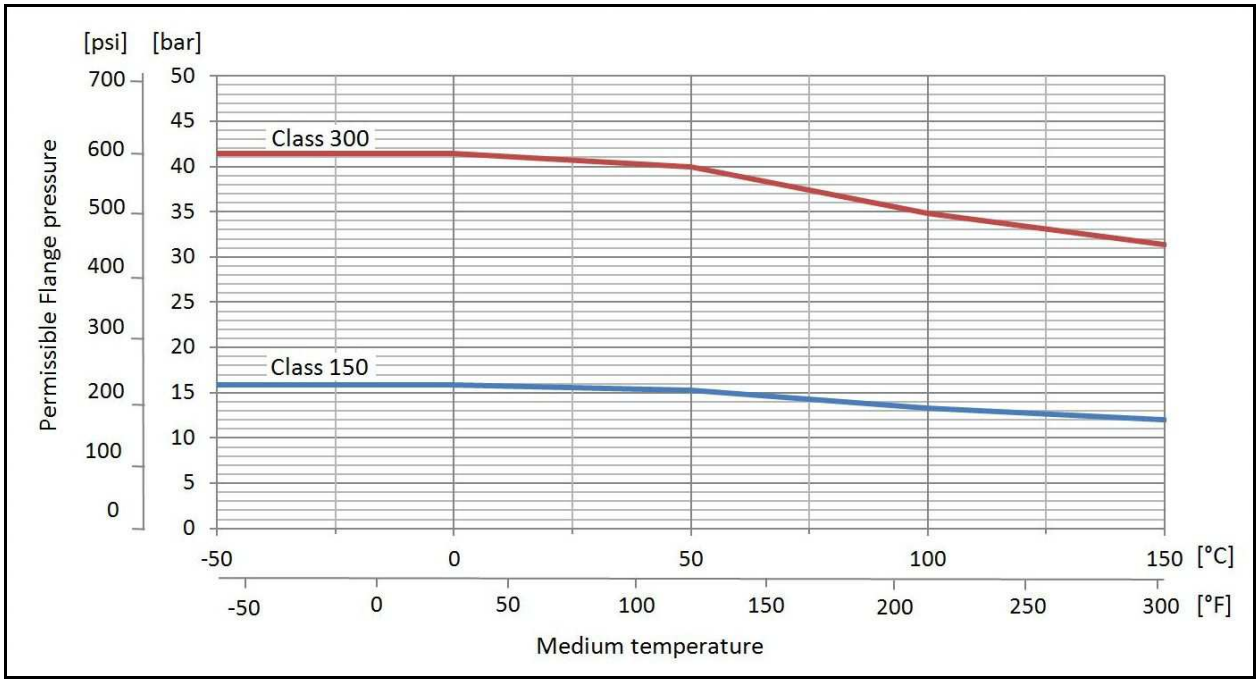
8.6 Process pressure

The maximal permissible process pressure is stated on the rating plate, and is dependent on the medium temperature. The maximal process pressure for the appropriate flange can be obtained from the following table.

Flange Connection according to EN1092-1 (DIN 2501)



Flange Connection according to ASME B16.5



8.7 Medium temperature and assignment of the temperature class

The maximum allowable medium temperature of the sensor depends on the used version as well as from the pipe lining used in the sensor. The device-specific temperature is designated on the rating plate.

For the relationship between the medium- and ambient temperature, see section 8.5.1 „Ambient temperature limits“, on page 28.

The Industrial Safety Act stipulates that equipment with very cold or hot components must be provided with protective guards to prevent accidental physical contact of employees with the respective parts. For this reason, as well as from an energy aspect, in practical applications where temperatures of 60 °C and higher prevail, all pipes and installed measuring instruments are normally thermally insulated.

Thermal insulation of the sensor

The sensor can also be provided with a thermal insulation for use in hazardous areas. However, the insulation should only reach maximal half way up the connecting tube, on which the terminal box or the transmitter is mounted.
The maximum surface temperature of insulated and non-insulated sensors is specified in the two following tables. The maximum temperature of the insulated sensor was determined by a thermal series of tests in accordance with the EN 60079-0. For this purpose the sensor was wrapped in 40 mm thick, laminated strips of mineral wool with vertically oriented fibers, wrapped on aluminum foil and reinforced with a glass mesh.

The temperature range in which the device may be used is dependent on the lining material. In the following table the temperature ranges and the applicable temperature class for gas and dust are rated with respect to the used lining.

For DN 15 to DN 25

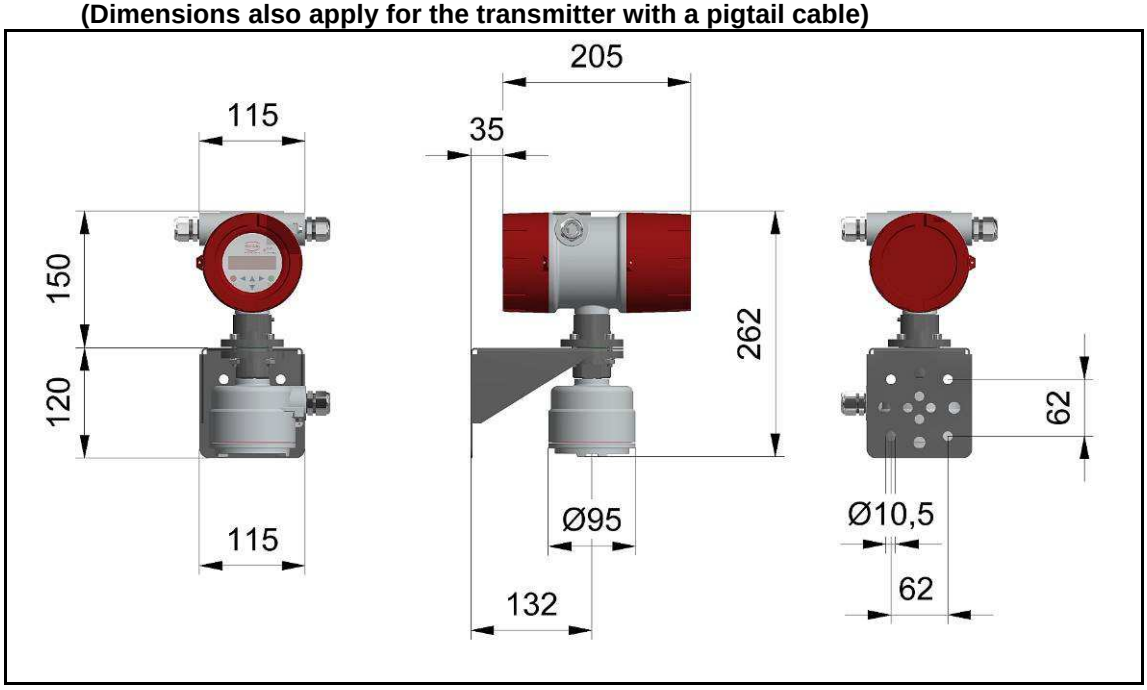
Lining material	Fluid temperature range	Temperature class for 2G (Gas)	Temperature class for 2D (Dust)
Hard rubber	-35 °C to +48 °C (-31 °F to +118 °F)	T6	80 °C (176 °F)
Soft rubber	+ 5 °C to +48 °C (+41 °F to +118 °F)	T6	80 °C (176 °F)
PTFE / ECTFE	-35 °C to +48 °C (-31 °F to +118 °F)	T6	80 °C (176 °F)
PTFE / ECTFE	-35 °C to +63 °C (-31 °F to +145 °F)	T5	95 °C (203 °F)
PTFE / ECTFE	-35 °C to +98 °C (-31 °F to +208 °F)	T4	130 °C (266 °F)
PTFE / ECTFE	-35 °C to +123 °C (-31 °F to +253 °F)	T3	155 °C (311 °F)

For DN 32 to DN 300

Lining material	Fluid temperature range	Temperature class for 2G (Gas)	Temperature class for 2D (Dust)
Hard rubber	-35 °C to +64 °C (-31 °F to +147 °F)	T6	80 °C (176 °F)
Soft rubber	+ 5 °C to +64 °C (+41 °F to +147 °F)	T6	80 °C (176 °F)
PTFE / ECTFE	-35 °C to +64 °C (-31 °F to +147 °F)	T6	80 °C (176 °F)
PTFE / ECTFE	-35 °C to +79 °C (-31 °F to +174 °F)	T5	95 °C (203 °F)
PTFE / ECTFE	-35 °C to +114 °C (-31 °F to +237 °F)	T4	130 °C (266 °F)
PTFE / ECTFE	-35 °C to +139 °C (-31 °F to +282 °F)	T3	155 °C (311 °F)

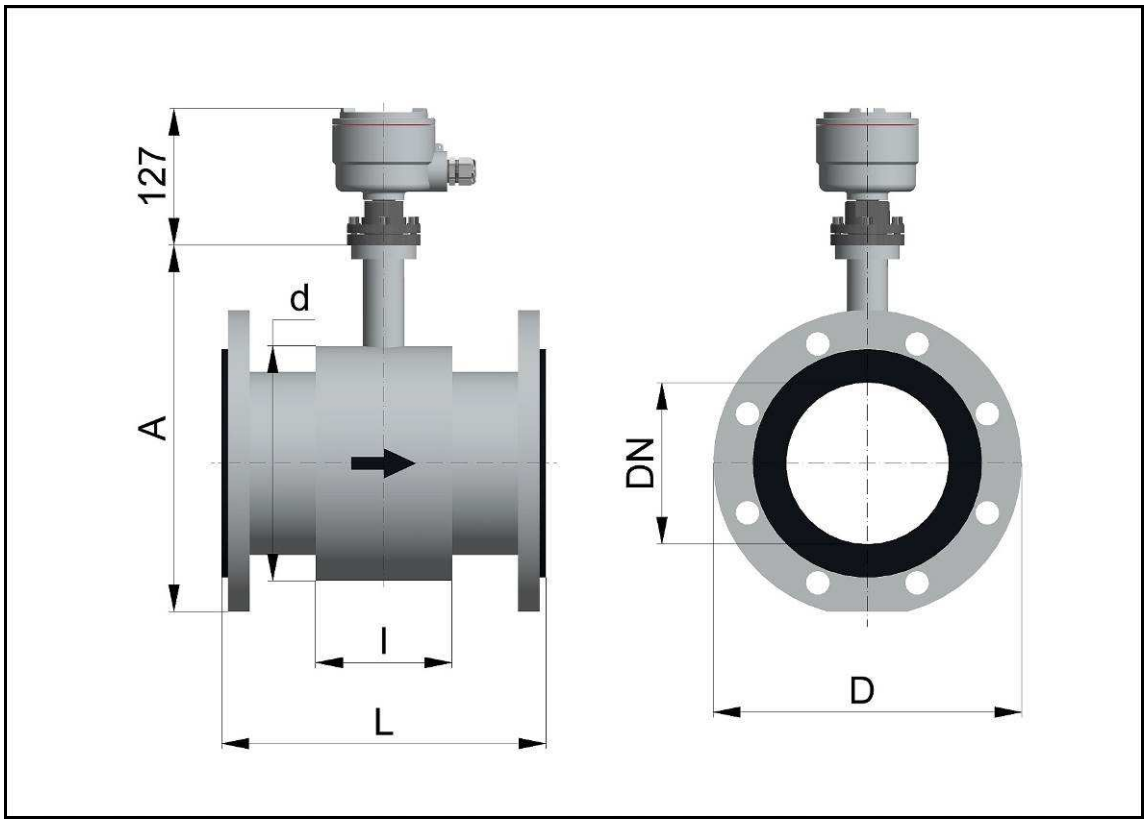
9 Dimensions and weight

9.1 Transmitter with terminal box and wall bracket for separate montage (Dimensions also apply for the transmitter with a pigtail cable)



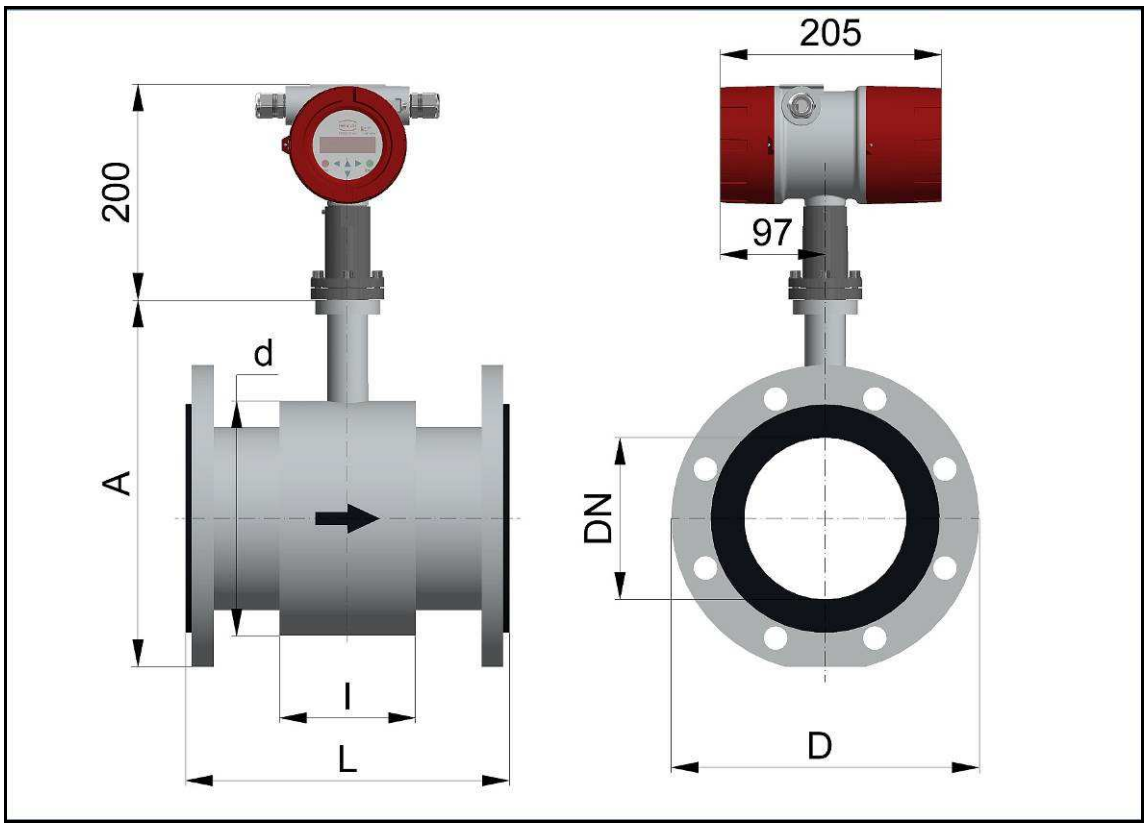
See Table 1 on Page 33 for dimensions

9.2 EPX with terminal box for separate montage



See Table 1 on Page 33 for dimensions

9.3 EPX with mounted transmitter UMF3



See Table 1 on Page 33 for dimensions

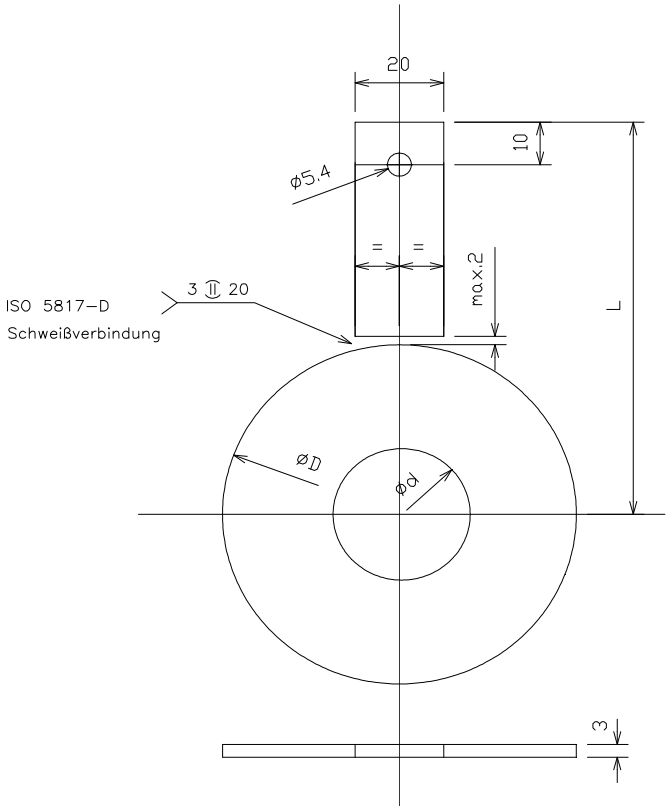
9.4 Dimensions of sensor / transmitter

Table 1: The Flanges comply with DIN EN 1092-1. / or ASME B16.5

(Standard Pressure Rating)	DN	ASME	D DIN/EN Flange	D ASME Flange	d	A DIN/EN Flange	A ASME Flange	L	l	Weight * [kg]	
										With Terminal Box	With Trans-mitter
PN 40	15	½"	95	88,9	62	164	172	200	66	3,5	5,5
	20	¾"	105	98,4	62	170	177	200	66	3,5	5,5
	25	1"	115	107,9	72	180	187	200	96	3,5	5,5
	32	1¼"	140	117,5	82	199	197	200	96	4,5	6,5
	40	1½"	150	127	92	209	207	200	96	4,5	6,5
	50	2"	165	152,4	107	223	227	200	96	6,5	8,5
PN16	65	2½"	185	177,8	127	244	249	200	96	9,5	11,5
	80	3"	200	190,5	142	260	263	200	96	14,5	16,5
	100	4"	220	228,6	162	280	292	250	96	16,5	18,5
	125	5"	250	254	192	310	320	250	126	19,5	21,5
	150	6"	285	279,4	218	340	346	300	126	25,5	27,5
	200	8"	340	342,9	274	398	405	350	211	41,5	43,5
PN 10	250	10"	395	406,4	370	480	485	450	211	54,5	56,5
	300	12"	445	482,6	420	535	548	500	320	77,5	79,5

* Weight specifications are only approximations.

9.5 Dimensions of the grounding ring



DN	PN	D [mm]	d [mm]	L [mm]
10	40	44	10	67,5
15	40	49	17	70
20	40	59	19	75
25	40	69	22	80
32	40	80	32	92,5
40	40	90	40	97,5
50	16	105	48	105
65	16	125	64	115
80	16	140	77	122,5
100	16	160	102	132,5
125	16	190	127	147,5
150	16	216	156	165
200	10	271	207	195
250	10	326	261	222,5
300	10	376	315	247,5

10 Declaration of Decontamination for the cleaning of the device

Company: ..... Town/City: .....

Department: ..... Name: .....

Tel.-No.: .....

The enclosed flowmeter

Model: EPX.....

Was operated using the following fluid: .....

Since the used fluid is potentially hazardous to water / toxic / corrosive / combustible*,

we have:

- checked all cavities in the device to ensure that they are free of fluid residues *
- washed and neutralized all cavities in the device*

* Delete if not applicable.

We hereby confirm that no health or environmental hazard will arise from any fluid residues on or in the device enclosed for return.

Date: ..... Signature: .....

Company stamp

11 Declaration of Conformity

Konformitätserklärung
Declaration of Conformity

Nº. 16.4158.01

Hersteller:
Manufacturer:

Heinrichs Messtechnik GmbH
Robert-Perthel-Strasse 9
50739 Köln

Produktbeschreibung:
Product description:

Magnetisch Induktiver Durchflussmessgerät UMF3 für Verwendung mit der Sensorreihe EPX und PIT*
Magnetic inductive flowmeter UMF3 for use with the sensor series EPX and PIT*
**** jede Typ / * all versions***

Hiermit erklären wir, in alleiniger Verantwortung, dass das oben genannte Messsystem den Anforderungen der folgenden EU-Richtlinien, einschließlich allen bis heute veröffentlichten Änderungen bzw. Nachträgen entspricht:
We declare herewith, in sole responsibility, that the product described above is conform with the provisions of the following EU-directives, including all published changes and amendments as of today:

2014/30/EU (EMC)	EU-Richtlinie über die Elektromagnetische Verträglichkeit. *EU-Directive relating to electromagnetic compatibility.*
2014/34/EU (ATEX)	EU-Richtlinie über Geräte zur Bestimmungsgemäße Verwendung in explosionsgefährdeten Bereichen. *EU-Directive relating to electrical equipment intended for use in potentially explosive atmospheres.*
2014/35/EU (LVD)	EU-Richtlinie über die Bereitstellung elektrischer Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen auf dem Markt. *EU-Directive relating to the making available on the market of electrical equipment designed for use within certain voltage limits.*
2014/68/EU (PED)	EU-Richtlinie zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung von Druckgeräten auf dem Markt. *EU-Directive* on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment.

Anhang N und **X** sind ein integraler Bestandteil dieser Erklärung
Annex N und **X are** *an integral part of this declaration*

Köln, den 20.08.2016

Kontakt: Tel: +49 (221) 49708-0
Contact: Email: info@heinrichs.eu
Web: www.heinrichs.eu

Frank Schramm
(Geschäftsführung / Managing Director)

Anhang N zur Konformitätserklärung
Annex N of the Declaration of Conformity

No. 16.4158.01

Produktbeschreibung: **Magnetisch Induktiver Durchflussmessgerät UMF3 für Verwendung mit der Sensorreihe EPX und PIT***
Product description: ***Magnetic inductive flowmeter UMF3 for use with the sensor series EPX and PIT****

Die Konformität mit den auf Seite 1 genannten Richtlinien diese Erklärung wird nachgewiesen durch die Einhaltung folgenden Normen:
Conformity to the Directives referred to on Page 1 of this Declaration is assured through the application of the following standards:

Richtlinie ***Direktive***	**Norm –Ref. Nr.** ***Standard / Ref. Nº.***	**Ausgabe** ***Edition***	**Kurz Beschreibung Short Description**	UMF3	EPX	PIT*	
2014/30/EU	EN 61000-6-2	2011	Immunity Industry	X	X	X	
	EN 61000-6-3	2012	Emmision residential	X	X	X	
	EN 55011	2011	Radio frequency disturbance	X	X	X	
	EN 61326-1	2013	EMC requirements	X	X	X	
2014/34/EU	60079-0	2009	General requirements			X	
		2012+ A11:2013		X	X		
	60079-1	2007	Flameproof Enclose „d“	X			
	60079-7	2007	Increased Safety „e“	X	X	X	
	60079-11	2007	Intrinsic Safety „i“			X	
		2012		X	X		
	60079-31	2009	Dust Protection by Enclosure „t“		X		
		2013		X			
2014/35/EU	EN 61010	2011	Safety requirements	X	X	X	
2014/68/EU	AD 2000-Merkblätter		Module H		X		

X: Zutreffende Norm / Applicable Standard

Name und Anschrift der Benannte Stelle / *Name and Address of the Notified Body*

TÜV-SÜD-Industrie Service GmbH
TÜV-SÜD Gruppe
Westendstraße 193
D-80686 München

DEKRA EXAM GmbH
Carl-Beyling-Haus
Dinnendahlstraße 9
D-44809 Bochun
ID-Nr. / *ID-Nº.*: RL 2014/34/EU: 0158

Anhang X zur Konformitätserklärung
Annex X to the Declaration of Conformity

Nr. 16.4158.01

Produktbeschreibung: **Magnetisch Induktiver Durchflussmessgerät UMF3 für Verwendung mit der Sensorreihe EPX und PIT***
Product description: ***Magnetic inductive flowmeter UMF3 for use with the sensor series EPX and PIT****

Gerät Zulassungen / Device certification

Prüfbescheinigungen ***examination certificates***	**Nachtrag** ***Supplement***	**Kennzeichnung** ***Marking***	UMF3	EPX	PIT*	
BVS 15 ATEX E 067 X	-	II 2G II 2D	X			
	-	II 2G (1G) II 2D (1D)	X			
FTZU 16 ATEX 0064 U	-	II 2G II 2D		X		
FTZU 16 ATEX 0065 X	-	II 2G II 2D		X		
BVS 03 ATEX E 150 X	1	II 2G			X	

X: Zutreffende Norm / Applicable Standard

Die oben genannten Produkte entsprechen der Richtlinie 2014/34/EU. Neue Editionen können bereits eine oder mehrere der in den jeweiligen EG-Baumusterprüfbescheinigungen genannten Normen ersetzt haben.
Der Hersteller erklärt, dass alle Produkte erwähnt in dieser Konformitätserklärung auch der Anforderungen der neuen Editionen einhalten, da die veränderten Anforderungen der neuen Editionen haben entweder keinen Einfluss auf das Produkt, oder das Produkt die Anforderungen erfüllt.

The above-mentioned products comply with the Directive 2014/34/EU. New editions may have already replaced one or more of the Standards stated in the respective EC-Type-examination certificates. The manufacturer declares that all products mentioned in this Declaration of Conformity also comply with the requirements of the new editions since either the changed requirements of the new editions do not affect the product, or the product also fulfills the requirements.

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