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Subject to technical change.  
 All dimensions in mm (inch).

We assume no liability for typing errors.  
 Different variations than specified are possible.  
 Please contact our technical consultants.

## Safety notes / Technical support

### Notes

- Installation, maintenance and commissioning may be accomplished only by qualified technical personnel.
- The product must be used only in the manner outlined in this instruction manual.

Special attention must be paid to warnings and notes as follows:

#### WARNING



Relates to a caution symbol on the product: A failure to observe the necessary precautions can result in death, serious injury and/ or considerable material damage.

#### WARNING



Relates to a caution symbol on the product: Risk of electric shock

#### WARNING



A failure to observe the necessary precautions can result in death, serious injury and/ or considerable material damage.

This symbol is used, when there is no corresponding caution symbol on the product.

#### CAUTION

A failure to observe the necessary precautions can result in considerable material damage.

### Safety symbols

In manual and on product	Description
	CAUTION: refer to accompanying documents (manual) for details.
	Earth (ground) Terminal
	Protective Conductor Terminal

### Technical support

Please contact your local supplier (for address see [www.uwtgroup.com](http://www.uwtgroup.com)). Otherwise you can contact:

UWT GmbH  
 Westendstr. 5  
 D-87488 Betzigau

Tel.: 0049 (0)831 57123-0  
 Fax: 0049 (0)831 76879  
[info@uwtgroup.com](mailto:info@uwtgroup.com)  
[www.uwtgroup.com](http://www.uwtgroup.com)

## Introduction

### Applications

The device is used for level monitoring in all types of containers and silos.

It can be used with all powdery and granulated bulk materials with a density greater than 20 g/l (1.25 lb/ft³) that do not show a strong tendency to form crusts or deposits.

The units can be delivered with Ex-approvals for use in Dust Hazardous Areas.

A selection of fields of application:

- **Building materials industry**  
lime, moulding sand, etc.
- **Food industry**  
milk powder, flour, salt, etc.
- **Plastics industry**  
plastics granules etc.
- **Timber industry**
- **Chemical industry**
- **Mechanical engineering**

The Mononivo oscillating probe is normally screwed into the lateral container wall so that it is level with the filling height to be registered and monitored.

The device can also be mounted from the top of the container. In this case an extension piece is used to mount the probe level with the height to be registered.

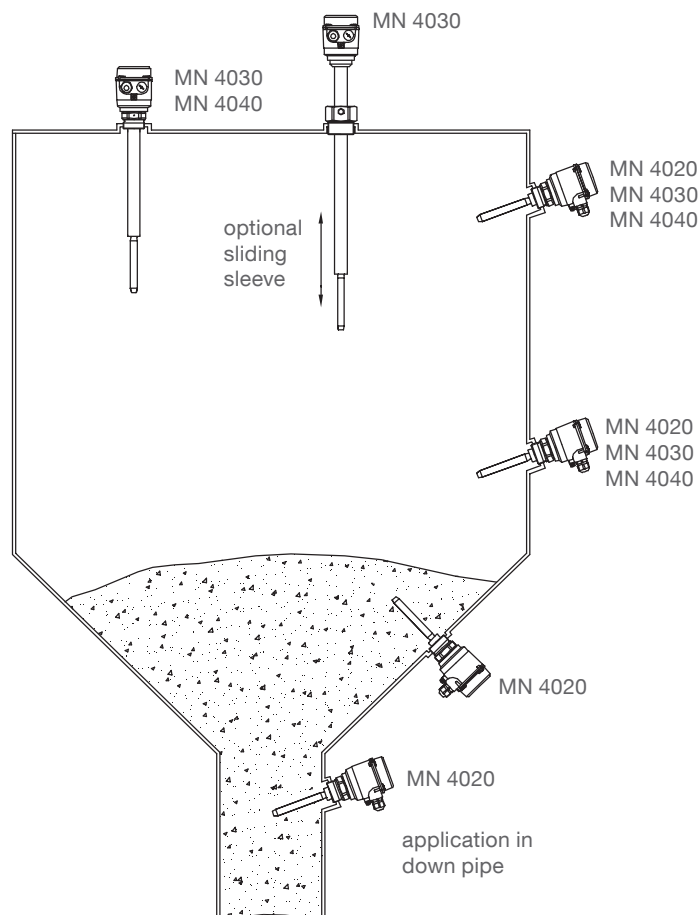
The length of the probe can be up to 4 m (157") with an extension tube (MN 4030, MN 4040).

The use of a sliding sleeve is recommended so that the switch point can be changed continuously during operation of the device.

### Function

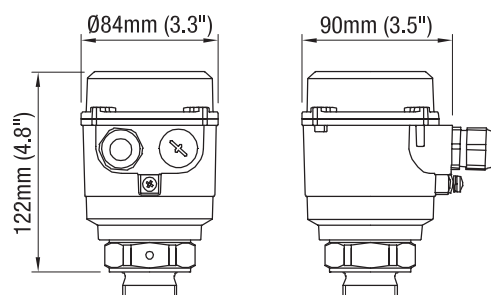
The piezo-electrically stimulated oscillating rod vibrates at its mechanical resonance frequency. If the probe is covered by the bulk material, the damping thus generated is registered electronically and a corresponding signal output is actuated.

The oscillation of the rod ensures a certain self-cleaning effect.

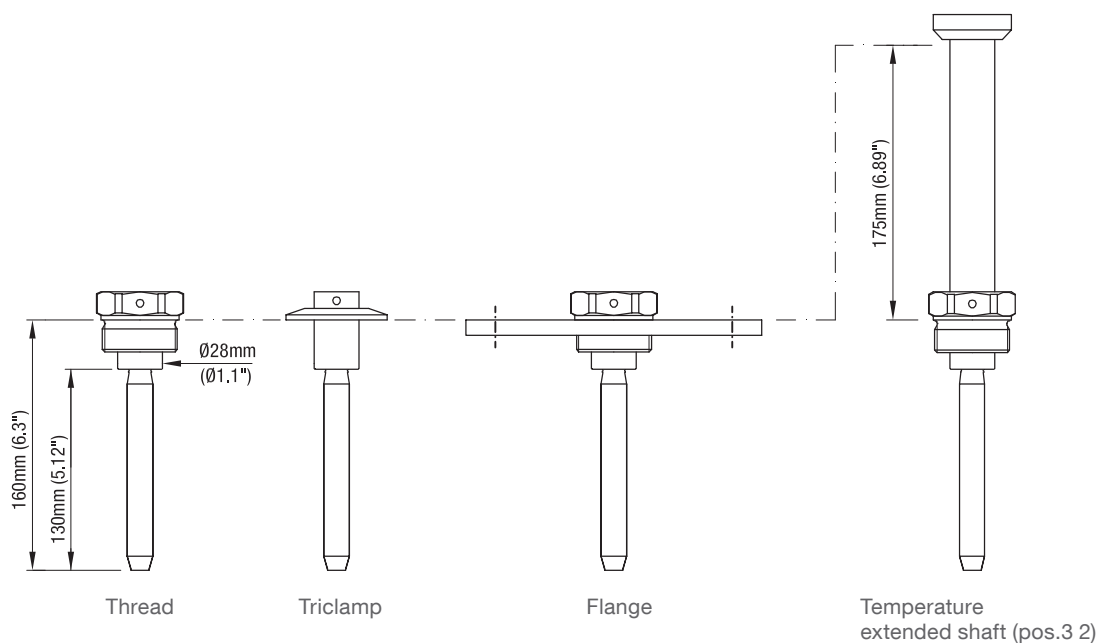


## Technical data

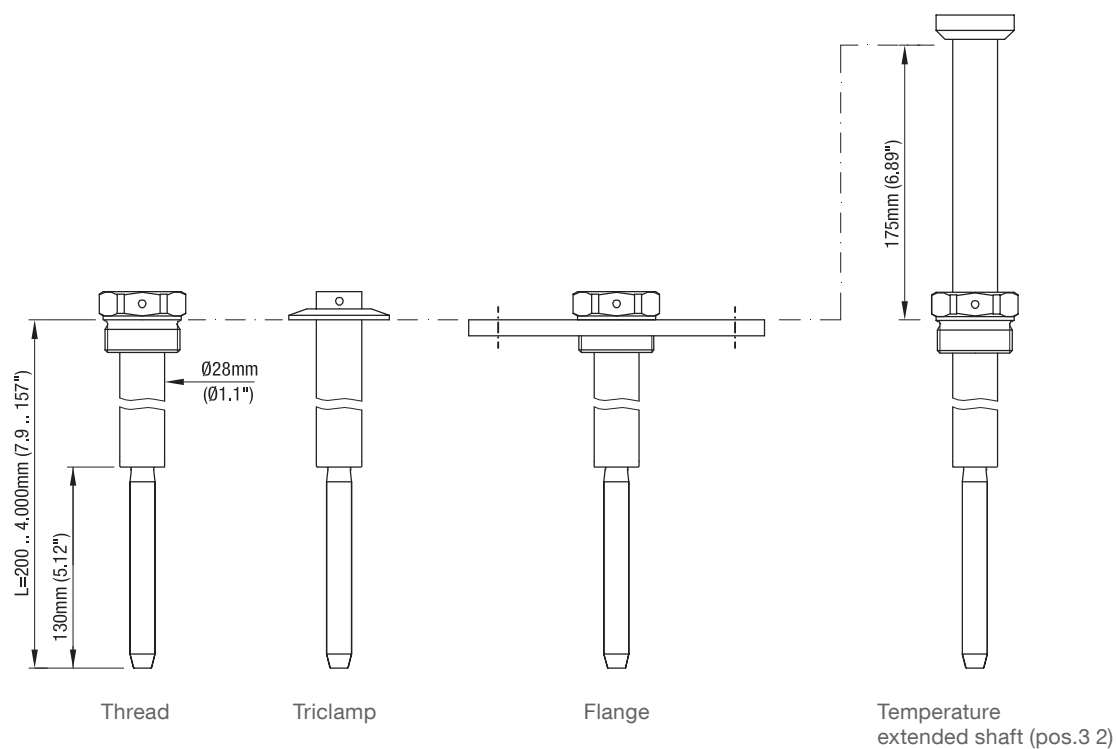
### Dimensions



#### MN 4020

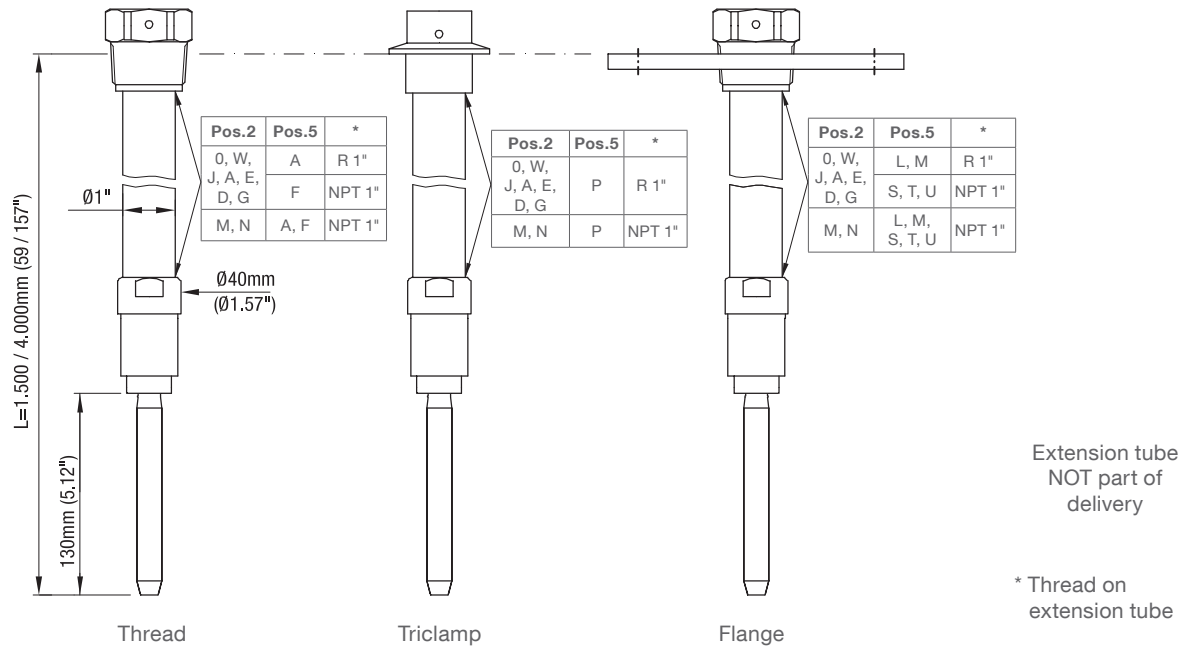


#### MN 4030



## Technical data

### MN 4040



## Technical data

### Electrical data

Connection terminals	0.14 - 2.5 mm <sup>2</sup> (AWG 26 - 14)
Cable entry	M20 x 1.5 screwed cable gland NPT ½" conduit connection NPT ¾" conduit connection  Clamping range (diameter) of the factory provided cable glands: M20 x 1.5: 6 .. 12 mm (0.24 .. 0.47")
Signal delay	Sensor free -> covered ca. 1 sec Sensor covered -> free ca. 1 .. 2 sec
Safety operation (FSL,FSH)	Switchable for minimum or maximum safety
Vibration frequency	ca. 330 Hz
Overvoltage category	II
Pollution degree	2 (inside housing)

### Electronics

	Universal voltage Relay DPDT	3-wire PNP
Power supply	21 V .. 230 V 50 - 60 Hz ±10%* 22 V .. 45 V DC ±10%* *incl. ±10% of EN 61010	20 V .. 40 V DC ±10%* *incl. ±10% of EN 61010
Max. ripple of power supply	7 V <sub>ss</sub> at DC	7 V <sub>ss</sub>
Installed load/ input current	max. 22 VA/ 2 W	max. 0.5 A
Signal output	Floating relay DPDT AC max. 250 V, 8 A non inductive DC max. 30 V, 5 A non inductive	Open Collector: Permanent load max. 0.4 A Short-circuit, overload and reverse polarity protected Output voltage equal to input voltage, drop <2.5 V
Indicating light	Status of signal output by built-in LED	Status of signal output by built-in LED
Isolation	Power supply to signal output: 2,225 Vrms Signal output to signal output: 2,225 Vrms	-
Protection class	I	III

## Technical data

### Mechanical data

<b>Housing</b>	Aluminium housing, powder coated RAL 5010 gentian blue Seal between housing and lid: NBR Seal between housing and process connection: NBR Nameplate: polyester film	
<b>Degree of protection</b>	IP67* (EN 60529), NEMA Type 4X * For version with plug the type of protection can be lower (see option plug/ page 10).	
<b>Partition wall between Zone 20 and Zone 21 (EPL Da/Db)</b>	Material:	stainless steel
	Thickness:	min. 1 mm
	Expected lifetime under constant functional vibration stress:	20 years (depending on application and ambient conditions)
	Note: in case of high flow rate of abrasive dust, measures shall be provided to mitigate potential abrasion at the partition wall.	
<b>Process connection</b>	Material: MN 4020: stainless steel 1.4301 (304)/ 1.4541 (321)* or 1.4404 (316L) MN 4030/ 4040: stainless steel 1.4301 (304)/ 1.4541 (321)* or 1.4404 (316L) (process connection and tube extension) * The listed or higher-quality corrosion-resistant materials can be used. Filler materials are not listed. Thread: G 1", G 1¼", G 1½" DIN 228; NPT 1", NPT 1¼", NPT 1½" ANSI B 1.20.1 Flange: according to selection 1.4541 (321) or 1.4404 (316L) Triclamp: stainless steel 1.4301 (304) or 1.4404 (316L) 2" (DN50) ISO 2852 All material food grade	

## Technical data

**Tolerance length "L"** ±10 mm (±0.39")

**Oscillator** Material: stainless steel 1.4404 (316L) (food grade)

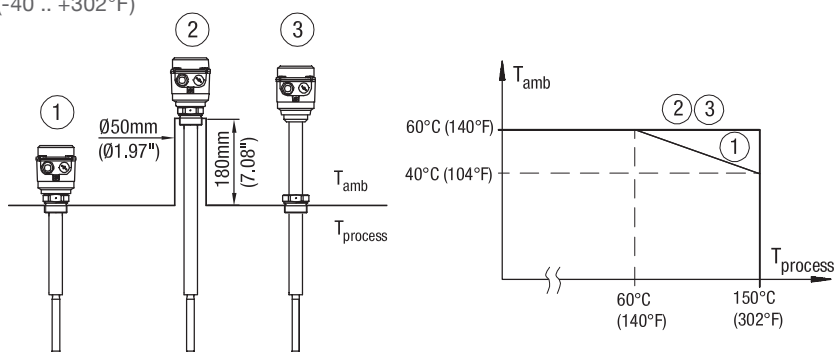
**Sound level** max. 50 dBA

**Overall weight (ca.)**  
 MN 4020: 1.3 kg (2.9 lbs)  
 MN 4030: 1.3 kg (2.9 lbs) +1.3 kg/m (+2.9 lbs per 39.3") extension  
 MN 4040: 1.8 kg (4.0 lbs) +1.3 kg/m (+2.9 lbs per 39.3") extension

## Operating conditions

**Ambient temp. (housing)** -40°C .. +60°C (-40 .. +140°F)

**Process temperature** -40°C .. +150°C (-40 .. +302°F)



For versions with Ex-approvals: see remarks on page 21.

**Ventilation** Ventilation is not required

**Min. powder density**

Setting	Min. powder density (ca.)
I	20 g/l (1.25 lb/ft³)
II	80 g/l (5 lb/ft³)
III	150 g/l (9.4 lb/ft³)
IV	300 g/l (18.7 lb/ft³)

**Features of bulk material** No strong tendency to cake or deposit

**Max. mechanical load** 400 N (@40°C, 104°F) laterally (on oscillator rod)  
 Recommended protection in case of high material load: mounting of a protective angle above the probe

**Max. mechanical torque**  
 MN 4030: 180 Nm (@40°C, 104°F)  
 MN 4040: 100 Nm (@40°C, 104°F)

**Max. process pressure** 16 bar (232 psi)  
 For versions with "sliding sleeve without process overpressure" (option pos.25 a,b,c): unpressurized.

The max. process pressure may be reduced with use of flanges. Observe flange standards for pressure rating and pressure derating with higher temperature.

For versions with Ex-approvals: see remarks on page 19.

**Vibration** 1.5 (m/s²)²/Hz according to EN 60068-2-64

**Relative Humidity** 0 - 100%, suitable for outdoor use

**Altitude** max. 2,000 m (6,562 ft)

**Expected product lifetime** Following parameters have a negative influence on the expected product lifetime:  
 High ambient- and process temperature, corrosive environment, high vibration, high flow rate of abrasive bulk material passing the sensor element.



## Technical data / Approvals

### Transport and Storage

<b>Transport</b>	<p>Observe the instructions as stated on the transport packaging, otherwise the products may get damaged.</p> <p>Transport temperature: -40 .. +80°C (-40 .. +176°F)          Transport humidity: 20 .. 85%</p> <p>Transport incoming inspections must be carried out to check for possible transport damage.</p>
<b>Storage</b>	<p>Products must be stored at a dry and clean place. They must be protected from influence of corrosive environment, vibration and exposure to direct sunlight.</p> <p>Storage temperature: -40 .. +80°C (-40 .. +176°F)          Storage humidity: 20 .. 85%</p>

### Approvals

<b>General Purpose (Ordinary Locations)</b> Depending on selected version in price list.	CE/ UKCA FM/ FMC TR-CU	EN 61010-1 (IEC/CB)	
<b>Hazardous Locations</b> Depending on selected version in price list.	ATEX UKEX IEC-Ex FM/ FMC TR-CU KC CCC INMETRO	Dust explosion Dust explosion Dust explosion Dust explosion Dust explosion Dust explosion Dust explosion Dust explosion	ATEX II 1/2D Ex ta/tb IIIC T! Da/Db UKEX II 1/2D Ex ta/tb IIIC T! Da/Db IEC-Ex ta/tb IIIC T! Da/Db Cl. II, III Div. 1 Gr. E,F,G Ex ta/tb IIIC T120°C...T150°C Da/Db X Ex ta/tb IIIC T* °C Da/Db Ex ta/tb IIIC T! Da/Db Ex ta/tb IIIC T! Da/Db
	Detailed allocation of types and electronics to approvals: see selection list.		
<b>EMC</b>	EN 61326 - A1		
<b>Food grade material</b>	According to directive 1935/2004/EC		
<b>RoHS conform</b>	According to directive 2011/65/EU		
<b>Pressure Equipment Directive (2014/68/EU)</b>	As the equipment does not have pressure-bearing housings of its own, it is not subject to the PED: - as "pressure accessory" (see 2014/68/EU Art. 2 (5) and PED Guidelines A-08, A-40) - as "safety accessory" (see 2014/68/EU Art. 2 (4) and PED Guidelines A-20, A-25)		

## Options

### Weather protection cover

When the measuring device is used outdoor, the use of the weather protection cover is recommended. It protects the device from all atmospheric influences such as:

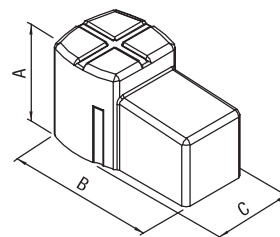
- rain water
- condensation of water
- excessively high temperatures due to insulation
- excessively low temperatures in winter

Material: PE, weathering and temperature stable

Not available for housing version d and de.



For use in Hazardous Locations: only permitted for Category 3 (zone 22) or Division 2.



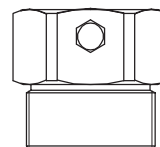
A	100 mm (3.94")
B	165 mm (6.5")
C	88 mm (3.46")

### Sliding sleeve

MN 4030 G 1½" ISO 228 or 1½" NPT ANSI B 1.20.1 or flanges  
 Material: 1.4301 (304) or 1.4571 (316Ti)

Version with selection code pos.25 a,b,c:  
 Only for applications without process pressure, max. 150°C (302°F). Not available for Ex-approvals.

Version with selection code pos.25 e,f,g:  
 For applications with process pressure, max. 16bar (232psi), 150°C (302°F). Sealing material to the extension tube: FPM or NBR



### Mounting set

Screws and washers for fixing the unit on a flange.

### Signal lamp

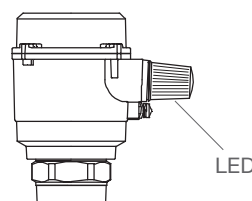
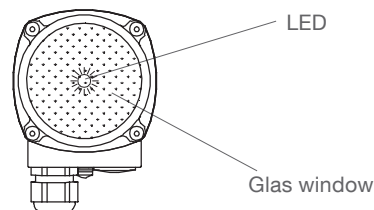
#### LED (glass window in lid)

To see the indicating light on the electronic module from outside.

#### LED (green or red)

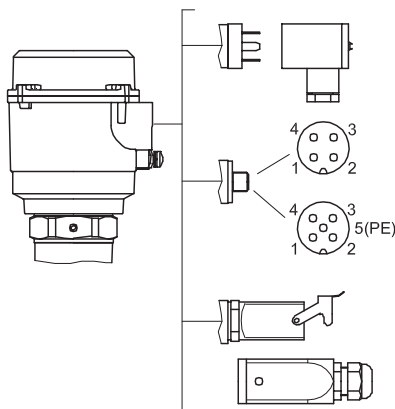
Mounted in cable entry. Connection of the LED wires to the internal terminals of the unit refer to documentation "Plugs and Signal lamps - Connecting diagram". Not available for use in Hazardous Locations and FM/CSA general purpose.

Available LED for use in Hazardous Locations and FM general purpose - see series NivoLED.



### Plug

Not available for use in Hazardous Locations and FM/CSA general purpose. Connection of the plug wires to the internal terminals of the unit refer to documentation "Plugs and Signal lamps - Connecting diagram".



#### Valve connector (incl. mating plug)

4-pole (incl. PE), max. 230 V, enclosure plastic, IP65, -40 °C ≤ T<sub>a</sub> ≤ +125 °C

#### Plug M12 (without mating plug)

4-pole, max. 25 V or 5-pole, max. 60 V, enclosure brass, IP66, -25 °C ≤ T<sub>a</sub> ≤ +80 °C

#### Plug Han 4A (incl. mating plug)

5-pole (incl. PE), max. 230 V, enclosure zinc, IP65, -40 °C ≤ T<sub>a</sub> ≤ +125 °C

## Mounting

### General Safety Instructions

#### Process pressure



Improper installation may result in loss of process pressure.

#### Chemical resistance against the medium



Materials of construction are chosen based on their chemical compatibility (or inertness) for general purposes. For exposure to specific environments, check with chemical compatibility charts before installing.

#### Temperature range



The range of the ambient and process temperature of the device must be observed (see page 8 and for Ex-approvals page 21)

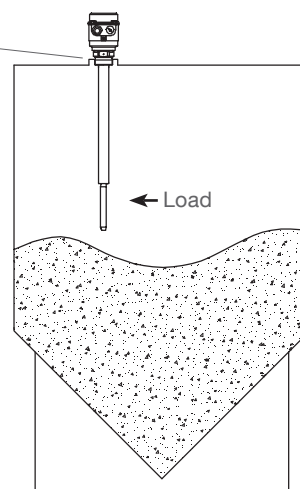
#### Mechanical load



The torque at the fastening spot must not exceed 180 Nm MN 4030/ 100 Nm MN 4040

Maximum length „L“ in dependence on the deviation (in degrees) from vertical installation:

Max. deviation	Max. length „L“
5°	4,000 mm (157.5“)
45°	1,200 mm (47.24“)
>45°	600 mm (23.62“)

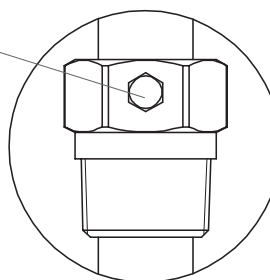


#### Mounting location

Keep distance to incoming material and to the silo wall. The installation has to be done in a way, that the sensor elements cannot hit the wall of the silo. The flow of the medium and fixtures in the container must be considered. This is especially important for extension length more than 3 m (118.1“).

#### Sliding sleeve

“Pressure tight” version (pos.25 e,f,g): Tighten both straining screws M8 with 12 Nm to obtain resistance against pressure.



#### Flange mounting

A plastic sealing must be used to tighten the flange.

#### Fastening of the threaded process connection

Mounting torque for the thread may not exceed 80 Nm. Use a 50 mm (1.97“), for units with sliding sleeve use a 55 mm (2.17“), open-end wrench. Do not fasten by turning the housing .

#### Food grade material

The materials are available for the use under normal and predictable applications (according to directive 1935/2004 Art.3). Other conditions can influence the safety.

## Mounting

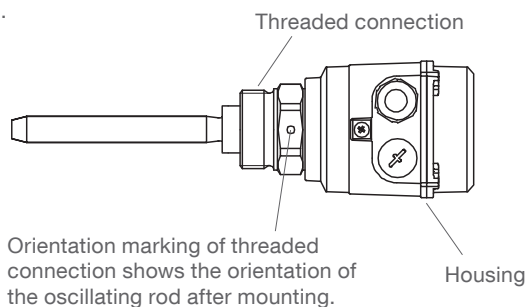
### ! Additional Safety Instructions for Hazardous Locations

<b>Installation regulations</b>	For devices to use in hazardous locations the respectively valid installation regulations must be observed.
<b>Sparks</b>	The installation has to be done in a way mechanical friction or impact can not cause sparks between the aluminium enclosure and steel.

## Mounting instructions

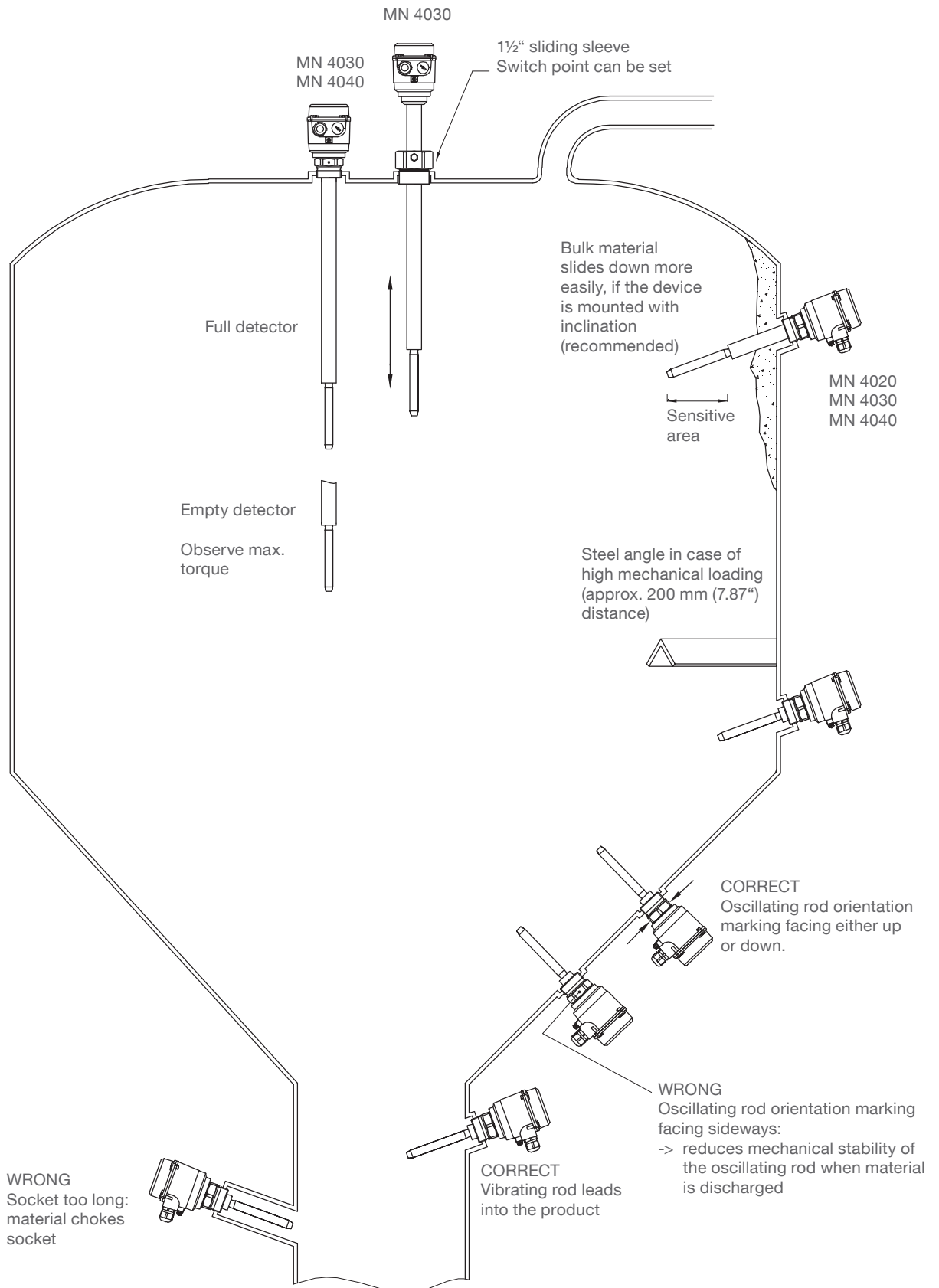
<b>Oscillating rod</b>	Do not bend, shorten or extend the oscillating rod since this will destroy the device.
------------------------	--

<b>Rotatable housing and orientation marking of oscillating rod</b>	The housing can be rotated against the threaded connection after mounting.
---	--



<b>Direction of the cable glands</b>	When the unit is mounted from the side, ensure, that the cable glands faces downwards and are closed to avoid water penetration into the housing. The housing can be rotated against the threaded connection after mounting.
<b>Sealing</b>	Seal the process thread with PTFE sealing tape in case of process pressure
<b>Precaution for later dismounting/ Service</b>	Grease the screws of the lid if corrosive atmosphere is present (e.g. close to sea)
<b>Switching point</b>	Heavy bulk material -> the signal output switches when the oscillating rod is covered a few mm Light bulk material -> the signal output switches, when the oscillating rod is covered a few cm

## Mounting



## Electrical installation

### General Safety Instructions

#### Handling



In the case of inexperienced handling or handling malpractice the electric safety of the device cannot be guaranteed.

#### Protective earthing

Before any electrical installation, the device must be connected to the protective earthing terminal inside the housing.

#### Installation regulations

The local regulations must be observed.  
 With use of 24 V supply voltage, an approved power supply with reinforced insulation to mains is required.

#### Fuse

Use a fuse as stated in the connection diagrams (page 16).

#### RCCB protection

In the case of a defect, the distribution voltage must automatically be cut off by a RCCB protection switch so as to protect the user of the device from indirect contact with dangerous electric tensions.

#### Power supply switch

A Power-supply-disconnecting switch must be provided and marked near the device.

#### Wiring diagram

The electrical connections have to be made according to the wiring diagram.

#### Supply voltage

Compare the supply voltage applied with the specifications given on the electronic and name plate before switching the device on.

#### Cable gland/ closing element

The screwed cable gland and closing element must have following specifications:  
 Ingress protection IP67, temperature range from -40°C to +70°C, certified depending on the country where the unit is installed, pull relief.  
 Make sure that the screwed cable gland safely seals the cable and that it is tight (danger of water intrusion). Cable glands that are not used have to be locked with a closing element.

#### Conduit system

In case of using a conduit system (with NPT thread) instead of a cable gland the regulations of the country where the unit is installed must be observed. The conduit must have a tapered thread either NPT 1/2" or NPT 3/4" in accordance with the unit and ANSI B 1.20.1. Not used inlets must be closed tight with a metal closing element.

#### Field wiring cables

- The diameter has to match to the clamping range of the used cable gland.
- The cross section has to match with the clamping range of the connection terminals and consider the max. current.
- All field wirings must have insulation suitable for at least 250 V AC.
- The temperature rating must be at least 90°C (194°F).
- If higher immunity interferences as specified in the stated EMC standards are present (see chapter approval), a shielded cable is required, otherwise an unshielded instrumentation cable is satisfactory.

#### Connecting the terminals

Make sure that max. 8 mm (0.31") of the pigtails are bared (danger of contact with live parts).

#### Guiding the cables in the terminal box

Cut the field wiring cables to appropriate length to fit properly into the terminal box.

#### Relay and transistor protection

Provide protection for relay contacts and output transistors to protect the device against spikes with inductive loads.

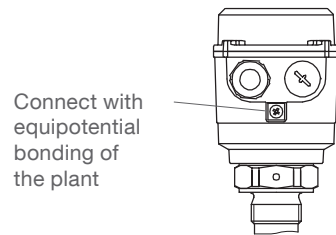
#### Protection against static charging

The housing of the unit must be grounded in any case to avoid static charging of the unit on applications with pneumatic conveying and non-metallic containers.

## Electrical installation

### ! Additional Safety Instructions for Hazardous Locations

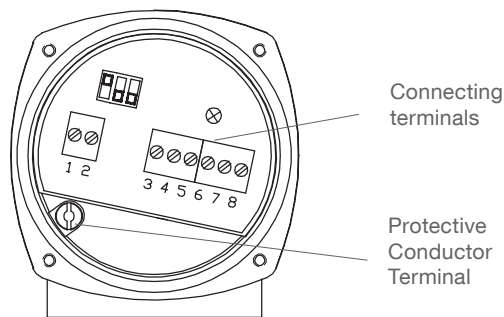
**External equipotential bonding terminal**



<b>Field wiring</b>	A pull relief must be provided for the field wiring cables, when the device is installed with the factory provided cable glands.
<b>Cable glands</b>	<p>Installation according to the regulations of the country, where the product is installed.</p> <p>Not used entries have to be closed with blanking elements certified for this purpose.</p> <p>Where available the factory provided parts must be used.</p> <p>A strain relief must be provided for the field wiring cables, when the device is installed with the factory provided cable glands.</p> <p>The diameter of the field wiring cable must match to the clamping range of the cable clamp.</p> <p>If other than the factory provided parts are used, following must be ensured:          The parts must have an approval adequate to the approval of the level sensor (certificate and type of protection).          The approved temperature range must be from the min. ambient temperature of the level sensor to the max. ambient temperature of the level sensor increased by 10 Kelvin.          The parts must be mounted according to the instructions of the supplier.</p>
<b>Conduit system for FM</b>	In addition the regulations of the country must be observed. The used flameproof seals and blanking elements must have an adequate type approval and a temperature range of at least $-40^{\circ}\text{C}$ ( $-40^{\circ}\text{F}$ ) to $+80^{\circ}\text{C}$ ( $176^{\circ}\text{F}$ ). In addition they shall be suitable for the conditions and correctly installed. Where available the provided original parts of the manufacturer must be used.
<b>Commissioning</b>	Commissioning only with closed lid.
<b>Opening the lid</b>	Before opening the lid take care, that no dust deposits or whirlings are present. Do not remove the lid (cover) while circuits are alive.

## Electrical installation

### Connection



#### Universal voltage Relay DPDT

##### Power supply:

21 V .. 230 V 50 - 60Hz  $\pm 10\%^*$  22 VA  
 22 V .. 45 V DC  $\pm 10\%^*$  2 W  
 \*incl.  $\pm 10\%$  of EN 61010

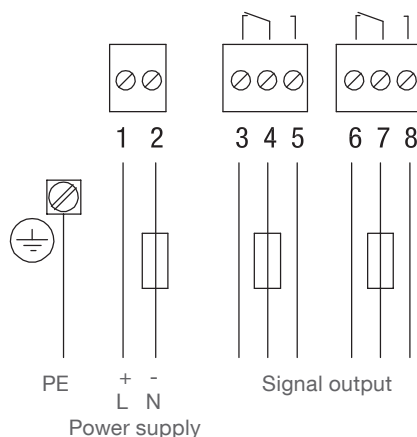
Fuse on power supply:  
 max. 10 A, fast or slow, HBC, 250 V

##### Signal output:

Floating relay DPDT

AC max. 250 V, 8 A, non inductive  
 DC max. 30 V, 5 A, non inductive

Fuse on signal output:  
 max. 10 A, fast or slow, HBC, 250 V



#### 3-wire PNP

##### Power supply:

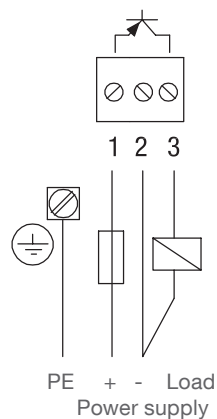
20 .. 40 V DC  $\pm 10\%^*$   
 \*incl.  $\pm 10\%$  of EN 61010  
 Input current: max. 0.5 A

Fuse:  
 max. 4 A, fast or slow, 250 V

##### Signal output:

max. 0.4 A  
 Output voltage equal to input  
 voltage, drop  $< 2.5$  V

Load for example:  
 PLC, relay, contactor, bulb





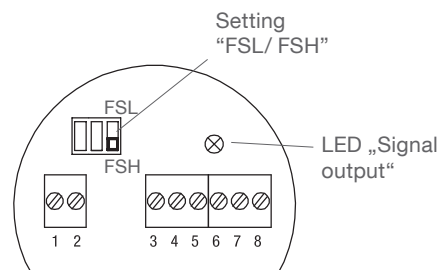
## Signal output / Sensitivity setting

### Signal output

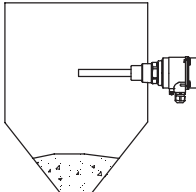
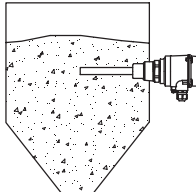
#### FSL/ FSH Setting

**FSH** If the sensor is used to indicate full load, set to Fail Safe High. Power failure or line break is regarded as „full“ signal (protection against overcharging).

**FSL** If the sensor is used to indicate empty load, set to Fail Safe Low. Power failure or line break is regarded as „empty“ signal (protection against running dry).



	Signal output		Signal output	
Setting	FSL	FSH	FSL	FSH
Relay DTPT				
3-wire PNP				
LED „Signal output“				

### Sensitivity setting

All sensors are factory set to position "III" to cover the majority of applications.

If the bulk material is heavy and has a strong tendency to cake or deposit, the setting can be set to position „IV“ so as to decrease the sensitivity of the probe.

If the bulk material is light and has few or no tendency to cake or deposit, the setting can be set to position „II“ or „I“ so as to increase the sensitivity of the probe.

The table indicates the approximate min. bulk density depending on the settings.

Please contact manufacturer if you intend to use the device for special purposes.

Setting	Sensitivity/ Powder density (ca.)	
I	High >20 g/l (1.25 lb/ft³)	
II	Medium high >80 g/l (5 lb/ft³)	
III *	Medium low >150 g/l (9.4 lb/ft³)	
IV	Low >300 g/l (18.7 lb/ft³)	

\* factory preset

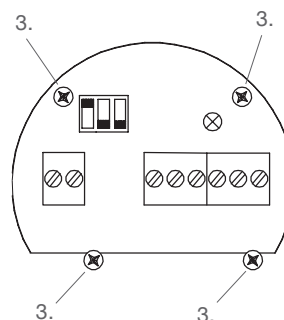
## Maintenance

<b>Opening the lid (cover)</b>	<p>Before opening the lid for maintenance reasons observe following items:</p> <ul style="list-style-type: none"> <li>• Do not remove the lid while circuits are alive.</li> <li>• No dust deposits or whirlings are present.</li> <li>• No rain can enter into the housing.</li> </ul>
<b>Frequent check of the unit</b>	<p>To ensure durable safety in hazardous locations and with electrical safety, following items must be checked frequently depending on the application:</p> <ul style="list-style-type: none"> <li>• Mechanical damage or corrosion of any components (housing side and sensor side) and of the field wiring cables.</li> <li>• Tight sealing of the process connection, cable glands and enclosure lid.</li> <li>• Properly connected external PE cable (if present).</li> </ul>
<b>Cleaning</b>	<p>If cleaning is required by the application, following must be observed:</p> <ul style="list-style-type: none"> <li>• Cleaning agent must comply with the materials of the unit (chemical resistance). Mainly the lid sealing, cable gland and the surface of the unit must be considered.</li> </ul> <p>The cleaning process must be done in a way, that:</p> <ul style="list-style-type: none"> <li>• The cleaning agent cannot enter into the unit through the lid sealing or cable gland.</li> <li>• No mechanical damage of the lid sealing, cable gland or other parts can happen.</li> </ul> <p>A possible accumulation of dust on the unit does not increase the maximum surface temperature and must therefore not be removed for purposes of maintaining the surface temperature in hazardous locations.</p>
<b>Function test</b>	<p>A frequent function test may be required depending on the application.</p> <p>Observe all relevant safety precautions related with a safe work depending on the application (e.g. hazardous locations, hazardous bulk material, electric safety, process pressure).</p> <ul style="list-style-type: none"> <li>• This test does not proof if the sensor is sensitive enough to measure the material of the application.</li> </ul> <p>Function test is done by stopping the vibration of the vibrating rod with appropriate means and monitor if a correct change of the signal output from uncovered to covered happens.</p>
<b>Production date</b>	<p>The production date can be traced by the serial number on the typeplate. Please contact the manufacturer or your local distributor.</p>
<b>Spare parts</b>	<p>All available spare parts are stated in the selection list.</p>

### Change of the electronic board:

Deenergise device and secure against being switched on again.

1. Open the housing lid
2. Remove the field wiring cables/ plug
3. Unscrew the cover plate
4. Take out the electronic board and remove internal plug
5. Insert a new electronic board in reverse sequence
6. Connect the field wiring cables



## Notes for use in Hazardous Locations

### Zone classification

	Usable in zone	Category	Equipement Protection Level (EPL)
Dust applications	20, 21, 22	1 D	Da
	21, 22	2 D	Db
	22	3 D*	Dc

\* in case of conductive dust additional demands for the installation are possible.

### General Notes

#### Marking

Devices with EX approval are marked on the name plate.

#### Process pressure

- !** Devices with Ex Approval are approved for atmospheric pressure.  
 A detailed explanation is given below for ATEX and applies analogously for other Ex approvals:
- The scope of the ATEX directive is generally limited to atmospheric pressure, see ATEX directive 2014\_34\_EU Chapter 1 Art.2 (4).  
 Atmospheric pressure is defined as absolute pressure 0.8bar to 1.1bar, see ATEX guideline §50 and IEC 60079-0 chapter 1 Scope.  
 The technical background is that an explosive atmosphere which is compressed (overpressure) or released (underpressure) can exhibit different explosion behaviour than under atmospheric conditions. The standards for the types of protection against explosion (IEC 60079 series), on which a type approval according to the ATEX directive is based, are designed for atmospheric conditions and do not automatically cover deviating pressure conditions.  
 Thus, an ATEX type approval issued in accordance with this directive only covers atmospheric pressure.  
 This applies to all manufacturers.  
 A deviating operating pressure can be assessed and approved by an expert for the respective application.  
 Regardless of this, the design of the level indicators is suitable for a vessel overpressure / underpressure in accordance with the specified technical data.

#### Process and ambient temperature

The permitted temperature ranges are marked on the name plate.  
 The max. permitted ambient and process temperatures (including temperature derating) stated in this manual must be observed.

### ATEX/ UKEX: Year of manufacturing

Marking on the name plate is done according to IEC 60062 as follows:

Year of manufacturing	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Marking code	K	L	M	N	P	R	S	T	U	V	W	X

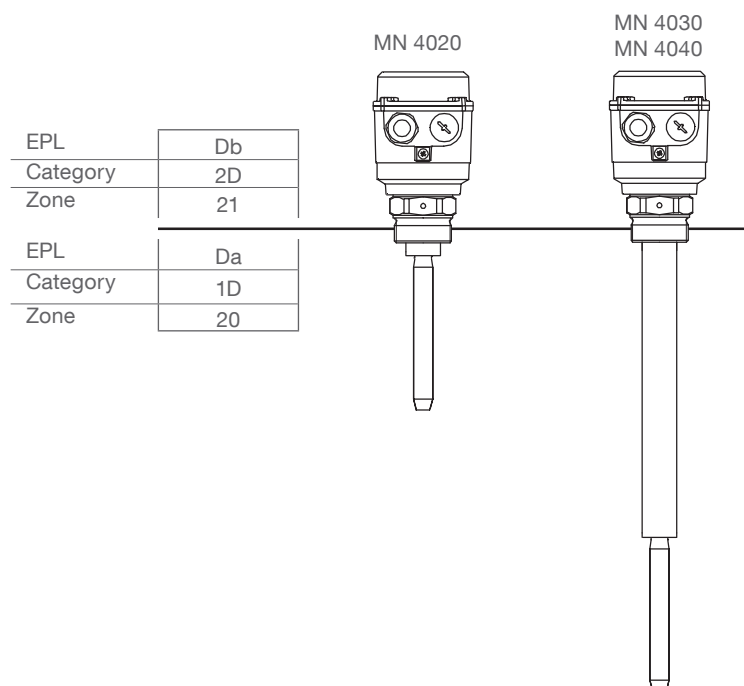
### **!** Specific conditions of use

#### Electrostatic charge

The apparatus shall be installed in a way that danger caused by electrostatic charges is avoided.

## Notes for use in Hazardous Locations

### Permitted zones for mounting in partition wall

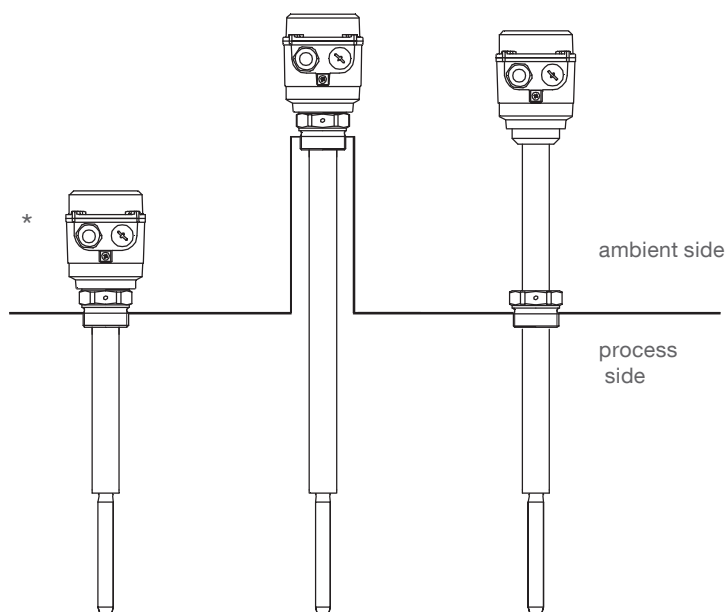


## Notes for use in Hazardous Locations

### Max. Surface Temperature and Temperature Class

The temperature marking on the type plate  refers to the instruction manual.  
 In the following table the relevant temperature ratings are shown.

The maximum surface temperature (resp. temperature class) is the warmest temperature of the unit which could occur during malfunction (according to Ex-definition).



\* Max ambient temperature is derated when process temperature exceeds 60°C (140°F), see ① on page 8.

Max. ambient temperature	Max. process temperature	Max. surface temperature (EPL Db)	Max. surface temperature (EPL Da)	Temperature class (Division System)
60°C (140°F)	120°C (248°F)	120°C (248°F)	T <sub>200</sub> 120°C	T4A
	130°C (266°F)	130°C (266°F)	T <sub>200</sub> 130°C	T4
	140°C (284°F)	140°C (284°F)	T <sub>200</sub> 140°C	T3C
	150°C (302°F)	150°C (302°F)	T <sub>200</sub> 150°C	T3C

## Assembly MN 4040

### Manufacturing of the Extension tube

**!** Obtain instruction manual for proper manufacturing of the extension tube. In case of deviation from the instruction manual the unit is not safe for use in Hazardous Locations.

#### Demands on the Extension tube

Material: Stainless steel 1.4301 (SS304) or 1.4305 (SS301) or 1.4571 (SS316Ti) or 1.4404 (SS316L)

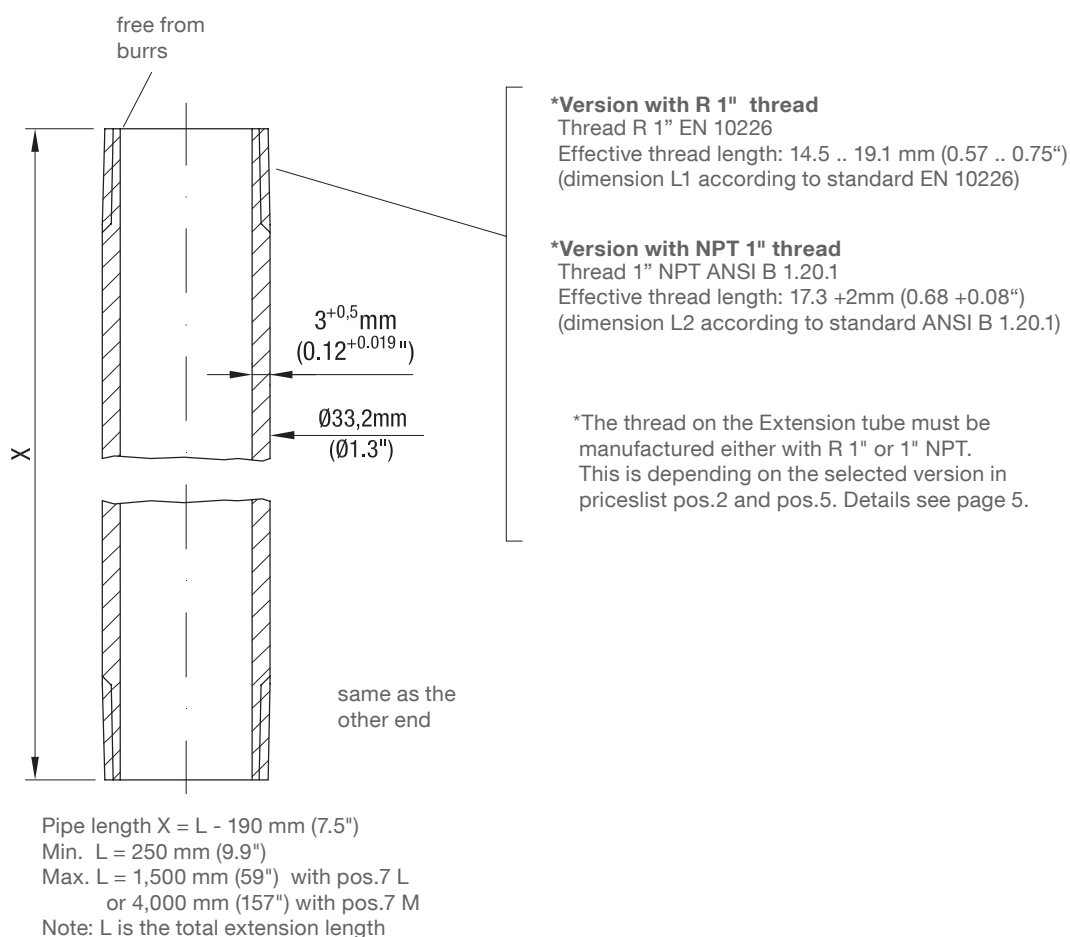
The tube must be manufactured from one single piece. It is not allowed to weld two or more pieces together.

Carefully observe max. length, diameter, wall thickness, thread, tolerances as specified in the drawing.

All sharp edges must be removed to protect the cable.

#### Thread testing

Each thread must be tested with go and no-go ring gauge according to standard EN 10226 (R 1" version) or ANSI B 1.20.1 (NPT 1" version)



#### In case of FM approved Units:

The MN 4040 extension tube is constructed using Industry Electrical conduit installed by Qualified personnel per NFPA 70 National Electrical Code.

#### In case of CSA approved Units:

The MN 4040 extension tube is constructed using Industry Electrical conduit installed by Qualified personnel per C22.1 Canadian Electrical Code.

## Assembly MN 4040

### Assembly of the unit

#### 1. Mounting of the Extension tube

**!** The tube must be assembled very carefully to ensure permanent sealing, electrical grounding and mechanical stability. Observe the follow mounting instructions.

**!** Make sure that the thread of the extension tube and the thread of the screwed piece/oscillating piece is the same type (do not mix R and NPT thread).

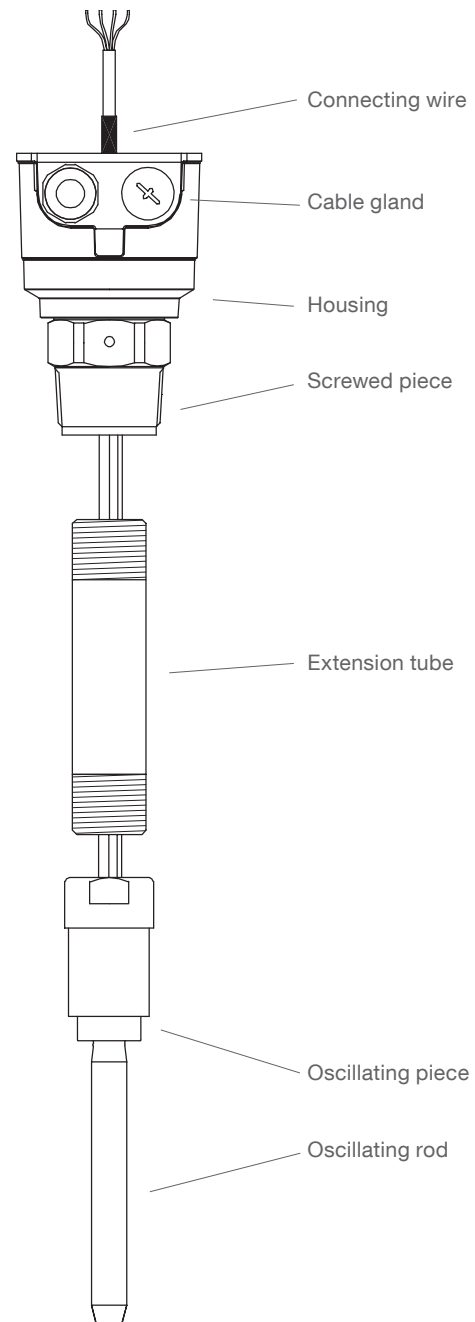
1.1. Feed the connecting wire through the 1" Extension tube and the screwed piece. Use a separate taut wire for easy working.

1.2. Screw the 1" Extension tube into the oscillating piece and the screwed piece.

#### Requirements for proper sealing and electrical grounding:

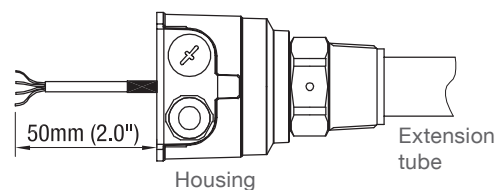
Sealing must satisfy IP67 or NEMA Type 4 at both sides of the extension tube. To reach this, the threads must be sealed with temperature resistant sealing for 150°C (302°F). Max. thickness of the sealing is 0.2 mm (0.008").

The threads must be fixed with 50 Nm.  
 Use a open-end wrench to attach the oscillating piece (do not use the oscillating rods).



#### 2. Checking the cable length

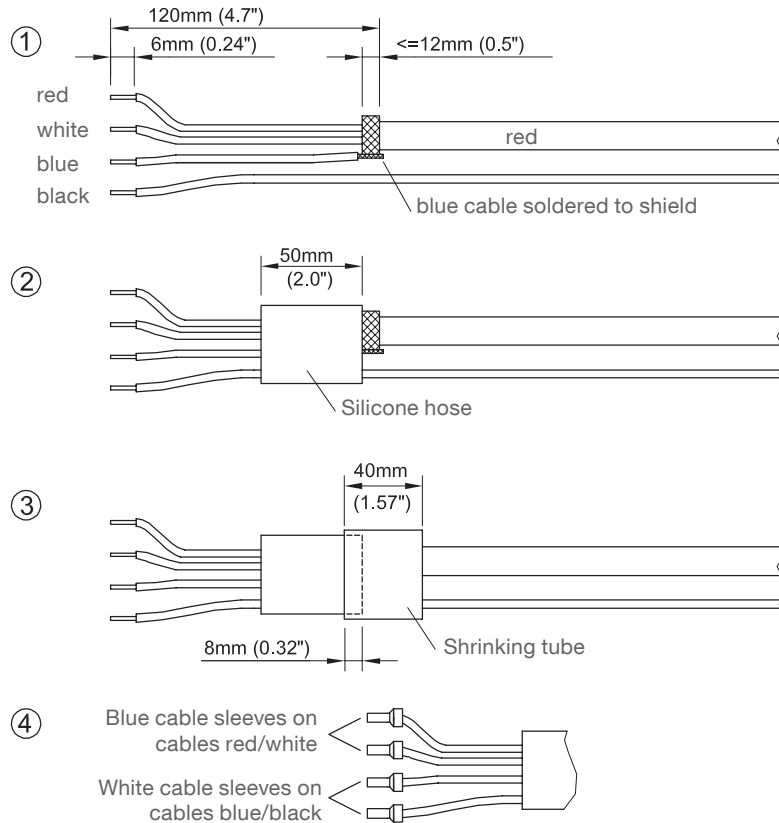
Push back the cable into the extension tube until the stated length is present. Take care that no cable is wound up inside the housing.  
 If the cables are too long to be pushed back, goto step 3, otherwise goto step 4.



## Assembly MN 4040

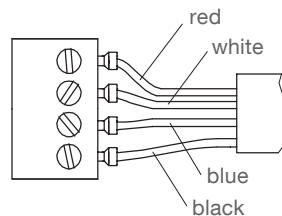
### 3. Cutting the cables (if required)

If the cables are too long to be pushed back into the extension tube, shorten the cable to the length as stated in step 2. Prepare the cables as shown. Use the attached hoses and cable sleeves for proper mounting.



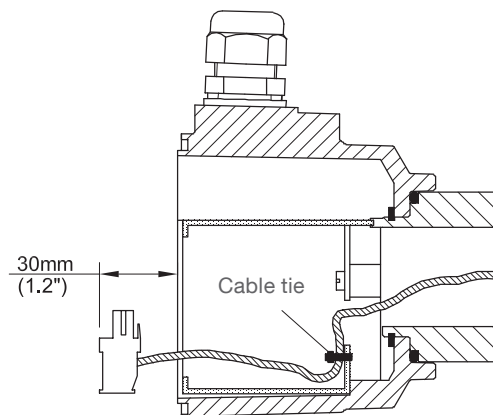
### 4. Connecting the plug

Observe correct sequence



### 5. Fixing the cable tie

Before fixing the cable tie observe correct cable length as stated and that no cable is wound up inside the housing.



### 6. Insert electronics

Insert the plug into the electronic, insert the electronic into the housing and fix the electronic plastic cover with 4 screws.



## Disposal

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The product consists of materials which can be recycled, details of the used materials see chapter "Technical data - mechanical data".

Recycling must be done by a specialised recycling company.