

# Safety Instructions

## Prosonic S FDU93, FDU95

EAC: Ex ta/tb IIC T\*\*°C Da/Db  
Ex tb IIC T\*\*°C Db



Document: XA01391F-A  
Safety instructions for electrical apparatus for explosion-hazardous areas →  3



# Prosonic S FDU93, FDU95

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<b>Associated documentation</b>	<p>This document is an integral part of the following Operating Instructions: TI00396F/00</p>										
<b>Supplementary documentation</b>	<p>Explosion-protection brochure: CP00021Z/11</p> <p>The Explosion-protection brochure is available:</p> <ul style="list-style-type: none"> <li>■ In the download area of the Endress+Hauser website: <a href="http://www.endress.com">www.endress.com</a> -&gt; Downloads -&gt; Media Type: Documentation -&gt; Documentation Type: Brochures and catalogs -&gt; Text Search: CP00021Z</li> <li>■ On the CD for devices with CD-based documentation</li> </ul>										
<b>Manufacturer's certificates</b>	<p><b>Certificate of Conformity TP TC 012/2011</b></p> <p>Inspection authority: LLC NANIO CCVE (ООО «НАНИО ЦСВЭ»)</p> <p>Certificate number: TC RU C-DE.AA87.B.00875</p> <p>Affixing the certificate number certifies conformity with the following standards (depending on the device version):</p> <ul style="list-style-type: none"> <li>■ GOST 31610.0-2014 (IEC 60079-0:2011)</li> <li>■ GOST IEC 60079-31-2010</li> </ul>										
<b>Manufacturer address</b>	<p>Endress+Hauser SE+Co. KG Hauptstraße 1 79689 Maulburg, Germany Address of the manufacturing plant: See nameplate.</p>										
<b>Extended order code</b>	<p>The extended order code is indicated on the nameplate, which is affixed to the device in such a way that it is clearly visible. Additional information about the nameplate is provided in the associated Operating Instructions.</p> <p><b>Structure of the extended order code</b></p> <table border="0" style="margin-left: 40px;"> <tr> <td style="text-align: center;">FDU9x</td> <td style="text-align: center;">-</td> <td style="text-align: center;">*****</td> <td style="text-align: center;">+</td> <td style="text-align: center;">A*B*C*D*E*F*G*..</td> </tr> <tr> <td style="text-align: center;"><i>(Device type)</i></td> <td></td> <td style="text-align: center;"><i>(Basic specifications)</i></td> <td></td> <td style="text-align: center;"><i>(Optional specifications)</i></td> </tr> </table> <p>* = Placeholder At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.</p> <p><i>Basic specifications</i></p> <p>The features that are absolutely essential for the device (mandatory features) are specified in the basic specifications. The number of positions depends on the number of features available. The selected option of a feature can consist of several positions.</p> <p><i>Optional specifications</i></p> <p>The optional specifications describe additional features for the device (optional features). The number of positions depends on the number of features available. The features have a 2-digit structure to aid identification (e.g. JA). The first digit (ID) stands for the feature group and consists of a number or a letter (e.g. J = Test, Certificate). The second digit constitutes the value that stands for the feature within the group (e.g. A = 3.1 material (wetted parts), inspection certificate).</p>	FDU9x	-	*****	+	A*B*C*D*E*F*G*..	<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>
FDU9x	-	*****	+	A*B*C*D*E*F*G*..							
<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>							

More detailed information about the device is provided in the following tables. These tables describe the individual positions and IDs in the extended order code which are relevant to hazardous locations.

#### Extended order code: Prosonic M



The following specifications reproduce an extract from the product structure and are used to assign:

- This documentation to the device (using the extended order code on the nameplate).
- The device options cited in the document.

#### Device type

FDU93, FDU95

#### Basic specifications

Position 1 (Approval)		
Selected option		Description
FDU93	F	EAC Ex ta/tb IIIC T***C Da/Db
FDU95		EAC Ex tb IIIC T***C Db

Position 2 (Temperature; Blocking Distance; Material)		
Selected option		Description
FDU95	1	-40...+80°C/176°F; 70cm/2.3ft; membrane 316L, PE coated
	2	-40...+150°C/302°F; 90cm/2.9ft; membrane 316L

#### Optional specifications

No options specific to hazardous locations are available.

#### Safety instructions: General

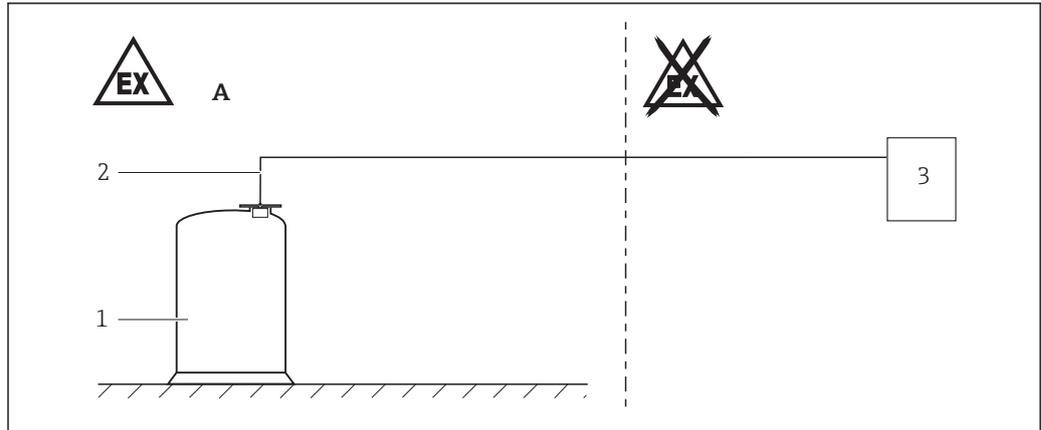
- Comply with the installation and safety instructions in the Operating Instructions.
- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
  - Be suitably qualified for their role and the tasks they perform
  - Be trained in explosion protection
  - Be familiar with national regulations
- Install the device according to the manufacturer's instructions and national regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- Only use the device in media to which the wetted materials have sufficient durability.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. housing, sensor element, special varnishing, attached additional plates, ..)
  - Of isolated capacities (e.g. isolated metallic plates)

#### Safety instructions: Special conditions

In the event of additional or alternative special varnishing on the housing or other metal parts:

- Observe the danger of electrostatic charging and discharge.
- Do not rub surfaces with a dry cloth.

**Safety instructions:  
Installation**

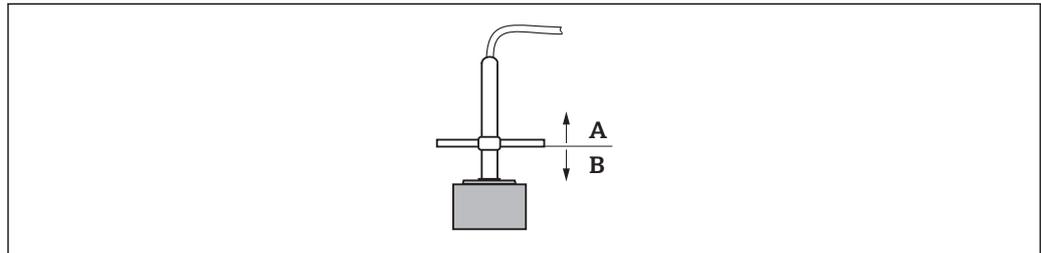


A0036071

1

- A Zone 21 or Zone 22
- 1 Tank, hazardous area Zone 20
- 2 Electric connection
- 3 Analysing and controlling unit

**Installation with alignment unit**



A0036072

2

- A Zone 21 or Zone 22
- B Zone 20

- Sensor housing consists of conductive material and is connected as well as the membrane and the mounting connection to the earth lead of the sensor cable, which must be connected to the local grounding system of the plant.
- The ultrasonic sensor can be screwed into a durable plastic flange with conductive cladding, a durable unclad plastic flange with a surface resistance  $\leq 10^9 \Omega$  or a metal flange. When using a clad plastic flange, the free plastic surface may not be within the filling curtain. The cladding must be connected to the plant local grounding system. Conducting or metal flanges are preferred.
- The sensor can be mounted using the alignment device FAU40.
- When using plastic accessories check the suitability for explosion hazardous areas. Observe the instructions concerning electrostatic charging.

**Temperature tables**

	Device type		
	FDU93	FDU95 with Basic specification, Position 2 (Temperature; Blocking Distance; Material) =	
		1	2
Process temperature $T_p$ (process)	max. +80 °C	max. +80 °C	max. +130 °C

## Zone 20/21 - Application

	Sensor in Zone 20		Sensor in Zone 21		Permitted ambient temperature range
	Max. surface temperature at ambient temperature				
	$T_a = 40\text{ °C}$	$T_a = T_{max}$	$T_a = 40\text{ °C}$	$T_a = T_{max}$	
Device type FDU93	100 °C	100 °C	80 °C	100 °C	-40 to +80 °C
Device type FDU95 with Basic specification, Position 2 (Temperature; Blocking Distance; Material) = 1	100 °C	100 °C	80 °C	100 °C	-40 to +80 °C
Device type FDU95 with Basic specification, Position 2 (Temperature; Blocking Distance; Material) = 2	165 °C	165 °C	120 °C	165 °C	-40 to +130 °C

## Connection data

## Performance limits

	Device type		
	FDU93	FDU95 with Basic specification, Position 2 (Temperature; Blocking Distance; Material) =	
		1	2
Max. working pressure <sup>1)</sup>	0.3 MPa	0.15 MPa	0.15 MPa

1) outside explosion hazard atmospheres at 20 °C

## Emission/signal circuit (FMU90, FMU95 to FDU9x)

	Device type		
	FDU93	FDU95 with Basic specification, Position 2 (Temperature; Blocking Distance; Material) =	
		1	2
Transmission voltage	$\leq 55 V_{eff}$	$\leq 55 V_{eff}$	$\leq 55 V_{eff}$
Sending frequency (20 °C)	27.3 kHz	17.1 kHz	18.1 kHz
Max. power consumption (eff. long-term power)	0.7 W	0.7 W	0.7 W

## NTC power supply (FMU90, FMU95 to FDU9x)

	Device type		
	FDU93	FDU95 with Basic specification, Position 2 (Temperature; Blocking Distance; Material) =	
		1	2
Power supply	$\leq 12 V$	$\leq 12 V$	$\leq 12 V$
Max. power consumption (eff. long-term power)	$\leq 0.4 mW$	$\leq 0.4 mW$	$\leq 0.4 mW$



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