IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx BVS 08.0012**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2010-11-22) Issue 0 (2008-05-14)
Date of Issue:	2021-05-19		

Applicant: **Endress+Hauser GmbH+Co. KG**
Hauptstrasse 1
79689 Maulburg
Germany

Equipment: **Ultrasonic sensor type Prosonic S FDU 9*-***

Optional accessory:

Type of Protection: **Encapsulation 'm', Equipment dust ignition protection by enclosure 't'**

Marking:
Type FDU90-J*, FDU91/2-D*, FDU91F-D*:
Ex ma IIC T6/T5 Gb
Type FDU90-E*, FDU91/2-C*, FDU91F-C*, FDU93/5/6-D*:
Ex ta/tb III C IP65 T see manual Da/Db or
Ex tb III C IP65 T see manual Db
Ex ma IIC T6/T5 Gb
Type FDU93/5/6-C*:
Ex ta/tb III C IP65 T see manual Da/Db or
Ex tb III C IP65 T see manual Db

Approved for issue on behalf of the IECEx Certification Body: **Dr Franz Eickhoff**

Position: **Lead Auditor and officially recognised expert**

Signature: (for printed version)

Date: 2021-05-19

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2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

DEKRA Testing and Certification GmbH
Certification Body
Dinnendahlstrasse 9
44809 Bochum
Germany

DEKRA
On the safe side.

IECEx Certificate of Conformity

Certificate No.: **IECEx BVS 08.0012**

Issue No: 2

Date of issue: 2021-05-19

Manufacturer: **Endress+Hauser GmbH+Co. KG**
Hauptstrasse 1
79689 Maulburg
Germany

Additional manufacturing locations: **Endress+Hauser (Suzhou) Automation Instrumentation Co. Ltd.**
215021 Suzhou
China

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-18:2017 Explosive atmospheres - Part 18: Protection by encapsulation "m"
Edition:4.1

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/BVS/ExTR08.0016/02

Quality Assessment Report:

DE/TUN/QAR06.0003/08

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

Description

The ultrasonic sensor type Prosonic S FDU 9*-* is a level transmitter for non-contact level measurement of liquids and solids stored in vessels or silos of all kind, as well as for flow measurements over open channels or conveyor belts. The sensor consists of a polymeric enclosure, a membrane on the lower end of the sensor and a process connection at the top. The sensor is located in zone 20 or zone 1, the process connection and the cable is located in zone 21 or zone 1. The sensor can be installed with the help of the alignment unit type FAU40-**. All sensors are fitted with a non-removable pigtail cable. The complete measuring system consists of the ultrasonic sensor type Prosonic S FDU 9*-* and an evaluating transmitter unit (e.g. Prosonic S FMU 90 or FMU 95) which is installed outside the hazardous area.

Model/Type reference

See Annex

Ratings

See Annex

Rated ambient temperature range (°C)

See Annex

SPECIFIC CONDITIONS OF USE: NO

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Updating to the current standards

Annex:

BVS_08_0012_E+H_Annex_issue2.pdf

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Certificate No.: **IECEx BVS 08.0012 issue No. 2**
Annex

Model/type reference
The complete model code is as follows
Ultrasonic sensor type PROSONIC S FDU 9*-*

Ultrasonic sensor type PROSONIC S FDU 9*-*

Type PROSONIC S FDU 90-abcde
a - Certificate
  C - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex tb IIIC IP65 T see manual Db
    Ex ma IIC T6/T5 Gb
  D - Ex ma IIC T6/T5 Gb
b - Process connection
c - Cable length
d - Heating
  A - without heating
  B - with heating (DC 24 V)
e - Additional options, without relevance for the explosion protection

Type PROSONIC S FDU 91-abcde
a - Certificate
  C - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex tb IIIC IP65 T see manual Db
    Ex ma IIC T6/T5 Gb
  D - Ex ma IIC T6/T5 Gb
b - Process connection
c - Cable length
d - Heating
  A - without heating
  B - with heating (DC 24 V)
e - Additional options, without relevance for the explosion protection

Type PROSONIC S FDU 91F-abcd
a - Certificate
  C - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex tb IIIC IP65 T see manual Db
    Ex ma IIC T6/T5 Gb
  D - Ex ma IIC T6/T5 Gb
b - Process connection
c - Cable length
d - Additional options, without relevance for the explosion protection

Type PROSONIC S FDU 92-abcd
a - Certificate
  C - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex tb IIIC IP65 T see manual Db
    Ex ma IIC T6/T5 Gb
  D - Ex ma IIC T6/T5 Gb
b - Process connection
c - Cable length
d - Additional options, without relevance for the explosion protection

Type PROSONIC S FDU 93-abcd
a - Certificate
  C - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex ta IIIC IP65 T see manual Db
  D - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex t IIIC IP65 T see manual Db
    Ex ma IIC T6/T5 Gb
b - Process connection
c - Cable length
d - Additional options, without relevance for the explosion protection

Type PROSONIC S FDU 95-abcde
a - Certificate
C - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex tb IIIC IP65 T see manual Db
D - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex tb IIIC IP65 T see manual Db
Ex ma IIC T6/T5 Gb
b - Temperature version
1 - -40 °C... +80 °C
2 - -40 °C... +130 °C
c - Process connection
d - Cable length
e - Additional options, without relevance for the explosion protection

Type PROSONIC S FDU 96-abcd

a - Certificate
C - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex tb IIIC IP65 T see manual Db
D - Ex ta/tb IIIC IP65 T see manual Da/Db or Ex tb IIIC IP65 T see manual Db
Ex ma IIC T6/T5 Gb
b - Process connection
c - Cable length
d - Additional options, without relevance for the explosion protection

Alignment unit type FAU40-ab
a - Process connection
b - Sensor connection

Rating:

Emitting and signal circuit for connection to Prosonic S FMU90/95

PROSONIC S FDU 90-*

Operation voltage	≤	55	Veff
Operation frequency		90	kHz
Power consumption of probe	≤	0.9	W

Heating circuit

Operation voltage	24	V
Current	220	mA

PROSONIC S FDU 91-*

Operation voltage	≤	55	Veff
Operation frequency		43.0	kHz
Power consumption of probe	≤	0.4	W

Heating circuit

Operation voltage	24	V
Current	220	mA

PROSONIC S FDU 91F-*

Operation voltage	≤	55	Veff
Operation frequency		42.0	kHz
Power consumption of probe	≤	0.9	W

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PROSONIC S FDU 92-*

Operation voltage	≤	55	Veff
Operation frequency		30.5	kHz
Power consumption of probe	≤	0.9	W

PROSONIC S FDU 93-*

Operation voltage	≤	55	Veff
Operation frequency		27.3	kHz
Power consumption of probe	≤	0.7	W

PROSONIC S FDU 95-*1

Operation voltage	≤	55	Veff
Operation frequency		17.1	kHz
Power consumption of probe	≤	0.7	W

PROSONIC S FDU 95-*2

Operation voltage	≤	55	Veff
Operation frequency		18.1	kHz
Power consumption of probe	≤	0.7	W

PROSONIC S FDU 96-*

Operation voltage	≤	55	Veff
Operation frequency		10.9	kHz
Power consumption of probe	≤	0.7	W

NTC/sensor identification circuit

Operation voltage	≤	12	V
Mean power	≤	0.4	mW

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Rated ambient temperature range (°C)

Ambient temperature/temperature class

Sensor type PROSONIC S	Temperature class			
	T6	T5	T4	T3
	Permissible ambient temperature			
FDU 90-D**A* FDU 90-C**A* (without heating)	-	-40 °C...+60 °C	-40 °C...+80 °C	-40 °C... +80 °C
FDU 90-D**A* FDU 90-C**A* (with heating)	-	-40 °C...+80 °C	-40 °C...+80 °C	-40 °C... +80 °C
FDU 91-D**A* FDU 91-C**A* (without heating)	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+80 °C	-40 °C... +80 °C
FDU 91-D**B* FDU 91-C**B* (with heating)	-40 °C...+40 °C	-40 °C...+60 °C	-40 °C...+80 °C	-40 °C... +80 °C
FDU 91F-D* FDU 91F-C*	-40 °C...+60 °C	-40 °C...+80 °C	-40 °C...+80 °C	-40 °C... +80 °C
FDU 92-D* FDU 92-C*	-40 °C...+60 °C	-40 °C...+80 °C	-40 °C...+80 °C	-40 °C... +80 °C
FDU 93-D*	-40 °C...+60 °C	-40 °C...+80 °C	-40 °C...+80 °C	-40 °C... +80 °C
FDU 95-D*	-40 °C...+60 °C	-40 °C...+80 °C	-40 °C...+80 °C	-40 °C... +80 °C
FDU 96-D *	-40 °C...+75 °C	-40 °C...+90 °C	-40 °C...+125 °C	-40 °C...+140 °C

Sensor type PROSONIC S	Permissible ambient temperature	Max. surface temperature[2] EPL Da	Max. surface temperature[2] EPL Db
FDU 90-C**A* (without heating)	-40 °C...+60 °C	100 °C [1]	100 °C
FDU 90-C**B* (with heating)	-40 °C...+60 °C	110 °C [1]	110 °C
FDU 91-C**A* (without heating)	-40 °C...+80 °C	100 °C [1]	100 °C
FDU 91-C**B* (with heating)	-40 °C...+80 °C	110 °C [1]	100 °C
FDU 91F-C*	-40 °C...+80 °C	100 °C [1]	100 °C
FDU 92-C*	-40 °C... +80 °C	100 °C [1]	100 °C
FDU 93-D* FDU 93-C*	-40 °C... +80 °C	100 °C [1]	100 °C
FDU 95-D1* FDU 95-C1*	-40 °C... +80 °C	100 °C [1]	100 °C
FDU 95-C2*	-40 °C...+130 °C	165 °C [1]	165 °C
FDU 96-D* FDU 96-C	-40 °C...+140 °C	168 °C [1]	168 °C
FDU 96-F	-40 °C... +80 °C	105 °C [1]	105 °C

[1] thermal fuse
[2] at maximum permissible ambient temperature