

**[1] EU-TYPE EXAMINATION CERTIFICATE - TRANSLATION**

[2] Equipment and protective systems intended for use  
in potentially explosive atmospheres, directive 2014/34/EU

[3] EU-Type Examination Certificate Number **IBExU20ATEX1103 X** | Issue 0

[4] Equipment: **Ultrasonic Flowmeter**  
Type: 831-Abc

[5] Manufacturer: **FLEXIM Flexible Industriemesstechnik GmbH**

[6] Address: **Boxberger Straße 4  
12681 Berlin  
GERMANY**

[7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8] IBExU Institut für Sicherheitstechnik GmbH, Notified Body number 0637 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential test report IB-18-3-0114.

[9] Compliance with the essential health and safety requirements has been assured by compliance with:  
EN IEC 60079-0:2018 EN 60079-1:2014 EN IEC 60079-7:2015+A1:2018 EN 60079-11:2012  
EN 60079-31:2014

Except in respect of those requirements listed at item [18] of the schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the specific conditions of use specified in the schedule to this certificate.

[11] This EU-type examination certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

Type: 831-ANN: II 2G Ex db eb IIC T6 Gb

II 2D Ex tb IIIC T100 °C Db

Type: 831-AA1: II 2G Ex db eb ia IIC T6 Gb

II 2D Ex tb ia IIIC T100 °C Db

Type: 831-AA2: II (1)2G Ex db eb ia [ia] IIC T6 Gb

II (1)2D Ex tb ia [ia] IIIC T100 °C Db

Type: 831-AA3: II (1)2G Ex db eb [ia] IIC T6 Gb

II (1)2D Ex tb [ia] IIIC T100 °C Db

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By order

Dipl.-Ing. Willamowski



Certificates without seal and signature are not valid. Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

Freiberg, 2021-05-20

[13]

## Schedule

[14]

**Certificate Number IBExU20ATEX1103 X | Issue 0**

[15] **Description of product**

[16] The Ultrasonic Flowmeter type 831-Abc is designed to measure the flow velocity of mediums (gases or liquids) in pipes. It consists of a flameproof enclosure with electronics unit and Ex-e connection compartment as well as another Ex-e connection enclosure for connecting the separately certified ultrasonic sensors.

For type 831-AAc, several signal inputs and signal outputs are designed in the type of protection Ex ia.

For Group IIIC, the protection is provided by type of protection Ex tb.

Technical data:

- Ambient temperature range: -40 °C up to +60 °C
- Degree of protection according to EN 60529: IP66
- Nominal voltage (type 831-ANN): 100...230 V AC, 11...16 V DC, 20...32 V DC
- Nominal voltage (type 831-AAc): 11...16 V DC, 20...32 V DC
- Power input: max. 15 W

Signal outputs type of protection Ex eb (type 831-ANN):

- Current active and passive
- Frequency
- Pulse
- Binary

Signal inputs type of protection Ex eb (type 831-ANN):

- Current active and passive
- Temperature

Communication interfaces type of protection Ex eb (type 831-ANN):

- BACnet MS/TP
- Modbus RTU
- HART
- RS485
- Profibus PA
- Foundation Fieldbus
- M-Bus
- USB (only for use outside explosive atmospheres)

Signal Outputs type of protection Ex ia (types 831-AA1 and 831-AA2):

- Current passive
- Pulse
- Binary
- Frequency, all:
  - o  $U_m = 120 \text{ V}$
  - o  $L_i = 50 \text{ nH}$
  - o  $C_i = 1 \text{ nF}$

|       |        | or     | or     | or     |
|-------|--------|--------|--------|--------|
| $U_i$ | 27 V   | 28 V   | 29 V   | 30 V   |
| $I_i$ | 115 mA | 107 mA | 100 mA | 93 mA  |
| $P_i$ | 776 mW | 749 mW | 725 mW | 698 mW |

Signal Inputs type of protection Ex ia (types 831-AA2 and 831-AA3):

- Current
  - o  $U_m = 120 \text{ V}$
  - o  $U_o = 29.2 \text{ V}$
  - o  $I_o = 88 \text{ mA}$
  - o  $P_o = 640 \text{ mW}$
  - o  $C_o = 73 \text{ nF}$
  - o  $L_o = 4.1 \text{ mH}$
- Temperature
  - o  $U_m = 120 \text{ V}$
  - o  $U_o = 9.2 \text{ V}$
  - o  $I_o = 25 \text{ mA}$
  - o  $P_o = 57 \text{ mW}$
  - o  $C_o = 4283 \text{ nF}$
  - o  $L_o = 57 \text{ mH}$

Signal Communication interfaces type of protection Ex ia (types 831-AA1 and 831-AA2):

- Foundation Fieldbus
- Profibus PA, all:
  - o  $U_m = 120 \text{ V}$
  - o  $L_i = \text{negligibly low}$
  - o  $C_i = \text{negligibly low}$

| Group | IIC     | IIB     |
|-------|---------|---------|
| $U_i$ | 24 V    | 17.5 V  |
| $I_i$ | 250 mA  | 380 mA  |
| $P_i$ | 1500 mW | 1663 mW |

or FISCO

- HART:
  - o  $U_m = 120 \text{ V}$
  - o  $L_i = 50 \text{ nH}$
  - o  $C_i = 1 \text{ nF}$

|       |        | or     | or     | or     |
|-------|--------|--------|--------|--------|
| $U_i$ | 27 V   | 28 V   | 29 V   | 30 V   |
| $I_i$ | 115 mA | 107 mA | 100 mA | 93 mA  |
| $P_i$ | 776 mW | 749 mW | 725 mW | 698 mW |

**[17] Test report**

The test results are recorded in the confidential test report IB-18-3-0114 of 2021-05-20.  
The test documents are part of the test report and they are listed there.

*Summary of the test results*

The Ultrasonic Flowmeter type 831-ANN fulfils the requirements of explosion protection for equipment of Group II, Category 2G, type of protection flameproof enclosure "db" and increased safety "eb" and Category 2D, type of protection dust ignition protection by enclosure "tb".

The Ultrasonic Flowmeter type 831-AAc fulfils the requirements of explosion protection for equipment of Group II, Category 2G, type of protection flameproof enclosure "db" and increased safety "eb" in combination with Intrinsic safety "ia" and Category 2D, type of protection dust ignition protection by enclosure "tb" in combination with intrinsic safety "ia".

**[18] Special conditions for use**

- The Ultrasonic Flowmeter type 831-Abc can be used in an extended ambient temperature range from  $-40 \text{ }^{\circ}\text{C}$  up to  $+60 \text{ }^{\circ}\text{C}$ .

- Repairs of the flameproof joints must be made in compliance with the constructive specifications provided by the manufacturer. Repairs must not be made on the basis of values specified in tables 2 and 3 of EN 60079-1.

**[19] Essential health and safety requirements**

In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report:

- not applicable -

**[20] Drawings and documents**

The documents are listed in the test report.

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By order

  
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Freiberg, 2021-05-20