



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: IECEx BVS 07.0009X issue No.:5

Status: **Current**

Date of Issue: **2018-04-04** Page 1 of 4

Applicant: **Endress+Hauser Flowtec AG**  
Kägenstrasse 7  
4153 Reinach  
Switzerland

Certificate history:  
Issue No. 5 (2018-4-4)  
Issue No. 4 (2015-5-12)  
Issue No. 3 (2011-11-15)  
Issue No. 2 (2009-2-12)  
Issue No. 1 (2007-8-23)  
Issue No. 0 (2007-4-30)

Equipment: **Measuring system PROline type Prosonic Flow 9\*P\*\*\_\*\*\*\*\***  
Optional accessory:

Type of Protection: **Equipment protection by flameproof enclosures "d", Equipment protection by intrinsic safety "i", Equipment dust ignition protection by enclosure "t", Equipment protection by increased safety "e"**

Marking: See Annex


Approved for issue on behalf of the IECEx Certification Body:

Jörg Koch

Position:

Head of Certification Body

Signature:  
(for printed version)

  
\_\_\_\_\_

Date:

1. This certificate and schedule may only be reproduced in full.
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 the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

DEKRA EXAM GmbH  
Dinnendahlstrasse 9  
44809 Bochum  
Germany

 **DEKRA**  
DEKRA EXAM GmbH



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Manufacturer: **Endress+Hauser Flowtec AG**  
Kägenstrasse 7  
4153 Reinach  
Switzerland

**Additional Manufacturing location(s):**

**Endress+Hauser  
Flowtec AG,  
Division U.S.A**  
2330 Endress Place  
Greenwood  
Indiana 46143  
United States of  
America

**Endress+Hauser  
Flowtec (China) Co.  
Ltd**  
Su-Hong-Zhong-Lu  
No. 465  
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Suzhou Industrial Park  
(SIP)  
215021  
China

**Endress+Hauser  
Flowtec (India) Co.  
Ltd.**  
M-171 to 176, MIDC  
Waluj  
Aurangabad – 431 136  
Maharashtra State  
India

**Endress+Hauser  
Flowtec AG**  
35, rue de l' Europe  
68700 Cernay  
France

**Endress+Hauser  
Flowtec (Brasil)  
Fluxômetros Ltda.**  
Estrada Municipal  
Antonio Sesti  
600 A – Recreio Costa  
Verde – Itatiba / SP  
CEP 13254 – 085  
Brazil

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 apparatus 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:

<b>IEC 60079-0 : 2011</b> Edition: 6.0	Explosive atmospheres - Part 0: General requirements
<b>IEC 60079-1 : 2014-06</b> Edition: 7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
<b>IEC 60079-11 : 2011</b> Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
<b>IEC 60079-31 : 2013</b> Edition: 2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
<b>IEC 60079-7 : 2015</b> Edition: 5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical 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/ExTR07.0010/05

Quality Assessment Report:

DE/TUN/QAR06.0004/06



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

#### Subject and Type

See Annex

#### Description

PROline Prosonic Flow is a measuring system supplying piezo sensors in hazardous locations. The transmitting electronics evaluates the measured signals of the piezo and transmit signals galvanically separated between non intrinsically safe and intrinsically safe circuits. The sensors are clamped on any measuring tube having effect through the tube wall. The difference in running time of the ultrasonic waves, which are influenced by the flowing medium, is a measure for the flow velocity in the tube. The system is designed for 2 measuring channels with 2 separated sensors each channel.

The measuring system consists of a transmitter and a sensor which is mounted separate (remote version). The connecting cable has a max. length of 30 m.

The used sensors Prosonic Flow P, Prosonic Flow DDU 18 and Prosonic Flow DDU 19 are designed for type of protection intrinsically safe Ex ib.

The electronic of the transmitter (type Prosonic Flow 9\*a) is certified under IECEX BVS 06.0006U and mounted inside the enclosure Proline G02, certified under IECEX BVS 06.0012U; the connection box for connection of the intrinsically safe sensor circuits is in type of protection Ex ib IIC resp. Ex ib IIIC.

#### Listing of all used components

See Annex

#### Parameters

See Annex

#### SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The transmitter has be integrated into the potential equalisation system. Along the intrinsically safe sensor circuits potential equalisation must exist.
2. For the application of the transmitters in an ambient temperature of less than -20 °C suitable cable and cable entries or conduit entries certified for this condition shall be used. Entry holes which are not needed shall be closed by stopping plugs separately certified for this purpose.
3. The dimensions of the flameproof joints are in parts other than the relevant minimum or maximum values of IEC 60079-1. For information on the dimensions of the flameproof joints contact the manufacturer.<



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## DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Assessment of the Measuring system PROline in accordance with the current standard versions

- Modified marking
- Modified drawings
- Minor changes



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## Marking

### Transmitter:

Ex db eb [ia] IIC T6...T1 Gb

Ex tb [ia] IIIC T85°C Db

IP67

or

Ex db [ia] IIC T6...T1 Gb

Ex tb [ia] IIIC T85°C Db

IP67

or

Ex db eb [ia Gb] [ia Ga] IIC T6...T1 Gb

Ex tb [ia Db] [ia Da] IIIC T85°C Db

IP67

or

Ex db [ia Gb] [ia Ga] IIC T6...T1 Gb

Ex tb [ia Db] [ia Da] IIIC T85°C Db

IP67

### Sensors:

Ex ib IIC T6...T1 Gb

Ex ib IIIC T<sup>\*\*\*1)</sup> Db

1) Temperature table:

The maximum surface temperature for EPL Db shall be defined by the temperature table under consideration of ambient temperature  $T_a$  and medium temperature  $T_{med}$ .

For relationship between Ex marking and variant of the apparatus see General product information.



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**Subject and Type**

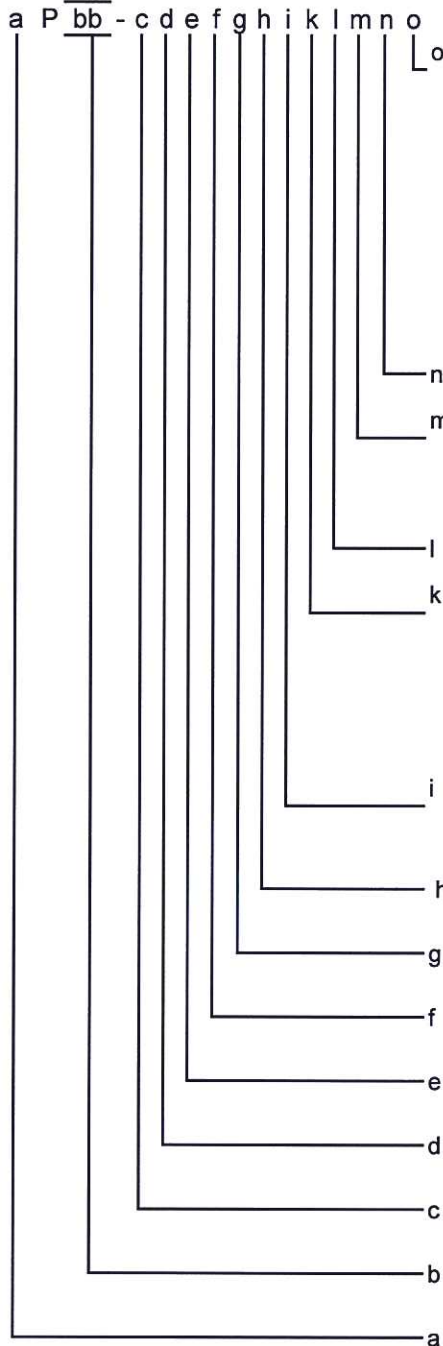
Measuring system PROline type Prosonic Flow 9\*P\*\*\_\*\*\*\*\*

Instead of the \*\*\* in the complete denomination letters and numerals will be inserted which characterize modifications:

**Transmitter**

Prosonic Flow 9\*P\*\*\_\*\*\*\*\*

Prosonic Flow 9 \* P \*\* - \* \* \* \* \* \* \* \* \* \* \*



**Output**

- A, B, C, D, E, H, J, K, L, M, N, P, Q, V, W, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 = outputs not Ex i
- F = PROFIBUS PA, Ex ia IIC
- G = Foundation Fieldbus, Ex ia IIC
- R = HART + current output, active, Ex ia IIC
- S = HART current output active, frequency output, passive, Ex ia IIC
- T = HART current output passive, frequency output passive, Ex ia IIC
- U = HART + current output, passive, Ex ia IIC

**Software**

- Display, power supply, operation
- A, C, E, G, P, R, 0, 2, 4, 7 = 85-260 VAC
- B, D, F, H, Q, S, 1, 3, 5, 8 = 20-55 VAC / 16-62 VDC

**Cable glands**

- Enclosure type
- V = remote version 1.4404, IP67, -40 °C
- W = remote version 1.4404, IP67
- 6 = remote -40 °C
- any single number or letter except „V, 6“ = remote -20 °C

**Approvals**

- B = Ex db [ia] IIC Gb, Ex tb [ia] IIIC Db
- D = Ex db eb [ia] IIC Gb, Ex tb [ia] IIIC Db

**Calibration**

Sensor cable conduit adapters

Sensor cable incl. connectors

Installation set

Sensor holder

Flow sensor type

Mounting type, no of channel

No. 0, 3



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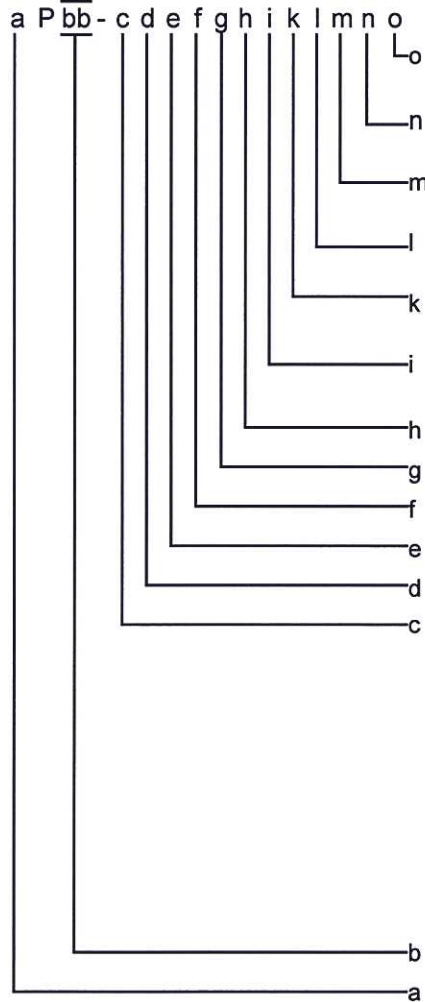


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Sensor

Prosonic Flow 9\*P\*\*\_\*\*\*\*\*

Prosonic Flow 9 \* P \*\* \_ \* \* \* \* \* \* \* \* \* \* \*

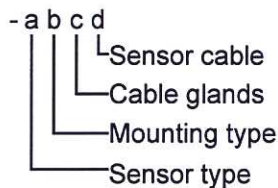


- Outputs/Inputs
- X = Sensor only
- Software
- X = Sensor only
- Power supply, display, operation
- X = Sensor only
- Cable glands
- X = Sensor only
- Enclosure
- X = Sensor only
- Approvals
- B or D
- Calibration
- Conduit adapters
- Sensor cable incl. Connectors
- Installation set
- Sensor holder
- Flow sensor type
- 1 = clamp on; Tmed = -40 °C... 100 °C; IP68; DN15 – DN65
- 2 = clamp on; Tmed = -40 °C... 150 °C; IP68; DN15 – DN65
- A = clamp on; Tmed = -40 °C... 80 °C; IP68; DN100 – DN4000
- B = clamp on; Tmed = -40 °C... 80 °C; IP68; DN50 – DN300
- E = clamp on; Tmed = 0 °C ... 170 °C; IP68; DN100 – DN4000
- F = clamp on; Tmed = 0 °C... 170 °C; IP68; DN50 – DN300
- Mounting type, no of channel
- No. 0, 3

Prosonic Flow DDU 18-\*\*\*\*

Model code delivered with cable:

Prosonic Flow DDU 18 - \* \* \* \*



- Sensor type
- A = clamp on, T med = -40 °C... 80 °C
- B = clamp on, T med = 0 °C... 170 °C

Model code delivered without cable:

Prosonic Flow DDU 18 – 50091704 (T med = 0 °C... 170 °C);

Prosonic Flow DDU 18 – 50091703 (T med = -40 °C... 80 °C)



# IECEX Certificate of Conformity

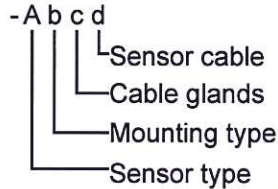


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Prosonic Flow DDU 19-A\*\*\*

Model code delivered with cable:

Prosonic Flow DDU 19 - A \* \* \*



A = clamp on, T med = -40 °C... 80 °C

Model code delivered without cable:

Prosonic Flow DDU 19 – 50091713

## Listing of all used components

Subject and type	Certificate	Standards
Transmitter enclosure type Proline G02 and G12	IECEX BVS 06.0012U (DE/BVS/06/2091)	IEC 60079-0:2011 IEC 60079-1:2014 IEC 60079-7:2015 IEC 60079-31:2013
Transmitter electronics type Promag 5*a	IECEX BVS 06.0006U (DE/BVS/06/2074)	IEC 60079-0:2011 IEC 60079-11:2011

## Parameters

1 Power supply (terminals no. 1 (L/+) and 2 (N/-))

Nominal Voltage

types Prosonic Flow 9\*P\*\*-\*\*\*\*\*m\*\*

with m = A, C, E, G, P, R, 0, 2, 4, 7

AC 85 to 260 V

types Prosonic Flow 9\*P\*\*-\*\*\*\*\*m\*\*

with m = B, D, F, H, Q, S, 1, 3, 5, 8

DC 16 to 62 V

or

AC 20 to 55 V

Power consumption

15 VA / W

Max. voltage

U<sub>m</sub>

AC 260 V

Signal circuits

2.1 Non-intrinsically safe signal circuits type Prosonic Flow 9\*P\*\*-\*\*\*\*\*

Type	Terminal No.	Safety parameters
Prosonic Flow 9*P**-*****p with p = A, B, C, D, E, H, J, K, L, M, N, P, Q, V, W, 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9	20 ... 27	U <sub>m</sub> 260 V I <sub>max</sub> 0.5 A



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2.2 Intrinsically safe signal circuits type Prosonic Flow 9\*P\*\*\_\*\*\*\*\*

Type	Terminal No.	Safety parameters			
		Ex ia IIC or connection to a field bus system in acc. with FISCO-model			
Prosonic Flow 9*P**_*****F Prosonic Flow 9*P**_*****G	26 and 27	U <sub>i</sub>	30	V	
		I <sub>i</sub>	600	mA	
		P <sub>i</sub>	8.5	W	
		C <sub>i</sub>	5	nF	
		L <sub>i</sub>	10	μH	
Prosonic Flow 9*P**_*****R	24 and 25 26 and 27	U <sub>o</sub>	21.8	V	
		I <sub>o</sub>	90	mA	
		P <sub>o</sub>	491	mW	
			C <sub>o</sub>	0.16	μF
			L <sub>o</sub>	4.1	mH
			C <sub>o</sub>	1.16	μF
			L <sub>o</sub>	15	mH
			U <sub>i</sub>	30	V
			I <sub>i</sub>	10	mA
			P <sub>i</sub>	300	mW
		C <sub>i</sub>	6	nF	
		L <sub>i</sub>	negligible		
Prosonic Flow 9*P**_*****S	24 and 25	U <sub>i</sub>	30	V	
		I <sub>i</sub>	500	mA	
		P <sub>i</sub>	600	mW	
			C <sub>i</sub>	6	nF
			L <sub>i</sub>	negligible	
	26 and 27	U <sub>o</sub>	21.8	V	
		I <sub>o</sub>	90	mA	
		P <sub>o</sub>	491	mW	
			C <sub>o</sub>	0.16	μF
			L <sub>o</sub>	4.1	mH
		C <sub>o</sub>	1.16	μF	
		L <sub>o</sub>	15	mH	
		U <sub>i</sub>	30	V	
		I <sub>i</sub>	10	mA	
		P <sub>i</sub>	300	mW	
		C <sub>i</sub>	6	nF	
		L <sub>i</sub>	negligible		
Prosonic Flow 9*P**_*****T	24 and 25	U <sub>i</sub>	30	V	
		I <sub>i</sub>	500	mA	
		P <sub>i</sub>	600	mW	
			C <sub>i</sub>	6	nF
			L <sub>i</sub>	negligible	
	26 and 27	U <sub>i</sub>	30	V	
I <sub>i</sub>		100	mA		
P <sub>i</sub>		1.25	W		
		C <sub>i</sub>	6	nF	
		L <sub>i</sub>	negligible		
Prosonic Flow 9*P**_*****U	24 and 25 26 and 27	U <sub>i</sub>	30	V	
		I <sub>i</sub>	100	mA	
		P <sub>i</sub>	1.25	W	
		C <sub>i</sub>	6	nF	
		L <sub>i</sub>	negligible		



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2.3 Intrinsically safe sensor circuits  
 Terminals / Plugs for remote version CH1 and CH2 = Sensor circuit

Values for each circuit

Maximum output voltage	$U_o$	DC	30	V
Maximum output current	$I_o$		7.8	mA
Maximum output power	$P_o$		60	mW
Linear output characteristic				

For the connection of the remote sensor type Prosonic Flow 9\*P\*\*\_\*\*\*\*\* or type Prosonic Flow DDU 18-\*\*\*\* or type Prosonic Flow DDU 19-A\*\*\* an Endress+Hauser supplied Data sensor cable with a max. length of 30 m.

### 3 Thermal Parameters

#### 3.1 Medium temperature range

Type	Medium temperature range
Prosonic Flow 9*P**-(A,B)***** Prosonic Flow DDU 18-A*** Prosonic Flow DDU 18-50091703 Prosonic Flow DDU 19-A*** Prosonic Flow DDU 19-50091713	-40 °C up to +80 °C
Prosonic Flow 9*P**-(E,F)***** Prosonic Flow DDU 18-B*** Prosonic Flow DDU 18-50091704	-0 °C up to +170 °C
Prosonic Flow 9*P**-1*****	-40 °C up to +100 °C
Prosonic Flow 9*P**-2*****	-40 °C up to +150 °C

#### 3.2 Ambient temperature range

Transmitter

Type	Ambient temperature range
Prosonic Flow 9*P**_***** (6,V)****	-40 °C up to +60 °C
Prosonic Flow 9*P**_*****W****	-20 °C up to +60 °C

Sensors

Type	Ambient temperature range
Prosonic Flow 9*P**-(A,B,1,2)*****	-40 °C up to +60 °C
Prosonic Flow 9*P**-(E,F)*****	-20 °C up to +60 °C
Prosonic Flow DDU 18 -A*** Prosonic Flow DDU 18 -50091703 Prosonic Flow DDU 18 -B*** Prosonic Flow DDU 18 -50091704	-40 °C up to +60 °C
Prosonic Flow DDU 19 -A***	-20 °C up to +60 °C
Prosonic Flow DDU 19 -50091713	-20 °C up to +60 °C



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3.3 The relationship between maximum ambient, medium temperatures, temperature class and maximum surface temperature

Transmitter

At an ambient temperature of 60 °C the interior surface temperature is ≤ 85 °C. Therefore the transmitter is suitable for temperature class T6 / surface temperature 85 °C.

Sensor

Temperature table temperature class	Max. medium temperature [°C]					
	T6	T5	T4	T3	T2	T1
max. surface temperature, Group III	85 °C	100 °C	135 °C	200 °C	300 °C	450 °C
Prosonic Flow 9*P**-1*****	88	95	100	100	100	100
Prosonic Flow 9*P**-2*****	80	95	130	150	150	150
Prosonic Flow 9*P** - A*****	80	80	80	80	80	80
Prosonic Flow 9*P** - B*****	80	80	80	80	80	80
DDU 18 - A***	80	80	80	80	80	80
DDU 19 - A***	80	80	80	80	80	80
DDU 18 - 50091703	80	80	80	80	80	80
DDU 18 - 50091713	80	80	80	80	80	80
Prosonic Flow 9*P** - E*****	80	95	130	170	170	170
Prosonic Flow 9*P** - F*****	80	95	130	170	170	170
DDU 18 - B***	80	95	130	170	170	170
DDU 18 - 50091704	80	95	130	170	170	170

4. Ingress Protection

IP67