EXPLOSION PROTECTION
CERTIFICATE OF CONFORMITY

Cert NO.GYJ15.1203X

This is to certify that the product

Ultrasonic Flow Measuring Sensor

manufactured by **Endress + Hauser Flowtec AG**

(Address:CH-4153, Reinach BL1, Switzerland)

which model is **PROline Prosonic Flow P, DDU18/19**

Ex marking **Ex ib IIC T1~T6 Gb Ex ibD 21 T***

product standard **/**

drawing number **370050-0000BBA, 370026-0000B0C, 370389-0000FAA**

has been inspected and certified by NEPSI, and that it conforms to **GB 3836.1-2010,GB 3836.4-2010,GB 12476.1-2013,GB 12476.4-2010**

This Approval shall remain in force until **2020.06.15**

Remarks

1.Conditions for safe use are specified in the attachment to this certificate.
2.Symbol "X" placed after the certification number denotes specific conditions of use, which are specified in the attachment to this certificate.
3.Safe parameters specified in the attachment to this certificate.
4.This certificate is also applicable for the product with the same type manufactured by Endress+Hauser Flowtec (China) Co., Ltd. (address: Su Hong Zhong Lu No.465, Suzhou-SIP, China)

Director

National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation

Issued Date 2015.06.16

This Certificate is valid for products compatible with the documents and samples approved by NEPSI.

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Attachment Ⅰ to GYJ15.1203X/GYJ15.1204X
(translation)

1. Description

PROline Prosonic Flow P, DDU18 and DDU19 Series Ultrasonic Flow Measuring Sensor (certificate number is GYJ15.1203X) and PROline Prosonic Flow 90/93 Series Ultrasonic Transmitter (certificate number is GYJ15.1204X), manufactured by Endress+Hauser Flowtec AG, has been certified by National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI). This product accords with following standards:

GB3836.1-2010 Explosive atmospheres-Part 1: Equipment-General requirements

GB3836.2-2010 Explosive atmospheres-Part 2: Equipment protection by flameproof enclosure"d"

GB3836.3-2010 Explosive atmospheres-Part 3: Equipment protection by increased safety"e"

GB3836.4-2010 Explosive atmospheres-Part 4: Equipment protection by intrinsic safety"i"

GB3836.20-2010 Explosive atmospheres-Part 20: Equipment with equipment protection level (EPL) Ga

GB12476.1-2013 Electrical apparatus for use in the presence of combustible dust- Part 1: General requirements

GB12476.4-2010 Electrical apparatus for use in the presence of combustible dust- Part 4: Protection by intrinsic safety "iD"

GB12476.5-2013 Electrical apparatus for use in the presence of combustible dust- Part 5: Protection by enclosures "tD"

Type approved is shown as following:

Transmitter:

Prosonic Flow 9 ***a*** P**-***b*************c d* e* f*

Note: ***a*** indicates transmitter version, including 0, 3;

b indicates flow sensor type, including 1, 2, A, B, E, F;

c indicates approvals, including K, S;

d indicates enclosure type, including 6= remote version, T_a -40℃;

V= remote version, stainless steel, T_a -40℃;

W= remote version, stainless steel;

any single number or letter except "6, V"= remote version T_a -20℃;

e indicates power supply/display and operation, including A, C, E, G, P, R, 0, 2, 4, 7= AC 85~260V;

B, D, F, H, Q, S, 1, 3, 5, 8= AC 20~55V or DC 16~32V;

f indicates signal output, including 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 (non-intrinsically safe outputs);

F, G, R, S, T, U (intrinsically safe outputs);

* indicates mounting type, sensor holder, installation set, sensor cable incl. connectors, sensor cable conduit adapters, calibration, cable glands and software.

Details see the instruction manual.

Sensor with cable:

Prosonic Flow 9 *a* P**-*b*******c* XXXXX (refer to designation of the transmitter)

Prosonic Flow DDU18 –A/B□□□

Prosonic Flow DDU19 –A□□□

□ indicates mounting type, cable glands and sensor cable.

Sensor without cable:

Type Prosonic Flow DDU18 –50091704

Type Prosonic Flow DDU18 –50091703

Type Prosonic Flow DDU19 –50091713

The relationship between type code and Ex marking is shown as following:

For transmitter:

Type code	Marking Gas	Marking Dust
Prosonic Flow 9*P**-******K***** with non- intrinsically safe outputs	Ex d [ia] Ⅱ C T6 Gb	Ex tD [iaD 21] A21 IP6X T85℃
Prosonic Flow 9*P**-******S***** with non- intrinsically safe outputs	Ex d e [ia] Ⅱ C T6 Gb	
Prosonic Flow 9*P**-******K***** with intrinsically safe outputs	Ex d [ia Gb] [ia Ga] Ⅱ C T6 Gb	Ex tD [iaD 21] [iaD 20] A21 IP6X T85℃
Prosonic Flow 9*P**-******S***** with intrinsically safe outputs	Ex d e [ia Gb] [ia Ga] Ⅱ C T6 Gb	

For sensor:

Type code	Marking Gas	Marking Dust
Prosonic Flow 9*P**-********** Prosonic Flow DDU18 -**** Prosonic Flow DDU18 -50091703 Prosonic Flow DDU18 -50091704 Prosonic Flow DDU19-A*** Prosonic Flow DDU19-50091703	Ex ib Ⅱ C T1~T6 Gb	Ex ibD 21 T*

2. Special Conditions for Safe Use

The suffix "X" placed after the certificate number indicates that this product is subject to special conditions for safe use, that is:

2.1 For information on the dimensions of the flameproof joints contact the manufacturer.

2.2 The transmitter has been integrated into the potential equalisation system. Along the intrinsically safe sensor circuits potential equalisation must exist.

3. Conditions for Safe Use

3.1 The external earth connection facility shall be connected reliably. Potential must be equalized along the intrinsically safe circuits between sensor and transmitter.

3.2 The ambient temperature of the transmitter is -20 °C～+60 °C;

For type Prosonic Flow 9*P**-******6/V***only, the ambient temperature is -40 °C～+60 °C.

The relation of sensor type, ambient temperature and medium temperature is shown as follows:

type	ambient temperature	medium temperature
Prosonic Flow 9*P**-1**********	-40℃+60℃	-40℃+100℃
Prosonic Flow 9*P**-2**********	-40℃+60℃	-40℃+150℃
Prosonic Flow 9*P**-A/B**********	-40℃+60℃	-40℃+80℃
Prosonic Flow 9*P**-E/F**********	-20℃+60℃	0℃+170℃
Prosonic Flow DDU18 -A*** Prosonic Flow DDU18- 50091703	-40℃+60℃	-40℃+80℃
Prosonic Flow DDU18 -B*** Prosonic Flow DDU18- 50091704		0℃+170℃
Prosonic Flow DDU19 -A*** Prosonic Flow DDU19- 50091713	-20℃+60℃	-40℃～+80℃

3.3 The relationship between type of sensor, maximum medium temperature, the temperature class and the max. surface temperature is shown as follows:

type	T6 T80	T5 T95	T4 T130	T3 T195	T2 T290	T1 T440
Prosonic Flow 9*P**- A/B**********	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU18- A***	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU18-50091703	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU19- A***	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU19-50091713	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow 9*P**- 1**********	80℃	95℃	100℃	100℃	100℃	100℃

Prosonic Flow 9*P**- 2**********	80℃	95℃	130℃	150℃	150℃	150℃
Prosonic Flow 9*P**- E/F**********	80℃	95℃	130℃	170℃	170℃	170℃
Prosonic Flow DDU18- B***	80℃	95℃	130℃	170℃	170℃	170℃
Prosonic Flow DDU18- 50091704	80℃	95℃	130℃	170℃	170℃	170℃

3.4 The connecting cable between transmitter and sensor has a max. length of 30 m. The cable specified/provided by the manufacturer shall be used.

3.5 Suitable cable glands or blind plugs for unused holes, seperated certified by ExTL according to related standards, shall be used and correctly installed. After that, degree of protection of enclosure is at least IP67 according to GB4208-2008. The cable glands and blind plugs to be used shall suitable for the product working conditions.

3.6 Non-intrinsically safe communication circuits:

type	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			
Safety Parameters	Terminals 20/21	Terminals 22/23	Terminals 24/25	Terminals 26/27
Um	260 VAC			
Im	500 mA			

3.7 Intrinsically safe communication circuits:

Safety Parameter	Prosonic Flow 9*P**-**********p								
	p = F or G	p = R		p = S		p = T		p = U	
	Terminals	Terminals		Terminals		Terminals		Terminals	
	26/27	24/25	26/27	24/25	26/27	24/25	26/27	24/25	26/27
	passive	active	active	passive	active	passive	passive	passive	passive
Uo	---	21.8 V	21.8 V	---	21.8 V	---	---	---	---
Io	---	90 mA	90 mA	---	90 mA	---	---	---	---
Po	---	491mW	491mW	---	491mW	---	---	---	---
Lo (IIC)	---	4.1 mH	4.1 mH	---	4.1 mH	---	---	---	---
Co (IIC)	---	160 nF	160 nF	---	160 nF	---	---	---	---
Lo (IIB)	---	15 mH	4.1 mH	---	15 mH	---	---	---	---
Co (IIB)	---	1160 nF	1160 nF	---	1160 nF	---	---	---	---
Ui	30 V	30 V	30 V	30 V	30 V	30 V	30 V	30 V	30 V
Ii	600 mA	10 mA	10 mA	500 mA	10 mA	500 mA	100 mA	100 mA	100 mA
Pi	8,5 W	300mW	300mW	0.6 W	300mW	0.6 W	1.25 W	1.25 W	1.25 W
Li	≤ 10 µH	0	0	0	0	0	0	0	0
Ci	≤ 5 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF

The communication circuits, option F and G are for connection to Ex ia IIC or FISCO Field Device.

3.8 Any maintenance shall be done only when the warning of "after switching off, wait 10 minutes before opening" is observed (only for the transmitter) or the area is known to be non hazardous.

3.9 The user shall not change the configuration in order to maintain/ensure the explosion protection performance of the equipment. Any change may impair safety.

3.10 For installation, use and maintenance of the product, the end user shall observe the instruction manual and the following standards:

GB50257-1996 "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".

GB3836.13-2013 "Explosive atmospheres- Part 13:Equipment repair, overhaul and reclamation".

GB3836.15-2000 "Electrical apparatus for explosive gas atmospheres- Part 15:Electrical installations in hazardous area (other than mines)".

GB3836.16-2006 "Electrical apparatus for explosive gas atmospheres- Part 16:Inspection and maintenance of electrical installation (other than mines)".

GB15577-2007 "Safety regulations for dust explosion prevention and protection". (Only if installed in dust hazardous areas)

GB12476.2-2010 "Electrical apparatus for use in the presence of combustible dust- Part 2: Selection and installation". (Only if installed in dust hazardous areas)

4. Manufacturer's Responsibility

4.1 Conditions for safe use, as specified above, should be included in the documentation the user is provided with.

4.2 Manufacturing should be done according to the documentation approved by NEPSI.

4.3 Any modification affecting the explosion protection performance as shown in the documentation approved by NEPSI should not be done, except after NEPSI's reapproval.

4.4 Marking should show the following

4.4.1 NEPSI logo

4.4.2 Type of explosion protection

4.4.3 Certificate number

4.4.4 Ambient temperature range

4.4.5 Warning of "after switching off, wait 10 minutes before opening" (only for the transmitter)

4.4.6 Safety parameters

In case the nameplate does not provide enough space, information can be given in the manual, provided the nameplate shows a link to the appropriate documentation.

National Supervision and Inspection Center
for Explosion Protection and Safety of Instrumentation
2015.06.16

防 爆 合 格 证

证 号：GYJ15.1203X

由 恩德斯+豪斯公司 制造的产品：

（地址： CH-4153, Reinach BL1, Switzerland）

名 称 超声波流量传感器

型 号 规 格 PROline Prosonic Flow P, DDU18/19

防 爆 标 志 Ex ibⅡC T1~T6 Gb Ex ibD 21 T*

产 品 标 准 /

图 样 编 号 370050-0000BBA, 370026-0000B0C, 370389-0000FAA

经图样及技术文件的审查和样品检验，确认上述产品符合 GB 3836.1-2010、GB 3836.4-2010、GB 12476.1-2013、GB 12476.4-2010 标准，特颁发此证。

本证书有效期： 2015 年 6 月 16 日 至 2020 年 6 月 15 日

备 注
1. 安全使用注意事项见本证书附件。
2. 证书编号后缀“X”表明产品具有安全使用特殊条件，内容见本证书附件。
3. 电气安全参数见本证书附件。
4. 本证书同时适用于恩德斯豪斯流量仪表技术（中国）有限公司（地址：苏州工业园区苏虹中路465号）生产的同型号产品。

站 长

国家级仪器仪表防爆安全监督检验站

颁发日期二〇一五年六月十六日

本证书仅对与认可文件和样品一致的产品有效。

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国家级仪器仪表防爆安全监督检验站

National Supervision and Inspection Centre for
Explosion Protection and Safety of Instrumentation

(GYJ15.1203X/GYJ15.1204X) **(Attachment Ⅰ)**

GYJ15.1203X/GYJ15.1204X防爆合格证附件Ⅰ

由恩德斯＋豪斯公司生产的PROline Prosonic Flow P、DDU18和DDU19 系列超声波流量传感器（防爆合格证号GYJ15.1203X）和PROline Prosonic Flow 90/93系列超声波流量转换器（防爆合格证号GYJ15.1204X），经国家级仪器仪表防爆安全监督检验站(NEPSI)检验，符合下列标准：

GB3836.1-2010 爆炸性环境 第1部分：设备 通用要求

GB3836.2-2010 爆炸性环境 第2部分：由隔爆外壳“d”保护的设备

GB3836.3-2010 爆炸性环境 第3部分：由增安型“e”保护的设备

GB3836.4-2010 爆炸性环境 第4部分：由本质安全型“i”保护的设备

GB3836.20-2010 爆炸性环境 第20部分：设备保护级别（EPL）为Ga级的设备

GB12476.1-2013 可燃性粉尘环境用电气设备 第1部分：通用要求

GB12476.4-2010 可燃性粉尘环境用电气设备 第4部分：本质安全型“iD”

GB12476.5-2013 可燃性粉尘环境用电气设备 第5部分：外壳保护型“tD”

产品认可型号规格如下：

转换器型号：

Prosonic Flow 9*a* P**-*b*******c d** *e** *f*

其中，*a*表示转换器型号，包括0、3；

*b*表示传感器型式，包括1、2、A、B、E、F；

*c*表示认证代码，包括K、S；

*d*表示外壳型式，包括6 = 分体型，Ta -40℃；

V = 分体型，不锈钢，Ta -40℃；

W = 分体型，不锈钢；

任意数字或字母（除了6、V）= 分体型，Ta -20℃；

*e*表示电源/显示/操作，包括A、C、E、G、P、R、0、2、4、7= AC 85~260V；

B、D、F、H、Q、S、1、3、5、8= AC 20~55V或DC 16~32V；

*f*表示信号输出，包括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（非本安信号输出）；

F、G、R、S、T、U（本安信号输出）；

*的内容表示安装型式、传感器夹具、安装调整、传感器电缆（包括连接器）、传感器电缆转换器、校准、电缆引入装置和软件等信息。

具体含义参见产品使用说明书。

带电缆的传感器认可型号：

Prosonic Flow 9*a* P**-*b*******c*XXXXX（参考转换器定义）

Prosonic Flow DDU18 -A/B□□□

Prosonic Flow DDU19 -A□□□

□的内容表示安装型式、电缆引入装置和传感器电缆。

不带电缆的传感器认可型号：

Prosonic Flow DDU18 – 50091704

Prosonic Flow DDU18 – 50091703

Prosonic Flow DDU19 – 50091713

产品认可型号与防爆标志的关系如下：

转换器

型号规格	气体防爆标志	粉尘防爆标志
Prosonic Flow 9*P**-******K***** 非本安信号输出	Ex d [ia] Ⅱ C T6 Gb	Ex tD [iaD 21] A21 IP6X T85℃
Prosonic Flow 9*P**-******S***** 非本安信号输出	Ex d e [ia] Ⅱ C T6 Gb	
Prosonic Flow 9*P**-******K***** 本安信号输出	Ex d [ia Gb] [ia Ga] Ⅱ C T6 Gb	Ex tD [iaD 21] [iaD 20] A21 IP6X T85℃
Prosonic Flow 9*P**-******S***** 本安信号输出	Ex d e [ia Gb] [ia Ga] Ⅱ C T6 Gb	

传感器

型号规格	气体防爆标志	粉尘防爆标志
Prosonic Flow 9*P**-********** Prosonic Flow DDU18 -**** Prosonic Flow DDU18 -50091703 Prosonic Flow DDU18 -50091704 Prosonic Flow DDU19-A*** Prosonic Flow DDU19-50091703	Ex ib Ⅱ C T1~T6 Gb	Ex ibD 21 T*

一、产品安全使用特殊条件

产品防爆合格证号后缀“X”表示产品有安全使用特殊要求：

1、涉及隔爆接合面的维修须联系产品制造商。

2、产品传感器和转换器的本安电路之间应等电位连接。

二、产品使用注意事项

1、产品外壳设有接地端子，用户在使用时应可靠接地。

2、转换器的使用环境温度为 -20℃～+60℃；

型号规格中代码*d*为6或V时，转换器的使用环境温度为 -40℃～+60℃。

传感器型号、使用环境温度、介质温度范围的关系如下所示：

型号规格	环境温度	介质温度
Prosonic Flow 9 *P**- 1**********	-40℃～+60℃	-40℃～+100℃
Prosonic Flow 9 *P**- 2**********	-40℃～+60℃	-40℃～+150℃
Prosonic Flow 9 *P**- A/B**********	-40℃～+60℃	-40℃～+80℃
Prosonic Flow 9 *P**- E/F**********	-20℃～+60℃	0℃～+170℃
Prosonic Flow DDU18- A*** Prosonic Flow DDU18- 50091703	-40℃～+60℃	-40℃～+80℃
Prosonic Flow DDU18- B*** Prosonic Flow DDU18- 50091704		0℃～+170℃
Prosonic Flow DDU19- A*** Prosonic Flow DDU19- 50091713	-20℃～+60℃	-40℃～+80℃

3、传感器型号、最高介质温度、温度组别和最高表面温度的关系如下所示：

传感器型号	T6 T80	T5 T95	T4 T130	T3 T195	T2 T290	T1 T440
Prosonic Flow 9*P**- A/B**********	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU18- A***	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU18-50091703	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU19- A***	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU19-50091713	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow 9*P**- 1**********	80℃	95℃	100℃	100℃	100℃	100℃
Prosonic Flow 9*P**- 2**********	80℃	95℃	130℃	150℃	150℃	150℃
Prosonic Flow 9*P**- E/F**********	80℃	95℃	130℃	170℃	170℃	170℃
Prosonic Flow DDU18- B***	80℃	95℃	130℃	170℃	170℃	170℃
Prosonic Flow DDU18- 50091704	80℃	95℃	130℃	170℃	170℃	170℃

4、传感器与转换器之间的连接电缆可为厂家预制电缆，最大允许长度为30m。

5、转换器的电缆引入口须配用经防爆检验认可、符合相应防爆型式和等级的电缆引入装置或封堵件；安装后外壳防护等级不得低于GB4208-2008规定的IP67。选用的电缆引入装置和封堵件应和产品的工作条件相适应。

6、当产品的信号电路不带本质安全输出时，其最大电气参数如下：

产品型号	Prosonic Flow 9*P**-**********p 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			
最大电气参数	端子 20/21	端子 22/23	端子 24/25	端子 26/27
Um	260 VAC			
Im	500 mA			

7、当产品的信号电路带本质安全输入/输出时，其安全参数如下：

安全参数	Prosonic Flow 9*P**-**********p								
	p=F or G	p = R		p = S		p = T		p = U	
	端子	端子		端子		端子		端子	
	26/27	24/25	26/27	24/25	26/27	24/25	26/27	24/25	26/27
	无源	有源	有源	无源	有源	无源	无源	无源	无源
Uo	---	21.8 V	21.8 V	---	21.8 V	---	---	---	---
Io	---	90 mA	90 mA	---	90 mA	---	---	---	---
Po	---	491mW	491mW	---	491mW	---	---	---	---
Lo(IIC)	---	4.1 mH	4.1 mH	---	4.1 mH	---	---	---	---
Co(IIC)	---	160 nF	160 nF	---	160 nF	---	---	---	---
Lo(IIB)	---	15mH	4.1mH	---	15mH	---	---	---	---
Co(IIB)	---	1160nF	1160nF	---	1160nF	---	---	---	---
Ui	30 V	30 V	30 V	30 V	30 V	30 V	30 V	30 V	30 V
Ii	600 mA	10 mA	10 mA	500mA	10 mA	500mA	100mA	100mA	100mA
Pi	8,5 W	300mW	300mW	0.6 W	300mW	0.6 W	1.25 W	1.25W	1.25 W
Li	≤10 μH	0	0	0	0	0	0	0	0
Ci	≤ 5 nF	≤ 6 nF	≤ 6 nF	≤ 6nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF

当p = F或G时，产品连接Ex ia IIC电路或FISCO总线设备。

8、转换器在现场维护使用时应遵循“断电源后延时10分钟开盖”的原则。

9、用户不得自行随意更换该产品的电气零部件，应会同产品制造商共同解决运行中出现的故障，以免影响防爆性能和损坏现象的发生。

10、产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第13部分：设备的修理、检修、修复和改造”、GB3836.15-2000“爆炸性气体环境用电气设备 第15部分：危险场所电气安装（煤矿除外）”、GB3836.16-2006“爆炸性气体环境用电气设备 第16部分：电气装置的检查和维护（煤矿除外）”、GB12476.2-2010“可燃性粉尘环境用电气设备 第2部分：选型和安装”、GB15577-2007“粉尘防爆安全规程” 及GB50257-1996“电气设备安装工程爆炸和火灾危险环境电气装置施工及验收规范”的有关规定。

三、制造厂责任

1、产品制造厂必须将上述使用注意事项纳入产品使用说明书；

2、制造厂必须严格按照NEPSI认可的文件资料生产；

3、产品铭牌中应至少包括下列内容：

a) NEPSI认可标志（见防爆合格证书）

b) 产品防爆标志

c) 防爆合格证号

d) 使用环境温度

e）“断电源后延时10分钟开盖”警告语（转换器）

f）本安参数说明

国家级仪器仪表防爆安全监督检验站

二〇一五年六月十六日

EXPLOSION PROTECTION
CERTIFICATE OF CONFORMITY

Cert NO.GYJ15.1204X

This is to certify that the product

Ultrasonic Transmitter

manufactured by **Endress + Hauser Flowtec AG**

(Address:CH-4153, Reinach BL1, Switzerland)

which model is **PROline Prosonic Flow 90/93 Series**

Ex marking **See attachment to this certification**

product standard **/**

drawing number **319415-0002B00, FEK0944**

has been inspected and certified by NEPSI, and that it conforms to **GB 3836.1-2010,GB 3836.2-2010,GB 3836.3-2010,GB 3836.4-2010,GB 3836.20-2010, GB 12476.1-2013,GB 12476.5-2013,GB 12476.4-2010**

This Approval shall remain in force until **2020.06.15**

Remarks
1.Conditions for safe use are specified in the attachment to this certificate.
2.Symbol "X" placed after the certification number denotes specific conditions of use, which are specified in the attachment to this certificate.
3.Model designation is specified in the attachment to this certificate.
4.Safe parameters specified in the attachment to this certificate.
5.This certificate is also applicable for the product with the same type manufactured by Endress+Hauser Flowtec (China) Co., Ltd. (address: Su Hong Zhong Lu No.465, Suzhou-SIP, China)

Director

National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation

Issued Date 2015.06.16

This Certificate is valid for products compatible with the documents and samples approved by NEPSI.

103 Cao Bao Road
Shanghai 200233, China

http://www.nepsi.org.cn
Email: info@nepsi.org.cn

Tel: +86 21 64368180
Fax: +86 21 64844580

Attachment Ⅰ to GYJ15.1203X/GYJ15.1204X
(translation)

1. Description

PROline Prosonic Flow P, DDU18 and DDU19 Series Ultrasonic Flow Measuring Sensor (certificate number is GYJ15.1203X) and PROline Prosonic Flow 90/93 Series Ultrasonic Transmitter (certificate number is GYJ15.1204X), manufactured by Endress+Hauser Flowtec AG, has been certified by National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI). This product accords with following standards:

GB3836.1-2010 Explosive atmospheres-Part 1: Equipment-General requirements

GB3836.2-2010 Explosive atmospheres-Part 2: Equipment protection by flameproof enclosure"d"

GB3836.3-2010 Explosive atmospheres-Part 3: Equipment protection by increased safety"e"

GB3836.4-2010 Explosive atmospheres-Part 4: Equipment protection by intrinsic safety"i"

GB3836.20-2010 Explosive atmospheres-Part 20: Equipment with equipment protection level (EPL) Ga

GB12476.1-2013 Electrical apparatus for use in the presence of combustible dust- Part 1: General requirements

GB12476.4-2010 Electrical apparatus for use in the presence of combustible dust- Part 4: Protection by intrinsic safety "iD"

GB12476.5-2013 Electrical apparatus for use in the presence of combustible dust- Part 5: Protection by enclosures "tD"

Type approved is shown as following:

Transmitter:

Prosonic Flow 9 ***a*** P**-***b*************c d* e* f*

Note: ***a*** indicates transmitter version, including 0, 3;

b indicates flow sensor type, including 1, 2, A, B, E, F;

c indicates approvals, including K, S;

d indicates enclosure type, including 6= remote version, T_a -40℃;

V= remote version, stainless steel, T_a -40℃;

W= remote version, stainless steel;

any single number or letter except "6, V"= remote version T_a -20℃;

e indicates power supply/display and operation, including A, C, E, G, P, R, 0, 2, 4, 7= AC 85~260V;

B, D, F, H, Q, S, 1, 3, 5, 8= AC 20~55V or DC 16~32V;

f indicates signal output, including 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 (non-intrinsically safe outputs);

F, G, R, S, T, U (intrinsically safe outputs);

* indicates mounting type, sensor holder, installation set, sensor cable incl. connectors, sensor cable conduit adapters, calibration, cable glands and software.

Details see the instruction manual.

Sensor with cable:

Prosonic Flow 9 *a* P**-*b*******c* XXXXX (refer to designation of the transmitter)

Prosonic Flow DDU18 –A/B□□□

Prosonic Flow DDU19 –A□□□

□ indicates mounting type, cable glands and sensor cable.

Sensor without cable:

Type Prosonic Flow DDU18 –50091704

Type Prosonic Flow DDU18 –50091703

Type Prosonic Flow DDU19 –50091713

The relationship between type code and Ex marking is shown as following:

For transmitter:

Type code	Marking Gas	Marking Dust
Prosonic Flow 9*P**-******K***** with non- intrinsically safe outputs	Ex d [ia] Ⅱ C T6 Gb	Ex tD [iaD 21] A21 IP6X T85℃
Prosonic Flow 9*P**-******S***** with non- intrinsically safe outputs	Ex d e [ia] Ⅱ C T6 Gb	
Prosonic Flow 9*P**-******K***** with intrinsically safe outputs	Ex d [ia Gb] [ia Ga] Ⅱ C T6 Gb	Ex tD [iaD 21] [iaD 20] A21 IP6X T85℃
Prosonic Flow 9*P**-******S***** with intrinsically safe outputs	Ex d e [ia Gb] [ia Ga] Ⅱ C T6 Gb	

For sensor:

Type code	Marking Gas	Marking Dust
Prosonic Flow 9*P**-********** Prosonic Flow DDU18 -**** Prosonic Flow DDU18 -50091703 Prosonic Flow DDU18 -50091704 Prosonic Flow DDU19-A*** Prosonic Flow DDU19-50091703	Ex ib Ⅱ C T1~T6 Gb	Ex ibD 21 T*

2. Special Conditions for Safe Use

The suffix "X" placed after the certificate number indicates that this product is subject to special conditions for safe use, that is:

2.1 For information on the dimensions of the flameproof joints contact the manufacturer.

2.2 The transmitter has been integrated into the potential equalisation system. Along the intrinsically safe sensor circuits potential equalisation must exist.

3. Conditions for Safe Use

3.1 The external earth connection facility shall be connected reliably. Potential must be equalized along the intrinsically safe circuits between sensor and transmitter.

3.2 The ambient temperature of the transmitter is -20 °C～+60 °C;

For type Prosonic Flow 9*P**-******6/V***only, the ambient temperature is -40 °C～+60 °C.

The relation of sensor type, ambient temperature and medium temperature is shown as follows:

type	ambient temperature	medium temperature
Prosonic Flow 9*P**-1**********	-40℃+60℃	-40℃+100℃
Prosonic Flow 9*P**-2**********	-40℃+60℃	-40℃+150℃
Prosonic Flow 9*P**-A/B**********	-40℃+60℃	-40℃+80℃
Prosonic Flow 9*P**-E/F**********	-20℃+60℃	0℃+170℃
Prosonic Flow DDU18 -A*** Prosonic Flow DDU18- 50091703	-40℃+60℃	-40℃+80℃
Prosonic Flow DDU18 -B*** Prosonic Flow DDU18- 50091704		0℃+170℃
Prosonic Flow DDU19 -A*** Prosonic Flow DDU19- 50091713	-20℃+60℃	-40℃～+80℃

3.3 The relationship between type of sensor, maximum medium temperature, the temperature class and the max. surface temperature is shown as follows:

type	T6 T80	T5 T95	T4 T130	T3 T195	T2 T290	T1 T440
Prosonic Flow 9*P**- A/B**********	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU18- A***	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU18-50091703	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU19- A***	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU19-50091713	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow 9*P**- 1**********	80℃	95℃	100℃	100℃	100℃	100℃

Prosonic Flow 9*P**- 2**********	80℃	95℃	130℃	150℃	150℃	150℃
Prosonic Flow 9*P**- E/F**********	80℃	95℃	130℃	170℃	170℃	170℃
Prosonic Flow DDU18- B***	80℃	95℃	130℃	170℃	170℃	170℃
Prosonic Flow DDU18- 50091704	80℃	95℃	130℃	170℃	170℃	170℃

3.4 The connecting cable between transmitter and sensor has a max. length of 30 m. The cable specified/provided by the manufacturer shall be used.

3.5 Suitable cable glands or blind plugs for unused holes, seperated certified by ExTL according to related standards, shall be used and correctly installed. After that, degree of protection of enclosure is at least IP67 according to GB4208-2008. The cable glands and blind plugs to be used shall suitable for the product working conditions.

3.6 Non-intrinsically safe communication circuits:

type	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			
Safety Parameters	Terminals 20/21	Terminals 22/23	Terminals 24/25	Terminals 26/27
Um	260 VAC			
Im	500 mA			

3.7 Intrinsically safe communication circuits:

Safety Parameter	Prosonic Flow 9*P**-**********p								
	p = F or G	p = R		p = S		p = T		p = U	
	Terminals	Terminals		Terminals		Terminals		Terminals	
	26/27	24/25	26/27	24/25	26/27	24/25	26/27	24/25	26/27
	passive	active	active	passive	active	passive	passive	passive	passive
Uo	---	21.8 V	21.8 V	---	21.8 V	---	---	---	---
Io	---	90 mA	90 mA	---	90 mA	---	---	---	---
Po	---	491mW	491mW	---	491mW	---	---	---	---
Lo (IIC)	---	4.1 mH	4.1 mH	---	4.1 mH	---	---	---	---
Co (IIC)	---	160 nF	160 nF	---	160 nF	---	---	---	---
Lo (IIB)	---	15 mH	4.1 mH	---	15 mH	---	---	---	---
Co (IIB)	---	1160 nF	1160 nF	---	1160 nF	---	---	---	---
Ui	30 V	30 V	30 V	30 V	30 V	30 V	30 V	30 V	30 V
Ii	600 mA	10 mA	10 mA	500 mA	10 mA	500 mA	100 mA	100 mA	100 mA
Pi	8,5 W	300mW	300mW	0.6 W	300mW	0.6 W	1.25 W	1.25 W	1.25 W
Li	≤ 10 µH	0	0	0	0	0	0	0	0
Ci	≤ 5 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF

The communication circuits, option F and G are for connection to Ex ia IIC or FISCO Field Device.

3.8 Any maintenance shall be done only when the warning of "after switching off, wait 10 minutes before opening" is observed (only for the transmitter) or the area is known to be non hazardous.

3.9 The user shall not change the configuration in order to maintain/ensure the explosion protection performance of the equipment. Any change may impair safety.

3.10 For installation, use and maintenance of the product, the end user shall observe the instruction manual and the following standards:

GB50257-1996 "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".

GB3836.13-2013 "Explosive atmospheres- Part 13:Equipment repair, overhaul and reclamation".

GB3836.15-2000 "Electrical apparatus for explosive gas atmospheres- Part 15:Electrical installations in hazardous area (other than mines)".

GB3836.16-2006 "Electrical apparatus for explosive gas atmospheres- Part 16:Inspection and maintenance of electrical installation (other than mines)".

GB15577-2007 "Safety regulations for dust explosion prevention and protection". (Only if installed in dust hazardous areas)

GB12476.2-2010 "Electrical apparatus for use in the presence of combustible dust- Part 2: Selection and installation". (Only if installed in dust hazardous areas)

4. Manufacturer's Responsibility

4.1 Conditions for safe use, as specified above, should be included in the documentation the user is provided with.

4.2 Manufacturing should be done according to the documentation approved by NEPSI.

4.3 Any modification affecting the explosion protection performance as shown in the documentation approved by NEPSI should not be done, except after NEPSI's reapproval.

4.4 Marking should show the following

4.4.1 NEPSI logo

4.4.2 Type of explosion protection

4.4.3 Certificate number

4.4.4 Ambient temperature range

4.4.5 Warning of "after switching off, wait 10 minutes before opening" (only for the transmitter)

4.4.6 Safety parameters

In case the nameplate does not provide enough space, information can be given in the manual, provided the nameplate shows a link to the appropriate documentation.

National Supervision and Inspection Center
for Explosion Protection and Safety of Instrumentation
2015.06.16

防爆合格证

证 号：GYJ15.1204X

由 恩德斯+豪斯公司 制造的产品：

（地址： CH-4153, Reinach BL1, Switzerland）

名 称 超声波流量转换器

型 号 规 格 PROline Prosonic Flow 90/93系列

防 爆 标 志 详见合格证附件

产 品 标 准 /

图 样 编 号 319415-0002B00, FEK0944

经图样及技术文件的审查和样品检验，确认上述产品符合 GB 3836.1-2010、GB 3836.2-2010、GB 3836.3-2010、GB 3836.4-2010、GB 3836.20-2010、GB 12476.1-2013、GB 12476.5-2013、GB 12476.4-2010 标准，特颁发此证。

本证书有效期： 2015 年 6 月 16 日 至 2020 年 6 月 15 日

备注
1. 安全使用注意事项见本证书附件。
2. 证书编号后缀“X”表明产品具有安全使用特殊条件，内容见本证书附件。
3. 型号规格说明见本证书附件。
4. 电气安全参数见本证书附件。
5. 本证书同时适用于恩德斯豪斯流量仪表技术（中国）有限公司（地址：苏州工业园区苏虹中路465号）生产的同型号产品。

站长

国家级仪器仪表防爆安全监督检验站

颁发日期二〇一五年六月十六日

本证书仅对与认可文件和样品一致的产品有效。

地址：上海市漕宝路103号 网址：www.nepsi.org.cn 电话：+86 21 64368180
邮编：200233 Email:info@nepsi.org.cn 传真：+86 21 64844580

国家级仪器仪表防爆安全监督检验站

National Supervision and Inspection Centre for
Explosion Protection and Safety of Instrumentation

(GYJ15.1203X/GYJ15.1204X) **(Attachment Ⅰ)**

GYJ15.1203X/GYJ15.1204X防爆合格证附件Ⅰ

由恩德斯＋豪斯公司生产的PROline Prosonic Flow P、DDU18和DDU19 系列超声波流量传感器（防爆合格证号GYJ15.1203X）和PROline Prosonic Flow 90/93系列超声波流量转换器（防爆合格证号GYJ15.1204X），经国家级仪器仪表防爆安全监督检验站(NEPSI)检验，符合下列标准：

GB3836.1-2010 爆炸性环境 第1部分：设备 通用要求

GB3836.2-2010 爆炸性环境 第2部分：由隔爆外壳“d”保护的设备

GB3836.3-2010 爆炸性环境 第3部分：由增安型“e”保护的设备

GB3836.4-2010 爆炸性环境 第4部分：由本质安全型“i”保护的设备

GB3836.20-2010 爆炸性环境 第20部分：设备保护级别（EPL）为Ga级的设备

GB12476.1-2013 可燃性粉尘环境用电气设备 第1部分：通用要求

GB12476.4-2010 可燃性粉尘环境用电气设备 第4部分：本质安全型“iD”

GB12476.5-2013 可燃性粉尘环境用电气设备 第5部分：外壳保护型“tD”

产品认可型号规格如下：

转换器型号：

Prosonic Flow 9*a* P**-*b*******c d** *e** *f*

其中，*a*表示转换器型号，包括0、3；

*b*表示传感器型式，包括1、2、A、B、E、F；

*c*表示认证代码，包括K、S；

*d*表示外壳型式，包括6 = 分体型，Ta -40℃；

V = 分体型，不锈钢，Ta -40℃；

W = 分体型，不锈钢；

任意数字或字母（除了6、V）= 分体型，Ta -20℃；

*e*表示电源/显示/操作，包括A、C、E、G、P、R、0、2、4、7= AC 85~260V；

B、D、F、H、Q、S、1、3、5、8= AC 20~55V或DC 16~32V；

*f*表示信号输出，包括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（非本安信号输出）；

F、G、R、S、T、U（本安信号输出）；

*的内容表示安装型式、传感器夹具、安装调整、传感器电缆（包括连接器）、传感器电缆转换器、校准、电缆引入装置和软件等信息。

具体含义参见产品使用说明书。

带电缆的传感器认可型号：

Prosonic Flow 9*a* P**-*b*******c*XXXXX（参考转换器定义）

Prosonic Flow DDU18 -A/B□□□

Prosonic Flow DDU19 -A□□□

□的内容表示安装型式、电缆引入装置和传感器电缆。

不带电缆的传感器认可型号：

Prosonic Flow DDU18 – 50091704

Prosonic Flow DDU18 – 50091703

Prosonic Flow DDU19 – 50091713

产品认可型号与防爆标志的关系如下：

转换器

型号规格	气体防爆标志	粉尘防爆标志
Prosonic Flow 9*P**-******K***** 非本安信号输出	Ex d [ia] Ⅱ C T6 Gb	Ex tD [iaD 21] A21 IP6X T85℃
Prosonic Flow 9*P**-******S***** 非本安信号输出	Ex d e [ia] Ⅱ C T6 Gb	
Prosonic Flow 9*P**-******K***** 本安信号输出	Ex d [ia Gb] [ia Ga] Ⅱ C T6 Gb	Ex tD [iaD 21] [iaD 20] A21 IP6X T85℃
Prosonic Flow 9*P**-******S***** 本安信号输出	Ex d e [ia Gb] [ia Ga] Ⅱ C T6 Gb	

传感器

型号规格	气体防爆标志	粉尘防爆标志
Prosonic Flow 9*P**-********** Prosonic Flow DDU18 -**** Prosonic Flow DDU18 -50091703 Prosonic Flow DDU18 -50091704 Prosonic Flow DDU19-A*** Prosonic Flow DDU19-50091703	Ex ib Ⅱ C T1~T6 Gb	Ex ibD 21 T*

一、产品安全使用特殊条件

产品防爆合格证号后缀“X”表示产品有安全使用特殊要求：

1、涉及隔爆接合面的维修须联系产品制造商。

2、产品传感器和转换器的本安电路之间应等电位连接。

二、产品使用注意事项

1、产品外壳设有接地端子，用户在使用时应可靠接地。

2、转换器的使用环境温度为 -20℃～+60℃；

型号规格中代码*d*为6或V时，转换器的使用环境温度为 -40℃～+60℃。

传感器型号、使用环境温度、介质温度范围的关系如下所示：

型号规格	环境温度	介质温度
Prosonic Flow 9 *P**- 1**********	-40℃～+60℃	-40℃～+100℃
Prosonic Flow 9 *P**- 2**********	-40℃～+60℃	-40℃～+150℃
Prosonic Flow 9 *P**- A/B**********	-40℃～+60℃	-40℃～+80℃
Prosonic Flow 9 *P**- E/F**********	-20℃～+60℃	0℃～+170℃
Prosonic Flow DDU18- A*** Prosonic Flow DDU18- 50091703	-40℃～+60℃	-40℃～+80℃
Prosonic Flow DDU18- B*** Prosonic Flow DDU18- 50091704		0℃～+170℃
Prosonic Flow DDU19- A*** Prosonic Flow DDU19- 50091713	-20℃～+60℃	-40℃～+80℃

3、传感器型号、最高介质温度、温度组别和最高表面温度的关系如下所示：

传感器型号	T6 T80	T5 T95	T4 T130	T3 T195	T2 T290	T1 T440
Prosonic Flow 9*P**- A/B**********	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU18- A***	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU18-50091703	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU19- A***	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow DDU19-50091713	80℃	80℃	80℃	80℃	80℃	80℃
Prosonic Flow 9*P**- 1**********	80℃	95℃	100℃	100℃	100℃	100℃
Prosonic Flow 9*P**- 2**********	80℃	95℃	130℃	150℃	150℃	150℃
Prosonic Flow 9*P**- E/F**********	80℃	95℃	130℃	170℃	170℃	170℃
Prosonic Flow DDU18- B***	80℃	95℃	130℃	170℃	170℃	170℃
Prosonic Flow DDU18- 50091704	80℃	95℃	130℃	170℃	170℃	170℃

4、传感器与转换器之间的连接电缆可为厂家预制电缆，最大允许长度为30m。

5、转换器的电缆引入口须配用经防爆检验认可、符合相应防爆型式和等级的电缆引入装置或封堵件；安装后外壳防护等级不得低于GB4208-2008规定的IP67。选用的电缆引入装置和封堵件应和产品的工作条件相适应。

6、当产品的信号电路不带本质安全输出时，其最大电气参数如下：

产品型号	Prosonic Flow 9*P**-**********p 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			
最大电气参数	端子 20/21	端子 22/23	端子 24/25	端子 26/27
Um	260 VAC			
Im	500 mA			

7、当产品的信号电路带本质安全输入/输出时，其安全参数如下：

安全参数	Prosonic Flow 9*P**-**********p								
	p=F or G	p = R		p = S		p = T		p = U	
	端子	端子		端子		端子		端子	
	26/27	24/25	26/27	24/25	26/27	24/25	26/27	24/25	26/27
	无源	有源	有源	无源	有源	无源	无源	无源	无源
Uo	---	21.8 V	21.8 V	---	21.8 V	---	---	---	---
Io	---	90 mA	90 mA	---	90 mA	---	---	---	---
Po	---	491mW	491mW	---	491mW	---	---	---	---
Lo(IIC)	---	4.1 mH	4.1 mH	---	4.1 mH	---	---	---	---
Co(IIC)	---	160 nF	160 nF	---	160 nF	---	---	---	---
Lo(IIB)	---	15mH	4.1mH	---	15mH	---	---	---	---
Co(IIB)	---	1160nF	1160nF	---	1160nF	---	---	---	---
Ui	30 V	30 V	30 V	30 V	30 V	30 V	30 V	30 V	30 V
Ii	600 mA	10 mA	10 mA	500mA	10 mA	500mA	100mA	100mA	100mA
Pi	8,5 W	300mW	300mW	0.6 W	300mW	0.6 W	1.25 W	1.25W	1.25 W
Li	≤10 μH	0	0	0	0	0	0	0	0
Ci	≤ 5 nF	≤ 6 nF	≤ 6 nF	≤ 6nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF	≤ 6 nF

当p = F或G时，产品连接Ex ia IIC电路或FISCO总线设备。

8、转换器在现场维护使用时应遵循“断电源后延时10分钟开盖”的原则。

9、用户不得自行随意更换该产品的电气零部件，应会同产品制造商共同解决运行中出现的故障，以免影响防爆性能和损坏现象的发生。

10、产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第13部分：设备的修理、检修、修复和改造”、GB3836.15-2000“爆炸性气体环境用电气设备 第15部分：危险场所电气安装（煤矿除外）”、GB3836.16-2006“爆炸性气体环境用电气设备 第16部分：电气装置的检查和维护（煤矿除外）”、GB12476.2-2010“可燃性粉尘环境用电气设备 第2部分：选型和安装”、GB15577-2007“粉尘防爆安全规程” 及GB50257-1996“电气设备安装工程爆炸和火灾危险环境电气装置施工及验收规范”的有关规定。

三、制造厂责任

1、产品制造厂必须将上述使用注意事项纳入产品使用说明书；

2、制造厂必须严格按照NEPSI认可的文件资料生产；

3、产品铭牌中应至少包括下列内容：

a) NEPSI认可标志（见防爆合格证书）

b) 产品防爆标志

c) 防爆合格证号

d) 使用环境温度

e）“断电源后延时10分钟开盖”警告语（转换器）

f）本安参数说明

国家级仪器仪表防爆安全监督检验站

二〇一五年六月十六日