

防爆合格证

证号: GYJ15.1144X

由 恩德斯+豪斯公司

制造的产品:

(地址: Hauptstrasse 1, D-79689 Maulburg, Germany)

名 称 放射线物位计

型号规格 FMG60系列

防爆标志 Ex d [ia Ga] II C T5/T6 Gb Ex d e [ia Ga] II C T5/T6 Gb

产品标准 /

图样编号 960006483-D、960006729-A、960015545

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 标准,
特颁发此证。

本证书有效期: 2015年5月25日至2020年5月24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. 本证书同时适用于恩德斯豪斯(苏州)自动化仪表有限公司(地址: 苏州工业园区苏虹中路491号)生产的同型号产品。
 5. [更改1]: 制造商名称变更。2018年3月23日签发。

站长

国家级仪器仪表防爆安全监督检验站

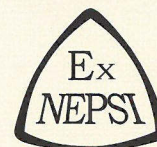
颁发日期二〇一五年五月二十五日

本证书仅对与认可文件和样品一致的产品有效。

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EXPLOSION PROTECTION

CERTIFICATE OF CONFORMITY

Cert NO.GYJ15.1144X

This is to certify that the product

Compact Transmitter Gammapilot M

manufactured by **Endress + Hauser SE + Co. KG**

(Address:Hauptstrasse 1, D-79689 Maulburg, Germany)

which model is **FMG60 Series**

Ex marking **Ex d [ia Ga] IIC T5/T6 Gb Ex d e [ia Ga] IIC T5/T6 Gb**

product standard /

drawing number **960006483-D、960006729-A、960015545**

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**

This Approval shall remain in force until **2020.05.24**

- Remarks**
- 1.Conditions for safe use are specified in the attachment(s) 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.This certificate is also applicable for the product with the same type manufactured by Endress+Hauser (Suzhou) Automation Instrumentation Co., Ltd. (address: Su Hong Zhong Lu No.491, Suzhou-SIP, China)
 - 5.[Variation]: Modify the manufacturer name. Signed on 2018.03.23.

Director



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

Issued Date **2015.05.25**

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

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

(GYJ15.1144X)

(Attachment II)

GYJ15.1144X防爆合格证附件 II

由恩德斯+豪斯公司生产的FMG60系列放射线物位计，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

产品防爆标志为Ex d [ia Ga] II C T5/T6 Gb、Ex d e [ia Ga] II C T5/T6 Gb，防爆合格证号为GYJ15.1144X。

本证书认可的产品具体型号规格如下：

FMG60- **a b c d e f g h**

其中：**a** 表示NEPSI认可信息，可为C或D；

b 表示供电电源，可为1或2；

c 表示供电电源和信号输出的连接型式，可为B、C、D或E；

d 表示信号输出，可为1、2或3；

e 表示闪烁体测量范围；

f 表示外壳材质和操作，可为1、2、3或4；

g 表示电源引入装置，可为A、B、C或D；

h 表示信号输出引入装置，可为1、2或3。

具体含义详见产品使用说明书。

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，具体内容如下：

- 1、涉及隔爆接合面的维修须联系产品制造商。
- 2、严禁干擦、摩擦产品非金属表面（标牌、柔性闪烁体和外壳涂层），以防产生静电火花危险。

二、产品使用注意事项

- 1、产品外壳设有接地端子，用户在安装使用时应可靠接地。

2、产品工作方式、防爆型式、使用环境温度和温度组别的关系如下：

产品带NaJ或PVT闪烁体			
工作方式	防爆型式	使用环境温度	温度组别
无水冷或水冷不工作	Ex d或Ex de	-40~+60℃	T6
带水冷	Ex d或	-40~+75℃	T6
(冷却水管内侧的温度 -40~+60℃)	Ex de	-40~+80℃	T5

产品带柔性闪烁体			
工作方式	防爆型式	使用环境温度	温度组别
带柔性闪烁体	Ex d或Ex de	-40~+60℃	T6

3、产品的电气参数如下：

3.1 FMG60-*1*****

供电电源（端子L1、N）：U= 90~253Vac, max 8.5VA

Um= 253Vac

3.2 FMG60-*2*****

供电电源（端子L+、L-）：U= 18~35Vdc, max 3.5W

Um= 253Vac

3.3 FMG60-**B1****和FMG60-**E1****

产品输出电路（有源）（端子3、4）的本安参数如下：

最高输出电压 Uo (V)	最大输出电流 Io (mA)	最大输出功率 Po(mW)	最大外部参数	
			Co(nF)	Lo(mH)
21.2	92	479	156	0.15
			116	1

最高输入电压 Ui (V)	最大输入电流 Ii (mA)	最大输入功率 Pi(mW)	最大内部参数	
			Ci(nF)	Li(mH)
30	13*	390	13.4	0

注*：按图960008339接线时，Ii = 500mA。

3.4 FMG60-**B2****、FMG60-**B3****、FMG60-**E2****和FMG60-**E3****

产品输出电路Profibus PA或FF（端子3、4和外部插头）的本安参数如下：

最高输入电压 Ui (V)	最大输入电流 Ii (mA)	最大输入功率 Pi(W)	最大内部参数	
			Ci(nF)	Li(μ H)
24	250	1.2	5	10
17.5*	500*	5.5*	5*	10*

注*：该组参数符合FISCO总线设备要求。

3.5 FMG60-*****

传感器电路 (Pt100) (端子9、10、11、12) 的本安参数如下:

最高输出电压 U _o (V)	最大输出电流 I _o (mA)	最大输出功率 P _o (mW)	最大外部参数	
			Co(μ F)	Lo(mH)
8.4	8.3	17.5	1.8	0.15
			1.2	1

Cascade output (端子7、8) 的本安参数如下:

最高输出电压 U _o (V)	最大输出电流 I _o (mA)	最大输出功率 P _o (mW)	最大外部参数	
			Co(μ F)	Lo(mH)
8.4	19.2	40.3	5.1	69

Cascade input (端子5、6) 的本安参数如下:

最高输入电压 U _i (V)	最大输入电流 I _i (mA)	最大输入功率 P _i (mW)	最大内部参数	
			Ci(nF)	Li(μ H)
8.4	19.2	40.3	0	67

显示输出电路 (连接器) 的本安参数如下:

最高输出电压 U _o (V)	最大输出电流 I _o (mA)	最大输出功率 P _o (mW)	最大外部参数	
			Co(μ F)	Lo(mH)
4.7	37.7	44.3	150	25

3.6 FMG60-**C1****和FMG60-**D1****

信号输出 (端子3、4): 4~20mA

U_m=253V

3.7 FMG60-**C2****、FMG60-**C3****、FMG60-**D2****和FMG60-**D3****

总线连接 (端子1、2): U≤32V

U_m=253V

4、产品的本安输入端必须与已通过防爆认证的关联设备配套共同组成本安防爆系统方可用于爆炸性气体环境。其系统接线必须同时遵守本产品 and 所配关联设备的使用说明书要求, 接线端子不得接错。

5、产品与关联设备的连接电缆应为带绝缘护套的屏蔽电缆, 其屏蔽层应接地。

6、产品的电缆引入口须配用经防爆检验认可、符合GB3836.1-2010和GB3836.2-2010 (或GB3836.3-2010) 标准、具有相应防爆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IP65。

7、当使用环境温度超过+70℃时, 必须使用至少耐热+85℃的耐热电缆、电缆引入装置及封堵件。

- 8、产品在现场使用和维护时必须遵守“断电源后开盖”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修（煤矿除外）”、GB3836.18-2010“爆炸性环境 第18部分：本质安全系统”及GB50257-2014“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) 安全电气参数
 - f) “断电源后开盖”警告语

国家级仪器仪表防爆安全监督检验站

二〇一八年三月二十三日

注：本附件是对2015年05月25日签发的附件 I 的更新。

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

(GYJ15.1144X)

(Attachment II)

Attachment II to GYJ15.1144X

(translation)

1. Description

FMG60 Series Compact Transmitter Gammapiot M (simply called Gammapiot M), manufactured by Endress+Hauser SE+Co.KG, has been certified by National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI). This type of 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

The Ex marking is Ex d [ia Ga] II C T5/T6 Gb or Ex d e [ia Ga] II C T5/T6 Gb, its certificate number is

GYJ15.1144X.

The detail of type approved is shown as following:

FMG60- **a b c d e f g h**

a indicates NEPSI approved version, C or D;

b indicates power supply, 1 or 2;

c indicates connection power supply and connection communication output, B, C, D or E;

d indicates communication output, 1, 2 or 3;

e indicates scintillator measuring range;

f indicates housing and operation, 1, 2, 3 or 4;

g indicates cable entry power supply, A, B, C or D;

h indicates cable entry communication output, 1, 2 or 3.

Refer to instruction manual for the details.

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 To minimize the risk of electrostatic charging of the labels, flexible scintillator and coating on metallic parts, see manufacturer instructions.

3. Conditions for Safe Use

3.1 The external earth connection facility should be connected reliably.

3.2 The relation between product type, type of protection, ambient temperature and temperature class is shown as following:

Gammapiot with NaJ or PVT scintillator			
Type	Type of protection	Ambient temperature	Temperature class
Types without water cooling or water cooling out of operation	Ex d or Ex d e	-40~+60°C	T6
Types with water cooling in operation provided that the pipe housing is remained within -40~+60°C	Ex d or Ex d e	-40~+75°C	T6
		-40~+80°C	T5

Gammapiot with flexible scintillator			
Type	Type of protection	Ambient temperature	Temperature class
Type with flexible scintillator	Ex d or Ex d e	-40~+60°C	T6

3.3 Electrical data:

3.3.1 FMG60-*1*****

Supply (terminal L1 and N): $U = 90 \sim 253V_{ac}$, max 8.5VA

$U_m = 253V_{ac}$

3.3.2 FMG60-*2*****

Supply (terminal L+ and L-): $U = 18 \sim 35V_{dc}$, max 3.5W

$U_m = 253V_{ac}$

3.3.3 FMG60-**B1****, FMG60-**E1****

Output circuit (active) (terminals 3 and 4):

U_o (V)	I_o (mA)	P_o (mW)	C_o (nF)	L_o (mH)
21.2	92	479	156	0.15
			116	1

U_i (V)	I_i (mA)	P_i (mW)	C_i (nF)	L_i (mH)
30	13*	390	13.4	0

Note *: if the active current output is connected via a passive dc single return barrier, as specified in drawing 960008339, the maximum value $I_i = 500mA$ applies.

3.3.4 FMG60-B2****, FMG60-**B3****, FMG60-**E2****, FMG60-**E3******

Output circuit Profibus PA or FF (terminals 3 and 4 or external socket):

Ui (V)	Ii (mA)	Pi(W)	Ci(nF)	Li(μ H)
24	250	1.2	5	10
17.5*	500*	5.5*	5*	10*

Note *: parameters satisfy the requirements of the FISCO devices.

3.3.5 FMG60-*****

Sensor circuit (Pt100) (terminals 9,10,11,12)

Uo (V)	Io (mA)	Po(mW)	Co(μ F)	Lo(mH)
8.4	8.3	17.5	1.8	0.15
			1.2	1

Cascade output (terminals 7 and 8)

Uo (V)	Io (mA)	Po(mW)	Co(μ F)	Lo(mH)
8.4	19.2	40.3	5.1	69

Cascade input (terminals 5 and 6)

Ui (V)	Ii (mA)	Pi(mW)	Ci(nF)	Li(μ H)
8.4	19.2	40.3	0	67

Display output circuit (connector)

Uo (V)	Io (mA)	Po(mW)	Co(μ F)	Lo(mH)
4.7	37.7	44.3	150	25

3.3.6 FMG60-C1****, FMG60-**D1******

Signal output (terminals 3 and 4): 4~20mA (active)

$$U_m = 253V$$

3.3.7 FMG60-C2****, FMG60-**D2****, FMG60-**C3****, FMG60-**D3******Fieldbus connection (terminals 1 and 2): $U \leq 32V$

$$U_m = 253V$$

3.4 This product should be used in explosive gas atmospheres together with approved associated apparatus, follow the instruction manual of this product and associated apparatus when connecting the wiring. Connect the wiring terminals correctly.

3.5 Connecting cable between the product and associated apparatus should be insulated screen cable; connect the cable screen functionally to earth ground.

3.6 Suitable certified cable entry or blinding plug approved by ExTL according to GB3836.1-2010 and GB3836.2-2010 (GB3836.3-2010) shall be used and correctly installed, and must comply with the type of protection; after installing, degree of protection of enclosure should be at least IP65 according to GB4208-2008.

3.7 For ambient temperature above +70℃, heat resistant cables and cable entry devices, suitable for a temperature of at least +85℃ shall be used.

3.8 Any maintenance shall be performed only when the warning of "Do not open while the circuit is alive" is observed.

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

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

GB50257-2014 "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)".

GB3836.18-2010 "Explosive atmospheres-Part 18: Intrinsically safe system".

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 Nameplate should at least include these contents listed below:

1) NEPSI logo



2) Ex marking

3) certificate number

4) ambient temperature range

5) safety parameters

6) warning of "Do not open while the circuit is alive"

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

2018.03.23

Note: This attachment is the amendment to the attachment I issued on 2015.05.25.