

Safety Instructions

Levelflex M

FMP41C

HART, PROFIBUS PA, FOUNDATION Fieldbus

Ex emb [ia] IIC T6...T1

NEPSI GYJ101291

XA00377F-C



en - Safety instructions for electrical apparatus for explosion-hazardous areas.

zh - 爆炸环境中电气仪表的安全指南。

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english

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Associated Documentation

This document is an integral part of the following Operating Instructions:

HART: BA276F/00

PROFIBUS PA: BA277F/00

FOUNDATION Fieldbus: BA278F/00

The Operating Instructions which are supplied and correspond to the device type apply.

Designation

Explanation of the labelling and type of protection can be found in the explosion protection brochure.

Designation of explosion protection

Ex emb [ia] IIC T6...T1

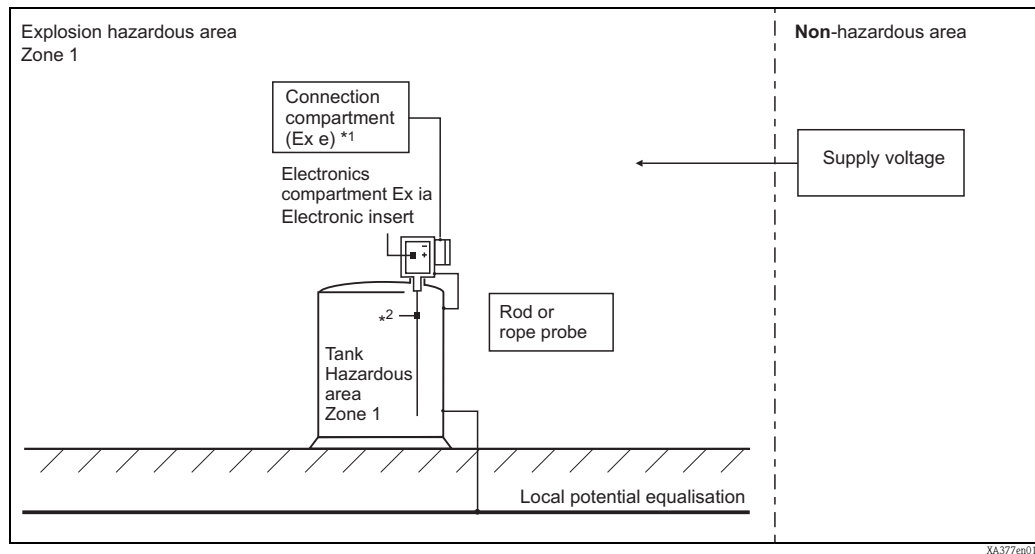


Fig. 1

Power supply	$U_e \leq 32 \text{ V DC}$ $U_m \leq 250 \text{ V AC}$	Connection compartment (Ex e)	Observe instructions *3
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Application	Zone 1	Probe and housing in Zone 1
Type of protection	Ex emb [ia] IIC T6...T1	
Max. working pressure	dependent on the probe	
Process temperature	dependent on the probe	

Housing T12	$-40 \text{ °C} \leq T_u \leq +75 \text{ °C}$	Optionally with or without VU331 display and operating module
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Safety instructions: Installation

- Install the device according to the manufacturer's instructions and any other valid standards and regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- The housing of transmitter is equipped with a ground terminal; users must ensure that it is reliably connected to ground during installation and use.
- The relationship between the permitted ambient temperature for the electronics housing, dependent on the range of application, and the temperature classes is shown in the tables (Tab. 1).
- After aligning (rotating) the housing, retighten the fixing screw (see Operating Instructions).
- Continuous duty temperature of the cable $\geq T_a + 5 \text{ K}$ *1.
- Replace cable glands only with identical parts *1.
- Connection compartment cover: "Do not open under voltage in explosive atmospheres" *3.
- Do not open the connection compartments under voltage in an explosive atmosphere.
- Only install the devices in media for which the wetted materials have sufficient durability.
- Install the device to exclude any mechanical damage or friction during the application.
Pay particular attention to flow conditions and fittings.

Special conditions *2

- The probes (rod and rope version) have plastic surfaces, which can become electrostatically charged.

Measures:

Instruments with flange cladding (plastic) may be installed in hazardous locations (classified) of Zone 1 without further protective measures, if charging of the flange cladding is prevented by the installation (e.g. no exposed plastic surfaces or installation in metallic connection parts/nozzles).

- Changes in electrical and mechanical parts of the equipment could harm the type of explosion protection and are not allowed for the user.
- The safety parameters of the output circuit for the externally connected monitor are as follows:
 $U_o = 4.2\text{ V}$, $I_o = 34\text{ mA}$, $P_o = 36\text{ mW}$, $C_o = 4\text{ }\mu\text{F}$, $L_o = 5\text{ mH}$
 When this product is equipped with an external monitor, it must also conform to the following specifications:
 $U_o \leq U_i$, $I_o \leq I_i$, $P_o \leq P_i$, $C_o \geq C_i + C_c$, $L_o \geq L_i + L_c$
 Note:
 – U_i , I_i and P_i represent the maximum input voltage, maximum input current and maximum input power of the monitor respectively.
 – C_i and L_i represent the maximum internal equivalent capacitance and inductance of the monitor respectively.
 – C_c and L_c represent the distributed capacitance and distributed inductance of cable.

Tab. 1
Zone 1 - Application

Temperature class with or without VU331 display	Maximum permitted medium temperature (process connection) Probe in Zone 1	Maximum permitted ambient temperature at the electronics housing (electronics housing in Zone 1) dependent on the medium temperature		
		FMP41C	FMP41C with remote electronics / spacer tube	FMP41C with remote electronics / spacer hose
T6	+ 75 °C + 60 °C	55 °C 60 °C	59 °C 60 °C	60 °C 60 °C
T5	+ 95 °C + 75 °C	72 °C 75 °C	74 °C 75 °C	75 °C 75 °C
T4	+130 °C + 75 °C	68 °C 75 °C	74 °C 75 °C	75 °C 75 °C
T3 (functional) *4	+150 °C + 75 °C	65 °C 75 °C	73 °C 75 °C	75 °C 75 °C
T3, T2, T1	+195 °C + 75 °C	61 °C 75 °C	72 °C 75 °C	75 °C 75 °C

Note: permitted probe temperature range must be observed
 *4 functional = limited by maximum permitted probe temperature

- For installation, use and maintenance of the device, users must also observe the requirements stated in the Operating Instructions and the standards:
 - GB50257-1996: "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".
 - GB3836.13-1997: "Electrical apparatus for explosive gas atmospheres, Part 13: Repair and overhaul for apparatus used in explosive gas atmospheres".
 - 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 for explosive gas atmospheres, Part 16: Inspection and maintenance of electrical installation (other than mines)".

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中文

HART, PROFIBUS PA, FOUNDATION Fieldbus (基金会现场总线)

相关资料

本文档是下列操作手册的组成部分：

HART：BA276F/00

PROFIBUS PA：BA277F/00

FOUNDATION Fieldbus (基金会现场总线)：BA278F/00

根据用户订购仪表的具体型号所提供的相应操作手册。

名称

防爆标志和防护类型说明请查询防爆手册。

防爆代号

Ex emb [ia] IIC T6...T1

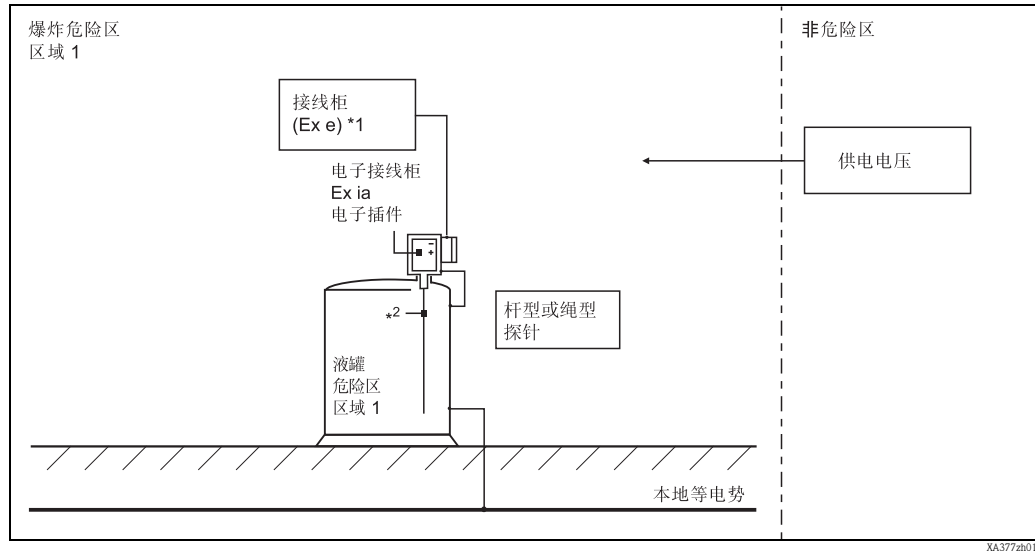


图 1

电源	$U_e \leq 32 \text{ V DC}$ $U_m \leq 250 \text{ V AC}$	接线柜 (Ex e)	遵循指南 *3
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应用	区域 1	探针和外壳在区域 1 中
防护类型	Ex emb [ia] IIC T6...T1	
最大工作压力	取决于探针	
过程温度	取决于探针	

T12 外壳	$-40 \text{ }^\circ\text{C} \leq T_u \leq +75 \text{ }^\circ\text{C}$	可选带有或不带有 VU331 显示屏 和操作模块
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安全指南： 安装

- 按照制造商的说明及其它有效标准和规定来安装设备。
- 使用设备时请勿超出指定的电、热和机械参数。
- 变送器的外壳装备有接地端子；在安装和使用的过程中，用户应确保该端子可靠接地。
- 电子部件外壳的允许环境温度（取决于应用范围）与温度等级之间的关系如下表所示（表 1）。
- 在对齐（旋转）外壳后，重新拧紧固定螺丝（参见操作说明）。
- 电缆持续工作温度 $\geq T_a + 5 \text{ K}$ *1。
- 只能使用相同的部件更换电缆栓塞 *1。
- 接线柜盖：“请勿在爆炸性空气中带电压打开盖子” *3。
- 在爆炸性空气环境中使用仪表时，请勿带电压开启接线柜。
- 当仪表的受潮部件对介质具有足够耐久性时，才可将仪表安装于介质中。
- 仪表的安装方式应能避免在应用期间遭受任何机械损坏或磨损。
请尤其注意流量状况和液罐装置。

特殊条件 *2

- 探针（探针棒和探针索）具有塑料表面，可能会带有静电。

措施：

对于有法兰覆层 (塑料) 的仪器，如果采用适当的安装方式防止法兰覆层产生静电 (例如，不将塑料表面或装置暴露或安装在金属连接部件 / 管口中)，则无需增加任何防护措施，即可安装在区域 1 类的危险场所。

■ 改动设备的电气和机械部件会降低防爆保护的类型，用户请勿擅自改动。

■ 外接监视器输出电路的安全参数如下所示：

$$U_o = 4.2 \text{ V}, I_o = 34 \text{ mA}, P_o = 36 \text{ mW}, C_o = 4 \text{ }\mu\text{F}, L_o = 5 \text{ mH}$$

当本产品配备外接监视器时，必须符合下列技术规范：

$$U_o \leq U_i, I_o \leq I_i, P_o \leq P_i, C_o \geq C_i + C_c, L_o \geq L_i + L_c$$

注意：

- U_i 、 I_i 和 P_i 分别代表监视器的最大输入电压、最大输入电流和最大输入功率。
- C_i 和 L_i 分别代表监视器的最大内部等效电容和电感。
- C_c 和 L_c 代表电缆的分布电容和分布电感。

表 1

区域 1 - 应用

温度等级， 带有或不带 VU331 显示屏	最大允许输入温度 (工艺连接件) 探针在区域 1 中	电子部件外壳处的最大允许环境温度 (电子部件外壳在区域 1 内) 取决于输入温度		
		FMP41C	FMP41C，带有 远程电子部件 / 隔离管	FMP41C，带有 远程电子部件 / 隔离软管
T6	+ 75 °C + 60 °C	55 °C 60 °C	59 °C 60 °C	60 °C 60 °C
T5	+ 95 °C + 75 °C	72 °C 75 °C	74 °C 75 °C	75 °C 75 °C
T4	+130 °C + 75 °C	68 °C 75 °C	74 °C 75 °C	75 °C 75 °C
T3 (功能型) *4	+150 °C + 75 °C	65 °C 75 °C	73 °C 75 °C	75 °C 75 °C
T3, T2, T1	+195 °C + 75 °C	61 °C 75 °C	72 °C 75 °C	75 °C 75 °C

提示： 必须遵守允许的探针温度范围

*4 功能型 = 受限于允许的最大探针温度

■ 在安装、使用和维护产品时，用户必须遵守操作手册和下列标准中的规定：

- 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”
- GB3836.13-1997：“爆炸性气体环境用电气设备 第 13 部分：爆炸性气体环境用电气设备的检修”。
- 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)”。

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