



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Safety Instructions

Prosonic M

FMU40, FMU41, FMU42, FMU44

4-20 mA HART

Ex ia IIC T1...T6 Ga/Gb

Ex ia IIC T1...T6 Gb

NEPSI GYJ12.1530X



en - Document: XA00442F-B

Safety instructions for electrical apparatus for explosion-hazardous areas

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爆炸环境中电气仪表的安全指南

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Prosonic M

FMU40, FMU41, FMU42, FMU44

4-20 mA HART

**Associated
Documentation**

This document is an integral part of the following Operating Instructions:
BA00237F/00
The Operating Instructions which are supplied and correspond to the device type apply.

Designation

Designation of explosion protection	Ex ia IIC T1...T6 Ga/Gb
	Ex ia IIC T1...T6 Gb

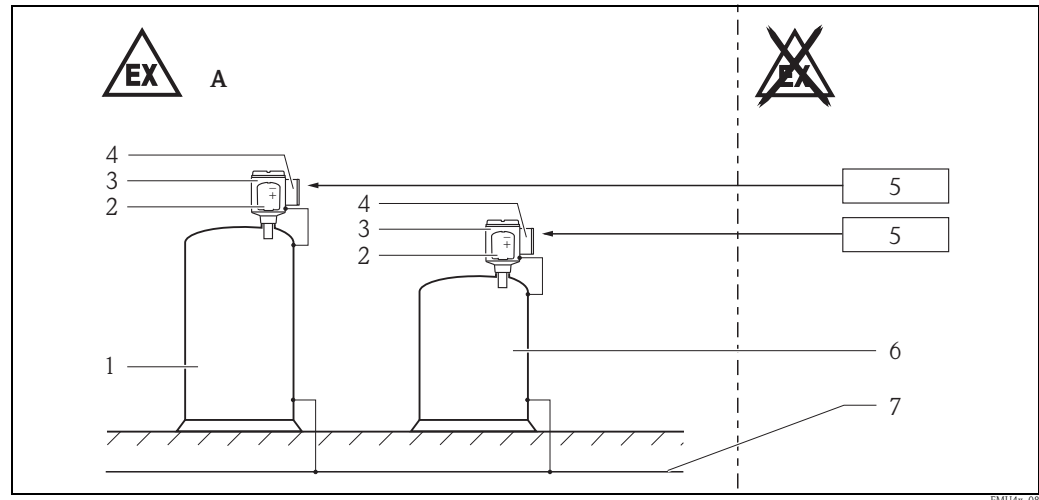
Applied standards

GB 3836.1-2010
GB 3836.4-2010
GB 3836.20-2010

Safety instructions:
Special conditions

Permitted ambient temperature range at the electronics housing: $-40\text{ °C} \leq T_a \leq +80\text{ °C}$.
 Observe the information in the temperature tables.

Safety instructions:
Installation



 1

A Zone 1

- 1 Tank, hazardous area Zone 0
- 2 Electronic insert
- 3 Housing, optionally with or without VU331 display and operating module:
– T12-OVP, aluminium coated
- 4 Terminal module with integrated overvoltage protection
- 5 Certified associated apparatus
- 6 Tank, hazardous area Zone 1
- 7 Local potential equalization

- 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 intrinsically safe input power circuit of the device is isolated from ground potential.
The dielectric strength to earth is limited by 600 V electrode arresters.
- The relationship between the permitted ambient temperature for the electronics housing, dependent on the range of application and temperature classes is shown in the table (→ 5).
- Continuous duty temperature of the cable $\geq T_a + 5\text{ K}$.
- Avoid a build-up of electrostatic charge on the sensor surface. Do not make friction and clean with dry cloth.
- The user shall not change the configuration in order to ensure the explosion protection performance of the equipment. Any change may impair safety.
- 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)".

Note

- The type of protection changes as follows when the devices are connected to certified intrinsically safe circuits of Category Ex ib for Group IIC or IIB: Ex ib IIC or Ex ib IIB.
- The integrated overvoltage protector meets the requirements as per IEC/EN 60079-14, Section 12.3.

Safety instructions:
Zone 0

- Only operate devices in potentially explosive vapour/air mixtures under atmospheric conditions:
 $-20\text{ °C} \leq T \leq +60\text{ °C}$
 $800\text{ hPa} \leq p \leq 1100\text{ hPa}$
- If no potentially explosive mixtures are present, the transmitters may be operated under other atmospheric conditions in accordance with the manufacturer's specifications.
- Only install the devices in media for which the wetted materials have sufficient durability.
- Associated apparatus with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.

Temperature tables

Process temperature
max. 80 °C

Temperature class	Ambient temperature
T6	-40 °C...+60 °C
T5	-40 °C...+75 °C
T4...T1	-40 °C...+80 °C

Connection data

For connection to a certified intrinsically safe circuit only.

- Power supply and signal circuit in protection type: intrinsic safety Ex ia IIC or IIB

Maximum values
$U_i = 30\text{ V}$ $L_i = \text{negligible}$ $I_i = 273\text{ mA}$ $C_i = 13\text{ nF}$ $P_i = 1\text{ W}$

Option (only for service purposes)

- Power supply and signal circuit in protection type: intrinsic safety Ex ia IIC or IIB.

Power supply
$U_o = 4.2\text{ V}$ $L_o = 5\text{ mH}$ effective inner inductance $L_i = \text{negligible}$ $I_o = 34\text{ mA}$ $C_o = 4\text{ }\mu\text{F}$ effective inner capacitance $C_i = \text{negligible}$ $P_o = 36\text{ mW}$ characteristic curve: linear

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4-20 mA HART

相关资料

本文档是下列操作手册的组成部分：
BA00237F/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

防爆代号	Ex ia IIC T1...T6 Ga/Gb
	Ex ia IIC T1...T6 Gb

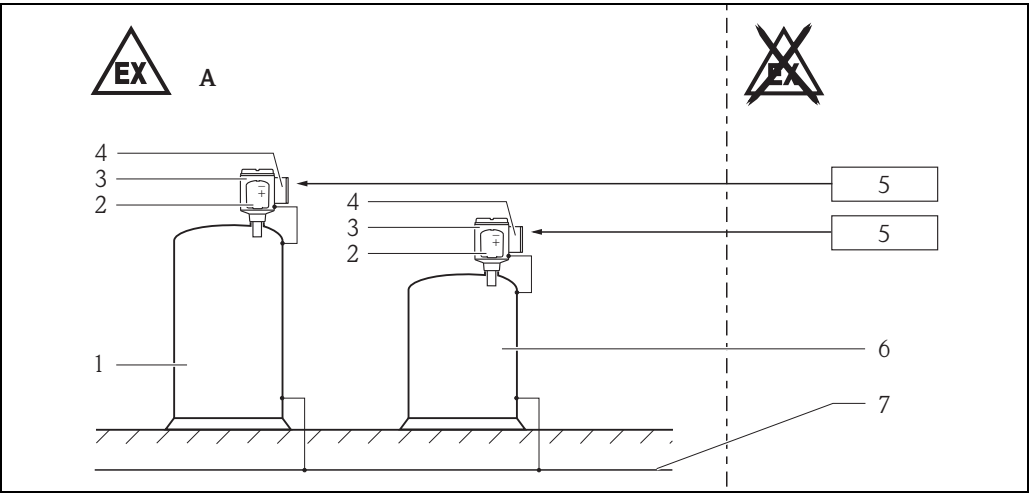
适用标准

GB 3836.1-2010
GB 3836.4-2010
GB 3836.20-2010

安全指南：
特殊条件

电子部件外壳处的允许环境温度范围： $-40\text{ }^{\circ}\text{C} \leq T_a \leq +80\text{ }^{\circ}\text{C}$ 。
遵守温度表中的信息。

安全指南：
安装



1

A 区域 1

- 1 液罐，危险区，区域 0
- 2 电子插件
- 3 外壳，可选带有或不带有 VU331 显示屏和操作模块：
 - T12-OVP，铝涂层
- 4 带集成过电压保护装置的终端模块
- 5 经认证的关联设备
- 6 液罐，危险区，区域 1
- 7 本地电势均衡

- 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。
- 设备的本质安全型输入电源电路与地电势在电气上隔离。
对地绝缘强度限制为 600 V 电气放电装置。
- 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表中所示 (→ 9)。
- 电缆持续工作温度 $\geq T_a + 5\text{ K}$ 。
- 避免传感器表面上积累静电荷。不要用干布摩擦和清洁。
- 用户不得更改配置，以确保设备的防爆性能。任何更改都可能影响安全。
- 在安装、使用和维护设备时，用户还必须遵守操作手册和下列标准中的规定：
 - GB50257-1996：“电气装置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)”。

注意

- 当设备连接到经认证的 IIC 或 IIB 设备组的 Ex ib 类本安型电路时，防护类型作如下改变：
Ex ib IIC 或 Ex ib IIB。
- 集成的过电压保护装置满足 IEC/EN 60079-14 第 12.3 节中规定的要求。

安全指南：
区域 0

- 只有在下列大气条件下才能在有爆炸可能的蒸汽 / 空气混合物中操作设备：
-20 °C ≤ T ≤ +60 °C
800 hPa ≤ p ≤ 1100 hPa
- 如果不存在可能爆炸的混合物，则变送器可在符合制造商技术规范的有关大气条件下运行。
- 只有当介质的防潮材料具备足够的耐用性时，才可把设备安装在介质中。
- 在本安型和非本安型电路间最好采用电气隔离的相关设备。

温度表

过程温度
最高 80 °C

温度组别	环境温度
T6	-40 °C...+60 °C
T5	-40 °C...+75 °C
T4...T1	-40 °C...+80 °C

连接数据

仅限于连接到经认证的本安型电路。

- 电源和信号电路的防护类型：本安型 Ex ia IIC 或 IIB

最大值
$U_i = 30\text{ V}$ $I_i = 273\text{ mA}$ $P_i = 1\text{ W}$ $L_i = \text{可忽略}$ $C_i = 13\text{ nF}$

选项 (仅用于维修服务)

- 电源和信号电路的防护类型：本安型 Ex ia IIC 或 IIB。

电源
$U_o = 4.2\text{ V}$ $I_o = 34\text{ mA}$ $P_o = 36\text{ mW}$ $L_o = 5\text{ mH}$ $C_o = 4\text{ }\mu\text{F}$ 有效的内部电容 $L_i = \text{可忽略}$ 有效的内部电容 $C_i = \text{可忽略}$ 特征曲线：线性

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