Level Pressure Flow Temperature Liquid Analysis Registration Systems Components Services Solutions

Safety Instructions

Micropilot M
FMR250
4-20 mA HART, PROFIBUS PA, FOUNDATION Fieldbus

Ex d ia [ia Ga] IIC T1...T6 Ga/Gb

NEPSI GYJ13.1095X

XA00448F-C/00/B2/13.13
71220286

Endress+Hauser
People for Process Automation

Micropilot M
FMR250

english

4-20 mA HART, PROFIBUS PA, FOUNDATION Fieldbus

Associated Documentation

This document is an integral part of the following Operating Instructions:
HART: BA00284F/00
PROFIBUS PA: BA00331F/00
FOUNDATION Fieldbus: BA00336F/00

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

Supplementary Documentation

Explosion-protection brochure:
CP00021Z/11

Designation

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

Designation of explosion protection/ level of protection	**Ex d ia [ia Ga] IIC T1...T6 Ga/Gb**

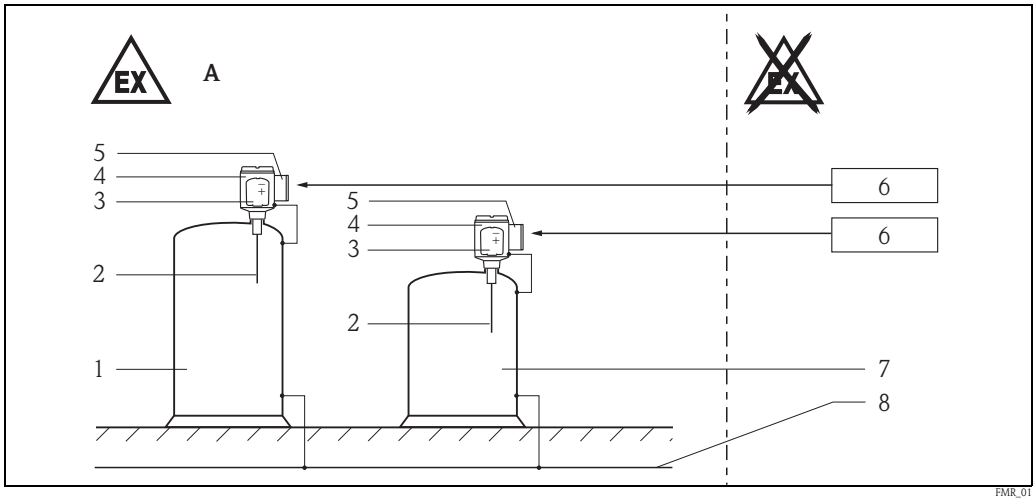
Applied standards

GB 3836.1-2010
GB 3836.2-2010
GB 3836.4-2010
GB 3836.20-2010

Safety instructions: Special conditions

Permitted ambient temperature range at the electronics housing: –40 °C ≤ Ta ≤ +70 °C.
Observe the information in the temperature tables.

Safety instructions: Installation



1

A *Zone 1*

1 *Tank; hazardous area Zone 0*
2 *Horn or parabolic antenna*
3 *Electronic insert;*
Electronics compartment Ex ia
4 *Housing:*
– T12 (Aluminium)
optionally with or without VU331 display and operating module
5 *Connection compartment (Ex d);*
Do not open under voltage in explosive atmospheres
6 *Power supply*
7 *Tank; hazardous area Zone 1*
8 *Local potential equalization*

- Install the device according to the manufacturer's instructions and any other valid standards and regulations.
- The electrical apparatus must be integrated into the local potential equalization line.
  The input circuit is galvanically connected to the housing.
- The external earth connection facility should be connected reliably.
- 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 (→ 🖹 5, "Temperature tables").
- After aligning (rotating) the housing, retighten the fixing screw (Allen screw on the threaded neck).
- Connection compartment cover: "Do not open under voltage in explosive atmospheres".
- For operating the transmitter housing at an ambient temperature under -20 °C, appropriate cables and cable entries permitted for this application must be used.
- Continuous duty temperature of the cable ≥ Ta +5 K.
- Connect the device using suitable cable and wire entries or using piping systems of protection type "Pressure-tight Enclosure d".
  (Complying with the stipulations of the Ex d IIC class of the standards GB3836.1/2-2010.)
- When connecting the transmitter housing via piping entries permitted for this purpose, the associated seal mechanisms must be arranged directly at the housing.
- Close unused entry glands with approved (Ex d) sealing plugs.

Air purge connection FMR250:
- In closed state the installation must have ingress protection ≥ IP67.
- Purging pressure > internal pressure of the vessel.
- In the not purging state a respective stop cock or valve must be closed.
  With open valve or stop cock and without purging fluid explosible atmospheres may be released or flames may enter from the outside.

Safety instructions: Zone 0

- Only operate devices in potentially explosive vapour/air mixtures under atmospheric conditions (→ 🖹 5, "Zone 0 - Application"):
  –20 °C ≤ T ≤ +60 °C
  0.8 bar ≤ p ≤ 1.1 bar
- 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.
- 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)".

Temperature tables

Note: Observe the permitted antenna temperature range.

*[1] = Functional
limited by maximum permitted antenna temperature

Temperature class	Max. permitted medium temperature at the antenna (process connection) Tmed	Max. permitted ambient temperature at the electronics housing (Ta)	
		4-20 mA HART, PROFIBUS PA	FOUNDATION Fieldbus
T6	+80 °C +60 °C	+55 °C +60 °C	+50 °C +55 °C
T5	+95 °C +70 °C	+65 °C +70 °C	+60 °C +70 °C
T4	+130 °C +70 °C	+60 °C +70 °C	+60 °C +70 °C
T3	+195 °C +70 °C	+55 °C +70 °C	+55 °C +70 °C
T2, T1 (functional) *[1]	+200 °C +70 °C	+55 °C +70 °C	+55 °C +70 °C

Zone 0 - Application

Temperature class	Max. permitted medium temperature (Antenna in Zone 0)	Max. permitted ambient temperature at the electronics housing (in Zone 1) dependent on the medium temperature	
		4-20 mA HART, PROFIBUS PA	FOUNDATION Fieldbus
T6	+60 °C	+60 °C	+55 °C
T5 - T1	+60 °C	+70 °C	+70 °C

Connection data

Power supply:
U = 32 V Um = 250 V AC

Micropilot M
FMR250

中文

4-20 mA 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：BA00284F/00
PROFIBUS PA：BA00331F/00
FOUNDATION Fieldbus (基金会现场总线)：BA00336F/00

根据用户订购仪表的具体型号所提供的相应操作手册。

补充文档

防爆手册：
CP00021Z/11

名称

防爆标志和防护类型说明请查询防爆手册。

防爆代号 / 防护级别	**Ex d ia [ia Ga] IIC T1...T6 Ga/Gb**

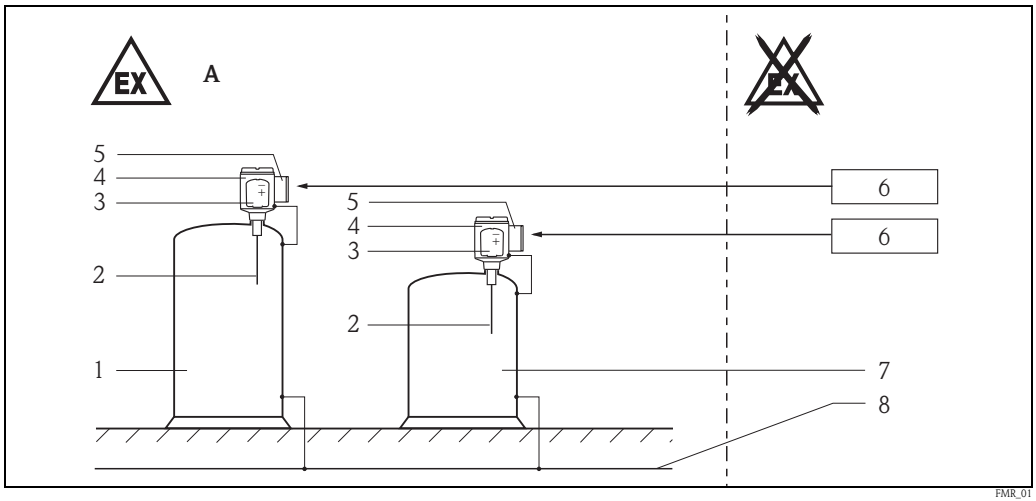
适用标准

GB 3836.1-2010
GB 3836.2-2010
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 °C ≤ Ta ≤ +70 °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 *喇叭形天线或抛物面天线*
3 *电子插件：*
电子接线柜 Ex ia
4 *外壳：*
– T12 (铝)
可选带有或不带有 VU331 显示屏和操作模块
5 *接线柜 (Ex d) ：*
请勿在爆炸性空气中带电压打开盖子
6 *电源*
7 *液罐：危险区，区域 1*
8 *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。
- 必须将电气装置集成连接于本地等电势线上。
  输入电路与外壳进行电气连接。
- 外部接地连接部件应可靠连接。
- 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所示 (→ 9，“ 温度表 ”)。
- 在对齐 (旋转) 外壳后，重新拧紧固定螺丝 (带螺纹螺栓颈上的内六角螺丝)。
- 接线柜盖：“ 请勿在爆炸性空气中带电压打开盖子 ”。
- 要使变送器外壳在低于 -20 °C 的环境温度下工作，必须使用允许用于该应用条件的适当电缆和电缆引入装置。
- 电缆持续工作温度 ≥ Ta +5 K。
- 使用合适的电缆和电线引入装置，或使用防护类型为 “ 耐压密封外壳 d” 的管路系统连接设备。
  (遵守 GB3836.1/2-2010 标准的 Ex d IIC 类的规定。)
- 当使用允许用于此用途的管路入口连接变送器外壳时，则必须直接在外壳处配置相关的密封机械装置。
- 请用通过防爆认证 (Ex d) 的密封塞密封未使用的电缆引入接头。

吹气清洗接口 FMR250：
- 在关闭状态下，安装必须具有 ≥ IP67 入口保护等级。
- 清洗压力 > 容器的内部压力。
- 在非清洗状态下，必须关闭各自的旋塞阀或阀门。
  在阀门或旋塞阀打开且没有清洗液时，可能会释放易爆炸的空气或者吸入外部的烟雾。

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
  (→ 🖹5，“ 区域 0 - 应用 ”)：
  -20 °C ≤ T ≤ +60 °C
  0.8 bar ≤ p ≤ 1.1 bar
- 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其它大气条件下运行。
- 只有当介质的防潮材料具备足够的耐用性时，才可把设备安装于介质中。
- 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：维修与检修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)”。

温度表

注意：遵循允许的天线温度范围。

*1 = 功能型
受限于允许的最大天线温度

温度组别	天线 (过程连接) 处的最大允许输入温度 Tmed	电子部件外壳处的最大允许环境温度 (Ta)	
		4-20 mA HART, PROFIBUS PA	FOUNDATION Fieldbus (基金会现场总线)
T6	+80 °C +60 °C	+55 °C +60 °C	+50 °C +55 °C
T5	+95 °C +70 °C	+65 °C +70 °C	+60 °C +70 °C
T4	+130 °C +70 °C	+60 °C +70 °C	+60 °C +70 °C
T3	+195 °C +70 °C	+55 °C +70 °C	+55 °C +70 °C
T2, T1 (功能型) *1	+200 °C +70 °C	+55 °C +70 °C	+55 °C +70 °C

区域 0 - 应用

温度组别	最大允许的介质温度 (天线在区域 0 中)	电子部件外壳 (区域 1) 处的 最大允许温度取决于输入温度	
		4-20 mA HART, PROFIBUS PA	FOUNDATION Fieldbus (基金会现场总线)
T6	+60 °C	+60 °C	+55 °C
T5 - T1	+60 °C	+70 °C	+70 °C

连接数据

电源：
U = 32 V Um = 250 V AC

www.endress.com/worldwide

Endress+Hauser

People for Process Automation

XA00448F-C/00/B2/13.13
71220286
CCS/FM 8.0

71220286