Safety Instructions
Gammapilot
FTG20

Ex d ia IIC T* Gb
Ex d [ia] IIC T* Gb

GYJ13.1284X

Gammapilot
FTG20

english

Associated Documentation

This document is an integral part of the following Operating Instructions:
BA01035F/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

Ex d ia IIC T* Gb
Ex d [ia] IIC T* Gb

T* → 6

Applied standards

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

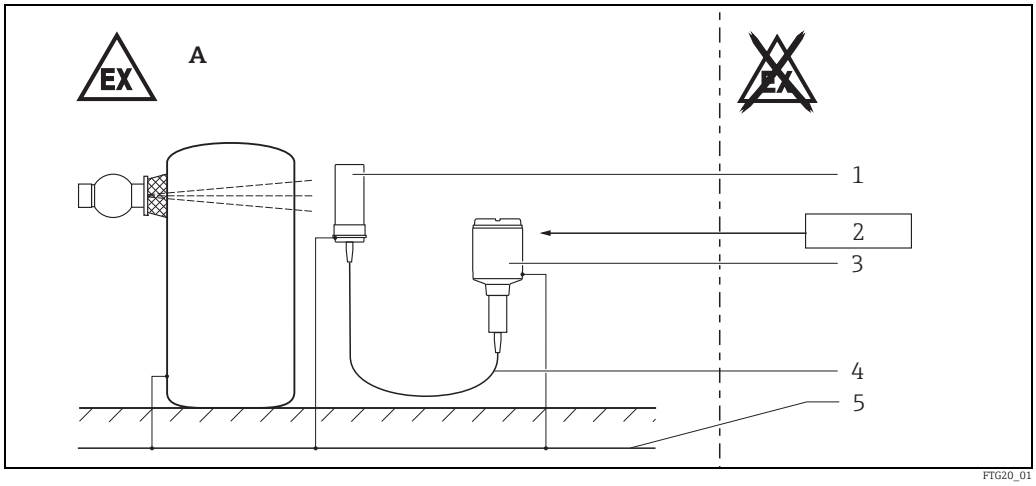
Safety instructions: General

- Install the device according to the manufacturer's instructions and any other valid standards and regulations.
- Comply with the installation and safety instructions in the Operating Instructions.
- For installation, use and maintenance of the device, users must also observe the requirements stated in the Operating Instructions and the standards:
  - GB 50257-1996: "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".
  - GB 3836.13-1997: "Electrical apparatus for explosive gas atmospheres, Part 13: Repair and overhaul for apparatus used in explosive gas atmospheres".
  - GB 3836.15-2000: "Electrical apparatus for explosive gas atmospheres, Part 15: Electrical installations in hazardous area (other than mines)".
  - GB 3836.16-2006: "Electrical apparatus for explosive gas atmospheres, Part 16: Inspection and maintenance of electrical installation (other than mines)".
- Do not open when energized.
- Do not operate the device outside the specified electrical and thermal parameters.
- Changes in electrical and mechanical parts of the equipment could harm the type of explosion protection and are not allowed for the user.
- To maintain the ingress protection of the housing, install the housing cover and cable glands correctly.
- Close unused entry glands with sealing plugs.
- Use a connecting cable for continuous duty temperature $T \geq T_a$ +20 K.
- Install the device to exclude impact and friction sparks on the aluminium housing (F13).
- After aligning (rotating) the housing, retighten the fixing screw (see Operating Instructions) (for securing the earth connection).
- Connect the sensor and transmitter to the common on-site potential equalization line.
- Connect cable screen to earth ground at safe area.

Safety instructions: Special conditions

- Connecting cable between sensor and transmitter:
  - Do not install in the vicinity of processes generating strong electrostatic charges.
  - Avoid electrostatic charging of the sensor cable (e.g. do not rub dry and install outside the filling flow).
  - Do not leave cable hanging loosely when installed.
  - If the connecting cable is removed from both the sensor and the transmitter, ensure that measures are taken to avoid electrostatic discharge in a potentially explosive atmosphere.

Safety instructions: Installation



1

A *Zone 1*

FTG20 with electronic insert FEG24 (Relay)
1 Sensor
2 Power supply
3 Transmitter (Ex d)
4 Connection cable (Ex ia),
Cable designation: Lapp Ölflex Heat 180 EWKF or Helu Thermflex 180 EWKF-C
5 Potential equalization

FTG20 with electronic insert FEG25 (8/16 mA)
1 Sensor
2 Associated intrinsically safe apparatus [Ex ia]
3 Transmitter (Ex ia)
4 Connection cable (Ex ia),
Cable designation: Lapp Ölflex Heat 180 EWKF or Helu Thermflex 180 EWKF-C
5 Potential equalization

Ingress protection of housing
- Transmitter, F13 housing (aluminium): IP66/67
- Transmitter, F27 housing (stainless steel): IP66/68
- Sensor (stainless steel): IP66/68

Instructions: Ex d joints

Specification according to IEC/EN 60079-1:2007, Chapter 5.1

- If required or if doubt: ask manufacturer for specifications.

Safety instructions: Zone 1

FTG20 with electronic insert FEG24 (Relay)

- Suitable certified cable entry and blind plug approved by ExTL according to GB3836.1-2010 and GB3836.2-2010 with Ex d IIC shall be used and correctly installed.
- Connect the device using suitable cable and wire entries or using piping systems of protection type "Pressure-tight Enclosure d".
- Close unused entry glands with approved (Ex d) sealing plugs.
  The plastic sealing plug is used only as transport protection.
- Transmitter housing: Do not open in a potentially explosive atmosphere.
- During operation, the cover must be screwed all the way in and the cover's safety catch must be fastened.
- Replace sealing plugs only with identical parts.
- Lay connecting cable to the transmitter and secure.
- The intrinsically safe signal circuit to the sensor is galvanically isolated from other circuits up to a peak value of the nominal voltage of 375 V.

FTG20 with electronic insert FEG25 (8/16 mA)

- The pertinent guidelines must be observed when intrinsically safe circuits are connected together acc. IEC 60079-14 (Proof of Intrinsic Safety).
- The intrinsically safe input power circuit of the device is isolated from ground potential and has a dielectric strength of at least 500 V_{rms} with respect to it.
- The intrinsically safe signal circuit of the sensor is isolated from ground potential and has a dielectric strength of at least 500 V_{rms} with respect to it.
- When the device is connected to an intrinsically safe circuit Ex ib, the level of protection changes to Ex ib.
- When the device is connected to an intrinsically safe circuit Ex ic, the level of protection changes to Ex ic. Do not operate intrinsically safe circuits Ex ic in zone 1.

Temperature tables

FTG20 with electronic insert FEG24 (Relay)

Designation Gammapilot FTG20	Type of protection			Temperature class/surface temperature/ ambient temperature range		Operating condition
	Transmitter	Sensor		Transmitter	Sensor	Sensor
	Housing	Housing	Signal circuit			
Ex d [ia] IIC T6 Gb	Ex d	Ex d	Ex ia	T6 for T_a = −40 °C...70 °C	T6 for T_a = −40 °C... 70 °C	Without water cooling or water cooling out of operation
Ex d [ia] IIC T4 Gb					T4 for T_a = −40 °C...120 °C	With water cooling in operation

FTG20 with electronic insert FEG25 (8/16 mA)

Designation Gammapilot FTG20	Type of protection			Temperature class/surface temperature/ ambient temperature range		Operating condition
	Transmitter	Sensor		Transmitter	Sensor	Sensor
	Housing	Housing	Signal circuit			
Ex d ia IIC T6...T4 Gb	Ex ia	Ex d	Ex ia	T6 for T_a = −40 °C...40 °C T4 for T_a = −40 °C...70 °C	T6 for T_a = −40 °C... 70 °C	Without water cooling or water cooling out of operation
Ex d ia IIC T4 Gb					T4 for T_a = −40 °C...120 °C	With water cooling in operation

Connection data

Transmitter

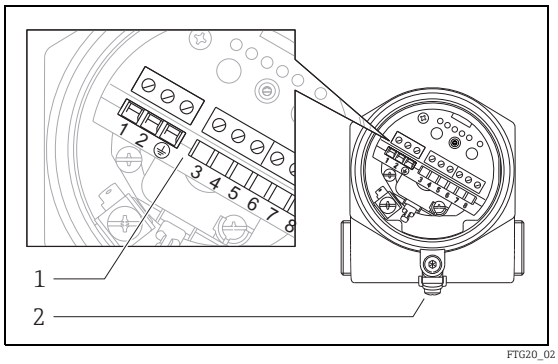
Electronic insert FEG24 (Relais)

Power supply terminal 1, 2:

19...253 VAC
19...55 VDC
U_m = 253 VAC

Terminal 3, 4, 5 and 6, 7, 8 relay contacts:

253 VAC, 4 A
1000 VA (cos φ = 1), 750 VA (cos φ = 0.7)
or
30 VDC, 4 A
125 VDC, 0.2 A



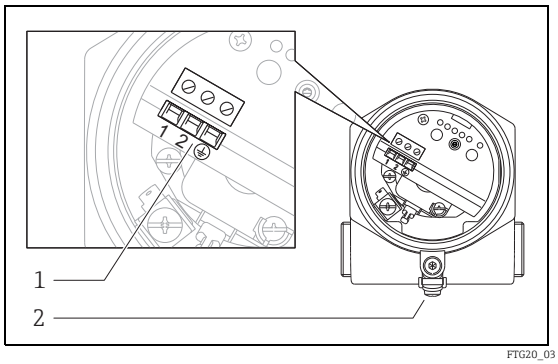
2

1 Terminals
2 Potential equalization

Electronic insert FEG25 (8/16 mA)

Terminal 1, 2:

U_i = 30 V
I_i = 100 mA
P_i = 1 W
C_i = 2.4 nF
L_i = 0



3

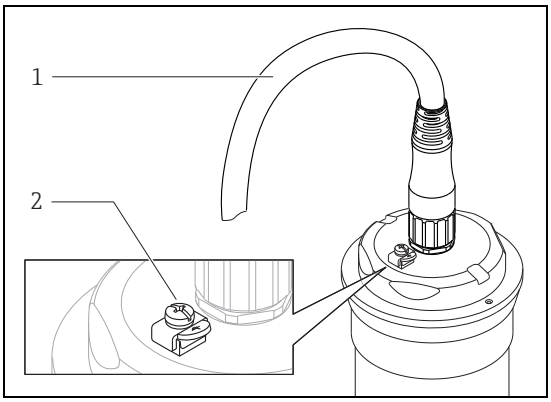
1 Terminal
2 Potential equalization

Sensor

Sensor with plug connector

U_i = 9.77 V
I_i = 26.7 mA
P_i = 78.5 mW

Only for connection to Gammapilot FTG20 with electronic insert FEG24 or FEG25



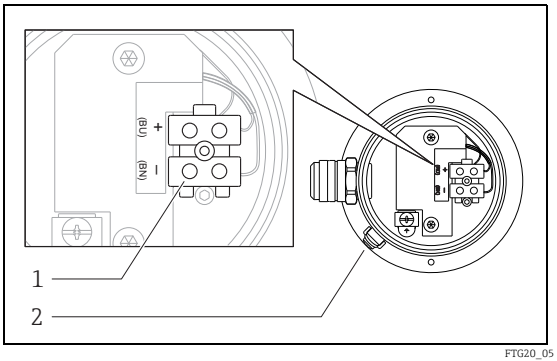
4

1 Supplied cable with coded plug connectors
2 Potential equalization

Sensor with connection compartment

U_i = 9.77 V
I_i = 26.7 mA
P_i = 78.5 mW

Only for connection to Gammapilot FTG20 with electronic insert FEG24 or FEG25



5

1 Terminal
2 Potential equalization

Gammapilot
FTG20

中文

相关文档资料

本文档资料是下列 《操作手册》的组成部分：
BA01035F

各种设备须参考各自的 《操作手册》。

补充文档资料

《防爆手册》：
CP00021Z/11

标识

防爆保护标签和防爆保护的详细说明请参考 《防爆手册》。

防爆标识

Ex d ia IIC T* Gb
Ex d [ia] IIC T* Gb

T* → 12

适用标准

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

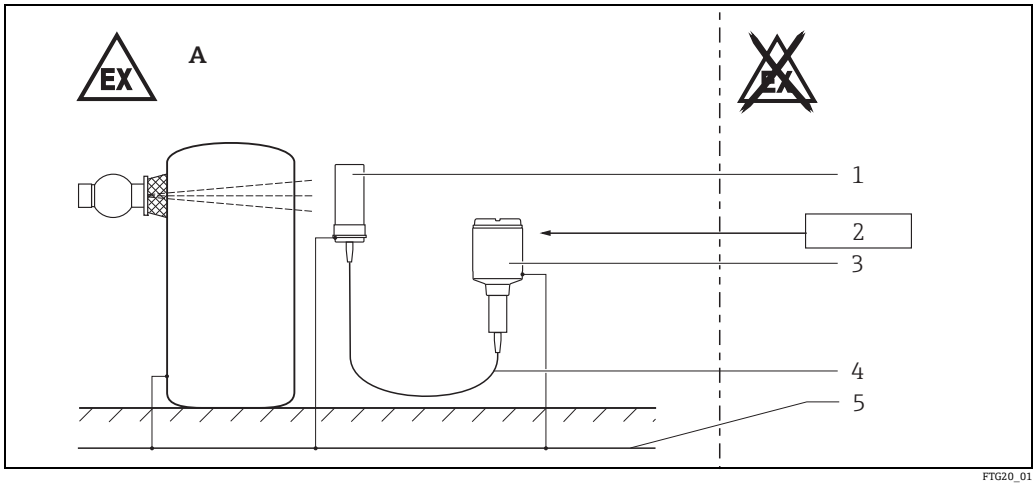
安全指南：概述

- 按照制造商说明和其他有效标准和法规安装设备。
- 遵守 《操作手册》中的安装指南和安全指南要求。
- 安装、使用和维护设备时，用户必须遵守 《操作手册》和标准中列举的要求：
  - 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)”。
  - GB 3836.16-2006：“ 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)”。
- 上电时，请勿打开。
- 超出规定电气参数和热参数时，禁止使用设备。
- 改装设备的电气和机械部分可能会破坏防爆保护，禁止用户进行此类操作。
- 正确安装外壳盖和缆塞，确保外壳的防护等级。
- 使用堵头密封未使用的缆塞入口。
- 使用连续工作温度 $T \geq T_a$ +20 K 的连接电缆。
- 安装设备，避免铝外壳 (F13) 上出现冲击和摩擦火花。
- 对准 (旋转) 外壳后，重新拧紧固定螺丝 (参考 《操作手册》) (用于固定接地连接)。
- 将传感器和变送器连接至现场等电势连接线。
- 连接电缆屏蔽层在安全区接地。

安全指南：特殊条件

- 传感器和变送器之间的连接电缆：
  - 请勿在产生强静电释放的过程附近安装设备。
  - 避免传感器电缆的静电释放 (例如：请勿使用干布擦拭和在进料区外安装)。
  - 安装时，请勿使电缆处于松弛悬挂状态。
  - 连接电缆断开与传感器和变送器的连接时，确保采取适当措施避免在潜在爆炸性气体环境中出现静电释放。

安全指南：安装



1

A 1 区

FTG20，带电子插件 FEG24 (继电器)
1 传感器
2 电源
3 变送器 (Ex d)
4 连接电缆 (Ex ia)，
电缆标识：Lapp Ölflex Heat 180 EWKF 或 Helu Thermflex 180 EWKF-C
5 等电势端

FTG20，带电子插件 FEG25 (8/16 mA)
1 传感器
2 相关本安认证设备 [Ex ia]
3 变送器 (Ex ia)
4 连接电缆 (Ex ia)，
电缆标识：Lapp Ölflex Heat 180 EWKF 或 Helu Thermflex 180 EWKF-C
5 等电势端

外壳的防护等级
- ▶ 变送器，F13 外壳 (铝)： IP66/67
- ▶ 变送器，F27 外壳 (不锈钢)： IP66/68
- ▶ 传感器 (不锈钢)： IP66/68

安装指南：Ex d 区

规格参数符合 IEC/EN 60079-1:2007 标准第 5.1 章

- 如需要或有任何疑问：咨询制造商。

安全指南：1 区

FTG20，带电子插件 FEG24 (继电器)

- 应使用合适的认证电缆入口和 ExTL 认证堵头，符合 GB3836.1-2010 标准和 GB3836.2-2010 , Ex d IIC 标准。
- 使用合适的电缆和线芯入口，或使用防爆保护 " 密闭压力隔爆 Ex d" 管路系统连接设备。
- 使用认证 (Ex d) 密封插头密封未使用的缆塞入口。
  塑料密封插头仅用于运输防护。
- 变送器外壳：请勿在潜在爆炸性气体环境中打开外壳。
- 在操作过程中，必须完全拧紧外壳盖，必须锁紧外壳盖安全锁。
- 仅允许使用相同部件更换密封插头。
- 连接变送器连接电缆，并固定。
- 连接传感器的本安信号回路与其他回路电气隔离，标称电压的峰值为 375 V。

FTG20，带电子插件 FEG25 (8/16 mA)

- 本安认证回路互连时，参考 IEC 60079-14 标准 (本质安全认证)，必须遵守相关指南要求。
- 设备的本安输入回路与接地隔离，绝缘强度至少为 500 V_{rms}。
- 传感器的本安输入回路与接地隔离，绝缘强度至少为 500 V_{rms}。
- 设备连接至 Ex ib 本安认证回路时，防爆保护等级变更为：Ex ib。
- 设备连接至 Ex ic 本安认证回路时，防爆保护等级变更为：Ex ic。
  请勿在 1 区中操作本安认证回路 Ex ic。

温度表

FTG20，带电子插件 FEG24 (继电器)

Gammapilot FTG20 的防爆等级	防爆保护			温度等级 / 表面温度 / 环境温度范围		操作条件
	变送器	传感器		变送器	传感器	传感器
	外壳	外壳	信号回路			
Ex d [ia] IIC T6 Gb	Ex d	Ex d	Ex ia	T6 T_a = −40 ℃...70 ℃ 时	T6 T_a = −40 ℃... 70 ℃ 时	无水冷套管或 水冷功能失效
Ex d [ia] IIC T4 Gb					T4 T_a = −40 ℃...120 ℃ 时	带水冷套管功能

FTG20，带电子插件 FEG25 (8/16 mA)

Gammapilot FTG20 的防爆等级	防爆保护			温度等级 / 表面温度 / 环境温度范围		操作条件
	变送器	传感器		变送器	传感器	传感器
	外壳	外壳	信号回路			
Ex d ia IIC T6...T4 Gb	Ex ia	Ex d	Ex ia	T6 T_a = −40 ℃...40 ℃ 时	T6 T_a = −40 ℃... 70 ℃ 时	无水冷套管或 水冷功能失效
Ex d ia IIC T4 Gb				T4 T_a = −40 ℃...70 ℃ 时	T4 T_a = −40 ℃...120 ℃ 时	带水冷套管功能

连接参数 **变送器**

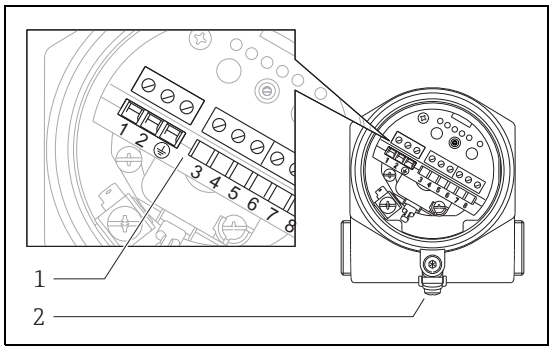
电子插件 FEG24 (继电器)

电源接线端子 1、2：

19...253 VAC
19...55 VDC
U_m = 253 VAC

继电器触点接线端子 3、4、5 和 6、7、8：

253 V AC，4 A
1000 VA (cos φ = 1)，750 VA (cos φ = 0.7)
或
30 V DC，4 A
125 V DC，0.2 A



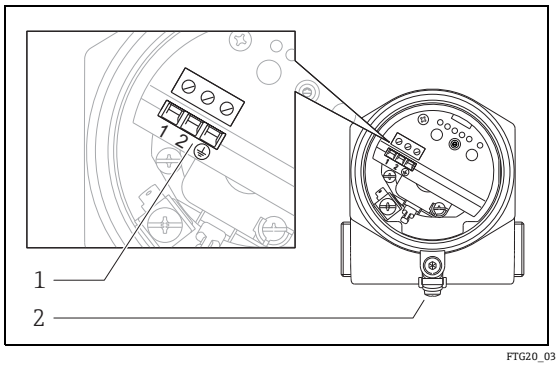
2

1 接线端子
2 等电势端

电子插件 FEG25 (8/16 mA)

接线端子 1、2：

U_i = 30 V
I_i = 100 mA
P_i = 1 W
C_i = 2.4 nF
L_i = 0



3

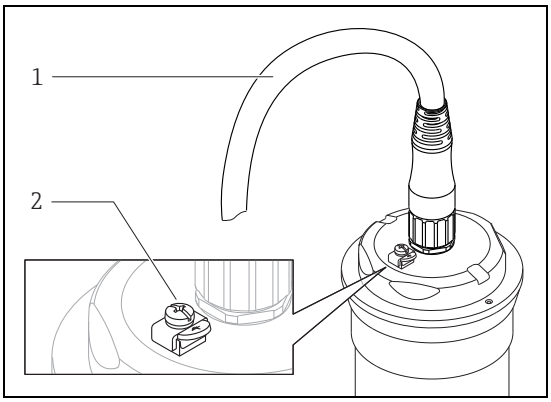
1 接线端子
2 等电势端

传感器

传感器，带连接插头

U_i = 9.77 V
I_i = 26.7 mA
P_i = 78.5 mW

仅适用于连接带电子插件 FEG24 或 FEG25 的 Gammapilot FTG20



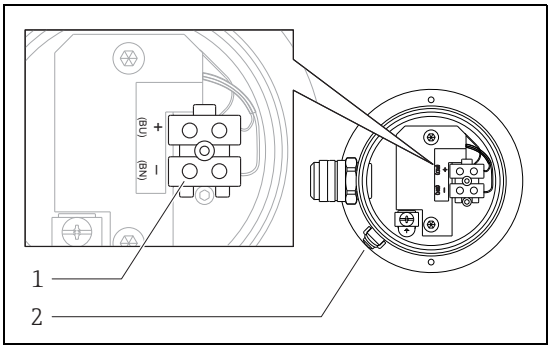
4

1 原装电缆，带编码连接头
2 等电势端

传感器，带端子接线腔

U_i = 9.77 V
I_i = 26.7 mA
P_i = 78.5 mW

仅适用于连接带电子插件 FEG24 或 FEG25 的 Gammapilot FTG20



5

1 接线端子
2 等电势端

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