

Safety Instructions

Gammapilot FTG20

EAC: 1Ex d ia IIC T6...T4 Gb X
1Ex d [ia] IIC T6...T4 Gb X
Ex tb ia IIC T75°C/T90°C/T125°C Db X
Ex tb [ia] IIC T75°C/T90°C/T125°C Db X



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Safety instructions for electrical apparatus for explosion-hazardous areas → 3

Gammapilot FTG20

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Associated documentation	<p>This document is an integral part of the following Operating Instructions: BA01035F/00</p>										
Supplementary documentation	<p>Explosion-protection brochure: CP00021Z/11</p> <p>The Explosion-protection brochure is available:</p> <ul style="list-style-type: none"> ■ In the download area of the Endress+Hauser website: www.endress.com -> Downloads -> Media Type: Documentation -> Documentation Type: Brochures and catalogs -> Text Search: CP00021Z ■ On the CD for devices with CD-based documentation 										
Manufacturer's certificates	<p>Certificate of Conformity TP TC 012/2011</p> <p>Inspection authority: LLC NANIO CCVE (ООО «НАНИО ЦСВЭ»)</p> <p>Certificate number: TC RU C-DE.AA87.B.01172</p> <p>Affixing the certificate number certifies conformity with the following standards (depending on the device version):</p> <ul style="list-style-type: none"> ■ GOST 31610.0-2014 (IEC 60079-0:2011) ■ GOST 31610.11-2014 (IEC 60079-11:2011) ■ GOST IEC 60079-1-2011 ■ GOST IEC 60079-31-2013 										
Manufacturer address	<p>Endress+Hauser SE+Co. KG Hauptstraße 1 79689 Maulburg, Germany Address of the manufacturing plant: See nameplate.</p>										
Extended order code	<p>The extended order code is indicated on the nameplate, which is affixed to the device in such a way that it is clearly visible. Additional information about the nameplate is provided in the associated Operating Instructions.</p> <p>Structure of the extended order code</p> <table border="0" style="margin-left: 40px;"> <tr> <td style="text-align: center;">FTG20</td> <td style="text-align: center;">–</td> <td style="text-align: center;">*****</td> <td style="text-align: center;">+</td> <td style="text-align: center;">A*B*C*D*E*F*G*..</td> </tr> <tr> <td style="text-align: center;"><i>(Device type)</i></td> <td></td> <td style="text-align: center;"><i>(Basic specifications)</i></td> <td></td> <td style="text-align: center;"><i>(Optional specifications)</i></td> </tr> </table> <p>* = Placeholder At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.</p> <p><i>Basic specifications</i></p> <p>The features that are absolutely essential for the device (mandatory features) are specified in the basic specifications. The number of positions depends on the number of features available. The selected option of a feature can consist of several positions.</p> <p><i>Optional specifications</i></p> <p>The optional specifications describe additional features for the device (optional features). The number of positions depends on the number of features available. The features have a 2-digit structure to aid identification (e.g. JA). The first digit (ID) stands for the feature group and consists</p>	FTG20	–	*****	+	A*B*C*D*E*F*G*..	<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>
FTG20	–	*****	+	A*B*C*D*E*F*G*..							
<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>							

of a number or a letter (e.g. J = Test, Certificate). The second digit constitutes the value that stands for the feature within the group (e.g. A = 3.1 material (wetted parts), inspection certificate).

More detailed information about the device is provided in the following tables. These tables describe the individual positions and IDs in the extended order code which are relevant to hazardous locations.

Extended order code: Gammapilot

Device type

FTG20

Basic specifications

Position 1, 2 (Approval)		
Selected option		Description
FTG20	GA	EAC 1Ex d ia IIC T6...T4 Gb X
	GB	EAC 1Ex d [ia] IIC T6...T4 Gb X
	GD	EAC Ex tb ia IIIC T75°C/T90°C/T125°C Db X
	GE	EAC Ex tb [ia] IIIC T75°C/T90°C/T125°C Db X

Position 4 (Electronics; Output)		
Selected option		Description
FTG20	4	FEG24; relay DPDT, 19-253VAC, 19-55VDC
	5	FEG25; 8/16mA, 11-36VDC

Position 5 (Housing Transmitter)		
Selected option		Description
FTG20	A	F13 Alu IP66/67 NEMA Type4/6 Encl.
	B	F27 316L IP66/68 NEMA Type4X/6P Encl.

Position 6 (Electrical Connection)		
Selected option		Description
FTG20	1 ¹⁾	Gland M20
	2	Thread M20
	3	Thread G1/2
	4	Thread NPT3/4

1) Only in connection with Position 1 (Approval) = GA, GD, GE

Position 7 (Housing Sensor)		
Selected option		Description
FTG20	B	316L IP66/68 NEMA Type4X/6P Encl.
	D	316L IP66/68 NEMA Type4X/6P Encl. + connection compartment

Optional specifications

No options specific to hazardous locations are available.

Safety instructions: General

- Comply with the installation and safety instructions in the Operating Instructions.
- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
 - Be suitably qualified for their role and the tasks they perform
 - Be trained in explosion protection
 - Be familiar with national regulations
- Install the device according to the manufacturer's instructions and national regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.
- Avoid electrostatic charging:
 - Of plastic surfaces (e.g. housing, sensor element, special varnishing, attached additional plates, ..)
 - Of isolated capacities (e.g. isolated metallic plates)

**Safety instructions:
Special conditions**

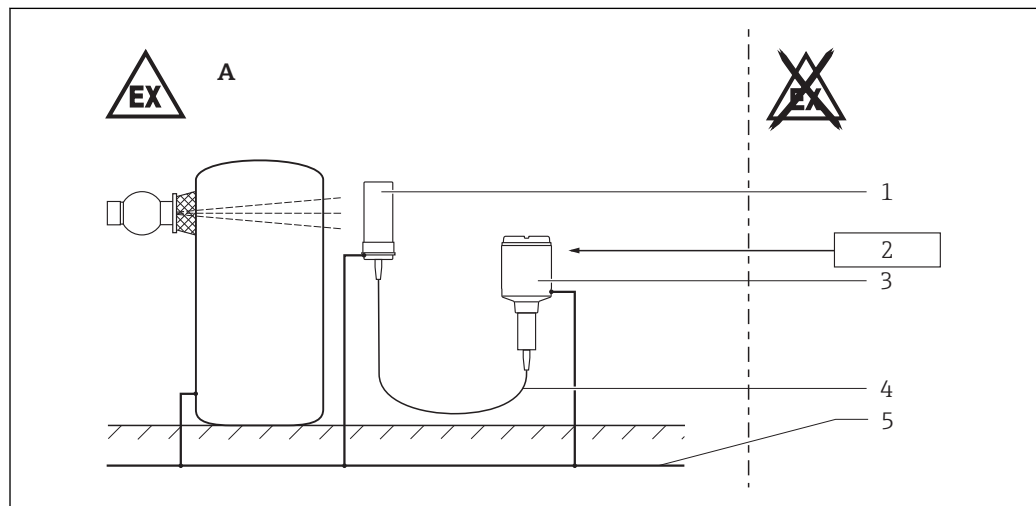
- In the event of additional or alternative special varnishing on the housing or other metal parts:
- Observe the danger of electrostatic charging and discharge.
 - Do not rub surfaces with a dry cloth.

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 an explosive atmosphere.

Basic specification, Position 5 (Housing Transmitter) = A

Avoid sparks caused by impact and friction.

**Safety instructions:
Installation**

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A Zone 1, Zone 21

1 Sensor

2 Basic specification, Position 4 (Electronics; Output) = 4: Power supply

Basic specification, Position 4 (Electronics; Output) = 5: Associated intrinsically safe apparatus [Ex ia]

3 Basic specification, Position 4 (Electronics; Output) = 4: Transmitter (Ex d or Ex t)

Basic specification, Position 4 (Electronics; Output) = 5: Transmitter (Ex ia)

4 Connection cable (Ex ia)

5 Potential equalization



Cable designation: Lapp Ölflex Heat 180 EWKF or Helu Thermflex 180 EWKF-C

- To maintain the ingress protection of the housing: Install the housing cover, cable glands and blind plugs correctly.
- Seal unused entry glands with sealing plugs.
- Continuous service temperature of the connecting cable: $\geq T_a + 20 \text{ K}$.
- After aligning (rotating) the housing, retighten the fixing screw (see Operating Instructions).

Potential equalization

Integrate the device into the local potential equalization.

Safety instructions: Ex d joints

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

Safety instructions: Zone 1

Basic specification, Position 4 (Electronics; Output) = 4

- Connect the device:
 - Using suitable cable and wire entries of protection type "Flameproof Enclosure (Ex d)".
 - Using piping systems of protection type "Flameproof Enclosure (Ex d)".
- Seal unused entry glands with approved Ex d sealing plugs.
- The plastic sealing plug is used only as transport protection.
- Before operation:
 - Screw in the cover all the way.
 - Tighten the securing clamp on the cover.
- Replace cable glands and sealing plugs only with identical parts.
- Lay connecting cable and secure.
- The intrinsically-safe signal circuits are galvanically isolated from other circuits up to a peak value of the nominal voltage of 375 V.

Basic specification, Position 4 (Electronics; Output) = 4 and Position 5 (Housing Transmitter)

Do not open in a potentially explosive atmosphere.

Safety instructions: Zone 21

Basic specification, Position 4 (Electronics; Output) = 4

- Connect the device:
 - Using suitable cable and wire entries.
 - Using piping systems.
- Only use cable and wire entries suitable for Zone 21 with the degree of protection IP68. Cable and wire entries must be suitable for an ambient temperature of at least -40 to $+70 \text{ }^\circ\text{C}$.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection.
- The plastic sealing plug is used only as transport protection.
- Lay connecting cable and secure.
- Replace cable glands and sealing plugs only with identical parts.
- The intrinsically-safe signal circuits are galvanically isolated from other circuits up to a peak value of the nominal voltage of 375 V.

Basic specification, Position 4 (Electronics; Output) = 4 and Position 5 (Housing Transmitter)

Do not open in a potentially explosive dust atmosphere.

Safety instructions: Zone 1, Zone 21

Basic specification, Position 4 (Electronics; Output) = 5

- Observe the pertinent guidelines when interconnecting intrinsically safe circuits.
- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least $500 \text{ V}_{\text{rms}}$.
- The intrinsically safe signal circuit of the sensor is isolated from ground. The dielectric strength is at least $500 \text{ V}_{\text{rms}}$.
- When the device is connected to an intrinsically safe circuit Ex ib, the type of protection changes to Ex ib.
- When the device is connected to an intrinsically safe circuit Ex ic, the type of protection changes to Ex ic. Do not operate intrinsically safe circuits Ex ic in Zone 1 or Zone 21.

Safety instructions:
Zone 21, Zone 22

Basic specification, Position 4 (Electronics; Output) = 5

For service operations, the transmitter housing may be opened under voltage for a short time.

When the terminal compartment is opened make sure that no dust may deposit.

After configuration screw the cover down to limit stop.

Temperature tables

Basic specification, Position 4 (Electronics; Output) = 4

Type of protection	Temperature class			Surface temperature		Operating condition
	Transmitter Housing	Sensor Housing	Signal circuit	Transmitter	Sensor	
1Ex d [ia] IIC T6 Gb X	Ex d	Ex d	Ex ia	T6 for $T_a = -40$ to $+70$ °C	T6 for $T_a = -40$ to $+70$ °C	Without water cooling or water cooling out of operation.
1Ex d [ia] IIC T4 Gb X					T4 for $T_a = -40$ to $+120$ °C	With water cooling in operation.
Ex tb [ia] IIIC T90°C Db X	Ex tb	Ex tb	Ex ia	T90°C for $T_a = -40$ to $+70$ °C	T75°C for $T_a = -40$ to $+70$ °C	Without water cooling or water cooling out of operation.
Ex tb [ia] IIIC T125°C Db X					T125°C for $T_a = -40$ to $+120$ °C	With water cooling in operation.

Basic specification, Position 4 (Electronics; Output) = 5

Type of protection	Temperature class			Surface temperature		Operating condition
	Transmitter Housing	Sensor Housing	Signal circuit	Transmitter	Sensor	
1Ex d ia IIC T6 Gb X	Ex ia	Ex d	Ex ia	T6 for $T_a = -40$ to $+40$ °C T4 for $T_a = -40$ to $+70$ °C	T6 for $T_a = -40$ to $+70$ °C	Without water cooling or water cooling out of operation.
1Ex d ia IIC T4 Gb X					T4 for $T_a = -40$ to $+120$ °C	With water cooling in operation.
Ex tb ia IIIC T75°C Db X	Ex ia	Ex tb	Ex ia	T75°C for $T_a = -40$ to $+70$ °C	T75°C for $T_a = -40$ to $+70$ °C	Without water cooling or water cooling out of operation.
Ex tb ia IIIC T125°C Db X					T125°C for $T_a = -40$ to $+120$ °C	With water cooling in operation.

Connection data

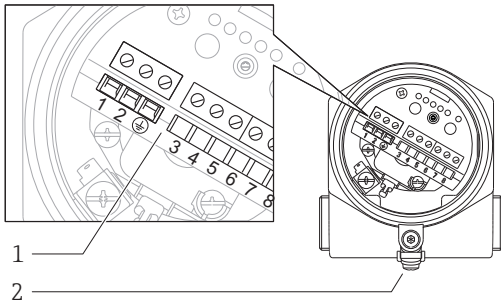
Basic specification, Position 4 (Electronics; Output) = 4 and Position 5 (Housing Transmitter) = A, B

Power supply terminal 1, 2:

19 to 253 V_{AC}
 19 to 55 V_{DC}
 U_m = 253 V_{AC}

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

253 V_{AC}, 4 A
 1 000 VA (cos φ = 1), 750 VA (cos φ = 0.7)
 or
 30 V_{DC}, 4 A
 125 V_{DC}, 0.2 A



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2

☑ 2

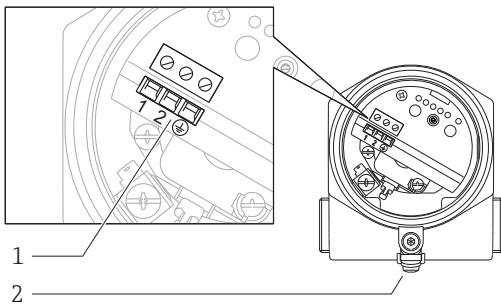
1 Terminals
2 Potential equalization

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Basic specification, Position 4 (Electronics; Output) = 5 and Position 5 (Housing Transmitter) = A, B

Terminal 1, 2:

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



1
2

☑ 3

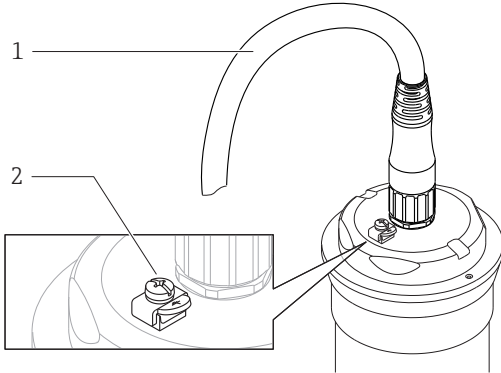
1 Terminals
2 Potential equalization

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Basic specification, Position 7 (Housing Sensor) = B

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

Only for connection to Device type FTG20,
 Basic specification, Position 4 (Electronics; Output) = 4, 5



1
2

☑ 4

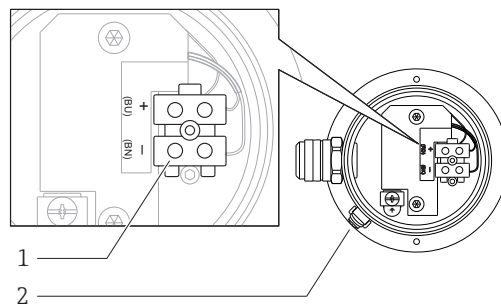
1 Supplied cable with coded plug connectors
2 Potential equalization

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Basic specification, Position 7 (Housing Sensor) = D

$U_i = 9.77 \text{ V}$
 $I_i = 26.7 \text{ mA}$
 $P_i = 78.5 \text{ mW}$

Only for connection to *Device type FTG20*,
Basic specification, Position 4 (Electronics; Output)
= 4, 5



5

- 1 Terminal
2 Potential equalization

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