

Safety Instructions

Deltapilot M

FMB50, FMB51, FMB52, FMB53

4-20 mA HART, PROFIBUS PA, FOUNDATION Fieldbus

Ga/Gb Ex ia IIC T6...T4

1Ex ia IIC T6...T4 Gb



Document: XA01390P-A

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



Deltapilot M FMB50, FMB51, FMB52, FMB53

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Table of contents

Associated documentation	4
Supplementary documentation	4
Manufacturer's certificates	4
Other standards	4
Extended order code	4
Safety instructions: General	5
Safety instructions: Special conditions	5
Safety instructions: Installation	6
Safety instructions: Zone 0	6
Temperature tables	7
Connection data	8

Associated documentation	<p>This document is an integral part of the following Operating Instructions:</p> <p>HART BA00382P/00</p> <p>PROFIBUS PA BA00383P/00</p> <p>FOUNDATION Fieldbus BA00384P/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 → Download → Advanced → Documentation Code: CP00021Z ■ On the CD for devices with CD-based documentation 										
Manufacturer's certificates	<p>EAC Declaration of Conformity</p> <p>Inspection authority: CB NANIO CCVE Certificate number: RU C-DE.GB05.B.00966</p> <p>Affixing the certificate number certifies conformity with the following standards (depending on the device version): TP TC 012/2011</p>										
Other standards	<p>Among other things, the following standards shall be observed for proper installation:</p> <ul style="list-style-type: none"> ■ IEC/EN 60079-14 : 2012: "Explosive atmospheres - Part 14: Electrical installations design, selection and erection" ■ EN 1127-1 : 2011: "Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology" 										
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;">FMB5x</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 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).</p>	FMB5x	-	*****	+	A*B*C*D*E*F*G*..	<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>
FMB5x	-	*****	+	A*B*C*D*E*F*G*..							
<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>							

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 of the Deltapilot M

Device type

FMB50, FMB51, FMB52, FMB53

Basic specifications

Position 1, 2 (Approval)		
Selected option		Description
FMB50	GA ¹⁾	EAC Ex ia IIC T6 Ga/Gb
FMB51		
FMB52		
FMB5x	GE ²⁾	EAC Ex ia IIC T6 Gb

1) Corresponds to the option BA (ATEX II 1/2 G Ex ia IIC T6 Ga/Gb)

2) Corresponds to the option BE (ATEX II 2 G Ex ia IIC T6 Gb)

Position 3 (Output)		
Selected option		Description
FMB5x	2	4-20 mA HART
	3	PROFIBUS PA
	4	FOUNDATION Fieldbus

Optional specifications

No options specific to hazardous locations are available.

Safety instructions: General

- 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.
- Only use the device in media to which the wetted materials have sufficient durability.
- Avoid electrostatic charging:
 - Of plastic surfaces (e.g. housing, sensor element, special varnishing, attached additional plates, ..)
 - Of isolated capacities (e.g. isolated metallic plates)

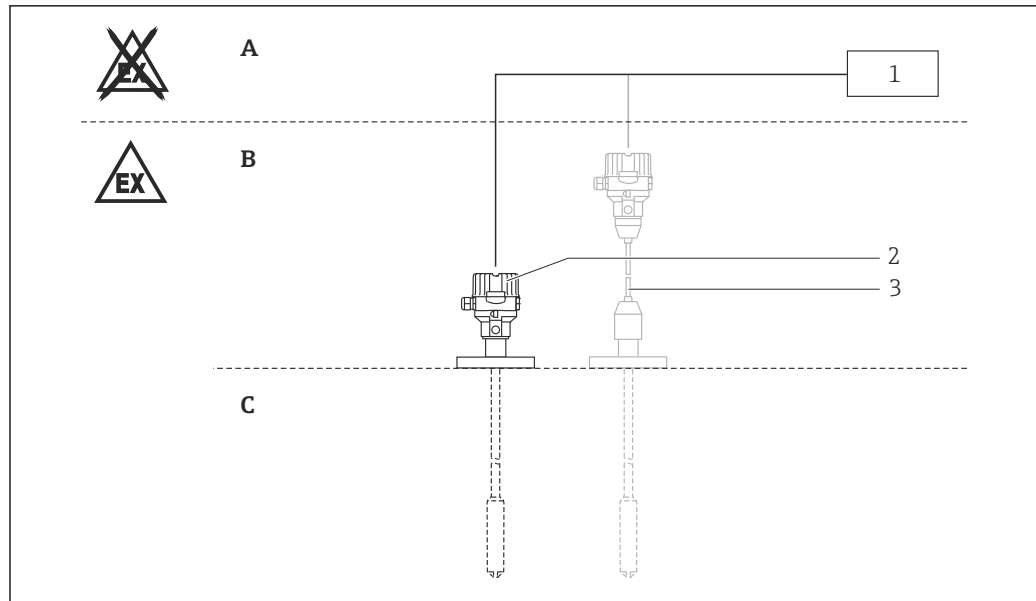
Safety instructions: Special conditions

Permitted ambient temperature range at the electronics housing: $-40\text{ °C} \leq T_a \leq +70\text{ °C}$.

Observe the information in the temperature tables.

- In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.
- For light metal flanges, flange faces or process connections (e.g. titanium, zirconium), avoid sparks caused by impact and friction.
- 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.

Safety instructions: Installation



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- A Power supply
 B Zone 1; Electronic
 C II 1/2 G: Zone 0; II 2 G: Zone 1; Process
 1 Certified associated apparatus
 2 II 1/2 G: FMB50, FMB51, FMB52; II 2 G: FMB50, FMB51, FMB52, FMB53
 3 Option FMB50, FMB51, FMB52: Separate housing

Device type FMB51

Mechanically fix probes which are more than 3 m (e.g. using guy ropes).

Device type FMB52, FMB53

- Avoid electrostatic charging of the cable.
- Secure probes against swinging.

Intrinsic safety

- When the device is connected to an intrinsically safe circuit Ex ib, the type of protection changes to Ex ib. Do not operate intrinsically safe circuits Ex ib in Zone 0.
- 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 0 or Zone 1.
- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least 500 V_{rms}.

Service connection

Basic specification, Position 3 (Output) = 2

- For service operations: connect the Commubox FXA191 or FXA195 (from Endress+Hauser) to the display socket.
- Observe the safety instructions of the Commubox.

Safety instructions: Zone 0

- In the event of potentially explosive vapor/air mixtures, only operate the device under atmospheric conditions.
 - Temperature: –20 to +60 °C
 - Pressure: 80 to 110 kPa (0.8 to 1.1 bar)
 - Air with normal oxygen content, usually 21 % (V/V)
- If no potentially explosive mixtures are present, or if additional protective measures have been taken, the device may also be operated under non-atmospheric conditions in accordance with the manufacturer's specifications.
- Associated devices with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.

Temperature tables

Device type FMB50

Type of protection	Temperature class	Process temperature ¹⁾	Ambient temperature (Housing)
II 1/2 G Ex ia IIC T6 Ga/Gb II 2 G Ex ia IIC T6 Gb	T6	≤ 80 °C	-40 °C ≤ T _a ≤ +40 °C
	T4	≤ 100 °C	-40 °C ≤ T _a ≤ +70 °C

- 1) The process temperatures refer to the temperature at the separation membrane (do not exceed the max. ambient temperature at the housing).

Device type FMB51

Type of protection	Temperature class	Process temperature ¹⁾	Ambient temperature (Housing)
II 1/2 G Ex ia IIC T6 Ga/Gb II 2 G Ex ia IIC T6 Gb	T6	≤ 80 °C	-40 °C ≤ T _a ≤ +40 °C
	T4	≤ 85 °C	-40 °C ≤ T _a ≤ +70 °C

- 1) The process temperatures refer to the temperature at the rod (do not exceed the max. ambient temperature at the housing).

Device type FMB52

Type of protection	Temperature class	Process temperature ¹⁾	Ambient temperature (Housing)
II 1/2 G Ex ia IIC T6 Ga/Gb II 2 G Ex ia IIC T6 Gb	T6	≤ 80 °C	-40 °C ≤ T _a ≤ +40 °C
	T4	≤ 80 °C	-40 °C ≤ T _a ≤ +70 °C

- 1) The process temperatures refer to the temperature at the cable (do not exceed the max. ambient temperature at the housing).

Device type FMB53

Type of protection	Temperature class	Process temperature ¹⁾	Ambient temperature (Housing)
II 2 G Ex ia IIC T6 Gb	T6	≤ 80 °C	-40 °C ≤ T _a ≤ +40 °C
	T4	≤ 80 °C	-40 °C ≤ T _a ≤ +70 °C

- 1) The process temperatures refer to the temperature at the cable (do not exceed the max. ambient temperature at the housing).

Connection data*Basic specification, Position 3 (Output) = 2*

Power supply
$U_i \leq 30 V_{DC}$ $I_i \leq 300 \text{ mA}$ $P_i \leq 1 \text{ W}$ $C_i \leq 10 \text{ nF}$ $L_i = 0$

Basic specification, Position 3 (Output) = 3, 4

Power supply
$U_i \leq 17.5 V_{DC}$ $I_i \leq 500 \text{ mA}$ $P_i \leq 5.5 \text{ W}$ $C_i \leq 5 \text{ nF}$ $L_i \leq 10 \mu\text{H}$ (FISCO field device) or $U_i \leq 24 V_{DC}$ $I_i \leq 250 \text{ mA}$ $P_i \leq 1.2 \text{ W}$ $C_i \leq 5 \text{ nF}$ $L_i \leq 10 \mu\text{H}$



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