

Safety Instructions

Soliphant M FTM50, FTM51

JPN: Ex ia IIC T3 Ga/Gb
Ex ia IIIC T65°C Da/Db

Document: XA01769F-A

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

Soliphant M FTM50, FTM51

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Associated documentation	<p>This document is an integral part of the following Operating Instructions:</p> <ul style="list-style-type: none"> ■ KA00229F/00 ■ TI00392F/00 										
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</p> <p>Certificate number: DEK18.0088X</p> <p>Affixing the certificate number certifies conformity with the following standards (depending on the device version):</p> <ul style="list-style-type: none"> ■ JNIO SH-TR-46-1 : 2015 ■ JNIO SH-TR-46-6 : 2015 ■ IEC 60079-26 : 2014 										
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;">FTM5x</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>	FTM5x	-	*****	+	A*B*C*D*E*F*G*..	<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>
FTM5x	-	*****	+	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: Soliphant M



The following specifications reproduce an extract from the product structure and are used to assign:

- This documentation to the device (using the extended order code on the nameplate).
- The device options cited in the document.

Device type

FTM50, FTM51

Basic specifications

Position 1 (Approval)		
Selected option		Description
FTM50	T	JPN Ex ia IIC T3 Ga/Gb
FTM51		JPN Ex ia IIIC T65°C Da/Db

Position 5 (Fork; Bulk Density)		
Selected option		Description
FTM50	A	155mm/6inch; min 10g/l standard fork
	K	100mm/4inch; min 50g/l short fork
FTM51	L mm; min 10g/l standard fork
	M mm; min 50g/l short fork

Position 6 (Electronics; Output)		
Selected option		Description
FTM50	7	FEM57; 2-wire PFM
FTM51		

Position 7 (Type of Probe)		
Selected option		Description
FTM50	A	Compact
FTM51	D	6m cable > separate housing
	G	6m cable, armoured > separate housing

Position 8 (Housing)		
Selected option		Description
FTM50	3	F17 Alu IP66/67 NEMA Type 4X Encl.
FTM51	5	F13 Alu IP66/68 NEMA Type 4X Encl.

Position 9 (Cable Entry)		
Selected option		Description
FTM50	2	Gland M20x1.5
FTM51		

Position 10 (Additional Option 1)		
Selected option		Description
FTM50	A	Not selected
FTM51	G	Glass cover
	R	Glass cover, SIL declaration of conformity
	S	SIL declaration of conformity

Position 11 (Additional Option 2)		
Selected option		Description
FTM50	A	Not selected
FTM51	C	EN10204-3.1 material (wetted parts), inspection certificate

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.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- 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)
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.
- Refer to the temperature tables for the relationship between the permitted ambient temperature for the sensor and/or transmitter, depending on the range of application and the temperature class.

Safety instructions: Special conditions

Permitted ambient temperature range at the electronics housing:

→  9, "Temperature tables".

- 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.
- Avoid sparks caused by impact and friction.

Basic specification, Position 7 (Type of Probe) = D, G

The probe version with separate housing is only suited for fixed installation.

Basic specification, Position 7 (Type of Probe) = D

Avoid electrostatic charging of the connecting cable between the separate housing and the sensor.

Safety instructions: Installation

Basic specification, Position 1 (Approval) = T in connection with Position 7 (Type of Probe) = A	
FTM50	Ex ia IIIC T65°C Da/Db
FTM51	Ex ia IIC T3 Ga/Gb ¹⁾

1) Only in connection with Basic specification, Position 11 (Additional Option 2) = A, C

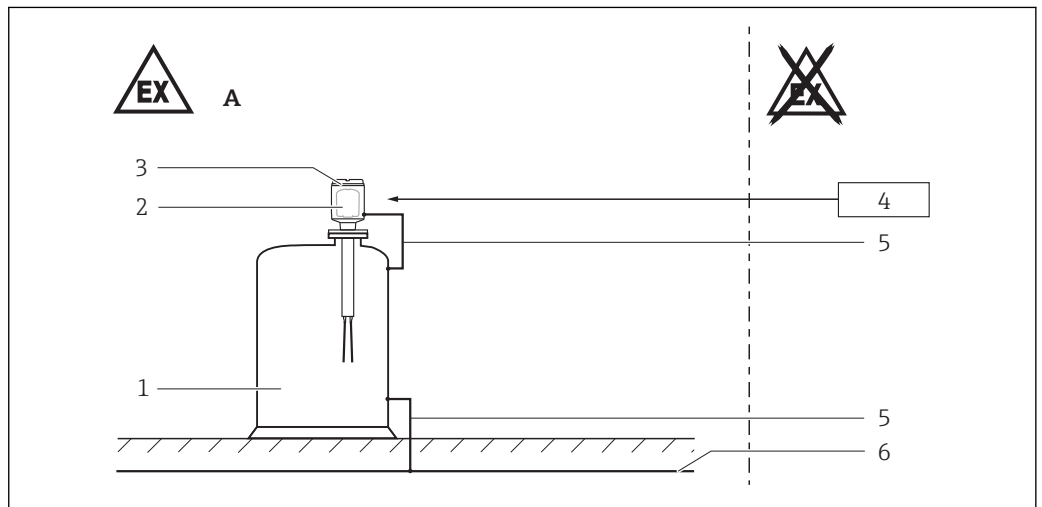
Basic specification, Position 1 (Approval) = T in connection with Position 7 (Type of Probe) = D	
Electronics housing FTM50 FTM51	Ex ia [ia Da] IIIC T65°C Db Ex ia [ia Db] IIIC T65°C Db ¹⁾ Ex ia [ia Da] IIC T3 Gb Ex ia [ia Ga] IIC T3 Gb Ex ia [ia Db] IIC T3 Gb Ex ia [ia Gb] IIC T3 Gb
Sensor housing FTM50 FTM51	Ex ia IIIC T65°C Da/Db Ex ia IIC T3 Ga/Gb

1) Designation due to limited space only in this XA; not on the nameplate

Basic specification, Position 1 (Approval) = T in connection with Position 7 (Type of Probe) = G	
Electronics housing FTM50 FTM51	Ex ia [ia Da] IIIC T65°C Db Ex ia [ia Ga] IIIC T65°C Db ¹⁾ Ex ia [ia Db] IIIC T65°C Db ¹⁾ Ex ia [ia Da] IIC T3 Gb ¹⁾ Ex ia [ia Ga] IIC T3 Gb Ex ia [ia Db] IIC T3 Gb ¹⁾ Ex ia [ia Gb] IIC T3 Gb ¹⁾
Sensor housing FTM50 FTM51	Ex ia IIIC T65°C Da/Db ¹⁾ Ex ia IIC T3 Ga/Gb ¹⁾²⁾

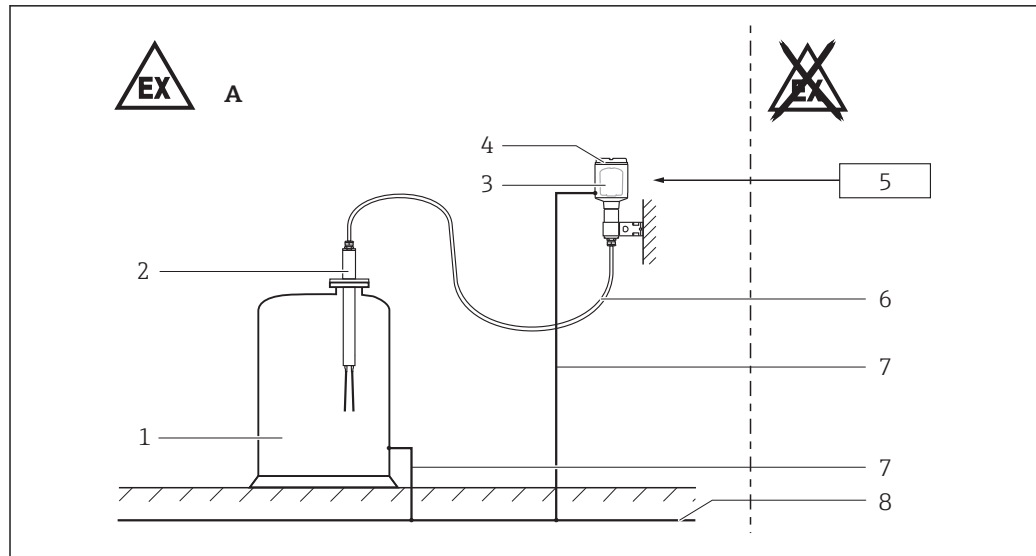
1) Designation due to limited space only in this XA; not on the nameplate

2) Only in connection with Basic specification, Position 11 (Additional Option 2) = A, C



1

- A Basic specification, Position 7 (Type of Probe) = A: Zone 1 or Zone 21
- 1 Tank, Zone 0, Zone 1, Zone 20 or Zone 21
- 2 Electronic insert; Electronic compartment Ex ia
- 3 Housing
- 4 Power supply
- 5 Potential equalization line
- 6 Potential equalization



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- A Basic specification, Position 7 (Type of Probe) = D, G: Zone 1 or Zone 21
 1 Tank, Hazardous area Zone 0, Zone 1, Zone 20 or Zone 21
 2 Sensor housing
 3 Electronic insert; Electronic compartment Ex ia
 4 Electronics housing
 5 Power supply
 6 Connecting cable
 7 Potential equalization line
 8 Potential equalization

- Connect the device using suitable cable glands and cable and wire entries. An ingress protection of at least IP54 must be achieved.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection.
- Observe the maximum process conditions according to the manufacturer's Operating Instructions.
- At high medium temperatures, note flange pressure load capacity as a factor of temperature.
- Install the device to exclude any mechanical damage or friction during the application.
Pay particular attention to flow conditions and tank fittings.
- Protect the connecting cable between the separate housing and the level sensor from tension and friction (e.g. due to electrostatic charge from medium flow).
- Use a process connection seal that meets the materials compatibility and temperature requirements.
- Support extension tube of the device if a dynamic load is expected.
- Continuous service temperature of the connecting cable: -40 °C to $\geq +85\text{ °C}$; in accordance with the range of service temperature taking into account additional influences of the process conditions.

Basic specification, Position 8 (Housing) = 3

Perform the following to achieve the degree of protection IP66/67:

- Screw the cover tight.
- Mount the cable entry correctly.

Basic specification, Position 8 (Housing) = 5

Perform the following to achieve the degree of protection IP66/68:

- Screw the cover tight.
- Mount the cable entry correctly.

Accessory high pressure sliding sleeve

The high pressure sliding sleeve can be used for a continuous setting of the switch point and is suited for zone division if mounted properly (see Operating Instructions).

Application in gas

- When using under non-atmospheric pressures and non-atmospheric temperatures: The sensor part of the device approved for Zone 0 does not cause any ignition hazards.
- For operation in accordance with manufacturer's specifications:
 - Permissible medium temperatures: dependent on ambient temperature
 - Permissible pressures: -1 to $+25$ bar, dependent on process connection (see Operating Instructions).

Intrinsic safety

- The device is only suitable for connection to certified, intrinsically safe equipment with explosion protection Ex ia.
- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least $500 V_{rms}$.
- Observe the pertinent guidelines when interconnecting intrinsically safe circuits.

Potential equalization

Integrate the device into the local potential equalization.

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.
- Only use the device in media to which the wetted materials have sufficient durability (e.g. process connection seal).
- If used under non-atmospheric conditions and if the manufacturer's specifications are observed: The sensor approved for the pressure vessel (Zone 0) does not cause any ignition hazards.

Temperature tables

Application in gas

The dependency of the ambient and process temperatures upon the temperature class:

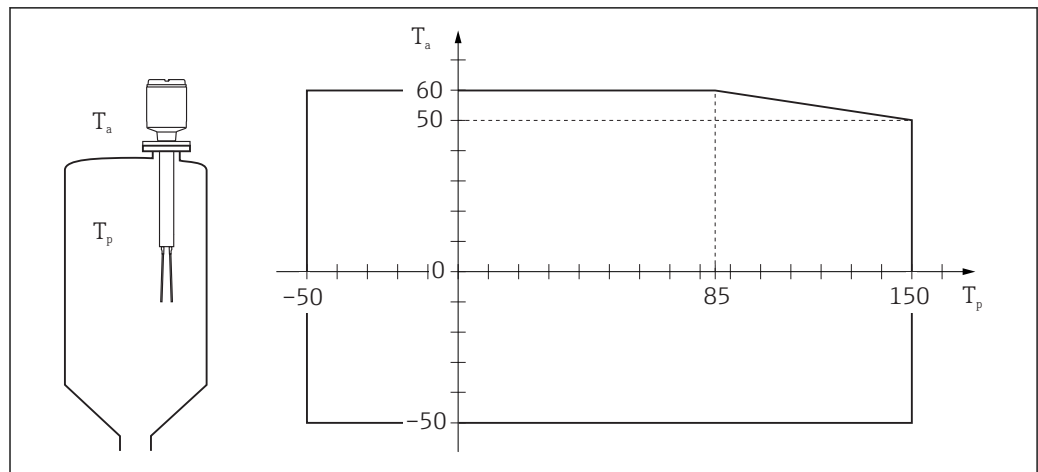
Temperature class	Process temperature T_p (process): sensor	Ambient temperature T_a (ambient): electronics
T3	-50 to $+150$ °C	-50 to $+60$ °C

Application in dust

Deposited material with a layer up to 5 mm

Surface temperature	Process temperature T_p (process): sensor	Ambient temperature T_a (ambient): probe <i>with Basic specification, Position 7 (Type of Probe) = D, G</i>	Ambient temperature T_a (ambient): electronics
Sensor: $T_{p,max}+5$ K Housing: $T_{a,max}+5$ K	-50 to $+150$ °C	-50 to $+60$ °C	-50 to $+60$ °C

Compact version

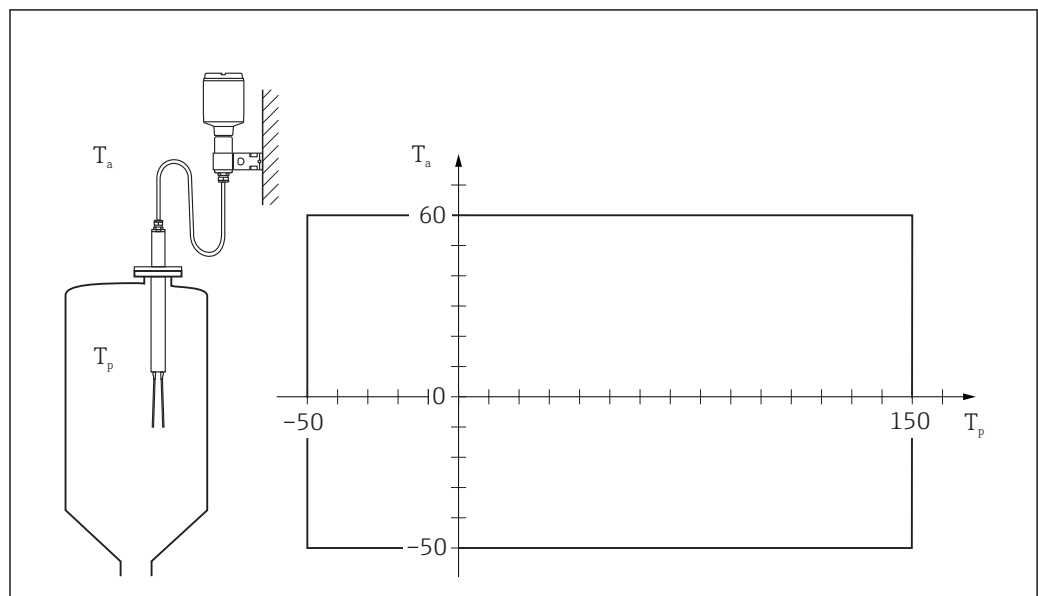


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 T_a Ambient temperature in °C T_p Process temperature in °C

Version with separate housing



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 T_a Ambient temperature in °C T_p Process temperature in °C

Connection data

Position 6 (Electronics; Output)	Power supply
7	$U_i = 16.7 \text{ V}$ $I_i = 150 \text{ mA}$ $P_i = 1 \text{ W}$ $L_i = 0$ $C_i = 0$





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