XA01803F-B/00/EN/02.21
71545753
2021-11-29

Safety Instructions
Liquiphant FTL41

Control Drawing IS

Endress+Hauser
People for Process Automation

Liquiphant FTL41

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About this document

This document has been translated into several languages. Legally determined is solely the English source text.

Associated documentation

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

BA01893F/00

Manufacturer's certificates

CSA C/US certificate

Certificate number:
CSA19CA80022351

Manufacturer address

Endress+Hauser SE+Co. KG
Hauptstraße 1
79689 Maulburg, Germany

Address of the manufacturing plant: See nameplate.

Extended order code

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.

Structure of the extended order code

FTL41	–	**********	+	A*B*C*D*E*F*G*..
(Device type)		*(Basic specifications)*		*(Optional specifications)*

* = Placeholder
At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.

Basic specifications

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.

Optional specifications

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).

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: Liquiphant

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

FTL41

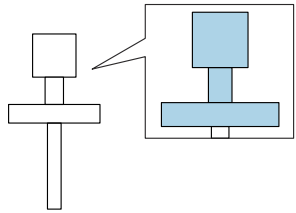
Basic specifications

Position 1, 2 (Approval)		
Selected option		**Description**
FTL41	CH	CSA C/US IS Cl. I, Div. 1, Gr. A, B, C, D; Cl. I, Zone 0, AEx/Ex ia IIC T6 Ga

Position 3, 4 (Output)		
Selected option		**Description**
FTL41	A8	FEL48, 2-wire NAMUR

Position 6 (Housing, Material)		
Selected option		**Description**
FTL41	A	Single compartment; plastic
	B	Single compartment; Alu, coated

Shown in the temperature tables exemplary as follows:

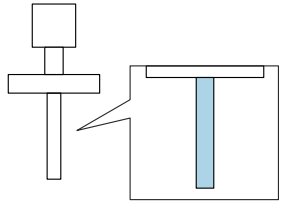


Position 7 (Electrical Connection)		
Selected option		**Description**
FTL41	A	Gland M20, plastic, IP66/68 NEMA Type 4X/6P
	B [1)]	Gland M20, brass nickel plated, IP66/68 NEMA Type 4X/6P
	F	Thread M20, IP66/68 NEMA Type 4X/6P
	H [2)]	Thread NPT1/2, IP66/68 NEMA Type 4X/6P
	I [1)]	Thread NPT3/4, IP66/68 NEMA Type 4X/6P
	M [1)]	Plug M12, IP66/67 NEMA Type 4X

1) Only in connection with Position 6 = B
2) Only in connection with Position 6 = A

Position 10 (Type of Probe)		
Selected option		**Description**
FTL41	1	Compact version
	2	Extension tube
	3	Short tube version

Shown in the temperature tables exemplary as follows:



Optional specifications

ID Px, Rx (Accessory Enclosed)	
Selected option	**Description**
FTL41 PB [1]	Weather protection cover, plastic

1) Only in connection with Position 6 = B

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. enclosure, sensor element, special varnishing, attached additional plates, ..)
  - Of isolated capacities (e.g. isolated metallic plates)
- 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.
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.

Safety instructions: Special conditions

- The electronics enclosure are permitted to operate in a standard ambient temperature range of −40 to 70 °C.
- Limitations of the maximum ambient temperature at the electronics enclosure may be required dependent on device configuration, process temperatures and temperature classification.
- Minimum process temperature: −40 °C.

Details of temperature limitations:
→ 9, "Temperature tables".

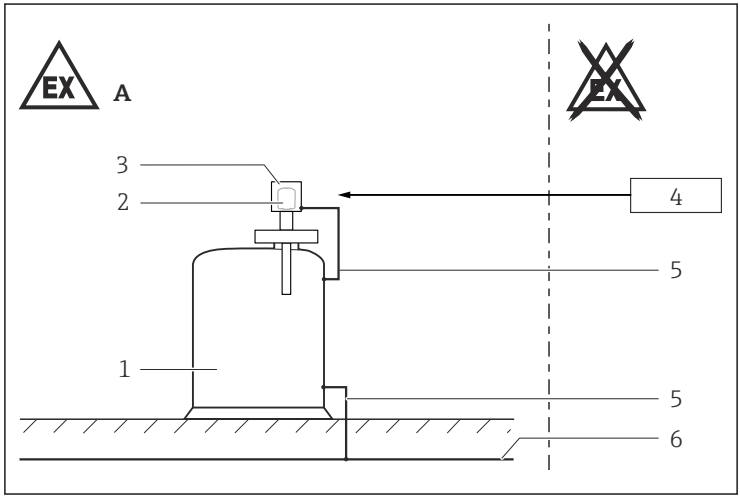
- To avoid electrostatic charging: Do not rub surfaces with a dry cloth.
- In the event of additional or alternative special varnishing on the enclosure or other metal parts or for adhesive plates:
  - Observe the danger of electrostatic charging and discharge.
  - Do not install in the vicinity of processes (≤ 0.5 m) generating strong electrostatic charges.

Basic specification, Position 6 = A
Avoid electrostatic charging of the enclosure (e.g. friction, cleaning, maintenance, strong medium flow).

Basic specification, Position 6 = B
Avoid sparks caused by impact and friction.

Optional specification, ID Px, Rx = PB
Avoid electrostatic charging of the weather protection cover (e.g. friction, cleaning, maintenance, strong medium flow).

Safety instructions: Installation



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A Zone 0 or 1; Class I, Div. 1, Groups A-D
1 Tank; Zone 0 or 1; Class I, Div. 1, Groups A-D
2 Electronic insert
3 Enclosure
4 Associated intrinsically safe power supply units
5 Potential equalization line
6 Local potential equalization

- Continuous service temperature of the connecting cable: ≥ T_a+20 K.
- Perform the following to achieve the degree of protection IP66/68:
  - Screw the cover tight.
  - Mount the cable entry correctly.
- 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.
- Support extension tube of the device if a dynamic load is expected.

Potential equalization

Integrate the device into the local potential equalization.

Intrinsic safety

Intrinsically safe, Class I, Div. 1, Groups A, B, C, D;
Class I, Zone 0 or Zone 1, AEx ia IIC/Ex ia IIC Ga

Entity installation

- Use an intrinsic safety barrier or other associated equipment that is approved for the country in use and satisfies the following conditions: U_o (V_{oc}) ≤ U_i (V_{max}), I_o (I_{sc}) ≤ I_i (I_{max}), C_o (C_a) ≥ C_i + C_{cable}, L_o (L_a) ≥ L_i + L_{cable} and P_o ≤ P_i.
- For transmitter parameters: See "Connection data" section.
- When the device is connected to certified intrinsically safe circuits of Category Ex ib for Equipment Groups IIC and IIB, the type of protection changes to Ex ib IIC and Ex ib IIB.
- Control room equipment may not use or generate over 250 V_{rms}.
- Install per National Electrical Code (NFPA70) or Canadian Electrical Code, Part I (C22.1), as applicable.
- Always follow the installation instructions provided by the intrinsic safety barrier manufacturer when installing this equipment.
- WARNINGS: Substitution of components may impair intrinsic safety.
- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least 500 V_{rms}.

Process seals

The device is rated as a Single Seal device and does not require the use of an external secondary process seal.

Temperature tables

General notes

Optional specification, ID Px, Rx = PB
When using the weather protection cover: Reduce the values T_a of P1, P2, P3 by 16 K.

Description notes

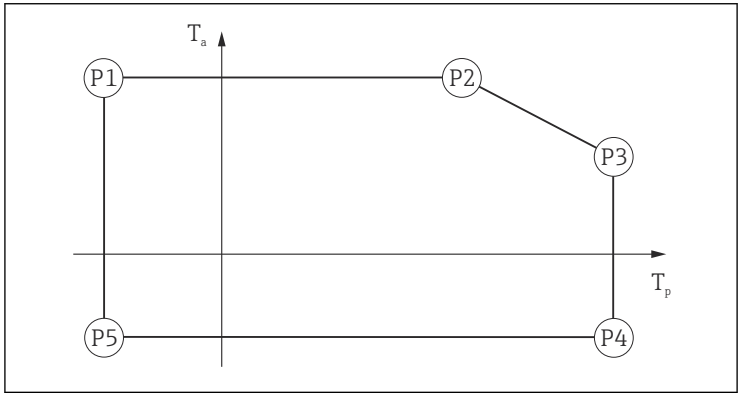
Unless otherwise indicated, the positions always refer to the basic specification.

1st column: Position 3, 4 = .., A4, A8

2nd column: Temperature classes T6 (85 °C) to T1 (450 °C)

Column P1 to P5: Position (temperature value) on the axes of the derating

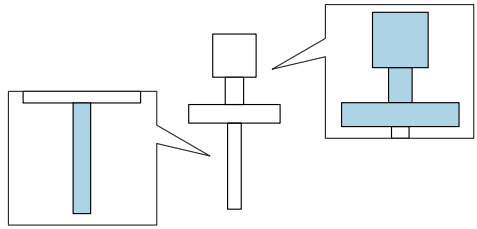
- T_a: Ambient temperature in °C
- T_p: Process temperature in °C



A0033052

Zone 0, Zone 1, Class I, Div. 1

Zone 0 or
Zone 1
Cl. I, Div. 1



Zone 0 or
Zone 1
Cl. I, Div. 1

A8		**P1**		**P2**		**P3**		**P4**		**P5**	
		T_p	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**
	T6	–40	67	67	67	75	60	75	0 [1] –40	–40	0 [1] –40
	T5	–40	70	70	70	90	60	90	0 [1] –40	–40	0 [1] –40
	T4	–40	70	70	70	125	60	125	0 [1] –40	–40	0 [1] –40
	T3	–40	70	70	70	150	60	150	0 [1] –40	–40	0 [1] –40

1) In connection with Position 6 = A: Standard ambient temperature range: 0 to +70 °C

Connection data

Associated intrinsically safe power supply unit with max. electrical specifications below the characteristic values of the electronic inserts

Basic specification, Position 3, 4	**Power supply circuit**
A8	U_i (or V_{max}) = 16 V I_i (or I_{max}) = 52 mA P_i = 170 mW L_i = 0 C_i = 30 nF

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