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Safety Instructions
Liquiphant FTL41

Control Drawing Div. 2

Endress+Hauser
People for Process Automation

Liquiphant FTL41

Table of contents

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

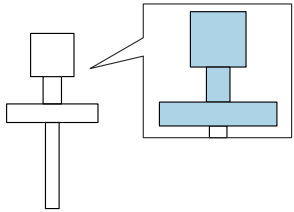
Basic specifications

Position 1, 2 (Approval)		
Selected option		**Description**
FTL41	CC	CSA C/US Cl. I, Div. 2, Gr. A,B,C,D

Position 3, 4 (Output)		
Selected option		**Description**
FTL41	A2	FEL42, 3-wire PNP 10-55VDC
	A4	FEL44, relay DPDT 19-253VAC/19-55VDC contact 253V/2A
	A8	FEL48, 2-wire NAMUR

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

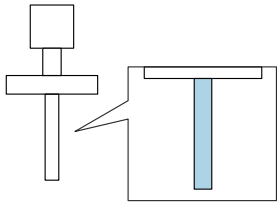
Shown in the temperature tables exemplary as follows:



Position 7 (Electrical Connection)		
Selected option		**Description**
FTL41	B	Gland M20, brass nickel plated, IP66/68 NEMA Type 4X/6P
	C	Gland M20, 316L, IP66/68 NEMA Type 4X/6P
	F	Thread M20, IP66/68 NEMA Type 4X/6P
	I	Thread NPT3/4, IP66/68 NEMA Type 4X/6P

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:



Position 11, 12 (Sensor Length, Material)		
Selected option		**Description**
FTL41	AJ	Compact version; 316L
	BJ	Short tube version; 316L
	CJ	..... mm L Ra<3,2um/126uin; 316L
	DJ	..... in L Ra<3,2um/126uin; 316L

Optional specifications

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

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.
- 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.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. enclosure, 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.

Safety instructions: Special conditions

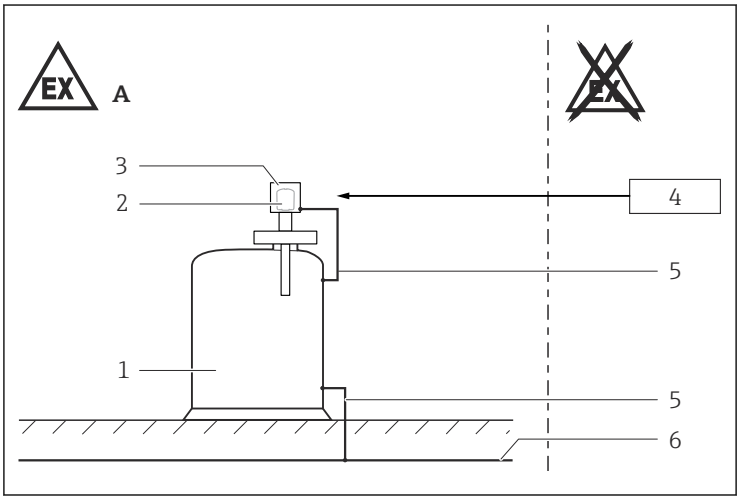
- The electronics enclosure are permitted to operate in a standard ambient temperature range of −40 to 70 °C.
- Limitations of the maximum ambient temperature at the electronics enclosure may be required dependent on device configuration, process temperatures and temperature classification.
- Minimum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

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 Class I, Div. 2, Groups A-D
1 Tank; Class I, Div. 2, Groups A-D
2 Electronic insert
3 Enclosure
4 Supply unit
5 Potential equalization line
6 Local potential equalization

- Before operation:
  - Screw in the cover all the way.
  - Tighten the securing clamp on the cover.
- In potentially explosive atmospheres:
  - Do not disconnect the electrical connection of the power supply circuit when energized.
  - Do not open the connection compartment cover and the electronics compartment cover.
- Continuous service temperature of the connecting cable / cable gland / cable entry:
  - *Basic specification, Position 3, 4 = A2*: ≥ T_a+35 K
  - *Basic specification, Position 3, 4 = A4*: ≥ T_a+40 K
  - *Basic specification, Position 3, 4 = A8*: ≥ T_a+20 K
- Perform the following to achieve the degree of protection IP66/68:
  - Screw the cover tight.
  - Mount the cable entry correctly.
- 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.

Class I, Div. 2, Groups A-D

- Install per National Electrical Code (NFPA70) or Canadian Electrical Code, Part I (C22.1), as applicable.
- Use wiring methods appropriate for the location.
- Associated apparatus not required.
- For the maximum supply voltage: See "Connection data" section.
- WARNINGS: Substitution of components may impair suitability for hazardous locations. Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

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

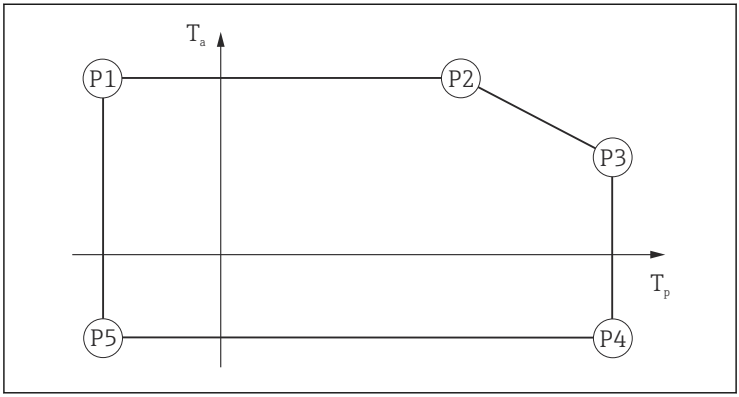
Unless otherwise indicated, the positions always refer to the basic specification.

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

2nd column: Maximum load current

3rd 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



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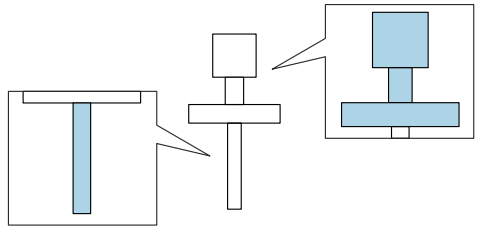
Class I, Div. 2



A2	**350 mA**		**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	70	70	70	80	70	80	–40	–40	–40
		T5	–40	70	70	70	95	70	95	–40	–40	–40
		T4	–40	70	70	70	130	55	130	–40	–40	–40
		T3	–40	70	70	70	150	45	150	–40	–40	–40

A4	**2 A**		**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	52	52	52	80	40	80	–40	–40	–40
		T5	–40	67	67	67	95	55	95	–40	–40	–40
		T4	–40	70	70	70	130	47	130	–40	–40	–40
		T3	–40	70	70	70	150	38	150	–40	–40	–40

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	70	70	70	80	70	80	–40	–40	–40
		T5	–40	70	70	70	95	70	95	–40	–40	–40
		T4	–40	70	70	70	130	70	130	–40	–40	–40
		T3	–40	70	70	70	150	70	150	–40	–40	–40

Connection data

Basic specification, Position 3, 4	**Power supply circuit**	**Output**
A2	U = 10 to 55 V_{DC}; P_{max} < 0.5 W	I_{max} = 350 mA
A4	U = 19 to 253 V_{AC}, 50/60 Hz or 19 to 55 V_{DC}; P_{max} < 25 VA or < 1.3 W	2 potential free change-over contacts; 2 A
A8	U = 4 to 8.2 V_{DC}	NAMUR; I_{max} = 3.8 mA

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