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Safety Instructions
Liquiphant FTL41

Ga/Gb Ex db IIC T6...T1
1Ex db IIC T6...T1 Gb

Document: XA01912F-A
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Endress+Hauser
People for Process Automation

Liquiphant FTL41

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Associated documentation

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

BA01893F/00

Supplementary documentation

Explosion-protection brochure: CP00021Z/11

The Explosion-protection brochure is available:
- 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

Certificate of Conformity TP TC 012/2011

Inspection authority:
LLC NANIO CCVE (ООО «НАНИО ЦСВЭ»)

Certificate number:
ЕАЭС RU C-DE.AA87.B.00272/19

Affixing the certificate number certifies conformity with the following standards (depending on the device version):
- GOST 31610.0-2014 (IEC 60079-0:2011)
- GOST IEC 60079-1-2013
- GOST 31610.26-2012 (IEC 60079-26:2006)

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	GC	EAC Ga/Gb Ex db IIC T6...T1 EAC 1Ex db IIC T6...T1 Gb

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/6A
	A8	FEL48, 2-wire NAMUR

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

Position 7 (Electrical Connection)		
Selected option		**Description**
FTL41	F	Thread M20, IP66/68 NEMA Type 4X/6P
	G	Thread G1/2 [1)], IP66/68 NEMA Type 4X/6P
	I	Thread NPT3/4, IP66/68 NEMA Type 4X/6P
	Y	Special version: Thread NPT1/2, IP66/68 NEMA Type 4X/6P

1) Reduction M20x1.5 to G1/2 enclosed

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

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

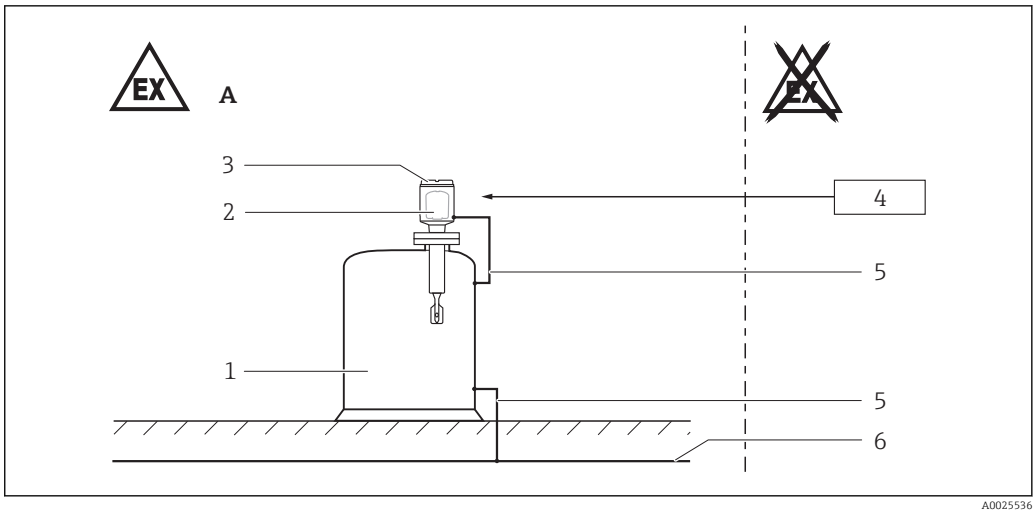
Permitted ambient temperature range at the electronics housing:
→ 🖹 8, "Temperature tables".

Covers with glass window only permitted for the following ambient temperatures:
$-50\ °C \leq T_a \leq +70\ °C$

- To avoid electrostatic charging: Do not rub surfaces with a dry cloth.
- In the event of additional or alternative special varnishing on the housing 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.
- Avoid sparks caused by impact and friction.

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

Safety instructions: Installation



1

A Zone 1
1 Tank; Zone 0, Zone 1
2 Electronic insert
3 Housing
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 (Output) = A2*: ≥ T_a +35 K
  - *Basic specification, Position 3, 4 (Output) = A4*: ≥ T_a +40 K
  - *Basic specification, Position 3, 4 (Output) = 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.
- Only use certified cable entries suitable for the application. Observe national regulations and standards. Accordingly, the connection terminal does not include any ignition sources.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection. The plastic transport sealing plug does not meet this requirement and must therefore be replaced during installation.
- The built-in metallic sealing plug is examined and approved for explosion protection type Ex d with the device.
- When operating the transmitter housing at an ambient temperature under −20 °C, use appropriate cables and cable entries permitted for this application.
- When connecting through a conduit entry approved for this purpose, mount the associated sealing unit directly at the housing.
- Flameproof equipment with G threaded entry holes is not intended for new installations but only for replacement of equipment in existing installations. Application of this equipment shall comply with the local installation requirements.

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.
- Flameproof joints are not intended to be repaired.

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.
- Only use the device in media to which the wetted materials have sufficient durability (e.g. process connection seal).
- 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.

Temperature tables

→ 🖹 10

Connection data

Basic specification, Position 3, 4 (Output)	**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 Ex d
A8	U = 4 to 8.2 V_{DC}	NAMUR; I_{max} = 3.8 mA

Liquiphant FTL41

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Notes on the structure

Extract from the extended order code

Device type

FTL41

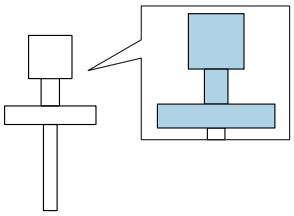
Basic specifications

Position 1, 2 (Approval)		
Selected option		**Description**
FTL41	GC	EAC Ga/Gb Ex db IIC T6...T1 EAC 1Ex db IIC T6...T1 Gb

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/6A
	A8	FEL48, 2-wire NAMUR

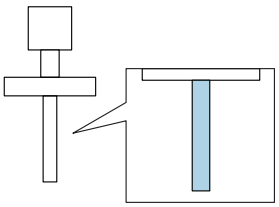
Position 6 (Housing; Material)		
Selected option		**Description**
FTL41	B	Single compartment; Alu, coated

Shown in the temperature tables exemplary as follows:



Position 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	Weather protection cover, plastic

General notes

Optional specification, ID Px, Rx (Accessory Enclosed) = 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 (Output) = .., 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

A4	**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	-50	70	70	70	75	40	75	-40	-50	-40
		T5	-50	70	70	70	90	55	90	-40	-50	-40
		T4	-50	70	70	70	125	47	125	-40	-50	-40
		T3...T1	-50	70	70	70	150	47	150	-40	-50	-40

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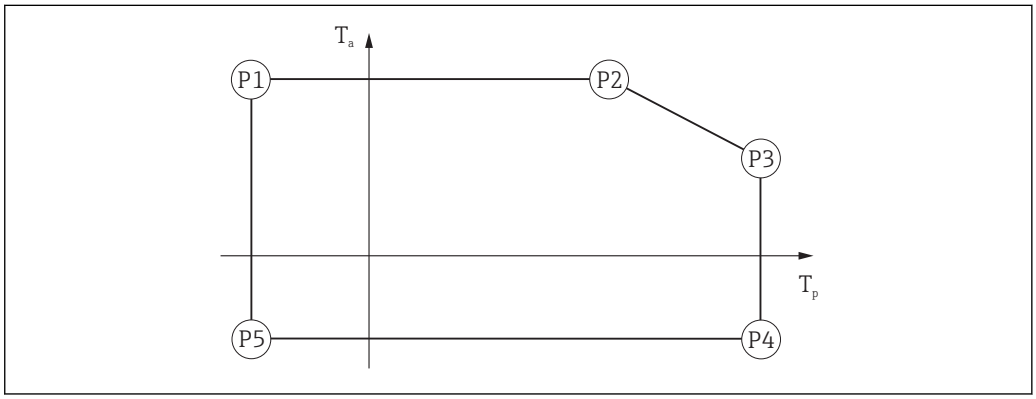

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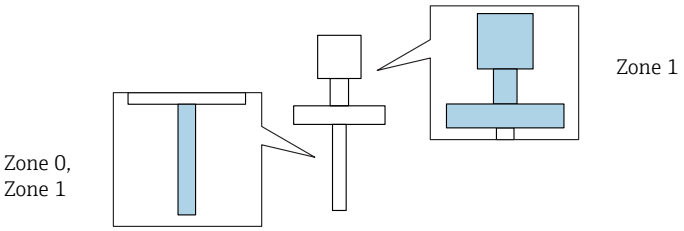
Zone 0, Zone 1



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	–50	70	70	70	75	70	75	–40	–50	–40
		T5	–50	70	70	70	90	70	90	–40	–50	–40
		T4	–50	70	70	70	125	55	125	–40	–50	–40
		T3…T1	–50	70	70	70	150	45	150	–40	–50	–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	–50	52	52	52	75	40	75	–40	–50	–40
		T5	–50	67	67	67	90	55	90	–40	–50	–40
		T4	–50	70	70	70	125	47	125	–40	–50	–40
		T3…T1	–50	70	70	70	150	38	150	–40	–50	–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	–50	70	70	70	75	70	75	–40	–50	–40
		T5	–50	70	70	70	90	70	90	–40	–50	–40
		T4	–50	70	70	70	125	70	125	–40	–50	–40
		T3…T1	–50	70	70	70	150	70	150	–40	–50	–40

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