



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEX DEK 15.0028X** Page 1 of 4 Certificate history:
Status: **Current** Issue No: 2 [Issue 1 \(2017-03-21\)](#)
[Issue 0 \(2016-10-19\)](#)
Date of Issue: 2021-07-07
Applicant: **Endress+Hauser SE+Co. KG**
Hauptstraße 1
79689 Maulburg
Germany
Equipment: **Liquid Level Switch Liquiphant M Type FTL50(H)-...., Type FTL51(H)-.... and Type FTL51C-.... and Liquiphant S
Type FTL70-.... and Type FTL71-....**
Optional accessory:
Type of Protection: **Ex i, Ex d**
Marking: Refer to Annex 1 for detailed marking.

Approved for issue on behalf of the IECEx
Certification Body:

R. Schuller

Position:

Certification Manager

Signature:
(for printed version)

Date:

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2. This certificate is not transferable and remains the property of the issuing body.
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Certificate issued by:

DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
Netherlands





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Manufacturer: **Endress+Hauser SE+Co. KG**
Hauptstraße 1
79689 Maulburg
Germany

Additional manufacturing locations: **refer to Annex 2 for additional manufacturing locations**

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-26:2021-02 Explosive atmospheres - Part 26: Equipment with Separation Elements or combined Levels of Protection
Edition:4.0

IEC 60079-26:2014-10 Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
Edition:3.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[NL/DEK/ExTR15.0036/02](#)

Quality Assessment Report:

[DE/TUN/QAR06.0003/08](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Liquid Level Switches Liquiphant M Type FTL50 (H)-...., Type FTL51 (H)-.... and Type FTL51 C-.... and Liquid Level Switches Liquiphant S Type FTL70-.... and Type FTL71-...., for use in explosive atmospheres caused by the presence of combustible gases, fluids, vapours or dusts, directly detect a liquid level by means of a symmetrical vibrating fork and convert it into an electrical signal. Depending on the applied electronics insert, the Liquid level Switch provides a 8/16 mA current output signal (electronics insert type FEL55), a NAMUR signal (electronics insert type FEL56 or type FEL58, inverse signal), a digital signal (electronics insert type FEL57) or a connection to a Fieldbus (electronics insert type FEL50A).

The Liquid Level Switches Liquiphant M and Liquiphant S are used for the measurement of the density or concentration of a process fluid, if provided with the electronics insert type FEL50D and connected to the Endress+Hauser Interface type FML621.

The electronics enclosure is made of plastic, aluminium or stainless steel. Depending on the version, the stainless steel sensor is mounted directly to the enclosure (compact versions, type FTL50 (H) and type FTL70) or via an extension tube (type FTL51 (H), type FTL51 C and type FTL71).

The Liquid Level Switches Liquiphant M type FTL 5. (H)-.... and Liquiphant S type FTL7.-.... are also available in completely stainless steel versions, electrically identical with the versions with electronics insert type FEL58 (inverted NAMUR output signal).

The process contacting parts of Liquid Level Switch Liquiphant M type FTL51 C-.... are provided with a protective coating.

For model code break down, electrical data and thermal data, refer to attached Annex 1 to Report No. NL/DEK/ExTR15.0036/02.

SPECIFIC CONDITIONS OF USE: YES as shown below:

If adhesive labels are used, electrostatic charging shall be avoided. For details, refer to the equipment specific Safety Instructions.

For Liquid Level Switch Liquiphant M Type FTL50(H)-...., Type FTL51(H)-.... and Type FTL51C-.... with an aluminium enclosure, when used as EPL Ga equipment, shall be installed in such a way that, even in the event of rare incidents, ignition sources due to impact and friction between the enclosure and iron or steel are excluded.

For the Liquid Level Switch Liquiphant M Type FTL51C provided with a protective coating of non-conductive PFA or ECTFE, precautions shall be taken to minimize the risk from electrostatic discharge or propagating brush discharges of the coated sensor surface.

For the Liquid Level Switch Liquiphant M Type FTL50H, FTL51H with Basic specification, Position 5, 6 = xD only; the probe shall not be subjected to abrasive or corrosive medium that may adversely affect the partition wall for zone separation.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

1. Name change of the manufacturer
2. Assessed per IEC 60079-0 Ed. 7
3. Assessed per IEC 60079-26 Ed. 4
4. Minor constructional changes.

Annexes:

[225613200-Annex1 to ExTR15.0036.02.pdf](#)
[225613200-Annex2.pdf](#)

Types:

Liquid Level Switch Liquiphant M

FTL50 – abbbccdeef+gg
 FTL50H – abbbccdeef+gg
 FTL51 – abbbccdeef+gg
 FTL51H – abbbccdeef+gg
 FTL51C – abbbccdeefg+hh

Liquid Level Switch Liquiphant S

FTL70 – abbbccdeefg+hh
 FTL71 – abbbccdeefg+hh

- a = Approval**
 F, G, H, J, 1 or 4 (see marking on page 2)
- bbb = Process connection**
 Triple number of characters, or numbers, which define standardized threaded bosses or flanges, refer to instruction manual for details.
- cc = Probe length**
 Dual number of characters, which defines the probe length, refer to instruction manual for details.
 For FTL51C, where: *.N = PFA conductive, *.S = Enamel are non chargeable.
 For FTL51C, where: *.K = ECTFE, *.L = Edlon, *.M = RubyRed are chargeable
- d = Electronic insert**
 - A = FEL50A PROFIBUS PA / Fieldbus Foundation FF
 - D = FEL50D Density / Concentration
 - 5 = FEL55 8/16mA-Version, 11...36 VDC
 - 6 = FEL56 NAMUR-Version (DIN19234)
 - 7 = FEL57 PFM-Version
 - 8 = FEL58 NAMUR-Version (EN50227) inverse signal
 - 9 = Software and hardware modifications, not relevant for Ex i.
- ee = Enclosure**
 - *1 = F27 Stainless steel enclosure
 - *3 = Compact housing /Hygiene version (FEL58 only)
 - *5 = F17 Aluminium enclosure
 - *6 = F15 Stainless steel enclosure, Hygiene version
 - *7 = T13 Aluminium, with terminal partition
 - *9 = Modification of one of *1 to *7 enclosures for Ex i.
 - C* = Cord version (Only *3 and FEL58)
 - D* = PG11 Plug (Only *3 and FEL58)
 - E* = NPT 1/2" or NPT 3/4"
 - F* = Thread G 1/2 "
 - G* = Cable gland M20*1,5
 - N* = M12 Plug
- f = Additional options**
 - A = Standard (without options)
 - B, C, D, K, L, N, P, R, S = Cleaned for LABS (silicon free) application, Material certificate eg. 3.1 EN10204-3, Calibration Density H₂O, Ship building certification.
- g = Option in 1 or 2 digits**
 For type FTL50, FTL50H, FTL51, FTL51H:
 any combination of number and/or letter, not relevant for safety
 Process temperature range: -50 °C to +150 °C
 For type FTL51C: Additional options: A = Not selected, B and C = temperature spacer
 Process temperature range: -50 °C to +150 °C
 For type FTL70, FTL71: Process temperature range is:
 L = -60 °C to 230 °C, N = -60 °C to 280 °C and Y = -60 °C to 300 °C
- h = Option in 1 or 2 digits**
 For type FTL51C, FTL70, FTL71:
 any combination of number and/or letter, not relevant for safety

Marking

Level switch Type

Level switch Type	ATEX	IECEX/ATEX
FTL50(H) – abbbccdeef+gg; FTL51(H) – abbbccdeef+gg:	For a = F, G: II 1/2 G II 1/2 D For a = H, J: II 1 G	Ex ia IIC T6...T3 Ga/Gb Ex ia IIIC T ₂₀₀ 165 °C T _L 80 °C Da/Db Ex ia IIC T6...T3 Ga (Only for cc = *N or *S) Ex ia IIC T6...T3 Ga/Gb Ex ia IIIC T ₂₀₀ 165 °C T _L 80 °C Da/Db
FTL51C – abbbccdeefg+hh:	For a = F: II 1/2 G II 1/2 D For a = 1: II 1/2 G For a = 4: II 1/2 G	(Only for cc = *K or *L or *M) Ex ia IIB T6...T3 Ga/Gb (Only for cc = *K or *L or *M) Ex ia IIC T6...T3 Ga/Gb
FTL70 – abbbccdeefg+hh; FTL71 – abbbccdeefg+hh:	For a = F: II 1/2 G For a = F & g=L: II 1/2 D For a = F & g=N: II 1/2 D For a = F & g=Y: II 1/2 D	Ex db ia IIC T6...T2 Ga/Gb Ex ia IIIC T ₂₀₀ 245 °C T _L 80 °C Da/Db Ex ia IIIC T ₂₀₀ 295 °C T _L 80 °C Da/Db Ex ia IIIC T ₂₀₀ 315 °C T _L 80 °C Da/Db

Thermal data

Ambient temperature range: -50 °C to +65 °C ¹⁾²⁾

Further restrictions:

1. For temperature class T6 the maximum ambient temperature at the electronics enclosure is 55 °C.
2. Refer to derating tables in the safety advice (instructions) regarding ambient and process temperatures.

For EPL Db applications, the maximum surface temperature T_L is based on the applicable maximum ambient temperature and with dust accumulation.

For applications where the sensor is in EPL Da, the maximum surface temperature T₂₀₀ is based on the applicable maximum ambient temperature, with 200 mm dust immersion on the sensor and T_L with dust accumulation on the electronics enclosure.

Refer to tables in the safety advice (instructions) for the applicable temperatures.

Electrical data

The electrical data are depending on the applied electronics insert.

Electronics insert type FEL55

Supply and output circuit (terminals 1 and 2):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 36 \text{ V}$; $I_i = 100 \text{ mA}$; $P_i = 1 \text{ W}$; $C_i = 0 \text{ nF}$; $L_i = 0 \text{ mH}$.

Electronics insert type FEL56, FEL58 and stainless steel compact versions

Supply and output circuit (terminals 1 and 2, or a connector):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 16 \text{ V}$; $I_i = 52 \text{ mA}$; $P_i = 0.17 \text{ W}$; $C_i = 30 \text{ nF}$; $L_i = 0 \text{ mH}$.

Electronics insert type FEL57

Supply and output circuit (terminals 1 and 2):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 16.7 \text{ V}$; $I_i = 150 \text{ mA}$; $P_i = 1 \text{ W}$; $C_i = 0 \text{ nF}$; $L_i = 0 \text{ mH}$.

Electronics insert type FEL50A

Supply and output circuit (terminals 1 and 2):
in type of protection intrinsic safety Ex ia IIC, for connection to a certified intrinsically safe Fieldbus (Profibus PA), in accordance with the FISCO Model, with the following maximum values:
 $U_i = 17.5 \text{ V}$; $I_i = 500 \text{ mA}$; $P_i = 5.5 \text{ W}$; $C_i = 2.7 \text{ nF}$; $L_i \leq 10 \text{ }\mu\text{H}$;

or for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 24 \text{ V}$; $I_i = 250 \text{ mA}$; $P_i = 1.2 \text{ W}$; $C_i = 2.7 \text{ nF}$; $L_i \leq 10 \text{ }\mu\text{H}$.

Electronics insert type FEL50D

Supply and output circuit (terminals 1 and 2):
in type of protection intrinsic safety Ex ia IIC, only for connection to the intrinsically safe circuit of Endress + Hauser Interface Type FML621, with the following maximum values:
 $U_i = 27.6 \text{ V}$; $I_i = 93 \text{ mA}$; $P_i = 640 \text{ mW}$; $C_i = 2 \text{ nF}$; $L_i = 133 \text{ }\mu\text{H}$.

The sensor circuit is an internal circuit in type of protection intrinsic safety Ex ia IIC.

The supply and output circuit of the Liquid Level Switch may also be connected to a certified intrinsically safe circuit in type of protection intrinsic safety Ex ib IIC. This does not change the equipment category.

Annex 2 to Certificate of Conformity IECEx DEK 15.0028X

Manufacturing locations

1. Endress+Hauser SE+Co. KG
Hauptstraße 1
79689 Maulburg
Germany
2. Endress+Hauser (USA) Automation Instrumentation Inc.
2340 Endress Place
Greenwood, Indiana 46143
USA
3. Endress+Hauser (Suzhou) Automation Instrumentation Co. Ltd.
China-Singapore Industrial Park (SIP)
Su-Hong-Zhong-Lu, No. 491
Jiangsu Province, 215021 Suzhou
China
4. Endress+Hauser (India) Automation Instrumentation Pvt. Ltd.
M-192, Waluj
Aurangabad - 431136
Maharashtra State
India
5. Endress+Hauser (Brasil),
Instrumentação e Automação Ltda.,
Avenida Antonio Sesti, 600, Itatiba/SP
Brasil