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防爆合格证

证号: GYJ22.1804X

制造商 恩德斯豪斯公司

(地址: Hauptstrasse 1, D-79689 Maulburg, Germany)

产品名称 液体音叉开关

型号规格 Liquiphant M FTL5x 系列、Liquiphant S FTL7x 系列

防爆标志 Ex db II C T6...T3 Ga/Gb、Ex db II B T6...T3 Ga/Gb、
Ex db II C T6...T1 Ga/Gb

产品标准 /

图样编号 960005122-C、960005124-D、960006121-C

经图样及技术文件的审查和样品检验, 确认上述产品符合下列标准:

GB/T 3836.1-2021, GB/T 3836.2-2021, GB 3836.20-2010

特颁发此证。

本证书有效期: 2022年06月09日至2027年06月08日

备注

1. 安全使用注意事项见本证书附件。
2. 证书编号后缀“X”表明产品具有安全使用特殊条件, 内容见本证书附件。
3. 型号规格说明见本证书附件。
4. 电气安全参数见本证书附件。
5. 本证书同时适用于恩德斯豪斯(苏州)自动化仪表有限公司(地址: 苏州工业园区苏虹中路491号)生产的同型号产品。



本证书仅对与认可文件和样品一致的产品有效。

地址: 上海市漕宝路103号
邮编: 200233

网址: www.nepsi.org.cn
Email: info@nepsi.org.cn

电话: +86 21 64368180
传真: +86 21 64844580



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EXPLOSION PROTECTION CERTIFICATE OF CONFORMITY

Cert No. GYJ22.1804X

Manufacturer	Endress + Hauser SE+Co. KG (Address: Hauptstrasse 1, D-79689 Maulburg, Germany)
Product	Liquid Level Switch
Model	Liquiphant M FTL5x Series, Liquiphant S FTL7x series
Ex marking	Ex dbIIC T6...T3 Ga/Gb, Ex dbIIB T6...T3 Ga/Gb, Ex dbIIC T6...T1 Ga/Gb
Product standard	/
Drawing number	960005122-C、960005124-D、960006121-C

The product was found to comply with the following standard(s):

GB/T 3836.1-2021,GB/T 3836.2-2021,GB 3836.20-2010

Valid until: 2027.06.08

Remarks

- 1.Conditions for safe use are specified in the attachment(s) to this certificate.
- 2.Symbol "X" placed after the certification number denotes specific conditions of use, which are specified in the attachment(s) to this certificate.
- 3.Model designation is specified in the attachment(s) to this certificate.
- 4.Safety parameters specified in the attachment(s) to this certificate.
- 5.This certificate is also applicable for the product with the same type manufactured by Endress+Hauser (Suzhou) Automation Instrumentation Co., Ltd. (address: Su Hong Zhong Lu No.491, Suzhou-SIP, China)



Approval

Shanghai Inspection and Testing Institute of
Instruments and Automation Systems Co., Ltd.
National Supervision and Inspection Center for
Explosion Protection and Safety of Instrumentation
Date of issue 2022.06.09

This Certificate is valid for products compatible with the documents and samples approved by NEPSI.

103 Cao Bao Road
Shanghai 200233, China

<http://www.nepsi.org.cn>
Email: info@nepsi.org.cn

Tel: +86 21 64368180
Fax: +86 21 64844580



(GYJ22.1804X)

(Attachment I)

GYJ22.1804X防爆合格证附件 I

由恩德斯豪斯公司生产的Liquiphant M FTL5x系列和Liquiphant S FTL7x系列液体音叉开关, 经国家级仪器仪表防爆安全监督检验站 (NEPSI) 检验, 符合下列标准:

GB/T 3836.1-2021 爆炸性环境 第1部分: 设备 通用要求

GB/T 3836.2-2021 爆炸性环境 第2部分: 由隔爆外壳“d”保护的设备

GB 3836.20-2010 爆炸性环境 第20部分: 设备保护级别 (EPL) 为Ga级的设备

产品防爆标志Ex db II C T6...T3 Ga/Gb、Ex db II B T6...T3 Ga/Gb、Ex db II C T6...T1 Ga/Gb, 防爆合格证号GYJ22.1804X。

认可产品型号为:

FTL5**a b c d e f g h** + **i**

a 表示类型, 可为 0 (一体型), 1 (延长管至6000mm);

b 表示内衬类型, 可为空缺 (标准), H (卫生型);

c 表示认可代码, 可为 N (Ex db II C T6...T3 Ga/Gb);

d 表示过程连接型式, 可为 *** (与防爆性能无关),

**2 (316L),

**6 (C22);

e 表示探头长度和类型, 可为A*¹⁾ (一体型),

I*¹⁾ (一体型、带温度隔离器),

Q*¹⁾ (一体型、带温度隔离器、气密穿通件),

*A¹⁾ (Ra<3.2 μm, 与防爆无关),

*B²⁾ (Ra<3.2 μm, 316L, 与防爆无关),

*C (Ra<1.5 μm, 与防爆无关),

*E²⁾ (Ra<1.5 μm, 合金, 与防爆无关),

B*, C*, D*²⁾ (延长至6米),

J*, K*, L*²⁾ (延长至6米、带温度隔离器),

R*, S*, T*²⁾ (延长至6米、带温度隔离器、气密穿通件),

YY (特殊类型, 如延长温度隔离器);

f 表示电子插件, 可为 A (FEL50A, Profibus PA/ Fieldbus Foundation FF),

D (FEL50D, Density/ Concentration),

1 (FEL51, AC-version, 19...253Vac),

2 (FEL52, DC-version, PNP, 10...55Vdc),

4 (FEL54, Relay-version, 19...253Vac/ 19...55Vdc, DPDT),

5 (FEL55, 8/16mA-version, 11...36Vdc),

6 (FEL56, NAMUR-version, DIN19234),

7 (FEL57, PFM-version),

8 (FEL58, NAMUR-version, EN50227, inverse signal),

9 (FEL5x, 硬件和软件调整, 与防爆无关);

- g** 表示外壳和电缆入口, 可为 *1 (F27不锈钢316L),
 *5 (F13铝合金),
 *7 (T13铝合金、带接线腔),
 E* (NPT1/2或NPT3/4),
 F* (G1/2),
 G* (M20*1.5),
 Y9 (*1~*7 Ex db外壳的调整,
 1: 电缆口M20*1.5转NPT1/2; 2: 玻璃盖);

h、**i** 表示附加选项 (材质证书、测试证书), 与防爆性能无关;
 注: ¹⁾仅适用于FTL50(H) ²⁾仅适用于FTL51(H)

FTL5**a b c d e f g h i** + **j**

- a** 表示类型, 可为1 (延长管至6000mm);
- b** 表示内衬类型, 可为C (涂覆型);
- c** 表示认可代码, 可为 N (Ex db IIC T6...T3 Ga/Gb、Ex db IIB T6...T3 Ga/Gb);
- d** 表示过程连接型式和尺寸, 可为 *** (与防爆性能无关),
 **N, **K, **L, **M (316L),
 **S (C22);
- e** 表示探头长度和类型, 可为B*,C*,D*,E*,F*,G*,H*,K* (延长管至6000mm/ 235in),
 *K (ECTFE, chargeable, 适用于IIB. For IIC 见注¹⁾),
 *L (PFA Edlon®, chargeable, 适用于IIB. For IIC见注¹⁾),
 *M (PFA RubyRed®, chargeable, 适用于IIB. For IIC见注¹⁾),
 *N (PFA, conductive; non-chargeable, 适用于IIC),
 *S (Enamel, non-chargeable, 适用于IIC),
 YY (特殊类型, 如延长温度隔离器);
- f** 表示电子插件, 可为A (FEL50A, Profibus PA/ Fieldbus Foundation FF),
 D (FEL50D, Density/ Concentration),
 1 (FEL51, AC-version, 19...253Vac),
 2 (FEL52, DC-version, PNP, 10...55Vdc),
 4 (FEL54, Relay-version, 19...253Vac/ 19...55Vdc, DPDT),
 5 (FEL55, 8/16mA-version, 11...36Vdc),
 6 (FEL56, NAMUR-version, DIN19234),
 7 (FEL57, PFM-version),
 8 (FEL58, NAMUR-version, EN50227, inverse signal),
 9 (FEL5x, 硬件和软件调整, 与防爆无关);
- g** 表示外壳和电缆入口, 可为 *1 (F27不锈钢316L),
 *5 (F13铝合金),
 *7 (T13铝合金、带接线腔),
 E* (NPT1/2或NPT3/4),

F* (G1/2),
 G* (M20*1.5),
 Y9 (*1~*7 Ex db外壳的调整,
 1: 电缆口M20*1.5转NPT1/2; 2: 玻璃盖);

h 表示附加选项1, 与防爆性能无关;

i 表示附加选项2, 可为A (无选择),
 B (带温度隔离器),
 C (带温度隔离器、气密穿通件),
 Y (特殊类型, 如延长温度隔离器);

j 表示测试证书, 与防爆性能无关;

注: ¹⁾使用条件见产品使用说明书安全注意事项

FTL7**a-b-c-d-e-f-g-h+i**

a 表示类型, 可为 0 (一体型),
 1 (延长管至6000mm);

b 表示认可代码, 可为 N (Ex db II C T6...T1 Ga/Gb);

c 表示过程连接型式和尺寸, 可为 *** (与防爆性能无关),
 **2 (316L),
 **6 (C22);

d 表示探头长度和类型, 可为 A*¹⁾ (一体型、带温度隔离器、气密穿通件),
 B*, C*²⁾ (延长至6米),
 *B, *E (Ra<3.2 μm, 与防爆无关),
 YY (特殊类型, 如延长温度隔离器);

e 表示电子插件, 可为A (FEL50A, Profibus PA/ Fieldbus Foundation FF),
 1 (FEL51, AC-version, 19...253Vac),
 2 (FEL52, DC-version, PNP, 10...55Vdc),
 4 (FEL54, Relay-version, 19...253Vac/ 19...55Vdc, DPDT),
 5 (FEL55, 8/16mA-version, 11...36Vdc),
 6 (FEL56, NAMUR-version, DIN19234),
 7 (FEL57, PFM-version),
 8 (FEL58, NAMUR-version, EN50227, inverse signal),
 9 (FEL5x, 特殊型式: FEL50D, Density/ Concentration);

f 表示外壳和电缆入口, 可为 *1 (F27不锈钢316L),
 *7 (T13铝合金、带接线腔),
 *8 (F13铝合金)
 E* (NPT1/2或NPT3/4),
 F* (G1/2),
 G* (M20*1.5),
 Y9 (*1~*7 Ex db外壳的调整,
 1: 电缆口M20*1.5转NPT1/2; 2: 玻璃盖);

- g** 代表附加选项1，与防爆性能无关；
- h** 代表应用，可为L（230℃、气密穿通件），
N（280℃、气密穿通件），
Y（300℃、气密穿通件）；

i 表示测试证书，与防爆性能无关。

注：¹⁾仅适用于FTL70 ²⁾仅适用于FTL71

一、产品安全使用特殊条件

产品防爆合格证号后缀“X”表示产品有安全使用特殊要求，具体内容如下：

- 1、涉及隔爆接合面的维修须联系产品制造商。
- 2、产品FTL51C带非导电涂层时仅适用于IIC，且应采取措施以防其表面产生静电火花危险。

二、产品使用注意事项

- 1、产品外壳设有接地端子，用户在安装使用时应可靠接地。
- 2、液体音叉开关的型号、环境温度和介质温度的关系如下：

型号	环境温度范围	介质温度范围
FTL50(H)/51(H)	-60℃/-50℃ ¹⁾ ~+70℃	-50℃~+150℃
FTL51C	-60℃/-50℃ ¹⁾ ~+70℃	-50℃~+120℃/150℃ ²⁾
FTL70/71	-60℃/-50℃ ¹⁾ ~+70℃	-60℃~+230℃/+280℃ /290℃/+300℃ ³⁾

注¹⁾：有玻璃显示窗时，最低环境温度为-50℃；

注²⁾：取决于探针长度和类型；

注³⁾：取决于过程连接件；

当使用FEL50D, Density/ Concentration电子插件时，

型号	环境温度范围	介质温度范围
FTL50(H)/51(H)	-40℃~+70℃	-50℃~+80℃
FTL51C		
FTL70/71		-60℃~+80℃

对于上述表格，具体的使用环境温度、介质温度范围和温度组别的关系，参见安全指南文件XA00401F。

3、根据选用不同的电子插件，产品具有不同的输出信号。产品的电气参数如下：

电子插件	电路	电气参数
FEL51	电源电路	$U = 19 \sim 253\text{Vac}$, 50/60Hz; $P_{\max} = 0.96\text{VA}$
	输出电路	$I_{\max} = 350\text{mA}$
FEL52	电源电路	$U = 10 \sim 55\text{Vdc}$, $P_{\max} = 0.83\text{W}$
	输出电路	PNP 晶体管, $I_{\max} = 350\text{mA}$
FEL54	电源电路	$U = 19 \sim 253\text{Vac}$, 50/60Hz or $U = 19 \sim 55\text{Vdc}$; $P_{\max} = 1.3\text{W}$
	输出电路	触点, 额定值为 4A (Ex d)
FEL55	电源电路	$U = 11 \sim 36\text{Vdc}$, $P_{\max} = 0.6\text{W}$
	输出电路	$I_{\max} = 22\text{mA}$
FEL56	电源电路	$U = 4 \sim 12.5\text{Vdc}$, $P_{\max} = 0.23\text{W}$
	输出电路	NAMUR $I_{\max} = 3.5\text{mA}$
FEL57	电源电路	$U_{\max} = 16.7\text{Vdc}$, $P_{\max} = 0.15\text{W}$
	输出电路	PFM $I_{\max} = 12\text{mA}$
FEL58	电源电路	$U = 4 \sim 12.5\text{Vdc}$, $P_{\max} = 0.23\text{W}$
	输出电路	NAMUR $I_{\max} = 3.5\text{mA}$
FEL50A	电源电路	连接现场总线
	输出电路	连接 Profibus PA/FF
FEL50D	电源/输出电路	连接 Endress+Hauser Interface FML621

4、产品电缆引入口配用的电缆引入装置或封堵件应与产品的防爆型式及等级相匹配；选用的电缆引入装置、封堵件及产品的连接电缆应与产品的工作条件相适应。安装后外壳防护等级不得低于GB/T 4208-2017要求的IP66。

5、产品在现场维护使用时应遵循“断电源后延时17分钟开盖”的原则。

6、用户不得自行随意更换该产品的电气零部件，应会同产品制造商共同解决运行中出现的故障，以免影响防爆性能和损坏现象的发生。

7、产品的安装、使用和维护应同时遵守产品使用说明书、GB/T 3836.13-2021“爆炸性环境 第13部分：设备的修理、检修、修复和改造”、GB/T 3836.15-2017“爆炸性环境 第15部分：电气装置的设计、选型和安装”、GB/T 3836.16-2017“爆炸性环境 第16部分：电气装置的检查与维护”及GB 50257-2014“电气设备安装工程爆炸和火灾危险环境电气装置施工及验收规范”的有关规定。

三、制造厂责任

- 1、产品制造厂必须将上述使用注意事项纳入产品使用说明书；
- 2、制造厂必须严格按照NEPSI认可的文件资料生产；
- 3、产品铭牌中应至少包括下列内容：
 - a) NEPSI认可标志（见防爆合格证书）
 - b) 产品防爆标志
 - c) 防爆合格证号
 - d) 使用环境温度
 - e) 过程温度范围
 - f) 产品电气参数
 - g) “断电源后延时17分钟开盖”警告语

上海仪器仪表自控系统检验测试所有限公司
国家级仪器仪表防爆安全监督检验站
二〇二二年六月九日



(GYJ22.1804X)

(Attachment I)

Attachment I to GYJ22.1804X

1. Description

Liquiphant M FTL5x series and Liquiphant S FTL7x series Liquid Level Switch, manufactured by Endress + Hauser SE+Co. KG, have been certified by National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI). This type of product accords with following standards:

GB/T3836.1-2021 Explosive atmospheres-Part 1: Equipment-General requirements

GB/T3836.2-2021 Explosive atmospheres-Part 2: Equipment protection by flameproof enclosure"d"

GB3836.20-2010 Explosive atmospheres-Part 20: Equipment with equipment protection level (EPL) Ga

The Ex marking is Ex db II C T6...T3 Ga/Gb, Ex db II B T6...T3 Ga/Gb, Ex db II C T6...T1 Ga/Gb, its certificate number is GYJ22.1804X.

Type approved in this certificate is detailed as below:

FTL5**a b c d e f g h + i**

a indicates design, including 0 (compact),

1 (pipe extension up to 6000mm);

b indicates line, including - (standard),

H (hygiene line);

c indicates approval, including N (Ex db II C T6...T3 Ga/Gb);

d indicates process connection, including *** (not relevant for Ex certification),

**2 (material stainless steel type 316L),

**6 (material hastelloy type C22);

e indicates probe length and type, including A* ¹⁾ (compact),

I* ¹⁾ (compact, with temperature separator),

Q* ¹⁾ (compact, with temp. separator, pressure tight feed-through),

*A ¹⁾ (Ra < 3.2µm, not relevant for Ex),

*B ²⁾ (Ra < 3.2µm, 316L, not relevant for Ex),

*C (Ra < 1.5µm, not relevant for Ex),

*E ²⁾ (Ra < 1.5µm, Alloy, not relevant for Ex),

B*, C*, D* ²⁾ (extended till 6 meter),

J*, K*, L* ²⁾ (extended till 6 meter with temperature separator);

R*, S*, T* ²⁾ (extended till 6 meter with temperature separator incl. pressure tight feed-through),

YY (Special version, e.g. Longer Temperature Spacer);

f indicates electronic insert, including A (FEL50A, Profibus PA/ Fieldbus Foundation FF),
D (FEL50D, Density/ Concentration),
1 (FEL51, AC-version, 19...253Vac),
2 (FEL52, DC-version, PNP, 10...55Vdc),
4 (FEL54, Relay-version, 19...253Vac/ 19...55Vdc, DPDT),
5 (FEL55, 8/16mA-version, 11...36Vdc),
6 (FEL56, NAMUR-version, DIN19234),
7 (FEL57, PFM-version),
8 (FEL58, NAMUR-version, EN50227, inverse signal),
9 (FEL5x, Modifications to software and hardware, not relevant for Ex certification);

g indicates enclosure and cable entry, including *1 (F27 stainless steel 316L enclosure),
*5 (F13 aluminum enclosure),
*7 (T13 aluminum, with terminal partition),
E* (thread NPT1/2 or NPT3/4),
F* (thread G1/2),
G* (thread M20*1.5),
Y9 (Modification of one of *1 to *7 enclosures for Ex db
Two modifications possible, 1: reduction M20x1,5 to NPT1/2" in the cable entry assembled, 2: cover with glass window);

h, i indicate additional option (cleaning/ material certificate, test certificate), not relevant for Ex certification.

Note: ¹⁾ only application for FTL50(H), ²⁾ only applicable for FTL51(H)

FTL5a b c d e f g h i j

a indicates design, including 1 (pipe extension up to 6000mm);

b indicates line, including C (coated version);

c indicates approval, including N (Ex db II C T6...T3 Ga/Gb, Ex db II B T6...T3 Ga/Gb);

d indicates process connection, including *** (not relevant for Ex certification),
**N,K,L,M (material stainless steel type 316L),
**S (material hastelloy type C22);

e indicates probe length and type, including B*,C*,D*,E*,F*,G*,H*,K* (Probe length up to 6000 mm / 235 in),
*K (ECTFE, chargeable, suitable for IIB. For IIC see note¹⁾),
*L (PFA Edlon©, chargeable, suitable for IIB. For IIC see note¹⁾),
*M (PFA RubyRed©, chargeable, suitable for IIB. For IIC see note¹⁾),
*N (PFA, conductive; non-chargeable, suitable for IIC),
*S (Enamel, non-chargeable, suitable for IIC),
YY (Special version, e.g. Longer Temperature Spacer);

f indicates electronic insert, including A (FEL50A, Profibus PA/ Fieldbus Foundation FF),
D (FEL50D, Density/ Concentration),
1 (FEL51, AC-version, 19...253Vac),
2 (FEL52, DC-version, PNP, 10...55Vdc),
4 (FEL54, Relay-version, 19...253Vac/ 19...55Vdc, DPDT),
5 (FEL55, 8/16mA-version, 11...36Vdc),
6 (FEL56, NAMUR-version, DIN19234),
7 (FEL57, PFM-version),
8 (FEL58, NAMUR-version, EN50227, inverse signal),
9 (FEL5x, Modifications to software and hardware, not relevant for Ex certification);

g indicates enclosure and cable entry, including *1 (F27 stainless steel 316L enclosure),
*5 (F13 aluminum enclosure),
*7 (T13 aluminum, with terminal partition),
E* (thread NPT1/2 or NPT3/4),
F* (thread G1/2),
G* (thread M20*1.5),
Y9 (Modification of one of *1 to *7 enclosures for Ex db
Two modifications possible, 1: reduction M20x1,5 to NPT1/2" in the cable entry assembled, 2: cover with glass window);

h indicates additional option 1, not relevant for Ex certification;

i indicates additional option 2, including A (not selected),
B (temperature separator),
C (temperature separator incl. pressure tight feed-through),
Y (Special version, e.g. Longer Temperature Spacer);

j indicates test certificate, not relevant for Ex certification.

Note: ¹⁾ The conditions as mentioned in the manufacturers safety instructions are applicable.

FTL7 **a-b-c-d-e-f-g-h+i**

a indicates design, including 0 (compact),
1 (pipe extension up to 6000mm);

b indicates approval, including N (Ex db II C T6...T1 Ga/Gb);

c indicates process connection, including *** (not relevant for Ex certification),
**2 (material stainless steel type 316L),
**6 (material hastelloy type C22);

- d** indicates probe length and type, including A* ¹⁾ (compact, temp. separator, gas tight pipe),
B*, C* ²⁾ (extended till 6 meter),
*B, *E (Ra < 3.2µm, not relevant for Ex),
YY (Special version, e.g. Longer Temperature Spacer);
- e** indicates electronic insert, including A (FEL50A, Profibus PA/ Fieldbus Foundation FF),
1 (FEL51, AC-version, 19...253Vac),
2 (FEL52, DC-version, PNP, 10...55Vdc),
4 (FEL54, Relay-version, 19...253Vac/ 19...55Vdc, DPDT),
5 (FEL55, 8/16mA-version, 11...36Vdc),
6 (FEL56, NAMUR-version, DIN19234),
7 (FEL57, PFM-version),
8 (FEL58, NAMUR-version, EN50227, inverse signal),
9 (FEL5x, special version: FEL50D Density/ Concentration);
- f** indicates enclosure and cable entry, including *1 (F27 stainless steel 316L enclosure),
*7 (T13 aluminum, with terminal partition),
*8 (F13 aluminum enclosure),
E* (thread NPT1/2 or NPT3/4),
F* (thread G1/2),
G* (thread M20*1.5),
Y9 (Modification of one of *1 to *7 enclosures for Ex db
Two modifications possible, 1: reduction M20x1,5 to
NPT1/2" in the cable entry assembled, 2: cover with glass
window);
- g** indicates additional option1, not relevant for Ex certification;
- h** indicates application, including L (230°C gas-tight feed through),
N (280°C gas-tight feed through),
Y (300°C gas-tight feed through);
- i** indicates test certificate, not relevant for Ex certification.

Note: ¹⁾ only application for FTL70, ²⁾ only applicable for FTL71

2. Special Conditions for Safe Use

The suffix "X" placed after the certificate number indicates that this product is subject to special conditions for safe use, that is:

2.1 For flameproof product, for information on the dimensions of the flameproof joints contact the manufacturer.

2.2 Liquiphant M FTL51C which are provided with a non-conductive coating are only suitable for group IIC, if it is assured that electrostatic charging of the sensor is avoided.

3. Conditions for Safe Use

3.1 The external earth connection facility should be connected reliably.

3.2 The relation of type of protection, ambient temperature and process temperature is as following:

Liquid Level Switches Types	Ambient temperature range	Process temperature range
FTL50(H)/51(H)	-60°C/-50°C ¹⁾ ~+70°C	-50°C~+150°C
FTL51C	-60°C/-50°C ¹⁾ ~+70°C	-50°C~+120°C/150°C ²⁾
FTL70/71	-60°C/-50°C ¹⁾ ~+70°C	-60°C~+230°C/+280°C /290°C/+300°C ³⁾

Note 1): The minimum ambient temperature will be -50°C while the product with glass window cover;

Note 2): Depending on Probe length/ Type;

Note 3): Depending on Process connection;

When FEL50D, Density/concentration, is used, the widest temperature range is as below:

Liquid Level Switches Types	Ambient temperature range	Process temperature range
FTL50(H)/51(H)	-40°C~+70°C	-50°C~+80°C
FTL51C		
FTL70/71		-60°C~+80°C

For above all, for the precise ambient temperature, process temperature and temperature class for application, see Temperature derating tables detailed in instructions XA00401F.

3.3 The output signal can be different depending on the different electronic insert; the electrical parameters are shown as following:

Electronic insert	Circuit	Rating
FEL51	Supply circuit:	U = 19~253Vac, 50/60Hz; Pmax = 0.96VA
	Output:	I _{max} = 350mA
FEL52	Supply circuit:	U = 10~55Vdc, Pmax = 0.83W
	Output:	PNP transistor, I _{max} = 350mA
FEL54	Supply circuit:	U = 19~253Vac, 50/60Hz or U = 19~55Vdc; Pmax = 1.3W
	Output:	2 potential free change-over contacts, rated 4A
FEL55	Supply circuit:	U = 11~36Vdc, Pmax = 0.6W
	Output:	I _{max} = 22mA
FEL56	Supply circuit:	U = 4~12.5Vdc, Pmax = 0.23W
	Output:	NAMUR I _{max} = 3.5mA
FEL57	Supply circuit:	U _{max} = 16.7Vdc, Pmax = 0.15W
	Output:	PFM I _{max} = 12mA

FEL58	Supply circuit:	U = 4~12.5Vdc, Pmax = 0.23W
	Output:	NAMUR I _{max} = 3.5mA
FEL50A	Supply circuit:	For connection to a Fieldbus
	Output:	Profibus PA or Foundation Fieldbus (FF)
FEL50D	Supply circuit:/Output:	Only for connection to Endress+Hauser Interface FML621

3.4 Suitable certified cable glands or blanking plugs for unused holes shall be used and correctly installed. The cable glands, blanking plugs and connecting cable to be used shall be suitable for the product working conditions. After installation, degree of protection of this product shall be at least IP66 according to GB/T 4208-2017.

3.5 Obey the warning "Keep tight when the circuit is alive. Wait 17min. after switch off!"

3.6 The user shall not change the configuration in order to maintain/ensure the explosion protection performance of this product. Any change may impair safety.

3.7 For installation, use and maintenance of this product, the end user should observe the instruction manual and the following standards:

GB 50257-2014 "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".

GB/T 3836.13-2021 "Explosive atmospheres- Part 13: Equipment repair, overhaul and reclamation".

GB/T 3836.15-2017 "Explosive atmospheres- Part 15: Electrical installations design, selection and erection".


GB/T 3836.16-2017 "Explosive atmospheres- Part 16: Electrical installations inspection and maintenance".

4. Manufacturer's Responsibility

4.1 Conditions for safe use, as specified above, should be included in the documentation the user is provided with.

4.2 Manufacturing should be done according to the documentation approved by NEPSI.

4.3 Nameplate should at least include these contents listed below:

- 1) NEPSI logo 
- 2) Ex marking
- 3) certificate number
- 4) ambient temperature range
- 5) process temperature range
- 6) safety parameters
- 7) warning of "Keep tight when the circuit is alive. Wait 17 min. after switch off!"

Shanghai Inspection and Testing Institute of
Instruments and Automation Systems Co., Ltd.
National Supervision and Inspection Center for
Explosion Protection and Safety of Instrumentation
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