



SITIiAS
Worldwide Access

防爆合格证

证号：GYJ21.1248X

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 FTL41、FTL51B、FTL62、FTL64

防 爆 标 志 见防爆合格证附件

产 品 标 准 /

图 样 编 号 961003648A

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/T 3836.3-2021,GB/T 3836.4-2021,
GB/T 3836.8-2021,GB/T 3836.31-2021

特颁发此证。

本证书有效期：2021年06月02日至2026年06月01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。
6. [更改I]：产品型号、防爆标志和防爆标准增加。2022年1月20日签发。
7. [更改II]：产品防爆标准、防爆标志更新。2022年6月15日签发。



批 准

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
颁发日期二〇二一年六月二日

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



SITIIAS
Worldwide Access

EXPLOSION PROTECTION CERTIFICATE OF CONFORMITY

Cert No. GYJ21.1248X

Manufacturer	Endress+Hauser SE+Co. KG (Address: Hauptstrasse 1, D-79689 Maulburg, Germany)
Product	Liquid Level Switch
Model	Liquiphant FTL41, FTL51B, FTL62 and FTL64
Ex marking	Specified in the attachment
Product standard	/
Drawing number	961003648A

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

GB/T 3836.1-2021,GB/T 3836.2-2021,GB/T 3836.3-2021,GB/T 3836.4-2021,
GB/T 3836.8-2021,GB/T 3836.31-2021

Valid until: 2026.06.01

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.Safe 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)
- 6.[Variation I]: Add product model, Ex marking and standards. Signed on 2022.01.20.
- 7.[Variation II]: Update Ex standards, Ex marking. Signed on 2022.06.15.



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 2021.06.02

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



GYJ21.1248X防爆合格证附件III

由恩德斯豪斯公司生产的Liquiphant FTL41, FTL51B, FTL62和FTL64系列液体音叉开关, 经检验符合下列标准:

- 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/T 3836.3-2021爆炸性环境 第3部分: 由增安型“e”保护的设备
 - GB/T 3836.4-2021爆炸性环境 第4部分: 由本质安全型“i”保护的设备
 - GB/T 3836.8-2021爆炸性环境 第8部分: 由“n”型保护的设备
 - 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
 - GB/T 3836.31-2021爆炸性环境 第31部分: 由防粉尘点燃外壳“t”保护的设备
- 产品防爆标志如下, 防爆合格证号GYJ21.1248X。

认可产品型号为:

Liquiphant FTL41-**aa bb c d e f g h i j kkk+mm nn oo qq r r ss**

aa表示NEPSI认可代码, 可为NB (Ex ia IIC T6...T1 Ga/Gb、Ex ia IIC T6...T1 Gb)
NC (Ex db IIC T6...T1 Ga/Gb、Ex db IIC T6...T1 Gb)

bb表示电子插件/输出, 可为A2 (FEL42, 3-wire PNP 10~55VDC)、
A4 (FEL44, Relay DPDT 19~253VAC/19~55VDC
Contact 253V/6A)、
A8 (FEL48, 2-wire NAMUR)、
9Y (基于上述的微调, 与防爆无关);

c表示显示/操作, 可为A (带/不带; 开关) 或Y (基于上述的微调, 与防爆无关);

d表示外壳/材料, 可为A (单腔、塑料)、
B (单腔、铝合金)、
Y (基于上述的微调, 与防爆无关);

e表示电气连接, 可为A (Gland M20, plastic, IP66/68, NEMA Type 4X/6P)、
B (Gland M20, brass nickel plated, IP66/68 NEMA Type 4X/6P)、
F (Thread M20, IP66/68 NEMA Type 4X/6P)、
G (Thread G1/2, IP66/68 NEMA Type 4X/6P)、
H (Thread NPT1/2, IP66/68 NEMA Type 4X/6P)、
I (Thread NPT3/4, IP66/68 NEMA Type 4X/6P)、
M (Plug M12, IP66/67 NEMA Type 4X)、
Y (基于上述的微调, 与防爆无关);

- f**表示应用，可为A（介质max.150°C, 40bar）、
Y（基于上述的微调，与防爆无关）；
- g**表示表面处理，可为A（标准Ra<3.2µm/126uin）、
Y（基于上述的微调，与防爆无关）；
- h**表示探头类型，可为1（一体型）、
2（延长探头）、
3（短探头）、
9（基于上述的微调，与防爆无关）；
- i**表示探头长度/材料，可为AA~YY（与防爆无关）；
- jj kkk**表示过程连接型式和尺寸，可为AA AAA~99 9YY（与防爆无关）；
- mm**表示服务，可为HA~I9（与防爆无关）；
- nn**表示测试/证书，可为JA~K9（与防爆无关）；
- oo**表示附加认证，可为LD~L9（与防爆无关）；
- qq**表示安装配件，可为O9（与防爆无关）；
- r**表示配备配件，可为PB或R9（与防爆无关）；
- ss**表示标牌，可为Z1或Z9（与防爆无关）。

Liquiphant FTL51B-**aa bb c d e f g h i j kkk+l mm nn oo pp qq rr ss**

aa表示NEPSI认可代码，可为

- NA (Ex ia IIC T6...T1 Ga)
 NB (Ex ia IIC T6...T1 Ga/Gb、Ex ia IIC T6...T1 Gb)
 NC (Ex db IIC T6...T1 Ga/Gb、Ex db IIC T6...T1 Gb)
 ND (Ex db eb IIC T6...T1 Ga/Gb、Ex db eb IIC T6...T1 Gb)
 NK (Ex ia IIC T6...T1 Ga/Gb、Ex ia IIC T6...T1 Gb
 Ex ia IIIC T85°C...T165°C Da/Db、Ex ia IIIC T85°C...T155°C Db)
 NL (Ex ec IIC T6...T1 Gc、Ex ec nC IIC T6...T1 Gc
 Ex tc IIIC T80°C...T150°C Dc)
 NM (Ex db IIC T6...T1 Ga/Gb、Ex db IIC T6...T1 Gb
 Ex ta/tb IIIC T85°C...T165°C Da/Db、
 Ex tb IIIC T85°C...T155°C Db)

bb表示电子插件/输出，可为A1（FEL61, 2-wire 19-253VAC + test button）、
A2（FEL62, 3-wire PNP 10-55VDC + test button）、
A3（FEL64DC, relay DPDT 9-20VDC, contact 253V/6A +
test button）、

A4 (FEL64, relay DPDT 19-253VAC/19-55VDC,
contact 253V/6A+ test button) 、

A7 (FEL67, 2-wire PFM + test button) 、

A8 (FEL68, 2-wire NAMUR + test button) 、

GA (FEL60D, density/concentration) 、

9Y (基于上述的微调, 与防爆无关) ;

c表示显示/操作, 可为A (带/不带、开关) 、

B (外部可见LED模块、开关) 、

Y (基于上述的微调, 与防爆无关) ;

d表示外壳, 可为A (单腔、塑料) 、

B (单腔、铝合金) 、

C (单腔、316L) 、

M (两腔、铝合金) 、

Y (基于上述的微调, 与防爆无关) ;

e表示电气连接, 可为A (Gland M20, plastic, IP66/68, NEMA Type 4X/6P) 、

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) 、

G (Thread G1/2, IP66/68 NEMA Type 4X/6P) 、

H (Thread NPT1/2, IP66/68 NEMA Type 4X/6P) 、

I (Thread NPT3/4, IP66/68 NEMA Type 4X/6P) 、

M (Plug M12, IP66/67 NEMA Type 4X) 、

Y (基于上述的微调, 与防爆无关) ;

f表示应用, 可为A (介质 max 150oC/302oF, max 64bar) 、

B (介质 max 150oC/302oF, max 100bar) 、

C (介质 max 80oC/176oF, max 25bar) 、

9 (基于上述的微调, 与防爆无关) ;

g表示表面处理, 可为A (标准Ra<3.2µm/126uin) 、

Y (基于上述的微调, 与防爆无关) ;

h表示探头类型, 可为1 (一体型) 、

2 (延长探头) 、

3 (短探头) 、

9 (基于上述的微调, 与防爆无关) ;

i表示探头长度/材料, 可为AA~YY (与防爆无关) ;

jj kkk表示过程连接/密封面, 可为AA AAA~99 9YY (与防爆无关);

ll表示应用程序包, 可为EH~E9 (与防爆无关);

mm表示服务, 可为HA~I9 (与防爆无关);

nn表示测试/证书/声明, 可为JL (环境温度 -50oC/-58oF)、

JN (环境温度 -52oC/-62oF)、

JT (环境温度 -60oC/-76oF)、

JA~K9 (与防爆无关);

oo表示附加认证, 可为LA~L9 (与防爆无关);

pp表示传感器设计, 可为MR (温度隔离)、

MS (温度隔离+气密穿通件)、

M9 (基于上述的微调, 与防爆无关);

qq表示安装配件, 可为NF (蓝牙) 或O9 (基于上述的微调, 与防爆无关);

r表示配备配件, 可为PA (防水罩、316L)、

PB (防水罩、塑料)、

R6 (电磁干扰)、

R9 (基于上述的微调, 与防爆无关);

ss表示标牌, 可为Z1或Z9 (与防爆无关)。

Liquiphant FTL62-**aa bb c d e f g h i j kkk+ll mm nn oo pp qq rr ss**

aa表示NEPSI认可代码, 可为NB (Ex ia IIC T6...T1 Ga/Gb、Ex ia IIC T6...T1 Gb)

NC (Ex db IIC T6...T1 Ga/Gb、Ex db IIC T6...T1 Gb)

ND (Ex db eb IIC T6...T1 Ga/Gb、Ex db eb IIC T6...T1 Gb)

NK (Ex ia IIC T6...T1 Ga/Gb、Ex ia IIIC T**°C Da/Db)

NL (Ex ec IIC T6...T1 Gc、Ex tc IIIC T**°C Dc)

NM (Ex db IIC T6...T1 Ga/Gb、Ex ta/tb IIIC T**°C Da/Db)

bb表示电子插件/输出, 可为A1 (FEL61, 2-wire 19-253VAC + test button)、

A2 (FEL62, 3-wire PNP 10-55VDC + test button)、

A3 (FEL64DC, relay DPDT 9-20VDC, contact 253V/6A + test button)、

A4 (FEL64, relay DPDT 19-253VAC/19-55VDC, contact 253V/6A+ test button)、

A7 (FEL67, 2-wire PFM + test button)、

A8 (FEL68, 2-wire NAMUR + test button)、

GA (FEL60D, density/concentration)、

9Y (基于上述的微调, 与防爆无关);

- c**表示显示/操作, 可为A (带/不带、开关)、
B (外部可见LED模块、开关)、
Y (基于上述的微调, 与防爆无关);
- d**表示外壳/材质, 可为A (单腔、塑料)、
B (单腔、铝合金)、
C (单腔、316L)、
M (两腔、铝合金)、
Y (基于上述的微调, 与防爆无关);
- e**表示电气连接, 可为A (Gland M20, plastic, IP66/68, NEMA Type 4X/6P)、
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)、
G (Thread G1/2, IP66/68 NEMA Type 4X/6P)、
H (Thread NPT1/2, IP66/68 NEMA Type 4X/6P)、
I (Thread NPT3/4, IP66/68 NEMA Type 4X/6P)、
M (Plug M12, IP66/67 NEMA Type 4X)、
Y (基于上述的微调, 与防爆无关);
- f**表示应用, 可为C (介质 max 80oC/176oF, max 25bar)、
N (介质 max 120oC/248oF, max 40bar ECTFE)、
P (介质 max 150oC/302oF, max 40bar PFA)、
T (介质 max 150oC/302oF, max 25bar Enamel)、
9 (基于上述的微调, 与防爆无关);
- g**表示表面涂层, 可为N (涂覆ECTFE)、
P (涂覆PFA Edlon)、
Q (涂覆PFA RubyRed)、
R (涂覆PFA、导电性)、
T (涂覆Enamel);
- h**表示探头类型, 可为2 (延长探头)、
3 (短探头)、
9 (基于上述的微调, 与防爆无关);
- i**表示探头长度/材料, 可为BN~YY (与防爆无关);
- ij kkk**表示过程连接型式和/密封面, 可为AA AAA ~99 9YY (与防爆无关);
- l**表示应用程序包, 可为EH~E9 (与防爆无关);
- mm**表示服务, 可为HA~I9 (与防爆无关);

nn表示测试/证书/声明, 可为JL (环境温度 -50oC/-58oF)、
 JN (环境温度 -52oC/-62oF)、
 JT (环境温度 -60oC/-76oF)、
 JA~K9 (与防爆无关);

oo表示附加认证, 可为LA~L9 (与防爆无关);

pp表示传感器设计, 可为MR (温度隔离)、
 MS (温度隔离+气密穿通件)、
 M9 (基于上述的微调, 与防爆无关);

qq表示安装附件, 可为NF (蓝牙)、
 NG (预留蓝牙功能)、
 O9 (基于上述的微调, 与防爆无关);

rr表示配备附件, 可为PA (防水罩、316L)、
 PB (防水罩、塑料)、
 R6 (电磁干扰)、
 R9 (基于上述的微调, 与防爆无关);

ss表示标牌, 可为Z1或Z9 (与防爆无关)。

Liquiphant FTL64-**aa bb c d e f g h i j kkk+l mm nn oo pp qq rr ss**

aa表示NEPSI认可代码, 可为NB (Ex ia IIC T6...T1 Ga/Gb、Ex ia IIC T6...T1 Gb)
 NC (Ex db IIC T6...T1 Ga/Gb、Ex db IIC T6...T1 Gb)
 ND (Ex db eb IIC T6...T1 Ga/Gb、Ex db eb IIC T6...T1 Gb)
 NK (Ex ia IIC T6...T1 Ga/Gb、Ex ia IIIC T**°C Da/Db)
 NL (Ex ec IIC T6...T1 Gc、Ex tc IIIC T**°C Dc)
 NM (Ex db IIC T6...T1 Ga/Gb、Ex ta/tb IIIC T**°C Da/Db)

bb表示电子插件/输出, 可为A1 (FEL61, 2-wire 19-253VAC + test button)、
 A2 (FEL62, 3-wire PNP 10-55VDC + test button)、
 A3 (FEL64DC, relay DPDT 9-20VDC,
 contact 253V/6A + test button)、
 A4 (FEL64, relay DPDT 19-253VAC/19-55VDC,
 contact 253V/6A+ test button)、
 A7 (FEL67, 2-wire PFM + test button)、
 A8 (FEL68, 2-wire NAMUR + test button)、
 GA (FEL60D, density/concentration)、
 9Y (基于上述的微调, 与防爆无关);

- c**表示显示/操作, 可为A (带/不带、开关)、
B (外部可见LED模块、开关)、
Y (基于上述的微调, 与防爆无关);
- d**表示外壳/材质, 可为A (单腔、塑料)、
B (单腔、铝合金)、
C (单腔、316L)、
M (两腔、铝合金)、
Y (基于上述的微调, 与防爆无关);
- e**表示电气连接, 可为A (Gland M20, plastic, IP66/68, NEMA Type 4X/6P)、
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)、
G (Thread G1/2, IP66/68 NEMA Type 4X/6P)、
H (Thread NPT1/2, IP66/68 NEMA Type 4X/6P)、
I (Thread NPT3/4, IP66/68 NEMA Type 4X/6P)、
M (Plug M12, IP66/67 NEMA Type 4X)、
Y (基于上述的微调, 与防爆无关);
- f**表示应用, 可为D (介质 max 280oC/536oF, max 100bar)、
E (介质 max 230oC/446oF, max 100bar)、
R (介质 max 230oC/446oF, max 40bar PFA)、
9 (介质 max 300oC/572oF, max 100bar);
- g**表示表面涂层, 可为A (标准Ra<3.2µm/126uin)、
R (涂覆PFA、导电性)、
Y (基于上述的微调, 与防爆无关);
- h**表示探头类型, 可为1 (一体型)、
2 (延长探头)、
9 (基于上述的微调, 与防爆无关);
- i**表示探头长度/材料, 可为AC~YY (与防爆无关);
- jj kkk**表示过程连接型式和/密封面, 可为AA AAA ~99 9YY (与防爆无关);
- ll**表示应用程序包, 可为EH~E9 (与防爆无关);
- mm**表示服务, 可为HA~I9 (与防爆无关);
- nn**表示测试/证书/声明, 可为JL (环境温度 -50oC/-58oF)、
JN (环境温度 -52oC/-62oF)、
JT (环境温度 -60oC/-76oF)、
JA~K9 (与防爆无关);

- oo表示附加认证，可为LA~L9（与防爆无关）；
- pp表示传感器设计，可为空缺（无备选）或M9（与防爆无关）；
- qq表示安装附件，可为NF（蓝牙）、
 NG（预留蓝牙功能）、
 O9（基于上述的微调，与防爆无关）；
- rr表示配备附件，可为PA（防水罩、316L）、
 PB（防水罩、塑料）、
 R6（电磁干扰）、
 R9（基于上述的微调，与防爆无关）；
- ss表示标牌，可为Z1或Z9（与防爆无关）。

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、产品的安装及维护应避免产生静电火花危险。
- 3、铝合金外壳用于0区时，应防止由于冲击或摩擦引起的点燃危险。
- 4、设备保护级别为Gc的产品不得安装使用于超过GB/T 16935.1规定的最大污染等级为2级的场所。

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、产品使用环境温度、介质温度和温度组别的关系见文件961003762-B。
- 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FEL42/62/62LT DC-PNP

防爆型式	电源输入	输出
Ex e	U = 10~55VDC ¹⁾ P _{max} ≤ 0.5W I _{max} = 10mA	I _{Lmax} = I _{SCmax} = 350mA (包括过载保护)
Ex t	U = 10~55VDC ¹⁾	
Ex d	U = 10~35VDC ²⁾ P _{max} ≤ 0.5W; ≤ 1.2W ⁴⁾ I _{max} = 10mA	

电子插件FEL44/64/64E/64LT

防爆型式	电源输入	输出
Ex e	$U = 19 \sim 253VAC$ ¹⁾²⁾ / $50 \sim 60Hz$ $P_{max} = 25VA$ or $U = 19 \sim 55VDC$ ¹⁾²⁾ $U = 19 \sim 35VDC$ ¹⁾³⁾ $P_{max} = 1.3W; \leq 2.0W$ ⁴⁾	2 potential free change over contacts (DPDT)
Ex t		$U_{max} = 253VAC$ ¹⁾²⁾ $I_{max} = 6A$ $P_{max} = 1500VA; \cos\phi = 1$ $P_{max} = 750VA; \cos\phi = 0.7$ or $U_{max} = 30VDC$
Ex d		$I_{max} = 6A$ $U_{max} = 125VDC$ ¹⁾²⁾ $U_{max} = 35VDC$ ¹⁾³⁾ $I_{max} = 0.2A$

电子插件FEL64DC/64DC_E/64DC_LT

防爆型式	电源输入	输出
Ex e	$U = 9 \sim 20VDC$ ¹⁾²⁾³⁾ $P_{max} = 1.0W; \leq 1.7W$ ⁴⁾	2 potential free change over contacts (DPDT)
Ex t		$U_{max} = 253VAC$ ¹⁾²⁾ $I_{max} = 6A$ $P_{max} = 1500VA; \cos\phi = 1$ $P_{max} = 750VA; \cos\phi = 0.7$ or $U_{max} = 30VDC$
Ex d		$I_{max} = 6A$ $U_{max} = 125VDC$ ¹⁾²⁾ $U_{max} = 35VDC$ ¹⁾³⁾ $I_{max} = 0.2A$

电子插件FEL61/61LT

防爆型式	电源输入	输出
Ex e	$U = 19 \sim 253VAC$ $P_{max} < 2VA$ at I_{Lmax} $I_{max} = 10mA$	$I_{Lmax} = I_{SCmax} = 350mA$
Ex t		
Ex d		

电子插件FEL67 PFM

防爆型式	电源输入
Ex i	$U_i = 14.6V$ $I_i = 100mA$ $P_i = 633mW$ $C_i = 3nF$ $L_i = 0\mu H$ $U_{nom} = 12.5VDC$ ¹⁾ $U_m = 250V$ $P_{max} = 100mW$
Ex e	
Ex t	
Ex d	

电子插件FEL48/68 NAMUR

防爆型式	电源输入
Ex i	$U_i = 16V$ $I_i = 52mA$ $P_i = 170mW$ $C_i = 30nF$ $L_i = 0\mu H$
Ex e	$U_{nom} = 9.0VDC$ $U_m = 250V$ ¹⁾
Ex t	
Ex d	

电子插件FEL60D Density

防爆型式	电源输入
Ex i	$U_i = 27.6V$ $I_i = 93mA$ $P_i = 640mW$ $C_i = 3nF$ $L_i = 3\mu H$
Ex e	$U_{nom} = 26VDC$ ¹⁾ $U_m = 250V$ $P_{max} = 150mW$
Ex t	
Ex d	

LED模块

防爆型式	电源输入
Ex e	$U_{nom} = 19\sim 253VAC$ ¹⁾ ; $12\sim 55VDC$ ¹⁾
Ex t	$P_{max} \leq 6VA$; $< 0.7W$
Ex d	$U_m = 250V$

BT模块

防爆型式	电源输入
Ex i	$U_i = 10.0V$ $I_i = 16mA$ $P_i = 40mW$ $C_i = 0\mu F$ $L_i = 0\mu H$
Ex e	$U_{nom} = 3.3VDC$ ¹⁾ $U_m = 250V$
Ex t	
Ex d	

注:

- 1) 最大值, 包括了10%的电源波动。
- 2) 环境温度 $-50^{\circ}C \sim +70^{\circ}C$
- 3) 环境温度 $-60^{\circ}C \sim +70^{\circ}C$
- 4) 装配LED模块时

4、本安产品必须与已通过防爆认证的关联设备配套共同组成本安防爆系统方可使用于爆炸性气体环境/可燃性粉尘环境。其系统接线必须同时遵守本产品 and 所配关联设备的使用说明书要求, 接线端子不得接错。

5、本安产品与关联设备的连接电缆应为带绝缘护套的屏蔽电缆, 其屏蔽层应接地。

6、非Ex ia产品的电缆引入口须配用经防爆检验认可的、符合相应防爆型式及防爆等级的电缆引入装置或封堵件; 安装后, 产品外壳防护等级不得低于GB/T 4208-2017规定的IP54。选用的电缆引入装置或封堵件应与产品的工作条件相适应。

7、产品现场使用和维护时, 必须遵守“断电源后开盖”的原则。

8、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。

9、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”、GB/T 3836.18-2017“爆炸性环境 第18部分：本质安全电气系统”、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”及GB 15577-2018“粉尘防爆安全规程”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) 介质温度范围
 - f) 安全电气参数

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
二〇二三年六月十五日

注：本附件是对2022年01月20日签发的附件 II 的更新。



(GYJ21.1248X)

(Attachment III)

Attachment III to GYJ21.1248X
(translation)

1. Description

Liquid Level Switch typed Liquiphant FTL41, FTL51B, FTL62 and FTL64, manufactured by Endress+Hauser SE+Co.KG, has been certified and accords with following standards:

GB/T 3836.1-2021 Explosive atmospheres-Part 1: Equipment-General requirements

GB/T 3836.2-2021 Explosive atmospheres-Part 2: Equipment protection by flameproof enclosure “d”

GB/T 3836.3-2021 Explosive atmospheres-Part 3: Equipment protection by increased safety “e”

GB/T 3836.4-2021 Explosive atmospheres-Part 4: Equipment protection by intrinsic safety “i”

GB/T 3836.8-2021 Explosive atmospheres-Part 8: Equipment protection by type of protection “n”

GB 3836.20-2010 Explosive atmospheres-Part 20: Equipment with equipment protection level (EPL) Ga

GB/T 3836.31-2021 Explosive atmospheres- Part 31: Equipment dust ignition protection by enclosure “t”

Type approved in this certificate is shown as following:

	Liquiphant FTL41- aa bb c d e f g h i j kkk+mm nn oo qq rr ss	
aa	NEPSI approval code:	
	NB	Ex ia II C T6...T1 Ga/Gb, Ex ia II C T6...T1 Gb
	NC	Ex db II C T6...T1 Ga/Gb, Ex db II C T6...T1 Gb
bb	Ouput:	
	A2	FEL42, 3-wire PNP 10~55VDC
	A4	FEL44, Relay DPDT 19~253VAC/19~55VDC Contact 253V/6A
	A8	FEL48, 2-wire NAMUR
	9Y	Modification of one of the above named electronics in: Switch point, switch time or switch –density. Changes not explosion protection relevant
c	Display; Operation:	
	A	W/o; switch
	Y	Modification of the above named option in: Color of LED. Changes not explosion protection relevant
d	Housing; Material:	
	A	Single compartment; plastic
	B	Single compartment; Alu, coated
	Y	Modification of one of the above named option in: Color or Coating type. Enclosure partly potted, Enclosure prepared for lead-sealed. Changes not explosion protection relevant
e	Electrical Connection:	
	A	Gland M20, plastic, IP66/68, NEMA Type 4X/6P
	B	Gland M20, brass nickel plated, IP66/68 NEMA Type 4X/6P
	F	Thread M20, IP66/68 NEMA Type 4X/6P

	G	Thread G1/2, IP66/68 NEMA Type 4X/6P
	H	Thread NPT1/2, IP66/68 NEMA Type 4X/6P
	I	Thread NPT3/4, IP66/68 NEMA Type 4X/6P
	M	Plug M12, IP66/67 NEMA Type 4X
	Y	Modification of one of the above named option: : NPT1/2-Reduction glued in to Encl. Assembled with third party cert. Cable gland or Blanking Element, blue plastic Ex i cable gland, Plug connector for Ex i. For Ex i Inst. Cable pre. assembled. Changes not explosion protection relevant
f	Application:	
	A	Process max 150°C, 40 bar
	Y	Modification of the above named option in: Reduction of Process Temperature or Pressure, Fork angled. Changes not explosion protection relevant
g	Surface finish:	
	A	Standard Ra <3,2um/126uin
	Y	Modification of the above named option in: Ra < 1,6um or better. Changes not explosion protection relevant
h	Probe version:	
	1	Compact version
	2	Extension tube
	3	Short tube version
	9	Modification of the above named option: Shorter than standard version, Probe angled. Changes not explosion protection relevant
ii	Probe length, material:	
	AA	Two characters representing different types of probe materials (316L or Alloy C) and length of probe in mm or inch
	to	
	YY	Modification of one of the above named option: Special version not given in the standard order code, Duplex Steel, different Alloy-C-version. Changes not explosion protection relevant
jj kkk	Process connection type and size:	
	AA AAA	Combination of two characters representing different types of process connections (Flange, thread, or Hygienic types), plus a triple number of combinations representing the different sizes of process connections. Not explosion protection relevant.
	to	
	99 9YY	Modification of one of the above named option in: Special version not given in the standard order code. Changes not explosion protection relevant
mm	Services:	
	HA	H or I plus a character or figure representing different services like cleaned from oli+fat, cleaned for Oxygen applications, or settings to the device different from delivery standard. Not mandatory, multiple selection possible. Not explosion protection relevant.
	to	
	I9	Modification of one of the above named option: Special version not given in the standard order code. Switch point, switch time or switch –density, Foam Detection, Gold plated Relay Contacts. Changes not explosion protection relevant
nn	Test, Certificate:	
	JA	J or K plus a character or figure representing different production tests (Pressure test,

	to	He-Leakage test, PMI test, ...) or material certificates for the wetted materials. Not mandatory, multiple selection possible. Not explosion protection relevant.
	K9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
oo	Additional approvals:	
	LD	L plus a character or figure representing different additional approvals (WHG, ship building, CRN, ...). Not mandatory, multiple selection possible.
	L9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
qq	Accessories mounted:	
	O9	Modification of one of the above named option: Special version not given in the standard order code, Sliding sleeve assembled. Changes not explosion protection relevant
rr	Accessories enclosed:	
	PB	Weather protection cover, plastic Sliding sleeve
	R9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
ss	Marking:	
	Z1	Tagging (TAG), 316L plate, Paper plate, Customer plate, RFID TAG
	Z9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant

	Liquiphant FTL51B- aa bb c d e f g h i j kkk+ll mm nn oo pp qq rr ss	
aa	NEPSI approval code:	
	NA	Ex ia II C T6...T1 Ga
	NB	Ex ia II C T6...T1 Ga/Gb Ex ia II C T6...T1 Gb
	NC	Ex db II C T6...T1 Ga/Gb Ex db II C T6...T1 Gb
	ND	Ex db eb II C T6...T1 Ga/Gb Ex db eb II C T6...T1 Gb
	NK	Ex ia II C T6...T1 Ga/Gb Ex ia II C T6...T1 Gb Ex ia IIIC T85°C...T165°C Da/Db Ex ia IIIC T85°C...T155°C Db
	NL	Ex ec II C T6...T1 Gc Ex ec nC II C T6...T1 Gc Ex tc IIIC T80°C...T150°C Dc
	NM	Ex db II C T6...T1 Ga/Gb Ex db II C T6...T1 Gb Ex ta/tb IIIC T85°C...T165°C Da/Db Ex tb IIIC T85°C...T155°C Db
bb	Ouput:	
	A1	FEL61, 2-wire 19-253VAC + test button
	A2	FEL62, 3-wire PNP 10-55VDC + test button
	A3	FEL64DC, relay DPDT 9-20VDC, contact 253V/6A + test button
	A4	FEL64, relay DPDT 19-253VAC/19-55VDC, contact 253V/6A + test button
	A7	FEL67, 2-wire PFM + test button

	A8	FEL68, 2-wire NAMUR + test button
	GA	FEL60D, density/concentration
	9Y	Modification of one of the above named electronics in: Switch point, switch time or switch –density. Changes not explosion protection relevant
c	Display; Operation:	
	A	W/o; switch
	B	LED module outside visible; switch
	Y	Modification of the above named option in: Color of LED. Changes not explosion protection relevant
d	Housing; Material:	
	A	Single compartment; plastic
	B	Single compartment; Alu, coated
	C	Single compartment; 316L, cast
	M	Dual compartment L-shape; Alu, coated
	Y	Modification of one of the above named option in: Color or Coating type. Enclosure partly potted, Enclosure prepared for lead-sealed. Changes not explosion protection relevant
e	Electrical Connection:	
	A	Gland M20, plastic, IP66/68, NEMA Type 4X/6P
	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
	G	Thread G1/2, IP66/68 NEMA Type 4X/6P
	H	Thread NPT1/2, IP66/68 NEMA Type 4X/6P
	I	Thread NPT3/4, IP66/68 NEMA Type 4X/6P
	M	Plug M12, IP66/67 NEMA Type 4X
	Y	Modification of one of the above named option: : NPT1/2-Reduction glued in to Encl. Assembled with third party cert. Cable gland or Blanking Element, blue plastic Ex i cable gland, Plug connector for Ex i. For Ex i Inst. Cable pre. assembled. Changes not explosion protection relevant
f	Application:	
	A	Process max 150oC/302oF, max 64bar
	B	Process max 150oC/302oF, max 100bar
	C	Process max 80oC/176oF, max 25bar
	9	Modification of the above named option in: Changes not explosion protection relevant
g	Surface finish:	
	A	Standard Ra <3,2um/126uin
	Y	Modification of the above named option in: Ra < 1,6um or better. Changes not explosion protection relevant
h	Probe version:	
	1	Compact version
	2	Extension tube
	3	Short tube version
	9	Modification of the above named option: Shorter than standard version, Probe angled. Changes not explosion protection relevant
i	Probe length, material:	

	AA	Two characters representing different types of probe materials (316L or Alloy C) and length of probe in mm or inch
	to	
	YY	Modification of one of the above named option: Special version not given in the standard order code, Duplex Steel, different Alloy-C-version. Changes not explosion protection relevant
jj kkk	Process Connection, Sealing Surface:	
	AA AAA	Combination of two characters representing different types of process connections (Flange, thread, or Hygienic types), plus a triple number of combinations representing the different sizes of process connections. Not explosion protection relevant.
	to	
	99 9YY	Modification of one of the above named option in: Special version not given in the standard order code. Changes not explosion protection relevant
ll	Application Package:	
	EH	E plus a character or figure representing different Application packages as Heartbeat Verification + Monitoring. Not mandatory, multiple selection possible
	to	
	E9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
mm	Services:	
	HA	H or I plus a character or figure representing different services like cleaned from oli+fat, cleaned for Oxygen applications, or settings to the device different from delivery standard. Not mandatory, multiple selection possible. Not explosion protection relevant.
	to	
	I9	Modification of one of the above named option: Special version not given in the standard order code. Switch point, switch time or switch –density, Foam Detection, Gold plated Relay Contacts. Changes not explosion protection relevant
nn	Test, Certificate, Declaration:	
	JL	Ambient temperature -50oC/-58oF
	JN	Ambient temperature -52oC/-62oF
	JT	Ambient temperature -60oC/-76oF
	JA	J or K plus a character or figure representing different production tests (Pressure test, He-Leakage test, PMI test, ...) or material certificates for the wetted materials. Not mandatory, multiple selection possible.
	to	
	K9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
oo	Additional approvals:	
	LA	L plus a character or figure representing different additional approvals (SIL, WHG, ship building, CRN, ...). Not mandatory, multiple selection possible.
	to	
	L9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
	Sensor design:	
pp	MR	Temperature separator
	MS	Temperature separator + Pressure tight feed through (Second line of defence)

	M9	Modification of one of the above named option: Special version not given in the standard order code, shorter, longer or angled version. Changes not explosion protection relevant
qq	Accessories mounted:	
	NF	Bluetooth
	O9	Modification of one of the above named option: Special version not given in the standard order code, Sliding sleeve assembled. Changes not explosion protection relevant
rr	Accessories enclosed:	
	PA	Weather protection cover, 316L
	PB	Weather protection cover, plastic
	R6	Test magnet outside
	R9	Modification of one of the above named option: Special version not given in the standard order code Sliding sleeve enclosed, Cable glands, Blanking Elements enclosed. Changes not explosion protection relevant
ss	Marking:	
	Z1	Tagging (TAG), 316L plate, Paper plate, Customer plate, RFID TAG
	Z9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant

	Liquiphant FTL62- aa bb c d e f g h ii jj kkk+ll mm nn oo pp qq rr ss	
aa	NEPSI approval code:	
	NB	Ex ia II C T6...T1 Ga/Gb Ex ia II C T6...T1 Gb
	NC	Ex db II C T6...T1 Ga/Gb Ex db II C T6...T1 Gb
	ND	Ex db eb II C T6...T1 Ga/Gb Ex db eb II C T6...T1 Gb
	NK	Ex ia II C T6...T1 Ga/Gb Ex ia IIIC T**°C Da/Db
	NL	Ex ec II C T6...T1 Gc Ex tc IIIC T**°C Dc
	NM	Ex db II C T6...T1 Ga/Gb Ex ta/tb IIIC T**°C Da/Db
	bb	Electronic, Output:
A1		FEL61, 2-wire 19-253VAC + test button
A2		FEL62, 3-wire PNP 10-55VDC + test button
A3		FEL64DC, relay DPDT 9-20VDC, contact 253V/6A + test button
A4		FEL64, relay DPDT 19-253VAC/19-55VDC, contact 253V/6A + test button
A7		FEL67, 2-wire PFM + test button
A8		FEL68, 2-wire NAMUR + test button
GA		FEL60D, density/concentration
9Y		Modification of one of the above named electronics in: Switch point, switch time or switch –density. Changes not explosion protection relevant
c	Display; Operation:	
	A	W/o; switch
	B	LED module outside visible; switch
	Y	Modification of the above named option in: Color of LED. Changes not explosion protection relevant

d	Housing; Material:	
	A	Single compartment; plastic
	B	Single compartment; Alu, coated
	C	Single compartment; 316L, cast
	M	Dual compartment L-shape; Alu, coated
	Y	Modification of one of the above named option in: Color or Coating type. Enclosure partly potted, Enclosure prepared for lead-sealed. Changes not explosion protection relevant
e	Electrical Connection:	
	A	Gland M20, plastic, IP66/68, NEMA Type 4X/6P
	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
	G	Thread G1/2, IP66/68 NEMA Type 4X/6P
	H	Thread NPT1/2, IP66/68 NEMA Type 4X/6P
	I	Thread NPT3/4, IP66/68 NEMA Type 4X/6P
	M	Plug M12, IP66/67 NEMA Type 4X
	Y	Modification of one of the above named option: : NPT1/2-Reduction glued in to Encl. Assembled with third party cert. Cable gland or Blanking Element, blue plastic Ex i cable gland, Plug connector for Ex i. For Ex i Inst. Cable pre. assembled. Changes not explosion protection relevant
f	Application:	
	C	Process max 80oC/176oF, max 25bar
	N	Process max 120oC/248oF, max 40bar (ECTFE)
	P	Process max 150oC/302oF, max 40bar (PFA)
	T	Process max 150oC/302oF, max 25bar (Enamel)
	9	Modification of the above named option in: Changes not explosion protection relevant
g	Surface Refinement:	
	N	Coating ECTFE
	P	Coating PFA (Edlon)
	Q	Coating PFA (RubyRed)
	R	Coating PFA (conductive)
	T	Coating Enamel
h	Probe version:	
	2	Extension tube
	3	Short tube version
	9	Modification of the above named option: Shorter than standard version, Probe angled. Changes not explosion protection relevant
i	Probe length, material:	
	BN	Two characters representing different types of probe coating materials (ECTFE, PFA, ENAMEL) and length of probe in mm or inch
	YY	Modification of one of the above named option: Special version not given in the standard order code, Duplex Steel, different Alloy-C-version. Changes not explosion protection relevant
jj kkk	Process Connection, Sealing Surface:	
	AA AAA	Combination of two characters representing different types of process connections

	to	(Flange), plus a triple number of combinations representing the different sizes of process connections. Not explosion protection relevant.
	99 9YY	Modification of one of the above named option in: Special version not given in the standard order code. Changes not explosion protection relevant
II	Application Package:	
	EH	E plus a character or figure representing different Application packages as
	to	EH=Heartbeat Verification + Monitoring or EL= Prepared for Heartbeat Verification + Monitoring. Not mandatory
	E9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
mm	Services:	
	HA	H or I plus a character or figure representing different services like cleaned from oli+fat,
	to	cleaned for Oxygen applications, or settings to the device different from delivery standard. Not mandatory, multiple selection possible.
	I9	Modification of one of the above named option: Special version not given in the standard order code. Switch point, switch time or switch –density, Foam Detection, Gold plated Relay Contacts. Changes not explosion protection relevant
nn	Test, Certificate, Declaration:	
	JL	Ambient temperature -50oC/-58oF
	JN	Ambient temperature -52oC/-62oF
	JT	Ambient temperature -60oC/-76oF
	JA	J or K plus a character or figure representing different production tests (Pressure test,
	to	He-Leakage test, PMI test, ...) or material certificates for the wetted materials. Not mandatory, multiple selection possible.
	K9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
oo	Additional approvals:	
	LA	L plus a character or figure representing different additional approvals (SIL, WHG, ship
	to	building, CRN, ...). Not mandatory, multiple selection possible.
	L9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
	Sensor design:	
pp	MR	Temperature separator
	MS	Temperature separator + Pressure tight feed through (Second line of defence)
	M9	Modification of one of the above named option: Special version not given in the standard order code, shorter, longer or angled version. Changes not explosion protection relevant
qq	Accessories mounted:	
	NF	Bluetooth
	NG	Prepared for Bluetooth

	O9	Modification of one of the above named option: Special version not given in the standard order code, Sliding sleeve assembled. Changes not explosion protection relevant
rr	Accessories enclosed:	
	PA	Weather protection cover, 316L
	PB	Weather protection cover, plastic
	R6	Test magnet outside
	R9	Modification of one of the above named option: Special version not given in the standard order code Sliding sleeve enclosed, Cable glands , Blanking Elements enclosed. Changes not explosion protection relevant
ss	Marking:	
	Z1	Tagging (TAG), 316L plate, Paper plate, Customer plate, RFID TAG
	Z9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant

	Liquiphant FTL64- aa bb c d e f g h ii jj kkk+ll mm nn oo pp qq rr ss	
aa	NEPSI approval code:	
	NB	Ex ia II C T6...T1 Ga/Gb Ex ia II C T6...T1 Gb
	NC	Ex db II C T6...T1 Ga/Gb Ex db II C T6...T1 Gb
	ND	Ex db eb II C T6...T1 Ga/Gb Ex db eb II C T6...T1 Gb
	NK	Ex ia II C T6...T1 Ga/Gb Ex ia IIIC T**°C Da/Db
	NL	Ex ec II C T6...T1 Gc Ex tc IIIC T**°C Dc
	NM	Ex db II C T6...T1 Ga/Gb Ex ta/tb IIIC T**°C Da/Db
bb	Electronic, Output:	
	A1	FEL61, 2-wire 19-253VAC + test button
	A2	FEL62, 3-wire PNP 10-55VDC + test button
	A3	FEL64DC, relay DPDT 9-20VDC, contact 253V/6A + test button
	A4	FEL64, relay DPDT 19-253VAC/19-55VDC, contact 253V/6A + test button
	A7	FEL67, 2-wire PFM + test button
	A8	FEL68, 2-wire NAMUR + test button
	GA	FEL60D, density/concentration
	9Y	Modification of one of the above named electronics in: Switch point, switch time or switch –density. Changes not explosion protection relevant
c	Display; Operation:	
	A	W/o; switch
	B	LED module outside visible; switch
	Y	Modification of the above named option in: Color of LED. Changes not explosion protection relevant
d	Housing; Material:	
	A	Single compartment; plastic
	B	Single compartment; Alu, coated
	C	Single compartment; 316L, cast

	M	Dual compartment L-shape; Alu, coated
	Y	Modification of one of the above named option in: Color or Coating type. Enclosure partly potted, Enclosure prepared for lead-sealed. Changes not explosion protection relevant
e	Electrical Connection:	
	A	Gland M20, plastic, IP66/68, NEMA Type 4X/6P
	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
	G	Thread G1/2, IP66/68 NEMA Type 4X/6P
	H	Thread NPT1/2, IP66/68 NEMA Type 4X/6P
	I	Thread NPT3/4, IP66/68 NEMA Type 4X/6P
	M	Plug M12, IP66/67 NEMA Type 4X
	Y	Modification of one of the above named option: : NPT1/2-Reduction glued in to Encl. Assembled with third party cert. Cable gland or Blanking Element, blue plastic Ex i cable gland, Plug connector for Ex i. For Ex i Inst. Cable pre. assembled. Changes not explosion protection relevant
f	Application:	
	D	Process max 280oC/536oF, max 100bar
	E	Process max 230oC/446oF, max 100bar
	R	Process max 230oC/446oF, max 40bar (PFA)
	9	Process max 300oC/572oF, max 100bar Modification of the above named option in: Changes not explosion protection relevant
g	Surface Refinement:	
	A	Standard Ra<3,2µm/126µin
	R	Coating PFA (conductive)
	Y	Modification of the above named option in: For Example: surface Refinement Ra<= 0,5µm, or Surface electropolished not explosion protection relevant
h	Probe version:	
	1	Compact version
	2	Extension tube
	9	Modification of the above named option: Shorter than standard version, Probe angled. Changes not explosion protection relevant
ii	Probe length, material:	
	AC to	Two characters representing different types of probe materials (316L/AlloyC22) and length of probe in mm or inch
	YY	Modification of one of the above named option: Special version not given in the standard order code, Duplex Steel, different Alloy-C-version. Changes not explosion protection relevant
jj kkk	Process Connection, Sealing Surface:	
	AA AAA to	Combination of two characters representing different types of process connections (Flange), plus a triple number of combinations representing the different sizes of process connections. Not explosion protection relevant.
	99 9YY	Modification of one of the above named option in: Special version not given in the standard order code.

		Changes not explosion protection relevant
ll	Application Package:	
	EH to	E plus a character or figure representing different Application packages as EH= Heartbeat Verification + Monitoring or EL= Prepared for Heartbeat Verification + Monitoring. Not mandatory
	E9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
mm	Services:	
	HA to	H or I plus a character or figure representing different services like cleaned from oli+fat, cleaned for Oxygen applications, or settings to the device different from delivery standard. Not mandatory, multiple selection possible.
	I9	Modification of one of the above named option: Special version not given in the standard order code. Switch point, switch time or switch –density, Foam Detection, Gold plated Relay Contacts. Changes not explosion protection relevant
nn	Test, Certificate, Declaration:	
	JL	Ambient temperature -50oC/-58oF
	JN	Ambient temperature -52oC/-62oF
	JT	Ambient temperature -60oC/-76oF
	JA to	J or K plus a character or figure representing different production tests (Pressure test, He-Leakage test, PMI test, ...) or material certificates for the wetted materials. Not mandatory, multiple selection possible.
	K9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
oo	Additional approvals:	
	LA to	L plus a character or figure representing different additional approvals (SIL, WHG, ship building, CRN, ...). Not mandatory, multiple selection possible.
	L9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant
	Sensor design:	
pp	-	No option available
	M9	Modification of one of the above named option: Special version not given in the standard order code, shorter, longer or angled version. Changes not explosion protection relevant
qq	Accessories mounted:	
	NF	Bluetooth
	NG	Prepared for Bluetooth
	O9	Modification of one of the above named option: Special version not given in the standard order code, Sliding sleeve assembled. Changes not explosion protection relevant
rr	Accessories enclosed:	
	PA	Weather protection cover, 316L

	PB	Weather protection cover, plastic
	R6	Test magnet outside
	R9	Modification of one of the above named option: Special version not given in the standard order code Sliding sleeve enclosed, Cable glands, Blanking Elements enclosed. Changes not explosion protection relevant
ss	Marking:	
	Z1	Tagging (TAG), 316L plate, Paper plate, Customer plate, RFID TAG
	Z9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant

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 information on the dimensions of the flameproof joints contact the manufacturer.
- 2.2 The Liquid Level Switches Liquiphant shall be installed and maintained such that hazards caused by electrostatic discharge are excluded.
- 2.3 For Liquid Level Switches Liquiphant 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.
- 2.4 Products with equipment protection level Gc shall only be used in an area of not more than pollution degrees 2, as defined in GB/T 16935.1.

3. Conditions for Safe Use

- 3.1 The external earth connection facility shall be connected reliably.
- 3.2 Regarding the relationship between the temperature class, the maximum permissible ambient and process temperatures, refer to the document 961003762-B.
- 3.3 Electrical data:

FEL42/62/62LT DC-PNP Electronic Insert

Designation	Input	Output
Ex e	U = 10~55VDC ¹⁾ P _{max} ≤ 0.5W I _{max} = 10mA	I _{Lmax} = I _{SCmax} = 350mA (includes overload protection)
Ex t	U = 10~55VDC ¹⁾	
Ex d	U = 10~35VDC ²⁾ P _{max} ≤ 0.5W; ≤ 1.2W ⁴⁾ I _{max} = 10mA	

FEL44/64/64E/64LT Electronic Insert

Designation	Input	Output
Ex e	$U = 19 \sim 253\text{VAC}^{1)2)}$ / $50 \sim 60\text{Hz}$ $P_{\max} = 25\text{VA}$ or $U = 19 \sim 55\text{VDC}^{1)2)}$ $U = 19 \sim 35\text{VDC}^{1)3)}$ $P_{\max} = 1.3\text{W}; \leq 2.0\text{W}^{4)}$	2 potential free change over contacts (DPDT) $U_{\max} = 253\text{VAC}^{1)2)}$ $I_{\max} = 6\text{A}$ $P_{\max} = 1500\text{VA}; \cos\varphi = 1$ $P_{\max} = 750\text{VA}; \cos\varphi = 0.7$ or $U_{\max} = 30\text{VDC}$
Ex t		$I_{\max} = 6\text{A}$ $U_{\max} = 125\text{VDC}^{1)2)}$ $U_{\max} = 35\text{VDC}^{1)3)}$
Ex d		$I_{\max} = 0.2\text{A}$

FEL64DC/64DC_E/64DC_LT Electronic Insert

Designation	Input	Output
Ex e	$U = 9 \sim 20\text{VDC}^{1)2)3)}$ $P_{\max} = 1.0\text{W}; \leq 1.7\text{W}^{4)}$	2 potential free change over contacts (DPDT) $U_{\max} = 253\text{VAC}^{1)2)}$ $I_{\max} = 6\text{A}$ $P_{\max} = 1500\text{VA}; \cos\varphi = 1$ $P_{\max} = 750\text{VA}; \cos\varphi = 0.7$ or $U_{\max} = 30\text{VDC}$
Ex t		$I_{\max} = 6\text{A}$ $U_{\max} = 125\text{VDC}^{1)2)}$ $U_{\max} = 35\text{VDC}^{1)3)}$
Ex d		$I_{\max} = 0.2\text{A}$

FEL61/61LT Electronic Insert

Designation	Input	Output
Ex e	$U = 19 \sim 253\text{VAC}$	$I_{L\max} = I_{SC\max} = 350\text{mA}$
Ex t	$P_{\max} < 2\text{VA}$ at $I_{L\max}$	
Ex d	$I_{\max} = 10\text{mA}$	

FEL67 PFM Electronic Insert

Designation	Input
Ex i	$U_i = 14.6\text{V}$ $I_i = 100\text{mA}$ $P_i = 633\text{mW}$ $C_i = 3\text{nF}$ $L_i = 0\mu\text{H}$
Ex e	$U_{\text{nom}} = 12.5\text{VDC}^{1)}$ $U_m = 250\text{V}$ $P_{\max} = 100\text{mW}$
Ex t	

Ex d	
------	--

FEL48/68 NAMUR Electronic Insert

Designation	Input
Ex i	$U_i = 16V$ $I_i = 52mA$ $P_i = 170mW$ $C_i = 30nF$ $L_i = 0\mu H$
Ex e	$U_{nom} = 9.0VDC$ $U_m = 250V$ ¹⁾
Ex t	
Ex d	

FEL60D Density Electronic Insert

Designation	Input
Ex i	$U_i = 27.6V$ $I_i = 93mA$ $P_i = 640mW$ $C_i = 3nF$ $L_i = 3\mu H$
Ex e	$U_{nom} = 26VDC$ ¹⁾ $U_m = 250V$ $P_{max} = 150mW$
Ex t	
Ex d	

LED Module

Designation	Input
Ex e	$U_{nom} = 19 \sim 253VAC$ ¹⁾ ; $12 \sim 55VDC$ ¹⁾
Ex t	$P_{max} \leq 6VA$; $< 0.7W$
Ex d	$U_m = 250V$

BT Module

Designation	Input
Ex i	$U_i = 10.0V$ $I_i = 16mA$ $P_i = 40mW$ $C_i = 0\mu F$ $L_i = 0\mu H$
Ex e	$U_{nom} = 3.3VDC$ ¹⁾ $U_m = 250V$
Ex t	
Ex d	

Note:

- 1) maximum, including 10% power fluctuations
- 2) Ambient temperature $-50^\circ C \sim +70^\circ C$
- 3) Ambient temperature $-60^\circ C \sim +70^\circ C$
- 4) When assembling the LED module

3.4 Intrinsically safe product should be used in explosive gas atmospheres together with approved associated apparatus, follow the instruction manual of this product and associated apparatus when connecting the wiring. Connect the wiring terminals correctly.

3.5 Connecting cable between intrinsically safe product and associated apparatus should be insulated screen cable; connect the cable screen functionally to earth ground.

3.6 For Non-Ex ia explosion protection, suitable certified cable glands or blanking plugs for unused holes shall be used and correctly installed. After installation, degree of protection of enclosure is at least IP54 according to GB/T 4208-2017. The cable glands and blanking plugs to be used shall be suitable for the product working conditions.

3.7 Obey the warning "Keep tight when the circuit is alive" when the area is known to be hazardous.

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

3.9 For installation, use and maintenance of this product, the end user shall 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".

GB/T 3836.18-2017 "Explosive atmospheres-Part 18: Intrinsically safe electrical systems".


GB 15577-2018 "Safety regulations for dust explosion prevention and protection". (Only if installed in dust hazardous areas)

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 include these contents listed below:

- 1) NEPSI logo 
- 2) Ex marking
- 3) certificate number
- 4) ambient temperature range
- 5) Medium temperature range
- 6) safety parameters

In case the nameplate does not provide enough space, information can be given in the manual, provided the nameplate shows a link to the appropriate documentation.



Note: This attachment is the amendment to the attachment II issued on 2022.01.20.