



防爆合格证

证 号: GYJ25.1001X

制 造 商 Endress+Hauser SE+Co. KG

(地址: Hauptstrasse 1, 79689 Maulburg Germany)

产 品 名 称 液体音叉开关

型 号 规 格 Liquiphant FTL41、FTL51B、FTL62、FTL63、FTL64

防 爆 标 志 见本证书附件

产 品 标 准 /

图 样 编 号 961003648

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 3836.20-2010, GB/T 3836.31-2021
特颁发此证。

本证书有效期: 2025 年 02 月 18 日 至 2030 年 02 月 17 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。

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 五 年 二 月 十 八 日

本证书仅对与认可文件和样品一致的产品有效。



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Worldwide Access

EXPLOSION PROTECTION

CERTIFICATE OF CONFORMITY

Cert No. GYJ25.1001X

Manufacturer	Endress+Hauser SE+Co. KG (Address:Hauptstrasse 1, 79689 Maulburg Germany)
Product	Liquid Level Switch
Model	Liquiphant FTL41, FTL51B, FTL62, FTL63 and FTL64
Ex marking	Specified in the attachment(s) to this certificate.
Product standard	/
Drawing number	961003648

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 3836.20-2010, GB/T 3836.31-2021

Valid until: 2030.02.17

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)

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 2025.02.18

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



(GYJ25.1001X)

(Attachment I)

GYJ25.1001X 防爆合格证附件 I

由 Endress+Hauser SE+Co. KG 生产的 Liquiphant FTL41、FTL51B、FTL62、FTL63、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”保护的設備

GB/T 3836.3-2021 爆炸性环境 第 3 部分：由增安型“e”保护的設備

GB/T 3836.4-2021 爆炸性环境 第 4 部分：由本质安全型“i”保护的設備

GB/T 3836.8-2021 爆炸性环境 第 8 部分：由“n”型保护的設備

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

GB/T 3836.31-2021 爆炸性环境 第 31 部分：由防粉尘点燃外壳“t”保护的設備
产品防爆标志详见型号规格，防爆合格证号 GYJ25.1001X。

本证书认可的产品型号规格如下：

Liquiphant FTL41-**aa bb c d e f g h ii jj kkk** + **mm nn oo 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)；

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)、
D (单腔，316L，卫生型)、
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 $Ra < 3.2 \mu m/126 \mu in$)、

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);

ii 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);

以下选项为可选项, 可为空缺。

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 NJ (带观察窗的盖板; 玻璃)、

NK (带观察窗的盖板; 塑料)、

09 (基于上述的微调, 与防爆无关);

rr 表示配备配件, 可为 AA~YY (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 ii jj kkk** + **yy ll mm nn oo pp qq rr zz 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 T**°C Da/Db, Ex ia IIIC T**°C Db)、

NL (Ex ec IIC T6...T1 Gc, Ex ec nC IIC T6...T1 Gc,

Ex tc IIIC T**°C Dc)、

NM (Ex db IIC T6...T1 Ga/Gb, Ex db IIC T6...T1 Gb,

Ex ta/tb IIIC T**°C Da/Db, Ex tb IIIC T8**°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)、

D (单腔, 316L, 卫生型)、

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)、

D (Gland M20, 316L, hygiene, 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)、

J (Gland M20, plastic blue, 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/302°F, max 64bar)、

B (介质 max 150°C/302°F, max 100bar)、

C (介质 max 80°C/176°F, 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<3.2 μm/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);

ii 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);

以下选项为可选项, 可为空缺。

yy 表示操作语言显示, 可为 AA~YY (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 -50°C/-58°F)、
JT (环境温度 -60°C/-76°F)、
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 MA~ME (分体式传感器, TPR 电缆, 2m~30m + 墙装架/管装架, 316L)、
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)、

NG (蓝牙, NAMUR 输出时, 温度组别对应: T4...T1)、
NJ (带观察窗的盖板; 玻璃)、
NK (带观察窗的盖板; 塑料)、
OB (IEC/ATEX Ex d 隔爆堵头)、
O9 (基于上述的微调, 与防爆无关);

rr 表示配备配件, 可为 AA~YY (与防爆无关);

zz 表示固件版本, 可为 01~99 (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 ii jj kkk + yy ll mm nn oo pp qq rr zz 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, Ex ia IIC T6...T1 Gb, Ex ia IIIC T**°C Db)、
NL(Ex ec IIC T6...T1 Gc, Ex ec nC 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, Ex db IIC T6...T1 Gb, Ex ta/tb IIIC T**°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/材质, 可为 A (单腔、塑料)、

B (单腔、铝合金)、

C (单腔、316L)、

D (单腔, 316L, 卫生型)、

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)、

J (Gland M20, plastic blue, IP66/68 NEMA Type 4X6P/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 80°C/176°F, max 25bar)、

N (介质 max 120°C/248°F, max 40bar ECTFE)、

P (介质 max 150°C/302°F, max 40bar PFA)、

T (介质 max 150°C/302°F, 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)、

Y (基于上述的微调, 与防爆无关);

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);

ii 表示探头长度/材料, 可为 BN~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);

以下选项为可选项, 可为空缺。

yy 表示操作语言显示, 可为 AA~YY (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 -50°C/-58°F)、
JT (环境温度 -60°C/-76°F)、
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 MA~ME (分体式传感器, TPR 电缆, 2m~30m + 墙装架/管装架, 316L)、
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 (蓝牙, NAMUR 输出时, 温度组别对应 T4...T1)、
NJ (带观察窗的盖板: 玻璃)、
NK (带观察窗的盖板: 塑料)、
OB (IEC/ATEX Ex d 隔爆堵头)、
O9 (基于上述的微调, 与防爆无关);

rr 表示配备附件, 可为 AA~YY (与防爆无关);

zz 表示固件版本, 可为 01~99 (与防爆无关);

ss 表示标牌, 可为 Z1 或 Z9 (与防爆无关)。

Liquiphant FTL63-**aa bb c d e f g h ii jj kkk + yy ll mm nn oo pp qq rr zz 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 IIIC T**°C
Da/Db, Ex ia IIC T6...T1 Gb, Ex ia IIIC T**°C Db)、
NL (Ex ec IIC T6...T1 Gc, Ex tc IIIC T**°C Dc,
Ex ec nC IIC T6...T1 Gc)、

NM (Ex db IIC T6...T1 Ga/Gb, Ex ta/tb IIIC T**°C
Da/Db, Ex db IIC T6...T1 Gb, Ex tb IIIC T**°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/材质, 可为 A (单腔、塑料)、
B (单腔、铝合金)、
C (单腔、316L)、
D (单腔, 316L, 卫生型)、
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)、
D (Gland M20, 316L, hygiene, 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)、
J (Gland M20, plastic blue, IP66/68 NEMA Type 4X6P/6P)、
M (Plug M12, IP66/67 NEMA Type 4X/6P)、
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/302°F, max 64bar)、
B (介质 max 150°C/302°F, max 100bar)、
C (介质 max 80°C/176°F, max 25bar PFA)、
9 (基于上述的微调, 与防爆无关);

g 表示表面涂层, 可为 A (标准 Ra<3.2 μm/126uin)、
B (卫生型 Ra<0.76 μm/30uin)、
D (卫生型 Ra<0.03 μm/12uin)、
E (卫生型 Ra<0.03 μm/12uin 电抛光)、
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 (短管型)
9 (基于上述的微调, 与防爆无关);

ii 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/密封面, 可为 AA AAA~99 9YY (与防爆无关);

以下选项为可选项, 可为空缺。

yy 表示操作语言显示, 可为 AA~YY (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 -50°C/-58°F)、

JT (环境温度 -60°C/-76°F)、

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 MA~ME (分体式传感器, TPR 电缆, 2m~30m + 墙装架/管装架, 316L)、

MR (温度隔离)、

MS (温度隔离+气密馈通)、

M9 (与防爆无关);

qq 表示安装附件, 可为 NF (蓝牙)、

NG (蓝牙, NAMUR 输出时, 温度组别对应 T4...T1)、

NJ (玻璃视窗盖子)

NK (塑料视窗盖子)

OB (IEC/ATEX Ex d 隔爆堵头)、

O9 (基于上述的微调, 与防爆无关);

rr 表示配备附件, 可为 AA~YY (与防爆无关);

zz 表示固件版本, 可为 01~99 (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 ii jj kkk** + **yy ll mm nn oo pp qq rr zz ss**

aa 表示 NEPSI 认可代码, 可为 NB(Ex db ia IIC T6...T1 Ga/Gb, Ex db 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 db ia IIC T6...T1 Ga/Gb, Ex ia ta IIC T**°C

Da/Db, Ex db ia IIC T6...T1 Gb, Ex ia tb IIC T**°C Db)、

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

Ex ec nC IIC T6...T1 Gc)、

NM(Ex db IIC T6...T1 Ga/Gb, Ex ta/tb IIIC T**°C

Da/Db, Ex db IIC T6...T1 Gb, Ex tb IIIC T**°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/材质, 可为 A (单腔、塑料)、
B (单腔、铝合金)、
C (单腔、316L)、
D (单腔, 316L, 卫生型)、
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)、
D (Gland M20, 316L, hygiene, 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)、
J (Gland M20, plastic blue, IP66/68 NEMA Type 4X6P/6P)、
M (Plug M12, IP66/67 NEMA Type 4X/6P)、
Y (基于上述的微调, 与防爆无关);

f 表示应用, 可为 D (介质 max 280°C/536°F, max 100bar)、
E (介质 max 230°C/446°F, max 100bar)、
R (介质 max 230°C/446°F, max 40bar PFA)、
9 (介质 max 300°C/572°F, max 100bar);

g 表示表面涂层, 可为 A (标准 Ra<3.2 μm/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);

ii 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);

以下选项为可选项，可为空缺。

- yy** 表示操作语言显示，可为 AA~YY（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 -50℃/-58°F）、JT（环境温度 -60℃/-76°F）、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 MA~ME（分体式传感器，TPR 电缆，2m~30m + 墙装架/管装架，316L）、M9（与防爆无关）；
- qq** 表示安装附件，可为 NF（蓝牙）、NG（蓝牙，NAMUR 输出时，温度组别对应 T4...T1）、NJ（玻璃视窗盖子）、NK（塑料视窗盖子）、OB（IEC/ATEX Ex d 隔爆堵头）、O9（基于上述的微调，与防爆无关）；
- rr** 表示配备附件，可为 AA~YY（与防爆无关）；
- zz** 表示固件版本，可为 01~99（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、涉及隔爆面的维修须联系产品制造商。
- 2、应尽量降低产品静电放电的风险，请参阅说明书。
- 3、对于粉尘型产品，仅允许使用原厂电缆引入装置、螺纹转接头、密封堵头和 O 型圈。
- 4、产品铝合金外壳应用于 Ga 场所时，应防止由于冲击或摩擦引起的点燃危险。
- 5、产品型号 FTL63（型号规格代码 **g** = D、E 时），应用于 Ga/Gb 或 Da/Db 场所时，禁止探头接触会对隔板产生不利影响的环境条件。
- 6、产品最高表面温度（温度组别）、使用环境温度范围和最高介质温度，请参阅说明书。
- 7、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、产品电气参数如下：
 - 1) 电子插件 FEL42/62/62LT DC-PNP

防爆型式	电源输入	输出
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Ex e ¹⁾⁵⁾	$U = 10 \sim 55\text{VDC}^{2)3)}$ $P_{\max} \leq 0.5\text{W}$ $I_{\max} = 10\text{mA}$	$I_{L\max} = I_{SC\max} = 350\text{mA}$ (包括过载保护)
Ex t ¹⁾⁵⁾	$U = 9.6 \sim 55\text{VDC}^{2)3)}$	
Ex d	$U = 9.6 \sim 35\text{VDC}^{2)4)}$ $P_{\max} \leq 0.5\text{W}$ $I_{\max} = 10\text{mA}$	

2) 电子插件 FEL44/64/64E/64LT

防爆型式	电源输入	输出
Ex e ¹⁾⁵⁾	$U = 19 \sim 253\text{VAC}^{2)3)}/50 \sim 60\text{Hz}$ $P_{\max} = 25\text{VA}$ or $U = 19 \sim 55\text{VDC}^{2)3)}$ $U = 19 \sim 35\text{VDC}^{2)4)}$ $P_{\max} = 1.3\text{W} \leq 2.0\text{W}^{6)}$	2 potential free change over contacts (DPDT) $U_{\max} = 253\text{VAC}^{2)3)}$ $I_{\max} = 6\text{A}$ $P_{\max} = 1500\text{VA}; \cos \phi = 1$ $P_{\max} = 750\text{VA}; \cos \phi = 0.7$ or $U_{\max} = 30\text{VDC}$ $I_{\max} = 6\text{A}$ $U_{\max} = 125\text{VDC}^{2)3)}$ $U_{\max} = 35\text{VDC}^{2)4)}$ $I_{\max} = 0.2\text{A}$
Ex t		
Ex d		

3) 电子插件 FEL64DC/64DC_E/64DC_LT

防爆型式	电源输入	输出
Ex e ¹⁾⁵⁾	$U = 9 \sim 20\text{VDC}^{2)3)4)}$ $P_{\max} = 1.0\text{W} \leq 1.7\text{W}^{6)}$	2 potential free change over contacts (DPDT) $U_{\max} = 253\text{VAC}^{2)3)}$ $I_{\max} = 6\text{A}$ $P_{\max} = 1500\text{VA}; \cos \phi = 1$ $P_{\max} = 750\text{VA}; \cos \phi = 0.7$ or $U_{\max} = 30\text{VDC}$ $I_{\max} = 6\text{A}$ $U_{\max} = 125\text{VDC}^{2)3)}$ $U_{\max} = 35\text{VDC}^{2)4)}$ $I_{\max} = 0.2\text{A}$
Ex t		
Ex d		

4) 电子插件 FEL61/61LT

防爆型式	电源输入	输出
Ex e ¹⁾⁵⁾	$U = 19 \sim 253\text{VAC}^{2)}$	$I_{L\max} = I_{SC\max} = 350\text{mA}$
Ex t ¹⁾⁵⁾	$P_{\max} < 2\text{VA at } I_{L\max}$	
Ex d	$I_{\max} = 10\text{mA}$	

5) 电子插件 FEL67 PFM

防爆型式	电源输入
Ex i	$U_i = 14.6V$ $I_i = 100mA$ $P_i = 633mW$ $C_i = 3nF$ $L_i = 0\mu H$
Ex e ¹⁾⁵⁾	$U_{nom} = 12.5VDC^{2)}$ $P_{max} = 100mW$
Ex t ¹⁾⁵⁾	
Ex d	

6) 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 ¹⁾⁵⁾	$U_{nom} = 9.0VDC^{2)}$
Ex t ¹⁾⁵⁾	
Ex d	

7) 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 ¹⁾⁵⁾	$U_{nom} = 26VDC^{2)}$ $P_{max} = 150mW$
Ex t ¹⁾⁵⁾	
Ex d	

注:

1) 根据 GB/T 3836.3-2021, Ex eb/ec 的要求完全适用。

2) 最大值, 包括了 10% 的电源波动。

3) 环境温度 $-50^{\circ}C \sim +70^{\circ}C$ 。4) 环境温度 $-60^{\circ}C \sim +70^{\circ}C$ 。

5) EPL Gc 除外。

6) 装配 LED 模块时。

3、本安产品必须与已通过防爆认证的关联装置配套共同组成本安防爆系统方可使用于爆炸性环境。其系统接线必须同时遵守本产品 and 所配关联装置的使用说明书要求, 接线端子不得接错。产品与关联装置的连接电缆应为带绝缘护套的屏蔽电缆, 其屏蔽层应接地。

4、非 Ex ia 产品的电缆引入口须配用经防爆检验认可的、符合相应防爆型式和等级的电缆引入装置或封堵件; 安装后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。

5、产品现场使用和维护时, 必须遵守“断电源后开盖”的原则。

6、产品在粉尘环境使用维护时, 应定期采取清洁措施, 以防止表面积聚粉尘。

7、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。

8、产品的安装、使用和维护应同时遵守产品使用说明书及以下相关标准、规范的要求:

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 3836.16-2022 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
GB 15577-2018 粉尘防爆安全规程

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或相关技术文件中；
- 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) 电气参数/本安参数

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

二〇二五年二月十八日



(GYJ25.1001X)

(Attachment I)

Attachment I to GYJ25.1001X

1. Description

Liquiphant FTL41, FTL51B, FTL62, FTL63 and FTL64 series Liquid Level Switch, 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”

The Ex marking is detailed in the model specifications, its certificate number is GYJ25.1001X.

Type approved in this certificate is shown as below:

	Liquiphant FTL41- aa bb c d e f g h ii jj 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	Output:	
	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
	D	Single compartment; 316L, hygiene
	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.
The following options are optional and can be left blank.		
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, He-Leakage test, PMI test, ...) or material certificates for the wetted materials. Not mandatory, multiple selection possible. Not explosion protection relevant.
	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:	
	LD to	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:	
	NJ	Cover with sight glass, glass
	NK	Cover with sight glass, plastic
	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:	
	AA to	Changes not explosion protection relevant.
	YY	
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 ii jj kkk+yy ll mm nn oo pp qq rr zz 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 T**°C Da/Db, Ex ia IIIC T**°C Db
	NL	Ex ec II C T6...T1 Gc, Ex ec nC II C T6...T1 Gc Ex tc IIIC T**°C Dc
	NM	Ex db II C T6...T1 Ga/Gb, Ex db II C T6...T1 Gb Ex ta/tb IIIC T**°C Da/Db, Ex tb IIIC T**°C Db
bb	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
	D	Single compartment; 316L, hygiene
	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
	D	Gland M20, 316L, hygiene, 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
	J	Gland M20, plastic blue, 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/302°F, max 64bar
	B	Process max 150°C/302°F, max 100bar
	C	Process max 80°C/176°F, 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.
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, 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.
The following options are optional and can be left blank.		
yy	Operating Language:	
	AA	Customer operating language
	to	
	YY	Modification of one of the above named option: 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 -50°C/-58°F
	JT	Ambient temperature -60°C/-76°F
	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.
pp	Sensor design:	
	MA to ME	Sensor remote, cable TPR, 2m to 30m + mounting bracket, wall/pipe, 316L
	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	Bluetooth for NAMUR output (T4...T1)
	NJ	Cover with sight glass, glass
	NK	Cover with sight glass, plastic
	OB	Plug marking according to IEC/ATEX Ex d
	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:	
	AA	Changes not explosion protection relevant.
	to	
	YY	
zz	Firmware-Version:	
	01	Version of the firmware if available for the Electronic, Output (bb=020)
	to	Not explosion protection relevant
	99	
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 ij kkk+yy ll mm nn oo pp qq rr zz ss	
aa	NEPSI approval code:	
	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 Ex ia IIC T6...T1 Gb, Ex ia IIIC T**°C Db
	NL	Ex ec IIC T6...T1 Gc, Ex ec nC 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 Ex db IIC T6...T1 Gb, Ex ta/tb IIIC T**°C 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
	D	Single compartment; 316L, hygiene
	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
	J	Gland M20, plastic blue, IP66/68 NEMA Type 4X6P/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 80°C/176°F, max 25bar
	N	Process max 120°C/248°F, max 40bar (ECTFE)
	P	Process max 150°C/302°F, max 40bar (PFA)
	T	Process max 150°C/302°F, 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
	Y	Coating Metal plating, electrically conductive and without risk of impact and

		friction sparks. E.g. tantalum, gold, ...
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.
ii	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 (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.
The following options are optional and can be left blank.		
yy	Operating Language:	
	AA	Customer operating language
	to	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant.
	YY	
ll	Application Package:	
	EH	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	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 -50°C/-58°F
	JT	Ambient temperature -60°C/-76°F
	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.
	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.
pp	Sensor design:	
	MA to ME	Sensor remote, cable TPR, 2m to 30m + mounting bracket, wall/pipe, 316L
	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	Bluetooth for NAMUR output (T4...T1)
	NJ	Cover with sight glass, glass
	NK	Cover with sight glass, plastic
	OB	Plug marking according to IEC/ATEX Ex d
	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:	
	AA to YY	Changes not explosion protection relevant.
zz	Firmware-Version:	
	01 to 99	Version of the firmware if available for the output order code 020=bb 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 FTL63- aa bb c d e f g h ii jj kkk+yy ll mm nn oo pp qq rr zz 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 III C T**°C Da/Db

		Ex ia II C T6...T1 Gb, Ex ia III C T**°C Db
	NL	Ex ec II C T6...T1 Gc, Ex ec nC II C T6...T1 Gc, Ex tc III C T**°C Dc
	NM	Ex db II C T6...T1 Ga/Gb, Ex ta/tb III C T**°C Da/Db Ex db II C T6...T1 Gb, Ex tb III C T**°C 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:	
	A	Single compartment; plastic
	B	Single compartment; Alu, coated
	C	Single compartment; 316L, cast
	D	Single compartment; 316L, hygiene
	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. Cover with window 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
	D	Gland M20, 316L, hygiene, 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
	J	Gland M20, plastic blue, IP66/68 NEMA Type 4X6P/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/302°F, max 64bar
	B	Process max 150°C/302°F, max 100bar

	C	Process max 80°C/176°F, max 25bar
	9	Modification of the above named option in: Changes not explosion protection relevant.
g	Surface finish:	
	A	Standard Ra <3,2um/126uin
	B	Hygienic Ra <0,76um/30uin
	D	Hygienic Ra <0,03um/12uin
	E	Hygienic Ra <0,03um/12uin electr. polished
	Y	Modification of the above named option in: Ra < 0,03um 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
	to	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, thread, or Hygienic types), 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.
The following options are optional and can be left blank.		
yy	Operating Language:	
	AA	Customer operating language
	to	Modification of one of the above named option: Special version not given in the standard
	YY	order code. Changes not explosion protection relevant
ll	Application Package:	
	EH	E plus a character or figure representing different Application packages as
	to	EH=Heartbeat Verification + Monitoring. EL=Heartbeat Verification + Monitoring for NAMUR Output 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 -50°C/-58°F
	JT	Ambient temperature -60°C/-76°F
	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.
	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.
	L9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant.
pp	Sensor design:	
	MA to ME	Sensor remote, cable TPR, 2m to 30m + mounting bracket, wall/pipe, 316L
	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	Bluetooth for NAMUR output (T4...T1)
	NJ	Cover with sight glass, glass
	NK	Cover with sight glass, PLASTIC
	OB	Plug marking according to IEC/ATEX Ex d
	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:	
	AA	Changes not explosion protection relevant.
	to YY	
zz	Firmware-Version:	
	01	Version of the firmware if available for the Electronic, Output (bb=020)
	to	Not explosion protection relevant.
	99	
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.
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	Liquiphant FTL64- aa bb c d e f g h i j kkk+yy ll nn oo pp qq rr zz ss	
aa	NEPSI approval code:	
	NB	Ex db ia II C T6...T1 Ga/Gb, Ex db 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 db ia II C T6...T1 Ga/Gb, Ex db ia II C T6...T1 Gb Ex ia ta III C T**°C Da/Db, Ex ia tb III C T**°C Db
	NL	Ex ec II C T6...T1, Gc Ex tc III C T**°C Dc Ex ec nC II C T6...T1 Gc
	NM	Ex db II C T6...T1 Ga/Gb, Ex db II C T6...T1 Gb Ex ta/tb III C T**°C Da/Db, Ex tb III C T**°C 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
	D	Single compartment; 316L, hygiene
	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. Cover with window 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
	D	Gland M20, 316L, hygiene, 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
	J	Gland M20, plastic blue, IP66/68 NEMA Type 4X6P/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 280°C/536°F, max 100bar
	E	Process max 230°C/446°F, max 100bar
	R	Process max 230°C/446°F, max 40bar (PFA)
	9	Process max 300°C/572°F, 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, Coated with ECFTE, Email, EDLON®, PFA or RubyRed,not explosion protection relevant.
h	Type of Probe:	
	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	Sensor Length; Material:	
	AC	Two characters representing different types of probe materials (316L/AlloyC22) 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), 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.
The following options are optional and can be left blank.		
yy	Operating Language:	
	AA	Customer operating language
	to	Modification of one of the above named option:
	YY	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
	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, cleaned for Oxygen applications, or settings to the device different from delivery standard. Not mandatory, multiple selection possible.
	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 -50°C/-58°F
	JT	Ambient temperature -60°C/-76°F
	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	
oo	K9	Modification of one of the above named option: Special version not given in the standard order code. Changes not explosion protection relevant.
	Additional approvals:	
	LA	L plus a character or figure representing different additional approvals (SIL, WHG, ship building, CRN, ...).
	to	Not mandatory, multiple selection possible.
pp	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:	
	MA to ME	Sensor remote, cable TPR, 2m to 30m + mounting bracket, wall/pipe, 316L
qq	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.
	Accessories mounted:	
	NF	Bluetooth
	NG	Bluetooth for NAMUR output (T4...T1)
	NJ	Cover with sight glass, glass
	NK	Cover with sight glass, PLASTIC
	OB	Plug marking according to IEC/ATEX Ex d
	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:	
	AA	Changes not explosion protection relevant.
	to	
	YY	

zz	Firmware-Version:	
	01	Version of the firmware if available for the Electronic, Output (bb=020)
	to	Not explosion protection relevant.
	99	
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 specified as follows:

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

2.2 The risk of electrostatic discharge from Liquid Level Switches Liquiphant shall be minimized, see safety instructions.

2.3 When used as Group III equipment, only cable glands, thread adapters and blanking elements conforming to the requirements of GB/T 3836.1 may be used with the apparatus.

2.4 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.

2.5 The FTL63 with a sensor that is mechanically polished and installed in the boundary of EPL Ga/Gb or EPL Da/Db shall not be exposed to environmental conditions that could affect the partition.

2.6 For maximum surface temperature (temperature class), ambient temperature range and maximum process temperatures see safety instructions.

2.7 For Liquid Level Switches Liquiphant, when used as EPL Gc equipment shall only be used in an area of not more than pollution degree 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 Electrical data:

1) FEL42/62/62LT DC-PNP Electronic Insert

Designation	Input	Load current
Ex e ¹⁾⁵⁾	$U = 10 \sim 55VDC^{2)3)}$ $P_{max} \leq 0.5W$ $I_{max} = 10mA$	$I_{Lmax} = I_{SCmax} = 350mA$ (incl. overload protection)

Ex t ¹⁾⁵⁾	U = 9.6~55VDC ²⁾³⁾	
Ex d	U = 9.6~35VDC ²⁾⁴⁾ P _{max} ≤ 0.5W I _{max} = 10mA	

2) FEL44/64/64E/64LT Electronic Insert

Designation	Input	Output
Ex e ¹⁾⁵⁾	U = 19~253VAC ^{2)3)/50~60Hz P_{max} 25VA or U = 19~55VDC²⁾³⁾ U = 19~35VDC²⁾⁴⁾ P_{max} = 1.3W ≤ 2.0W⁶⁾}	2 potential free change over contacts (DPDT) U _{max} = 253VAC ²⁾³⁾ I _{max} = 6A P _{max} = 1500VA; cosφ = 1 P _{max} = 750VA; cosφ = 0.7 or U _{max} = 30VDC I _{max} = 6A U _{max} = 125VDC ²⁾³⁾ U _{max} = 35VDC ²⁾⁴⁾ I _{max} = 0.2A
Ex t		
Ex d		

3) FEL64DC/64DC_E/64DC_LT Electronic Insert

Designation	Input	Output
Ex e ¹⁾⁵⁾	U = 9~20VDC ²⁾³⁾⁴⁾ P _{max} = 1.0W ≤ 1.7W ⁶⁾	2 potential free change over contacts (DPDT) U _{max} = 253VAC ²⁾³⁾ I _{max} = 6A P _{max} = 1500VA; cosφ = 1 P _{max} = 750VA; cosφ = 0.7 or U _{max} = 30VDC I _{max} = 6A U _{max} = 125VDC ²⁾³⁾ U _{max} = 35VDC ²⁾⁴⁾ I _{max} = 0.2A
Ex t		
Ex d		

4) FEL61/61LT Electronic Insert

Designation	Input	Load current
Ex e ¹⁾⁵⁾	U = 19~253VAC ²⁾	I _{Lmax} = I _{SCmax} = 350mA
Ex t ¹⁾⁵⁾	P _{max} < 2VA at I _{Lmax}	
Ex d	I _{max} = 10mA	

5) FEL67 PFM Electronic Insert

Designation	Input
Ex i	U _i = 14.6V I _i = 100mA P _i = 633mW C _i = 3nF L _i = 0μH
Ex e ¹⁾⁵⁾	U _{nom} = 12.5VDC ²⁾ P _{max} = 100mW
Ex t ¹⁾⁵⁾	
Ex d	

6) FEL48/68 NAMUR Electronic Insert

Designation	Input
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Ex i	$U_i = 16V$ $I_i = 52mA$ $P_i = 170mW$ $C_i = 30nF$ $L_i = 0\mu H$
Ex e ¹⁾⁵⁾	$U_{nom} = 9.0VDC^{2)}$
Ex t ¹⁾⁵⁾	
Ex d	

7) 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 ¹⁾⁵⁾	$U_{nom} = 26VDC^{2)}$ $P_{max} = 150mW$
Ex t ¹⁾⁵⁾	
Ex d	

Note:

- 1) This rating is fully compatible with Ex eb/ec acc. to GB/T 3836.3-2021.
- 2) The range specified are maximum values which include 10% safety margin for typical power line variations.
- 3) Ambient temperature $-50^{\circ}C \sim +70^{\circ}C$.
- 4) Ambient temperature $-60^{\circ}C \sim +70^{\circ}C$.
- 5) Category 3 (EPL Gc) is not in the scope.
- 6) When assembled with LED-Module.

3.3 Intrinsically safe product should be used in explosive 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. Connecting cable between this product and associated apparatus should be insulated screen cable; connect the cable screen functionally to earth ground.

3.4 For Non-Ex ia explosion protection, Suitable certified cable glands and blanking plugs approved by ExTL and meets the corresponding explosion-proof type and grade 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 suitable for the product working conditions.

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

3.6 Clean the surface of this product termly when using in combustible dust atmosphere.

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

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

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

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

GB/T 3836.16-2022 "Explosive atmospheres- Part 16: Electrical installations inspection and maintenance".

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

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

GB 15577–2018 “Safety regulations for dust explosion prevention and protection”.

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) Electrical data/ Intrinsically safe parameters

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