# 防爆合格证

证　号：GYJ21.3422X

由　恩德斯豪斯公司　　制造的产品：
（地址：Hauptstrasse 1, D-79689 Maulburg, Germany）

名　　称　微波式物位测量仪

型号规格　Micropilot FMR60/62/67

防爆标志　详见合格证附件

产品标准　/

图样编号　960018579, 960018584, 960018664, 960018665, 960018666, 960018580, 960018585

经图样及技术文件的审查和样品检验，确认上述产品符合 GB 3836.1-2010,GB 3836.2-2010,GB 3836.4-2010, GB 3836.20-2010,GB 12476.1-2013, GB 12476.4-2010,GB 12476.5-2013 标准，

特颁发此证。

本证书有效期：2022 年 02 月 10 日至 2027 年 02 月 09 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。

站长

国家级仪器仪表防爆安全监督检验站

颁发日期 二〇二二 年 二 月 十 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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# EXPLOSION PROTECTION
## CERTIFICATE OF CONFORMITY

**Cert NO.GYJ21.3422X**

This is to certify that the product

| | |
|---|---|
| | **Microwave unit** |
| manufactured by | **Endress + Hauser SE + Co. KG** |
| | **(Address:Hauptstrasse 1, D-79689 Maulburg, Germany)** |
| which model is | **Micropilot FMR60/62/67** |
| Ex marking | **Specified in the attachment** |
| product standard | / |
| drawing number | **960018579, 960018584, 960018664, 960018665, 960018666, 960018580, 960018585** |

has been inspected and certified by NEPSI, and that it conforms to **GB 3836.1-2010,GB 3836.2-2010,GB 3836.4-2010,GB 3836.20-2010, GB 12476.1-2013,GB 12476.4-2010,GB 12476.5-2013.**

This Approval shall remain in force until **2027.02.09**

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 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)

**Director**

National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation

**Issued Date** 2022.02.10

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

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# 国家级仪器仪表防爆安全监督检验站

## National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation

**(GYJ21.3422X)** **(Attachment Ⅰ)**

## GYJ21.3422X防爆合格证附件Ⅰ

由恩德斯豪斯公司生产的Micropilot FMR60/62/67微波式物位测量仪，经国家级仪器仪表防爆安全监督检验站（NEPSI）检验，符合下列标准：

GB3836.1-2010 爆炸性环境 第1部分：设备 通用要求

GB3836.2-2010 爆炸性环境 第2部分：由隔爆外壳“d”保护的设备

GB3836.4-2010 爆炸性环境 第4部分：由本质安全型“i”保护的设备

GB3836.8-2014 爆炸性环境 第8部分：由“n”型保护的设备

GB3836.20-2010 爆炸性环境 第20部分：设备保护级别（EPL）为Ga级的设备

GB12476.1-2013 可燃性粉尘环境用电气设备 第1部分：通用要求

GB12476.4-2010 可燃性粉尘环境用电气设备 第4部分：本质安全型“iD”

GB12476.5-2013 可燃性粉尘环境用电气设备 第5部分：外壳保护型“tD”

本证书认可的型号规格如下：

FMR60-[redacted]*+#

FMR62-[redacted]*+#

FMR67-[redacted]*+#

[redacted]表示NEPSI认可代码，代码可为NA（Ex ia Ⅱ C T6 Ga）

NB（Ex ia Ⅱ C T6 Ga/Gb）

NC（Ex ia/d [ia Ga] Ⅱ C T6 Ga/Gb）

ND（Ex ia/ic [ia Ga] Ⅱ C T6 Ga/Gb/Gc）[1)]

NF（Ex tD A20/A21 IP6X T85℃）[2)]

NG（Ex nA Ⅱ C T6 Gc）[2)]

NH（Ex ic Ⅱ C T6 Gc）[2)]

NL（Ex ia/nA [ia Ga] Ⅱ C T6 Ga/Gb/Gc）[1)]

N2（Ex ia Ⅱ C T6 Ga/Gb Ex iaD 20/21 T85）

N3（Ex ia/d [ia Ga] Ⅱ C T6 Ga/Gb
Ex tD A20/A21 IP6X T85℃）[2)]

N4（Ex ia Ⅱ C T6 Ga/Gb
Ex ia/d [ia Ga] Ⅱ C T6 Ga/Gb）[2)]

[redacted]表示电源/输出，代码可为A、B或C；

c表示显示/操作，代码可为A、C、E、L、M或N；

d表示外壳，代码可为A、B或C；

e表示电气连接（电缆口），代码可为A、B、C、D、I或M；

f表示天线；

gg表示密封；

hhh表示过程连接；

*表示空气净化连接；

#表示备选信息。

具体型号规格说明详见产品使用说明书。

注[1)]：配备气密绝缘套管

[2)]：带显示单元L、M或N的产品标志如下：

| 认可代码 | 防爆标志 |
|---|---|
| NF | Ex tD [iaD 20] A20/A21 IP6X T85℃ |
| NG | Ex nA [ia Ga] Ⅱ C T6 Gc |
| NH | Ex ic [ia Ga] Ⅱ C T6 Gc |
| N3 | Ex ia/d [ia Ga] Ⅱ C T6 Ga/Gb Ex tD [iaD 20] A20/A21 IP6X T85℃ |

## 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、严禁干擦、摩擦产品非金属外壳表面、金属外壳非金属涂层表面或天线表面，以防产生静电火花危险。

2、涉及隔爆接合面的维修须联系产品制造商。

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、认可代码为ND或NL的产品，天线部分可位于0区，电子主腔可位于1区，接线腔部分应通过自然通风等方式保证其位于2区。

5、应确保产品外壳防护等级满足IP67。

6、不得改变调整装置的位置：

- 通过枢轴支架调整天线后
- 拧紧夹紧法兰后
- 固定夹紧环后（10~11 Nm扭力）

7、移除空气吹扫连接之后应使用合适的封堵件将开口堵封。

- 6~7 Nm扭力
- 用于可燃性粉尘环境的设备，螺纹啮合扣数应大于5扣

## 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、产品的电缆引入口须配用经防爆检验认可、符合相关标准和防爆等级的电缆引入装置或封堵件；选用的电缆引入装置或封堵件应满足产品的工作条件。

3、产品电子外壳的使用环境温度范围：-40℃～+80℃。

产品温度组别、使用环境温度和介质温度的关系，与外壳型式、I/O模块、RF模块和天线型式等有关，详见E+H公司提供的安全指南文件XA01625F ~ XA01630F。

4、电气参数：

| 认可代码 | 电源/输出 | | | 防爆型式 | 电气参数 | |
|---|---|---|---|---|---|---|
| | 代码 | 类型 | 传输模块代码(TRC) | | 电源/输出（端子1、2） | 电源/输出（端子3、4） |
| NA, NB, N2 | A | 4~20mA HART (IO210_3) | 31 | Ex ia IIC | $U_i$ = 30V<br>$I_i$ = 300mA<br>$P_i$ = 1W<br>$L_i$ = 0 μH<br>$C_i$ = 12nF | |
| NG | | | | Ex nA IIC | $U_N$ = 35Vdc [2]<br>$I_N$ = 4~20mA<br>$P_N \leq$ 847mW | |
| NH | | | | Ex ic IIC | $U_i$ = 35V<br>$I_i$ = N/A<br>$P_i$ = N/A<br>$L_i$ = 0 μH<br>$C_i$ = 12nF | |
| N4 [1] | A | 4~20mA HART (IO211/3) [3] | 02 | Ex ia IIC | $U_i$ = 30V<br>$I_i$ = 300mA<br>$P_i$ = 1W<br>$L_i$ = 0 μH<br>$C_i$ = 5nF | |
| ND | | | | Ex ia/ic [ia Ga] IIC | $U_i$ = 35V<br>$I_i$ = N/A<br>$P_i$ = N/A<br>$L_i$ = 0 μH<br>$C_i$ = 5nF | |
| NC, N3, N4 [1] | A | 4~20mA HART (IO212/3) [3] | 03 | Ex ia/d [ia Ga] IIC | $U_N$ = 35Vdc [2]<br>$U_m$ = 250V<br>$I_{nom}$ = 4~20mA<br>$I_{max}$ = 22mA<br>$P_{nom}$ = 0.7W | |
| NF, N3 | | | | Ex tD A20/A21 | | |
| NG | | | | Ex nA IIC | | |
| NL | | | | Ex ia/nA [ia Ga] IIC | | |

续上表：

| 认可代码 | 电源/输出 | | | 防爆型式 | 电气参数 | |
|---|---|---|---|---|---|---|
| | 代码 | 类型 | 传输模块代码(TRC) | | 电源/输出（端子1、2） | 电源/输出（端子3、4） |
| NA,NB N2, N4 [1] | B | 4~20mA HART + switch (IO211/3) | 02 | Ex ia IIC Ex iaD | $U_i$ = 30V $I_i$ = 300mA $P_i$ = 1W $L_i$ = 0 μH $C_i$ = 5nF | $U_i$ = 30V $I_i$ = 300mA $P_i$ = 1W $L_i$ = 0 μH $C_i$ = 6nF |
| ND, NH | | | | Ex ia/ic [ia Ga] IIC Ex ic IIC | $U_i$ = 35V $I_i$ = N/A $P_i$ = N/A $L_i$ = 0 μH $C_i$ = 5nF | $U_i$ = 35V $I_i$ = N/A $P_i$ = 1W $L_i$ = 0 μH $C_i$ = 6nF |
| NC, N3, N4 [1] | B | 4~20mA HART + switch (IO212/3) | 03 | Ex ia/d [ia Ga] IIC | $U_N$ = 35Vdc [2] $U_m$ = 250V $I_{nom}$ = 4~20mA $I_{max}$ = 22mA $P_{nom}$ = 0.7W | $U_N$ = 35Vdc [2] $U_m$ = 250V $P_{nom}$ = 0.7W |
| NF, N3 | | | | Ex tD A20/A21 | | |
| NG | | | | Ex nA IIC | | |
| NL | | | | Ex ia/nA [ia Ga] IIC | | |
| NA,NB, N2, N4 [1] | C | 4~20mA HART +4~20mA (IO214_2) | 24 | Ex ia IIC Ex iaD | $U_i$ = 30V $I_i$ = 300mA $P_i$ = 1W $L_i$ = 0 μH $C_i$ = 30nF | $U_i$ = 30V $I_i$ = 300mA $P_i$ = 1W $L_i$ = 0 μH $C_i$ = 30nF |
| ND, NH | | | | Ex ia/ic [ia Ga] IIC Ex ic IIC | $U_i$ = 30V $I_i$ = N/A $P_i$ = N/A $L_i$ = 0 μH $C_i$ = 30nF | $U_i$ = 30V $I_i$ = N/A $P_i$ = N/A $L_i$ = 0 μH $C_i$ = 30nF |
| NC, N3, N4 [1] | C | 4~20mA HART +4~20mA (IO215_2) | 25 | Ex ia/d [ia Ga] IIC | $U_N$ = 30Vdc [2] $U_m$ = 250V $I_N$ = 4~20mA $I_{max}$ = 22mA $P_N$ = 0.7W | $U_N$ = 30Vdc [2] $U_m$ = 250V $I_N$ = 4~20mA $I_{max}$ = 22mA $P_N$ = 0.7W |
| NF, N3 | | | | Ex tD A20/A21 | | |
| NG | | | | Ex nA IIC | | |
| NL | | | | Ex ia/nA [ia Ga] IIC | | |

注：[1] 多种防爆型式的产品，在初期选定安装后不得变更使用防爆型式；

[2] 最大值，包括10%容差；

[3] 须使用电气隔离模块和位于1通道模式下的4~20mA HART（开关端子关闭）。

CDI接口参数（MB30主板TRC[41]）：

作为Ex ia IIC或Ex iaD

$U_o$ = 7.3V $I_o$ = 60mA $P_o$ = 110mW $C_i$ = 0nF $L_i$ = 0mH $U_i$ = 7.3V

| $L_o$(mH) | 5.00 | 2.00 | 1.00 | 0.50 | 0.20 | 0.10 | 0.05 | 0.02 | 0.01 | 0.005 | 0.002 | 0.001 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $C_o$(μF) | 0.73 | 1.20 | 1.60 | 2.00 | 2.60 | 3.20 | 4.00 | 5.50 | 7.30 | 10.00 | 12.70 | 12.70 |

作为Ex ic ⅡC：$U_o$ = 7.3V $U_i$ = 7.3V
作为Ex nA ⅡC或Ex tD A20/A21：$U_N$ = 6.5V

显示接口参数（MB30主板TRC[41]）：
作为Ex ia ⅡC、Ex iaD、Ex ia/ic [ia Ga] ⅡC、Ex ia/nA [ia Ga] ⅡC、Ex tD A20/A21
$U_o$ = 7.3V $I_o$ = 83mA $P_o$ = 538mW $I_{opeak}$ = 1.65A $U_i$ = 7.3V

5、本安/本安粉尘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或可燃性粉尘环境。其系统接线必须同时遵守本产品和所配关联设备的使用说明书要求，接线端子不得接错。

6、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。

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、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，但严禁用压缩空气吹扫。

9、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。

10、产品的安装、使用和维护应同时遵守产品使用说明书、GB 3836.13-2013“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）安全电气参数
   f）“断电源后开盖”警告语（适用时）

国家级仪器仪表防爆安全监督检验站
二〇二二年二月十日

# 国家级仪器仪表防爆安全监督检验站

## National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation

**(GYJ21.3422X)** **(Attachment Ⅰ)**

### Attachment Ⅰ to GYJ21.3422X

### (translation)

## 1. Description

Microwave unit Micropilot FMR60/62/67, manufactured by Endress + Hauser SE + Co. KG, has been certified by National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI).

The product accords with following standards:

GB3836.1-2010 Explosive atmospheres-Part 1: Equipment-General requirements

GB3836.2-2010 Explosive atmospheres-Part 2: Equipment protection by flameproof enclosure"d"

GB3836.4-2010 Explosive atmospheres-Part 4: Equipment protection by intrinsic safety"i"

GB3836.8-2014 Explosive atmospheres-Part 8: Equipment protection by type of protection "n "

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

GB12476.1-2013 Electrical apparatus for use in the presence of combustible dust- Part 1: General requirements

GB12476.4-2010 Electrical apparatus for use in the presence of combustible dust- Part 4: Protection by intrinsic safety "iD"

GB12476.5-2013 Electrical apparatus for use in the presence of combustible dust- Part 5: Protection by enclosures "tD"

Type approved in this certificate is shown as following:

FMR60-[redacted]*+#

FMR62-[redacted]*+#

FMR67-[redacted]*+#

Note: [redacted] indicates NEPSI approval code, NA (Ex ia Ⅱ C T6 Ga)

NB (Ex ia Ⅱ C T6 Ga/Gb)

NC (Ex ia/d [ia Ga] Ⅱ C T6 Ga/Gb)

ND (Ex ia/ic [ia Ga] Ⅱ C T6 Ga/Gb/Gc) 1)

NF (Ex tD A20/A21 IP6X T85℃) 2)

NG (Ex nA Ⅱ C T6 Gc) 2)

NH (Ex ic Ⅱ C T6 Gc) 2)

NL (Ex ia/nA [ia Ga] Ⅱ C T6 Ga/Gb/Gc) 1)

N2 (Ex ia Ⅱ C T6 Ga/Gb Ex iaD 20/21 T85)

N3 (Ex ia/d [ia Ga] Ⅱ C T6 Ga/Gb Ex tD A20/A21 IP6X T85℃) 2)

N4 (Ex ia Ⅱ C T6 Ga/Gb Ex ia/d [ia Ga] Ⅱ C T6 Ga/Gb) 2)

[redacted] indicates power supply/output, including A, B or C;

[redacted] indicates display/operation, including A, C, E, L, M or N;
[redacted] indicates housing, including A, B or C;
[redacted] indicates electrical connection (cable glands), including A, B, C, D, I or M;
[redacted] indicates antenna;
[redacted] indicates seal;
[redacted] indicates process connection;
* indicates air purge connection if available;
# indicates options.
Refer to the instruction manual for the details.
Remark: 1) only in combination with a gastight feed through.
2) marking changes in combination with the display L, M or N like below:

| Approval code | Marking |
|---|---|
| NF | Ex tD [iaD 20] A20/A21 IP6X T85℃ |
| NG | Ex nA [ia Ga] Ⅱ C T6 Gc |
| NH | Ex ic [ia Ga] Ⅱ C T6 Gc |
| N3 | Ex ia/d [ia Ga] Ⅱ C T6 Ga/Gb Ex tD [iaD 20] A20/A21 IP6X T85℃ |

## 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 Electrostatic charge on the plastic housing, coating of metal housing or surface of antenna shall be avoided.

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

2.3 When the intrinsic safety product being used in zone 0, the enclosure which is made of aluminium alloy must be installed so that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded.

2.4 For the product with approval code ND or NL, the probe part could be in zone 0, the electronic compartment should be in zone 1 while the terminal compartment should be in zone 2 by suitable measures like natural ventilation etc.

2.5 Degree of protection IP67 must be fulfilled.

2.6 Changing the positon of the alignment device must be impossible:

- After the alignment of the antenna via the pivot bracket
- After tightening of the clamping flange
- After setting the clamping ring (torque 10~11 Nm)

2.7 After removing the air purge connection: Lock the opening with a suitable plug.

- Torque: 6~7 Nm
- For product used in combustible dust atmospheres, thread engagement > 5 turns

## 3. Conditions for Safe Use

3.1 The external earth connection facility shall be connected reliably.

3.2 Suitable cable glands or blind plugs approved by Ex TL should be used and correctly installed. The cable glands or blind plugs to be used shall suitable for the product working conditions.

3.3 Permitted ambient temperature range at the electronics housing is -40℃～+80℃.

The relationship between temperature classe, the maximum permissible ambient and process temperatures depending on the used housing variants, I/O modules, RF modules and antennas etc., refer to the temperature tables given in the respective safety instructions XA01625F ~ XA01630F supplied by E+H.

3.4 Electrical data:

| Approval code | Power supply/Output (I/O Interface) | | | Type of protection | Electrical data/maximum values | |
|---|---|---|---|---|---|---|
| | Code | Mode (functional) | Module Transmission code(TRC) | | Supply/output (terminals 1 and 2) | Supply/output (terminals 3 and 4) |
| NA, NB, N2 | A | 4~20mA HART (IO210_3) | 31 | Ex ia IIC | $U_i$ = 30V<br>$I_i$ = 300mA<br>$P_i$ = 1W<br>$L_i$ = 0μH<br>$C_i$ = 12nF | |
| NG | | | | Ex nA IIC | $U_N$ = 35Vdc [2]<br>$I_N$ = 4~20mA<br>$P_N$≤847mW | |
| NH | | | | Ex ic IIC | $U_i$ = 35V<br>$I_i$ = N/A<br>$P_i$ = N/A<br>$L_i$ = 0μH<br>$C_i$ = 12nF | |
| N4 [1] | A | 4~20mA HART (IO211/3) [3] | 02 | Ex ia IIC | $U_i$ = 30V<br>$I_i$ = 300mA<br>$P_i$ = 1W<br>$L_i$ = 0μH<br>$C_i$ = 5nF | |
| ND | | | | Ex ia/ic [ia Ga] IIC | $U_i$ = 35V<br>$I_i$ = N/A<br>$P_i$ = N/A<br>$L_i$ = 0μH<br>$C_i$ = 5nF | |
| NC, N3, N4 [1] | A | 4~20mA HART (IO212/3) [3] | 03 | Ex ia/d [ia Ga] IIC | $U_N$ = 35Vdc [2]<br>$U_m$ = 250V<br>$I_N$ = 4~20mA<br>$I_{max}$ = 22mA<br>$P_N$ = 0.7W | |
| NF, N3 | | | | Ex tD A20/A21 | | |
| NG | | | | Ex nA IIC | | |
| NL | | | | Ex ia/nA [ia Ga] IIC | | |

Continue:

| Approval code | Power supply/Output (I/O Interface) | | | Type of protection | Electrical data/maximum values | |
|---|---|---|---|---|---|---|
| | Code | Mode (functional) | Module Transmission code(TRC) | | Supply/output (terminals 1 and 2) | Supply/output (terminals 3 and 4) |
| NA, NB, N2, N4 [1] | B | 4~20mA HART + switch (IO211/3) | 02 | Ex ia II C<br>Ex iaD | Ui = 30V<br>Ii = 300mA<br>Pi = 1W<br>Li = 0μH<br>Ci = 5nF | Ui = 30V<br>Ii = 300mA<br>Pi = 1W<br>Li = 0μH<br>Ci = 6nF |
| ND, NH | | | | Ex ia/ic [ia Ga] II C<br>Ex ic II C | Ui = 35V<br>Ii = N/A<br>Pi = N/A<br>Li = 0μH<br>Ci = 5nF | Ui = 35V<br>Ii = N/A<br>Pi = 1W<br>Li = 0μH<br>Ci = 6nF |
| NC, N3, N4 [1] | B | 4~20mA HART + switch (IO212/3) | 03 | Ex ia/d [ia Ga] II C | $U_N$ = 35Vdc [2]<br>$U_m$ = 250V<br>$I_N$ = 4~20mA<br>$I_{max}$ = 22mA<br>$P_N$ = 0.7W | $U_N$ = 35Vdc [2]<br>$U_m$ = 250V<br>$P_N$ = 0.7W |
| NF, N3 | | | | Ex tD A20/A21 | | |
| NG | | | | Ex nA II C | | |
| NL | | | | Ex ia/nA[ia Ga] II C | | |
| NA, NB, N2, N4 [1] | C | 4~20mA HART +4~20mA (IO214_2) | 24 | Ex ia II C<br>Ex iaD | Ui = 30V<br>Ii = 300mA<br>Pi = 1W<br>Li = 0μH<br>Ci = 30nF | Ui = 30V<br>Ii = 300mA<br>Pi = 1W<br>Li = 0μH<br>Ci = 30nF |
| ND, NH | | | | Ex ia/ic [ia Ga] II C<br>Ex ic II C | Ui = 30V<br>Ii = N/A<br>Pi = N/A<br>Li = 0μH<br>Ci = 30nF | Ui = 30V<br>Ii = N/A<br>Pi = N/A<br>Li = 0μH<br>Ci = 30nF |
| NC, N3, N4 [1] | C | 4~20mA HART +4~20mA (IO215_2) | 25 | Ex ia/d [ia Ga] II C | $U_N$ = 30Vdc [2]<br>$U_m$ = 250V<br>$I_N$ = 4~20mA<br>$I_{max}$ = 22mA<br>$P_N$ = 0.7W | $U_N$ = 30Vdc [2]<br>$U_m$ = 250V<br>$I_N$ = 4~20mA<br>$I_{max}$ = 22mA<br>$P_N$ = 0.7W |
| NF, N3 | | | | Ex tD A20/A21 | | |
| NG | | | | Ex nA II C | | |
| NL | | | | Ex ia/nA[ia Ga] II C | | |

Remark: [1] multiple marking; type of protection selected for first installation must be indicated and shall not be changed

[2] specifies maximum values, which includes 10% tolerance in mains voltage

[3] For application/certificates which need modules with galvanic separation and use of 4~20mA HART in 1-channel mode (switch terminals closed)

Service Interface (CDI) of the Mainboard TRC[41] (MB30):
- used in type of protection Ex ia II C/Ex iaD

$U_o$ = 7.3V $I_o$ = 60mA $P_o$ = 110mW $C_i$ = 0nF $L_i$ = 0mH $U_i$ = 7.3V

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $L_o$(mH) | 5.00 | 2.00 | 1.00 | 0.50 | 0.20 | 0.10 | 0.05 | 0.02 | 0.01 | 0.005 | 0.002 | 0.001 |
| $C_o$(μF) | 0.73 | 1.20 | 1.60 | 2.00 | 2.60 | 3.20 | 4.00 | 5.50 | 7.30 | 10.00 | 12.70 | 12.70 |

- used in type of protection Ex ic Ⅱ C

$U_o$ = 7.3V $U_i$ = 7.3V

- used in type of Ex nA Ⅱ C or Ex tD A20/A21

$U_N$ = 6.5V

Interface of the display of the Mainboard TRC[41] (MB30):

- used in type of protection Ex ia Ⅱ C, Ex iaD, Ex ia/ic [ia Ga] Ⅱ C, Ex ia/nA [ia Ga] Ⅱ C or Ex tD A20/A21

$U_o$ = 7.3V $I_o$ = 83mA $P_o$ = 538mW $I_{opeak}$ = 1.65A $U_i$ = 7.3V

3.5 When used as intrinsically safe product, it should be used in explosive gas atmospheres/combustible dust 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.

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

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

3.8 Clean the surface of this product termly when using in combustible dust atmosphere, purge with compressed air is not allowed.

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

3.10 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 3836.13-2013 "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) safety parameters

6) warning "Keep tight when the circuit is alive" (if applicable)

National Supervision and Inspection Center
for Explosion Protection and Safety of Instrumentation
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