



# 防爆合格证

证 号: GYJ24.1037X

制 造 商 恩德斯+豪斯公司

(地址: CH-4153, Reinach BL1, Switzerland)

产 品 名 称 热式质量流量计

型 号 规 格 Proline t-mass 300/500

防 爆 标 志 详见合格证附件

产 品 标 准 /

图 样 编 号 961001814-E, 961002020-F, 961002023-D, 961002082-B,  
961002967-A, 961001825-B, 961003164-A

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, GB3836. 20-2010, GB/T 3836. 31-2021

特颁发此证。

本证书有效期: 2024 年 03 月 18 日 至 2029 年 03 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。

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 四 年 三 月 十 八 日

本证书仅对与认可文件和样品一致的产品有效。





# EXPLOSION PROTECTION

## CERTIFICATE OF CONFORMITY

Cert No. GYJ24.1037X

|                  |                                                                                           |
|------------------|-------------------------------------------------------------------------------------------|
| Manufacturer     | Endress + Hauser Flowtec AG<br>(Address: CH-4153, Reinach BL1, Switzerland)               |
| Product          | Thermal Mass Flowmeter                                                                    |
| Model            | Proline t-mass 300/500                                                                    |
| Ex marking       | Refer to the attachment for details                                                       |
| Product standard | /                                                                                         |
| Drawing number   | 961001814-E, 961002020-F, 961002023-D, 961002082-B, 961002967-A, 961001825-B, 961003164-A |

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: 2029.03.17

Remarks

1. Conditions for safe use are specified in the attachment 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 to this certificate.
4. Safe parameters specified in the attachment to this certificate.

### 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 2024.03.18

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



(GYJ24.1037X)

(Attachment I)

## GYJ24.1037X 防爆合格证附件 I

由恩德斯+豪斯公司生产的 Proline t-mass 300/500 热式质量流量计，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  
 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  
 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 GYJ24.1037X。

本证书认可的产品型号规格如下：

Proline t-mass 300:

|                                                                                                                                                                              |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 6F3 <b>b</b> <b>cc</b> - <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>j</b> <b>l</b> <b>p</b> <b>ss</b> <b>ttt</b> <b>v</b> <b>ww</b> + <b>###</b>                      |            |
| 6I3 <b>b</b> <b>cc</b> - <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>j</b> <b>l</b> <b>p</b> <b>ss</b> <b>ttt</b> <b>uu</b> <b>v</b> <b>ww</b> + <b>###</b>            |            |
| O6F3 <b>b</b> <b>cc</b> - <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>j</b> <b>l</b> <b>p</b> <b>ss</b> <b>ttt</b> <b>v</b> <b>ww</b> <b>yy</b> + <b>###</b>           | OEM版本      |
| O6I3 <b>b</b> <b>cc</b> - <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>j</b> <b>l</b> <b>p</b> <b>ss</b> <b>ttt</b> <b>uu</b> <b>v</b> <b>ww</b> <b>yy</b> + <b>###</b> | OEM版本      |
| 6X3 <b>b</b> XX- <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>j</b> <b>l</b> <b>p</b> <b>ss</b> <b>ww</b> + <b>###</b>                                                  | 可换转换器适用    |
| O6X3 <b>b</b> XX- <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>j</b> <b>l</b> <b>p</b> <b>ss</b> <b>ww</b> <b>yy</b> + <b>###</b>                                       | 可换转换器（OEM） |

Proline t-mass 500:

|                                                                                                                                                                                                                  |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 6F5 <b>b</b> <b>cc</b> - <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>i</b> <b>j</b> <b>k</b> <b>m</b> <b>n</b> <b>o</b> <b>p</b> <b>ss</b> <b>ttt</b> <b>v</b> <b>ww</b> + <b>###</b>                      |            |
| 6I5 <b>b</b> <b>cc</b> - <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>i</b> <b>j</b> <b>k</b> <b>m</b> <b>n</b> <b>o</b> <b>p</b> <b>ss</b> <b>ttt</b> <b>uu</b> <b>v</b> <b>ww</b> + <b>###</b>            |            |
| O6F5 <b>b</b> <b>cc</b> - <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>i</b> <b>j</b> <b>k</b> <b>m</b> <b>n</b> <b>o</b> <b>p</b> <b>ss</b> <b>ttt</b> <b>v</b> <b>ww</b> <b>yy</b> + <b>###</b>           | OEM版本      |
| O6I5 <b>b</b> <b>cc</b> - <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>i</b> <b>j</b> <b>k</b> <b>m</b> <b>n</b> <b>o</b> <b>p</b> <b>ss</b> <b>ttt</b> <b>uu</b> <b>v</b> <b>ww</b> <b>yy</b> + <b>###</b> | OEM版本      |
| 6X5 <b>b</b> XX- <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>i</b> <b>j</b> <b>k</b> <b>m</b> <b>o</b> <b>p</b> <b>ss</b> <b>ww</b> + <b>###</b>                                                           | 可换转换器适用    |
| O6X5 <b>b</b> XX- <b>dd</b> <b>e</b> <b>ff</b> <b>g</b> <b>h</b> <b>i</b> <b>j</b> <b>k</b> <b>m</b> <b>o</b> <b>p</b> <b>ss</b> <b>ww</b> <b>yy</b> + <b>###</b>                                                | 可换转换器（OEM） |

其中：**b**表示产品代系识别码，可为B；

**cc**表示测量口径，最大尺寸DN100（t-mass F）/ 1500mm（t-mass I）；

**dd**表示NEPSI认证代码，详见2.4条描述；

**e**表示电源, 可为D = 24Vdc, E = 100~230Vac, I = 100~230Vac/24Vdc, X = 仅传感器;

**ff**表示输入/输出1, 可为BA = 4~20mA HART,

BB = 4~20mA WHART,

CA = 4~20mA HART Ex i (无源),

CB = 4~20mA WHART Ex i (无源),

CC = 4~20mA HART Ex i (有源),

CD = 4~20mA WHART Ex i (有源),

GA = Profibus PA,

HA = Profibus PA Ex i,

LA = Profibus DP,

MA = Modbus RS485,

MB = Modbus TCP;

MC = Modbus TCP Ex i,

NA = EtherNet/IP,

RA = Profinet IO,

RB = Profinet,

RC = Profinet Ex i,

SA = Foundation Fieldbus,

TA = Foundation Fieldbus Ex i,

XX = 仅为传感器;

**g**表示输入/输出2, 可为A = 不带输入/输出2,

B = 4~20mA,

C = 4~20mA Ex i (无源),

D = configurable IO,

E = pulse/frequency/switch output,

F = pulse output phase-shifted,

G = pulse/frequency/switch output Ex i,

H = relay,

I = 4~20mA input,

J = status input,

K = Pulse output Ex i,

L = Pulse output,

X = 仅为传感器;

**h**表示输入/输出3, 可为A = 不带输入/输出3,

B = 4~20mA,

C = 4~20mA Ex i (无源),

D = configurable IO,



E = pulse/frequency/switch output,  
F = pulse output phase-shifted,  
G = pulse/frequency/switch output Ex i,  
H = relay,  
I = 4~20mA input,  
J = status input,  
K = Pulse output Ex i,  
L = Pulse output,  
X = 仅为传感器;

**i**表示输入/输出4, 可为A = 不带输入/输出4;

(Proline 500适用)

B = 4~20mA,  
C = 4~20mA Ex i (无源),  
D = configurable IO,  
E = pulse/frequency/switch output,  
F = pulse output phase-shifted,  
G = pulse/frequency/switch output Ex i,  
H = relay,  
I = 4~20mA input,  
J = status input,  
K = Pulse output Ex i,  
L = Pulse output,  
X = 仅为传感器;

**j**表示显示/运行, 可为O (带远程显示) 或其它 (不带远程显示);

**k**表示内置ISEM模块 (Proline 500适用), 可为A = 传感器;

**l**表示外壳 (Proline 300适用);

**m**表示转换器外壳 (Proline 500适用);

**n**表示传感器外壳 (Proline 500适用);

**o**表示传感器电缆连接 (Proline 500适用);

**p**表示电缆引入规格;

**ss**表示传感器材质;

**ttt**表示过程连接;

**uu**表示衬垫;

**v**表示校准;

**ww**表示设备型号，可为A1 = 版本1或A2 = 版本2；

**yy**表示客户信息；

**\*\***表示备选信息；

**#, +**表示扩展订购码。

详见产品规格说明书。

## 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、测量系统的所有设备都应包括在等电位连接中。本安传感器电路须等电位连接。
- 2、涉及隔爆接合面的维修须联系产品制造商。
- 3、测量介质不得对产品接液部件有不良影响。
- 4、产品认证代码**dd** = NJ的转换器塑料外壳（Proline 500适用）应安装在污染等级最多为2级的区域。
- 5、当产品配接远程显示单元(O)DKX001时，应满足以下匹配要求：

|                        |                                            |
|------------------------|--------------------------------------------|
| t-mass 300代码 <b>dd</b> | 远程显示单元(O)DKX001代码 <b>bb</b> （证号GYJ21.1084） |
| NB或ND                  | NE, NF或NG                                  |
| NS                     | NS                                         |

- 6、仅可使用Renata型的3V CR1632锂电池。
- 7、在0区，产品认证代码**dd** = NB、ND、NJ或NN的产品仅适用于测量管内有过程介质的传感器。
- 8、产品转换器外壳或传感器外壳可带有不锈钢吊牌，应采取措施防止因摩擦或清洗引起的静电火花危险。

## 二、产品使用注意事项

- 1、所有传感器都可按传感器分组归为K1或K2。
- 2、温度参数（1区）

Proline t-mass 300

Notes:

This page applies to versions with extended order code covering:

6\*3B\*\* – dd...

06\*3B\*\* – dd...

6x3Bxx – dd...

06x3Bxx – dd...

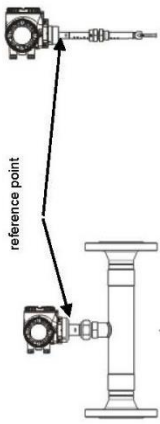
with approval option: dd = NB, ND

| Temperature table for versions with sensor insulated and not insulated<br>(for insulation refer to manual of Endress+Hauser Flowtec)                                                         |                  |             |                            |                           |                           |                           |                           |                           |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--|--|--|--|
| Size / DN                                                                                                                                                                                    | T <sub>med</sub> |             | T <sub>med, max</sub> [°C] |                           |                           |                           |                           |                           |  |  |  |  |
|                                                                                                                                                                                              | min<br>[°C]      | max<br>[°C] | T <sub>6</sub><br>(65°C)   | T <sub>5</sub><br>(100°C) | T <sub>4</sub><br>(135°C) | T <sub>3</sub><br>(200°C) | T <sub>2</sub><br>(300°C) | T <sub>1</sub><br>(450°C) |  |  |  |  |
| all                                                                                                                                                                                          | -50              | 180         | 50                         | ---                       | 115                       | 150                       | 180                       | 180                       |  |  |  |  |
|                                                                                                                                                                                              |                  |             | 55                         | ---                       | 115                       | 155                       | 180                       | 180                       |  |  |  |  |
|                                                                                                                                                                                              |                  |             | 60                         | ---                       | 100                       | 100                       | 100                       | 100                       |  |  |  |  |
|                                                                                                                                                                                              |                  |             |                            |                           | (115)                     | (130)                     | (150)                     | (180)                     |  |  |  |  |
| Notes: (1) T <sub>6, min</sub> = -40°C, -50°C respectively (see nameplate)<br>(2) values in brackets are applicable for installation where the transmitter is not installed above the sensor |                  |             |                            |                           |                           |                           |                           |                           |  |  |  |  |

| Temperature table for versions with sensor insulated<br>(for insulation not in compliance to manual of Endress+Hauser Flowtec) |                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                           |                           |                           |                           |  |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--|
| Size / DN                                                                                                                      | T <sub>max</sub> to be measured at reference point at<br>sensor neck [°C]                                                                                                                                                                                                                                                                                                                                         |                           |                           |                           |                           |                           |  |
|                                                                                                                                | T <sub>6</sub><br>(85°C)                                                                                                                                                                                                                                                                                                                                                                                          | T <sub>5</sub><br>(100°C) | T <sub>4</sub><br>(135°C) | T <sub>3</sub><br>(200°C) | T <sub>2</sub><br>(300°C) | T <sub>1</sub><br>(450°C) |  |
| all                                                                                                                            | ---                                                                                                                                                                                                                                                                                                                                                                                                               | ---                       | 73                        | 76                        | 77                        | 77                        |  |
| Notes:                                                                                                                         | (1) for safe use temperatures shall not exceed all of the following:<br>- temperature table for versions with sensor not insulated (refer to table above)<br>- temperature at reference point as listed in this table<br>- T <sub>6, min</sub> = -40°C, -50°C respectively (see nameplate)<br>- for maximum medium temperature and minimum medium temperature see<br>nameplate<br>(2) location of reference point |                           |                           |                           |                           |                           |  |

reference point

nameplate



| Änderungen: |  | A                                                                                                                                            | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|-------------|--|----------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|             |  | 15.01.2019 / EKE                                                                                                                             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Alle gezeichneten Linien werden verändert.                                                                                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch Dritten Personen und Kontinenten zur Verfügung gemacht werden. |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Erstellt für: FES / EKE<br>Erstellt: FES / EKE<br>FILE: M_Zeichnung\FES0341A\FES0341A.doc                                                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Installation Drawing NEPSI (acc. to FES0331A)                                                                                                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Zone 1, Zone 21                                                                                                                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Thermal Parameter                                                                                                                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Proline t-mass 300/500                                                                                                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Gezeichnet: 15.01.2019 EKE                                                                                                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Geprüft: 15.01.2019 EKE                                                                                                                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Exgeprüft: 15.01.2019 EKE                                                                                                                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | Gesehen: 15.01.2019 EKE                                                                                                                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|             |  | FES0341A 1/2                                                                                                                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |



Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach

Proline t-mass 500

Notes:  
This page applies to versions with extended order code covering:

6\*5\*\*\* – dd\*\*\*\*\*A...      06\*5\*\*\* – dd\*\*\*\*\*A...      6x5Bxx – dd\*\*\*\*\*A...      06x5Bxx – dd\*\*\*\*\*A...  
with approval option: dd = NJ, NN

| Sensor: Temperature table for versions with sensor insulated and not insulated<br>(for insulation refer to manual of Endress+Hauser Flowtec) |                  |             |                           |               |               |               |               |               |  |
|----------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|---------------------------|---------------|---------------|---------------|---------------|---------------|--|
| Size / DN                                                                                                                                    | T <sub>ref</sub> |             | T <sub>amb,max</sub> [°C] |               |               |               |               |               |  |
|                                                                                                                                              | min<br>[°C]      | max<br>[°C] | T6<br>(85°C)              | T5<br>(100°C) | T4<br>(135°C) | T3<br>(200°C) | T2<br>(300°C) | T1<br>(450°C) |  |
| all                                                                                                                                          | -50              | 180         | 55                        | ---           | 115           | 155           | 180           | 180           |  |
| Note: (1) T <sub>amb</sub> = -40°C, -50°C respectively (see nameplate)                                                                       |                  |             |                           |               |               |               |               |               |  |

| Transmitter for all versions                                                                                                          |                           |              |               |               |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------|---------------|---------------|
| Type of enclosure                                                                                                                     | T <sub>amb</sub> [°C]     |              |               |               |
|                                                                                                                                       | Ordinary location<br>(°C) | T6<br>(85°C) | T5<br>(100°C) | T4<br>(135°C) |
| aluminium                                                                                                                             | 60                        | ---          | 45            | 60            |
| plastic                                                                                                                               | 60                        | ---          | ---           | ---           |
| Note: (1) aluminium enclosure: T <sub>amb</sub> = 50°C (for limitation see name plate)<br>plastic enclosure: T <sub>amb</sub> = -40°C |                           |              |               |               |

Sensor: Temperature table for versions with sensor insulated  
(for insulation not in compliance to manual of Endress+Hauser Flowtec)

| Size / DN | T <sub>max</sub> to be measured at reference point at sensor neck [°C] |               |               |               |               |               |  |
|-----------|------------------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|--|
|           | T6<br>(85°C)                                                           | T5<br>(100°C) | T4<br>(135°C) | T3<br>(200°C) | T2<br>(300°C) | T1<br>(450°C) |  |
| all       | ---                                                                    | ---           | 76            | 78            | 82            | 82            |  |

Notes: (1) for safe use temperatures shall not exceed all of the following:  
- temperature table for versions with sensor not insulated (refer to table above)  
- temperature at reference point as listed in this table  
- T<sub>amb</sub> = -40°C, -50°C respectively (see nameplate)  
- for maximum medium temperature and minimum medium temperature see nameplate  
(2) location of reference point

Anderungen:

| A | 15.01.2019 / EKE | F |
|---|------------------|---|
| B |                  |   |
| C |                  |   |
| D |                  |   |
| E |                  |   |

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Erstellt für:  
Ersteller: FES / EKE  
FILE: M-Zeichnung\FES0341\FES0341A.doc

Installation Drawing NEPSI (acc. to FES0331A)  
Zone 1, Zone 21  
Thermal Parameter  
Proline t-mass 300/500

|            |            |     |
|------------|------------|-----|
| Gezeichnet | 15.01.2019 | EKE |
| Geprüft    |            |     |
| Ex-geprüft | 15.01.2019 | EKE |
| Gesehen    |            |     |

Flowtec AG, Kagenstrasse 7, CH-4153 Reinach BL1, Postfach

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3、温度参数（2区）

Proline t-mass 300

Notes:  
This page applies to versions with extended order code covering:  
6\*3B\*\* – dd...      O6\*3B\*\* – dd...      O6x3Bxx – dd...  
with approval option: dd = NS

Temperature table for versions with sensor insulated and not insulated  
(for insulation refer to manual of Endress+Hauser Flowtec)

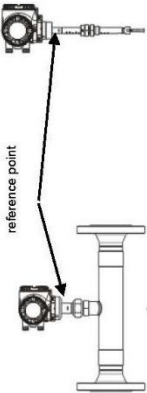
| Size / DN | T <sub>amb</sub> |             | T <sub>med/amb</sub> [°C] |                |                |                |                |                |  |
|-----------|------------------|-------------|---------------------------|----------------|----------------|----------------|----------------|----------------|--|
|           | min<br>[°C]      | max<br>[°C] | T <sub>6</sub>            | T <sub>5</sub> | T <sub>4</sub> | T <sub>3</sub> | T <sub>2</sub> | T <sub>1</sub> |  |
| all       | -50              | 180         | ---                       | ---            | 115            | 155            | 180            | 180            |  |
|           |                  |             | 55                        | ---            | 115            | 155            | 180            | 180            |  |
|           |                  |             | 60                        | ---            | 100            | 100            | 100            | 100            |  |
|           |                  |             |                           |                | (115)          | (130)          | (130)          | (130)          |  |

Notes: (1) T<sub>amb</sub> = -40°C, -50°C respectively (see nameplate)  
(2) values in brackets are applicable for installation where the transmitter is not installed above the sensor  
(3) versions with transmitter enclosure stainless steel (metal sheet) only for installation where transmitter is not installed above the sensor  
(4) versions with transmitter enclosure stainless steel (metal sheet) installed in temperature class T5, a degree of 3°C for ambient temperature shall be taken into account

Temperature table for versions with sensor insulated  
(for insulation not in compliance to manual of Endress+Hauser Flowtec)

| Size / DN | T <sub>max</sub> to be measured at reference point at sensor neck [°C] |                           |                           |                           |                           |                           |  |
|-----------|------------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--|
|           | T <sub>6</sub><br>(85°C)                                               | T <sub>5</sub><br>(100°C) | T <sub>4</sub><br>(135°C) | T <sub>3</sub><br>(200°C) | T <sub>2</sub><br>(300°C) | T <sub>1</sub><br>(450°C) |  |
| all       | ---                                                                    | ---                       | 73                        | 76                        | 77                        | 77                        |  |

Notes: (1) for safe use temperatures shall not exceed all of the following:  
- temperature table for versions with sensor not insulated (refer to table above)  
- temperature at reference point as listed in this table  
- T<sub>min</sub> = -40°C, -50°C respectively (see nameplate)  
- for maximum medium temperature and minimum medium temperature see nameplate  
(2) location of reference point



Änderungen:  
A 15.01.2019 / ENE  
B  
C  
D  
E

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Ergsteller FES / EKE  
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Gezeichnet  
Geprüft  
Ex-geprüft  
Gesehen

15.01.2019  
EKE

Installation Drawing NEPSI (acc. to FES0332A)  
Zone 2  
Thermal Parameter  
Proline t-mass 300/500

 Flowtec AG, Kagenstrasse 7, CH-4153 Reinsach BL1, Postfach

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第 7 页 / 共 15 页

Proline t-mass 500

Notes:

This page applies to versions with extended order code covering:

6\*5\*\*\* - dd\*\*\*\*\*A...      06\*5\*\*\* - dd\*\*\*\*\*A...      6x5Bxx - dd\*\*\*\*\*A...      06x5Bxx - dd\*\*\*\*\*A...  
with approval option: dd = NL, NS

Sensor: Temperature table for versions with sensor insulated and not insulated (for insulation refer to manual of Endress+Hauser Flowtec)

| Size / DN                                                              | T <sub>med</sub> [°C] |     | T <sub>max</sub> [°C] |     |     |     |     |     |  |
|------------------------------------------------------------------------|-----------------------|-----|-----------------------|-----|-----|-----|-----|-----|--|
|                                                                        | min                   | max | T6                    | T5  | T4  | T3  | T2  | T1  |  |
| all                                                                    | -50                   | 180 | 55                    | 100 | 135 | 200 | 300 | 450 |  |
|                                                                        | ---                   | --- | ---                   | --- | --- | --- | --- | --- |  |
|                                                                        | ---                   | --- | ---                   | --- | --- | --- | --- | --- |  |
| Note: (1) T <sub>min</sub> = -40°C, -50°C respectively (see nameplate) |                       |     |                       |     |     |     |     |     |  |

Transmitter for all versions

| Type of enclosure                                                                                                                      | T <sub>max</sub> [°C]  |           |            |            |  |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|------------|------------|--|
|                                                                                                                                        | Ordinary location (°C) | T6 (85°C) | T5 (100°C) | T4 (135°C) |  |
| aluminium                                                                                                                              | 60                     | ---       | 45         | 60         |  |
| plastic                                                                                                                                | 60                     | ---       | ---        | ---        |  |
| Note: (1) aluminium enclosure: T <sub>min</sub> = -50°C (for limitation see name plate)<br>plastic enclosure: T <sub>min</sub> = -40°C |                        |           |            |            |  |

Sensor: Temperature table for versions with sensor insulated (for insulation not in compliance to manual of Endress+Hauser Flowtec)

| Size / DN | T <sub>max</sub> to be measured at reference point at sensor neck [°C] |            |            |            |            |            |  |
|-----------|------------------------------------------------------------------------|------------|------------|------------|------------|------------|--|
|           | T6 (85°C)                                                              | T5 (100°C) | T4 (135°C) | T3 (200°C) | T2 (300°C) | T1 (450°C) |  |
| all       | ---                                                                    | ---        | 76         | 78         | 82         | 82         |  |

Notes:

- (1) for safe use temperatures shall not exceed all of the following:
  - temperature table for versions with sensor not insulated (refer to table above)
  - temperature at reference point as listed in this table
  - T<sub>min</sub> = -40°C, -50°C respectively (see nameplate)
  - for maximum medium temperature and minimum medium temperature see nameplate
- (2) location of reference point

|                                               |   |                  |   |                                                                                                                                                             |            |                                          |  |  |
|-----------------------------------------------|---|------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------|--|--|
| Änderungen:                                   | A | 15.01.2019 / EKE | F | Alle gesetzlichen /interne/ Anforderungen. Diese Zeichnung darf ohne unsere Genehmigung weder ververvielfältigt werden noch an Dritte weitergegeben werden. |            | Erstellt durch:                          |  |  |
|                                               | B |                  | G |                                                                                                                                                             |            | Erstellt für:                            |  |  |
|                                               | C |                  | H |                                                                                                                                                             |            | Ersteller: FES / EKE                     |  |  |
|                                               | D |                  | J |                                                                                                                                                             |            | FILE: M:\Zeichnung\FES0342A\FES0342A.doc |  |  |
|                                               | E |                  | K |                                                                                                                                                             |            |                                          |  |  |
| Installation Drawing NEPSI (acc. to FES0332A) |   |                  |   |                                                                                                                                                             |            |                                          |  |  |
| Zone 2                                        |   |                  |   |                                                                                                                                                             |            |                                          |  |  |
| Thermal Parameter                             |   |                  |   |                                                                                                                                                             |            |                                          |  |  |
| Proline t-mass 300/500                        |   |                  |   |                                                                                                                                                             |            |                                          |  |  |
|                                               |   |                  |   | Gezeichnet                                                                                                                                                  | 15.01.2019 | EKE                                      |  |  |
|                                               |   |                  |   | Geprüft                                                                                                                                                     |            |                                          |  |  |
|                                               |   |                  |   | Ex-geprüft                                                                                                                                                  | 15.01.2019 | EKE                                      |  |  |
|                                               |   |                  |   | Gesehen                                                                                                                                                     |            |                                          |  |  |
| FES0342A                                      |   |                  |   |                                                                                                                                                             |            | 2/2                                      |  |  |

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## 4、产品防爆标志详细如下：

Proline 300：

| dd 代码 | ff 代码                                  | 气体防爆标志                                                                        | 粉尘防爆标志                       | 各组成代表含义                                          |
|-------|----------------------------------------|-------------------------------------------------------------------------------|------------------------------|--------------------------------------------------|
| NB    | CA, CB, CC, CD, HA, TA, MC, RC         | Ex db eb ia [ia Ga] II C T1...T4 Gb<br>Ex db eb ia [ia Ga] II C T1...T4 Ga/Gb | Ex tb [ia Da] III C T**°C Db | db -> 电子腔<br>eb -> 接线腔<br>ia -> 传感器              |
|       | BA, BB, GA, LA, NA, RA, SA, MA, MB, RB | Ex db eb ia II C T1...T4 Gb<br>Ex db eb ia II C T1...T4 Ga/Gb                 | Ex tb III C T**°C Db         | tb -> 外壳<br>[ia Ga] -> 输入/输出<br>[ia Da] -> 输入/输出 |
| ND    | CA, CB, CC, CD, HA, TA, MC, RC         | Ex db ia [ia Ga] II C T1...T4 Gb<br>Ex db ia [ia Ga] II C T1...T4 Ga/Gb       | Ex tb [ia Da] III C T**°C Db | db -> 电子腔<br>ia -> 传感器                           |
|       | BA, BB, GA, LA, NA, RA, SA, MA, MB, RB | Ex db ia II C T1...T4 Gb<br>Ex db ia II C T1...T4 Ga/Gb                       | Ex tb III C T**°C Db         | tb -> 外壳<br>[ia Ga] -> 输入/输出<br>[ia Da] -> 输入/输出 |
| NS    | CA, CB, CC, CD, HA, TA, MC, RC         | Ex ec nC [ic] II C T1...T4 Gc                                                 | ---                          | ec -> 变送器/传感器外壳                                  |
|       | BA, BB, GA, LA, NA, RA, SA, MA, MB, RB | Ex ec nC II C T1...T4 Gc                                                      | ---                          | nC -> 电器元件<br>[ic] -> 输入/输出 Ex ic                |



Proline 500 传感器外壳内置ISEM:

| dd 代码 | ff 代码                                                                  | 转换器                                                    | 传感器                                                                                   | 各组成代表含义                                                                 |
|-------|------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
|       |                                                                        | 气体/粉尘防爆标志                                              | 气体/粉尘防爆标志                                                                             |                                                                         |
| NJ    | BA, BB, CA, CB, CC, CD, HA, TA, GA, LA, NA, RA, RB, RC, SA, MA, MB, MC | [Ex ia] II C<br>[Ex ia] III C                          | Ex db ia II C T1...T4 Gb<br>Ex db ia II C T1...T4<br>Ga/Gb<br>Ex ia tb III C T**°C Db | [Ex ia] -> 传感器回路<br>ia -> 传感器<br>tb -> 传感器外壳<br>db 传感器外壳                |
|       | CA, CB, CC, CD, HA, TA, MC, RC                                         | [Ex ic] II C                                           | Ex ec II C T1...T4 Gc                                                                 | ec -> 传感器外壳                                                             |
| NL    | BA, BB, GA, LA, NA, RA, SA, MA, MB ; RB                                | non-Ex                                                 |                                                                                       | [Ex ic]-> 输入/输出<br>Ex ic                                                |
|       | CA, CB, CC, CD, HA, TA, MC, RC                                         | Ex ec nC [ic] [ia Ga] II C T4...T5 Gc<br>[Ex ia] III C | Ex db ia II C T1...T4 Gb<br>Ex db ia II C T1...T4<br>Ga/Gb<br>Ex ia tb III C T**°C Db | db -> 传感器外壳<br>ia -> 传感器<br>[ia Ga] 传感器回路<br>->                         |
| NN    | BA, BB, GA, NA, RA, SA, MA, MB, RB                                     | Ex ec nC [ia Ga] II C T4...T5 Gc<br>[Ex ia] III C      |                                                                                       | [Ex ia] -> 传感器回路<br>ec -> 变送器外壳<br>nC -> 电器元件<br>[ic] -> 输入/输出<br>Ex ic |
|       | CA, CB, CC, CD, HA, TA, MC, RC                                         | Ex ec nC [ic] II C T4...T5 Gc                          | Ex ec II C T1...T4 Gc                                                                 | ec -> 变送器/传感器外壳                                                         |

|                                                    |                             |                                          |
|----------------------------------------------------|-----------------------------|------------------------------------------|
| BA, BB,<br>GA, LA,<br>NA, RA,<br>SA, MA,<br>MB, RB | Ex ec nC II C<br>T4...T5 Gc | nC -> 电器元件<br><br>[ic] -> 输入/输出<br>Ex ic |
|----------------------------------------------------|-----------------------------|------------------------------------------|

## 5、产品电气参数：

| 电源                   |                      |                                                                       |
|----------------------|----------------------|-----------------------------------------------------------------------|
| dd e 代码              | 端子                   | 参数                                                                    |
| NBD, NDD             | No. 1(L+/L), 2(L-/N) | $U_N = 19.2 \sim 28.8V_{dc}$<br>$U_M = 250V_{ac}$                     |
| NBE, NDE             | No. 1(L+/L), 2(L-/N) | $U_N = 85 \sim 264V_{ac}$<br>$U_M = 250V_{ac}$                        |
| NSI, NJI<br>NLI, NNI | No. 1(L+/L), 2(L-/N) | $U_N = 19.2 \sim 28.8V_{dc} / 85 \sim 264V_{ac}$<br>$U_M = 250V_{ac}$ |

| 输入/输出1     |            |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                   |
|------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ff 代码      | 端子         | 参数                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                   |
| BA, BB, MA | No. 26, 27 | $U_N = 30V_{dc}$<br>$U_M = 250V_{ac}$                                                                                                                                                                                                       |                                                                                                                                                                                                                                   |
| LA, GA, SA | No. 26, 27 | $U_N = 32V_{dc}$<br>$U_M = 250V_{ac}$                                                                                                                                                                                                       |                                                                                                                                                                                                                                   |
| CA, CB     | No. 26, 27 | $U_i = 30V$<br>$I_i = 100mA$<br>$P_i = 1.25W$<br>$L_i = 0$<br>$C_i = 6nF$                                                                                                                                                                   |                                                                                                                                                                                                                                   |
| CC, CD     | No. 26, 27 | <b>dd</b> = NB, ND:<br><br>$U_o = 21.8V$<br>$I_o = 90mA$<br>$P_o = 491mW$<br>$L_o = 4.1mH$ (IIC)/<br>15mH (IIB)<br>$C_o = 160nF$ (IIC)/<br>1160nF (IIB)<br><br>$U_i = 30V$<br>$I_i = 10mA$<br>$P_i = 0.3W$<br>$L_i = 5\mu H$<br>$C_i = 6nF$ | <b>dd</b> = NS, NL, NN:<br><br>$U_o = 21.8V$<br>$I_o = 90mA$<br>$P_o = 491mW$<br>$L_o = 9mH$ (IIC)/<br>39mH (IIB)<br>$C_o = 600nF$ (IIC)/<br>4000nF<br>(IIB)<br><br>$U_i = 30V$<br>$I_i = 10mA$<br>$P_i = 0.3W$<br>$L_i = 5\mu H$ |

|        |            |                                                                                                                                                                                                           |                                                                                                                                                                                                               |
|--------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |            |                                                                                                                                                                                                           | $C_i = 6\text{nF}$                                                                                                                                                                                            |
| HA, TA | No. 26, 27 | $dd = \text{NB, ND:}$<br>PA/FF<br>$U_i = 30\text{V}$<br>$I_i = 570\text{mA}$<br>$P_i = 8.5\text{W}$<br>$L_i = 10\mu\text{H}$<br>$C_i = 5\text{nF}$                                                        | $dd = \text{NS, NL, NN:}$<br>PA/FF<br>$U_i = 32\text{V}$<br>$I_i = 570\text{mA}$<br>$P_i = 8.5\text{W}$<br>$L_i = 10\mu\text{H}$<br>$C_i = 5\text{nF}$                                                        |
| MB, RB | No. 26, 27 | APL port profile SLAX/SPE PoDL<br>classes 10,11,12<br>$U_N = 30\text{Vdc}$<br>$U_M = 250\text{Vac}$                                                                                                       |                                                                                                                                                                                                               |
| MC, RC | No. 26, 27 | $dd^{(1)} = \text{NB, ND:}$<br>2-WISE power<br>load APL port<br>profile SLAA<br>$U_i = 17.5\text{V}$<br>$I_i = 380\text{mA}$<br>$P_i = 5.32\text{W}$<br>$L_i \leq 10\mu\text{H}$<br>$C_i \leq 5\text{nF}$ | $dd^{(1)} = \text{NS, NL, NN:}$<br>2-WISE power<br>load APL port<br>profile SLAC<br>$U_i = 17.5\text{V}$<br>$I_i = 380\text{mA}$<br>$P_i = 5.32\text{W}$<br>$L_i \leq 10\mu\text{H}$<br>$C_i \leq 5\text{nF}$ |
| NA, RA | IO1 / RJ45 | $U_N = 30\text{Vdc}$<br>$U_M = 250\text{Vac}$                                                                                                                                                             |                                                                                                                                                                                                               |

1)对于输出参数来说没有额外的内部电容

| 输入/输出2              |            |                                                                                              |
|---------------------|------------|----------------------------------------------------------------------------------------------|
| $g$ 代码              | 端子         | 参数                                                                                           |
| C, G, K             | No. 24, 25 | $U_i = 30\text{V}$<br>$I_i = 100\text{mA}$<br>$P_i = 1.25\text{W}$<br>$L_i = 0$<br>$C_i = 0$ |
| B, D, E, F, I, J, L | No. 24, 25 | $U_N = 30\text{Vdc}$<br>$U_M = 250\text{Vac}$                                                |
| H                   | No. 24, 25 | $U_N = 30\text{Vdc}$<br>$I_N = 100\text{mA} / 500\text{mA}$<br>$U_M = 250\text{Vac}$         |

| 输入/输出3              |            |                                                                         |
|---------------------|------------|-------------------------------------------------------------------------|
| <b>h</b> 代码         | 端子         | 参数                                                                      |
| C, G, K             | No. 22, 23 | $U_i = 30V$<br>$I_i = 100mA$<br>$P_i = 1.25W$<br>$L_i = 0$<br>$C_i = 0$ |
| B, D, E, F, I, J, L | No. 22, 23 | $U_N = 30Vdc$<br>$U_M = 250Vac$                                         |
| H                   | No. 22, 23 | $U_N = 30Vdc$<br>$I_N = 100mA/ 500mA$<br>$U_M = 250Vac$                 |

| 输入/输出4              |            |                                                                         |
|---------------------|------------|-------------------------------------------------------------------------|
| <b>i</b> 代码         | 端子         | 参数                                                                      |
| C, G, K             | No. 20, 21 | $U_i = 30V$<br>$I_i = 100mA$<br>$P_i = 1.25W$<br>$L_i = 0$<br>$C_i = 0$ |
| B, D, E, F, I, J, L | No. 20, 21 | $U_N = 30Vdc$<br>$U_M = 250Vac$                                         |
| H                   | No. 20, 21 | $U_N = 30Vdc$<br>$I_N = 100mA/ 500mA$<br>$U_M = 250Vac$                 |

| 服务接口         |      |                                                                                                                                                       |
|--------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>dd</b> 代码 | 端子   | 参数                                                                                                                                                    |
| NB           | 服务接口 | 服务接口仅能安装在非爆炸危险场所的非本质安全电路：<br>$U_N = 3.3 V$ , $U_M = 250 VAC$ 或者<br>本质安全电路：<br>$U_i = 10V$ , $I_i = n.a.$ , $P_i = na.$ , $C_i = 200nF$ ,<br>$L_i = 0$ |
| ND           | 服务接口 | 服务接口仅能安装于非本质安全电路：<br>$U_N = 3.3 V$ , $U_M = 250 VAC$ 或者<br>本质安全电路：<br>$U_i = 10V$ , $I_i = n.a.$ , $P_i = na.$ , $C_i = 200nF$ ,<br>$L_i = 0$         |
| 不适用于 NB, ND  | 服务接口 | $U_N = 3.3V$                                                                                                                                          |



| 天线套管               |             |                                                                                                                                                          |
|--------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| dd 代码              | 端子          | 参数                                                                                                                                                       |
| NB, NJ, NL, NN, NS | N connector | 使用Endress+Hauser提供的RF天线:<br>或使用符合下列要求带或不带电缆的RF天线:<br>- 最小阻抗 $50\Omega$<br>- 频率范围不超过<br>$1710\text{MHz} \dots 6000\text{MHz}$<br>- 配有N型连接器插头(MIL-STD-348) |

| 远程显示   |                    |                                                                                                                                                                  |
|--------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dd 代码  | 端子                 | 参数                                                                                                                                                               |
| NB, ND | No. 81, 82, 83, 84 | $U_o = 3.9\text{V}$<br>$I_o = 1.5\text{A (spark)}$<br>$200\text{mA (power)}$<br>$P_o = 600\text{mW}$<br>$R_i = 2.6\Omega$<br>$L_o = 0$<br>$C_o = 670\mu\text{F}$ |
| NS     | No. 81, 82, 83, 84 | $U_N = 3.3\text{V}$<br>$I_N = 150\text{mA}$                                                                                                                      |

认证代码 **dd** = NB或ND的产品连接E+H公司远程显示单元DKX001或ODKX001时，连接电缆应满足  $L/R \leq 0.024\text{mH}/\Omega$  的要求。

#### 6、远程变送器和远程传感器电路电气参数（Proline 500）：

| dd k 代码                                                                                                                                                                                                                                                                                                                                                                          | 转换器              |                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------|
| NJA, NNA                                                                                                                                                                                                                                                                                                                                                                         | 端子61, 62, 63, 64 | $U_o = 13.8\text{V}$<br>$I_o = 1.156\text{A}$<br>$P_o = 3.3\text{W}$ |
|                                                                                                                                                                                                                                                                                                                                                                                  | 传感器              |                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                  | 端子61, 62, 63, 64 | $U_i = 14\text{V}$<br>$I_i = 1.2\text{A}$<br>$P_i = 3.4\text{W}$     |
| 转换器与传感器之间的连接电缆应满足下列要求:<br>$L/R \leq 0.0089\text{mH}/\Omega$ 和 $C_{\text{cable}} \leq 760\text{nF}$ (IIC)<br>$L/R \leq 0.0356\text{mH}/\Omega$ 和 $C_{\text{cable}} \leq 4.2\mu\text{F}$ (IIB)<br>或<br>$L_{\text{cable}} \leq 26\mu\text{H}$ 和 $C_{\text{cable}} \leq 760\text{nF}$ (IIC)<br>$L_{\text{cable}} \leq 104\mu\text{H}$ 和 $C_{\text{cable}} \leq 4.2\mu\text{F}$ (IIB) |                  |                                                                      |

|                |          |              |
|----------------|----------|--------------|
| <b>dd k</b> 代码 | 转换器      |              |
| NLA, NSA       | 端子61, 62 | $U_N = 32V$  |
|                | 端子63, 64 | $U_N = 3.3V$ |
|                | 传感器      |              |
|                | 端子61, 62 | $U_N = 32V$  |
|                | 端子63, 64 | $U_N = 3.3V$ |

7、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防爆等级的电缆引入装置或堵头；当接线腔为增安型时，可使用厂家指定的Ex e电缆引入装置。产品装配完整后，外壳防护等级不得低于GB/T 4208-2017规定的IP66/67。

8、产品在现场维护使用时应遵循“断电源后开盖”的原则。

9、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。

10、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。

11、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 3836.16-2022 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 电气装置安装工程爆炸和火灾危险环境 电气装置施工及验收规范 或 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产品安全使用特殊条件和使用注意事项纳入该产品使用说明书。

2. 制造厂必须严格按照NEPSI认可的文件资料生产。

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

二〇二四年三月十八日



(GYJ24.1037X)

(Attachment I )

## Attachment I to GYJ24.1037X

### 1. Description

Proline t-mass 300/500 Series Thermal Mass Flowmeter, manufactured by Endress+Hauser Flowtec AG, has been accords with following standards:

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

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

GB/T3836.3-2021 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/T3836.31-2021 Explosive atmospheres-Part 31: Equipment dust ignition protection by enclosure“t”

The Ex marking is shown as following section, its certificate number is GYJ24.1037X.

Type approved in this certificate is detailed as below:

Proline t-mass 300:

6F3**b** **cc** -**dd** **e** **ff** **g** **h** **j** **l** **p** **ss** **ttt** **v** **ww** +###

6I3**b** **cc** -**dd** **e** **ff** **g** **h** **j** **l** **p** **ss** **ttt** **uu** **v** **ww** +###

O6F3**b** **cc** -**dd** **e** **ff** **g** **h** **j** **l** **p** **ss** **ttt** **v** **ww** **yy** +###

for OEM-version

O6I3**b** **cc** -**dd** **e** **ff** **g** **h** **j** **l** **p** **ss** **ttt** **uu** **v** **ww** **yy** +###

for OEM-version

6x3**b**xx-**dd** **e** **ff** **g** **h** **j** **l** **p** **ss** **ww** +###

for replacement transmitter only

O6x3**b**xx-**dd** **e** **ff** **g** **h** **j** **l** **p** **ss** **ww** **yy** +###

for replacement transmitter OEM

Proline t-mass 500:

6F5**b** **cc** -**dd** **e** **ff** **g** **h** **i** **j** **k** **m** **n** **o** **p** **ss** **ttt** **v** **ww** +###

6I5**b** **cc** -**dd** **e** **ff** **g** **h** **i** **j** **k** **m** **n** **o** **p** **ss** **ttt** **uu** **v** **ww** +###

O6F5**b** **cc** -**dd** **e** **ff** **g** **h** **i** **j** **k** **m** **n** **o** **p** **ss** **ttt** **v** **ww** **yy** +###

for OEM-version

O6I5**b** **cc** -**dd** **e** **ff** **g** **h** **i** **j** **k** **m** **n** **o** **p** **ss** **ttt** **uu** **v** **ww** **yy** +###

for OEM-version

6x5**b**xx-**dd** **e** **ff** **g** **h** **i** **j** **k** **m** **o** **p** **ss** **ww** +###

for replacement transmitter only

O6x5**b**xx-**dd** **e** **ff** **g** **h** **i** **j** **k** **m** **o** **p** **ss** **ww** **yy** +###

for replacement transmitter OEM

**b** indicates generation, including B = Generation of Flowmeter;

**cc** indicates size, any combination of number and/or letter up to size = DN100 (t-mass F) / 1500mm (t-mass I);

**dd** indicates NEPSI approval code, refer to Clause 3.4 for the detail;

**e** indicates power supply, including D = 24Vdc, E = 100~230Vac, I = 100~230Vac/ 24Vdc, X = sensor only;

**ff** indicates input/output 1, including BA = 4~20mA HART,

BB = 4~20mA WHART,

CA = 4~20mA HART Ex i (passive),

CB = 4~20mA WHART Ex i (passive),

CC = 4~20mA HART Ex i (active),

CD = 4~20mA WHART Ex i (active),

GA = Profibus PA,

HA = Profibus PA Ex i,

LA = Profibus DP,

MA = Modbus RS485,

MB = Modbus TCP,

MC = Modbus TCP Ex i,

NA = EtherNet/IP,

RA = Profinet IO,

RB = Profinet,

RC = Profinet Ex i,

SA = Foundation Fieldbus,

TA = Foundation Fieldbus Ex I,

XX = sensor only;

**g** indicates input/output 2, including A = without input/output 2,

B = 4~20mA,

C = 4~20mA Ex i (passive),

D = configurable IO,

E = pulse/frequency/switch output,

F = pulse output phase-shifted,

G = pulse/frequency/switch output Ex i,

H = relay,

I = 4~20mA input,

J = status input,

K = Pulse output Ex i,

L = Pulse output,

X = sensor only;

**h** indicates input/output 3, including A = without input/output 3,

B = 4~20mA,

C = 4~20mA Ex i (passive),

D = configurable IO,

E = pulse/frequency/switch output,

F = pulse output phase-shifted,



G = pulse/frequency/switch output Ex i,

H = relay,

I = 4~20mA input,

J = status input,

K = Pulse output Ex i,

L = Pulse output,

X = sensor only;

**i** indicates input/output 4, including A = without input/output 4,  
(Proline 500 only)

B = 4~20mA,

C = 4~20mA Ex i (passive),

D = configurable IO,

E = pulse/frequency/switch output,

F = pulse output phase-shifted,

G = pulse/frequency/switch output Ex i,

H = relay,

I = 4~20mA input,

J = status input,

K = Pulse output Ex I,

L = Pulse output,

X = sensor only;

**j** indicates display/operation, including O (with remote display) or any single number or letter except O (without remote display);

**k** indicates integrated ISEM electronic (Proline 500 only), including A = Sensor;

**l** indicates housing (Proline 300 only), any single number or letter;

**m** indicates transmitter housing (Proline 500 only), any single number or letter;

**n** indicates sensor housing (Proline 500 only), any single number or letter;

**o** indicates cable sensor connection (Proline 500 only), any single number or letter;

**p** indicates cable entry, any single number or letter;

**ss** indicates material sensor, any double digits with combination of number or letter;

**ttt** indicates process connection, any double digits with combination of number or letter;

**uu** indicates gasket, any double number or letter;

**v** indicates calibration, any single number or letter;

**ww** indicates device model, including A1 = product version 1,  
A2 = product version 2;

**yy** indicates customer version, any double digits with combination of number and/or letter;

\*\* indicates option in two digits, none or any combination of number and/or letter;

#, + indicates signs used as indicator for optional abbreviation of extended order codes.

For the details, see the instruction manual.

## 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 All equipment of the measurement system shall be included in the equipotential bonding. Along the intrinsically safe sensor circuits potential equalization must exist.

2.2 The flameproof joints are not intended to be repaired.

2.3 The sensors may only be used for those process media, for which the wetted parts are known to be suitable.

2.4 Plastic transmitter enclosures of product Proline 500 with approval code **dd** = NJ, shall be installed in an area of at least pollution degree 2.

2.5 If the flowmeter system is connected to remote display type (O)DKX001, they should be paired as the following:

|                                              |                                                                              |
|----------------------------------------------|------------------------------------------------------------------------------|
| Approval code <b>dd</b> of Prolinet-mass 300 | Approval code <b>bb</b> of remote display (O)DKX001 as covered by GYJ21.1084 |
| NB or ND                                     | NE, NF or NG                                                                 |
| NS                                           | NS                                                                           |

2.6 Only use battery Renata type lithium CR1632, 3V.

2.7 For Proline t-mass 300\_500 with order code 'dd' = NB, ND, NJ & NN:

Zone 0 is only applicable to sensor with process medium in the measuring tube.

2.8 The Proline 300/500 Flowmeter that may include, stainless steel label tag with rope, when not bonded to earth used on coated transmitter and/or sensor enclosure, shall be prevented from risk of electrostatic charging caused by friction and/or cleaning.

## 3. Conditions for Safe Use

3.1 All the sensors can be assigned to sensor group K1 or K2.

## Proline t-mass 300

**Notes:**  
This page applies to versions with extended order code covering:

6x3Bxx - dd...

O6x3Bxx - dd...

| Size / DN | T <sub>max</sub> to be measured at reference point at sensor neck [°C] |               |               |               |               |               |  |
|-----------|------------------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|--|
|           | T6<br>(85°C)                                                           | T5<br>(100°C) | T4<br>(135°C) | T3<br>(200°C) | T2<br>(300°C) | T1<br>(450°C) |  |
| all       | ---                                                                    | ---           | ---           | 73            | 76            | 77            |  |

Notes: (1) for safe use temperatures shall not exceed all of the following:

- temperature table for versions with sensor not insulated (refer to table above)
- T<sub>max</sub> = -40°C - 50°C respectively (see nameplate)
- for maximum medium temperature and minimum medium temperature see nameplate

(2) location of reference point

Proline t-mass 500

Notes:  
This page applies to versions with extended order code covering:

6\*5\*\*\* – dd\*\*\*\*\*A...  
with approval option: dd = NJ, NN

06\*5\*\*\* – dd\*\*\*\*\*A...  
06x5Bxx – dd\*\*\*\*\*A...

6\*5\*\*\* – dd\*\*\*\*\*A...  
06x5Bxx – dd\*\*\*\*\*A...

Sensor: Temperature table for versions with sensor insulated and not insulated  
(for insulation refer to manual of Endress+Hauser Flowtec)

| Size / DN | T <sub>max</sub> to be measured at reference point at sensor neck [°C] |                          |              |               |               |               |               |               |  |  |
|-----------|------------------------------------------------------------------------|--------------------------|--------------|---------------|---------------|---------------|---------------|---------------|--|--|
|           | T <sub>min</sub><br>[°C]                                               | T <sub>max</sub><br>[°C] | T6<br>(85°C) | T5<br>(100°C) | T4<br>(135°C) | T3<br>(200°C) | T2<br>(300°C) | T1<br>(450°C) |  |  |
| all       | -50                                                                    | 180                      | 55           | ---           | 115           | 155           | 180           | 180           |  |  |

Note: (1) T<sub>min</sub> = -40°C, -50°C respectively (see nameplate)

Transmitter for all versions

| Type of enclosure | T <sub>a,max</sub> [°C]   |              |               |               |
|-------------------|---------------------------|--------------|---------------|---------------|
|                   | Ordinary location<br>(°C) | T6<br>(85°C) | T5<br>(100°C) | T4<br>(135°C) |
| aluminium         | 60                        | ---          | 45            | 60            |
| plastic           | 60                        | ---          | ---           | ---           |

Note: (1) aluminium enclosure: T<sub>a,min</sub> = -50°C (for limitation see name plate)  
plastic enclosure: T<sub>a,min</sub> = -40°C

Sensor: Temperature table for versions with sensor insulated  
(for insulation not in compliance to manual of Endress+Hauser Flowtec)

| Size / DN | T <sub>max</sub> to be measured at reference point at sensor neck [°C] |               |               |               |               |               |  |  |  |  |
|-----------|------------------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|--|--|--|--|
|           | T6<br>(85°C)                                                           | T5<br>(100°C) | T4<br>(135°C) | T3<br>(200°C) | T2<br>(300°C) | T1<br>(450°C) |  |  |  |  |
| all       | ---                                                                    | ---           | 76            | 78            | 82            | 82            |  |  |  |  |

Notes: (1) for safe use temperatures shall not exceed all of the following:  
- temperature table for versions with sensor not insulated (refer to table above)  
- temperature at reference point as listed in this table  
- T<sub>a,min</sub> = -40°C, -50°C respectively (see nameplate)  
- for maximum medium temperature and minimum medium temperature see nameplate  
(2) location of reference point

Installation Drawing NEPSI (acc. to FES0331A)

Zone 1, Zone 21

Thermal Parameter

Proline t-mass 300/500

EH

Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach

FES0341A

2/2

Anderungen:

| A | 15.01.2019 / EKE | F |
|---|------------------|---|
| B | S                |   |
| C | H                |   |
| D | J                |   |
| E | K                |   |

Erstellt durch:

Erstellt für:

Erstelltler: FES / EKE

FILE: M:\Zuehung\FES0341\FES0341A.doc

Als gesetzlich Unterbrechung: vorbehalten.

Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konstrukteuren zugänglich gemacht werden.

Gezeichnet

15.01.2019

EKE

Geprüft

Ex-geprüft

15.01.2019

EKE

Gesehen

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3.3 Thermal Parameters (Zone 2)

Proline t-mass 300

Notes:  
This page applies to versions with extended order code covering:  
6\*3B\*\* – dd... O6\*3B\*\* – dd... 6x3Bxx – dd... O6x3Bxx – dd...  
with approval option: dd = NS

Temperature table for versions with sensor insulated and not insulated  
(for insulation refer to manual of Endress+Hauser Flowtec)

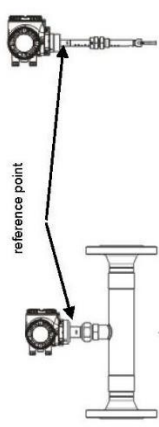
| Size / DN | T <sub>med</sub> |          | T <sub>a, max</sub> |                | T <sub>med, max</sub> [°C] |                |                |                |  |  |
|-----------|------------------|----------|---------------------|----------------|----------------------------|----------------|----------------|----------------|--|--|
|           | min [°C]         | max [°C] | T <sub>6</sub>      | T <sub>5</sub> | T <sub>4</sub>             | T <sub>3</sub> | T <sub>2</sub> | T <sub>1</sub> |  |  |
| all       | -50              | 180      | 50                  | 115            | 115                        | 155            | 180            | 180            |  |  |
|           |                  |          | 55                  | 115            | 155                        | 180            | 180            | 180            |  |  |
|           |                  |          | 80                  | 100            | 100                        | 100            | 100            | 100            |  |  |
|           |                  |          |                     | (115)          | (130)                      | (130)          | (130)          | (130)          |  |  |

Notes: (1) T<sub>a, min</sub> = -40° C, -50° C respectively (see nameplate)  
(2) values in brackets are applicable for installation where the transmitter is not installed above the sensor  
(3) versions with transmitter enclosure stainless steel (metal sheet) only for installation where transmitter is not installed above the sensor  
(4) versions with transmitter enclosure stainless steel (metal sheet) installed in temperature class T5, a degree of 3° C for ambient temperature shall be taken into account

Temperature table for versions with sensor insulated  
(for insulation not in compliance to manual of Endress+Hauser Flowtec)

| Size / DN | T <sub>max</sub> to be measured at reference point at sensor neck [°C] |                            |                            |                            |                            |                           | T <sub>1</sub><br>(450° C) |
|-----------|------------------------------------------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|---------------------------|----------------------------|
|           | T <sub>6</sub><br>(85° C)                                              | T <sub>5</sub><br>(100° C) | T <sub>4</sub><br>(135° C) | T <sub>3</sub><br>(200° C) | T <sub>2</sub><br>(300° C) | T <sub>7</sub><br>(77° C) |                            |
| all       | ---                                                                    | ---                        | 73                         | 76                         | 77                         | 77                        |                            |

Notes: (1) for safe use temperatures shall not exceed all of the following:  
- temperature table for versions with sensor not insulated (refer to table above)  
- temperature at reference point as listed in this table  
- T<sub>a, min</sub> = -40° C, -50° C respectively (see nameplate)  
- for maximum medium temperature and minimum medium temperature see nameplate  
(2) location of reference point



Installation Drawing NEPSI (acc. to FES0332A)

Zone 2

Thermal Parameter

Proline t-mass 300/500

Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach

FES0342A

1/2

Änderungen:

| A                | B   | C   | D   | E   |
|------------------|-----|-----|-----|-----|
| 15.01.2019 / EKE | --- | --- | --- | --- |
| ---              | --- | --- | --- | --- |
| ---              | --- | --- | --- | --- |
| ---              | --- | --- | --- | --- |

Erstellt durch:  
Alle gesetzlichen Umgebungen, Vorarbeiten.  
Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch Dritten Personen und Konstruktionen zugänglich gemacht werden.

Erstellt für:  
Ersteller: FES / EKE  
Date: 15.01.2019 / FES0342A.doc

| Gezeichnet | 15.01.2019 | EKE |
|------------|------------|-----|
| Geprüft    |            |     |
| Ex-geprüft | 15.01.2019 | EKE |
| Gesehen    |            |     |

Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach

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O6x5Bxx - dd\*\*\*\*\*A...

| Size / DN | $T_{max}$ to be measured at reference point at sensor neck [°C] |               |               |               |               |               |
|-----------|-----------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|
|           | T6<br>(85°C)                                                    | T5<br>(100°C) | T4<br>(135°C) | T3<br>(200°C) | T2<br>(300°C) | T1<br>(450°C) |
| all       | ---                                                             | ---           | 76            | 78            | 82            | 82            |

Notes:

- for safe use temperatures shall not exceed all of the following:
  - temperature table for versions with sensor not insulated (refer to table above)
  - $T_{s, atm} = -40^{\circ}\text{C}$ ,  $-50^{\circ}\text{C}$  respectively (See nameplate)
  - for maximum medium temperature and minimum medium temperature see nameplate
- location of reference point

| Transmitter for all versions |                           |              |               |               |
|------------------------------|---------------------------|--------------|---------------|---------------|
| Type of enclosure            | Ordinary location<br>(°C) | T6<br>(85°C) | T5<br>(100°C) | T4<br>(135°C) |
| aluminium                    | 60                        | ---          | 45            | 60            |
| plastic                      | 60                        | ---          | ---           | ---           |

Note: (1) aluminium enclosure:  $T_{\text{amb}} = -50^\circ\text{C}$  (for limitation see name plate)  
 plastic enclosure:  $T_{\text{amb}} = -40^\circ\text{C}$

|                                                                                                                                                  |   |                  |   |                                                                                                                                                                                                         |                                                                                                       |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----|
| Änderungen:                                                                                                                                      | A | 15.01.2019 / EKE | F | Alle gesetzlichen Urheberrechte vorbehalten.<br>Diese Zeichnung darf ohne unsere<br>Genehmigung weder vervielfältigt werden noch<br>dritten Personen und Konkurrenzfirmen<br>zugänglich gemacht werden. | Ersetzt durch:<br><br>Ersatz für:<br>Ersteller: FES / EKE<br>FILE: H:\Zeichnung\FES0342A\FES0342A.dwg |     |
|                                                                                                                                                  | B |                  | G |                                                                                                                                                                                                         |                                                                                                       |     |
|                                                                                                                                                  | C |                  | H |                                                                                                                                                                                                         |                                                                                                       |     |
|                                                                                                                                                  | D |                  | J |                                                                                                                                                                                                         |                                                                                                       |     |
|                                                                                                                                                  | E |                  | K |                                                                                                                                                                                                         |                                                                                                       |     |
| Installation Drawing NEPSI (acc. to FES0332A)                                                                                                    |   |                  |   |                                                                                                                                                                                                         |                                                                                                       |     |
| Zone 2                                                                                                                                           |   |                  |   |                                                                                                                                                                                                         |                                                                                                       |     |
| Thermal Parameter                                                                                                                                |   |                  |   |                                                                                                                                                                                                         |                                                                                                       |     |
| Proline t-mass 300/500                                                                                                                           |   |                  |   |                                                                                                                                                                                                         |                                                                                                       |     |
|                                                                                                                                                  |   |                  |   | Gezeichnet                                                                                                                                                                                              | 15.01.2019                                                                                            | EKE |
|                                                                                                                                                  |   |                  |   | Geprüft                                                                                                                                                                                                 |                                                                                                       |     |
|                                                                                                                                                  |   |                  |   | Ex-geprüft                                                                                                                                                                                              | 15.01.2019                                                                                            | EKE |
|                                                                                                                                                  |   |                  |   | Gesehen                                                                                                                                                                                                 |                                                                                                       |     |
|                                                                                                                                                  |   |                  |   |                                                                                                                                                                                                         |                                                                                                       |     |
|  Flowtec AG, Kädenstrasse 7, CH-4153 Reinach, RI 1 Postfach |   |                  |   |                                                                                                                                                                                                         |                                                                                                       |     |
| <b>FES0342A</b> <b>2/2</b>                                                                                                                       |   |                  |   |                                                                                                                                                                                                         |                                                                                                       |     |

3.4 The Ex marking of this product is detailed as following:

Proline 300:

| <b>dd</b> code | <b>ff</b> code                         | Marking Gas                                                                   | Marking Dust                 | Marking of protection representative for                                                                                                                                                 |
|----------------|----------------------------------------|-------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NB             | CA, CB, CC, CD, HA, TA MC,RC           | Ex db eb ia [ia Ga] II C T1...T4 Gb<br>Ex db eb ia [ia Ga] II C T1...T4 Ga/Gb | Ex tb [ia Da] III C T**°C Db | db -> transmitter electronic compartment<br>eb -> transmitter terminal compartment<br>ia -> sensor<br>tb -> enclosures<br>[ia Ga] -> input/output Ex ia<br>[ia Da] -> input/output Ex ia |
|                | BA, BB, GA, LA, NA, RA, SA, MA MB,RB   | Ex db eb ia II C T1...T4 Gb<br>Ex db eb ia II C T1...T4 Ga/Gb                 | Ex tb III C T**°C Db         |                                                                                                                                                                                          |
| ND             | CA, CB, CC, CD, HA, TA, MC, RC         | Ex db ia [ia Ga] II C T1...T4 Gb<br>Ex db ia [ia Ga] II C T1...T4 Ga/Gb       | Ex tb [ia Da] III C T**°C Db | db -> transmitter electronic compartment<br>eb -> transmitter terminal compartment<br>ia -> sensor<br>tb -> enclosures<br>[ia Ga] -> input/output Ex ia<br>[ia Da] -> input/output Ex ia |
|                | BA, BB, GA, LA, NA, RA, SA, MA MB,RB   | Ex db ia II C T1...T4 Gb<br>Ex db ia II C T1...T4 Ga/Gb                       | Ex tb III C T**°C Db         |                                                                                                                                                                                          |
| NS             | CA, CB, CC, CD, HA, TA MC,RC           | Ex ec nC [ic] II C T1...T4 Gc                                                 | ---                          | ec -> transmitter and sensor enclosure<br>nC -> electronic<br>[ic] -> input/output Ex ic                                                                                                 |
|                | BA, BB, GA, LA, NA, RA, SA, MA, MB, RB | Ex ec nC II C T1...T4 Gc                                                      | ---                          |                                                                                                                                                                                          |

Proline 500 with ISEM integrated in sensor:

| dd<br>code | ff<br>code                                                                                     | Transmitter                                               | Sensor                                                                                   | Marking of protection<br>representative for                                                                                                             |
|------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                                                                                                | Marking Gas & Dust                                        | Marking Gas & Dust                                                                       |                                                                                                                                                         |
| NJ         | BA, BB,<br>CA, CB,<br>CC, CD,<br>HA, TA,<br>GA, LA,<br>NA, RA,<br>RB, RC,<br>SA, MA,<br>MB, MC | [Ex ia] II C<br>[Ex ia] III C                             | Ex db ia II C T1...T4<br>Gb<br>Ex db ia II C T1...T4<br>Ga/Gb<br>Ex ia tb III C T**°C Db | [Ex ia] -> sensor circuit                                                                                                                               |
|            |                                                                                                |                                                           |                                                                                          | ia -> sensor                                                                                                                                            |
|            |                                                                                                |                                                           |                                                                                          | tb -> sensor enclosure                                                                                                                                  |
|            |                                                                                                |                                                           |                                                                                          | db -> sensor enclosure                                                                                                                                  |
| NL         | CA, CB,<br>CC, CD,<br>HA, TA,<br>MC, RC                                                        | [Ex ic] II C                                              | Ex ec II C T1...T4 Gc                                                                    | ec -> sensor enclosure                                                                                                                                  |
|            | BA, BB,<br>GA, LA,<br>NA, RA,<br>SA, MA,<br>MB ; RB                                            | non-Ex                                                    |                                                                                          | [Ex ic]-> input/output Ex ic                                                                                                                            |
| NN         | CA, CB,<br>CC, CD,<br>HA, TA,<br>MC, RC                                                        | Ex ec nC [ic] [ia Ga] II C<br>T4...T5 Gc<br>[Ex ia] III C | Ex db ia II C T1...T4<br>Gb<br>Ex db ia II C T1...T4<br>Ga/Gb<br>Ex ia tb III C T**°C Db | db -> sensor enclosure                                                                                                                                  |
|            | BA, BB,<br>GA, LA,<br>NA, RA,<br>SA, MA,<br>MB, RB                                             | Ex ec nC [ia Ga] II C<br>T4...T5 Gc<br>[Ex ia] III C      |                                                                                          | ia -> sensor<br>[ia Ga] -> sensor circuit<br>[Ex ia] -> sensor circuit<br>ec -> transmitter enclosure<br>nC -> electronic<br>[ic] -> input/output Ex ic |
| NS         | CA, CB,<br>CC, CD,<br>HA, TA,<br>MC, RC                                                        | Ex ec nC [ic] II C<br>T4...T5 Gc                          | Ex ec II C T1...T4 Gc                                                                    | ec -> transmitter and sensor enclosure                                                                                                                  |

|  |                                                    |                             |  |                                                   |
|--|----------------------------------------------------|-----------------------------|--|---------------------------------------------------|
|  | BA, BB,<br>GA, LA,<br>NA, RA,<br>SA, MA,<br>MB, RB | Ex ec nC II C T4...T5<br>Gc |  | nC -> electronic<br>[ic] -> input/output<br>Ex ic |
|--|----------------------------------------------------|-----------------------------|--|---------------------------------------------------|

## 3.5 Electrical parameters

| Power supply         |                      |                                                                     |
|----------------------|----------------------|---------------------------------------------------------------------|
| dd e code            | terminal no.         | values                                                              |
| NBD, NDD             | No. 1(L+/L), 2(L-/N) | $U_N = 19.2\sim 28.8V_{dc}$<br>$U_M = 250V_{ac}$                    |
| NBE, NDE             | No. 1(L+/L), 2(L-/N) | $U_N = 85\sim 264V_{ac}$<br>$U_M = 250V_{ac}$                       |
| NSI, NJI<br>NLI, NNI | No. 1(L+/L), 2(L-/N) | $U_N = 19.2\sim 28.8V_{dc} / 85\sim 264V_{ac}$<br>$U_M = 250V_{ac}$ |

| Input/output 1 |              |                                                                                                                                                                                                                          |                                                                                                                                                                                                                            |
|----------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ff code        | terminal no. | values                                                                                                                                                                                                                   |                                                                                                                                                                                                                            |
| BA, BB, MA     | No. 26, 27   | $U_N = 30V_{dc}$<br>$U_M = 250V_{ac}$                                                                                                                                                                                    |                                                                                                                                                                                                                            |
| LA, GA, SA     | No. 26, 27   | $U_N = 32V_{dc}$<br>$U_M = 250V_{ac}$                                                                                                                                                                                    |                                                                                                                                                                                                                            |
| CA, CB         | No. 26, 27   | $U_i = 30V$<br>$I_i = 100mA$<br>$P_i = 1.25W$<br>$L_i = 0$<br>$C_i = 6nF$                                                                                                                                                |                                                                                                                                                                                                                            |
| CC, CD         | No. 26, 27   | <b>dd</b> = NB, ND:<br>$U_o = 21.8V$<br>$I_o = 90mA$<br>$P_o = 491mW$<br>$L_o = 4.1mH$ (IIC)/<br>15mH (IIB)<br>$C_o = 160nF$ (IIC)/<br>1160nF (IIB)<br><br>$U_i = 30V$<br>$I_i = 10mA$<br>$P_i = 0.3W$<br>$L_i = 5\mu H$ | <b>dd</b> = NS, NL, NN:<br>$U_o = 21.8V$<br>$I_o = 90mA$<br>$P_o = 491mW$<br>$L_o = 9mH$ (IIC)/<br>39mH (IIB)<br>$C_o = 600nF$ (IIC)/<br>4000nF (IIB)<br><br>$U_i = 30V$<br>$I_i = 10mA$<br>$P_i = 0.3W$<br>$L_i = 5\mu H$ |



|        |            |                                                                                                                                                                                                        |                                                                                                                                                                                                            |
|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |            | $C_i = 6\text{nF}$                                                                                                                                                                                     | $C_i = 6\text{nF}$                                                                                                                                                                                         |
| HA, TA | No. 26, 27 | $dd = \text{NB, ND:}$<br>PA/FF<br>$U_i = 30\text{V}$<br>$I_i = 570\text{mA}$<br>$P_i = 8.5\text{W}$<br>$L_i = 10\mu\text{H}$<br>$C_i = 5\text{nF}$                                                     | $dd = \text{NS, NL, NN:}$<br>PA/FF<br>$U_i = 32\text{V}$<br>$I_i = 570\text{mA}$<br>$P_i = 8.5\text{W}$<br>$L_i = 10\mu\text{H}$<br>$C_i = 5\text{nF}$                                                     |
| MB, RB | No. 26, 27 | APL port profile SLAX/SPE PoDL<br>classes 10, 11, 12<br>$U_N = 30\text{Vdc}$<br>$U_M = 250\text{Vac}$                                                                                                  |                                                                                                                                                                                                            |
| MC, RC | No. 26, 27 | $dd^1) = \text{NB, ND:}$<br>2-WISE power<br>load APL port<br>profile SLAA<br>$U_i = 17.5\text{V}$<br>$I_i = 380\text{mA}$<br>$P_i = 5.32\text{W}$<br>$L_i \leq 10\mu\text{H}$<br>$C_i \leq 5\text{nF}$ | $dd^1) = \text{NS, NL, NN:}$<br>2-WISE power<br>load APL port<br>profile SLAC<br>$U_i = 17.5\text{V}$<br>$I_i = 380\text{mA}$<br>$P_i = 5.32\text{W}$<br>$L_i \leq 10\mu\text{H}$<br>$C_i \leq 5\text{nF}$ |
| NA, RA | IO1 / RJ45 | $U_N = 30\text{Vdc}$<br>$U_M = 250\text{Vac}$                                                                                                                                                          |                                                                                                                                                                                                            |

Note <sup>1)</sup>: no additional internal capacitances are effective to the output value

| Input/output 2      |              |                                                                                              |
|---------------------|--------------|----------------------------------------------------------------------------------------------|
| g code              | terminal no. | values                                                                                       |
| C, G, K             | No. 24, 25   | $U_i = 30\text{V}$<br>$I_i = 100\text{mA}$<br>$P_i = 1.25\text{W}$<br>$L_i = 0$<br>$C_i = 0$ |
| B, D, E, F, I, J, L | No. 24, 25   | $U_N = 30\text{Vdc}$<br>$U_M = 250\text{Vac}$                                                |
| H                   | No. 24, 25   | $U_N = 30\text{Vdc}$<br>$I_N = 100\text{mA} / 500\text{mA}$<br>$U_M = 250\text{Vac}$         |

| Input/output 3      |              |                                                                         |
|---------------------|--------------|-------------------------------------------------------------------------|
| <b>h</b> code       | terminal no. | values                                                                  |
| C, G, K             | No. 22, 23   | $U_i = 30V$<br>$I_i = 100mA$<br>$P_i = 1.25W$<br>$L_i = 0$<br>$C_i = 0$ |
| B, D, E, F, I, J, L | No. 22, 23   | $U_N = 30Vdc$<br>$U_M = 250Vac$                                         |
| H                   | No. 22, 23   | $U_N = 30Vdc$<br>$I_N = 100mA/ 500mA$<br>$U_M = 250Vac$                 |

| Input/output 4      |              |                                                                         |
|---------------------|--------------|-------------------------------------------------------------------------|
| <b>i</b> code       | terminal no. | values                                                                  |
| C, G, K             | No. 20, 21   | $U_i = 30V$<br>$I_i = 100mA$<br>$P_i = 1.25W$<br>$L_i = 0$<br>$C_i = 0$ |
| B, D, E, F, I, J, L | No. 20, 21   | $U_N = 30Vdc$<br>$U_M = 250Vac$                                         |
| H                   | No. 20, 21   | $U_N = 30Vdc$<br>$I_N = 100mA/ 500mA$<br>$U_M = 250Vac$                 |

| Service interface |                   |                                                                                                                                                                                                                                                                                        |
|-------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>dd</b> code    | terminal no.      | values                                                                                                                                                                                                                                                                                 |
| NB                | Service interface | Service interface shall only be installed in areas which are known to be non hazardous with a non intrinsically safe circuit<br>$U_N = 3.3 V$ , $U_M = 250 VAC$ or<br>to an intrinsically safe circuit with<br>$U_i = 10V$ , $I_i = n.a.$ , $P_i = na.$ , $C_i = 200nF$ ,<br>$L_i = 0$ |
| ND                | Service interface | Service interface shall only be installed to an non intrinsically safe circuit with<br>$U_N = 3.3 V$ , $U_M = 250 VAC$ or<br>to an intrinsically safe circuit with<br>$U_i = 10V$ , $I_i = n.a.$ , $P_i = na.$ , $C_i = 200nF$ ,                                                       |

|                   |                   |              |
|-------------------|-------------------|--------------|
|                   |                   | $L_i = 0$    |
| not for<br>NB, ND | Service interface | $U_N = 3.3V$ |

| Antenna bushing       |              |                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dd code               | terminal no. | values                                                                                                                                                                                                                                                                                                                                                                                       |
| NB, NJ, NL, NN,<br>NS | N connector  | RF antenna supplied by Endress+Hauser;<br>As an alternate, any passive omni-directional RF antenna with or without cable is permitted to be connected to the output of the antenna bushing when meeting the following parameters:<br>- have an impedance of at least $50\Omega$<br>- frequency range not exceeding 1710MHz ...6000MHz<br>- fitted with a Type N connector plug (MIL-STD-348) |

| Remote display |                    |                                                                                                                              |
|----------------|--------------------|------------------------------------------------------------------------------------------------------------------------------|
| dd code        | terminal no.       | values                                                                                                                       |
| NB, ND         | No. 81, 82, 83, 84 | $U_o = 3.9V$<br>$I_o = 1.5A$ (spark)<br>200mA (power)<br>$P_o = 600mW$<br>$R_i = 2.6\Omega$<br>$L_o = 0$<br>$C_o = 670\mu F$ |
| NS             | No. 81, 82, 83, 84 | $U_N = 3.3V$<br>$I_N = 150mA$                                                                                                |

For transmitter with approval code **dd** = NB and ND connected to the remote display of Endress+Hauser, Type DKX001 or ODKX001, the cable parameter with ration  $L/R \leq 0.024mH/\Omega$  applies.

## 3.6 Electrical parameters of remote transmitter and remote sensor (Proline 500)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------|
| <b>dd k</b> code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Transmitter:             |                                                 |
| NJA, NNA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Terminals 61, 62, 63, 64 | $U_o = 13.8V$<br>$I_o = 1.156A$<br>$P_o = 3.3W$ |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sensor:                  |                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Terminals 61, 62, 63, 64 | $U_i = 14V$<br>$I_i = 1.2A$<br>$P_i = 3.4W$     |
| For interconnection of transmitter to sensor any cable may be used with following requirements:<br>$L/R \leq 0.0089 \text{ mH}/\Omega$ and $C_{\text{cable}} \leq 760\text{nF}$ for group IIC, $L/R \leq 0.0356 \text{ mH}/\Omega$ and $C_{\text{cable}} \leq 4.2\mu\text{F}$ for group IIB or<br>$L_{\text{cable}} \leq 26\mu\text{H}$ and $C_{\text{cable}} \leq 760\text{nF}$ for group IIC, $L_{\text{cable}} \leq 104\mu\text{H}$ and $C_{\text{cable}} \leq 4.2\mu\text{F}$ for group IIB |                          |                                                 |
| <b>dd k</b> code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Transmitter:             |                                                 |
| NLA, NSA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Terminals 61, 62         | $U_N = 32V$                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Terminals 63, 64         | $U_N = 3.3V$                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sensor:                  |                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Terminals 61, 62         | $U_N = 32V$                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Terminals 63, 64         | $U_N = 3.3V$                                    |

3.7 For cable entries, appropriate separately certified cable glands or blind plugs shall be used.

Otherwise/alternatively Ex e cable glands specified/provided by the manufacture can be used (terminal compartment in increased safety only). After installation, the ingress protection shall be at least IP66/67 according to GB/T 4208-2017.

3.8 Any maintenance shall be done after power off or the area known to be non hazardous.

3.9 Clean the surface of this product termly when using in combustible dust atmospheres.

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

3.11 For installation, use and maintenance of this product, the end user should 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".

GB50257-2014 "Code for construction and acceptance of electric equipment on fire and device for

explosion hazard electrical installation engineering”.

GB15577-2018 “Safety regulations for dust explosion prevention and protection”.

#### 4. Manufacturer’s Responsibility

4.1 Conditions for safe use and special 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.

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National Supervision and Inspection Center  
for Explosion Protection and Safety of Instrumentation  
2024.03.18