防爆合格证

证　号：GYJ21.3359X

由　恩德斯豪斯公司　　制造的产品：

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

名　　称　雷达液位计

型号规格　FMR20 DN40/80 系列

防爆标志　Ex ia IIC T4~T1 Ga　Ex ia IIC T4~T1 Ga/Gb

产品标准　/

图样编号　960018378、960018387、960018388

经图样及技术文件的审查和样品检验，确认上述产品符合　GB 3836.1-2010,GB 3836.4-2010,GB 3836.20-2010　标准，特颁发此证。

本证书有效期：2021 年 11 月 02 日至 2026 年 11 月 01 日

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

站长

国家级仪器仪表防爆安全监督检验站

颁发日期 二〇二一 年 十一 月 二 日

本证书仅对与认可文件和样品一致的产品有效。

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EXPLOSION PROTECTION
CERTIFICATE OF CONFORMITY

Cert NO.GYJ21.3359X

This is to certify that the product

Radar Level Sensor

manufactured by Endress+Hauser SE+Co. KG

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

which model is FMR20 DN40/80 Series

Ex marking Ex iaIIC T4~T1 Ga Ex iaIIC T4~T1 Ga/Gb

product standard /

drawing number 960018378, 960018387, 960018388

has been inspected and certified by NEPSI, and that it conforms to GB 3836.1-2010,GB 3836.4-2010,GB 3836.20-2010.

This Approval shall remain in force until 2026.11.01

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

Director

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

Issued Date 2021.11.02

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

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国家级仪器仪表防爆安全监督检验站

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

(GYJ21.3359X) **(Attachment Ⅰ)**

GYJ21.3359X防爆合格证附件Ⅰ

由恩德斯豪斯公司生产的FMR20 DN40/80系列雷达液位计，经国家级仪器仪表防爆安全监督检验站(NEPSI)检验，符合下列标准：

GB 3836.1-2010 爆炸性环境 第1部分：设备 通用要求

GB 3836.4-2010 爆炸性环境 第4部分：由本质安全型“i”保护的设备

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

产品防爆标志为Ex ia ⅡC T4~T1 Ga、Ex ia ⅡC T4~T1 Ga/Gb，防爆合格证号为GYJ21.3359X。

本证书认可的产品具体型号规格如下：

FMR20-aa b cc ddd eee f +g

其中，aa表示认证代码，可为NA（Ex ia ⅡC T4~T1 Ga）或NB（Ex ia ⅡC T4~T1 Ga/Gb）；

b表示电源/输出/操作，可为A、P或R；

cc表示天线/测量温度范围，可为BM或BN；

ddd表示后端过程连接，可为VCE或WDE；

eee表示前端过程连接，可为RPF、RRF、RSF、VEE、VFE、WFE、WGE或XR0；

f表示电缆长度，可为A、1、2、3或8；

g表示备选附件。

具体含义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，即：

1、产品非金属表面在现场使用时应严禁相互摩擦、干擦清洗或安装在强介质流中，以防产生静电火花危险。

2、FMR20仅供在大气条件下使用，压力范围：80...110kPa(0.8...1.1bar)。

二、产品使用注意事项

1、产品使用环境温度范围：-40℃～+80℃。

2、产品使用介质温度范围：-40℃～+80℃。

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

4、产品本安电气参数：

4.1 2线制，4~20mA HART（b= A或P）

电路	电气参数
电源	Ui = 30V Ii = 100mA Pi = 750mW Ci = 15nF Li = 35μH

4.2 4线制，Modbus RS485（b= R）

电路	电气参数
电源	Ui = 30V Ii = 100mA Pi = 650mW Ci = 10nF Li = 20μH Cc = 45pF/m Lc = 0.8μH/m
RS485	Uo = 4.2V Io = 149mA Ui = 4.2V Ii = 4.8A Ci = 97μF Li ≈ 0 Cc = 45pF/m Lc = 0.8μH/m

5、产品与关联设备的连接电缆应为带绝缘护套的屏蔽电缆，其屏蔽层应接地。

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

7、产品的安装、使用和维护应同时遵守产品使用说明书、GB 3836.13-2013“爆炸性环境 第13部分：设备的修理、检修、修复和改造”、GB/T 3836.15-2017“爆炸性环境 第15部分：电气装置的设计、选型和安装”、GB/T 3836.16-2017“爆炸性环境 第16部分：电气装置的检查与维护”、GB/T 3836.18-2017“爆炸性环境 第18部分：本质安全电气系统”及GB 50257-2014“电气设备安装工程爆炸和火灾危险环境电气装置施工及验收规范”的有关规定。

三、制造厂责任

1、产品制造厂必须将上述使用注意事项纳入产品使用说明书或相关技术文件中；

2、制造厂必须严格按照NEPSI认可的文件资料生产；

3、产品铭牌中应包括下列内容：

1）NEPSI认可标志 （见防爆合格证书）

2）产品防爆标志

3）防爆合格证号

4）环境温度范围

5）介质温度范围

6）“防静电”警告语

7）本安电气参数

国家级仪器仪表防爆安全监督检验站

二〇二一年十一月二日

国家级仪器仪表防爆安全监督检验站

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

(GYJ21.3359X) **(Attachment Ⅰ)**

Attachment Ⅰ to GYJ21.3359X

(translation)

1. Description

FMR20 DN40/80 series Radar level sensor, manufactured by Endres+Hauser SE+Co. KG, has been certified by National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI). This product accords with following standards:

GB 3836.1-2010 Explosive atmospheres-Part 1: Equipment-General requirements

GB 3836.4-2010 Explosive atmospheres-Part 4: Equipment protection by intrinsic safety"i"

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

The Ex marking is Ex ia Ⅱ C T4~T1 Ga Ex ia Ⅱ C T4~T1 Ga/Gb, its certificate number is GYJ21.3359X.

Type approved in this certificate is shown as following:

FMR20-***aa b cc ddd eee f+g***

aa indicates approval code, including NA (Ex ia Ⅱ C T4~T1 Ga) or NB (Ex ia Ⅱ C T4~T1 Ga/Gb);

b indicates power supply/output/operation, including A, P or R;

cc indicates antenna/max. measuring range, including BM or BN;

ddd indicates process connection rear side, including VCE or WDE;

eee indicates process connection front side, including RPF, RRF, RSF, VEE, VFE, WFE, WGE or XR0;

f indicates cable length, including A, 1, 2, 3 or 8;

g indicates options, accessory enclosed.

Refer to instruction manual for the details.

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:

1. Avoid a built-up of electrostatic charge on the plastic surface, do not make friction, cleaning and install it in the strong medium flow.

2. The FMR20 is for use under atmospheric conditions only. Pressure range: 80...110kPa (0.8...1.1bar).

3. Conditions for Safe Use

3.1 The allowed ambient temperature range is -40℃~+80℃.

3.2 The allowed medium temperature range is -40℃~+80℃.

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

3.4 Intrinsically safe parameters:

3.4.1 2-wire, 4~20mA HART (*b* = A or P)

circuit	parameters
supply	Ui = 30V Ii = 100mA Pi = 750mW Ci = 15nF Li = 35μH

3.4.2 4-wire, Modbus RS485 (*b* = R)

circuit	parameters
supply	Ui = 30V Ii = 100mA Pi = 650mW Ci = 10nF Li = 20μH Cc = 45pF/m Lc = 0.8μH/m
RS485	Uo = 4.2V Io = 149mA Ui = 4.2V Ii = 4.8A Ci = 97μF Li ≈ 0 Cc = 45pF/m Lc = 0.8μH/m

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

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

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

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

GB 3836.13-2013 "Explosive atmospheres- Part 13:Equipment repair, overhaul and reclamation".

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

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

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

4. Manufacturer's Responsibility

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

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

4.3 Nameplate should include these contents listed below:

1) NEPSI logo

2) Ex marking

3) certificate number

4) ambient temperture range

5) medium temperature range

6) warning of "Avoid electrostatic charge"

7) intrinsically safe parameters

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

National Supervision and Inspection Center
for Explosion Protection and Safety of Instrumentation
2021.11.02