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防爆合格证

证号: GYJ22.1807X

制 造 商 恩德斯豪斯公司

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

产 品 名 称 显示单元

型 号 规 格 FHX50-**a b c d+ e f g h+i**

防 爆 标 志 Ex ia II C T6...T1 Ga, Ex ia III C T100°C/T105°C Db
Ex ic II C T6...T1 Gc. Ex ic III C T100°C/T105°C Dc

产 品 标 准 /

图 样 编 号 960015447

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 3836.4-2021, GB 3836.20-2010

特颁发此证。

本证书有效期: 2022年05月16日至2027年05月15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。



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. GYJ22.1807X

Manufacturer	Endress + Hauser SE + Co. KG (Address: Hauptstrasse 1, D-79689 Maulburg, Germany)
Product	Display
Model	FHX50-a b c d+ e f g h+i
Ex marking	Ex iaIIIC T6...T1 Ga, Ex iaIIIC T100°C/T105°C Db Ex icIIIC T6...T1 Gc, Ex icIIIC T100°C/T105°C Dc
Product standard	/
Drawing number	960015447

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

GB/T 3836.1-2021, GB/T 3836.4-2021, GB 3836.20-2010

Valid until: 2027.05.15

Remarks

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



Approval

Shanghai Inspection and Testing Institute of
Instruments and Automation Systems Co., Ltd.
National Supervision and Inspection Center for
Explosion Protection and Safety of Instrumentation
Date of issue 2022.05.16

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

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GYJ22.1807X防爆合格证附件 I

由恩德斯豪斯公司生产的FHX50-**a b c d+ e f g h+i** 型显示单元, 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/T 3836.1-2021 爆炸性环境 第1部分: 设备 通用要求

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

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 T6...T1 Ga, Ex ia III C T100°C/T105°C Db, Ex ic IIC T6...T1 Gc, Ex ic III C T100°C/T105°C Dc, 防爆合格证号为GYJ22.1807X。

本证书认可产品型号规格如下:

FHX50-**a b c d+ e f g h+i**

其中, **a**表示NEPSI认可代码, 可为NA = Ex ia IIC T6...T1 Ga

NH = Ex ic IIC T6...T1 Gc

NM = Ex ia III C T100°C/ T105°C Db

NN = Ex ic III C T100°C/ T105°C Dc

b表示显示/操作, 可为A = 不含LCD, 经由通信

C = LCD SD02, 按键 + 数据备份功能

E = LCD SD03, 触控 + 数据备份功能

Y = 与安全无关的特殊版本; 例如调节器

c表示外壳, 可为B = 单腔; 316L钢

C = 单腔; Alu (铝), 涂层

D = 单腔; 塑料

Y = 与安全无关的特殊版本; 例如颜色、涂层等

d表示电缆, 可为A = 5m + M12插头

B = 10m + M12插头

D = 20m + M12插头

E = 30m + M12插头

1 = 由客户提供, 电缆密封套M16(最大长度60米)

2 = 由客户提供, 螺纹NPT(最大长度60米) *

Y = 与安全无关的特殊版本

e表示可选测量设备, 可为A = 配套于FHX50

B = 非配套于FHX50+改装套件

Y = 与安全无关的特殊版本

t表示测试/认证，可为JN = 环境温度-50℃

g表示其它认证，可为LE = GL船用

LF = ABS船用

LG = LR船用

LH = BV船用

LI = DNV船用

L9 = 其它

h表示随机附件，可为AA = 安装支架，管1”/2”

R9 = 与安全无关的特殊版本

i表示标签信息（可选），与安全无关。

注*：仅适用于代码 **c** = B、C

具体含义参见产品使用说明书。

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、产品用于EPL Ga或EPL Db场所时，GF27塑料外壳表面及电缆应采取措施以防产生静电火花危险。

2、G327铝合金外壳产品应于EPL Ga场所时，应防止由于冲击或摩擦引起的点燃危险。

二、产品使用注意事项

1、温度参数

产品外壳材质、使用环境温度和温度组别的关系：

外壳材质	使用环境温度	温度组别
塑料外壳	-40℃~+55℃	T6/T5
金属外壳	-50℃/-40℃~+60℃	T6/T5
塑料外壳	-40℃~+80℃	T4...T1
金属外壳	-50℃/-40℃~+80℃	T4...T1

对于粉尘防爆产品，最高环境温度+80℃时，最高表面温度为T100℃（金属外壳）、T105℃（塑料外壳）。

2、电气参数

电源及输入电路（变送器模块连接器X800）：

与ProToF Mainboards TRC[11;14;12;15]连用时

Ui = 7.3 V; li = 327 mA; Pi = 800 mW; Ci = 0 nF; Li = 0 μH

与ProToF Mainboard TRC[41]连用时

$U_i = 7.3 \text{ V}$; $I_i = 90 \text{ mA}$; $P_i = 540 \text{ mW}$; $C_i = 0 \text{ nF}$; $L_i = 0 \text{ } \mu\text{H}$

输出电路（连接器X900, X901）：

与ProToF Mainboards TRC[11;14;12;15]连用时

$U_o = 7.3 \text{ V}$; $I_o = 157 \text{ mA}$; $P_o = 362 \text{ mW}$; $C_o = 388 \text{ nF}$; $L_o = 149 \text{ } \mu\text{H}$

与ProToF Mainboard TRC[41]连用时

$U_o = 7.3 \text{ V}$; $I_o = 90 \text{ mA}$; $P_o = 362 \text{ mW}$; $C_o = 388 \text{ nF}$; $L_o = 149 \text{ } \mu\text{H}$

连接电缆的最大允许电容和电感： $C_c \leq 125 \text{ nF}$; $L_c \leq 149 \text{ } \mu\text{H}$

随设备提供的电缆的分布参数为： $C_c \leq 0.2 \text{ nF/m}$; $L_c \leq 1 \text{ } \mu\text{H/m}$

显示单元电源及输入电路（连接器X900, X901）：

与ProToF Mainboards TRC[11;14;12;15]连用时

$U_i = 7.3 \text{ V}$; $I_i = 157 \text{ mA}$; $P_i = 362 \text{ mW}$; $C_i = 263 \text{ nF}$; $L_i = 0 \text{ } \mu\text{H}$

与ProToF Mainboard TRC[41]连用时

$U_i = 7.3 \text{ V}$; $I_i = 90 \text{ mA}$; $P_i = 362 \text{ mW}$; $C_i = 263 \text{ nF}$; $L_i = 0 \text{ } \mu\text{H}$

电源及输出电路（接收模块连接器X400）：

与ProToF Mainboards TRC[11;14;12;15]连用时

$U_o = 7.3 \text{ V}$; $I_o = 157 \text{ mA}$; $P_o = 362 \text{ mW}$; $C_o = 0 \text{ nF}$; $L_o = 0 \text{ } \mu\text{H}$

与ProToF Mainboard TRC[41]连用时

$U_o = 7.3 \text{ V}$; $I_o = 90 \text{ mA}$; $P_o = 362 \text{ mW}$; $C_o = 0 \text{ nF}$; $L_o = 0 \text{ } \mu\text{H}$

- 3、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。
- 4、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。
- 5、产品的安装、使用和维护应同时遵守产品使用说明书、GB/T 3836.13-2021“爆炸性环境 第13部分：设备的修理、检修、修复和改造”、GB/T 3836.15-2017“爆炸性环境 第15部分：电气装置的设计、选型和安装”、GB/T 3836.16-2017“爆炸性环境 第16部分：电气装置的检查与维护”、GB/T 3836.18-2017“爆炸性环境 第18部分：本质安全电气系统”、GB 50257-2014“电气设备安装工程爆炸和火灾危险环境电气装置施工及验收规范”及GB 15577-2018“粉尘防爆安全规程”的有关规定。

三、制造厂责任

- 1、产品制造厂必须将上述使用注意事项纳入产品使用说明书或相关技术文件中；
- 2、制造厂必须严格按照NEPSI认可的文件资料生产；
- 3、产品铭牌中应至少包括下列内容：
 - a) NEPSI认可标志(见防爆合格证书)
 - b) 产品防爆标志
 - c) 防爆合格证号
 - d) 使用环境温度
 - e) 安全电气参数

上海仪器仪表自控系统检验测试所有限公司
国家级仪器仪表防爆安全监督检验站
二〇二三年八月二十四日





(GYJ22.1807X)

(Attachment I)

Attachment I to GYJ22.1807X

1. Description

Display typed FHX50-a b c d e f g h+i, manufactured by Endress+Hauser SE+Co. KG, has been certified and accords with following standards:

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

GB/T 3836.4-2021 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 T6...T1 Ga, Ex ia III C T100°C/T105°C Db, Ex ic II C T6...T1 Gc, Ex ic III C T100°C /T105°C Dc, its certificate number is GYJ22.1807X.

The approved product model is:

FHX50-a b c d e f g h+i

a means the NEPSI approval code, includes NA = Ex ia II C T6...T1 Ga

NH = Ex ic II C T6...T1 Gc

NM = Ex ia III C T100°C/ T105°C Db

NN = Ex ic III C T100°C/ T105°C Dc

b means display/operation, includes A = W/o LCD, via communication

C = LCD SD02, push button + data backup function

E = LCD SD03, touch control + data backup function

Y = Special version not relevant for safety; e.g. adjustment

c means housing, includes B = single compartment; 316L

C = single compartment; Alu, coated

D = single compartment; Plastics

Y = Special version not relevant for safety; e.g. colour, coating, ...

d means cable, includes A = 5m+M12 plug

B = 10m+M12 plug

D = 20m+M12 plug

E = 30m+M12 plug

1 = provided by customer, cable gland M16 (length max. 60 m)

2 = provided by customer, thread NPT $\frac{1}{2}$ (length max. 60 m) *

Y = Special version not relevant for safety

e means option measurement device, includes A = Prepared for display FHX50

B = Not prepared for display FHX50 + retrofit kit

Y = Special version not relevant for safety

f means test/certificate, includes JN = Ambient temperature transmitter -50°C

g means additional approval, includes LE = GL ship building approval

LF = ABS ship building approval

LG = LR ship building approval

LH = BV ship building approval

LI = DNV ship building approval

L9 = Any other additional approval

h means accessory enclosed, includes AA = Mounting bracket, Pipe 1"/2"

R9 = Special version not relevant for safety

i means tagging (option, not mandatory), not relevant for safety.

Note *: only suitable for code c = B or C.

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. For applications in explosive atmospheres requiring equipment of EPL Ga or EPL Db, electrostatic charges on the non-metallic parts of the polymeric GF27 enclosure and the cable shall be avoided.

2.2. For applications in explosive atmospheres requiring equipment of EPL Ga in combination with aluminum Remote Display enclosure G327, sparks caused by impact and friction shall be avoided.

3. Conditions for Safe Use

3.1 Thermal data:

The relationship between material of enclosure, ambient temperature range and temperature class is shown as the following:

Material of enclosure	Ambient temperature range	Temperature class
Polymeric enclosure	-40°C ~ +55°C	T6/T5
Metal enclosure	-50°C/-40°C ~ +60°C	T6/T5
Polymeric enclosure	-40°C ~ +80°C	T4...T1
Metal enclosure	-50°C/-40°C ~ +80°C	T4...T1

For dust product, the maximum surface temperature of the enclosure T100°C (metal enclosure) respectively T105°C (polymeric enclosure) is based on the maximum ambient temperature of 80°C.



3.2 Electrical data:

Supply and input circuit (connector X800 of transmitter module):

$U_i = 7.3 \text{ V}$; $I_i = 327 \text{ mA}$; $P_i = 800 \text{ mW}$; $C_i = 0 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$, when transmitter module is in combination with ProToF Mainboards with TRC[11;14;12;15]

$U_i = 7.3 \text{ V}$; $I_i = 90 \text{ mA}$; $P_i = 540 \text{ mW}$; $C_i = 0 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$, when transmitter module is in combination with ProToF Mainboard with TRC[41]

Output circuit (connector X900, X901):

$U_o = 7.3 \text{ V}$; $I_o = 157 \text{ mA}$; $P_o = 362 \text{ mW}$; $C_o = 388 \text{ nF}$; $L_o = 149 \text{ }\mu\text{H}$, when transmitter module is in combination with ProToF Mainboards with TRC[11;14;12;15]

$U_o = 7.3 \text{ V}$; $I_o = 90 \text{ mA}$; $P_o = 362 \text{ mW}$; $C_o = 388 \text{ nF}$; $L_o = 149 \text{ }\mu\text{H}$, when transmitter module is in combination with ProToF Mainboard with TRC[41]

Maximum allowed capacitance and inductance of the interconnection cable:

$C_c \leq 125 \text{ nF}$; $L_c \leq 149 \text{ }\mu\text{H}$.

The value of the parameters of the cable provided with the equipment are:

$C_c \leq 0.2 \text{ nF/m}$; $L_c \leq 1 \text{ }\mu\text{H/m}$.

Supply and input circuit remote display (connector X900, X901):

$U_i = 7.3 \text{ V}$; $I_i = 157 \text{ mA}$; $P_i = 362 \text{ mW}$; $C_i = 263 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$, when transmitter module is in combination with ProToF Mainboards with TRC[11;14;12;15]

$U_i = 7.3 \text{ V}$; $I_i = 90 \text{ mA}$; $P_i = 362 \text{ mW}$; $C_i = 263 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$, when transmitter module is in combination with ProToF Mainboard with TRC[41]

Supply and output circuit (connector X400 of receiver module):

$U_o = 7.3 \text{ V}$; $I_o = 157 \text{ mA}$; $P_o = 362 \text{ mW}$; $C_o = 0 \text{ nF}$; $L_o = 0 \text{ }\mu\text{H}$, when transmitter module is in combination with ProToF Mainboards with TRC[11;14;12;15]

$U_o = 7.3 \text{ V}$; $I_o = 90 \text{ mA}$; $P_o = 362 \text{ mW}$; $C_o = 0 \text{ nF}$; $L_o = 0 \text{ }\mu\text{H}$, when transmitter module is in combination with ProToF Mainboard with TRC[41]

3.3 Clean the surface of this product termly when using in combustibile dust atmosphere.

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

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

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

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

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

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

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


GB 15577-2018 "Safety regulations for dust explosion prevention and protection."

4. Manufacturer's Responsibility

4.1 Conditions for safe use 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.

4.3 Nameplate should include these contents listed below:

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

Shanghai Inspection and Testing Institute of
Instruments and Automation Systems Co., Ltd.
National Supervision and Inspection Center for
Explosion Protection and Safety of Instrumentation

2022.08.24