IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx EPS 18.0098X**	Page 1 of 5	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2021-02-04) Issue 0 (2020-02-14)
Date of Issue:	2023-04-24		
Applicant:	**Endress & Hauser SE+Co.KG** Hauptstraße 1 79689 Maulburg **Germany**		
Equipment:	**Gammapilot FMG50**		
Optional accessory:			
Type of Protection:	**db ia, db, tb**		
Marking:	Ex db ia IIC T6…T1 Gb Ex db IIC T6…T1 Gb Ex tb IIIC T85°C Db Ex db IIC T6...T1 Gb , Ex tb IIIC T85°C Db		

Approved for issue on behalf of the IECEx Certification Body: **Ulrich Feike**

Position: **Head of Certification**

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

Bureau Veritas Consumer Products Services Germany GmbH
Businesspark A96
86842 Türkheim
Germany

IECEx Certificate of Conformity

Certificate No.: **IECEx EPS 18.0098X**

Date of issue: 2023-04-24 Issue No: 2

Manufacturer: **Endress & Hauser SE+Co.KG**
Hauptstraße 1
79689 Maulburg
Germany

Manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-1:2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-31:2022-01 Edition:3.0	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
IEC TS 60079-47:2021 Edition:1.0	Explosive atmospheres – Part 47: Equipment protection by 2-wire intrinsically safe Ethernet concept (2-WISE)

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/EPS/ExTR18.0105/02

Quality Assessment Report:

DE/TUN/QAR06.0003/10

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The Gammapilot FMG50 is an instrument for non-contact measurement of level, limit level, density and concentration in liquids and solids. The FMG50 contains a scintillator, a photomultiplier and the electronic evaluation unit. The detector receives the weak signal from a measuring gamma radiation source focused on the scintillator. The scintillator converts the weak radiation into light and the electronics convert the light into an electrical signal which is evaluated and passed on as an analog (e.g. 4..20 mA) or digital (PA/FF or Profinet-APL) measured value. The pulse rate (number of pulses per second) is an indicator of the intensity of the radiation. Depending on the calibration, the pulse frequency is converted by the evaluation electronics into a level, limit value, density or concentration signal.

SPECIFIC CONDITIONS OF USE: YES as shown below:
The device shall be installed and maintained such that hazards caused by electrostatic discharge are excluded.

The flameproof joints of the Ex-d device FMG50 are not intended to be repaired.

The Ex-db and Ex-tb housing must not be opened within hazardous areas.

The screws used for the sensor flange connection must have a minimum strength according A4-70 of DIN912 .

Nameplate marking is divided into sections showing the different protection types. Safety instructions will address the requirements of each single type of protection. Explosive gas and dust atmosphere at the same time (hybrid mixture) are not allowed or need a special evaluation not covered by this certificate. Sequential changes between dust and gas explosion protection periods requires a transition period with non-explosive atmosphere or special evaluation not covered by this certification. These applications are in responsibility of the user.

IECEx Certificate of Conformity

Equipment (continued):

Electrical data:
Intrinsically safe version:

For MA10 - 4..20mA (HART): Ui <= 30 V DC, Ii <= 300 mA, Pi <= 1 W, Ci <= 10 nF, Li = 0

For MA11 - Profibus PA, Foundation Fieldbus:

FISCO: Ui <= 17.5 V DC, Ii <= 380 mA, Pi <= 5.32 W, Ci <= 5 nF, Li = 0

Entity: Ui <= 24 V DC, Ii <= 300 mA, Pi <= 1.2 W, Ci <= 5 nF, Li = 0

For MA12 - PROFINET APL: FISCO: Ui <= 17.5 V DC, Ii <= 380 mA, Pi <= 5.32 W, Ci <= 5 nF, Li = 0

Entity: Ui <= 17.5 V DC, Ii <= 300 mA, Pi <= 1.2 W, Ci <= 5 nF, Li = 0

Non-intrinsically safe version (Ex-db and Ex-tb):

For MA10: 4..20mA (HART): U <= 35 V DC, P <= 1 W

For MA11: Profibus PA, Foundation Fieldbus: U <= 32 V DC, P <= 0.7 W

For MA12: PROFINET APL: U <= 15 V DC, P <= 0.7 W

see Annex for temperature ratings

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Addition of the following:

- revised electronic MA10 (no influence to type of protection)

- Profibus PA, Foundation Fieldbus electronic MA11

- Ethernet-APL electronic MA12

- graphic display VA11 (with/without Bluetooth)

- driver electronic VA12 for external display FHX50B

- 1-chamber encl. HA07 (Alu)

- 2-chamber L-shape encl. HA37 (Alu), HS37 (stainless steel)

- add. lengths for PVT-Scintillator (50mm / 100mm /3.5m / 4m / 4.5m)

Annex:

IECEx EPS 18.0098X - Annex_0.pdf

Temperatures for Ex-i:

1. MA10 (4..20 mA HART):

Material: (VKM060=)	Temp.-class	Ambient temperature Ta	
		MA10+VA12 (VKM020=BA + 030=A/L/M/N/O)	MA10+(VA10/VA11) (020=BA + 030= C/D/E/F)
A: PVT	T6…T1	-40°C ≤ Ta ≤ +60°C	-40°C ≤ Ta ≤ +60°C
B: PVT-HT	T6	-20°C ≤ Ta ≤ +70°C	-20°C ≤ Ta ≤ +60°C
	T5…T1	-20°C ≤ Ta ≤ +75°C	-20°C ≤ Ta ≤ +65°C
C: NaI	T6	-40°C ≤ Ta ≤ +70°C	-40°C ≤ Ta ≤ +60°C
	T5…T1	-40°C ≤ Ta ≤ +75°C	-40°C ≤ Ta ≤ +65°C

2. MA11 (Profibus PA / Foundation Fieldbus FF)

Material: (VKM060=)	Temp.-class	Ambient temperature Ta	
		MA11+VA12 (VKM020=DA + 030=A/L/M/N/O)	MA11 + (VA10/VA11) (020=DA + 030= C/D/E/F)
A: PVT	T6…T1	-40°C ≤ Ta ≤ +60°C	-40°C ≤ Ta ≤ +60°C
B: PVT-HT	T6	-20°C ≤ Ta ≤ +60°C	-20°C ≤ Ta ≤ +60°C
	T5…T1	-20°C ≤ Ta ≤ +65°C	-20°C ≤ Ta ≤ +65°C
C: NaI	T6	-40°C ≤ Ta ≤ +60°C	-40°C ≤ Ta ≤ +60°C
	T5…T1	-40°C ≤ Ta ≤ +65°C	-40°C ≤ Ta ≤ +65°C

3. MA12 (Ethernet-APL)

Material: (VKM060=)	Temp.-class	Ambient temperature Ta	
		MA12+VA12 (VKM020=FA + 030=A/L/M/N/O)	MA12 + (VA10/VA11) (020=FA + 030= C/D/E/F)
A: PVT	T6…T1	-40°C ≤ Ta ≤ +60°C	-40°C ≤ Ta ≤ +60°C
B: PVT-HT	T6	-20°C ≤ Ta ≤ +70°C	-20°C ≤ Ta ≤ +60°C
	T5…T1	-20°C ≤ Ta ≤ +75°C	-20°C ≤ Ta ≤ +65°C
C: NaI	T6	-40°C ≤ Ta ≤ +70°C	-40°C ≤ Ta ≤ +60°C
	T5…T1	-40°C ≤ Ta ≤ +75°C	-40°C ≤ Ta ≤ +65°C

Temperatures for Ex d

1. MA10 (4..20 mA HART):

Material: (VKM060=)	Temp.-class	Ambient temperature Ta
		MA10+(VA10/VA11/VA12) (VKM020=BA + 030=A/C/D/E/F/N/O)
A: PVT	T6…T1	-40°C ≤ Ta ≤ +60°C
B: PVT-HT	T6	-20°C ≤ Ta ≤ +70°C
	T5…T1	-20°C ≤ Ta ≤ +75°C
C: NaI	T6	-40°C ≤ Ta ≤ +70°C
	T5…T1	-40°C ≤ Ta ≤ +75°C

2. MA11 (Profibus PA / Foundation Fieldbus FF):

Material: (VKM060=)	Temp.-class	Ambient temperature Ta
		MA11+(VA10/VA11/VA12) (VKM020=DA + 030=A/C/D/E/F/N/O)
A: PVT	T6…T1	-40°C ≤ Ta ≤ +60°C
B: PVT-HT	T6	-20°C ≤ Ta ≤ +70°C
	T5…T1	-20°C ≤ Ta ≤ +75°C
C: NaI	T6	-40°C ≤ Ta ≤ +70°C
	T5…T1	-40°C ≤ Ta ≤ +75°C

3. MA12 (Ethernet-APL):

Material: (VKM060=)	Temp.-class	Ambient temperature Ta
		MA12+(VA10/VA11/VA12) (VKM020=FA + 030=A/C/D/E/F/N/O)
A: PVT	T6…T1	-40°C ≤ Ta ≤ +60°C
B: PVT-HT	T6	-20°C ≤ Ta ≤ +75°C
	T5…T1	-20°C ≤ Ta ≤ +80°C
C: NaI	T6	-40°C ≤ Ta ≤ +75°C
	T5…T1	-40°C ≤ Ta ≤ +80°C

Temperatures for Ex t

Material: (VKM060=)	Maximum surface temperature (with Dust accumulation)	Ambient temperature Ta
		MA10 / MA11 /MA12 (VKM020=BA/DA/FA)
A: PVT	T85°C	-40°C ≤ Ta ≤ +60°C
B: PVT-HT		-20°C ≤ Ta ≤ +80°C
C: NaI		-40°C ≤ Ta ≤ +80°C

An additionally installed display or driver (VA10, VA11, VA12) does not cause any additional heating.