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 DEK 15.0042X**

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Certificate history:
Issue 0 (2016-10-19)

Status: **Current**

Issue No: 1

Date of Issue: 2021-05-12

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

Equipment: **Level Limit Switch Soliphant M Type FTM 50-....., Type FTM 51-..... and Type FTM 52-.....**

Optional accessory:

Type of Protection: **Ex i**

Marking: Ex ia
Refer to Annex 1 for detailed marking.

Approved for issue on behalf of the IECEx Certification Body: **R. Schuller**

Position: **Certification Manager**

Signature:
(for printed version)

Date:

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:

DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
Netherlands

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Date of issue:	2021-05-12	Issue No: 1

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

Additional manufacturing locations: **See Annex 2 for additional 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 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26:2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga

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:

NL/DEK/ExTR15.0053/01

Quality Assessment Report:

DE/TUN/QAR06.0003/08

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

Level Limit Switches Soliphant M Type FTM 50-....., Type FTM 51-..... and Type FTM 52-..... are used to detect the level limit of powdered or fine grain solids, using a vibrating fork sensor.
Level Limit Switch Soliphant M Type FTM 50-..... is a compact version, Type FTM 51-..... is a version with an extended sensor (tube extension) and Type FTM 52-..... is a version with a sensor with rope extension.
All models can be executed as a remote version with the sensor separately mounted from the electronics enclosure. The maximum length of the connection cable between the electronics enclosure and the sensor is 17 m.

The versions of the level limit switch for high process temperatures are provided with a temperature spacer.
Optionally, the process connected parts can completely or partially be provided with a coating or a protective layer.
Depending on the electronics insert, the output signal is a current signal (FEM 55, 2-wire 8/16 mA current), a pulse signal (FEM 57, 2-wire PFM) or a current signal (FEM 58, 2-wire NAMUR in accordance with IEC 60947-5-6).
The electronics enclosure is made of aluminium or stainless steel.

For model code break down, electrical data and thermal data, refer to attached Annex 1 to Report No. NL/DEK/ExTR15.0053/01.

SPECIFIC CONDITIONS OF USE: YES as shown below:
For Level Limit Switches when used as EPL Ga equipment, with an aluminium enclosure shall be installed in such a way that, even in the event of rare incidents, ignition sources due to impact and friction between the enclosure and iron or steel are excluded.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

1. Name change of the manufacturer
2. Assessed per IEC 60079-0 Ed. 7
3. Minor constructional changes

Annexes:

225509100-Annex1 to ExTR15.0053.01.pdf
225509100-Annex2.pdf

Type designation

Level Switch Soliphant M, Type FTM50, FTM51 and FTM52,
Product Order code: FTM5x-a bb c d e f g h i j

Marking on compact device:
f=A

	Product Order Code				
	a=		j=		
	IECEx	**ATEX**		**ATEX**	**ATEX/IECEx**
FTM50-a FTM51-a	E-	1	A, C	II 1 D II 1 D II 1/2 D II 1 G *1 II 1/2 G	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 °C Da Ex ia IIIC T***4 °C Da/Db Ex ia IIC T6...T3 Ga Ex ia IIC T6...T3 Ga/Gb
			D,E, F, H, J, K, Y	II 1 D II 1 D II 1/2 D II 1 G *1 II 1/2 G	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 °C Da Ex ia IIIC T***4 °C Da/Db Ex ia IIC T6...T2 Ga Ex ia IIC T6...T2 Ga/Gb
	-	7	A, C	II 1 D II 1 D II 1 G *3	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da Ex ia IIC T6...T3 Ga
			D,E, F, H, J, K, Y	II 1 D II 1 D II 1 G *3	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da Ex ia IIC T6...T2 Ga *1
FTM52-a	E	1	A	II 1 D II 1 D II 1/2 D II 1 G *1 II 1/2 G	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da Ex ia IIIC T***4 °C Da/Db Ex ia IIC T6 Ga Ex ia IIC T6 Ga/Gb
	-	7	A	II 1 D II 1 D II 1 G *3	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da Ex ia IIC T6 Ga

*1 Only in combination with Stainless Steel enclosures F15 and F27

*3 X marking Alu enclosures F13, F17, T13 impact and friction sparks must be excluded

*4 ** refer to derating table in the safety advice (instructions)

Separate marking on remote enclosure *5 f=D,E (Remote enclosure standard connecting cable)					
	Product Order Code				
	a=		**j=**		
	IECEx	**ATEX**		**ATEX**	**ATEX/IECEx**
FTM5x-a ## # # # f (Enclosure including electronic insert)	E	1	A,C, D,E, F,H J,K,Y	II 1 D (1) D II 1 D (1) D II 2 D (1) D II 2 D (2) D II 2 D (2) G II 2 G (1) D II 2 G (2) D II 2 G (2) G	Ex ia [ia Da] IIIC T**[*4] °C Da Ex ia [ia Da] IIIC T_{200}=T**[*4] Da [*2] Ex ia [ia Da] IIIC T**[*4] °C Db [*2] Ex ia [ia Db] IIIC T**[*4] °C Db [*2] Ex ia [ia Gb] IIC T6 Gb [*2] Ex ia [ia Da] IIC T6 Gb [*2] Ex ia [ia Db] IIC T6 Gb [*2] Ex ia [ia Gb] IIC T6 Gb [*2]
*2 Caused on space problems marking not given on the nameplate, marking only given in the relevant XA *4 ** refer to derating table in the safety advice (instructions) *5 only for a=1 or E					

Separate marking on remote enclosure *5 f= G,H (Remote enclosure armoured connecting cable)					
FTM5x-a ## # # # f (Enclosure including electronic insert)	E	1	A,C, D,E, F,H J,K,Y	II 1 D (1) D II 1 D (1) D II 1 D (1) G II 2 D (1) D II 2 D (1) G II 2 D (2) D II 2 D (2) G II 1 G [*1] (1) D II 1 G [*1] (1) G II 2 G (1) D II 2 G (1) G II 2 G (2) D II 2 G (2) G	Ex ia [ia Da] IIIC T**[*4] °C Da Ex ia [ia Da] IIIC T_{200}=T**[*4] Da [*2] Ex ia [ia Ga] IIIC T**[*4] °C Da [*2] Ex ia [ia Da] IIIC T**[*4] °C Db Ex ia [ia Ga] IIIC T**[*4] °C Db [*2] Ex ia [ia Db] IIIC T**[*4] °C Db [*2] Ex ia [ia Gb] IIC T6 Gb [*2] Ex ia [ia Da] IIC T6 Ga [*2] Ex ia [ia Ga] IIC T6 Ga Ex ia [ia Da] IIC T6 Gb [*2] Ex ia [ia Ga] IIC T6 Gb Ex ia [ia Db] IIC T6 Gb [*2] Ex ia [ia Gb] IIC T6 Gb [*2]
*1 Only in combination with Stainless Steel enclosures F15 and F27 *2 Caused on space problems marking not given on the nameplate, marking only given in the relevant XA *4 ** refer to derating table in the safety advice (instructions) *5 only for a=1 or E					

Separate marking on probe of remote enclosure *5 f=D,E					
FTM50-a ## # # # f FTM51-a ## # # # f (Sensor without electronic insert)	E	1	A, C	II 1 D II 1 D II 1/2 D II 1/2 G	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da *2 Ex ia IIIC T***4 °C Da/Db *2 Ex ia IIC T6...T3 Ga/Gb
			D,E, F, H, J, K, Y	II 1 D II 1 D II 1/2 D II 1/2 G	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da *2 Ex ia IIIC T65 °C Da/Db *2 Ex ia IIC T6...T2 Ga/Gb
FTM52 a ## # # # f (Sensor without electronic insert)	E	1	A	II 1 D II 1 D II 1/2 D II 1/2 G	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da *2 Ex ia IIIC T***4 °C Da/Db *2 Ex ia IIC T6 Ga/Gb
*2 Caused on space problems marking not given on the nameplate, marking only given in the relevant XA *4 ** refer to derating table in the safety advice (instructions) *5 only for a=1 or E					

Separate marking on probe of remote enclosure *5 f=G,H					
FTM50-a ## # # # f FTM51-a ## # # # f (Sensor without electronic insert)	E	1	A, C	II 1 D II 1 D II 1/2 D II 1 G II 1/2 G	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da *2 Ex ia IIIC T***4 °C Da/Db *2 Ex ia IIC T6...T3 Ga Ex ia IIC T6...T3 Ga/Gb *2
			D,E, F, H, J, K, Y	II 1 D II 1 D II 1/2 D II 1 G II 1/2 G	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da *2 Ex ia IIIC T***4 °C Da/Db *2 Ex ia IIC T6...T2 Ga Ex ia IIC T6...T2 Ga/Gb *2
FTM52 a ## # # # f (Sensor without electronic insert)	E	1	A	II 1 D II 1 D II 1/2 D II 1 G II 1/2 G	Ex ia IIIC T***4 °C Da Ex ia IIIC T_{200}=T***4 Da *2 Ex ia IIIC T***4 °C Da/Db *2 Ex ia IIC T6 Ga Ex ia IIC T6 Ga/Gb *2
*2 Caused on space problems marking not given on the nameplate, marking only given in the relevant XA *4 ** refer to derating table in the safety advice (instructions) *5 only for a=1 or E					

a	=	**Approval Type**
bb	=	**Process connection** any double number or letter; Represents different type of standardized process Connections, like threads or flanges; Refer to instruction Manual for details.
c	=	**Material / Process connected surface** any single number or letter
d	=	**Overall length** any single number or letter
e	=	**Electronic insert** Ambient temperature range of -40 °C to +70 °C*6: 5 = FEM55, 7 = FEM57, 8 = FEM58
f	=	**Type of probe** A = No remote housing, D,E,G,H = remote housing with different remote cable length (max. 17 m) any single number or letter
g	=	**Enclosure** 3 = F17(Aluminium), 5 = F13 (Aluminium), 6 = F27 (SS), 7 = F15 (SS), H = T13 (Aluminium).
h	=	**Cable entry** 2 = M20, 3 = NPT 1/2, 4 = G1/2, 7 = NPT ¾
i	=	**Additional options 1** A = option not selected, G,R = Glass window cover or any single number or letter R,S = SIL conformity
j	=	**Additional options 2 – Process temperature related** FTM50 or FTM 51: A = option not selected D,E = Process temperature ≤ 150 ˚C, F,H,J,K,Y = Process temperature > 150 ˚C Tp ≤ 300 ˚C FTM52: A: No additional options. (Process temperature ≤ 80 ˚C)
**+#	=	Options + additional options, not relevant for safety any combination of numbers and letters

*6 enclosure F13, F27, T13: the minimum temperature is -50 °C

The max. surface temperatures under fault conditions depends on the version, maximum ambient temperature and the process temperature, as listed in the following tables:

For group II:

Type	Temperature class	Medium temperature (sensor)	Ambient Temperature (electronic)	Version
FTM50, FTM51	T6	-40°C to +80 °C *6	See derating *4 *6	150 ˚C and 300 ˚C
FTM52		-40°C to +80 °C		80 ˚C
FTM50, FTM51	T5	-40°C to +95 °C *6	See derating *4 *6	150 ˚C and 300 ˚C
FTM50, FTM51	T4	-40°C to +130 °C *6	See derating *4 *6	150 ˚C and 300 ˚C
FTM50, FTM51	T3	-40°C to +150 °C *6	See derating *4 *6	150 ˚C
FTM50, FTM51	T3	-40°C to +195 °C *6	See derating *4 *6	300 ˚C
FTM50, FTM51	T2	-40°C to +290 °C *6	See derating *4 *6	300 ˚C

For group III:

For Dust without remote enclosure:

Type	media temperature Tp (sensor)	Max surface Temp. (sensor)	Ambient temperature Ta (electronic)	Max surface temperature T electronic enclosure
Without a dust layer				
FTM50, FTM51	-40°C to +150°C *6 -40°C to +300°C *6	T_{p_max} +5K	See derating *4 *6	T_{a_max} +5K
FTM52	-40°C to +80°C			
With a dust layer of 200mm				
FTM50, FTM51	See derating *4 *6	T_{200} = ***4 °C	See derating *4 *6	T_{200} = ***4 °C
FTM52	See derating *4			

For Dust with remote enclosure:

Type	Medium temperature Tp (sensor)	Max ambient temperature probe enclosure	Max surface temperature (sensor)	Ambient Temperature Ta (electronic)	Max surface temperature T electronic enclosure
Without a dust layer					
FTM50, FTM51	-40°C to +150 °C *6 -40°C to +300 °C *6	120 °C	T = T_{p_max} +5K	See derating *4 *6	T = T_{a_max} +5K
FTM52	-40°C to +80 °C	80 °C			
With a dust layer of 200 mm					
FTM50, FTM51	See derating *4 *6	See derating *4 *6	T_{200} = ***4 °C	See derating *4 *6	T_{200} = ***4 °C
FTM52	See derating *4	See derating *4			

*4 refer to derating table in the safety advice (instructions).
*6 enclosure F13, F27, T13: the minimum temperature is -50 °C

Electrical data

Electronics insert FEM 55 (2-wire 8/16 mA)

Supply and output circuit (terminals 1 and 2):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:
U_i = 35 V, I_i = 100 mA, P_i = 1 W, C_i = 0 nF, L_i = 0 mH

Electronics insert FEM 57 (2-wire PFM)

Supply and output circuit (terminals 1 and 2):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:
U_i = 16.7 V, I_i = 150 mA, P_i = 1 W, C_i = 0 nF, L_i = 0 mH

Electronics insert FEM 58 (2-wire NAMUR)

Supply and output circuit (terminals 1 and 2):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:
U_i = 18 V, I_i = 52 mA, P_i = 170 mW, C_i = 30 nF, L_i = 0 mH

The supply and output circuit of the electronics inserts FEM 55 and FEM57 is infallibly isolated from the sensor circuit and from the frame of the apparatus up to a maximum voltage of 60 V.

Sensor circuit, all electronics inserts

Internal circuit in type of protection intrinsic safety Ex ia IIC, respectively Ex ia IIIC.
The sensor circuit is connected to earth.

Manufacturing locations

1. Endress+Hauser SE+Co. KG
   Hauptstraße 1
   79689 Maulburg
   Germany

2. Endress+Hauser (Suzhou) Automation Instrumentation Co. Ltd.
   China – Singapore Industrial Park (SIP)
   Su-Hong-Zhong-Lu, No. 491
   Jiangsu Province, 215021 Suzhou
   China

3. Endress+Hauser (India) Automation Instrumentation Pvt. Ltd.
   M-192, Waluj MIDC, Aurangabad – 431 136
   Maharashtra State
   India

4. Endress+Hauser (USA)
   Automation Instrumentation Inc.
   2340 Endress Place
   Greenwood, Indiana 46143
   United States of America

5. Endress+Hauser Yamanashi Co., Ltd
   862-1 Mitsukunugi Sakaigawa-cho
   Fuefuki-shi Yamanashi Pref. 406-0846
   Japan

6. Endress+Hauser (Brasil) Instrumentação e Aut.Ltda.
   Estrada Municipal Antonio Sesti
   600 Bairro Recreio Costa Verde
   Itatiba, SP - 13254-085
   Brasil