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 13.0088X**	Page 1 of 5	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2022-07-26) Issue 0 (2014-03-25)
Date of Issue:	2022-11-25		
Applicant:	**Endress+Hauser SE+Co. KG** Hauptstraße 1 79689 Maulburg **Germany**		
Equipment:	**Level Switches Soliphant M, Type FTM50, FTM51 and FTM52**		
Optional accessory:			
Type of Protection:	**Ex d, Ex e, Ex i and Ex t**		
Marking:	Refer to Annex 1.		

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

Position: **Certification Manager**

Signature:
(for printed version)

Date:
(for printed version)

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Certificate issued by:

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

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Date of issue: 2022-11-25 Issue No: 2

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

Manufacturing locations:

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

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

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

See following pages for more 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 60079-26:2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
IEC 60079-31:2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7:2017 Edition:5.1	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

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/ExTR13.0092/02

Quality Assessment Report:

DE/TUN/QAR06.0003/09

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

Level Switches Soliphant M Type FTM50 -...., Type FTM51 -.... and Type FTM52-.... for use in explosive atmospheres caused by the presence of combustible gases, fluids or vapours, directly detect a grained solids level by means of a symmetrical vibrating fork and convert it into an electrical signal.

For detailed Type designation, Electrical data, Thermal data and marking refer to Annex 1.

SPECIFIC CONDITIONS OF USE: YES as shown below:
- Electrostatic charging shall be avoided, see manufacturer instructions.

- The flameproof joints are not intended to be repaired.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Minor changes and corrections to Annex 1.

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Additional manufacturing locations:

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

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

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

Annex:

227118000-ExTR13.0092.02-Annex1_1.pdf

Description

Level Switches Soliphant M Type FTM50-...., Type FTM51-.... and Type FTM52‑...., detect a grained solids level by means of a symmetrical piezo driven vibrating fork and convert it into an electrical signal.

The level switch is available without (integral version) and with (remote version) remote housing.

The level limit switch consist of an electronics enclosure, made of aluminium (enclosures T13, F13), or stainless steel (enclosure F27) with the electronics and a stainless steel sensor.

In addition, the remote version includes the remote housing which on one side connects to the electronics enclosure and on the other side to the sensor, having a cable with a length of max. 17 m in between.

The sensor is directly mounted (type FTM50-...), connected via an extension tube (type FTM51-...) or connected via a cable (type FTM52-...) to the electronics enclosure or to the remote housing.

For explosive gas atmospheres requiring EPL Gb, the electronics enclosure is in type of protection flameproof enclosures "d". The terminal compartment of the dual compartment enclosure (T13) is either in type of protection increased safety "e" or in type of protection flameproof enclosures "d".
For explosive dust atmospheres requiring EPL Db, the electronics enclosure is in type of protection dust ignition protection by enclosures "t" for EPL Db.

The remote housing with the electronics insert is in type of protection flameproof enclosures “d” for EPL Gb and type of protection dust ignition protection by enclosures "t" for EPL Db.
The remote housing connected with the sensor is in type of protection intrinsic safety “ia” for EPL Ga, Gb, Da and Db.

The sensor of the integral type FTM50-… (compact version) forms one compartment with the electronics compartment of the enclosure in type of protection flameproof enclosures "d" and dust ignition protection by enclosures "t" for EPL Gb and Db. The sensor wall provides an effective separation from the process requiring EPL Ga and Gb.

The sensor of the other types and versions is in type of protection intrinsic safety “ia” for EPL Ga, Gb, Da and Db.
An internal seal provides an effective separation of the areas requiring EPL Gb and Db from the areas requiring EPL Ga and Da.

The level limit switches 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 is a switched load in the supply line (FEM51), a transistor switch (FEM52), a potential free relay contact (FEM54) or a current signal (FEM55, 2-wire 8/16 mA current).

In the Ex e terminal compartment, Bartec terminals type 07-9702, certified per IECEx PTB 07.0007U (IEC 60079-0 Ed. 6.0 and IEC 60079-7 Ed. 5.0) are used. A gap analysis is conducted, no applicable Technical Differences were found. For details see ExTR.

For ambient temperature and process temperature ranges see type designation and thermal data sections below.

Type designation

Level Switch Soliphant M, Type FTM50, 51 and 52, code FTM5x-abbcdefghij

a	=	**Approval code** K, L, 5 or 6; see the marking section below for details
bb	=	**Process connection** any double number or letter; Represents different type of standardised process connections, like treads of 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 related** 1 = FEM51 2 = FEM52 4 = FEM54 5 = FEM55
f	=	**version** A = compact version D = remote version E = remote version G = remote version H = remote version
g	=	**Enclosure** 5 = F13 (Aluminium) 6 = F27 (SS) H = T13 (Aluminium)
h	=	**Cable entry** M20x1.5 NPT 1/2 G1/2 (only with g = H and a = L or 5) NPT 3/4
i	=	**Additional options 1** Option not selected or Glass window cover or SIL Conformity
j	=	**Additional options 2 – Process temperature related** No or Material certificate or Temperature spacer or Product documentation on paper C, D, E, M: Process temperature ≤ 150 °C J, K, O: Process temperature ≤ 230 °C F, H, N: Process temperature ≤ 280 °C Y: Process temperature ≤ 300 °C L: Product documentation

Marking

integral version

	Approval code IECEx	ATEX	ATEX	IECEx/ATEX
FTM50 – a	K	6	II 2 G II 1/2 G II 1/2 D	Ex db IIC T6…T1 Gb [1)] Ex db IIC T6…T1 Ga/Gb [1)] Ex tb IIIC T160 °C...T310 °C Da/Db [1)]
	L	5	II 2 G II 1/2 G II 1/2 D	Ex db eb IIC T6…T1 Gb [1)] Ex db eb IIC T6…T1 Ga/Gb [1)] Ex tb IIIC T160 °C...T310 °C Da/Db [1)]
FTM51 – a	K	6	II 2 G II 1/2 G II 1/2 D	Ex db [ia] IIC T6…T1 Gb [1)] Ex db [ia Ga] IIC T6…T1 Ga/Gb [1)] Ex tb [ia Da] IIIC T160 °C...T310 °C Da/Db [1)]
	L	5	II 2 G II 1/2 G II 1/2 D	Ex db eb [ia] IIC T6…T1 Gb [1)] Ex db eb [ia Ga] IIC T6…T1 Ga/Gb [1)] Ex tb [ia Da] IIIC T160 °C...T310 °C Da/Db [1)]
FTM52 – a	K	6	II 2 G II 1/2 G II 1/2 D	Ex db [ia] IIC T6 Gb Ex db [ia Ga] IIC T6 Ga/Gb Ex tb [ia Da] IIIC T90 °C Da/Db
	L	5	II 2 G II 1/2 G II 1/2 D	Ex db eb [ia] IIC T6 Gb Ex db eb [ia Ga] IIC T6 Ga/Gb Ex tb [ia Da] IIIC T90 °C Da/Db

Remote version, electronics enclosure

FTM5x – a ## # # # f = D or E	K	6	II 2 (1) G II 2 G (1) D II 2 (1) D	Ex db [ia Ga] IIC T6 Gb Ex db [ia IIIC Da] IIC T6 Gb Ex tb [ia Da] IIIC T70 °C Db
	L	5	II 2 (1) G II 2 G (1) D II 2(1) D	Ex db eb [ia Ga] IIC T6 Gb Ex db eb [ia IIIC Da] IIC T6 Gb Ex tb [ia Da] IIIC T70 °C Db

Remote version, sensor

FTM50/ FTM51 – a ## # # # f = D or E	K, L, 5 or 6	II 1/2 G II 1 D II 1/2 D	Ex ia IIC T6…T1 Ga/Gb [1)] Ex ia IIIC T_{200} 160 °C…T_{200} 310 °C Da [1)] Ex ia IIIC T160 °C…T310 °C Da/Db [1)]
FTM52 – a ## # # # f = D or E	K, L, 5 or 6	II 1/2 G II 1 D II 1/2 D	Ex ia IIC T6 Ga/Gb Ex ia IIIC T_{200} 90 °C Da Ex ia IIIC T90 °C Da/Db

Note 1):

Ordercode j = Additional Options 2	Marked temperature class	Marked maximum surface temperature integral version or remote version	Marked maximum surface temperature remote version
None, C, D, E	T6…T3	T160 °C	T_{200} 160 °C
J, K	T6…T2	T160 °C …T240 °C	T_{200} 160 °C …T_{200} 240 °C
F, H	T6…T2	T160 °C …T290 °C	T_{200} 160 °C …T_{200} 290 °C
Y	T6…T1	T160 °C …T310 °C	T_{200} 160 °C …T_{200} 310 °C

Thermal data

Ambient temperature range of remote housing with electronics insert:

Type	Ambient temperature range	Marked Temperature class / maximum surface temperature
FTM50-... and FTM51-...	-50 °C to +60 °C	T6
	-40 °C to +60 °C	T70 °C
FTM52-...	-40 °C to +60 °C	T6
	-40 °C to +60 °C	T70 °C

*) Refer to the instruction manual for detailed derating data.

For the integral versions and sensor of remote versions the temperature class and maximum surface temperature are, depending on the type, the maximum ambient temperature and the process temperature, as listed in the following tables:

Gas, integral version:

Type	Ambient temperature range	Process temperature range	Temperature class
FTM50-... and FTM51-...	-50 °C to +60 °C	-50 °C to +80 °C	T6
	-50 °C to +60 °C See derating *)	-50 °C to +95 °C	T5
		-50 °C to +130 °C	T4
		-50 °C to +150 °C	T3
		-50 °C to +195 °C	T3
		-50 °C to +290 °C	T2
		-50 °C to +300 °C	T1
FTM52-...	-40 °C to +60 °C	-40 °C to +80 °C	T6

*) Refer to the instruction manual for detailed derating data.

Gas, sensor of remote version:

Type	Ambient temperature range	Process temperature range	Temperature class
FTM50-... and FTM51-...	-50 °C to +80 °C	-50 °C to +80 °C	T6
	-50 °C to +95 °C	-50 °C to +95 °C	T5
	-50 °C to +120 °C	-50 °C to +130 °C	T4
		-50 °C to +150 °C	T3
		-50 °C to +195 °C	T3
		-50 °C to +290 °C	T2
		-50 °C to +300 °C	T1
FTM52-...	-40 °C to +80 °C	-40 °C to +80 °C	T6

Dust, integral version:

Type	Ambient temperature range	Process temperature (sensor)range	Max. surface temperature T
FTM 50-... and FTM 51-...	-40 °C to +60 °C See derating *)	-50°C to +150 °C	160 °C
		-50°C to +230 °C	240 °C
		-50°C to +280 °C	290 °C
		-50°C to +300 °C	310 °C
FTM 52-…	-40 °C to +60 °C See derating *)	-40 °C to +80 °C	90 °C

*) Refer to the instruction manual for detailed derating data.

Dust, sensor of remote version:

Type	Ambient temperature range	Process temperature (sensor)range	Max. surface temperature T
FTM 50-... and FTM 51-...	-40 °C to +120 °C	-50 °C to +150 °C	160 °C
		-50 °C to +230 °C	240 °C
		-50 °C to +280 °C	290 °C
		-50 °C to +300 °C	310 °C
FTM 52-…	-40 °C to +80 °C	-40 °C to +80 °C	90 °C

Electrical data

Electronics insert FEM51 (2-wire, switched load)

Supply: 19 ... 253 Vac, 50/60 Hz, max. 1 W
Output: max. 350 mA
U_m = 253 Vac

Electronics insert FEM52 (transistor switch)

Supply: 10 ... 55 Vdc, max. 0.86 W
Output: PNP transistor, max. 350 mA
U_m = 253 Vac

Electronics insert FEM54 (relay contacts)

Supply: 19 ... 55 Vdc, max. 1.3 W, or
19 ... 253 Vac, 50/60 Hz, max. 1.5 W
Output: 2 potential free change-over contacts, max. 6 A
U_m = 253 Vac

Electronics insert FEM55 (2-wire, 8/16 mA)

Supply/output: 11 ... 35 Vdc, 8 or 16 mA, max. 0.6 W
U_m = 253 Vac

Sensor circuits of all electronics inserts

For connection to the sensors covered by this certificate, in type of protection intrinsic safety Ex ia IIC/IIIC.
The sensor circuit is connected to earth.

Sensors

For connection to the sensors circuits of the electronics inserts covered by this certificate, in type of protection intrinsic safety Ex ia IIC/IIIC.
The sensor circuit is connected to earth.