CERTIFICATE

(1) EU-Type Examination

(2) **Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **KEMA 04ATEX2330 X** Issue Number: **5**

(4) Product: **Level Switches Soliphant M, Types FTM50, FTM51 and FTM52**

(5) Manufacturer: **Endress+Hauser SE+Co. KG**

(6) Address: **Hauptstrasse 1, 79689 Maulburg, Germany**

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., Notified Body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential test report number NL/DEK/ExTR13.0092/02.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0 : 2018	**EN 60079-1 : 2014**	**EN 60079-7 : 2015 + A1 : 2018**
EN 60079-11 : 2012	**EN 60079-26 : 2015**	**EN 60079-31 : 2014**

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

Refer to Annex 1 to Report No. NL/DEK/ExTR13.0092/02 for detailed information

Date of certification: 25 November 2022

DEKRA Certification B.V.

R. Schuller
Certification Manager

DEKRA Certification B.V. Meander 1051, 6825 MJ Arnhem P.O. Box 5185, 6802 ED Arnhem The Netherlands
T +31 88 96 83000 F +31 88 96 83100 www.dekra-product-safety.com Registered Arnhem 09085396

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.

(13) # SCHEDULE

(14) **to EU-Type Examination Certificate KEMA 04ATEX2330 X** Issue No. **5**

(15) **Description**

Level Switches Soliphant M Type FTM50 -...., Type FTM51 -.... and Type FTM52 -.... for use in explosive atmospheres caused by the presence of combustible gases, fluids, vapours or dusts, 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 to Report No. NL/DEK/ExTR13.0092/02.

Installation instructions

The instructions provided with the product shall be followed in detail to assure safe operation.

(16) **Report Number**

No. NL/DEK/ExTR13.0092/02.

(17) **Specific conditions of use**

Electrostatic charging shall be avoided, see manufacturer instructions.

The flameproof joints are not intended to be repaired.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/DEK/ExTR13.0092/02.

(20) **Certificate history**

Issue 1 -	203803300	initial certificate
Issue 2 -	210149200	evaluation to EN 61241-0 : 2006; EN 61241-1 : 2004 and EN 61241-11 : 2006, constructional changes
Issue 3 -	215821500	evaluation to EN 60079-0 : 2012 + A11, EN 60079-11 : 2012, EN 60079-31 : 2014, constructional changes
Issue 4 -	225526000	change of manufacturers name, evaluation to updated editions of the standards, the Ex ta … IIIC Da version is deleted, change of the process temperatures; minor changes to the construction and update of the documentation
Issue 5 -	227118000	Minor changes and corrections to Annex 1.