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 01ATEX1089 X** Issue Number: **3**

(4) Product: **Vibrating Limit Switch Vibracon Type LVL-M1(H)-...., Type LVL-M2(H)-.... and Type LVL-M2C-....**

(5) Manufacturer: **Pepperl + Fuchs GmbH**

(6) Address: **Lilienthalstrasse 200, 68307 Mannheim 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/ExTR16.0108/00.

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

EN 60079-0 : 2012 + A11 **EN 60079-11 : 2012** **EN 60079-26 : 2015**

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 for detailed marking

Date of certification: 14 August 2017

DEKRA Certification B.V.

R. Schuller
Certification Manager

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(13) # SCHEDULE

(14) **to EU-Type Examination Certificate KEMA 01ATEX1089 X** Issue No. **3**

(15) **Description**

Vibrating Limit Switch Type LVL-M1(H)-…., Type LVL-M2(H)-…. and Type LVL-M2C-…., for use in explosive atmospheres caused by the presence of combustible gases, fluids, vapours or dusts, directly detect a liquid level by means of a symmetrical vibrating fork and convert it into an electrical signal. Depending on the applied electronics insert, the Liquid level Switch provides a 8/16 mA current output signal (electronics insert type FEL55), a NAMUR signal (electronics insert type FEL56 or type FEL58, inverse signal), a digital signal (electronics insert type FEL57) or a connection to a Fieldbus (electronics insert type FEL50A).

The electronics enclosure is made of plastic, aluminium or stainless steel. Depending on the version, the stainless steel sensor is mounted directly to the enclosure (compact versions, type LVL-M1(H) or via an extension tube (type LVL-M2(H) and type LVL-M2C).

The Vibrating Limit Switch type LVL-M.(H)-.... are also available in completely stainless steel versions, electrically identical with the versions with electronics insert type FEL58 (inverted NAMUR output signal).

The process contacting parts of Vibrating Limit Switch Type LVL-M2C-…. are provided with a protective coating.

For model code break down, electrical data and thermal data, refer to Annex 1.

Installation instructions

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

(16) **Report Number**

No. NL/DEK/ExTR16.0108/00.

(17) **Specific conditions of use**

For Vibrating Limit Switch Type LVL-M1(H)-…., Type LVL-M2(H)-…. and Type LVL-M2C-…. with an aluminium enclosure, when used as EPL Ga equipment, 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.

For Vibrating Limit Switch Type LVL-M2C-…. provided with a protective coating of non-conductive PFA or ECTFE, precautions shall be taken to minimize the risk from electrostatic discharge or propagating brush discharges of the coated sensor surface.

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

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/DEK/ExTR16.0108/00.

(13) # SCHEDULE

(14) **to EU-Type Examination Certificate KEMA 01ATEX1089 X** Issue No. **3**

(20) **Certificate history**

Issue 1	201251000	initial certificate
Issue 2	215893900	Assessment to new editions of standards
Issue 3	218833000	Assessment to new editions of standards

**Annex 1 to Certificate of Conformity IECEx DEK 16.0077X, issue 0,
to EU-Type Examination Certificate KEMA 01ATEX1089 X, Issue 3 and
to NL/DEK/ExTR16.0108/00**

Types:

Liquid Limit Switch Vibracon **LVL-M aa - bbbccddeeffgghhhh**

a or **aa** = **Enclosure**
1 or 2H = Compact housing /Hygiene version
2 or 2C = Extended version

bbb = **Process connection and material**
Dual or triple number of characters, or numbers, which define standardized threaded bosses or flanges, refer to instruction manual for details.

cc = **Sensor length, temperature spacer, pressure-tight bushing**
Dual number of characters, which defines this, refer to instruction manual for details.

dd = **Enclosure, cable entry**
Dual number of characters, which defines this, refer to instruction manual for details.
C2, C6 = IP65,
C4 = IP66, IP68, IP69

ee = **Electronic insert**
PA = FEL50A PROFIBUS PA / Fieldbus Foundation FF
SI = FEL55 8/16mA-Version, 11...36 VDC
N1 = FEL56 NAMUR-Version (DIN19234)
N2 = FEL58 NAMUR-Version (EN50227) inverse signal

Optional equipment

ff = N/A = without optional equipment
Z3 = not relevant for safety

gg = **Certificates/marking**
Dual number of characters (E1, E2, EA, EB, EI, EF), which defines marking (see below)

hhhh = **Specification of length without unit for design M2**
any combination of number and/or letter, not relevant for safety

Marking

Level switch Type	**ATEX**	**IECEx/ATEX**
LVL-M1(H) or LVL-M2(H)	For **gg** = E2, EB:	
	II 1/2 G	Ex ia IIC T3…T6 Ga/Gb
	II 1/2 G	Ex ib IIC T3…T6 Ga/Gb
	II 1/2 D	Ex ia IIIC T80 °C Da/Db
	For **gg** = E1, EA:	
	II 1 G	Ex ia IIC T3…T6 Ga
LVL-M2C	For **gg** = EI:	
	II 1/2 G	Ex ia IIC T3…T6 Ga/Gb
	For **gg** = EF:	
	II 1/2 G	Ex ia IIB T3…T6 Ga/Gb

Thermal data

Ambient temperature range: -50 °C to +70 °C for all types, where **ee** = SI, N1 or N2.
-50 °C to +60 °C for types where **ee** = PA.

The max. process temperature is limited according to the following table in dependence to the temperature class or maximum surface temperature:

Maximum process temperature Tp				
T6	**T5**	**T4**	**T3**	**T80 °C**
≤ 80 °C	≤ 95 °C	≤ 125 °C	≤ 190 °C*	≤ 150 °C*

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Note: For temperature class T6 the maximum ambient temperature at the electronics enclosure is 55 °C.

Note: For Level Limit Switches Type FTL51C with PFA/ Enamel, the maximum process temperature is 150 °C, for ECTFE, the process temperature is 120 °C.

The maximum surface temperature of the enclosure T80 °C is based on the maximum ambient temperature of 70 °C with a dust layer up to 5 mm.

Electrical data

The electrical data are depending on the applied electronics insert.

Electronics insert type FEL55

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 the following maximum values:
U_i = 36 V; I_i = 100 mA; P_i = 1 W; C_i = 0 nF; L_i = 0 mH.

Electronics insert type FEL56, FEL58 and stainless steel compact versions

Supply and output circuit (terminals 1 and 2, or a connector: L+ and L-):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
U_i = 16 V; I_i = 52 mA; P_i = 0.17 W; C_i = 30 nF; L_i = 0 mH.

Electronics insert type FEL50A

Supply and output circuit (terminals 1 and 2):
in type of protection intrinsic safety Ex ia IIC, for connection to a certified intrinsically safe Fieldbus (Profibus PA), in accordance with the FISCO Model, with the following maximum values:
U_i = 17.5 V; I_i = 500 mA; P_i = 5.5 W; C_i = 2.7 nF; L_i ≤ 10 µH;

or for connection to a certified intrinsically safe circuit, with the following maximum values:
U_i = 24 V; I_i = 250 mA; P_i = 1.2 W; C_i = 2.7 nF; L_i ≤ 10 µH.