

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) Equipment or protective system intended for use in potentially explosive atmospheres – Directive 94/9/EC

(3) EC-Type Examination Certificate Number: KEMA 01ATEX1089

(4) Equipment or protective system: **Vibrating Limit Switch Type LVL-M1(H)-.....  
Type LVL-M2(H)-.... and Type LVL-M2C-....**

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

(6) Address: **Königsberger Allee 87, 69307 Mannheim, Germany**

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

(8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. 2012510.

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

**EN 50014 : 1997    EN 50020 : 1994    EN 50284 : 1999    EN 50281-1-1 : 1998**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

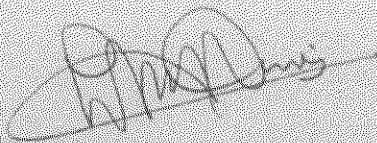


**II 1/2 G EEx Ia IIC T3 ... T6 or EEx Ia IIB T3 ... T6**



**II 1/2 D T 80 °C**

Arnhem, 31 October 2001  
KEMA Quality B.V.



L.M.J. Vries  
Certification Manager

\* This Certificate may only be reproduced in its entirety and without any change

(13)

## SCHEDULE

(14)

to EC-Type Examination Certificate KEMA 01ATEX1089


(15) **Description**

The Vibrating Limit Switch Type LVL-M1(H)-...., Type LVL-M2(H)-.... and Type LVL-M2C-.... is used for operation in potentially explosive atmospheres caused by the presence of combustible gases, fluids, vapours or dust. The Vibrating Limit Switch directly detects the level of the process medium by means of a vibrating fork and converts it into an electrical signal. Depending on the applied electronic module, the output signal is a 4/20 mA current signal (electronic module Type FEL 55) or a Namur signal (electronic modules Type FEL 56 and Type FEL 58).

The different types of the Vibrating Limit Switches are distinguished by the direct connection of the vibrating fork to the electronics housing (compact version) or by a fixed vibrating fork with tube extension and by the coating of the vibrating fork and the extension tube.

Further differences are in the process connection and in the material of the enclosure.

The marking of versions of the Vibrating Limit Switch Type LVL-M2C-.... with a non-conductive PFA or ECTFE coating shall include the following:

 II 1/2 G EEx ia IIB T3 ... T6

The different types of apparatus enclosures provide a degree of protection of at least IP 65 in accordance with EN 60529.

Ambient temperature range at the electronics enclosure: -40 °C ... +70 °C.

Process temperature range: -40 °C ... +150 °C.

The relation between the process temperature at the sensor and the temperature class is given in the table below:

Temperature class	Process temperature (sensor)
T6	≤ 85 °C
T5	≤ 100 °C
T4	≤ 135 °C
T3	≤ 150 °C

The marked maximum temperature T = 80 °C at the surface of the enclosure is related to the maximum ambient temperature of 70 °C at the electronics enclosure.

(13)

## SCHEDULE

(14)

to EC-Type Examination Certificate KEMA 01ATEX1089

### Electrical data

#### Type LVL-M... with electronic module type FEL 55

Supply and output circuit ..... in type of explosion protection intrinsic safety  
(terminals 1 and 2) EEx ia IIC, only for connection to a certified  
intrinsically safe circuit, with following maximum  
values:

$$\begin{aligned} U_i &= 36 \text{ V} \\ I_i &= 100 \text{ mA} \\ P_i &= 1 \text{ W} \end{aligned}$$

The effective internal capacitance and inductance are negligibly small.

Sensor circuit ..... in type of explosion protection intrinsic safety  
(internal connection) EEx ia IIC

#### Typ LVL-M... with electronic module type FEL 56 or type FEL 58

Supply and output circuit ..... in type of explosion protection intrinsic safety  
(terminals 1 and 2) EEx ia IIC, only for connection to a certified  
intrinsically safe circuit, with following maximum  
values:

$$\begin{aligned} U_i &= 16 \text{ V} \\ I_i &= 52 \text{ mA} \\ P_i &= 169 \text{ mW} \end{aligned}$$

The effective internal capacitance and inductance are negligibly small.

Sensor circuit ..... in type of explosion protection intrinsic safety  
(internal connection) EEx ia IIC

### Installation instructions

The supply and output circuit of the Vibrating Limit Switch may also be connected to a certified intrinsically safe circuit in type of explosion protection intrinsic safety EEx ib IIC. This does not change the apparatus category of the Vibrating Limit Switch.

For the installation of the sensor in an area where an explosive gas mixture may be present continuously or for long periods, the safety instructions, supplied with the apparatus, must be observed.

(13)

## SCHEDULE

(14)

to EC-Type Examination Certificate KEMA 01ATEX1089

(16) **Report**

KEMA No. 2012510.

(17) **Special conditions for safe use**

None.

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

Essential Health and Safety Requirements not covered by the standards listed at (9)	
Clause	Subject
1.0.5	Marking
1.0.6 b)	Instructions

These Essential Health and Safety Requirements are examined and positively judged. The results are laid down in the report listed at (16).

(19) **Test documentation**

1. Certificate of Conformity KEMA 99ATEX0523

signed

2. Description 16-394KE-01c (3 pages)

16.10.2001