

1 EU-TYPE EXAMINATION CERTIFICATE



2 **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU**

3 **EU-Type Examination Certificate No:** FM14ATEX0030X

4 **Equipment or protective system:** LMS 100 Magnetic Level Gauge Switch
(Type Reference and Name)

5 **Name of Applicant:** ABB, Inc. – BU Measurement Products

6 **Address of Applicant:** 125 East County Line Road
Warminster, PA 18974
USA

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

8 FM Approvals Ltd, notified body number 1725 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number:

3051174 dated 22nd December 2014

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN 60079-0:2012 + A11:2013, EN 60079-11:2012 and EN 60529:1992 + A1:2000

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. 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:



II 1 G Ex ia IIC T6...T1 Ga -40°C ≤ Ta ≤ 70°C; IP66/67,
II 1 D Ex ia IIIC T85°C...T450°C Da -40°C ≤ Ta ≤ 70°C; IP66/67



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Mick Gower
Certification Manager, FM Approvals Ltd

Issue date: 30th October 2017

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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F ATEX 020 (Apr/16)

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SCHEDULE



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13 Description of Equipment or Protective System:

The LMS100 Magnetic Level Gauge Switch enclosure is made from 316 Stainless Steel. The enclosure body is less than 100cm³. The enclosure body has one 1/2"-14 NPT entry and one cover with M42-1.5 6g/6H thread. The cover contains one O-ring made from nitrile that seats into the retention groove. The enclosure body also contains two screws used for the rotational mounting bracket. Earth Grounding is made through internal and external grounding terminals made from 316 Stainless Steel. The enclosure 1/2 "-14 NPT entry has one M20 316SS Adapter 1/2" X 20MM thread adapter, one 1/2" MNPT X 1/2" FNPT Nickel Brass Elbow thread adapter and one 1/2" MNPT X M20F Nickel Brass Elbow thread adapter.

The LMS100 is a magnetically actuated single pole double-throw switch. When the LMS100 is mounted on a KM26 Magnetic liquid level indicator, LS Series Cage Level switch or an external chamber that contains a magnetic float, it can sense high or low levels within a vessel. The unique magnetic coupling action eliminates the need for seals, diaphragms, springs, or torque tubes. There is no physical contact between the switch and the process. Magnetic coupling eliminates the necessity of process connections and insures total isolation from the process. The LMS100 consists of a form C reed switch actuated by a rotating permanent magnet. The reed switch uses precious metal contacts in an inert gas atmosphere sealed by glass to metal bond. A magnetic float traveling in a chamber, relative to the LMS100 causes the reed switch to change state. After the float has passed, the reed switch will maintain this state until the float reverses direction and passes the switch in the opposite direction. The action of the switch is break before make. The hermetically sealed contacts serve to insure a high degree of hazardous area safety, weather resistance and general reliability of the product. The LMS100 will provide either a normally open or normally closed dry contact which may be used to activate external devices such as alarms or a device that annunciates. Its main application is to sense the passing of a magnetic float in a KM26 level gauge, or similar chamber, attached to a vessel containing a fluid. These trip points can be used for alarms to activate a pump motor starter relay.

Electrical Ratings

Ui = 14 V,	Ii = 1200 mA,	Pi = 4.20 W
Ui = 30 V,	Ii = 101 mA,	Pi = 757 mW
Ui = 18 V,	Ii = 440 mA,	Pi = 1.98 W
Ui = 60 V,	Ii = 29 mA,	Pi = 435 mW
Ui = 24 V,	Ii = 174 mA,	Pi = 1.044 W

LMS100.a.b.c.d Magnetic Level Gauge Switch

a = Mounting; A1 or A2

b = High Temperature process insulator options; Y0 or P1

c = Approval: E4

d= Electric cable connection: A1, U8, E8, or E9

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14 Specific Conditions of Use:

1. When the manufacturer of the equipment has not identified the type of protection on the label, the user shall, on installation, mark the label with the type of protection used.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments. Clean with a damp cloth
3. The relationship between the temperature class, the maximum surface temperature, the ambient temperature and the process temperature is as follows.

For Gases and Vapours:

Max Process Temp	Temperature Class
75°C	T6
90°C	T5
125°C	T4
190°C	T3
290°C	T2
416°C	T1

For Dusts and Fibres

Max Process Temp	Temperature Class
80°C	T85°C
95°C	T100°C
130°C	T135°C
195°C	T200°C
295°C	T305°C
416°C	T426°C

15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

16 Test and Assessment Procedure and Conditions:

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Ltd's ATEX Certification Scheme.

17 Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

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18 **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
23 rd December 2014	Original Issue.
20 th January 2015	Supplement 1: Report Reference: 3051174 - Reissue 1 dated 16 th January 2015. Description of the Change: Minor editorial changes not related to safety.
27 th June 2016	Supplement 2: Report Reference: RR203894 dated 27 th June 2016 Description of the Change: Change address of manufacturer and documentation.
30 th October 2017	Supplement 3: Report Reference: RR210916 dated 27 th October 2017 Description of the Change: Transfer of the product and related certificates to a different division of ABB. Update related documentation. Update standards to latest editions.

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Blueprint Report

ABB Inc - BU Measurement Products (1000000328)

Class No 3615

Original Project I.D. 3051174

Certificate I.D. FM14ATEX0030X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>	<u>Electronic Drawing</u>
3KXL000391U0109	B	LMS100 ATEX_IECEX NAMEPLATE	RR209734	Yes (pdf)
3KXL000405U0101	NC	LMS100 BARE PCB	3051174	Yes (pdf)
3KXL000406U0101	NC	TERMINAL PLUG RIGHT ANGLE 5.08MM 3POS	3051174	Yes (pdf)
3KXL000407U0101	NC	TERMINAL HEADER 5.08MM 3POS	3051174	Yes (pdf)
3KXL130100G0001	B	LMS100 GENERAL ASSEMBLY	3051174	Yes (pdf)
3KXL130100G0122	NC	LMS100 IS_NI CONTROL DRAWING	3051174	Yes (pdf)
3KXL130100L0009	NC	LMS100 FLAMEPATH DRAWING	3051174	Yes (pdf)
3KXL130100R1001	A	LMS100 DATASHEET	3051174	Yes (pdf)
MIS0661	NC	INSULATION PAD	3051174	Yes (pdf)
OI_LMS100-EN	B	LMS100 OPERATING INSTRUCTIONS	RR210916	Yes (pdf)