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:** **FM16ATEX0032X**

4 **Equipment or protective system: (Type Reference and Name)** **LLT100 Laser Level Transmitter**

5 **Name of Applicant:** **ABB Inc.**

6 **Address of Applicant:** **3400 Rue Pierre-Ardouin Québec, QC G1P0B2 Canada**

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:

3052274 dated 15th July 2016

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 60079-1: 2014, EN 60079-26:2015, EN 60079-28: 2015, EN 60079-31:2014, EN 60529:1991 + 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:

Cemented Window Version - Metric and Imperial

II 2 (1) G Ex db [op is T6 Ga] IIC T6…T5 Gb -50°C ≤ Ta ≤ +75°C…+85°C

II 2 (1) D Ex tb [op is Da] IIIC T85°C…T100°C Db -50°C ≤ Ta ≤ +75°C…+85°C – IP66/IP67

Fused Glass Version – Metric and Imperial

II 1/2 (1) G Ex db [op is T6 Ga] IIC T6…T5 Ga/Gb -50°C ≤ Ta ≤ +75°C…+85°C

II 2 (1) D Ex tb [op is Da] IIIC T85°C…T100°C Db -50°C ≤ Ta ≤ +75°C…+85°C – IP66/IP67

Mick Gower
Certification Manager, FM Approvals Ltd.

Issue date: 18th July 2016

FM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK. SL4 1RS
T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: atex@fmapprovals.com www.fmapprovals.com

SCHEDULE

to EU-Type Examination Certificate No. FM16ATEX0032X

13 **Description of Equipment or Protective System:**

General - The LLT100 is a high performance laser level transmitter that can accurately measure level, distance and position over long ranges in extreme environments. The on-board microprocessor calculates distance by multiplying the speed of light by the time taken by a laser pulse to travel from the instrument to a target and back. The LLT features advanced timing and sophisticated signal processing for pinpoint accuracy at up to 30 m/ 100 ft (liquid level applications), 100 m/328 ft (solid level applications) and up to 200 m/ 656 ft (positioning applications).

Construction - The LLT100 Laser Level Transmitter consists of a power source, electronics and optical elements housed in a right-angled enclosure. The enclosure can be all aluminium powder coated, all stainless steel, or a combination of aluminium and stainless steel. The enclosure consists of four parts: top works, line bushing, bottom works (also called front-end enclosure or main body) and process front plate. The enclosure has two volumes separated by the line bushing. The first volume is the terminal compartment and the communication compartment at the top works, and the second is the electronics/optical compartment at the bottom works. Two ½ inch NPT entries are provided for the electrical connection on the side of the terminal head into the terminal compartment. Alternatively, a metric version is also available with two M20 X 1.5 entries.

Ratings - The LLT100 —Laser Level Transmitter— operates at 15.5-42 Vdc (Instrument 1 W/ Heater 3 W). The transmitters are rated for use in an ambient temperature range of -50°C to +75°C/+85°C.

LLT100.aa.b.c.dd.ee, Laser Level Transmitter (Cemented Window – Imperial)

aa	**Body**: Al - Aluminum body (imperial) Sl - Stainless Steel body (imperial)
b	**Process flange:** A - ASME 2" class 150 / DIN 50mm PN16 bolt pattern, flat face, aluminum, cemented window * B - ASME 2" class 150 / DIN 50mm PN16 bolt pattern, flat face, stainless steel, cemented window * * Note: limited to 7.6 bar process pressure.
c	**Heated lens:** N - No heated lens H - With heated lens * * Note: Requires 24 volt input to operate the heater.
dd	**Communication protocol:** 10 - 4-20 mA HART
ee	**Display:** L0 - None L5 - Digital LCD integral display with TTG (Through-The-Glass) activated keypad

LLT100.aa.b.c.dd.ee, Laser Level Transmitter (Fused Glass – Imperial)

aa	**Body**: Al - Aluminum body (imperial) Sl - Stainless Steel body (imperial)
b	**Process flange:** C - ASME 2" class 150, stainless steel, raised face, fused window D - ASME 2" class 300, stainless steel, raised face, fused window F - DIN 50mm PN16, stainless steel, raised face, fused window

SCHEDULE

to EU-Type Examination Certificate No. FM16ATEX0032X

	G - DIN 50mm PN40, stainless steel, raised face, fused window
c	**Heated lens:** N - No heated lens H - With heated lens * * Note: Requires 24 volt input to operate the heater.
dd	**Communication protocol:** 10 - 4-20 mA HART
ee	**Display:** L0 - None L5 - Digital LCD integral display with TTG (Through-The-Glass) activated keypad

LLT100.aa.b.c.dd.ee, Laser Level Transmitter (Cemented Window – Metric)

aa	**Body**: AM - Aluminum body (metric) SM - Stainless Steel body (metric)
b	**Process flange:** A - ASME 2" class 150 / DIN 50mm PN16 bolt pattern, flat face, aluminum, cemented window * B - ASME 2" class 150 / DIN 50mm PN16 bolt pattern, flat face, stainless steel, cemented window * * Note: limited to 7.6 bar process pressure.
c	**Heated lens:** N - No heated lens H - With heated lens * * Note: Requires 24 volt input to operate the heater
dd	**Communication protocol:** 10 - 4-20 mA HART
ee	**Display:** L0 - None L5 - Digital LCD integral display with TTG (Through-The-Glass) activated keypad

LLT100.aa.b.c.dd.ee, Laser Level Transmitter (Fused Glass – Metric)

aa	**Body**: AM - Aluminum body (metric) SM - Stainless Steel body (metric)
b	**Process flange:** C - ASME 2" class 150, stainless steel, raised face, fused window D - ASME 2" class 300, stainless steel, raised face, fused window F - DIN 50mm PN16, stainless steel, raised face, fused window G - DIN 50mm PN40, stainless steel, raised face, fused window
c	**Heated lens:** N - No heated lens H - With heated lens * * Note: Requires 24 volt input to operate the heater.
dd	**Communication protocol:** 10 - 4-20 mA HART
ee	**Display:** L0 - None L5 - Digital LCD integral display with TTG (Through-The-Glass) activated keypad

SCHEDULE

to EU-Type Examination Certificate No. FM16ATEX0032X

14 **Specific Conditions of Use:**

1. The LLT100 includes flamepath joints, consult ABB if repair of the flamepath joints is necessary.
2. The LLT100 enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.
3. Under certain extreme circumstances, exposed plastic (including powder coating) and unearthed metal parts of the enclosure may store an ignition-capable level of electrostatic charge. Therefore, the user/installer shall implement precautions to prevent the buildup of electrostatic charge, e.g. clean with a damp cloth."
4. The process temperature range shall not exceed the respective maximum ambient temperature of the LLT100 (75°C for T6 or 85°C for T5).
5. For equipment rated Ga/Gb, please refer to section 9.1 and 9.2 of the manual for detailed information on the marking. Note that all versions of the LLT can emit light into the Ga area, however, only version LLT100.xx.C to G, the process interface of the LLT100 can form a barrier to Ga (Cat 1, former Zone 0).

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.

18 **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
18th July 2016	Original Issue.