

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 Europe Ltd, notified body number 2809 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 IEC 60079-0:2018, EN 60079-1:2014, EN 60079-26:2015, EN 60079-28: 2015,
EN 60079-31:2014, EN 60529:1991 + A1:2000+ A2:2013

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

Martin Crowe
Certification Manager, FM Approvals Europe Ltd.

Issue date: 17th January 2023

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F ATEX 020 Dec/2020)



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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 LLT100 features advanced timing and sophisticated signal processing for pinpoint accuracy at up to 30m/100ft (liquid level applications), 100m/328ft (solid level applications) and up to 200m/656ft (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. The enclosure has an ingress protection rating of IP 66/67.

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) SI - 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:

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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 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 *

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	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:

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L0	- None
L5	- Digital LCD integral display with TTG (Through-The-Glass) activated keypad

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. All versions of the LLT100 can emit light into Ga area. However, only in versions LLT100.xx.C to G, can the process interface from 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 Europe 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 Europe 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:

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Date	Description
18 th July 2016	Original Issue.
12 th March 2019	<u>Supplement 1:</u> Description of the Change: Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809.
05 th July 2022	<u>Supplement 2:</u> Report Reference: RR232764 dated 29 th June 2022. Description of the Change: 1) User guide was updated for marketing purposes and / or other non-safety related content. 2) Update EN60079-0 from 2012 + A11:2013 Ed. 6 to EN60079-0:2018 Ed. 7. 3) Clarified wording to Specific Condition of Use #5.
17 th January 2023	<u>Supplement 3:</u> Report Reference: RR229253 dated 13 th January 2023. Description of the Change: 1) Documentation update 2) Issuance of FM22UKEX0122X

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Blueprint Report

ABB Inc (144325)

Class No 3615

Original Project I.D. 3052274

Certificate I.D. FM16ATEX0032X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
3KQZ207029U0101	01	ALUMINUM WINDOW COVER SUB-ASSEMBLY	3052274
3KQZ207030U0101	01	STAINLESS STEEL WINDOW COVER SUB-ASSEMBLY	3052274
3KQZ207036U0101	01	BLIND COVER ALUMINIUM	3052274
3KQZ207037U0101	01	BLIND COVER MACHINED STAINLESS STEEL	3052274
3KQZ207123U0101	00	HOUSING MACHINED ALUMINIUM 4 PINS 1/2" NPT	3052274
3KQZ207123U0201	00	HOUSING MACHINED ALUMINIUM 4 PINS M20	3052274
3KQZ207124U0101	00	HOUSING MACHINED STAINLESS STEEL 4 PINS 1/2" NPT	3052274
3KQZ207124U0201	00	HOUSING MACHINED STAINLESS 4 PINS M20	3052274
AA009907-01EX	C	THREADED RETAINING RING	3052274
AA009908-01EX	A	LSRC WINDOW HEATER	3052274
AA009909-01EX	B	PLASTIC WINDOW WASHER	3052274
AA010128-01EX	B	FRONT PLATE WINDOW	3052274
AA010129-01EX	C	LLT100 - PAINTED MAIN BODY	3052274
AA011524-01EX	C	LLT100 - SS MAIN BODY	3052274
AA011529-01EX	C	THREADED RING FUSED SIGHT GLASS	3052274
AA011554-01EX	B	UNIVERSAL INSTRUMENT FLANGE PAINTED	3052274
AA011554-02EX	B	UNIVERSAL INSTRUMENT FLANGE SS316L	3052274
AA011567-01EX	B	INSTRUMENT FLANGE NPS 2" CLASS 150	3052274
AA011567-02EX	B	INSTRUMENT FLANGE NPS 2" CLASS 300	3052274
AA011567-03EX	B	INSTRUMENT FLANGE DN50 PN40	3052274
AA011569-01EX	A	LSRC INSTALLATION	3052274
AA011570-01EX	D	LLT100 INSTRUMENT FLAMEPATH CERTIF.	3052274
AA011571-01EX	C	LINE-BUSHING 18 AWG GTMS	3052274
AA012219-01EX	A	HV LASER PULSER - OPIS - ATEX CERTIFICATION	3052274
AA012909-01	G	Operation Instruction OI/LLT-EN	RR229253
AA013055-01EX	C	FINAL ASSEMBLY & PART LIST	3052274
AA013173-01	C	LSRC Ex Protection Modes ID Plate (Imperial Cement.)	RR229253
AA013173-02	B	LSRC Ex Protection Modes ID Plate (Imperial-Fused GI)	RR229253
AA013173-03	B	LSRC Ex Protection Modes ID Plate (Metric Cemented)	RR229253
AA013173-04	B	LSRC Ex Protection Modes ID Plate (Metric Fused Gl.)	RR229253
AA013174-01	C	LSRC Ex Nameplate	3052274
ABBCABOM-02626_LSRC	C	Model LLT100 Descriptive Note for ATEX, IECEx, FM & CSA (HazLoc)	3052274