

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** FM19US0023X
3. **Equipment:** LWT Series Guided Wave Level Transmitter
(Type Reference and Name)
4. **Name of Listing Company:** ABB Inc.
5. **Address of Listing Company:** 3400 Rue Pierre-Ardouin
Quebec, QC, G1P 0B2
Canada
6. The examination and test results are recorded in confidential report number:

3063611 dated 25th July 2019
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2018, FM Class 3610:2018, FM Class 3611:2018, FM Class 3615:2018,
FM Class 3616:2011, FM Class 3810:2018, ANSI/ISA 12.27.01:2011, ANSI/UL 121201:2017,
ANSI/UL 60079-0:2019, ANSI/UL 60079-1:2015, ANSI/ISA 60079-11:2014, ANSI/ISA 60079-15:2013,
ANSI/UL 60079-26:2017, ANSI/ISA 60079-31:2015, ANSI/ISA 61010-1:2012, ANSI/IEC 60529:2004,
ANSI/NEMA 250: 2014
8. 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.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

25 July 2019

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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10. Equipment Ratings:

Certification option LWT3.**.bb LWT4.**.**.cc	Certification	Probe type
N1 M1 M2	Class I, Zone 0, AEx ia IIC T4...T1 Ga Tambient -50°C to 43°C...75°C	Local
N1 M1 M2	Class I, Zone 0, AEx ia IIC T6...T4 Ga Tambient -50°C to 40°C...85°C	Remote
N1 M1 M2	Zone 20, AEx ia IIIC T88°C...T368°C Da Tambient -50°C to 43°C...75°C	Local
N1 M1 M2	Zone 20, AEx ia IIIC T52°C...T93°C Da Tambient -50°C to 40°C...85°C	Remote
N2 N4 M1 M2	Class I, Zone 0 / Class I, Zone 1, AEx ia/db IIB T6...T1 Ga/Gb Tambient -50°C to 70°C...85°C	Local
N2 N4 M1 M2	Zone 20 / Zone 21, AEx ia/tb IIIC T77°C...T358°C Da/Db Tambient -50°C to 70°C...85°C	Local
N2 N4 M1 M2	Class I, Zone 1, AEx db [ia Ga] IIB T6...T5 Gb Tambient -50°C to 75°C...85°C	Remote
N2 N4 M1 M2	Zone 21, AEx tb [ia Da] IIIC T77°C...T87°C Db Tambient -50°C to 75°C...85°C	Remote
N6	Class I, Zone 2, AEx ic [ia Ga] IIB T6...T4 Gc Tambient -50°C to 40°C...85°C	Remote
N6	Zone 22, AEx ic [ia Da] IIIC T52°C...T93°C Dc Tambient -50°C to 40°C...85°C	Remote
N3	Class I, Zone 2, AEx nAc [ia Ga] IIB T6...T4 Gc Tambient -50°C to 40°C...85°C	Remote
N1 M1 M2	Intrinsically safe, Class I, II, III, Division 1, Groups A-G, T4...T1, Tambient -50°C to 43°C...75°C	Local
N1 M1 M2	Intrinsically safe, Class I, II, III, Division 1, Groups A-G, T6...T4, Tambient -50°C to 40°C...85°C	Remote
N2 N4 M1 M2	Explosionproof with intrinsically safe probe for Class I, Division 1, Groups C, D, T6...T1, Tambient -50°C to 70°C...85°C	Local

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N2 N4 M1 M2	Dust-ignitionproof with intrinsically safe probe for Class II, III, Division 1, Groups E-G, T6...T1, Tambient -50°C to 70°C...85°C	Local
N2 N4 M1 M2	Explosionproof with intrinsically safe connections for remote (simple apparatus) probe for Class I, Division 1, Groups C, D, T6...T5, Tambient -50°C to 75°C...85°C	Remote
N2 N4 M1 M2	Dust-ignitionproof with intrinsically safe connections for remote (simple apparatus) probe for Class II, III, Division 1, Groups E, F, G, T6...T5, Tambient -50°C to 75°C...85°C	Remote
N3	Class I, Division 2, Groups C, D, T6...T4, Tambient -50°C to 40°C...85°C with intrinsically safe connections for Class I, Division 1, Groups C, D for remote (simple apparatus) probe. Supply/HART wiring of transmitter may be installed with or without non-incendive field wiring.	Remote

Enclosure: Type 4X, 6P, IP66, IP68 (1 meter, 72 hours)

11. The marking of the equipment shall include:

Marking specific to local-mount probe variants:

Explosionproof, Dust-ignitionproof with IS, SI probe, CL I,II,III, DIV 1, GR C-G, T6...T1

CL I, Zone 0/1, AEx/Ex ia/db IIB T6...T1 Ga/Gb

Zone 20/21 AEx/Ex ia/tb IIIC T77°C...T358°C Da/Db

IS, SI, CL I, II, III, DIV 1, GP A-G, T4...T1

CL I, ZONE 0, AEx/Ex ia IIC T4...T1 Ga

Zone 20, AEx/Ex ia IIIC T88°C...T368°C Da

For all wiring see drawings # 3KXL001177U0109, 3KXL001177U0209 and 3KXL001177U0309

ENCL TYPE 4X, 6P

IP66/68

Marking specific to remote-mount probe variants:

Explosionproof, Dust-ignitionproof with IS, SI remote probe connection, CL I,II,III, DIV 1, GR C-G, T6...T5

CL I, ZONE 1, AEx/Ex db [ia Ga] IIB T6...T5 Gb

ZONE 21 AEx/Ex tb [ia Da] IIIC T77°C...T87°C Db

IS, SI, CL I, II, III, DIV 1, GP A-G T6...T4

CL 1, ZONE 0, AEx/Ex ia IIC T6...T4 Ga

ZONE 20, AEx/Ex ia IIIC T52°C...T93°C Da

CL I, DIV 2, Gp C, D, T6...T4, with IS, SI connection for CL I, DIV 1, GROUPS C, D for remote probe.

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Supply/HART wiring may be installed with or without non-incendive field wiring.

Class I, Zone 2, AEx/Ex ic [ia Ga] IIB T6...T4 Gc

Zone 22, AEx /Ex ic [ia Da] IIIC T52°C...T93°C Dc

For all wiring see drawings # 3KXL001177U0109, 3KXL001177U0209 and 3KXL001177U0309

ENCL TYPE 4X, 6P

IP66/68

Note: Ambient temperature range identified by manufacturer's nameplate 3KXL001107U0101 at time of manufacture in accordance with limits defined by control drawings 3KXL001177U0109, 3KXL001177U0209, 3KXL001177U0309 with ambient temperature range not exceeding -50°C to 85°C.

12. Description of Equipment:

General – The LWT series of level transmitters is a modular range of field-mounted, microprocessor-based electronic transmitters relying on guided wave radar technology. The LWT emits radar pulses which are guided along a locally or remotely-mounted process probe; a metal rod which is simple apparatus in accordance with EN / IEC 60079-11. The LWT series can be configured to provide specific industrial output signals over a 4-20 mA current loop, via HART communication protocol.

Construction - The LWT Series Transmitters consist of an instrument housing constructed of cast stainless steel or painted cast aluminium alloy. The enclosure features two threaded covers. For display options L1 and L2, one cover incorporates a glass window through which a display may be viewed. A blind cover without a display is optionally available as display option L0. The enclosure provides two ½ - 14 NPT or M20 x 1.5 wiring entries. The instrument housing is separated into two separate electronics compartments, separated by an integral cast partition with interconnection of the electronics accomplished by way of feedthroughs.

Ratings - The LWT series operates over a voltage range of 15.5 to 42 V dc (4-20 mA functionality) or 21 to 42 V dc (HART functionality). They are rated for use over an ambient temperature range of -50°C to +85°C. The transmitter's probes are rated for use in a process temperature range of -50°C up to +450°C.

Interconnection (entity and nonincendive field wiring) parameters - Interconnection parameters for supply connections are as follows:

Parameter	Set 1	Set 2	Set 3	Set 4
Ui (V)	30	Not used	30	30
Ii (mA)	100	Not used	100	50
Pi (W)	0.75	Not used	1.4	0.4
Ci (nF)			19	
Li (µH)			20	

Model types - The applicable model designations are as follows:

LWT3.aa.bb.cc.dd.ee.f.g.hh.iiii.jj.kk.ll, where:

aa = Device type: 10, 20, 30, 40, 50

bb = Certification: M1, M2, N1, N2, N3, N4, N6

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cc = Wetted material: Two characters
dd = Seal type: Two characters
ee = Process connection: Two characters
f = Process connection pressure rating: One character
g = Process connection size: One character
hh = Probe type: Two characters
iiii = Probe material: Four characters
jj = Housing: D1, D2, D3, D4, R1, R2, R3, R4
kk = Display: L0, L1, L2
ll = Output: H1

LWT4.aa.bb.cc.dd.ee.ff.g.h.ii.jjjj.kk.ll.mm, where:

aa = Device type: 10, 20, 30, 40, 50
bb = Process condition: C1, H1, H2, H3
cc = Certification: M1, M2, N1, N2, N3, N4, N6
dd = Wetted material: Two characters
ee = Seal type: Two characters
ff = Process connection: Two characters
g = Process connection pressure rating: One character
h = Process connection size: One character
ii = Probe type: Two characters
jjjj = Probe material: Four characters
kk = Housing: D1, D2, D3, D4, R1, R2, R3, R4
ll = Display: L0, L1, L2
mm = Output: H1

13. Specific Conditions of Use:

1. Light metals can generate ignition-capable sparks when subjected to impact or friction.
 - a. Transmitter enclosure: When installed in Zone 0, 1, 20, 21 (EPL Ga, Gb, Da, Db required) or Division 1, transmitter enclosures which are constructed of aluminum alloy shall be protected such that sparks resulting from impact or friction cannot occur, taking into account rare malfunctions. Such enclosures include housing model/option types D1, D2, R1 and R2. Where special housing type Z9 is present, it is the responsibility of the installer to determine if the transmitter housing is constructed of aluminum alloy.
 - b. Probe: When installed in Zone 0, 1, 20, 21 (EPL Ga, Gb, Da, Db required) or Division 1, probes which are constructed of light metals, including aluminum, magnesium, titanium or zirconium shall be protected such that sparks resulting from impact or friction cannot occur, taking into account rare malfunctions. Such probes include wetted part model/option types PMT2, PMT5 and PMU9. Where special probe type PMZ9 is present, it is the responsibility of the installer to determine if the probe incorporates light metals.
2. When EPL Da is required, the instrument housing shall not be subjected to uncontrolled dust layers.

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3. The equipment includes flameproof joints. Consult with ABB if repair of flameproof joints is required.
4. For installations relying upon type of protection Ex nAc [ia Ga] Gc, the transmitter shall be installed within a location providing protection against pollution of not less than Pollution Degree 2. In Pollution Degree 2, only non-conductive pollution occurs except that occasionally a temporary conductivity caused by condensation is expected. This restriction is not applicable to the probe (simple apparatus supplied by intrinsically safe [ia] circuit).
5. The equipment presents a potential risk of electrostatic sparking. Clean only with a damp cloth.
6. The transmitter does not provide isolation from earth. When installed as Ex ia, Ex ic [ia], intrinsically safe, Class I, II, III, Division 1, the associated apparatus used to limit energy to the transmitter shall provide isolation from earth at not less than 500 Vrms.
7. Using the box provided on the nameplate, the user shall permanently mark the type of protection chosen for the specific installation. Once the type of protection has been marked it shall not be changed.
8. Wetted materials for LWT300 series include TEFLON (PTFE), along with alloy and O-ring materials selected in order matrix for process coupler and probe. Wetted materials for LWT400 series include alumina (Al₂O₃), graphite gasket, along with alloy materials selected in order matrix for process coupler and probe. It is the responsibility of the user to ensure that process and environment do not damage the equipment.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
25 th July 2017	Original Issue.

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