

# CERTIFICATE OF CONFORMITY



1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**
2. **Certificate No:** FM16CA0124X
3. **Equipment:** LMT Series Magnetostrictive Level Transmitters  
**(Type Reference and Name)**
4. **Name of Listing Company:** ABB Engineering (Shanghai) Ltd
5. **Address of Listing Company:** No 4528, KangXin Highway  
KangQiaoTown PudongNewDistrict Shanghai 201319  
China
6. The examination and test results are recorded in confidential report number:  
  
3062871 dated 4<sup>th</sup> August 2017
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:  
  
CSA-C22.2 No. 0.4:R2013, CSA-C22.2 No. 0.5:R2012, CSA-C22.2 No. 25:R2014,  
CSA-C22.2 No. 30:R2012, CSA-C22.2 No. 94:R2011, CSA-C22.2 No. 60529:R2010,  
CAN/CSA-C22.2 No. 60079-0:2015, CAN/CSA-C22.2 No. 60079-1:2016,  
CAN/CSA-C22.2 No. 60079-31:2015, CAN/CSA-C22.2 No. 61010-1:2012,  
CAN/CSA C22.2 No. 213-M1987, CAN/CSA 60079-11:2014, CAN/CSA C22.2 No. 60079-15:2012
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  
Manager, Electrical Systems

23 October 2018

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://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  
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmapprovals.com](mailto:information@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

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10. Equipment Ratings:

Explosionproof for Class I, Division 1, Groups A, B, C and D; Dust-ignitionproof for Class II, Division 1, Groups E, F and G; Class III, Division 1; Flameproof for Class I, Zone 1, Ex db IIC T6...T2 Gb; Protection by Enclosure for Zone 21, Ex tb IIIC T85°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP66) with an ambient temperature rating of -40°C to +85°C.

Intrinsically safe for Class I, II and III Division 1, Groups A, B, C, D, E, F and G T6...T4; Intrinsically safe for Class I, Zone 0 Ex ia IIC T6...T4 Ga when installed per Control Drawing 3KXL140000G0109; Nonincendive for Class I, Division 2 Groups A, B, C and D, Class II, Division 2 Groups F and G; Class III. Type of Protection 'n' for Class I, Zone 2 Ex nL IIC T6...T4 hazardous locations, indoors and outdoors (Type 4X, IP66) with an ambient temperature rating of -40°C to +85°C.

11. The marking of the equipment shall include:

For a = Approvals M1, or N2.

Class I Division 1, Groups A, B, C, D; T6...T2 Ta = -40°C to +85°C; Type 4X, IP66

Class II, Division 1, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +85°C; Type 4X, IP66

Class I, Zone 1, Ex db IIC T6...T2 Gb Ta = -40°C to +85°C, Type 4X, IP66

Zone 21, Ex tb IIIC T85°C...T165°C Db Ta = -40°C to +85°C, Type 4X, IP66

For a = Approvals M1, N1 or N3.

Class I, II and III, Division 1, Groups A, B, C, D, E, F and G T6...T4 Ta = -40°C to +85°C; Type 4X, IP66

Class I, Zone 0, Ex ia IIC T6...T4 Ga Ta = -40°C to +85°C, Type 4X, IP66

Class I, Division 2, Groups A, B, C and D T6...T4 Ta = -40°C to +85°C, Type 4X, IP66

Class II, Division 2, Groups F and G T6...T4 Ta = -40°C to +85°C, Type 4X, IP66

Class III

Class I, Zone 2, Ex nL IIC T6...T4 Ta = -40°C to +85°C, Type 4X, IP66

"FISCO Field Device" for Output I = F1 or P1

12. **Description of Equipment:**

The LMT Series of level transmitters are a range of field-mounted, microprocessor-based electronic transmitters utilizing multiple sensor technologies. The transmitters provide measurement of liquid levels and can be configured to provide specific industrial output signals according to 4-20 mA with HART digital communication. The LMT Series consists of three model types: the LMT100 which is insertion-mounted, the LMT200 which is externally mounted on gauge and the LMT300 which is insertion-mounted, sanitary.

The LMT Series level transmitters are comprised of a two compartment enclosure attached to the "front end assembly" which is attached to the probe or sensor. The front end assembly contains a glass-to-metal feedthru which separates the enclosure from the probe.

Three communications options are included, HART, Foundation Fieldbus and Profibus PA.

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The LMT Series level transmitters operate on 10.5 - 42 Vdc. The transmitters are intended for use in an ambient temperature of -40°C to +85°C. The equipment is rated for a process temperature range of -195°C to +427°C with the insertion-mounted versions rated for a maximum process pressure up to 3000 psi depending on probe.

The intrinsically safe versions of the LMT operate at a maximum voltage of 30 V per Control Drawing 3KXL140000G0109.

## ***LMT100.a.b.c.d.e.f.g.h.i.j.k.l.m.n – o.p.q.r.s.t.u.v.x // z.aa.bb.cc.dd.ee.ff.gg.hh.ii.jj Magnetostrictive Level Transmitters.***

a = Approvals N2

b = Probe wetted material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.

c = Probe style and probe type Y0, R1, R2, R3, R4, R5, C1, C2, C3, C4, H1, H2, J1, J2, J4, J5, T1, S5, W1, W2, W4, W5, W6, W8, W9 or Z9.

d = Probe end connection Y0, A1, C1, C2, C3, C4, C5, C6 or Z9.

e = Process connection style Y0, P1, P2, P3 or P4.

f = Process connection type YY, AF, AJ, AR, CG, CN, CR, CV, DG, DR, DT, EG, ER, FB, FC, FN, GT, JG, JR, MD, NT, RG, RR, SA, SB, SC, SD, SE, SF, SG, SH, SJ, SK, SV, SL, SM, SN, SP, S1, SR, SS, S2, SU, UG, UR or ZZ.

g = Process connection size Y, A, B, C, D, E, F, G, H, J, K, M, N, P, R or Z.

h = Process connection pressure rating Y, A, B, C, D, E, F, G, H, J, K, M, N, P or Z.

i = Process connection material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.

j = Housing D1, D2, D3 or D4.

k = Display L0, L1, L2, L3, L4 or L8.

l = Output Y0, F1, H1 or P1.

m = Float 1 option 00Y, 00R, 99Z, 210, 231, 232, 233, 241, 251, 252, 253, 254, 255, 261, 262, 263, 271, 272, 273, 274, 275, 281, 282, 283, 291, 401, 402, 461, 462, 463, 471, 472, 473, 481, 01B, 02B, 05B, 06B, 07B, 08B, 09D, 10D, 11D, 12E, 12F, 14G, 15B, 17B, 17D, 18B, 19E, 19F, 20D, 22D, 29B, 30B, 31B, 41B, 45T, 50B, 50M, 51B, 52P, 53G, 53P, 54G, 55G, 56F, 58B, 59E, 60T or 61T.

n = Float 2 option 00Y, 00R or 99Z.

Model code options beyond variable “n” do not affect product safety. Model code options “o” to “jj” are optional. Model code “x” = AR is not applicable.

## ***LMT200.a.b.c.e.j.k.l - o.p.q.r.s.t.u.v.w.x.y // z.aa.bb.cc.dd.ee.ff.gg.hh.ii.jj Magnetostrictive Level Transmitters.***

a = Approvals N2

b = Probe wetted material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.

c = Probe style and probe type Y0, R1, R2, R3, C1, C2, C3, C4 or Z9.

e = Process connection style Y0, B1, B2, T1 or T2.

j = Housing D1, D2, D3 or D4.

k = Display L0, L1, L2, L3, L4 or L8.

l = Output Y0, F1, H1 or P1.

Model code options beyond variable “l” do not affect product safety. Model code options “o” to “jj” are optional. Model code “x” = AR is not applicable.

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## ***LMT300.a.b.c.d.e.f.g.h.i.j.k.l.m.n - o.p.q.r.s.t.u.v.x // z.aa.bb.cc.dd.ee.ff.gg.hh.ii.jj Magnetostrictive Level Transmitters.***

- a = Approvals N2
- b = Probe wetted material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.
- c = Probe style and probe type Y0, S1, S2, S3, S4 or Z9.
- d = Probe end connection Y0, S1, S2, S3, S4 or Z9.
- e = Process connection style Y0, P1, P2 or P4.
- f = Process connection type YY, CG, CN, CR, CV, SA, SB, SC, SD, SE, SF, SG, SH, SJ, SK, SV, SL, SM, SN, SP, S1, SR, SS, S2, SU or ZZ.
- g = Process connection size Y, C, D, E, F, G, H, J, K, M, N or Z.
- h = Process connection pressure rating A, B, C, D or E.
- i = Process connection material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.
- j = Housing D1, D2, D3 or D4.
- k = Display L0, L1, L2, L3, L4 or L8.
- l = Output Y0, F1, H1 or P1.
- m = Float 1 option 00Y, 00R, 99Z, 210, 231, 232, 233, 241, 251, 252, 253, 254, 255, 261, 262, 263, 271, 272, 273, 274, 275, 281, 282, 283, 291, 401, 402, 461, 462, 463, 471, 472, 473, 481, 01B, 02B, 05B, 06B, 07B, 08B, 09D, 10D, 11D, 12E, 12F, 14G, 15B, 17B, 17D, 18B, 19E, 19F, 20D, 22D, 29B, 30B, 31B, 41B, 45T, 50B, 50M, 51B, 52P, 53G, 53P, 54G, 55G, 56F, 58B, 59E, 60T or 61T.
- n = Float 2 option 00Y, 00R or 99Z.

Model code options beyond variable "n" do not affect product safety. Model code options "o" to "jj" are optional. Model code "x" = AR is not applicable.

## ***LMT100.a.b.c.d.e.f.g.h.i.j.k.l.m.n - o.p.q.r.s.t.u.v.x // z.aa.bb.cc.dd.ee.ff.gg.hh.ii.jj Magnetostrictive Level Transmitters.***

- a = Approvals M1, N1 or N3.
- b = Probe wetted material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.
- c = Probe style and probe type Y0, R1, R2, R3, R4, R5, C1, C2, C3, C4, H1, H2, J1, J2, J4, J5, T1, S5, W1, W2, W3, W4, W5, W6, W7, W8, W9 or Z9.
- d = Probe end connection Y0, A1, C1, C2, C3, C4, C5, C6 or Z9.
- e = Process connection style Y0, P1, P2, P3 or P4.
- f = Process connection type YY, AF, AJ, AR, CG, CN, CR, CV, DG, DR, DT, EG, ER, FB, FC, FN, GT, JG, JR, MD, NT, RG, RR, SA, SB, SC, SD, SE, SF, SG, SH, SJ, SK, SV, SL, SM, SN, SP, S1, SR, SS, S2, SU, UG, UR or ZZ.
- g = Process connection size Y, A, B, C, D, E, F, G, H, J, K, M, N, P, R or Z.
- h = Process connection pressure rating Y, A, B, C, D, E, F, G, H, J, K, M, N, P or Z.
- i = Process connection material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.
- j = Housing D1, D2, D3 or D4.
- k = Display L0, L1, L2, L3, L4 or L8.
- l = Output Y0, F1, H1 or P1.
- m = Float 1 option 00Y, 00R, 99Z, 210, 231, 232, 233, 241, 251, 252, 253, 254, 255, 261, 262, 263, 271, 272, 273, 274, 275, 281, 282, 283, 291, 401, 402, 461, 462, 463, 471, 472, 473, 481, 01B, 02B, 05B, 06B, 07B, 08B, 09D, 10D, 11D, 12E, 12F, 14G, 15B, 17B, 17D, 18B, 19E, 19F, 20D, 22D, 29B, 30B, 31B, 41B, 45T, 50B, 50M, 51B, 52P, 53G, 53P, 54G, 55G, 56F, 58B, 59E, 60T or 61T.
- n = Float 2 option 00Y, 00R or 99Z.

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Model code options beyond variable “n” do not affect product safety. Model code options “o” to “jj” are optional. Model code “x” = AR is not applicable.

***LMT200.a.b.c.e.j.k.l - o.p.q.r.s.t.u.v.w.x.y // z.aa.bb.cc.dd.ee.ff.gg.hh.ii.jj*** **Magnetostrictive Level Transmitters.**

a = Approvals M1, N1 or N3.

b = Probe wetted material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.

c = Probe style and probe type Y0, R1, R2, R3, C1, C2, C3, C4 or Z9.

e = Process connection style Y0, B1, B2, T1 or T2.

j = Housing D1, D2, D3 or D4.

k = Display L0, L1, L2, L3, L4 or L8.

l = Output Y0, F1, H1 or P1..

Model code options beyond variable “l” do not affect product safety. Model code options “o” to “jj” are optional. Model code “x” = AR is not applicable.

***LMT300.a.b.c.d.e.f.g.h.i.j.k.l.m.n - o.p.q.r.s.t.u.v.x // z.aa.bb.cc.dd.ee.ff.gg.hh.ii.jj*** **Magnetostrictive Level Transmitters.**

a = Approvals M1, N1 or N3.

b = Probe wetted material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.

c = Probe style and probe type Y0, S1, S2, S3, S4 or Z9.

d = Probe end connection Y0, S1, S2, S3, S4 or Z9.

e = Process connection style Y0, P1, P2 or P4.

f = Process connection type YY, CG, CN, CR, CV, SA, SB, SC, SD, SE, SF, SG, SH, SJ, SK, SV, SL, SM, SN, SP, S1, SR, SS, S2, SU or ZZ.

g = Process connection size Y, C, D, E, F, G, H, J, K, M, N or Z.

h = Process connection pressure rating A, B, C, D or E.

i = Process connection material Y0, A2, A3, A4, A5, A6, C1, C9, D1, D2, D3, D4, H1, H2, H3, H4, L1, M4, N1, N2, N3, N4, P1, P2, P3, P4, P5, P6, P7, P8, S1, S2, S3, S4, S5, S6, S7, S9, T2, T5, U9 or Z9.

j = Housing D1, D2, D3 or D4.

k = Display L0, L1, L2, L3, L4 or L8.

l = Output Y0, F1, H1 or P1.

m = Float 1 option 00Y, 00R, 99Z, 210, 231, 232, 233, 241, 251, 252, 253, 254, 255, 261, 262, 263, 271, 272, 273, 274, 275, 281, 282, 283, 291, 401, 402, 461, 462, 463, 471, 472, 473, 481, 01B, 02B, 05B, 06B, 07B, 08B, 09D, 10D, 11D, 12E, 12F, 14G, 15B, 17B, 17D, 18B, 19E, 19F, 20D, 22D, 29B, 30B, 31B, 41B, 45T, 50B, 50M, 51B, 52P, 53G, 53P, 54G, 55G, 56F, 58B, 59E, 60T or 61T.

n = Float 2 option 00Y, 00R or 99Z.

Model code options beyond variable “n” do not affect product safety. Model code options “o” to “jj” are optional. Model code “x” = AR is not applicable.

### 13. Specific Conditions of Use:

1. For Ex d and XP installation - The flameproof joints of the equipment are not intended to be repaired. Consult the manufacturer if repair of the flameproof joints is necessary.
2. For Division 1 and Zone 0 installations - The LMT main electronics enclosure option j = D1 or D2 contains aluminium and is considered to present a potential risk of ignition by impact or friction. Care

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- shall be taken into account during installation and use to prevent impact or friction.
- For Zone 0 or Zone 20 installations, parts of the equipment containing light metals (Aluminum, Titanium, Zirconium or Magnesium) shall be protected from impact so that impact or friction sparks cannot occur, taking into account rare malfunction. Measures to prevent impact or friction sparks when using the equipment containing light metals include but are not limited to:
    - Mounting the probe vertically
    - No mechanical agitation shall be used
    - Use of stilling wells to mitigate effect of agitation.
    - Limit rate of change of level to values such that friction sparks cannot occur
  - The user shall take the appropriate mitigation measures in accordance with their own risk assessment to prevent any other conditions capable of producing impact or friction sparks.
  - If additional non-conductive paint/coatings are applied to the process connection, flange or instrument housing (for example to provide additional corrosion resistance) there may exist a risk of electrostatic discharge due to charge build-up on the non-conductive paint/coating layer. The user shall take the appropriate mitigation measures in accordance with their own risk assessment.
  - When non-metallic sensor well or probe sleeve materials are used there is a risk of ignition from electrostatic discharge due to the flow of non-conductive media (for example in stirring vessels and pipes). The user shall decide on the suitability of the equipment for the particular application.
  - 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.
  - The equipment temperature class rating is according to the following table:

Process Temperature	Ambient Temperature	Temperature Class			
		DIV 1, ZN 1	DIV 1, ZN 21	Div 1, Zn 0	Div 1, ZN 20
		XP, "db"	DIP, "tb"	IS, "ia"	IS, "ia"
-196°C to +80°C	-40°C to +57.9°C	T6, T6	T6, T85°C	T6	T6, T85°C
-196°C to +95°C	-40°C to +67.4°C	T5, T5	T5, T100°C	T5	T5, T100°C
-196°C to +130°C	-40°C to +85°C	T4, T4	T4, T135°C	T4	T4, T135°C
-196°C to +195°C	-40°C to +85°C	T4, T4	T4, T135°C	T4	T4, T135°C
-196°C to +295°C	-40°C to +85°C	T3B, T3	T3B, T165°C	N/A	N/A, T165°C
-196°C to +420°C	-40°C to +85°C	T2, T2	N/A, N/A	N/A	N/A, N/A

- On installation as Type nL apparatus the LMT shall be provided with supply transient protection external to the apparatus such that the voltage at the supply terminals of the LMT does not exceed 140% of the voltage rating of the equipment.

## 14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

## 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:

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Date	Description
4 <sup>th</sup> August 2017	Original Issue.
23 <sup>rd</sup> October 2018	<u>Supplement 1:</u> Report Reference: 3062990 dated 23 <sup>rd</sup> October 2018 Description of the Change: Addition of FF and PA communications options I = F1 and P1.

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