

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** FM16US0185
3. **Equipment:** MT2000 series and MT5 series Level Transmitters
(Type Reference and Name)
4. **Name of Listing Company:** ABB Inc.
5. **Address of Listing Company:** 3400 Rue Pierre-Ardouin
Québec, G1P 0B2
Canada
6. The examination and test results are recorded in confidential report number:

3006244 dated 27th December 2000
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2011, FM Class 3610:2010, FM 3611:2004, FM Class 3615:2006, FM Class 3810:2005, ANSI/NEMA 250:1991
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

31 July 2017

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

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SCHEDULE



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10. Equipment Ratings:

MT2000 Series:

Explosionproof for Class I, Division 1, Groups A, B, C and D with intrinsically safe electrodes; Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G; Intrinsically safe for Class I, Division 1, Groups C and D; Nonincendive for and with nonincendive field wiring connections to Class I, Division 2, Groups A, B, C and D; and Suitable for Class II, III, Division 2, Groups F and G hazardous (classified) locations per Control Drawings ELE1014 (HART/FB), Entity; Indoor/outdoor (NEMA Type 4X)

MT5 Series:

Explosionproof for Class I, Division 1, Groups A, B, C and D with intrinsically safe electrodes; Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G; Intrinsically safe for Class I, Division 1, Groups A, B, C and D; Nonincendive for and with nonincendive field wiring connections to Class I, Division 2, Groups A, B, C and D; and Suitable for Class II, III, Division 2, Groups F and G hazardous (classified) locations per Control Drawings ELE1034 (HART/FB) and ELE9020 (Modbus), Entity; Indoor/outdoor (NEMA Type 4X)

11. The marking of the equipment shall include:

MT2000 series

Class I Division 1, Groups A, B, C, D; T6 Ta = 77°C;

Class II/III, Division 1, Groups E, F, G; T6 Ta = 77°C;

Class I, Division 1, Groups C, D, T4 Ta = 77°C;

Class I, Division 2, Groups A, B, C, D; T4 Ta = 77°C;

Type 4X

MT5 series

Class I Division 1, Groups A, B, C, D; T6 Ta = 77°C;

Class II/III, Division 1, Groups E, F, G; T6 Ta = 77°C;

Class I, Division 1, Groups A, B, C, D, T4 Ta = 77°C;

Class I, Division 2, Groups A, B, C, D; T4 Ta = 77°C;

Class II/III, Division 2, Groups F, G; T4 Ta = 77°C;

Type 4X

12. **Description of Equipment:**

General – Model MT2000 radar level transmitter with intrinsically safe antenna rod for use in hazardous locations. Rated input: 13.5-36 Vdc, 0.65 W; Maximum operating temperature 77°C; Maximum operating pressure up to 5000 psi; Enclosure. Type 4X. Single Seal.

Model MT2000 radar level transmitter for use in hazardous locations, intrinsically safe when installed per installation drawing ELE1014. Entity parameters: Vmax = 36 Vdc, Imax = 200 mA, Ci = 0.011 µF and Li = 510 µH; Maximum operating temperature 77°C; Maximum operating pressure up to 5000 psi; Enclosure

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Type 4X. Single Seal.

The **ABB MT5** series of guided wave radar level transmitters uses low power microwave energy to determine the level of the product being measured, with communication by Intrinsically Safe 4-20mA current loop with Hart protocol or by Fieldbus.

The MT5000 is used for single level measurement of liquids, the MT5100 is for dual level measurements and the MT5200 is for the measurement of bulk products.

Units are manufactured in Group IIB and Group IIC versions according to model number. Refer to the equipment marking plate.

Construction – The equipment is housed within a dual compartment enclosure with IP rating IP66. The enclosure is made from either aluminum or stainless steel.

Ratings –

MT2000

$V_{max} = 36V$, $I_{max} = 200 \text{ mA}$, $P_{max} = 0.65W$.

MT5

$V_{max} = 36V$, $I_{max} = 250 \text{ mA}$, $P_{max} = 1.2W$.

The following Listings describe the permitted model option codes.
For a full explanation of the code meanings, refer to the relevant ABB product literature.

MT2000abcdefghijkl. Level Transmitter.

XP-IS / I / 1 / ABCD / T6 Ta = 77°C; DIP / II,III / 1 / EFG / T6 Ta = 77°C; IS / I / 1 / CD / T4 Ta = 77°C — ELE1014; Entity;

NI / I / 2 / ABCD / T4 Ta = 77°C; S / II,III / 2 / FG / T4 Ta = 77°C; ANI / I / 2 / ABCD / T4 — ELE1014; Entity; Type 4X

Entity Parameters:

V Max = See Control drawing: I Max = 200 mA, P Max = 0.65 W, C i = 0.011 μ F, L i = 510 μ H.

Nonincendive Field Wiring Parameters

V Max = See Control drawing: I Max = 90 mA, P Max = 0.65 W, C i = 0.011 μ F, L i = 510 μ H.

a = Probe material S6, HC, HB, MO or TI.

b = Transmitter Configuration L, LW, R, RW, RA or RWA.

c = Transmitter Housing material A or S.

d = Process Connection/Waveguide Coupler C1, C2, C4, C5, C6, C7, C8 or C9 (with up to 5 digit suffix).

e = Probe Type X, P01, P02, P11, P12, P22, P31, P32, P41, P42, P1F, P2F, P91 or PEP (with up to 6 digit suffix),

f = Probe Attachment Option X, CD, CW, or E (with up to 5 digit suffix).

g = Process Temperature Option H0 or H6.

h = Electronic Module X, M2, M4A or M4AD (M4AD not intrinsically safe).

i = Process Connection P, FL or WP.

j = Length SL or specified length (inches or millimeters).

MT5a.b.c.d.e.f.g.h.i.j.k.l.m.n.o.p.q.r.s.t.u.v.w.x.y.aa.bb. Level Transmitter.

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XP-IS / I / 1 / ABCD / T6 Ta = 77°C

DIP / II,III / 1 / EFG / T6 Ta = 77°C

IS / I / 1 / ABCD / T4 Ta = 77°C - ELE1034; Entity;

NI / I / 2 / ABCD / T4 Ta = 77°C

S / II,III / 2 / FG / T4 Ta = 77°C

ANI / I / 2 / ABCD / T4 - ELE1034 (for codes M7A, M7AF, M7B, M7BF, M71A, M71AF, M71B or M71BF);
HART/FB Entity; Type 4X

ANI / I / 2 / ABCD / T4 - ELE9020 (for codes M71AM or M71BM); Modbus Entity; Type 4X

HART/Fieldbus Entity Parameters:

V_{Max} = 36 V dc, I_{Max} = 250 mA, P_{Max} = 1.2 W, C_i = 0.005 µF, L_i = 510 µH.

Nonincendive Field Wiring Parameters:

V_{Max} = 36 V dc, I_{Max} = 90 mA, P_{Max} = 1.2 W, C_i = 0.005 µF, L_i = 510 µH.

Modbus Entity Nonincendive Field Wiring Parameters:

Power Terminals (+12V, 0); V_{max} = 18 V dc, I_{max} = 147 mA, P_{max} = 0.66W, C_i = 0, L_i = 0

Signal Terminals (+, -); V_{max} = +/-4.2 V dc, I_{max} = 149 mA, P_{max} = 139 mW, C_i = 18.07 uF, L_i = 1.22 mH

a = Device Type: 000, 100, or 200.

b = Coupler Material: S6, S4, H1, H3, M4, T2, T5, N2, A2, D1, D2 or N1.

c = Transmitter Configuration: L, LW, R, RW or Z9.

d = Transmitter Housing: A or S.

e = Process Connection/Waveguide Coupler: C1, C1H, C2, C2H, C3, C4, C4H, C5, C5H, C6, C7, C8, C9 or CZ.

f = Process Seal Type: Y, V, SV, K, SK, E, SE, A, SA, B, SB, S or Z9.

g = Probe Type: P01, P02, P03, P21, P22, P411F, P421F, P412F, P422F, P41EP, P42EP, P43, P11, P12, P31, P32, P33, P61, P51, P71, P52, P81, or P91.

h = Probe End Attachment: Y0, W09, W10, W13, W16, W19, W29, WS6, W61, W99, D15, D20, D23, D28, D38, D60, D99, E1, E2 or Z9.

i = Probe Attachment Material: Y, S6, S4, H1, H3, M4, T2, T5, N2, A2, D1, D2, N1 or Z9.

j = Process Temperature Extension: H0, H6 or Z9.

k = Electronic Module: M7A, M7AF, M7B, M7BF, M71A, M71AF, M71AM, M71B, M71BF or M71BM.

l = Agency Approvals: N1, N2 or N3.

m = Process Connection Type: Y0, P1, P4, P3 or P2.

n = Process Connection Material: Y0, S6, S4, C1, H1, H3, M4, T2, T5, N2, A2, D1, D2, N1 or Z9.

o = Flange or Plug Size // Rating / Type: YYYY, NTBN, NTCN, NTEN, NTFN, NTGN, GTBN, GTCN, GTEN, GTFN, GTGN, R11, R13, R16, R151, R153, R156, R21, R23, R26, R251, R253, R256, R31, R33, R36, R41, R43, R46, R61, R63, R66, D2525, D2540, D3225, D3240, D4025, D4040, D5025, D5040, D6525, D6540, D8025, D8040, D10025, D10040, D12525, D12540, D15025, D15040, P1, P15, P2, P25, P3, P4, SCC, SCE, SCF, SCG, SCH, SCJ, SRC, SRE, SRF, SRG, SRH, SRJ, SSC, SSE, SSF, SSG, SSH, SSJ or Z9.

p = Additional Approvals or Certifications (not evaluated by FM Approvals): CRN, CC, CS, CP, CL2, CL3, CWL, CWG, P4, PZ.

q = Sensor Options: SEL, SEP, SEN, SEB, SE1, SE2, SE3, P1, P7 or SEZ.

r = Target Float Options: FT1, FT2, FT3, FT4, FT5 or FZ9.

s = Remote Electronics Signal Cable Length (for remote coupler only): SRW, SRT, SR1, SRR or SRZ.

t = Repeat Indicator (for two analog level outputs): AR.

u = Add Rod Extension Rod to Probe (material and diameter by coupler selection): AR1, AR2, AR3 or AR9.

v = Gas Phase Connection: NP1, NP2, NP3 or NPZ.

w = Centering Disk for Cable Weight (cable probes only, disk material same as weight): WD1, WD2, WD3, WD4, WD5, WD6 or WDZ.

x = Device Identification Type: T1, TS or TZ.

y = Electrical Connection Type: U8 or U9.

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aa = Special Other: TEZ, STH or STF.
bb = Mounted Accessories: AS or A3.

13. Specific Conditions of Use:

None.

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
27 th December 2000	Original Issue.
26 th July 2016	Supplement 9: Report Reference: – RR205413 dated 26 th July 2016. Description of the Change: Two different versions of the original 3026244coc were issued, with differing Listings. This Revision is a correction to consolidate the two Listings into a single certificate. For the MT5 model's option k, additional variants are added which do not impact safety. Certificate is being reissued in the new format.
31 st July 2017	Supplement 10: Report Reference: – RR209638 dated 31 st July 2017 Description of the Change: Product/Project transfer from ABB Inc. (Baton Rouge, LA) to ABB Inc. (Québec, CA).

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