# **CERTIFICATE OF CONFORMITY**



HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS

2. Certificate No: FM16CA0068X

**Equipment:** 

(Type Reference and Name)

Model 2410 Tank Hub

Name of Listing Company:

Rosemount Tank Radar AB

Address of Listing Company:

Layoutvägen 1 435 33 Mölnlycke Sweden

The examination and test results are recorded in confidential report number:

3035492 dated 16th September 2010

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. 0.4:2017, CSA C22.2 No. 0.5:2016, CSA C22.2 No. 30:2020, CSA C22.2 No. 94-M91:1991 (Reaffirmed 2011) CSA C22.2 No. 1010.1:2004 (Reaffirmed 2009), CAN/CSA C22.2 No. 60079-0:2019, CAN/CSA C22.2 No. 60079-1:2016, CAN/CSA C22.2 No. 60079-7:2018 CAN/CSA C22.2 No. 60079-11:2014, CSA C22.2 No. 60529:2016

- 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.
- 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:

VP, Manager - Electrical Systems

22 July 2021

To verify the availability of the Approved product, please refer to <a href="www.approvalguide.com">www.approvalguide.com</a>

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#### 10. Equipment Ratings:

When b= Tank Bus (Fieldbus - Power and Communication): F and when d = Secondary Communication Bus (Non-IS): R, E, 5, K, L, V, H, G, A, U, T, B, 6, 7, 0, or F:

Explosionproof for use in Class I, Division 1, Group C and D; Temperature Class T4 Ta = -50°C to +70°C; Dust-Ignitionproof for use in Class II and III, Division 1, Groups E, F and G; Temperature Class T4 Ta = -50°C to +70°C; Associated Fieldbus Intrinsically Safe Concept (FISCO POWER SUPPLY) connections to Class I, Division 1, Group C and D in accordance with Control Drawing D9240040-901; Flameproof and Increased Safety for use in Class I, Zone 1 Group IIB; Temperature Class T4 Ta = -50°C to +70°C with Associated Fieldbus Intrinsically Safe Concept (FISCO POWER SUPPLY) connections to Class I, Zone 1, Group IIB in accordance with Control Drawing D9240040-901; Hazardous Locations/Explosive Atmospheres; indoor and outdoor; Type 4X; IP66/67.

FISCO Parameters;

Uo (Voc) = 15V, Io (Isc) = 354mA, Po = 5.32W

When b= Tank Bus (Fieldbus - Power and Communication): F and when d = Secondary Communication Bus (HART®/4-20mA Active IS Input/Output): W, C or 8:

Explosionproof for use in Class I, Division 1, Group C and D; Temperature Class T4 Ta = -50°C to +70°C; Dust-Ignitionproof for use in Class II and III, Division 1, Groups E, F and G; Temperature Class T4 Ta = -50°C to +70°C; Associated Fieldbus Intrinsically Safe Concept (FISCO POWER SUPPLY) connections to Class I, Division 1, Group C and D in accordance with Control Drawing D9240040-901 and with Associated Intrinsically Safe (Entity) connections to Class I, Division 1, Groups C and D in accordance with control drawing D9240040-901. Flameproof and Increased Safety for use in Class I, Zone 1 Group IIB; Temperature Class T4 Ta = -50°C to +70°C with Associated Fieldbus Intrinsically Safe Concept (FISCO POWER SUPPLY) connections to Class I, Zone 1, Group IIB and with Intrinsically Safe (Entity) connections to Class I, Zone 0, Group IIC in accordance with Control Drawing D9240040-901; Hazardous Locations/Explosive Atmospheres; indoor and outdoor; Type 4X; IP66/67.

FISCO Parameters;

Uo (Voc) = 15V, Io (Isc) = 354mA, Po = 5.32W

**Entity Parameters:** 

Uo (Voc) = 23.1V; Io (Isc) = 95.3mA; Po = 550mW Group A/B or IIC: Co (Ca) = 0.14μF, Lo (La) = 3.9mH Group C or IIB: Co (Ca) = 1.0μF, Lo (La) = 15mH Group D or IIA: Co (Ca) = 3.67μF, Lo (La) = 33mH

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## Canadian Certificate Of Conformity No: FM16CA0068X

b= Tank Bus (Fieldbus - Power and Communication): F and when d = Secondary Communication Bus (HART®/4-20mA Passive IS Input/Output): D or 9.

Explosionproof for use in Class I, Division 1, Group C and D; Temperature Class T4 Ta = -50°C to +70°C; Dust-Ignitionproof for use in Class II and III, Division 1, Groups E, F and G; Temperature Class T4 Ta = -50°C to +70°C; Associated Fieldbus Intrinsically Safe Concept (FISCO POWER SUPPLY) connections to Class I, Division 1, Group C and D in accordance with Control Drawing D9240040-901; Flameproof and Increased Safety for use in Class I, Zone 1 Group IIB; Temperature Class T4 Ta = -50°C to +70°C; Associated Fieldbus Intrinsically Safe Concept (FISCO POWER SUPPLY) connections to Class I, Zone 1, Group IIB and Intrinsically Safe (Entity) connections for use in Class I, Zone 1, Group IIB in accordance with Control Drawing D9240040-901; Hazardous Location/Explosive Atmospheres; indoor and outdoor; Type 4X; IP66/67.

FISCO Parameters:

Uo (Voc) = 15V, Io (Isc) = 354mA, Po = 5.32W

**Entity Parameters:** 

Ui (Vmax) = 30V; Ii (Imax) = 300mA; Pi (Pmax) = 1W, Ci = 0; Li = 0

When b = Tank Bus (Fieldbus - Power and Communication): E and when d = Secondary Communication Bus (Non-IS): R, E, 5, K, L, V, H, G, A, U, T, B, 6, 7, 0, or F.

Explosionproof for use in Class I, Division 1, Group C and D; Temperature Class T4 Ta =  $-50^{\circ}$ C to  $+70^{\circ}$ C; Dust-Ignitionproof for use in Class II and III, Division 1, Groups E, F and G; Temperature Class T4 Ta =  $-50^{\circ}$ C to  $+70^{\circ}$ C; Associated Intrinsically Safe (Entity) connections to Class I, Division 1, Groups C and D in accordance with Control Drawing D7000002-611; Flameproof and Increased Safety for use in Class I, Zone 1 Group IIB; Temperature Class T4 Ta =  $-50^{\circ}$ C to  $+70^{\circ}$ C with Associated Intrinsically Safe (Entity) connections to Class I, Zone 1, Group IIB in accordance with Control Drawing D7000002-611; Hazardous Locations/Explosive Atmospheres; indoor and outdoor; Type 4X; IP66/67.

Entity Parameters (Fieldbus Terminals): Uo (Voc) = 15V, Io (Isc) = 200mA, Po = 3W, Co (Ca) = 1.99μF, Lo (La) = 143μH

When b = Tank Bus (Fieldbus - Power and Communication): E and when d = Secondary Communication Bus (HART®/4-20mA Active IS Input/Output): W, C or 8.

Explosionproof for use in Class I, Division 1, Group C and D; Temperature Class T4 Ta = -50°C to +70°C; Dust-Ignitionproof for use in Class II and III, Division 1, Groups E, F and G; Temperature Class T4 Ta = -50°C to +70°C; Associated Intrinsically Safe (Entity) connections to Class I, Division 1, Group C and D in accordance with Control Drawing D7000002-611 and with Associated Intrinsically Safe (Entity) connections to Class I, Division 1, Groups C and D in accordance with Control Drawing D7000002-611. Flameproof and Increased Safety for use in Class I, Zone 1 Group IIB; Temperature Class T4 Ta = -50°C to +70°C with Associated Intrinsically Safe (Entity) connections to Class I, Zone 0, Group IIC in accordance with Control Drawing D7000002-611; Hazardous Locations/Explosive Atmospheres; indoor and outdoor; Type 4X; IP66/67.

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Entity Parameters (Fieldbus Terminals):

Uo (Voc) = 15V, Io (Isc) = 200mA, Po = 3W, Co (Ca) =  $1.99\mu\text{F}$ , Lo (La) =  $143\mu\text{H}$ 

Entity Parameters (Active HART I/O Terminals):

Uo (Voc) = 23.1V, lo (Isc) = 95.3mA, Po = 550mW

Group A/B or IIC: Co (Ca) =  $0.14\mu$ F, Lo (La)= 3.9mH

Group C/D or IIB: Co (Ca) =  $1.0\mu$ F, Lo (La) = 15mH

Group D or IIA: Co (Ca) =  $3.67\mu$ F, Lo (La) = 33mH

When b = Tank Bus (Fieldbus - Power and Communication): E and when d = Secondary Communication Bus (HART®/4-20mA Passive IS Input/Output): D or 9.

Explosionproof for use in Class I, Division 1, Group C and D; Temperature Class T4 Ta = -50°C to +70°C; Dust-Ignitionproof for use in Class II and III, Division 1, Groups E, F and G; Temperature Class T4 Ta = -50°C to +70°C; Associated Intrinsically Safe (Entity) connections to Class I, Division 1, Group C and D in accordance with Control Drawing D7000002-611; Flameproof and Increased Safety for use in Class I, Zone 1 Group IIB; Temperature Class T4 Ta = -50°C to +70°C; Associated Intrinsically Safe (Entity) connections to Class I, Zone 1, Group IIB and Intrinsically Safe (Entity) connections for use in Class I, Zone 1, Group IIB in accordance with Control Drawing D7000002-611; Hazardous Location/Explosive Atmospheres; indoor and outdoor; Type 4X; IP66/67.

Entity Parameters (Fieldbus Terminals):

Uo (Voc) = 15V, Io (Isc) = 200mA, Po = 3W, Co (Ca) =  $1.99\mu$ F, Lo (La) =  $143\mu$ H

Entity Parameters (Passive HART):

Ui (Vmax) = 30V, Ii (Imax) = 300mA, Pi (Pmax) = 1W, Ci = 0, Li = 0



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#### 11. The marking of the equipment shall include:

For b = Tank Bus (Fieldbus - Power and Communication): F and when d = Secondary Communication Bus (Non-IS): R, E, 5, K, L, V, H, G, A, U, T, B, 6, 7, 0, or F:

FISCO POWER SUPPLY
XP CL 1, DIV 1 GPS C, D & Associated
Apparatus providing IS circuit to CL I,
DIV 1, GPS C & D; DIP CL II/III, DIV. 1,
GP E, F & G; CL I, ZONE 1 Ex db eb [ib] IIB Gb
Amb. Temp. Limits -50°C to +70°C Temp. Class T4
SEE CONTROL DRAWING D9240040-901
Type 4X; IP66/67

When b = Tank Bus (Fieldbus - Power and Communication): F and when d = Secondary Communication Bus (HART®/4-20mA Active IS Input/Output): W, C or 8.

FISCO POWER SUPPLY
XP CL 1, DIV 1 GPS C, D & Associated
Apparatus providing IS circuit to CL I,
DIV 1, GPS C & D; DIP CL II/III, DIV. 1,
GP E, F & G; CL I, ZONE 1 Ex db eb [ib] IIB Gb
ENTITY IS I/O
ACTIVE: XP CL 1, DIV 1 GPS C, D & Associated
Apparatus providing IS circuit to CL 1, DIV 1, GPS C & D
ACTIVE: CL I, ZONE 0 Ex db eb [ ia IIC Ga ] IIB Gb
Amb. Temp. Limits -50°C to +70°C Temp. Class T4
SEE CONTROL DRAWING D9240040-901
Type 4X; IP66/67

When b = Tank Bus (Fieldbus - Power and Communication): F and when d = Secondary Communication Bus (HART®/4-20mA Passive IS Input/Output): D or 9.

FISCO POWER SUPPLY
XP CL 1, DIV 1 GPS C, D & Associated
Apparatus providing IS circuit to CL I,
DIV 1, GPS C & D; DIP CL II/III, DIV. 1,
GP E, F & G; CL I, ZONE 1 Ex db eb [ib] IIB Gb
ENTITY IS I/O
PASSIVE: CL I, ZONE 1 Ex db eb ib IIB Gb
Amb. Temp. Limits -50°C to +70°C Temp. Class T4
SEE CONTROL DRAWING D9240040-901
Type 4X; IP66/67



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When b = Tank Bus (Fieldbus - Power and Communication): E and when d = Secondary Communication Bus (Non-IS): R, E, 5, K, L, V, H, G, A, U, T, B, 6, 7, 0, or F:

ENTITY IS POWER SUPPLY
XP CL I, DIV 1 GPS C, D & Associated
Apparatus providing IS circuit to CL I,
DIV 1, GPS C & D; DIP CL II/III, DIV. 1,
GP E, F & G; CL I, ZONE 1 Ex db eb [ib] IIB Gb
Amb. Temp. Limits -50°C to +70°C Temp. Class T4
SEE CONTROL DRAWING D7000002-611
Type 4X; IP66/67



When b = Tank Bus (Fieldbus - Power and Communication): E and when d = Secondary Communication Bus (HART®/4-20mA Active IS Input/Output): W, C or 8.

ENTITY IS POWER SUPPLY
XP CL I, DIV 1 GPS C, D & Associated
Apparatus providing IS circuit to CL I,
DIV 1, GPS C & D; DIP CL II/III, DIV. 1,
GP E, F & G; CL I, ZONE 1 Ex db eb [ib] IIB Gb
ENTITY IS I/O
ACTIVE: XP CL I, DIV 1 GPS C, D & Associated
Apparatus providing IS circuit to CL I, DIV 1, GPS C & D
ACTIVE: CL I, ZONE 0 Ex db eb [ia IIC Ga] IIB Gb
Amb. Temp. Limits -50°C to +70°C Temp. Class T4
SEE CONTROL DRAWING D7000002-611
Type 4X; IP66/67

When b = Tank Bus (Fieldbus - Power and Communication): E and when d = Secondary Communication Bus (HART®/4-20mA Passive IS Input/Output): D or 9:

ENTITY IS POWER SUPPLY XP CL I, DIV 1 GPS C, D & Associated Apparatus providing IS circuit to CL I, DIV 1, GPS C & D; DIP CL II/III, DIV. 1, GP E, F & G; CL I, ZONE 1 Ex db eb [ib] IIB Gb ENTITY IS I/O PASSIVE: CL I, ZONE 1 Ex db eb ib IIB Gb Amb. Temp. Limits -50°C to +70°C Temp. Class T4 SEE CONTROL DRAWING D7000002-611 Type 4X; IP66/67



#### 12. Description of Equipment:

General - The Model 2410 is a tank hub unit which handles data transmissions between the control room and a number of Fieldbus devices. The Model 2410 Tank Hub has a Flameproof enclosure, Increased Safety terminals, and also contains Intrinsically Safe circuitry for supplying energy to the Intrinsically Safe location.

Construction - The Model 2410 Tank Hub housing and covers are constructed of Stainless Steel 316 or die cast Aluminum Alloy 360. The complete housing consists of a total of three compartments. Two field wiring

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compartments are situated on either side of the enclosures' electronics compartment. Terminal compartments are covered with identical thread-on blank covers while the electronics compartment is covered with a glass window thread-on cover. The terminal compartment situated on the left side, has two,  $\frac{1}{2}$ -14 NPT, and two  $\frac{3}{4}$ -14 NPT conduit entries for field wiring purposes. The terminal compartment situated on the right side has two,  $\frac{1}{2}$ -14 inch conduit entries for intrinsically safe field wiring purposes.

Ratings - The Model 2410 Tank Hub is powered with a nominal 24-48Vdc or 48-240Vac / 50Hz to 60Hz. Intrinsically Safe entity and FISOC parameters can be found above in the equipment ratings section. The Model 2410 Tank Hub has an ambient temperature range of –50°C to +70°C.

#### 2410-abcdefghijklmn. Tank Hub.

- a= Number of Tanks: Any single character.
- b= Tank Bus (Fieldbus Power and Communication): F.
- c = Primary Communication Bus (Non-IS): R, 4, E, L, V, H, G, U, T, A, B, 6 or 7.
- d = Secondary Communication Bus (Non-IS): R, E, 5, K, L, V, H, G, A, U, T, B, 6, 7, 0, or F.
- e = Relay Output (SIS/SIL): 3, 2, S, F or 0. (Option 3, 2 and S are not verified by FM Approvals).
- f = Relay Outputs (Non-SIS/SIL): 1, 2, F, A or 0. (Option A was not verified by FM Approvals)
- g = Integral Display: 1 or 0.
- h = Power Supply: P.
- i = Firmware: Any single character.
- j = Hazardous Location Certification: E6, K2, K4 or K6.
- k = Custody Transfer Type Approval: Any single character.
- I = Housing: A or S.
- m = Cable/Conduit Connections: 1 (required for Explosion proof installation), 2, G, E or M.
- n = Mechanical Mounting: P, W, X or 0.

#### 2410-abcdefghijklmn. Tank Hub.

- a= Number of Tanks: Any single character.
- b= Tank Bus (Fieldbus Power and Communication): F.
- c = Primary Communication Bus (Non-IS): R, 4, E, L, V, H, G, U, T, A, B, 6 or 7.
- d = Secondary Communication Bus (HART®/4-20mA Active IS Input/Output): W, C or 8.
- e = Relay Output (SIS/SIL): 3, 2, S, F or 0. (Option 3, 2 and S are not verified by FM Approvals)
- f = Relay Outputs (Non-SIS/SIL): 1, 2, F, A or 0. (Option A was not verified by FM Approvals)
- g = Integral Display: 1 or 0.
- h = Power Supply: P.
- i = Firmware: Any single character.
- j = Hazardous Location Certification: E6, K2, K4 or K6.
- k = Custody Transfer Type Approval: Any single character.
- I = Housing: A or S.
- m = Cable/Conduit Connections: 1 (required for Explosionproof installation), 2, G, E or M.
- n = Mechanical Mounting: P, W, X or 0.

#### 2410-abcdefghijklmn. Tank Hub.

- a= Number of Tanks: Any single character.
- b= Tank Bus (Fieldbus Power and Communication): F.
- c = Primary Communication Bus (Non-IS): R, 4, E, L, V, H, G, U, T, A, B, 6 or 7.
- d = Secondary Communication Bus (HART®/4-20mA Passive IS Input/Output): D or 9.
- e = Relay Output (SIS/SIL): 3, 2, S, F or 0. (Option 3, 2 and S are not verified by FM Approvals)
- f = Relay Outputs (Non-SIS/SIL): 1, 2, F, A or 0. (Option A was not verified by FM Approvals)
- g = Integral Display: 1 or 0.

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- h = Power Supply: P.
- i = Firmware: Any single character.
- j = Hazardous Location Certification: E6, K2, K4 or K6.
- k = Custody Transfer Type Approval: Any single character.
- I = Housing: A or S.
- m = Cable/Conduit Connections: 1 (required for Explosionproof installation), 2, G, E or M.
- n = Mechanical Mounting: P, W, X or 0.

#### 2410-abcdefghijklmn. Tank Hub.

- a = Number of Tanks: Any single character.
- b = Tank Bus (Fieldbus Power and Communication): E.
- c = Primary Communication Bus (Non-IS): R, 4, E, L, V, H, G, U, T, A, B, 6 or 7.
- d = Secondary Communication Bus (Non-IS): R, E, 5, K, L, V, H, G, A, U, T, B, 6, 7, 0, or F.
- e = Relay Output (SIS/SIL): 3, 2, S, F or 0. (Option 3, 2 and S are not verified by FM Approvals)
- f = Relay Outputs (Non-SIS/SIL): 1, 2, F, A or 0. (Option A was not verified by FM Approvals)
- g = Integral Display: 1 or 0.
- h = Power Supply: P.
- i = Firmware: Any single character.
- j = Hazardous Location Certification: E5, K1, K4 or K5.
- k = Custody Transfer Type Approval: Any single character.
- I = Housing: A or S.
- m = Cable/Conduit Connections: 1 (required for Explosionproof installation), 2, G, E or M.
- n = Mechanical Mounting: P, W, X or 0.

#### 2410-abcdefghijklmn. Tank Hub.

- a = Number of Tanks: Any single character.
- b = Tank Bus (Fieldbus Power and Communication): E.
- c = Primary Communication Bus (Non-IS): R, 4, E, L, V, H, G, U, T, A, B, 6 or 7.
- d = Secondary Communication Bus (HART®/4-20mA Active IS Input/Output): W, C or 8.
- e = Relay Output (SIS/SIL): 3, 2, S, F or 0. (Option 3, 2 and S are not verified by FM Approvals)
- f = Relay Outputs (Non-SIS/SIL): 1, 2, F, A or 0. (Option A was not verified by FM Approvals)
- g = Integral Display: 1 or 0.
- h = Power Supply: P.
- i = Firmware: Any single character.
- j = Hazardous Location Certification: E5, K1, K4 or K5.
- k = Custody Transfer Type Approval: Any single character.
- I = Housing: A or S.
- m = Cable/Conduit Connections: 1 (required for Explosionproof installation), 2, G, E or M.
- n = Mechanical Mounting: P, W, X or 0.

#### 2410-abcdefghijklmn. Tank Hub.

- a = Number of Tanks: Any single character.
- b = Tank Bus (Fieldbus Power and Communication): E.
- c = Primary Communication Bus (Non-IS): R, 4, E, L, V, H, G, U, T, A, B, 6 or 7.
- d = Secondary Communication Bus (HART®/4-20mA Passive IS Input/Output): D or 9.
- e = Relay Output (SIS/SIL): 3, 2, S, F or 0. (Option 3, 2 and S are not verified by FM Approvals)
- f = Relay Outputs (Non-SIS/SIL): 1, 2, F, A or 0. (Option A was not verified by FM Approvals)
- g = Integral Display: 1 or 0.
- h = Power Supply: P.
- i = Firmware: Any single character.

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j = Hazardous Location Certification: E5, K1, K4 or K5.

k = Custody Transfer Type Approval: Any single character.

I = Housing: A or S.

m = Cable/Conduit Connections: 1 (required for Explosionproof installation), 2, G, E or M.

n = Mechanical Mounting: P, W, X or 0

### 13. Specific Conditions of Use:

The flamepaths of the equipment are not intended to be repaired. Consult the manufacturer if repair of the flamepath joints is necessary.

#### 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:

Date	Description
16th September 2010	Original Issue.
14 <sup>th</sup> December 2016	Supplement 4: Report Reference: 3058394 dated 14 <sup>th</sup> December 2016 Description of the Change:  1. Transfer product to new certificate format 2. Update equipment to the latest standards
7 <sup>th</sup> March 2017	Supplement 5: Report Reference: RR208434 dated 7 <sup>th</sup> March 2017 Description of the Change: 1. Added Codes U and T (Keiso and Tokyo) to Secondary Communication Bus (Non-IS) options. 2. Added Polane HS Blue paint as an option for the enclosure.
31 <sup>st</sup> March 2017	Supplement 6: Report Reference: RR208840 dated 31st March 2017 Description of the Change: 1. Non-Intrinsically Safe Communication board options added to Primary Communication (Pos 4), Model codes "L, V, H, G, U and T"
27 <sup>th</sup> March 2019	Supplement 7: Report Reference: RR218003 dated 27 <sup>th</sup> March 2019 Description of the Changes: 1. Updated Canadian Standards to the latest versions where applicable. 2. Equipment protection by increased safety "e" Standard updated to EN60079-

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	<ul> <li>7.</li> <li>3. Updated Markings to 60079-7.</li> <li>4. Removed IEC 60079-26 from the certificate since the product does not have a boundary wall separation.</li> </ul>
22 <sup>nd</sup> July 2021	Supplement 8: Report Reference: RR227099 dated 22 <sup>nd</sup> July 2021. Description of the Changes: 1. Updated Canadian Standards to the latest versions where applicable. 3. Updated to C22.2 No. 30 and CSA C22.2 No. 60079-0.

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