

CERTIFICATE OF CONFORMITY



- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
- Certificate No:** FM17US0030X
- Equipment:** MODEL 5900 RADAR LEVEL GAUGE
(Type Reference and Name)
- Name of Listing Company:** Rosemount Tank Radar AB
- Address of Listing Company:** Layoutvägen 1
Mölnlycke, 43533
Sweden
- The examination and test results are recorded in confidential report number:

3035466 dated 10th February 2010
- 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 3610:2021, FM Class 3810:2021,
ANSI/UL 60079-0:2020, ANSI/UL 60079-11:2014; ANSI/UL 60079-26:2017;
ANSI/ISA 61010-1:2012; ANSI/NEMA 250:2003, ANSI/IEC 60529:2004
- 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.
- Equipment Ratings:

Intrinsically Safe (Entity; FISCO) for use in Class I, II, III, Division 1, Groups A, B, C, D, E, F and G;
Temperature Class T4 Ta = -50°C to +80°C in accordance with Control Drawing No.9240040-917;
Intrinsically safe (Entity; FISCO) for use in Class I, Zone 0, AEx ia IIC T4 Ga Ta = -50°C to +80°C; in accordance with Control Drawing No. 9240040-917; Intrinsically safe (Entity; FISCO) for use in Class I,

Certificate issued by:


J.E. Marquedant

VP, Manager - Electrical Systems

10 January 2022

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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SCHEDULE



US Certificate Of Conformity No: FM17US0030X

Zone 0/1, AEx ib IIC T4 Ga/Gb Ta = -50°C to +80°C; in accordance with Control Drawing No. 9240040-917;

Dust-Ignitionproof for use in Class II and III, Division 1, Groups E, F and G; Temperature Class T5 Ta = -50°C to +80°C; Hazardous (Classified) Locations; Type 4X; IP66; IP67.

11. The marking of the equipment shall include:

FISCO FIELD DEVICE AND ENTITY
IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G T4
DIP CL II/III, DIV 1, GP E, F, G T5
CL I, Zone 0 AEx ia IIC T4 Ga
CL I, Zone 0/1 AEx ib IIC T4 Ga/Gb
SEE CONTROL DRAWING D9240040-917
AMB. TEMP. LIMITS -50°C TO +80°C
ENCL, TYPE 4X, IP66, IP67

12. **Description of Equipment:**

The Model 5900 Radar Level Gauge is a continuous level transmitter that uses a microwave signal to measure the level of a process liquid or solid.

The circuitry of the Model 5900 Radar Level Gauge circuitry is contained on four printed circuit boards and housed within a Type 4X; IP66; IP67 housing.

The Model 5900 Radar Level Gauges use an antenna for transmission of the signal and are designed for immersion into a process medium. The maximum process pressure rating (MWPR) is specified to be 40Bar (580psi) for LPG-LNG antennas, 55Bar (800psi) Cone Quartz antenna, 10Bar (145psi) for the Parabolic Antenna, 2Bar (29psi) for the Horn Antenna and Array Antenna, and (20Bar) 290psi for the Cone PTFE antenna.

The Model 5900 Radar Level Gauge housing is constructed of aluminum alloy 360 or stainless steel 316. The housing is a two compartment housing separated with a dividing wall with a feed-through employed for power and signal routing. A thread on cover encloses the terminal while a flat cover is bolted to the electronics compartment. The terminal compartment, has two, ½-14 NPT, conduit entries for field wiring purposes. Exiting the electronics compartment is the connection for radar probe assemblies.

The Model 5900 Radar Level Gauges have an ambient operating temperature range of -50°C to +80°C.

5900abcdefghijklmnop. Radar Level Gauge.

Entity Parameters:

Vmax = 30V, Imax = 300mA, Pi = 1.3W, Ci = 1.1nF, Li = 1.5µH.

FISCO Parameters:

Vmax = 17.5V, Imax = 380mA, Pi = 5.32W, Ci = 1.1nF, Li = 1.5µH.

a = Product Description: C or S.

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US Certificate Of Conformity No: FM17US0030X

- b = Performance: Any single character.
- c = Safety Certification: Any single character.
- d = Redundancy: 2, F, 1 or Z.
- e = Communication: F or Z.
- f = Certification: I5, KA, KD, KE or ZZ.
- g = Custody Transfer Approval: Any single character.
- h = Level Measurement: Any single character.
- i = Housing: A, S or Z.
- j = Cable/Conduit Connections: 1, 2, G, E, M or Z.

k = Antenna:	1A	1P	1H	G1, G2, G4	1C	1F	11	12	ZZ
l = Antenna Size:	5, 6, 8, A or B	F or X	8 or X	A, B, D or X	3, 4, 6, 8, A or X	4, 6, 8, A or X	2, 0, 3, 4 or X	3, 4, 6, 8 or X	Z
m = Antenna Material:	S	S	S	S	S, H, T, M or Y	S	S	S	Z
n = Tank Seal:	FF, HH, FK or HK	PF, PK	PV, PK	QA, PT	PV, PK, QV or QK	PV, PK, QV or QK	PV, PK, QV or QK	PV, PK, QV or QK	ZZ
o = Tank Connection :	5A, 6A, 8A, AA, BA, KA, LA, MB or XX	WE or CL	8A, 8Z, LA, LZ or XX	1B, 2A, 2B, 3A, 3B, 4A, 4B, 4C, 6A, 6B, 6C, 8A, 8B, NA, OA, PA, PB or XX	3A, 3B, 4A, 4B, 4T, 6T, 8T, 6A, 6B, 8A, 8B, AA, BA, IA, IB, JA, JB, JT, KA, KB, KT, LA, LB, MT, 00 or XX	4A, 6A, 8A, AA, 4X, 6X, 8X, AX, JA, KA, LB, MB, JX, KX, LX, MX, 00 or XX	2A, 2B, 3A, 3B, 4A, 4B, HB, IA, IB, JA, JB, 00 or XX	3A, 3B, 4A, 4B, 6A, 6B, 8A, 8B, IA, IB, JA, JB, KA, KB, LA, LB, 00 or XX	ZZ
p = Special:	0, C, V or X	0, V, or X	0, V, or X	0, V or X	0, 1, 2, 3 or X	0 or X	1 or X	0, 1, 2, 3, 4 or X	Z

13. Specific Conditions of Use:

1. The enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction. When installed as EPL Ga, care must be taken during installation and use to prevent impact or friction.
2. Non-metallic surfaces and the surface of the painted housing may, under certain extreme conditions, generate an ignition-capable level of electrostatic. Appropriate measures must be taken to prevent electrostatic discharge.
3. 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.

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US Certificate Of Conformity No: FM17US0030X

4. When installed as Ex ib Ga/Gb, the partition wall materials separating EPL Ga from EPL Gb are constructed of different materials depending on the antenna option. Please refer to Control Drawing D9240040-917 for the material type of each antenna. The material shall not be subject to environmental conditions which might adversely affect the partition wall.

5. Maximum Process temperatures are as follows:

When Option n = Tank Seal:	O-Ring Type	Min/Max Process Temperature Range
PV or QV	Viton	-15°C to +180°C
PK, FK, HK or QK	Kalrez	-20°C to +230°C
PE or QE	EPDM	-40°C to +110°C
PB or QB	BUNA-N	-35°C to +90°C
PM, FF, HH or QM	FVMQ	-60°C to +155°C
PF or QF	FEP	-60°C to +180°C

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
10 th February 2010	Original Issue.
9 th February 2017	<u>Supplement 2:</u> Report Reference: – RR208087 dated 9 th February 2017. Description of the Change: 1. Corrected drawing numbers in the CDL. 2. Concerted to new certificate format
24 th September 2019	<u>Supplement 3:</u> Report Reference: –3062821 dated 24 th September 2019. Description of the Changes: 1. Examination to the latest standards 2. Drawing updates to include new bushing, aluminum cover plate, a new label design, option for a stainless steel blanking plug and Reflector for Proof test (Model code Option V). 3. Addiiton of marking AEx ib Ga/Gb and examination to 60079-26 for boundary wall separation.
10 th December 2019	<u>Supplement 4:</u> Report Reference: – RR221344 dated 10 th December 2019.

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US Certificate Of Conformity No: FM17US0030X

	Description of the Changes: 1. Minor clerical updates to drawings 2. Add encapsulation material 3. Add Kalrez O-ring "Option PK" to Horn Anetna
4 th May 2021	<u>Supplement 5:</u> Report Reference: – RR227655 dated 4 th May 2021. Description of the Changes: Minor design changes not affecting compliance. Addition of flange options.
10 th January 2022	<u>Supplement 6:</u> Report Reference: – RR230986 dated 10 th January 2022. Description of the Change: 1) FM3610 and FM3810 updated to latest edition (2021) 2) ANSI/UL 60079-0:2013 updated to ANSI/UL 60079-0:2020 3) ANSI/ISA 61010-1:2004 updated to ANSI/ISA 61010-1:2012

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