



# 1. EU-TYPE EXAMINATION CERTIFICATE

2. Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU

3. EU-Type Examination Certificate No: FM09ATEX0057X

4. Equipment or protective system:  
(Type Reference and Name) MODEL 5900 RADAR LEVEL GAUGE

5. Name of Applicant: Rosemount Tank Radar AB

6. Address of Applicant Layoutvägen 1, 43533 Mölnlycke, Sweden

7. This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8. FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

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

3035466 dated 15<sup>th</sup> February 2010

9. Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN IEC 60079-0:2018, EN 60079-11:2012, EN 60079-26:2015, EN 60529:1991+A1:2000+A2:2013

10. 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.

11. This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

Certificate issued by: Martin Crowe

Certification Manager, FM Approvals Europe Ltd.

Date: 18 May 2023

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FM Approvals Europe Ltd. One Georges Quay Plaza, Dublin. Ireland. D02 E440  
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12. The marking of the equipment or protective system shall include:



II 1G Ex ia IIC T4 Ga Ta = -50°C to +80°C  
II 1/2 G Ex ib IIC T4 Ga/Gb Ta = -50°C to +80°C

### 13. Description of Equipment or Protective System:

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 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 aluminium 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, 1/2-14 NPT, conduit entries for field wiring purposes. Exiting the electronics compartment is the connection for radar probe assemblies.

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

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

Energy Limitation Parameters:

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

FISCO Limitation Parameters:

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

#### 5900abcdefghijklmnp. Radar Level Gauge.

a = Product Description: C or S.

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: I1, KA, KB, KC, 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.

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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, 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, 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

### 14. 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.
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:

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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

### 15. Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

### 16. Test and Assessment Procedure and Conditions:

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

### 17. Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

### 18. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
1 March 2010	Original Issue.

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Date	Description
3 September 2010	<p><u>Supplement 1:</u> Report Reference: 3035466rev102805 dated 23<sup>rd</sup> August, 2010. Description of the Change: 1. Update to reference manual. 2. Modifications to terminal blocks related to EMC performance. 3. Addition of coating/encapsulation specification.</p>
28 November 2013	<p><u>Supplement 2:</u> Report Reference: 3049398 dated 15<sup>th</sup> November 2013. Description of the Change: 1. Reassessment to the latest editions of EN standards noted in item 9 of the schedule to this certificate. 2. Removal of "S" from the model code "5900Sabcdehijklmno" to allow for greater Ex code flexibility. 3. Documentation updates and minor changes to the product not affecting compliance.</p>
25 March 2014	<p><u>Supplement 3:</u> Report Reference: – 3035492rev140317 dated 25<sup>th</sup> March 2014. Description of the Change: Added an option for additional printed circuit board conformal coating type, HumiSeal 1B73 and HumiSeal 1B31.</p>
10 February 2017	<p><u>Supplement 4</u> Report Reference: - RR208087 dated 09<sup>th</sup> February 2017. Description of the Change: Corrected drawing numbers in the CDL.</p>
25 September 2019	<p><u>Supplement 5:</u> Report Reference: –3062821 Dated 24<sup>th</sup> September 2019. Description of the Changes: 1. Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809. 2. Re-examination to the latest standards 3. 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). 4. Addition of marking Ex ib Ga/Gb and examination to 60079-26 for boundary wall separation.</p>
11 December 2019	<p><u>Supplement 6:</u> Report Reference: – RR221344 dated 10<sup>th</sup> December 2019. Description of the Changes: 1. Minor clerical updates to drawings 2. Add encapsulation material 3. Add Kalrez O-ring "Option PK" to Horn Anetnna</p>

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Date	Description
31 July 2020	<u>Supplement 7:</u> Report Reference: – RR224154 dated 30 <sup>th</sup> July 2020. Description of the Changes: Minor design and documentation changes not affecting safety.
10 May 2021	<u>Supplement 8:</u> Report Reference: – RR227655 dated 04 <sup>th</sup> May 2021. Description of the Changes: Addition of flange options, minor design changes not affecting compliance.
23 July 2021	<u>Supplement 9:</u> Report Reference: – RR228421 dated 22 <sup>nd</sup> July 2021. Description of the Changes: Update of marking and instructions reflecting addition of UKEX certification.
10 January 2022	<u>Supplement 10:</u> Report Reference: – RR230986 dated 10 <sup>th</sup> January 2022. Description of the Changes: 1. Documentation Updates
18 May 2023	<u>Supplement 11:</u> Report Reference: RR236975 dated 17 May 2023. Description of the Change(s): Minor documentation updates.

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# Blueprint Report

## Rosemount Tank Radar AB (1000003453)

Class No 3610

Original Project I.D. 3035466

Certificate I.D. FM09ATEX0057X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
00809-0100-5900	EB	Reference Manual Rosemount™ 5900S Radar Level Gauge	RR228421
<b>00809-0100-5901</b>	<b>DC</b>	<b>Reference Manual Rosemount™ 5900C Radar Level Gauge</b>	<b>RR236975</b>
9240040-909	2	APPV. DWG. 1/2" NPT PLUG	3062821
9240040-930	3	APPR. DWG. FM SIMPL. CAP. MODEL	RR224154
9240040-931	1	APPR. DWG. FM BLOCK DIAGRAM	3035466
D7000001-674	2	APPR. DWG. FM 5900 SERIES, 2930 ANTENNA	3062821
D7000001-675	1	APPR. DWG. FM 5900 SERIES, TCC/6 ANTENNA	3049398
D7000003-298	2	APPR. DWG. FM MAIN LABEL ROSEMOUNT 5900 SERIES	RR228421
D7000005-155	1	APPR. DWG. FM 5900, LPG/LNG ANTENNA	3062821
D7000006-343	1	APPR. DWG FM PCB TB SIL AND IS-Component	RR224154
D9240040-913	3	APPR. DWG. FM	3062821
D9240040-914	02	APPR. DWG. FM PCB PM	RR227655
D9240040-915	04	APPR. DWG. FM PCB CM	RR230986
D9240040-916	02	APPR. DWG. FM PCB RM	RR227655
D9240040-917	3	SYSTEM CONTROL DRAWING FM	3062821
D9240040-919	2	APPR. DWG. FM PARABOLIC ANTENNA	3062821
D9240040-922	03	APPR. DWG. FM ARRAY ANTENNA	RR221344
D9240040-923	2	APPR. DWG. FM HORN ANTENNA	3062821
D9240040-924	3	APPR. DWG. FM LPG ANTENNA	3062821
D9240040-925	04	APPR. DWG. FM PCB TB STANDARD	RR227655
D9240040-926	4	APPR. DWG. FM PCB TB TWO-IN-ONE	RR224154
D9240040-928	4	APPR. DWG. FM PCB TB SIL	RR224154
D9240040-932	2	APPR. DWG. FM CONE/PIPE ANTENNA	3062821
D9240040-933	2	APPR. DWG. FM RM MECH ASSY	RR224154
D9240040-934	2	APPR. DWG. FM CONE/PURGING ANTENNA	3062821
D9240040-946	04	APPR. DWG. FM CONFORMAL	RR221344
D9240040-970	06	5900S MODEL CODE DESCRIPTION	RR227655