



1 EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 94/9/EC**

3 **EC-Type Examination Certificate No:** FM09ATEX0057X

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

5 **Name of Applicant:** Rosemount Tank Radar AB

6 **Address of Applicant:** Gamlestadvägen 18B
GÖTEBORG SE-40251
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 Ltd, notified body number 1725 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, 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:

3035466EC dated 15 Feb 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 60079-0:2012, EN 60079-11:2012 and EN 60079-26:2007, EN 60529:2013

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. 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.

12 The marking of the equipment or protective system shall include:



II 1/2 G Ex ia IIC T4 Ta = -50°C to 80°C; IP66, IP67*

II 1/2 G Ex ia IIC T4 Ta = -50°C to 80°C; FISCO; IP66, IP67*

Mick Gower
Certification Manager, FM Approvals Ltd.

Issue date: 15th April 2014

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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to EC-Type Examination Certificate No. FM09ATEX0057X

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 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 uses an antenna for transmission of the signal. The maximum process pressure rating (MWPR) is specified to be 40Bar (581psi) and 55Bar (798psi), respectively, for LPG-LNG antenna and Cone Quartz antenna. The maximum process pressure rating (MWPR) is specified to be 20Bar (290psi) or less for other antennas.

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.

5900abcdefghijklmno. Radar Level Gauge.

Energy Limitation Parameters:

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

FISCO Limitation Parameters:

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

a = Performance: Any two characters.

b = Safety Certification: Any single character.

c = Redundancy: 2, F, 1 or Z.

d = Communication: F or Z.

e = Certification: I1, KA, KB, KC, or ZZ.

f = Custody Transfer Type Approval: Any single character.

g = Level Measurement: Any single character.

h = Housing: A, S or Z.

i = Cable/Conduit Connections: 1, 2, G, E, M or Z.

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j = Antenna:	1A	1P	1H	G1 or G2	1C	1F	11	12	ZZ
k = 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
l = Antenna Material:	S	S	S	S	S, H, T, M or Y	S	S	S	Z
m = Tank Seal:	FF or HH	PF	PV	QA	PV, PK, QV or QK	PV, PK, QV or QK	PV, PK, QV or QK	PV, PK, QV or QK	ZZ
n = Tank Connection:	5A, 6A, 8A, AA, BA, KA, LA, MB or XX	WE or CL	8A, 8Z, LA, LZ or XX	4A, 4B, 4C, 6A, 6B, 6C, 8A, 8B or XX	3A, 3B, 4A, 4B, 6A, 6B, 8A, 8B, AA, BA, IA, IB, JA, JB, KA, KB, LA, LB, 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
o = Special:	0, C or X	0 or X	0 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 Special Conditions for Safe Use:

1. The enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact or friction.
2. Parabolic and Array antennas with plastic surfaces may, under certain extreme conditions, generate an ignition-capable level of electrostatic charge for IIC applications. Therefore, when these antennas are used in Category 1G, Group IIC, appropriate measures must be taken to prevent electrostatic discharge.
3. *Category 1/2 notation: The Rosemount 5900 Radar Level Gauge was evaluated so that an [ib] associated apparatus can connect to it restricting the installation of the electronics to a Zone 1 location while still allowing the antenna to enter a Zone 0 location.

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 EC-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 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 Ltd's ATEX Certification Scheme.

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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 st March 2010	Original Issue.
3 rd September, 2010	<u>Supplement 1:</u> Report Reference: 3035466rev102805 dated 23 rd August, 2010 Description of the Change: <ol style="list-style-type: none">1. Update to reference manual.2. Modifications to terminal blocks related to EMC performance.3. Addition of coating/encapsulation specification.
28 th November 2013	<u>Supplement 2:</u> Report Reference: 3049398 dated 15 th November 2013 Description of the Change: <ol style="list-style-type: none">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 "5900Sabcdefhijklmno" to allow for greater Ex code flexibility.3. Documentation updates and minor changes to the product not affecting compliance.
25 th March 2014	<u>Supplement 3:</u> Report Reference: – 3035492rev140317 dated 25 th March 2014. Description of the Change: Added an option for additional printed circuit board conformal coating type, HumiSeal 1B73 and HumiSeal 1B31.

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Blueprint Report

Rosemount Tank Radar AB (100003453)

Class No 3610

Rosemount Tank Radar AB (100003453)

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>	<u>Electronic Drawing</u>
300520EN	CA	Reference Manual Rosemount 5900 Series	3049398	Yes (pdf)
9240040-909	1	APPV. DWG. 1/2" NPT PLUG	3035466	Yes (pdf)
9240040-913	2	APPR. DWG. FM	3049398	Yes (pdf)
9240040-914	1	APPR. DWG. FM PCB PM	3035466	Yes (pdf)
9240040-915	2	APPR. DWG. FM PCB CM	3049398	Yes (pdf)
9240040-916	1	APPR. DWG. FM PCB RM	3035466	Yes (pdf)
9240040-917	2	SYSTEM CONTROL DRAWING FM	3049398	Yes (pdf)
9240040-919	1	APPR. DWG. FM PARABOLIC ANTENNA	3035466	Yes (pdf)
9240040-922	1	APPR. DWG. FM ARRAY ANTENNA	3035466	Yes (pdf)
9240040-923	1	APPR. DWG. FM HORN ANTENNA	3035466	Yes (pdf)
9240040-924	2	APPR. DWG. FM LPG ANTENNA	3049398	Yes (pdf)
9240040-925	2	APPR. DWG. FM PCB TB STANDARD	05/28/10	Yes (pdf)
9240040-926	2	APPR. DWG. FM PCB TB TWO-IN-ONE	05/28/10	Yes (pdf)
9240040-928	2	APPR. DWG. FM PCB TB SIL	05/28/10	Yes (pdf)
9240040-930	2	APPR. DWG. FM SIMPL. CAP. MODEL	3049398	Yes (pdf)
9240040-931	1	APPR. DWG. FM BLOCK DIAGRAM	3035466	Yes (pdf)
9240040-932	1	APPR. DWG. FM CONE/PIPE ANTENNA	3035466	Yes (pdf)
9240040-933	1	APPR. DWG. FM RM MECH ASSY	3035466	Yes (pdf)
9240040-934	1	APPR. DWG. FM CONE/PURGING ANTENNA	3035466	Yes (pdf)
9240040-939	2	APPR. DWG. FM MAIN LABEL	3049398	Yes (pdf)
9240040-946	2	APPR. DWG. FM CONF. COAT./ENCAPSUL.	05/28/10	Yes (pdf)
9240040-947	03	APPR. DWG. FM CONFORMAL	140317	Yes (pdf)
9240040-970	2	5900S Model Code Description	3049398	Yes (pdf)
D7000001-674	1	APPR. DWG. FM 5900 SERIES, 2930 ANTENNA	3049398	Yes (pdf)
D7000001-675	1	APPR. DWG. FM 5900 SERIES, TCC/6 ANTENNA	3049398	Yes (pdf)