OIML Member State Sweden	**OIML Certificate No.** R85/2008-A-SE1-2021.01

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: RISE Research Institutes of Sweden AB
Address: Box 857, SE-50115 Borås, Sweden
Person responsible: Martin Tillander

Applicant

Name: Rosemount Tank Radar AB
Postal address: Box 150, SE-435 23 Mölnlycke, Sweden
Visiting address: Layoutvägen 1, SE-435 33 Mölnlycke, Sweden

Manufacturer

Name: Rosemount Tank Radar AB
Postal address: Box 150, SE-435 23 Mölnlycke, Sweden
Visiting address: Layoutvägen 1, SE-435 33 Mölnlycke, Sweden

Identification of the certified type *(the detailed characteristics will be defined in the additional pages and in appendix to this certificate)*

Raptor Tank Gauging System

Designation of the module (if applicable)

5900S Radar Level Gauge

This OIML Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML type evaluation report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

OIML R 85 Edition (year):2008

2019-03-27

OIML Certificate No.

R85/2008-A-SE1-2021.01R85/2008-A-SE1-2021.01

This OIML Certificate relates only to metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML Recommendation identified above.

This OIML Certificate does not bestow any form of legal international approval.

The conformity was established by the results of tests and examinations provided in the associated OIML type evaluation report:

No. 105101-113504 dated 2021-02-18 that includes 57 pages

The technical documentation relating to the identified type is contained in documentation file:

No. 126949

OIML Certificate History

The product 5900S Radar Level Gauge was earlier certified by SP/RISE according to OIML R85:2008, number R85/2008-SE-11.01

Revision No.	Date	Description of the modification
First issue (CS)	2021-02-18	

Identification, signature and stamp
The OIML Issuing Authority
RISE Research Institutes of Sweden AB

Signed by: Martin Tillander
Reason: I am the author of this document
Date & Time: 2021-02-18 16:59:47 +01:00

Martin Tillander

Date: 2021-02-18

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated OIML type evaluation report(s) is not permitted, although either may be reproduced in full.

OIML Member State Sweden	**OIML Certificate No.** R85/2008-A-SE1-2021.01

ANNEX to an OIML Certificate of Conformity

Issuing Authority

Name: RISE Research Institutes of Sweden AB
Address: Box 857, SE-50115 Borås, Sweden
Person responsible: Martin Tillander

Applicant

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Manufacturer

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Correction

-

Identification, signature and stamp
The Issuing Authority
RISE Research Institutes of Sweden AB

Signed by: Martin Tillander
Reason: I am the author of this document
Date & Time: 2021-02-18 17:00:00 +01:00

……..

Date: 2021-02-18

RISE Research Institutes of Sweden AB | Certification
Box 857, SE-50115 Borås, Sweden
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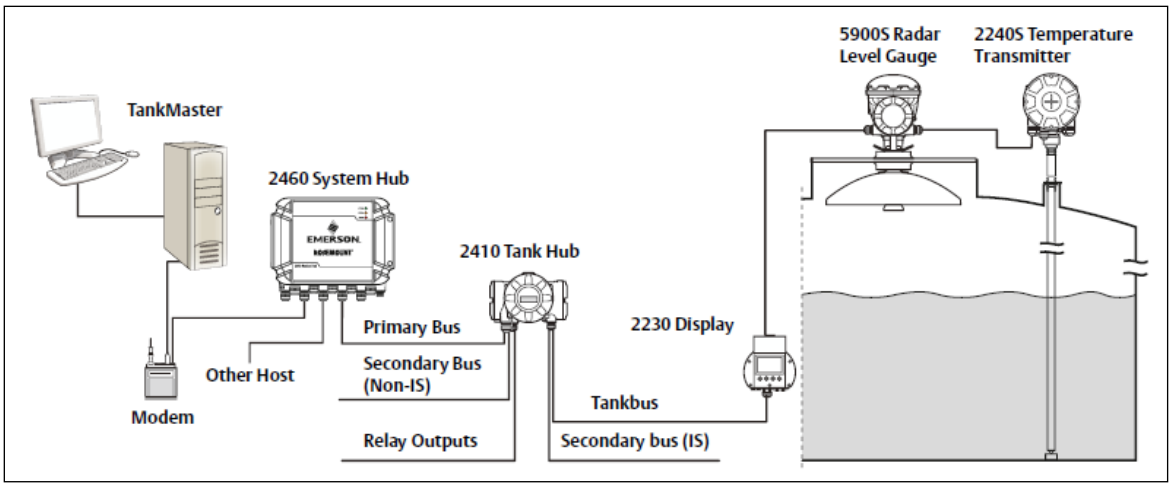
Identification and description of the certified type of tank radar

1 Design of the Raptor Tank Gauging System

1.1 Overview



1.2 Description of tested components

5900S Radar level gauge with:

- Parabolic antenna 1P
- Horn antenna 1H
- Still-pipe array antenna 1A5
- Still-pipe array antenna 1A6
- Still-pipe array antenna 1A8
- Still-pipe array antenna 1AA
- Still-pipe array antenna 1AB
- LPG/LNG antenna G1/G2/G4
- 2410 Tank Hub
- 2230 Graphical Field Display
- 2160/61 Field Communication Unit
- 2180 Field Bus Modem
- Wireless 775 THUM adapter
- Wireless 1420 Gateway
- General purpose PC with TankMaster for display of measured level
- Printer.

Rosemount 5900S Radar Level Gauge
The Rosemount 5900S radar level gauge is an instrument for measuring the product level inside a tank. The 5900S can measure the level of almost any product, including bitumen, crude oil, refined products, aggressive chemicals, LPG and LNG. The Rosemount 5900S sends microwaves towards the surface of the product in the tank. The level is calculated based on the echo from the surface. No part of the 5900S is in contact with the product in the tank, and the antenna is the only part of the gauge that is exposed to the tank atmosphere.
Different antennas can be used in order to meet the requirements of different applications:

Antenna type	Model
Parabolic antenna	1P
Horn antenna	1H
Still-pipe array antenna	1A5, 1A6, 1A8, 1AA, 1AB
LPG/LNG antenna	G1/G2/G4

Rosemount 2410 Tank Hub
The Rosemount 2410 tank hub acts as a supply to the connected field devices in the hazardous area using the intrinsically safe Raptor Tankbus. The Rosemount 2410 tank hub collects measurement data and status information from field devices on a tank. It has two external buses for communication with various host systems.

Rosemount 2460 System Hub
The 2460 System Hub is a data concentrator and calculator that continuously polls and stores data from field devices such as radar level gauges and temperature transmitters in a buffer memory. When a request for data or calculated values is received over any of the communication ports (RS485, TRL/2, Ethernet etc), the 2460 sends data from a group of tanks from the updated buffer memory.

Rosemount 2230 Graphical Field Display
The Rosemount 2230 graphical field display presents inventory tank gauging data such as level, temperature, and pressure. The unit allows navigation through the different menus to provide all tank data, directly in the field. The Rosemount 2230 supports up to 10 tanks.

Rosemount 2160 Field Communication Unit
The 2160 field communication unit (FCU) is a data concentrator that continuously polls and stores data from field devices such as radar level gauges and temperature transmitters in a buffer memory. When a request for data is received, the FCU sends data from a group of tanks from the updated buffer memory.

Rosemount 2180 Field Bus Modem
The Rosemount 2180 field bus modem (FBM) is used for connecting a TankMaster PC to the TRL/2 communication bus. The 2180 is connected to the PC using either the RS232 or the USB interface.

TankMaster Software
TankMaster – provides configuration, service, set-up, inventory, and custody transfer functions for Rosemount Raptor systems and other supported instruments. TankMaster is designed to be used in the Microsoft® Windows environment providing access to measurement data from Local Area Network.

TankMaster WinOpi – the program lets the operator monitor measured tank data. It includes alarm handling, batch reports, automatic report handling, historical data sampling as well as inventory calculations such as Volume, Observed Density and other parameters. A plant host computer can be connected for further processing of data.

TankMaster WinSetup – the program is a graphical user interface for installation, configuration and service of the different devices in the Rosemount Raptor system.

2 Technical data

2.1 Measurement range

5900S with antenna:	Distance
- Horn antenna 1H - Still-pipe array antenna 1A5 - Still-pipe array antenna 1A6 - Still-pipe array antenna 1A8 - Still-pipe array antenna 1AA	0-30 m
- Parabolic antenna 1P - Still-pipe array antenna 1AB - LPG/LNG antenna G1/G2/G4	0-40 m

2.2 Rated operating conditions

Ambient temperatures	Low	-40 °C
	High	+70 °C
Relative humidity	up to 100%	
DC mains voltage	24-48 VDC (-15%...+10%)	
AC mains voltage	48-240 VAC (-15%...+10%)	
Temperature extreme values	Liquid	N/A antenna not in contact with liquid
	Medium above the liquid	-40 – 230°C (LPG/LNG antenna -170°C to 90°C, -55°C – 90°C close to ball-valve)
Pressure extreme values	Varies with antenna type -0.2 – 2 bar (horn- and still-pipe antenna), - 0.2 -10 bar (parabolic antenna), up to 25 bar (LPG antenna)	
Liquid characteristics	N/A, liquid does not affect measurement performance	
Liquid density. extreme values	N/A, liquid density does not affect measurement performance	
Medium characteristics	Typical petroleum products	
Medium density. extreme values		
Remarks: Normal petroleum products have no measurable influence on performance. Certain special products (e.g. ketons) may influence velocity of the radar wave and may result in performance outside m.p.e. See manufacturer's recommendation on which products to avoid. Tank design with internal floating roof may reduce influence for critical products.		

3 Technical documentation

The manuals include technical specifications and descriptions.

4 Securing

The housing and data plate can be sealed using wire or filling depending national practice. Verification marks can be placed on top or side of each unit.

5 Marking/labelling/inscriptions

A data plate is placed on the side or top of each unit including the:

- manufacturer´s name,
- type,
- serial number,
- year of manufacture,
- EC type-approval number, (when applicable)
- ranges of operations range and
- CE mark (when applicable)