OIML CERTIFICATE OF CONFORMITY

OIML Member State
SWEDEN

OIML Certificate No.
R85/2008-SE-11.01 rev 1

Applicant and manufacturer

Name: **Emerson Process Management, Rosemount Tank Radar AB**
Address: Box 130 45, SE-402 51 Göteborg, Sweden

Issuing authority

Name: SP Technical Research Institute of Sweden
Address: Box 857, SE-501 15 Borås, Sweden
Person responsible: Lennart Månsson

Identification of the certified type

Automatic level gauges for measuring the level of liquid in stationary storage tanks.

Product name: **Raptor Tank Gauging System**
Components:
- 5900S Radar level gauge with different antennas, see page 2
- 2410 Tank Hub
- 2230 Graphical Field Display
- 2160/61 Field Communication Unit
- 2460 System Hub
- 2180 Field Bus Modem
- Standard printer
- Software "TankMaster"

Measuring range: 0.8 – 30 m for all antenna types
Power supply: 24 – 48 VDC, or 48 – 240 VAC
Ambient temperature: - 40 to +70°C, for the equipment

Certificate and documents

This certificate attests the conformity of the above-mentioned pattern (represented by the samples identified in the associated test report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

R 85, edition year **2008**

This certificate relates only to the metrological and technical characteristics of the pattern of the instrument concerned, as covered by the relevant OIML International Recommendation. This certificate does not bestow any form of legal international approval.

The conformity was established by tests described in the associated test reports:
SP No. P905645, dated 2011-04-12 and P905645 2014-04-16 rev 1.

Borås, 12th May 2014

SP Technical Research Institute of Sweden
Certification

Lennart Månsson
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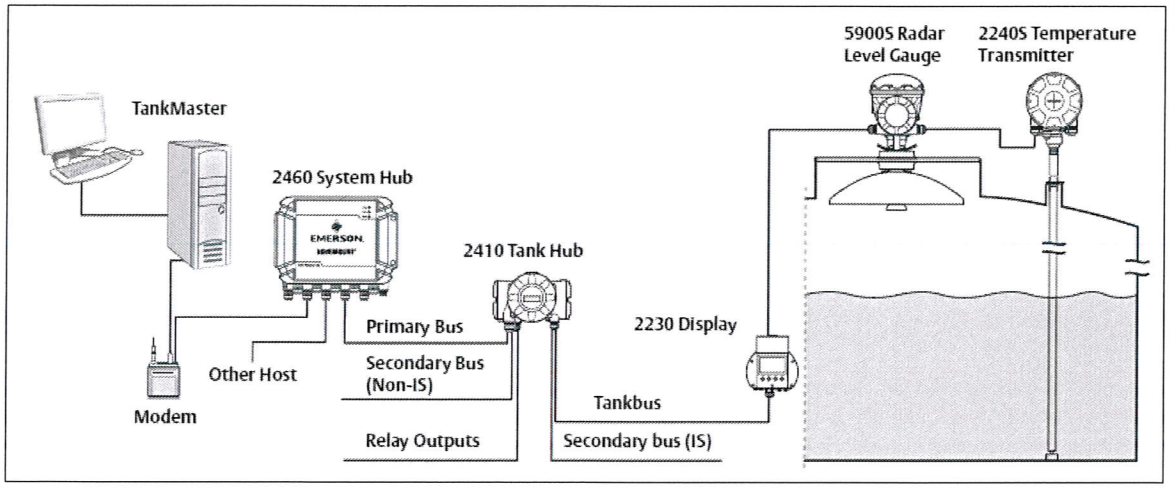
Identification and description of the certified type of tank radar

1. Design of the Raptor Tank Gauging System

1.1 Overview



Either of 2460 System Hub or FCU 2160 can be used.

1.2 Description of tested components

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

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.

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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

The software identification number is 6.xx (where .xx is not concerning metrological functions).

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 Rated operating conditions

Characteristic	Value / Description	Comment
Measurand	Liquid level inside a tank	Equipment measures liquid level
Measuring range	0.8 to 30 m	For all antenna types
Ambient temperature	- 40 to +70°C	For the equipment
Humidity	up to 100% RH	For the equipment
Extreme value temp.	- 170 to +230°C	For air/medium direct above liquid, value varies with type of antenna*
Extreme value pressure	value varies with antenna type	Air/medium pressure *
Power supply	24 - 48 VDC, or 48 - 240 VAC	---

** value given by the manufacturer, also see manual*

2.2 Technical documentation

The manuals include technical specifications and descriptions.

SP Technical Research Institute of Sweden

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3. Marking/labelling/inscriptions

Information to be borne by and to accompany the instrument (label on top or side on each unit):

- manufacturer (Rosemount Tank Radar AB)
- type designation (5900S)
- serial number and year of manufacture
- number of certificate
- type approval mark
- ranges defining the field of operation (measuring range, temperature, etc)
- information required by national legislation.

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