DNV·GL

Certificate No:
TAA000003X

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Monitoring System

with type designation(s)
Rosemount CMS, Transmitter

Issued to
Rosemount Tank Radar AB
GÖTEBORG, Sweden

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application :

Drawings for the actual application are to be submitted for approval in each case.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Rosemount CMS	**D**	**B**	**A**	**B**	**Required protection according to the Rules to be provided upon installation on board**
Transmitter	**D**	**B**	**A**	**B**	**C**

This Certificate is valid until **2017-09-08**.

Issued at **Høvik** on **2015-09-09**

for **DNV GL**

DNV GL local station: **Gothenburg**

Approval Engineer: **Jens Erling Bråten**

Odd Magne Nesvåg
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Place of manufacture

Rosemount Tankradar AB, Gøteborg, Sweden
Emerson Process Management Marine Solutions, Busan, South Korea

Product description

Rosemount CMS: level, temperature, pressure Cargo Monitoring and Alarm System consisting of:

Supply and Communication Unit (SCU):	
Cabinet	SCU
Supply- and communication computer	SCC
Supply & Communication Power Terminal	SCP 5110
Supply & Communication Power Terminal 2	SCP terminal
Supply & Communication Charger, 230V	SCH 5110
Supply & Communication Charger, 115V	SCH 5120
Supply & Communication Battery	SCY 5110
Supply & Communication Tank Interface	SCT 5110
Supply & Communication Converter (integral to SCT)	SCN 5110
Supply & Communication Modem "	SCM 5110
Supply & Communication Safety Barrier "	SCS 5110
Supply & Communication interface Box	SCB 5110
Supply & Communication Display	SCD 5110
Supply & Communication Ethernet Hub	SCE 5110
Supply & Comm. Alarm Panel w. integr./ext. line filter	SCA 5110
Supply & Communication Alarm Panel, slave panel	SCA Slave
Supply & Comm. Alarm Panel w.integr. line filter	SCA 5110
I/O Module PRS	SCI
I/O Modules:	
General purpose I/O Module	IOT 5110/5120/5130/5140
Intrinsic safe multiplexer	IOT 5150
Terminal Block Main	-
Power Supply IDEC	IOP 5110/5120
Tank Gauge Unit (TGU):	
Tank Gauge Electronics (1 to 3 radar channels)	TGE 51xx
Tank Gauge Electronics (1 to 3 radar channels)	TGE 52xx
Tank Gauge Antenna, parabolic	TGA 5110
Tank Gauge Antenna, cone	TGA 5211
Tank Gauge Antenna, liquefied gas	TGA 5310
Unit including TGE 51xx and TGA 5110	TGU 51
Unit including TGE 51xx and TGA 5210	TGU 52
Unit including TGE 51xx and TGA 5310	TGU 53
Still pipe gauge/antenna (for tanks)	TGU 55
Still pipe gauge/antenna (for draft)	TGU 56
Bitumen Gauge/Antenna	TGU 57
Unit including TGE 52xx	TGU 58
Tank Gauge Antenna, cone, including TGE 52xx	TGU 62
Tank Gauge Antenna, array, including TGE 51xx	TGU 65
Tank Gauge Antenna, parabolic, including TGE 52xx and optional with TGS68 hinged socket	TGU 68
I/O box	-
External Sensors:	
Vapour Pressure Sensor	VPS 58xx

Vapour Pressure Sensor, 0.8 - 1.4 Bar	VPS 5310
Vapour Pressure Sensor, 0.8 - 8 Bar	VPS 5410
Temperature Measuring unit (3/4-w)	TMU 51xx, 53xx
Temperature Sensor Micro Matic (3/4-w Pt100)	-
Tank Connection Box equippped w. conn. terminals or w. WTU 5110, WashTrac Unit	TCB 5110
Tank Gauge Display	TGD 51xx
Work station PC	Type Appoved PC
Work station software	9.B0

Application/Limitation

Cable for IS-circuits L/Rmax.=24 microH/Ohm, Cmax=200nF.

Ex installations to be approved in each case according to the Rules and Ex-Certification**/** Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Ex-certification is not covered by this certificate and the following paragraph, which is for information only, is based on information received from the manufacturer, but not verified by DNV.

Information on Ex-Certification received from manufacturer – Not verified by DNV		
Equipment	Certified	Certificate No.
System	Ⓔx II 1G Ex ia IIC T4 Ga -40°C ≤ Ta ≤ +80°C Ⓔx II (1)G [Ex ia Ga] IIC 0°C ≤ Ta ≤ +70°C	Nemko 01ATEX338X Issue No.13
TGU58, TGU62, TGU68, /TGE52	Ⓔx II 1G Ex ia IIC T4 Ga Ta:80°C / Ta:70°C	Nemko 09ATEX1302X Issue No.5
TGU58, TGU62, TGU68, /TGE52	Ex ia IIC T4 Ga Ta:80°C / Ta:70°C	IECEx NEM 09.0021X Issue No.5
Tank Gauging System	[EX ia] IIC Ta:70°C EX ia IIC T4 Ta:70°C	IECEx NEM 11.0001X Issue No.3

The tank pressure sensing system is considered acceptable for use as secondary means of protection in addition to P/V valves.

A single level sensor assembly is considered acceptable for 2 out of 3 of below functions where separation is unconditionally required by DNV Rules, provided at least 2 independent channel cards are installed, each with independent power supply and output to independent channels:

1) Overfill alarm
2) High level alarm
3) Level gauging.

For "Oil Carriers", 2) and 3) may be combined on a single channel card, ref. DNV Rules Pt.5 Ch.3 Sec.9

Incorporation of control actions in the system are to be approved case by case.

Approval conditions

The Type Approval covers hardware and software listed under Product description.
The current software numbers and versions are listed and described in document no. G5-03-0135

When the type approved software is revised (affecting all future deliveries) DNV is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

The following documentation of the actual application is to be submitted for approval by system integrator in each case:

- Reference to this Type Approval Certificate
- System block diagram
- Single line diagram for IS-circuits
- Drawing showing location of equipment
- Power supply arrangement (may be part of the System block diagram)
- List of Control and Monitored points
- Test program for certification

Product certificate
Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. The Certification of Application Functions is to be performed at the manufacturer of the application system before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Clause for application software control
All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval.
Major changes in the software are to be approved before being installed in the computer.
A Certification of Application Functions may be required for the particular vessel.

Type Approval documentation

Tests carried out

Applicable tests according to Standard for Certification No.2.4 (April 2006).

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE