

[1]

EU-TYPE EXAMINATION CERTIFICATE

[2] Product Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

[3] EU-Type Examination Certificate Number: **DNV 22 ATEX 82891X** **Issue 0**

[4] Product: **Radar Communication Module RCM-300
HART Communication Module HCM-300**

[5] Manufacturer: **Kongsberg Maritime AS**

[6] Address: **Skonnertvegen 1
7053 Ranheim Norway**

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] DNV Product Assurance AS, notified body number 2460, in accordance with Article 17 and Article 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in confidential reports listed in item 16.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with: **EN IEC 60079-0:2018 and EN 60079-11:2012**

Where additional criteria beyond those given here have been used, they are listed at item 18 in the Schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

[11] This EU-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

 **II (1) G [Ex ia Ga] IIC -15°C≤Ta≤+70°C**



Date of issue:
2023-07-07



Asle Kaastad
For DNV Product Assurance AS
The Certificate has been digitally signed.
See www.dnv.com/digitalsignatures for info

[13] **Schedule**

 [14] **EU-Type Examination Certificate No:** DNV 22 ATEX 82891X Issue 0

 [15] **Description of Product**

RCM-300 is an associated apparatus for power supply and communication for level gauging radar sensors and auxiliary HART pressure and temperature transmitters.

The power and RS-485 are for connection to the level gauging radar sensor. The HART circuit for pressure and temperature transmitters.

The HCM-300 is a variant of the RCM-300 where the RS-485 input is substituted with a HART input, resulting in a dual HART board.

More than one HART transmitter may be connected to the HART circuit so far as the sums of capacitance and inductance of the transmitters and cables are less than or equal to the Co and Lo for the RCM-300/HCM-300.

Type designation

RCM-300 (with radar and HART interface)

HCM-300 (with dual HART interface)

Electrical Safety Data

RCM-300:

Maximum safe voltage Um: 250V AC

Power supply, terminals X1 p1 (+10V) - X1 p2 (0V/GND)	IIB	IIC
Maximum output voltage	Uo: 12.63VDC	12.63VDC
Maximum output current	Io: 330mA	330mA
Maximum output power	Po: 1.92W	1.92W
Maximum external capacitance	Co: 7.4μF	1.15μF
Maximum external inductance	Lo: 200μH	50μH
Maximum ratio	Lo/Ro 74μH/Ω	18.5μH/Ω

Note:

The output circuit has a trapezoidal resistive characteristic with voltages UQ : 23.5 V and Uo: 12.63 V

X1 p3 (RS-485 A-) – X1 p4 (RS-485 B+)	IIB	IIC
Maximum output voltage	Uo: 7.0VDC	7.0VDC
Maximum output current	Io: 68mA	68mA
Maximum output power	Po: 85mW	85mW
Maximum external capacitance	Co: 300μF	15.7μF
Maximum external inductance	Lo: 30mH	7.5mH

X2 p1 (HART+) – X2 p2-p4 (HART- / GND)	IIB	IIC
Maximum output voltage	Uo: 25.20VDC	25.20VDC
Maximum output current	Io: 108mA	108mA
Maximum output power	Po: 0.68W	0.68W
Maximum external capacitance	Co: 820nF	107nF
Maximum external inductance	Lo: 7.2mH	1.8mH

HCM-300:

Maximum safe voltage U_m : 250V AC

X1/X2 p1 (HART+) – X1/X2 p2-p4 (HART- / GND)

	IIB	IIC
Maximum output voltage	U_o : 25.20VDC	25.20VDC
Maximum output current	I_o : 108mA	108mA
Maximum output power	P_o : 0.68W	0.68W
Maximum external capacitance	C_o : 820nF	107nF
Maximum external inductance	L_o : 7.2mH	1.8mH

Degrees of protection (IP Code)

IP20

Ambient temperature:

$-15^{\circ} \leq T_a \leq +70^{\circ}C$

Routine tests

None

[16] **Report No.:** 281919

Project No.: PRJN-281919-2021-PA-NOR

[17] **Specific Conditions of Use**

1. The separation distance of minimum 50mm between intrinsically and non-intrinsically safe circuits has to be observed for the final installation in a cabinet.
2. The RCM-300, HCM-300 has to be installed in a cabinet with a degree of protection of at least IP20
3. The RS-485 circuit of RCM-300 (X1/p3,p4) has a safety open voltage $U_o = 7V$ with a maximum voltage 5V for load and thermal assessments.

[18] **Essential Health and Safety Requirements**

Met by compliance with the requirements mentioned in item 9.

[19] Drawings and documents

Number	Title	Rev.	Date
GL-2743	RCM-300 schematics	A	14.06.2023
7212-533.900	RCM-300 PCB spec	A	14.06.2023
7212-533.000	RCM-300 Layout drawings	A	14.06.2023
7212-533.901	RCM-300 Bill of Materials	A	14.06.2023
GL-2750	HCM-300 schematics	A	15.06.2023
7212-534.900	HCM-300 PCB spec	A	15.06.2023
7212-534.000	HCM-300 Layout drawings	A	15.06.2023
7212-534.901	HCM-300 Bill of Materials	A	15.06.2023
E-2793	Label for RCM-300 module	A	26.01.2023
E-2794	Label for HCM-300 module	A	26.01.2023
GL-2752	Safety control drawing RMC-300 module	A	27.01.2023
GL-2753	Safety control drawing HMC-300 module	A	27.01.2023
GL-2754	Outline drawing RCM-300 & HCM-300	A	26.01.2023
110-0021689	Coating procedure RCM-300	A	02.01.2023
110-0021690	Coating procedure HCM-300	A	02.01.2023

[20] Certificate History

Issue	Description	Issue date	Report no.
0	Original issue	2023-07-07	PRJN-281919-2021-PA-NOR

END OF CERTIFICATE

