

[1]

EU-TYPE EXAMINATION CERTIFICATE

[2] Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014

[3] EU-Type Examination Certificate Number: **DNV 22 ATEX 82891X** **Issue 1**

[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 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" listed under item 17 of this certificate.

[11] This EU-TYPE EXAMINATION CERTIFICATE relates only to the technical design 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:
2025-02-20



Ståle Sandstad
For DNV Product Assurance AS
The Certificate has been digitally signed.



[13]

Schedule

 [14] **EU-Type Examination Certificate No:**

DNV 22 ATEX 82891X

Issue 1

 [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 and Intrinsic 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 | 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 |

Degrees of protection (IP Code)

IP20

Ambient temperature:

-15°C to +70°C

Routine tests

None

[16] **Report No.:** PRJN-281919-2021-PA-NOR/01

[17] **Specific Condition(s) 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 | B | 30.01.2025 |
| 7212-533.900 | *RCM-300 PCB spec | B | 26.06.2024 |
| 7212-533.000 | *RCM-300 Layout drawings | B | 31.01.2025 |
| 7212-533.901 | *RCM-300 Bill of Materials | B | 30.01.2025 |
| GL-2750 | *HCM-300 schematics | B | 20.06.2024 |
| 7212-534.900 | *HCM-300 PCB spec | B | 25.06.2024 |
| 7212-534.000 | *HCM-300 Layout drawings | B | 19.06.2024 |
| 7212-534.901 | HCM-300 Bill of Materials | B | 03.07.2024 |
| 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 | B | 23.01.2025 |
| GL-2753 | Safety control drawing HMC-300 module | A | 27.01.2023 |
| GL-2754 | *Outline drawing RCM-300 & HCM-300 | C | 07.02.2025 |
| 110-0021689 | *Coating procedure RCM-300 | B | 11.12.2024 |
| 110-0021690 | *Coating procedure HCM-300 | B | 11.12.2024 |

*Note: An * is included before the title of documents that are new or revised.*

[20] Certificate History

| Issue | Description | Issue date | Report no. |
|-------|--|------------|----------------------------|
| 0 | Original issue | 2023-07-07 | PRJN-281919-2021-PA-NOR |
| 1 | <ul style="list-style-type: none"> - New alternative coating is added. - Minor changes to circuit board specifications. - Changes in bill of materials (changes are on the primary side of the barrier circuits). - Minor changes to the pcb layouts. - Updated and corrected information in control drawing. | 2025-02-20 | PRJN-281919-2021-PA-NOR/01 |

Compliance of the product with the applicable safety requirements of the relevant industrial standards has not been verified and is not covered by this certificate.

END OF CERTIFICATE