



Certificate No:
TAA000033B

TYPE APPROVAL CERTIFICATE

This is to certify:

That the **RDLM Level Monitoring System**

with type designation(s)

RDLM-01, RDLM-02, RDLM-03, RDLM-04

Issued to

Shanghai Rongde Engineering Equipment Co., Ltd.
Shanghai, China

is found to comply with

DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

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

Temperature B

Humidity B

Vibration A

EMC B

Enclosure Required protection according to DNV Rules shall be provided upon installation on board

Issued at **Hamburg** on **2023-01-06**

This Certificate is valid until **2028-01-05**.

for **DNV**

DNV local station: **Shanghai**

Approval Engineer: **Didier Girardin**

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Joannis Papanuskas
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2021-03

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Product description

RDLM Level Monitoring System is including three parts:

Level detector, safe barrier and monitoring and alarm unit (or Computer monitor).

Power supply: 220V AC, 24V DC (backup power for RDLM-04)

RDLM-01: Computer monitoring and alarm units with level detectors

System arrangement specification¹⁾

RDLM-02: Monitoring and alarm units with level detectors

System arrangement specification¹⁾

RDLM-03: Combined computer and various alarm units with level detectors

System arrangement specification¹⁾

RDLM-04: Monitoring and alarm units with level detectors (for high level and overfill alarm system)¹⁾

¹⁾ See details in ANNEX

Place of manufacture

No.268, Yangyue Road, Fengxian District, Shanghai, PRC.

Application/Limitation

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

- Reference to this Type Approval Certificate
- Functional description
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- List of control and monitored points
- Circuit diagrams
- Test program for certification

The Type Approval covers hardware and software listed under Product description.

Product certificate

Each delivery of the application system is to be certified according to DNV Pt.4 Ch.9 Sec.1. The certification test 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.

Application software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board.

Type Approval documentation

Hidden

Present certificate is replacing GL Certificate 54 531-07 HH

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE

ANNEX

Arrangement Barrier Detectors

RDLM-01

DNV type approved computer / monitor to be used

RDAQ-1	RDHL-A1-S-RI/RIT/RIP/RITP, RDHL-A1/A2/A3/B1/B2/B3 -S-B, RDHL-A2-S-BP, UQK-01/02/03-B, UQK-04-B1/B2/B3, UQK-14-B2, RDHL-DJ100 series, RDLY-S-1/1a/1d/2a/2b/2c/3a, RDLY-S-2/3/3HT/4HT
RDAQ-2/5	WZPK-1/2-R1/R2, WZPK-3-R1/R2-1/2/3
RDAQ-4	RDHL-A1-S-M/MD/MDT/MTP/MDTP, RDHL-A1-S-M/MT-H
----	and detectors EPU-6/8, WZPK-4-R1/R2-4/5

RDLM-02

Analog monitoring and alarm unit: RDCP-3, RDCP-6, RDCP-12

RDAQ-1	RDHL-A1-S-RI/RIT/RIP/RITP, RDLY-S-1/1a/1d/2a/2b/2c/3a, RDLY-S-2/3/3HT/4HT;
RDAQ-4	RDHL-A1-S-M/MD/MDT/MTP/MDTP, RDHL-A1-S-M/MT-H
----	and detectors: EPU-6/8.

Analog monitoring and alarm unit: RDYB-205

RDAQ-1	RDHL-A1-S-RI/RIT/RIP/RITP, RDLY-S-1/1a/1d/2a/2b/2c/3a, RDLY-S-2/3/3HT/4HT;
RDAQ-2/5	WZPK-1/2-R1/R2, WZPK-3-R1/R2-1/2/3
RDAQ-4	RDHL-A1-S-M/MD/MDT/MTP/MDTP, RDHL-A1-S-M/MT-H
----	and detectors: EPU-6/8, WZPK-4-R1/R2-4/5.

Analog monitoring and alarm unit: RDYB-100, RDYB-101, RDYB-208

RDAQ-1	RDHL-A1-S-RI/RIT/RIP/RITP, RDLY-S-1/1a/1d/2a/2b/2c/3a, RDLY-S-2/3/3HT/4HT
----	and detectors: EPU-6/8.

Analog monitoring and alarm unit: RDYB-216

RDAQ-2/5	WZPK-1/2-R1/R2, WZPK-3-R1/R2-1/2/3
----	and detectors: WZPK-4-R1/R2-4/5.

Binary alarm unit: RDBJ-12/12a

RDAQ-1	A1/A2/A3/B1/B2/B3 -S-B, RDHL-A2-S-BP, RDHL-A2-D-B/B1/B3/BP/B1P/B3P, UQK-01/02/03-B, UQK-04-B1/B2/B3, UQK-14-B2, RDHL-DJ100 series
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RDLM-03

DNV type approved computer / monitor to be used

Analog monitoring and alarm unit: RDCP-3, RDCP-6, RDCP-12

RDAQ-1	RDHL-A1-S-RI/RIT/RIP/RITP, RDLY-S-1/1a/1d/2a/2b/2c/3a, RDLY-S-2/3/3HT/4HT
RDAQ-4	RDHL-A1-S-M/MD/MDT/MTP/MDTP, RDHL-A1-S-M/MT-H
----	and detectors: EPU-6/8

Analog monitoring and alarm unit: RDYB-205

RDAQ-1	RDHL-A1-S-RI/RIT/RIP/RITP, RDLY-S-1/1a/1d/2a/2b/2c/3a, RDLY-S-2/3/3HT/4HT
RDAQ-2/5	WZPK-1/2-R1/R2, WZPK-3-R1/R2-1/2/3
RDAQ-4	RDHL-A1-S-M/MD/MDT/MTP/MDTP, RDHL-A1-S-M/MT-H
----	and detectors: EPU-6/8, WZPK-4-R1/R2-4/5.

Analog monitoring and alarm unit: RDYB-100, RDYB-101, RDYB-208

RDAQ-1	RDHL-A1-S-RI/RIT/RIP/RITP, RDLY-S-1/1a/1d/2a/2b/2c/3a, RDLY-S-2/3/3HT/4HT
----	and detectors: EPU-6/8.

Analog monitoring and alarm unit: RDYB-216

RDAQ-2/5	WZPK-1/2-R1/R2, WZPK-3-R1/R2-1/2/3
----	and detectors: WZPK-4-R1/R2-4/5.

Binary alarm unit: RDBJ-12/12a

RDAQ-1	RDHL-A1/A2/A3/B1/B2/B3 -S-B, RDHL-A2-S-BP, RDHL-A2-D-B/B1/B3/BP/B1P/B3P, UQK-01/02/03-B, UQK-04-B1/B2/B3, UQK-14-B2, RDHL-DJ100 series
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RDLM-04

Binary alarm unit: RDBJ-12/12a

RDAQ-1	RDHL-A1/A2/A3/B1/B2/B3 -S-B, RDHL-A2-S-BP, RDHL-A2-D-B/B1/B3/BP/B1P/B3P, UQK-01/02/03-B, UQK-04-B1/B2/B3, UQK-14-B2, RDHL-DJ100 series
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Specification of detectors

(1) Magnetic float level transmitter - types:

RDHL-A1-S-RI/RIT/RIP/RITP/M/MD/MDT/MTP/MDPT

RDHL-A1-S-M/MT-H,

(2) Magnetic float level sensor - types:

RDHL-A1/A2/A3/B1-S-B

RDHL-B2/B3-S-B

RDHL-A2-S-BP

RDHL-A2-D-B

(3) Magnetic float level switch - types:

UQK-01/02/03-B

UQK-04-B1/B2/B3

UQK-14-B2

(4) Electrode type level sensor – types:

RDHL-DJ100/101/102

(5) Level detector with pressure transmitter – types:

RDLY-S/1/1a/1d/2a/2b/2c/3a

RDLY-S-2/3/3HT/4HT

(6) Electro-pneumatic level detection unit - types:

EPU-n(A)

(7) Temperature sensor - types:

WZPK-1/2-R1/R2

WZPK-3-R1/R2-1/2/3

WZPK-4-R1/R2-4/5

Zener barrier – types:

RDAQ-1

RDAQ-2

RDAQ-4

RDAQ-5

Junction box – types:

RDEJ-56

RDEJ-68

Monitoring and alarm unit – types:

Computer monitor: A DNV-type approved computer/monitor is to be used

Display unit: RDYB-101

Analog monitoring and alarm unit: RDYB-100, RDYB-205, RDYB-208, RDYB-216, RDCP-3/6/12

Binary alarm unit: RDBJ-12/12a

Data collecting module: RDDS-A24H2, RDDS-T24H, PT100-3

Communication interface module: CP-104UL, CP-168U, USBCAN-2E-U, NET-CAN485

Test reports SITIIAS no.: A07-026-WT (01.08.07), A07-050-WT (21.12.07),A03-016-ZC (10.09.03), A04-016-ZC (06.04.04); A14-013-ZC (25.06.14), A22-006-ZC (01.06.22)