

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Loading Computer System

with type designation(s)
CYBERMASTER 3D, Version 10.1,

Issued to

CyberMarine Technologies Pte Ltd
Singapore, Singapore

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

Type approved for calculation and control of loading conditions with the following functions:

- Check of shear force and bending moments against limit curves
- Check of intact stability, damage stability and grain stability by direct calculation
- Check of intact and damage stability against limit curve

The product approved by this certificate is accepted for installation on all vessels classed by DNV GL. Note that ship specific approval and certification is also required.

Issued at **Høvik** on **2020-05-15**

This Certificate is valid until **2025-05-14**.

DNV GL local station: **Singapore**

Approval Engineer: **Nils Heimvik**



for **DNV GL**

Digitally Signed By: Seglem, Inge
Location: DNV GL, Høvik, Norway
Signing Date: 18.05.2020

Inge Seglem
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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



Product description

Available Options of the Software:

Based on the stored characteristic data and stored 2D(*) and 3D model and loading data given by the user, the following functions are performed onboard monohull vessels:

Hull Strength:

For prepared loading conditions;

- Calculation of still water bending moment and shear force, and control against limit values.

Stability:

For prepared loading conditions;

- Calculation of draft, trim, righting levers (GZ) and metacentric height (GM)
- Calculation and check of the intact stability criteria of 2008 IS Code Part A Ch.2.2 and 2.3
- Calculation and check of compliance with pre-stored limit curves for intact and damage stability
- Calculation and check according to the damage stability criteria of MARPOL 73/78 Annex I Regulation 28, IMO IBC Code Ch.2, and IMO IGC Code Ch.2
- Calculation and check of the grain stability requirements of SOLAS-74 Reg. VI/Part C and MSC 23(59), (International Grain Code) including A.10.3
- Calculation of damage stability of a real case flooding scenario, with manual user input of the damage case, according to DNV GL Rules Pt.6 Ch.4 Sec.6, "Type 4" computer, for cargo ships

* A table input based "2D" version is also available for vessels for which 3D model data (lines) are not available. This version cannot be used for direct damage stability calculations.

Approval conditions

1. The loading computer is considered as supplementary to the approved stability booklet and/or loading manual onboard.
2. Specific approval and certification is required for each vessel at which the program is installed. Documentation to be submitted for approval is listed in DNV GL Rules for Ships Pt.6 Ch.4 Sec. 6. The identification of software will be recorded in the certificate.
3. The program is either to be installed on one approved hardware (type approved or case-by-case approved), or it is to be installed on two nominated computers. If two nominated computers are available, approval of hardware may be waived (Ref. DNV GL Rules Pt.6 Ch.4 Sec.6).

Type Approval documentation

The type approval is based on the approval of the software for the following vessel:

- DNV GL Id. No. 13980, "MIRANDA ROSE"	Strength-Intact stability-Grain stability
- DNV GL Id. No. 14149, "KAMPUR"	Strength-Intact Stability- Grain Stability
- DNV GL Id. No. 17596, "JAG PRAJA"	Strength-Intact Stability
- DNV GL Id. No. 17557, "JAG PRAYOG"	Strength –Intact Stability
- DNV GL Id. No. 15773, "JAG VAYU"	Strength-Intact Stability
- DNV GL Id. No. 26462, "African Sprinter"	Strength – Intact and damage stability (3D model)
- DNV GL Id. No. 21267, "Caspia"	Strength – Intact and damage stability (3D model)
- DNV GL Id. No. 22723, "Delice"	Strength – Intact and damage stability (3D model)

Renewal assessment

The scope of the retention/renewal assessment is to verify that the conditions stipulated for the type approval is complied with and that no alterations are made to the product or software design.

The main elements of the assessment to be dealt with:

- Ensure that documentation for the type approval is available.
- Ensure that the type approved software complies with the referenced documents and specifications.
- Review of possible changes in design and performance of the type approved software version.
- Ensure traceability between manufacturer's product marking and the DNV GL Type Approval Certificate.

The assessment is to be performed only upon renewal, and by the unit issuing the type approval certificate




TYPE APPROVAL CERTIFICATE
No. ELE111120PU

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

<i>Description</i>	SOFTWARE FOR LOADING INSTRUMENT
<i>Type</i>	CYBERMASTER 3D
	VERSION 10.1
<i>Applicant</i>	CYBERMARINE TECHNOLOGIES PTE LTD
	10 Bukit Batok Crescent, #12-01 The Spire Building
	658079 Singapore
	SINGAPORE
<i>Reference standards</i>	Rules for the classification of ships - Part C - Machinery, Systems and Fire Protection - Chapter 3, Section 6, Paragraph 2.3

Issued in **BUSAN** on **December 21, 2020**. This Certificate is valid until **December 20, 2025**




RINA Services S.p.A.
Young-Kwang Kim

This certificate consists of this page and 1 enclosure



**SOFTWARE FOR LOADING INSTRUMENT
(CYBERMASTER 3D)****1. Application**

- Type approved for calculation and control of loading conditions with the following functions:
 - Check of shear force and bending moments against limit curves
 - Check of intact stability, damage stability and grain stability by direct calculation
 - Check of intact and damage stability against limit curve
- The product approved by this certificate is accepted for installation on all vessels classed by RINA. Note that ship specific approval and certification is also required.

2. Product Description

- Available options of the software
- Based on the stored characteristic data and stored 2D(*) and 3D model and loading data given by the user, the following functions are performed onboard mono hull vessel:

(*) A table input based "2D" version is also available for vessels for which 3D model data (lines) are not available. This version cannot be used for direct damage stability calculations.

2-1. Hull Strength:

For prepared loading conditions;

- Calculation of still water bending moment and shear force, and control against limit values.

2-2. Stability:

For prepared loading conditions;

- Calculation of draft, trim, righting levers(GZ) and metacentric height(GM)
- Calculation and check of the intact stability criteria of 2008 IS Code Part A Ch.2.2 and 2.3
- Calculation and check of compliance with pre-stored limit curves for intact and damage stability
- Calculation and check according to the damage stability criteria of MARPOL 73/78 Annex I Regulation 28, IMO IBC Code ch.2, and IMO IGC Code Ch.2
- Calculation and check of the grain stability requirements of SOLAS-74 Reg. VI/Part C and MSC 23(59), (International Grain Code) including A.10.3
- Calculation of damage stability of a real case flooding scenario, with manual user input of the damage case, according to RINA Rules Pt.B Ch.11 Sec.2 [4.5.4]



RINA Società per azioni
REGISTRO ITALIANO NAVALE Group

Head Office: Via Corsica, 12 16128 Genova - Italy
Tel. +39 010 53851
Fax +39 010 5351000

C.F./P. Iva 03794120109
Cap. Soc. 58.400.000.000 i.v.
R.I. Genova N. 23602/99

Korea Engineering Centre
14th Fl, Centum Green Tower, 78 Centum Jungang-Ro
Haeundae-Gu Busan 612-020 Korea
TEL: +82 51 465 5412
FAX: +82 51 465 5535-6
E-MAIL: korea.planapproval@rina.org

3. Approval Conditions

- 3-1. The loading computer is considered as supplementary to the approved stability booklet and/or loading manual onboard.
- 3-2. Specific approval and certification are required for each vessel as which the program is installed. Documentation to be submitted for approval is listed in RINA Rules Pt.B Ch.11 Sec.2 [4.3.3]. The identification of software will be recorded in the certificate.
- 3-3. The program is either to be installed on one approved hardware (type approved or case-by-case approved), or it is to be installed on two nominated computers. If two nominated computers are available, approval of hardware may be waived (Ref. RINA Rules Pt.B Ch.11 Sec.2 [4.3.4]).

4. Approval Conditions

- The type approval is based on the approval of the software options for the following vessel:

4-1. Strength only

- | | | |
|--|---|--------------------------------------|
| - Ship name | : | JAG PRAJA |
| - Operation manual & Test loading conditions | : | RINA APP. No. PUCD-10798 |
| - Approval letter | : | PUCD/2020/00537/JKI dated 10/12/2020 |
| - Ship name | : | JAG PRAYOG |
| - Operation manual & Test loading conditions | : | RINA APP. No. PUCD-10799 |
| - Approval letter | : | PUCD/2020/00538/JKI dated 10/12/2020 |
| - Ship name | : | KANPUR |
| - Operation manual & Test loading conditions | : | RINA APP. No. PUCD-10800 |
| - Approval letter | : | PUCD/2020/00539/JKI dated 10/12/2020 |

4-2. Strength and Intact Stability

- | | | |
|---------------------------|---|--------------------------------------|
| - Ship name | : | MV GLORY SKY |
| - Operation manual | : | RINA APP. No. PUCD-10643 |
| - Test loading conditions | : | RINA APP. No. PUCD-10649 |
| - Database | : | RINA APP. No. PUCD-10653 |
| - Approval letter | : | PUCD/2020/00432/JKI dated 29/10/2020 |

4-3. Strength, Intact stability and Grain Stability

- | | | |
|---------------------------|---|--------------------------------------|
| - Ship name | : | MIRANDA ROSE |
| - Operation manual | : | RINA APP. No. PUCD-10801 |
| - Test loading conditions | : | RINA APP. No. PUCD-10802 |
| - Approval letter | : | PUCD/2020/00541/JKI dated 10/12/2020 |



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Tel. +39 010 53851
Fax +39 010 5351000

C.F./P. Iva 03794120109
Cap. Soc. 58.400.000.000 i.v.
R.I. Genova N. 23602/99

Korea Engineering Center

16th Fl, Nat'l Pension Corp Bldg, 1422-8, Yeonsan-Dong
Yeonje-Gu Busan 611-830 Korea
TEL: +82 51 465 5412
FAX: +82 51 465 5535~6
E-MAIL: korea.planapproval@rina.org

4-4. Strength-Intact and Damage stability (3D model)

- Ship name	:	AFREICAN SPRINTER
- Operation manual	:	RINA APP. No. PUCD-10642
- Test loading conditions	:	RINA APP. No. PUCD-10646
- Database	:	RINA APP. No. PUCD-10650
- Approval letter	:	PUCD/2020/00428/JKI dated 28/10/2020
- Ship name	:	CASPIA
- Operation manual	:	RINA APP. No. PUCD-10644
- Test loading conditions	:	RINA APP. No. PUCD-10647
- Database	:	RINA APP. No. PUCD-10651
- Approval letter	:	PUCD/2020/00429/JKI dated 28/10/2020
- Ship name	:	DELICE
- Operation manual	:	RINA APP. No. PUCD-10645
- Test loading conditions	:	RINA APP. No. PUCD-10648
- Database	:	RINA APP. No. PUCD-10652
- Approval letter	:	PUCD/2020/00429/JKI dated 28/10/2020

5. Renewal assessment

- The scope of the retention/renewal assessment is to verify that the conditions stipulated for the type approval is complied with and that no alterations are made to the product or software design.
- The main elements of the assessment to be dealt with:
 - Ensure that documentation for the type approval is available.
 - Ensure that the type approved software complies with the referenced documents and specifications.
 - Review of possible changes in design and performance of the type approval software version.
- The assessment is to be performed only upon renewal, and by the unit issuing the type approval certificate.



BUSAN December 21, 2020



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REGISTRO ITALIANO NAVALE Group

Head Office: Via Corsica, 12 16128 Genova - Italy
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Fax +39 010 5351000

C.F./P. Iva 03794120109
Cap. Soc. 58.400.000.000 i.v.
R.I. Genova N. 23602/99

Korea Engineering Center
16th Fl, Nat'l Pension Corp Bldg, 1422-8, Yeonsan-Dong
Yeonje-Gu Busan 611-830 Korea
TEL: +82 51 465 5412
FAX: +82 51 465 5535~6
E-MAIL: korea.planapproval@rina.org