



Certificate No:
TAA0000389

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Central Alert Management System

with type designation(s)
ARINE-BAM

Issued to

SAN Engineering Co.,Ltd.
Seongnam-si, Gyeonggi-do, Korea, Republic of

is found to comply with

DNV rules for classification – Ships
IMO Resolution MSC.302(87) Performance standards for Bridge Alert Management
MSC.191(79) Performance standards for presentation of navigation-related information on shipborne navigational displays
IMO Res. A.694(17) General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids

Application :

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

Issued at **Høvik** on **2024-04-15**

This Certificate is valid until **2029-04-14**.

for **DNV**

DNV local unit: **Seoul**

Approval Engineer: **Tommi Juhani Rifaat**

Frederik Tore Elter
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: 2022-12

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Product description

The ARINE-BAM Central Alert Management System consist of the following components:

Description	Type	Location
Processor Unit	HTC03-i5-AC-yzzzzzz or DPC-OT-22B	Protected
Display Unit	HD27T22 MMD-MA4-FAGA or ER2701	Protected
Keyboard & Trackball	RKCT92S0001-W-MC1	Protected
Network Hub	EDS-208A	Protected
Mini DP to DP Cable	HA-VGA-2M-32 HA-SDM-2M CD075414JHC00FMB-D VSD101004-1 C-HM/HM-6 RC3473 / HT DPM2DVI-DF-A1 VSDDPVGA340 / HT DPM2VGAF-A1	Protected
Power Cable	TP52/TC01-1.8M TP11/TC01-1,8M	Protected
Sensor Adapter	PCA100297-1 MDCU-100S (LAN to RS422/485)	Protected

Software version: 1.0.x where x is higher than 0

Operating system: Windows 10

Application/Limitation

- The system is to be installed as specified in equipment manuals.
- The ARINE-BAM Central Alert Management complies with the applicable requirements for BAM compliant equipment (EUT function type P¹) and CAM system (EUT function type Q¹). Depending on the configuration, the ARINE-BAM may support Legacy Alert conversion (EUT function type S¹)

Type Approval documentation

DNV No	Drw No	Rev	Title
30	MNS-TSR-008	1.0.0	Report: MRC, IEC 61162-1/2 Test Report for MDCU box
29	ICRT-TR-I230347-0A	1	Report: Kolas, MDCU-100 Series IEC 60945 Temperature and Vibration Test Report
28	F690501-RF-EMC001335	0	Report: SGS, MDCU-100 series IACS UR E10/ IEC 60945 EMC Test Report
27	Manual: Develo, MDCU-100 Series	2022-09-22	Manual: Develo, MDCU-100 Series
26	TAA000039Z		Certificate: DNV, Orion Technology ER2701 Monitor
25	ARINE-BAM-IM-012	1.0.12	Manual: SAN ENGR, ARINE-BAM Instruction Manual
24	ARINE-BAM-OM-004	R 1.0.4	Manual: SAN ENGR, ARINE-BAM Operating Manual
23			Doc: SAN ENGR, testing comment list
22	BAM SP-R008	1.8	Report: SAN ENGR, Performance Test Report, IEC 62923, 62288, 61162-450
21	DANAK-19/14501		Report: Delta, Enviromental Test Report Keyboard with Trackball
18	TAA000006N	5	Certificate: DNV, Moxa Switches
17	MRA000003D	1	Certificate: DNV, Hatteland Computers
16	MRA0000016	5	Certificate: DNV, Hatteland Monitors
11	MRA000000T	Rev.2	Certificate: DNV, Orion Technology Computers & PLCs

¹ As defined in 62923-1

Tests carried out

- | | |
|---|---|
| • Environmental testing: | IEC 60945 (2002) incl. Corr.1 (2008) |
| • LAN interface testing: | IEC 61162-450 (2018) |
| • Presentation of navigation information: | IEC 62288 (2021) |
| • Bridge Alert Management: | IEC 62923-1 (2018) and IEC 62923-2 (2018) |

Marking of product

The Manufacturer and Type Designation to be applied to the equipment in a clearly visible location. In addition the equipment shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage and reference to the Type Approval certificate number.

Periodical assessment

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.

The scope of the periodical/renewal assessment is to verify that the production quality conditions stipulated for the type approval are complied with and that no alterations are made to the product design or its components and/or materials without appraisal by the Society.

This certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>