



Certificate No:
TAA000037E

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Electronic System

with type designation(s)
BE-DCxx series

Issued to

BEMAC Corp. Mirai Factory
Imabari city, Ehime Pref., Japan

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 **2022-11-02**

This Certificate is valid until **2027-11-01**.

for **DNV**

DNV local station: **Kobe**

Approval Engineer: **Didier Girardin**

.....
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

BE-DCxx series Marine computer system for control and monitoring and including equipment described in ANNEX

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
- User interface description
- Description of functions covered by software
- System block diagram
- SW numbers and versions
- Power supply arrangement (may be part of the System block diagram)
- List of controlled and Monitored points
- Test program for certification

The Type Approval covers hardware listed under Product description.

Product certificate

Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system according to an approved test program before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

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 GL for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Type Approval documentation

LIC 12-22-090	13-07-2022
LIC12-22-101	05-08-2022

Tests carried out

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

Marking of product

The products to be marked with:

- Identification of the manufacturer,
- Equipment type number or model identification under which it was type tested,
- Serial number of the unit,
- Compass safe distance.

Alternatively, the minimum safe distance for fixed equipment may be given in the equipment manual, but portable equipment shall always be marked according 60945 IEC:2002 Ch. 4.5.3

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

Name	Type	SW rev.0
Process Unit (BDC-MC)	BDC-MC	1.015
Process Unit (BDC-AO)	BDC-AO	1.005
CUnet HUB Unit	BDC-HUB	...
Process Unit (BDC-AI)	BDC-AI	1.005
Input Signal Conversion Unit (BDC-AC-T) (*)	BDC-AC-T	...
Input Signal Conversion Unit (BDC-AC-P) (*)	BDC-AC-P	...
Process Unit (BDC-DI)	BDC-DI	1.006
Process Unit (BDC-DO)	BDC-DO	1.006
Process Unit (BDC-PS3)	BDC-PS3	1.000
Graphic Terminal / Server Unit	BDC-GTU	1.0.1.0
Display Unit	BDC-LCD24W	...
Extension Alarm Unit (BD-EAP-L)	BD-EAP-L	1.009
Extension Alarm Unit (BD-EAP-D)	BD-EAP-D	1.009

(*) Contained in Process Unit (BDC-AI).