

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Control and Monitoring System**with type designation(s)
TERANET 50X

Issued to

Terasaki Electric Co., Ltd.
Osaka, Osaka Pref, Japan

is found to comply with

DNV GL 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 GL.****Location classes:****Temperature B****Humidity B****Vibration A/B*****EMC B****Enclosure Required protection according to DNV GL Rules shall be provided upon installation onboard***** See Product description on page 2.**Issued at **Høvik** on **2019-05-15**This Certificate is valid until **2024-05-14**.DNV GL local station: **Kobe**for **DNV GL**Approval Engineer: **Frode Nygård**

Trond Sjøvåg
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.



Product description

TERANET 50X system is a Total Integrated Automation System comprising:

VDU:

EMB-7010, Marine Computer
EMB-7040, Marine Computer II
EMB-7040-OP1, Marine Computer II/ PCI Extender Unit
EMB-7050, Marine Computer mini
EMB-7060, Marine Panel Computer

Process Control Unit (Vibration Class B):

EMB-7110, PCU, Process Control Unit

I/O units (Vibration Class B):

EMB-7310, 32 digital inputs
EMB-7420, 24 digital relay outputs
EMB-7610, 8 analog outputs, 4..20mA, 0-5V
EMB-7510, 16 analog inputs, 4..20mA, +/-10V, 0-5V, 0-2V, PT100.

Repeater (Vibration Class B):

EMB-7710, Repeater Unit

Etherneth Switch:

EMB-7810, Ethernet Switch

Extension Alarm Panel:

EEA-231, EEA-232, Extension Alarm Panel, RS485 interface
EEA-234, EEA-235, Extension Alarm Panel, Ethernet Interface
Variants with different colours or mounting arrangements:
EEA-241, EEA-242, EEA-243, EEA-244, EEA-245
Drip-proof types (IP22): EEA-246, EEA-247.

TM&TMA System:

EMB-7910, Serial Converter Unit

Software Versions:

PCU: V1.0
VDU: V1.0
EAP: V1.0

Application/Limitation

DC mains power shall be supplied by a Type Approved 24 Vdc instrument power supply.
EMI core TDK ZCAT2032-0930 to be used for keyboard cable.

Approval conditions

The Type Approval covers hardware and software listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

When the type approved software is revised (affecting all future deliveries) DNV GL is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

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 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 GL for evaluation and approval before implemented on board.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

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