Certificate No:
TAA000031J

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Personal Computer

with type designation(s)
SPC-5000-8665

Issued to
Captec America Inc.
Cambridge, ON, Canada

is found to comply with

Application :

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

Temperature	**D (+70°C; -40°C)**
Humidity	**B**
Vibration	**A**
EMC	**A**
Enclosure	**A (IP20)**

Issued at **Hamburg** on **2021-09-08**
This Certificate is valid until **2026-09-07**.
DNV local station: **Montreal**

Approval Engineer: **Didier Girardin**

for **DNV**

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.

Product description
SPC-5000-8665 Workstation
See Annex

Approval conditions
The Type Approval covers hardware 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

Product certificate
If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After the certification the clause for application software control will be put into force.

Clause for application software control
All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV GL for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Application/Limitation
Equipment do not offer isolation between Frame Ground (FG/PE) and Signal Ground (GND/0V). 24 VDC power needs to be supplied via a Safety Extra Low Voltage (SELV) and Limited Energy Circuit or SELV and Class II (double insulated) DC power supply.

Equipment to be protected by wide band high performance Emi Filter SW10F

Each delivery to be provided with installation instruction or later approved version

Type Approval documentation

Tests carried out
Applicable tests according to class guideline DNVGL-CG-0339 December 2019

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

Product description

Captec Americas Inc. integrated SPC-5000-8665U8-CAP Industrial grade computing system

EQUIPMENT	DESCRIPTION
Intel® Core™ i7-8665UE	1.7GHz/4 Cores, 8thread, 8MB Cache TDP 15W DDR2400Mhz
EMBC-3000-8665U	Embedded motherboard
DDR-8	Transcend 8GB, DDR4 2400
CT250MX500SSD1	Crucial 250GB SSD
Onboard	Intel® HD Graphics 620 onboard EMC-3000-8665U
LAN1	Onboard EMC-3000-8665U Intel® I219LM Gigabit LAN supports iAMT 12.0
LAN2	Onboard EMC-3000-8665U Intel® I210 Gigabit LAN
LMX-200	Mini PCI adapter to provide 2 x 2 Intel® I210 Gigabit LAN (POE)
Puls – Dimension QS20	DIN rail power supplies for 1-phase system 24V, 20A