

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Remote Control System Steering Gear

with type designation(s)
DSC 100 / MCP 100

Issued to

Jastram Engineering Ltd.
North Vancouver BC, Canada

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.

Temperature	D
Humidity	B
Vibration	A
EMC	B
Enclosure	B

Issued at **Hamburg** on **2017-05-11**

This Certificate is valid until **2019-05-10**.

DNV GL local station: **Vancouver**

for **DNV GL**

Approval Engineer: **Holger Jansen**

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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.



Product description

Remote steering control system comprising the following components:

- DSC 100 Digital Steering Controller
- MCP 100 Mode Control Processor
- CP 600/375 Steering Mode Control Panel
- LC 100 FFU Lever Controller
- LC 300 FFU Lever Controller
- JO 100 NFU Jog Lever
- RFU 2000 Rudder Feedback Unit

DSC Processor Firmware Rev.: K
SCP Processor Firmware Rev.: E

Application/Limitation

The following standard Jastram documentation of the actual application is to be submitted for approval in each case:

- Scope of Supply with Reference to this Type Approval Certificate
- Steering Control Functional Requirements
- Steering Control Functional Validation
- Steering Control Cabling Diagram (System block diagram)
- Steering Control Wiring Diagram
- Steering Control Changeover Procedure
- Steering Control Technical Description

The Type Approval covers hardware and software listed under Product description.

The revisions history for each software are listed in documents:

DSC Processor Firmware: REC00902, 09-11-05
SCP Processor Firmware: REC00903, 09-11-05

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.

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.

A Certification of Application Functions may be required for the particular vessel.

Type Approval documentation

Tests carried out

Applicable tests according to Class Guideline DNVGL-CG-0339, November 2016.

Periodical assessment

Job Id: **262.1-005399-3**
Certificate No: **TAA0000158**

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 at renewal of this certificate.

END OF CERTIFICATE