



TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00001FG
Revision No:
1

This is to certify:

That the **Network and Communication Components**

with type designation(s)
HSIO-100-A, HSIO-100-B, HSIO-100-C

Issued to
Kongsberg Maritime AS Avd Skonnertvegen
Ranheim, Norway

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.

Location classes:

Temperature	D (tested to -40°C)
Humidity	B
Vibration	A
EMC	B
Enclosure	A / IP20

Issued at **Høvik** on **2022-11-21**

This Certificate is valid until **2027-10-17**.

DNV local unit: **Trondheim**

Approval Engineer: **Ståle Sneen**

for **DNV**



Digitally Signed By: Elter, Frederik Tore
Location: DNV Høvik, Norway

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.





Job Id: 262.1-026869-2
Certificate No: TAA00001FG
Revision No: 1

Product description

The Kongsberg HSIO-100 module is a family of high-speed data acquisition modules. The HSIO-100 can be an integrated part of Kongsberg Maritime Condition Monitoring system. The high-speed capability is provided by an FPGA (Field Programmable Gate Array) and processor. The data collected can be data from any high-speed data source like for example, vibration sensor, acoustic emission sensor, or specialized sensors for torque measurement. The module provides high-speed communication via Ethernet.

HSIO-100 DATA ACQUISITION UNITS (HIGH-SPEED I/O MODULES):

Item	Description	Compass safe distances Standard / Steering
HSIO-100-A	CONDITION MONITORING (ACOUSTIC)	20 cm / 10 cm
HSIO-100-B	CONDITION MONITORING (VIBRATION)	130 cm / 90 cm
HSIO-100-C	FIELDBUS AND TORQUE APPLICATIONS	20 cm / 10 cm

Rating: 24V DC, range 18 to 32 V DC

HSIO Software revision: 1.3.x.

Place of manufacture

Kongsberg Maritime
Ranheim
Norway

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, 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 rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

Data sheets: P-HSIO-100-A/CE Rev. B
P-HSIO-100-B/CE Rev. D
P-HSIO-100-C/CE Rev. B
Test reports: E17008.02 Rev. 02 dated 2022-04-22
Sw. revision: 424979 Rev. D

Type approval renewal assessment report for TAA00001FG, DNV Trondheim 2022-10-17.

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.
Applicable tests for protected equipment according to IEC 60945, 4th edition (2002), except salt mist test.

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings



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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