



Certificate no.:
TAA00003B6

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Position Transmitter**

with type designation(s)
CHI 703xxxx12, CHI 733xxxx12

issued to

Leine & Linde AB
Strängnäs, Sweden

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
Humidity	B
Vibration	B/C
EMC	A
Enclosure	C

Issued at **Høvik** on **2023-12-20**

This Certificate is valid until **2028-12-19**.

for **DNV**

DNV local unit: **Sweden CMC**

Approval Engineer: **Martin Skårerverket**

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: 2023-09

www.dnv.com

Page 1 of 3

Product description

The CHI 703/733xxx12 is an optical scanning encoder creating a pulse train of incremental signal. The period of the incremental signals is proportional to the encoder rotational speed. The unit(s) is intended for use in marine environments.

Codification / type designation is **CHI 7x3xxx12**, where:

CHI 7x3 Model	
703 = Anodized aluminium 733 = Stainless steel (A2)	
xx Shaft	
12 = Ø12 mm	25 = Ø25 mm
14 = Ø14 mm	01 = Ø1 inch
15 = Ø15 mm	58 = Ø5/8 inch
16 = Ø16 mm	34 = Ø3/4 inch
20 = Ø20 mm	
x Flange	
0 = Without Torque Bracket 2 = Torque bracket 120° 9 = Tether arm with insulation	
x Electronics	
1 = TTL (supply 5 Vdc, output 5 Vdc)	7 = RS422 (supply 9-30 Vdc, output 5 Vdc)
5 = HC-HTL (supply 9-30 Vdc, output 9-30 Vdc)	8 = Sinusoidal 1 Vpp (supply 9-30 Vdc, output 1 Vpp)
6 = HTL (supply 5-30 Vdc, output 5-30 Vdc)	9 = Sinusoidal 1 Vpp (supply 5 Vdc, output 1 Vpp)
1 Approval	
1 = DNV Type Approved	
2 Connection	
2 = M23 connector 12 pin (CCW)	

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.

Application/Limitation

Only variants with M23 connector are covered by this type approval.

Compass safe distance measurements:

- CHI 703xxx12: Standard: 20 cm Steering: 10 cm.
- CHI 733xxx12: Standard: 20 cm Steering: 10 cm.

The equipment is not approved for direct power connection to the ship's distribution board. The equipment shall be installed with power supply of an approved type.

Type Approval documentation

Tests carried out

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

For the bridge mounted components the 'Acoustic noise and signals' and the 'Compass safe distance' were measured according to sections 11.1 and 11.2 of IEC 60945, 4th edition (2002).

Marking of product

The products to be marked with:

- manufacturer name
- CHI 7x3xxxx12
- 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