DNV·GL

Certificate No:
TAA00002KK

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Control levers

with type designation(s)
NORISYS 4 LS4 / LT4

Issued to
Noris Automation GmbH
Rostock, Germany

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	**C (front side)**

Issued at **Hamburg** on **2020-01-15**
This Certificate is valid until **2025-01-14**.
DNV GL local station: **Hamburg CMC**

Approval Engineer: **Holger Jansen**

for **DNV GL**

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.

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Product description

The NORISYS 4 Control Lever Devices are equipped with an interface electronic which provides signals and communication interfaces for the remote control system designed for main propulsion plants and lateral thrust propeller application.

Common characteristic:

Supply Voltage: 24 Vdc
Current consumption: 0.15 .. 1,5A according to level of equipment

NORISYS 4 LS4 Control Lever

Nomenclature a-b-c-d-e-f-g

a: Base type:	LS4:	Single lever
	LSN4:	Double lever for two demands (handle by one signal processing electronic)
	LSD4:	Double lever for two demands (handle by separated signal processing electronic)
b: Scale orientation:	FWD:	Forward oriented installation
	AFT:	Astern oriented installation
c: Scale design:	0-10	
	10-0-10	
	L0-10/R10-0-10	
	L10-0-10/R0-10	
d: Scale subdesign:	blank:	No extra scale design is used
	ORD:	Scale design with order steps
e: Signal processing:	E1:	Signal processing electronic, 2xCANbus 2x 4..20mA OUT, 2x Digital IN, 1x PWM IN, LED band
	E2:	Signal processing electronic, 2xCANbus, 1x RS-485 1x Digital IN, 1x Digital OUT, 1x PWM IN, LED band
f: Illuminaton:	IL1:	Scale with backlight and position indiactor
g: Options:	ESS:	Electrical shaft system
	MLP:	Mechanical lock points (not applicable with ESS option)
	MHL:	Mechanical handle linkage (with MLP only)

NORISYS 4 LT4 Control Lever

Nomenclature a-b-c-d-e-f

a: Base type:	LT4:	Single lever
	LTD4:	Double lever for two demands (handle by separated signal processing electronic)
b: Scale orientation:	FWD:	Forward oriented installation
	AFT:	Astern oriented installation
c: Scale design:	0-10	
	10-0-10	
d: Signal processing:	E1:	Signal processing electronic, 2xCANbus 2x 4..20mA OUT, 2x Digital IN, 1x PWM IN, LED band
	E2:	Signal processing electronic, 2xCANbus, 1x RS-485 1x Digital IN, 1x Digital OUT, 1x PWM IN, LED band
e: Illuminaton:	IL1:	Scale with backlight and position indiactor
f: Options:	ESS:	Electrical shaft system
	MLP:	Mechanical lock points (not applicable with ESS option)
	MHL:	Mechanical handle linkage (with MLP only)

Application/Limitation

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 Ships Pt.4 Ch.9 Control and Monitoring Systems.

Type Approval documentation

Tests carried out

Applicable tests according to DNV GL Class Guideline CG0339, November 2016.

Marking of product

The products to be marked with:

- Noris Automation GmbH
- Model name
- Serial number

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