

NORISYS 4 LT4

Control Lever System



- Single lever and double lever setups
- Several available scales, separated for both handles
- LED band for position indication of active lever for each handle
- Optional electrical shaft functionality for each handle with force feedback
- 2 separated CANbus interfaces (option)
(CAN1 can be configured as RS-232/RS-485 interface)
- 1 RS-485 interface (optional)
- 1 scale illumination input (dimmable)
- 2 digital inputs, galvanically isolated (optional)
- 2 analogue outputs 4 ... 20 mA (one for each handle, optional)
- Extended operating temperature range -25°C ... +70°C
- IP56 front side



Control lever system NORISYS4-LT4



Application range

The NORISTAR control lever system is designed for ship propulsion plant applications in accordance to marine certification requirements. The lever can be equipped in three levels, starting from a mechanical setup with potentiometric signal outputs, basic electronic equipment with analogue standard signal output 4 ... 20 mA for each handle and as full electric version with integrated data interface and optional electrical shaft system onboard.

Description

In relation to its area of application the lever can be equipped as single or double lever as well as control lever chain. The portfolio of standard and customer-specific scales matches a wide range of applications. Direct wiring of standard industrial signal cables is provided by 2.5 mm² terminal blocks. The design as a plug-and-play component in the basic and full electronic version requires no calibration handling on customer side. The full electronic version is equipped with a high performance ARM processor, which calculates the handle positions, controls the integrated LED band as well as the stepper motors of the optional electrical shaft system and powers the data interfaces. The integrated LED band for each handle is a precise visualisation to indicate the current position of the active control lever and to support the operator during control position transfer. An optional electrical shaft system provides automatic alignment of each handle according to the position of the active control lever in the network. The ESS option uses the existing network interconnection between all levers and the remote control system and requires no separate control hardware.

Interconnection

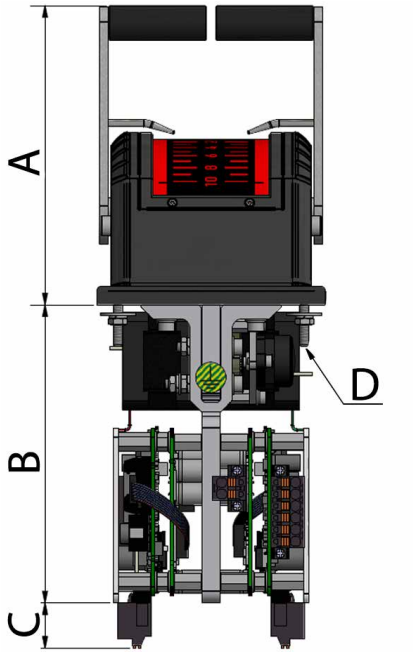
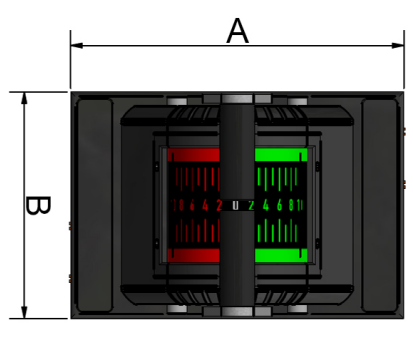
The full electronic version is equipped with several data interfaces as well as analogue standard signal outputs. The full electronic equipped control lever can be interconnected to an automation system via redundant or single CANbus as well as by using the integrated RS-485 interface with Modbus-RTU or NORISYS 4 ExtBus protocol. The electronic control lever can be used as gateway to add NORISYS 4 and NORISTAR 4 extension units to an automation system. All versions provide a signal output for each handle, positioning indication and dimming of the scale illumination. The data interfaces are short-circuit protected and 24 V protected.

Mechanical Versions

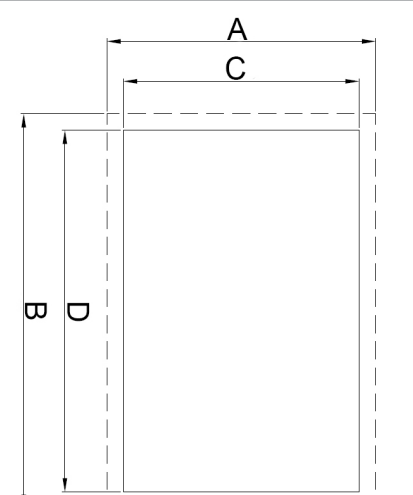
The mechanical design allows a setup of several application specific versions. The lever can be equipped as single and double handle. For main propulsion systems a base socket can be used to tend the device towards the operator. For thruster applications the control lever can be mounted rotated by 90°. The handle can be mounted according to application and user requirements. For similar propulsion plants it is possible to establish a control lever chain by connecting the control levers with a reversible mechanical linkage.

Dimensions, connections and drawings

Device dimensions

 <p>Technical drawing showing the front view of the device. Dimension A is the total height, B is the height of the main body, C is the height of the base, and D is the length of a specific threaded component.</p>	<p>Explanation to the left illustration (front view)</p> <ul style="list-style-type: none"> A) Length 128.5 mm B) Length 128 mm C) Length 20 mm D) Thread M4, length 17.8 mm
 <p>Technical drawing showing the top view of the device. Dimension A is the total width and B is the width of the main body.</p>	<p>Explanation to the left illustration (top view)</p> <ul style="list-style-type: none"> A) Length 144 mm B) Length 98 mm

Console cut-out

 <p>Diagram showing the dimensions for a console cut-out. Dimension A is the width of the cut-out, B is the height, C is the width of the surrounding panel, and D is the height of the surrounding panel.</p>	<p>Explanation to the left illustration</p> <ul style="list-style-type: none"> A) Length 98 mm B) Length 144 mm C) Length 86 mm D) Length 132 mm
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Technical data

Connection

Supply voltage	U _{nom} 24 VDC, 18 ... 32 VDC
Current consumption	0.15 ... 1.5 A according to level of equipment
Reverse voltage protection	Integrated
Over voltage protection	Integrated

Interfaces

CANbus (optional)	2 x
RS-485 (optional)	1 x, galvanically isolated
Electrical connections	Terminals for cable profile 2.5 mm ²

In-/Output

Digital inputs	1 x Input, 1x Output, galvanically isolated
Illumination regulation input	For conventional 24 VDC PWM dimmer or 0 ... 24 VDC

Environmental influences

Operating temperature	DIN IEC 60068-2-2 and DIN IEC 60068-2-1: -25°C ... +70°C
Climatic test	DIN IEC 60068-2-30 Db
Storage temperature	DIN IEC 60068-2: -40°C ... +85°C
Vibration resistance	DIN IEC 60068-2-6 Fc: ±1.0 mm @ 2 ... 13.2 Hz, ±0.7 g @ 13.2 ... 100 Hz
Degree of protection	DIN EN 60529: IP56 front side
ESD	IEC 61000-4-2: ± 6 kV/Contact Discharge; ± 8 kV/Air Discharge
HF-interference immunity	IEC 61000-6-2; IEC 61000-4-3, -4-4, -4-5, -4-6
Interference emission	IEC 61000-6-4; CISPR16-1, CISPR16-2, EMC 1

Mechanical dimensions

Material	Enclosure: PUR, AlMg3
Mounting	Console mounting
Installation position	None
Dimensions	144 x 98 x 276.5 mm (148 mm under floor)
Weight	1.8 kg - 2.4 kg according to level of equipment

Other

ESS	Optional electrical shaft system with separate 24 VDC power supply
Approvals	CE, BV, DNV GL, LR, NKK, KR

Type code

Type code structure LT4, LTD4...						
	LTD4	-FWD	-10-0-10	-E1	-IL1	-ESS
	Base type					
	Scale orientation					
	Scale design					
	Signal processing					
	Illumination					
	Options					

Type code LT4, LTD4							
Base type	LTD4	Single lever					
	LTD4	Double lever for two demands, handled by one signal processing electronic					
Scale orientation	-FWD	Forward oriented installation					
	-AFT	Astern oriented installation					
Scale design	-0-10						
	-10-0-10						
Signal processing	-E1	Signal processing electronic, 2 x CANbus, 2 x 4 ... 20 mA OUT, 2 x Digital IN, 1 x PWM IN, LED band					
	-E2	Signal processing electronic, 2 x CANbus, 1x RS-485, 1 x Digital IN, 1x Digital OUT, 1 x PWM IN, LED band					
Illumination	-IL1	Scale with backlight and position indicator					
Options	-ESS	Electrical shaft system; detents are to be defined during order					
	-MLP	Mechanical lock points; detents are to be defined during order (not applicable with ESS option)					
	-MLH	Mechanical handle linkage (with MLP only)					
	LTD4	-	-	-	-	-	Example: LTD4-FWD-10-0-10-E1-IL1-ESS