

NORISYS 4 LTK4

Control Lever System



- Single lever
- Several available scales, applicable at a mechanical range of 180°
- LED band for position indication of active lever
- Optional electrical shaft functionality with force feedback
- 2 separated CANbus interfaces (optional) (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 (optional)
- Extended operating temperature range -25°C ... +70°C
- IP56 front side



Control lever system NORISYS4 LTK4



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 and as full electric version with integrated data interface and optional electrical shaft system onboard.

Description

The type of control lever is designed to fit rudder control and thruster control applications. 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 turning knob position, controls the integrated LED band as well as the stepper motor of the optional electrical shaft system and powers the data interfaces. The integrated LED band 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 the turning knob 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

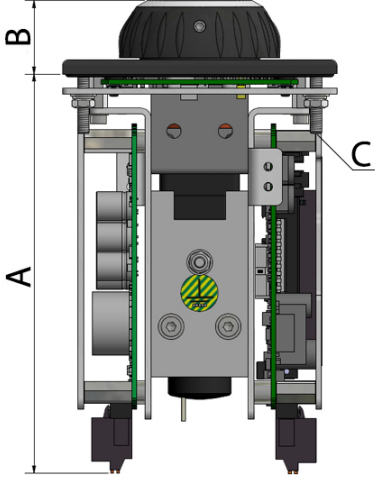
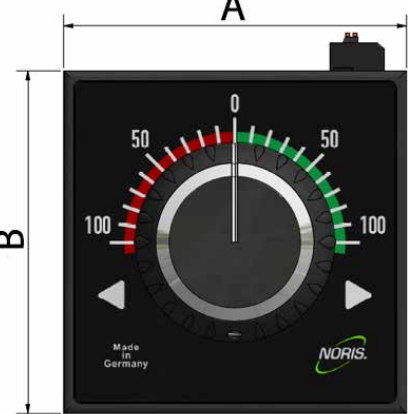
The full electronic version is equipped with several data interfaces and can be optionally delivered with analogue standard signal outputs. The full electronic equipped control lever can be interconnected to an automation system via redundant or single CANbus. All versions provide a positioning indication and dimming of the scale illumination. The data interfaces are short-circuit prove and 24 V protected.

Mechanical Versions

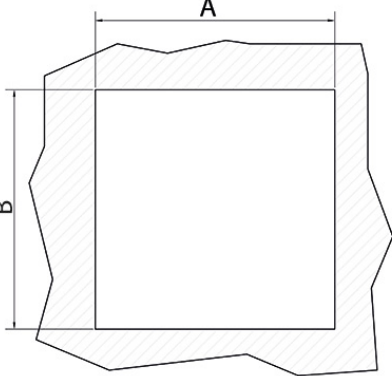
The mechanical design allows a setup of several application specific versions. The lever can be equipped with several scales according to application and user requirements. The control lever can be equipped with a mechanical notch in middle or any other position. The optional electronic shaft system driven unit can be programmed with up to 9 electric controlled notches.

Dimensions, connections and drawings

Device dimensions

	<p>Explanation to the left illustration (side view)</p> <p>A) Length 140 mm B) Length 25.70 mm C) Thread M4, length 20.8 mm</p>
	<p>Explanation to the left illustration (above view)</p> <p>A) Length 96 mm B) Length 96 mm</p>

Console cut-out

	<p>Explanation to the left illustration</p> <p>A) Length 86 mm B) Length 86 mm</p>
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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, 1 x Output, galvanically isolated
Illumination regulation input	For conventional 24 VDC PWM dimmer

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	96 x 96 x 166 mm (140 mm under floor)
Weight	0.8 kg - 1.1 kg according to level of equipment

Other

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

Type code

Type code structure LTK4...

	LTK4	-FWD	-100-0-100	-E1	-IL1	-ESS
	Base type					
	Scale orientation					
	Scale design					
	Signal processing					
	Illumination					
	Options					

Type code LTK4...

Base type	LTK4	Single lever				
Scale orientation		-FWD	Forward oriented installation			
		-AFT	Astern oriented installation			
Scale design		100-0-100	Scale marking for 100 in cw/ccw, turning range of 180°			
		-45-0-45	Scale marking for 45° in cw/ccw, turning range of 160°			
		-C	customer specific scale e.g. +/-35°			
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, 1 x RS-485, 1 x Digital IN, 1 x Digital OUT, 1 x PWM IN, LED band			
		-P1	1 x Potentiometer signal, 2kΩ			
		-P2	2 x Potentiometer signal, 2kΩ			
Illumination		-IL1	Scale backlight and position indicator (for E1 and E2 only)			
		-IL2	Scale backlight with external dimming (for P1 and P2 only)			
Options		-ESS	Electrical shaft system; detents are to be defined during order (for E1 and E2 only)			
		-MLP	Mechanical lock points; detents are to be defined during order			
	LTK4	-	-	-	-	Example: LTK4-FWD-100-0-100-E1-IL1-ESS