

NORISTAR LS4 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 (optional)
- 1 RS-232/485*) interface (optional)
- 1 scale illumination input (dimnable)
- 2 analogue outputs 4 ... 20 mA (one for each handle)
- Extended operating temperature range -25 °C ... +70 °C
- IP56 front side



Germanischer Lloyd



(Approvals in preparation)

NORISTAR LS4...



*) CAN1 can be configured as RS-232/RS-485 interface

NORISTAR LS4...

General Information

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 an precise visualization 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 use the existing network interconnection between all levers and the remote control system and requires no separate control hardware.

Interconnection

1. The potentiometric version is equipped with a 2 kΩ potentiometer which can be connected to a NORIS SA502-3G transducer card and provides two adjustable 0...10 V and 0 ... 20 mA outputs.
2. A basic electronic version is equipped with a 4 ... 20 mA output.
3. 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 prove 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.

Technical Data

Series NLS4...		
Connection	Supply voltage	U_{nom} 24 V _{DC} , 18 ... 32 V _{DC} , galvanically isolated
	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, galvanically isolated
	RS-232/-485 (optional)	1 x, galvanically isolated, Protocol: NORISYS 4 ExtBus, Modbus-RTU
	Electrical connections	Terminals for cable profile 2.5 mm ²
In-/Output	Digital inputs	2 x, galvanically isolated
	Illumination regulation input	For conventional 24 V _{DC} PWM dimmer or 0 ... 24 V _{DC}
	Resistive sensor outputs	2 kΩ
	Analogue output signals (optional)	4 ... 20 mA or 0 ... 10 V / 0 ... 20 mA (additional SA502-3G device)
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
Mech. dimensions	Interference emission	IEC 61000-6-4; CISPR16-1, CISPR16-2, EMC 1
	Material	Enclosure: PA6, Almg3
	Mounting	Desk mounting
Mech. dimensions	Installation position	None
	Dimensions	96 x 154 x 317 mm (175 mm under floor)
	Weight	1.8 kg - 2.4 kg according to level of equipment
	ESS	Optional electrical shaft system with separate 24 V _{DC} power supply
Approvals	CE, ABS, BV, DNV, GL, LR, NK (approvals in preparation)	

Type Code / Standard Variants

LSEn4 – E1 ESS (e. g. LSEn4-E1-ESS)
 1 | 2 | 3.1 | 3.n

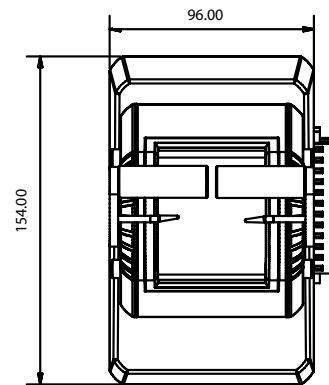
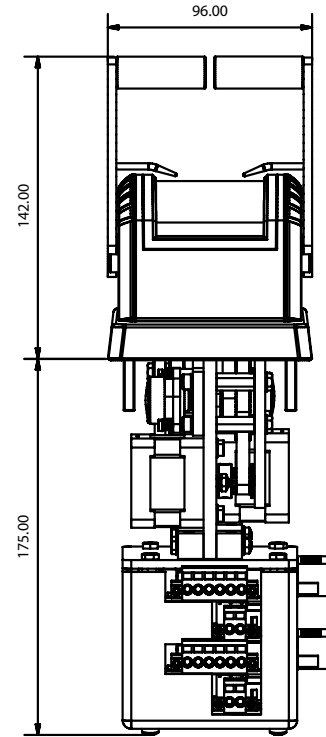
1	Base type
LS4	Single lever
LSEn4	Double lever for two demands, handled by one signal processing electronic
LSD4	Double lever for two demands, handled by separated signal processing electronics

2	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
I2	Analogue standard signal on each handle, 4 ... 20 mA
P1	Potentiometer signal on each handle, 2 kΩ
U1	Potentiometer and additional SA502-3G device for each handle, 0 ... 10 V / 0 ... 20 mA

3	Options
ESS	Electrical shaft system (with signal processing E1 only)
MLP	Mechanical lock points (not applicable with ESS option)

Dimensions, Connection, Diagram

Device dimensions



Desk cut-out

