



Operation & Installation Manual

ROT INDICATOR

NGC-516




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- Please read this manual carefully to ensure proper use before installation and use of the product.
- Please keep the manual for your future reference.

MODIFY RECORD

No	Modify by	Date	Paragraph	Version	Reason
1	Q/A	2026/01/21		01	First edition

SAFETY INSTRUCTIONS FOR THE OPERATOR

	<p>Warning Keep away from heat sources or direct sunshine. For the safety of the ship, it is prohibited to interrupt or arbitrarily the power supply to the compass during navigation.</p>
	<p>Prohibition Don't open the equipment. Don't disassemble or try to modify the equipment.</p>
	<p>Dangerous Turn off the power immediately when smoke or fire is emitted.</p>

SAFETY INSTRUCTIONS FOR THE INSTALLER




	<p>Warning Connect the earthing cord to the ship's body. Observe the compass safe distance to prevent deviation of an onboard magnetic compass.</p>
	<p>Prohibited Don't open the equipment. Only authorized or qualified personnel should install the equipment. Don't disassemble or try to modify the equipment.</p>
	<p>Dangerous Turn off the power at the power distribution board before installation.</p>

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1. PRODUCT OVERVIEW

1.1 Product Purpose

NGC-516 ROT (Rate of Turn) Indicator is an instrument designed to display the rate of turn of a vessel. It provides a real-time indication of the angular change per minute during maneuvers, measured in degrees per minute ($^{\circ}/\text{min}$). This enables the crew to precisely monitor the vessel's turning status and ensure safe navigation.

To satisfy the Rate of Turn Indicator (ROTI) requirements, the type NGC-516 ROT indicator must be used in conjunction with the sensor NGC-50X0 gyro compass.

1.2 Product Features



- **Precise Display:** Features an analog dial and a digital display screen, it clearly and accurately shows the ship's rate of turn. The resolution is $1^{\circ}/\text{min}$, covering a range of $45^{\circ}/\text{min}$ to both port and starboard.
- **Signal Compatibility:** Supports standard communication format ROT (IEC 61162-1/NMEA0183).
- **Environmental Adaptability:** Features a compact aluminum structure that meets IEC 60945 standards for internal installation.
- **Easy Installation:** The bracket supports flexible installation options (desktop or pendant mounting) and comes with a remote dimmer.

2. INSTALLATION AND SETTING

2.1 Installation

There is one data interface (IEC 61162-1/NMEA 0183) for receiving heading information. The parameters for this interface of RS422:

- baud rate: 4800bps
- 1 start bit
- 8 data bits
- no polarity check
- 1 stop bit

The data format ROT is supported. For details, refer to Appendix I.

The ROT indicator unit should be connected to one of the repeater interfaces (**P6~P9**) on the interface unit, for example, **P6**:

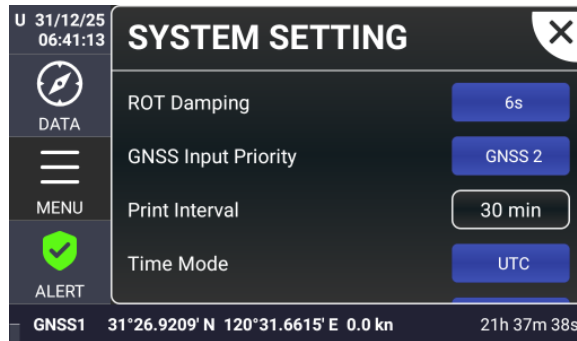
NGC-516 ROT Indicator		NGC-512 interface unit of NGC-50X0	
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RX+	32	TX+
2	RX-	31	TX-
3	DC24V+	33	24V
4	GND	34	GND

The remote dimmer should be connected to the ROT indicator.

NGC-516 ROT Indicator		NGC-516R Remote Dimmer	
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DIM-	3	DIM-
2	GND	5	GND
3	DIM+	1	DIM+

2.2 ROT Damping Setting

The ROT damping setting is performed on the NGC-50X0. Please refer to the NGC-50X0 manual - Section 3.3 [ROT Damping]. It can be set as 0s ~ 10s.



2.3 Dimming

Once the remote dimmer NGC-516R is connected, the backlight brightness can be adjusted with the buttons. You can DIM down to the lowest setting to turn off the backlight.




2.4 Calibration

After connecting to the power supply, automatic calibration will be performed. Once calibration is complete, the rate of turning will be displayed, and the pointer will point to the angle.

If there is an error after automatic calibration, you can follow the steps below to perform manual calibration by NGC-516R.

- a. Press both buttons together to enter calibration mode. The digital display will show 0, and the device will begin a self-check.
- b. Wait for the pointer to return to zero, then use the two buttons to adjust its position to 0.
- c. Press both buttons together again to confirm and exit.

3. MAINTENANCE AND REPAIR

Display	Probable Reason	Remedy
	Mistakes in the sentence	Check input sentences. Refer to Appendix I.
	Connection error	Check the connection. Refer to Section 2.1.

4. TECHNICAL SPECIFICATIONS

No.	Item	Description
1	Mechanical parameters	Resolution: 0.1°/min Reading accuracy: 0.05° IP grade: IP44
2	Electrical parameters	Voltage: 24V Power Consumption: About 3W Interface: RS422, 4800bps (IEC61162-1, 2024)
3	Ambient temperature	-20°C to + 55°C
4	Compass Safe Distance	Standard: 0.45m, Steering: 0.30m
5	Size	144 (w) x 144 (H) x 64 (D) mm Refer to the appendix drawings.
6	Weight	About 1.1kg

APPENDIX I DATA FORMAT

ROT – Rate of turn

```

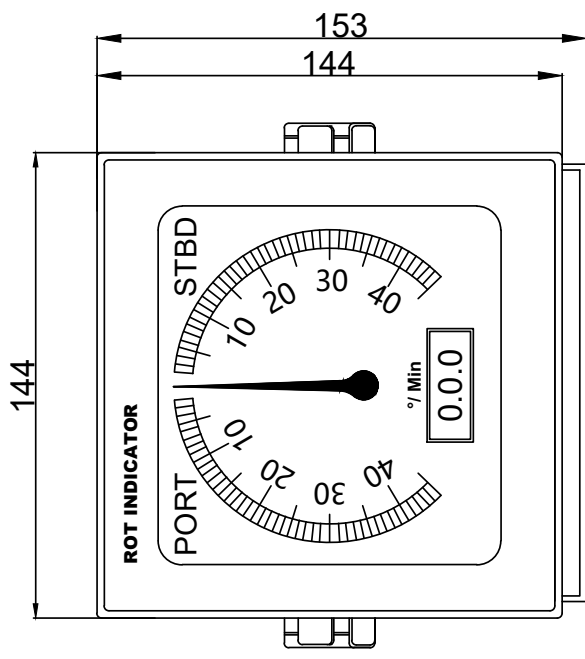
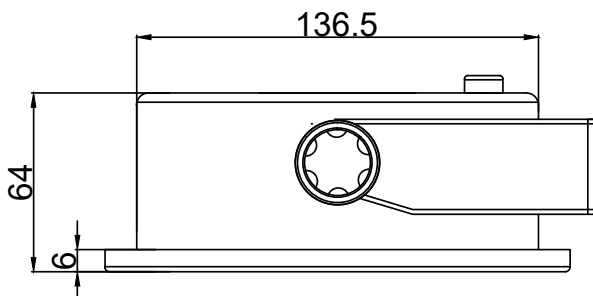
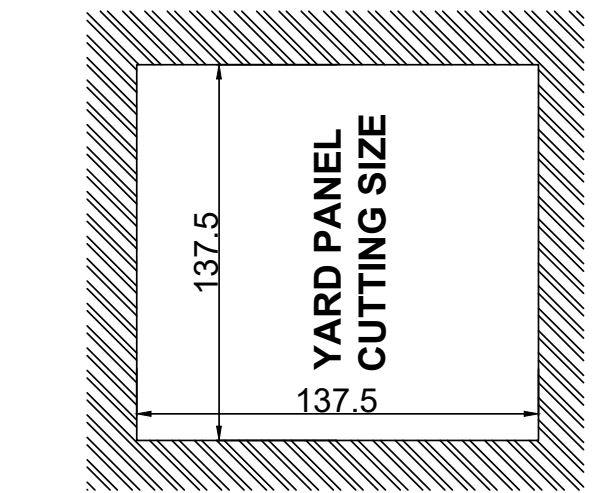
$--ROT,x.x,A*hh<CR><LF>
  |  |
  |  +-----2
+-----1
    
```

1. Rate of turn, °/min, "-" = bow turns to port
2. Status, A= data valid, V= data invalid

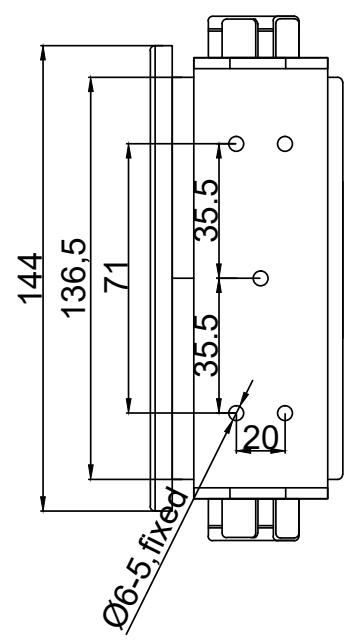
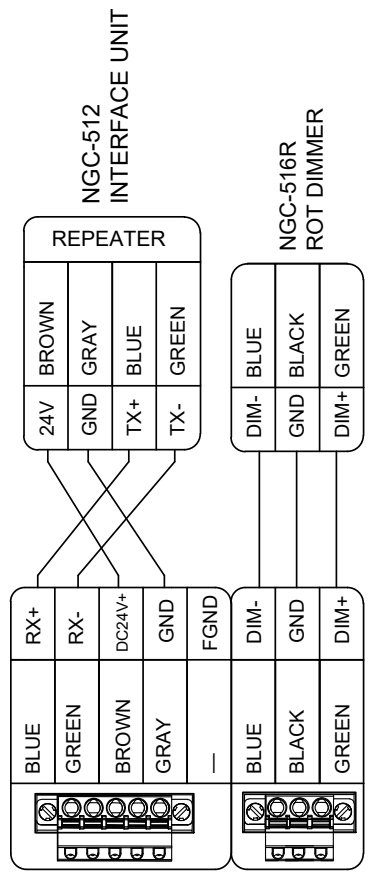
APPENDIX II SIZE DRAWINGS

Drawing No.	Description
NGC516-ID-001	NGC-516 ROT INDICATOR SIZE DRAWING
NGC516-ID-002	NGC-516R ROT DIMMER SIZE DRAWING

NO.	DATE	REVISION & DESCRIPTION	CHECKED	DRAWING



NGC-516 ROT INDICATOR



APPLICATION: NGC-516 ROT INDICATOR SIZE DRAWING

DATE	ITER	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE

APPROVAL: **NSR** NEW SUNRISE CO., LTD.

NGC516-ID-001

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