

EMRI



Rudder Angle Indication System

Rudder indication System



SAB10-230

Supply and Amplifier Box for Indicators.

Size 210 x 230 x 100 mm

Alternatives: 110V supplied



TPL511

45-0-45 Deg. 3 Face Rudder indicators for ceiling mounting. Easy to read scale, Size : Ø = 420 mm

Alternatives: 70-0-70 and built in Dimmer



RIB51X

50-0-50 Deg. Rudder indicator for panel mounting.

Easy to read scale, Size : 144x144 mm

Alternatives: Enclosures for built in.



RIF511-RG-WP

50-0-50 Deg. Rudder indicator for Bulkhead mounting IP56

Easy to read scale, Size : 192x192 mm

Alternatives: built in Dimmer
RIF511-RG-WP-D



DIM14

Dimmer potentiometer for console mounting

Alternative: DIM42 (4 gang pot)



DIM14WP

Watertight dimmer potentiometer for console mounting including 3 m cable.



RFU32

Rudder Feedback Unit. Dual Pot. Including arm A=400mm, L=440mm and 2 uniball links. Max rudder angle 2 x 50 deg.

Alternative: RFU33 Single potentiometer and other arm length.
Available Arm lengths: A=420, 450, 500, 550, Max=600



RFB36

Rudder Feedback Unit. Dual Pot. Including 45 inch belt and pulley. Max rudder angle 2 x 85 deg.

Alternative: RFU33 Single potentiometer and other BELT lengths
Available Belt Lengths (inch): 42, 45, 51, 54, 60



ENCL-BX-BW

Bracket mounted watertight enclosure for EMRI 144 x 144mm instruments. IP56

Alternative: With Built in Dimmer
ENCL-BX-BW-D



ENCL-BX-WP

Console mountable Watertight enclosure for EMRI 144 x 144 mm instruments. IP56

RUDDER INDICATION SYSTEM. 35 & 45deg RUDDERS

Rudder Indication System Design.

The EMRI Rudder Indication System described in this document is for use with rudders with a maximum rudder angle of 2x45 deg.
The system consists of a number of rudder feedback units, supply & amplifiers boxes and indicators.

Some classification societies require two independent feedback units connected to two independent amplifier units driving individual indicators, to ensure that no individual failure will lead to a loss of indication on the bridge. Other classification companies can accept a simpler design.

Zero Adjustment of feedback units

Check that the linkage arm connections is a parallelogram and in accordance with the drawings in the Arm version (RFU) of feedback units datasheets. If the Feedback unit is a Belt- version (RFB), make sure the belt is tight and in accordance with the drawings in the Belt version of feedback units datasheets.

Since the potentiometers are factory calibrated, only a zeroing remains:
Energize the RFU/RFB-potentiometer by energizing the SAB10.

Bring the Rudder to exactly AMIDSHIPS.

Check that the potentiometer (potentiometers) have correct +/-12VDC supply.

Loosen the 3 screws holding potentiometer the fixing nails and then carefully turn the potentiometer until 0.0 Volts is measured at the potentiometer SIGNAL wiper terminal. (Terminal 2 or terminal 7.) Use terminal 4 or terminal 8 as signal reference to the digital voltmeter. The digital voltmeter (DVM) reading must follow the turning smoothly and continuously, and no backlash must be observed.

Correctly zeroed, the SIGNAL voltage should be less than 25mV. (5 mV is obtainable).

When the potentiometer has been zeroed, retighten the 3 fixing nail screws firmly.

NOTE:

For systems with link arm fine 0-adjustment can be done using the Left/Right Threaded pins of the UNIBALL LINKS.



Adjustment of SAB10-110 / SAB10-230 (Mod. 2)

The feedback input of SAB10 is factory calibrated to 0.2V/deg negative stbd. The SAB shall be checked and adjusted with feedback unit and all indicators connected.

With the rudder exactly amidships check that the signal measured at TP2 with reference to TP1 is 0mV. Zero can be fine adjusted if necessary on P3.

Move the rudder to a very exact large angle (f.ex. 30 or 40 deg). Check the signal at TP2 with reference to TP1 to be $30 \times 0.125V = 3.750V$ or $40 \times 0.125V = 5.000V$. Adjust on P4 if needed.

The CH1-6 outputs for indicators are factory calibrated to 0.25V/deg.

Normally no adjustments are needed.

With the rudder exactly amidships check zero indication on all indicators. If zero adjustment of an indicator is needed measure the output at the TP's as shown below and adjust the offset to bring the pointer to exactly zero. (25mV will move the pointer 0.1deg).

Check the rudder indication for every 5 deg. If gain adjustment of an indicator is needed measure the output at the TP's as shown below and adjust gain to correct indication.

| | CH1 | CH2 | CH3 | CH4 | CH5 | CH6 |
|-------------|-----|-----|-----|------|------|------|
| Signal | TP3 | TP5 | TP7 | TP9 | TP11 | TP13 |
| Reference | TP4 | TP6 | TP8 | TP10 | TP12 | TP14 |
| Zero adjust | P5 | P7 | P9 | P11 | P13 | P15 |
| Gain adjust | P6 | P8 | P10 | P12 | P14 | P16 |