BRIDGE INSTRUMENTATION

Rudder Angle Indication System

• Complete indication system
• Custom designed scales
• Superior accuracy and flexibility
• Robust design and performance
**Rudder Angle Indication System**

**XL indicator range (panel mounting)**

Our indicators cover a wide range of applications from small control panels where space is limited, to overhead mounting where long distance reading is essential.

Special versions for front mounting and types with exchangeable scale are also available. The entire range offers optional IP66 protection from the front.

![XL indicators](image)

**BW indicator range (bulkhead mounting)**

With waterproof housing (IP66) as standard, the BW types are designed for outside mounting on bridge wings. The instrument is equally suited for indoor use on the bridge as an alternative to overhead panel instruments.

The flexible foot allows for various mounting angles, and the integrated dimmer enables local dimming control.

![BW indicators](image)

**Panorama indicator (TRI-2)**

Placed centrally on the bridge ceiling, this indicator offers readability from an angle of more than 300 degrees.

Choose black or white scale base according to your preference. The scale illumination can be dimmed by means of the built-in dimmer.

![Panorama indicator](image)

**Rudder angle transmitter package**

An angular transmitter (RT-2) with a 4 to 20mA output and a signal converter (TDG-210DG), providing galvanic separation and 10 to 0 to 10V output for optimum indicator performance.

An optional adjustable arm set for mechanical interface to RT-2 is available.

As these components are not comprised by the MED requirements, they hold GL approvals instead.
**Scale design**

The visual appearance of the indicator is almost completely defined by the scale design. Due to the neutral white scale illumination, a wide range of colours is possible. Other design elements include customer logo, font, text, figures, dividing lines etc. Please contact DEIF for scale design examples.

Choosing between black or white scale base is a matter of choosing optimum readability in either daylight or at night (illuminated). In daylight, the human eye prefers to read dark figures on a white surface. However, a white scale base will give much more light at night, possibly ‘blinding’ the crew on a dark bridge. Therefore, the black scale is recommended for central bridges, and inside bridge wings. Outside, on open bridge wings, white scales are recommended as they will be easier to read in direct sunlight.

**Indicators with black and white scale base in darkroom**

Notice the illuminated pointer versus the black pointer.

The black scale design is only transmitting light from the figures, lines and pointer. Therefore, the light from the indicator can be kept at a minimum, at the same time featuring perfect readability.

The white scale design is transmitting light on the whole scale surface and the information is visible as coloured shadows.

**Dimming illumination**

All panel indicators have a separate dimmer input for external control and all other types have both internal dimmer and input for alternative external control.

**MED requirements**

All indicators on a ship bridge indicating parameters directly or indirectly affecting the navigation of the ship must be MED approved according to the European Marine Equipment Directive. For components not requiring this approval, i.e. rudder transmitters, signal converters etc., DEIF has obtained GL approval.

**Superior linearity**

All XL/BW indicators are calibrated to class 0.5 accuracy. The accuracy is obtained by means of automated vision-based test equipment ensuring a high and homogeneous quality by eliminating the ‘human factor’.

Further documentation is available on www.deif.com
Typical application

Bridge/Wheel house
Local, group or system dimming is possible on all indicators.

Approvals
All system components are approved by classification societies (MED or/and GL).

Engine control room
Many customers use illuminated indicators on the bridge as well as in the engine control room. If a more cost efficient solution is wanted for the engine control room, DEIF offers a suitable range of non-illuminated indicators.

The rudder indication will be a part of the engine control panel.
Illumination/MED is not a requirement when the indicator is placed in the engine control room.

Steering gear room
Rudder transmitter signal is galvanically separated and converted from 4…20mA to 10…0…10V.

In some systems with very long distances from transmitter to bridge, it can be beneficial to place the signal converter on the bridge, but under normal conditions DEIF recommends signal conversion in proximity of the transmitter.

Illumination/MED is not a requirement in the steering gear room - the transmitter and converter instead hold GL approvals.

An adjustable arm set makes the mechanical interface to the rudder easy.