

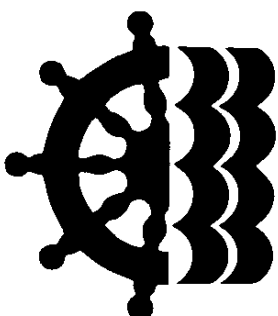
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# RVL

## Rudder Angle Indicator

### TECHNICAL SPECIFICATIONS

Vers. 1.1



### 1.1.5 A brief description

RVL is a simple Rudder indicator for indicating rudder angle on ships. RVL should be connected to a Scan-steering FBP1 or FBP2 (Rudder Feedback Unit).

RVL features a gain trim-potentiometer inside to adjust the range of the indicator. It also has a knob on the front, to adjust the LED light of the scale.

## 2. Installation

### 2.1.1 General

This section describes how to proper install RVL. In case of mistakes, careless installation or operation, Scan-Steering obviously cannot be held responsible for that.

### 2.1.2 Unpacking and handling

Before starting the installation, care should be taken when unpacking and handling the equipment. We recommend to visually inspect the equipment and look for any damage or lost parts during shipment. Please refer to the packing list or invoice.

By installation in new buildings, the temperature and humidity are often not controlled, and there may be dust and other objects that could be harmful to the device.

*Please pay close attention to the technical specification section later in this manual, for information such as temperature, moisture etc.!*



*Pay special attention when working inside devices with circuit-boards, as these can be very fragile and even sensitive to ESD!*

### 2.1.3 Mounting

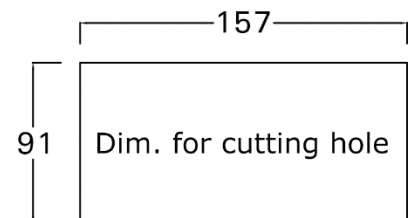
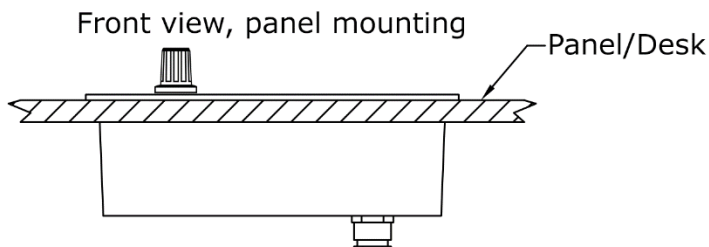
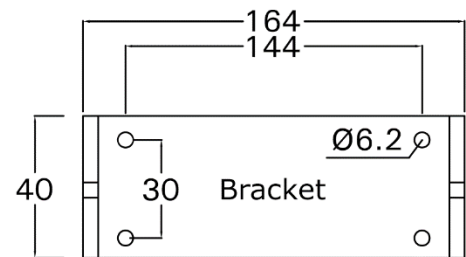
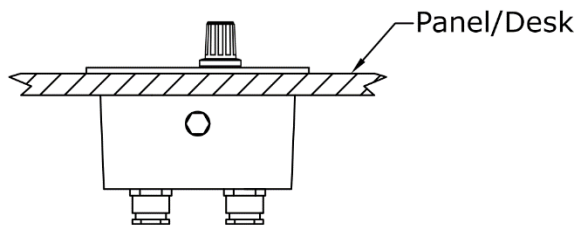
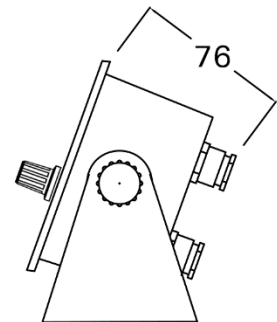
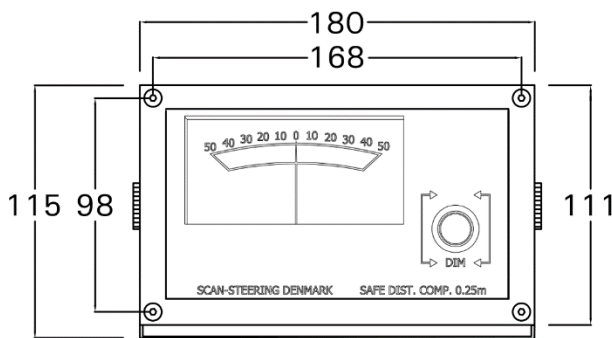
RVL enclosure is for flush mounting. The mounting brackets are intended for vertical installation as well as horizontal mounting can be ordered (order number BULKM11), but we recommend mounting RVL as flush mount in bridge table or on side of bridge table, with the cable glands facing down.

*Screws, bolts and nuts for mounting, are not included!*

*Mounting area must comply with the enclosure protection class.*

*Please see technical specification section later in this manual, for information such as dimensional drawing with mounting holes etc., as well as enclosure protection class.*

### 2.1.4 Mechanical drawing



**2.1.5 Cabling, wiring & terminal instruction**

Follow below listed points, to achieve best installation results, easy commissioning and possible later, additional installation as well as possible future repairs:

1. Use only type approved and shielded cables.
2. Use only cables with a specified number of wires and specified wire cross section, so the cables can fit the cable-glands.
3. Cable in tightened cable-glands, must be firmly fixed and watertight.
4. Do not use any device's terminals as junction points, by installing two or more wires in same terminal.
5. Use twisted pair cable if specified (normally used in data-signal circuits).
6. Cables should always be labelled with designator as specified by system wire-diagram.
7. Wires should always be labelled with wire markers, showing wire number or letter as specified by system wire-diagram.
8. Secure cables and wires with cable-ties. Wires will eventually break if they are continuously flexing.
9. Avoid to route cables and wires near sharp edges etc.
10. If two or more systems are mounted, route cables in at least two routes.
11. Use only proper tools.

## Technical specifications

### 2.1.7 RVL Data

**Temperature:**

Class-C -25 to +55C (not installed in direct sunlight).

**Humidity:**

Class-A, relative humidity up to 96% at all relevant temperatures, no condensation.

**Voltage supply:**

This unit is supplied by EL600 or external supply.

**Input Signal:**

0-8V or 0-24V

**Main fuse:**

200mA polyfuse.

**Power consumption:**

Approximate 50-200mA.

**Enclosure material:**

Black Coated Alu-box.

**Enclosure protection:**

IP54.

**Mounting:**

Flush Mount or Bracket mount (order number BULKM11).

**Vibrations:**

Handles normal conditions on board ships.

**Start-up time:**

None.

**Weight:**

700g.

**Compass safety distance:**

More than 0.5m.

**EMC protection:**

EN60945: 1996-11.

### 2.1.8 Cable-glands

Scan-Steering products are fitted with high quality cable-glands:

RVL is fitted with:

2pcs. PG11

Cable-gland data:

|                   |   |                      |
|-------------------|---|----------------------|
| Body material     | = | Brass, nickel plated |
| Cap material      | = | Brass, nickel plated |
| Clamping          | = | Polyamide 6          |
| Sealing           | = | Neoprene             |
| O-ring            | = | NBR                  |
| Protection class  | = | IP68                 |
| Temperature range | = | -30°C to +80°C       |

Clamping range (cable diameter):

Tool (ring spanner):

|        |   |            |      |
|--------|---|------------|------|
| PG9    | = | 4 to 8mm   | 17mm |
| PG11   | = | 5 to 10mm  | 20mm |
| PG13.5 | = | 6 to 12mm  | 22mm |
| PG16   | = | 10 to 14mm | 24mm |
| PG21   | = | 13 to 18mm | 30mm |
| PG29   | = | 18 to 25mm | 40mm |
| PG36   | = | 22 to 32mm | 50mm |

### 2.1.9 Cable ferrules

(Not included!)

Wire strip length = 11mm

Wire cross section = 0.14mm<sup>2</sup> to 16mm<sup>2</sup>, depending on type  
(refer to colour code)



Scan-Steering products mostly use these HI-end PCB-terminals:

### 2.1.10 Terminal, Wieland

PCB terminal blocks with rising clamp:

|                         |   |                                                         |
|-------------------------|---|---------------------------------------------------------|
| Wire strip length       | = | 6.5mm (11mm if cable-ferrules are used)                 |
| Wire min. cross section | = | 0.14mm <sup>2</sup>                                     |
| Wire max. cross section | = | 2.5mm <sup>2</sup> (4mm <sup>2</sup> solid • 22-12 AWG) |
| Screw material          | = | Steel, Sn zinc plated                                   |
| Tightening torque max.  | = | 0.5Nm (tightening clockwise)                            |
| Insulation material     | = | Thermoplastic (grey)                                    |
| Contact base material   | = | E-Cu Copper, Sn zinc plated                             |
| Approval                | = | UR / CSA / ROHS                                         |

### 2.1.11 Terminal, GST865/GSK865

Pluggable PCB connector:

|                         |   |                                                         |
|-------------------------|---|---------------------------------------------------------|
| Wire strip length       | = | 6.5mm (11mm if cable-ferrules are used)                 |
| Wire min. cross section | = | 0.14mm <sup>2</sup>                                     |
| Wire max. cross section | = | 2.5mm <sup>2</sup> (4mm <sup>2</sup> solid • 22-12 AWG) |
| Insulation material     | = | Thermoplastic PBT, GV 30 (blue)                         |
| Screw material          | = | Steel, Sn zinc plated                                   |
| Tightening torque max.  | = | 0.5Nm (tightening clockwise)                            |
| Contact base material   | = | Brass, nickel plated                                    |
| Spring material         | = | tin bronze tinned                                       |
| Approval                | = | UL / CSA / ROHS                                         |

### 2.1.12 Terminal, Wago 236

PCB terminal block strips with cage-clamp spring, series 236:

|                         |   |                                                                         |
|-------------------------|---|-------------------------------------------------------------------------|
| Wire strip length       | = | 5-6mm (11mm if cable-ferrules are used)                                 |
| Wire min. cross section | = | 0.08mm <sup>2</sup>                                                     |
| Wire max. cross section | = | 2.5mm <sup>2</sup> (2.5mm <sup>2</sup> solid • 28-12 AWG)               |
| Spring material         | = | Chrome nickel spring steel, Sn zinc plated                              |
| Tightening torque       | = | Automatic                                                               |
| Insulation material     | = | Polyamide PA66 (blue, green, grey, orange)                              |
| Contact base material   | = | Electrolytic copper, Sn zinc plated                                     |
| Approval                | = | UR / CSA / CCA / BV / DNV GL / ROHS / KEMA / NEMKO / RMR / SEMKO / ROHS |

### 2.1.13 Terminal tools



1. Screwdriver, slotted type, 3.5 x 0.6 mm
2. Wago special tool (mini) for type 236
3. Wago special tool for type 236

*Special tools are not included but can be ordered separately.*

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