

SKIPPER

Digital Speed and Distance Repeater

IR300

Operation and Installation Manual



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1. Overview

The SKIPPER IR300 is a dual axis remote speed indicator for NMEA signals. It is designed for use with SKIPPER DL850 and SKIPPER EML224. It may also be used with speed logs from other manufacturers, when these have an NMEA 0183 output. It repeats information about transversal and longitudinal ship speed. The operator may select between bottom and water related speed when these are provided from the log. If both fore and aft transversal speed is available (docking mode), the IR300 will also display this information.

SKIPPER IR300 indicates trip and total distance measured by the log. If aft speed is available, it can be displayed by pressing the Trip/Total button until the indicator LEDs are both off. SKIPPER IR300 indicates trip and total distance measured by the speed log.

Brightness can be adjusted from:

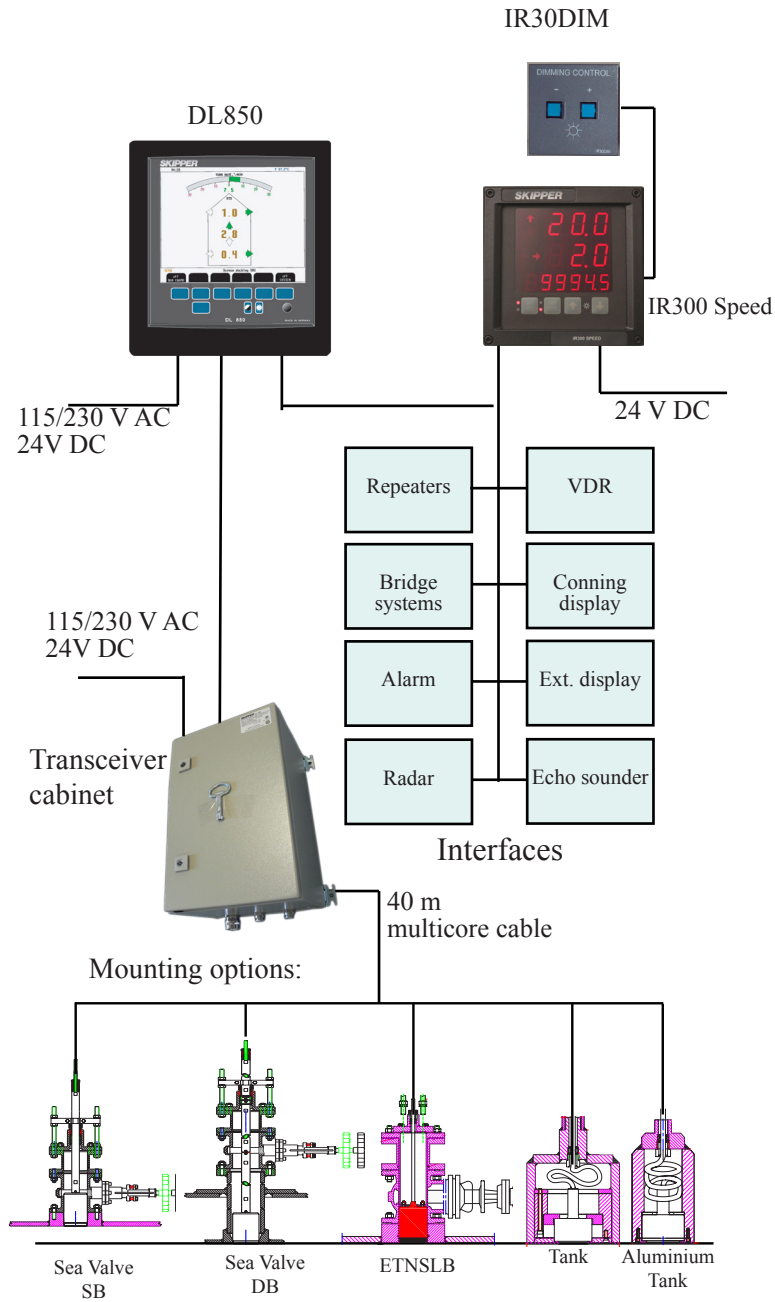
- The front panel.
- A remote controller (IR30DIM).
- NMEA sentence DDC (Display Dimming Control).

Note: The display can be deactivated (system off) by pressing the up and down buttons simultaneously. The display will be reactivated when any button is pressed.

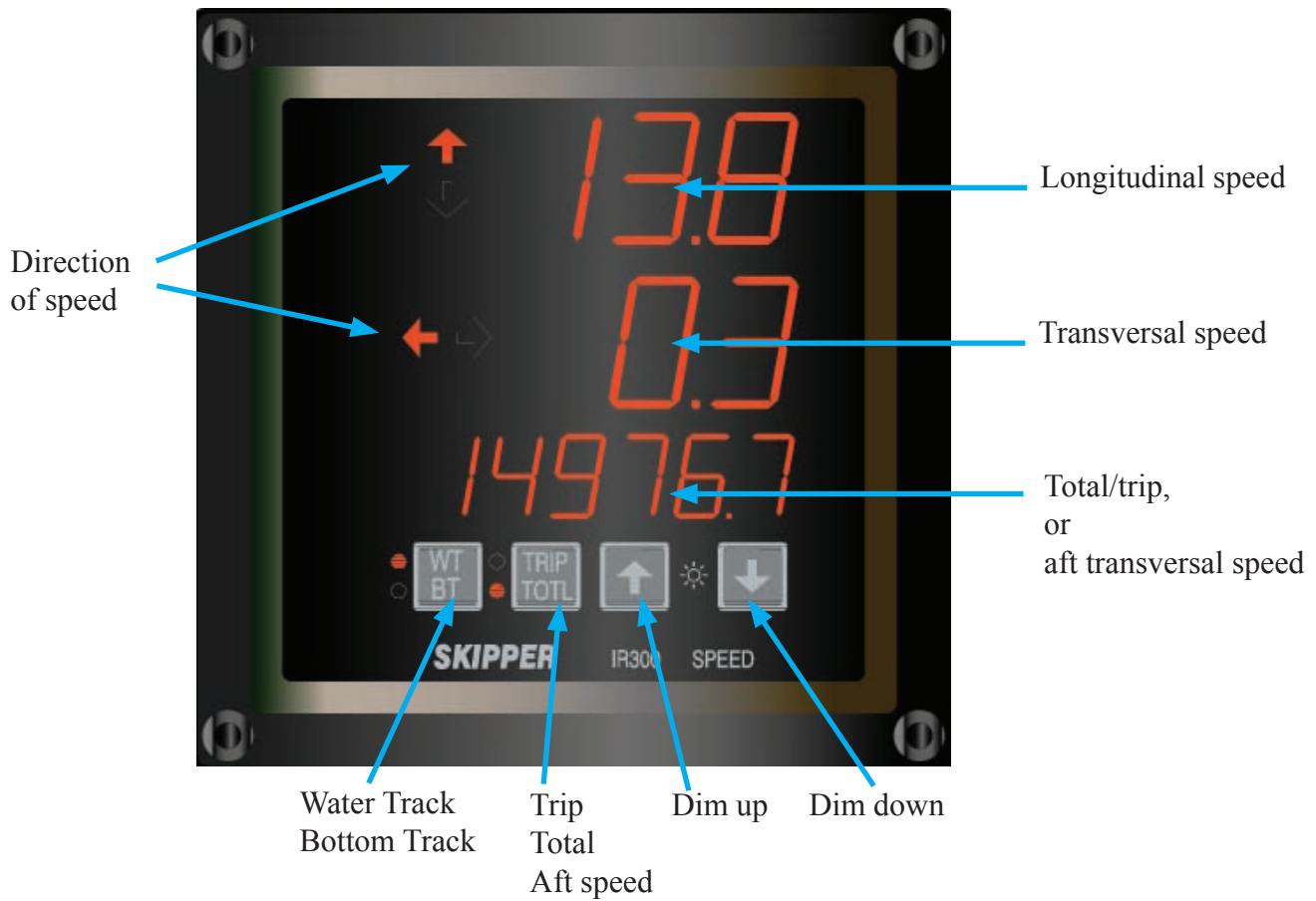
Features

- Speed indicator.
- Trip counter.
- Distance counter.
- One, two or three axis (Docking) indication.
- Bracket or panel mounting.

2. System Overview



3. Buttons and Display



| Name | Description |
|--------------------|--|
| WT (Water Track) | Speed through water (Longitudinal, transversal, transversal aft) |
| BT (Bottom Track) | Speed over ground. (Longitudinal, transversal, transversal aft) |
| Trip Total and Aft | Indication on 3rd line. |
| ↑ (Dim up) | 8 levels of dimming up. |
| ↓ (Dim down) | 8 levels of dimming down. |
| Longitudinal speed | Speed in the fore-aft direction of the vessel. |
| Transversal speed | Speed in the port-starboard direction of the vessel. |
| Total distance | The distance through water, daily trip value in NM or the transversal aft speed in kn. |
| Direction | ↑ : Fore |
| | ↓ : Aft |
| | ←, - Port |
| | →, - Starboard |

4. Operation

1. To switch the unit on, press any key, to switch off, press both up and down keys at the same time.
2. To adjust brightness of LEDs, press up/down arrows to find suitable setting. (**Note***)
3. The IR300 has been adapted to show the Aft speed when available. This function can be activated by pressing the trip total button until the indicator LED “Trip/Totl” does not light.
4. The display will primarily show values from the VBW NMEA sentence. If this is not available, the display will show VHW or VTG from other sentences. In these cases, there will be no value in the transversal speed.
5. If a single axis speed log is attached, The system will detect this if the transversal field contains no information but the signal is valid. In this case the longitudinal data is shown with direction. If VHW is used no direction is shown. If a VHW is used but shows ‘-’ longitudinal value, a backwards arrow will show.

Note*: Remote Dimming.

- Repeaters can be remotely dimmed by:

- Using external buttons (IR30DIM) connected to the DIM UP, DIM DN and DIMKEY of each repeater.
- Pressing up and down arrows on one repeater, when DIM lines are connected in parallel.
- Using NMEA command DDC as described in section 5.

5. NMEA Messages

Accepted messages (received and transmitted) (NMEA 0183), talker identifier is not processed:

| Name | Description | Example | Comments |
|------|-------------------------------------|--|--|
| VBW | Dual Ground/Water Speed. | \$--VBW,x.x,x.x,A,x.x,x.x,A,x.x,A,x.xA*hh<CR><LF> | |
| VTG | Course Over Ground and Ground speed | \$--VTG,,,,,x.x,N,,, *hh<CR><LF> | Only speed over ground in knots is accepted. |
| VHW | Water speed and heading | \$--VHW,,,,,x.x,N,,, *hh<CR><LF> | Only speed in knots is accepted. |
| VLW | Distance traveled through the water | \$--VLW,x.x,N,x.x,N*hh<CR><LF> \$--VLW,x.x,N,x.x,N,x.x,N,x.x,N*hh | Trip and total through water in NM. Trip and total through water (and over ground, not displayed) in NM. |
| DDC | Display Dimming Control | \$--DDC,a,xx,*hh<CR><LF> | Brightness percentage has priority over display dimming preset. |

Note: Baud rate is fixed to 4800 baud.

Speed vectors directions (Fore/Aft, Port/Starboard) are displayed by arrow indicators, and no sign is presented in the digital value.

6. Diagnostic information

- If IR300 does not receive any signal from the external source for more than 5 seconds, “Error” (“Err”) message is indicated on the LEDs. This may happen, for example if an external talker is not connected or connection polarity is not correct.
- If input messages do not contain sentences required for indication of selected data, “-” (minus) is indicated on the corresponding LEDs. Example: if there is no VLW message available on the input, IR300 will indicate “-----” instead of distance counter.
- If fields in the received message is empty (not valid data), dots are indicated on the corresponding LEDs. Example: if speed over ground fields are empty in VTG or VBW sentences and BT mode is selected on IR300, “...” will be indicated instead of speed value.
- If input message format is incorrect, e.g. the baud rate is incorrect, noise or incorrect polarity on the communications line, this will result in “-.-.-” in all positions.

7. Environmental according to IEC60945

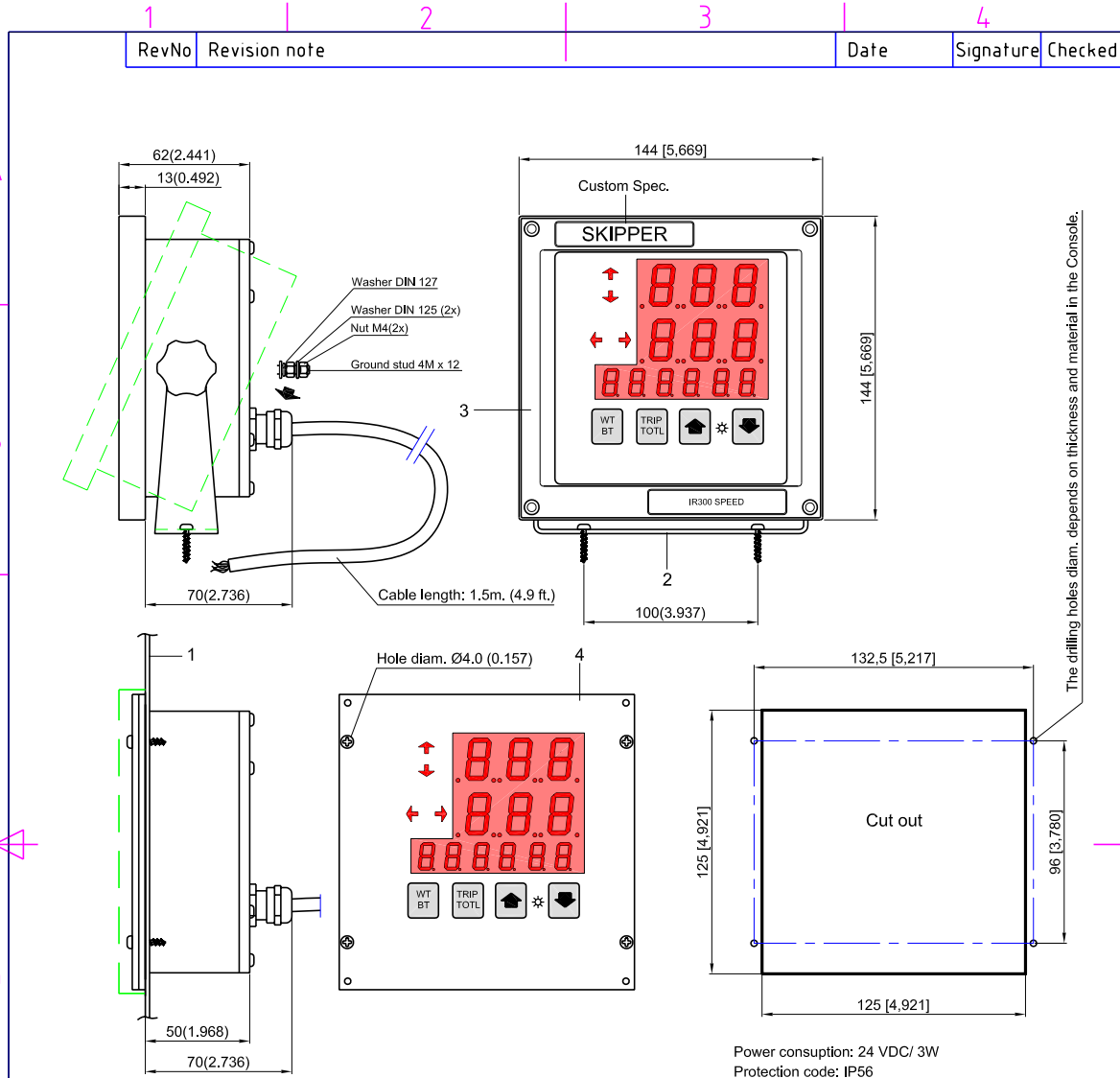
| | |
|-----------------------|--|
| Power supply | DC: 10 - 32 V DC. |
| Power consumption | 3 W at 24 V. |
| Display | 2 lines with 7 segments 20 x 11 mm. 1 line with 7 segments 20 x 11 mm. |
| Display outputs | Speed over ground (bottom track). <ul style="list-style-type: none"> • Longitudinal. • Transversal fore. • Transversal aft (docking). Speed through water (water track). <ul style="list-style-type: none"> • Longitudinal. • Transversal fore. • Transversal aft (docking). Distance travelled through water. <ul style="list-style-type: none"> • Trip • Total • Daily trip |
| Mounting dimensions | 124 x 124 mm. Bracket or panel mounting. |
| Front plate | 144 x 144 mm to DIN standard. |
| Depth | 59 mm. |
| Weight cabinet | 1 kg. |
| Protection | IP 56. |
| Resolution | 0.1 kn. |
| Outputs | 1 x NMEA 0183 (IEC 61162-1:2007(E)). (Fixed to 4800 baud). |
| Inputs | NMEA 0183 (IEC 61162-1:2007(E)). (Fixed to 4800 baud). Remote dimmer input. |
| Classification | Follows standards as required for use with MED B equipment (IEC 60945). |
| Service | Available in most major harbours, world-wide through extensive dealer network. |
| Operating temperature | -15 - 55 degrees C. To increase serviceability and lifetime, we suggest the working temperature to be held at 0 - 40 degrees C |
| Storage temperature | -20 - 70 degrees C. |
| Humidity | 10 - 90 % relative, no condensation. |

Note: The IR300 is classed IP 56 and may be mounted externally, but should be covered when not in use.

8. Service

- All service requests should be made to the local SKIPPER representative.
- Adjustments and repairs should only be performed by qualified service engineers, and unqualified repair attempts will void the warranty.

9. IR300 Connections



- Console mounting order:
- Make a cut out in the Console (1) 125 x 125 (4.921 x 4.921)
 - Remove the mounting bracket (2)
 - Unscrew the 4 screws in the frame (3) (one in each corner) and remove the frame.
 - Put the Monitor(4) in the cut out and mark the 4 centerpoints for the Drill in the Console(1)
(The drilling holes diam. depends on thickness and material in the Console.)
 - Use Panh. screws DIN 7981 Diam. 2.9 (0.114). Length depends on the Console thickness.
 - Finally put on the frame (3). Make sure that the screwheads correspond with the cut outs in the frame.

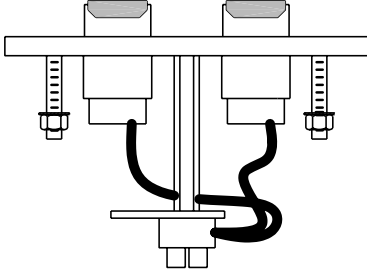
Power consumption: 24 VDC/ 3W
Protection code: IP56

| WIRING CONNECTING | | | |
|-------------------------|--------------|--------|--------|
| COLOUR | SIGNAL | COLOUR | SIGNAL |
| RED | + 24V | GREEN | DIM+ |
| BLACK | - 24V | YELLOW | DIM- |
| BLUE | NMEA IN+ | GREY | DIMKEY |
| WHITE | NMEA IN/OUT- | | |
| ORANGE | NMEA OUT+ | | |
| GROUND WITH GROUND STUD | | | |

| | | | | | | |
|------------------------|------------------|--|-------------------------|----------------|-----------------------|--------------|
| Itemref | Quantity | Title/Name, designation, material, dimension etc | | | Article No./Reference | |
| Designed by AM | Checked by VF | Approved by - date VF-020815 | File name IR300speed | Date 020815 | Scale 1:1 | |
| SKIPPER Electronics AS | | | IR300 SPEED INDICATOR | | | |
| | | | TB3012-01 | | Edition 0 | Sheet 1/1 |

10. IR30DIM


| | | | | |
|-------|---------------|---|---|-----------|
| 1 | | 2 | 3 | 4 |
| RevNo | Revision note | | | Date |
| | | | | Signature |
| | | | | Checked |



96 [3,780]

DIMMING CONTROL

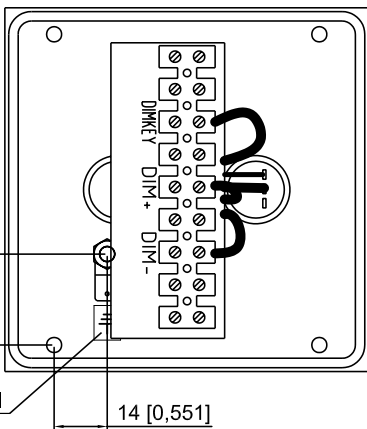
- +



IR30DIM

96 [3,780]

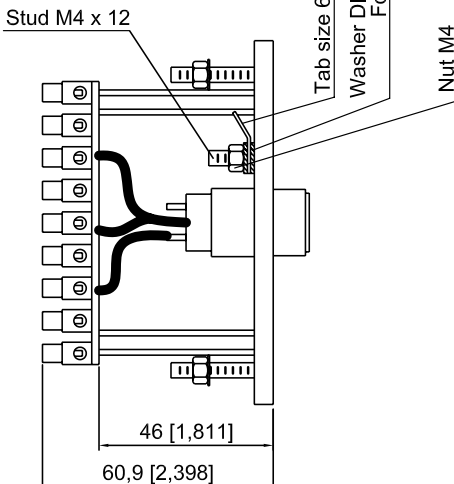
Turned 180°



24 [0,945]

Grounding Label

14 [0,551]



Stud M4 x 12

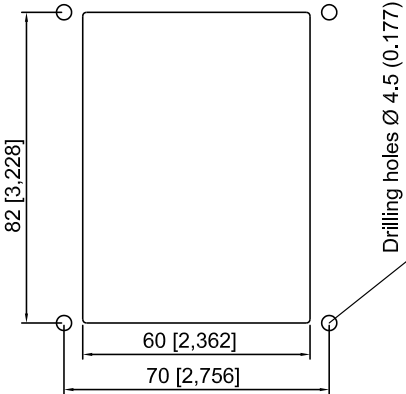
Tab size 6.3 x 0.8

Washer DIN 6797 (2x)
Form A

Nut M4

46 [1,811]

60,9 [2,398]



82 [3,228]

60 [2,362]

70 [2,756]

Drilling holes Ø 4.5 (0.177)

| Itemref | Quantity | Title/Name, designation, material, dimension etc | Article No./Reference |
|------------------------|------------------|--|-----------------------|
| Designed by AM | Checked by VF | Approved by - date VF-020815 | File name TB3010 |
| | | | Date 020815 |
| | | | Scale 1:1 |
| SKIPPER Electronics AS | | IR30DIM | |
| | | TB3010 | Edition 0 |
| | | | Sheet 1/1 |