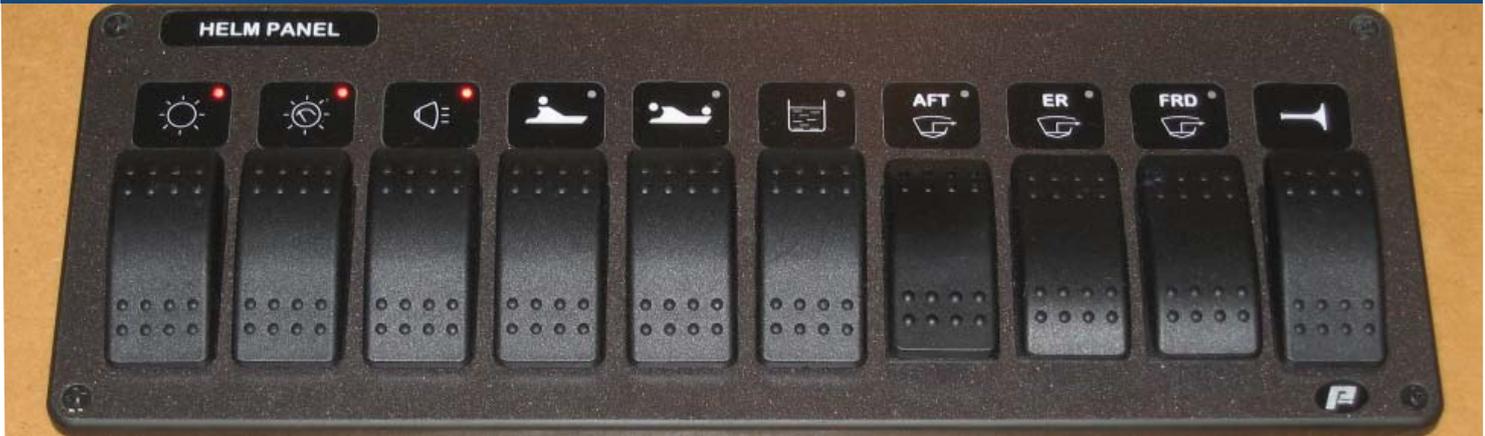


# RA Series Rocker Switch Panels



## Versatile rocker switch panels that look great, feel good and keep working

The RA series rocker switch panels have found their way onto luxury boat dash boards and industrial control panels. They are equally at home in fly bridge and open cockpit applications.

The special electrographite panel material is resistant to smudging, scratching, corrosion, UV light, glare, reflection, moisture, fire and just about anything that you can throw at it. This means that the panel will be looking like new for the life of the application. But don't let the good looks fool you. The panel range has been engineered with functionality and reliability in mind.

- ▶ Large labels with blue LED backlighting - choose from a selection of graphic symbols or specify text labels
- ▶ Dual intensity LED circuit-on indicator embedded in label has high brightness for daylight applications and dimmable for night
- ▶ On-board replaceable fuses for each switch position
- ▶ Full range of sizes from 1-way to 16-way
- ▶ Industry proven Carlingswitch Contura<sup>®</sup> waterproof<sup>1</sup> rocker switches are large enough to be operated with a gloved hand
- ▶ Surface mount design uses a simple rectangular cutout that allows for an easy installation
- ▶ Wiring harness for production applications - consult factory
- ▶ Support available for EmpirBus<sup>2</sup> applications - consult factory
- ▶ Also available as embedded switches in custom dash or helm panels (see photos at right) - consult factory



The panels are custom ordered with factory configured switch mechanisms and labels. Panelec can typically ship a single panel order within 5 working days from completion of order confirmation. Quantity orders will take extra time dependent on volume.

| Specifications           |                     |
|--------------------------|---------------------|
| Fuse Holder Rating       | 15 Amperes maximum  |
| Voltage Rating           | 32 Volts DC maximum |
| Individual Switch Rating | 15 Amperes maximum  |
| Panel Cumulative Rating  | 50 Amperes maximum  |

1 Panel must be sealed from the front and panel back to be protected from moisture.

2 CAN bus network power supply system - see <http://www.empirbus.com>

## Part Number System

Panel part numbers have two sections. The first section designates the panel style. The second section is a 4 digit specification number “nnnn” which defines the manner in which the panel is loaded with individual switches and labels. Table 1 lists the available panel styles. Table 2 lists the selection of switch mechanisms. Standard label legends are shown on the back page. Each legend has a label reference number. Custom text labels can be made within the space constraints of the label text window (18mm wide x 12mm high).

Example: RA108-0001 designates an 8 position panel dimensioned 244 wide x 108.2 high. The “0001” is custom to this particular panel.

| Panel Style | Switch Positions | Width mm | Height mm |
|-------------|------------------|----------|-----------|
| RA101       | 1                | 48       | 108.2     |
| RA102       | 2                | 76       | 108.2     |
| RA103       | 3                | 104      | 108.2     |
| RA104       | 4                | 132      | 108.2     |
| RA106       | 6                | 188      | 108.2     |
| RA108       | 8                | 244      | 108.2     |
| RA110       | 10               | 300      | 108.2     |
| RA110A      | 8                | 300      | 108.2     |
| RA112       | 12               | 356      | 108.2     |
| RA116       | 16               | 468      | 108.2     |

**Table 1: Primary Part Numbers**

## Order Confirmation Process

A panel specification is required to build the required panel for the particular application. The information is documented as shown in Table 3.

1. Select the panel style number from Table 1 above.
2. Create the master panel label. This label is located at the top left of the panel. It may be specified as blank.
3. For each switch position select the label, switch mechanism number and fuse value. If the label is a graphic symbol then insert the corresponding label number. Otherwise print the label text to be used. The switch mechanism is shown in Table 2. The fuse values can be either blank “-”, 5A, 10A, or 15A.

Although Table 2 shows a comprehensive list of switch mechanisms, only the highlighted items are normally stocked in volume. An extended lead time may be required for other mechanisms.

A photocopy of the table can be used or optionally send an email with the required information. A \$50 nonrefundable processing fee must accompany each order request. A single \$50 credit will be applied to the final panel order.

Once the order is received, the panel will be laid out in accordance to the data provided in Table 3. A Panelec part number will be assigned and a panel layout in Adobe Acrobat format will be transmitted for approval along with a formal quotation and delivery schedule. Any changes may attract an additional \$50 processing fee. Balance of payment will be required before panel construction can commence. Because of the custom panel nature, all orders are final.

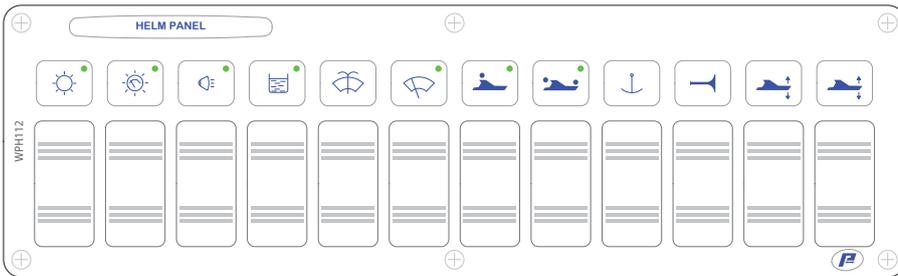
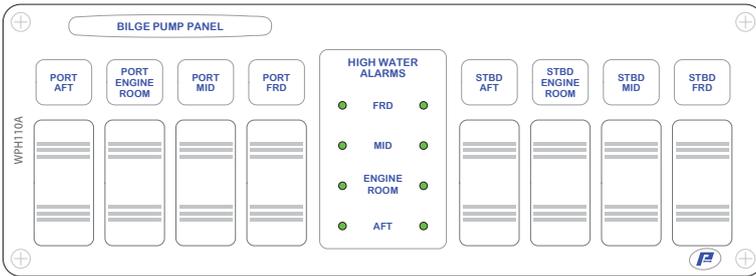
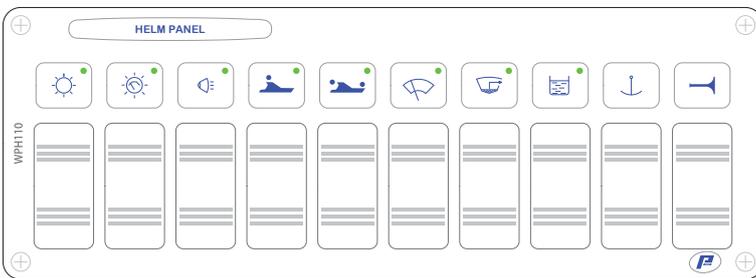
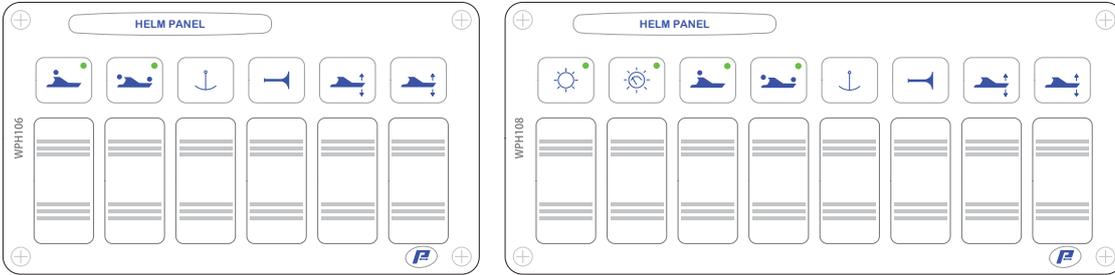
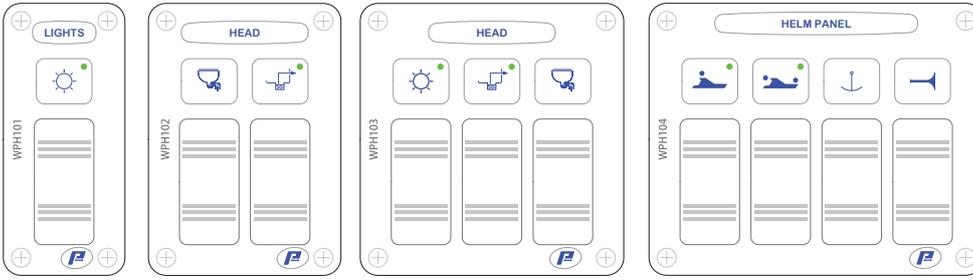
| Switch | Mechanism     | Pole |
|--------|---------------|------|
| 1      | ON-OFF        | 1    |
| 2      | ON-OFF        | 2    |
| 3      | (ON)-OFF      | 1    |
| 4      | (ON)-OFF      | 2    |
| 5      | ON-ON         | 1    |
| 6      | ON-ON         | 2    |
| 7      | (ON)-ON       | 1    |
| 8      | (ON)-ON       | 2    |
| 9      | ON-OFF-ON     | 1    |
| 10     | ON-OFF-ON     | 2    |
| 11     | (ON)-OFF-(ON) | 1    |
| 12     | (ON)-OFF-(ON) | 2    |
| 13     | OFF-ON-ON     | 1    |
| 14     | OFF-ON-ON     | 2    |

**Table 2: Switch Mechanism**

| Panel Style |       |        |      |
|-------------|-------|--------|------|
| Panel Label |       |        |      |
| Pos         | Label | Switch | Fuse |
| 1           |       |        |      |
| 2           |       |        |      |
| 3           |       |        |      |
| 4           |       |        |      |
| 5           |       |        |      |
| 6           |       |        |      |
| 7           |       |        |      |
| 8           |       |        |      |
| 9           |       |        |      |
| 10          |       |        |      |
| 11          |       |        |      |
| 12          |       |        |      |
| 13          |       |        |      |
| 14          |       |        |      |
| 15          |       |        |      |
| 16          |       |        |      |

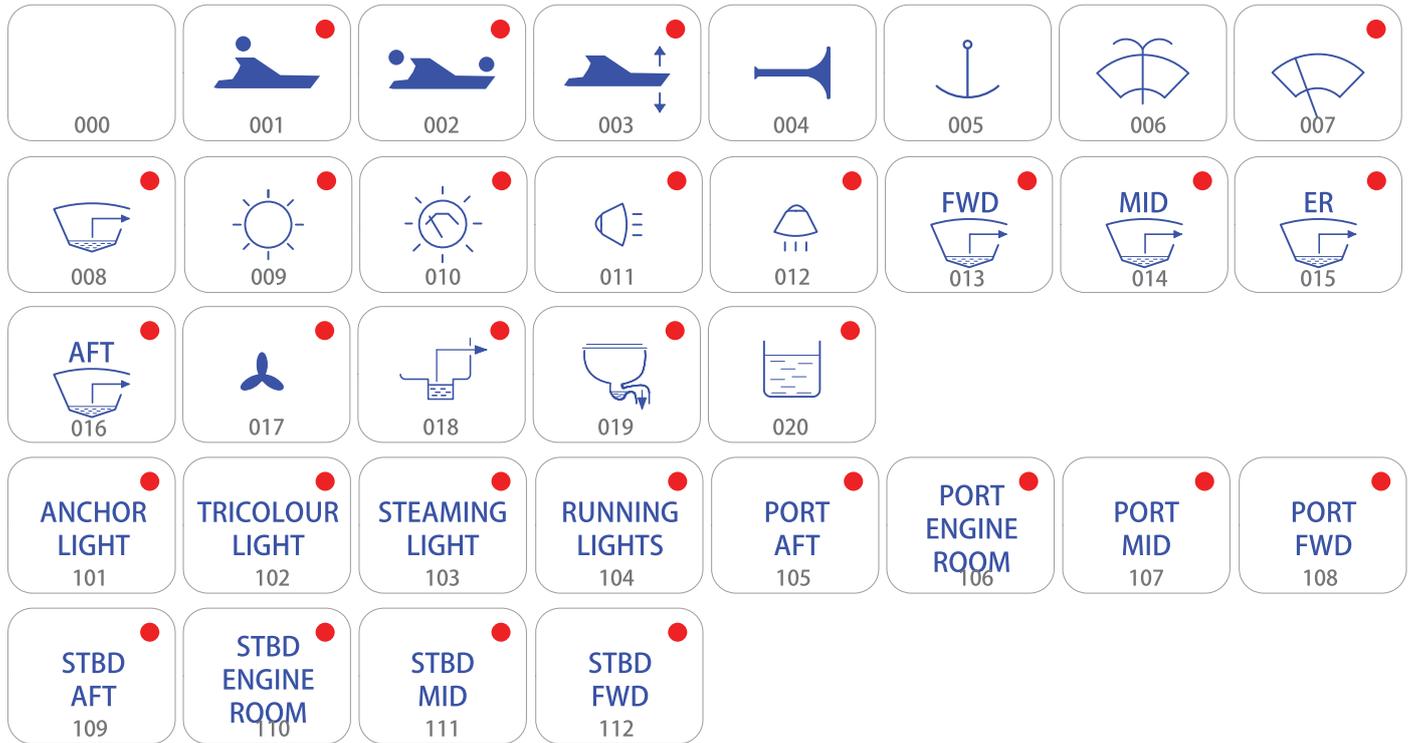
**Table 3: Panel Specification**

# Panel Layouts



RA110A has an embedded high water alarm panel

## Label legends (actual size)

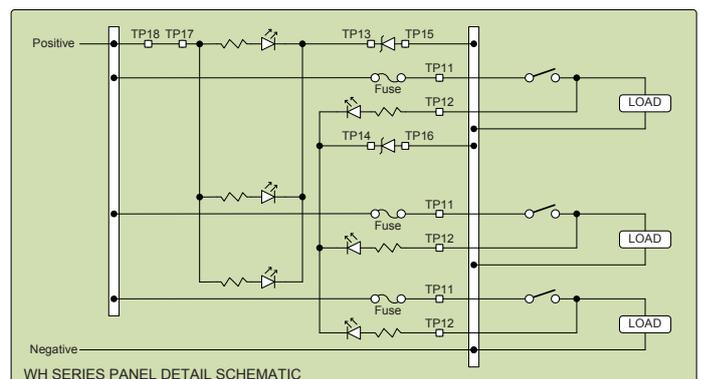


## Panel Schematic Description

The panel incorporates a series of rocker switches that each feed power to their respective loads. Each rocker switch has an associated fuse, backlit label and an LED to indicate an “on” position (except for momentary switch mechanisms which do not usually require an LED indicator).

A PCB (printed circuit board) mounted on the back of the panel facilitates power distribution, switch fusing, switch LED indication and label backlighting. Positive power is connected to a bus bar which is common to a group of fuses. Each fuse connects power via a wire to each switch common terminal. The ground return connects back to a ground bus bar on the panel or alternatively to an off-board bus bar.

The backlight can be left permanently on by bridging TP17 to TP18 at one station. Alternatively the backlight can be turned on or off by dedicating a switch to a wire connecting to TP17. The backlight intensity can be altered by bridging TP13 and TP14 with an appropriate Zener diode.



A wire from the load side of each switch connects back to the PCB to provide power to its respective LED indicator. In the same manner as the backlight system, an appropriate Zener diode can be used between TP14 and TP16 to adjust the LED intensity.

An interesting option is to bypass the Zener with a switch on another TP14/TP16 pair to provide a high brightness daytime intensity position.