

Selecting a Switch for your Marine Application

There are three important features to consider when selecting a switch:

- Contacts (e.g., single pole, double throw)
- Ratings (maximum voltage and current)
- Method of Operation (toggle, slide, key etc.)

Switch Contacts: Several terms are used to describe switch contacts:

- Pole: number of switch contact sets.
- Throw: number of conducting positions, single or double.
- Way: Number of conducting positions, three or more.
- Momentary: switch returns to its normal position when released.
- Open: off position, contacts not conducting.
- Closed: on position, contacts conducting, there may be several on positions.

For example: the simplest on-off switch has one set of contacts (single pole) and one switching position which conducts (single throw). The switch mechanism has two positions: open (off) and closed (on), but it is called 'single throw' because only one position conducts.

Switch Contact Ratings: Switch contacts are rated with a maximum voltage and current, and there may be different ratings for AC and DC. The AC values are higher because the current falls to zero many times each second and an arc is less likely to form across the switch contacts.

For low voltage electronics projects the voltage rating will not matter, but you may need to check the current rating. The maximum current is less for inductive loads (coils and motors) because they cause more sparking at the contacts when switched off.

Standard Switch Types

ON-OFF: Single Pole, Single Throw = SPST

- A simple on-off switch.
- This type can be used to switch the power supply to a circuit.
- When used with mains electricity this type of switch must be in the live wire, but it is better to use a DPST switch to isolate both live and neutral.

(ON)-OFF: Push-to-make = SPST Momentary

- A push-to-make switch returns to its normally open (off) position when you release the button, this is shown by the brackets around ON
- This is the standard doorbell switch.

ON-(OFF): Push-to-break = SPST Momentary

- A push-to-break switch returns to its normally closed (on) position when you release the button.

ON-ON: Single Pole, Double Throw = SPDT

- This switch can be on in both positions, switching on a separate device in each case.
- It is often called a changeover switch.
 - For example, a SPDT switch can be used to switch on a red lamp in one position and a green lamp in the other position.
- A SPDT toggle switch may be used as a simple on-off switch by connecting to COM and one of the A or B terminals
- A and B are interchangeable, so switches are usually not labelled.

ON-OFF-ON: SPDT Centre Off

- A special version of the standard SPDT switch.
- It has a third switching position in the center which is off.
- Momentary (ON)-OFF-(ON) versions are also available where the switch returns to the central off position when released.

Dual ON-OFF: Double Pole, Single Throw = DPST

- A pair of on-off switches which operate together
- A DPST switch is often used to switch mains electricity because it can isolate both the live and neutral connections.

Dual ON-ON: Double Pole, Double Throw = DPDT

- A pair of on-on switches which operate together
- A DPDT switch can be wired up as a reversing switch for a motor

ON-OFF-ON: DPDT Center Off

- A special version of the standard SPDT switch.
- It has a third switching position in the center, which is off.
- This can be very useful for motor control because you have forward, off and reverse positions.
- Momentary (ON)-OFF-(ON) versions are also available where the switch returns to the central off position when released.