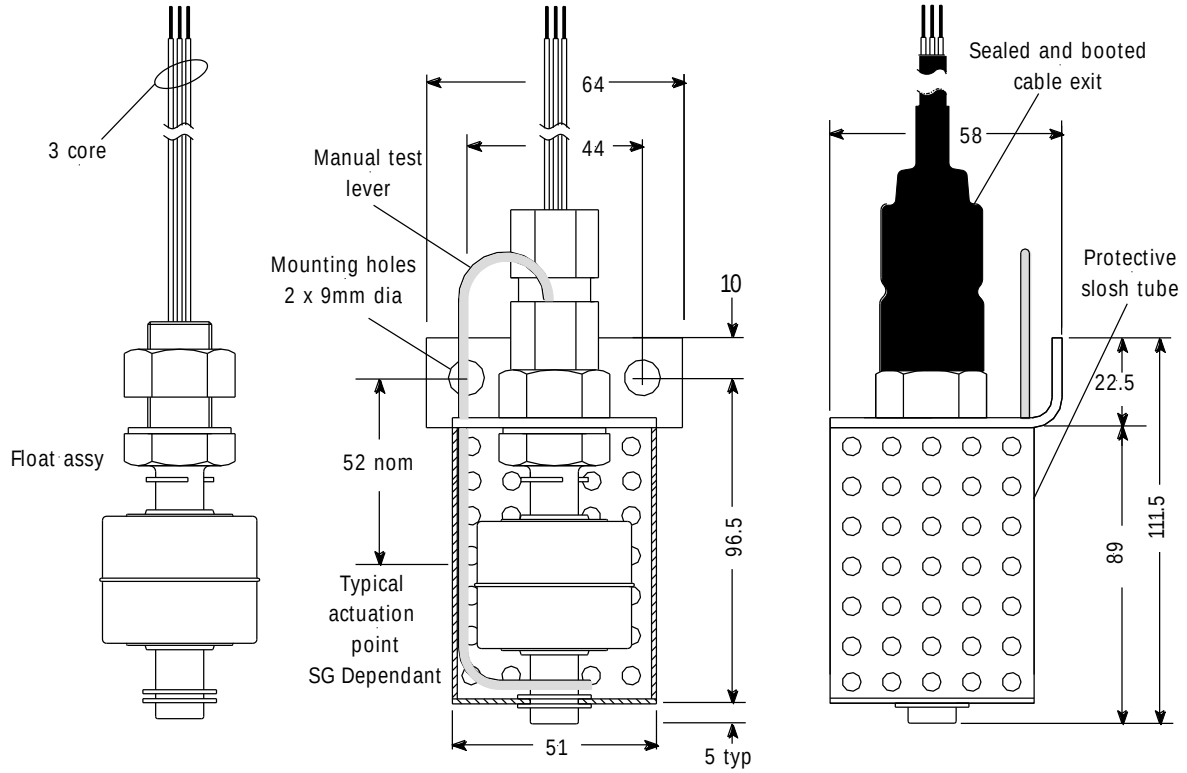
BILGE LEVEL SWITCH
BLS 9200

The Bilge Switch Model BLS 9200 is designed to be installed in ships bilges and tanks, industrial sumps and tanks where it would be bolted in situ at the required alarm level. This switch is corrosion resistant stainless steel fully submersible construction with an hermetically sealed SPDT reed switch potted in epoxy. This switch is also designed with a manual lift test mechanism to be used to check switch operation.

The BLS 9200 is very durable and designed to tolerate harsh conditions.



Float SG:	0.62
Max Rating:	100W ac/dc resistive
Max Volts:	500V dc / 250Vac
Switch rating:	100VA, SPDT
Min Rating:	3W

WIRING
1 = Common
2 = Normally Open
3 = Normally Closed

NOTES:

The actuation point can vary slightly depending on the temperature and specific gravity of the individual liquid being detected.

The minimum switch rating is to prevent switch oxidisation that causes long-term failure. See page 2 for installation requirements when used with low voltage relays or high input impedance systems.

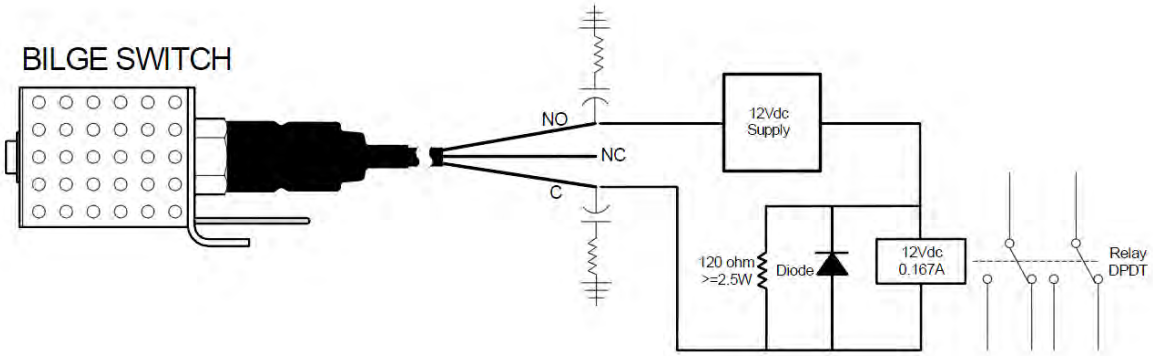
Installation of the switch in low power circuits

The switch has a minimum load rating of 3W and this is important when used in low power circuits, otherwise long-term failure or erratic operation due to reed switch contact oxidisation can occur. These installations are typically low voltage DC relays and high impedance inputs to PLC's

Contact oxidisation is a well documented phenomenon in all low strength reed-type magnetic switches caused by electro-metallurgical effects in low power circuits. High power circuits (AC or DC) do not suffer these effects as the switching of higher currents has a self-cleaning affect on the reed switch contacts.

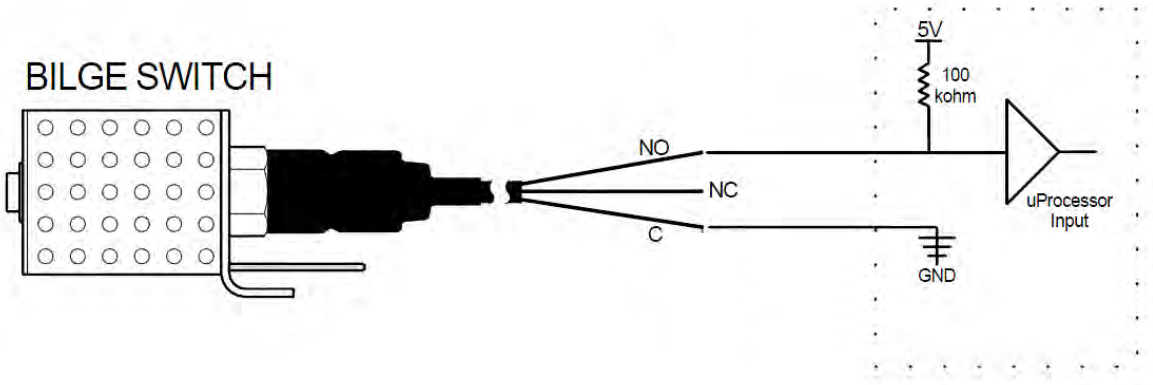
Using the switch to control a low voltage relay

Use a resistor in parallel with the relay coil to increase the current through the switch contacts:
For an AC circuit - a capacitor and resistor should be fitted in parallel with the switch (Page 4). Use a 0.1mf 400-600V capacitor and a 50 to 100 ohm ¼ watt resistor in series with the capacitor.

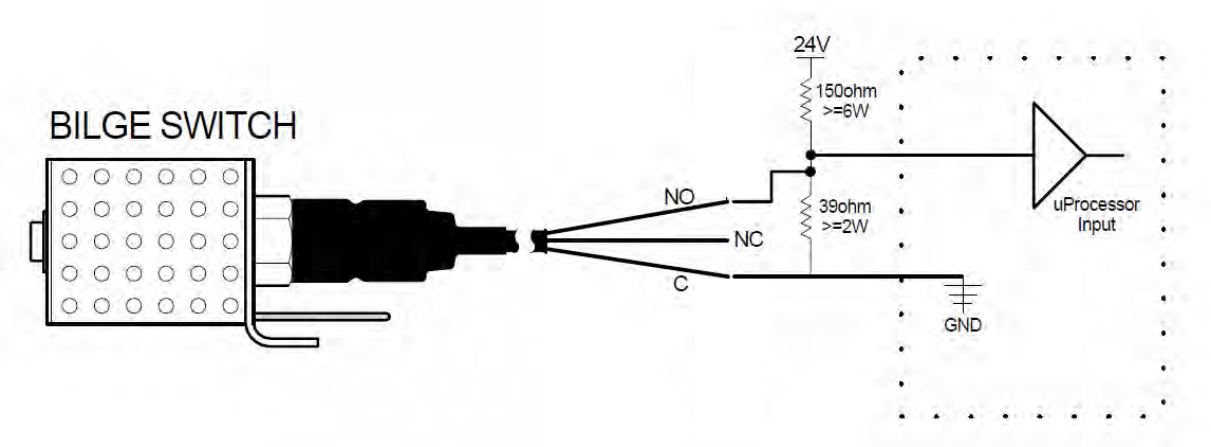


Using the switch as an input to a PLC with a high impedance input

With a low voltage use a single resistor to provide a voltage change across the input whilst maintaining a sufficiently high current through the switch contacts:



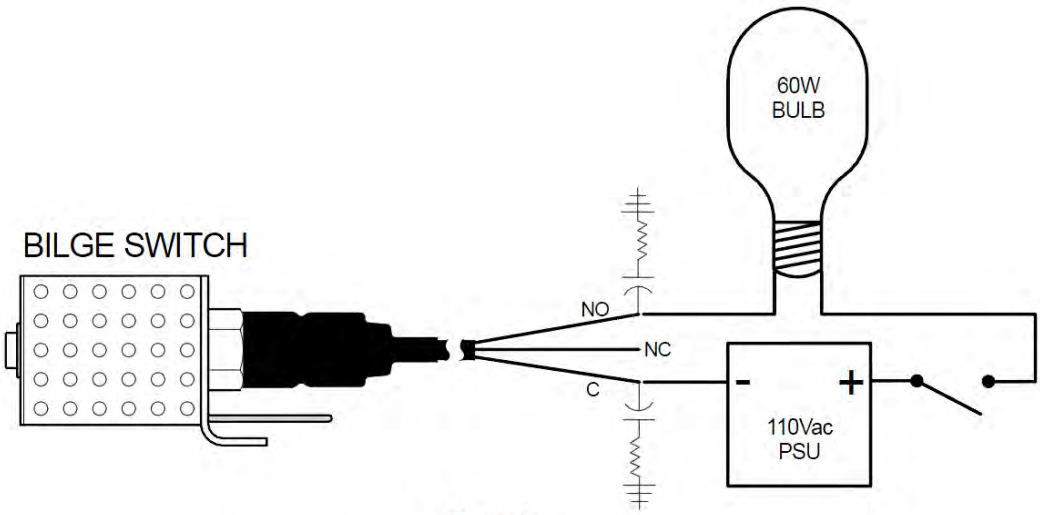
For higher voltages, resistors in series provide a voltage change across the input whilst maintaining a sufficiently high current through the switch contacts.



Testing the switch contacts

If the closed contact resistance is higher than 10 ohms, or the switch behaviour is erratic, then it is possible that the reed-switch contacts have become oxidised.

The basic functionality of the switch can be tested by using a high-power AC circuit to switch a light bulb as shown below. Change over the switch contact by using the test handle to illuminate the bulb. Repeating this process five times with a switch time of 30 seconds each, should also have a cleaning effect on the contacts.



N/C

Connect negative (-) to the bilge switch common lead & positive to the bilge switch N/C lead.
In an upright position the lamp should be on, lift the test handle & the lamp should go off.

N/O

Connect negative (-) to the bilge switch common lead & positive to the bilge switch N/O lead.
In an upright position the lamp should be off, lift the test handle & the lamp should come on.

Important notes:
Attempting to put excessive power through the bilge switch will irreparably damage the reed switch internals.

1. **If the power rating of the switch is greatly exceeded, the contacts will become permanently welded together.**
2. **If the switch is allowed to arc (spark) as it opens or closes the plated contacts will fail over time. [the greater the arc - the more rapidly failure will occur]**

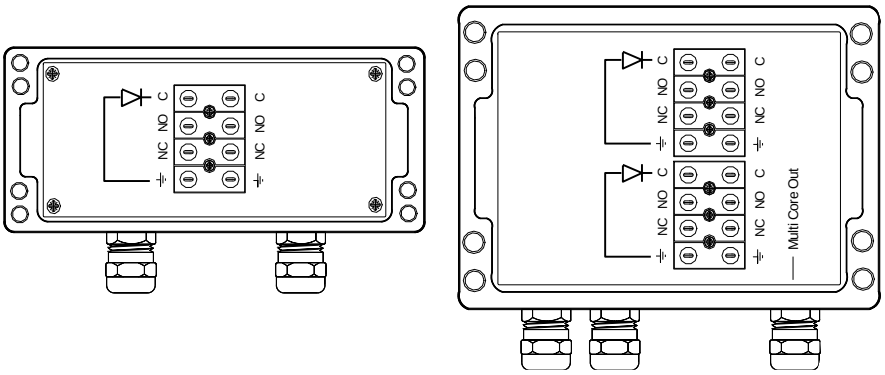
Do not be misled by the resistive ratings of the switches. Most applications involve inductive loads and many low wattage loads are often high inductance devices.
Switches ratings are quoted for a resistive load. Suppression is very important to protect the switch.

Lamp loads
Incandescent lamp loads can be very destructive to reed switch applications.
These type of loads have a 6-10 times the normal operating current when first energised [inrush current].

ARC suppression

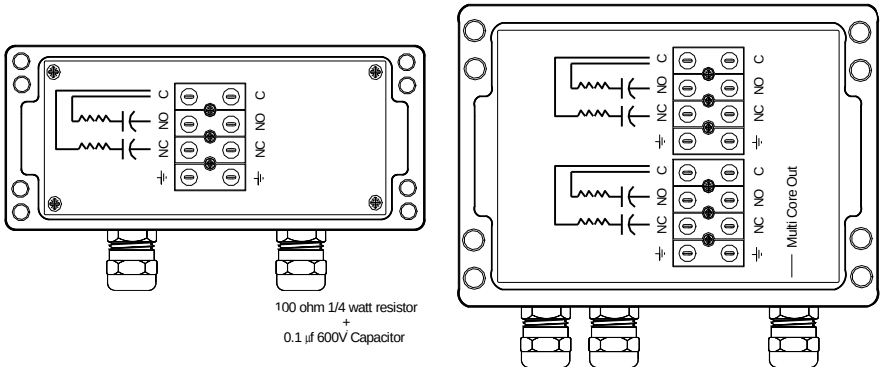
For a DC circuit – a one amp diode placed in parallel with the load will suppress the arc. Select a diode with a voltage rating of at least three times [3x] or more of that of the circuit rating. Connect diode cathode to positive.

DC Protection



For a AC circuit - a capacitor and resistor fitted in parallel with the switch. Use a 0.1µf 400-600V capacitor and a 50 to 100 ohm ¼ watt resistor in series with the capacitor.

AC Protection



Suitable arc suppression components are supplied loose with the PSM junction boxes.

We confirm that the products mentioned in this manual conform to the required safety standards in accordance with LVD 2006/95/EC

PSM WEEE Producer Registration No WEE/HC0106WW

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