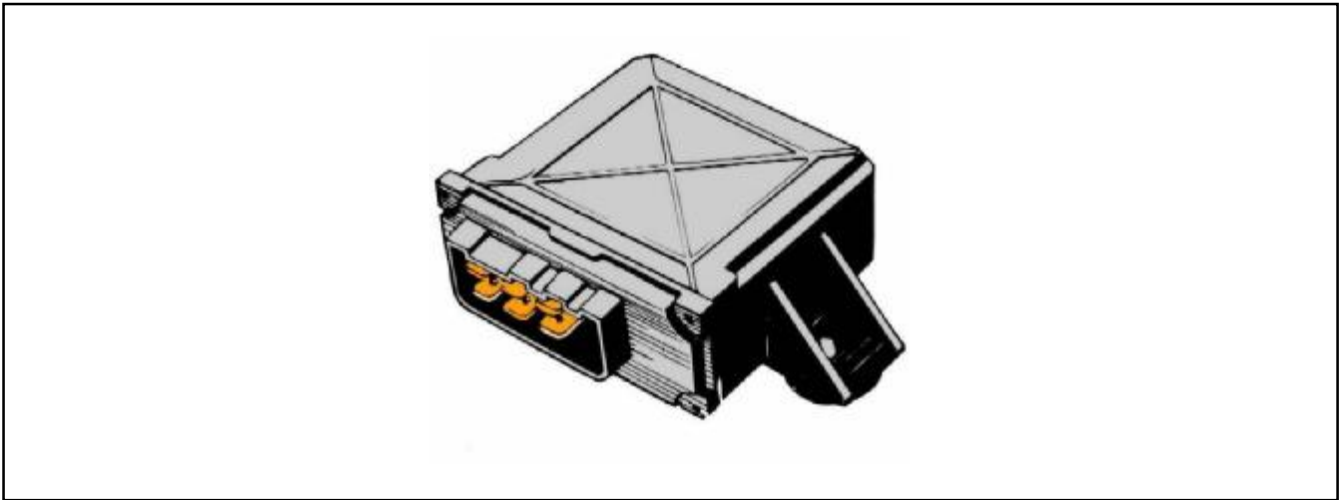


## HI-LO VOLTAGE WARNING MONITOR – 12VDC

P/no. 410.070 – Connection Instructions for 12V Module



### GENERAL

The 410.070 Voltage Monitoring Switch is a general-purpose module designed to give volt-free changeover contact output for both high and low voltage alarm situations in 12VDC circuits.

Separate outputs are used for the high volts alarm and the low volts alarm.

Both alarm points are fully adjustable and the low volt alarm has a user selectable “time delay before alarm” on falling volts of approximately 30 seconds to prevent nuisance alarms in engine starting applications.

Typical applications are ...

- § Standby generator sets – To warn the owner of an impending flat battery and turn on a battery charger.
- § Irrigation sets – To shutdown or alarm when the charging system either fails to charge enough or overcharges the battery.
- § Stationary engines – Any stationary, mobile, or automatic start engine system could benefit from the early warning alarm provided by a Hi-Lo Voltage Warning Monitor.

### FITTING INSTRUCTIONS

1. Locate a convenient mounting place in the instrument panel or under the dash near the fuse panel and mount the 410.070 Hi-Lo Voltage Monitoring Switch module. Screws (3/16” or 5mm), double sided tape, or Silastic are all acceptable. Orientation is not critical.
2. Connect the “+” terminal (Term. No. 2) on the control module to your positive source or ignition switch via a 5 amp fuse.
3. Connect the “-” terminal (Term. No. 1) to a good earth or ground connection.
4. Connect the relay terminals as required. Refer to Connections section and Wiring Diagram.
5. Adjust the voltage settings and time delay as required. Refer to Setting section.
6. When switching relay and solenoid coils with other electronic items connected it is recommended to fit reverse EMF diodes across all coils.
7. Excessively high voltages over a long period of time could overheat and damage this unit. Normal practice would call for a detected high volt situation to turn off all related equipment, including this module, and to alert the operator.
8. It is good wiring practice to make all circuits failsafe where possible and practical.

## CONNECTIONS

Terminal connections are as follows...

Term no. 1	= Negative or Ground
Term no. 2	= Positive 12VDC Supply
Term no. 3	= Low Alarm COM = Common
Term no. 4	= Low Alarm N/O = Normally Open
Term no. 6	= Low Alarm N/C = Normally Closed
Term no. 8	= High Alarm COM = Common
Term no. 5	= High Alarm N/O = Normally Open
Term no. 7	= High Alarm N/C = Normally Closed

Relay contacts are rated at 12vdc 3amp, resistive.

Note that both relays are de-energised at the expected normal voltage. ie: if Lo is set at 10vdc, Hi is set at 15vdc, and the battery voltage is 14.2vdc then neither relay will be energised and there will be no alarm.

## SETTING

The 410.070 Hi-Lo Voltage Monitoring Switch is factory tested and then set at approximately 10vdc on the Low setting and approximately 15vdc on the High setting. Keep these initial settings in mind when first adjusting your module.

Both the Low setting and the High setting are fully adjustable across a range of 8.0 to 20.0 vdc.

All 410.070 Hi-Lo Voltage Monitoring Switches are supplied with the Time Delay link in the **No Delay** position, ie: on the two pins closest to the IC chip. To turn the Low volts **time delay on**, carefully remove the link and refit onto the two pins furthest away from the IC chip.

A variable DC power supply and a good quality voltmeter are required for correct setting of this switch. For this reason it may be expedient to set the unit on the test bench before fitting

1. Make sure power is disconnected from the switch module and open the control box.
2. Confirm the time delay link is in the off position.
3. Turn the Low pot fully anti-clockwise and turn the High pot fully clockwise.
4. Adjust the power supply to the desired Low volts setting, connect power to the module.
5. Turn the Low pot slowly clockwise until the Low LED lights and the relay can be heard closing.
6. Adjust the power supply to the desired High volts setting.
7. Turn the High pot slowly anti-clockwise until the High LED lights and the relay can be heard closing. Recheck both settings and readjust if necessary.
8. Set time delay link to on if required.
9. If you do not want the Low setting to be used then turn the Low pot fully anti-clockwise.
10. If you do not want the High setting to be used then turn the High pot fully clockwise.
11. Do not forget that below approximately 7vdc the Low relay will not be able to hold in. Setting at this level is not advised.
12. To obtain a fully failsafe operation you can carefully **cross** the Low and High setting points and wire both N/O sets of contacts (3&4, 5&8, refer wiring diagram) in series with each other and the required load. ie: Set the Low volts at say 16vdc and the High volts at say 10vdc. The subsequent **on** window, between 10–16 vdc, means both relays are then energised permanently and the NO contacts are closed during normal operation.

## SPECIFICATIONS

Dimensions: 68 x 30 x 73mm deep, overall box dimensions.

Mounting: Hole centres -83mm, mounted height -35mm, box with plug & wiring allow 110mm+.

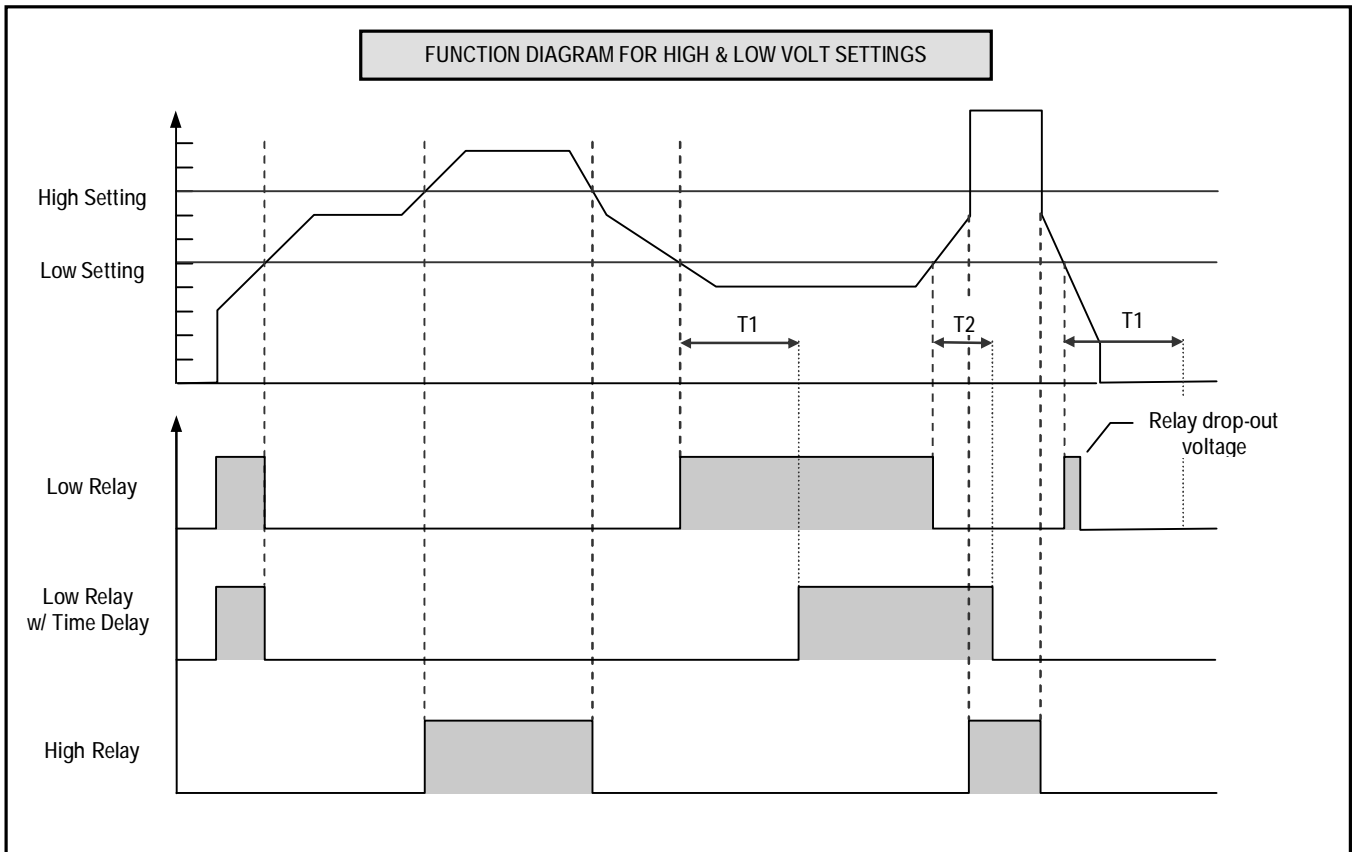
Voltage: 12vdc negative ground.

Adjustment: 8 to 20 vdc for Low & High settings

Time Delay: Approx 30 sec on falling volts (T1), approx 0.5 sec on rising volts (T2) for Low relay

Contacts: 12vdc 3amp resistive.

# FUNCTION DIAGRAM



# WIRING DIAGRAMS

