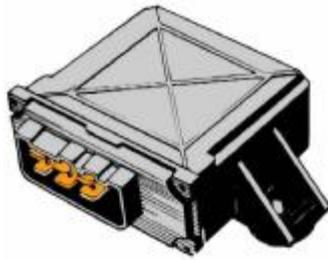


## TWO CHANNEL REV SWITCH – 12/24VDC

### P/no. 411.101 - Installation Instructions



### GENERAL

The Microprocessor controlled electronic switch module can be programmed for a number of different functions. Typically used to monitor engine RPM, the module can also be used to sense vehicle speed or any turning shaft speed for commercial applications.

The module can be utilised to switch an alarm or buzzer or even to control a solenoid. With two separate signal inputs switching two separate output relays there can be a number of combinations of monitoring possibilities eg:

- **Two Input Frequencies Giving Two Outputs**
- **Two Input Frequencies Giving One Output**
- **One Input Frequency Giving Two Outputs**
- **One Input Frequency Giving One Output**

*NOTE: This module is designed as a universal unit to suit as many automotive type applications as possible. However there may be some systems where the input or output signals are not compatible with this unit. The manufacturer is not responsible for incorrect fitting or damage caused by or during the fitting of this module.*

### FITTING INSTRUCTIONS

1. Locate a convenient mounting place in the instrument panel or under the dash near the fuse panel and mount the 411.101 Electronic Rev Switch. Screws (3/16" or 5mm), double sided tape, or silicon are acceptable. Orientation is preferred with terminals pointing down to prevent the ingress of water. Module is rated IP54.
2. Connect the "+" terminal (Term. No. 1) on the control module to a switched positive source or ignition switch via a 3 amp fuse.
3. Connect the "-" terminal (Term. No. 3) to a good earth or ground connection.
4. Connect terminal no's. 1 & 2 to your input signals.
5. Connect the output terminals as required. Term 5 & 7 = output for Channel 1. Term 6 & 7 = output for Channel 2. Refer to the Connections and Wiring Diagram sections.
6. When switching solenoids, relays or other inductive loads, ensure a diode is fitted across the coil winding.
7. Adjust the 2 Rev Switch settings as required. Refer to Setting section.

### CONNECTIONS

Terminal connections are as follows...

- Term no. 1 = Positive 12/24 VDC Supply
- Term no. 2 = Input Channel 2
- Term no. 3 = Negative or Ground
- Term no. 4 = Input Channel 1
- Term no. 5&7 = Output for Channel 1
- Term no. 6&8 = Output for Channel 2

Note: If only one channel is used ensure the other is tied to ground or earth.

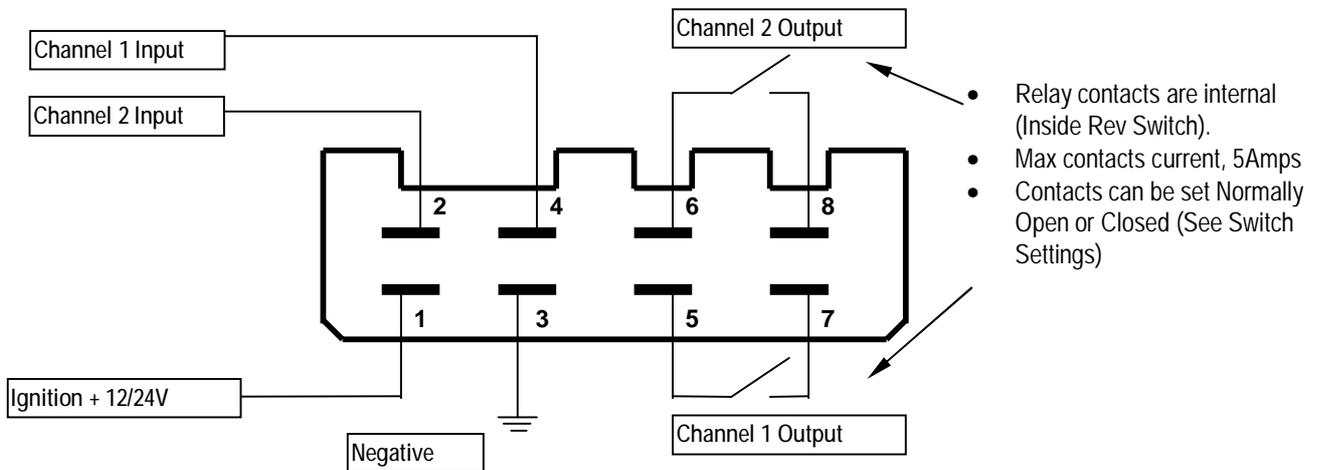
### **IMPORTANT – ALWAYS UNPLUG UNIT COMPLETELY IF WELDING ON THE VEHICLE**

*If the module settings become corrupted by welding or other interference you can perform a full reset at any time by holding down the Set "S" button and then turning on power. The display will read "rSEt". Release the button and all settings will return to default.*

## SET-UP OPTIONS

### 1. Dual Input - Dual Output.

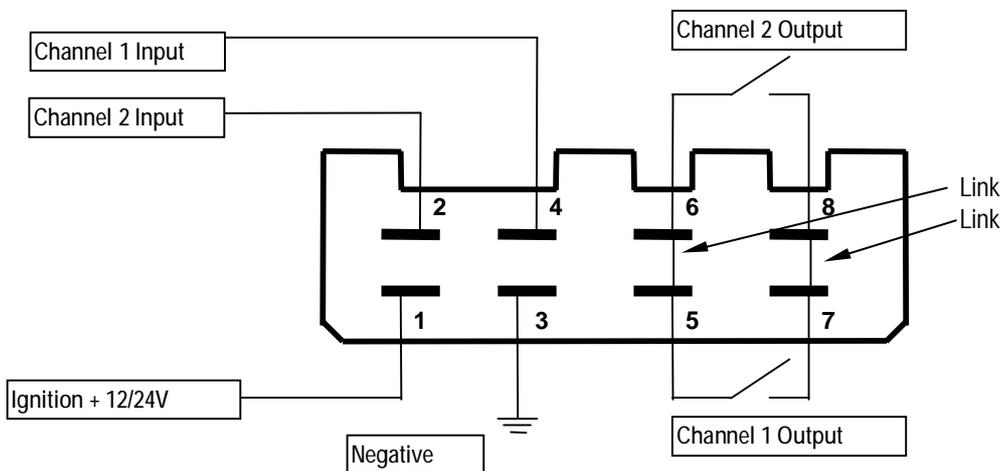
When frequency of each of the input signals increases to the preset value the internal relays will activate. Since both input/output systems work independently, the output can be set to be normally closed, normally open, oscillating (flashing) or any combination thereof.



### 2. Dual Input - Single Output.

When either channel 1 or channel 2 increases to the preset level, the relay will activate, therefore, changing state. The single output is created due to the parallel wiring of the relays.

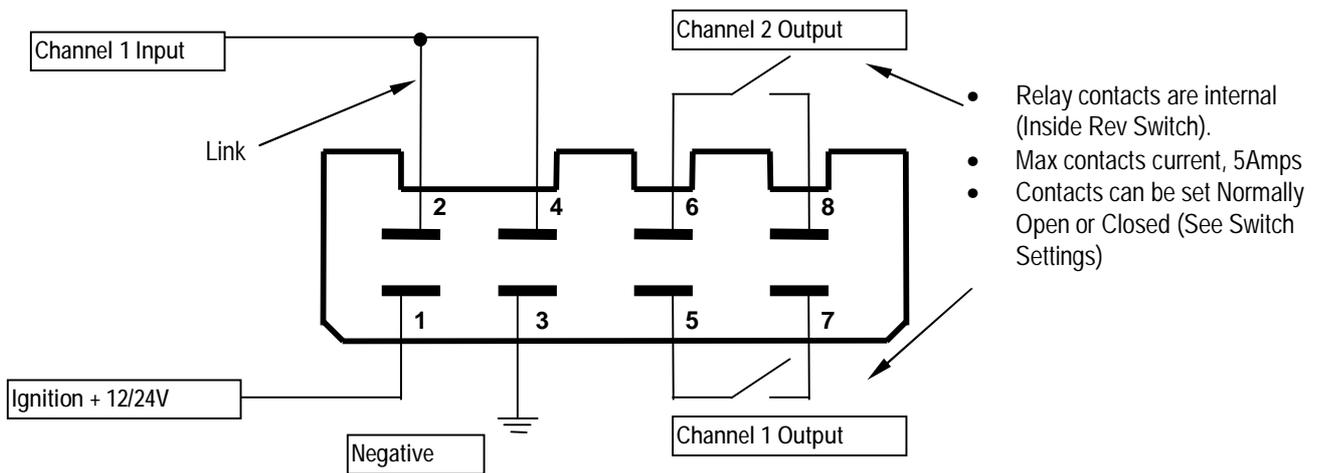
An application example may be as a gate lock switch or automatic transmission lockout. Where the channel 1 is monitoring engine RPM and channel 2 vehicle speed then the switch could be used to disable a low gear engagement in the transmission over a certain vehicle speed and/or engine RPM.



### 3. Single Input - Dual Output.

When the frequency of the input signal increases to preset value then the output relay activates, changing state. Since both input terminals are joint together, you can have two separate preset values and/or two separate outputs.

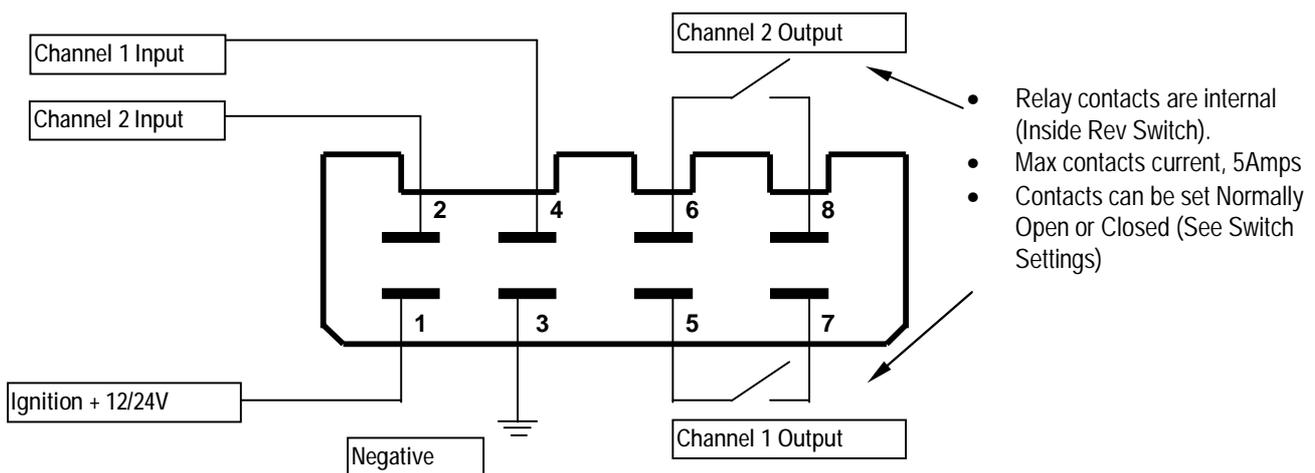
eg. When input reaches a preset value, relay channel 1 can open - shutting a solenoid off while channel 2 can be set to "Pulse" or oscillate which could be an alarm or buzzer warning of the problem.



#### 4. Single Input - Single Output.

Either channel 1 with its corresponding output 1 OR channel 2 with its corresponding output 2 can be used in single function applications.

If either channel is not used, earth its Input Signal pin.



### WIRING DIAGRAM

### SWITCH SETTINGS

#### 411.101 – PCB LAYOUT

Set both switches per setting chart at right

Display reads input frequency at any time when Button "R" is pushed

LEGEND	Sw2	ON		
24V	1	<input type="checkbox"/>	12V	
CH1 HI SIGNAL LEVEL	2	<input type="checkbox"/>	CH1 LO SIGNAL LEVEL	
CH2 HI SIGNAL LEVEL	3	<input type="checkbox"/>	CH2 LO SIGNAL LEVEL	

LEGEND	Sw1	ON	
RUN	1	<input type="checkbox"/>	PROGRAM
CH1	2	<input type="checkbox"/>	CH2
HIGH	3	<input type="checkbox"/>	LOW
CH1 N/O	4	<input type="checkbox"/>	CH1 N/C
CH1 NORMAL	5	<input type="checkbox"/>	CH1 PULSING
CH2 N/O	6	<input type="checkbox"/>	CH2 N/C
CH2 NORMAL	7	<input type="checkbox"/>	CH2 PULSING
NOT USED	8	<input type="checkbox"/>	NOT USED

## CALIBRATION

1. Set Switch 2-1 to 12vdc or 24vdc as required.
2. Set Switch 2-2 & 2-3 to LO SIGNAL LEVEL (  $\geq 1.2\text{v p-p}$ ) or HI SIGNAL LEVEL (  $\geq 4.2\text{v p-p}$ ) as appropriate.
3. Connect module to power, or wire up on bench as per wiring diagram.
4. Set Switch 1-1 to "Program"  
NOTE: WHEN IN "PROGRAM" MODE IF A BUTTON IS NOT PUSHED WITHIN 30 SECONDS THE MODULE WILL REVERT BACK TO "RUN" MODE. TURN SWITCH 1 OFF THEN ON AGAIN TO RE-ENTER "PROGRAM" MODE.
5. Set Switch 1-2 to "Ch1" and Switch 1-3 to "High". This is the initial switch point for rising frequency on Ch1.
6. Adjust the desired "Switch on" frequency Up or Down with buttons "U" or "D" as required.
7. When satisfied with the reading selected - LOCK IT IN by pushing the set button, "S". The display will flash once in confirmation. If it does not flash you have tried to enter an illegal setting, ie: High set points must be higher than Low set points.
8. Set Switch 1-3 to "Low". This is the secondary switch off point for falling frequency on Ch1.
9. Adjust the desired switch off frequency Up or Down with buttons "U" or "D" as required.
10. When satisfied with the reading selected - LOCK IT IN by pushing the Set "S" button. The display will flash once in confirmation. If it does not flash you have tried to enter an illegal setting.
11. Repeat for High and Low settings on Channel 2.
12. NOTE: The "Low" setting for each channel MUST be set 5% or more lower than the "High" setting to give some switching hysteresis. This allows for a positive switching action and reduces possible relay contact chatter
13. Use switches 1-4, 1-5, 1-6, and 1-7 to select desired output function.  
N/O indicates the contacts are initially open, will close at the "High" setting Hz, and will open again when under the "Low" setting Hz. Eg/ an overspeed alarm.  
N/C indicates the contacts are initially closed, will open at the "High" setting Hz, and will close again when under the "Low" setting Hz. Eg/ an underspeed alarm.  
PULSING indicates the contacts will pulse open and closed at a 1Hz rate when over the "High" set point.  
If a channel is set for N/C and PULSING the contacts will pulse when over the "High" set point, and close when under the "Low" set point.
14. If you wish either Channel output to latch once it has tripped then set the corresponding "Low" setting to 2Hz. The module will stay tripped until input frequency drops below this setting.
15. If the module or its settings become completely confused you can perform a full reset at any time by holding down the Set button "S", and then turning on power. The display will read "rSEt". Release the button and all settings will return to default. You will then need to start at point 3 again.
16. Pushing the Read "R" button at any time will display the instantaneous input frequency to whichever channel is selected with Switch 1-2. This disables the relay switching function until it is released.
17. At low frequencies this unit automatically selects a lower measuring cycle and so will take longer to react to frequency changes. Typical time will be approximately 0.5+ Seconds.
18. This unit will not switch at frequencies over 9.99 KHz, and may drop out if driven above this frequency. If higher frequency switching is required, contact the manufacturer
19. When finished with all settings, put Switch 1-1 back to "Run". ...**Calibration is now complete.**

### **DON'T FORGET TO SET SWITCH 1 BACK TO "RUN" BEFORE CLOSING THE BOX.**

#### Hall Effect Pull Up Resistors

Two pull up resistors of 10k ohms per channel are supplied on the PCB. To access these you will find four oval solder pads on the underside of the main PCB. Bridge either or both sets of these pads (marked CH1 and CH2) together with solder to bring the 10k ohm pull ups into circuit.

## SPECIFICATIONS

Protection:	IP54 Rated Case – Terminals to be pointing down to prevent ingress of water
Dimensions:	68 x 30 x 73mm deep, overall box dimensions.
Mounting:	Hole centres...83mm, Mounted Height...35mm. Box with plug & wiring allow 110+mm depth.
Voltage:	12/24vdc negative ground, 30mA typical quiescent current draw.
Switch Range	2 Hz – 9,990 Hz.
Default Settings:	Ch1 – Hi 50Hz, Low 40Hz. Ch2 - Hi 5000Hz, Low 4000Hz.
Input	Inductive, Magnetic Pickup or Hall Effect. (Pull up resistors now included for Hall Effect devices)
Output rating:	Relay contacts 12/24vdc, 5 amp resistive, volt free output.