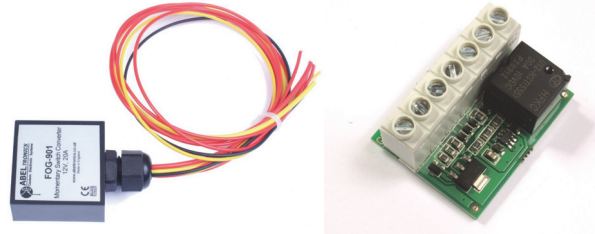




## Momentary to Latching Switch Converter: FOG-901, FOG-901NP

- 9 – 18V DC low voltage operation
- Up to 5A load (FOG-901) or 15A load (FOG-901NP)
- Converts momentary pushbutton to latching output
- Toggle action – brief switch press toggles latching output
- Supports LED-illuminated switches
- Only one wire (plus ground) required between switch and FOG-901
- Point-of-load switching in automotive and marine applications
- Self-cancelling operation
- Watertight – IP68 Rated (FOG-901)
- Economical bare PCB (FOG-901NP)



The Abeltronics FOG-901 and FOG-901NP are latching relays controlled by a momentary switch input. They provide a useful way to convert a momentary switch press into a toggle-action latching output. If used with an LED-illuminated switch, the FOG-901 and FOG-901NP drive the LED to indicate the state of the output: LED dim = output off; LED bright = output on. This feature allows the switch to be easily located in the dark.

The unit only needs one wire (plus ground) to the pushbutton in order to operate, even with an illuminated switch. This allows the FOG-901 or FOG-901NP to be located close to the load with the switch mounted remotely. This point-of-load switching where high currents are switched over minimal distance improves

efficiency, reduces voltage drop and reduces cable thicknesses and wiring loom cost.

The units also feature three ‘enable’ inputs which control the operation of the module. The FOG-901 or FOG-901NP will be inactive until at least one of these enable inputs is connected to +12V, at which time the unit can be controlled with the pushbutton. If all the enable inputs are disconnected from +12V while the output is on, the output will switch off. The unit has a self-cancelling action and will always default to off when re-activated regardless of the previous state of the unit. This is useful for automotive/marine ignition-fed applications where the output needs to be off when the ignition is turned off.

Parameter	FOG-901	FOG-901NP	Comment
Nominal Supply Voltage Range	9 – 18 V DC		
Peak Supply Voltage Range	8 – 40V DC		Operation not guaranteed
Quiescent Current, max	Enabled: 4mA; Not enabled: 0mA		At maximum operating voltage, excl illuminated switch
Operating Current, max	30mA		
Maximum Output Current	5A resistive, 2A inductive	15A resistive, 2A inductive	
Maximum Load Power	60W at 12V	180W at 12V	Resistive load
Peak Load Current	20A	30A	<3sec at nominal operating voltage
Operating Temperature Range	-20 – 70°C (-4 – 160°F)		
Dimensions	40 × 40 × 20mm	35 × 28 × 15mm	L × W × H ±3% excl. gland
Electrical Connection	7× Wire terminations, >30cm long	7× 4mm <sup>2</sup> Rising Clamp terminal block, nickel plated brass	

### Mounting and Connection Guidelines

The FOG-901 and FOG-901NP do not feature any fixing holes and are intended to be incorporated into wiring harnesses or enclosures by the user. The FOG-901 is hermetically sealed in epoxy resin and is fully watertight, whereas the FOG-901NP is a bare PCB and must be protected from the elements by a suitable IP-rated enclosure.

The FOG-901 should have its +12V supply terminal externally fused at 5A or less, and the FOG-901NP should have its +12V supply terminal externally fused at 15A or less. These are maximum ratings, the fuse rating should be sized appropriately for the load that is to be controlled.

Each enable input that is to be used should be fused at 1A or less for both versions of the module. Unused enable inputs can be left unconnected.

The units have a relay contact output and care should be taken to preserve the contact life. The relay is suitable for directly switching resistive loads such as lamps, up to the full current rating in the table above.

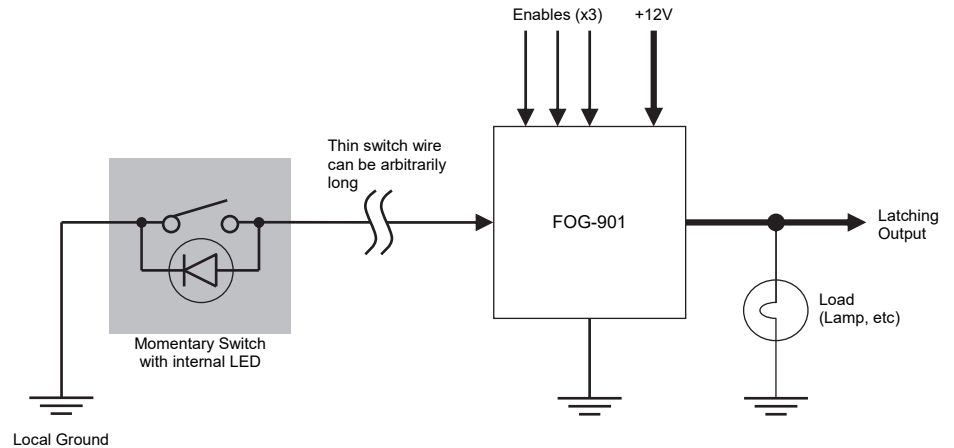
The relays are also suitable for switching inductive loads, but the load current must be de-rated depending on the type of load. As a guide, the maximum inductive load current should be 2A for the FOG-901 and FOG-901NP. If switching inductive loads of greater rating, an external outboard relay must be used. A back-emf protection diode should always be fitted in reverse-parallel with any inductive load.

The FOG-901NP has high-quality rising-clamp terminal blocks capable of receiving up to 4mm<sup>2</sup> cable. The terminals are spaced 5mm apart. To maximise the potential of the unit, cable rated at currents exceeding the load by 1.5 times should be used at the ‘+V’ and ‘OUT’ terminals, and the use of a bootlace ferrule at all the terminals is recommended.



## Applications Information

Function	FOG-901 Cable Colour	FOG-901NP Term. Name (printed on PCB)
+ Supply	Thick Red (fuse at ≤5A)	+V (fuse at ≤15A)
Output	Thick Pink	OUT
Enable 1	Orange	EN1
Enable 2	Orange	EN2
Enable 3	Orange	EN3
Switch	Yellow	SW
Ground	Black	GND



Electrical connections to the unit are shown above. Note there is only one wire leading to the switch, the return path is through the vehicle chassis ground. Care should be taken to ensure that the differential voltage between the switch ground and the FOG-901 ground does not exceed 0.5V since this may cause false triggering of the unit.

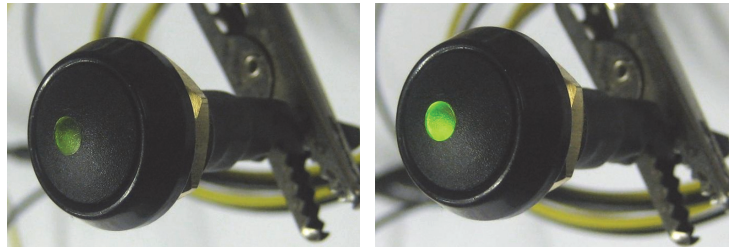
The switch shown in the diagram above is an illuminated type, with an LED illumination. The LED is simply connected in parallel with the switch contacts, with the cathode of the LED facing ground and the anode facing the FOG-901. No additional series resistor for the LED is required as the necessary drive circuitry is built into the FOG-901. (The FOG-901 will not work in this manner with switches illuminated with a filament lamp. A feed should be taken from the output back to the switch illumination if it is necessary to use an incandescent illumination.)

## Recommended Switch

The unit is supplied without a switch; we recommend the use of this switch:

<http://uk.rs-online.com/web/p/push-button-switches/1849165/>

When the LED is connected in parallel with the switch contacts as described above, the LED operates as shown. When any of the enable inputs are first connected to +12V, the switch lights up dimly as shown in the first image. When the button is pressed, and the FOG-901 activates its output, the LED lights up brightly as shown in the second image. Repeated operations of the pushbutton will toggle this state for as long as any of the enable inputs are active.



Switch datasheet: [http://www.itswitches.co.uk/resource/Series\\_59\\_Pushbutton\\_switch\\_datasheet.pdf](http://www.itswitches.co.uk/resource/Series_59_Pushbutton_switch_datasheet.pdf)

The switches have a 14mm round cut-out, and are IP67 rated, impact resistant, of metal construction, and available in a variety of colours with red, green, or no illumination. They also look extremely attractive, are hard-wearing, and are easy to wire up.

The switch can be any type of momentary switch, membrane keypad, etc. Current rating is irrelevant.

## Further Information

For more information, links to other products and to download the most current datasheet: [www.abeltronics.co.uk/products/automotive](http://www.abeltronics.co.uk/products/automotive). If you have any questions or queries, or require one of our dimmers to be modified to fit your application, please contact us by visiting [www.abeltronics.co.uk](http://www.abeltronics.co.uk).

## Direct Buy Online

FOG-901: [www.abeltronics.co.uk/products/fog-901](http://www.abeltronics.co.uk/products/fog-901)  
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