

# GPS Speed Switch

## *Easy to install GPS Speed Switch for automotive applications*

Hummingbird Electronics' GPS Speed Switch provides a simple to install, calibration free speed based switch.

Speed thresholds are set using internal switches in either km/h or mi/h.

Using data received from the Global Positioning Satellite network, the GPS Speed Switch calculates three-dimensional ground speed. If the speed exceeds the threshold, a relay is switched.

This high technology solution eradicates the dependency on vehicle specific parameters, thereby reducing installation time and eradicating the need for periodic calibration.

### **Powerful Performance**

Speed Switches have traditionally used speed-signals derived from gearbox mounted hall-effect or inductive speed senders. The Hummingbird Electronics' GPS Speed Switch integrates the source of the speed signal with the switch resulting in a small, reliable solution. No calibration is required and operation is completely independent of the vehicle.

Three dimensional velocity calculations are accurate to 0.2km/h and are updated 4 times per second. A 50 channel satellite receiver, enhanced receiver sensitivity and active antenna result in fast time-to-first-velocity-calculation as well as the ability to operate in the harshest RF environments such as canyons and cities.

Last known position and satellite information critical to fast start-up are battery backed in case of power failure.

A 10 way dip-switch is provided for configuring the switching speed and for setting the unit to miles per hour or kilometres per hour. Eight of the 10 dip switches are dedicated to the speed-switch-point, allowing a range of 0-255 miles per hour or kilometres per hour.

A voltage free relay output with common (30), normally-open (87) and normally-closed (87A) terminals is provided. At low speed, the common contact is connected to the normally closed contact and when the speed set-point is exceeded, the common terminal will be switched over to the normally open contact,



*GPS Speed Switch – calibration free speed-sensor  
and switch combined in a single package*

Designed for harsh automotive environments, the module features transient voltage protection on the supply and short circuit protection.

### **Rugged Hardware**

The GPS Speed Switch is supplied in a rugged aluminium enclosure with provision for screw mounting when required. Antenna connection for the active antenna is provided through a gold-plated threaded SMA connector. The active antenna is available in two options:

- magnetic mount, suitable for mounting in the interior of the vehicle, for example under the dashboard or rear window sill.
- bulkhead mount, suitable for exterior mounting, for example on the roof of the cab.

Power to the unit and switch outputs are provided through four colour coded wires.

For optimum performance, the antenna should be mounted horizontally and upright; and should have a clear view of the sky.

A red LED inside is provided to give the user status information.

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Technical Specifications and Ordering Information		
Part number	HMSW1000BM	HMSW1000BB
Antenna type	Magnetic mount	Bulkhead mount
Power consumption	480mW (incl. antenna)	
Dimensions (mm)	57mm(w) x 82mm(l) x 35.20mm(h)	
Input voltage	Minimum 9V, maximum 36V	
Relay current	Internal resettable fuse: 1A	
Acquisition time, loss of lock	Less than 2s (90% of the time)	
Acquisition time, temp loss of power	Less than 10s (50% of the time), less than 13s (90% of the time)	
Acquisition time, power-up	Less than 38s (50% of the time), less than 42s (90% of the time)	
Accuracy, horizontal	Less than 5m (50% of the time), less than 8m (90% of the time)	
Accuracy, altitude	Less than 10m (50% of the time), less than 16m (90% of the time)	
Precision, velocity	Less than 0.06m/sec or 0.22km/h	
Update rate	4 times per second (4Hz)	
RF interface	SMA connector supplied on magnetic and bulkhead antenna versions	
Antenna dimensions (mm)	51(l), 42(w), 12(h); cable length 5m	
Operating temperature	-40°C to 85°C; 5% to 95% relative humidity	
General	50 channel tracking receiver, battery backup 12 days	

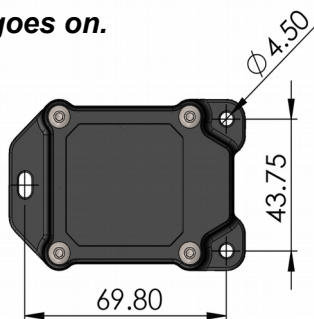
**Note: If GPS lock is lost, the unit will default to zero speed.**

**Red LED flashes when no satellite lock and then goes on.**

**Magnetic mount antenna**



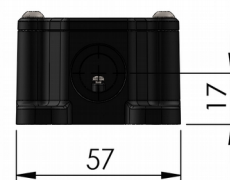
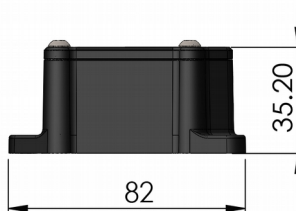
**Bulkhead mount antenna**



Mounting holes suit M4 screws.

### Key to wire colours and switch settings:

Red: Input voltage  
 Black: Ground  
 White: Relay Common (30)  
 Brown: Relay Normally Closed (87A)  
 Blue: Relay Normally Open (87)



SW10: ON = miles per hour, OFF = kilometers per hour

SW9: ON = relay will be on when no GPS fix available, OFF = relay off when no GPS fix available.

SW8-1: switching speed = SW1+2\*SW2+4\*SW3+8\*SW4+16\*SW5+32\*SW6+64\*SW7+128\*SW8

**Example: speed 35km/h – SW10=OFF for km/h; SW6 = ON (32), SW2 = ON (2), SW1 = ON (1); 32+2+1 = 35**

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