

GPS SPEEDOMETER RANGE



Hummingbird
Electronics

PREVENT OVERSPEED EVENTS

GPS SPEEDOMETER RANGE

With safety and regulatory compliance a high priority in a range of industry settings, monitoring and controlling speed is a critical factor in all your vehicular applications.

Hummingbird offers a range of speedometers, speed alerts and speed switches that use GPS and GLONASS satellite technology to ensure accuracy and ease of use.

Our speed management solutions are independent of any vehicle-specific parameters, such as wheel size and gearing, meaning they require no time-consuming and potentially error-prone calibration or periodic recalibration.

Robust, easy to install and easy to use, Hummingbird has a speed management solution to suit all vehicles, across all industry sectors.



Look at the benefits:

- Machine and operator safety
- Easy to view
- Risk reduction including injury
- Safety compliance
- Flexible installation
- Suits 12 or 24 volt vehicle systems
- Visual and audible warnings and alarms

GPS Speedometers

Hummingbird Electronics are market leaders in GPS Speedometer technology, offering off the shelf and customised solutions that utilise the latest GPS tracking, customisable dash mounts and GPS speed alert capabilities to suit any vehicle type or industry application.

Hummingbird's GPS Speedometers provide a quick to install, vehicle-independent speed readout in vehicles that are not fitted with conventional speedometers.

Using data received from the Global Positioning Satellite network, the GPS Speedometer calculates three-dimensional ground speed and displays it on a clear, easy-to-read digital display. This eradicates the dependency on vehicle-specific parameters, reducing installation time and eradicating the need for calibration.

Designed for harsh automotive environments, the module features one-inch high, high-intensity red LED digits. Automatic contrast adjustment ensures that the driver is able to read the display in daylight and is not blinded at night.

The ability to track twenty satellites simultaneously, 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. Despite this, speed errors will occur in RF blackout zones such as tunnels; this is indicated to the driver through a flashing display.

Three-dimensional velocity calculations are accurate to 0.2km/h and speed readings are updated 10 times every second.

Hummingbird's GPS Speedometers can be user-configured to work in kilometres per hour, miles per hour, knots or meters per minute.

A relay can be set to close when the speed exceeds a user-specified set-point. Typical applications for the speed switch would be driver over-speed warning or motion detection. Activation speed is set via a dip switch internal to the device and cannot be changed by the operator. The maximum speed can be set to be between 0 and 999 or between 0 and 99.9. The more precise setting is suitable for slow vehicles such as tractors.

Features:

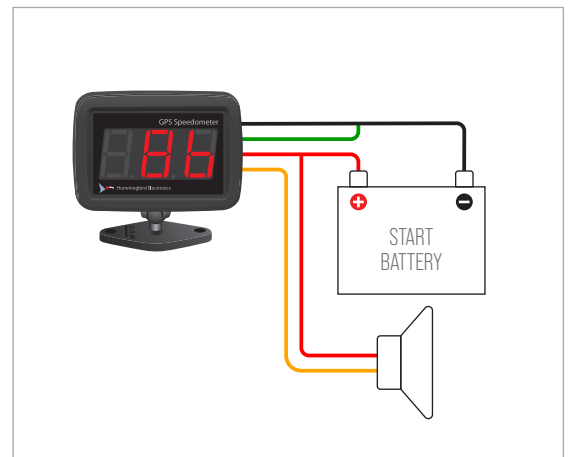
- High visibility display
- Adjustable speed limit – operators can not adjust limit
- Internal relay to drive external alarm
- Display auto dims at night
- External bulkhead and magnetic antenna options available
- Multi voltage - 12/24 volts
- Rugged RAM™ mount
- Reverse-polarity protected

GPS Speedometer range



HMSS1000BM/HMSS1000BB/HMSS1000BI

Input voltage	Minimum 9V - maximum 36V
Power Consumption	Maximum 2.5W (200mA @ 12V) - all segments lit at full brightness
Display digit height	25mm (1 inch)
Relay output	36V max, 1A max
Acquisition time - loss of lock	Less than 2 seconds (90% of the time)
Acquisition time - temp loss of power	Less than 10 seconds (50% of the time), less than 13 seconds (90% of the time)
Acquisition time - power-up	Less than 38 seconds (50% of the time), less than 42 seconds (90% of the time)
Speed range	Minimum 2km/h - maximum 299km/h (or 299mi/h)
Precision, velocity - preliminary	Less than 0.06m/sec or 0.22km/h - resolution 1 unit (km/h or mph)
Update rate	10 times per second (10Hz)
RF interface	SMA connector supplied on magnetic and bulkhead antenna versions
General	20 channel tracking receiver, battery backup 12 days
Operating temperature	-40 ° ~ 85 ° C, 5% to 95% relative humidity
Cable length	3 metres
Display dimensions (W x H x D)	86 x 66 x 25mm
Antenna dimensions (L x W x H)	51 x 42 x 12mm
Optional suction cup	HMSS-suction



GPS Speed Senders

GNSS Speed Sender Mini range

The Hummingbird GPS Speed Sender Mini including antenna is a compact speed sender providing distance travelled information fixed at 5000 pulses per km.

Hummingbird Electronics' Mini GPS Odometer Sender is a calibration-free speed sender that provides distance travelled information in an independent manner.

As there is no physical connection to sensitive vehicle sender or CAN-bus systems, vehicle warranties are unaffected by the use of this unit.

Using the data received from the Global Positioning Satellite network, the GPS Odometer Sender calculates three-dimensional ground speed and provides a pulsed output compatible with existing mechanical speed senders.

This state-of-the-art solution eradicates the dependency on vehicle-specific parameters, thereby reducing installation time and eradicating the need for calibration and recalibration.

Powerful performance

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

A 51 channel acquisition engine with the ability to track 14 satellites simultaneously, enhanced receiver sensitivity and active antenna results 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 saved in case of power failure.

Three-dimensional velocity calculations are accurate to 0.2km/h and pulse output rates are updated five times per second.

Compensation is provided for inaccuracies in pulse output that may occur due to loss of lock in tunnels and similar complex RF terrains.

The proprietary compensation algorithm uses the positions at which lock was lost and re-gained to estimate lost distance, which is then compensated for by increasing the output pulse rate until the lost distance has been regained.

Rugged hardware

Mini GPS Odometer Sender is supplied in an ABS plastic enclosure that has been designed to be so small that it can be incorporated in the wiring loom of most installations. Antenna connection for the active antenna is provided through a gold-plated threaded SMA connector.

The antenna is waterproof and is protected against UV radiation. The magnetic mount antenna is suitable for mounting in the interior of the vehicle, for example under the dashboard or rear windowsill.

Power to the unit and pulse outputs are provided through colour-coded wires.

Features

- Tracking of up to 14 satellites simultaneously
- Fast startup
- No calibration required
- Three-dimensional velocity calculations accurate to 0.2km/h
- Pulse output rates updated five times per second
- Loss of lock in tunnels and similar complex RF terrains is compensated for
- Red/green LED provides status information
- Four colour-coded wires for easy installation
- Input voltage from 9 to 36 volts



HMGM5000M - Magnetic Antenna



HMGM5000B - Bulkhead Antenna

Pulse rate (pulse per km)	5000 - will increase during lost distance catchup	
Power consumption	43mA at 12V	21mA at 12V
Input voltage	9-36V	
Differential output pulses	Square wave, peak to peak VIN - maximum current drain 25mA	
Acquisition time, loss of lock	Less than 2 seconds (90% of the time)	
Acquisition time, temp loss of power	Less than 10 seconds (50% of the time) - less than 13 seconds (90% of the time)	
Acquisition time, power-up	Less than 38 seconds (50% of the time) - less than 42 seconds (90% of the time)	
Horizontal accuracy	Within 5m (50% of the time)	
Altitudinal accuracy	Within 10m (50% of the time) - within 16m (90% of the time)	
Velocity precision	Within 0.06m/sec or 0.22km/h	
Update rate	5 times per second (5Hz)	
RF interface	SMA connector	SMA connector
Operating temperature	-40°~85°C - 5% to 95% relative humidity	
Dimensions (L x W x H)	46 x 20 x 12mm	46 x 20 x 12mm
Antenna dimensions (L x W x H)	51 x 42 x 12mm	
Cable length	3m	
Included features	14 channel tracking receiver	

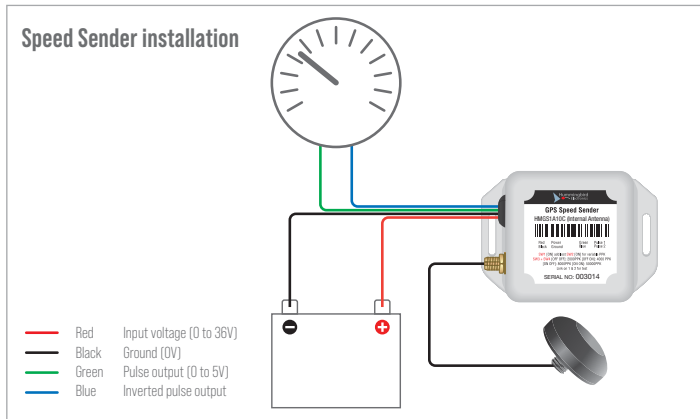
GPS Speed Sender range

The Hummingbird Global Navigation Satellite System (GNSS) Speed Sender is a compact speed sender providing distance travelled information using GPS and GLONASS satellite networks for greater accuracy.

It is a calibration-free replacement for mechanical speed senders, making installs even quicker.

Features

- GPS and GLONASS for greater accuracy
- Simple electrical installation
- No calibration required
- Internal or external antenna
- Variable pulse rates available between 1000 – 10,000 pulses per km (ppk)
- Four selectable fixed pulse rates: 2000, 4000, 8000 and 50,000ppk
- Optional tunnel distance correction
- Multi-voltage - 12/24 volts



Speed Sender antenna options

With the exception of the HMGS1A10CP - Passive Internal Antenna all Speed Senders are compatible with two types of antennas... choose the one that best suits your requirements.

Magnetic Antenna HMGA0M1SMA



Bulkhead Antenna HMGA0B1SMA



HMGS1A10CP - Passive Internal Antenna



HMGS1A10CM - Magnetic Antenna



HMGS1A10CB - Bulkhead Antenna

	HMGS1A10CP - Passive Internal Antenna	HMGS1A10CM - Magnetic Antenna	HMGS1A10CB - Bulkhead Antenna
Pulse rate (pulse per km)	Variable 1000 to 100,000 or fixed 2000, 4000, 8000, 50,000		
Power consumption	240mW	480mW (including antenna)	480mW (including antenna)
Input voltage	Minimum for operation 6V - maximum 36V		
Differential output pulses	Square wave, peak to peak 5V, DC 2.5V - maximum current drain 25mA		
Acquisition time, loss of lock	Less than 2 seconds (90% of the time)		
Acquisition time, temp loss of power	Less than 10 seconds (50% of the time) - less than 13 seconds (90% of the time)		
Acquisition time, power-up	Less than 38 seconds (50% of the time) - less than 42 seconds (90% of the time)		
Horizontal accuracy	Within 5m (50% of the time) - within 8m (90% of the time)		
Altitudinal accuracy	Within 10m (50% of the time) - within 16m (90% of the time)		
Velocity precision	Within 0.06m/sec or 0.22km/h		
Update rate	10 times per second (10Hz)		
RF interface	N/A	SMA connector	SMA connector
Operating temperature	-40°~85°C - 5% to 95% relative humidity		
Dimensions (L x W x H)	50 x 67 x 21mm	55 x 67 x 21mm	55 x 67 x 21mm
Antenna dimensions (L x W x H)	51 x 42 x 12mm		
Cable length	3m (minimum)		
Included features	56 channel tracking receiver		

GPS Speed Switches

Our range of GPS Speed Switches provide a warning or take action when a vehicle exceeds a given speed.

They are simple to install, calibration-free speed-based switches.

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

Using data received from the Global Positioning Satellite network, the GPS Speed Switch calculates three-dimensional ground speed. If the speed exceeds the threshold, the relay contacts switch, providing the installer with maximum versatility.

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 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 10 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 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.

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

Rugged hardware

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.

Features:

- Ideally suited to providing a warning or taking action when a vehicle exceeds a given speed
- No connection to vehicle electrics
- Voltage-free relay output
- Adjustable speed limit
- Km/h or mph
- External GPS and GLONASS antenna
- Multi voltage - 12/24 volts
- Installer-settable speed threshold



HMSW1000BM GPS Speed Switch - Magnetic Antenna



HMSW1000BB GPS Speed Switch - Bulkhead Antenna

Input voltage	9-36V	9-36V
Power consumption	480mw including antenna	480mw including antenna
Relay current	Internal resettable fuse - 1A	Internal resettable fuse - 1A
Aquisition time - loss of lock	Less than 2 seconds (90% of the time)	Less than 2 seconds (90% of the time)
Aquisition time - temp loss of power	Less than 10 seconds (50% of the time) Less than 13 seconds (90% of the time)	Less than 10 seconds (50% of the time) Less than 13 seconds (90% of the time)
Aquisition time - power up	Less than 38 seconds (50% of the time) Less than 42 seconds (90% of the time)	Less than 38 seconds (50% of the time) Less than 42 seconds (90% of the time)
Accuracy - horizontal	Within 5m (50% of the time) Within 8m (90% of the time)	Within 5m (50% of the time) Within 8m (90% of the time)
Accuracy - altitude	Within 10m (50% of the time) Within 16m (90% of the time)	Within 10m (50% of the time) Within 16m (90% of the time)
Precision velocity	Less than 0.06m/sec or 0.22km/h	Less than 0.06m/sec or 0.22km/h
Update rate	5 times per second (5hz)	5 times per second (5hz)
Rf interface	SMA connector supplied on magnetic and bulkhead antenna versions	SMA connector supplied on magnetic and bulkhead antenna versions
Speed switch dimensions (W x L x H)	55.0 x 82.0 x 35.2mm	55.0 x 82.0 x 35.2mm
Antenna dimensions (L x H)	51.0 x 12.0mm	51.0 x 12.0mm
Cable length	5 metres	5 metres
Spare antenna part number	HMGAOM1SMA magnetic mount	HMGAOB1SMA bulkhead mount
Operating temperature	-40 °~85°C - 5% to 95% relative humidity	-40 °~85°C - 5% to 95% relative humidity
Included features	50 channel tracking receiver	50 channel tracking receiver

GPS Speed Alerts

Our range of GPS Speed Alerts provide an accurate, highly-visible, fast-response digital speedometer and over-speed alert in a small, easy-to-mount unit.

They use satellites to determine three-dimensional speed and heading independently of the vehicle. No calibration is required for the unit to display correct speed in kilometres per hour or miles per hour.

The user can choose between three displays to show speed only; speed and heading; or speed, heading, position and battery voltage.

No installation or calibration is required. Each unit contains an internal antenna and the only electrical connection required is via a cigarette lighter plug that can be used in 12 or 24 volt vehicles.

Speed is displayed on a colour screen; the colour changes from green to red as the user-settable speed threshold is exceeded. A user-selectable buzzer can also be enabled to sound as an over-speed warning.

The speed threshold can be set by the user by pressing the up and down arrows on the keypad. The menu key and on-screen menu allows the user to select speed in km/h, mph or knots, and to enable or disable the buzzer.

The unit is mounted with a flexible windscreen mount and can also be attached using any standard camera mount, including those available from RAM.

Features:

- Speed in km/h, mph or knots
- GPS speed independent of vehicle
- Can permanently disable position display mode for rallies
- Multi voltage - 12/24 volts with 9 to 36 volt input voltage range
- Precision of 0.1 km/h
- Internal GPS and GLONASS for highest precision
- Cigarette lighter connection
- Optional buzzer and changes of colour for over-speed warning
- Low current draw
- Voltage monitoring of battery
- Multiple mounting options
- User-settable speed threshold

GPS Speed Alert range



HMSA3000/HMSA3300/HMSA3500
GPS Speed Alerts



HMSA4000B
GPS Speed Alert including odometer and track day mode function

Input voltage	Minimum 9V - maximum 36V	Minimum 9V - maximum 36V
Power Consumption (W)	Maximum 1.2W (100mA @ 12V - 50mA @ 24V)	Maximum 1.2W (100mA @ 12V - 50mA @ 24V)
Dimensions (mm)	70mm (width), 50mm (height), 18mm (depth)	70mm (width), 50mm (height), 18mm (depth)
Acquisition time, power-up	Less than 38 seconds (50% of the time), less than 42 seconds (90% of the time)	Less than 38 seconds (50% of the time), less than 42 seconds (90% of the time)
Resolution speed	One unit (km or miles per hour)	One unit (km or miles per hour)
Resolution distance	One unit (meter or feet)	One hundredth of a unit (km or miles)
Antenna	Internal	Internal
Mounting system	HMSA3000 - windscreen mount HMSA3300 - bracket dash mount HMSA3500 - RAM mount	Windscreen mount
Cable length	2 metres	2 metres
Display weight	178g	178g
Display dimensions (W x H x D)	74 x 52 x 17mm	74 x 52 x 17mm
Included features		Odometer and track day mode functions: 0 - 60mph, 0 - 100km/h, maximum speed, 60ft time, 1/8 and 1/4 mile time, GPS lap mode and GPS finish