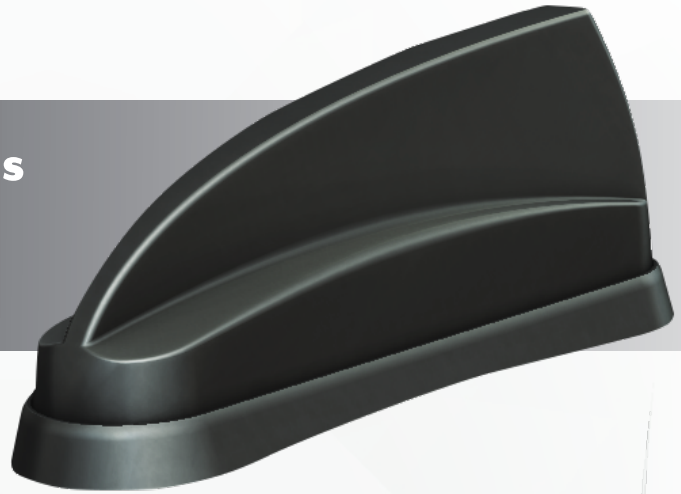


# Installation Instructions

GPSD-6-60 & SHK[G]-6-60 Series

SW3-031 - v1.2



## 1. Introduction

The GPSD/SHK[G]-6-60 series is a multi-function antenna with 2x2 MiMo for 4G/5G LTE. The GPSD & SHKG versions incorporate an active GPS/GNSS antenna with 26dB gain LNA. The GPSD version has a M6 stud (under a blanking cover) for an optional comms whip. Additionally, versions of each type are available with 2x2, 3x3 or 4x4 MiMo dual band WiFi antennas. This antenna is suitable for fitment to vehicle panels of up to 8mm (0.31"), although an optional thick panel fitting kit is available. Heat shrink tubes are included in the kit, to enable the coaxial connections to be sealed as an extra precaution if required.

## 2. Mounting requirements and selecting location

For optimum performance, it is recommended that the antenna is fitted on a conductive (metal) panel. For SHK(G) and GPSD (with no whip fitted), it is possible to mount the antenna on a non-conductive panel with acceptable performance for all the antenna functions. For GPSD type, with comms whip fitted, the antenna must be fitted on a conductive ground plane - recommended size is ½ wave length diameter at the lowest frequency of whip operation. To calculate this size, use formula below:

$150 / \text{frequency in MHz} = \frac{1}{2} \text{ wavelength (m)}$   
 Example: 150MHz = 100cm (39.4"); 400MHz = 38cm (15"); 900MHz = 16cms (6.3").

When fitting the GPSD with comms whip on a non-metallic panel, a ground plane plate of suitable size should be fabricated and fitted under the mounting panel. In all cases the earthing washer must make low resistance electrical contact with the ground plane plate (<0.2Ω). Select a mounting location, checking for any roof curvature to ensure that the antenna base contacts evenly on the mounting surface. The antenna should be located as far as possible from surrounding roof mounted items (e.g light bar, air con unit). Ensure that there is adequate under panel clearance and that there is no double skin panel or cross brace present. Measure to check for central position if applicable.

## 2. Prepare and drill hole



Fig.1

Mask panel area around hole position to protect paintwork and headliner. Drill a pilot hole, and then increase to 19mm (3/4"), ensuring that drill/cutter bit does not contact headliner. Clean area around the hole, carefully removing all burrs and swarf.

Remove paint and primer from under panel surface to ensure effective earth contact by washer and nut. Apply some petroleum jelly or paint around the hole to prevent corrosion.

## 3. Fitting the antenna

Remove protective backing from underside of antenna, feed coaxial cables through panel. Position the antenna over the hole ensuring correct orientation and stick to panel by applying firm downward pressure.

When fitting the nut, it is important to ensure that the cables are held centrally whilst the nut is correctly started on the threads. The nut should fit freely by hand and only require a final tighten by spanner to a recommended torque of 5Nm. It is important not to over-tighten the nut as this can cause damage to the mounting panel. For GPSD, if using comms whip, remove blanking cap and screw whip securely to mounting stud.

## 4. Routing and terminating coaxial cable(s)

If heat shrink tubes are to be used, slide onto antenna cable tails prior to connecting extension cables – it is recommended that these are heat shrunk only after all tests have been satisfactorily completed. Connect extension coaxial cables to antenna, ensuring that the connectors are fully inserted and tightened, then route to equipment. Fit correct coaxial connector or adaptor to cables as required.



When routing the cables take care to avoid running them adjacent to any existing vehicle wiring or fouling any moving vehicle components. The cables must not be routed in front of any airbag device.

## 5. Commission and test

### Check GPS/GNSS cable (where applicable):

- Check the GPS/GNSS cable with DC to measure high resistance.
- Connect the GPS / GNSS cable to the GPS/ GNSS receiver and check for satellite acquisition.

### Check comms cable(s)

- Carry out VSWR check, should measure <2.5:1 in transmit band (antenna type dependent).
- Connect Cellular/ LTE & WLAN cables as applicable or stow unused pigtailed.

## 6. Notices



**Important Note Regarding Sealing** - In order to ensure that the installation is properly sealed against the mounting surface care must be taken regarding curvature of the mounting panel. It is highly recommended to install the antenna on a clean, flat and level surface. After installation the compression of the rubber boot against the mounting panel should be checked and a small bead of neutral cure silicone sealant can be applied around the periphery of the mounting boot if required. It is important that the periphery of the antenna is sealed and that no moisture is allowed to penetrate under the antenna boot.



**Electrical Safety Note** - The GPSD and SHK[G] contain an active GPS/GNSS antenna. Rated voltage: 3-5VDC Rated current: 20mA maximum. The supply to this device must be provided with overcurrent protection of 1A maximum.



**General Safety Note** - Make sure that the product is mounted so that it cannot fall and cause injury. Do not chew the product or put it in your mouth. Do not leave children unsupervised with the product or packaging.



**CAUTION** - To comply with FCC RF Exposure requirements in section 1.1310 of the FCC Rules, antennas used with this device must be installed to provide a separation distance of at least 20 cm from all persons to satisfy RF exposure compliance.



**DO NOT** -

- operate the transmitter when someone is within 20 cm of the antenna.
- operate the equipment in an explosive atmosphere.
- chew parts or put them in mouth, keep away from unsupervised children.



Waste electrical products should not be disposed of with household waste. All electronic products with the WEEE logo must be collected and sent to approved operators for safe disposal or recycling. Please recycle where facilities exist. Many electrical/electronic equipment retailers facilitate "Distributor Take-Back scheme" for household WEEE. Check with your Local Authority or electronic retailers for designated collection facilities where WEEE can be disposed of for free.



### Directive 2011/65/EU (RoHS 2)

RoHS 2 compliance is declared per Directive 2011/65/EU and its subsequent amendments with exemption 6.c applied.

REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals, EC 1907/2006)

This product contains Lead (CAS No. 7439-92-1) which is classified as an SVHC (Substance of Very High Concern) as being toxic to reproduction under Article 57c. of REACH. Do not chew parts or put them in mouth, keep away from unsupervised children. Dispose of parts as WEEE waste do not send to landfill.

This declaration is issued under the sole responsibility of the manufacturer

The object of the declaration described above is in conformity with the relevant Union Harmonization Legislation below:

Directive 2014/53/EU Radio Equipment Directive (RED)

Harmonised Standards and References:

EN 301 489-1 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".

Referencing EN 61000-4-2:2009 – Electrostatic Discharge Immunity and EN 61000-4-3:2006 +A1:2008 +A2:2010 – Radiated RF Immunity EN 300 440-1 V1.6.1 (2010-08) – Electromagnetic compatibility and radio spectrum matters (ERM); short range devices; radio equipment to be used in the 1GHz to 40GHz frequency range; Part 1: Technical characteristics and Test methods in accordance with EN 300 440-2 V1.4.1 (2010-8) - Electromagnetic compatibility and radio spectrum matters (ERM); short range devices; radio equipment to be used in the 1GHz to 40GHz frequency range

Low Voltage Directive: Directive 2014/35/EU (Electrical Equipment designed for use within certain voltage limits) of 26th February 2014.

EN62368-1: 2014 Audio/video, information and communication technology equipment. Safety requirements

Waiver: This document represents information compiled to the best of our present knowledge. It is not intended to be a representation or warranty of fitness of the products described for any particular purpose. This document details guidelines for general information purposes only. Always seek specialist advice when planning installations and ensure that antennas are always installed by a properly qualified installer in compliance with local laws and regulations.

**Do not chew parts or put them in mouth, keep away from unsupervised children.  
Dispose of parts as WEEE waste do not send to landfill.**