

Installation Instruction – SW3-935

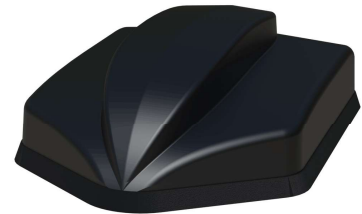
MiMo UHF / 4G/5G Sharkfin Antenna

SW3-935 V1

A. Introduction

The GPSDS[X]/SHK[G]/S[X]/FINDS[X] series is multi-function antenna with 2x2 MiMo function for 4G and 3.6GHz 5G LTE, 2x2 UHF LTE function in banded variants from 380-470MHz and incorporates up to two active GPS/GNSS antenna with 26dB gain LNAs. The GPSD version has a M6 stud (under a blanking cover) for an optional comms whip. In addition, versions are available which include 2x2, 3x3 or 4x4 MiMo dual band WiFi antennas.

This antenna is suitable for fitment to vehicle panels of up to 8mm (0.31"). Heat shrink tubes are included in the kit, to enable the coaxial connections to be sealed as an extra precaution if required.



Electrical Safety Note

The GPSD, SHK[G] variants 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.

B. Mounting requirements and selecting location

For optimum performance, it is recommended that the antenna is fitted on a conductive (metal) panel. For GPSD version, if a whip will not be fitted, and for SHK[G] and FIND types, it is possible to mount the antenna on a non-conductive panel with acceptable performance for all the antenna functions. For GPSD type, if a whip is to be used, then the antenna must be fitted on a conductive ground plane - recommended size is $\frac{1}{2}$ wave length diameter at the lowest frequency of whip operation. To calculate this size, use formula below:

$$150 / \text{frequency in MHz} = \frac{1}{2} \text{ wavelength (m)}$$

Examples: 150MHz = 100cm (39.4"); 400MHz = 38cm (15"); 900MHz = 16cms (6.3").

When fitting on a non-metallic panel, if a whip is being used a ground plane plate of suitable size should be fabricated and fitted under the mounting panel; the earthing washer must make low resistance electrical contact with this plate ($<0.2\Omega$). Select a mounting location, checking for roof curvature to ensure that the antenna base will have a flat 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.



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. For the GPSD variants if a whip is not being used or is removed for a carwash then the blanking cap should be fitted.

C. Prepare and drill hole

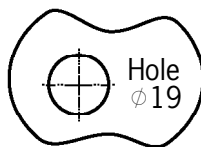


Fig.1

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 swarf.

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

D. 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, allow the boot to fully compress against the mounting panel.

Caution – A slotted/split nut is provided in order to simplify fitting it over the coaxial cables. 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.

Assemble the nut and washer from underside and tighten to recommended torque of 5Nm (3.6 ft/lbs).
Remove blanking cap and screw comms antenna whip securely to mounting stud (where used).

E. 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 tests have been satisfactorily completed. Connect extension coaxial cables to antenna and route to equipment. Fit correct coaxial connector or adapter 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.

F. 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, UHF LTE, Whip & WLAN cables or stow unused pigtailed.

G. Notices



DO NOT

- operate the transmitter when someone is within 0.3m (1') of the antenna.
- operate the equipment in an explosive atmosphere.
- attempt to install the antennas without the proper safe equipment to access the install location.
- chew parts or put them in mouth, keep away from unsupervised children.



European Waste Electronic Equipment Directive 2002/96/EC

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.**

EU Declaration of Conformity

Object Reference: GPSD[X]S[X] / SHKG[X]S[X]
Object Description: MiMo UHF / 4G/5G Sharkfin with GNSS Antenna
Manufacturer: Panorama Antennas Ltd 61 Frogmore, London, SW18 1HF, U.K.

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