



## **Installation Instructions**

### **Dual Sharkee**

FIND4/GPS[2]D4[W]/SHK[G]4[W]-6-60[-H][-Q][-D]  
SW3-1025- v1



# Content

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# 1. Introduction

The FIND4/GPS[X]D4/SHK[G]4 series is a multi-function sharkfin style antenna with 4x4 MiMo for 4G/5G. The GPS[X]D4 incorporates either a single or multiple GPS/ GNSS antennas with 26dB gain LNA or a single L1/L2/L5 antenna with up to 37dB LNA gain. The GPS[X]D4 type features an M6 mounting stud for an optional comms whip. Note: The SHK[G]4 type does not have this feature . Versions are available which can include up to 6x6 MiMo dual band WiFi 6e function. The antenna is suitable for fitment to vehicle panels up to 4mm (0.15") thick. An extended mounting kit for thicker panels is available as an accessory.



## Electrical Safety Note

The standard GPS[X]D4/SHK[G]4 contain single or multiple active GPS/GNSS antennas.  
Rated voltage: 3-5VDC

Rated current (each antenna): 20mA maximum.

The GPS25D4/SHK25G4 contain a single active GPS/GNSS antenna.

Rated voltage: 3-12VDC. Rated current: 35mA maximum.

**The supply to these devices must be provided with over current protection of 1A maximum.**

# 2. Mounting requirements and selecting location

For optimum performance, it is recommended that all versions of the antenna are fitted on a conductive (metal) panel, although it is possible to mount the antenna on a non-conductive panel with acceptable performance for all the internal antenna functions. For GPS[X]D4 type, when a whip is to be used, the antenna must be fitted on a conductive ground plane - recommended minimum size is 1/2 wave length diameter at the lowest frequency of whip operation. To calculate this size, use formula below:

$$50 / \text{frequency in MHz} = 1/2 \text{ wavelength (m)}$$

$$\text{Example: } 150\text{MHz} = 100\text{cm (39.4")}; 400\text{MHz} = 38\text{cm (15")}; 900\text{MHz} = 16\text{cms (6.3")}$$

When fitting 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 ( $<0.2 \Omega$ ). Select a mounting location, checking for roof curvature to ensure that the antenna base will have a flat mounting surface if possible. 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**

*To ensure that the antenna base is effectively sealed against the mounting surface, care must be taken regarding curvature of the mounting panel. It is highly recommended that the antenna is installed on a clean, flat and level surface. After installation the compression of the rubber boot against the mounting panel should be checked and if necessary, a small bead of neutral cure silicone sealant can be applied around the edge of the mounting boot. It is important that the periphery of the antenna is sealed and that no moisture is allowed to penetrate under the antenna boot.*

### 3. Prepare and drill hole

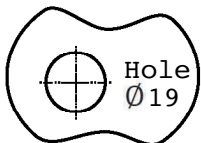


Fig. 1



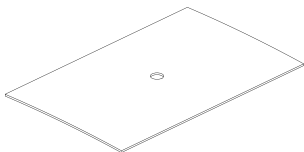
Up to 13 cables fitted with standard (SMA/FME) connectors, or 12 cables fitted with FAKRA type connectors can pass through a 19mm (3/4") clearance hole. If other connector types are fitted or the number of feeds exceeds these limits, you may need to consider drilling a larger mounting hole. Mask panel 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 any burrs and swarf. Remove paint and primer from under panel surface to ensure low resistance contact by washer and nut. Apply some petroleum jelly or paint around the hole to prevent corrosion.

### 4. Fitting the antenna

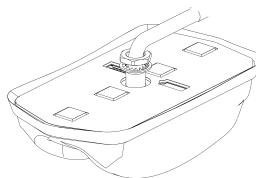
Remove protective backing from underside of antenna, feed coaxial cables through panel. Position the antenna over the hole ensuring correct orientation and stick to panel by applying firm, even, downward pressure.

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 requires a final tighten by spanner to a recommended torque of 5Nm. It is important not to over-tighten the nut as this may cause damage to the mounting panel. Remove blanking cap and screw comms antenna whip securely to mounting stud (where used).

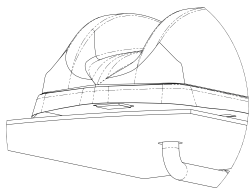
- 1 Prepare mounting surface. Drill hole etc. as per standard instructions



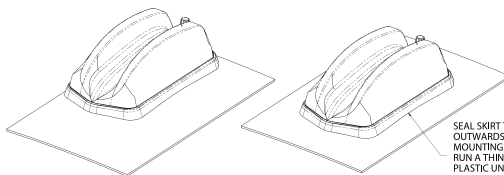
- 2 Remove nut, washer. Remove pad liner



- 3 Feed cables through hole

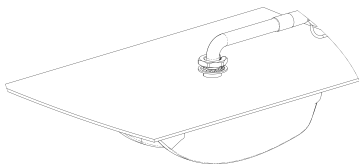


- 4 Firmly press down on antenna to affix to mounting surface, ensure that seal skirt splay out into surface

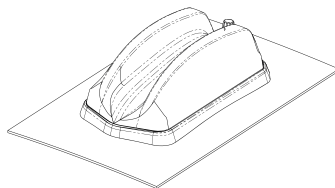


SEAL SKIRT TO SPLAY  
OUTWARDS ONTO  
MOUNTING SURFACES.  
RUN A THIN STRIP OF  
PLASTIC LINER SKIRT  
TO ASSIST (E.G. CREDIT  
CARD)

- 5 Assemble shakeproof washer and nut tighten to 5Nm.



- 6 Check that antenna is firmly secure to mounting surface and that sealing boot edges have played out into surface to form a seal



## 5. 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. Note: It is not recommended to heat shrink over Fakra type connectors. 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.*

## 6. Commission and test

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

- Check the GPS/GNSS cable(s) with DC to measure high resistance.
- Connect the GPS / GNSS cable(s) to the GPS/ GNSS receiver(s) 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 pigtails.

## 7. Notices



### CAUTION

Consider relevant RF exposure rules. Ensure that the antenna is installed to provide a minimum separation distance of at least 20 cm (8") from all persons during use.



### DO NOT

- operate the transmitter when someone is within 20 cm (8") 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

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