



# Installation Instructions

## L[G]AM-6-60 Series

SW3-965 - v1

### 1. Introduction

The L[G]AM-6-60 series is multi-function IOT antenna with 2x2 MiMo for 4G/5G LTE. The L[G]AM version incorporates an active GPS/GNSS antenna with 26dB gain LNA. In addition, versions are available which can include 2x2, 3x3 or 4x4 MiMo dual band WiFi function. The antenna is suitable for fitment to panels of thickness up to 8mm (0.31").



#### Electrical Safety Note

The L[G]AM 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.**

### 2. Mounting requirements and selecting location

For optimum performance especially across 617-698MHz, it is recommended that the antenna is fitted on a conductive (metal) panel (recommended minimum size 300mm (1') diameter). It is possible to mount the antenna on a non-conductive panel with acceptable performance for all the antenna functions above 698MHz. Performance will vary slightly depending on whether a ground plane is present or not.

Select a mounting location, checking for panel curvature to ensure that the antenna base will have a flat mounting surface. The antenna should be located as far as possible from surrounding structures and obstructions. If the antenna will be co-located with other antennas or equipment please try to ensure at least 30cm (12") of clearance around the antenna.

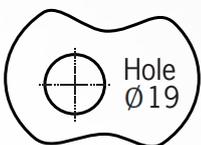
Ensure that there is adequate under panel clearance. Measure to check for central position if applicable.



#### 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. 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



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

If mounting on a metal panel then 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.

 Fig.1

## 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 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 overtorque the nut as this can cause damage to the mounting panel.

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

Route the coaxial cables to the radio equipment, taking care to avoid running them adjacent to any existing wiring or fouling any moving components. When installing the antenna on a vehicle, the cables must not be routed in front of any airbag device.



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## 6. 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 as per datasheet.
- Connect Cellular/ LTE & WLAN cables as applicable or stow unused pigtails.

## 7. Notices



### 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 (8") from all persons to satisfy RF exposure compliance.



### 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.



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.

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 as 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.