



## INSTALLATION INSTRUCTIONS

L[G]M[X]M4[X]-6-60[-24-58] SERIES

SW3-931- v1.0

## CONTENTS

EN

**INSTALLATION INSTRUCTIONS**  
SW3-931  
L[G]M[X]M4[X]-6-60 SERIES - V1.0

1-5

**CONTACT INFORMATION**

6

## INTRODUCTION

The L[G]M[X]M4[X]-6-60[24-58] series offers a comprehensive range of antennas for vehicular applications requiring 4x4 MiMo function for 4G/5G. The antenna range offers a robust, low profile housing incorporating four ultra-wideband cellular elements supporting 4G and 5G bands, with fall back capability to 3G/2G.

Versions of the antenna are available with additional 2x2, 3x3, 4x4 or 6x6 MiMo function for dual band WiFi and the LG version incorporates an active GNSS antenna suitable for use with GPS, GLONASS, BeiDou, QZSS and Galileo devices.

Please ensure that you have the correct version before you commence installation.



### Electrical Safety Note

The LG version of this product contains an active GNSS antenna (part number SR8-JG26NS). Rated voltage: 3-5VDC Rated current: 25mA maximum

**The supply to this device must be provided with overcurrent protection of 1A maximum.**

1

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## MOUNTING REQUIREMENTS AND SELECTING LOCATION

This antenna range does not require a ground plane in order to operate, so may be fitted on a metal or plastic roof panel.

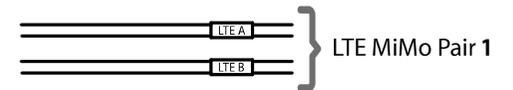
When the antenna is to be co-located with other antennas or roof mounted equipment, try to achieve a minimum of 30cm (12") clearance around the antenna in order to avoid de-tuning and interference issues.

The antenna will fit on a panel up to 9mm (0.35in) thick – extender kit M18-EXT is available for thicker panels. For the mounting location, select a flat panel area to accommodate the 18cm (7.1in) diameter footprint of the antenna. For curved or ribbed roof panels, fitting kit LGMM-EXT-R is available as an accessory item. For temporary magnetic fitment the magnetic base SAB-225 is a suitable accessory.

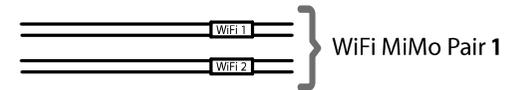
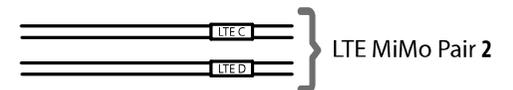
## APPLICATION NOTE

The cellular elements in this antenna provide the required isolation for 4x4 MiMo applications. The use with two separate 2x2 MiMo antenna systems is not recommended as there may not be sufficient isolation. The antenna could be used where a wireless device has two radios (SIM cards), each with 2x2 MiMo connection, where only one radio will be active at any time (e.g. failover operation).

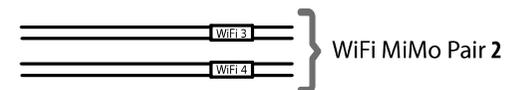
When used in failover application, ensure that the LTE element pairs are assigned as A&B and C&D.



Where the WiFi antennas are to be used for separate 2x2 MiMo functions, the same approach to the correctly paired elements should be taken with WiFi pairs assigned 1&2, 3&4 and 5&6 depending on how many elements are required.



Where using 2x 3x3 WiFi using the 6x6 version of the product the antennas should be matched 1,2&5 and 3,4&6 respectively.



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2

## PREPARE AND DRILL HOLE

Mask the panel area around the hole position to protect the paintwork and headliner. Drill a pilot hole, and then either use a hole cutter of correct size or increase the hole diameter to 19mm (3/4"), ensuring that drill/cutter bit does not contact the internal headliner. Clean area around the hole, carefully removing all swarf. Apply some petroleum jelly or paint around the hole to prevent corrosion.

## FITTING THE ANTENNA

**Note:** The adhesive pad provides a means to fixture the antenna during installation and assists with the sealing function of the antenna to mounting panel. The temperature range for optimum pad bonding process is 21°C (70°F) to 37°C (100°F) - it is recommended that the installation is not carried out in temperatures of less than 50°F (10°C).

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

**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). Ensure that the sealing boot is properly compressed.

## ROUTING AND TERMINATING COAXIAL CABLE(S)

Connect the extension coaxial cables to the antenna and route the cables to the radio equipment.



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.

Fit the correct coaxial connectors or adapters to the cables as required.

3

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## COMMISSION AND TEST

### Check the GNSS cable (if applicable):

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

### Check the comms cables:

- Earth continuity: connector body to vehicle ground should measure  $<0.2\Omega$  (where applicable).
- Connector body to centre pin should measure open circuit.
- Carry out VSWR check - the VSWR on all feeds should meet the specification in product data sheet.
- Connect the Cellular/LTE and WiFi cables (if applicable) or secure unused pigtails.

## NOTICES



**RF Safety Note** – Ensure that the antenna is mounted in such a way that no person is likely to be within a distance of 30cms (12") from the antenna during use. Ensure that the antenna is used only as supplied the co-axial cables should not be cut shorter or otherwise modified.



**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.



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.

**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.**

4

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### EU Declaration of Conformity (RED)

**Object Reference:** L[G]M[X]M4[X]-6-60[-24-58]  
**Object Description:** Low Profile MiMo Antenna with active 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.  
 EN60950-1: Safety of information technology equipment – according to test specification EN 60950-1:2006+A2:2013

RoHS 2 compliance is declared per Directive 2011/65/EU and its subsequent amendments with exemption 6.c applied. This product contains lead as an alloying element in a copper alloy containing up to 4% lead by weight.

Panorama's sole liability for incorrectly certifying a product shall be either replacement of the product or, alternatively and in the sole discretion of Panorama, return of the purchase price paid for the relevant Panorama Antennas product.

For additional information regarding Panorama's environmental initiatives please visit [www.panorama-antennas.com](http://www.panorama-antennas.com)

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