# datasheet
GPS L1/L2 Antenna

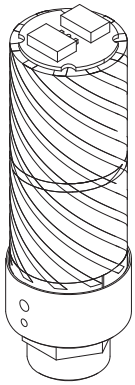
## HGL GPS L1/L2 Antenna

**The Helix Geospace GPS L1/L2 Antenna is a dielectric loaded decafilar helix, which uses patented Dielectrix™ antenna technology to provide the highest available efficiency per unit of size/volume.**

These antennas have excellent co-to-cross polarisation and therefore provide useful discrimination of multi-path (reflected polarisation-reversed) signals. They are balanced and isolated from platform ground, ensuring high immunity to common-mode noise and very low proximity de-tuning caused by nearby objects.

HGL Dielectrix antennas deliver predictable installed performance that belies the small size, due to operation of the dielectric-core material (patent-protected).

The product will be available encapsulated with an over-moulded protective radome, or unencapsulated as appropriate for direct integration into devices.



## Key Features

**Tuned to GPS L1 and L2 frequencies:**
**(L2) 1,226 MHz (1,217.61,237.6) and (L1) 1,565.42-1,585.42 MHz**

- Intrinsic band-pass filter response, tightly tuned to L1 and L2 frequency bands– immune to out of band interference
- Focused phase centering that is highly accurate and reproducible – a key requirement for autonomous positioning in a multi-constellation environment
- Small antenna per dB of gain
- Immune to static discharge and lightening splashes
- Typical gain at zenith: 37 dBic at L2 and 36 dBic at L1
- RHCP polarization with 30dB co-to-cross polarization discrimination - exceptional rejection of multi-path (reflected) signals
- Low de-tuning due to objects in the near-field – Ideal for hand-held and vehicle-mounted applications
- Cardioid radiation pattern - optimal reception of signals from lowelevation satellites, and when antenna is in a dynamic application (e.g. maritime, airborne and vehicle applications)
- Balanced antenna – resilient to common-mode noise (e.g. vehicle chassis ground fluctuations due to in-car compute and electric drive-train noise)
- Robust – withstands shock and vibration
- Wide operating temperature range (-40 to +85 deg C)
- SMA or U.FL connector option
- Multi-contsellation, covers BeiDou B1, Galileo E1, GLONASS G1 and SBAS.

## Applications

**Helix Geospace HGL series antennas are ideally suited for PNT (Position, Navigation and Timing) applications in which resilience, position accuracy and compact form factor are essential.**

- Precision location and navigation
- Precision timing for network sync and crypto
- Defence/security/CNI/first responder
- UAS/UAV autonomous vehicles and drones
- Asset tracking and fleet vehicle tracking
- Internet of Things
- Personal safety devices, geofencing
- Hand-held and wearable location devices
- Industrial/oil & gas/mining
- AgTech, precision farming, animal tracking.

dielectrix™

**Antenna technology** provides unrivaled efficiency per unit volume.

**Helix Geospace provides custom tuning services to optimise and tune antenna performance when integrated into customers enclosure.**

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## Electrical Specifications

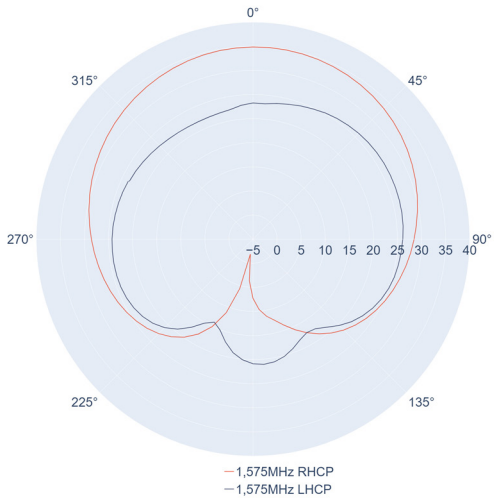
| | Min | Typical | Max | Units |
|---|---|---|---|---|
| Frequency L1 | 1565.42 | 1575.42 | 1585.42 | MHz |
| Frequency L2 | 1217.6 | 1227.6 | 1237.6 | MHz |
| Polarisation | | RHCP | | |
| Antenna element peak gain L1 | | 36 | | @zenith dBic |
| Antenna element peak gain L2 | | 37 | | @zenith dBic |
| Efficiency | | | >60 | Total Spherical |
| Bandwidth (3db) L1 | 1565.42 | | 1585,42 | MHz |
| Bandwidth (3db) L2 | 1217.6 | | 1237.6 | MHz |
| Axial ratio | | | <3dB | dB |
| Impedance | | 50 | | Ohms |
| Operating temp range | -40 | | +85 | C |
| RF connector | | SMA | | |
| Out of band rejection | | | >50 | dB |
| Noise figure | | 1.5 | | dB |
| Power supply | 1.8 | 3.3 | 5 | V |
| Current draw | | 9 | | mA |

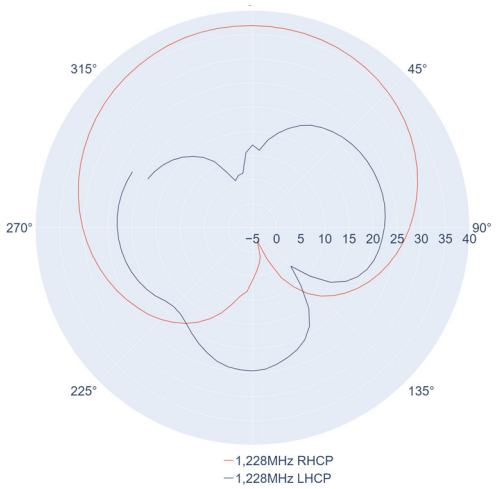
## Mechanical Specifications

| | Min | Typical | Max | Units |
|---|---|---|---|---|
| Dimensions SMA NOM | L 48 x ø 15 | | | mm |
| Dimensions SMA OM | | TBC | | mm |
| Weight SMA NOM | 32 | | | grams |
| Weight SMA OM | | TBC | | grams |
| IP rating (overmould) | | 67 | | IP |
| Additional sealing (overmould) | | O-ring | | |

## Radiation Patterns

The following radiation patterns have been measured WITHOUT a ground plane.

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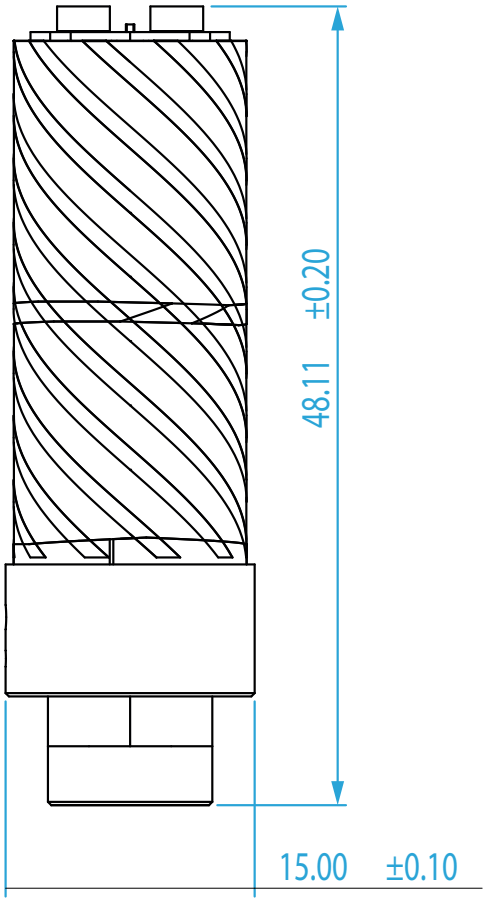
| Part number | Antenna | Connector | Dimensions mm | Weight g |
|---|---|---|---|---|
| HGL-L1L2-S-OMFT-A4-C  | Active<br>Over-moulded plastic radome - Rated: IP67 | SMA Male | TBC | TBC |
| HGL-L1L2-S-0000-A4-C  | Active | SMA Male | L 48 x ø 15 | 25 |
| HGL-L1L2-U-0000-A4-C  | Active | U.FL | TBC | TBC |

## HGL-L1L2-S-0000-A4-C dimensions

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