



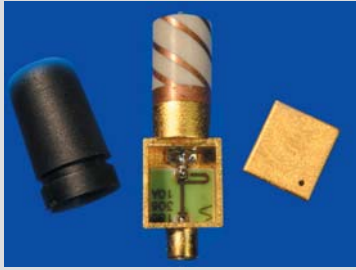
SARANTEL
INSTALLATION GUIDE



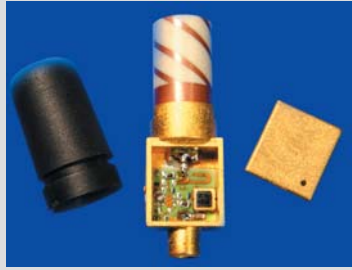
UP CLOSE PERFECTION

USING GEOHELIX™ ANTENNAS IN GPS RECEIVERS

The GeoHelix™ antennas have been designed for use in L1 Band GPS (Global Positioning System) receivers. There are three different versions of the antenna, all of which have been designed to simplify the integration process.

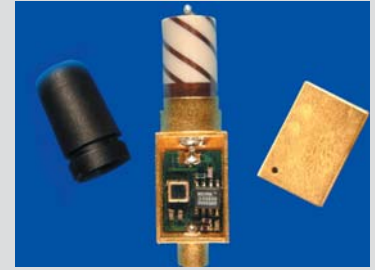


GeoHelix-P is a passive antenna



GeoHelix-M

An active antenna with built in low noise amplifier (LNA) with a typical gain of 10dB.



GeoHelix-H

An active antenna with built in low noise amplifier (LNA) with a typical gain of 20dB.

ELECTRICAL CHARACTERISTICS

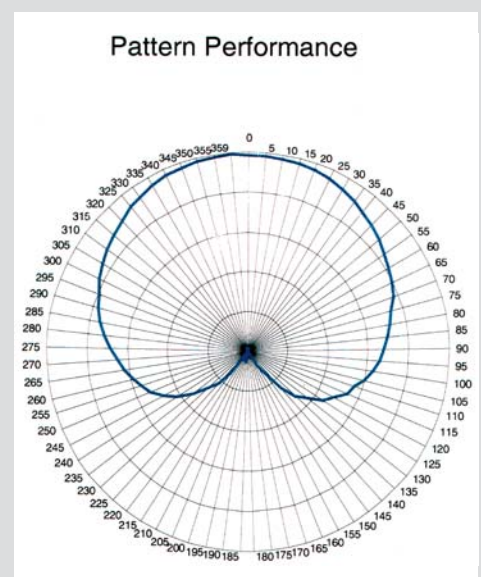
Parameter	GeoHelix-P	GeoHelix-M ⁽¹⁾	GeoHelix-H ⁽²⁾	Units
Frequency Band	1575.42 ±2	1575.42 ±2	1575.42 ±2	MHz
Typical Gain	> -4	10	20	dBi
Maximum Noise Figure	N/A	1.50	1.50	dB
Output Impedance	50	50	50	Ohms
Maximum VSWR	2.0:1	2.0:1	2.0:1	
Supply Voltage	N/A	2.75 - 5.5	3.0 - 5.0	V
Typical Current Consumption	N/A	7	20	mA
Input Third-Order Intercept Point	N/A	+2.8	-14	dBm
Temperature Range	-40 to +85	-40 to +85	-40 to +85	°C

(1) All specifications at Vcc = 3.30V and frequency = 1575.42 ±2MHz at +23°C ±5°C unless otherwise specified

(2) All specifications at Vcc = 5.0V and frequency = 1575.42 ±2MHz at +23°C ±5°C unless otherwise specified

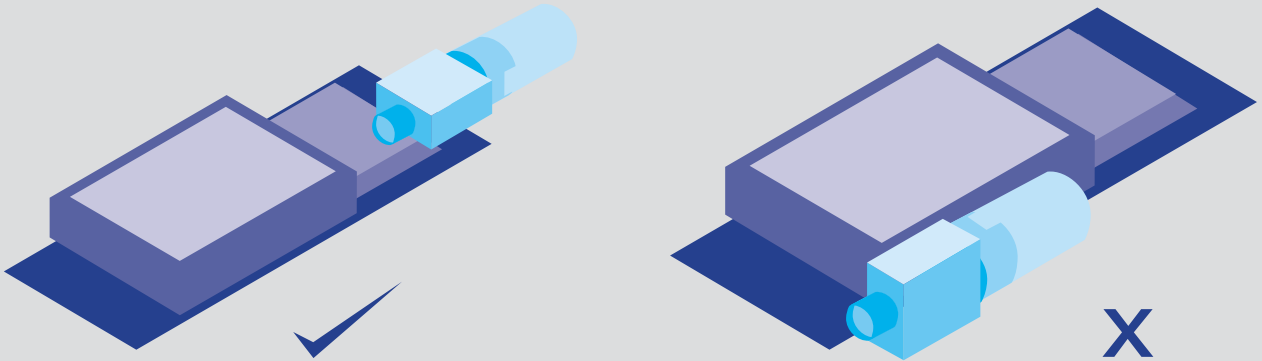
The GeoHelix design offers many benefits over conventional antennas including:

- The antenna is a small ceramic cylinder (10mm diameter by 18mm length), which has a cardioid type Right Hand Circular Pattern (RHCP).
- The omni directional nature of the pattern, along with a 3 dBi beamwidth (greater than 120 degrees), gives the host GPS receiver a greater field of vision above the horizon and accessibility to more satellites.
- Ability to receive right-hand circularly polarised signals above the antenna's horizon and left-hand circularly polarised signals below the horizon, thus assisting GPS reception in built-up areas and other multi path environments. However, this is dependent on the architecture of the receiver.
- A very low Near-Field means that receiver performance is not affected when in close proximity to objects including human tissue. This ensures that the GPS receiver's sensitivity is not impaired when used in hand-held applications
- The balanced configuration of the design removes the need for a ground plane, making the antenna independent of the receiver design.
- An integral Balun ensures complete isolation of the antenna from its mounting, and allows adjacent use of multiple antennas, for example GPS and 3G mobile.



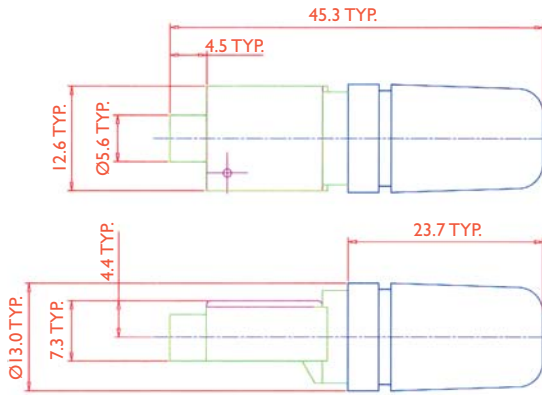
APPLICATION GUIDELINES

- Ensure that the antenna is mounted in such a way as to gain the maximum possible view of the sky during normal use.
- The correct antenna gain is dependent upon both the GPS receiver and the application. To select the correct antenna for your needs please consult Sarantel.
- Some GPS units have been designed to work with an active antenna only. Connecting a passive antenna to a receiver configured for an active antenna will cause a DC short and will risk damaging the receiver's power supply.
- For all active antennas, please ensure that the correct voltages are supplied to the LNA via the RF connectors. See the electrical characteristics table opposite for the correct operating voltages.
- The standard connector at the base of the antenna is a female MCX type connector. To test it please use a male MCX connector. If the antenna is to be installed on a PCB, the required connector is an SMT type right angle MCX plug (Supplier details available from Sarantel).
- Please avoid positioning the antenna near to large metal objects such as metal hydride batteries as this will degrade the signal efficiency.

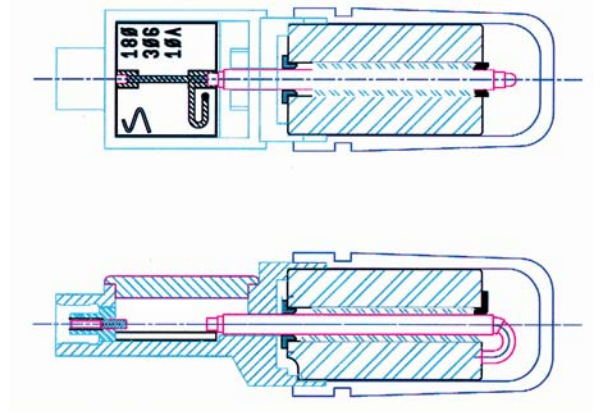


- The ring around the radome cap is designed to provide a weather seal and should not be used as the only mechanical fixing point.
- The antenna mounting box is designed to provide a Faraday Cage which offers protection against electrical interference. This is fitted during the manufacturing process and the protection will be damaged if the lid of the box is removed. Unauthorised removal will void any product warranty.
- The antenna has been extensively tested for temperature and humidity. However, additional protection is recommended below the radome to protect from wet or damp conditions that would damage the contents of the LNA box.
- The standard products are supplied with a rubberised plastic cap which has a known detuning effect. If an alternative material is to be used, please consult the factory about the material selection and the detuning effect thereof.
- If the antenna needs to be mechanically attached to a circuit board, a different box lid is available which has fixing lugs. Each lug has a 1.8mm diameter hole. The following screw types are recommended (Metric screw size M1.2 or American Standard 0-80UNF)
- The LNA box can be soldered directly on to a printed circuit board. To do this ensure that a low temperature solder paste is used with a melting temperature of less than 200°C. A hot air reflow method should be used.

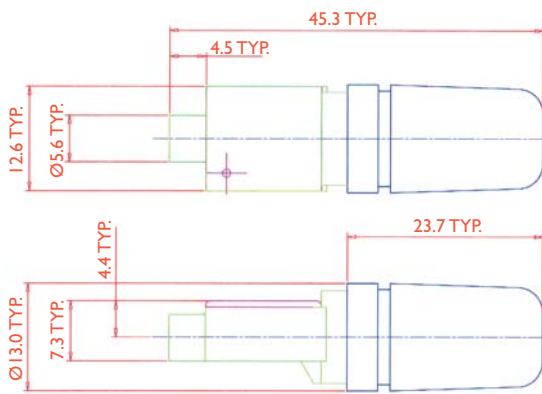
GEOHELIX-P: PASSIVE GPS ANTENNA ASSY



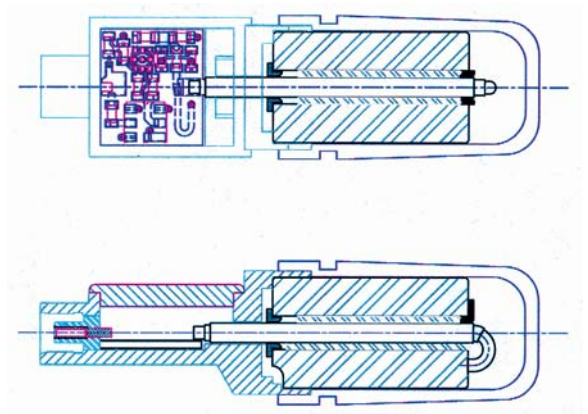
Weight 12g typ



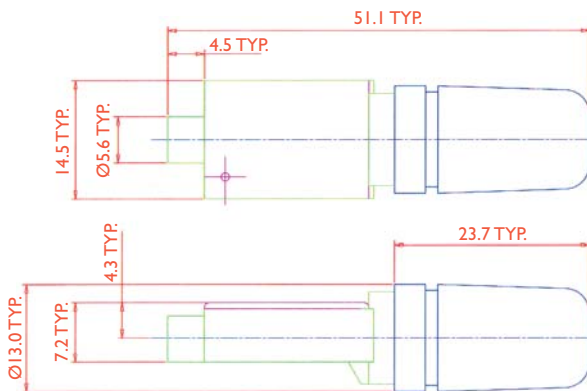
GEOHELIX-M: ACTIVE GPS ANTENNA ASSY



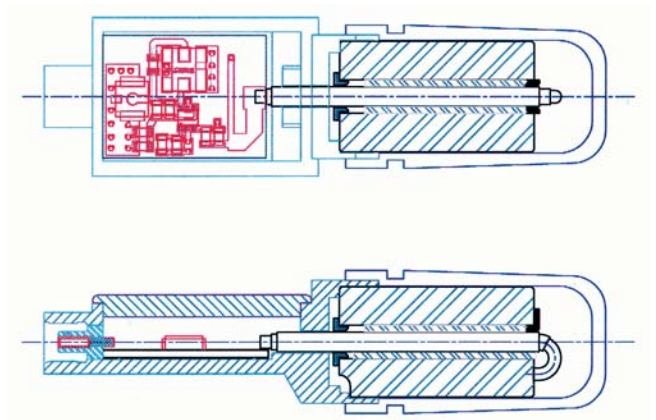
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GEOHELIX-H: ACTIVE GPS ANTENNA ASSY



Weight 12g typ



Distributor



Sarantel Ltd, Unit 2, Wendel Point, Ryle Drive,
Park Farm South, Wellingborough NN8 6AQ

Tel: +44 (0) 1933 670560

Fax: +44 (0) 1933 401155

info@sarantel.com