

general description

for GPS receiver

type DS/107150-002

1 general

StarLite is Datum's latest addition to the StarLoc family of precision time and frequency products. StarLite represents the smallest GPS receiver. With the StarLite, Datum has taken the popular StarLoc architecture and optimized it for OEM applications. Size, part count and cost have all been reduced without sacrificing the industry leading performance and reliability of the design. Meanwhile, ease of integration has been improved by providing the user with form factor, connectorization and input voltage options tailored for OEM requirements. Using Datum's proprietary Snapshot™ technology, a network of StarLite units is able to lock system time to within 20 nsec (RMS) of each other. After a quick initial survey, only one GPS satellite need be visible in order to maintain system accuracy. This is especially important in a crowded urban environment that lacks antenna locations with an unobstructed view of the sky. Another helpful and advanced feature is the T-RAIM (time-receiver autonomous integrity monitoring) algorithm we have incorporated to monitor the health of individual GPS satellites. This algorithm assures that timing and position information from a malfunctioning satellite is not used, thus preventing it from negatively affecting your system's accuracy. Contact Datum to discuss your specific requirements. Discover how our StarLite, or another of the many precision timing and frequency products designed and manufactured by Datum, can enhance your applications.



figure 1: 3d view

2 specifications

2.1 electrical

- **Inputs:** L1 GPS (1575.42 MHz.) C/A code
(from GPS antenna)
12 or 15 Vdc $\pm 5\%$
12W Max 7.5W Steady State
- **Outputs:** 1 PPS TTL @ 50 Ω
10 MHz Sine @ 50 Ω (coherent with 1 PPS)
13 dBm ± 2 dB
+5V@80 ma for antenna Amp.
RS-232 for GPS time/status alarms
- **Timing Accuracy:** ≤ 20 nsec RMS between units over any 20 minute interval (under limited temp. variations) ± 1 sec programmable offset from GPS in 17ns steps

- **Frequency Accuracy:** <math> <1E-12 </math> (24 hour average)
<math> <1E-10 </math> (Instantaneous)
- **Phase Noise:** 1 Hz <math> <-82 </math> dBc/Hz
10 Hz <math> <-120 </math> dBc/Hz
100 Hz <math> <-140 </math> dBc/Hz
1 KHz <math> <-145 </math> dBc/Hz
10 KHz <math> <-150 </math> dBc/Hz
100 KHz <math> <-150 </math> dBc/Hz
- **Holdover1:** <math> <1 </math> μ s over 2 hours typ.
<math> <1 </math> μ s over 30 minutes 99.9% of the time.
- **Spurious:** Harmonic: <math> <-30 </math> dBc
Non-Harmonic: <math> <-80 </math> dBc
- **Communication Protocol:** Datum Serial Binary Interface Protocol (TTL Levels)
Messages Handling:
Configuration
Calendar Date and Time to 1 sec
Receiver Location
Alarming

2.2 environmental

- **Operating Temperature:** -10°C to +65°C
- **Storage Temperature:** -40°C to +85°C
- **Operating Altitude2:** Operating: -200 ft to 40,000 ft. (12,200 meters)
- **Operating Humidity:** \leq 90%, Non-condensing

2.3 physical

- **Size:** 4" L X 3.25" W X 1.1" H
- **Weight:** 5 ounces
- **Antenna Input:** SMB
- **Power Input:** Molex 3 pin header (PN 22-23-2031)
- **Outputs:** 1 PPS and 10 MHz: MCX connectors
Comm port: Molex 4 pin header (PN 22-23-2041)
- **Warranty:** 1 year (Consult factory for extended warranty)
1Holdover refers to operation without GPS signals after an initial period of 8 hours of proper GPS reception
2Maximum operating temperature derated above 5,000 feet (1,525 meters)

3 dimensions

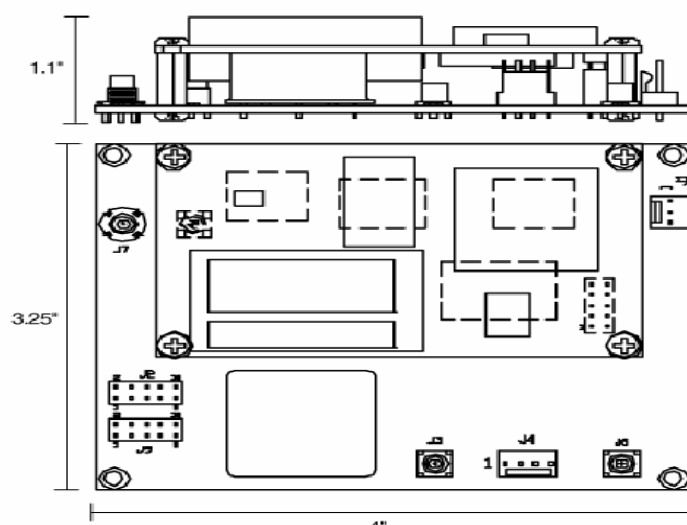


figure 2: dimensions

general description

for GPS L1 reference antenna

type 58532A GPS L1

1 general

The 58532A GPS L1 Reference Antenna is the latest in a line of antennas used to deliver L1 carrier frequency signals to GPS synchronization modules and receivers. Based on a design with proven reliability in tens of thousands of installations, the 58532A, like its predecessors, is characterized by low noise and high gain to provide optimum signal quality.

1.1 outstanding immunity to RF interference

Noise and interference near the L1 carrier can compromise reception of GPS signals. The 58532A features excellent filtering, with narrow bandwidth and steep rolloff to preserve the GPS signal while attenuating unwanted signals near the L1 carrier.

1.2 improved immunity to lightning

Electromagnetic fields caused by nearby lightning strikes can induce surge voltages in the antenna cable, damaging the antenna. The 58532A offers improved immunity to induced voltages through built-in diode protection.



Figure 1: 3d wiew

2 install

Designed for easy installation in outdoor locations, the 58532A features a durable, unobtrusive, cone-shaped cover that prevents snow and debris build-up. In addition, a sturdy aluminum mounting base allows easy attachment to the Option AUB antenna mast. With this type of mounting, the antenna/cable connector (type N) is protected from the weather. If your system requires the new 58529A Antenna Line Amplifier with Bandpass Filter or 58530A GPS L1 Bandpass Filter, then these cylindrical products can fit directly inside the antenna mast to be sheltered from the weather as well. Power is conveniently supplied to the antenna via the RF cable. The antenna requires 5 Vdc at less than 27 mA. This is available from several different GPS engines. Option 001 includes an N Plug to TNC Jack adapter to accommodate TNC cable users.

3 specifications

3.1 electrical

Frequency Range	1575.42 MHz \pm 10 MHz (typical)
Polarization	Right-hand circular
Output Impedance	50 Ω (typical)
Total Gain	>30 dBi (38 dBi typical @ elevation angle 90°)
Out-of-Band Signal Attenuation	60 dB (typical) at 1575.42 MHz \pm 50 MHz
Noise Figure	<2.2 dB (1.8 dB typical)
VSWR	<2.5 (1.5 typical)
DC Power	5 Vdc \pm 0.5 Vdc, <27 mA (20 mA typical)

3.2 physical

Connector	Type-N Jack
Dimensions	
Antenna without Mounting Base	90 mm D x 128 mm H (includes connector)r
Mounting Base	43 mm I.D. , 75 mm O.D., 65 mm H
Mounting Mast (Option AUB)	38 mm I.D., 42 mm O.D., 355 mm L
Weight	
Antenna without Mounting Base	187 g
Mounting Base	240 g
Mounting Mast (Option AUB)	250 g
Material	
Antenna	
Radome	UV-stabilized polycarbonate
Bottom housing	Die-cast aluminum, powder coated
Mounting Base	Die-cast aluminum, powder coated
Option AUB Mounting Mast	Anodized aluminum with teflon coating or stainless steel
Color, Antenna and Mounting Base	White
Operating Temperature	- 40°C to + 85°C
Storage Temperature	- 45°C to + 90°C

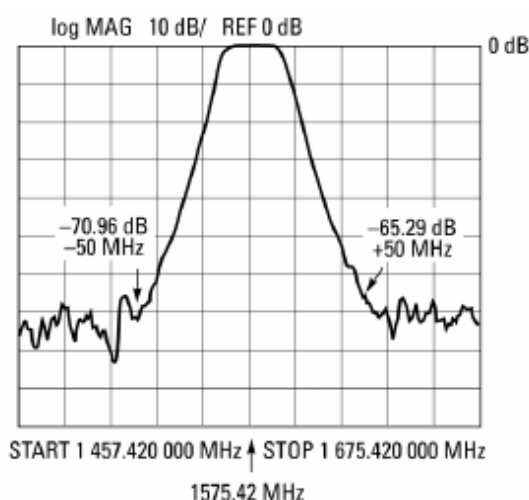


Figure 2: Relative amplitude versus frequency response for 58532A GPS L1 Reference Antenna.

4 dimensions

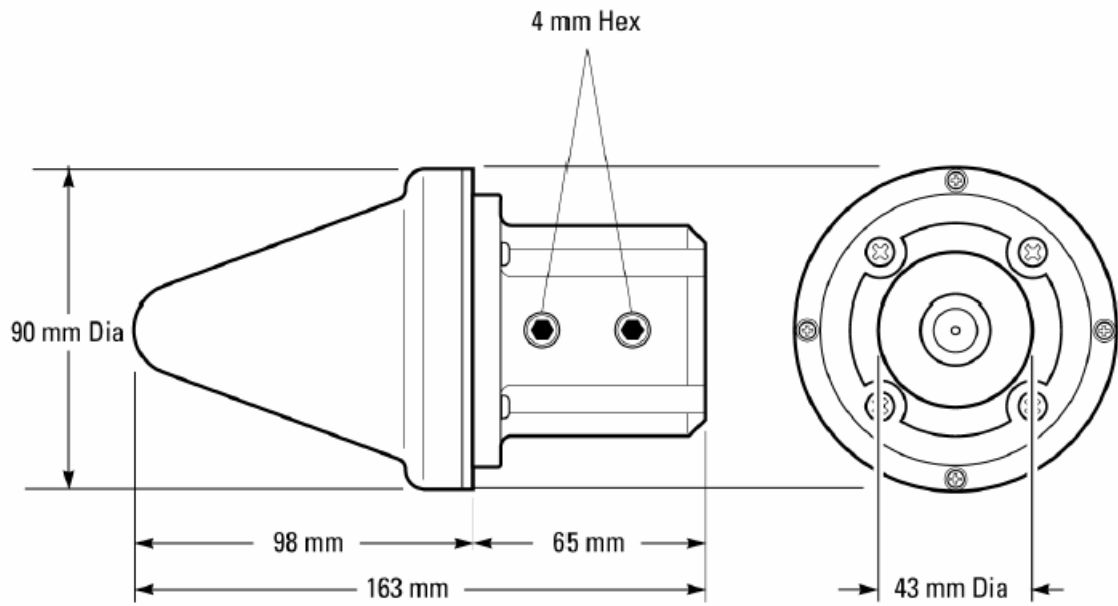


Figure 3: dimensions

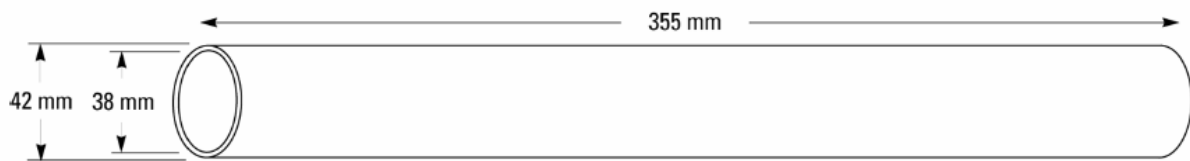


Figure 4: option AUB mounting mast dimensions