



3GOXX16A4-XTR-1-1

ANTENNA GUIDE

OM-20000156

Rev 1

December 2013

The 3GOXX16A4-XTR-1-1 antenna is designed for airborne use, but works in any mobile application.

The 3GOXX16A4-XTR-1-1 is an active GPS antenna, 88.9 mm (3.5-inches) in diameter and operates at the GPS L1 frequency of 1575.42 MHz and the GPS L2 frequency of 1227.60 MHz. The antenna is a spherical radius molded radome that provides enhanced protection against rain and ice.

The antenna includes the following:

- internal 33 dB low noise amplifier
- bias voltage from 2.5-24 V DC for operation
- band pass filtering
- DC bias provided through the coaxial connector

NovAtel offers optional coaxial cables of various lengths to connect the antenna and NovAtel GNSS receivers.

The 3GOXX16A4-XTR-1-1 is aircraft certified for navigation. This guide provides the basic information you need to install and begin using your new antenna.

ADDITIONAL EQUIPMENT REQUIRED

- A device with an antenna input port that both receives the RF signal and provides 2.5 - 24.0 VDC to the antenna is required for the 3GOXX16A4-XTR-1-1. NovAtel GPS receivers provide the necessary power through their antenna RF connectors.
- Coaxial cable with a male TNC connector

INSTALLING THE ANTENNA

Both the input DC power and the output RF signal use a single coaxial cable connected to the unit's TNC female connector.

The antenna can be attached to a surface with a square, four bolt, 1.9-inch space mounting pattern as shown in the Mechanical Drawings section of this guide. Four screws pass through the antenna housing.

To install the antenna:

1. Install the supplied o-ring into the groove on the antenna base.



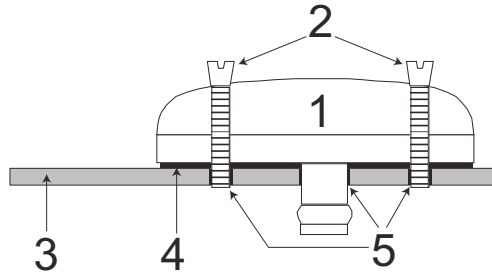
User-supplied o-ring grease can hold the o-ring in the groove during installation.

2. Pre-drill and tap the mounting holes and drill the connector clearance hole on the mounting surface. See the Mechanical Drawings section for mounting pattern details.

- Use the four supplied mounting screws to attach the antenna to the mounting surface. The o-ring compresses and creates a seal between the surface and the antenna.

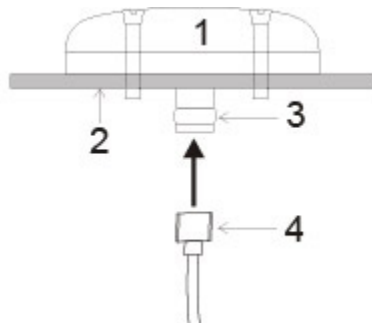


NovAtel recommends thread-locker (not included) on the mounting screws.



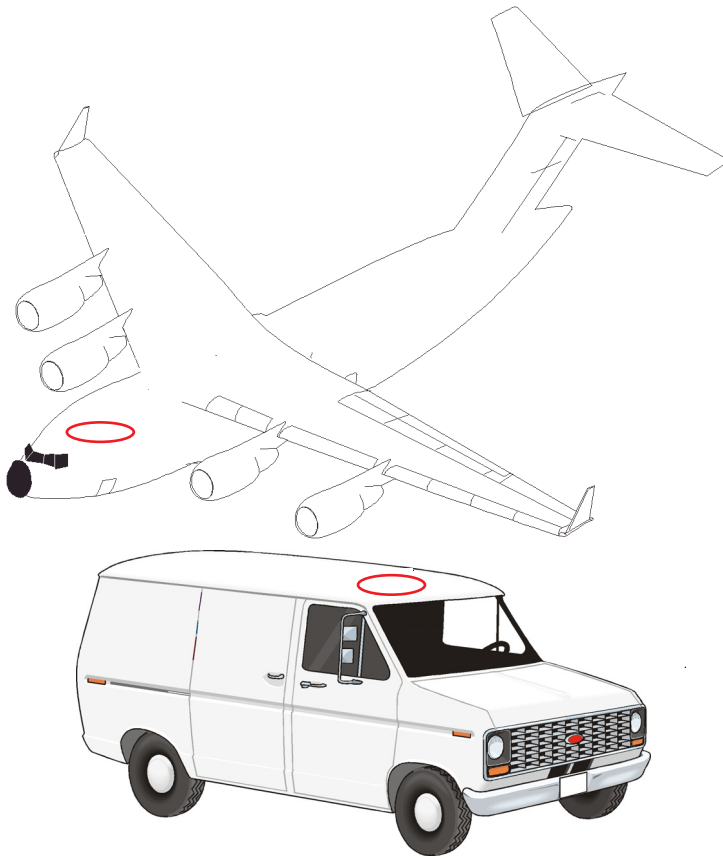
Ref. #	Description
1	Antenna
2	Countersink screws
3	Mounting surface
4	O-ring
5	Pre-drilled mounting holes

- Remove the dust cap from the antenna's TNC connector.
- Attach the coaxial cable's male TNC connector to the antenna's TNC connector.



Ref.#	Description
1	Mounted antenna
2	Mounting surface
3	TNC connector
4	Coaxial cable

- Attach the other end of the coaxial cable to the antenna input port on the receiving device. The receiving device must be equipped to provide power as detailed in the *SPECIFICATIONS* section of this guide. All NovAtel GPS receivers provide the necessary power through the antenna RF connectors.



This graphic provides examples of where the antenna may be located on an aircraft or vehicle (not to scale).

ANTENNA CARE

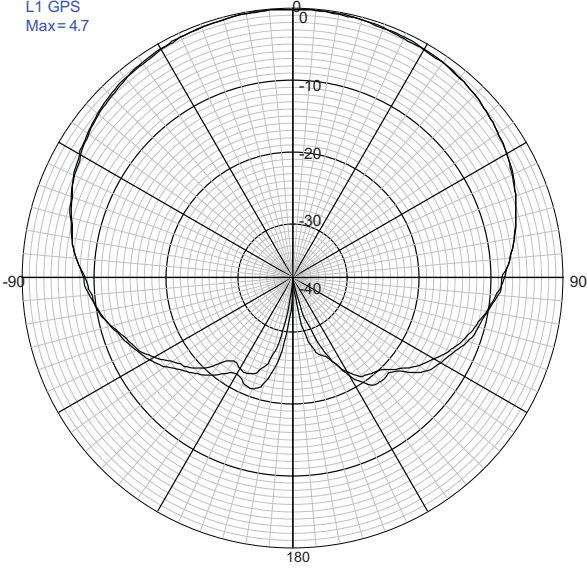
The 3GOXX16A4-XTR-1-1 is designed to withstand the elements, including rain, snow and dust. However, to ensure that the antenna performs optimally, keep the radome clean and brush off any ice or snow. In addition, ensure the TNC connector remains clean and dry and replace the dust cap when a cable is not connected.

SPECIFICATIONS

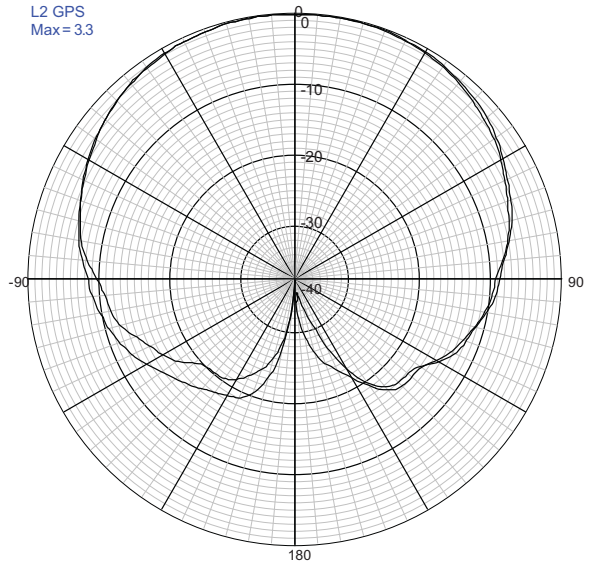
RF						
Band	L1			L2		
3 dB pass band (typical)	1575.42 ±15 MHz			1227.60 ±15 MHz		
Out-of-band rejection (dB)	< -41 dB (±50 MHz)			< -40 dB (±50 MHz)		
Antenna gain (dBic)	Free Space	16-inch ground plane	4-foot ground plane	Free Space	16-inch ground plane	4-foot ground plane
90° zenith	+4.7	+0.4	+3.5	+3.3	+1.5	+4.9
10° elevation	-1.8	-3.2	-2.0	-3.8	-4.0	-3.6
20° elevation	-0.3	-1.0	+0.8	-2.0	-2.0	-0.1
30° elevation	+1.4	+0.9	+1.8	-0.5	0.0	-1.8
60° – 90° elevation	>3.9	+3.4/+0.4	>2.8	>2.7	+2.4/+1.5	>3.0
Beamwidth (dB)	114°	118°	139°	106°	111°	75°
LNA gain	33 dB			35 dB		
Polarization	Right-hand circular					
Noise figure (typical)	3.0 dB					
Nominal impedance	50 Ω					
VSWR	< 1.5 : 1					
POWER						
Input voltage	2.5 - 24.0 VDC					
Current	< 50 mA					
PHYSICAL						
Radome diameter x height	8.89 cm (3.5 inches) x 1.847 cm (0.727 inches)					
Weight	191 g (6.802 ounces)					
ENVIRONMENTAL						
Maximum altitude	21,336 m (70,000 ft.)					
Operating / storage temperature	-55° C to +85° C (-67° F to +185° F)					
Vibration	>30 G					
Designed to meet these standards	FAA TSO-C144, DO-160D, DO-228, MIL-C-5541, MIL-E-5400, MIL-I-45208A, MIL-STD-810 and SAE J1455					

ELEVATION GAIN PATTERNS

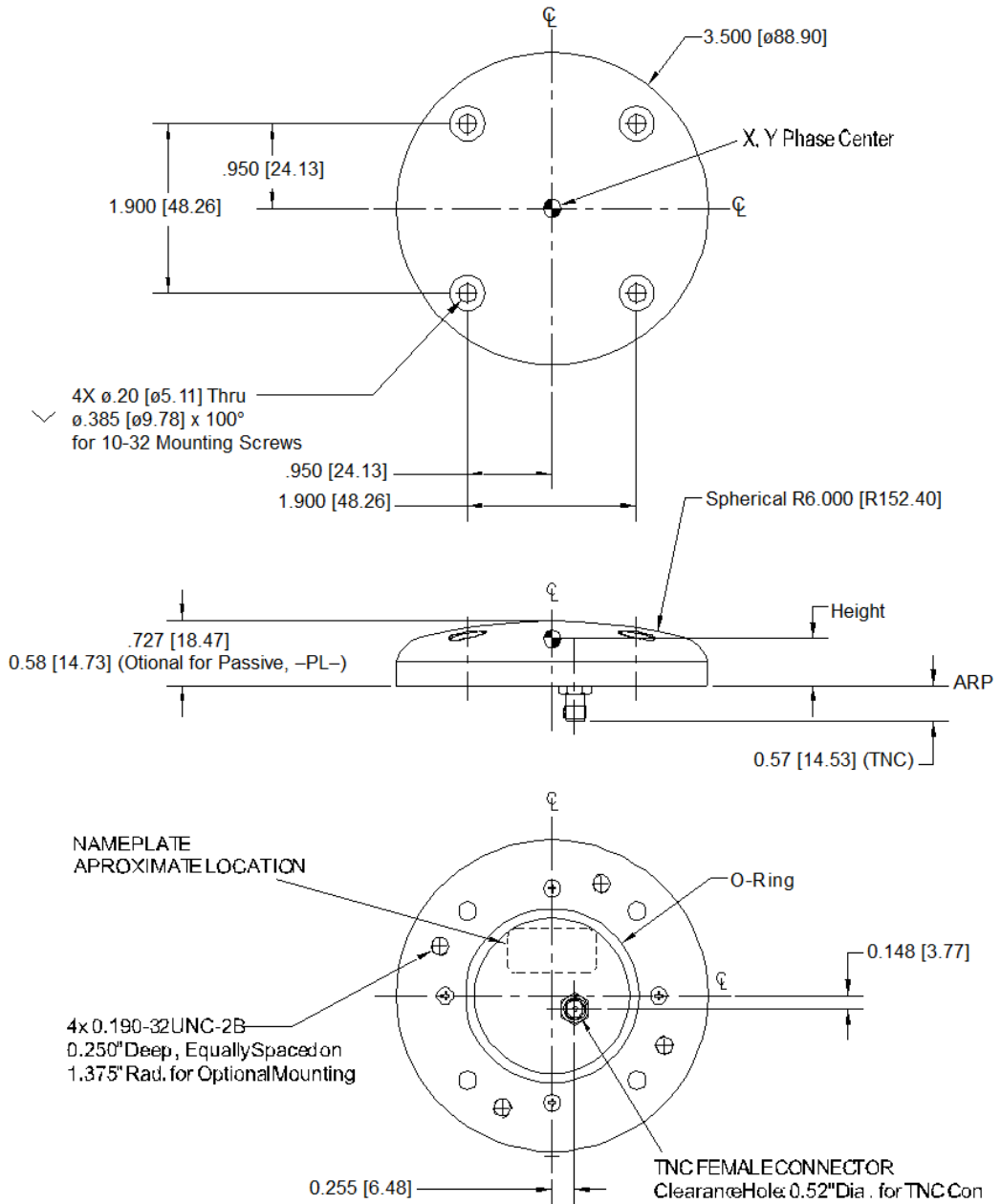
L1 GPS
Max=4.7



L2 GPS
Max=3.3



MECHANICAL DRAWINGS



Dimensions are in inches, followed by [mm]

PHASE CENTRE

Please refer to the Mechanical Drawings before reading this section.

HEIGHT = Vertical phase centre offset from antenna reference point or antenna reference plane (ARP), see the *MECHANICAL DRAWINGS* section of this guide.

For relative offset numbers and phase centre variation (PCV) tables, please visit the U.S. National Geodetic Survey (NGS) website at www.ngs.noaa.gov/ANTCAL/. Look for ANTCOM ACC3G1215A_XT_1.

Please check our website for updates to this manual at www.novatel.com/Downloads/docupdates.html and the websites mentioned above.

If you need any further advice on this matter, please visit our website at www.novatel.com. Other methods of contacting Customer Service can be found on the last panel of this guide.

WARRANTY POLICY

NovAtel Inc. warrants that its Global Positioning System (GPS) products are free from defects in materials and workmanship, subject to the conditions set forth below, for the following periods of time:

GPSAntenna™ Modules:	One (1) Year from date of sale
Cables and Accessories:	Ninety (90) Days from date of sale

Date of sale shall mean the date of the invoice to the original customer for the product. NovAtel's responsibility respecting this warranty is limited solely to product repair at an authorized NovAtel location only. Determination of repair will be made by NovAtel personnel or by technical personnel expressly authorized by NovAtel for this purpose.

The foregoing warranties do not extend to

(i) nonconformities, defects or errors in the products due to accident, abuse, misuse or negligent use of the products or use in other than a normal and customary manner, environmental conditions not conforming to NovAtel's specifications, or failure to follow prescribed installation, operating and maintenance procedures, (ii) defects, errors or nonconformities in the products due to modifications, alterations, additions or changes not made in accordance with NovAtel's specifications or authorized by NovAtel, (iii) normal wear and tear, (iv) damage cause by force of nature or act of any third person, (v) shipping damage; or (vi) service or repair of product by the dealer without prior written consent from NovAtel.

In addition, the foregoing warranties shall not apply to products designated by NovAtel as beta site test samples, experimental, developmental, preproduction, sample, incomplete or out of specification products or to returned products if the original identification marks have been removed or altered.

The warranties and remedies are exclusive and all other warranties, express or implied, written or oral, including the implied warranties of merchantability or fitness for any particular purpose are excluded.

NovAtel shall not be liable for any loss, damage or expense arising directly or indirectly out of the purchase, installation, operation, use or licensing of products or services. In no event shall NovAtel be liable for special, indirect, incidental or consequential damages of any kind or nature due to any cause.

There are no user-serviceable parts in the GPSAntenna and no maintenance is required. If the unit is faulty, replace with another unit and return the faulty unit to NovAtel Inc. You must obtain a RETURN MATERIAL AUTHORIZATION (RMA) number by calling NovAtel Customer Service at 1-800-NOVATEL (U.S. and Canada only) or 403-295-4500 before shipping any product to NovAtel or a dealer. Once you have obtained an RMA number, you will be advised of proper shipping procedures to return any defective product. When returning any product to NovAtel, please return the defective product in the original packaging to avoid damage.

** Before shipping any material to NovAtel or our Dealer, obtain a Return Material Authorization (RMA) number from the point of purchase. You may also visit our web site (<http://www.novatel.com>) and select *Support | Repair Request* from the side menu.

Questions or Comments

If you have any questions or comments, please contact NovAtel Customer Support using one of methods provided below.

E-mail: support@novatel.com

Web: www.novatel.com

Phone: 1-800-NOVATEL (International) or 403-295-4500 (U.S. & Canada)

Fax: 403-295-4501



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