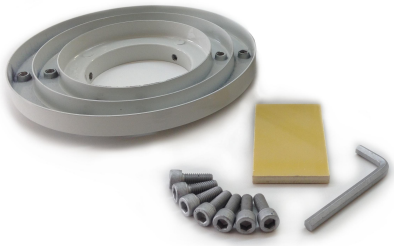
Titanium Satellite

C1W-PLL *lite* C-Band Phase Locked Loop LNBF
Install Guide: Prime Focus Dish

Congratulations on your purchase of a Titanium Satellite C1W-PLL *lite* LNBF. For best performance, the LNBF must be correctly installed on your dish to gather the most signal from the target satellite and reject unwanted signals and noise from adjacent satellites and terrestrial transmissions. The LNBFs are shipped with a flat scalar that is suitable for mounting on a prime focus dish (centered feedhorn). If the LNBF is to be mounted on an offset type dish, purchase the optional Titanium Satellite CS1 Conical Scalar kit.

LNBF Kit Parts:



1. Flat Scalar
2. Mounting Screws (Phillips or Allen)
3. Dielectric Slab
4. Hex Tool (optional)

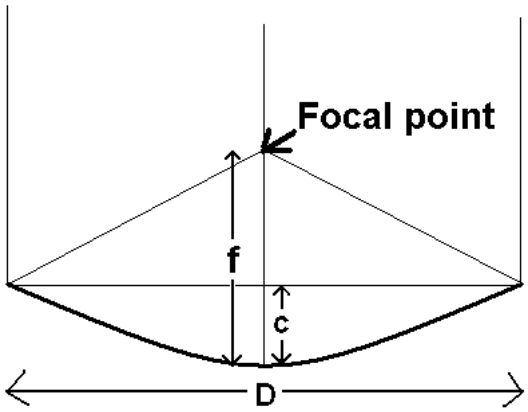
This guide assumes that the satellite receiver has been correctly configured with each target C-band satellite's menu setting: LO Frequency = 5150MHz, LNB Voltage = ON, Polarity = Automatic 13/18 and programmed for any inline switches or motor control. The LNBF signal polarity selection is switched by the receiver outputting 13Vdc to tune Vertical polarity transponders and 18Vdc for Horizontal.

Check Reflector Parabola Accuracy: The dish must be checked for accuracy and be perfectly shaped. Use a measuring tape and measure across the diameter of the dish in three directions. All measurements should be identical. Tie two or more pieces of string across the edges of the dish in two or more directions. The strings should just touch at the center of the dish. If the strings are pushed hard against each other or fail to touch then the dish is either not properly assembled or warped. If the parabola shape is not perfect, the reflected signals will not merge into a focal point to enter the feedhorn. With a warped dish, it will be very difficult to track the arc accurately and adjacent satellites may cause interference.

Calculating & Setting the Focal Length / FD Ratio: Prime Focus Parabolic Reflector

Before mounting the LNBF, you will need to know the dish Focal Length and the FD ratio. These two specifications are provided by the dish manufacturer. If these specifications are not available, they may be calculated with two measurements of the width and depth of the reflector.

Focal Length = f



Depth = c
Diameter = D
f = (D * D) / (16 * c)
FD Ratio = f / D

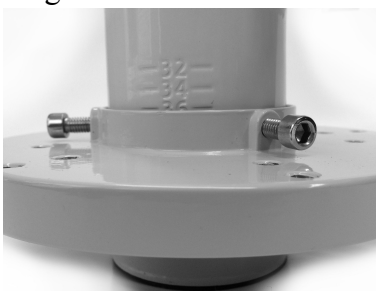
Measure the depth (c) using a fishing line or a string stretched tight edge to edge (D) across the face of the reflector.

Online FL / FD Calculator:
http://www.satellite-calculations.com/Satellite/reflector.htm

The Focal Length measurement is from the center of the reflector surface to 1/4” (6mm) inside the feedhorn throat. The

FD ratio is the position that the scalar attaches to the feedhorn. The sides of the feedhorn have the FD Scale markings. Align the back edge of the scalar mounting ring with the appropriate FD number then tighten the three screws to clamp the feedhorn into the scalar.
Important notice: To prevent damage to the feedhorn do not over-tighten.

Example: Focal Length 102”



Example: FD Ratio .36

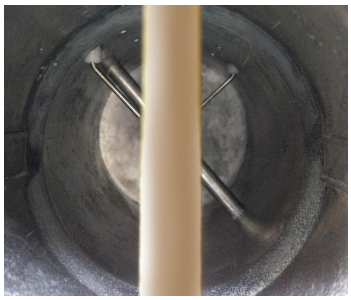
Don't assume that the support legs or button hook holding the scalar ring are the correct length. The scalar and feedhorn must be the correct distance from the reflector, parallel to the dish and perfectly centered and aimed into the exact center of the dish. Failure to set the correct distance and center the feedhorn/scalar will decrease signal strength and reduce performance. Measure from the edge of the reflector to the scalar in three or more directions to assure that it is exactly centered. Match these measurements to be within 1/16” (3mm). A small torpedo level with 90 degree laser placed across the scalar and feedhorn opening is a great tool for verifying that the scalar and feedhorn are correctly aimed into the center of the reflector.

Setting Polarity / Skew: Linear Polarity Satellites

The probes inside the feedhorn must be aligned to match the polarity of the satellite signal. On the back of the LNBF housing is a scale for setting the polarity and skew. On the C1W-PLL lite model with screws securing the electronic cover, the “0” is aligned with the horizontal polarity probe. On the C1W-PLL lite model without screws securing the electronic cover, the “0” is aligned with the vertical polarity probe. If installing on a motorized polar mount, drive the dish to the highest point of the arc. When installing the lite model with screws, align the “0” scale mark with the horizontal axis of the dish. The “0” may be pointed to either the 9 or 3 o'clock positions (straight left or right). When installing the lite model without screws securing the cover plate, align the “0” scale mark with the vertical axis of the dish. The “0” may be pointed to either the 12 or 6 o'clock position (straight up or down). If installing on a (non-motorized) fixed dish, rotate to align the vertical probe with the satellite's calculated skew rotation offset position.

Circular Polarity Satellites

The LNBF is capable of receiving either linear or circular polarity signals. A dielectric slab is included to insert into the feedhorn for receiving circular polarity signals. The dielectric slab should only be used with circular polarity satellites; otherwise, linear signals will be attenuated by 3dB.
To install: Remove the blue color feedhorn cover and completely insert the dielectric slab into the slots located at a 45 degree angle between the vertical and horizontal probes. The STB now will receive Right polarity on Vertical setting (13V) and Left polarity on Horizontal setting (18V)



Dielectric Slab Installed

Email: support@titaniumsatellite.com or **Call:** 530-652-4405