

### Attention and Warning Symbols

You must be aware of safety when you install and use this system. This guide provides various procedures. If you do some of these procedures carelessly, you could injure or kill yourself or damage equipment or property. Some other procedures require special attention.



Marks a procedure where the following may happen:

- Personal injury or death may occur.
- Equipment or property may be damaged.



Marks the following issues:

- Important operation or maintenance instructions follow.
- Special attention is required.

### Important Safety Instructions

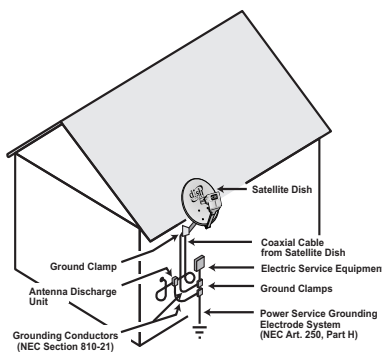
You must keep safety in mind when you install and use the DISH 1000.4. Refer to the safety instructions in this guide. In this guide, the following notes tell you when you need to pay special attention:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.

Keep the following in mind when you install the DISH 1000.4:

- Before you drill any holes in your building, make sure there are no wires or pipes near the holes.
- Install the equipment in accordance with the local building and electrical codes. If you aren't sure, call a licensed building inspector or electrician for help.
- Never install the satellite dish near power lines.
- Don't install the satellite dish on composite materials such as strand, chip, fiber, or particle board unless the fastener attaches securely to a wall stud, rafter, or other foundation material beneath the surface.

**Note to Satellite TV System Installer:** This reminder is to call the satellite TV system installer's attention to the guidelines for grounding the system in accordance with the *National Electrical Code* (NEC)® as referenced in Articles 250, 810, and 820. These sections cover the conductor insulation, material, size, length, and connection requirements.



# Installation Instructions

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**Attention!** These installation instructions are intended for use by qualified professional technicians due to the complexity of the installation and compliance to national/local building and electrical codes.

## Overview

These instructions guide you through the installation of a DISH Network DISH 1000.4 antenna, which consists of a reflector assembly and a DISH Pro Plus 1000.4 LNBF.

The Appendix (page 17) guides you through using the conversion of a DISH 500+ antenna to function as a DISH 1000.4.

The DISH 1000.4 is capable of receiving digital television signals from three DBS satellite locations: 61.5°W, 72.7°W, and 77°W. These instructions cover wall mounting only. For other mounting options (for example, pole mounting, or non-penetrating mounting), see the Retailer Care Site at [retailer.echostar.com](http://retailer.echostar.com).

## Installation Considerations

The DISH 1000.4 includes enhanced peaking controls for the azimuth and elevation settings that provide the ability to more easily obtain an optimal peaking of the dish antenna. Refer to Figure 1 on page 2 for more details on the enhanced peaking controls.

The fine-tune azimuth and elevation settings require the use of an 1/2" wrench. All other nuts and bolts use a 7/16" wrench.

All DISH 1000.4 equipment is marked with the circled A symbol shown below to help in identification. DISH Network ViP-series receiver models must have the circled A symbol shown on their Contents and Features label to be installed in a DISH 1000.4 system.



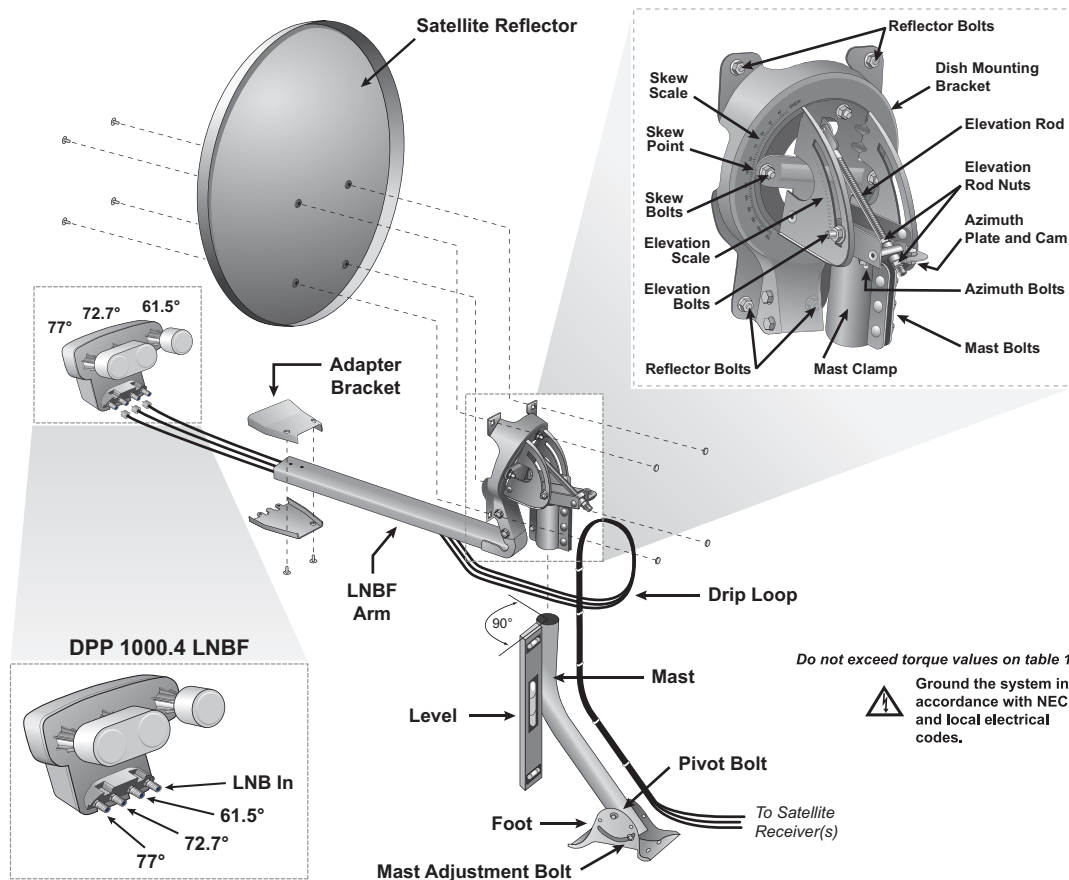
## About the System

The DISH Pro Plus 1000.4 LNBF provides reception from the 61.5°W, 72.7°W, and 77°W orbital locations, and provides an LNBF input port to receive programming from another satellite. The following LNBF types can be connected to the LNBF input port: DISH Pro Single, DISH Pro Dual, DISH Pro Dual Band, or DISH Network bandstacked LNBFs.

The LNBF assembly supports connection of up to three satellite receivers in any of the following combinations:

- Single-cable connection to DISH Pro Plus (dual-tuner) receivers, when each input is used with a DISH Pro Plus Separator.
- Single-cable connection to DISH Pro receivers.

# Quick Installation Instructions



**Figure 1. DISH 1000.4 Antenna Installation Overview**

1. Find Azimuth/Elevation/Skew angles for your location (instructions on page 3 and tables on page 11).
2. Find a location for the dish antenna with a clear line of sight and a sturdy mounting surface (page 3, step 1).
3. Mount the mast, making sure it is absolutely vertical (page 3, steps 2 and 3). Attach struts to the mast, using the instructions that came with your struts.
4. Assemble the dish antenna, setting the skew and elevation angles in the process (pages 3-4, steps 4-6).
5. Mount the dish antenna on the mast and point the dish to the azimuth angle (page 4, step 7).
6. Run cables between the dish antenna and the receiver(s), leaving a service loop around the dish mounting bracket and attaching cables to the mast using zip ties (page 5, step 1).
7. Using a peaking meter attached to the DPP 1000.4 LNBF **PORT 2**, rough peak the dish on 72.7°W using transponder 19 or 21 for maximum strength. Lock the mast clamp bolts (see Table 1) and re-confirm signal (page 5, steps 2 and 3).  
**Note:** If using a peaking meter, only odd transponders will be detected from 72.7°W at this time.
8. Using the elevation rod, fine-tune the elevation angle to achieve maximum signal. Tighten the top elevation rod nut, and then tighten the side elevation bolts marked T. Reconfirm signal after tightening all elevation bolts (page 6, step 6).
9. Using the azimuth fine-tune cam, fine-tune the azimuth angle to achieve maximum signal. Tighten the bolts labeled with a T and reconfirm signal. Do *not* tighten the azimuth fine-tune cam (page 7, step 6).
10. Connect the receiver cable(s) to the DPP 1000.4 LNBF **PORT 1** (and **PORT 2** and **PORT 3**, as necessary) and receiver (page 7, steps 7-9).
11. Run Check Switch test and confirm 61.5°W, 72.7°W, and 77°W reception (page 8, steps 10 and 11).
12. Take a software download, if you didn't already (page 8, step 12).
13. Run a second Check Switch test and confirm 61.5°W, 72.7°W, and 77° reception (page 8, step 13).
14. Install additional receiver(s), if necessary.
15. If applicable, connect a second satellite dish to the DPP 1000.4 LNB's **LNB IN** port (page 9, steps 1-4).

## Locating the Dish Antenna

Use the *Dish Pointing Angles* starting on page 11 to find the azimuth, elevation, and skew angles using the ZIP code of your location. Write the angles in the space provided below.

Elevation: \_\_\_\_\_ Azimuth: \_\_\_\_\_ Skew: \_\_\_\_\_

Using these azimuth and elevation angles, find a mounting location for the satellite dish where it can be pointed towards the satellites located at these angles. Use a compass and the azimuth angle to find the direction along the horizon that the dish should be pointed. Then use the elevation angle to find out how high the satellites are in the sky from your location. Make sure nothing blocks the line of sight between the dish and the satellites. Make sure this line of sight will not be blocked by future growth of nearby trees or other foliage. Also make sure your mounting location provides sufficient clearance to rotate the reflector as needed to point toward the satellites.

## Assembling and Mounting the Dish

Follow these instructions to assemble the satellite dish, mount it, and point it in the direction of the satellites.

- 1 Using the azimuth and elevation angles, find a location for the satellite dish where it can be pointed towards the satellites located at these angles. Make sure nothing blocks the line of sight between the dish and the satellites.
- 2 Mount the mast to a solid surface so that the dish antenna cannot move or be bumped out of alignment. Keep in mind that physical and environmental conditions can block your satellite dish's ability to receive a clear satellite signal. Never mount to a tree or a public utility pole. Install struts at this time, using the instructions that came with your struts.
- 3 Align the top part of the mast so that it is absolutely vertical. If the top part of the mast is off vertical by only a few degrees, it will be difficult or maybe even impossible for you to find the satellites. Take at least two readings with a level, on the upper mast, that are 90 degrees apart from one another (see Figure 1).
- 4 Loosen the skew bolts and set the skew by rotating the dish mounting bracket to align the mark with the required angle on the skew scale which you wrote above. Tighten the skew bolts securely. See Table 1 for the required torque values. **After the skew is set, do not try to fine-tune the skew angle when aiming the dish.**  
**Note:** You will need to loosen the elevation bolts and elevation rod locking nuts to access the skew bolts.

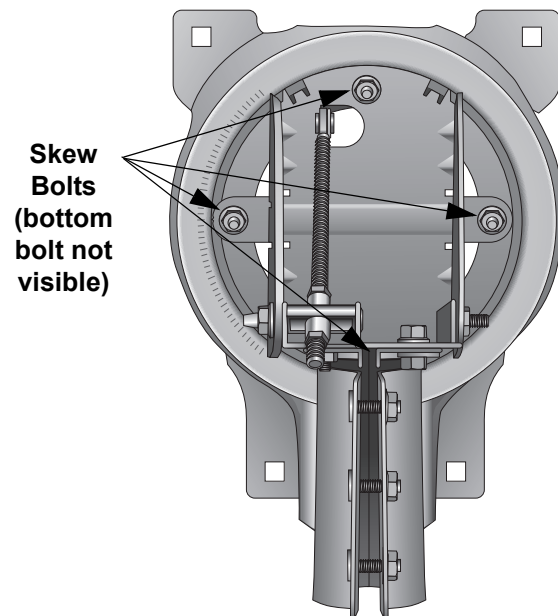
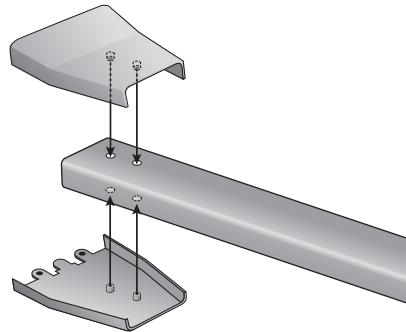


Figure 2. Skew Plate

5

Assemble the satellite dish as shown in Figure 1, except do not attach the LNBF at this time. The LNBF Arm has a specific orientation, indicated by the labeling Top and To LNBF. When attaching the DISH 1000.4 LNBF Bracket to the LNBF Arm, be sure that the small posts on the bracket fit into the holes on the LNBF Arm (see Figure 3).

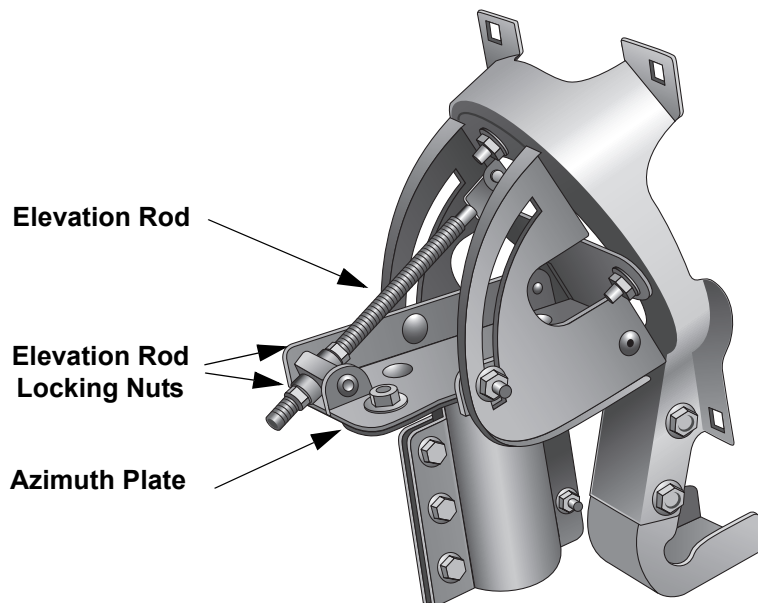
**Note:** The DISH 1000.2 LNBF Bracket is not compatible with the DISH 1000.4 or the DISH Pro Plus 1000.4 LNBF.



**Figure 3. Bracket posts fitting into LNBF arm (bolt holes removed for clarity)**

6

Set the elevation by loosening the elevation bolts and elevation rod locking nuts, and then tilting the dish mounting bracket to align the edge with the required angle on the elevation scale. Tighten both nuts on the elevation rod to hold the elevation, but do not tighten the side elevation bolts at this time.



**Figure 4. Setting the Rough Elevation Angle**

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Slide the dish assembly down onto the mast. Make sure the azimuth plate rests on top of the mast. Turn the dish assembly so that it points in the general direction of the satellites, using the azimuth angle you wrote on page 3. You may need to loosen the two front bolts slightly to mount the dish assembly.


**Note:** The DISH 1000.4 mast has a gripping feature that helps prevent movement of the dish antenna when fully installed. This gripping feature may give a slightly rough feel when installing the dish onto the mast or when adjusting the azimuth angle.


## Installing the Receivers

Use the steps below while referring to Figure 1.

- 1** Run RG-6 coaxial cables from the DISH 1000.4 antenna to the receiver location(s) using the following cable requirements. Grounding, other devices, and in-home cabling must also meet these requirements.

  - RG-6 coaxial cable rated for at least 950 to 2150 MHz must be used in this installation. Do not use existing cables such as RG-59 as it may cause signal loss. Also, be sure that any outdoor connections are made using weatherproof F-connectors rated for 2150 MHz or greater.
  - The length of the RG-6 cable from any receiver and farthest dish connected in the system must not be longer than 200 feet for DISH Pro or DISH Pro Plus receivers.
  - The cable length between the DISH Pro Plus 1000.4 LNBF and a connected compatible LNBF must be 80 feet or less, for a total cable length of no more than 200 feet from the LNBF to the receiver.

 The cable's center conductor must not extend past the rim of the F-connector more than the thickness of a nickel.

 Tighten all outdoor cable connections up to the torque values recommended by the manufacturer to ensure seal against moisture. Damage caused by over-tightening is not covered by the limited warranty. Tighten all indoor coaxial cable connections to the receiver and any other electronic components (such as TVs or DVD players) only by hand. If you use a wrench, you may over-tighten the connections and damage your equipment.
- 2** Connect a temporary cable to a peaking meter. Thread the other end of the cable through the LNBF arm and bracket. Connect the temporary cable to **PORT 2** of the DPP 1000.4 LNBF and attach the LNBF to the bracket with two screws.

**Note:** If the peaking meter does not produce at least 600 mA to power the DPP 1000.4 LNBF, connect **PORT 1** of the LNBF to the **SATELLITE IN** port of a powered receiver.

If you are peaking the dish using a previously-installed receiver, run a Check Switch test with the **SATELLITE IN** cable(s) disconnected before peaking the dish (see step 10 on page 8 for help running the Check Switch test). This clears the previous Check Switch results and allows the receiver to detect the signal from the DPP 1000.4 LNBF. Set the receiver's Point Dish screen to satellite 72.7°W and transponder 19 or 21 if peaking using this method.
- 3** Peak the dish for the strongest possible signal on the 72.7°W satellite signal using the azimuth setting you wrote on page 3. Do not adjust the skew.

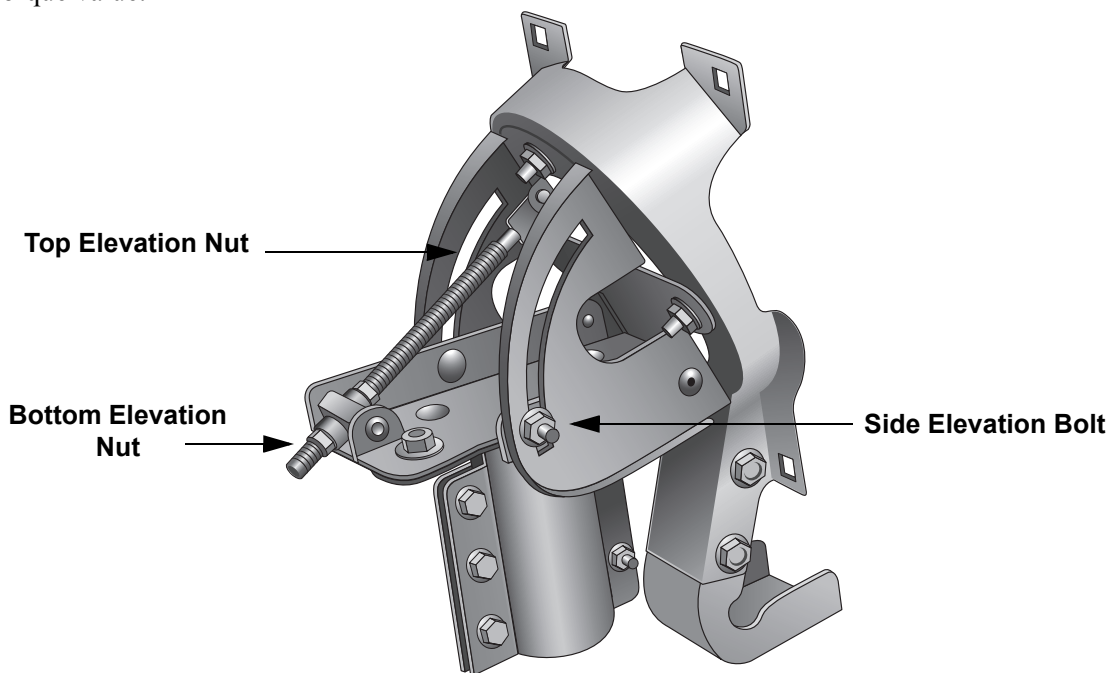
**Note:** If you cannot find the 72.7°W signal, try adjusting the elevation up or down one or two degrees. Ensure you are peaking the dish using transponder 19 or 21. If using a peaking meter, only odd transponders will display from 72.7°W.
- 4** With the peaking meter still connected, tighten the three mast bolts labeled with a T to the torque values listed in Table 1 on page 6. Re-confirm signal strength after tightening the bolts.

**Table 1: Torque Values**

Location	Torque Value (ft-lbs unless otherwise noted)
Mast-foot pivot thru bolt (ensure no mast deformation occurs during tightening)	3
Mast-foot locking nuts	12
Reflector mounting bolts	8
Clamp locking bolts (back and front bolts)	12
Skew adjustment locking nuts	12
Elevation adjustment locking nuts	12
Elevation rod locking nuts	Handtight
Azimuth adjustment locking nuts (do not tighten azimuth cam)	12
LNBF Arm to skew bracket	4
LNBF Arm to LNBF Bracket	Handtight
LNBF to LNBF Bracket	Handtight

**5**

Leaving the peaking meter connected, fine-tune the elevation angle. Using a 1/2" wrench, loosen the top elevation nut on the elevation rod to allow the dish to be moved up and down in elevation. Move the bottom elevation nut along the elevation rod to adjust the dish's elevation angle and achieve maximum signal. After obtaining maximum signal, tighten the top elevation nut on the elevation rod, then tighten the side elevation bolts labeled with T to the recommended torque value.



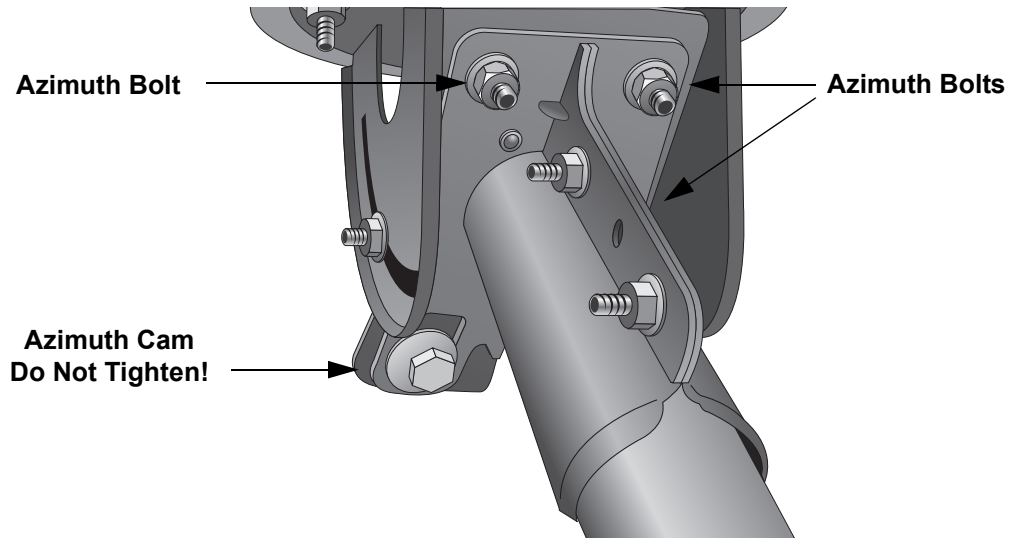
**Figure 5. Fine Tuning the Elevation Angle**



6

With the peaking meter still connected, fine-tune the azimuth angle. Loosen the three azimuth bolts enough so that the two azimuth plates can rotate. Using a 1/2" wrench, rotate the azimuth fine-tuning cam to adjust the azimuth angle to achieve maximum signal. After obtaining maximum signal, tighten the three azimuth bolts labeled with a T to the recommended torque value. **Do not torque the azimuth fine-tuning cam.**

**Note:** You can adjust the azimuth angle three degrees in either direction using the azimuth fine-tuning cam. If the azimuth angle needs to be adjusted more than three degrees, loosen the mast clamp bolts to make the adjustment.



**Figure 6. Fine Tuning the Azimuth Angle**

7

Remove the temporary cable used for peaking the dish. Thread the cable(s) from the receiver(s) through the LNBF Arm and bracket. Connect these cables to **PORT 1**, **PORT 2** and **PORT 3**, as applicable.

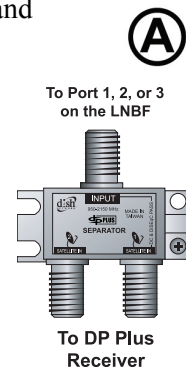
8

Connect a cable from DPP 1000.4 LNBF **PORT 1** (or **PORT 2** or **PORT 3**) to a DISH Pro or DISH Pro Plus (dual-tuner) satellite receiver's **SATELLITE IN** connection(s).

**Note:** Only ViP-series receivers with the circled A symbol on their Contents and Features labels should be used in a DISH 1000.4 installation.

To connect DISH Pro Plus (dual-tuner) receivers with a single cable, install a DISH Pro Plus Separator as follows:

- a. Connect a cable from the DPP 1000.4 LNBF output (**PORT 1**, **PORT 2**, or **PORT 3**) to the DISH Pro Plus Separator Input.
- b. Connect cables between the receiver's **SATELLITE IN 1** and **SATELLITE IN 2** to **SATELLITE IN 1** and **SATELLITE IN 2** respectively on the DISH Pro Plus Separator.



You must use a DISH Pro Plus Separator in a single-cable/dual-tuner receiver installation. A splitter or other device will not work in this configuration.



Tighten all indoor coaxial cable connections to the receiver only by hand. If you use a wrench, you may over-tighten the connections and damage your equipment.



9 Connect the receiver(s) to the TV(s) and display the **Point Dish** screen (if not shown, for most receivers, press MENU-6-1-1 on the remote control).

10 From the **Point Dish** screen, run **Check Switch**. When the Check Switch procedure finishes, you should see an Installation Summary screen similar to the ones shown below. Make sure the summary screen shows reception from the 61.5°W, 72°W, and 77°W satellites on all available satellite tuners. Also confirm the LNBF is correctly identified as a **DPP 1k.4** (factory software on some models may identify this LNBF as a **DPP Twin** or **DPP Triple**, which is OK).

**Note:** The 77°W orbital location may not be broadcasting at launch. If it is not broadcasting, 77°W will not display in the Installation Summary screen. On some models, you might not see signal from 72°W or 77°W until after you take a software download and run a Check Switch in steps 12 and 13.

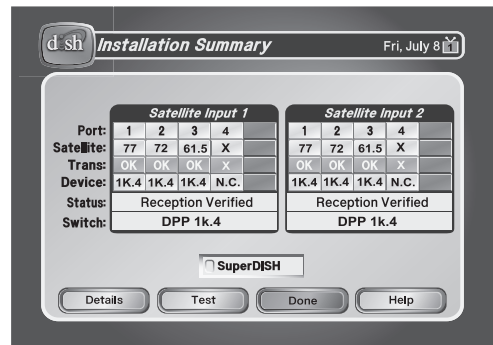


Figure 7. Installation Summary Screen

11 Exit the **Installation Summary** screen to display the **Point Dish** screen. Make sure the signal strength bar is green and locked for the 61.5°W, 72°W, and 77°W satellites.

**Note:** You might not see signal from 72°W or 77°W until after you take a software download and run a Check Switch in steps 10 and 11.

12 Exit the **Point Dish** screen and follow the on-screen instructions for taking a receiver software download. Do not disturb the receiver during the process of downloading software. If exiting the **Point Dish** screen does not start the download process, turn off the receiver for at least 20 minutes (on most receivers) to allow the receiver to take a software download.

13 Run **Check Switch** again and confirm reception for all three satellites on all available satellite tuners. Your Installation Summary screen should be similar to the ones shown above in step 8. This identification is OK.

14 If installing an additional receiver, follow steps 8-13. Make sure the summary screen shows reception from the 61.5°W, 72°W, and 77°W satellites. Keep in mind that a DISH Pro or DISH Pro Plus receiver must remain connected and powered at all times to power the DPP 1000.4 LNBF.

## Connecting a Second Satellite Dish

After completing the previous sections to install the DISH 1000.4, use these instructions to add a fourth satellite location from a second dish to the DISH 1000.4. The LNBF from the second dish must be a DISH Pro Single, DISH Pro Dual, DISH Pro Dual Band, or a DISH Network bandstacked LNBF.

- 1 Install and peak the second dish antenna using a peaking meter and the instructions that came with that dish antenna. Skip any steps regarding taking a receiver software upgrade since this was done in the previous section of the DISH 1000.4 Installation Instructions.
- 2 Run cable from the second dish antenna location to the DISH 1000.4, referring to the cable requirements stated in step 1 on page 5.
- 3 Connect the coaxial cable between the LNBF on the second dish and the **LNB IN** port on the DPP 1000.4 LNBF. Refer to Figure 1 on page 2.
- 4 From the **Point Dish** screen (accessed by pressing MENU-6-1-1 on most receivers), run **Check Switch** again on all connected receivers. When the **Check Switch** procedure finishes, you should see a summary screen similar to the summary screen below. Make sure the summary screen shows reception from the 61.5°W, 72.7°W, and 77°W satellites and the fourth satellite location on all available satellite tuners. If not, re-peak the DISH 1000.4 or the second dish as needed to achieve the required signal levels. Confirm the installed LNBF on the second dish is correctly identified.

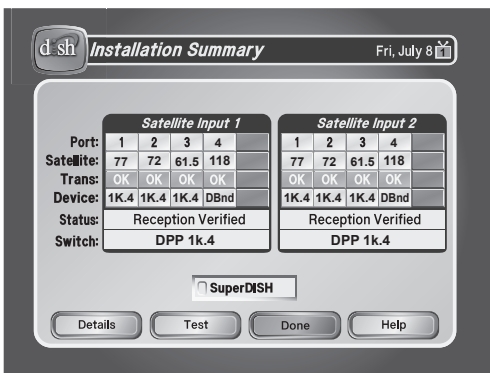


Figure 8. Installation Summary Screen

## Connecting to a Switch

### Connecting the DPP 1000.4 LNBF to a DPP44 Switch

The DPP 1000.4 LNBF can be connected to provide 61.5°W, 72.7°W and 77°W satellite signals to a DISH Pro Plus 44 switch. Refer to the instructions provided with the switch for additional considerations and instructions. Signal for a fourth satellite location must be provided directly from the fourth satellite location's LNBF to the DPP switch. The **LNB IN** port on the DPP 1000.4 LNBF must not be connected. In this installation, the DPP 1000.4 LNBF defaults to the following settings:

- **PORT 1**—77°W
- **PORT 2**—72.7°W
- **PORT 3**—61.5°W
- **LNB IN**—Disabled when DPP 1000.4 LNBF is connected to a switch. When connected to a switch, any LNBF connected to the **LNB IN** port must be disconnected from the DPP 1000.4 LNBF and connected directly to the switch.

**Note:** The DPP 1000.4 LNBF is NOT compatible with DISH Pro switches or the DISH Pro Plus 33 Switch in any installation.

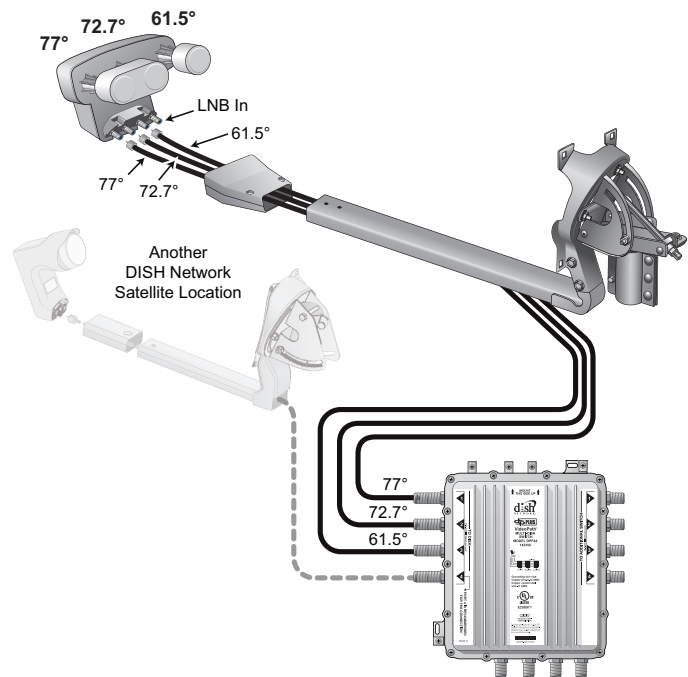


Figure 9. Connecting to a Switch

# Dish Pointing Angles

Use the tables below as follows:

1. Find the ZIP code for your location.
2. Find the row that contains the ZIP code or the first three digits of the ZIP code. For example, the correct row for ZIP code 80112 is 801XX.
3. Write down the number in the AZ column in the "Azimuth" blank on page 3.
4. Write down the number in the EL column in the "Elevation" blank on page 3.
5. Write down the number in the SK column in the "Skew" blank on page 3.

ZIP Code	EL	AZ	SK
00008	9	91	60
00013	24	104	48
00019	23	104	49
00020	25	105	47
00022	21	100	47
00025	22	104	50
00028	23	104	48
00031	25	102	44
00032	26	104	44
00033	23	104	48
00034	20	102	49
00035	21	103	49
00037	21	101	48
00038	22	102	48
00039	21	101	48
00040	25	105	47
00044	24	104	47
00047	22	102	47
00048	22	102	47
00049	20	101	49
00050	20	101	48
00051	24	104	47
00052	24	104	47
00054	20	101	48
00055	21	101	48
00058	25	105	47
00065	23	104	48
00087	56	167	75
00097	59	164	73
00116	50	141	60
00119	51	144	61
00120	51	143	61
00124	48	143	62
00125	36	204	93
00126	38	201	92
00127	38	205	95
00128	38	199	92
00130	37	205	94

ZIP Code	EL	AZ	SK
00132	37	203	93
00133	38	201	92
00134	38	206	95
00135	37	203	93
00136	37	204	94
00137	36	206	94
00138	37	205	94
00139	38	200	92
00140	38	201	92
00141	38	205	94
00145	38	202	93
00147	38	201	92
00148	36	206	94
00151	38	206	95
00152	46	187	87
00155	46	185	86
00156	46	184	86
00157	45	184	86
00159	42	198	92
00160	32	157	75
00161	32	154	74
00164	30	146	71
00165	30	147	71
00166	31	147	71
00168	39	199	92
00169	39	199	92
00170	38	199	92
00172	39	199	91
00173	39	199	91
00174	39	199	91
00176	39	199	91
00177	39	199	91
00179	39	199	91
00180	39	199	91
00181	39	199	91
00182	39	199	91
00183	39	199	92
00184	39	199	92

ZIP Code	EL	AZ	SK
00185	39	199	91
00186	38	199	91
00187	38	199	92
00188	48	128	51
00189	48	129	51
00190	38	198	91
00191	38	198	91
00192	38	198	91
00195	17	100	53
00198	-2	77	62
00199	33	111	45
00200	33	110	44
00201	35	112	46
00203	27	105	45
00205	26	105	46
00206	27	104	44
00214	26	103	42
00215	26	103	42
00216	27	104	43
00217	26	105	46
00218	23	103	48
00219	34	124	57
00222	54	166	75
00223	58	165	74
00225	56	167	75
00226	59	165	74
00228	59	166	74
00229	55	165	74
00232	57	162	72
00234	58	166	75
00236	24	109	54
00238	49	144	62
00241	32	154	73
00243	51	149	65
00246	24	117	60
00250	35	120	52
00252	37	118	49
00255	41	133	58

ZIP Code	EL	AZ	SK
00257	18	101	51
00258	20	103	52
00259	20	103	50
00260	19	102	53
00266	29	115	53
00267	17	104	57
00268	20	105	55
00270	19	104	54
00276	26	117	58
00277	18	104	57
00278	19	103	52
00279	26	116	58
00280	24	104	48
00281	28	115	55
00282	28	116	55
00283	41	176	81
00284	38	197	90
00285	43	191	89
00286	49	180	83
00401	42	191	89
00501	43	193	90
00544	43	193	90
006XX	67	211	108
007XX	67	211	108
008XX	67	217	113
009XX	67	212	109
010XX	41	195	90
011XX	41	195	90
012XX	41	193	89
013XX	41	195	90
014XX	41	196	91
015XX	41	196	91
016XX	41	196	91
017XX	41	198	91
018XX	41	198	92
019XX	41	199	92
020XX	41	198	92
021XX	41	198	92

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ZIP Code	EL	AZ	SK
022XX	41	198	92
023XX	41	199	92
024XX	41	198	92
025XX	42	199	92
026XX	42	200	93
027XX	42	197	92
028XX	42	197	91
029XX	42	197	91
030XX	41	198	91
031XX	40	198	91
032XX	40	197	91
033XX	40	198	91
034XX	40	196	91
035XX	39	199	91
036XX	40	196	90
037XX	40	197	91
038XX	40	198	92
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040XX	40	200	92
041XX	40	201	93
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045XX	39	201	93
046XX	38	206	95
047XX	36	206	94
048XX	39	203	94
049XX	38	202	93
050XX	39	196	90
051XX	40	195	90
052XX	40	194	90
053XX	40	195	90
054XX	39	196	90
055XX	41	198	92
056XX	39	196	90
057XX	40	194	90
058XX	39	197	91
059XX	38	198	91
060XX	42	194	90
061XX	42	194	90
062XX	42	196	91
063XX	42	196	91
064XX	42	194	90
065XX	42	194	90
066XX	42	193	89

ZIP Code	EL	AZ	SK
067XX	42	193	89
068XX	42	192	89
069XX	43	192	89
070XX	43	191	88
071XX	43	191	88
072XX	43	191	88
073XX	43	191	88
074XX	43	191	88
075XX	43	191	88
076XX	43	191	88
077XX	43	191	88
078XX	43	189	88
079XX	43	190	88
080XX	44	188	87
081XX	44	188	87
082XX	44	189	88
083XX	44	188	87
084XX	44	189	88
085XX	43	189	88
086XX	43	189	88
087XX	44	190	88
088XX	43	189	88
089XX	43	189	88
100XX	43	191	89
101XX	43	191	89
102XX	43	191	88
103XX	43	191	88
104XX	43	191	89
105XX	42	191	89
106XX	43	191	89
107XX	43	191	89
108XX	43	191	89
109XX	42	194	88
110XX	43	191	89
111XX	43	191	89
112XX	43	191	89
113XX	43	191	89
114XX	43	191	89
115XX	43	192	89
116XX	43	191	89
117XX	43	192	89
118XX	43	192	89
119XX	43	194	90
120XX	41	192	89
121XX	41	192	89

ZIP Code	EL	AZ	SK
122XX	41	192	89
123XX	41	192	89
124XX	41	191	88
125XX	42	192	89
126XX	42	191	89
127XX	42	190	88
128XX	40	193	89
129XX	39	193	89
130XX	40	187	86
131XX	40	187	86
132XX	40	187	86
133XX	40	189	87
134XX	40	189	87
135XX	40	189	87
136XX	39	190	87
137XX	41	188	87
138XX	41	188	87
139XX	41	187	86
140XX	40	181	84
141XX	40	181	84
142XX	40	181	83
143XX	40	181	83
144XX	40	184	85
145XX	40	184	85
146XX	40	184	85
147XX	41	181	83
148XX	41	184	85
149XX	41	185	85
150XX	43	177	81
151XX	43	177	82
152XX	43	177	82
153XX	43	176	81
154XX	43	177	82
155XX	43	179	83
156XX	43	178	82
157XX	42	179	83
158XX	42	180	83
159XX	43	180	83
160XX	42	177	82
161XX	42	176	81
162XX	42	179	82
163XX	41	179	82
164XX	41	177	82
165XX	41	177	82
166XX	43	180	83

ZIP Code	EL	AZ	SK
167XX	41	181	84
168XX	42	182	84
169XX	41	184	85
170XX	43	183	85
171XX	43	184	85
172XX	43	182	84
173XX	44	183	85
174XX	44	184	85
175XX	44	186	86
176XX	44	185	86
177XX	42	184	85
178XX	43	185	85
179XX	43	186	86
180XX	43	188	87
181XX	43	188	87
182XX	43	187	86
183XX	42	188	87
184XX	42	188	87
185XX	42	188	87
186XX	42	187	86
187XX	42	187	86
188XX	42	187	86
189XX	43	188	87
190XX	44	188	87
191XX	44	188	87
192XX	44	188	87
193XX	44	186	86
194XX	43	188	87
195XX	43	186	86
196XX	43	186	86
197XX	44	186	86
198XX	44	187	87
199XX	45	187	87
200XX	45	183	85
201XX	45	182	84
202XX	45	183	85
203XX	45	183	85
204XX	45	183	85
205XX	45	183	85
206XX	45	184	85
207XX	45	183	85
208XX	44	183	85
209XX	45	183	85
210XX	44	184	85
211XX	44	184	85

ZIP Code	EL	AZ	SK
212XX	44	184	85
214XX	45	184	85
215XX	44	179	82
216XX	45	186	86
217XX	44	183	84
218XX	46	186	86
219XX	44	186	86
220XX	45	182	84
221XX	45	182	84
222XX	45	183	85
223XX	45	183	85
224XX	46	183	85
225XX	46	183	85
226XX	44	180	83
227XX	45	180	83
228XX	45	178	82
229XX	46	179	83
230XX	46	182	84
231XX	46	182	84
232XX	46	181	84
233XX	47	185	86
234XX	47	185	86
235XX	47	184	85
236XX	47	184	85
237XX	47	184	85
238XX	47	181	84
239XX	47	179	82
240XX	46	175	80
241XX	46	175	80
242XX	46	169	77
243XX	46	172	79
244XX	45	177	82
245XX	46	176	82
246XX	46	170	78
247XX	46	172	79
248XX	46	172	79
249XX	45	175	80
250XX	45	172	79
251XX	45	172	79
252XX	44	172	79
253XX	45	172	79
254XX	44	181	84
255XX	45	170	78
256XX	45	170	78
257XX	44	170	78

ZIP Code	EL	AZ	SK
258XX	45	172	79
259XX	45	173	79
260XX	43	175	81
261XX	44	173	80
262XX	44	175	81
263XX	44	175	80
264XX	44	175	81
265XX	44	176	81
266XX	45	174	80
267XX	44	178	82
268XX	44	178	82
270XX	47	173	80
271XX	47	173	80
272XX	48	175	80
273XX	48	175	81
274XX	47	175	80
275XX	48	177	82
276XX	48	177	82
277XX	48	176	82
278XX	48	180	84
279XX	48	183	85
280XX	48	171	78
281XX	48	172	79
282XX	48	171	79
283XX	49	176	81
284XX	50	177	82
285XX	49	180	84
286XX	47	170	78
287XX	47	167	76
288XX	47	167	77
289XX	48	164	74
290XX	50	171	78
291XX	50	171	78
292XX	49	170	78
293XX	48	169	77
294XX	51	172	79
295XX	50	174	80
296XX	48	167	76
297XX	49	171	78
298XX	50	168	77
299XX	51	170	77
300XX	49	162	73
301XX	48	161	73
302XX	49	161	73
303XX	49	162	73

ZIP Code	EL	AZ	SK
304XX	51	167	76
305XX	48	164	74
306XX	49	165	75
307XX	48	161	73
308XX	50	167	76
309XX	50	167	76
310XX	50	164	74
311XX	49	162	73
312XX	50	163	74
313XX	52	168	76
314XX	52	168	77
315XX	52	165	75
316XX	52	163	73
317XX	51	161	72
318XX	50	160	72
319XX	50	160	72
320XX	53	165	74
321XX	54	166	75
322XX	53	167	75
323XX	52	160	71
324XX	52	157	69
325XX	51	153	67
326XX	54	164	73
327XX	55	166	75
328XX	55	166	75
329XX	56	168	76
330XX	59	166	74
331XX	59	167	75
332XX	59	166	75
333XX	58	167	75
334XX	58	168	75
335XX	56	163	73
336XX	56	162	72
337XX	56	161	72
338XX	56	164	73
339XX	57	163	72
342XX	56	161	72
344XX	55	164	73
346XX	55	162	72
347XX	55	165	74
349XX	57	168	75
350XX	48	156	70
351XX	48	156	70
352XX	48	156	70
354XX	48	154	68

ZIP Code	EL	AZ	SK
355XX	47	154	69
356XX	47	155	70
357XX	47	158	71
358XX	47	157	71
359XX	48	158	71
360XX	50	157	70
361XX	50	156	70
362XX	49	158	71
363XX	51	157	70
364XX	50	154	68
365XX	50	151	66
366XX	50	151	66
367XX	49	154	68
368XX	50	158	71
369XX	49	151	67
370XX	45	158	71
371XX	46	158	72
372XX	45	158	72
373XX	47	161	73
374XX	47	161	73
375XX	45	150	67
376XX	47	169	77
377XX	46	164	75
378XX	46	165	75
379XX	47	164	75
380XX	45	152	68
381XX	45	150	67
382XX	45	153	69
383XX	45	153	69
384XX	46	156	70
385XX	46	161	73
386XX	46	149	67
387XX	46	147	65
388XX	47	152	68
389XX	47	149	66
390XX	48	148	65
391XX	48	147	65
392XX	48	147	65
393XX	48	151	66
394XX	49	148	65
395XX	50	148	64
396XX	49	146	63
397XX	47	151	67
399XX	49	162	73
400XX	44	163	74

ZIP Code	EL	AZ	SK
401XX	44	161	73
402XX	44	162	74
403XX	44	165	76
404XX	45	164	75
405XX	44	164	75
406XX	44	164	75
407XX	45	164	75
408XX	46	167	76
409XX	46	166	76
410XX	43	166	76
411XX	44	169	77
412XX	45	169	77
413XX	45	167	76
414XX	45	167	77
415XX	45	169	78
416XX	45	169	77
417XX	45	167	76
418XX	46	167	77
420XX	44	155	70
421XX	45	160	73
422XX	45	158	72
423XX	44	158	72
424XX	44	156	71
425XX	45	164	75
426XX	45	163	74
427XX	45	161	73
430XX	42	169	78
431XX	43	169	78
432XX	43	169	78
433XX	42	169	78
434XX	41	171	78
435XX	41	168	77
436XX	41	169	78
437XX	43	172	79
438XX	42	172	79
439XX	43	174	80
440XX	41	174	80
441XX	41	174	80
442XX	42	174	80
443XX	42	174	80
444XX	42	175	81
445XX	42	176	81
446XX	42	174	80
447XX	42	174	80
448XX	41	171	79

ZIP Code	EL	AZ	SK
449XX	42	171	79
450XX	43	166	76
451XX	43	167	77
452XX	43	166	76
453XX	42	166	77
454XX	42	166	77
455XX	42	167	77
456XX	44	169	78
457XX	43	172	79
458XX	41	167	77
459XX	43	165	76
460XX	42	162	75
461XX	42	161	74
462XX	42	162	74
463XX	40	161	74
464XX	40	161	74
465XX	40	163	75
466XX	40	163	75
467XX	41	164	76
468XX	41	164	76
469XX	41	163	75
470XX	43	164	75
471XX	43	161	74
472XX	43	162	74
473XX	42	164	76
474XX	43	160	73
475XX	43	159	73
476XX	43	158	72
477XX	43	158	72
478XX	42	159	73
479XX	41	160	74
480XX	40	171	79
481XX	40	169	78
482XX	40	171	79
483XX	40	171	79
484XX	39	171	79
485XX	39	170	78
486XX	38	169	78
487XX	38	171	79
488XX	39	168	77
489XX	39	168	77
490XX	40	165	76
491XX	40	163	75
492XX	40	168	77
493XX	38	166	77

ZIP Code	EL	AZ	SK
494XX	38	164	76
495XX	39	165	76
496XX	37	166	77
497XX	36	170	79
498XX	35	163	76
499XX	34	160	75
500XX	37	146	68
501XX	37	146	68
502XX	37	146	68
503XX	37	146	68
504XX	36	148	69
505XX	36	146	68
506XX	37	149	70
507XX	37	150	70
508XX	38	144	67
509XX	37	146	68
510XX	35	142	67
511XX	35	141	66
512XX	35	142	67
513XX	35	144	68
514XX	36	143	67
515XX	37	143	66
516XX	37	142	66
520XX	38	153	71
521XX	37	151	71
522XX	38	151	70
523XX	38	151	70
524XX	38	151	70
525XX	39	148	69
526XX	39	151	70
527XX	38	153	71
528XX	39	153	71
530XX	37	159	74
531XX	38	159	74
532XX	38	159	74
534XX	38	160	74
535XX	38	156	73
537XX	38	156	73
538XX	37	153	72
539XX	37	156	73
540XX	34	151	71
541XX	36	160	75
542XX	37	161	75
543XX	36	161	75
544XX	36	156	74

ZIP Code	EL	AZ	SK
545XX	34	157	74
546XX	36	154	72
547XX	35	153	72
548XX	34	154	73
549XX	37	158	74
550XX	34	149	71
551XX	34	149	71
553XX	34	147	70
554XX	34	149	71
555XX	34	147	70
556XX	33	156	74
557XX	32	152	72
558XX	33	152	73
559XX	36	151	71
560XX	35	147	69
561XX	34	144	68
562XX	33	144	69
563XX	33	147	70
564XX	32	147	71
565XX	31	143	70
566XX	31	148	71
567XX	30	144	70
570XX	34	141	67
571XX	34	141	67
572XX	33	141	68
573XX	33	138	66
574XX	32	138	67
575XX	32	134	64
576XX	30	132	65
577XX	31	129	62
580XX	31	141	69
581XX	31	142	69
582XX	30	141	69
583XX	29	138	68
584XX	30	138	67
585XX	30	134	66
586XX	29	130	65
587XX	28	134	67
588XX	27	129	65
590XX	27	121	60
591XX	27	121	60
592XX	26	126	64
593XX	28	125	63
594XX	24	117	60
595XX	24	119	62



ZIP Code	EL	AZ	SK
596XX	24	116	59
597XX	25	115	58
598XX	23	112	58
599XX	22	112	59
600XX	39	159	74
601XX	39	158	73
602XX	39	159	74
603XX	39	159	74
604XX	40	159	73
605XX	39	158	73
606XX	39	159	74
607XX	39	159	74
609XX	40	158	73
610XX	38	156	72
611XX	38	156	73
612XX	39	153	71
613XX	39	156	72
614XX	39	153	71
615XX	40	154	71
616XX	40	155	71
617XX	40	156	72
618XX	41	158	72
619XX	41	157	72
620XX	41	153	70
622XX	42	153	70
623XX	40	151	69
624XX	42	156	72
625XX	41	155	71
626XX	41	153	70
627XX	41	154	71
628XX	43	155	71
629XX	43	154	70
630XX	42	150	69
631XX	42	152	69
633XX	41	150	69
634XX	40	149	69
635XX	39	148	68
636XX	42	150	68
637XX	43	152	69
638XX	44	152	68
639XX	43	150	68
640XX	40	144	66
641XX	39	143	65
644XX	38	143	66
645XX	39	143	66

ZIP Code	EL	AZ	SK
646XX	39	145	67
647XX	40	142	65
648XX	41	142	64
649XX	39	142	65
650XX	41	147	67
651XX	41	147	67
652XX	40	147	68
653XX	40	145	66
654XX	42	147	67
655XX	42	147	67
656XX	42	144	65
657XX	42	144	65
658XX	42	144	65
660XX	39	142	65
661XX	39	142	65
662XX	39	142	65
664XX	38	140	64
665XX	38	140	64
666XX	39	141	64
667XX	40	141	64
668XX	39	139	63
669XX	37	137	63
670XX	39	136	61
671XX	39	136	61
672XX	39	136	62
673XX	41	139	63
674XX	38	136	62
675XX	38	134	61
676XX	37	134	61
677XX	36	131	60
678XX	37	130	59
679XX	37	129	58
680XX	36	140	66
681XX	37	141	66
683XX	37	139	64
684XX	37	140	65
685XX	37	140	65
686XX	36	138	65
687XX	35	138	65
688XX	35	135	63
689XX	36	135	63
690XX	35	131	61
691XX	34	131	61
692XX	33	133	63
693XX	32	128	61

ZIP Code	EL	AZ	SK
700XX	50	146	62
701XX	50	146	63
703XX	50	144	61
704XX	50	146	63
705XX	49	141	60
706XX	48	140	59
707XX	49	144	62
708XX	49	144	62
710XX	46	141	61
711XX	46	140	61
712XX	47	144	63
713XX	48	142	61
714XX	47	141	61
716XX	46	145	64
717XX	45	142	63
718XX	45	141	62
719XX	44	142	63
720XX	44	146	65
721XX	44	145	65
722XX	45	145	64
723XX	45	149	67
724XX	44	149	67
725XX	44	147	66
726XX	43	144	65
727XX	42	141	63
728XX	43	143	63
729XX	43	141	63
730XX	41	134	59
731XX	41	134	59
733XX	45	130	54
734XX	43	135	59
735XX	41	132	57
736XX	40	131	58
737XX	40	134	60
738XX	39	132	59
739XX	38	128	57
740XX	41	138	61
741XX	41	138	62
743XX	42	140	63
744XX	42	139	62
745XX	43	137	61
746XX	40	137	61
747XX	43	137	60
748XX	42	136	60
749XX	43	140	62

ZIP Code	EL	AZ	SK
750XX	44	135	58
751XX	44	135	58
752XX	44	134	58
753XX	44	134	58
754XX	44	136	59
755XX	45	139	61
756XX	45	138	60
757XX	45	136	59
758XX	46	135	57
759XX	47	138	59
760XX	44	133	57
761XX	44	133	57
762XX	43	133	58
763XX	42	132	57
764XX	43	131	56
765XX	45	132	55
766XX	45	133	56
767XX	45	132	56
768XX	43	129	54
769XX	43	127	53
770XX	47	134	56
772XX	47	134	56
773XX	47	135	57
774XX	47	133	55
775XX	48	135	56
776XX	48	137	58
777XX	48	137	58
778XX	46	133	56
779XX	47	130	53
780XX	46	128	52
781XX	46	129	53
782XX	46	129	52
783XX	47	128	51
784XX	48	129	52
785XX	48	126	49
786XX	45	130	54
787XX	45	130	54
788XX	44	125	51
789XX	46	132	55
790XX	39	127	56
791XX	39	127	55
792XX	40	129	56
793XX	40	125	53
794XX	40	126	54
795XX	42	128	54

ZIP Code	EL	AZ	SK
796XX	42	128	54
797XX	41	124	51
798XX	40	120	48
799XX	38	118	48
800XX	33	124	57
801XX	34	124	57
802XX	33	124	57
803XX	33	124	57
804XX	33	122	57
805XX	33	125	58
806XX	33	125	58
807XX	34	128	59
808XX	34	126	57
809XX	34	124	57
810XX	35	125	56
811XX	34	122	54
812XX	34	122	55
813XX	33	118	53
814XX	32	119	54
815XX	32	118	54
816XX	32	121	56
820XX	32	125	59
821XX	26	117	58
822XX	31	126	60
823XX	30	121	58
824XX	28	120	59
825XX	28	119	58
826XX	30	123	59
827XX	30	126	61
828XX	28	123	60
829XX	29	117	56
830XX	27	117	57
831XX	28	117	56
832XX	27	114	56
833XX	25	111	54
834XX	26	115	57
835XX	22	109	57
836XX	23	109	54
837XX	24	109	54
838XX	21	110	58
840XX	29	115	54
841XX	28	115	54
842XX	28	114	54
843XX	28	114	55
844XX	28	114	54

ZIP Code	EL	AZ	SK
845XX	31	116	53
846XX	29	114	53
847XX	30	112	50
850XX	33	112	46
852XX	33	112	46
853XX	32	110	46
855XX	34	114	47
856XX	35	112	45
857XX	34	112	46
859XX	34	115	48
860XX	32	113	49
863XX	32	112	47
864XX	30	110	47
865XX	33	116	50
870XX	36	119	51
871XX	36	120	52
872XX	36	120	52
873XX	34	117	51
874XX	34	118	52
875XX	35	121	53
877XX	36	122	54
878XX	36	118	50
879XX	37	117	49
880XX	37	117	48
881XX	38	123	53
882XX	39	122	51
883XX	38	120	50
884XX	37	124	54
885XX	38	118	48
889XX	29	109	47
890XX	28	109	48
891XX	29	109	47
893XX	27	109	50
894XX	24	105	49
895XX	24	105	48
897XX	24	104	48
898XX	26	109	52
900XX	28	105	43
902XX	28	105	43
903XX	28	105	43
904XX	28	105	43
905XX	28	105	43
906XX	28	105	43
907XX	28	105	43
908XX	28	105	43

ZIP Code	EL	AZ	SK
910XX	28	105	44
911XX	28	105	44
912XX	28	105	44
913XX	27	105	43
914XX	28	105	43
915XX	28	105	44
916XX	28	105	43
917XX	28	105	44
918XX	28	105	44
919XX	30	106	43
920XX	29	106	43
921XX	29	106	43
922XX	30	107	44
923XX	29	106	45
924XX	28	106	44
925XX	29	105	44
926XX	28	105	43
927XX	28	105	43
928XX	28	105	43
930XX	27	104	43
931XX	26	104	43
932XX	26	104	45
933XX	27	105	44
934XX	25	103	44
935XX	27	106	45
936XX	25	104	46
937XX	25	104	46
938XX	25	104	46
939XX	24	102	44
940XX	23	101	45
941XX	23	101	45
942XX	23	103	47
943XX	23	101	45
944XX	23	101	45
945XX	23	102	46
946XX	23	102	46
947XX	23	102	46
948XX	23	102	46
949XX	22	101	46
950XX	23	102	45
951XX	23	102	45
952XX	24	103	46
953XX	24	103	46
954XX	22	101	46
955XX	20	101	48

ZIP Code	EL	AZ	SK
956XX	23	103	47
957XX	23	103	47
958XX	23	103	47
959XX	23	103	48
960XX	21	102	49
961XX	23	104	49
970XX	19	102	53
971XX	18	101	53
972XX	19	102	53
973XX	19	101	52
974XX	19	101	51
975XX	20	101	50
976XX	21	104	51
977XX	21	104	52
978XX	21	106	54
979XX	23	108	54
980XX	18	102	55
981XX	18	102	55
982XX	17	102	56
983XX	18	102	55
984XX	18	102	55
985XX	17	101	54
986XX	18	102	54
988XX	19	105	56
989XX	19	104	55
990XX	20	108	57
991XX	20	107	57
992XX	20	108	57
993XX	20	106	55
994XX	22	108	56
998XX	6	87	61
999XX	8	90	60

# Appendix

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## Overview

These instructions guide you through the installation of a DISH 500+ to DISH 1000.4 Conversion Kit. The DISH 1000.4 is capable of receiving digital television signals from three DBS satellite locations: 61.5°W, 72.7°W, and 77°W.

The conversion kit uses an existing DISH 500+ reflector to function as a DISH 1000.4. The kit converts the DISH 500+ reflector, backing structure, and mast to function as a DISH 1000.4 by using the DISH Pro Plus 1000.4 LNBF and the DISH 1000.4 LNBF Arm.

Use the DISH 500+ Installation Instructions to install the dish antenna and for peaking instructions, except to attach the LNBF and LNBF Arm and for the *Dish Pointing Angles*.

## Locating the Dish Antenna

Use the *Dish Pointing Angles* starting on page 11 to find the azimuth, elevation, and skew angles for the DISH 1000.4 using the ZIP code from your location. Write the angles in the space provided below.

**Elevation:** \_\_\_\_\_ **Azimuth:** \_\_\_\_\_ **Skew:** \_\_\_\_\_

Using these azimuth and elevation angles, find a mounting location for the satellite dish where it can be pointed towards the satellites located at these angles, or ensure the current mounting location is suitable. Use a compass and the azimuth angle to find the direction along the horizon that the dish should be pointed. Then use the elevation angle to find out how high the satellites are in the sky from your location. Make sure nothing blocks the line of sight between the dish and the satellites. Make sure this line of sight will not be blocked by future growth of nearby trees or other foliage. Also make sure your mounting location provides sufficient clearance to rotate the reflector as needed to point toward the satellites.

## Attaching the DISH 500+ to DISH 1000.4 Conversion Kit

Follow these instructions to attach the LNBF and LNBF Arm to convert the DISH 500+ to function as a DISH 1000.4.

- 1** Using the azimuth and elevation angles, find a location for the satellite dish where it can be pointed towards the satellites located at these angles. Make sure nothing blocks the line of sight between the dish and the satellites.  
If repointing an existing DISH 500+ to function as a DISH 1000.4, ensure the current mounting location has nothing blocking the line of sight between the dish and the new line of sight required for the DISH 1000.4.
- 2** Follow the DISH 500+ Installation Instructions through page 3, step 7 to assemble the dish antenna, except do not attach the DISH 500+ LNBF Arm.
- 3** Attach the DISH 1000.4 LNBF Arm to the DISH 500+. The LNBF Arm has a specific orientation, indicated by the labeling Top and To LNBF. When attaching the DISH 1000.4 Bracket to the LNBF Arm, be sure that the small posts on the bracket fit into the holes on the LNBF Arm (see Figure 2). Connect a temporary cable to a peaking meter. Thread the other end of the cable through the LNBF Arm and bracket. Connect the temporary cable to **PORT 2** of the DPP 1000.4 LNBF and attach the bracket with two screws.
- 4** Follow the instructions in the DISH 500+ Installation Instructions to peak the dish antenna, except use the *DISH Pointing Angles* starting on page 11 of these Installation Instructions, and be sure to connect your peaking meter to **PORT 2** of the DPP 1000.4 LNBF.

## Notes

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## Radio Interference

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

Modifying this receiver may void your authority to use the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

If none of the remedies stops the radio interference, you should contact a licensed radio/television technician, your satellite dealer or call the Customer Service Center at 1-800-333-3474, for assistance.

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