INSTALLATION WARNINGS

⚠ Always power off the RCST (and External Power Supply if used) whenever connecting or disconnecting IFL cables. Failure to do so can result in damage to the RCST.
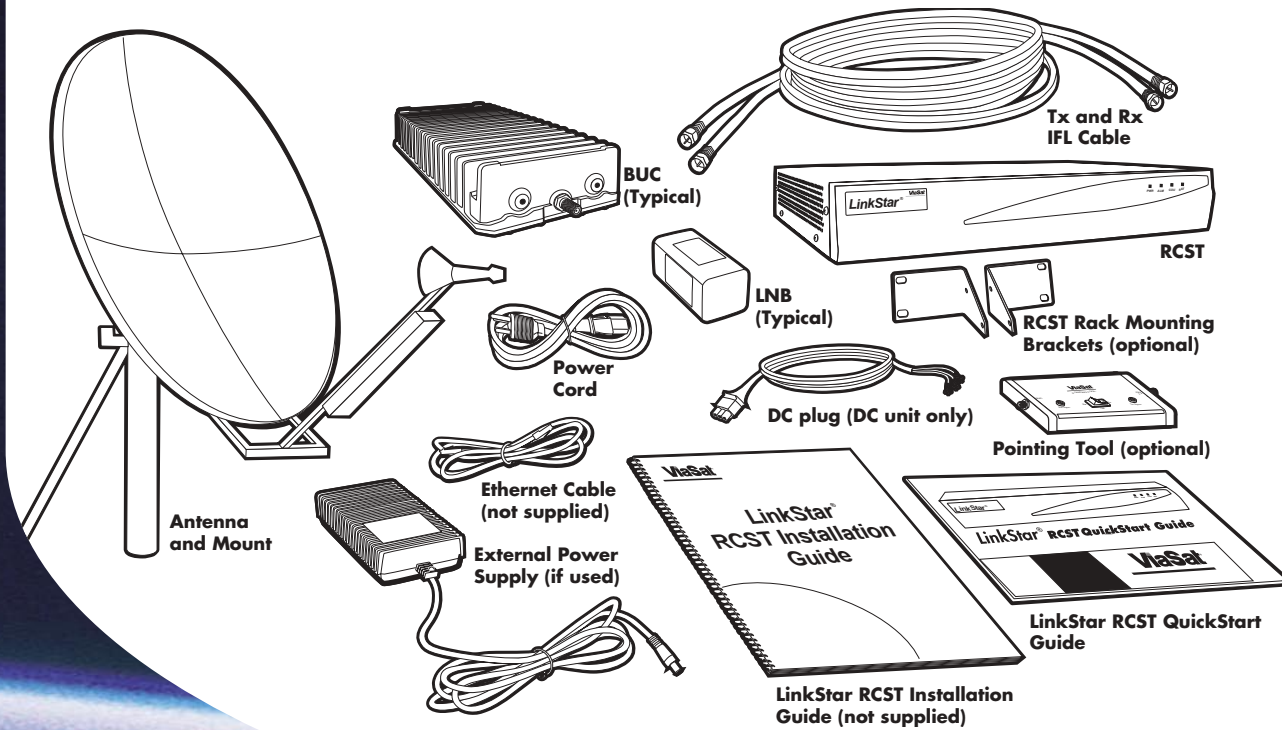
⚠ Do not connect the transmit IFL to the RCST receive IF port. The BUC will pull excessive current and damage the RCST. Obtain receive synchronization before connecting the transmit IFL cable to the BUC.

⚠ Do not short the center pin of the receive IF connector or receive IFL cable to ground. This will cause excessive current and will damage the RCST.

⚠ If an External Power Supply is installed with the RCST, ensure the RCST boot parameter is set for "External." If this boot parameter is not set correctly, the internal power supply could fail after a few hours of operation due to excessive current drain.

⚠ Verify IFL cable type, length, and need for External Power Supply as defined in the *Linkstar RCST Installation Guide*, Section 6, IFL Requirements. Failure to comply with these requirements can cause the RCST to fail or shorten its life.

1. Inventory

1a. Verify all equipment has been received and is of the correct type. (Refer to Section 4, LinkStar Remote Site Components, and Section 6, IFL Requirements, of the *LinkStar RCST Installation Guide*):
- Antenna
- Antenna Mount
- BUC
- External Power Supply (if used)
- LNB
- Return Channel Satellite Terminal (RCST)
- Tx/Rx IFL Cable(s)
- DC Plug (DC Unit only)

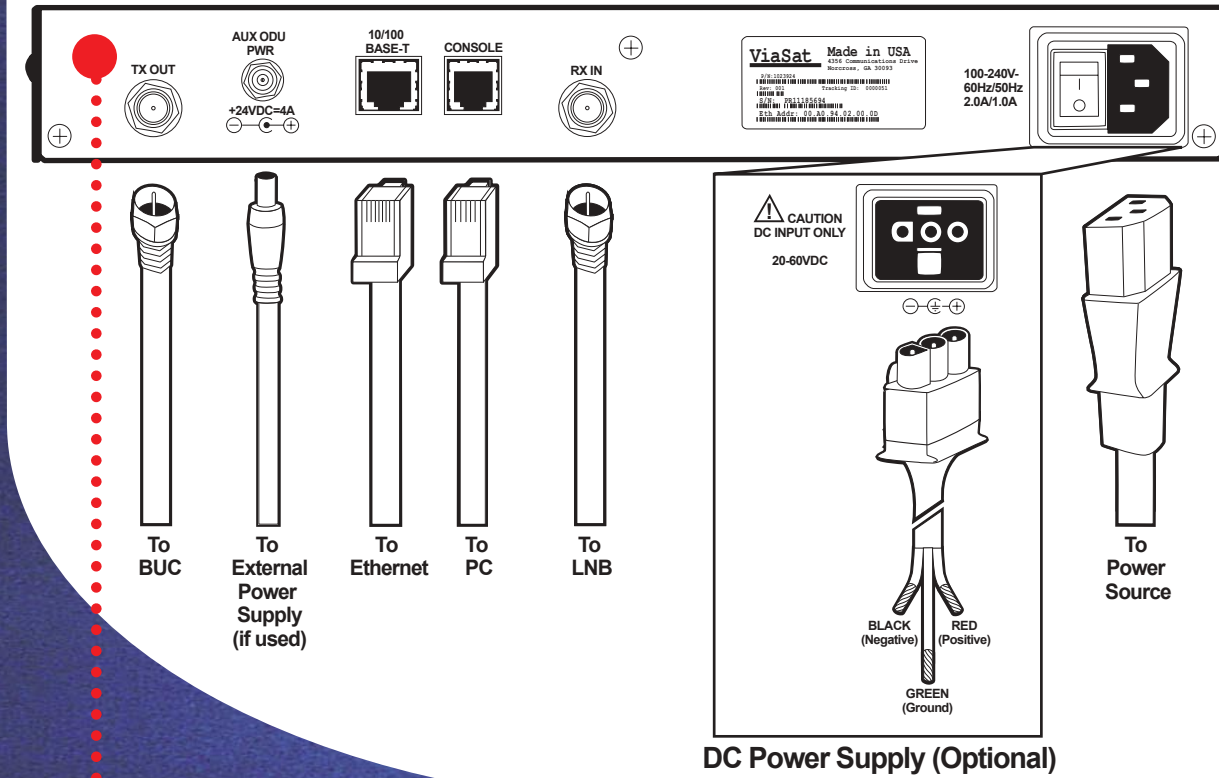Required Items (Not supplied with RCST):
- *LinkStar RCST Installation Guide* (one per installation team; also available at http://extranet.viasat.com)
- Ethernet Cable (Crossover or Straight, if using hub)
- Windows® PC

Optional Items (Not supplied with RCST):
- RCST Rack Mounting Brackets
- LinkStar Pointing Tool

Inventory illustration labels:
BUC (Typical) · Tx and Rx IFL Cable · RCST · LNB (Typical) · RCST Rack Mounting Brackets (optional) · Power Cord · DC plug (DC unit only) · Pointing Tool (optional) · Antenna and Mount · Ethernet Cable (not supplied) · External Power Supply (if used) · LinkStar RCST Installation Guide · LinkStar RCST QuickStart Guide · LinkStar RCST Installation Guide (not supplied)

2. Installation

2a. Install the RCST on a table top or in a rack. DO NOT block the side air vents or the unit will overheat.

2b. Make sure power is OFF to RCST (and to External Power Supply, if used).

2c. Install antenna, LNB, BUC (and External Power Supply, if used).

⚠ CAUTION!!
TO AVOID DAMAGING THE UNIT

DO NOT short center pin of RCST Rx connector or center pin of Rx IFL cable to ground.

DO NOT connect the Tx IFL cable to the BUC until receive synchronization is established.

2d. Connect the Rx IFL cable from the LNB to the RCST Rx In, using the unlabeled cable of the Siamese cable pair.

AC Power Configuration

Panel labels: TX OUT · AUX ODU PWR +24VDC=4A · 10/100 BASE-T · CONSOLE · RX IN · ViaSat Made in USA · 100-240V~ 60Hz/50Hz 2.0A/1.0A · ⚠ CAUTION DC INPUT ONLY 20-60VDC

To BUC · To External Power Supply (if used) · To Ethernet · To PC · To LNB · To Power Source

BLACK (Negative) · RED (Positive) · GREEN (Ground)

DC Power Supply (Optional)

Panel labels: TX OUT · AUX ODU PWR +24VDC=4A · 10/100 BASE-T · CONSOLE · RX IN · ViaSat Made in USA · 100-240V~ 60Hz/50Hz 2.0A/1.0A

Front panel LEDs: PWR · ALM · ODU · SAT

LinkStar® RCST *Quick*Start Guide

3. RCST Setup

Note: The default IP address is always "10" plus the last three hex octets converted to decimal. In this example, 02.00.00 hex converted to decimal is 2.0.13, therefore this RCST's default IP address is 10.2.0.13. The subnet is 255.255.255.0.

Ethernet address 00.A0.94.02.00.0D

Panel labels: AUX ODU PWR +24VDC=4A · 10/100 BASE-T · Ethernet Crossover cable, or straight cable through a hub.

3a. Power ON RCST.

3b. Connect crossover cable (or straight cable through a hub) to 10/100 base-T port. Telnet to the RCST default IP address (see note at the left).
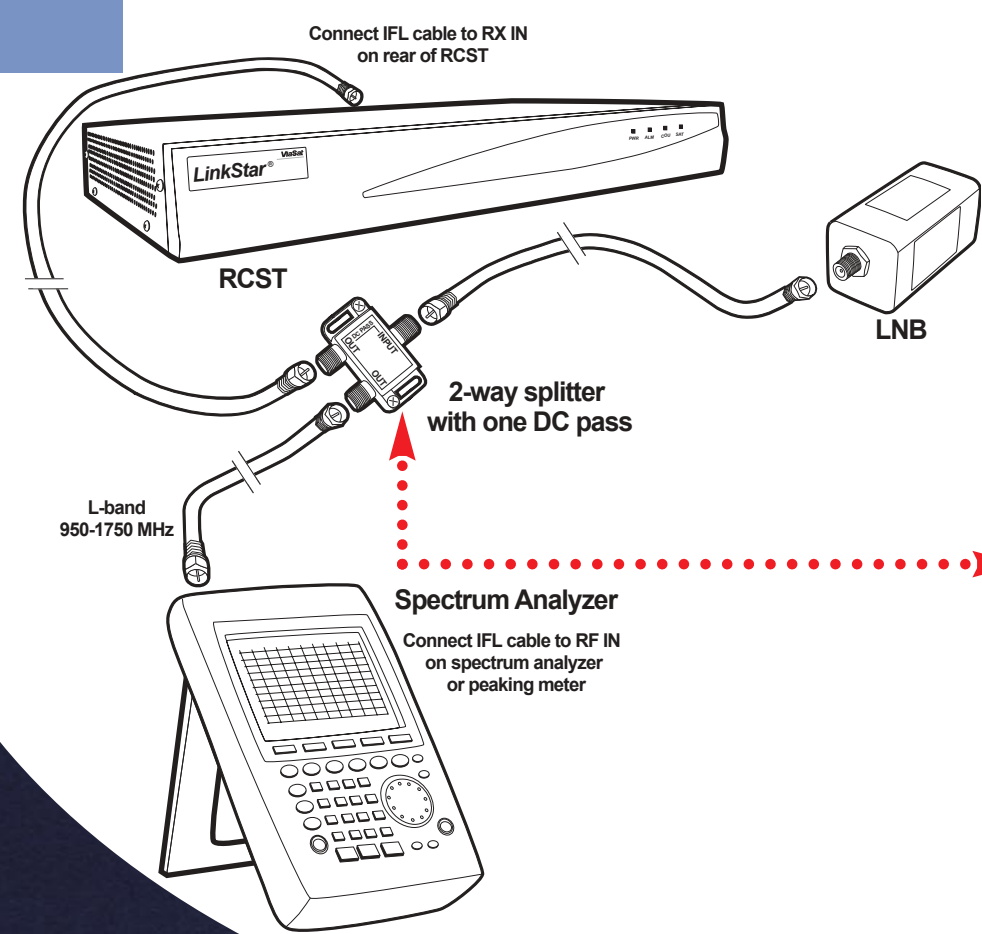
3c. Set boot parameters with save command:
`save`   **-t** (Tx power (1/2 dB steps))   **-c** (control PID)
     -f (TDM carrier (in KHz))   **-pcr** (PCR PID)
     -pop (population ID)   **-o** (ODU status)
     -s (symbol rate)
     -poi [0|1] (pointing tool mode 0 = off, 1 = on)
     -lnbv [0|12|13|18|20]   (0 = off)
     -lnbi [0|1]   (0 = off, 1 = on)

When turned on, the lnbi setting increments the lnbv value by one volt.
For example: `save -lnbv 20 -lnbi 0` (=20 volts)
`save -lnbv 20 -lnbi 1` (=21 volts). The recommended initial setting is 21 volts.

Example: `save -t -60 -c 0x1029 -f 125000 -pcr 0x365 -pop 0x11e0004 -o 2 -s 27500000 -lnbv 20 -lnbi 1`

ODU status parameters
-o 1   If the RCST will power the BUC.
-o 2   If using an External Power Supply.

3d. Enter `dbpr bootconf` to check parameters.

3e. Enter `hw` to reboot terminal.

Telnet screen contents:
```
Select Telnet 10.254.4.3
Password:
Logged in as root

dbpr bootconf
KSET BootConf
    item 1. Addr 12F060, Key 0 0x0 ItemMark 1 ArrayPos 0
    termid            0x20057        popid            0x11e0002
    ctlPID            0x1029         pcrPID           0x365
    TDMCarrierFreq    1270000        SymbolRate       10000000
    MaritimeEnabled   0              Latitude         39.02300
    Longitude         -77.12300      TxPower          -50
    ODUStatus         INTERNAL       VCXOPari         0x0
    VCXOPar2          0x0            TimingLoopBW     0x0
    Signature         0x0            isEncryptionEnabled  0
    isRecvKeyValid    0              isEncryptKeyValid    0
    PointingTool      0              LNBVoltage       0
    LNBVoltageIncrease 0             LNBToneOn        0
```

Logo: ViaSat®

4. Antenna Pointing

4a. Power OFF RCST (and External Power Supply, if used).

4b. Connect cables, spectrum analyzer (or peaking meter), and DC block/splitter, as shown.

4c. Turn ON power to RCST (and plug in External Power Supply, if used).

4d. Point antenna to elevation and azimuth specified for satellite.

4e. Perform azimuth sweeps at different elevations until satellite beacon is found. Call the satellite operator to verify the polarization adjustment. If satellite beacon is not found, refer to Troubleshooting, Item B in this QuickStart Guide.

Connect IFL cable to RX IN on rear of RCST

RCST

LNB

2-way splitter with one DC pass

L-band 950-1750 MHz

Spectrum Analyzer

Connect IFL cable to RF IN on spectrum analyzer or peaking meter

⚠ **C A U T I O N ! !**

DC VOLTAGE IS PRESENT ON THE IFL CABLES

To prevent damage to the spectrum analyzer, be sure to use a splitter that blocks the DC to the spectrum analyzer.

LinkStar™

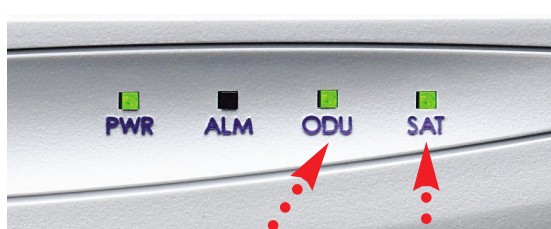PWR   ALM   ODU   SAT

5. Receive Synchronization

5a. Turn OFF power to RCST (and unplug External Power Supply, if used).

5b. Disconnect cables from spectrum analyzer and DC block/splitter.

5c. Connect the Rx IFL cable from the LNB to the RCST Rx In. DO NOT connect the Tx IFL cable from the BUC to Tx Out.

5d. Turn ON power to RCST (and plug in power cord for External Power Supply, if used).

5e. Check SAT LED:
Blinking slowly indicates Rx sync.
Blinking quickly indicates NCR sync (1.0.8 and later). If Rx sync is not acquired, refer to Troubleshooting, Item B in this QuickStart Guide.
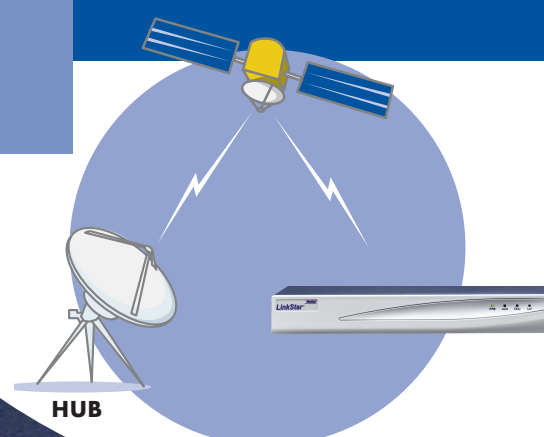
PWR   ALM   ODU   SAT

Verify PWR LED is ON

Verify SAT LED is blinking Green, indicating receive/NCR synchronization

6. Transmit Synchronization

6a. Turn OFF power to RCST (and unplug the External Power Supply, if used).

6b. Connect Tx IFL cable from BUC to RCST Tx Out.

6c. Turn ON power to RCST. ODU LED should be steady ON. After 5 minutes, SAT LED should be steady ON to indicate Tx sync. If SAT LED is OFF or blinking, refer to Troubleshooting, Item D in this QuickStart Guide.

PWR   ALM   ODU   SAT

Verify ODU LED is ON Green, indicating ODU Power

Verify SAT LED is ON Green, indicating transmit synchronization

7. Final Check

HUB

7a. Contact the Hub operator to verify:
- RCST status (**showrcst <RCST termid>, tcmp** commands).
- Ping from Hub to RCST.
- Software version (**lmep** command).

7b. If the ping fails, refer to Troubleshooting, Item F in this QuickStart Guide.

If the ping was successful, congratulations! You have installed your RCST!

Troubleshooting

Problem	Things You Should Check	For more detail, refer to the *LinkStar RCST Installation Guide* (Item No. ING00076), Section...
A. RCST does not power on	1. AC power wired to 110/220 VAC. 2. Blown fuse. 3. Bad AC power cable. If the RCST still does not power ON, replace the RCST.	13.3 *RCST Power ON Failure* " "
B. No Receive Synchronization **(SAT LED is not blinking.)**	1. Boot parameters: • TDM frequency. • TDM symbol rate. 2. IFL cable connectors. 3. Receive IFL cable type, length. 4. LNB frequency. 5. TDM signal level. 6. Noise level. 7. Interfering signal. 8. Obstructions. 9. Antenna polarization. 10. Antenna pointing.	13.5.5 *TDM Frequency and Symbol Rate* " 13.5.3 *Receive IFL Cable* " 13.5.2 *LNB* 13.5.1 *Receive TDM Signal* 13.5.4 *Antenna* " " " "
C. High Receive BER	1. Weather conditions. 2. TDM signal level. 3. Cable attenuation. 4. Antenna polarization. 5. Antenna pointing. 6. Interference.	13.6 *Receive TDM BER* " " " " "
D. No Transmit Synchronization **(LED is not solid steady green.)**	1. Boot parameters: • Terminal ID. • Population ID. • Control PID. • Tx power. 2. Transmit IFL Cable type, length. 3. BUC output power.	13.7.2 *RCST Boot Parameters* " " " " 13.7.4 *TDMA Transmit Level* "
E. High RCST Transmit BER	1. Weather conditions. 2. TDMA signal level at GCU. 3. BUC output power. 4. Antenna polarization.	13.8 *RCST Transmit BER* " " "
F. No IP Traffic	1. Allocated bandwidth. 2. IP Status.	13.9 *Traffic Test* "

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