

TRACPHONE®

TracPhone V7

24" (60 cm) Configuration



TracPhone V7 Installation Guide

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KVH's Complete mini-VSAT Broadbandsm System

These instructions explain how to install the TracPhone V7 mini-VSAT Broadband satellite communications system. Instructions on how to use the system are provided in the *User's Guide*.

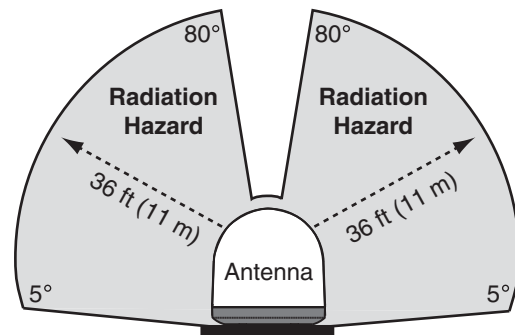
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CAUTION - RF Radiation Hazard



The antenna transmits radio frequency (RF) energy that is potentially harmful. Whenever the system is powered on, make sure everyone stays more than 36 feet (11 m) away from the antenna within its 5-80° elevation range. No hazard exists directly above the antenna and anywhere below the antenna's mounting plane.



Who Should Install the System?

To ensure a safe and effective installation, only a KVH-certified technician should install the TracPhone system. KVH-certified technicians have the tools and electronics expertise necessary to install the system. To find a technician near you, visit www.kvh.com/wheretogetservice.

Technical Support

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Phone: +45 45 160 180
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1 Inspect Parts and Get Tools

Before you begin, follow these steps to make sure you have everything you need to complete the installation.

- a. Unpack the box and ensure it contains everything shown in Figure 1 and on the *Kitpack Content Lists*. Save the packaging for future use.

IMPORTANT!

Always lift the antenna by the baseplate and never by the radome or any portion of the internal antenna assembly (see Figure 1).

- b. Carefully examine all of the supplied parts to ensure nothing was damaged in shipment.
- c. Gather all of the tools and materials listed below. You will need these items to complete the installation.
 - Flat-head and Phillips-head screwdrivers
 - Electric drill and 1/2" (13 mm) bit
 - 3" (80 mm) hole saw
 - Wire cutters
 - Socket wrenches and extension
 - 7/16" open-end wrench
 - Light hammer and center punch
 - Adhesive tape, scribe or pencil
 - Wire strippers and terminal lug crimper
 - Two RF coax cables (see Figure 20 on page 11 for type required)
 - Connector installation tools
 - Laptop computer with Windows® Vista or XP installed

NOTE: KVH offers an optional *Service Selector kit* for connecting both a TracPhone V7 and a Fleet antenna system to the onboard local area network (LAN). Supplemental instructions are provided in the *Service Selector kit* (KVH P/N 01-0299).

Figure 1: TracPhone V7 System Components

Antenna



Control Unit



Modem



Router



Multimedia Terminal Adapter (MTA)



Remote Service & Support Module



2 Plan the Antenna Installation

Before you begin, consider the following antenna installation guidelines:

- Minimize blockage. The antenna requires a clear view of the sky to transmit and receive satellite signals (see Figure 2). The fewer obstructions, the better the system will perform.
- Make sure the mounting surface is wide enough to accommodate the antenna's base (see Figure 3). Also make sure it is flat, level (within $\pm 1^\circ$), strong enough to support the antenna's weight (60 lbs, 27.2 kg), and rigid enough to withstand heavy vibration.
- Select a location that is as close as possible to the intersection of the vessel's fore-and-aft centerline and midships.
- Select a location that is well above any areas accessible to passengers and crew to reduce the risk of RF radiation exposure.
- Do not mount the antenna at the same level as the radar because the radar's energy might overload the antenna. Ideally, you should mount the antenna 4 ft (1.2 m) above the radar, outside the beam path of the radar.

Figure 2: Blockage from Obstruction

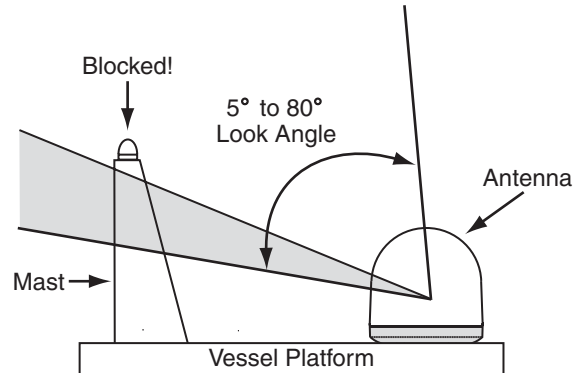
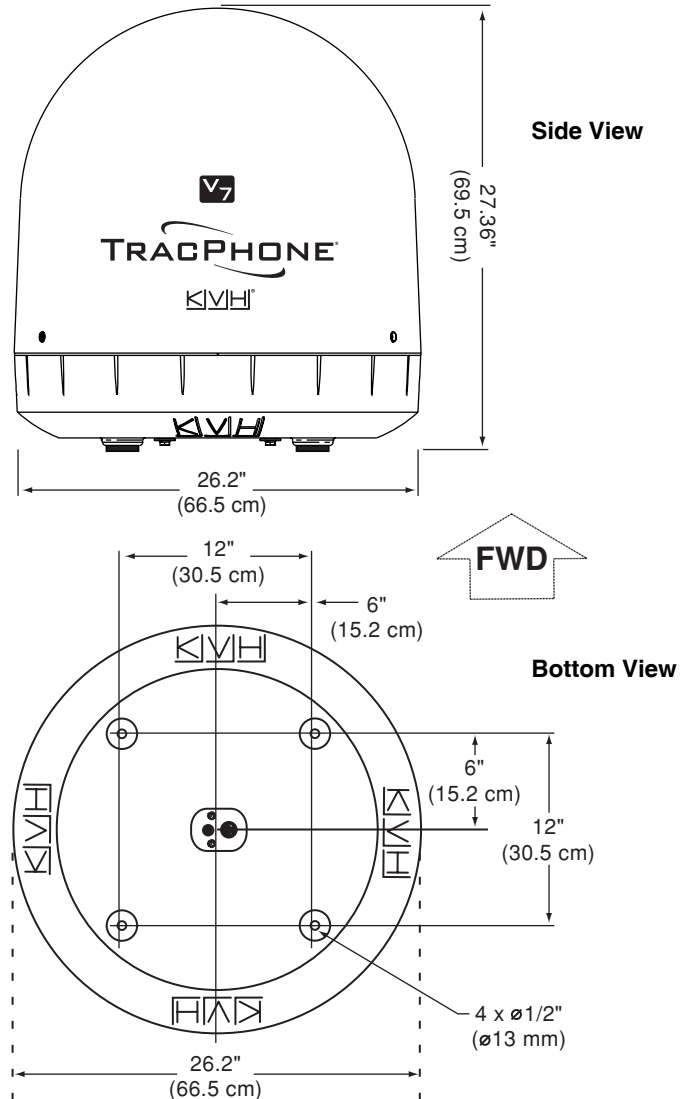


Figure 3: Antenna Dimensions



3 Plan the Belowdecks Installation

Before you begin, consider the following installation guidelines for the belowdecks units.

Control Unit and Modem

- Select a mounting location in a dry, well-ventilated area belowdecks away from any heat sources or salt spray.
 - Be sure the front panels will be easily accessible to the user.
 - Leave enough room at the rear panel for connecting the cables.
 - You have several options for mounting the control unit and modem:
 - Option 1** - Inside the optional case
 - Option 2** - To a horizontal surface together using two L-brackets
 - Option 3** - To a horizontal surface separately using four L-brackets
- NOTE: The control unit and modem are sized to fit a standard 19" (482.6 mm) equipment rack.*
- To use the supplied data and power cables, the control unit must be located within 100 ft (30 m) of the antenna. However, you can order 150 ft (45 m) cables if a longer cable run is necessary (see Figure 20 on page 11).

Router and MTA

- To use the supplied Ethernet cables, select a mounting location within 25 ft (7.5 m) of the modem (maximum length = 200 ft (60 m)).
- Be sure the location provides adequate WiFi reception. Do not install the router in an area surrounded by metal or near any electrical devices that generate RF noise.

Remote Service & Support Module

- To use the supplied serial data cable, select a mounting location within 25 ft (7.5 m) of the control unit (maximum length = 50 ft (15 m)).
- Be sure the location provides adequate GPRS cellular reception.

Figure 4: Control Unit or Modem Dimensions (Identical)

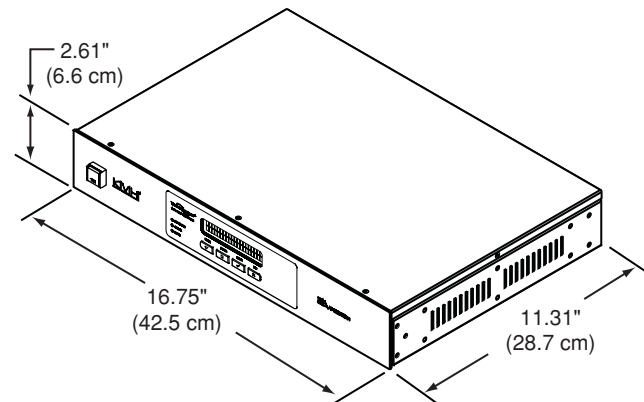
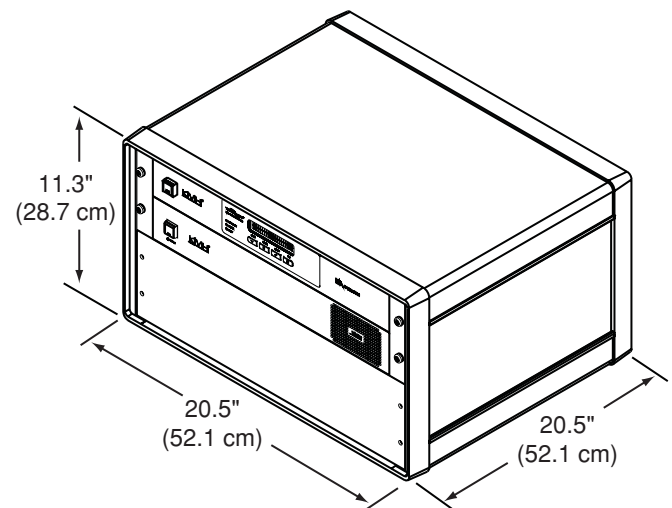


Figure 5: Case Dimensions



4

Prepare the Belowdecks Units

If you plan to mount the control unit and modem inside the optional 19" (482.6 mm) case, follow these steps to assemble the case.

- a. Remove the four M4 screws securing the rear cover to the case. Discard the rear cover.
- b. Attach the top cover to the case using four M4 x 12 mm screws (see Figure 6). Attach the bottom cover and the two mounting brackets using four M4 x 16 mm screws.
- c. Attach the four plastic feet to the bottom cover (see Figure 6).
- d. At the front of the case, insert eight cage nuts into the following locations on the frame (four on each side) (see Figure 6): #2, #5, #8, and #11.
- e. At the back of the case, insert four cage nuts into the following locations on the frame (two on each side): #1 and #3
- f. Remove the four #6-32 screws and washers securing the two retaining straps to the rear panel of the control unit. *Do not remove the bottom screws securing the straps to the modem.*
- g. Attach the strain-relief bracket to the retaining straps and control unit using the screws and washers you removed in Step f (see Figure 7).
- h. At the top 3U section of the case, insert the control unit/modem assembly and secure the front mounting brackets to the case using four M6 screws and washers (see Figure 8).
- i. At the bottom 3U section of the case, attach the supplied blank panel using four M6 screws and washers (see Figure 8).
- j. Secure the back of the control unit to the back of the case using the two supplied "Z" brackets. Attach the brackets to the case frame using four M6 screws and washers. Attach the brackets to the rear panel of the control unit using four #6-32 screws and washers (see Figure 8).
- k. Once you have completed all system wiring, mount the case to the vessel using fasteners appropriate for the mounting surface.

Option 1 - Mounting in the Case

Figure 6: Assembling the Case

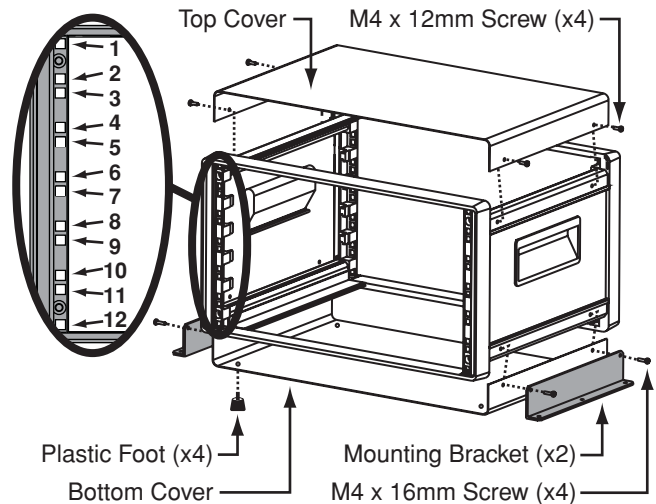


Figure 7: Attaching the Strain-Relief Bracket

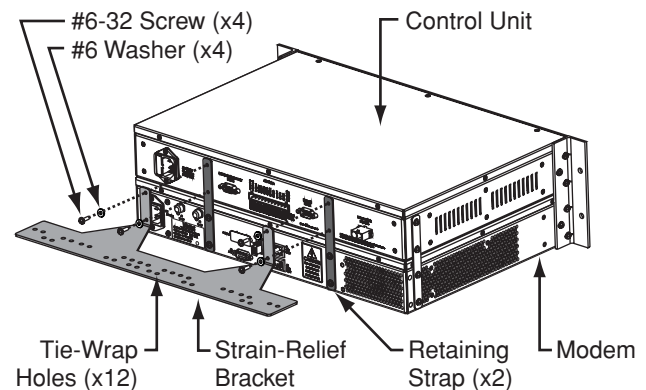
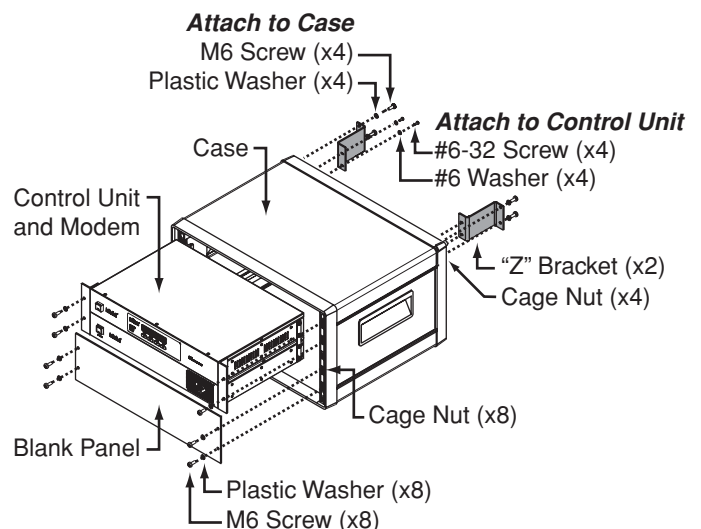


Figure 8: Securing the Control Unit/Modem in the Case



4 Prepare the Belowdecks Units

If you plan to mount the control unit and modem together as an assembly, without using the optional case, follow these steps to detach the rack-mount brackets, attach the strain-relief bracket, and attach the "L" mounting brackets.

- Remove the 12 #6-32 screws and washers securing the two rack-mount brackets to the front of the control unit and modem (see Figure 9). Remove the brackets.
- Remove the four #6-32 screws and washers securing the two retaining straps to the rear panel of the control unit. *Do not remove the bottom screws securing the straps to the modem.*
- Attach the strain-relief bracket to the retaining straps and control unit using the screws and washers you removed in Step b (see Figure 10).
- Attach two of the supplied "L" mounting brackets to the sides of the control unit or modem using four #6-32 screws and washers (see Figure 11). You can attach the brackets to either the top of the control unit or the bottom of the modem, depending on your desired mounting location.
- Once you have completed all system wiring, mount the modem/control unit assembly to the vessel using fasteners appropriate for the mounting surface.

Option 2 - Mounting Units Together

Figure 9: Detaching the Rack-Mount Brackets

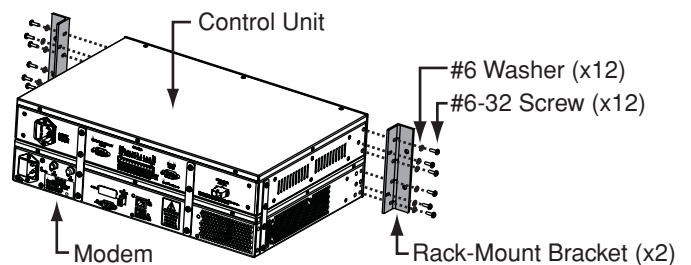


Figure 10: Attaching the Strain-Relief Bracket

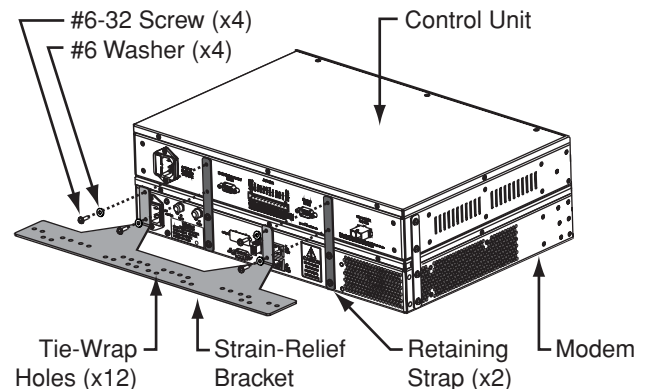
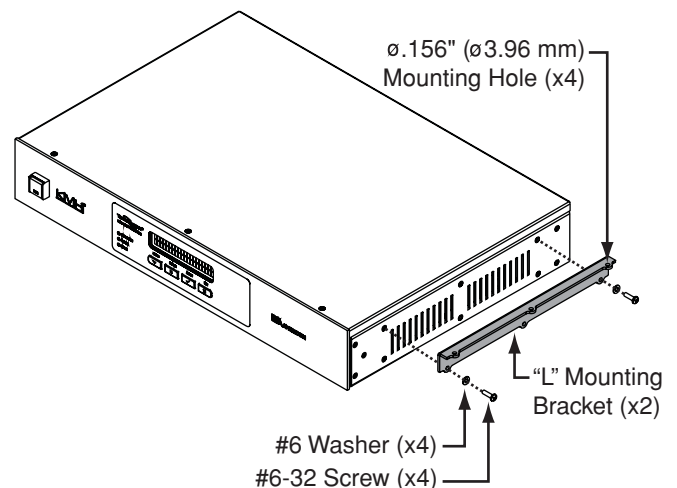


Figure 11: Attaching the "L" Mounting Brackets (Modem Not Shown)



4

Prepare the Belowdecks Units

If you plan to mount the control unit and modem separately, follow these steps to detach the control unit from the modem, attach the strain-relief brackets, and attach the "L" mounting brackets.

- a. Remove the 12 #6-32 screws and washers securing the rack-mount brackets to the front of the control unit and modem (see Figure 9 on page 7). Remove the brackets.
- b. Remove the 16 #6-32 screws and washers securing the four metal retaining straps to the control unit and modem (see Figure 12). Remove the straps.
- c. Attach a strain-relief bracket to the back of the control unit using four of the screws and washers you removed in Step b (see Figure 13).
- d. Attach a second strain-relief bracket to the back of the modem using four of the screws and washers you removed in Step b (see Figure 14).
- e. Attach two of the supplied "L" brackets to the sides of the control unit using four #6-32 screws and washers (see Figure 11 on page 7). You can attach the brackets at either the top or bottom of the control unit, depending on your desired mounting location.
- f. Attach the two other supplied "L" brackets to the sides of the modem using four #6-32 screws and washers (see Figure 11 on page 7). You can attach the brackets at either the top or bottom of the modem, depending on your desired mounting location.
- g. Once you have completed all system wiring, mount the control unit and modem to the vessel using fasteners appropriate for the mounting surface.

Option 3 - Mounting Units Separately

Figure 12: Detaching the Retaining Straps

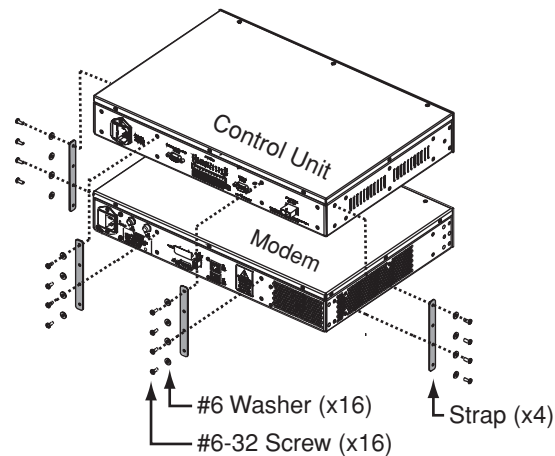


Figure 13: Attaching the Bracket to the Control Unit

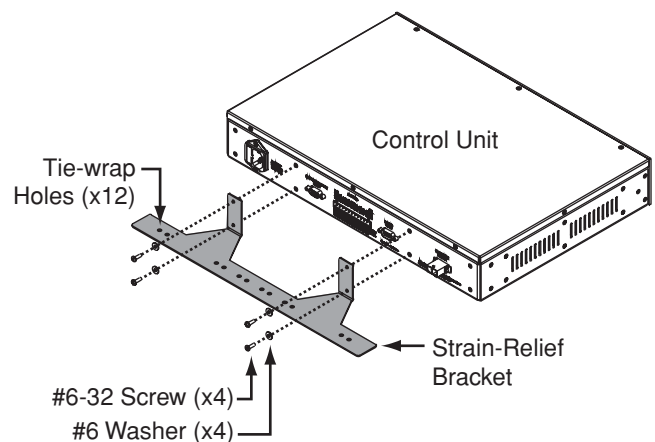
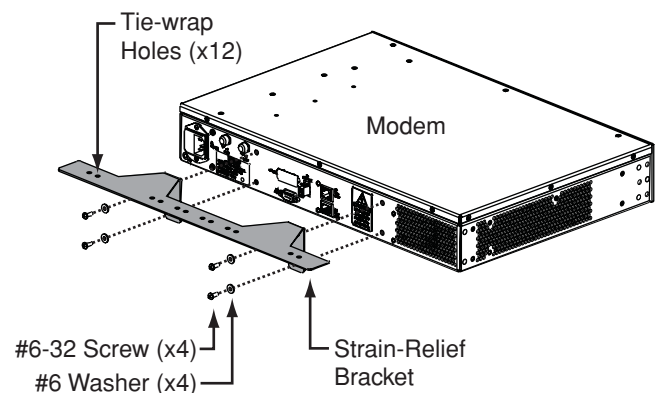


Figure 14: Attaching the Bracket to the Modem



5 Prepare the Antenna Site

Once you have identified a suitable antenna mounting site, according to the guidelines provided in Step 2, follow these steps to drill the mounting holes and cable access hole to prepare the site for installation.

- a. Unfold the antenna mounting template (supplied in the Customer Welcome Kit) and place it onto the mounting surface. Make sure the "FWD" (forward) arrow points toward the bow and is parallel to the vessel's centerline (see Figure 15).

NOTE: You don't need to mount the antenna exactly on the vessel's centerline, but the antenna's forward arrow must be parallel to it.

- b. Using a light hammer and center punch, mark the locations for the four mounting holes and cable access hole on the mounting surface in the locations indicated on the template.
- c. Drill a 1/2" (13 mm) hole at the four mounting hole locations you marked in Step b. Later, you will insert four 3/8"-16 bolts through these holes to secure the antenna to the mounting surface.
- d. Cut out the 3" (80 mm) cable access hole in the location you marked in Step b. Smooth the edges of the hole to protect the cables. Later, you will route the data, power, and RF cables through this hole and into the vessel.
- e. Clean and dry the antenna mounting surface.
- f. Peel off the paper backing from the supplied foam seal to expose the adhesive. Then press the foam seal down firmly onto the mounting surface, ensuring the hole in the foam seal aligns with the cable access hole in the mounting surface (see Figure 16).

NOTE: Apply the foam seal to the vessel mounting surface, not to the antenna's baseplate. You will have difficulty connecting the cables to the antenna if the foam seal is attached to the baseplate.

Figure 15: Antenna Mounting Holes Layout

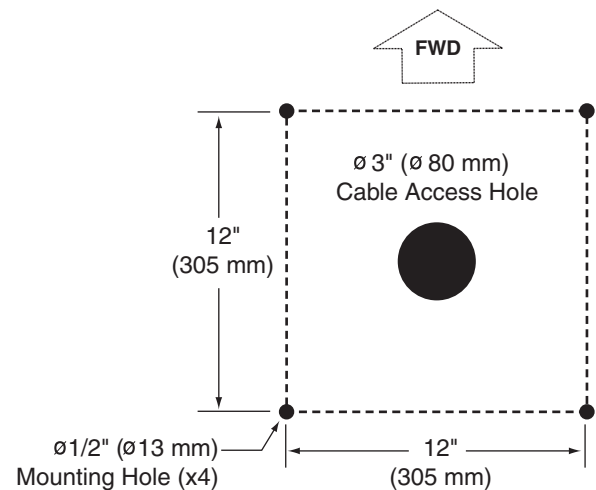


Figure 16: Foam Seal



6 Remove the Restraints

Inside the antenna, four shipping restraints prevent the antenna assembly from moving during shipment. Follow these steps to remove these shipping restraints.

- a. Remove the six #10-32 Phillips screws securing the radome to the baseplate. Carefully lift the radome straight up until clear of the antenna assembly and set it aside in a safe place.

TIP: If you keep the radome topside, secure it with a lanyard to prevent it from falling overboard.

- b. Using wire cutters, cut and remove the elevation shipping restraint securing the reflector to the antenna frame (see Figure 17).
- c. Cut and remove the tie-wrap securing the antenna's LNB to the reflector (see Figure 18).
- d. Using a 9/16" socket with 6" extension, remove the two 3/8" bolts securing the azimuth shipping restraints to the antenna baseplate (see Figure 19). Remove the restraints.

IMPORTANT!

Once you have removed the restraints, handle the antenna very carefully. With the restraints removed, the internal antenna assembly rotates freely and, if not handled properly, can damage the limit switch.

Figure 17: Elevation Shipping Restraint

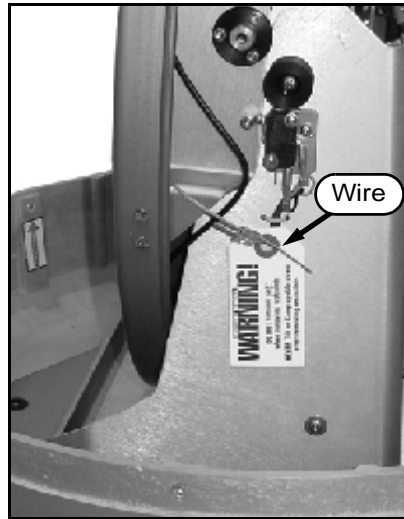


Figure 18: LNB Shipping Restraint

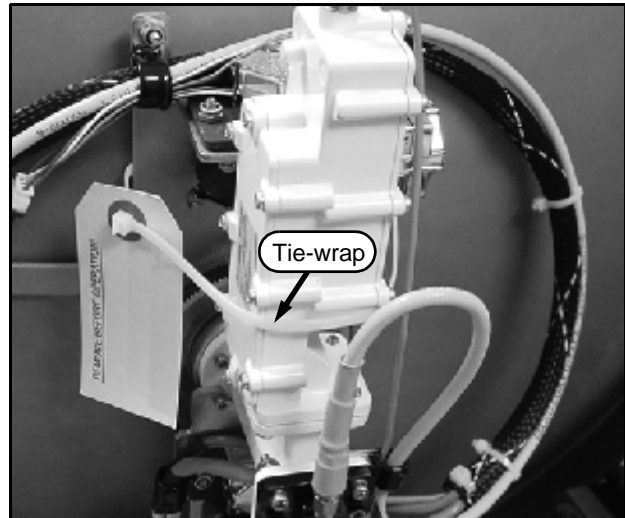
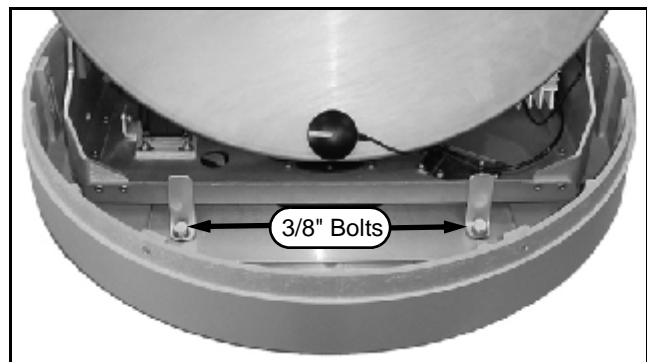


Figure 19: Azimuth Shipping Restraints



7 Wire the Antenna

Follow these steps to connect the data, power, and RF cables to the antenna.

- a. In addition to the data and power cables, you will need to connect two 75-ohm RF coax cables from the antenna to the belowdecks equipment. Use the guidelines in Figure 20 to determine the type of RF cables required.

IMPORTANT!

Terminate RF cables with the proper type “F” connectors (see Figure 20). *Connectors are included with RG-11 cables purchased from KVH.* Instructions for terminating LMR-400-75 cable are provided in Appendix B on page 28.

- b. **Label both ends** of the two RF cables. Label one cable “TX,” and label the other “RX.”
- c. Route the data, power, and RF cables belowdecks through the 3" (80 mm) cable access hole. Leave an adequate service loop, approximately 8" (20 cm) of slack, in the cables for easy serviceability. Later, you will connect the data and power cables to the control unit and the RF cables to the modem.

IMPORTANT!

Do not use bulkhead connectors. It is critical that you maintain the integrity of the cables.

- d. Connect the data cable to the “Data” jack on the bottom of the antenna (see Figure 21). Hand-tighten until the connector locks in place; do not use excessive force.
- e. Connect the power cable to the “Power” jack on the bottom of the antenna. Hand-tighten until the connector locks in place; do not use excessive force.
- f. Connect the RF cable labeled “TX” to the “MTx” jack on the bottom of the antenna. Hand-tighten, then tighten with a 7/16" wrench for 1/4 turn to ensure an electrical and weather-proof connection.
- g. Connect the RF cable labeled “RX” to the “MRx” jack on the bottom of the antenna. Hand-tighten, then tighten with a 7/16" wrench for 1/4 turn.

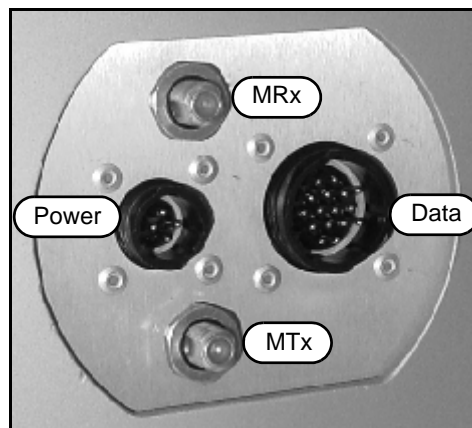
Figure 20: RF Cable Requirements

15-50 ft (5-15 m) Cable Run
Cable: RG-11 (KVH P/N 32-0566-0050) Connector: SNS11AS Installation Tools: CST596711 and L3011B
50-100 ft (15-30 m) Cable Run
Cable: LMR-400-75 Connector: EZ-400-FMH-75 Installation Tools: TK-400EZ-75
100-150 ft (30-45 m) Cable Run
Cable: LMR-600-75 Connector: EZ-600-FMH-75 Installation Tools: TK-600EZ

NOTE: RG-11 connectors/tools are manufactured by Thomas & Betts. LMR-400-75 and LMR-600-75 cables/connectors/tools are manufactured by Times Microwave.

NOTE: Optional 150 ft (45 m) data and power cables:
Data cable KVH P/N 32-0921-0150
Power cable KVH P/N 32-0924-0150

Figure 21: Connectors on Bottom of Antenna



8 Mount the Antenna

Follow these steps to mount the antenna to the mounting surface.

- Place the antenna baseplate over the holes drilled in the mounting surface.
- Make sure the forward arrow inside the baseplate points toward the bow and is parallel to the vessel's centerline (see Figure 22).
- Make sure the four holes in the baseplate line up with the four holes in the mounting surface.

IMPORTANT!

You will need to rotate the antenna assembly by hand to see all four mounting holes. Rotate the antenna assembly slowly. If it hits a mechanical stop with excessive force, the limit switch might become damaged.

- At each of the four baseplate mounting holes, place a 3/8" flat washer on a 3/8"-16 bolt and insert the bolt into the hole from above (see Figure 23).
- Secure each mounting bolt to the mounting surface using a 3/8" shoulder washer, a 3/8" flat washer, a 3/8" lock washer, and a 3/8"-16 hex nut from below. Tighten all four bolts until the four rubber feet on the baseplate are bottomed against the mounting surface and the foam seal is fully compressed.
- Reinstall the radome onto the antenna. Secure in place with the six #10-32 screws you removed in Step 6a (see Figure 24).
- Install a protective plastic screw cap (supplied in the kitpack) over each radome screw.

Figure 22: Forward Arrow in Antenna Baseplate

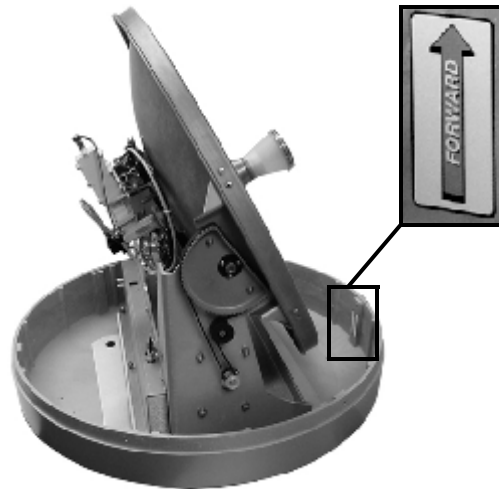


Figure 23: Mounting the Antenna (Side View)

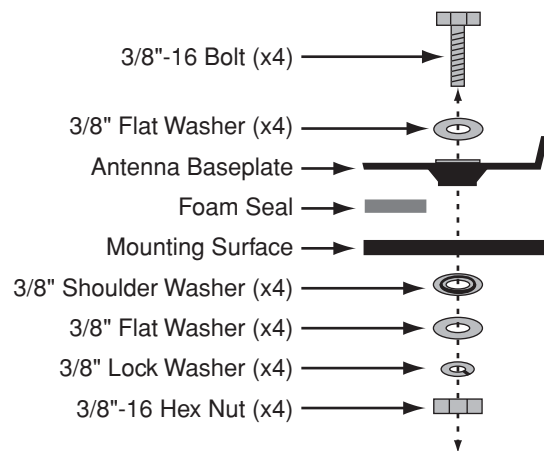
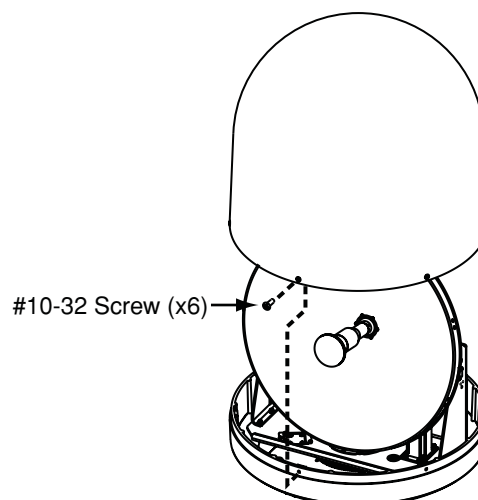


Figure 24: Reinstalling the Radome



9 Wire the Belowdecks Units

Wire the Antenna Cables

Follow these steps to connect the antenna to the control unit and the modem.

NOTE: A system wiring diagram is provided in Appendix A on page 27.

- First dress the data and power cables from the antenna. Strip back the insulation of each wire approximately 1/4" (6 mm) and gently twist each wire to ensure a good electrical connection.
- Find the terminal strip connector in the kitpack. Connect the antenna data cable to the terminal strip connector as shown in Figure 25.

IMPORTANT!

The diagram refers to wires by **body color/ stripe color**. For example, "Brown/White" means the brown wire with the white stripe.

- Connect the power cable from the antenna to the terminal strip connector as shown in Figure 25.
- Plug the terminal strip connector into the rear panel of the control unit (see Figure 26).
- Connect the RF coax cable labeled "RX" (connected to the antenna's MRx jack) to the "Rx RF" jack on the back of the modem (see Figure 27).
- Connect the RF coax cable labeled "TX" (connected to the antenna's MTx jack) to the "Tx RF" jack on the back of the modem.

IMPORTANT!

Be sure to terminate RF cables properly with type "F" connectors.

Figure 25: Antenna Power and Data Wiring

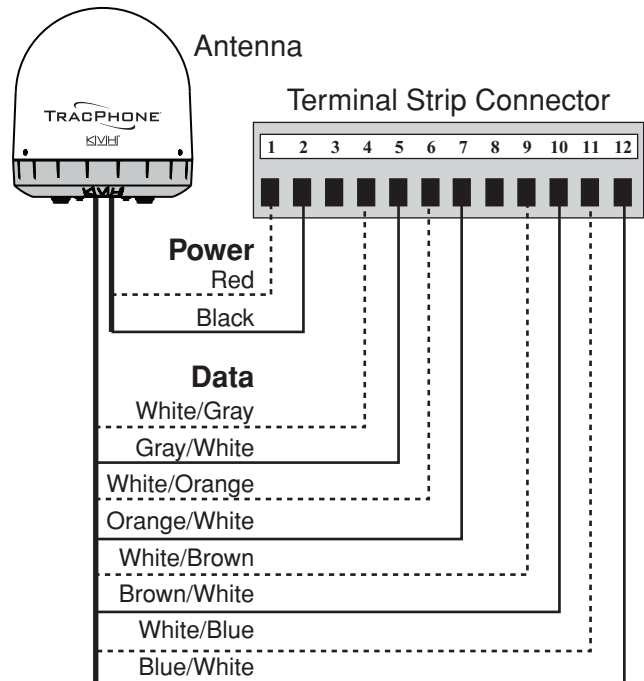


Figure 26: Antenna Power and Data Wiring

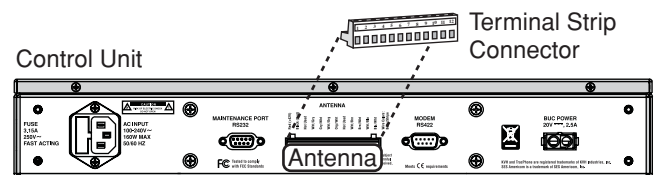
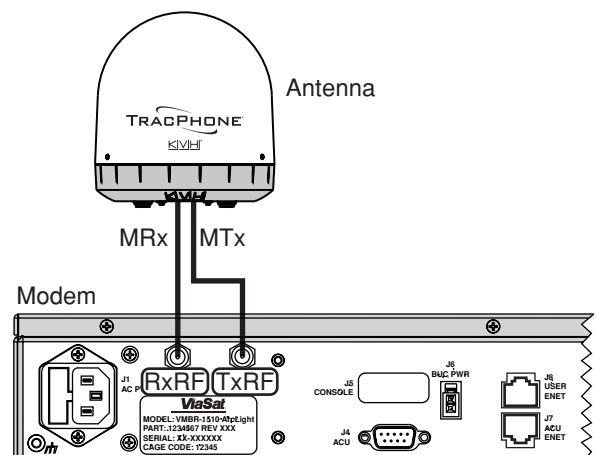


Figure 27: Antenna RF Transmit and Receive Wiring



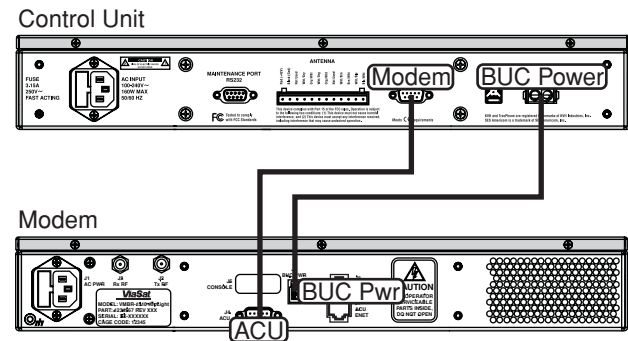
9 Continued Wire the Belowdecks Units

Wire the Control Unit to the Modem

Follow these steps to connect the control unit to the modem.

- Connect a serial data cable from the "Modem" jack on the control unit to the "ACU" jack on the modem (see Figure 28).
- Connect the BUC power cable from the "BUC Power" jack on the control unit to the "BUC Pwr" jack on the modem.

Figure 28: Modem Data and BUC Power Wiring

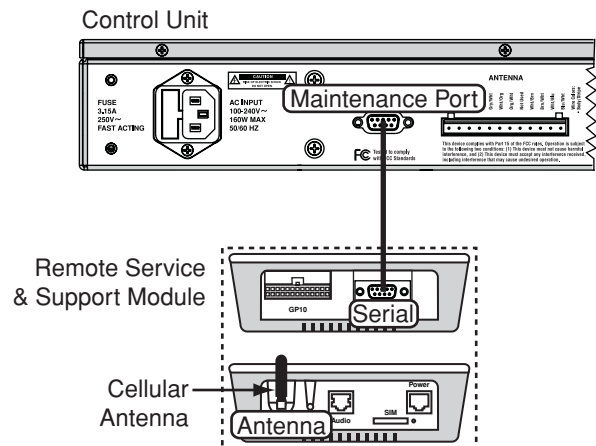


Wire the Remote Service Module

Follow these steps to connect the remote service & support module to the control unit.

- Connect a serial data cable from the "Maintenance Port" jack on the control unit to the "Serial" jack on the remote service & support module. (see Figure 29).
- Connect the cellular antenna to the "Antenna" jack on the remote service & support module.

Figure 29: Remote Service & Support Module Wiring

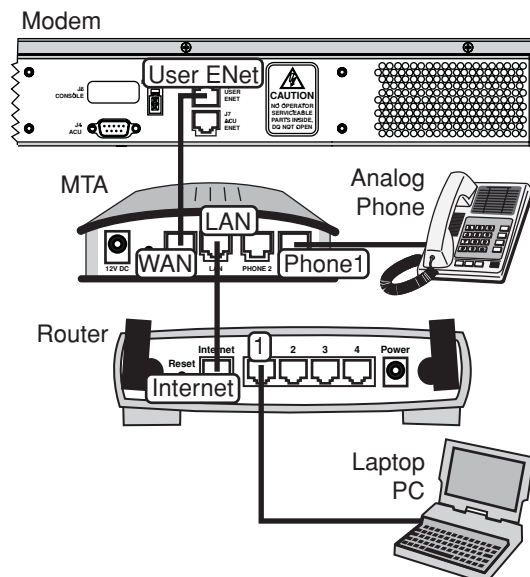


Wire the MTA and Router

Follow these steps to connect all LAN devices.

- Connect the supplied straight-through Ethernet cable from the "User ENet" jack on the modem to the "WAN" jack on the MTA (see Figure 30).
- Connect a second straight-through Ethernet cable from the "LAN" jack on the MTA to the "Internet" jack on the router.
- Connect the customer's analog phone(s), fax machine, and/or PABX to the RJ-11 "Phone" jack(s) on the MTA.

Figure 30: MTA and Router Wiring



IMPORTANT!

The RJ11 jacks on the MTA are rated for analog signals only. Do not connect a digital device directly to it.

- For a wired Ethernet network, connect the customer's computer(s) to the numbered RJ-45 Ethernet jack(s) on the router.

NOTE: The routing and VoIP equipment supplied with the system might differ from those shown in this diagram.

10 Connect Power

Follow these steps to connect power to the TracPhone V7 system.

- a. Before you begin, disconnect vessel power.

CAUTION
For your own safety, disconnect vessel power and make sure the circuit is dead before you connect any power cables.

- b. Be sure the vessel is properly grounded in accordance with marine standards.
- c. Connect the control unit and modem to the supplied AC power strip (see Figure 31 and Figure 32). Use the special adapter cables provided in the kitpack.

IMPORTANT!
Do not cut off the ground pin from the control unit and modem power cable plugs, and do not use a 3-prong to 2-prong adapter.

- d. Connect the appropriate power cord (US or European) to the power strip.
- e. Connect the supplied AC/DC adapters to the MTA, router, and remote service & support module. Then plug the adapter cables into the vessel's AC power supply.
- f. Strain-relieve all wires at the back of the control unit and modem by securing them to the attached strain-relief bracket(s). Use the tie-wraps supplied in the kitpack. Be sure to leave enough slack in the cables for easy serviceability.
- g. Plug the power strip into the vessel's 115 or 230 VAC power supply.

IMPORTANT!
Double-check all of your wiring before continuing. If wiring is incomplete or incorrect, electronics may become damaged when you apply power.

Figure 31: Power Wiring

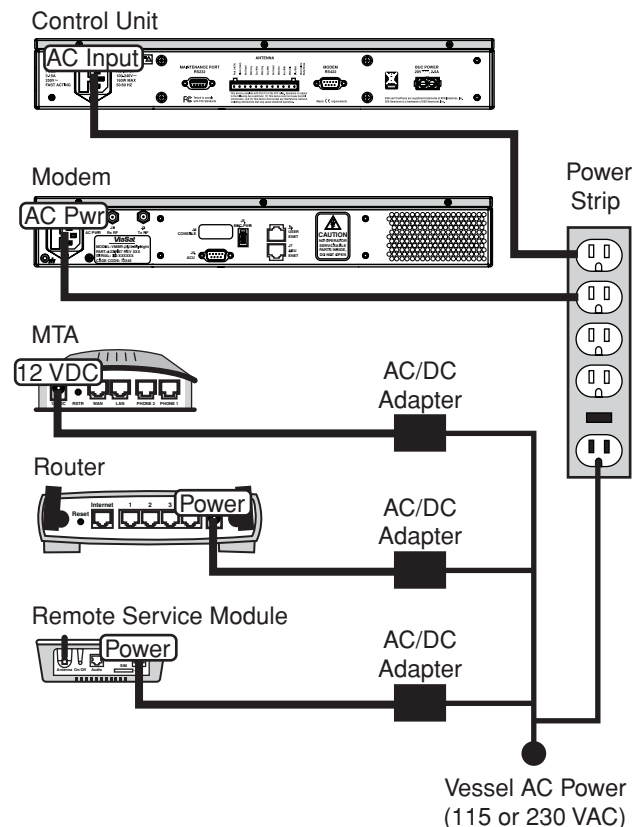


Figure 32: Power Strip for Control Unit and Modem



11 Configure the Computer(s)

Follow these steps to configure the user's computer(s) for a wired Ethernet connection to the TracPhone V7. Once you have set up and tested a wired connection, you can configure the computer(s) for a wireless connection.

IMPORTANT!

When setting up a wireless network, apply security settings, such as encryption, to protect the network from outside intrusion. If the user does not require a wireless network, disable the wireless functionality. Refer to the router owner's manual for setup details.

NOTE: The computer must have a network interface card installed and all cabling must be 100 Mbps fast Ethernet UTP CAT-5 with RJ45 connectors.

Windows Vista™

- Turn on the networked computer.
- At the Windows Control Panel, double-click **Network and Sharing Center**. You can find the control panel either through the Start menu or "My Computer."
- At the Network and Sharing Center window, double-click the **View Status** link for the Ethernet connection you are using for TracPhone V7.
- At the Local Area Connection Status window, click **Properties**. This screen only displays if the computer is currently connected to a network.
- At the Local Area Connection Properties window, select the **Networking** tab. Then select **Internet Protocol Version 4** and click **Properties** (see Figure 33).
- At the Internet Protocol Properties window, select **Obtain an IP address automatically** and **Obtain DNS server address automatically** (see Figure 34). Then click **OK**.
- At the Local Area Connection Properties window, click **OK**.

Figure 33: Windows Vista - Local Area Connection Properties

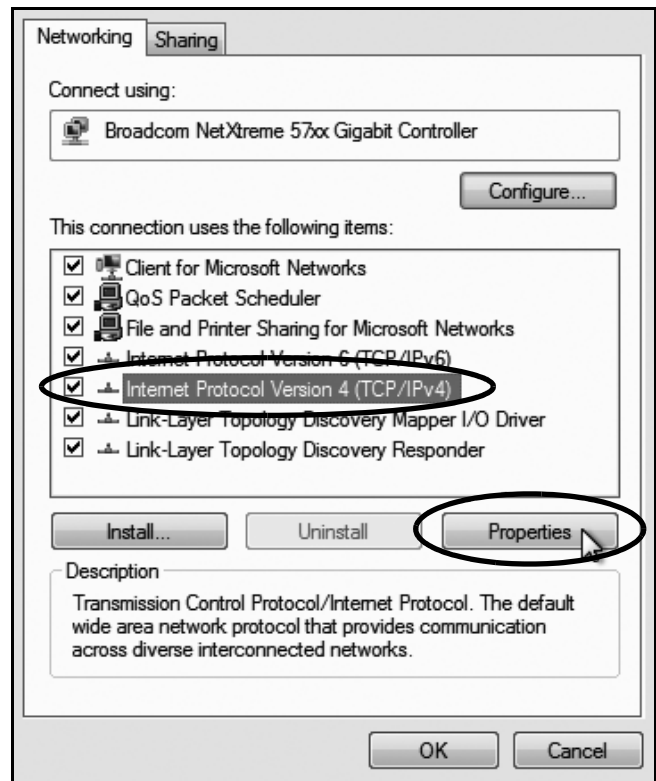
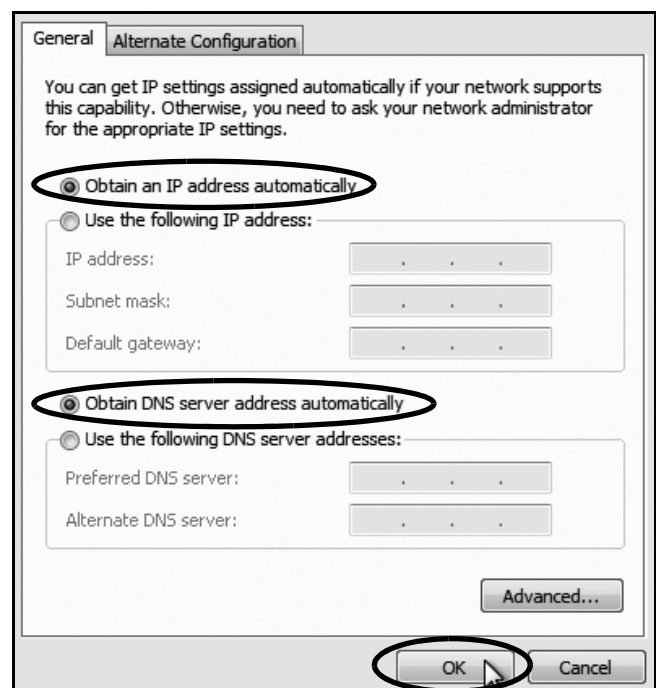


Figure 34: Windows Vista - Internet Protocol Properties



11 Continued configure the Computer(s)

Windows XP

- a. Turn on the networked computer.
- b. At the Windows Control Panel, double-click **Network Connections**. *You can find the control panel either through the Start menu or "My Computer."*
- c. At the Network Connections window, double-click the **Local Area Connection** icon for the Ethernet connection you are using for TracPhone V7.
- d. At the Local Area Connection Status window, select the **General** tab. Then click **Properties**. *This screen only displays if the computer is currently connected to a network.*
- e. At the Local Area Connection Properties window, select the **General** tab. Then select **Internet Protocol (TCP/IP)** and click **Properties** (see Figure 35).
- f. At the Internet Protocol (TCP/IP) Properties window, select the **General** tab. Then select **Obtain an IP address automatically** and **Obtain DNS server address automatically** (see Figure 36). Then click **OK**.
- g. At the Local Area Connection Properties window, click **OK**.
- h. Restart the computer.

Figure 35: Windows XP - Local Area Connection Properties

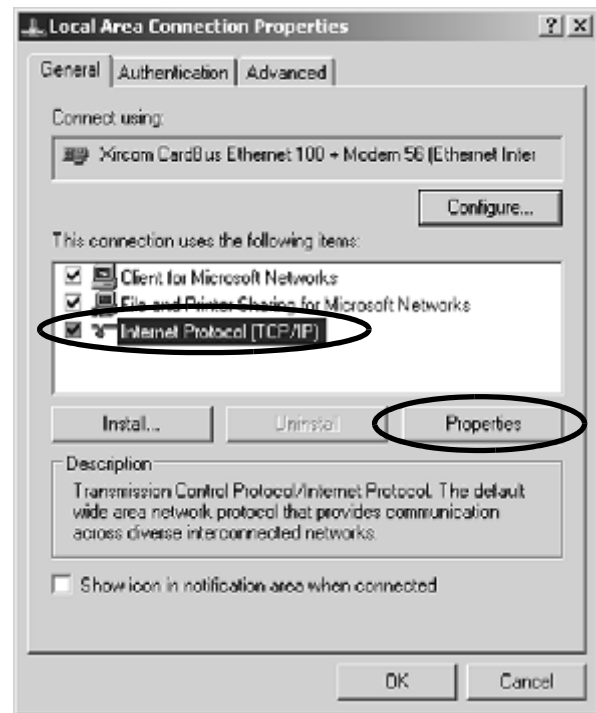
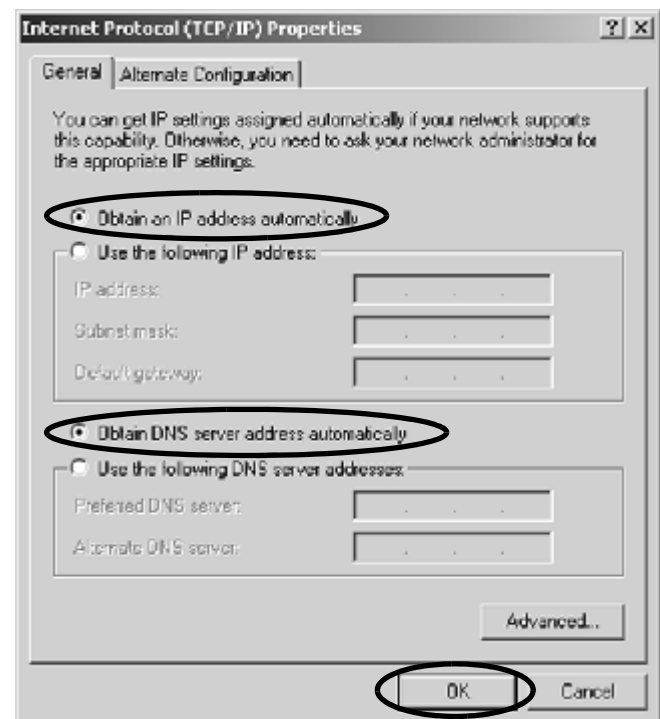


Figure 36: Windows XP - Internet Protocol (TCP/IP) Properties

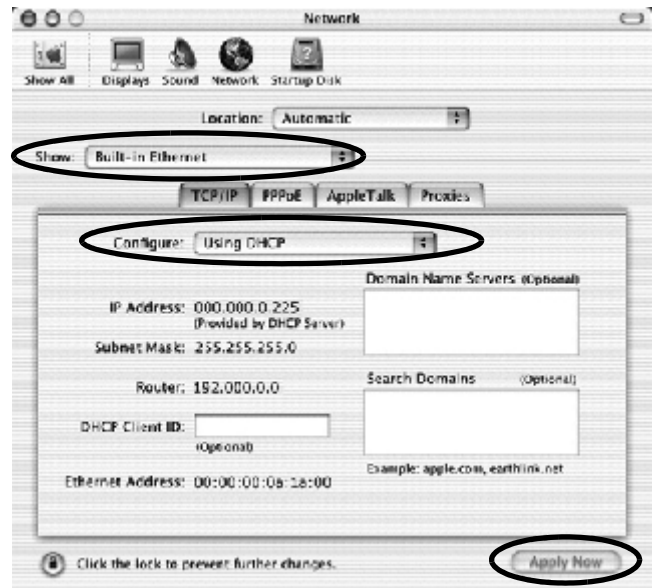


11 Continued Configure the Computer(s)

Macintosh OS X

- a. Turn on the networked computer.
- b. At System Preferences, click the **Network** icon.
- c. At the Network window, select the following:
 - Show: **Built-in Ethernet**
 - Configure: **Using DHCP**
 - Leave all text boxes blank
- d. Network: Click **Apply Now**.
- e. Restart the computer.

Figure 37: Macintosh OS X - Network Preferences



12 Turn On the System

Follow these steps to turn on the TracPhone V7 system and check the system for proper operation.

- a. Ensure the antenna has a clear, unobstructed view of the sky.
- b. Apply vessel power to the TracPhone system, including the router, MTA, and remote service & support module.
- c. Turn on the power switch on the front of the the modem (see Figure 38). The button's light should illuminate green.
- d. Turn on the power switch on the front of the control unit (see Figure 38). The button's light should illuminate green.
- e. Wait 5 minutes for system startup.
- f. Verify that the antenna finds and starts tracking the service satellite and the modem connects to the mini-VSAT Broadband service, as indicated by the control unit LCD screen shown in Figure 39. If an error message appears, refer to the Troubleshooting section of the *User's Guide*.
- g. Verify that the three status lights on the control unit and the status light on the modem are all lit green (see Figure 40). If any of these lights is not lit green, refer to the Troubleshooting section of the *User's Guide*.
- h. Verify that the status lights on the MTA and router indicate a normal condition. Refer to the MTA and router manuals for details.

Figure 38: Power Switches

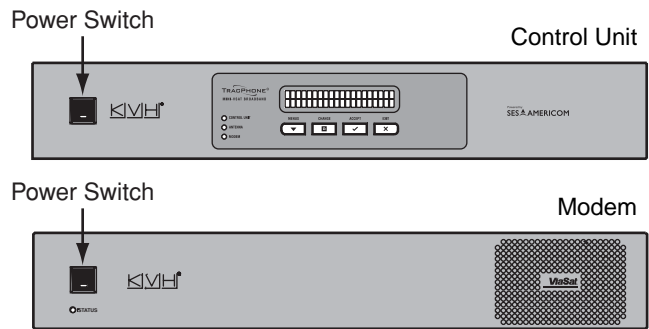
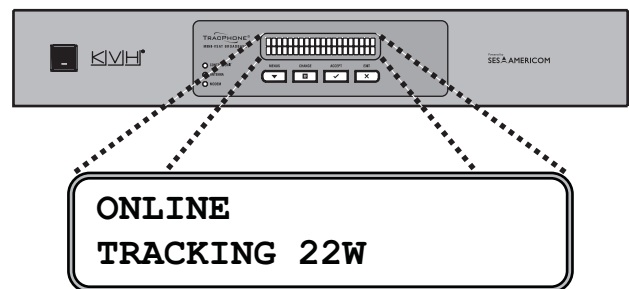
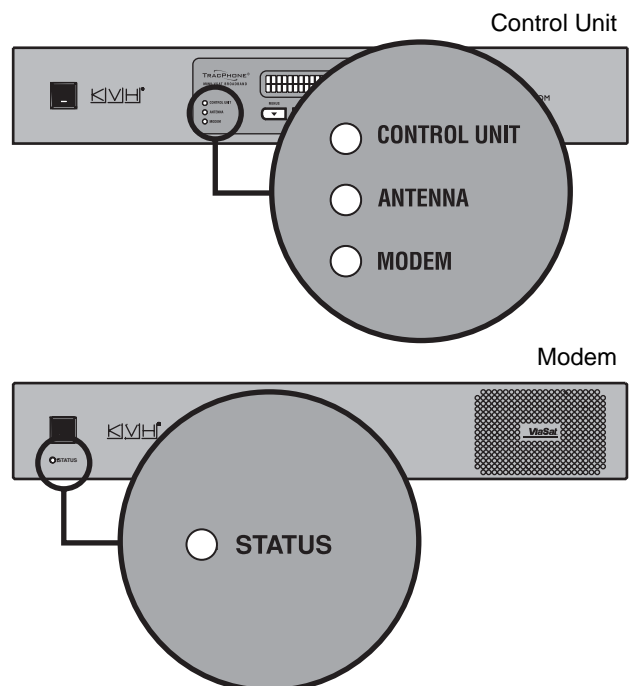


Figure 39: Good Service Connection Indicated on Control Unit LCD



NOTE: Satellites will vary depending on your location.

Figure 40: Status Lights



13 Set Up RF Hazard Zones (Optional)

To prevent exposure to RF energy, which may be harmful to people who stand within 36 feet (11 meters) of the antenna, you can configure up to two RF radiation hazard zones for areas where crew and/or passengers frequent (see Figure 41). The system will disable the transmitter whenever the antenna is pointing within one of these zones.

Follow these steps to set up an RF hazard zone.

- Determine the necessary azimuth range for the RF hazard zone(s). You will need to enter, in clockwise order, beginning and ending azimuths ($>4^\circ$ apart) **relative to the antenna's forward arrow**, which should be pointing toward the bow (see Figure 42).
- At the control unit, press **MENU** until the display shows "CONFIGURATION." Then press **ACCEPT**.
- Press **MENU** until the display shows "SET HAZARD ZONE."
- Press **CHANGE** until the display shows "SET HAZARD ZONE = YES." Then press **ACCEPT**.
- At "ZONE 1," press **CHANGE**. A cursor appears under the first number in the azimuth range for RF hazard zone #1.
- Press **CHANGE** until the number is set to the first digit of the beginning azimuth for the first hazard zone.
- Press **ACCEPT**. The cursor moves to the next number.
- Repeat steps f and g to set the remaining digits of the desired RF radiation hazard zone. Then press **ACCEPT**.
- At "Zone 2," repeat steps e-h to set the range for the second RF hazard zone, if desired.
- At "XMT IN ZONES," verify that the display shows "XMT IN ZONES = NO." Then press **MENU**.
- Press **EXIT** to exit the menu.

NOTE: For more details, refer to the Configuration section of the User's Guide.

Figure 41: Example of an RF Radiation Hazard Zone

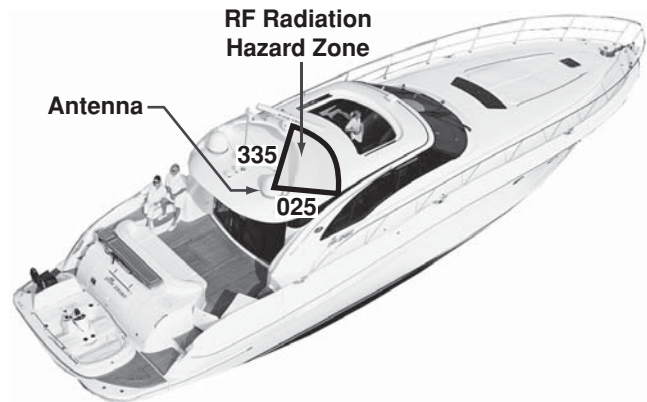


Figure 42: Azimuths Relative to Antenna's Forward Arrow

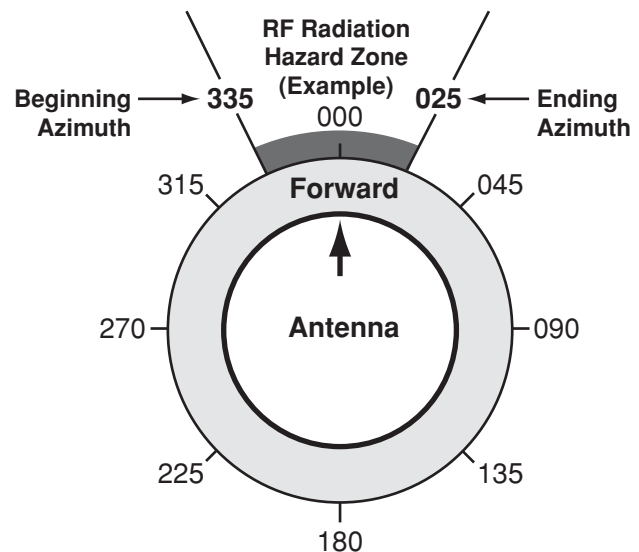
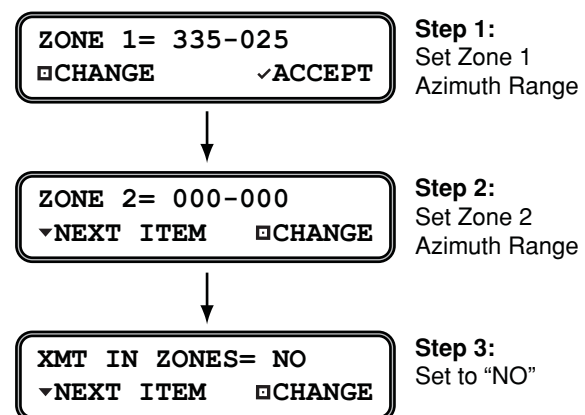


Figure 43: Setup Process for RF Hazard Zones



14 Test the System

Now that you have installed the system, you can test the system to verify it is ready for customer delivery. Follow the steps below to test the system for proper operation.

- With the TracPhone system powered on, restart the customer's networked computer(s).
- Make sure the control unit display indicates the system is "Online."
- If the customer has activated the TracPhone system for mini-VSAT Broadband service, verify that the system can access the Internet. (Enter any common website address (URL) into the browser.)
- If the customer has activated the TracPhone system for VoIP service, also verify that you can place a VoIP call via the TracPhone system. (Using any telephone connected to the MTA, place a call to someone on a terrestrial or cellular network and ask that person to call you back at the customer's VoIP number.)
- Even if the customer has not yet activated the TracPhone system for mini-VSAT Broadband service, you can still check the modem's communications to the land-based hub. Open the web browser on any networked computer and enter the corresponding web address for the currently tracked satellite:

Satellite Tracked:	Use Web Address:
22°W (NSS7)	http://204.14.40.60
72°W (AMC6)	http://204.14.40.60
8°W (Atlantic Bird2)	http://204.14.40.60

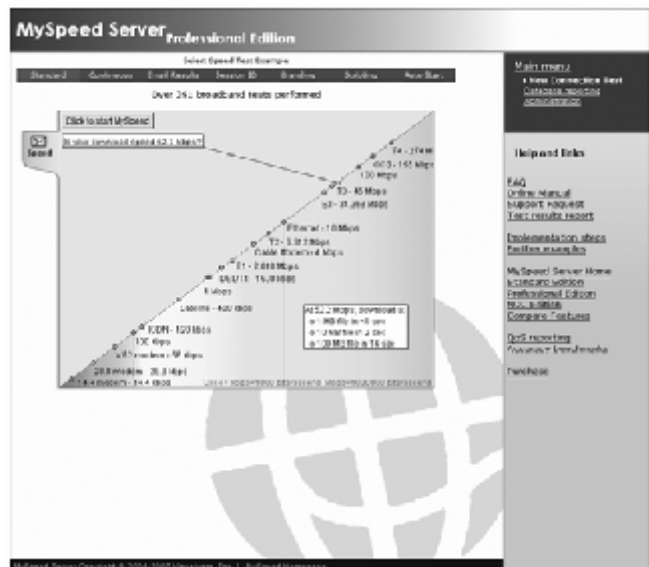
Verify that the hub's test web page appears in the browser (similar to the page shown in Figure 45). Run the speed test on this page several times and ensure it reports within 70% of advertised speeds, on average.

NOTE: KVH-certified dealers can find the latest hub information on the KVH Partner Portal.

Figure 44: Technician Testing the TracPhone V7 System



Figure 45: Hub Test Web Page

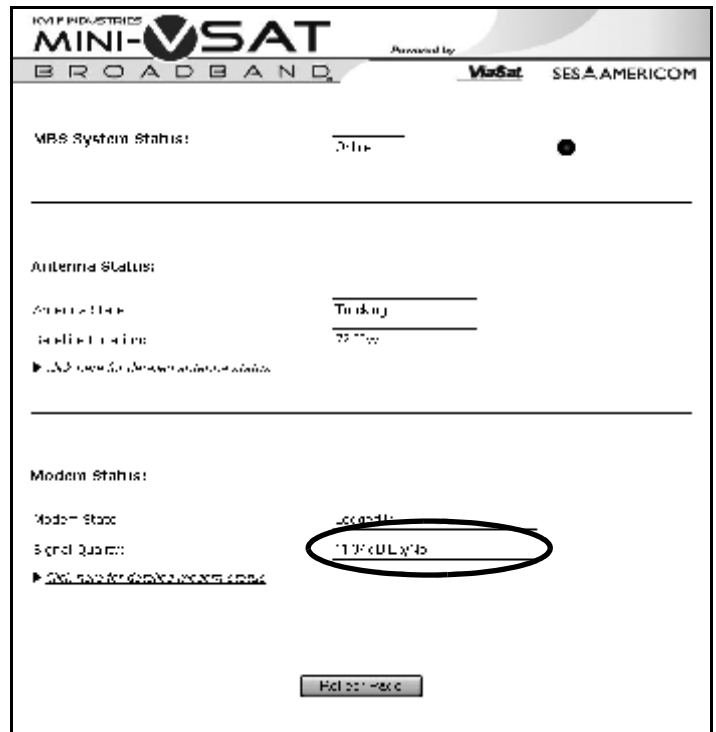


14 Continued Test the System

- f. Open the web browser on any wired (not wireless) networked computer and enter the following address to access the modem's system status web page: **http://192.168.0.1**
- g. At the login window, enter the following user name and password:
User name: **KVH** (all caps)
Password: None (leave blank)
- h. At the system status web page, make sure **Signal Quality is at least 8 dB Eb/No** (see Figure 46).

NOTE: Refer to the User's Guide for details about the other status information that is available on this web page.

Figure 46: System Status Page Via Modem Web Interface



15 Educate the Customer

The installation process is complete! Before you depart the vessel, give the Customer Welcome Kit to the customer and explain how to use the system. Also be sure the customer understands the following:

- **The antenna transmits RF energy that is potentially harmful.** Whenever the system is powered on, make sure everyone stays more than 36 feet (11 meters) away from the antenna within its 5-80° look angle (see Figure 47). No hazard exists directly above the antenna and anywhere below the antenna's mounting plane. Refer to the *User's Guide* for details.
- Keep the radome installed on the antenna at all times. The radome protects the antenna's moving parts from wind, rain, and debris.
- The antenna must have a clear view of the sky to communicate via the satellite. Common causes of blockage include trees, buildings, bridges, and other onboard equipment (see Figure 48).
- Clean the antenna regularly. Dirt buildup on the radome can affect communications. Heavy rain or snow may also temporarily interrupt communications.
- The vessel must be located within the coverage area of the satellite. To view a satellite coverage map, visit www.kvh.com/footprint.
- You need to activate the system for mini-VSAT Broadband service before you can start using the system. Fill out the Activation Form in the Customer Welcome Kit and fax it to KVH at either of the following numbers:

North/South America, Australia:

+1 401 851-3823

Europe, Middle East, Asia:

+45 45 160 181

- Refer to the *User's Guide* for complete operation instructions and troubleshooting information.

Figure 47: Safe Distance to Avoid Risk of RF Radiation Exposure

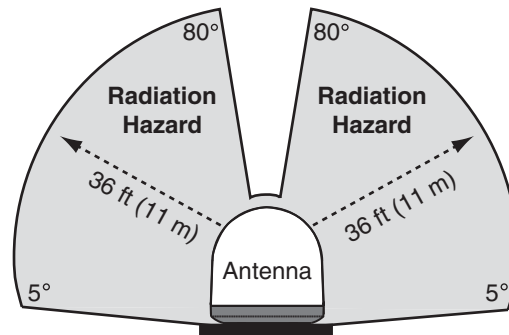
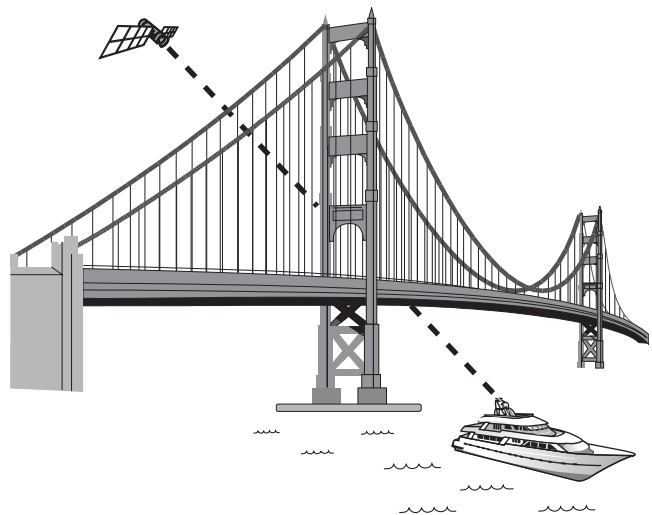


Figure 48: Example of Satellite Blockage



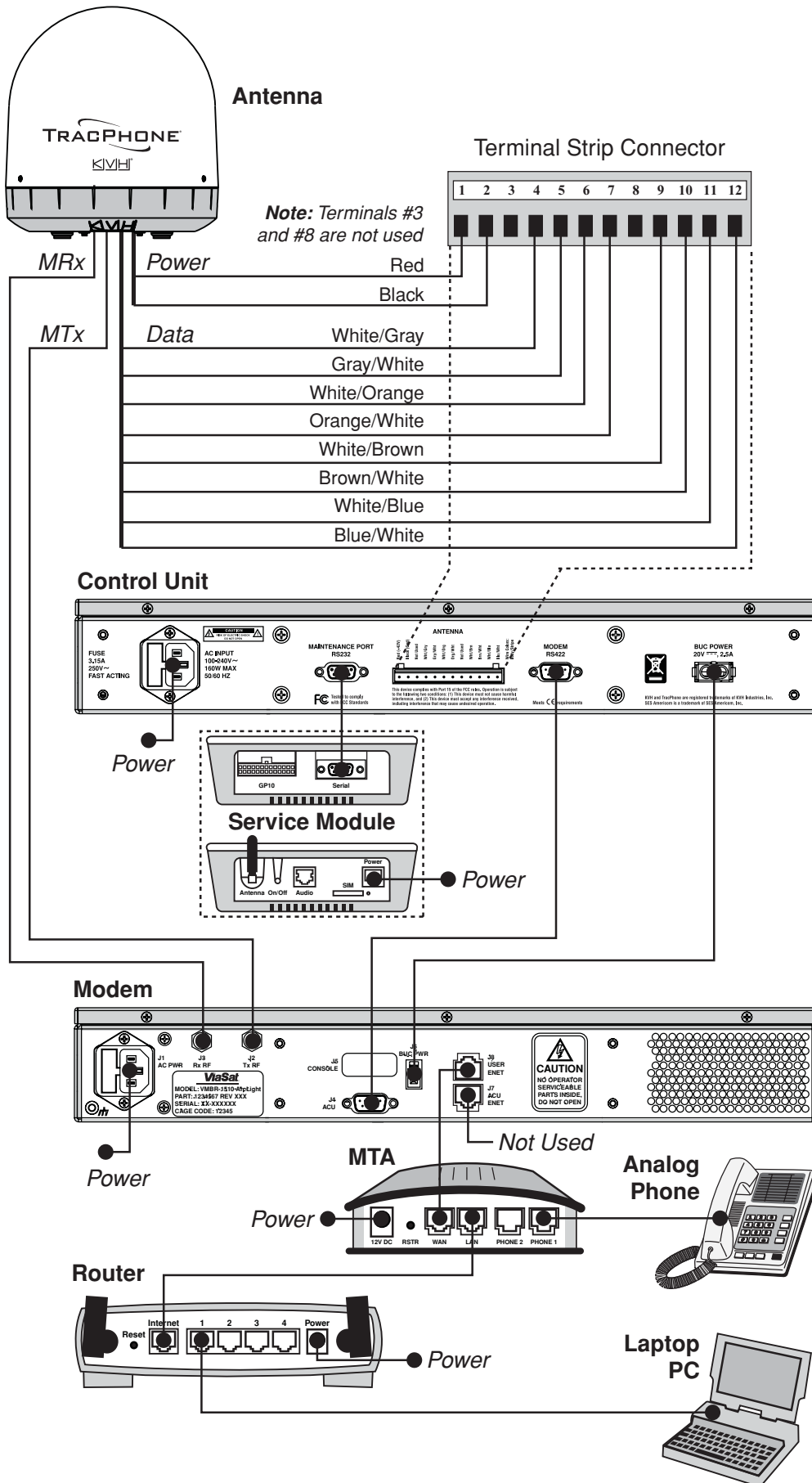
Appendices

This section provides a system wiring diagram and supplemental instructions for terminating an LMR-400-75 cable.

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- A. Wiring Diagram... 27
- B. Terminating LMR-400-75 Cable... 28

A Wiring Diagram



B Terminating LMR-400-75 Cable

Appendix

These instructions explain how to terminate an LMR-400-75 RF cable with an EZ-400-FMH-75 "F" connector using the tools from the TK-400EZ-75 tool kit. For more detailed instructions, refer to the Times Microwave website (www.timesmicrowave.com).

- a. Using the CCT-01 cutting tool, cut the cable evenly (see Figure 49).
- b. Since cutting the cable can deform the end, gently round the end of the cable using a pair of needle-nose pliers (see Figure 50). Also make sure the center conductor is centered within the cable.
- c. Place the heat shrink sleeve and metal ferrule onto the cable (see Figure 51).
- d. Insert the end of the cable into the #1 end of the ST-400EZ stripping tool (see Figure 52). Then rotate the tool clockwise around the cable until the tool turns easily. The end of the cable should now be stripped to expose the center conductor.

Figure 49: Cutting the Cable



Figure 50: Reshaping the Cable

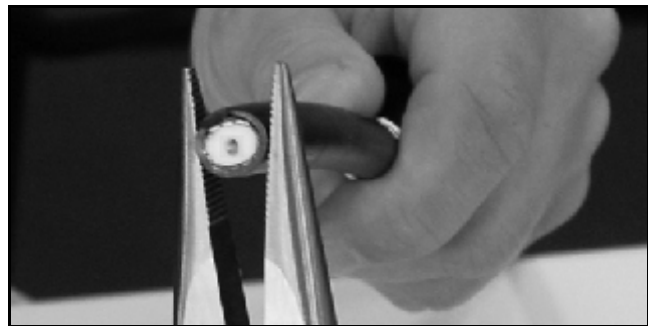


Figure 51: Placing the Heat Shrink Tubing and Ferrule



Figure 52: Stripping the End to Expose the Center Conductor



B Continued Terminating LMR-400-75 Cable

- e. Using a utility knife, carefully remove any residual plastic from the center conductor, if necessary (see Figure 53).
- f. Insert the end of the cable into the #2 end of the ST-400EZ stripping tool (see Figure 54). Then rotate the tool clockwise around the cable until the tool turns easily. This removes the cable jacket from the end of the cable, exposing the braid and dielectric (see Figure 55).
- g. Using the DBT-02 tool, deburr and chamfer the center conductor (see Figure 56). Avoid nicking the aluminum tape covering the dielectric.

Figure 53: Removing Plastic Residue

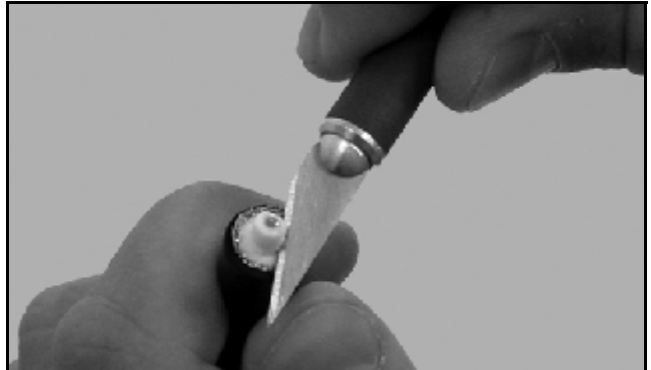


Figure 54: Stripping the Cable Jacket



Figure 55: Cable Stripped, Exposing Dielectric



Figure 56: Deburring the Center Conductor



B Continued Terminating LMR-400-75 Cable

- h. Gently flare the braid with your fingers (see Figure 57).
- i. Insert the end of the cable into the connector body until the dielectric is firmly seated inside the connector (see Figure 58). Be sure all braid wires remain on the outside of the connector.
- j. Trim any excess braid (see Figure 59), if necessary. The braid should assemble flush to within 1/16" (1.6 mm) of the connector shoulder.
- k. Slide the ferrule over the braid until it is flush against the connector shoulder (see Figure 60).

Figure 57: Flaring the Braid



Figure 58: Pushing On the Connector

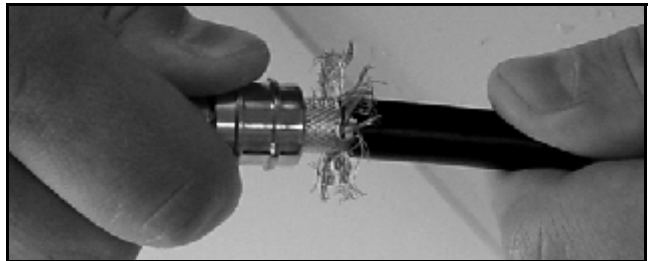


Figure 59: Trimming the Braid

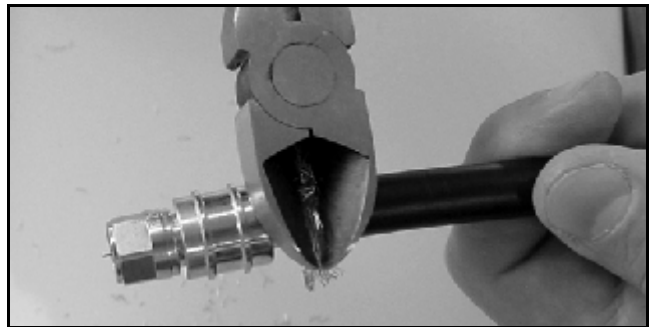
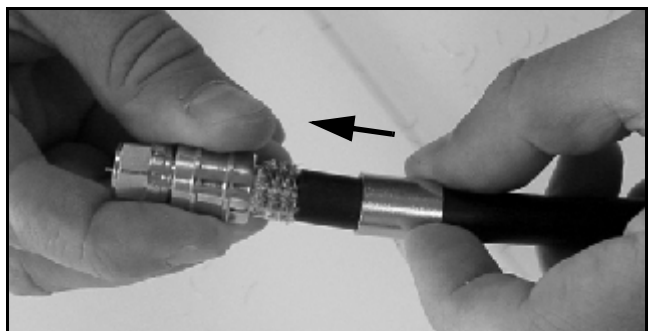


Figure 60: Sliding the Ferrule Over the Braid



B Continued Terminating LMR-400-75 Cable

- l. Using an appropriate crimp tool (either the CT-400/300 or the HX-4 with Y1719 dies), crimp the ferrule in place (see Figure 61). Crimp as close to the connector body as possible.
- m. Crimp the ferrule again, but further back from the connector. However, be careful not to crimp the cable jacket.
- n. Slide the heat shrink sleeve over the connector body and heat it to compress it into place (see Figure 62). When you are done, the heat shrink should extend from the rear of the connector to the cable jacket. This forms a weather-tight seal.
- o. Using a multimeter or similar device, check the continuity of the cable.

Figure 61: Crimping the Ferrule onto the Cable

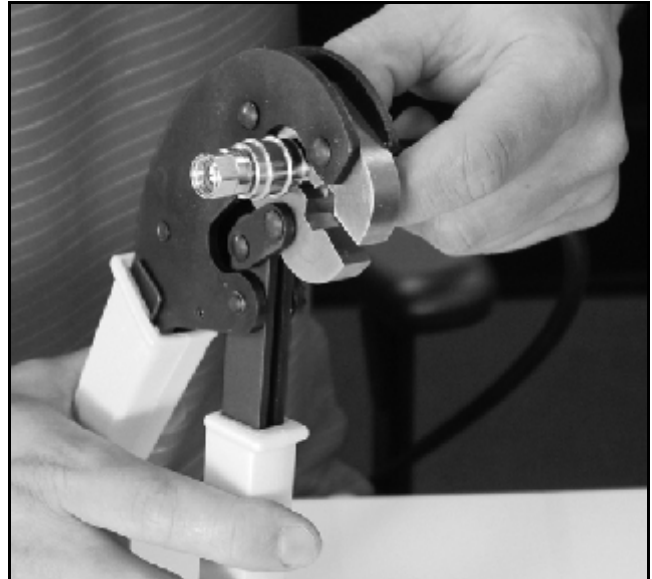


Figure 62: Applying the Heat Shrink Tubing





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