

# SmartSwitch Upgrade/Replacement Instructions

These instructions explain how to install a SmartSwitch Service/System Selector (SmartSwitch) to upgrade a TracVision HD11 system or replace a previously installed SmartSwitch.

**IMPORTANT!**

For instructions on installing the SmartSwitch and one or two TracVision HD11 systems together, refer to the TracVision HD11 Installation Guide. For SmartSwitch operation instructions, refer to the TracVision HD11 User's Guide.

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## Installation Steps

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## Who Should Install the System?

To ensure a safe and effective installation, KVH requires that a KVH-certified marine technician install the SmartSwitch. 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](http://www.kvh.com/wheretogetservice).

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## Technical Support

If you need technical assistance, please contact KVH Technical Support:

**Europe, Middle East, Asia-Pacific, Africa:**

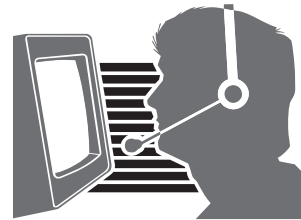
Phone: +45 45 160 180

Email: [support@emea.kvh.com](mailto:support@emea.kvh.com)

**North/South America, Australasia:**

Phone: +1 401 847-3327

Email: [support@kvh.com](mailto:support@kvh.com)



# 1 Inspect Parts and Gather 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 on the Kitpack Contents List.
- b. Carefully examine all of the supplied parts to ensure nothing was damaged in shipment.
- c. Gather the following tools. You will need these tools to complete the installation.
  - #1 Phillips screwdriver
  - PC (preferably with Internet access)
  - 7/16" wrench

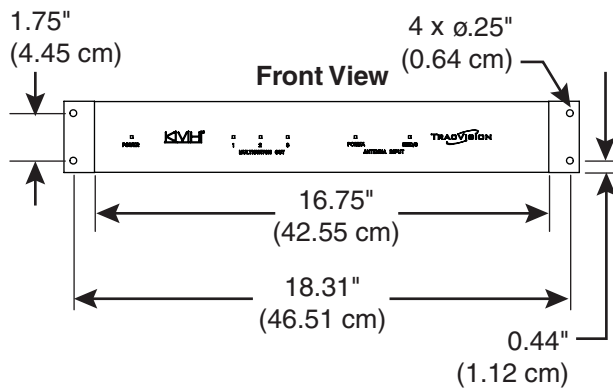
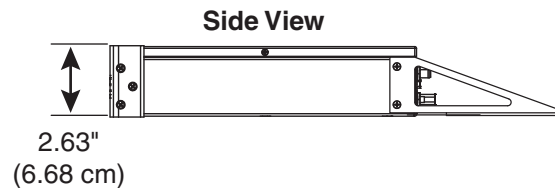
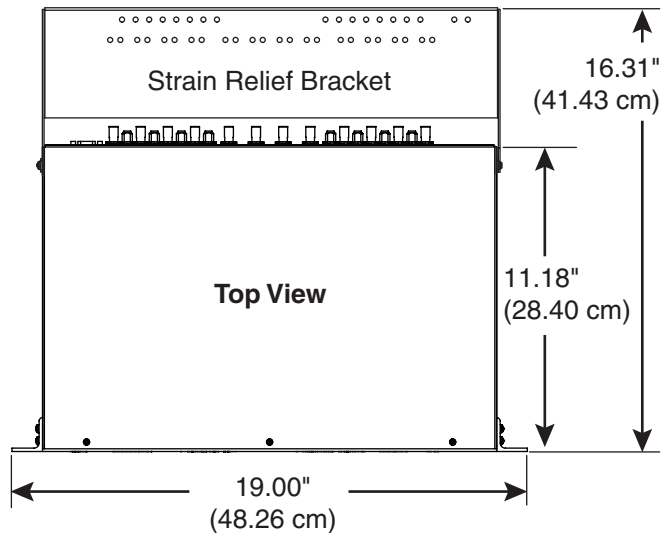
**IMPORTANT!**

Some SmartSwitch connectors include connector terminators. Only remove terminators from connectors you will be wiring to (see "Wiring Diagrams" on page 12).

Figure 1 SmartSwitch



Figure 2 SmartSwitch Dimensions



# 2 Plan the Installation

Follow the steps below to plan the SmartSwitch installation.

## Select an Installation Location

When selecting an installation location, consider the following:

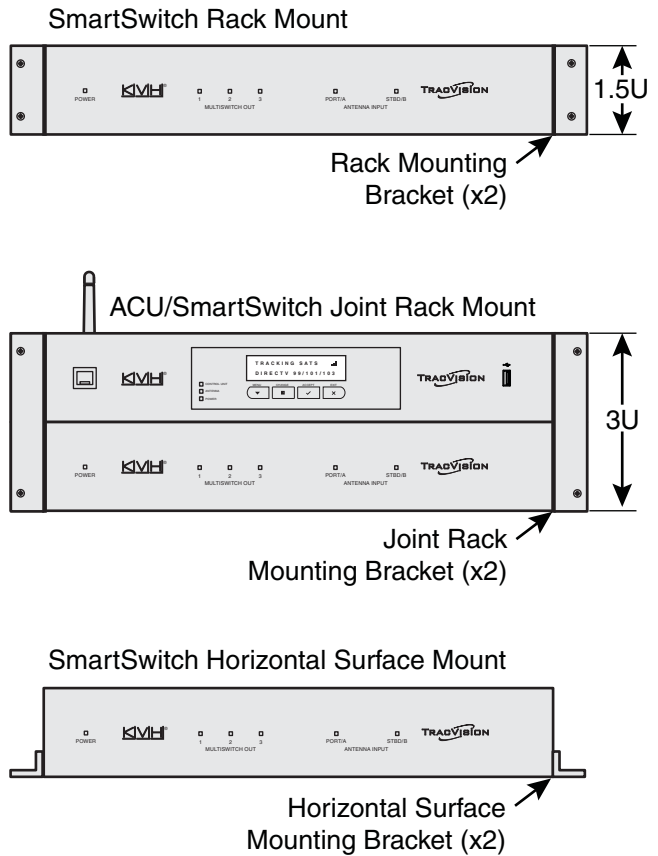
- Choose a belowdecks installation location that is dry, well-ventilated, and away from any heat sources or salt spray.
- The SmartSwitch must be installed within 3 feet (1 m) of the ACU A (the TracVision HD11 Antenna Control Unit (ACU) connected to Antenna A) in order to use the supplied PC data cable (25 ft (7.6 m) maximum). However, longer cabling may be used – contact KVH for details.

## Choose a Mounting Option

Select one of the following SmartSwitch mounting options.

- You can mount the SmartSwitch in a standard 19" (48.26 cm) equipment rack, either separately or together with an ACU (see Figure 3). The SmartSwitch is 1.5U in height.
- Alternatively, you can mount the SmartSwitch to a horizontal surface; the horizontal surface mounting brackets can attach to either the top or bottom of the SmartSwitch (see Figure 3).

Figure 3 SmartSwitch Mounting Options



# 3 Mount the SmartSwitch

Follow the steps below to mount the SmartSwitch using the desired mounting option.

## Rack Mounting

- Attach the strain-relief bracket to the SmartSwitch, as shown in Figure 4. Using a #1 Phillips screwdriver, secure the bracket in place using four #6-32 screws and #6 washers (supplied in the kitpack).
- Secure the SmartSwitch to the rack using four M6 screws and washers (see Figure 5).

## Horizontal Mounting

- Using a #1 Phillips screwdriver, remove the six screws securing the rack mounting brackets to the SmartSwitch (see Figure 6).
- Using a #1 Phillips screwdriver, attach the two horizontal mounting brackets to the sides of the SmartSwitch using four supplied #6-32 screws and #6 washers (see Figure 7). You can attach the brackets to either the top or bottom of the SmartSwitch, depending on your desired mounting location.
- If you are mounting the SmartSwitch to the underside of a shelf, attach the strain-relief bracket, as shown in Figure 4. Using a #1 Phillips screwdriver, secure the bracket in place using four #6-32 screws and #6 washers (supplied in the kitpack).
- Using fasteners appropriate for the mounting surface, secure the SmartSwitch to the mounting surface using the four mounting bracket holes.

Figure 4 Strain-Relief Bracket Mounting

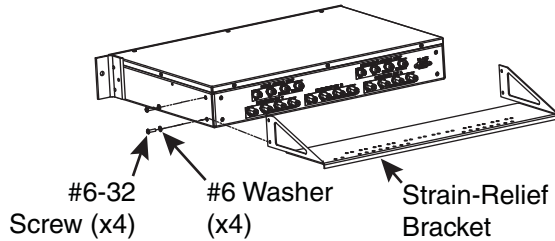


Figure 5 SmartSwitch Rack Mounting

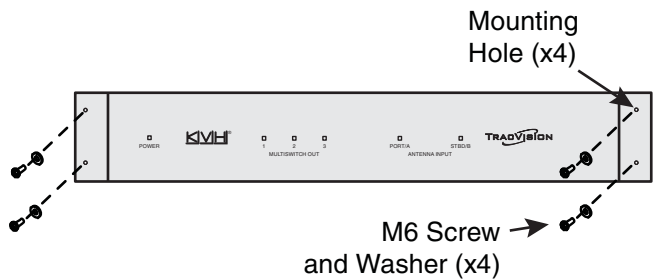


Figure 6 SmartSwitch Rack Mounting Bracket Removal

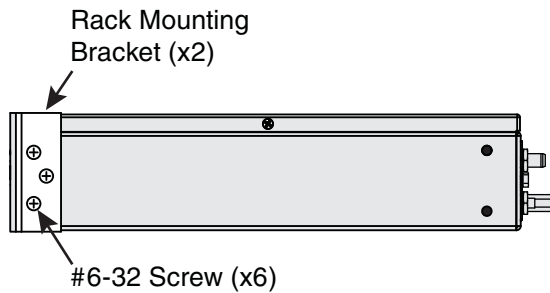
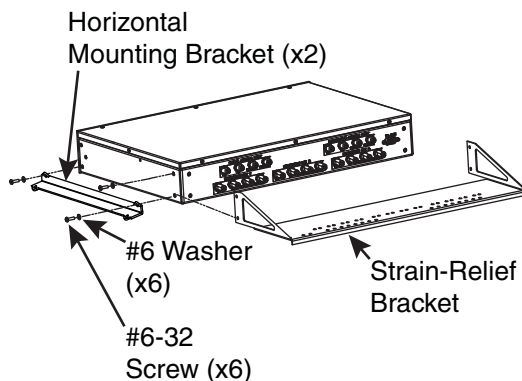


Figure 7 Horizontal Mounting



# 3 Continued Mount the SmartSwitch

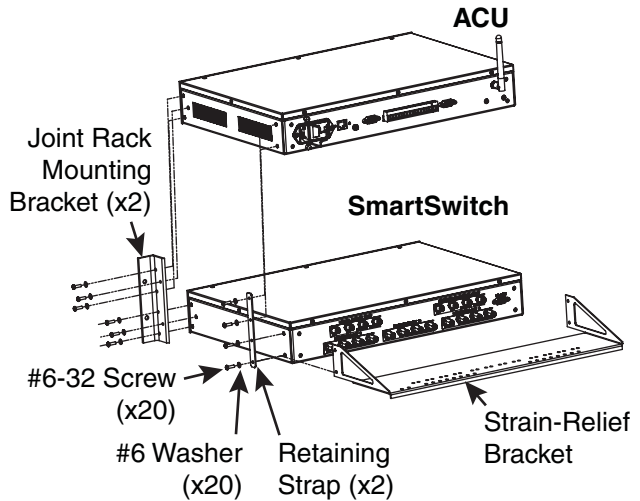
## Joint ACU/SmartSwitch Rack Mounting

- a. Using a #1 Phillips screwdriver, remove the six screws securing the rack mounting brackets to the SmartSwitch (see Figure 6 on page 5).
- b. Repeat Step a. to remove the six screws securing the rack mounting brackets to the ACU.
- c. Attach the joint rack mounting brackets to the ACU and SmartSwitch, as shown in Figure 8. Secure the brackets in place using twelve #6-32 screws and washers (supplied in the kitpacks).
- d. Attach the strain-relief bracket and retaining straps, as shown in Figure 8. Secure them in place using eight #6-32 screws and #6 washers (supplied in the kitpacks).

**NOTE:** Only the SmartSwitch strain-relief bracket must be installed. The ACU does not require a strain-relief bracket when jointly mounted with the SmartSwitch.

- e. Secure the joint assembly to the rack using four M6 screws and washers.

Figure 8 ACU/SmartSwitch Joint Assembly



# 4 Wire the SmartSwitch

Wiring instructions vary according to the customer's specific system configuration and hardware. **Refer to the wiring diagrams provided in Appendix A on page 12 for complete wiring instructions.**

*NOTE: When connecting cables, first hand-tighten the connector, then tighten 1/4 turn using a 7/16" wrench.*

*NOTE: Be sure to apply the cable labels (supplied in the kitpack) to the cables that will connect the SmartSwitch to other system components.*

## Wiring SWM and Non-SWM Hardware

Connect your receivers/DVRs according to the diagram for your particular configuration.

*NOTE: Only DIRECTV® programming in North America supports SWM-compatible receivers and DVRs. All linear receivers/DVRs and other circular receivers/DVRs are not SWM-compatible.*

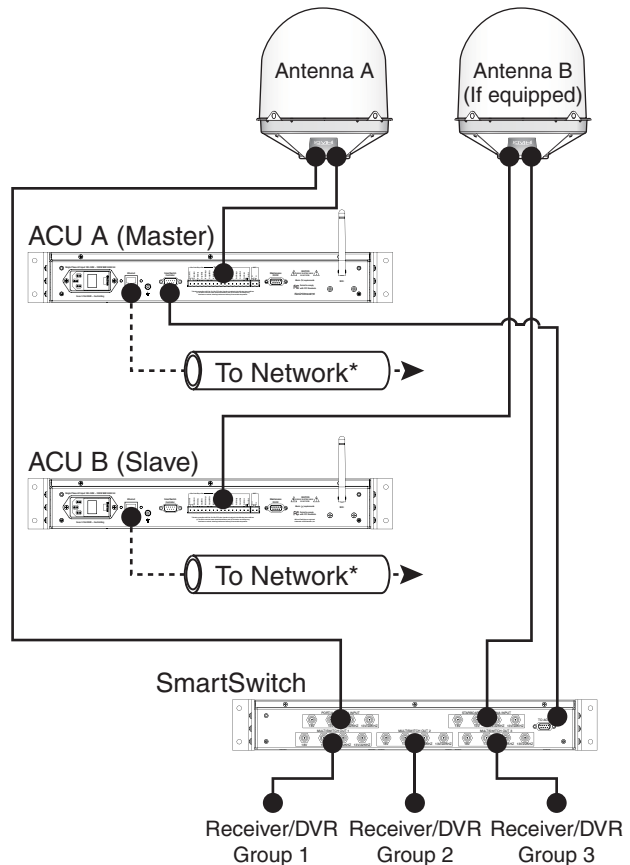
## SmartSwitch Input Wiring Diagrams

- One TracVision HD11 Antenna/ACU (see page 12)
- Two TracVision HD11 Antennas/ACUs (see page 13)

## SmartSwitch Output Wiring Diagrams

- Overview (see page 14)
- 32 Non-SWM-compatible Tuners (see page 15)
- 16 SWM-compatible Tuners and 32 Non-SWM-compatible Tuners (see page 16)
- 32 SWM-compatible Tuners and 32 Non-SWM-compatible Tuners (see page 17)

Figure 9 Wiring Overview



**\*IMPORTANT!** Both ACUs must be connected to each other via either a dedicated router or wired through the existing onboard network. If you do not have a network, install a router or router and switch.

# 5 Launch the Setup Wizard (Upgrades Only)

If you are upgrading the TracVision HD11 system to include a SmartSwitch, follow the steps below to launch the Setup Wizard and reconfigure system settings. **If you are replacing a previously installed SmartSwitch, the procedure is complete (your system is already configured).**

**IMPORTANT!**

If you have a dual-antenna system, before continuing, decide which ACU will be the Master and which will be the Slave.

*NOTE: If you have a dual-antenna system, perform the following steps using the Master ACU.*

- a. Press the power button on the front of the ACU to apply power to the TracVision system (see Figure 11). Then wait up to 5 minutes for system startup.
- b. On the front panel of the ACU, navigate to **System Settings > Ethernet Settings** and configure the parameters as follows:

- Set **State** to “**Static.**”
- Set the **IP Address** to an available IP address outside of your router’s DHCP range (*refer to the router’s user manual for details*).

For example, if the router assigns IP addresses ranging from 192.168.1.100 to 192.168.1.139, you could set the Master ACU’s IP address to 192.168.1.150.

- Set the Subnet Mask (**Mask**) and Gateway (**Gway**) parameters, as directed by the router’s user manual.

Figure 10 ACU Network Connection Options

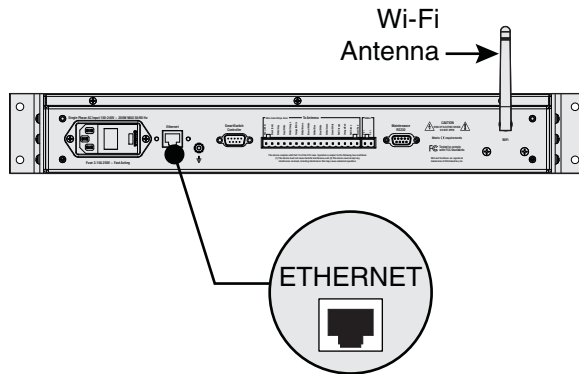
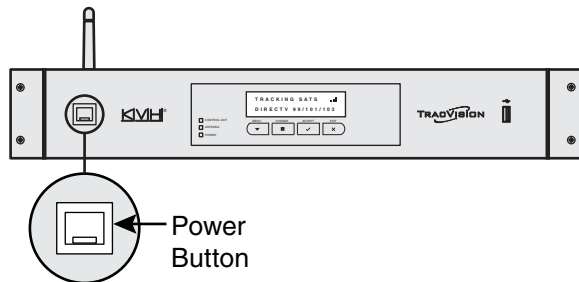


Figure 11 ACU Power Button



# 5 Continued Launch the Setup Wizard

- c. If you have a single-antenna system, skip to step d.

If you have a dual-antenna system, repeat steps a-b for the Slave ACU, setting the Slave ACU's IP address to another number outside of your router's DHCP range.

For example, if you set the Master ACU's IP address to 192.168.1.150, you could set the Slave ACU's IP address to 192.168.1.151.

*NOTE: If you are going to use a wireless network connection to access the web interface, ensure you have applied security settings, such as encryption, to protect the network from outside intrusion. If the network is not secure, outsiders within range of the wireless network might use the wireless connection without your knowledge.*

- d. Open the web browser on a PC connected to the same network. Then type the ACU's IP address (set in step b) into the browser's address bar.

For example, if the ACU's IP address was set to 192.168.1.150, you would enter the following into the browser's address bar:  
`http://192.168.1.150`

*NOTE: Alternatively, you can connect directly to the ACU's Ethernet port with a laptop PC configured for DHCP. Then open the web browser and enter `http://169.254.253.1` to access the web interface.*

- e. Log into the web interface.

The default login credentials are:  
Username: **admin**  
Password: **password**

- f. Select *Settings* > *General Settings*. Then select the **Launch** button to launch the Setup Wizard (see Figure 12).
- g. Follow the Setup Wizard's onscreen instructions to reconfigure system settings (see Figure 13).

Figure 12 Launch Setup Wizard Button

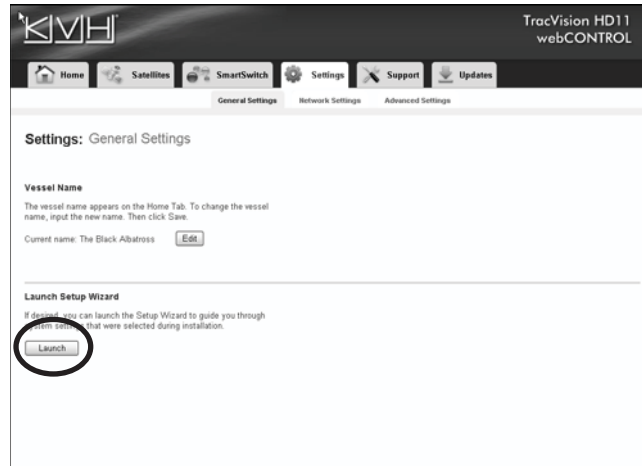
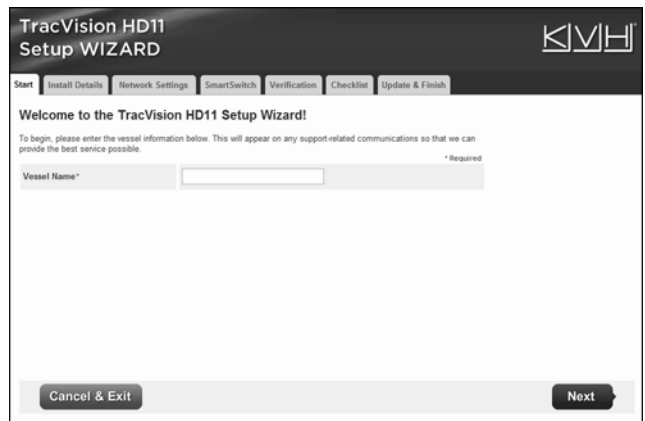


Figure 13 Setup Wizard



# 6 Turn Off Search Modes (Upgrades Only)

If you are upgrading a TracVision HD11 dual-antenna system to include a SmartSwitch, follow the steps below to turn off Search Modes 1 and 2 on each antenna. **If you are replacing a previously installed dual-antenna system SmartSwitch, the procedure is complete (the search modes have already been turned off).**

*NOTE: A valid heading input is required for dual-antenna system applications to function properly.*

- a. Open the web browser on a PC connected to the same network as the HD11 antennas. Open two web browser windows or tabs. In the first web browser window/tab, enter the IP address of the "A" (Master) antenna's ACU. In the second window/tab, enter the IP address of the "B" (Slave) antenna's ACU.

*NOTE: You can view an ACU's IP address and serial number on the ACU's front panel under its "About System" menu.*

- b. Log into the HD11 web interface for each antenna:
 

Username: **admin**  
Password: **password**
- c. At the web interface for each antenna, select the **Support** tab. Then select **Command Line** (see Figure 14).
- d. Look for the **+HDT** (true heading) message in each antenna's data stream (see Figure 15). Make sure that both antennas report the same heading. If they don't, make sure the ACU for each antenna is connected to the same heading source (NMEA 0183 talker), and the device is configured to transmit the \$-HDT message.

**IMPORTANT!**  
Do not proceed with the rest of this procedure until both antennas are reporting the same heading.

- e. Return to the **Support: Home** page and make sure that both antennas are tracking the same satellite (see Figure 16). If they are, complete the remaining steps in this section at the web interface for each antenna.

Figure 14 Command Line

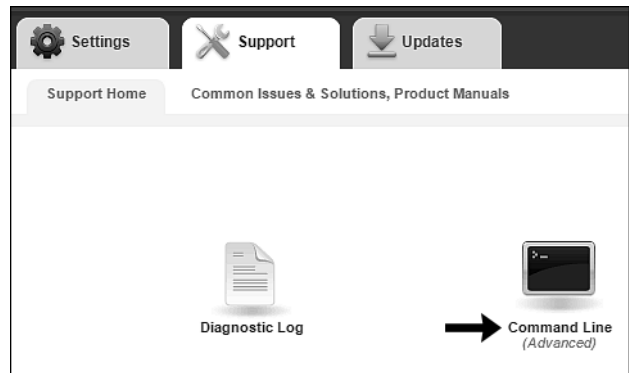


Figure 15 +HDT (True Heading) Message

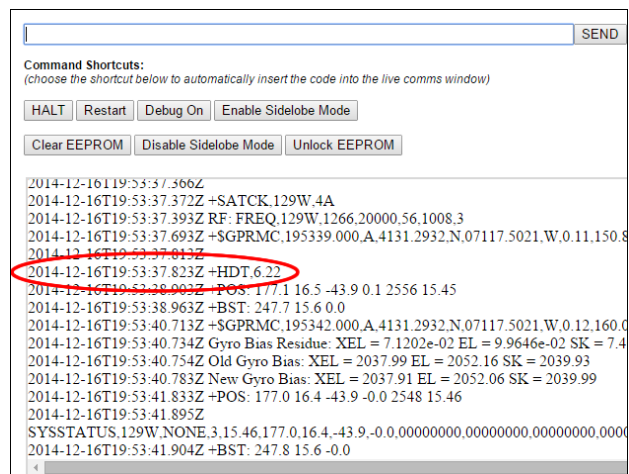


Figure 16 Tracked Satellite



# 6 Continued Turn Off Search Modes

*NOTE: If both antennas cannot track the same satellite due to a blockage condition, first select a satellite that the "A" (Master) antenna can track and follow all of the remaining steps for just the "A" (Master) antenna. When you have completed the entire procedure for the "A" (Master) antenna, switch to a satellite that the "B" (Slave) antenna can track then repeat all of the steps for the "B" (Slave) antenna.*

**IMPORTANT!**

To complete the remaining steps of this procedure, the antenna must be tracking a satellite.

- f. Select **Command Line**.
- g. In the Command box, enter **AZOFFSET**. Then click **Send**. Verify that an "AZOFFSET" value is reported along with a "V" as shown in Figure 17 (indicating a valid azimuth offset value). It might take up to 30 minutes if the antenna was just installed.
- h. In the Command box, enter **SM1,OFF** as shown in Figure 18. Then click Send. Verify that "SM1,OFF" appears in the data stream (indicating Search Mode 1 is turned off).
- i. In the Command box, enter **SM2,OFF** as shown in Figure 18. Then click **Send**. Verify that "SM2,OFF" appears in the data stream (indicating Search Mode 2 is turned off).

If both antennas could not track the same satellite (see note that follows step e), switch to a satellite that the "B" (Slave) antenna can track and repeat steps f-i for the "B" (Slave) antenna while it is tracking a satellite.

Figure 17 AZOFFSET Value

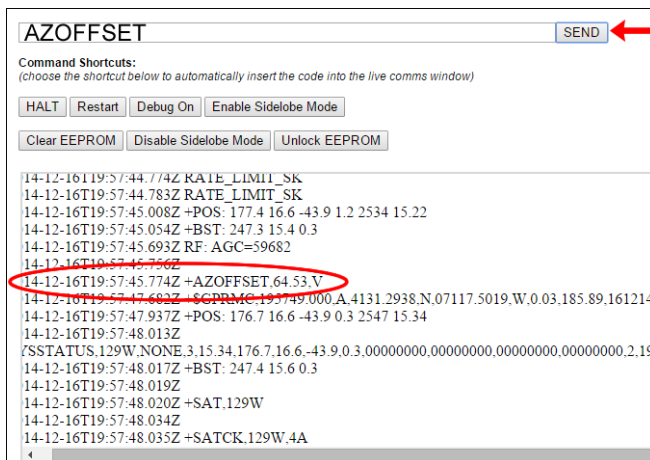
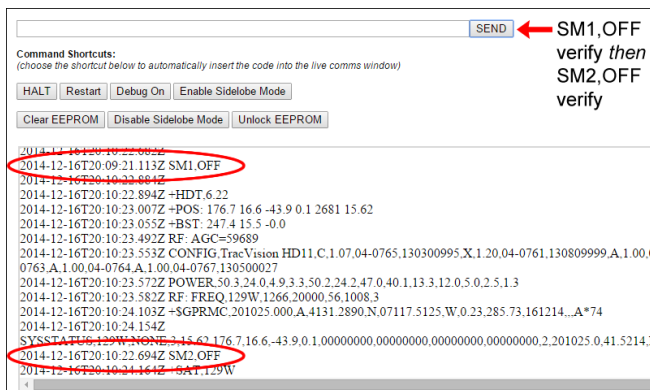
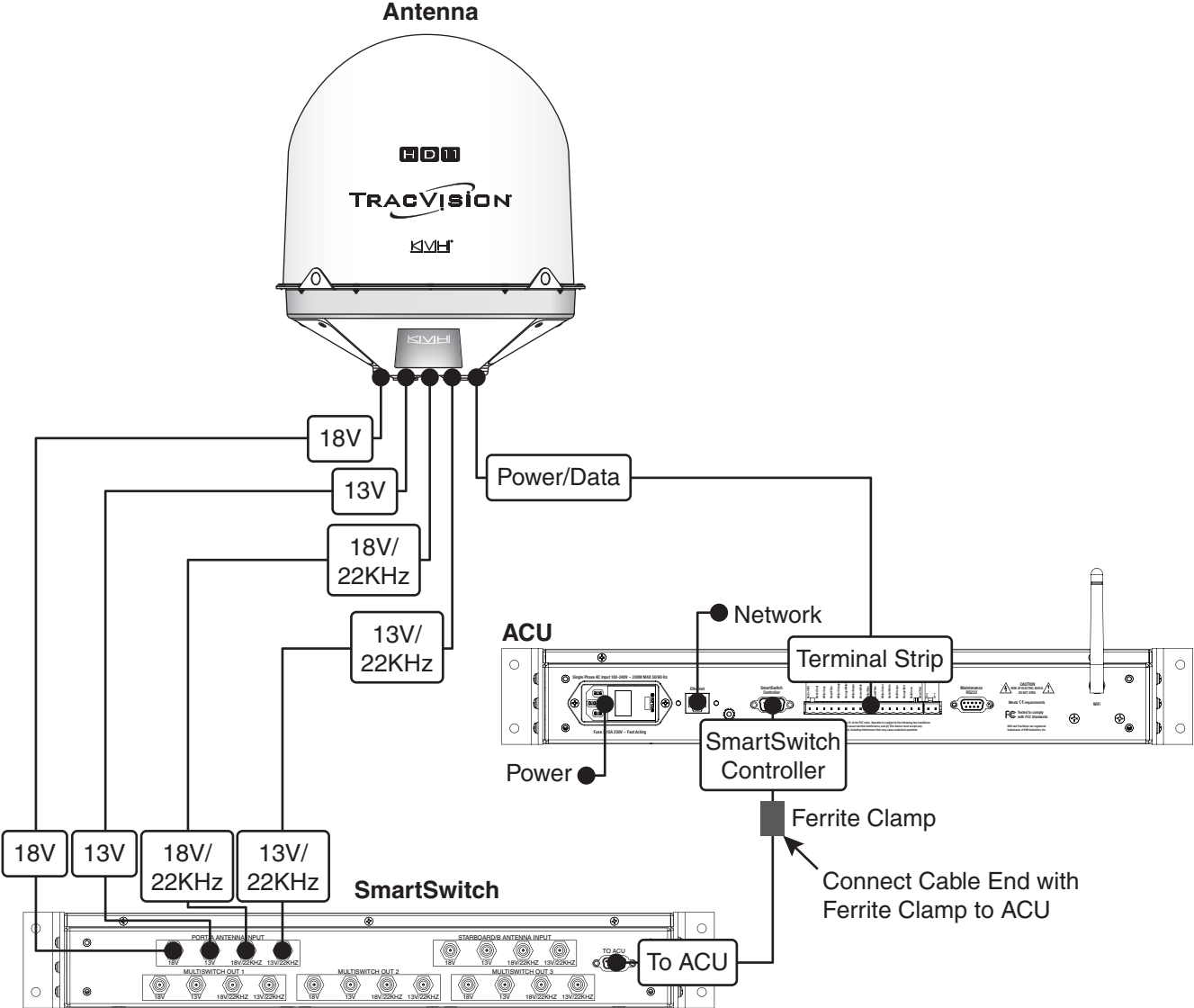


Figure 18 Turn Off Search Modes



# A Wiring Diagrams

Wiring SmartSwitch Input: One TracVision HD11 Antenna/ACU



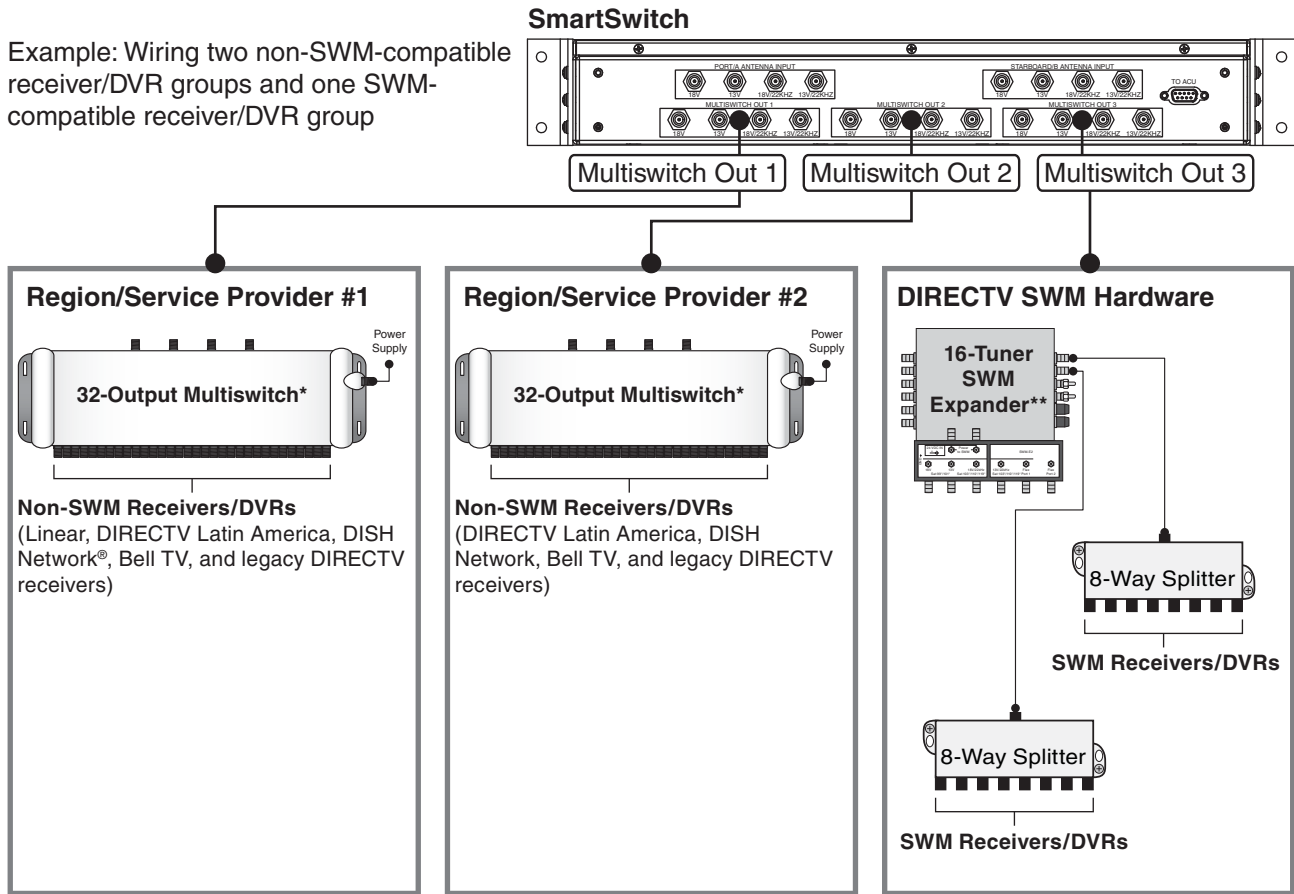


# A

## Continued Wiring Diagrams

### Wiring SmartSwitch Output: Overview

Example: Wiring two non-SWM-compatible receiver/DVR groups and one SWM-compatible receiver/DVR group



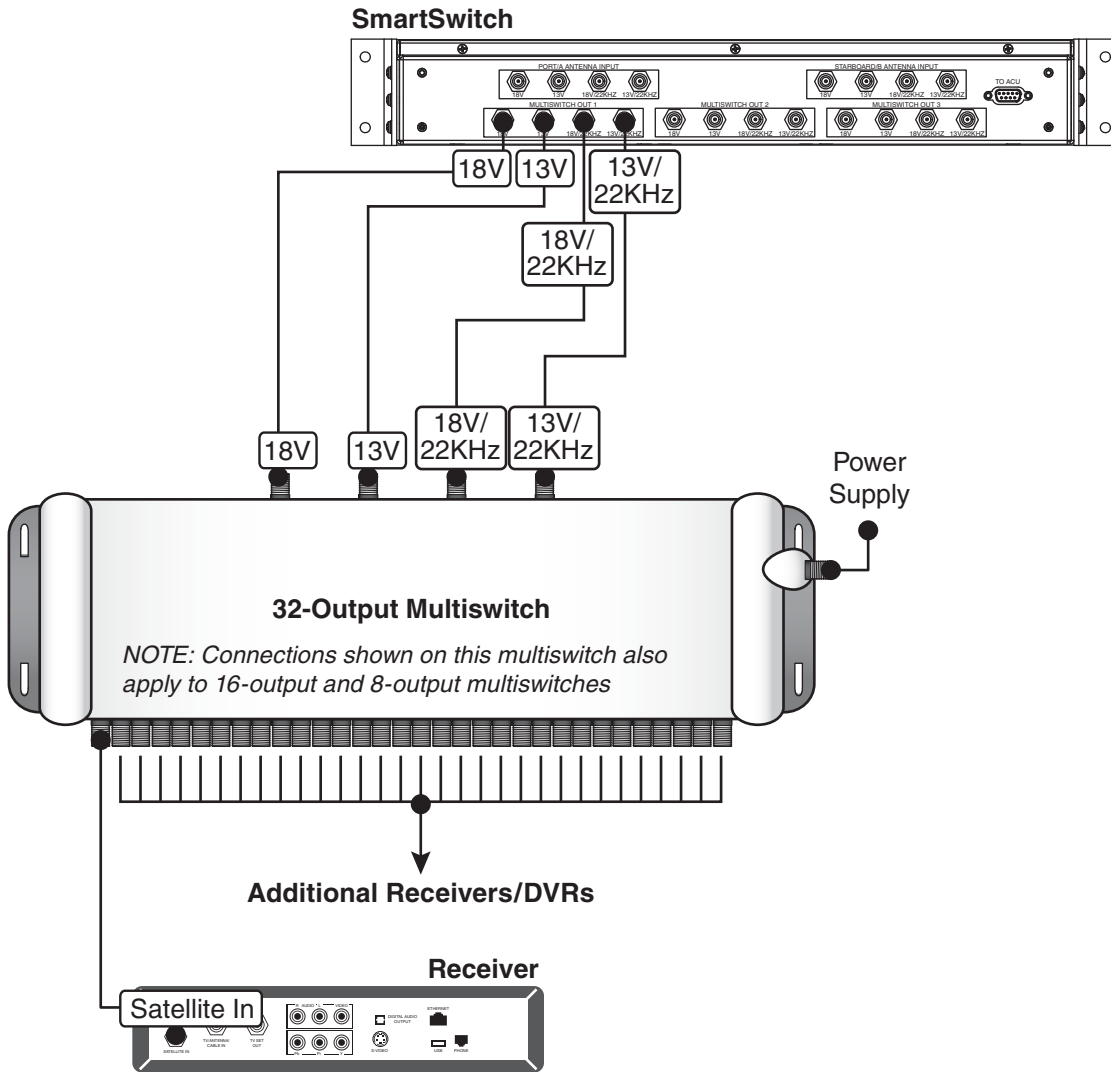
\*NOTE: Similar connections apply to 16-output and 8-output multiswitches

\*\*NOTE: Similar connections apply to 32-tuner SWM expanders

# A

## Continued Wiring Diagrams

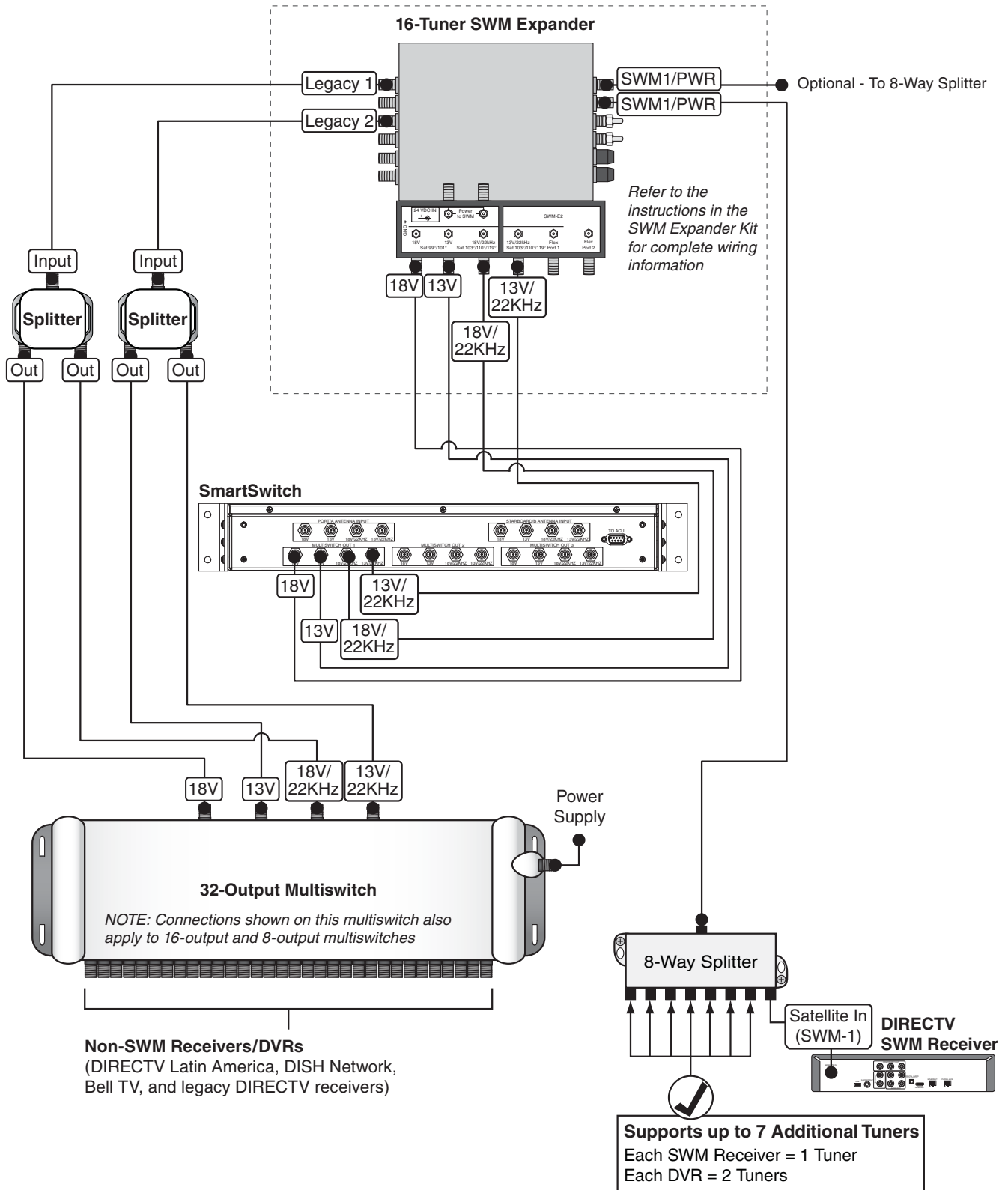
### Wiring SmartSwitch Output: 32 Non-SWM-compatible Tuners



# A

# Continued Wiring Diagrams

## Wiring SmartSwitch Output: 16 SWM-compatible Tuners and 32 Non-SWM-compatible Tuners



# A

## Continued Wiring Diagrams

### Wiring SmartSwitch Output: 32 SWM-compatible Tuners and 32 Non-SWM-compatible Tuners

