

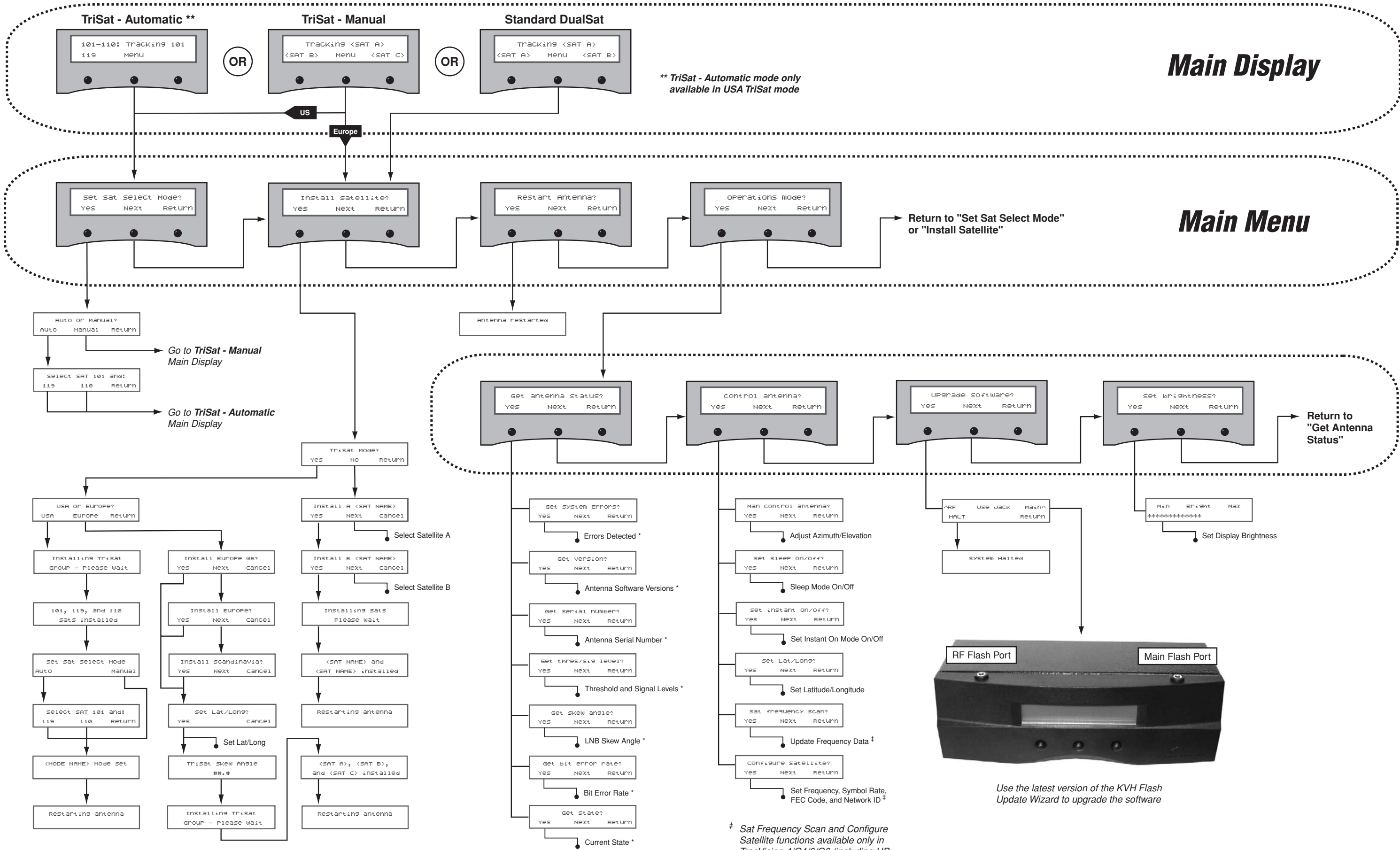
# TracVision® HDTV Converter for DIRECTV® Service

# owner's manual

- Installation Instructions
- User's Guide
- Technical Manual

**TracVision HDTV Converter**

# TracVision Control Panel Menu Quick Reference Guide



\*\* TriSat - Automatic mode only available in USA TriSat mode

Auto or Manual?  
Auto    Manual    Return

Go to **TriSat - Manual** Main Display

select SAT 101 and 119  
119    110    Return

Go to **TriSat - Automatic** Main Display

Trisat Mode?  
YES    NO    Return

USA OR EUROPE?  
USA    EUROPE    Return

Installing Trisat GROUP - Please wait

101, 119, and 110 sats installed

set sat select Mode  
AUTO    MANUAL

select SAT 101 and 119  
119    110    Return

<MODE NAME> Mode Set

Restarting antenna

Install EUROPE WB?  
YES    NEXT    CANCEL

Install EUROPE?  
YES    NEXT    CANCEL

Install scandinavia?  
YES    NEXT    CANCEL

set Lat/Long?  
YES    CANCEL

Set Lat/Long

Trisat skew Angle  
###.#

Installing Trisat GROUP - Please wait

Install A <SAT NAME>  
YES    NEXT    CANCEL

Select Satellite A

Install B <SAT NAME>  
YES    NEXT    CANCEL

Select Satellite B

Installing sats  
Please wait

<SAT NAME> and <SAT NAME> installed

Restarting antenna

<SAT A>, <SAT B>, and <SAT C> installed

Restarting antenna

get antenna status?  
YES    NEXT    RETURN

control antenna?  
YES    NEXT    RETURN

UPGRADE SOFTWARE?  
YES    NEXT    RETURN

set brightness?  
YES    NEXT    RETURN

get system errors?  
YES    NEXT    RETURN

Errors Detected \*

get version?  
YES    NEXT    RETURN

Antenna Software Versions \*

get serial number?  
YES    NEXT    RETURN

Antenna Serial Number \*

get thres/sig level?  
YES    NEXT    RETURN

Threshold and Signal Levels \*

get skew angle?  
YES    NEXT    RETURN

LNB Skew Angle \*

get bit error rate?  
YES    NEXT    RETURN

Bit Error Rate \*

get state?  
YES    NEXT    RETURN

Current State \*

Man control antenna?  
YES    NEXT    RETURN

Adjust Azimuth/Elevation

set sleep on/off?  
YES    NEXT    RETURN

Sleep Mode On/Off

set instant on/off?  
YES    NEXT    RETURN

Set Instant On Mode On/Off

set Lat/Long?  
YES    NEXT    RETURN

Set Latitude/Longitude

Sat frequency scan?  
YES    NEXT    RETURN

Update Frequency Data ‡

configure satellite?  
YES    NEXT    RETURN

Set Frequency, Symbol Rate, FEC Code, and Network ID ‡

RF    USE JACK    MAIN  
HALT    RETURN

SYSTEM HALTED

Min    BRIGHT    Max  
\*\*\*\*\*

Set Display Brightness



Use the latest version of the KVH Flash Update Wizard to upgrade the software

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# TracVision® HDTV Converter Owner's Manual Addendum

***(ECO # 7162)***

The following information applies to Revision A of the TracVision HDTV Converter Kit Owner's Manual (KVH Part Number 54-0260).

## 2.4 Upgrading the Antenna Software

*When you flash (upload software to) the TracVision antenna's Main or RF board via the control panel, you need to cycle power on both the TracVision antenna and the control panel once flashing is complete. This resets the communications link between the antenna and the control panel for normal operation.*

6. Wait for the wizard to finish flashing. **When it is finished, cycle power on both the TracVision antenna and the control panel.**
7. If you just flashed the RF board and need to flash the Main board, connect the flash adapter cable to the control panel's Main flash port and run the wizard again to flash the Main board. **Be sure to cycle power on the TracVision antenna and the control panel when flashing is complete.**

# KVH TracVision® HDTV Converter Kit

## Owner's Manual

Congratulations on your choice of the TracVision HDTV converter! With the HDTV converter added to your TracVision satellite TV antenna system and your HDTV receiver and HDTV monitor, you can watch the world's finest high-definition programming from DIRECTV while you're on the move.

This owner's manual provides all of the information needed to install, configure, operate, and troubleshoot the HDTV converter.



### HDTV Converter Serial Number



*This serial number will be required for all troubleshooting or service calls made regarding this product.*

Please direct questions, comments, or suggestions to:

**KVH Industries, Inc.**  
50 Enterprise Center  
Middletown, RI 02842-5279 USA  
Tel: +1 401 847-3327  
Fax: +1 401 849-0045  
E-mail: [info@kvh.com](mailto:info@kvh.com)  
Internet: [www.kvh.com](http://www.kvh.com)

**KVH Europe A/S**  
Kokkedal Industripark 2B  
2980 Kokkedal, Denmark  
Tel: +45 45 160 180  
Fax: +45 45 160 181  
E-mail: [info@kvh.dk](mailto:info@kvh.dk)  
Internet: [www.kvh.com](http://www.kvh.com)

[Click here to go to our Customer Support web page...the fastest and easiest way to get all of your questions answered.](#)



KVH Part # 54-0260 Rev. A

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DVB® (Digital Video Broadcasting) is a registered trademark of the DVB Project.

DIRECTV® is a registered trademark of DIRECTV, Inc.,  
a unit of the DIRECTV Group.

Windows® is a registered trademark of Microsoft Corporation  
in the United States and other countries.



# IMPORTANT

## Installation Requirements



To ensure a safe and effective installation, this product should be installed by a KVH-authorized technician. The installer should have experience installing electronic equipment on a vessel or vehicle.

**If you have purchased the product and decide to install it yourself, please have a KVH-authorized technician inspect and validate your installation.** (To find a technician near you, go to [www.kvh.com/wheretogetservice](http://www.kvh.com/wheretogetservice).) Ask the technician to fill out the Installation Report provided with this manual, with a note indicating that the technician has inspected and validated your installation. Fax the completed Installation Report to KVH at 401-849-0045, or mail it to the address printed on the form.

### **Warranty if Installed or Validated by a KVH-authorized Technician**

If a KVH-authorized technician installs the product or inspects and validates your installation, the product is covered under the following warranty:

**Parts:** 2 Years

**Labor:** 1 Year (Factory or Dealership)

KVH must have the Installation Report on file before any warranty claims can be processed.

### **Warranty if Installed by Owner, Without Validation**

If you install the product yourself, and your installation is not inspected and validated by a KVH-authorized technician, the product is covered under the following warranty:

**Parts:** 2 Years

**Labor:** 1 Year (Factory only)

In both cases, the warranty period begins on the date of purchase, not the date of installation. The product's complete warranty is printed on the last page of this manual. Please review this page to familiarize yourself with all requirements, liabilities, and policies.

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# 1 – Introduction

This section provides a basic overview of the TracVision HDTV converter and explains how to use this manual.

## Contents

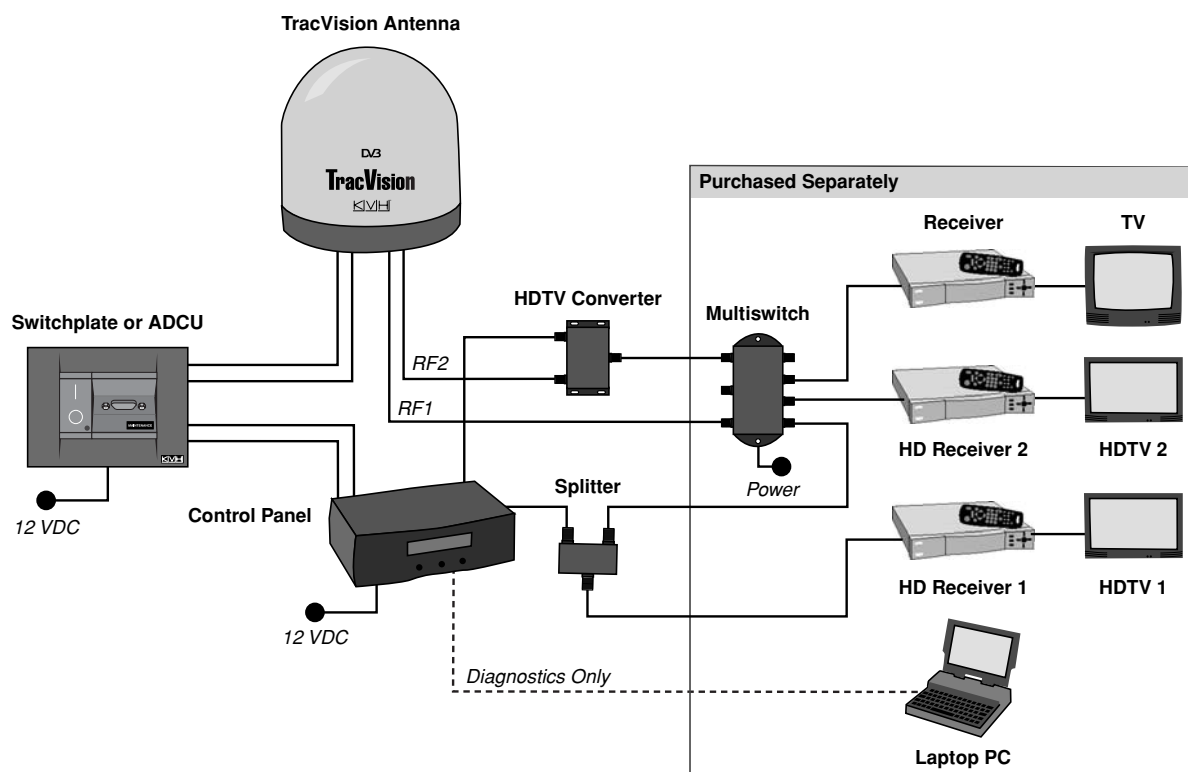
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## 1.1 HDTV Converter Kit Overview

The TracVision HDTV converter enables your DVB®-compatible TracVision satellite TV antenna to track **three** DIRECTV satellites, including DIRECTV's 110°W satellite, which offers high-definition programming. The HDTV converter also comes with an easy-to-use control panel that allows you to set up and operate your antenna system.

Figure 1-1 shows a typical HDTV system configuration. For detailed system wiring diagrams, see *Appendix C on page 87*.

**Figure 1-1** Typical HDTV System Configuration



## HDTV Converter Kit Components

Your HDTV converter kit comes with the following components:

### HDTV Converter

Whenever the DIRECTV 110°W satellite is selected, the HDTV converter alters the frequency of the satellite signal, allowing the receiver to decode it and deliver its high-definition programming.



### Splitter

The splitter divides the tone signal from the receiver into two signals, so that satellite switch commands can be routed to the control panel.



### Control Panel

The control panel is the user interface, providing access to the TracVision antenna system and its functions through an LCD and three buttons. Using the control panel, you can configure the antenna, select satellites, check system status, and restart the antenna.



## 1.2 How to Use this Manual

This owner's manual provides all of the information you need to install, configure, operate, and troubleshoot the HDTV converter and control panel. For information on installing, configuring, operating, and troubleshooting the TracVision antenna, please refer to the manual(s) that came with the antenna.

### Who Should Use This Manual

#### The Installer

The installing technician should follow all of the instructions provided in the *"Installation"* section to ensure a safe and effective installation. The installer should be a KVH-authorized technician with experience installing electronic equipment on a vessel or vehicle.

#### The User

The user should refer to the *"Operation"* section to learn how to operate the system using the control panel. The user should also refer to the *"Control Panel Menu Functions"* section for information on the functions available through the control panel.

#### The User and/or Service Technician

The user and/or servicing technician should refer to the *"Troubleshooting"* section to help identify the cause of a system problem.




## Typographical Conventions

This manual uses the following typographical conventions:

Text Example	Description
installing Trisat	Text as it appears on the control panel display
<SAT A> and <SAT B> installed	Text inside brackets <> is a variable (Example: "101 and 119 installed")
Connect the cable to the "HDTV CONTROL" connector	<i>(in the text)</i> Refers to the name of a connector as it appears on the label
To Control Panel <i>(HDTV CONTROL)</i>	<i>(in a figure)</i> Refers to the name of a connector as it appears on the label
Press the <b>MENU</b> button	Name of a button on the control panel
See "Flashing the RF Board" on page 27 for details	Cross-reference to another section in the manual or to a web site

## Icons Used in This Manual

Throughout this manual, important information is marked for your attention by the following icons:

Icon	Description
	A helpful tip that either directs you to a related area within the manual or offers suggestions on getting the most from your system
	An alert to important information regarding procedures, product specifications, or product use
	Information about installation, maintenance, troubleshooting, or other mechanical issues
	An electrical safety warning to help identify electrical issues that can be a hazard to either this KVH product or a user
	Indicates which button to press on the control panel to initiate a specified function

## TracVision Product Naming Conventions

For convenience, this manual uses the following product naming conventions:

Product Name in Manual	Associated TracVision Models
TracVision 4	TracVision 4, TracVision 4-HP
TracVision G4	TracVision G4, TracVision G4-HP
TracVision 6	TracVision 6, TracVision 6-HP
TracVision G6	TracVision G6, TracVision G6-HP
TracVision L3, S3, C3	TracVision L3, S3, C3

## Special Inserts in this Manual

This manual contains the following special inserts:

### Control Panel Flush Mount Template

If you wish to mount the control panel flush to a vertical surface, use the template in *Appendix B on page 85* to lay out the hole you'll need to cut out in the mounting surface.

### System Wiring Diagrams

Refer to the wiring diagrams in *Appendix C on page 87* while installing the system to ensure components are wired correctly.

### Control Panel Menus Quick Reference Guide

Refer to the quick reference guide printed on the inside front cover to view at a glance the control panel's menu structure and the functions available to you.

### Warranty Card

Please fill out the warranty card at the back of this manual and return it to KVH within 30 days of purchase for warranty registration. KVH must have this card on file to validate any future warranty claims.

### Installation Report

Installer - Please complete the installation report at the back of this manual and return it to KVH within 10 days after installing the product. This report will be used to activate the labor reimbursement portion of the product warranty.

## 1.3 Getting Help

### Technical Support

If you experience an operating problem and/or need technical assistance, please call your local authorized KVH TracVision dealer/installer. If an authorized dealer/installer is not located nearby, contact KVH Technical Support directly:

Phone: 1-401-847-3327

E-mail: [techs@kvh.com](mailto:techs@kvh.com)

Internet: [www.kvh.com/help](http://www.kvh.com/help)

### Receiver Activation

The receiver will not be able to decode HD channels until it is activated. High-definition channels are not included with the basic DIRECTV package, and premium HD channels, such as HBO HD, must be ordered separately.

If you have any questions about DIRECTV's HD services, or if you would like to activate your receiver, please call KVH's Activation Department:

Phone: 1-888-584-4163

(Monday-Friday, 8:30 am - 5:00 pm ET)

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### Send Us Your Comments About This Manual

If you have any comments regarding this manual, please e-mail them to [manuals@kvh.com](mailto:manuals@kvh.com). Your feedback is greatly appreciated!

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# 2 — Installation

This section explains how to install, configure, and test the TracVision HDTV converter system. Follow the procedures in this section sequentially to ensure a safe and effective installation.

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## 2.1 Planning the Installation

### Who Should Install the TracVision HDTV Converter?

KVH strongly recommends that a KVH-authorized technician install the TracVision HDTV converter. Installers should have experience installing electronic equipment on a vessel or vehicle.

### Installing the TracVision Antenna

This manual assumes that you are adding the HDTV converter to a TracVision antenna system that is already installed on the vessel or vehicle. If the antenna is not yet installed, follow the detailed instructions in the antenna's *Technical Manual* or *Owner's Manual* to install and test the antenna system. Then follow the instructions in this manual to install the HDTV converter and control panel.

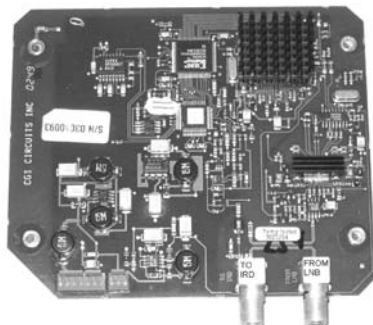
### RF Board Compatibility – RF4 or Later

The HDTV converter is compatible only with TracVision antennas that have RF board version **RF4 or later** installed. If the TracVision antenna has an RF1, RF2, or RF3 board installed, you will need to replace the RF board. To order an RF board upgrade kit, call KVH at 401-847-3327.

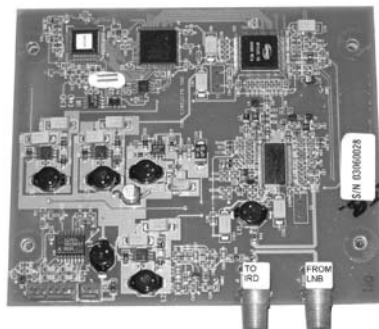
**All TracVision antennas having serial number 03040001 or later have an RF4 or RF5 board installed and are fully compatible with the HDTV converter.** You can tell which type of RF board is installed by the shape of the board itself. As shown in Figure 2-1, RF1, RF2, and RF3 boards have blunt corners, while RF4 and RF5 boards are square with sharp corners.

**Figure 2-1** RF Boards

**Shape of RF1, RF2,  
and RF3 Boards**



**Shape of RF4 and RF5 Boards**



**If you purchased the system and decide to install it yourself, be sure to read the important notice at the front of this manual regarding warranty implications.**



*The first four digits of the antenna serial number indicate the year and month (YYMM) the antenna was manufactured. Therefore, antennas that have a serial number starting with 0304 were built in April 2003.*

## Materials and Equipment Required for Installation

Before you begin installing the TracVision HDTV converter, verify that you have all of the following tools and materials:

- Electric drill
- $\frac{1}{16}$ " open-end wrench and  $\frac{3}{16}$ " nut driver/socket
- Flat head and Phillips screwdrivers
- Light hammer; center punch; tape; scribe/pencil
- Power cable to connect control panel power (Table 2-1 provides proper gauge and length for a 12 V supply)

**Table 2-1** Recommended Power Cable Specifications

Cable Length	Cable Gauge
to 40 ft (12 m)	14 AWG (1.5 mm <sup>2</sup> )
up to 70 ft (21 m)	12 AWG (2.5 mm <sup>2</sup> )



If your computer does not have a DB9 serial COM port, you can use the following USB-to-RS232 adapter:

IOGear part number GUC232A  
(visit [www.iogear.com](http://www.iogear.com))

- Laptop PC running Windows® 98, ME, 2000, or XP and equipped with a DB9 serial COM port
- HDTV receiver and HDTV monitor

## Downloading the KVH Flash Update Wizard

As explained in Section 2.4, “Upgrading the Antenna Software” on page 34, you will probably need to flash (upload software to) the TracVision antenna to make it compatible with the HDTV converter. Therefore, you should have the latest version of the KVH Flash Update Wizard installed on your laptop PC before you go to the vessel/vehicle. Download the latest version from [www.kvh.com/wizard](http://www.kvh.com/wizard).

## Kitpack Contents

The kitpack packaged with your HDTV converter contains hardware and other materials that will be needed to complete the installation. Ensure that the kitpack contains all of the items listed below.

**Table 2-2** Kitpack Contents

Part	Part #	Qty.
Control panel	02-1401	1
HDTV converter	02-1431	1
RF splitter	19-0366	1
Control panel mounting bracket	20-1056	1
Velcro self-adhesive backings	19-0146	2
Velcro washers	19-0147	2
#6-32 x ½" pan head screws	14-0029-06	2
#6 flat washers	14-0024	2
#4-24 thread-forming screws	14-0150-06	4
#8 type-A black screws	14-0047-08	4
#8 lock washers	14-0038	4
Power plug	23-0478-02	1
P-clip	22-0021-04	1
Flash cable (9-pin female to stereo plug) <i>Length: 5.9 ft (1.8 m)</i>	32-0807	1
Main control cable (9-pin male to 9-pin male) <i>Length: 25 ft (7.6 m)</i>	32-0716-25	1
RF control cable (9-pin female to RJ11) <i>Length: 25 ft (7.6 m)</i>	32-0811	1
RF control cable (9-pin female to 3 wires) <i>Length: 25 ft (7.6 m)</i>	32-0618-25	1
RG6 RF cables <i>Length: 28 ft (8.5 m)</i>	32-0417-28	3
RG179 RF cables <i>Length: 1.5 ft (45.7 cm)</i>	32-0442-18	2
Snap-N-Seal® F-connector	23-0170	1
Switchplate maintenance port assembly: TracVision 4/6/G4/G6 version	02-1192	1
<b>OR</b> TracVision C3/L3/S3 version	02-1192-01	1



*If you need to cut any RF cable to a certain length, be sure to attach a Snap-N-Seal F-connector to the end of the cable using an LRC/Augat T1000 crimp/strip tool. Do not use a screw-on, push-on, twist-on, or any other over-the-counter connector. Such low-quality connectors WILL degrade system performance and KVH does not warrant their use.*

## Choosing the Best Location for the Control Panel

- The control panel should be located in a dry location, allowing enough room at the back for connecting the various cables.
- Control panel dimensions: 8.2" (20.8 cm) wide x 3" (76.2 cm) deep x 2.6" (6.6 cm) high
- The control panel should be placed so that the LCD display is visible and the buttons are accessible to the user.
- The control panel is not susceptible to magnetic interference and does not need to be mounted on a level surface.



Before connecting any cables, turn off vessel/vehicle power and test the circuit to ensure that no power is present.

## 2.2 Wiring System Components

Wiring instructions vary depending on the antenna system's model and configuration. Table 2-3 lists the six possible system configurations.

**Table 2-3** System Configurations

	One HD Receiver (option for a 2nd, non-HD receiver)	Multiswitch Installed (multiple HD or standard receivers)
TracVision 4/6	A	B
TracVision G4/G6	C	D
TracVision C3/L3/S3	E	F

### Wiring Diagrams in Appendix C

Detailed wiring diagrams for all six configurations are provided in *Appendix C on page 87*. Find the diagram for your configuration and, as you connect each cable, mark an "X" over the corresponding line in the diagram. Once you've completed the installation, you will then be able to refer to the diagram to easily verify that you've connected all of the necessary cables.

## Step 1 - Wire the Receiver(s)

Two RF cables, labeled “RF1” and “RF2,” should already be connected to the TracVision antenna’s baseplate. In a standard TV configuration, these cables connect directly to the individual receivers or a multiswitch. Disconnect these RF cables from the receiver(s)/multiswitch and follow the wiring instructions for your particular configuration.

### One HD Receiver

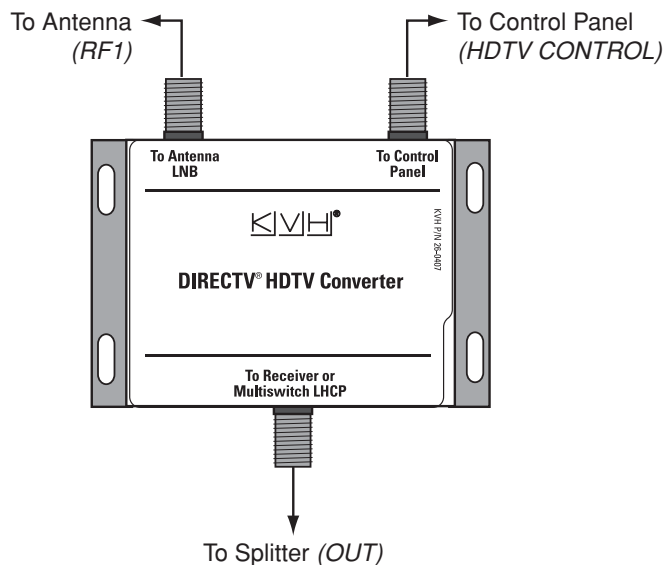
A, C, or E

Follow these instructions if you need to connect a single HD receiver, with the option for a second, standard **non-HD** receiver.

If you need to connect multiple HD receivers, or more than one additional standard receiver, you will need to purchase a multiswitch and follow the instructions in “*Multiswitch Installed*” on page 17.

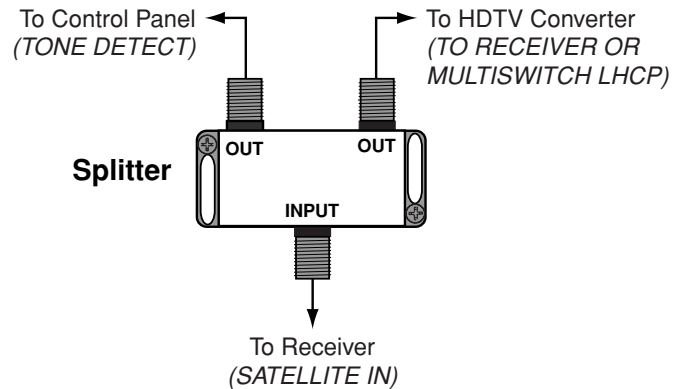
1. Connect the antenna’s “RF1” cable to the HDTV converter’s “TO ANTENNA LNB” connector.

**Figure 2-2** HDTV Converter



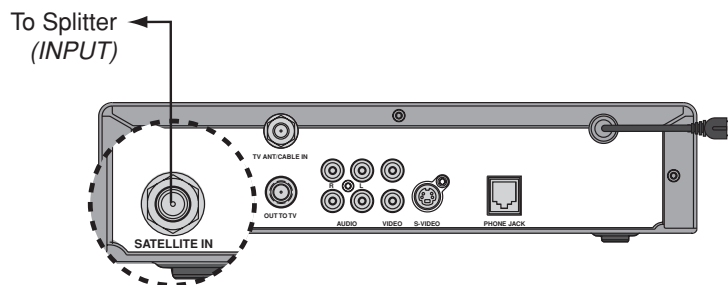
2. Connect an RG179 cable from the HDTV converter's "TO RECEIVER OR MULTISWITCH LHCP" connector to either of the splitter's "OUT" connectors.

**Figure 2-3** Splitter



3. Connect an RG6 cable from the splitter's "INPUT" connector to the HD receiver's "SATELLITE IN" connector.

**Figure 2-4** HD Receiver (Example)



4. If a second receiver is installed, connect the antenna's "RF2" cable to the second receiver's "SATELLITE IN" connector.

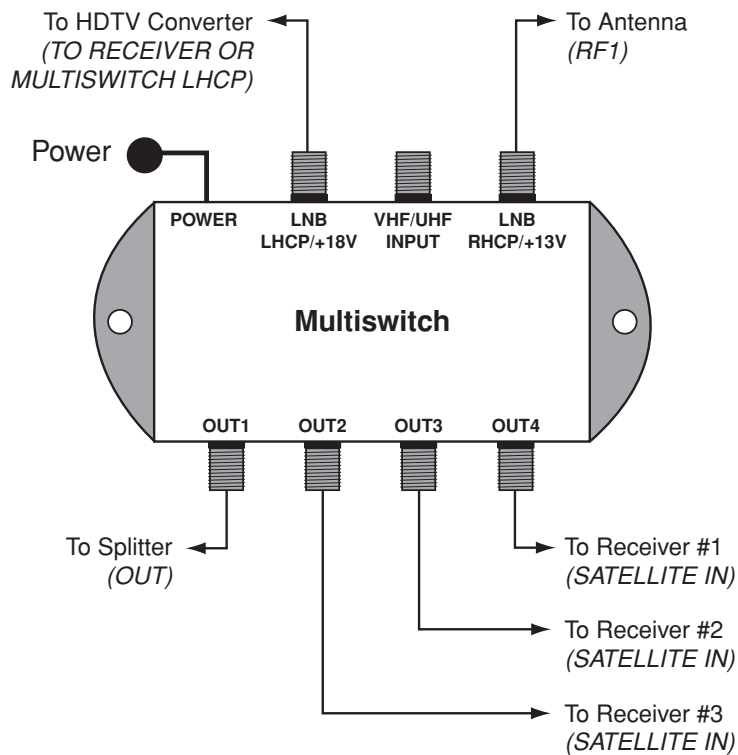
B, D, or F

## Multiswitch Installed

Follow these instructions if a multiswitch is installed and you need to connect multiple HD receivers or more than one additional standard receiver.

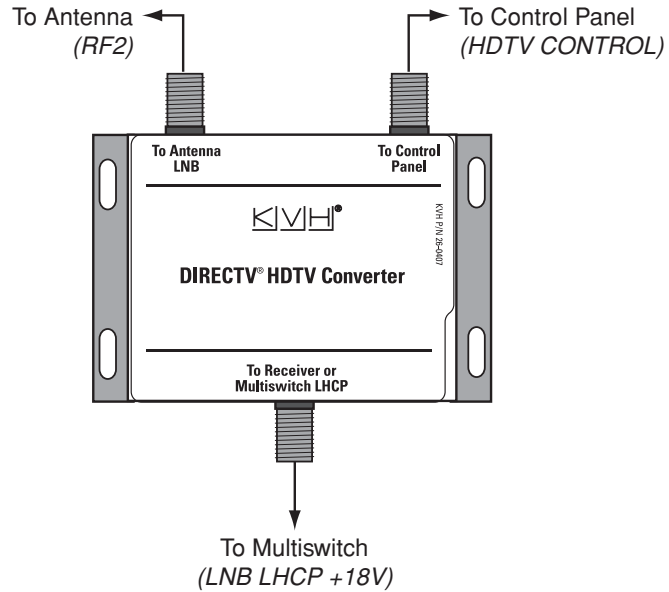
1. Connect the antenna's "RF1" cable to the multiswitch's "RHCP +13V" connector.

**Figure 2-5** Multiswitch (Example)



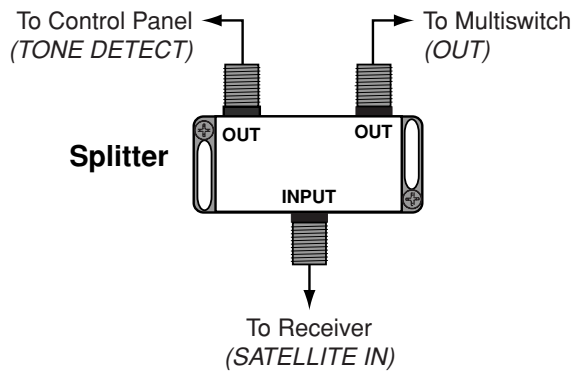
2. Connect the antenna's "RF2" cable to the HDTV converter's "TO ANTENNA LNB" connector.

**Figure 2-6** HDTV Converter



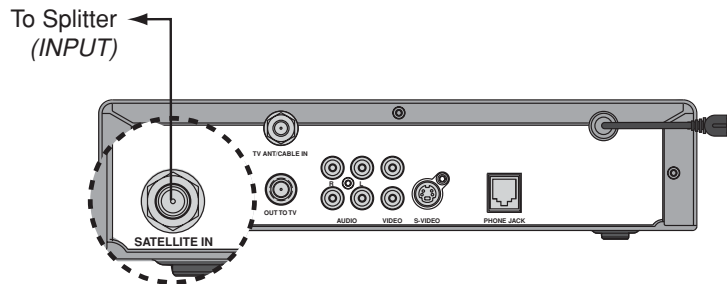
3. Connect an RG179 cable from the HDTV converter's "TO RECEIVER OR MULTISWITCH LHCP" connector to the multiswitch's "LHCP +18V" connector.
4. Connect an RG179 cable from any of the multiswitch's "OUT" connectors to either of the splitter's "OUT" connectors.

**Figure 2-7** Splitter



- Connect an RG6 cable from the splitter's "INPUT" connector to the master HD receiver's "SATELLITE IN" connector. *This receiver will control satellite selection.*

**Figure 2-8** HD Receiver (Example)

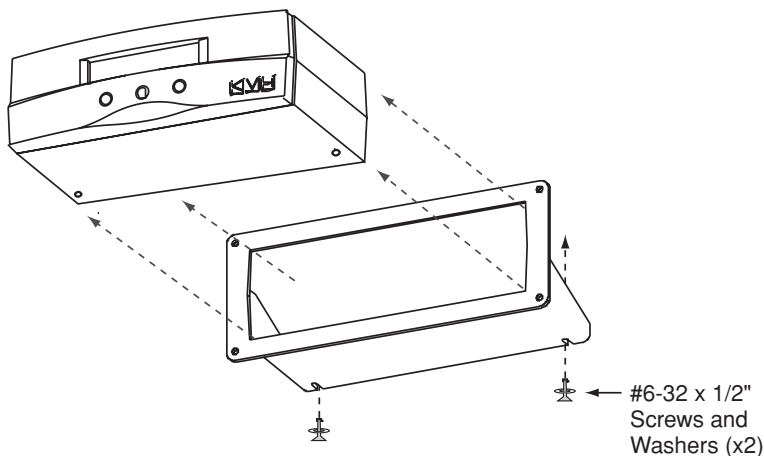


- Connect any additional HD or standard receivers to the multiswitch at its available "OUT" connectors.

### Flush Mounting Only – Attach Bracket

If you will use the supplied flush mount bracket to mount the control panel, slide the bracket onto the control panel from behind and position the front edge of the bracket over the seam line between the front bezel and the control panel chassis. Secure the bracket to the control panel using two #6-32 screws and flat washers. You will mount the control panel later in *Section 2.3, "Mounting the Control Panel" on page 32.*

**Figure 2-9** Flush Mount Bracket

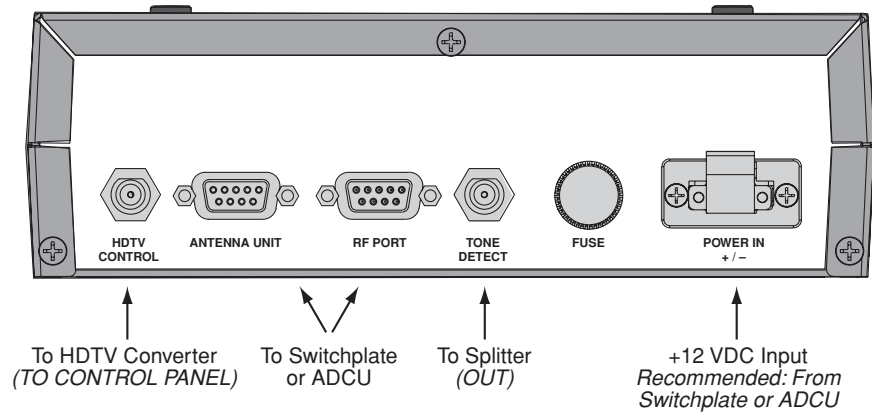


A, B, C, D, E, or F

## Step 2 - Wire the Control Panel

1. Connect an RG6 cable from the HDTV converter's "TO CONTROL PANEL" connector to the control panel's "HDTV CONTROL" connector.

**Figure 2-10** Control Panel



2. Connect an RG6 cable from the splitter's second "OUT" connector to the control panel's "TONE DETECT" connector.
3. Connect a DB9-male end of the main control cable to the control panel's "ANTENNA UNIT" port. Route the other end of the cable to the TracVision antenna's switchplate or ADCU. You will connect this cable to the switchplate/ADCU later.
4. Two different types of RF control cables are supplied in the kitpack. If you are connecting to a TracVision G4/G6, use the DB9-female to 3 wires cable. If you are connecting to a TracVision 4/6/C3/L3/S3, use the DB9-female to RJ11 cable.

Connect the DB9-female end of the RF control cable to the control panel's "RF PORT" port. Route the other end of the cable to the TracVision antenna's switchplate or ADCU. You will connect this cable to the switchplate/ADCU later.

### **Step 3 - Wire the Switchplate or ADCU**

Now you need to connect the control panel to the TracVision antenna's switchplate or ADCU. Follow the instructions for your particular configuration.

#### **TracVision 4/6**

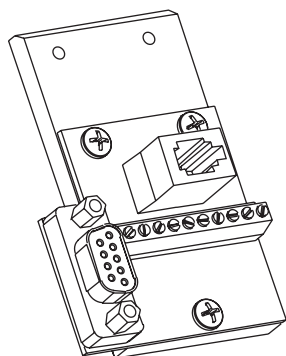
**A or B**

Follow these instructions if you are connecting to a TracVision 4 or TracVision 6.

If you are connecting to a TracVision G4 or G6, follow the instructions in "TracVision G4/G6" on page 25. If you are connecting to a TracVision C3, L3, or S3, follow the instructions in "TracVision C3/L3/S3" on page 26.

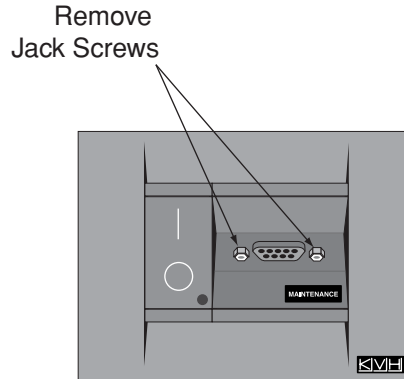
To connect the control panel to the switchplate, you will first need to access the back of the switchplate and replace the switchplate's maintenance port assembly with the modified assembly provided in the kitpack.

**Figure 2-11** *New Maintenance Port Assembly*



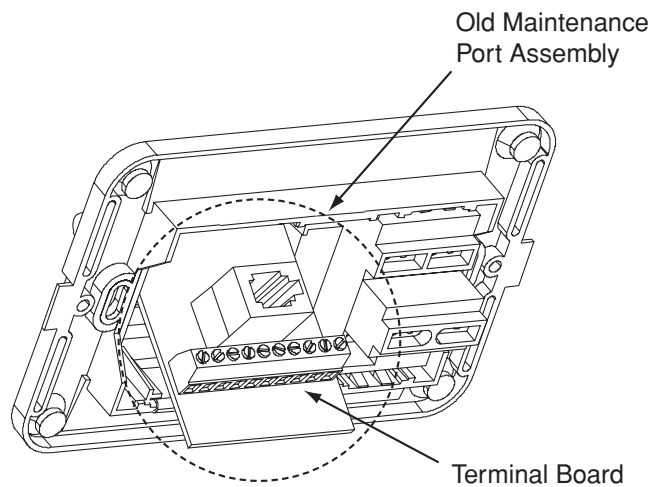
1. Remove and discard the two jack screws securing the maintenance port assembly to the switchplate.

**Figure 2-12** Detaching the Old Maintenance Port Assembly



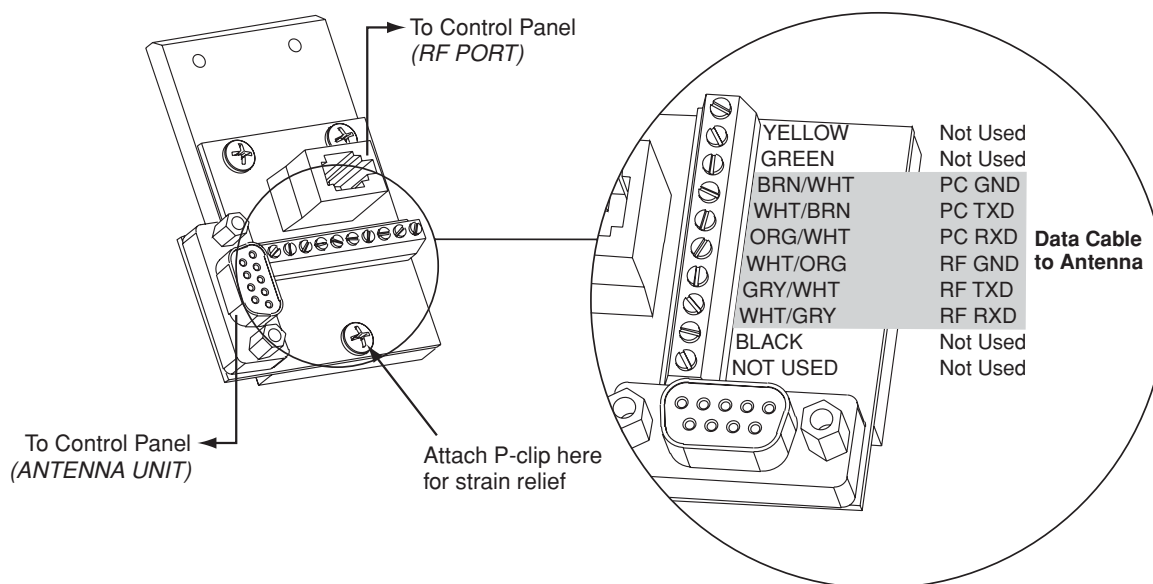
2. Carefully disconnect the TracVision antenna's data cable from the maintenance port assembly's terminal board, located on the rear of the switchplate. You will reattach these wires later.

**Figure 2-13** Old Maintenance Port Assembly



3. Discard the old maintenance port assembly.
4. Wire the TracVision antenna's data cable to the new maintenance port assembly's terminal board.  
*Be sure to match the wire colors with the terminal board label.*

**Figure 2-14** Wiring the New Maintenance Port Assembly

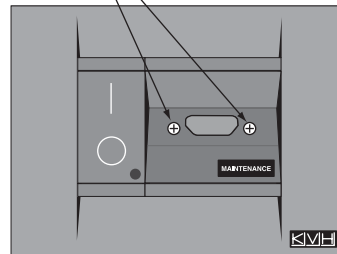


5. Connect the free DB9-male end of the main control cable to the DB9 connector on the maintenance port assembly (*the other end of the cable should already be connected to the control panel*). Tighten the connector's retaining screws.
6. Connect the RJ11 end of the RF control cable to the RJ11 jack on the maintenance port assembly (*the other end of the cable should already be connected to the control panel*).
7. Using the supplied P-clip, strain-relieve all wires by securing them to the maintenance port assembly.

8. Attach the new maintenance port assembly to the switchplate using two #4-24 screws supplied in the kitpack. These screws simply replace the jack screws that you removed in Step 1.

**Figure 2-15** *Securing the New Maintenance Port Assembly to the Switchplate*

#4-24 Screws



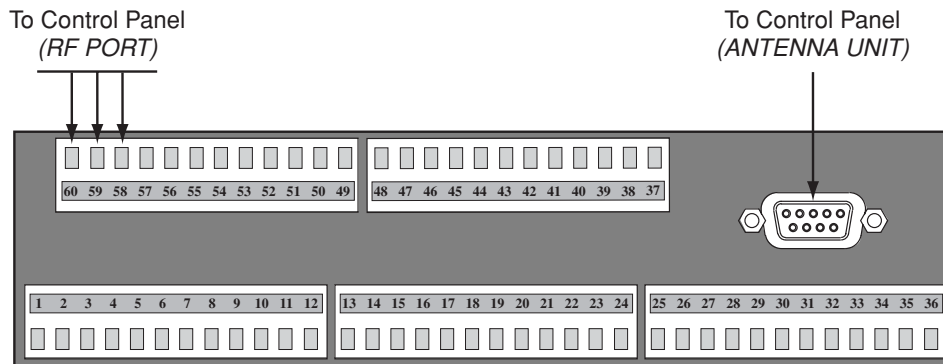
## TracVision G4/G6

Follow these instructions if you are connecting to a TracVision G4 or TracVision G6.

**Do not disconnect any of the cables that are already connected to the ADCU rear panel.** You will simply connect additional wires.

1. Connect the free DB9-male end of the main control cable to the DB9 maintenance port connector on the ADCU (*the other end of the cable should already be connected to the control panel*). Tighten the connector's retaining screws.

**Figure 2-16** ADCU Rear Panel



2. Connect the three wires of the RF control cable to terminals 58, 59, and 60 on the ADCU rear panel, as noted in the table below (*the other end of the cable should already be connected to the control panel*).

**Table 2-4** RF Control Cable Wiring to the ADCU

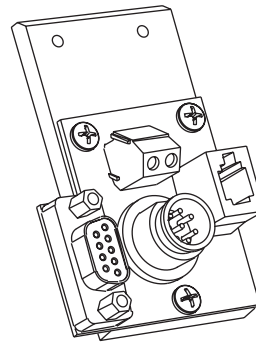
Wire Label	Connect to ADCU Terminal:
60 (Pin #2)	60
59 (Pin #3)	59
58 (Pin #5)	58

**E or F****TracVision C3/L3/S3**

Follow these instructions if you are connecting to a TracVision C3, L3, or S3.

To connect the control panel to the switchplate, you will first need to access the back of the switchplate and replace the switchplate's maintenance port assembly with the modified assembly provided in the kitpack.

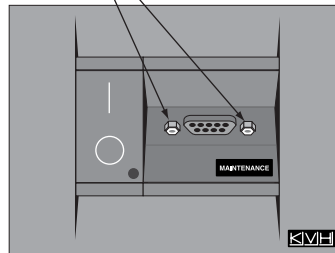
**Figure 2-17** *New Maintenance Port Assembly*



1. Remove and discard the two jack screws securing the maintenance port assembly to the switchplate.

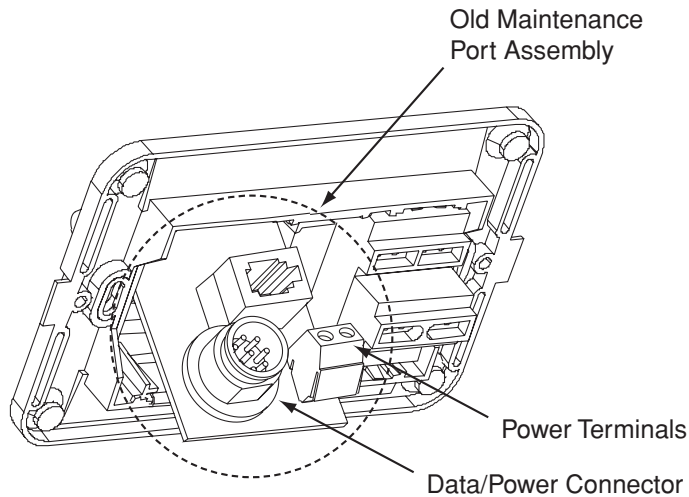
**Figure 2-18** *Detaching the Old Maintenance Port Assembly*

Remove  
Jack Screws



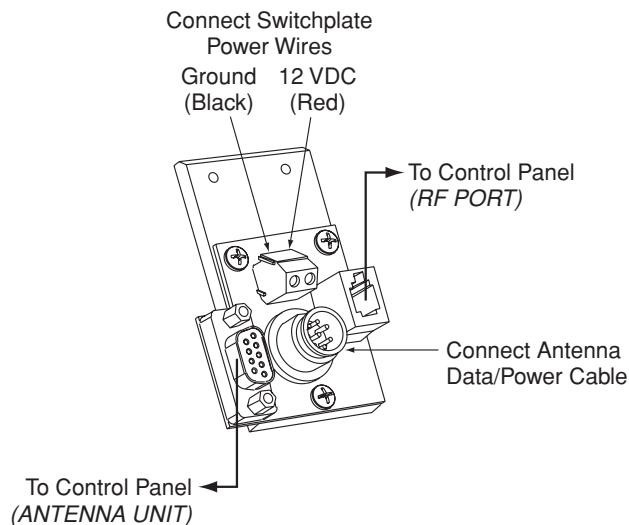
2. Disconnect the TracVision antenna's data/power cable from the maintenance port assembly's data/power connector, located on the rear of the switchplate. You will reattach this cable later.

**Figure 2-19** Old Maintenance Port Assembly



3. Carefully disconnect the two power wires from the maintenance port assembly's power terminals (see Figure 2-19). You will reattach these wires later.
4. Discard the old maintenance port assembly.
5. Connect the switchplate's two power wires (*which you disconnected in Step 3*) to the new maintenance port assembly's power terminals.

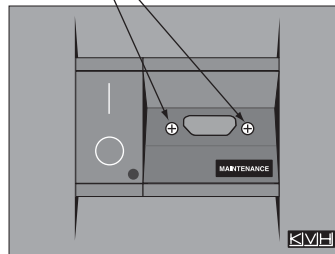
**Figure 2-20** Wiring the New Maintenance Port Assembly



6. Connect the TracVision antenna's data/power cable to the new maintenance port assembly's data/power connector (see Figure 2-20).
7. Connect the free DB9-male end of the main control cable to the DB9 connector on the maintenance port assembly (*the other end of the cable should already be connected to the control panel*). Tighten the connector's retaining screws.
8. Connect the RJ11 end of the RF control cable to the RJ11 jack on the maintenance port assembly (*the other end of the cable should already be connected to the control panel*).
9. Strain-relieve all wires as needed.
10. Attach the new maintenance port assembly to the switchplate using two #4-24 screws supplied in the kitpack. These screws simply replace the jack screws that you removed in Step 1.

**Figure 2-21** *Securing the New Maintenance Port Assembly*

#4-24 Screws



## Step 4 - Connect Power

The control panel requires an 11-16 VDC power input. Since it does not have a dedicated power control (ON/OFF switch), KVH recommends that you power the control panel from the switchplate or ADCU. The control panel will then power up whenever the antenna is turned on. This section explains how to make this connection; follow the instructions for your particular configuration.



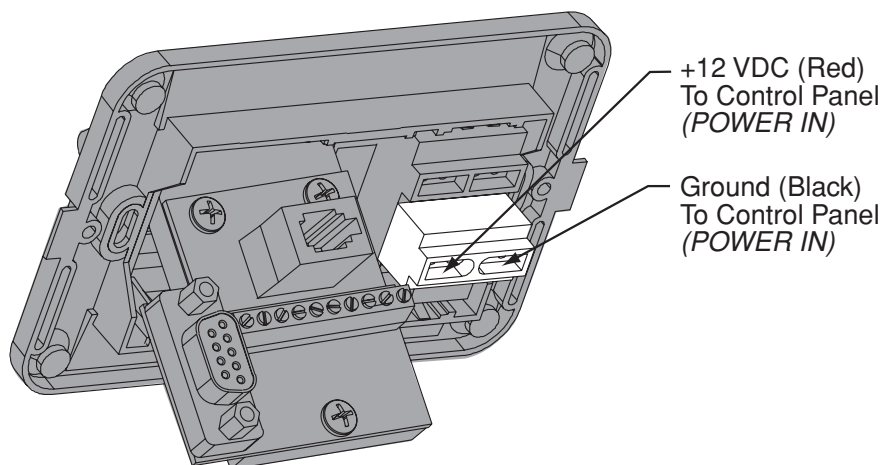
Alternatively, if the TracVision system is powered from a circuit breaker, you could wire the control panel power wires to the same circuit.

**A, B, E, or F**

### TracVision 4/6/C3/L3/S3

1. Run a power cable from the control panel to the switchplate. See Table 2-1 on page 12 for recommended power cable specifications.
2. At the switchplate, connect the power cable wires to the switchplate's power output connectors as shown in Figure 2-22. *Do not remove the two other wires that are already connected; when you're done, you will have three wires connected to each power output connector.*

**Figure 2-22** Connecting Control Panel Power from Switchplate



3. At the control panel, first insert the power wires into the supplied power plug's (+) and (-) terminals. Secure the wires in place by tightening the plug's terminal screws. Tug gently to ensure that the connections are solid, and make certain that the wire insulation is not pinched in the connector.

---

**Figure 2-23** Power Plug



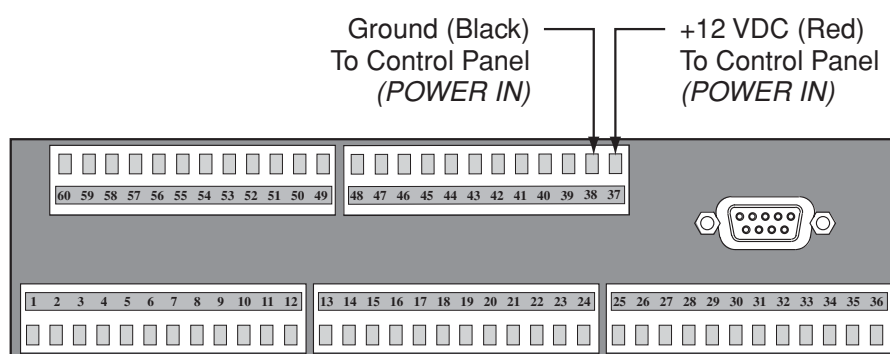
4. Plug the power connector plug into the "POWER IN" jack on the control panel (see Figure 2-10 on page 20). Secure in place with the two retaining screws.

C or D

## TracVision G4/G6

1. Run a power cable from the control panel to the ADCU. See Table 2-1 on page 12 for recommended power cable specifications.
2. At the ADCU, connect the power wires to the switchplate power output terminals as shown in Figure 2-24. *Do not remove the other wires that are already connected; when you're done, you will have two wires connected to each power output terminal.*

**Figure 2-24** Connecting Control Panel Power from ADCU



3. At the control panel, first insert the power wires into the supplied power plug's (+) and (-) terminals. Secure the wires in place by tightening the plug's terminal screws. Tug gently to ensure that the connections are solid, and make certain that the wire insulation is not pinched in the connector.

**Figure 2-25** Power Plug



4. Plug the power connector plug into the "POWER IN" jack on the control panel (see Figure 2-10 on page 20). Secure in place with the two retaining screws.

## 2.3 Mounting the Control Panel

Mount the control panel using either of the following options:

Option 1 - Velcro Fastening on a Horizontal Surface

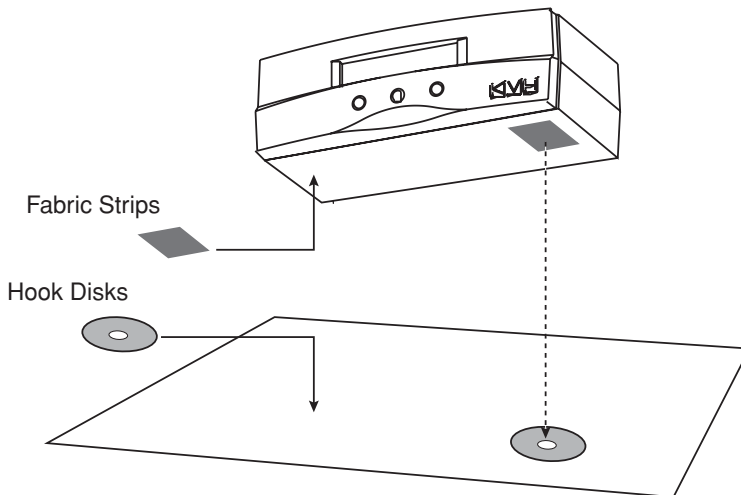
Option 2 - Flush Mounting

The following sections describe how to mount the control panel for both of these options.

### Option 1 - Velcro Fastening on a Horizontal Surface

1. Choose a location based upon the guidelines in “*Choosing the Best Location for the Control Panel*” on page 14.
2. Remove the two squares of Velcro fabric from the kitpack. Clean the bottom of the control panel housing with a mild detergent and water to remove oils, etc. Peel the protective backing from the Velcro squares and apply them to the bottom of the housing, one on each side.

**Figure 2-26** Mounting the Control Panel with Velcro

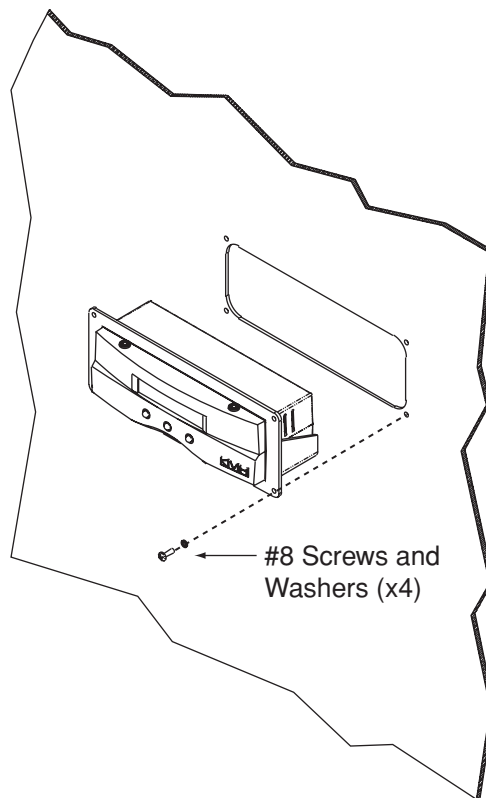


3. Position the two Velcro hook disks where the control panel will be mounted. Drill screw holes for the disks and secure in place with the #4-24 screws supplied in the kitpack.
4. Press the control panel firmly into place so that the loop material engages the hook disks.

## Option 2 - Flush Mounting

1. Choose a location based upon the guidelines in “*Choosing the Best Location for the Control Panel*” on page 14.
2. Using the template provided in *Appendix B on page 85* as a guide, mark a hole for the flush mount bracket. Cut the hole in the mounting surface and make certain the bracket and control panel will fit easily.
3. You should already have attached the flush mount bracket to the control panel (see page 19). Insert the control panel and bracket into the mounting hole and secure the unit to the mounting surface with the #8 screws and washers supplied in the kitpack.

**Figure 2-27** Flush Mounting the Control Panel



## 2.4 Upgrading the Antenna Software

The TracVision antenna must have the following Main board and RF board software revisions installed to be compatible with the HDTV converter:

**Table 2-5** Antenna Software Requirements

System Model	Main Board Software
TracVision 4, 6, G4, or G6	Rev. Y or later
TracVision C3, L3, or S3	Rev. N or later

RF Board Version	RF Board Software
RF4 or RF5	Version 8.8 or later

### **Step 1 - Download the KVH Flash Update Wizard**

To flash (*upload software to*) either board, you will need to have the latest version of the KVH Flash Update Wizard installed on your laptop PC. You can download the latest version for free from [www.kvh.com/wizard](http://www.kvh.com/wizard).

Once you've downloaded and installed the wizard, a shortcut will appear on your computer's desktop.



### **Step 2 - Read the Release Notes**

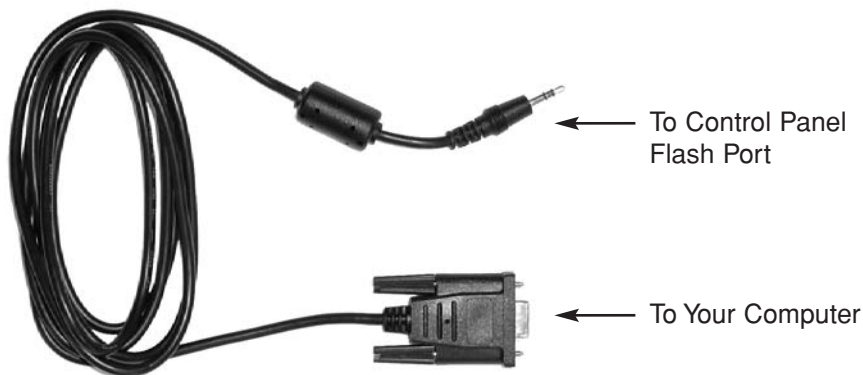
Be sure to read the Release Notes before using the Flash Update Wizard for the first time. The Release Notes contain important tips and compatibility information. (You can find the Release Notes from the Start menu at Programs>KVH>KVH Flash Update Wizard>Release Notes.)

### Step 3 - Flash the Main and/or RF Board

**IMPORTANT!** The flash process may take up to 30 minutes. Please make sure your computer's battery is sufficiently charged or is plugged into a stable power source, and be sure to turn off any power-saving mode or screensaver. Also, please ensure that the antenna is powered by a stable power source (not a battery).

1. Connect the DB9-female end of the flash adapter cable to your computer's DB9 serial COM port.

**Figure 2-28** Flash Adapter Cable



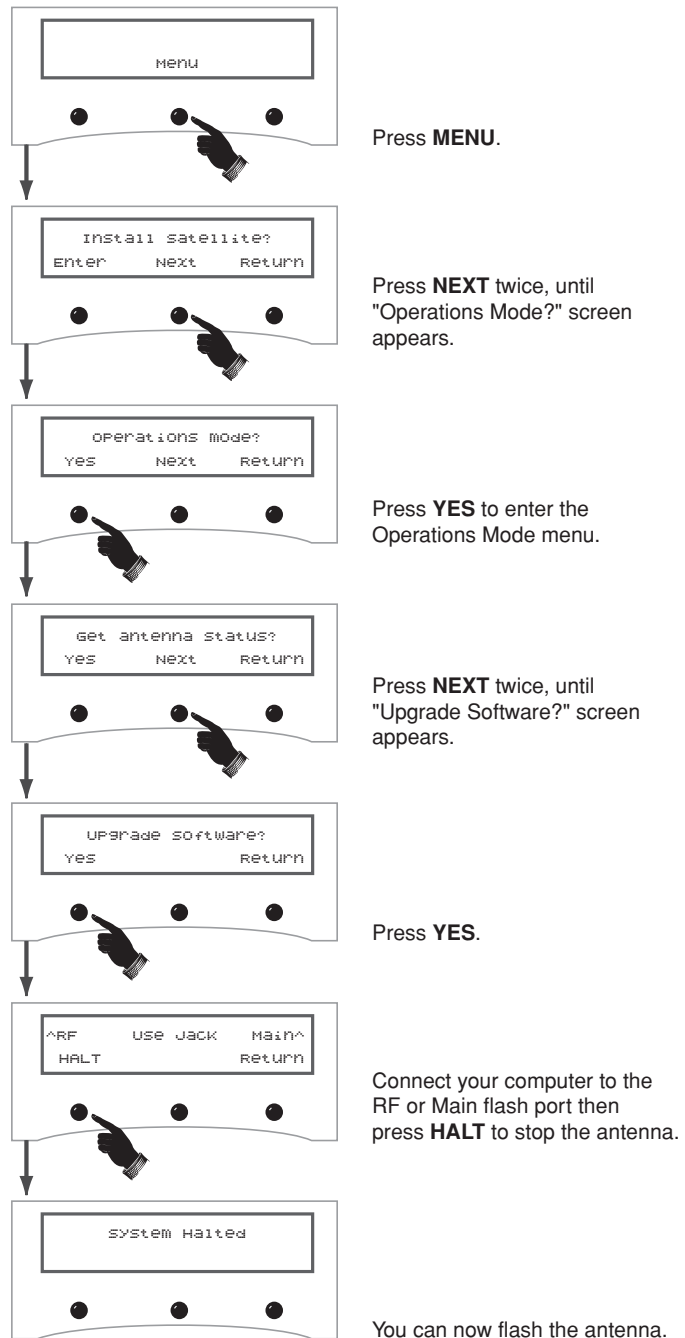
2. Turn on the TracVision antenna and control panel.
3. Wait two minutes for the antenna to initialize, then follow the process shown in Figure 2-29 on the following page.



If your computer does not have a DB9 serial COM port, you can use the following USB-to-RS232 adapter:

IOGear part number GUC232A  
(visit [www.iogear.com](http://www.iogear.com))

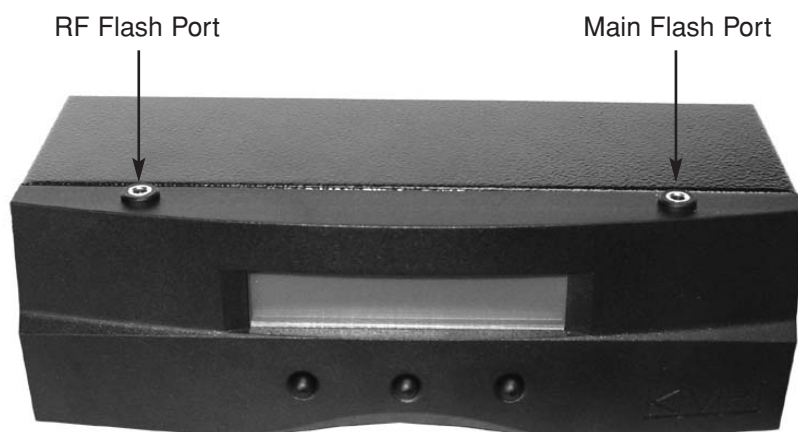
**Figure 2-29** *Preparing the Antenna for Flashing*



If you need to flash both boards, flash the RF board first.

4. Connect the stereo plug end of the flash adapter cable to the control panel's RF flash port (if you want to flash the RF board) or Main flash port (if you want to flash the Main board). Be sure to insert the stereo plug fully into the flash port, as shown in Figure 2-31.

**Figure 2-30** Control Panel Flash Ports



**Figure 2-31** Stereo Plug Fully Inserted into Flash Port



5. Double-click the "KVH Flash Update Wizard" shortcut on your computer's desktop to run the wizard and follow the onscreen instructions to flash either the RF board or main board.
6. Wait for the wizard to finish flashing. When it is finished, if you just flashed the RF board and need to flash the Main board, connect the flash adapter cable to the control panel's Main flash port and run the wizard again to flash the Main board.



## 2.5 Configuring the Antenna

Now that the antenna has the latest software installed, you need to configure the antenna to take full advantage of the system's new HDTV functionality.



For complete details about how to use the Sat Select modes, see Section 3, "Operation" on page 45.

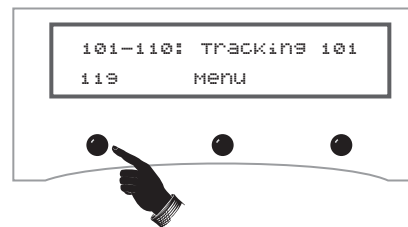
### Step 1 - Select TriSat Mode and Sat Select Mode

Follow the instructions on the following page to set up the antenna to track **three** DIRECTV satellites (located in orbital positions 101°W, 110°W, and 119°W) and to select either Automatic or Manual satellite switching. *The differences between these two Sat Select modes are noted below.*

#### Automatic Mode

In Automatic mode, the antenna automatically switches between a pair of satellites. The user can set the control panel to automatically switch between either the 101 and 110 satellites or the 101 and 119 satellites. *The control panel cannot be set to automatically switch between the 110 and 119 satellites.*

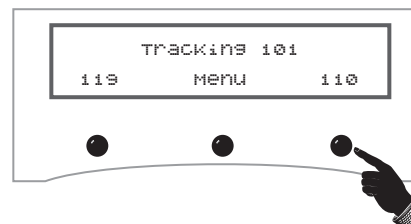
**Figure 2-32** Automatic Mode Main Display



#### Manual Mode

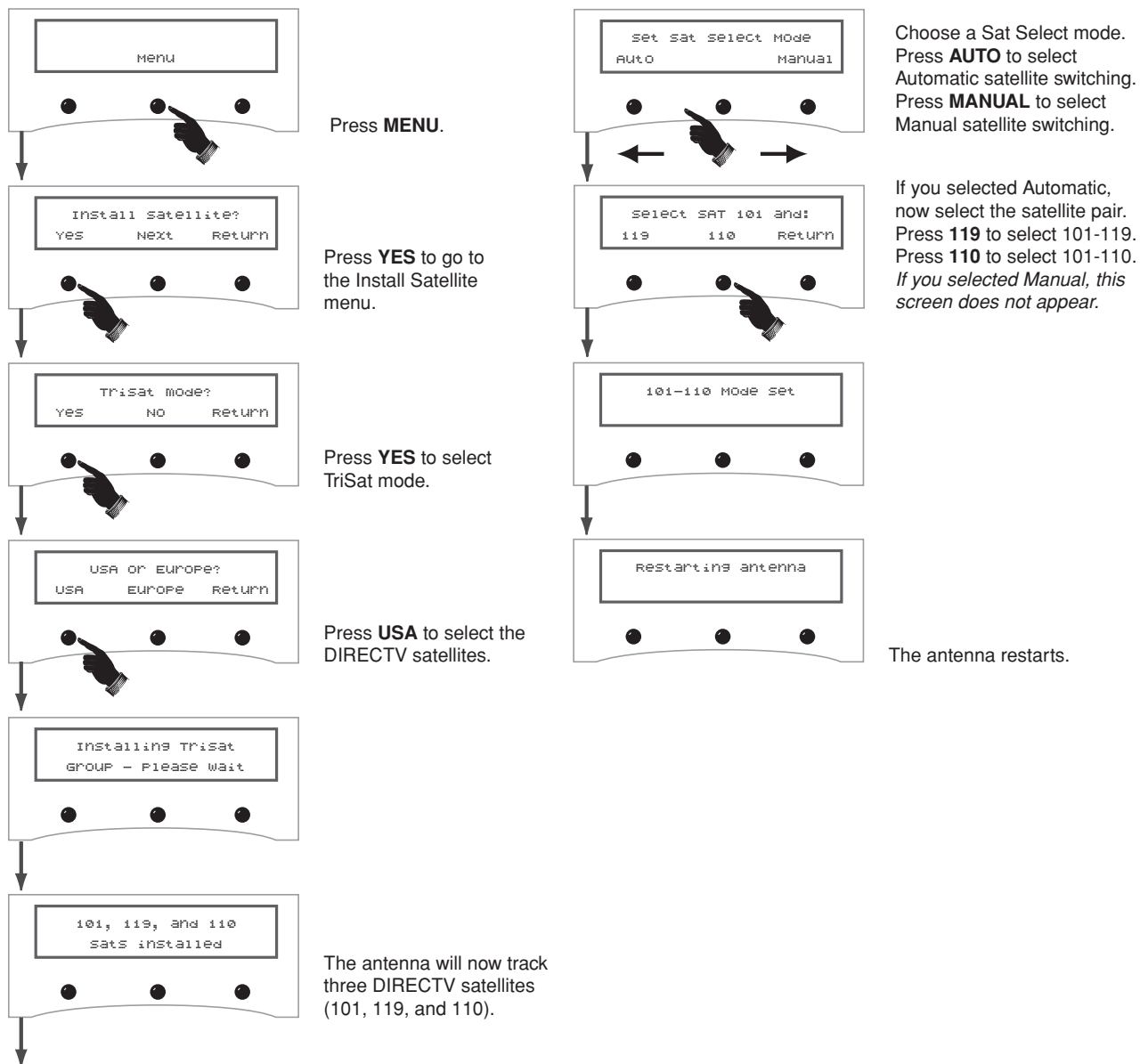
In Manual mode, the user presses a button on the control panel whenever he/she wants to switch satellites. The user can select between the 101, 110, and 119 satellites.

**Figure 2-33** Manual Mode Main Display



1. Turn on the TracVision antenna and control panel.
2. Wait two minutes for the antenna to initialize, then follow the process shown in Figure 2-34.

**Figure 2-34** Install TriSat and Choose Sat Select Mode Process



## Step 2 - Enter Your Position

The last thing you need to do to configure the antenna is enter the vessel's/vehicle's approximate position. The antenna will use this data to speed up satellite acquisition.

You can find your latitude and longitude from one of the following sources:

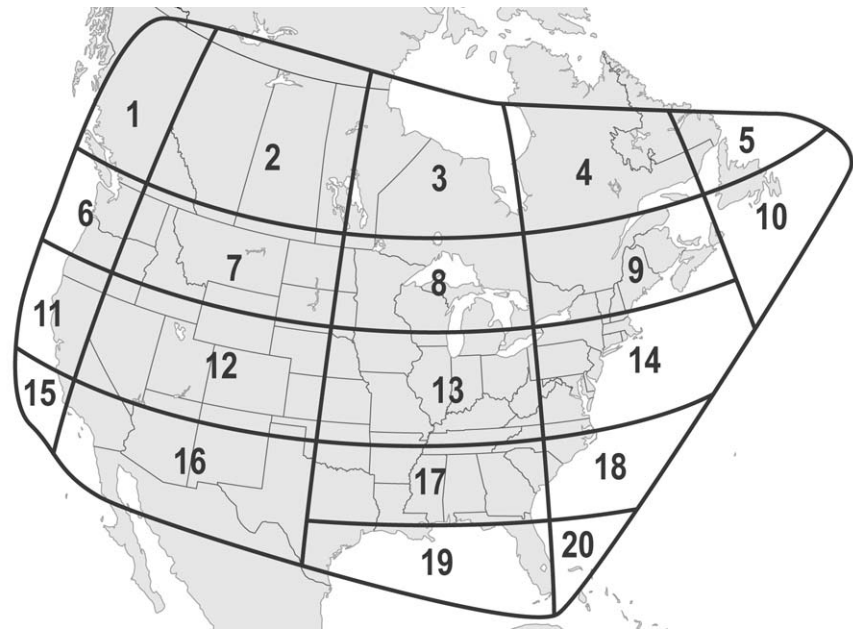
- GPS (Global Positioning System)
- An Internet resource
- Figure 2-35 divides North America into 20 sections; select your grid area then refer to the approximate latitude and longitude provided in Table 2-6.

**Table 2-6**

*Approximate Latitude/Longitude*

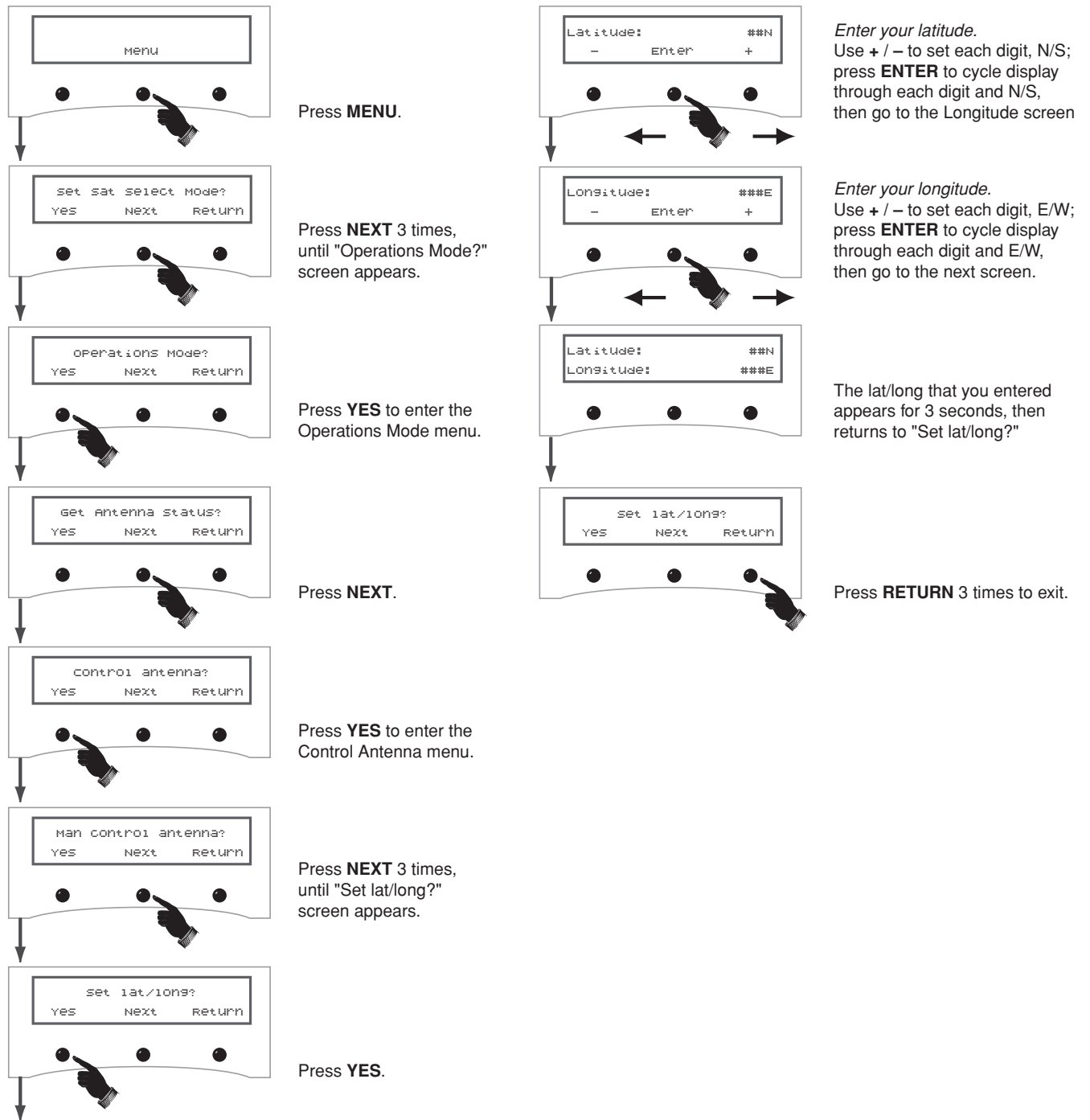
Grid #	Latitude	Longitude
1	55°N	125°W
2	55°N	110°W
3	55°N	90°W
4	55°N	70°W
5	55°N	55°W
6	45°N	125°W
7	45°N	110°W
8	45°N	90°W
9	45°N	70°W
10	45°N	50°W
11	40°N	125°W
12	40°N	110°W
13	40°N	90°W
14	40°N	70°W
15	32°N	125°W
16	32°N	110°W
17	32°N	90°W
18	32°N	75°W
19	27°N	83°W
20	27°N	78°W

**Figure 2-35** *Position Grid*



Follow the process shown in Figure 2-36 on the following page to enter the vessel's/vehicle's latitude and longitude.

**Figure 2-36** Entering Latitude/Longitude Process



## 2.6 Configuring the HD Receiver

Before the user can start enjoying high-definition programming, the DIRECTV® HD receiver must be configured for an “Oval, 3 LNB” dish type and must be activated for HDTV service.

### Changing the Receiver’s Dish Type Setting

To receive channels from the three DIRECTV satellites (101, 119, and 110), the receiver needs to be configured for an “Oval, 3 LNB” dish (antenna) type. Since each receiver model is different, refer to the receiver’s User’s Manual for details on viewing and changing the receiver’s Dish Type setting.

### Activating DIRECTV HDTV Service

The receiver will not be able to decode HD channels until it is activated. KVH makes it easy to activate. Just call KVH’s Activation Department at:

**1-888-584-4163**

(Monday-Friday, 8:30 am - 5:00 pm ET)

High-definition channels are not included with the basic DIRECTV package; the user needs to request that these special channels be added to the programming package. Premium HD channels, such as HBO HD, must be ordered separately.

## 2.7 Installation Checklist

Congratulations! You've completed the HDTV converter installation!

Before you test the system, please make certain that you have completed the following important steps:

Step	Page #	Done?
If you cut an RF cable, you used an Augat tool to attach an F-connector.	13	<input type="checkbox"/>
You wired the HDTV converter, splitter, and control panel correctly, according to the wiring diagram for your configuration in <i>Appendix C on page 87</i> .	14	<input type="checkbox"/>
You powered the control panel from the antenna's switchplate or ADCU power output.	29	<input type="checkbox"/>
You mounted the control panel in a dry location accessible to the user.	32	<input type="checkbox"/>
You upgraded the antenna's software using the latest version of the Flash Update Wizard.	34	<input type="checkbox"/>
You configured the antenna for TriSat mode.	38	<input type="checkbox"/>
You entered the vessel's/vehicle's position into the antenna.	40	<input type="checkbox"/>
You configured the receiver for "Oval, 3 LNB" dish type.	42	<input type="checkbox"/>
The user activated the receiver for HDTV service.	42	<input type="checkbox"/>

## 2.8 Testing the System

Now all you need to do is turn the system on and ensure everything works properly. Follow the steps below to test the HDTV-equipped TracVision system.

1. Ensure that the antenna has a clear view of all three DIRECTV satellites. The antenna requires an unobstructed view of the sky to receive satellite TV signals. Trees, buildings, bridges, and other equipment on the vessel/vehicle can block the signal.
2. Turn on the receiver(s) and TV(s).
3. Turn on the TracVision antenna and control panel. *If you wired the control panel power to the switchplate or ADCU, the control panel should power up at the same time you turn on the antenna.*
4. Within a few minutes, a picture should appear on the TV (*please be patient - it may take more than 20 minutes for the receiver to download the entire Program Guide*). If you configured the antenna for TriSat mode, try switching to the other two satellites and verify that the antenna receives programming from all three satellites. For details on how to switch to the other satellites, see *Section 3.4, "Switching Satellites in TriSat Mode" on page 48*.
5. When you have finished testing, shut down the system.



*The receiver loads the channel listings for the 101 satellite first. Then the receiver loads the channel listings for the other two satellites. **You cannot select a channel until it has been loaded in the Program Guide.***

# 3 — Operation

This section explains how to use the control panel and switch satellites while in the TriSat mode.

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3.1	Turning On the System .....	47
3.2	Using the Control Panel .....	47
3.3	TriSat Mode .....	48
3.4	Switching Satellites in TriSat Mode .....	48
3.5	How to Tell If You're On the Wrong Satellite .....	52
3.6	A Note About HDTV Programming .....	52

## 3.1 Turning On the System

If the installer wired the control panel's power to the TracVision antenna's switchplate or ADCU, the control panel will power on or off at the same time you turn the antenna on or off.

### A Note About DIRECTV Receiver Startup

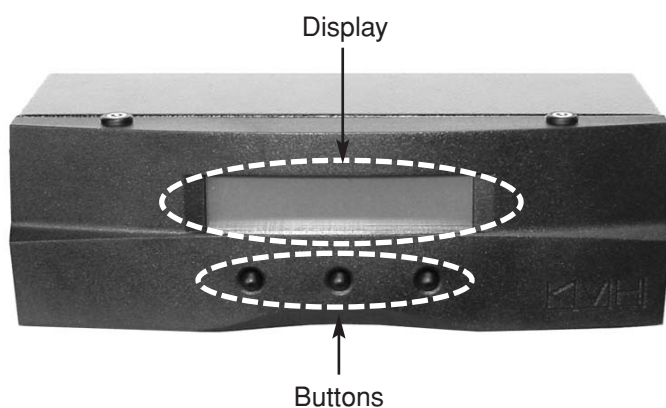
Whenever you turn on the receiver, it needs to download the Program Guide from the 101 satellite. Be sure the antenna is tracking the 101 satellite whenever you reboot the receiver.

Please be patient during this process – it may take more than 20 minutes for the receiver to load the entire Program Guide, which lists channels available on every DIRECTV satellite. **You cannot select a channel until it has been loaded in the Program Guide.**

## 3.2 Using the Control Panel

You can use the control panel to easily control and monitor all TracVision operations. An LCD display shows status messages and three buttons enable you to perform basic menu-driven tasks.

**Figure 3-1** Control Panel Display and Buttons



During normal operation, you should only need to use the control panel occasionally when switching satellites. This "Operation" section explains how to switch satellites while in TriSat mode. For a description of all other functions available through the control panel menus, refer to the quick reference guide on the inside front cover and Section 4, "Control Panel Menu Functions" on page 53.



*For general antenna operation information, refer to the TracVision antenna's User's Guide or Owner's Manual.*



*The receiver loads the channel listings for the 101 satellite first. Then the receiver loads the channel listings for the other satellites.*

## 3.3 TriSat Mode

When the antenna is set to TriSat mode, you can watch satellite TV programming from one of **three** DIRECTV satellites:

- **101** (*DSS\_101 located at 101°W*)
- **110** (*DSS\_110 located at 110°W*)
- **119** (*DSS\_119 located at 119°W*)

Whenever you select the 110 satellite, the HDTV converter goes to work behind the scenes, altering the frequency of the satellite signal so that the receiver is able to decode it and deliver its high-definition programming.

If the installer did not configure your TracVision antenna for TriSat mode, follow the steps in *Section 2.5, "Configuring the Antenna"* on page 38.

## 3.4 Switching Satellites in TriSat Mode

When the antenna is set to TriSat mode, you can choose between two methods of satellite switching: Automatic or Manual. The following sections explain how to use each mode and how to select the desired mode from the control panel.

### Automatic Mode

In Automatic mode, you can watch channels from two satellites without ever needing to touch the control panel. Simply use the master receiver's remote control to select a channel that's carried on the second satellite, and the antenna automatically switches to that satellite and receives the programming for that channel.

Since the antenna tracks three DIRECTV satellites, you can select between two satellite pairs for automatic switching:

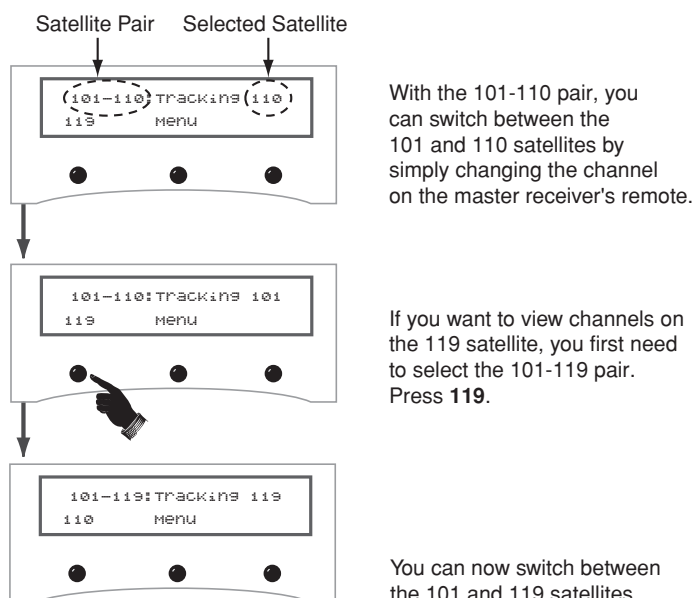
**101 and 119**

**101 and 110**

To switch to the other satellite pair, follow the simple process shown in Figure 3-2 on the following page.



*The control panel cannot switch automatically between the 119 and 110 satellites.*

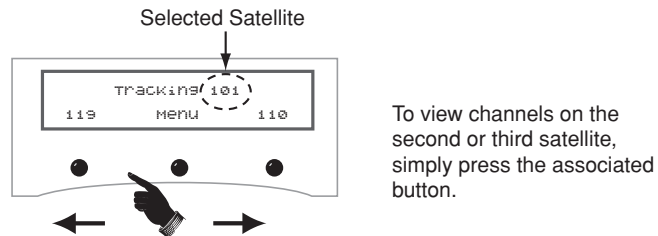
**Figure 3-2** *Selecting Satellites in Automatic Mode***An Example of Satellite Switching in Automatic Mode**

1. Chris has just finished watching a news channel on the 101 satellite and wants to watch a football game on an HD channel carried on the 110 satellite. Since the control panel is set to the 101-110 satellite pair, he simply selects the sports channel on the receiver's remote control.
2. The TracVision antenna automatically switches to the 110 satellite and Chris watches his favorite team in high-definition.
3. Once the game is over, he decides to watch a comedy show that is broadcast on the 119 satellite. Chris selects the channel on the remote control, but the show does not display on the TV.
4. Realizing that he is still in the 101-110 mode, he presses the **119** button on the TracVision control panel to switch to the 101-119 satellite pair. The TracVision antenna locks onto the 119 satellite and the comedy show appears on the TV.
5. His body aching from laughing so hard, Chris uses the receiver's remote control to select a documentary channel on the 101 satellite.
6. The TracVision antenna automatically switches to the 101 satellite and the award-winning documentary "The History of Paper" appears on the TV. Chris slowly drifts off to sleep.

## Manual Mode

In Manual mode, you need to press a single button on the control panel whenever you need to switch to another satellite.

**Figure 3-3** Satellite Switching in Manual Mode



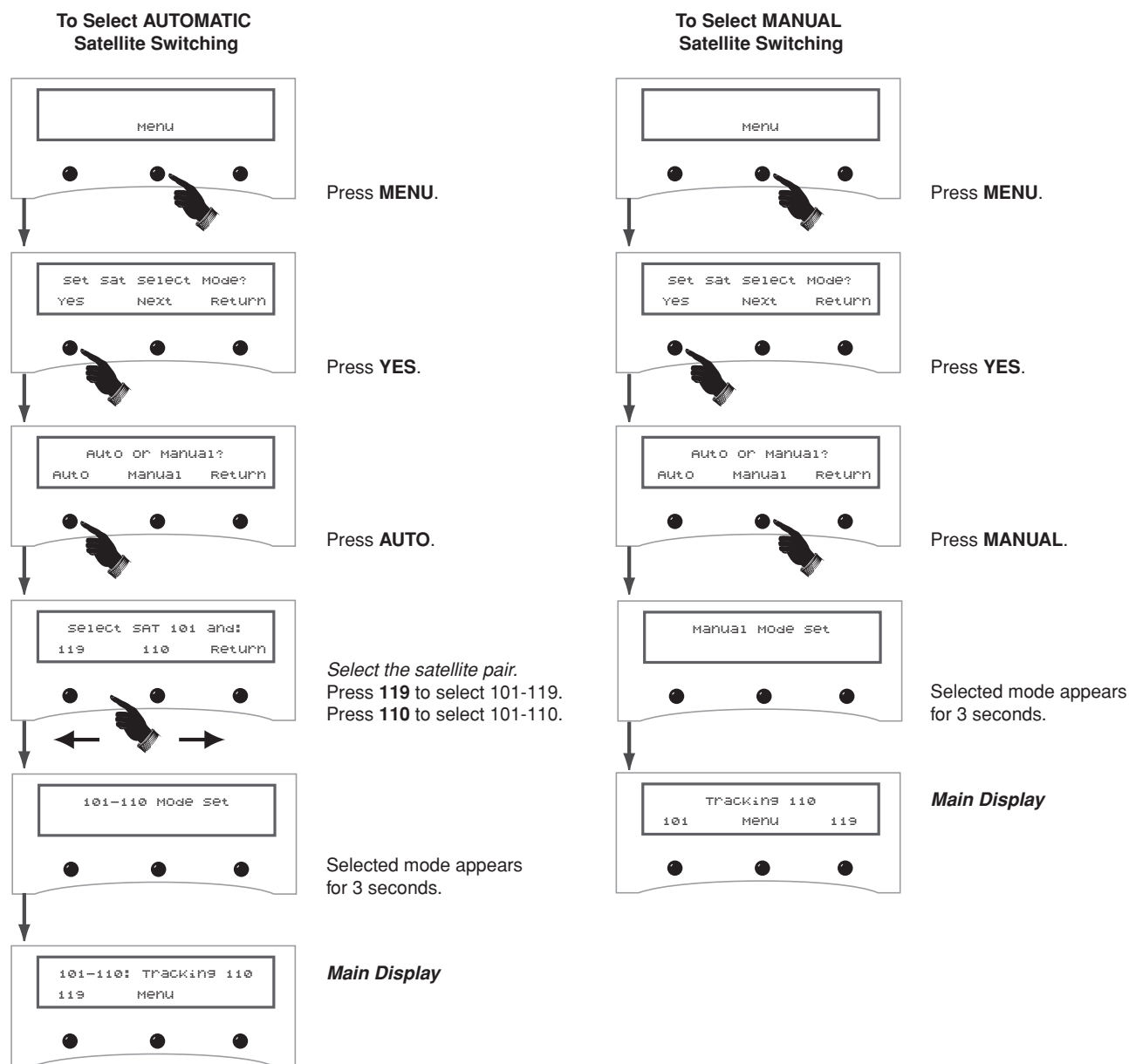
### An Example of Satellite Switching in Manual Mode

1. Nancy has just finished watching a political debate broadcast on the 101 satellite. Now she wants to watch a movie on an HD channel carried on the 110 satellite. She simply selects the movie channel on the receiver's remote control and presses the **110** button on the control panel.
2. The TracVision antenna switches to the 110 satellite and Nancy enjoys an exciting film in high-definition.
3. Once the movie is over, she decides to watch the late local news broadcast on the 119 satellite. Nancy selects the channel on the receiver's remote control, but instead of the news, a music video appears on the TV.
4. Realizing that the antenna is still tracking the 110 satellite, she presses the **119** button on the control panel.
5. The TracVision antenna switches to the 119 satellite and the correct program appears on the TV. Nancy falls asleep to the soothing tones of her favorite news anchor.

## Selecting a Sat Select Mode

To select either Automatic or Manual satellite switching, follow the appropriate process shown in Figure 3-4.

**Figure 3-4** Set Sat Select Mode





*For your convenience, KVH provides a list of HDTV channels, and the DIRECTV satellites that carry them, on our web site at [www.kvh.com/HDlineup](http://www.kvh.com/HDlineup). Since DIRECTV changes its channel lineups frequently, KVH can e-mail updates to you whenever the HDTV lineup changes. Register for this free service when you visit the web site for the first time.*

## 3.5 How to Tell If You're On the Wrong Satellite

As mentioned previously, you can watch TV channels from three DIRECTV satellites: 101, 110, and 119. But since the Program Guide lists all of the DIRECTV channels together and does not indicate what channel is on what satellite, how do you know which satellite is carrying the channel you want to watch?

Different receiver models behave differently. However, there are generally four ways to tell if the channel you've selected is carried on a different satellite:

1. The wrong programming appears on the TV
2. "Channel Not Available" appears on the TV
3. "Buy Now" appears on the TV
4. "Program Not Available in this Area" appears on the TV

If one of these situations occurs, try switching to another satellite. If you are in Automatic mode, press the control panel button for the alternate satellite pair. If you are in Manual mode, press the button for the second or third satellite.

## 3.6 A Note About HDTV Programming

If you are unable to receive high-definition channels on your HD receiver, your receiver may not be activated for HDTV service. High-definition channels are not included with the basic DIRECTV package; you need to request that these special channels be added to your programming package. Premium HD channels, such as HBO HD, must be ordered separately.

KVH can help you activate DIRECTV's HDTV service. Just call KVH's Activation Department at:

**1-888-584-4163**

(Monday-Friday, 8:30 am - 5:00 pm ET)

# 4 — Control Panel Menu Functions

This section explains the functions that are available through the control panel menus.

## Contents

4.1	The Main Menu .....	55
4.2	Setting Satellite Select Mode .....	56
4.3	Installing Satellites .....	57
4.4	Restarting the Antenna .....	59
4.5	Operations Mode .....	59



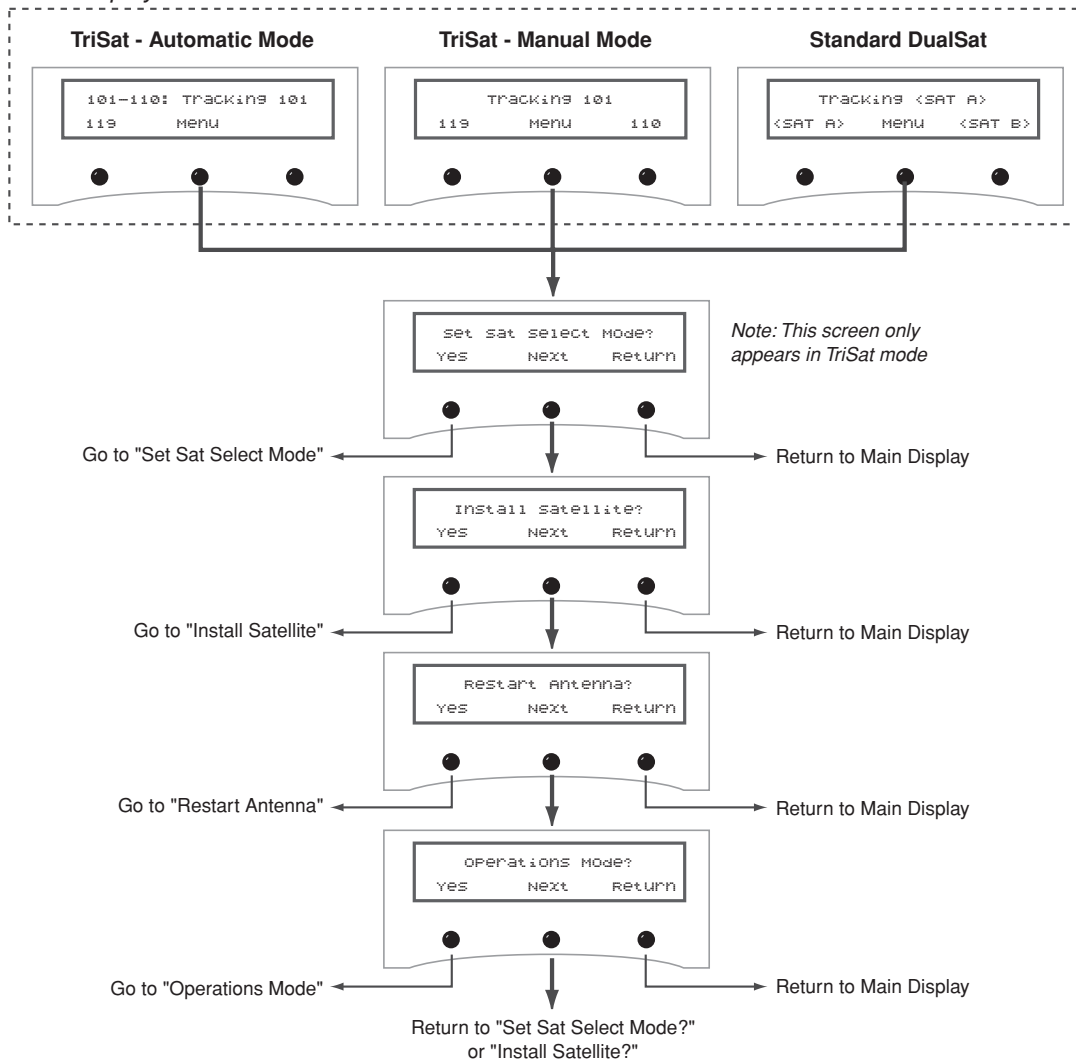
*A quick reference guide to the control panel menus is provided on the inside front cover of this manual.*

## 4.1 The Main Menu

Once the antenna has initialized, the control panel's main display indicates which satellite the antenna is currently tracking. To enter the main menu, press the center **MENU** button. Then press the **NEXT** button to scroll through the available main menu functions.

**Figure 4-1** Main Menu Functions

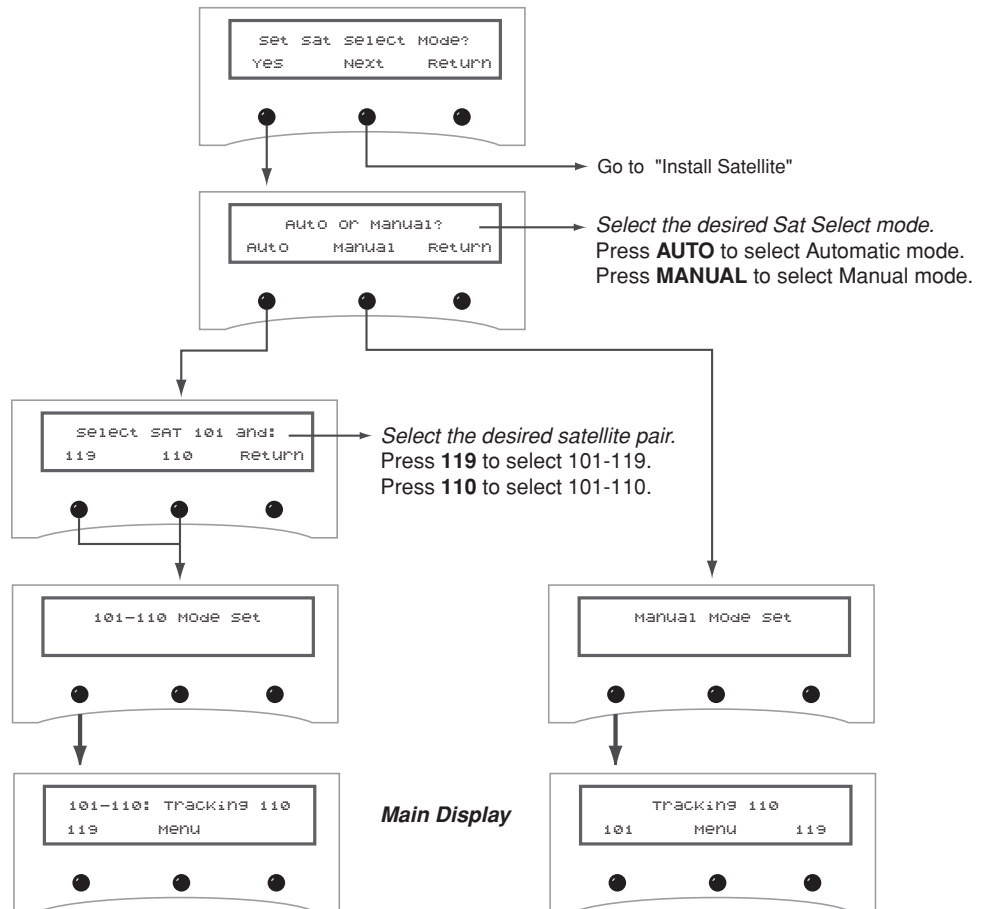
### Main Display - Three Variations



## 4.2 Setting Satellite Select Mode

When the antenna is set to TriSat mode, use this function to select between Automatic or Manual satellite switching. For complete details about the differences between these two modes, see Section 3.4, "Switching Satellites in TriSat Mode" on page 48.

**Figure 4-2** Set Satellite Select Mode



## 4.3 Installing Satellites

Use this function to select the satellites you want to track. You can program the antenna to track either the three DIRECTV satellites (located in orbital positions 101°W, 110°W, and 119°W) in TriSat mode or a pair of satellites of your choice.



*If you wish to track a satellite that is not listed in the table, refer to the TracVision antenna's Technical Manual or Owner's Manual for instructions on programming user-defined satellites.*

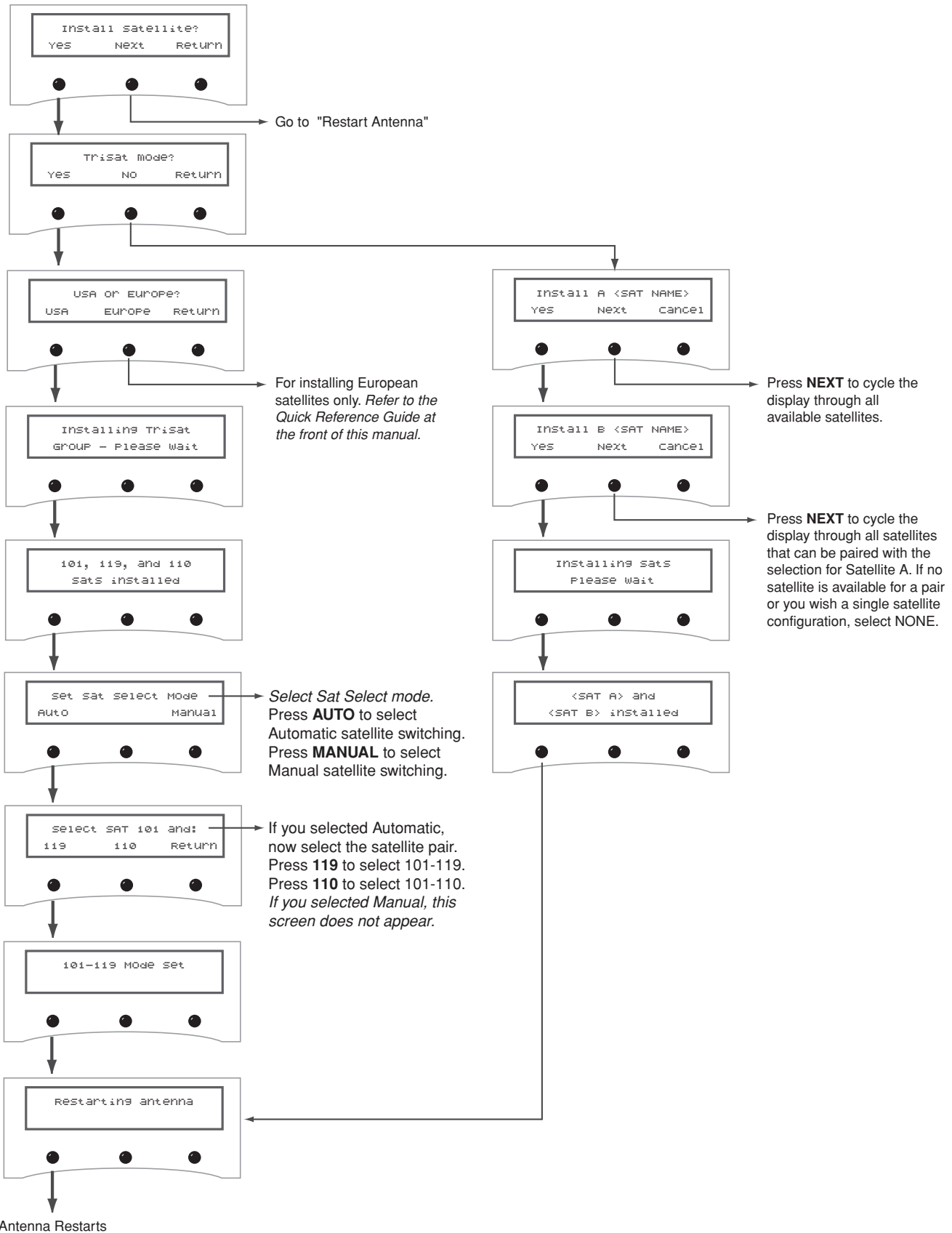
### Available Satellite Pairs in North America

If you do not wish to track the three DIRECTV satellites in TriSat mode, you can select any pair of satellites shown in Table 4-1 (a checkmark indicates a valid pair).

**Table 4-1** Valid Satellite Pairs in North America

	DSS_72	DSS_101	DSS_110	DSS_119	Echo_61	Echo_110	Echo_119	Echo_148	Expressvu	ExpressTV
DSS_72		✓							✓	✓
DSS_101	✓		✓	✓					✓	✓
DSS_110		✓								
DSS_119		✓							✓	✓
Echo_61						✓	✓		✓	✓
Echo_110					✓		✓	✓	✓	✓
Echo_119					✓	✓		✓	✓	✓
Echo_148						✓	✓		✓	✓
Expressvu	✓	✓		✓	✓	✓	✓	✓		✓
ExpressTV	✓	✓		✓	✓	✓	✓	✓	✓	

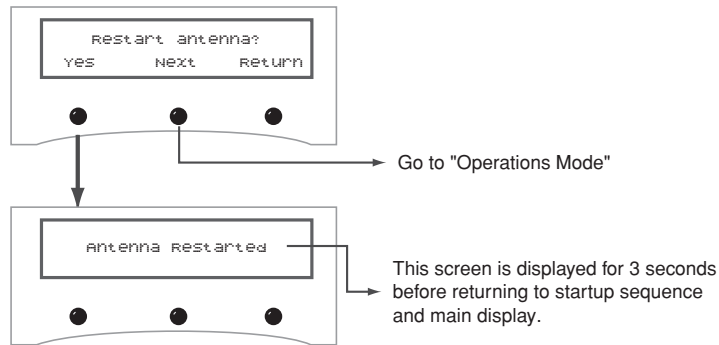
**Figure 4-3** Install Satellite



## 4.4 Restarting the Antenna

Use this function to restart the antenna. The antenna will re-initialize and reacquire the satellite.

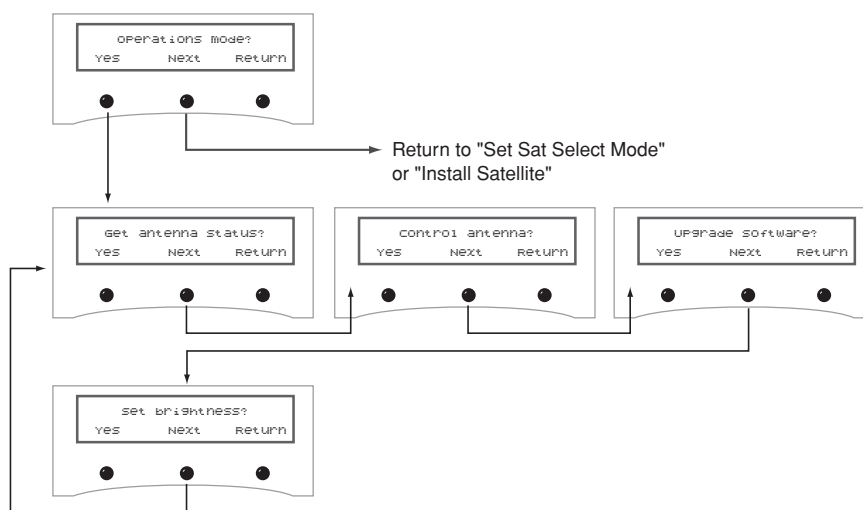
**Figure 4-4** Restart Antenna



## 4.5 Operations Mode

The Operations Mode sequence of menus allows you to view system information, perform various antenna functions, and set the display brightness. The following sections explain the uses of all these functions.

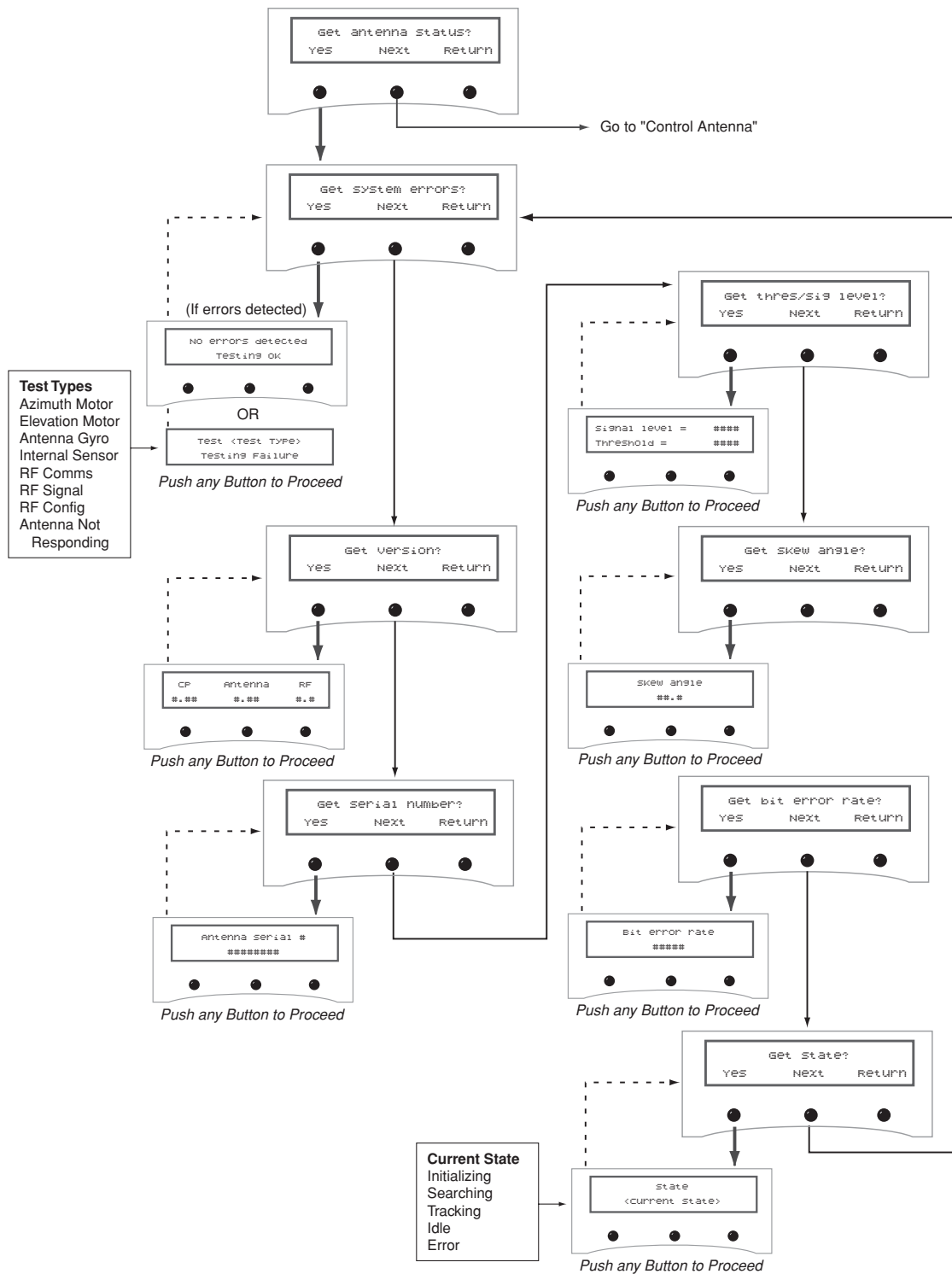
**Figure 4-5** Operations Mode Menu



## Viewing Antenna Status

The Get Antenna Status menu allows you to view errors, the software version, serial number, signal/noise levels, skew angle recommended, bit error rate, and the antenna's current state.

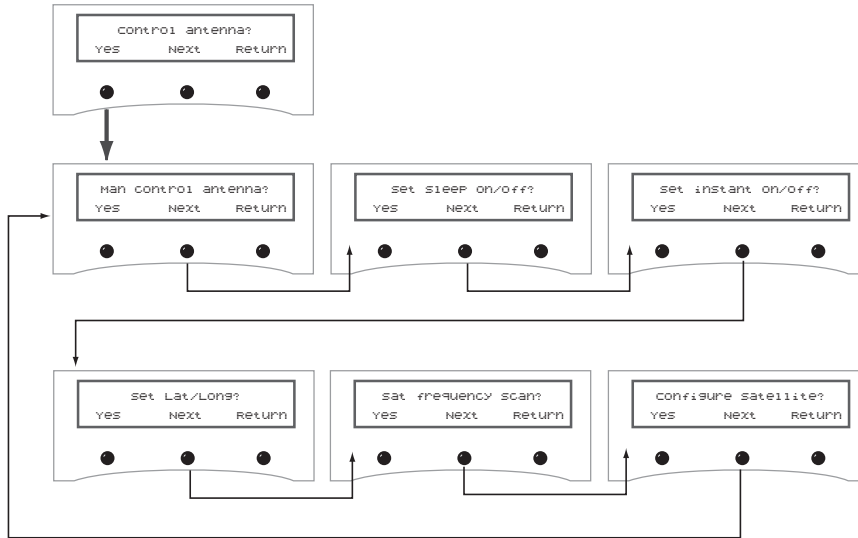
**Figure 4-6** Get Antenna Status Menu



## Control Antenna Menu

This menu allows you to adjust the antenna's azimuth and elevation manually, turn Sleep Mode on/off, turn Instant On Mode on/off, set the latitude and longitude, update satellite frequency data, and change satellite configuration settings.

**Figure 4-7** Control Antenna



## Manually Controlling the Antenna

Use this function to manually control the azimuth, elevation, and tracking of the TracVision antenna (*used in rare instances*). Wait until the antenna has fully initialized, then use the + and - buttons to manually move the dish. Azimuth measurements are reported as relative to the bearing of the front of the vessel/vehicle.

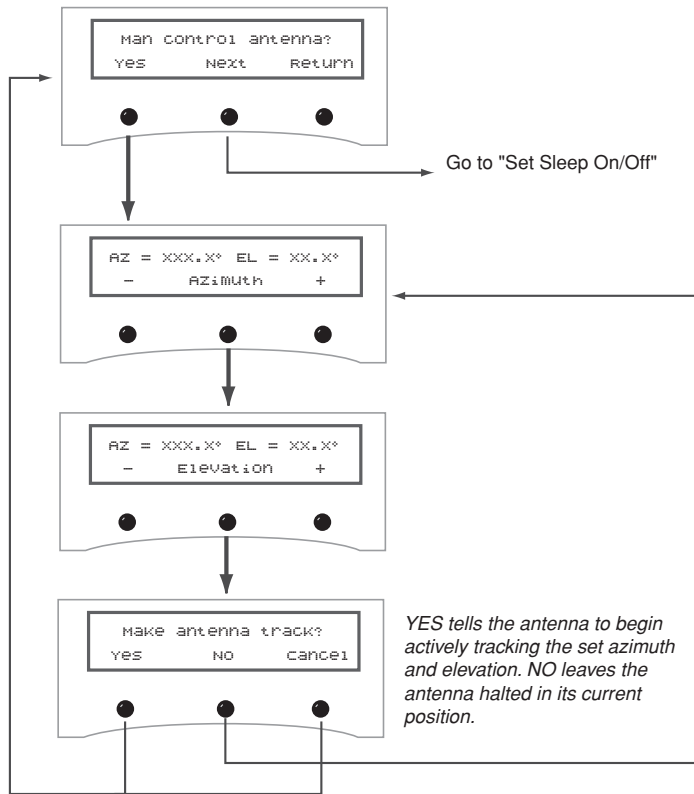
**Figure 4-8** Manual Control Antenna



Wait until the antenna has fully initialized before making manual adjustments.



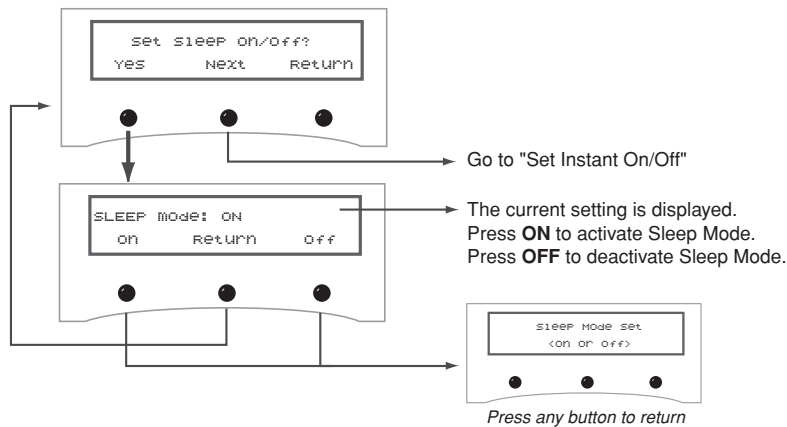
If the manual adjustment of the antenna reached the maximum rotation (720°), the antenna will rotate 360° and return to the Manual Control Antenna screens.



## Turning Sleep Mode On/Off

Use this function to turn Sleep Mode ON or OFF. Sleep Mode turns off satellite tracking if the antenna holds the same position for one minute. As soon as the vessel/vehicle moves, the system will automatically begin tracking the satellite again. The factory default setting for Sleep Mode is ON.

**Figure 4-9** Set Sleep Mode On/Off



## Turning Instant On Mode On/Off

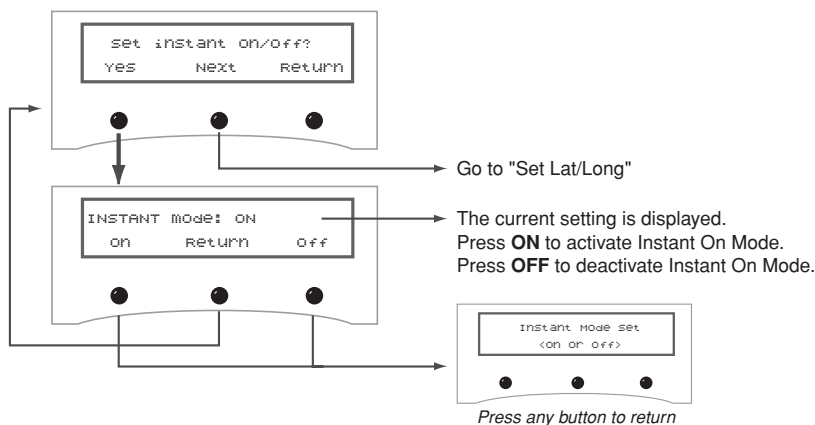
Use this function to turn Instant On Mode ON or OFF. Instant On allows the antenna to immediately receive a TV signal if the vessel/vehicle has not moved since the antenna was last shut off. If the vessel/vehicle moves after acquiring the satellite via Instant On, the antenna will perform its standard initialization process, resulting in a brief interruption of the TV signal. The factory default setting for Instant On Mode is OFF.



**(TracVision G4/G6 only)**

*Instant On Mode will not activate if the antenna's elevation angle is greater than 45°.*

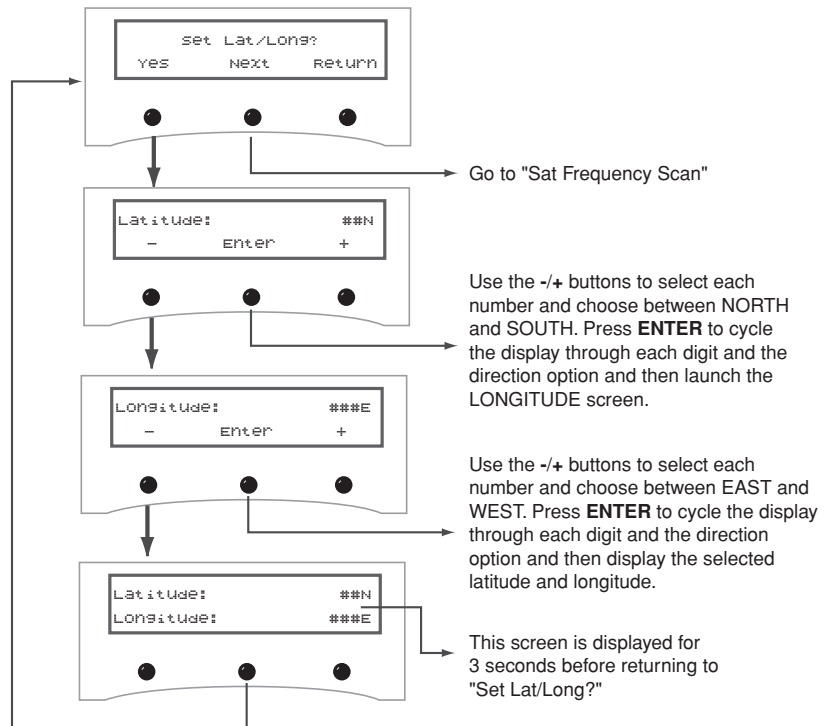
**Figure 4-10** Set Instant On Mode On/Off



## Setting Latitude and Longitude

As explained in *Section 2.5, "Configuring the Antenna"* on page 38, the antenna will find the satellite faster if it knows approximately where it is located. Use this function to enter your vessel's/ vehicle's latitude and longitude.

**Figure 4-11** Set Latitude/Longitude



## Updating Satellite Frequency Data

*This function is available only with TracVision 4/G4/G6/G6.*

If the antenna is unable to find a satellite, the satellite's frequency data may have changed. The Satellite Frequency Scan feature allows you to update the frequency data of any satellite stored in the system's library.

**This function should NOT be used unless directed by KVH Technical Support or a KVH-authorized technician.**

With the desired satellite, band, and polarization selected, the system will automatically search for the frequency with the strongest signal. The system will then update that satellite's programmed data with the new frequency (and associated network ID) and store it in the satellite library.

To update the satellite frequency data, follow the steps below:

1. Place your receiver in the satellite signal meter mode.
2. Select the desired satellite on the control panel.  
*Ensure the TV signal meter indicates that you have a strong signal.*

If the antenna is unable to find the selected satellite automatically, you can manually point the antenna (see "Manually Controlling the Antenna" on page 62).

3. Select the desired polarization and band on the receiver.
4. **Do not move the vessel.** It must remain motionless during the entire Satellite Frequency Scan process.
5. Follow the control panel menus on the next page. The scan itself will take a couple of minutes. Once complete, restart the antenna and ensure the antenna will track the new frequency.



**Do NOT** use this function unless directed by KVH Technical Support or a KVH-authorized technician. Improper data selection may affect the system's operation.

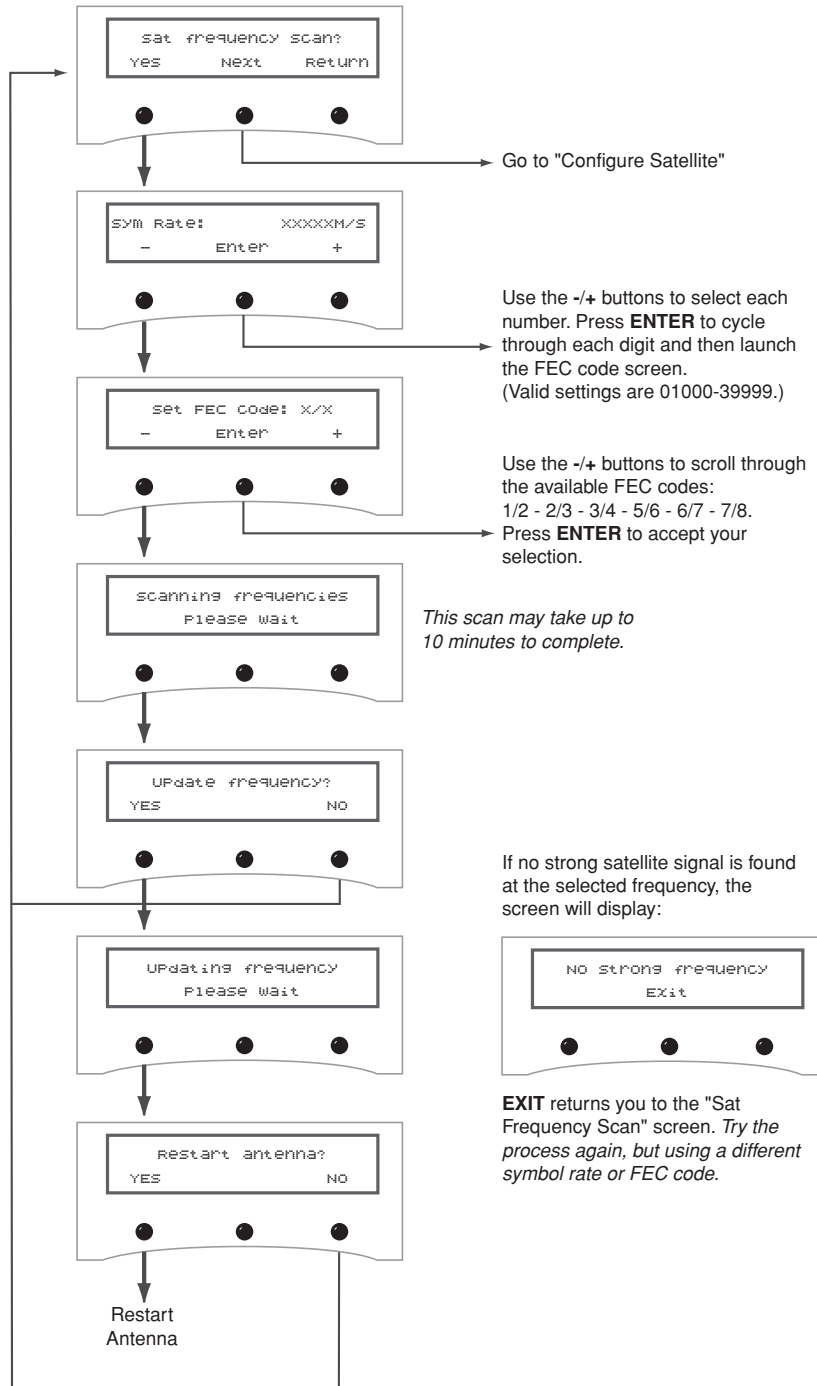


To find a valid symbol rate and FEC code, refer to an up-to-date satellite information table. Data for satellites stored in the antenna's library is available for download at [www.kvh.com/footprint](http://www.kvh.com/footprint). For other satellites, you might refer to an Internet resource such as [www.lyngsat.com](http://www.lyngsat.com) or [www.satcodx.com](http://www.satcodx.com) (these sites are not managed by KVH).



The vessel must remain stationary during this process.

**Figure 4-12** Satellite Frequency Scan



## Configuring Satellite Settings

*This function is available only with TracVision 4/G4/6/G6.*

Use this function to change the configuration settings for your installed satellites. For each polarization, you can change the following settings:

- **Frequency**  
(either 00000 or a number between 10700 - 12700 MHz)
- **Symbol Rate**  
(01000 - 45000 Mbit/sec)
- **FEC Code**  
(1/2, 2/3, 3/4, 5/6, 6/7, or 7/8)
- **Satellite Network ID**  
(0x0000 - 0xffff hex)



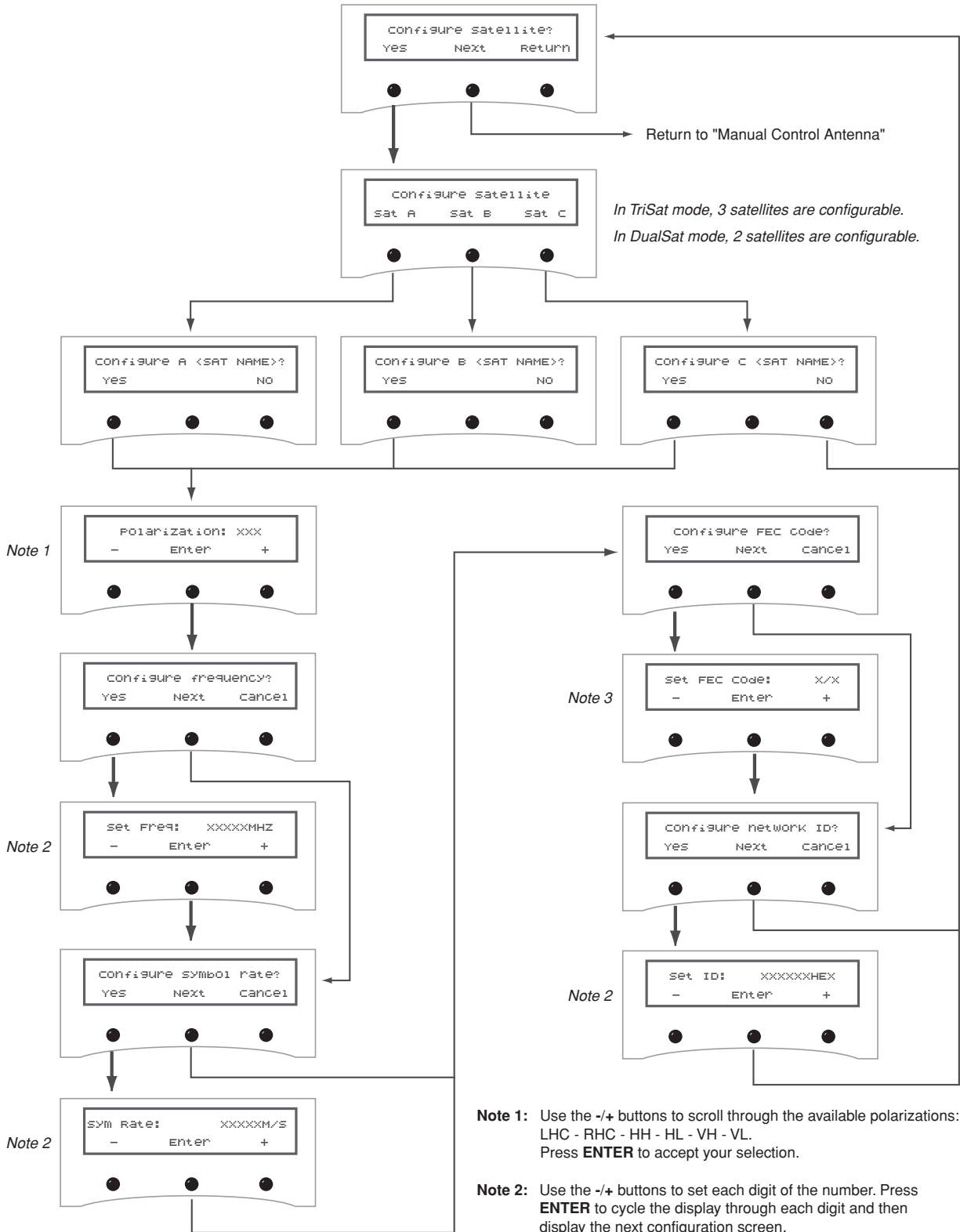
*North American satellites have two polarizations:*

- *Left-hand Circular (LHC)*
- *Right-hand Circular (RHC)*

*European satellites have four polarizations:*

- *Horizontal High (HH)*
- *Horizontal Low (HL)*
- *Vertical High (VH)*
- *Vertical Low (VL)*

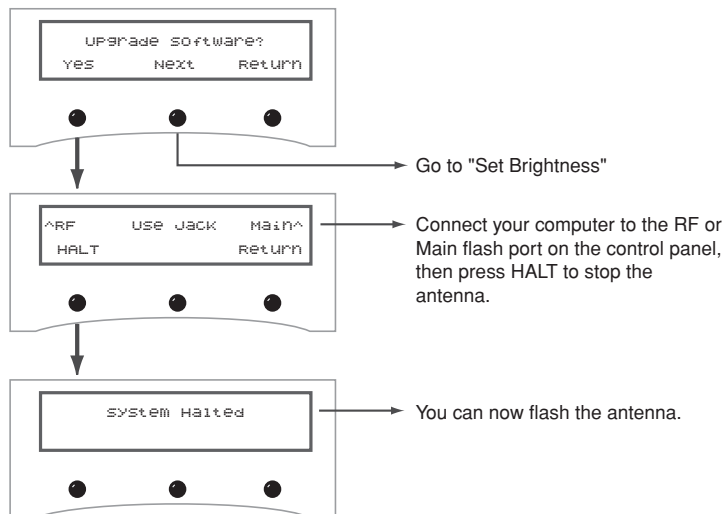
**Figure 4-13** Configure Satellite



## Upgrading Software

As explained in *Section 2.4, "Upgrading the Antenna Software"* on page 34, you can upgrade the antenna software by flashing the RF and Main boards via the control panel. Before you begin flashing, use this function to HALT (stop) the antenna.

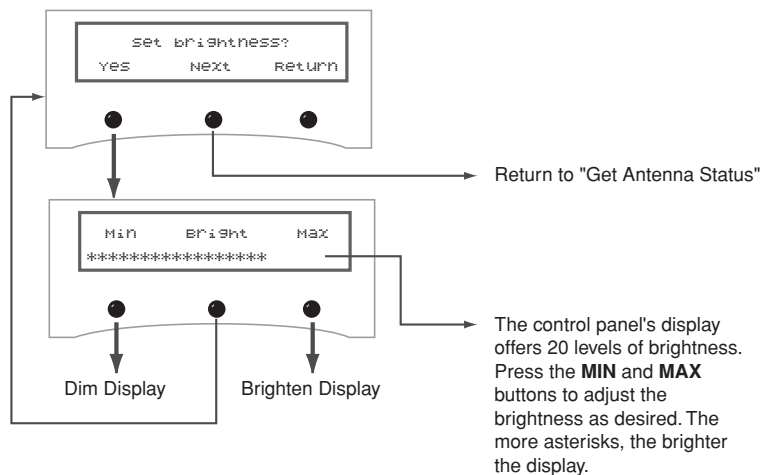
**Figure 4-14** Upgrade Software



## Setting Display Brightness

Use this function to adjust the brightness of the control panel display.

**Figure 4-15** Set Brightness



# 5 — Troubleshooting

This section identifies basic trouble symptoms and lists their possible causes and solutions.

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5.1	Troubleshooting Matrix .....	73
5.2	Causes and Remedies for Common Operational Issues .....	74
5.3	Receiver Troubleshooting .....	77
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*This section provides troubleshooting information that is specific to the HDTV converter system and DIRECTV HDTV service. For information on troubleshooting the TracVision antenna, refer to the antenna's Technical Manual or Owner's Manual.*

# 5.1 Troubleshooting Matrix

The troubleshooting matrix shown in Table 5-1 identifies some trouble symptoms, their possible causes, and references to troubleshooting solutions.

**Table 5-1**  
Troubleshooting Matrix

SYMPTOM	Section 5.2											
	POSSIBLE CAUSE (AND SOLUTION)											
	Wiring problem	Antenna powered off	Antenna tracking wrong satellite	Receiver not activated for DIRECTV HDTV service	Program Guide not fully loaded at startup	Satellite signal blocked	Weak satellite coverage issue	Receiver lost satellite signal	Antenna not configured properly	Receiver set to Manual mode	Inaccurate position information	Receiver faulty (Section 5.3)
System non-functional	X	X										X
"Channel Not Available" message on TV			X	X	X							
Wrong programming shown on selected channel			X									
"Searching for Satellite Signal" message on TV	X	X	X			X	X	X				X
Certain channels do not work				X	X			X	X			
Antenna not switching satellites automatically	X				X				X	X		
Program Guide does not load	X	X	X			X						X
Only Preview channels (100, 201) are viewable				X							X	
Intermittent picture for short intervals	X					X	X	X				X
Channels on 110 satellite not viewable; others OK						X	X	X				
Snowy television picture	X											X
"Antenna Not Responding" message on control panel	X	X										

## 5.2 Causes and Remedies for Common Operational Issues

There are a number of common issues that can affect the operation of the TracVision HDTV converter system. The following sections address these issues and potential solutions.

### Wiring Problem

If the HDTV components are not wired correctly, the system will not work. Using the appropriate diagram from *Appendix C on page 87*, verify that your system is wired properly.

### Antenna Powered Off

The TracVision antenna must be turned on for the system to work. If the system is entirely non-functional, check the switchplate's power switch or the circuit breaker to ensure that the antenna is turned on.



For your convenience, KVH provides a list of HDTV channels, and the DIRECTV satellites that carry them, on our web site at [www.kvh.com/HDlineup](http://www.kvh.com/HDlineup). Since DIRECTV changes its channel lineups frequently, KVH can e-mail updates to you whenever the HDTV lineup changes. Register for this free service when you visit the web site for the first time.

### Antenna Tracking Wrong Satellite

If you select a channel on the receiver, but the wrong programming or no programming appears on the TV, that channel might be carried on a different satellite from the one the antenna is currently tracking. Try switching to another satellite.

For details on switching satellites in TriSat mode, see *Section 3.4, "Switching Satellites in TriSat Mode" on page 48*.

### Receiver Not Activated for DIRECTV HDTV Service

If you are unable to receive high-definition channels on your HD receiver, your receiver may not be activated for HDTV service. High-definition channels are not included with the basic DIRECTV package; you need to request that these special channels be added to your programming package. Premium HD channels, such as HBO HD, must be ordered separately. Call KVH's Activation Department at **888-584-4163** for complete details about activating HDTV service.

## Program Guide Not Fully Loaded At Startup

Whenever you reboot the receiver, the receiver needs to download the complete Program Guide from the 101 satellite. Therefore, be sure the antenna is tracking the 101 satellite whenever you reboot the receiver.

Please be patient during this process – it may take more than 20 minutes for the receiver to load the entire Program Guide, which lists channels available on every DIRECTV satellite. **You cannot select a channel until it has been loaded in the Program Guide.**



*The receiver loads the channel listings for the 101 satellite first. Then the receiver loads the channel listings for the other satellites.*

## Satellite Signal Blocked

Satellite signals can be blocked or degraded by buildings, trees, bridges, or equipment on the vessel/vehicle itself. Simply moving the vessel/vehicle to clear an external obstruction will restore signal quality. Heavy rain or snow can also affect satellite signal reception.

## Satellite Coverage Issue

Since the 110 satellite transmits TV signals at a lower power than the 101 and 119 satellites, the coverage area of the 110 satellite differs slightly from the 101 and 119 satellites. As you approach fringe coverage areas of the 110 satellite, signal quality will degrade while the signal quality on the 101 and 119 satellites may remain relatively strong.

For your convenience, KVH provides satellite coverage maps for the 101, 119, and 110 satellites at [www.kvh.com/footprint](http://www.kvh.com/footprint).

## Weak Satellite Signal

Just like radio stations, some satellite TV channels are transmitted at a stronger signal level than others. If you're unable to receive a clear signal on one channel, try switching to a stronger channel. Weaker channels are more vulnerable to interference, such as rain or snow.

## Receiver Not Configured Properly

To receive channels from the three DIRECTV satellites (101, 119, and 110), the receiver needs to be configured for an "Oval, 3 LNB" dish (antenna) type. Refer to your receiver User's Manual for details on viewing and changing the receiver's Dish Type setting.

## Antenna Set to Manual Mode

If your TracVision antenna does not automatically switch between satellites when you change channels on the receiver's remote control, the antenna might be set to Manual mode. In Manual mode, you need to press a button on the control panel to switch to the second or third satellite.

In Automatic mode, the antenna automatically switches between either the 101/119 satellites or the 101/110 satellites (it cannot automatically switch between the 119 and 110 satellites). All you need to do to switch between the paired satellites is select the desired channel on the remote control. For details on selecting and using the Automatic mode, see *Section 3.4, "Switching Satellites in TriSat Mode"* on page 48.

## Receiver Lost Activation Information

If you can only access the DIRECTV preview channels, such as channel 100, while all other channels show a message to call DIRECTV, and you have already activated the receiver, the receiver may have lost its stored activation data. This may occur if the receiver is left idle (does not receive a satellite signal) for 30 consecutive days. To fix this problem, please call DIRECTV customer service at 1-800-DIRECTV (347-3288). *Be sure the antenna system is turned on and the receiver is tuned to the DIRECTV preview channel before you call. The antenna will need to receive a signal from the satellite to correct the problem.*

## Inaccurate Position Information in Antenna

If the antenna is taking an unusually long time to find the satellite, the position information stored in the antenna might be considerably inaccurate. KVH recommends that you update the position information in the antenna whenever you've traveled more than 500 miles. When the antenna knows approximately where it is located, it can find the satellite much faster.

To enter your new position information into the antenna, follow the instructions in *"Step 2 - Enter Your Position"* on page 40.

## 5.3 Receiver Troubleshooting

Your HD receiver may also be the cause of less-than-ideal operation. First check the receiver's configuration to ensure it is set up for the desired programming, screen resolution, etc. In the case of a faulty receiver, refer to your receiver User's Manual for service and warranty information. If the receiver is both configured properly and fully functional, contact your local KVH dealer or service center for assistance.

## 5.4 Computer Diagnostics

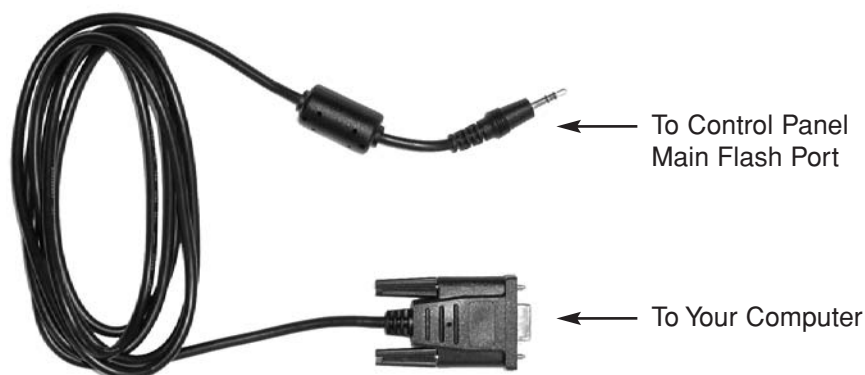
As explained in the TracVision antenna's *Technical Manual* or *Owner's Manual*, you can hook up a laptop PC to the antenna to view its diagnostic readouts, where you can often find the cause of a system problem.

With an HDTV converter added to your TracVision system, the maintenance port is now located at the control panel instead of the switchplate/ADCU. To view the diagnostics readouts, you will need to have either Windows HyperTerminal or the KVH Flash Update Wizard installed on your PC.

Follow the steps below to hook up your computer and view the antenna diagnostics data.

1. Connect the DB9-female end of the supplied flash adapter cable to your computer's DB9 serial COM port.

**Figure 5-1** Flash Adapter Cable



*If your computer does not have a DB9 serial COM port, you can use the following USB-to-RS232 adapter:*

*IOGear part number GUC232A  
(visit [www.iogear.com](http://www.iogear.com))*

2. Connect the stereo plug end of the flash adapter cable to the control panel's Main flash port. Be sure to insert the stereo plug fully into the flash port, as shown below.

**Figure 5-2** Control Panel Main Flash Port



3. If you are using **HyperTerminal**, open HyperTerminal and establish the following settings:
  - Bits per second: 9600
  - Data bits: 8
  - Parity: None
  - Stop bits: 1
  - Flow control: None



If you are using the **KVH Flash Update Wizard**, double-click the "KVH Flash Update Wizard" shortcut on your computer's desktop to start the wizard.

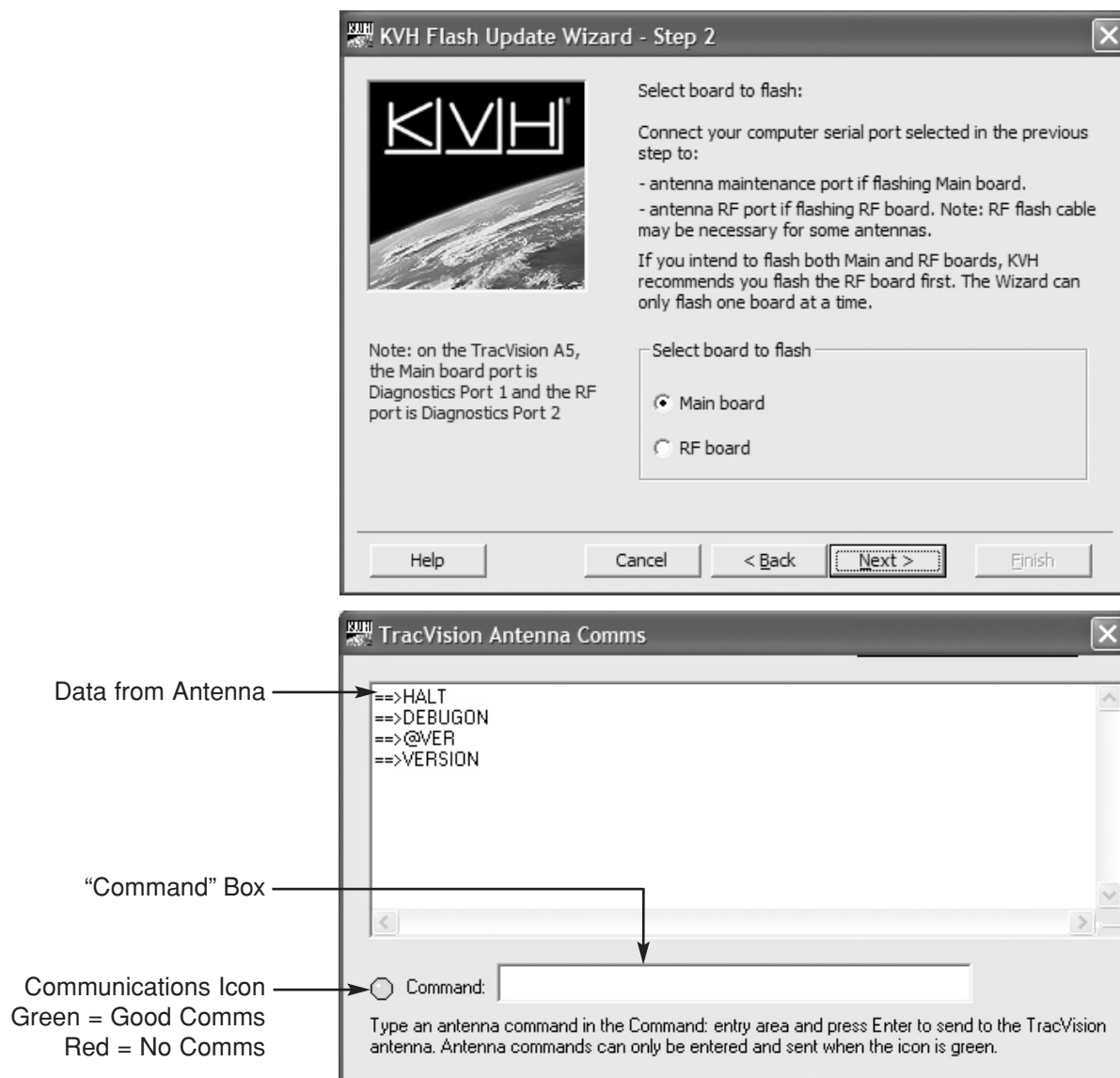
4. Apply power to the TracVision system and allow the system to complete full initialization. Data should be scrolling on your PC display to identify any system problems detected. If no data appears, recheck your connections and setup.
5. Refer to your TracVision antenna's *Technical Manual* or *Owner's Manual* for details about what diagnostics information is available from the antenna's data sequence.

## Entering Antenna Commands

You can also enter antenna commands through the Main flash port (for a list of valid antenna commands, refer to your TracVision antenna's Technical Manual or Owner's Manual). If you're using HyperTerminal, type the command in the HyperTerminal window then press **Enter**. If you're using the KVH Flash Update Wizard, go to the "Select board to flash" screen, type the command in the "Command" box, then press **Enter**.

*The communications icon must be green (not red) before the KVH Flash Update Wizard can accept commands.*

**Figure 5-3** KVH Flash Update Wizard Antenna Comms Window



## 5.5 Technical Support

If you need help troubleshooting your system, please contact an authorized TracVision dealer or service center. To find an authorized dealer located near you, visit:

[www.kvh.com/wheretogetservice](http://www.kvh.com/wheretogetservice)

If an authorized dealer is not located nearby, contact KVH Technical Support directly:

Phone: 1-401-847-3327

E-mail: [techs@kvh.com](mailto:techs@kvh.com)

Internet: [www.kvh.com/help](http://www.kvh.com/help)

You will need to have the serial numbers for your HDTV converter and TracVision antenna handy when you call. You can find the HDTV converter's serial number on the first page of this manual. You can find the antenna's serial number on the first page of the antenna's *Technical Manual* or *Owner's Manual*.

### Before You Return a Product...

As detailed in the warranty accompanying this product and printed on the last page of this manual, you need to have a Return Material Authorization (RMA) number before you return the product to KVH. Please contact KVH Technical Support to obtain an RMA number and be sure to write the number on the outside of the box. **Shipments received without an RMA number will be returned to you at your expense.**

Please review the complete product warranty to familiarize yourself with all requirements, liabilities, and policies.

# Appendices

This section contains several appendices of supplemental information, including specifications, a flush-mounting template, and wiring diagrams.

## Contents

- A Control Panel Specifications .....83
- B Control Panel Flush Mount Template .....85
- C Wiring Diagrams .....87
- Warranty .....89

# Appendix A

## Control Panel Specifications

### Physical Characteristics

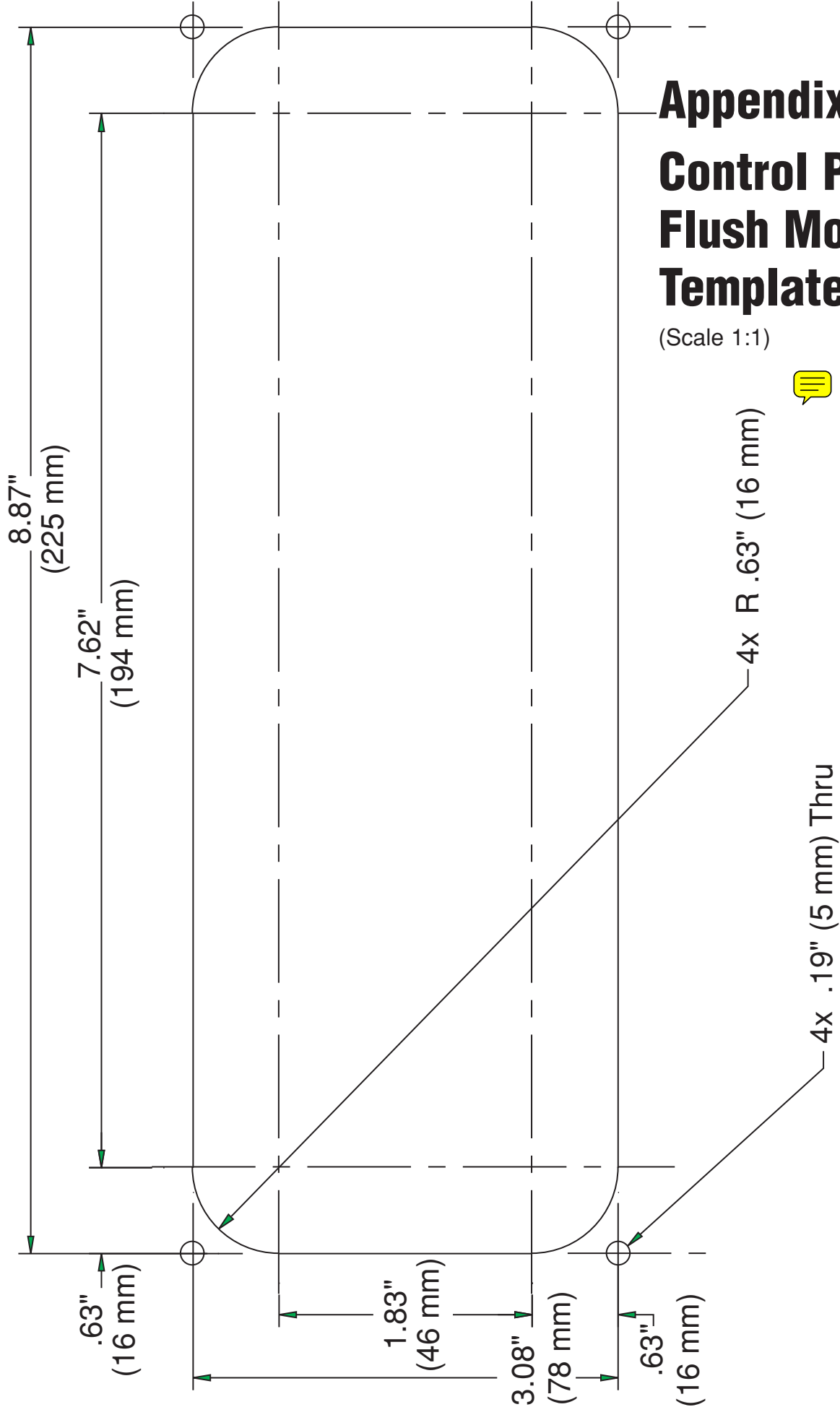
Dimensions	3" (76.2 cm) d x 8.2" (20.8 cm) w x 2.6" (6.6 cm) h
Operating temperature	-13°F to +130°F (-25°C to +55°C)
Storage temperature	-40°F to +185°F (-40°C to +85°C)

### Input Power

Input	11-16 VDC @ 3.5 amps nominal (4.5 amps peak) when connected to the antenna < 0.5 amps if only the control panel
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# Appendix B Control Panel Flush Mount Template

(Scale 1:1)



# Appendix C

## Wiring Diagrams

This appendix includes system wiring diagrams for each of the following configurations:

- A TracVision 4/6 with one HD receiver
- B TracVision 4/6 with multiswitch
- C TracVision G4/G6 with one HD receiver
- D TracVision G4/G6 with multiswitch
- E TracVision C3/L3/S3 with one HD receiver
- F TracVision C3/L3/S3 with multiswitch

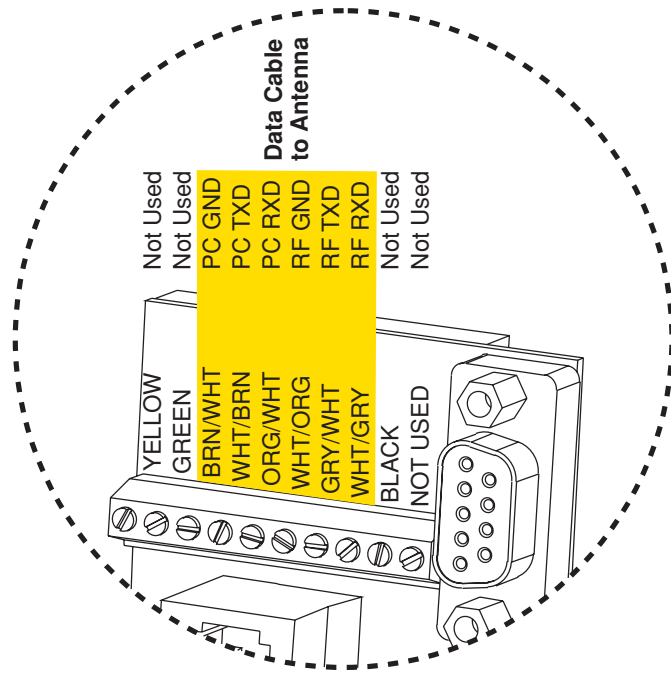
Use these helpful diagrams during the installation process to verify proper wiring.



*As you connect each cable, mark an "X" over the line in the wiring diagram. Once you've completed the installation, you will then be able to easily verify that you've connected all of the necessary cables.*

# HDTV Wiring Diagram - TracVision 4/6 with One HD Receiver

TracVision Antenna

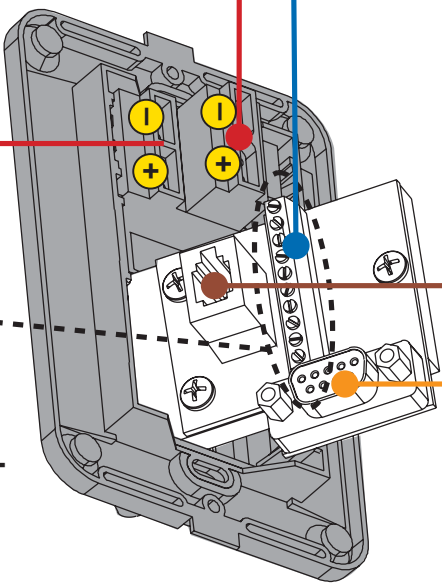


For detailed system wiring instructions, refer to Section 2, "Installation."

**A**

DC Power (+12 VDC)

Switchplate

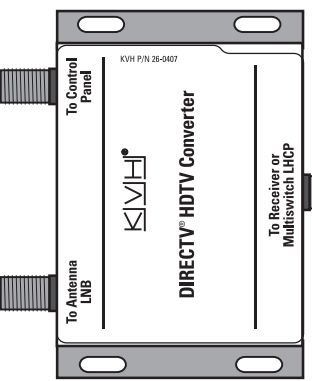


RF1

RF2

RG6  
P/N 32-0417-28

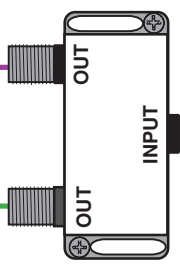
HDTV Converter



RG179  
P/N 32-0442-18

RG6  
P/N 32-0417-28

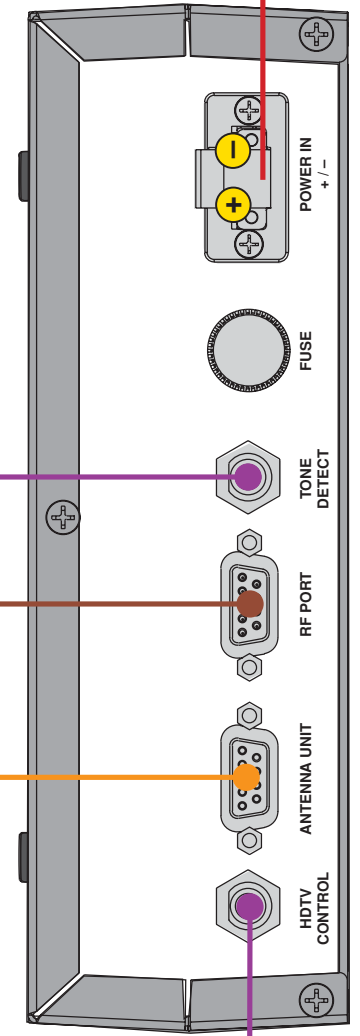
Splitter



RF Control  
(DB9F - RJ11)  
P/N 32-0811

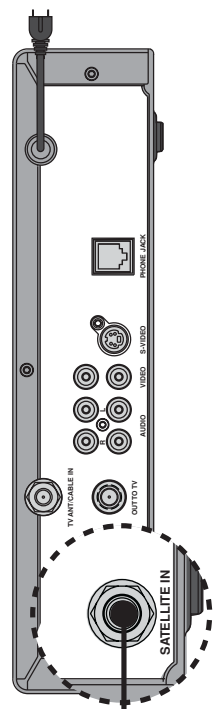
Main Control  
(DB9M - DB9M)  
P/N 32-0716-25

Control Panel

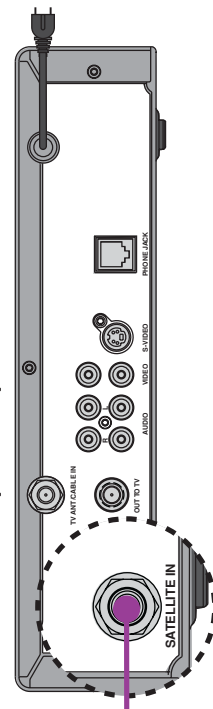


**Note:**  
Receiver(s) purchased separately.

Receiver



HD Receiver (Master)

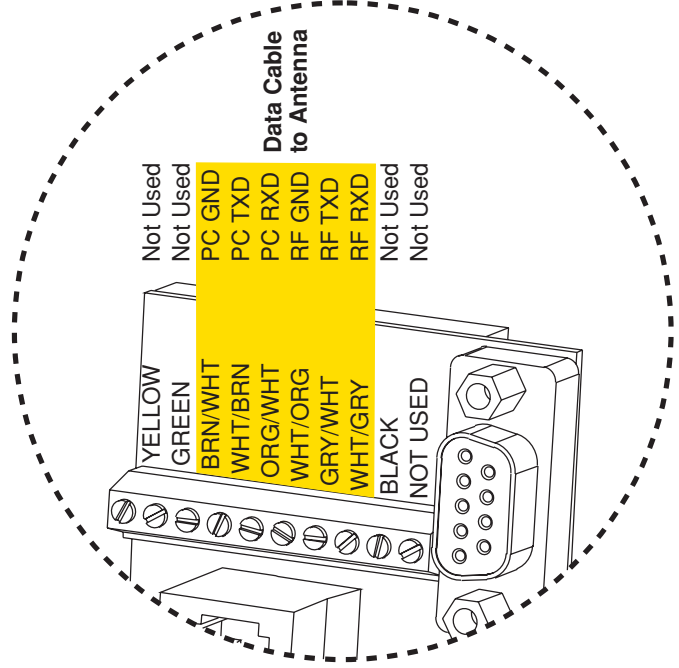


**Note:**  
KVH recommends that you power the control panel from the switchplate, so that the control panel will power up whenever the antenna is turned on.

DC Power (+12 VDC)

# HDTV Wiring Diagram - TracVision 4/6 with Multiswitch

TracVision Antenna



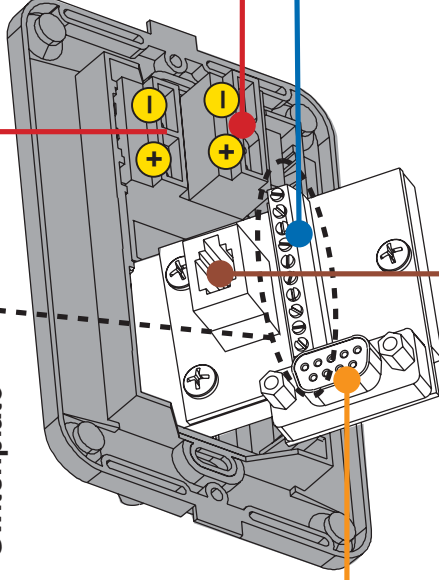
**B**



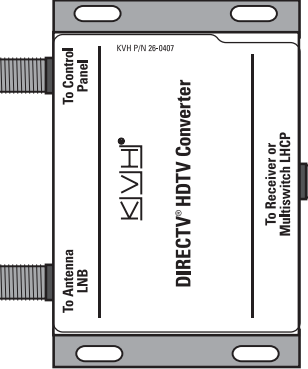
For detailed system wiring instructions, refer to Section 2, "Installation."

DC Power (+12 VDC)

Switchplate

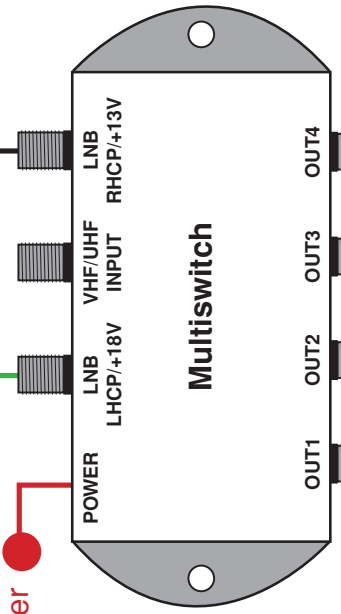


RG6 P/N 32-0417-28



HDTV Converter

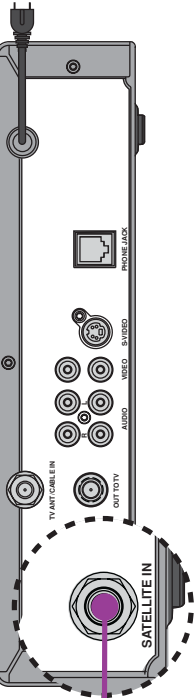
RG179 P/N 32-0442-18



**Note:**  
Multiswitch, receivers, and extra RG6 cables purchased separately.

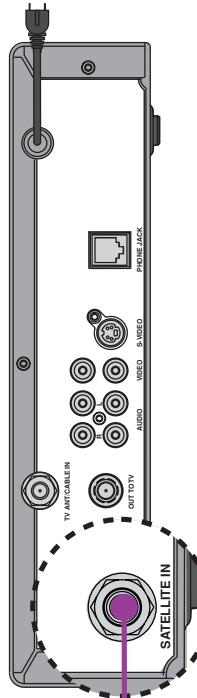
RG179 P/N 32-0442-18

HD Receiver #3



RG6 P/N 32-0417-28

HD Receiver #2

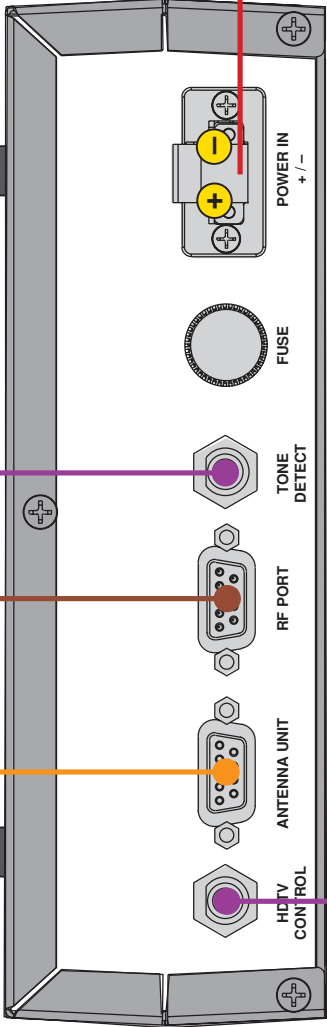
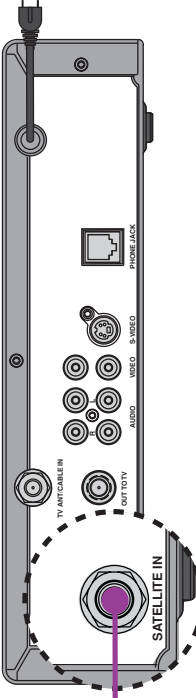


Splitter

P/N 32-0811

Main Control (DB9M - DB9M) P/N 32-0716-25

HD Receiver #1 (Master)

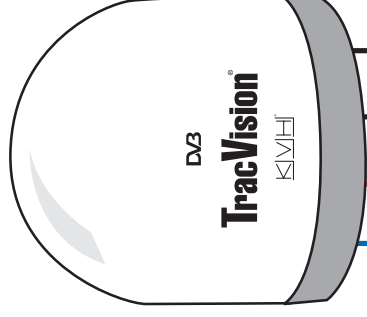


**Note:**  
KVMH recommends that you power the control panel from the switchplate, so that the control panel will power up whenever the antenna is turned on.

DC Power (+12 VDC)

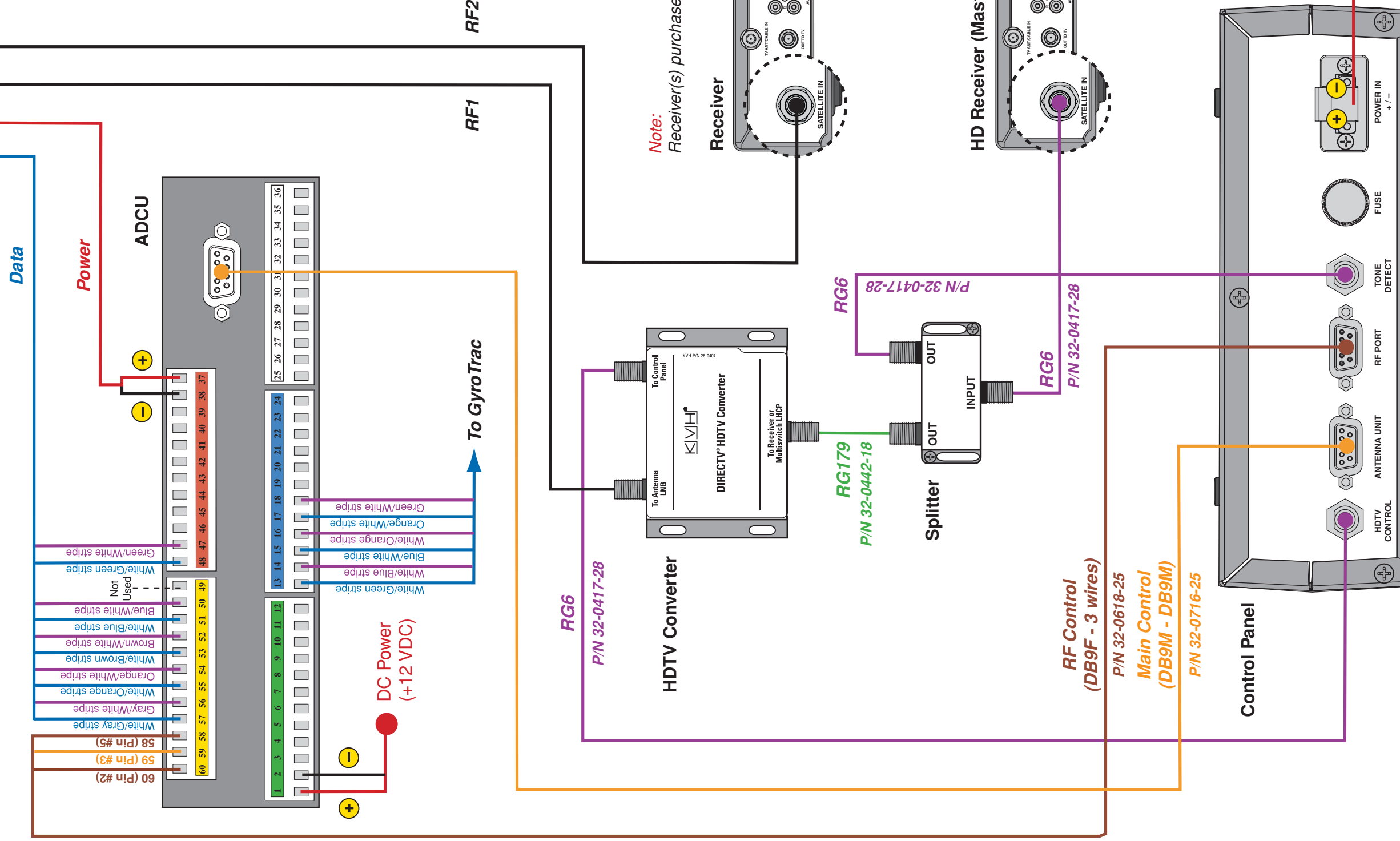
# HDTV Wiring Diagram - TracVision G4/G6 with One HD Receiver

TracVision Antenna



For detailed system wiring instructions, refer to Section 2, "Installation."

**C**

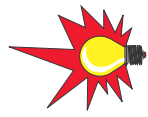


**Note:** Receiver(s) purchased separately.

**Note:** KVH recommends that you power the control panel from the same circuit breaker as the antenna, so that the control panel will power up whenever the antenna is turned on.

DC Power (+12 VDC)

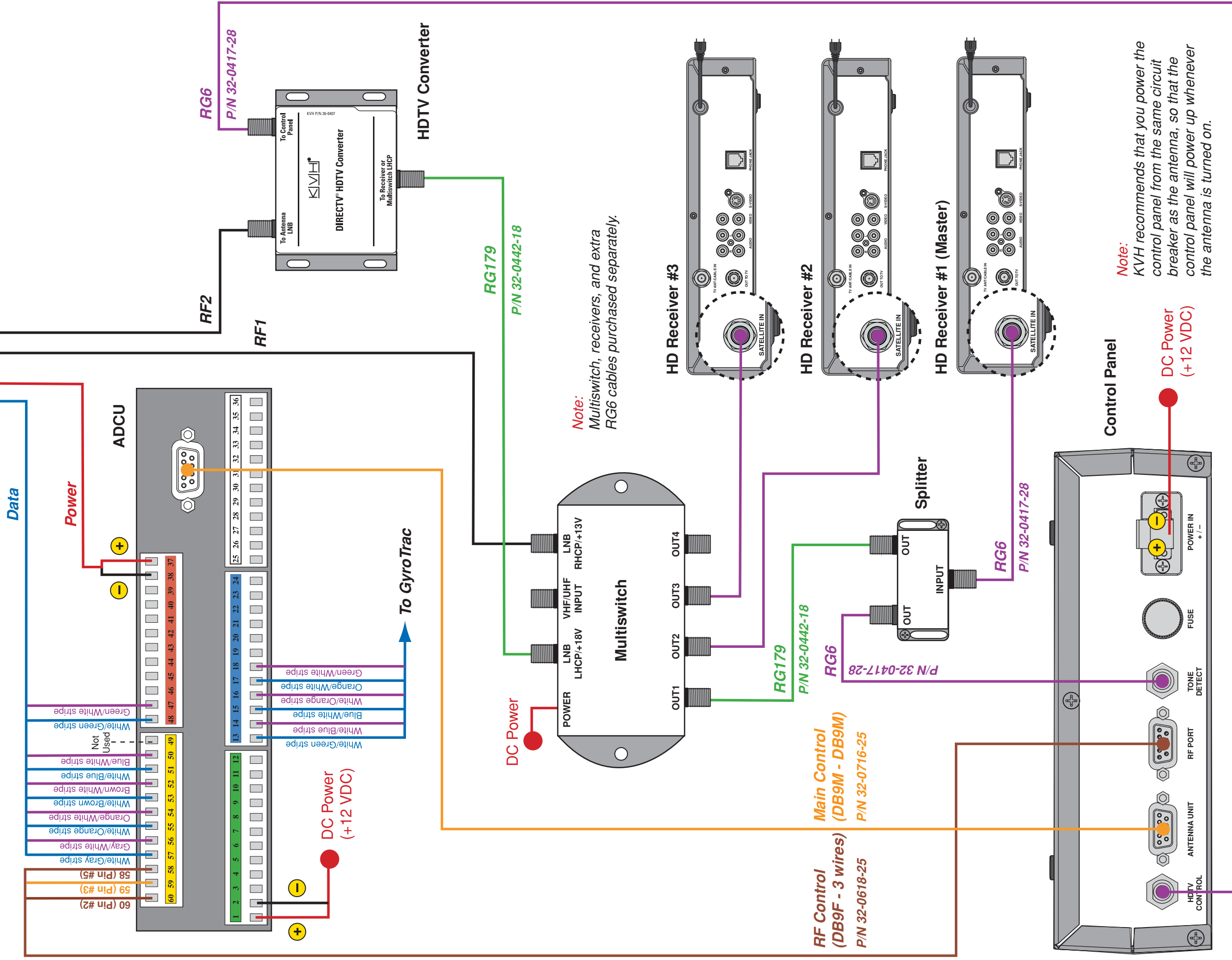
# HDTV Wiring Diagram - TracVision G4/G6 with Multiswitch



For detailed system wiring instructions, refer to Section 2, "Installation."

**D**

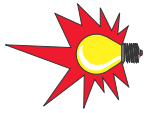
TracVision Antenna



**Note:** Multiswitch, receivers, and extra RG6 cables purchased separately.

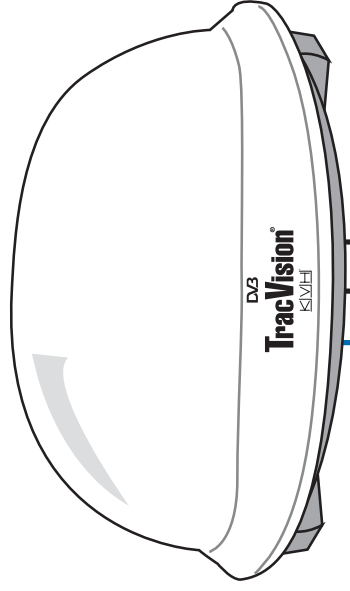
**Note:** KVMH recommends that you power the control panel from the same circuit breaker as the antenna, so that the control panel will power up whenever the antenna is turned on.

# HDTV Wiring Diagram - TracVision C3/L3/S3 with One HD Receiver



For detailed system wiring instructions, refer to Section 2, "Installation."

TracVision Antenna

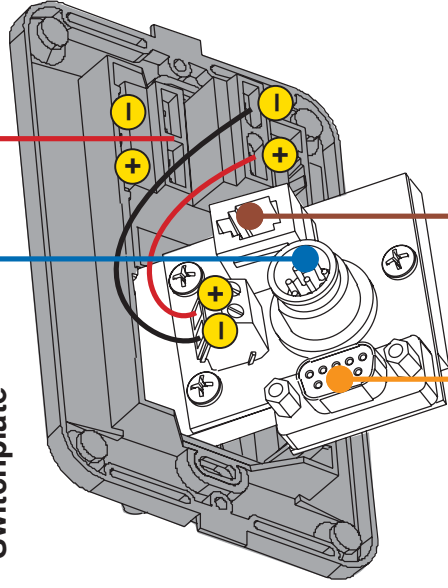


**E**

Data/Power

DC Power (+12 VDC)

Switchplate

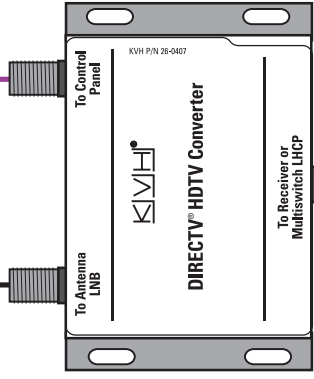


RF2

RF1

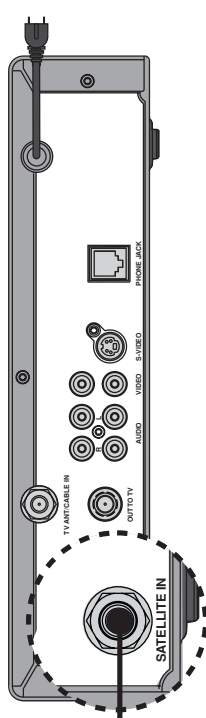
RG6  
P/N 32-0417-28

HDTV Converter



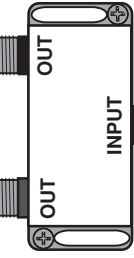
**Note:**  
Receiver(s) purchased separately.

Receiver



RG179  
P/N 32-0442-18

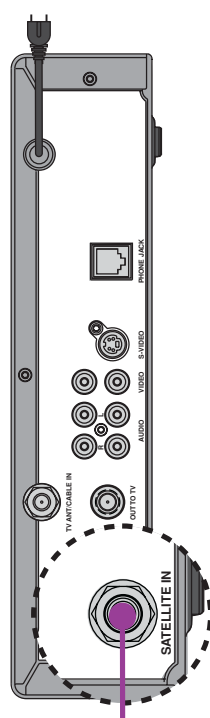
Splitter



RG6

P/N 32-0417-28

HD Receiver (Master)



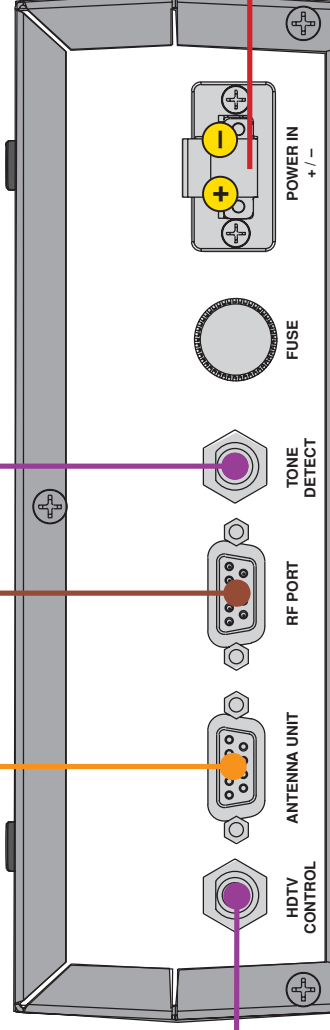
RF Control  
(DB9F - RJ11)

P/N 32-0811

Main Control  
(DB9M - DB9M)

P/N 32-0716-25

Control Panel



**Note:**  
KVM recommends that you power the control panel from the switchplate, so that the control panel will power up whenever the antenna is turned on.

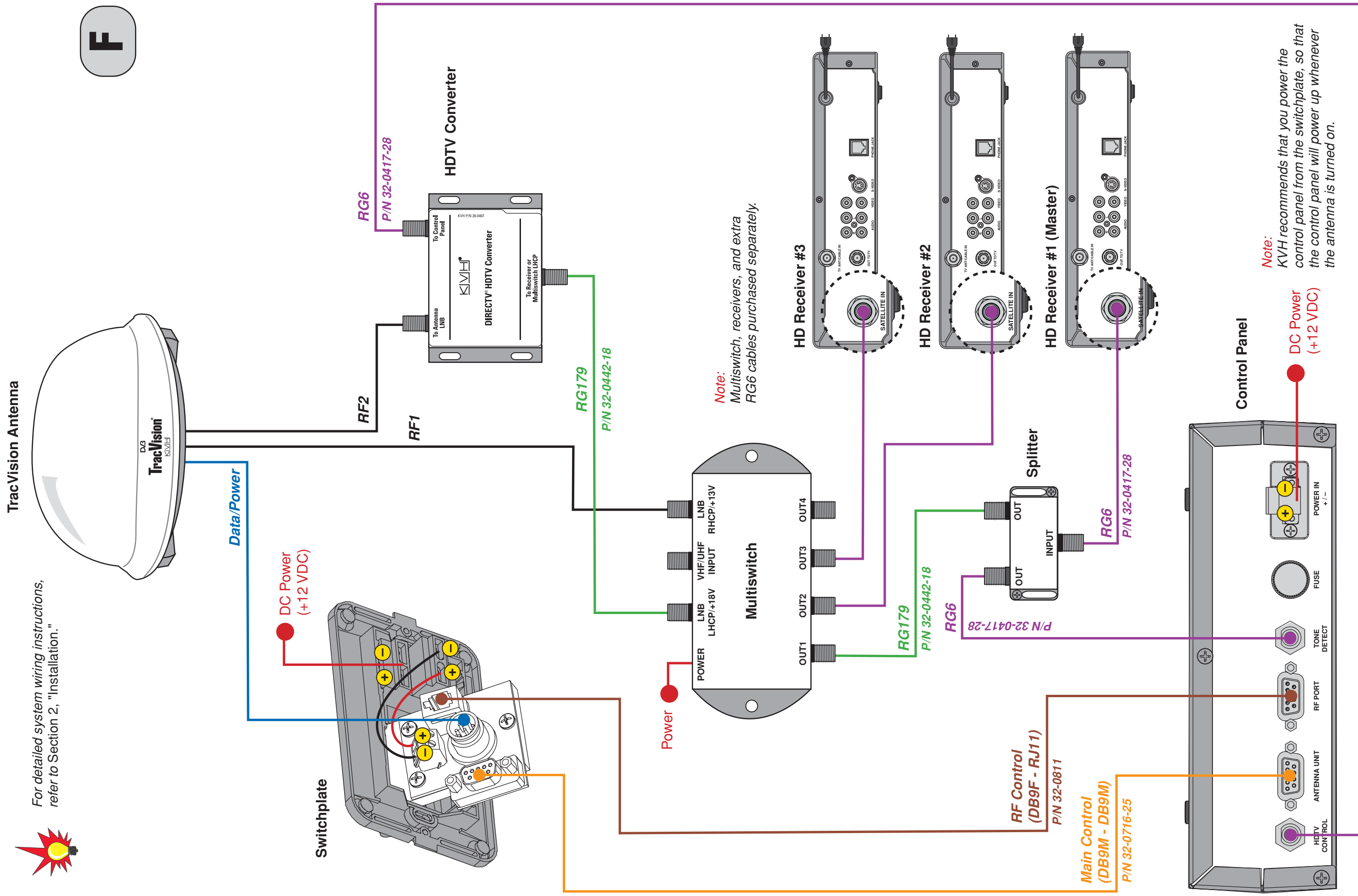
DC Power (+12 VDC)

# HDTV Wiring Diagram - TracVision C3/L3/S3 with Multiswitch



For detailed system wiring instructions, refer to Section 2, "Installation."

**F**



# KVH Industries Limited Warranty

## TracVision HDTV Converter Kit

### Limited Warranty on Hardware

KVH Industries, Inc., warrants the KVH product purchased against defects in materials for a period of TWO (2) years and against factory labor costs for a period of ONE (1) year from the date of original retail purchase by the original purchaser. It is the customer's responsibility to verify the date of purchase by returning the warranty card included with the product to KVH within 30 days of purchase, or by providing a copy of a dated sales receipt for the KVH product under warranty with the warranty claim. If this date cannot be verified, the warranty period will begin 30 days after the date of manufacture of the original product purchased.

If you discover a defect, KVH will, at its option, repair, replace or refund the purchase price of the product at no charge to you, provided you return it during the warranty period, transportation charges prepaid, to the factory direct. Please attach your name, address, telephone number, a description of the problem and a copy of the bill of sale or sales receipt as proof of date of original retail purchase, to each product returned to warranty service. Alternatively, you may bring the product to an Authorized KVH dealer/distributor for repair. During the first year, and if the product was installed by an Authorized KVH dealer/distributor (identified with the KVH Authorized dealer/distributor list), KVH will cover the dealer's/distributor's labor charges for warranty repairs, provided the dealer/distributor contacts KVH for pre-approval of the charges. Approval of charges is at KVH's sole discretion.

This Limited Warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication or has been modified without the written permission of KVH; if any KVH serial number has been removed or defaced; or if any factory-sealed part of the system has been opened without authorization.

### Return Authorization

A Return Material Authorization is required prior to returning the product to KVH Industries. Please call our Technical Support Department at +1 401 847-3327 or send an e-mail to [techs@kvh.com](mailto:techs@kvh.com) to obtain the RMA number. Write the number in large, clear characters on the outside of the box. To avoid confusion and misunderstandings, shipments without an RMA number clearly visible on the outside box will be refused and returned to you at your expense. If possible, use the original box and packing material to protect the equipment from damage in shipment. KVH assumes no responsibility for warranty shipments from the customer to the factory if not shipped in the manner prescribed above.

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**KVH Industries, Inc.**

50 Enterprise Center Middletown, RI 02842-5279 U.S.A.  
Phone: (401) 847-3327 Fax: (401) 849-0045  
E-mail: [info@kvh.com](mailto:info@kvh.com) Internet: [www.kvh.com](http://www.kvh.com)

**KVH Europe A/S**

Kokkedal Industripark 2B 2980 Kokkedal Denmark  
Phone: +45 45 160 180 Fax: +45 45 160 181  
E-mail: [info@kvh.dk](mailto:info@kvh.dk) Internet: [www.kvh.com](http://www.kvh.com)