TracVision®
BY KVH INDUSTRIES

# HDTV Converter for DIRECTV® Service


HDTV Converter Owner's Manual

# HDTV Converter for DIRECTV® Service

# quick reference guide

flip here to view



KU_HD_OM_CoverBW_3.07

# MultiSat Control Panel Menu Quick Reference Guide

## Main Display

**TriSat - Automatic**

```
101-110: Tracking 101
119      Menu
```

OR

**TriSat - Manual**

```
Tracking 101
119      Menu      110
```

OR

**DualSat**

```
Tracking <SAT NAME>
<SAT A>    Menu    <SAT B>
```

## Main Menu

```
Set Sat Select Mode?
Yes      Next     Return
```

```
Install Satellite?
Yes      Next     Return
```

```
Restart Antenna?
Yes      Next     Return
```

```
Operations mode?
Yes      Next     Return
```

Return to "Set Sat Select Mode" or "Install Satellite"

```
Auto or Manual?
Auto  Manual  Return
```

*Go to **TriSat - Manual** Main Display*

```
Select SAT 101 and:
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     110    Return
```

```
Restarting antenna
```

```
Install A <Sat Name>
Yes     Next   Cancel
```

Select Satellite A

```
Install B <Sat Name>
Yes     Next   Cancel
```

Select Satellite B

```
Installing sats
Please Wait
```

```
<SatA> and
<SatB> installed
```

```
Restarting antenna
```

```
Antenna restarted
```

```
Get antenna status?
Yes      Next     Return
```

```
Control antenna?
Yes      Next     Return
```

```
Upgrade software?
Yes      Next     Return
```

```
Set brightness?
Yes      Next     Return
```

Return to "Get Antenna Status"

```
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*

** Press any button to return*

*‡ TracVision M5/M7/M9 only*

# MultiSat Control Panel
## With HDTV Converter

# Owner's Manual

This manual provides all of the basic information you need to install, operate, set up, and troubleshoot the MultiSat Control Panel (MCP) and HDTV converter.

**NOTE:** The MultiSat Control Panel is not a standalone unit. It is an add-on accessory for an installed DVB-compatible TracVision satellite TV antenna system.

**MultiSat Control Panel Serial Number**

Please direct questions, comments, or suggestions to:

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**If you have any comments regarding this manual, please e-mail them to manuals@kvh.com. Your input is greatly appreciated!**

KVH Part # 54-0260 Rev. C

# Table of Contents

## 4 Menu Functions



## 5 Troubleshooting



## A Computer Diagnostics

## B Wiring Diagrams

# 1. Introduction

This chapter provides a basic overview of this manual and your MultiSat Control Panel with HDTV converter.

## Contents



1

# Using this Manual

This manual provides complete installation, operation, setup, and troubleshooting information for your MultiSat Control Panel (MCP) and HDTV converter.

## Who Should Use This Manual

The **installer** should refer to the "Installation" chapter and "Wiring Diagrams" appendix for information on installing the MCP and HDTV converter.

The **user** should refer to the "Operation" and "Menu Functions" chapters to learn how to operate and set up the control panel.

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

## Notifications Used in this Manual

This manual uses the following notifications to call attention to important information:

**CAUTION**

This is a danger, warning, or caution notice. Be sure to read these carefully to avoid injury!

***IMPORTANT!***

This is an important notice. Be sure to read these carefully to ensure proper operation and configuration of your system.

***NOTE:*** *This is a Note that provides useful supplemental information.*

***TIP:*** *This is a Tip that provides hints to get the most out of your system.*

## Typographical Conventions

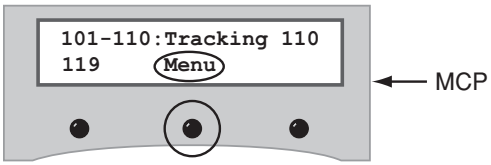
This manual uses the following typographical conventions:

| Text Example | Description |
|---|---|
| `<Sat Name>`<br>`###` | Text in brackets or the pound sign (#) indicates a variable field on the MCP display |
| *"System Overview" on page 5* | Cross-reference to another chapter in the manual or to a website |

## MCP Interface Conventions

When instructions indicate to select a specific MCP menu option, press the button located directly beneath the menu option on the MCP display.

**Figure 1-1 Example of MCP Menu Option and Corresponding Button**




## Related Documentation

In addition to this Owner's Manual, the following documents are provided with the product:

| Document | Description |
|---|---|
| Product Registration Form | Details on registering the product |
| Warranty Statement | Warranty terms and conditions |
| Contents List | List of every part supplied in the kit |

# Product Overview

The MultiSat Control Panel (MCP) and HDTV converter enable your TracVision antenna to receive HDTV programming from DIRECTV's specially configured 110 satellite, in addition to DIRECTV's 101 and 119 satellites.

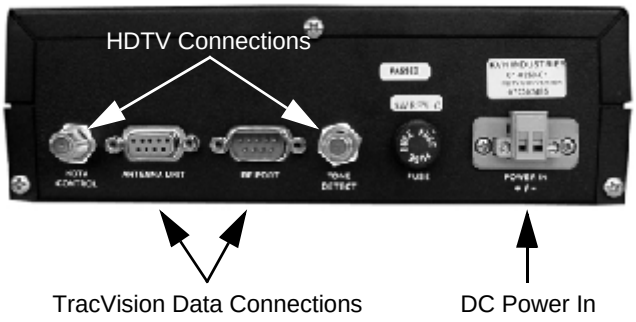
## MultiSat Control Panel (MCP)

The MultiSat Control Panel (MCP) allows you to control the TracVision antenna through a simple user interface consisting of an LCD and three buttons (see Figure 1-2). Now you can easily configure the antenna, select satellites, check system status, and restart the antenna right from the MCP.

**Figure 1-2 MCP Front Panel**


The MCP connects to your TracVision system via two data cables (see Figure 1-3). The MCP also connects to the HDTV converter and primary receiver to provide the HDTV control signal, as required, to switch to the DIRECTV 110 satellite. Complete installation instructions are provided in the next chapter. System wiring diagrams for each antenna/receiver configuration are provided in *"Appendix B" on page 69*.

**Figure 1-3 MCP Rear Panel**



## HDTV Converter

The HDTV converter adjusts the signal frequency of DIRECTV's 110 satellite, allowing the TracVision system to receive its high-definition channels.

Figure 1-4 HDTV Converter

# 2. Installation

This chapter explains how to connect the MCP and HDTV converter to your TracVision system and how to mount the MCP.

***IMPORTANT!***

This manual assumes that you are adding the MCP to a TracVision system that is already installed on the vessel/vehicle. If the antenna is not yet installed, follow the detailed instructions in the antenna's manual to install and test the antenna system. Then follow the instructions in this chapter to install the MCP and HDTV converter.

## Contents

# Inspecting Parts and Getting Tools

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

1. Unpack the box and ensure it contains everything shown on the *Kitpack Contents List*. Save the packaging for future use.

2. Carefully examine all of the supplied parts to ensure nothing was damaged in shipment.

3. Gather all of the tools and materials listed below. You will need these items to complete the installation.

   - Flat-head and Phillips-head screwdrivers
   - 7/16" open-end wrench
   - Electric drill
   - #29 and 3/32" drill bits
   - 3/16" nut driver/socket
   - Light hammer and center punch
   - Adhesive tape
   - Scriber or pencil
   - DIRECTV HD receiver and HDTV television (required to receive DIRECTV's HDTV programming)
   - Power cable for connecting power to the MCP from the TracVision system (see Figure 2-1)

**Figure 2-1 Power Cable Guidelines**

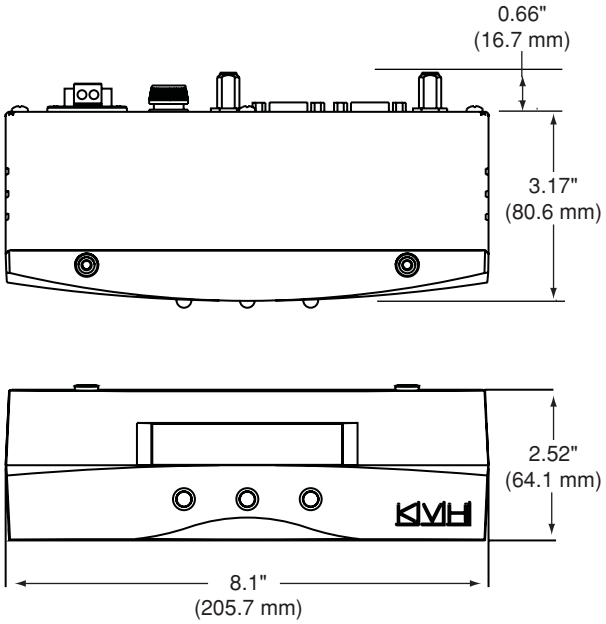
| Cable Length | Use Cable Gauge |
|---|---|
| < 40 ft (12 m) | 14AWG (2.5mm$^2$) |
| 40-70 ft (12-21 m) | 12AWG (4mm$^2$) |

# Planning the Installation

Before you begin, consider the following MCP installation guidelines.

- Select an MCP mounting location in a dry, well-ventilated area inside the vessel/vehicle away from any heat sources or salt spray.
- Be sure the MCP's front panel will be easily accessible to the user. The owner will use the MCP's buttons to control the antenna.
- Be sure to leave enough room at the MCP's rear panel for connecting the cables (see Figure 2-2 for MCP dimensions).

**Figure 2-2 MCP Dimensions**



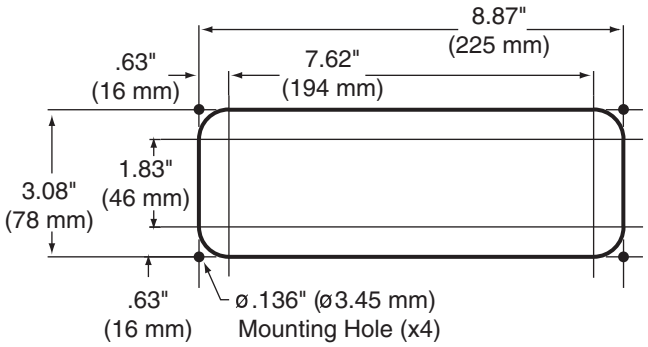

- Since the supplied main control cable and RF control cable are both 25 ft (7.6 m) long, the MCP must be located within 25 ft (7.6 m) of the TracVision antenna's switchplate, ADCU, or MCU. You will need to connect the MCP using these special cables.
- The kitpack contains parts for mounting the MCP either to a horizontal surface (using Velcro) or to a vertical surface (using the supplied flush mount bracket).

# Preparing the MCP Mounting Site (Flush Mount only)

***NOTE:*** *Skip this step if you plan to mount the MCP to a horizontal surface.*

1. Using the MCP flush mounting template provided at the end of this manual (see page 79), mark and cut out a hole in the mounting surface to accommodate the flush mount bracket (see Figure 2-3).

**Figure 2-3 MCP Mounting Holes Layout**




2. Using the same template, mark the locations for the four MCP mounting holes.
3. Using a #29 drill bit, drill a 0.136" (3.45 mm) hole at the four mounting hole locations. Later, you will mount the MCP using four #8 screws.

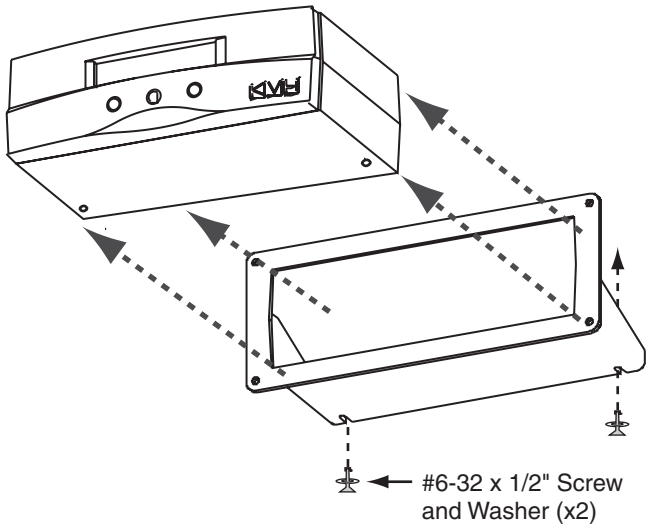
# Attaching the MCP Flush Mount Bracket (Flush Mount only)

***NOTE:*** *Skip this step if you plan to mount the MCP to a horizontal surface.*

1. Slide the bracket onto the MCP from behind and position the front edge of the bracket over the seam line between the front bezel and the chassis.

2. Secure the bracket in place using two #6-32 screws and washers (see Figure 2-4).

**Figure 2-4 MCP Flush Mount Bracket**



# Wiring the MCP to the Antenna - R4/R5 Switchplate

If you are connecting the MCP to a TracVision R4 or R5, follow the steps in this section to wire the MCP to the switchplate.

| ⚠ CAUTION |
| --- |
| For your own safety, disconnect vehicle power and make sure the circuit is dead before you begin wiring. |

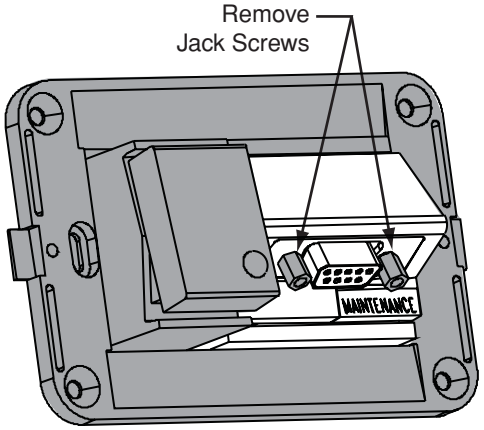
## Modifying the Switchplate (Optional)

To configure the switchplate for an MCP installation, follow these steps to replace the maintenance port assembly in the switchplate with the MCP-ready maintenance port assembly supplied in the kitpack.

***NOTE:*** *The MCP-ready maintenance port assembly moves the DB9 maintenance port to the back of the switchplate. This allows you to later connect the main control cable to the back of the switchplate, hidden from view. However, if you wish, you may skip this step and simply connect the main control cable to the DB9 maintenance port on the front of the unmodified switchplate.*

1. Remove and discard the two jack screws securing the standard maintenance port assembly to the switchplate (see Figure 2-5).

**Figure 2-5 Detaching the Standard Maintenance Port Assembly**

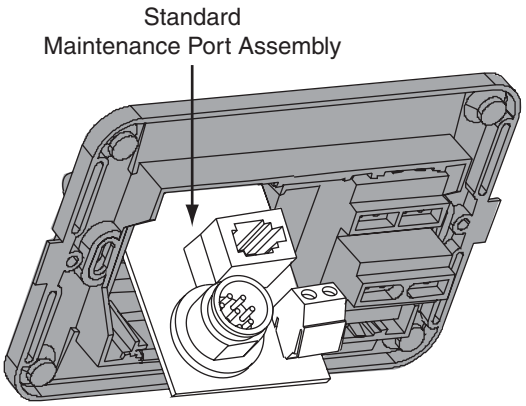



2. Disconnect the antenna's data/power cable from the maintenance port assembly. You will reconnect it later.

3. Carefully disconnect the two power wires from the maintenance port assembly's power terminals. You will reattach these wires later. *Do not disconnect the power wires connected to the switchplate itself.*

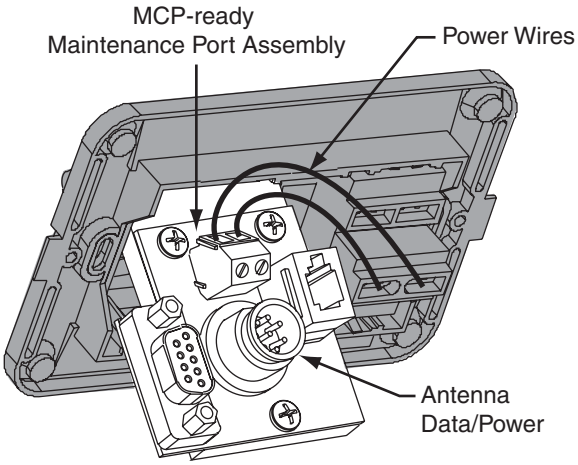
4. Remove and save the standard maintenance port assembly (see Figure 2-6).

**Figure 2-6 Standard Maintenance Port Assembly**




5. Attach the MCP-ready maintenance port assembly to the switchplate using two #4-24 screws (see Figure 2-7). These screws simply replace the jack screws you removed in Step 1.

**Figure 2-7 MCP-Ready Maintenance Port Assembly**

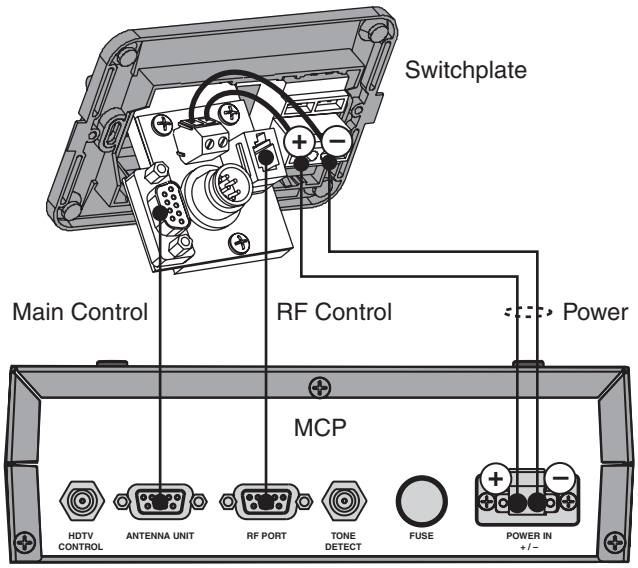



6. Connect the switchplate's two power wires and the antenna's data/power cable to the new maintenance port assembly.

## Wiring the MCP to the Switchplate

1. Connect the main control cable (DB9-male to DB9-male) from the DB9 maintenance port jack on the switchplate to the "Antenna Unit" jack on the MCP (see Figure 2-8).

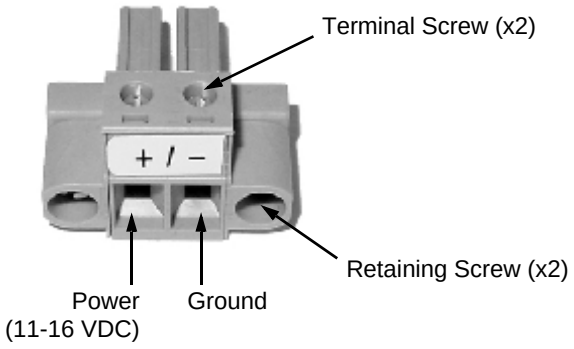
**Figure 2-8 MCP-to-Switchplate Wiring**




2. Connect the RF control cable (RJ22 to DB9-female) from the RJ22 jack on the switchplate to the "RF Port" jack on the MCP.

3. Connect a set of power wires from the switchplate's power output terminals to the plastic power plug supplied in the kitpack (see Figure 2-9) (for cable specifications, see *Figure 2-1 on page 9*).

**Figure 2-9 MCP Power Plug**




4. Plug the MCP power plug into the "Power In" jack on the MCP. Secure in place with the retaining screws.

# Wiring the MCP to the Antenna - M5/M7 Switchplate

If you are connecting the MCP to a TracVision M5 or M7 switchplate configuration, follow the steps in this section to wire the MCP to the switchplate.

| ⚠ CAUTION |
| --- |
| For your own safety, disconnect vessel power and make sure the circuit is dead before you begin wiring. |

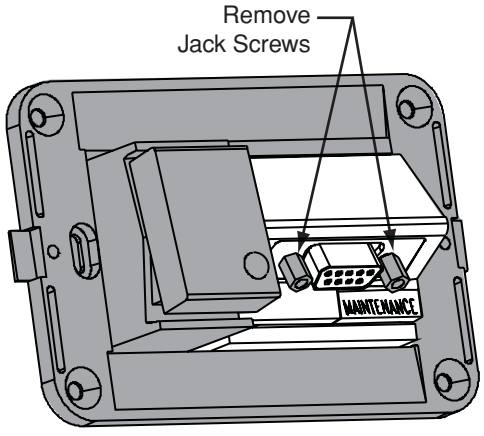
## Modifying the Switchplate (Optional)

To configure the switchplate for an MCP installation, follow these steps to replace the maintenance port assembly in the switchplate with the MCP-ready maintenance port assembly supplied in the kitpack.

***NOTE:*** *The MCP-ready maintenance port assembly moves the DB9 maintenance port to the back of the switchplate. This allows you to later connect the main control cable to the back of the switchplate, hidden from view. However, if you wish, you may skip this step and simply connect the main control cable to the DB9 maintenance port on the front of the unmodified switchplate.*

1. Remove and discard the two jack screws securing the standard maintenance port assembly to the switchplate (see Figure 2-10).

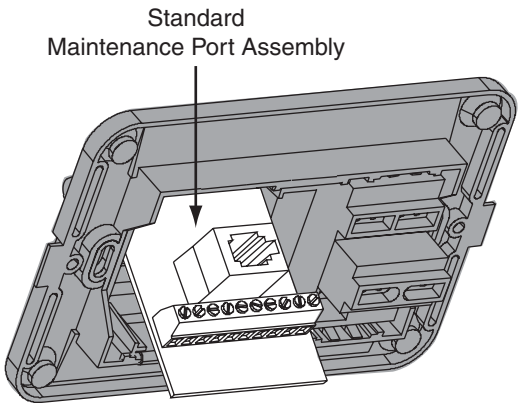
**Figure 2-10 Detaching the Standard Maintenance Port Assembly**




2. Carefully disconnect the antenna's data cable from the maintenance port assembly's terminal board. You will reconnect these wires later.

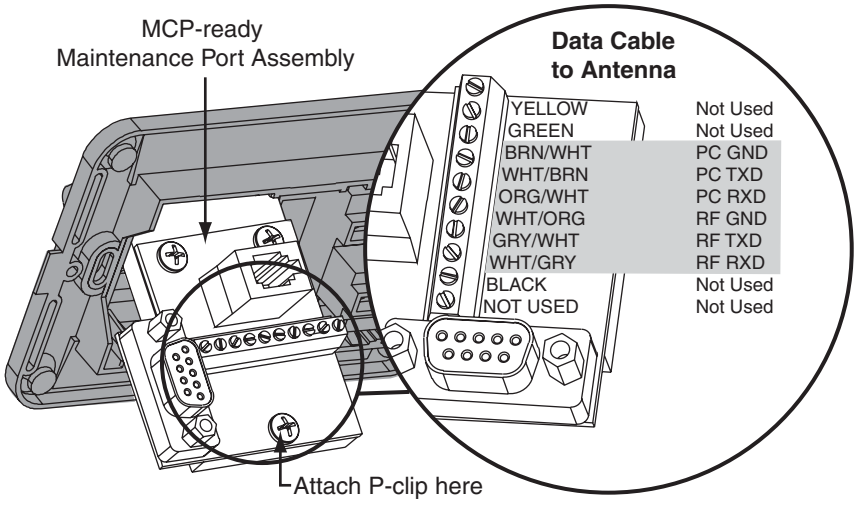
3. Remove and save the standard maintenance port assembly (see Figure 2-11).

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




4. Attach the MCP-ready maintenance port assembly to the switchplate using two #4-24 screws (see Figure 2-12). These screws simply replace the jack screws you removed in Step 1.

**Figure 2-12 MCP-Ready Maintenance Port Assembly**



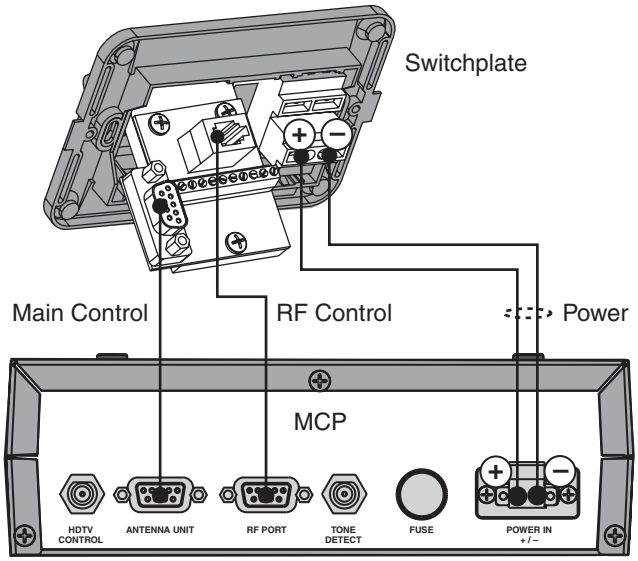

5. Wire the TracVision antenna's data cable to the terminal board on the new maintenance port assembly. *Be sure to match the wire colors (body color/stripe color) with the terminal board label.*

6. Using a P-clip, strain-relieve all wires at the switchplate by securing them to the bottom screw of the maintenance port assembly.

## Wiring the MCP to the Switchplate

1. Connect the main control cable (DB9-male to DB9-male) from the DB9 maintenance port jack on the switchplate to the "Antenna Unit" jack on the MCP (see Figure 2-13).

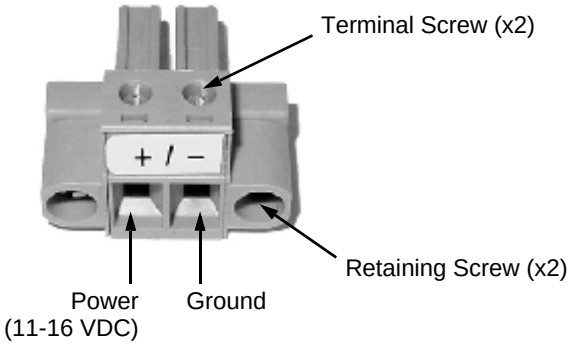
**Figure 2-13 MCP-to-Switchplate Wiring**




2. Connect the RF control cable (RJ22 to DB9-female) from the RJ22 jack on the switchplate to the "RF Port" jack on the MCP.

3. Connect a set of power wires from the switchplate's power output terminals to the plastic power plug supplied in the kitpack (see Figure 2-14) (for cable specifications, see *Figure 2-1 on page 9*).

**Figure 2-14 MCP Power Plug**




4. Plug the MCP power plug into the "Power In" jack on the MCP. Secure in place with the retaining screws.

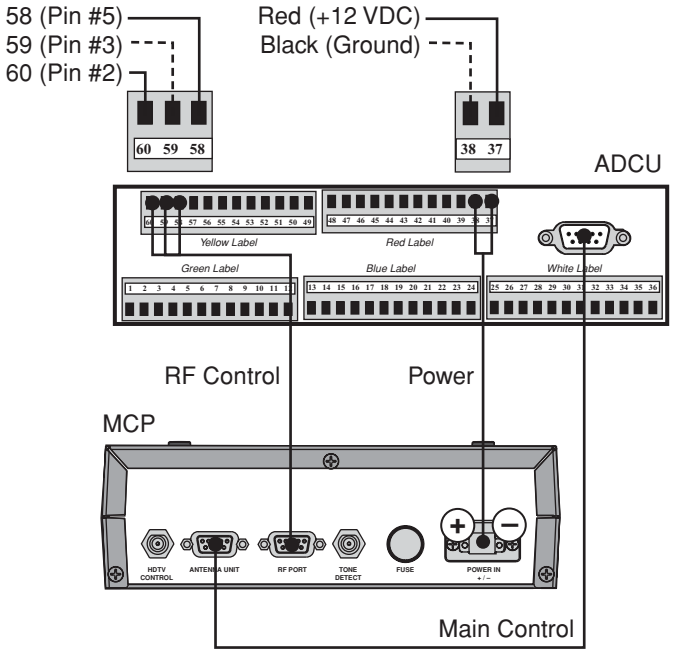
# Wiring the MCP to the Antenna - M5/M7 GyroTrac

If you are connecting the MCP to a TracVision M5 or M7 GyroTrac configuration, follow the steps in this section to wire the MCP to the GyroTrac ADCU.

| ⚠ CAUTION |
| --- |
| For your own safety, disconnect vessel power and make sure the circuit is dead before you begin wiring. |

1. Connect the main control cable (DB9-male to DB9-male) from the DB9 maintenance port jack on the ADCU to the "Antenna Unit" jack on the MCP (see Figure 2-15).

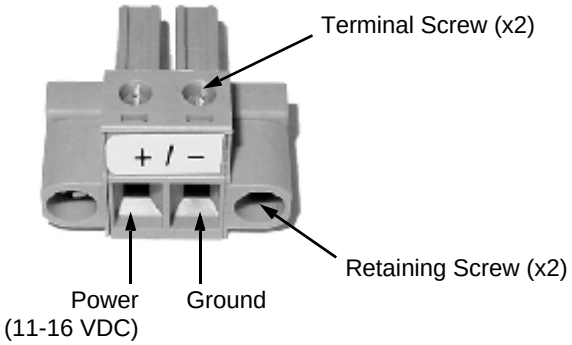
**Figure 2-15 MCP-to-ADCU Wiring**




2. Connect the RF control cable (3-wires to DB9-female) from terminals 58, 59, and 60 on the ADCU to the "RF Port" jack on the MCP (see Figure 2-15).

3. Connect a set of power wires from terminals 37 (+12 VDC) and 38 (ground) on the ADCU to the plastic power plug supplied in the kitpack (see Figure 2-16) (for cable specifications, see *Figure 2-1 on page 9*).

**Figure 2-16 MCP Power Plug**




4. Plug the MCP power plug into the "Power In" jack on the MCP. Secure in place with the retaining screws.

# Wiring the MCP to the Antenna - M9

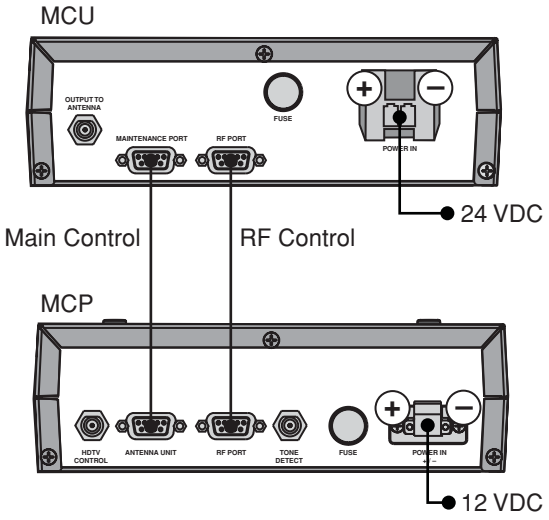
If you are connecting the MCP to a TracVision M9, follow the steps in this section to wire the MCP to the Master Control Unit (MCU).

**CAUTION**

For your own safety, disconnect vessel power and make sure the circuit is dead before you begin wiring.

1. Connect the main control cable (DB9-male to DB9-male) from the "Maintenance Port" jack on the MCU to the "Antenna Unit" jack on the MCP (see Figure 2-17).

**Figure 2-17 MCP-to-MCU Wiring**

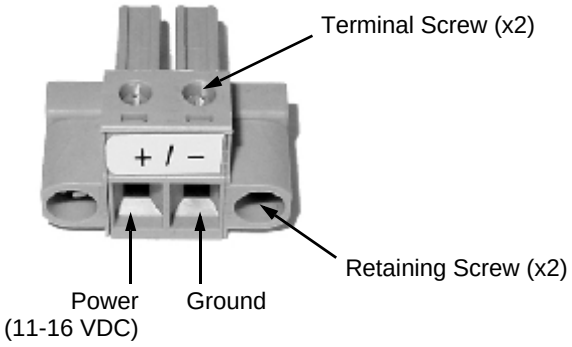



2. Connect the RF control cable (DB9-female to DB9-female) from the "RF Port" jack on the MCU to the "RF Port" jack on the MCP.

3. Connect a set of power wires from 12 VDC vessel power to the plastic power plug supplied in the kitpack (see Figure 2-18).

   For power cable specifications, see *Figure 2-1 on page 9*).

**Figure 2-18 MCP Power Plug**




4. Plug the MCP power plug into the "Power In" jack on the MCP. Secure in place with the retaining screws.

# Wiring the HDTV Converter and Receiver

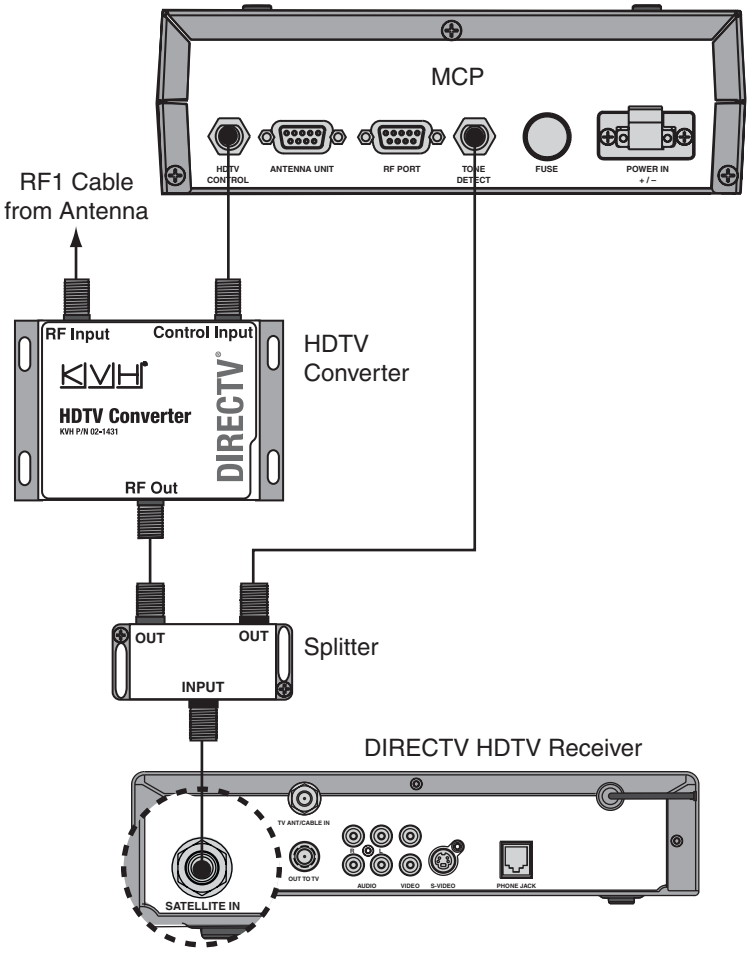
To configure your TracVision system for DIRECTV HDTV, follow the steps below to connect the HDTV converter between the MCP and your DIRECTV HDTV receiver.

***IMPORTANT!***

If you wish to connect multiple receivers, refer to the alternate wiring diagrams in *"Appendix B" on page 69*.

1. Connect an RF coax cable from the "HDTV Control" jack on the MCP to the "Control Input" jack on the HDTV converter (see Figure 2-19).

**Figure 2-19 HDTV Converter and Receiver Wiring**




2. Connect the RF1 cable from the antenna to the "RF Input" jack on the HDTV converter.

3. Connect an RF coax cable from the "RF Out" jack on the HDTV converter to either of the "Out" jacks on the supplied splitter.
4. Connect an RF coax cable from the "Tone Detect" jack on the MCP to the other "Out" jack on the splitter.
5. Connect an RF coax cable from the "Input" jack on the splitter to the "Satellite In" jack on the DIRECTV HD receiver.

# Mounting the MCP

Follow these steps to mount the MCP using one of the following options:

**Option 1** - Velcro mount to a horizontal surface

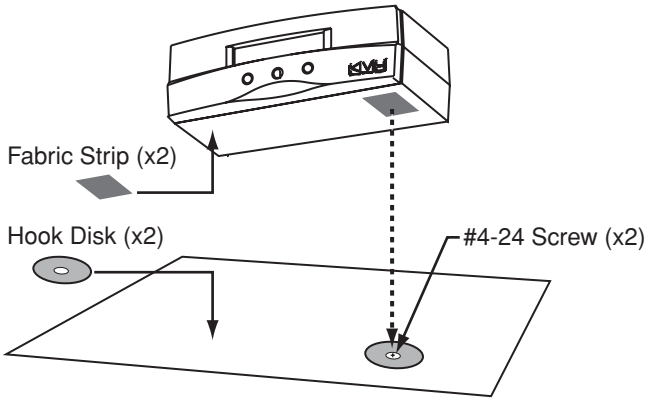
**Option 2** - Flush mount to a vertical surface

## Option 1 - Velcro Mounting

1. Clean the bottom of the MCP and the mounting surface using a mild detergent.

2. Peel the backing from the two supplied Velcro fabric squares and stick them to the bottom of the MCP (see Figure 2-20).

**Figure 2-20 Velcro Mounting the MCP to a Horizontal Surface**




3. Position the two Velcro hook disks onto the mounting surface. Drill screw holes for the disks and secure in place with #4-24 screws.

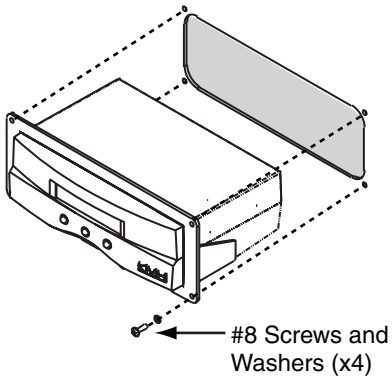
4. Press the MCP firmly into place so the fabric's loop material engages the hook disks.

## Option 2- Flush Mounting

1. Make sure the flush mount bracket is attached to the MCP. If it is not attached, attach the bracket as explained in *"Attaching the MCP Flush Mount Bracket (Flush Mount only)" on page 12*.

2. Insert the MCP and bracket assembly into the mounting hole and secure in place with four #8 screws and washers (see Figure 2-21).

Figure 2-21 Flush Mounting the MCP to a Vertical Surface



# Selecting the DIRECTV TriSat Group

Follow the steps below to turn on the system and set it up for TriSat mode.

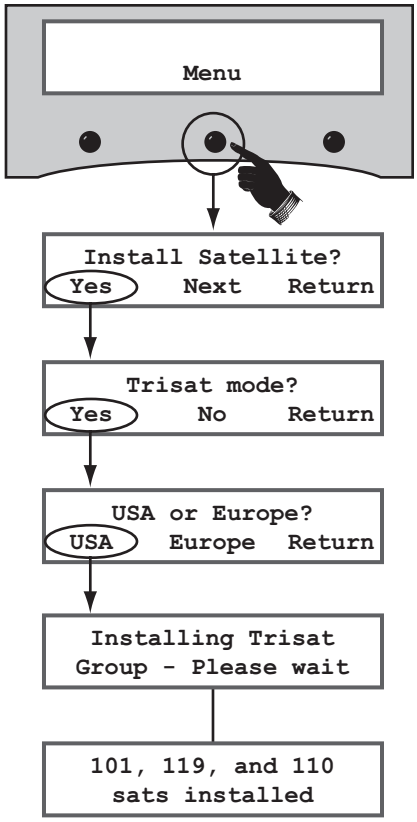
***NOTE:*** *This system is specially configured to receive DIRECTV's standard and HD programming from the 101, 119, and 110 satellites. However, the antenna has the capability to track any DVB®-compatible satellite. If you do not wish to set up the antenna to track the three DIRECTV satellites, refer to* ***"Selecting Satellites to Track - DualSat" on page 46*** *for details on installing a different pair of satellites.*

1. Ensure the antenna has a clear, unobstructed view of the sky.

2. Apply power to the receiver(s), TV(s), and TracVision system. Wait two minutes for system startup.

3. Press the center **MENU** button on the MCP's front panel to access the onscreen menu (see Figure 2-22).

Figure 2-22 Trisat Satellite Selection Menus on MCP



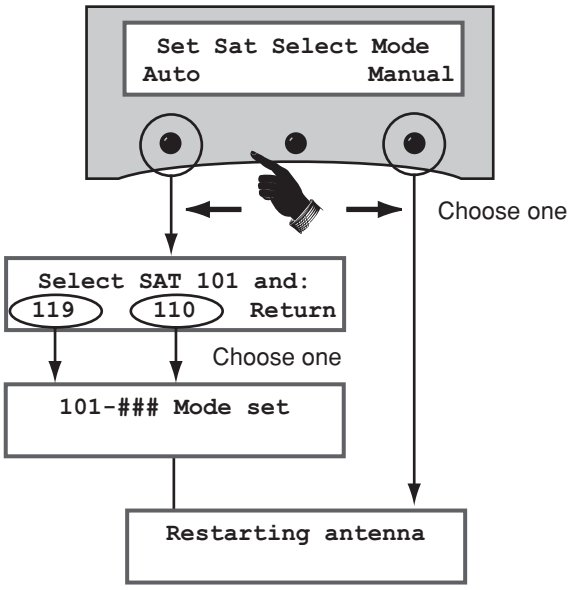
4. At "Install satellite?" press **YES**.
5. At "Trisat mode?" press **YES**.
6. At "USA or Europe?" press **USA**. The MCP installs the TriSat group of satellites into the antenna.
7. Follow the steps in the next section to choose the Sat Select mode.

# Choosing a Sat Select Mode

Now that you have selected the TriSat group of satellites, follow the steps below to choose a Sat Select mode: **Automatic** or **Manual** (see the next page for a brief description of each).

1. At "Set Sat Select Mode", press **AUTO** to select Automatic mode, or press **MANUAL** to select Manual mode (see Figure 2-23).

**Figure 2-23 Sat Select Mode Menus on MCP**




2. If you selected Automatic mode, at "Select SAT 101 and," select a satellite pair to track first:
   - Press **119** for 101-119
   - Press **110** for 101-110

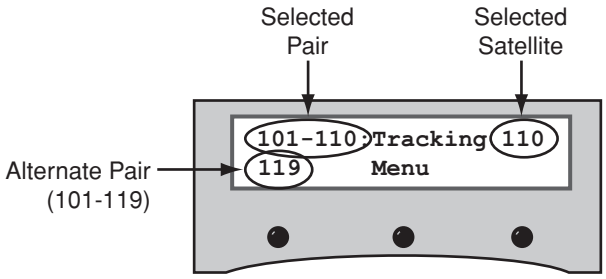
   After restart, the antenna will start tracking the satellite pair you selected.

3. The antenna restarts. Wait two minutes for system startup.

## Sat Select Modes

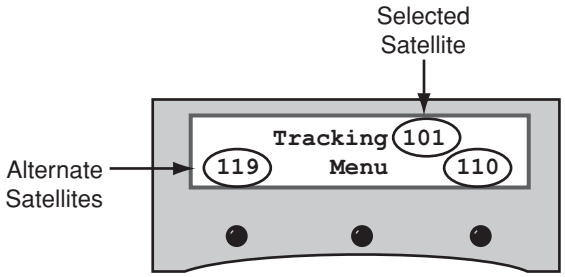
In **Automatic** mode, the antenna automatically switches between a pair of satellites as the user changes channels on the receiver's remote. The user sets the MCP to automatically switch between either 101-110 or 101-119 (see Figure 2-24).

**Figure 2-24 Automatic Sat Select Mode**




In **Manual** mode, the user presents a button on the MCP whenever he/she wishes to switch satellites. The user can select between 101, 110, and 119 (see Figure 2-25).

**Figure 2-25 Manual Sat Select Mode**



# Configuring the DIRECTV HD Receiver

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

## Changing the Dish Type on the Receiver

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 model of receiver is different, refer to the receiver's manual for details on viewing and changing the dish type setting.

## Activating the DIRECTV HDTV Service

The HD receiver will only be able to decode HD channels if 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. KVH makes activation easy. Just call KVH's Activation Department at **1-888-584-4163** (Mon.-Fri., 8:30 am - 5 pm ET).

# 3. Operation

This chapter explains how to access the system menu and switch satellites using the buttons on the control panel.

## Contents



3

# Downloading the Program Guide to the Receiver

Whenever you turn on the HD 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 might take more than 20 minutes for the receiver to download the entire Program Guide, which lists channels available on every DIRECTV satellite. A channel is selectable only if it is loaded in the Program Guide.

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

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

# Switching Satellites - TriSat

If your TracVision antenna is configured to track the DIRECTV TriSat group, your TracVision antenna will track three DIRECTV satellites in TriSat mode:

- **101** (Primary)
- **110** (HDTV)
- **119** (Locals)

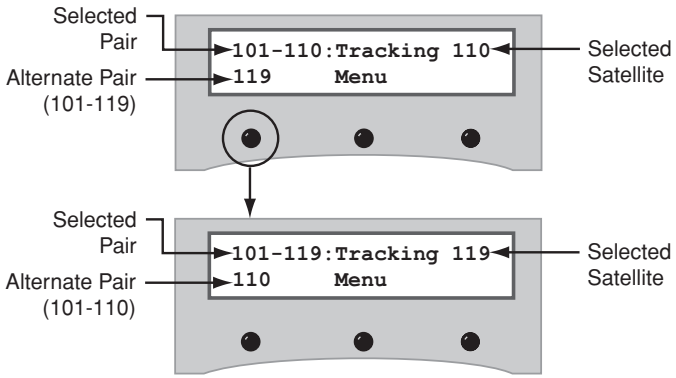
***NOTE:*** *For details on configuring the TracVision antenna for the DIRECTV TriSat group, see* *"Selecting the DIRECTV TriSat Group" on page 27*.

In TriSat mode, you can choose between two methods of satellite switching: Automatic or Manual. The following sections explain how to use each mode. For details on choosing a Sat Select mode, see *"Choosing a Sat Select Mode - TriSat Only" on page 45*.

## Automatic Switching

With Automatic Sat Select mode enabled, the antenna switches between a pair of satellites automatically, as necessary, when you change channels using the receiver's remote control. Since the antenna is configured to track three satellites, you can select either the **101-110** or **101-119** satellite pair on the MCP for automatic switching (see Figure 3-1).

**Figure 3-1 Automatic Satellite Switching in TriSat Mode**

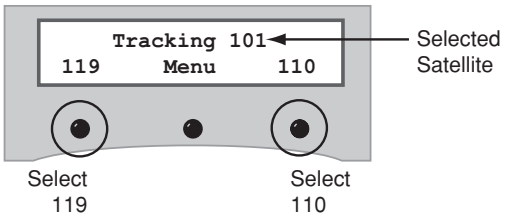



***NOTE:*** *The primary receiver, which is connected to the splitter, controls satellite selection. All secondary receivers will only be able to receive channels carried on the satellite that is currently selected on the primary receiver.*

## Manual Switching

With Manual Sat Select mode enabled, you can manually select satellites using the MCP front panel buttons. Simply press the button under the desired satellite shown on the display (see Figure 3-2).

**Figure 3-2 Manually Switching Satellites in TriSat Mode**



# Switching Satellites - DualSat

If your TracVision antenna is not configured to track the DIRECTV TriSat group, your TracVision antenna will track a pair of satellites in DualSat mode.

***NOTE:*** *For details on selecting the satellites to track in DualSat mode, see* *"Selecting Satellites to Track - DualSat" on page 46*.

## Automatic Switching

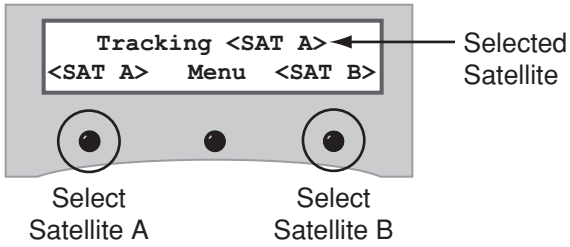
Most TracVision system configurations support automatic satellite switching in DualSat mode. With automatic switching enabled, the antenna switches satellites automatically, as necessary, when you change channels using the receiver's remote control.

***NOTE:*** *The primary receiver, which is connected to the splitter, controls satellite selection. All secondary receivers will only be able to receive channels carried on the satellite that is currently selected on the primary receiver.*

## Manual Switching

If your antenna configuration does not support automatic switching (for example, DISH Network or multiswitch configurations), you can manually select satellites using the MCP front panel buttons. Simply press the **left** button to select Satellite A or the **right** button to select Satellite B.

**Figure 3-3 Manually Switching Satellites in DualSat Mode**

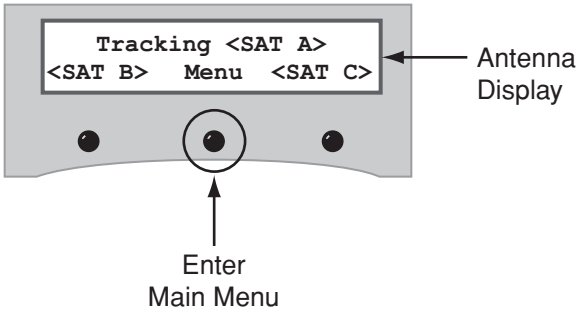



***NOTE:*** *If you use the MCP to manually switch between satellites, automatic satellite switching is disabled until you restart the TracVision system.*

# Accessing the Menu

With the MCP, you can configure and control all TracVision functions using the three buttons on the front panel. To access the menu, press the **center** button (see Figure 3-4).

**Figure 3-4 Accessing the Menu**




Once you have accessed the menu, the functions of the three MCP buttons are determined by the text shown directly above them on the display. Chapter 4 explains all of the menu functions that are available, and a quick reference guide is provided on the inside front cover of this manual.

# 4. Menu Functions

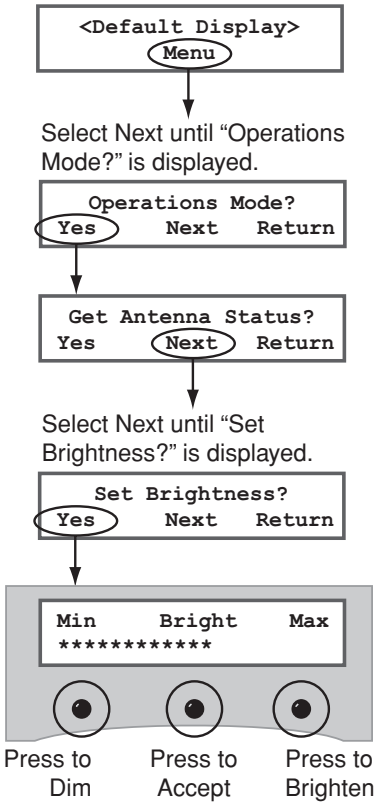
This chapter explains the various MCP menu functions that are available for configuring the TracVision system. Be sure to refer to the TracVision antenna manual for further details about configuring the antenna.

## Contents

# Adjusting Display Brightness

Follow the process shown in Figure 4-1 to adjust the brightness of the MCP display.

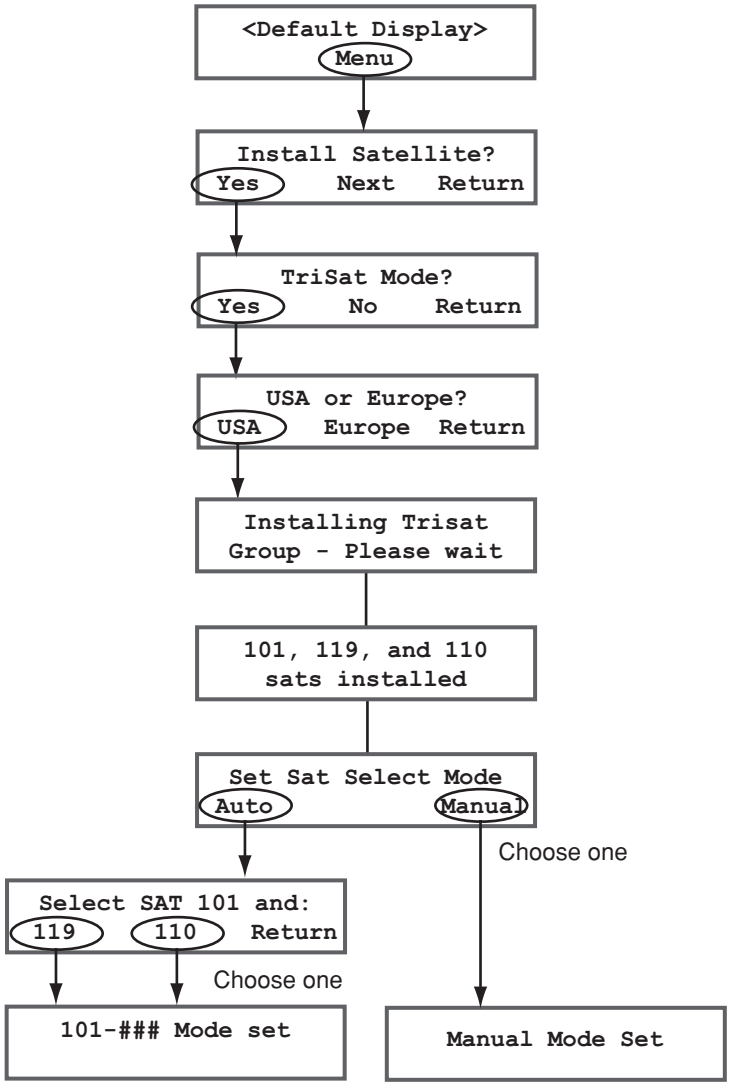
**Figure 4-1 Setting Display Brightness**



# Selecting Satellites to Track - TriSat

Follow the process shown in Figure 4-2 to select the DIRECTV TriSat group, consisting of the 101, 110, and 119 satellites.

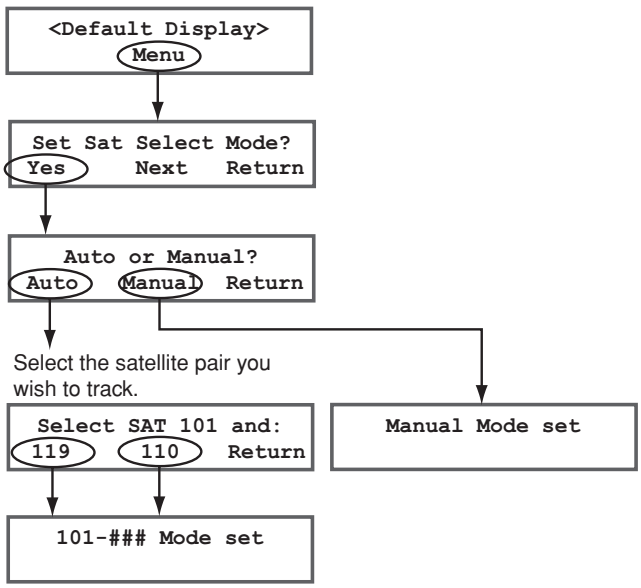
Figure 4-2 Selecting Satellites - TriSat



# Choosing a Sat Select Mode - TriSat Only

If your system is set up for TriSat mode, follow the process shown in Figure 4-3 to choose a Sat Select mode: Automatic or Manual. For details about these modes, see *"Sat Select Modes" on page 30*.

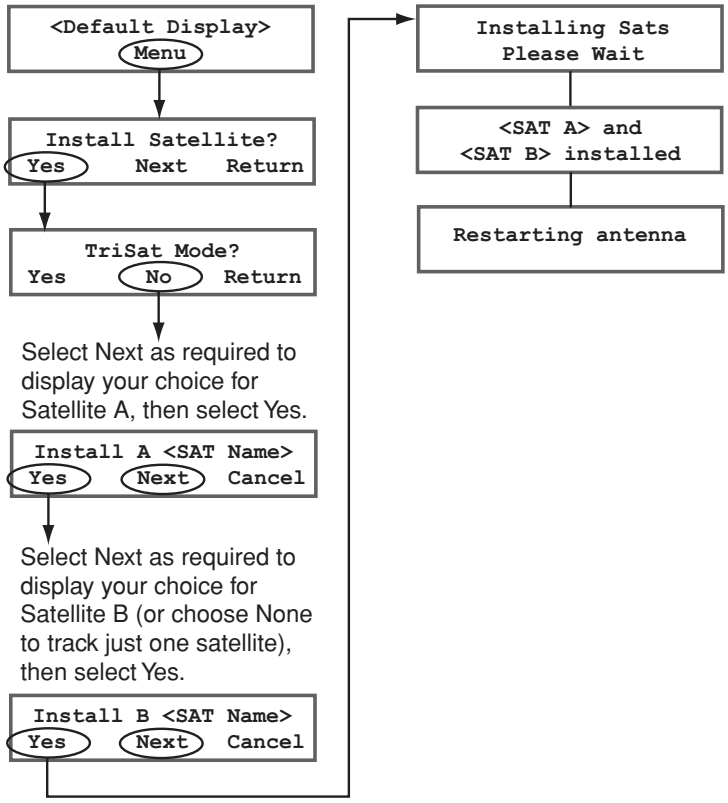
**Figure 4-3 Choosing a Sat Select Mode**



# Selecting Satellites to Track - DualSat

Follow the process shown in Figure 4-4 to select a pair of satellites from the TracVision antenna's satellite library.

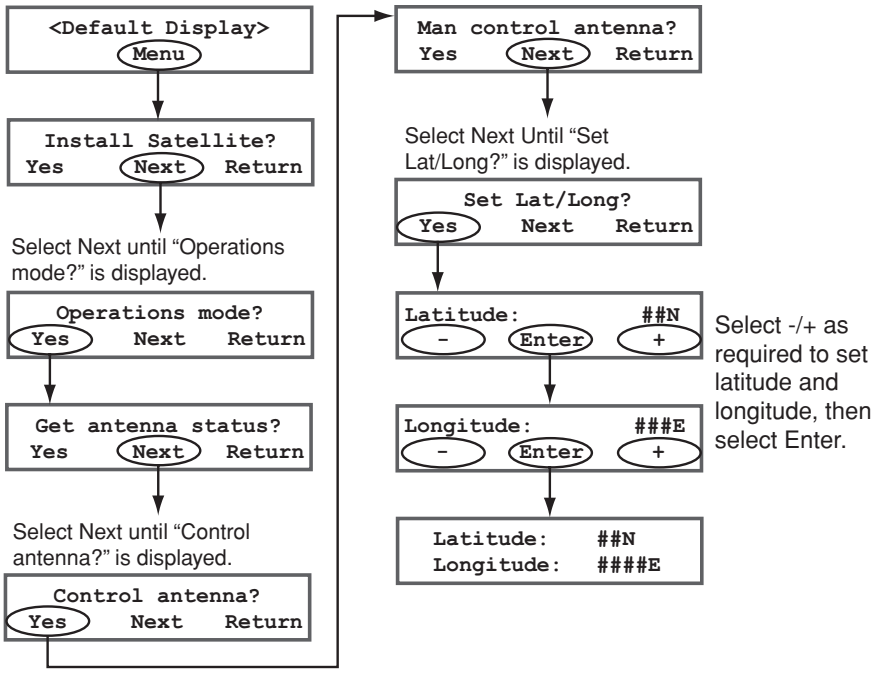
Figure 4-4 Selecting Satellites - DualSat



# Manually Entering Latitude and Longitude

Follow the process shown in Figure 4-5 to manually enter your vessel's/vehicle's latitude and longitude into the antenna. The antenna will use your position information to speed up satellite acquisition.

**Figure 4-5 Entering Latitude and Longitude**




***IMPORTANT!***

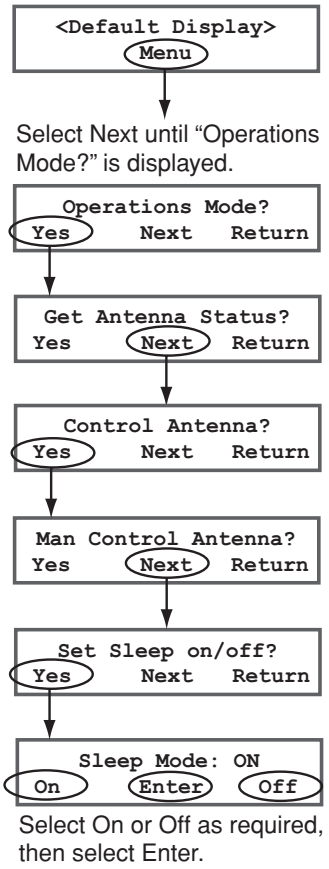
Be sure to restart the antenna after entering a new latitude and longitude. The antenna updates its stored position information only upon restart. For details on restarting the antenna, see *"Restarting the Antenna" on page 50*.

# Changing the Sleep Mode Setting

Follow the process shown in Figure 4-6 to set Sleep Mode on or off.

With Sleep Mode enabled, when the vessel/vehicle comes to a stop and holds its position for one minute (e.g., at a dock), the antenna unit locks the antenna in place to conserve power. As soon as the vessel/vehicle moves beyond a 1° - 2° window or the signal level changes significantly, Sleep Mode automatically turns off and the system begins tracking the satellite again.

**Figure 4-6 Setting Sleep Mode On/Off**

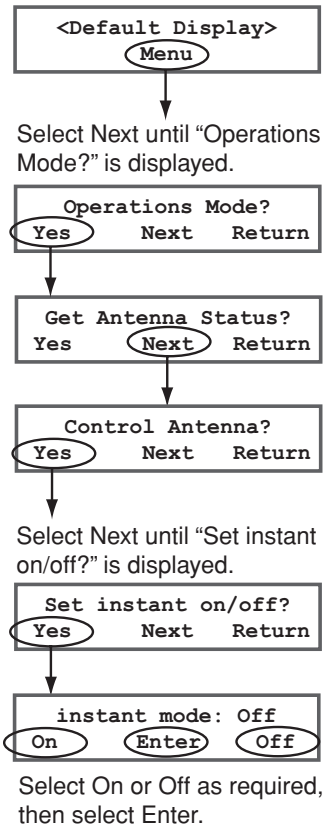


# Changing the Instant On Mode Setting

Follow the process shown in Figure 4-7 to set Instant On Mode on or off.

When Instant On is enabled, the antenna will immediately receive signals when the antenna is turned on, as long as the vessel/vehicle has not moved since the antenna was last shut off. However, if the system was turned off, and then the vessel/vehicle moved, after last acquiring the satellite via Instant On, the antenna will undergo its standard initialization process. This results in a brief delay.

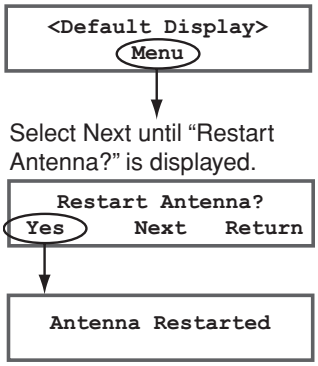
**Figure 4-7 Setting Instant On Mode On/Off**



# Restarting the Antenna

Follow the process shown in Figure 4-8 to restart the antenna.

**Figure 4-8 Restarting the Antenna**



# Viewing Antenna Status

Follow the process shown in Figure 4-9 to view antenna status information. Figure 4-10 lists the status information that is provided on each screen.

Figure 4-9 Antenna Status Screens

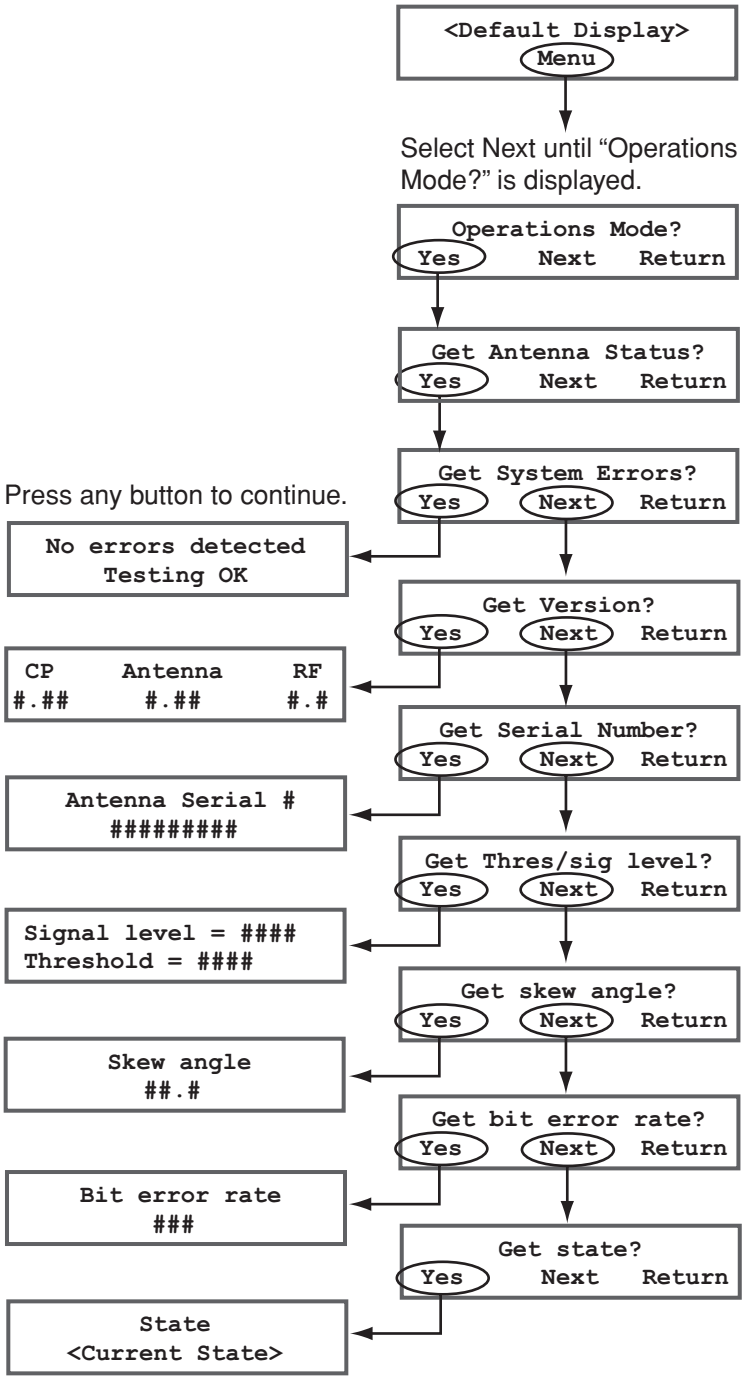


Figure 4-10 Antenna Status Information

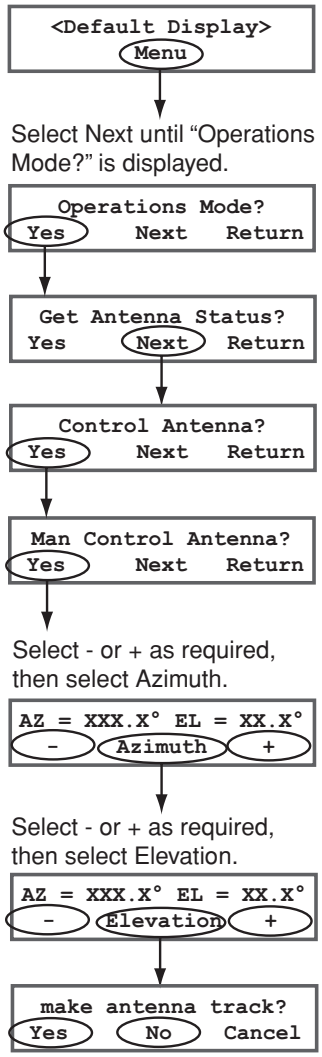
| MCP Screen | Description |
|---|---|
| Get System Errors | Performs the following tests and reports errors:<br>• Azimuth motor<br>• Elevation motor<br>• Antenna gyro (if applicable)<br>• Sensor (if applicable)<br>• RF comms<br>• RF signal<br>• RF config |
| Get Version | Reports the following software versions:<br>• Control Panel<br>• Antenna (Main board)<br>• RF board |
| Get Serial Number | Reports the antenna serial number |
| Get Thres/Sig Level | Reports the currently received RF signal level and threshold (minimum RF level for satellite acquisition) |
| Get Skew Angle | Reports the ideal LNB skew angle for the currently selected satellite - *Does not apply to North American antenna systems* |
| Get Bit Error Rate | Reports the received signal's bit error rate (higher number = more errors) |
| Get State | Reports the current state of the antenna:<br>• Initializing<br>• Searching<br>• Tracking<br>• Idle<br>• Error |

# Manually Controlling the Antenna

Follow the process shown in Figure 4-11 to manually position the antenna.

***NOTE:*** *If you are performing this procedure as part of the satellite frequency scan update procedure, be sure to select "NO" at the "Make Antenna Track" screen.*

**Figure 4-11 Manually Controlling the Antenna**



# Updating Satellite Frequency Data

***NOTE:*** *This function is only available in TracVision M5/M7/M9.*

If the antenna is unable to find a satellite, or if you are unable to receive certain channels, the satellite's frequency data might have changed. The satellite frequency scan feature allows you to update the frequency data of any satellite stored in the system's library. With the desired satellite, band, and polarization selected, the system will automatically scan 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.

***IMPORTANT!***

DO NOT use this function unless directed by KVH Technical Support or a KVH-authorized technician. Improper data selection will affect system performance.

***TIP:*** *During this process, you will need to enter the symbol rate and FEC code. You can find this satellite data on the web at* ***www.lyngsat.com*** *or* ***www.satcodx.com*** *(neither website is affiliated with KVH).*

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

***IMPORTANT!***

The vessel must remain stationary throughout this procedure.

1. Set your satellite receiver to the signal meter mode. Refer to your receiver's manual for details.

   ***IMPORTANT!***

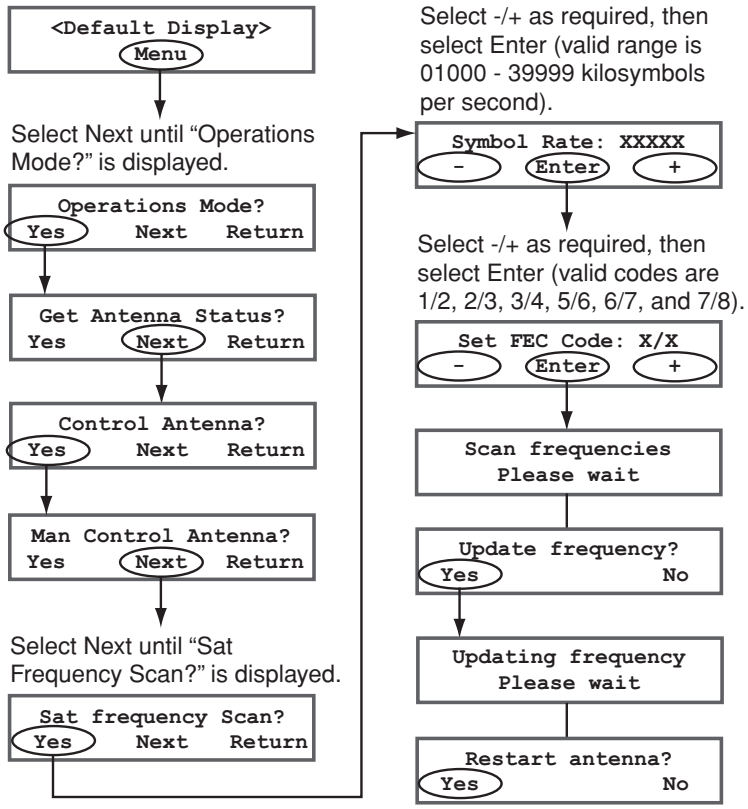
   Ensure that the TV signal meter indicates that you have a strong signal.

2. If the system is unable to locate the selected satellite, you can manually point the antenna. Refer to ***"Manually Controlling the Antenna" on page 53*** for details.
3. Using the receiver, select the desired polarization and band. Refer to your selected receiver's user manual for details.

4. Follow the process shown in Figure 4-12 to scan the frequency data of the selected satellite.

***NOTE:*** *Scanning satellite frequencies might take up to 10 minutes.*

**Figure 4-12 Scanning Frequency Data**

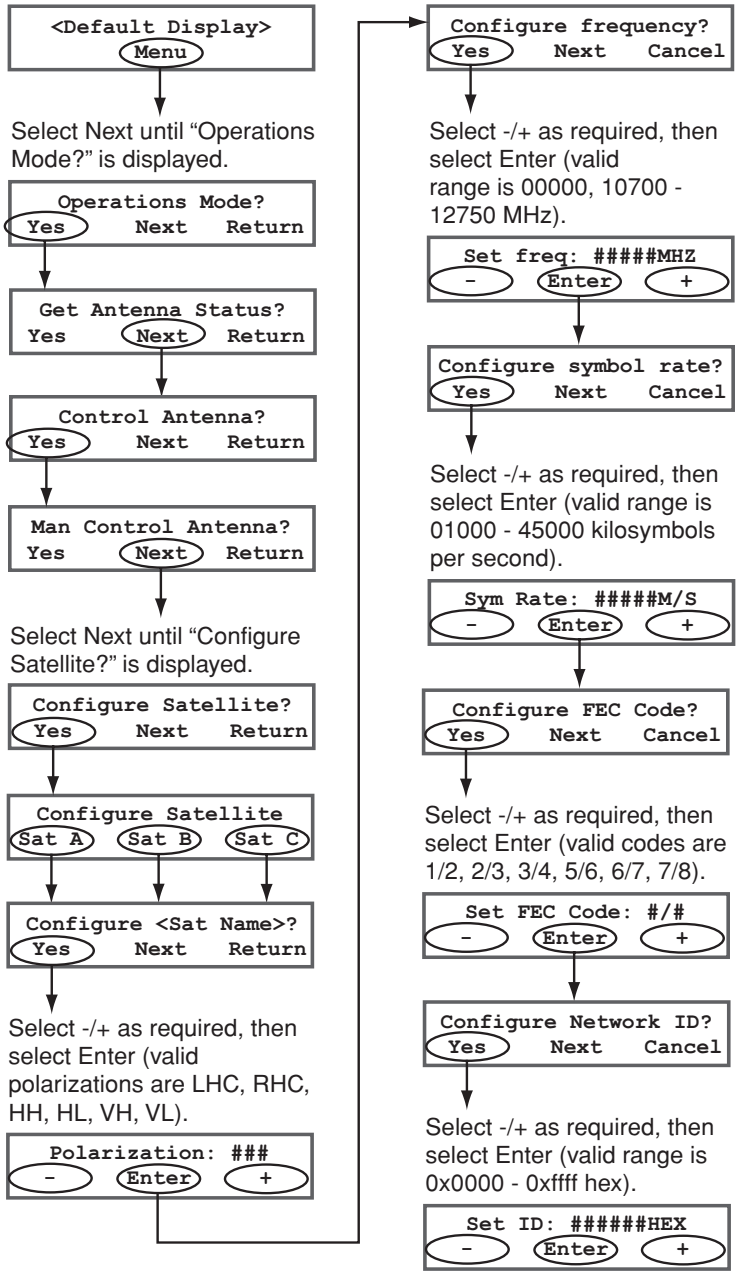


# Configuring Satellite Settings

***NOTE:*** *This function is only available in TracVision M5/M7/M9.*

Follow the process shown in Figure 4-13 to configure one of the satellites you have selected for tracking. *Circular satellites use two polarizations: right-hand circular (RHC) and left-hand circular (LHC).*

**Figure 4-13 Configuring a Satellite**



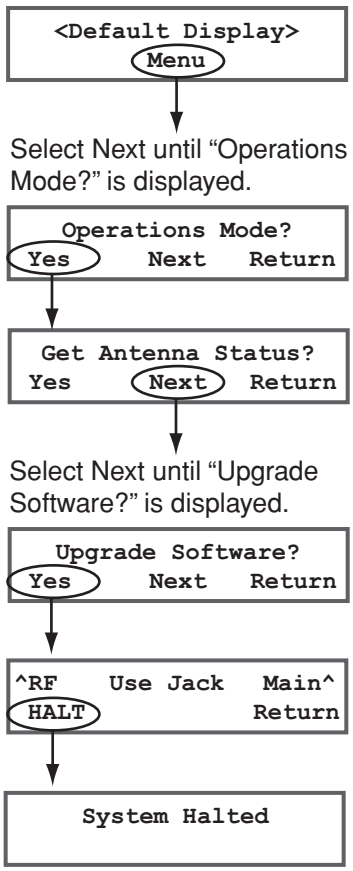
# Upgrading Software

A KVH-authorized technician can upgrade ("flash") the software in the antenna by connecting a laptop computer to the control panel and running the KVH Flash Update Wizard.

***NOTE:*** *KVH-authorized technicians can download the latest version of the KVH Flash Update Wizard, along with flashing instructions, from the KVH Partner Portal.*

Before beginning the software upgrade, follow the process shown in Figure 4-14 to halt the antenna.

**Figure 4-14 Preparing the Antenna for a Software Upgrade**



# 5. Troubleshooting

This chapter identifies potential problems that might occur following an MCP installation, along with their possible causes and solutions. It also explains how to get technical support. For antenna-specific troubleshooting information, refer to the TracVision antenna manual.

## Contents



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# Five Simple Checks

If you are experiencing a problem with the MCP, perform the five simple checks below.

## Is the antenna set to manual satellite switching?

If you cannot switch satellites using the receiver's remote control, the antenna might be set up for manual switching. If the system is configured for DIRECTV TriSat mode, refer to *"Choosing a Sat Select Mode - TriSat Only" on page 45* for details on selecting the Automatic Sat Select mode. If the system is configured for a pair of satellites in DualSat mode, simply turn the antenna off, then back on. In DualSat mode, the antenna enters manual switching whenever you press an MCP button to manually select a satellite.

## Has the receiver downloaded the Program Guide?

If the receiver hasn't downloaded the entire Program Guide from the satellite during startup, a "Channel Not Available" message might appear on the TV. Make sure the antenna is tracking the 101 satellite and wait for the Program Guide to load. It might take 20 minutes to complete.

## Is the selected channel carried on a different 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.

***TIP:*** *For your convenience, KVH provides a list of HD channels, and the DIRECTV satellites that carry them, on our web site at* ***www.kvh.com/HDlineup****.*

## Is the receiver configured for an "Oval, 3 LNB" dish type?

To receive channels from three DIRECTV satellites in TriSat mode, the receiver needs to be configured for an "Oval, 3 LNB" dish/antenna type. Refer to your receiver's manual for details on viewing and changing the receiver's dish type setting.

## Is the MCP connected properly to the TracVision system?

Check the rear panel of the MCP and ensure all cables are connected properly. Also be sure the TracVision system is turned on; the MCP receives its power from the TracVision system.

# Technical Support

The MCP and TracVision system are sophisticated electronic devices; only KVH-authorized technicians have the tools and expertise necessary to diagnose and repair a system fault. Therefore, if you experience any operating problem or require technical assistance, please call or visit your local authorized TracVision dealer or distributor. You can find an authorized technician near you by visiting our website at *www.kvh.com/wheretogetservice*.

If you need help finding an authorized technician, please contact KVH Technical Support:

Phone: +1 401 847-3327
E-mail: **techs@kvh.com**

Please have your antenna and MCP serial numbers handy before you call.

# Field Replaceable Units

Part numbers for field replaceable units (FRUs) that can be serviced in the field are listed in Figure 5-1. These parts can be obtained from any KVH-authorized dealer or distributor.

**Figure 5-1 MCP Field Replaceable Units**

| Part | Part Number |
|---|---|
| MCP | 02-1401 |
| Main control cable<br>(9-pin male to 9-pin male), 25 ft. | 32-0716-25 |
| RF control cable, switchplate version<br>(9-pin female to RJ22), 25 ft. | 32-0811 |
| RF control cable, ADCU version<br>(9-pin female to 3 wires), 25 ft. | 32-0618-25 |
| RF control cable, MCU (M9) version<br>(9-pin female to 9-pin female), 25 ft. | 32-0901-25 |
| Flash cable<br>(9-pin female to stereo plug), 5.9 ft. | 32-0807 |
| Switchplate maintenance port assembly,<br>TracVision M5/M7 version | 02-1192 |
| Switchplate maintenance port assembly,<br>TracVision R4/R5 version | 02-1192-01 |
| MCP rear-panel fuse (0.5 amp) | 16-0017-0500 |
| HDTV converter | 02-1431 |
| Splitter | 19-0366 |

# Appendix A
# Computer Diagnostics

This appendix explains how to connect a laptop PC to the antenna system via the MCP.

## Contents



A

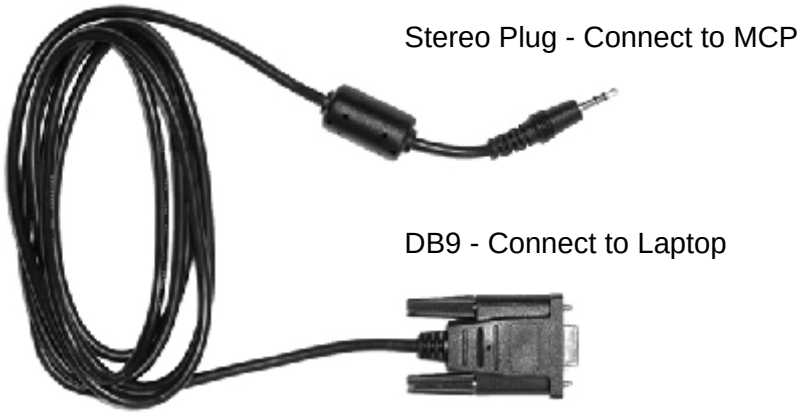
# Connecting a Laptop PC to the Main Flash Port

Since the MCP is wired directly to the TracVision system's maintenance port, the maintenance port is no longer available for computer diagnostics. Instead, you need to connect your laptop PC to the main flash port on the MCP (see Figure A-1). The main flash port has the same functionality as the maintenance port and is conveniently located on the MCP's front panel.

**Figure A-1 Main Flash Port on MCP**


To connect your laptop PC to the main flash port, use the supplied flash adapter cable (DB9-female to stereo plug) (see Figure A-2).

**Figure A-2 Flash Adapter Cable**




***TIP:*** *If your laptop does not have a DB9 serial COM port, you can use the following USB-to-RS232 adapters: IO Gear Part # GUC232A (visit* ***www.iogear.com****) or Belkin Part # F5U109 (visit* ***www.belkin.com****).*

Now you can use Windows® HyperTerminal or, if you are a KVH-authorized technician, the KVH Flash Update Wizard, to view antenna diagnostics data and enter antenna commands. Refer to the TracVision antenna manual for complete details.

# Appendix B
# Wiring Diagrams

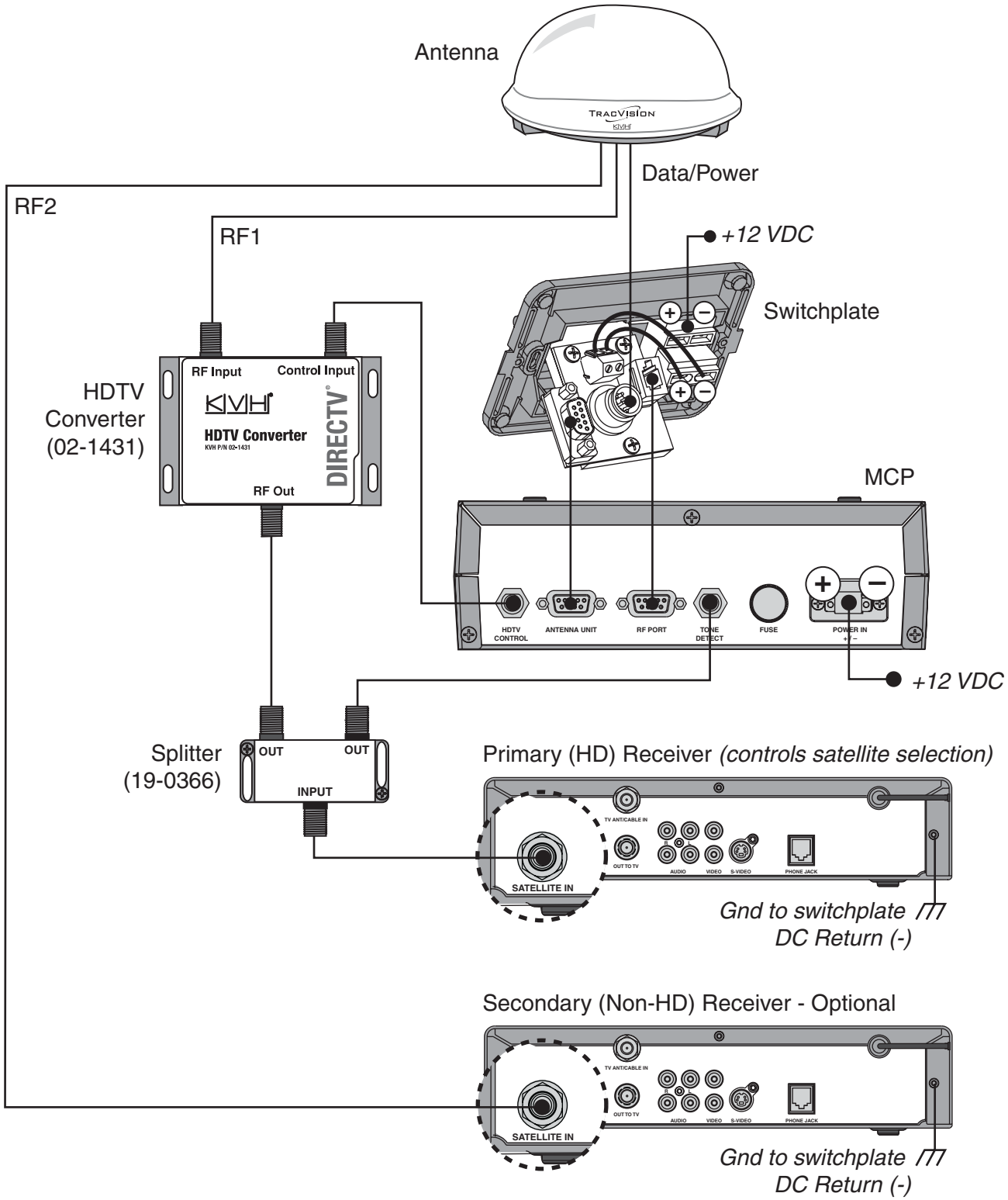
This appendix provides system wiring diagrams for various antenna and receiver configurations.

## Contents

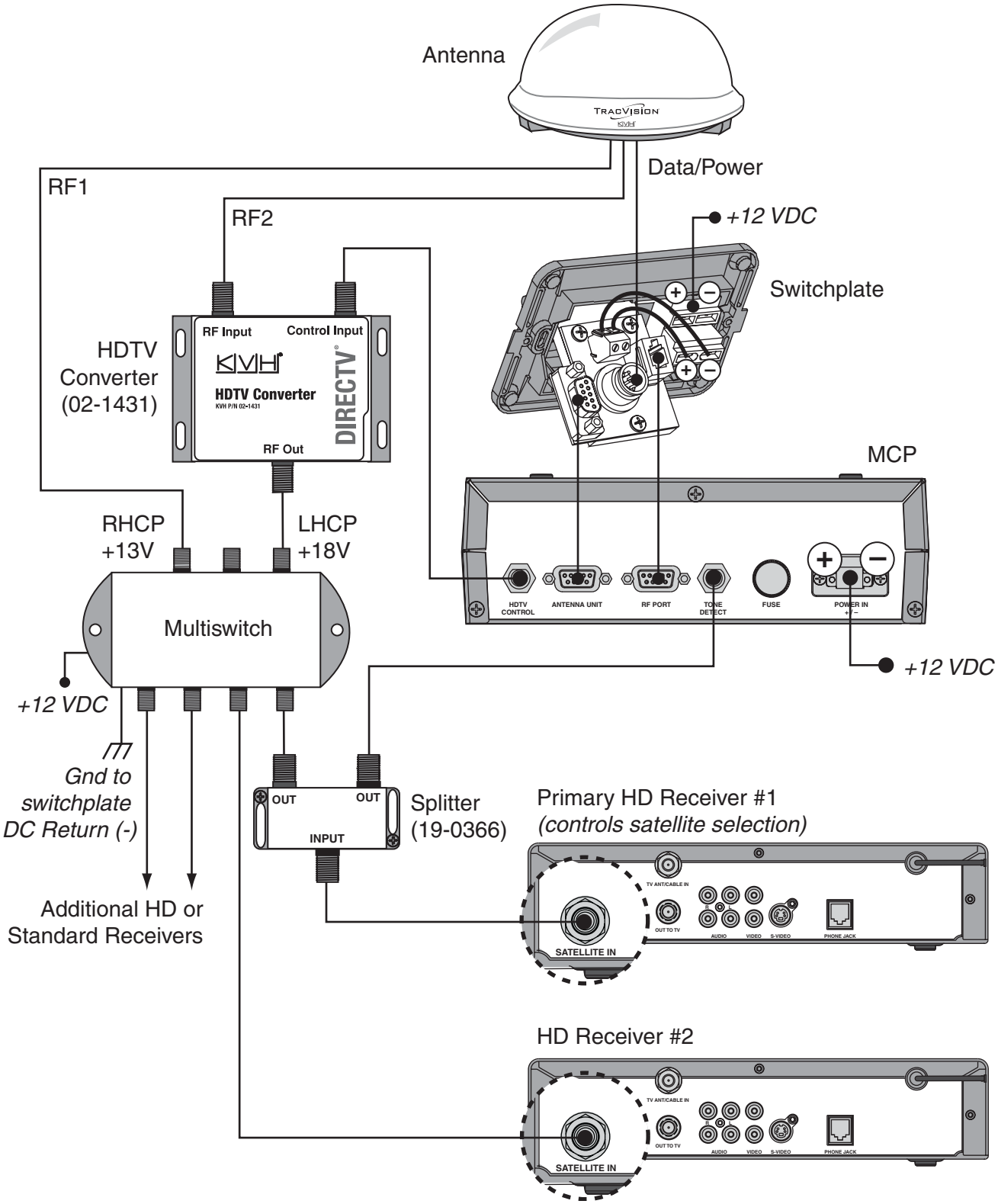


B

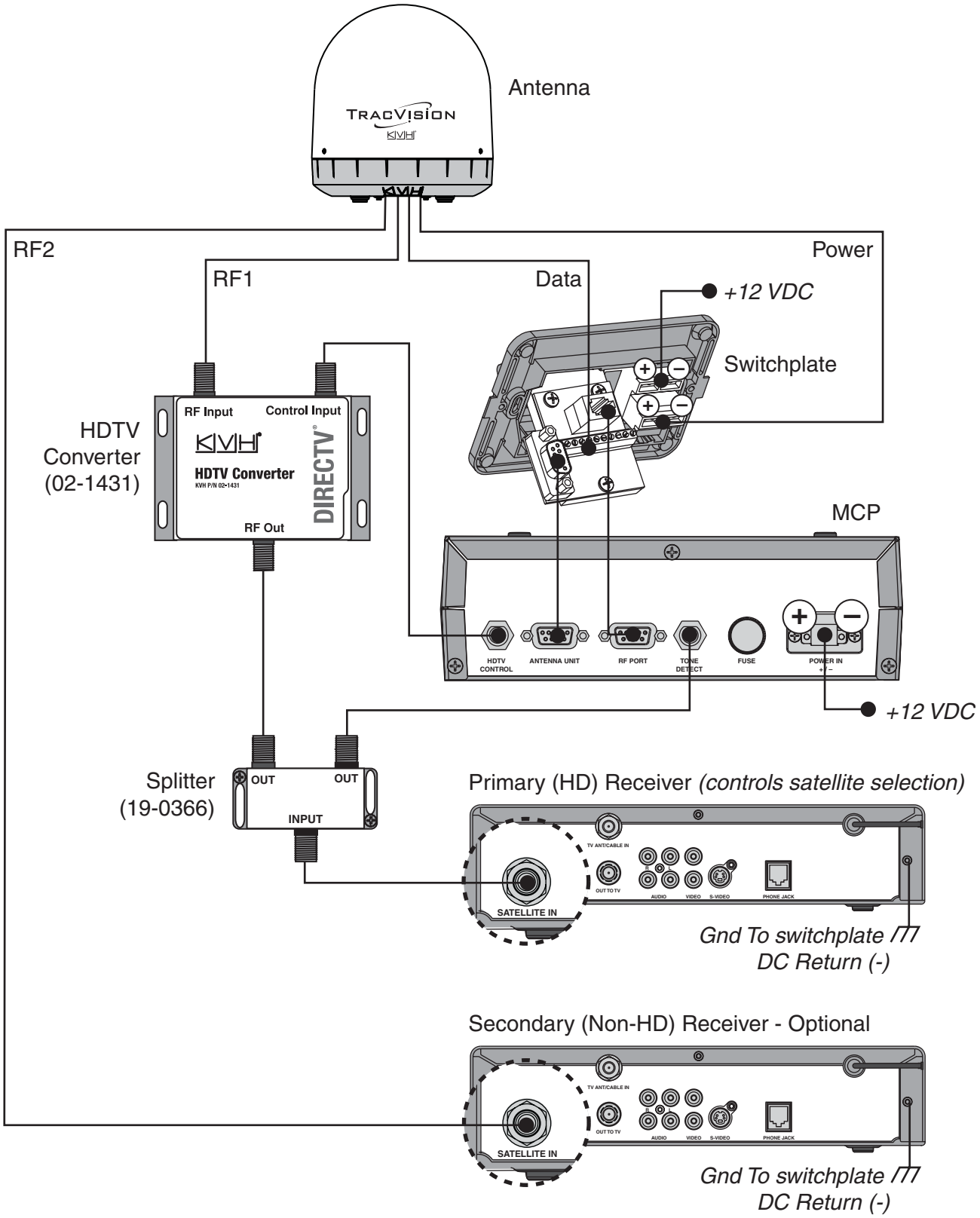
## Wiring 1 HD Receiver - R4/R5 Configuration



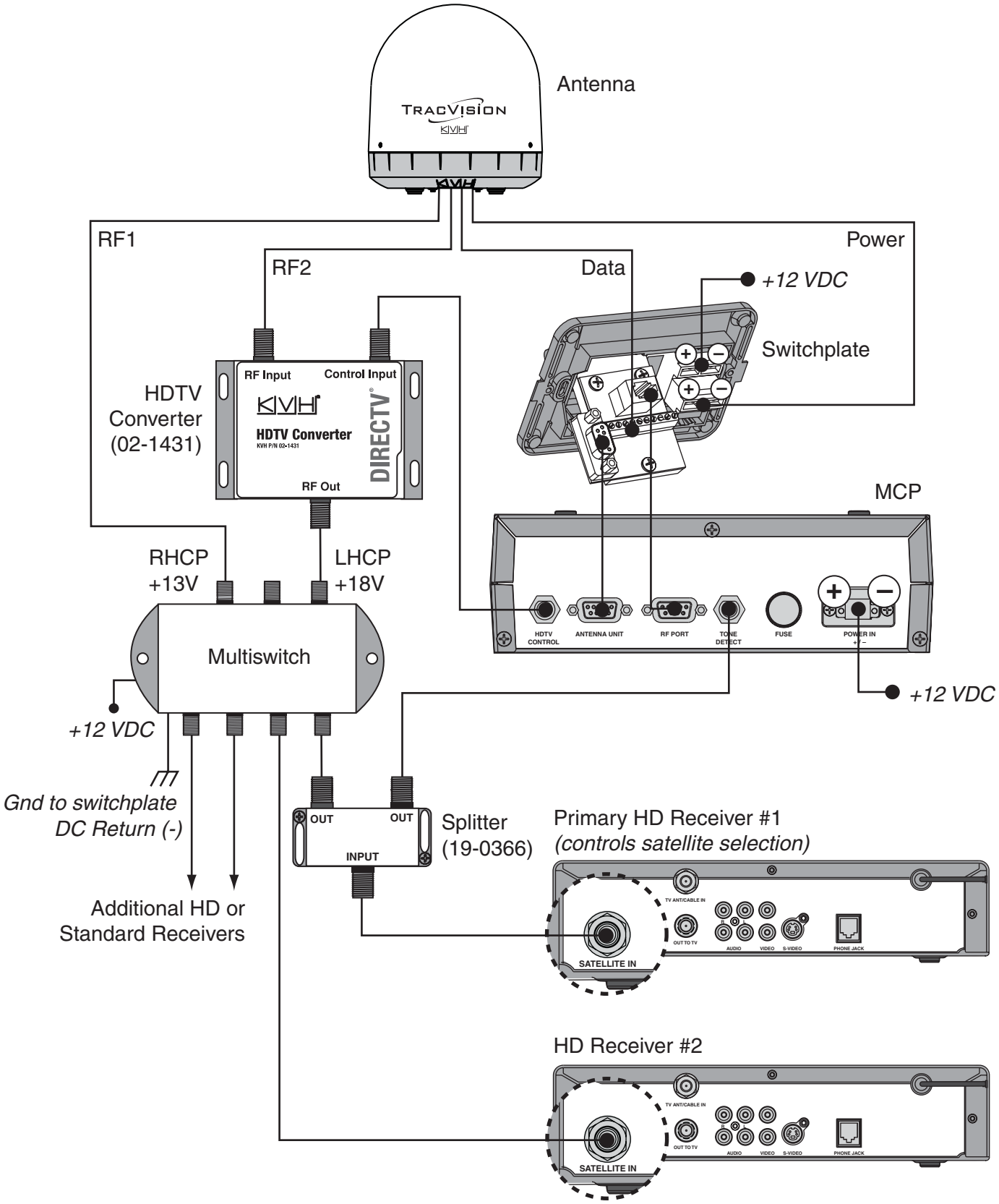
## Wiring 2 or More HD Receivers - R4/R5 Configuration



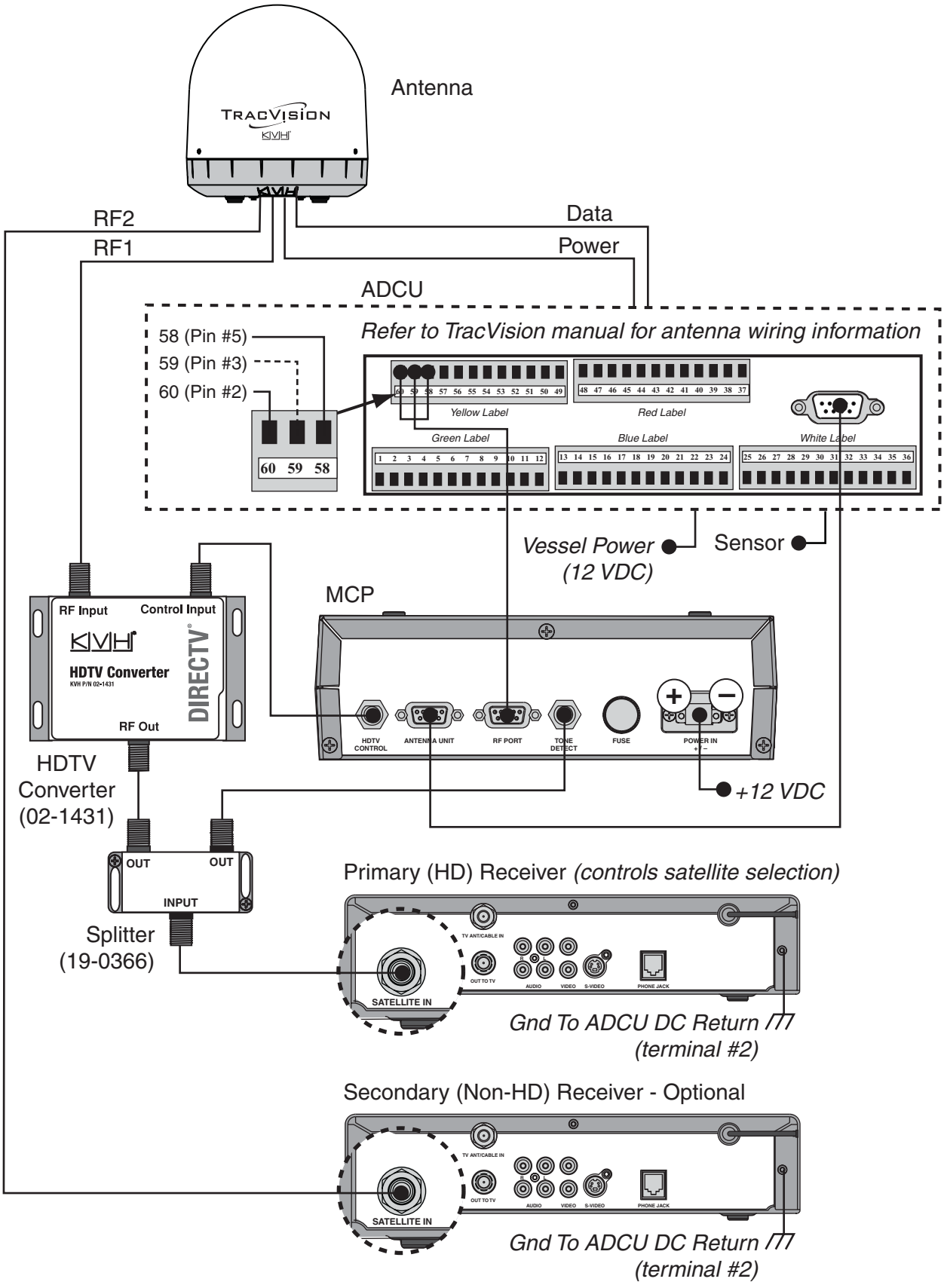
## Wiring 1 HD Receiver - M5/M7 Switchplate Configuration



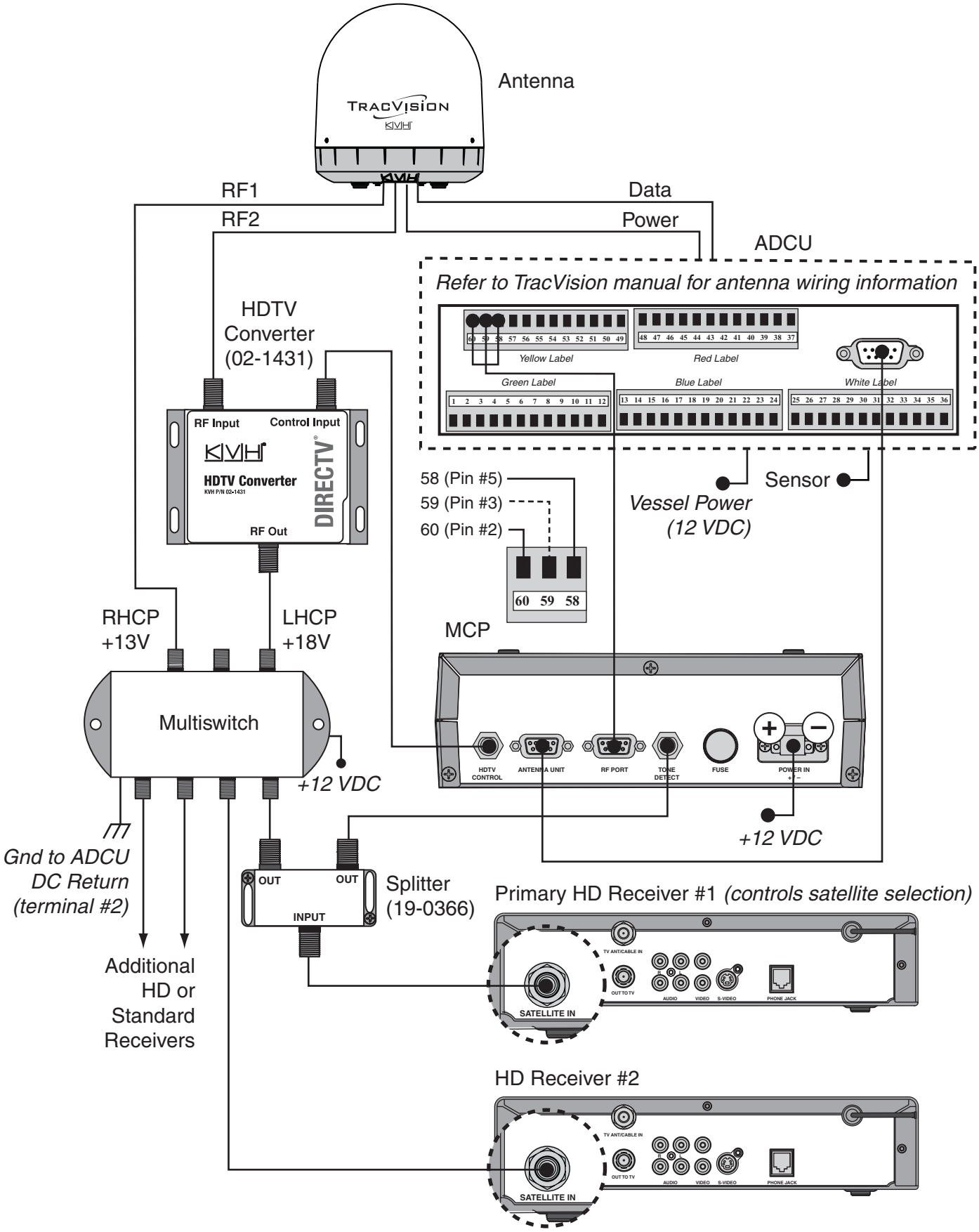
## Wiring 2 or More HD Receivers - M5/M7 Switchplate Configuration



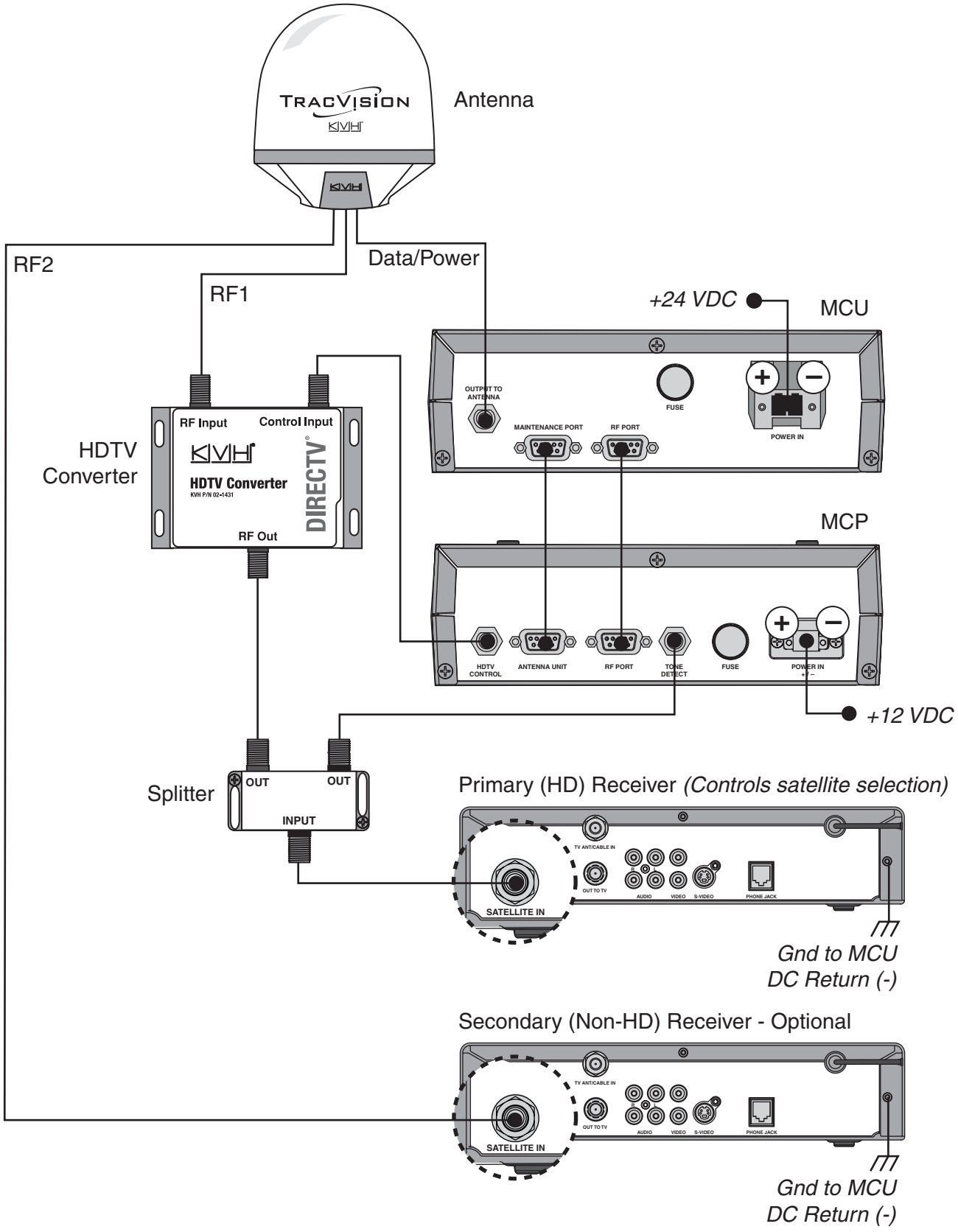
## Wiring 1 HD Receiver - M5/M7 GyroTrac Configuration



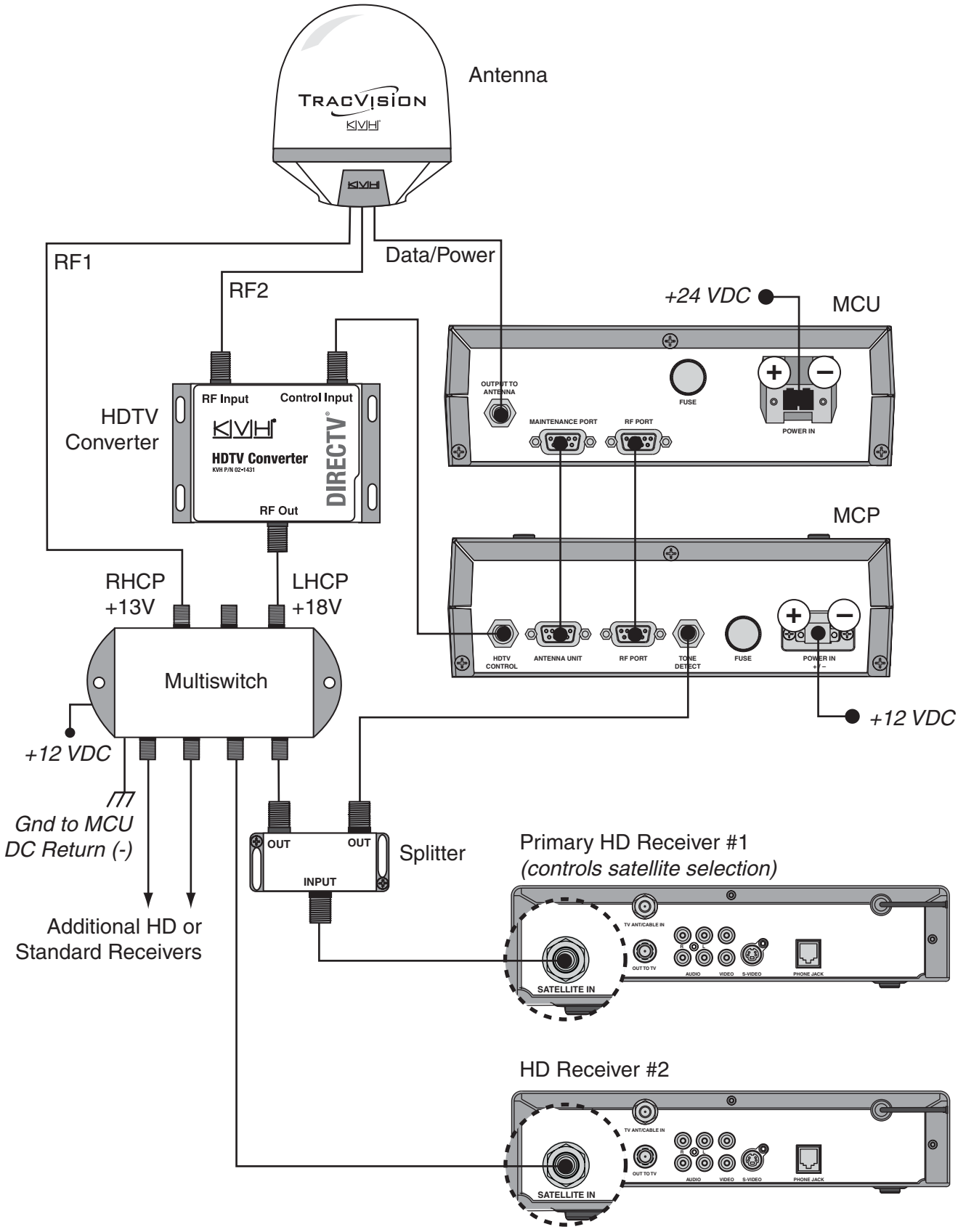
## Wiring 2 or More HD Receivers - M5/M7 GyroTrac Configuration



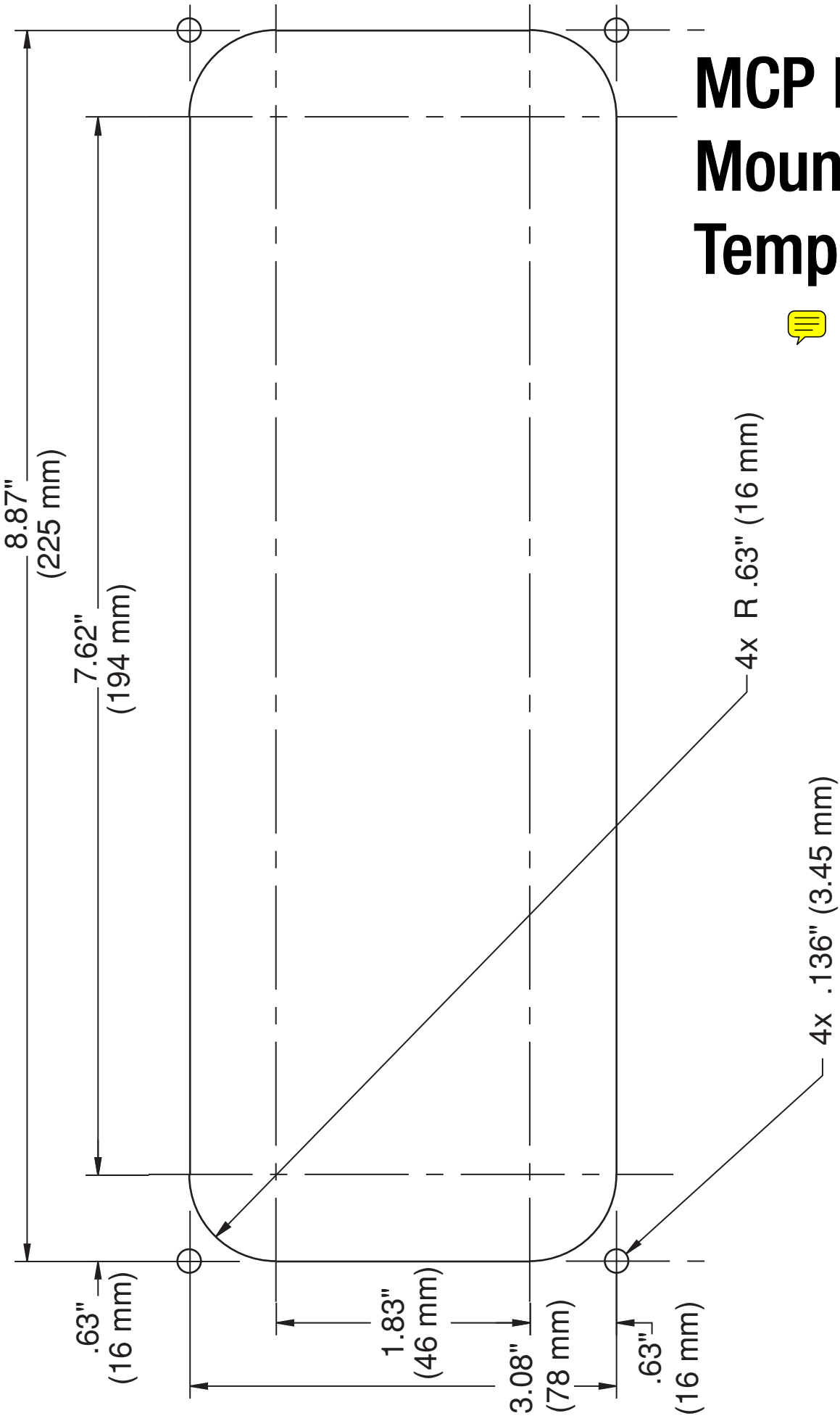
## Wiring 1 HD Receiver - M9 Configuration



## Wiring 2 or More HD Receivers - M9 Configuration



# MCP Flush Mounting Template



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