

**USER'S MANUAL**

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**STAR TRAK**

**SIX**

*First Class Performance*

**COMPUTER SYNTHESIZED SATELLITE RECEIVER DESCRAMBLER**

# STAR TRAK SIX

## FEATURES AT A GLANCE

- Integrated receiver / descrambler
- VideoCipher® II Plus descrambler equipped
- Multi-function IR Remote Control
- Advanced on-screen display
- Quartz synthesized for drift-free video and audio reception
- Full C Band and Ku Band compatibility
- 1000+ pre-programmed channels
- 100 Favorite channel memory
- 45 C Band Satellite Memory
- 45 Ku Band Satellite Memory

For future reference, write the Serial Number of your Star Trak Six IR/D (found on the bottom of the unit) and the VideoCipher® II Plus Unit ID Number in the spaces provided below.

Serial Number \_\_\_\_\_

VideoCipher® II Plus Unit ID Number \_\_\_\_\_

### ATTENTION

This consumer unit, with the VideoCipher® II, VideoCipher® II Plus or VideoCipher® II Plus with Integrated VIDEOpal® Order Recorder Consumer Descrambler Module installed, is intended for the authorized descrambling for personal home use of those satellite television signals which have been scrambled using a VideoCipher® scrambling format. Ownership or possession of this Integrated Receiver / Descrambler does not entitle (nor enable) the owner or possessor hereof to receive descrambled VideoCipher® television signals. To enable your unit and obtain proper authorization for descrambling, you must separately contract with the appropriate programming providers or their agents.

1. VideoCipher® and VIDEOpal® are registered trademarks of General Instrument Corporation.
2. VideoCipher® and VIDEOpal® trademarks are used under license from Cable/Home Communication Corp. (C/HCC), a subsidiary of General Instrument Corporation.
3. U.S. Patents Nos. 4,608,456, 4,613,901, 4,634,808, 4,712,238, 4,792,973, 4,864,615 and patents pending. ©Copyright 1986, 1987, 1988, 1989, 1990, C/HCC. All rights reserved.
4. Brevete\* 1987, 1988, 1990; Patented 1986, 1987, 1988, 1989.
5. Portions of this product sold under license from C/HCC.

- Built-in antenna positioner/power supply
- Parental Lockout
- Constant memory
- Accessory output for dual-band or dual-polarity feeds
- VC Stereo
- Scan Tune
- SMATV Ready
- UL Recognized product
- CSA Certified product

### OPTIONS:

- UHF Remote Control
- Programmable TI Filter
- 5 Year Extended Warranty

### OPERATION PRECAUTIONS

#### WARNING:

To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture. Do not open the cabinet. Refer servicing to qualified personnel only.

#### CAUTION:

To prevent electric shock, do not use this (polarized) plug with an extension cord receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

#### ATTENTION:

Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans en laisser aucune partie à découvert.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated, dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying this appliance.



**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN



**CAUTION:**  
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Export of the device requires a valid export license issued by the U.S. Department of State, Office of Munitions Control.

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# INTRODUCTION

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Welcome to the world of superb satellite viewing with the **STAR TRAK SIX** Computer Synthesized Integrated Satellite Receiver / Descrambler.

Your **STAR TRAK SIX** is equipped with a VideoCipher® II Plus Descrambler. Not only do you have access to the marvellous array of viewing on unscrambled channels, once your descrambler is authorized, you will have access to some of the finest TV programming available.

The advanced on-board microcomputer and continuous memory deliver drift-free, high-quality video and audio reception.

Once your **STAR TRAK SIX** system is operational you will discover how easy it is to use. It is recommended that you read this manual thoroughly to be sure that your **STAR TRAK SIX** system will give you maximum enjoyment.

Then relax and enjoy complete control of your entire satellite TV system - from dish movement to selecting your movie rating ceiling - with the comfortable and sleek **STAR TRAK SIX Remote Control**.

Happy viewing and thank you for choosing the **STAR TRAK SIX IR/D**.

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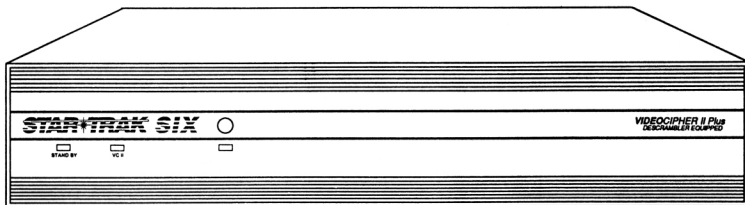
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# **CONTROLS, INDICATORS & CONNECTIONS**

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## **FRONT PANEL**



### **FRONT PANEL LED INDICATORS**

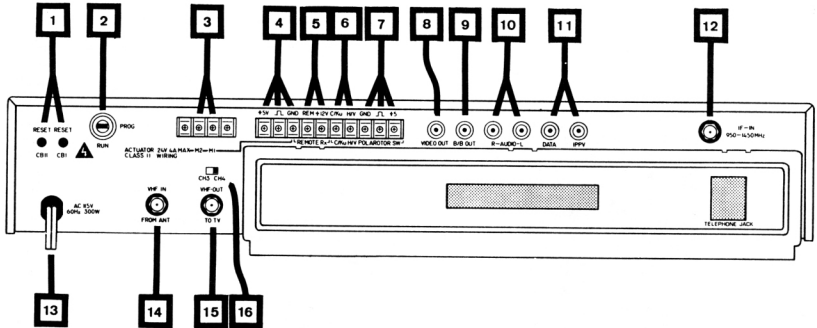
**STAND BY** - shows the receiver is plugged into power outlet

**VC** - lights with reception of VideoCipher® scrambled channel

**REMOTE** - target point for infrared remote signal. LED flashes when IR remote signal is received

## BACK PANEL

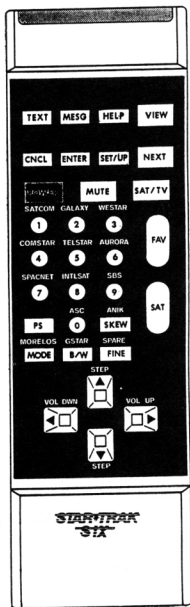
CONTROLS, INDICATORS & CONNECTIONS...



## BACK PANEL CONNECTIONS & CONTROLS

- CIRCUIT BREAKERS** - CB1 - Main Drive  
- CB2 - Motor Drive
- PROG/RUN** - (Keyswitch) use to select PROG or RUN mode.
- M2-M1** - main actuator terminals. Wiring connected to these terminals should be Class II.
- ACTUATOR** - actuator feedback (sensor) terminals
- REMOTE RX** - UHF Adaptor Kit (optional) inputs
- H/V or C/KU** - connect to H/V or C/Ku switch for automatic switching.
- POLAROTOR** - These 3 terminals (+5V, GND) are for use with a servo motor type polarizer only.
- VIDEO OUT** - connect your monitor or VCR VIDEO IN to this output.
- B/B OUT** - unclamped, unfiltered baseband signal. This is used with external decoder, SuperGuide or other accessory that requires unprocessed video signal.
- AUDIO** - R & L - connect your monitor or VCR AUDIO IN (R & L) to these outputs.
- DATA/IPPV OUTPUTS**  
**DATA** - connect this to VideoCipher® II Plus accessory, such as the INFOCIPHER® 1500 data receiver.  
**IPPV** - connect this jack to implus pay-per-view order recorder such as VIDEOPAL™.
- 950 -1450 MHz** - attach your coax cable from LNB here.
- 115V 60 Hz, - 300W AC Power Cord** - plug into properly grounded 3-prong power outlet.
- VHF-IN FROM ANT** - connect your VHF antenna or cable signal here.
- VHF-OUT TO TV** - connect your television's VHF Input here.
- CH3 CH4** - this switch selects the channel for viewing on a standard T.V.

## REMOTE CONTROL FUNCTIONS



**POWER Key** Turns the receiver on and off. Push [POWER] and the receiver restores the last watched satellite, and channel settings.

### DESCRAMBLER FUNCTION KEYS

These 8 keys control the VideoCipher® II Plus functions of your **STAR TRAK SIX**. Your receiver must be authorized and tuned to a VideoCipher scrambled channel for descrambling operations.

**TEXT** - Press for a display of information bulletins and special notices from program suppliers.

**MSG** - Press to view personal message sent by a program supplier. A flashing asterisk (\*) on your TV screen indicates that a message has been received.

**HELP** - Press for help with descrambler operation.

**VIEW** - Press to see the satellite name and channel # you are viewing. If information about the program is available it will also be shown. [VIEW] can also be used to return you from most setup functions, to viewing the program in progress.

**CNCL** - Functions like a backspace key. Press to delete any digit(s) entered incorrectly. Also used for skip-channel function (See page 13).

**ENTER** - Press to confirm selections or password entries.

**SETUP** - Press for an on-screen menu of descrambler features, including your descrambler authorization number. Use [SETUP] with numeric keys 0-9 to select and customize features.

**NEXT** - Press to display information about the next scheduled program on a VCI Plus channel.

### RECEIVER FUNCTION KEYS NUMBER KEYS 0 TO 9

These are dual function keys. (For example [GALAXY], [2] is used for either the GALAXY satellite or the number 2). They are used for direct entry of channels, audio frequency information or satellites.

**MUTE Key** - Turns audio on and off. The audio will return to the previous setting if the channel is changed or volume control is used. Also used to "SCAN" in "PROG" mode.

**SAT/TV Key** Lets you switch back and forth from satellite television viewing to regular or cable TV watching. This functions when built in channel 3/4 modulator is used.

**FAV Key** - Used to store and retrieve favorite satellite channels.

**SAT Key** - Used to select satellite and used to adjust dish position.

**PS Key** - Used to access Password [PS] features; lock channel and lock store and align dish.

**MODE Key** - Used to select audio subcarriers and audio bandwidth. Frequency is displayed in MHz.

**B/W Key** - Toggles between wide and narrow audio bandwidth.

**FINE Key** - Used with [STEP UP] or [STEP DOWN] for video fine tuning, and selecting optional TI filter.

**SKEW Key** - Used to adjust servo type polarator.

**VOL UP & VOL DOWN Keys** Adjust audio volume up or down. Also used as <-> keys for VideoCipher® II Plus.

**STEP UP & STEP DOWN Keys** Multi-function keys used to adjust dish positioning, skew, audio and video tuning and channel selection.

# INSTALLATION

## PRE-INSTALLATION CHECKLIST

### SATELLITE ANTENNA CONNECTIONS

Check that all the following items have been packed with the receiver. If any of the items are missing or appear damaged, contact your dealer.

- IR Remote Control
- 2 - "AA" Batteries
- User's Manual
- Two keys for keyswitch

### CABLES AND TOOLS REQUIRED

Use only quality cables and connectors. (For distances over 125 ft., see the Table 1) One-run cable is recommended. Add approximately 10% to the calculated distance for detours and drain loops. Always test cables for continuity or short circuits prior to installation.

Table 1 - Cable Recommendations

Connection	Length		
	up to 125 ft.	to 200 ft.	to 325 ft.
LNB to Receiver	RG-59	RG-6	RG-6
Actuator Motor wires	16 ga.	16 ga.	14 ga.
Actuator Sensor wires	24 ga.	24 ga.	22 ga.
Polarotor	20 ga.	18 ga.	16 ga.

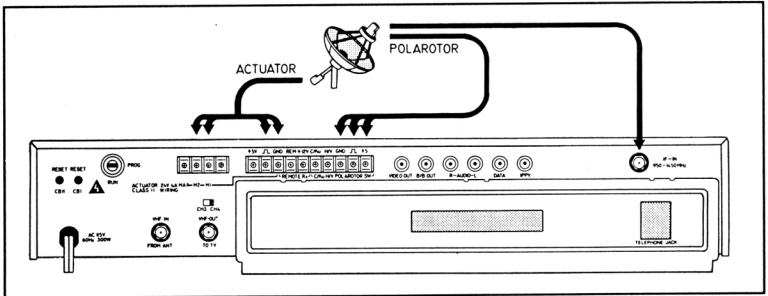
- RG-6 coaxial cable for IF connection
- 3 x 18 gauge polarotor wires
- 2 x 14 gauge actuator motor wires
- 3 x 24 gauge sensor wires
- F connectors
- Crimper
- Wire strippers
- #2 Phillips screwdriver

## INDOOR CONNECTION PROCEDURE

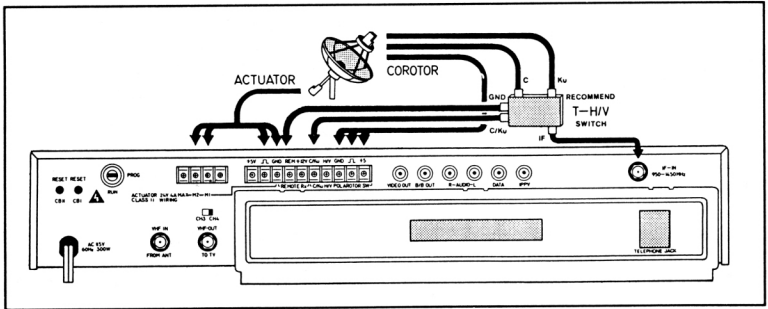
1. Check to make sure that your receiver is not connected to any AC power source. There should not be any LED's lit.
2. Place the receiver on a secure, flat surface. Be sure that there is proper ventilation and it is not near any heat source.
3. Insert key and turn the keyswitch on the back panel of the receiver to the "PROG" position.
4. Separate the individual wires of the one-run cable to ensure that each set of wires can easily reach the terminals. Install an F-type connector to the coaxial cable of the one-run cable. Connect the coaxial cable to the IF IN terminal.
5. Polarotor Connection. Insert the 3 x 18 gauge polarotor wires into quick connector terminals. Normally: Red to +5, Black to GND, White to  $\square$ .
6. Motor Connections. Remove the terminal cover and insert the 2 x 16 gauge wires into the Motor terminals. REPLACE THE TERMINAL COVER.
7. Install the 2 x 24 gauge wires to the sensor terminal marked  $\square$  and GND.
8. With the sensor and actuator motor now properly wired, connect the video and audio components. Suggestions are shown in the following diagrams for different options.
9. Plug the receiver into 115 VAC power outlet.

## SATELLITE ANTENNA CONNECTIONS

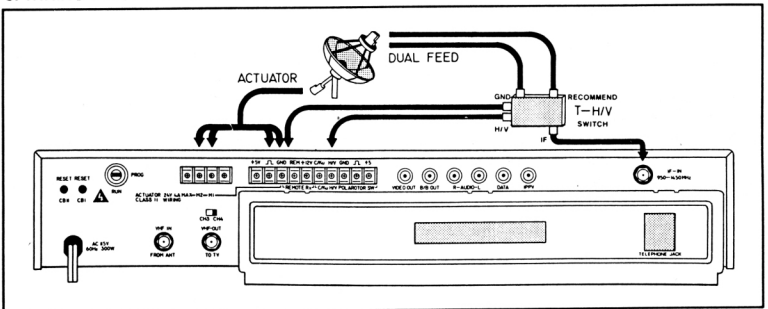
### 1. WIRING DIAGRAM SINGLE C-BAND SYSTEM



### 2. WIRING DIAGRAM - C/KU BAND (COROTOR™) SYSTEM



### 3. WIRING DIAGRAM DUAL C-BAND

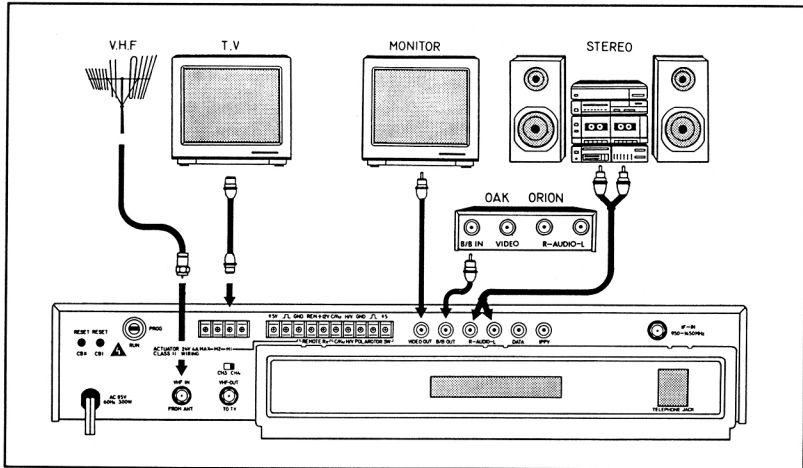




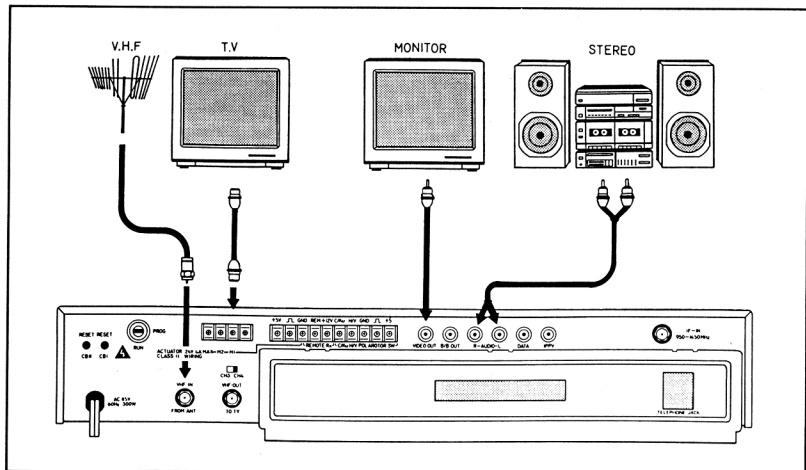
# AUDIO VIDEO CONNECTIONS

INSTALLATION...

## 1. EXTERNAL DECODER WIRING DIAGRAM



## 2. BASIC AUDIO VIDEO WIRING DIAGRAM



## PROGRAMMING (PROG MODE)

Programming involves "teaching" your receiver to remember satellite positions and channel selections. Most popular satellites and channels have been permanently pre-programmed for your convenience. Once the proper satellite position has been located, all adjustments for each channel on that satellite are done automatically. (These settings may be over-ridden if you should so desire.) The Star Trak Six does not use a [STORE] button. It's constant memory simply stores any changes automatically.

### INITIAL PROGRAMMING

This applies to new installations or after the location of the system has been changed. A current satellite TV guide will be useful to help you identify specific satellites and channels.

To program satellite positions, the keyswitch on the back panel must be in "PROG" position. All programming can then be done from the remote control.

When the keyswitch is turned to the "PROG" position, (Fig. 1) the On-Screen Display will show "PROGRAM MODE" at the top of the screen, and it will remain on the screen as long as the keyswitch is in the "PROG" position. Initial programming consists of the following steps:

1. Entering a new password
2. Erasing all memory (except pre-programmed factory settings)
3. Re-entering password
4. Setting the limits
5. Storing satellite positions

### ENTERING NEW PASSWORD

Press [PS] to display the "PS" functions available (Fig. 2) Press [PS] repeatedly to move the arrow to "CHANGE PASSWORD" then enter a 4 digit password of your choice. (Fig. 3).

### ERASING ALL MEMORY

To clear all satellite positions stored in memory and to reset all other settings to the pre-programmed factory settings, press [PS] until the arrow points to "ERASE ALL" (Fig. 4) Enter your 4-digit password. A warning screen will appear (Fig. 5). Entering your code a second time will erase all stored information, (pressing any other key will cancel the command). After the memory has been erased, the screen will show "ALL MEMORY CLEARED", then Fig. 1 will reappear on the screen.

### RE-ENTERING PASSWORD

Erasing the memory will also erase your password. The password then becomes "0000". If you want another password, repeat "ENTERING NEW PASSWORD" above.

"PROGRAM MODE"  
SET LOWER LIMIT!

PRESS SAT AND USE  
▲ OR ▼ TO MOVE DISH  
PRESS SAT 3 TIMES TO  
STORE LIMIT

Fig. 1

"PROGRAM MODE"

-> CHANGE PASSWORD  
ERASE SAT. (S2)  
ERASE ALL

PRESS PS TO SELECT  
ENTER PASSWORD TO  
EXECUTE

Fig. 2

"PROGRAM MODE"

PASSWORD HAS BEEN  
CHANGED TO: 0000

Fig. 3

"PROGRAM MODE"

CHANGE PASSWORD  
ERASE SAT. (S2)  
-> ERASE ALL  
PRESS PS TO SELECT  
ENTER PASSWORD TO  
EXECUTE

Fig. 4

"PROGRAM MODE"

\*\*\*\*\*CAUTION\*\*\*\*\*  
ERASE ALL WILL  
DESTROY ALL STORED  
INFORMATION!  
TO CONTINUE ENTER  
PASSWORD. ANY

Fig. 5

## SETTING LIMITS

PROGRAMMING...

This establishes the limits of antenna travel. There are two extreme limits, the lower one when the jack is fully retracted and the upper one, when it is fully extended. If you cannot see your dish while setting the extreme limits, have an assistant observe its movement to make certain that it does not travel too far (if your actuator jack does not have a physical stop) or strike an object.

In "PROG" mode, when the receiver is turned on for the first time, or after "ERASE ALL" has been used, the display will read: (Fig. 6)

\*PROGRAM MODE\*  
SET LOWER LIMIT!  
  
PRESS SAT AND USE  
▲ AND ▼ TO MOVE DISH  
PRESS SAT 3 TIMES TO  
STORE LIMIT

Fig. 6

The initial dish position is indicated by a four-digit number, eg. 5000. When you move the dish the number will go down as the jack is retracted and go up as the jack is extended. If the number does not change as you try to move the dish, the display will read: (Fig. 7). You may have reached the end of travel or there may be a loose or broken wire or other problem with the jack installation or in the wiring from the antenna jack to the receiver. If the numbers move the wrong way, disconnect the AC power source to your receiver and reverse the wires connected to the actuator motor terminal. When the number changes, it confirms that the motor is turning and the dish is moving.

\*PROGRAM MODE\*  
SET LOWER LIMIT!  
  
USE ▲ OR ▼ TO MOVE  
DISH TO LIMIT  
JACK ERROR!!!  
NO RETURN PULSE

Fig. 7

Press [SAT], then [STEP UP] or [STEP DOWN] to move the jack to the fully retracted position. Then go back and extend the jack for a few counts. You have now located the lower limit. Press [SAT] 3 times to store the limit in memory. Once stored, the on-screen display will read "LOWER LIMIT STORED AT XXXX", then after 5 seconds the display will change to "SET UPPER LIMIT" (Fig. 8).

\*PROGRAM MODE\*  
  
SET UPPER LIMIT!!!  
PRESS SAT AND USE  
▲ AND ▼ TO MOVE DISH  
  
PRESS SAT 3 TIMES TO  
STORE LIMIT.

Fig. 8

Press [STEP UP] or [STEP DOWN] to move the jack to the fully extended position, then go back and retract it for a few counts. Press [SAT] 3 times to store the limit in memory. Once stored, the screen display will read "UPPER LIMIT STORED AT XXXX" and after 5 seconds the display will change to: (Fig. 9).

\*PROGRAM MODE\*  
  
NO SATELLITES STORED  
PRESS SAT, NAME, NUM  
THEN  
▲ OR ▼ TO MOVE DISH

Fig. 9

## PROGRAMMING SATELLITE POSITIONS

To program satellite positions your dish must be accurately tracking the satellite arc.

Programming satellite positions is a simple step by step process. The first step is to call the name of the first satellite you wish to program. There are two methods available to call a satellite. One method is to choose the satellite name from a list of pre-stored satellite names and the other method is to specify the satellite name.

To choose from the pre-stored list, press [SAT] twice. The screen will change to: (Fig. 10). Press [STEP UP] or [STEP DOWN] to scroll through the list. Press [SAT] again to select the displayed satellite from the list. (Fig. 11)

OR

To specify the satellite name, press [SAT], the screen will read: (Fig. 12) Press the name of the satellite you wish to store, ie [SPACENET] on the remote control. A list of available C and KU band Spacenet satellites will be displayed. (Fig. 13) Choose the specific satellite you wish to program by pressing the corresponding number, ie [2] and the display will change to (Fig. 11), as above.

To locate the selected satellite, press the channel number of an active channel on this satellite. (A satellite TV program guide will help you identify a satellite and an active channel on this satellite. It will be difficult to tell one satellite from another without one.) Then use [STEP UP] or [STEP DOWN] to move the dish till the picture of the selected satellite channel appears on the screen.

To locate satellites easily, especially the first satellite to be programmed, you can use the SCAN feature, which is activated by pressing [MUTE] in PROG mode. It rapidly and continuously sweeps all channel frequencies. Use with [STEP UP] or [STEP DOWN] to move the dish and when your dish is pointed at a satellite, you will see a quick blink of video on the screen. At this point, stop moving the dish, deactivate [MUTE] by pressing [MUTE] again or by entering a channel number. Use [STEP UP] or [STEP DOWN] again to get the best picture.

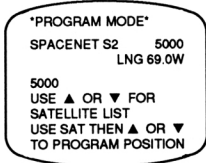


Fig. 10

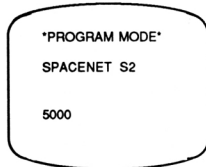


Fig. 11



Fig. 12

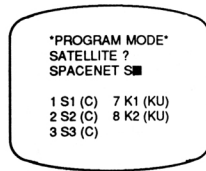


Fig. 13

Once the selected satellite has been located, use the [SKEW] key to improve the picture. The display will read: (Fig. 14) The two numbers shown between 0 and 253 represent the relative skew positions. One number will change when tuning an even-numbered channel, the other when tuning an odd-numbered channel. Use [STEP UP] or [STEP DOWN] to get the picture. Then select another active channel on the same satellite. If the first channel adjusted was even-numbered channel, then select an odd-numbered channel as the second channel. Press [SKEW] and then use [STEP UP] or [STEP DOWN] to get the best picture on the second channel.

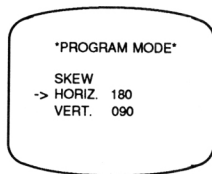


Fig. 14

Once the skew settings have been adjusted correctly for the first programmed satellite, the Star Trak Six will automatically adjust the skew settings for all satellites that will be stored.

As the Star Trak Six has constant memory that is always active, it is not necessary to press an Enter or Store key. Changes are automatically memorized as they are made.

Now call the next satellite that you want to program and program it the same way as the first.

- a) Select a satellite
- b) Select an active channel on that satellite
- c) Move the dish till the picture of that channel on the selected satellite appears on the screen.

Continue this way until you have programmed all the satellites that you want to be programmed and that are visible from your location. Then, turn the keyswitch on the back panel to the "RUN" position.

To prevent anyone from tampering with your programmed positions, remove the key and store it in a secure place.

## WARNING

*Once initial programming has been done, NEVER disconnect the receiver from AC power source while receiver is in "PROG MODE".*

## ERASING A SATELLITE

To erase a satellite that has been programmed

- call up the undesired satellite
- press [PS] repeatedly to move the arrow to "ERASE SAT" (Fig. 15).
- enter your password to execute

The receiver will erase all stored information for that satellite from its memory. The on-screen display will read: (Fig. 16)

## CHANGING LIMITS

If you try to program a satellite beyond the limit that you have initially set, the on-screen display will read "UPPER" or "LOWER LIMIT HIT". It will be necessary to change the dish limit. While at the limit, press [PS]. The on-screen display will then read "CHANGE LIMIT" in place of "ERASE SAT" (Fig. 17). Move the arrow to "CHANGE LIMIT", then enter your password. Entering the password will erase the current limit and the receiver will prompt you to reset that limit (Fig. 18)

Where "\*\*\*\*\*" is either the UPPER or LOWER limit that the dish is against. Proceed now as if this limit will be set for the first time. (See SETTING LIMITS.)

## TI FILTER (optional)

If this option has been installed in your IRD, it may be necessary to program this function for daily use. Press [FINE] twice so that the arrow points to TI OPT, (Fig. 19), then press [STEP UP] or [STEP DOWN] to toggle "DISABLE" and "ENABLE".

## CHANNEL SEQUENCE

If your satellite system uses a servo type polarotor, you can greatly reduce the wear and tear on the servo motor by setting the channel sequence from the "1 2 3..." (STEP) sequence to the "BY POLAR" (SKIP) sequence. "BY POLAR" would skip channels so that the sequence would be 1,3,5,...23,2,4,6,...24,1,3,...

To adjust the settings, press [FINE] three times so that the arrow points to CH. SEQ. (Fig. 20) Then press [STEP UP] or [STEP DOWN] to toggle settings.

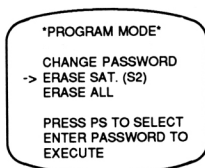


Fig. 15



Fig. 16

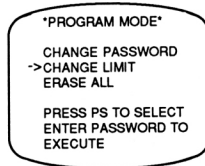


Fig. 17

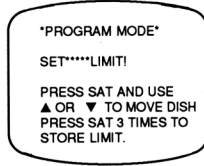


Fig. 18

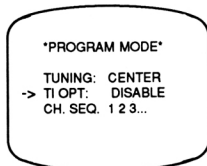


Fig. 19

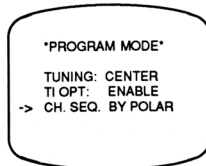


Fig. 20

## DAILY OPERATIONS (RUN MODE)

The key switch on the back panel of the **STAR TRAK SIX** must be in the "RUN" position for daily operation.

In the RUN position tuning changes are automatically saved in memory. The Star Trak Six simply remembers the changes made, without having to use a [STORE] button.

### SELECTING A SATELLITE

There are two methods to select a satellite:  
Method 1 is to enter the satellite name, then number.  
Method 2 is to select a satellite from the list of programmed satellites.

#### METHOD 1

Push [SAT], the display will ask you to specify the satellite you want to view (Fig. 21). Next, push the dual function (number/satellite) keys for the desired satellite. For example, for GALAXY 1, press [GALAXY] (Fig. 22) then [1]. If your receiver has been programmed for the position for GALAXY 1, the receiver will automatically adjust the antenna position for reception of GALAXY 1.

#### METHOD 2

When [SAT] is pushed twice the receiver will enter the NEXT SAT Mode (Fig. 23).

FROM: This is the current satellite and channel that you are presently viewing.

TO: As you use [STEP UP] or [STEP DOWN] (Fig. 24), the display will scroll through all programmed satellites in the order they are in the satellite arc. Pressing [SAT] again within 5 seconds will move the antenna to the satellite shown next to "TO". (Fig. 25)

When the antenna reaches the programmed position the receiver will switch to the last channel you viewed on that satellite. If you are a subscriber to VideoCipher® II Plus channels, the on-screen display will show the title, rating and time left of the current program.

### SELECTING A CHANNEL

There are two methods of channel selection: either by entering the channel number or by stepping channels.

**Direct Entry** - Enter a two-digit number, for example for channel 3, push the [0] and [3]. Two digits must always be entered.

**Stepping** - Use [STEP UP] or [STEP DOWN] to move through the channels. If you have a servo type polarator, then the channels should step in the sequence 2-4-6-8...up to 24. When you reach 24 the next channel will be 1 and the sequence will now be 1-3-5... till you reach 23 and the sequence will go to 2-4-6...again. If you have a dual feed horn, the channel sequence should be 1-2-3...23-24-1-2... (See Channel Sequence)

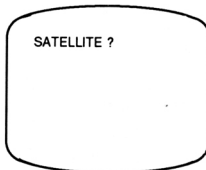


Fig. 21

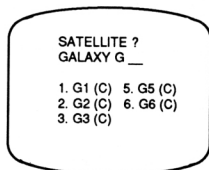


Fig. 22

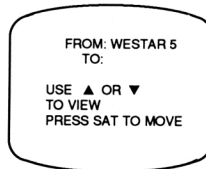


Fig. 23

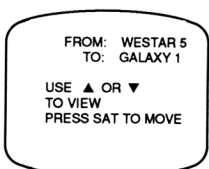


Fig. 24



Fig. 25

## FAVORITE CHANNEL

Favorite channel lets you store and retrieve up to 100 of your favorite satellite channels. Once saved, you will have easy access to your favorite satellite video and audio channels. Each audio sub-carrier channel of one video channel can be stored as different favorite channel numbers. This feature is useful for fast recall of radio sub-carrier audio programs.

### STORING A FAVORITE SATELLITE CHANNEL

Go to the satellite and channel you want to store. Press and hold [FAV] until the display changes to : (Fig. 26).

If a two-digit number is entered within 5 seconds, the present satellite, channel, fine tune, and audio frequency will be stored as the favorite identified by the number just entered. For example, when the first digit of the favorite code is entered the display will change to show all favorites stored in the 10's group. If "6" is entered first, the display will change to : (Fig. 27).

When the second digit is entered, for example a [5], the display will confirm that favorite #65 has been successfully stored (Fig. 28)

### RETRIEVING A FAVORITE SATELLITE CHANNEL

If [FAV] is pressed once, followed (within 5 seconds) by a two-digit number, the receiver will recall the information including satellite, channel, audio and video settings stored at that number.

If [FAV] is immediately followed by a number, [6] for example, the display shows the following: (Fig. 29).

Enter [0] for example, and the display will change as follows: (Fig. 30)

If a favorite channel has not yet been assigned, the display will show: (Fig. 31)

### SKIP CHANNEL

For your convenience, you may skip over a seldom watched channel.

Enter the channel number using the number keys, then press [CNCL] within 5 seconds. For example, press [1], then [2], then [CNCL] to skip channel 12. This channel will then be skipped (on the current satellite only) when stepping up or down through the channels. To regain access to that channel, simply enter the channel number directly. For example, [1], then [2].



Fig. 26

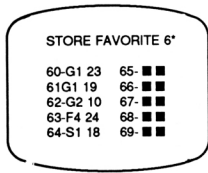


Fig. 27



Fig. 28

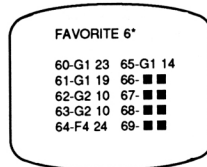


Fig. 29



Fig. 30



Fig. 31



## FINE TUNING VIDEO RECEPTION

DAILY OPERATIONS..

Your **STAR TRAK SIX** receiver is designed to provide the best audio and video quality from the signals it receives. The quality of those signals is determined by the strength of the signals received from the satellites, your antenna location, and the quality of your outdoor equipment and their installation. You can maximize the video signals received by following these simple steps.

### ADJUSTING THE DISH POSITION

Although you have programmed each satellite's position into memory, reception may be affected by the weather (snow on the dish or wind pushing the dish) or other interference, (See page 22). A slight adjustment of the dish position may improve the picture. Press [SAT], then [STEP UP] or [STEP DOWN] to trim the dish position until the picture improves. If the new position does not improve the video, return to the original position by pressing [SAT] three times.

This feature has a maximum dish movement of 25 counts and the new position will not be stored. To store the new position, see ALIGN DISH, Page 17.

### FINE TUNING THE VIDEO

After maximizing signal reception by adjusting the dish position, you may still have to fine tune the video because of interference - as you would a conventional television receiver. Press [FINE], (Fig. 33), then use [STEP UP] or [STEP DOWN] to change the frequency to the clearest reception. If the frequency goes below "CENTER" the number will be preceded by a "+". This fine tune setting will automatically be memorized for this channel on this satellite. If you have found it necessary to adjust the video frequency by the same amount on more than two channels on a satellite, use the Global Fine Tune Function.

### GLOBAL FINE TUNE

This function allows you to compensate for an LNB or block downconverter that is off frequency due to manufacturing variances or weather conditions. Use this adjustment if you have found it necessary to offset the video frequency on more than two channels on a satellite, by the same amount. Rather than fine tuning each channel on every satellite, the global fine tune will fine tune all channels, on all satellites.

- 1) Go to a channel which is being received by the LNB that is off frequency.
- 2) Press and hold [FINE] for about 4 seconds, until the display reads: (Fig. 34)
- 3) Press [STEP UP] or [STEP DOWN] to fine tune.
- 4) Repeat Steps 1, 2 and 3 on a channel of the opposite polarity if you have a single LNB with a skewable feed. If you are using a single LNB system, the required compensation for the horizontal and the vertical polarities will be the same, however compensation required for a dual LNB system may vary for each LNB.



Fig. 32

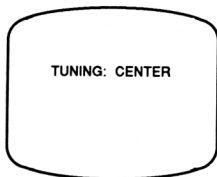


Fig. 33

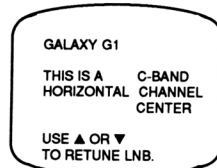


Fig. 34

### **SKREW ADJUSTMENT** *(This is not necessary on a dual feedhorn)*

Adjust the polarator skew. Press [SKEW] to get a reading of the skew (position of the polarator). The display will read: (Fig. 35) The arrow will point to the current polarity setting. The other polarity is shown only for convenience and can not be changed unless the channel is changed to one on the opposite polarity. Use [STEP UP] or [STEP DOWN] or a three digit number to change the setting until the picture improves. If it does not improve, return it to the original setting. A new setting will be memorized for all the channels on the polarity and on this satellite only. In PROGRAM MODE, a new skew setting will be memorized for all channels on this polarity and on all satellites.



Fig. 35

### **TI FILTER (optional)**

If your IRD is equipped with the TI filter option and you are experiencing terrestrial interference, (see page 25), you can change the TI Filter setting by pressing [FINE] twice and using the [STEP UP ] or [STEP DOWN] to toggle on and off. The TI filter setting will be memorized for the currently viewed channel and satellite only. It is recommended to repeat FINE TUNING THE VIDEO after changing the TI filter setting. If the picture does not improve return it to the original OFF setting.

NOTE: If the screen (Fig. 36) does not indicate the TI status then, either your receiver is not equipped with this option or, the TI filter option has been disabled during programming. See PROGRAMMING, page 7.

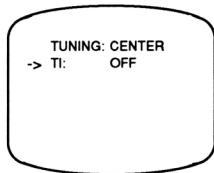


Fig. 36

### **FINE TUNING AUDIO RECEPTION**

#### **MONAURAL MODE**

Although most audio sub-carrier frequencies have been pre-programmed in memory, according to programming information available at the time of manufacture, you may want to adjust the settings as audio frequencies are sometimes changed and new programs are added. To find the correct frequency, refer to your satellite TV programming guide.

To change the frequency, press [MODE] and the display will read: (Fig. 37) Then, use [STEP UP] or [STEP DOWN] to change the frequency until the desired sub-carrier is tuned. Alternatively you may use the direct entry method. For example, to tune to 6.20 MHz, enter [6], [2], [0].



Fig. 37

#### **VC STEREO**

The Star Trak Six TV modulator is monoaural. For true enjoyment of digital stereo on VCI® scrambled channels you must use a stereo reproduction system and a stereo VCR for recording.

## AUDIO BANDWIDTH

Although most television broadcasts use wide bandwidth, some audio is broadcast using narrow bandwidth. Discrete stereo listing in your satellite TV programming guide is a good indication that narrow bandwidth is used.

The bandwidth may be changed using the [MODE] key, then pressing the [B/W] key or just by pressing the [B/W], (Fig. 38).

## VOLUME CONTROL

To increase or decrease the volume level, press [VOL UP] or [VOL DOWN]. Each press on the key will increase or decrease the volume level in steps.

(Fig. 39)

NOTE: Audio distortion may be encountered if the volume level of the Star Trak Six is low and the volume control of your television is tuned high to compensate. Instead, turn your TV volume control low (not off), and control the overall volume level through the Star Trak Six. When viewing local television, the Star Trak Six's volume control becomes inactive; therefore, it will be necessary to use your television set's volume control to adjust the desired audio level.

## MUTE

Press [MUTE] to shut off the sound when watching satellite TV (Fig. 40) Press [MUTE] again to restore the sound. Sound is automatically restored when you change channels.

The [MUTE] key is also used as a SCAN TUNE key when the receiver is in programming mode, see Page 9.

## USING PASSWORD FEATURES

The [PS], Password features, lets you keep exclusive control of many settings as well as preventing access to specific channels. To use this function, you must have already programmed your 4-digit password.

Press [PS] (Fig. 41) to display "PS" features available. Press [PS] repeatedly and the arrow points to individual features. Entering your 4 digit password will execute the function indicated. If the wrong password is entered the display will show (Fig. 42)

## PARENTAL LOCKOUT

Parental Lockout allows you to control the channels you wish other family members to view. The Lock Channel feature locks out the audio and video of a selected channel on a particular satellite. You may also use the Rating Ceiling feature for parental lockout for VideoCipher channels. See Descrambler Operations.



Fig. 38

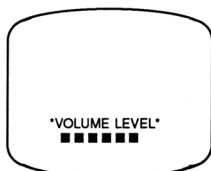


Fig. 39

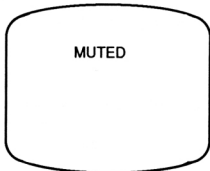


Fig. 40



Fig. 41

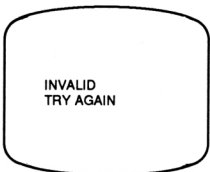


Fig. 42

### LOCK CHANNEL

To use LOCK CHANNEL, go to the channel you wish to lockout. Press [PS], the display will change to: (Fig. 43) With the arrow on "LOCK CHANNEL", enter your 4-digit password to execute the lockout of that channel. A locked channel will always be skipped and the receiver will tune to the next available channel when stepping through the channels using the [STEP UP] or [STEP DOWN] keys. However when using the Direct Entry channel selection method, the receiver will access the channel with no video or audio and the channel number on the television screen will be followed by a "." which indicates that this channel has been locked out.



Fig. 43

### UNLOCK CHANNEL

To UNLOCK CHANNEL, go to the channel you wish to unlock by using the Direct Entry channel selection method. There will be no audio or video. Press [PS], (Fig. 44), with the cursor on "UNLOCK CHANNEL" enter your password and the channel will once again be available for regular viewing.



Fig. 44

### LOCK STORE

This feature allows you to lock out some settings from the Star Trak Six IRD's constant memory. When a channel is set for LOCK STORE, adjustments made to the video fine tune, audio frequency and skew will not be memorized. The previously memorized settings will be restored when returning to the LOCK STORED channel.

Go to the channel you wish to apply the lock store feature. Press [PS] until the arrow points to "LOCK STORE". (Fig. 45) Then enter your password to execute the lock out.



Fig. 45



Fig. 46

### UNLOCK STORE

To cancel the LOCK STORE feature, go to the channel that has been locked out. Press [PS] until the arrow points to "UNLOCK STORE", (Fig. 46), then enter your password to cancel LOCK STORE on this channel.

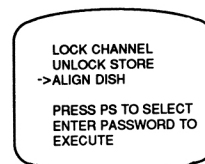


Fig. 47



Fig. 48

### ALIGN DISH

If the position of your antenna should change (due to extreme weather conditions or repair) or if the position of a satellite is moved, it will be necessary to realign the dish to the proper location. You may adjust the dish position for one satellite only or for all satellites.

To align the dish, press [PS] until the arrow points to ALIGN DISH, (Fig. 47) Then, enter your password. The screen will read: (Fig. 48). Press [1] to align all satellites, (Fig. 49) or press [0] to align the satellite that you are presently viewing, (Fig. 50).



Fig. 49



Fig. 50

# DESCRAMBLER OPERATIONS

Here's how the VideoCipher® II Plus (VCIIPlus™) system works. A program supplier (premium movies, superstations, sports, news, pay per view) sends a scrambled signal from their uplink transmitter to the satellite. This same signal will contain coded authorization messages that are addressed to individual receivers. These messages will allow your VideoCipher II Plus Integrated Receiver Descrambler (IRD) to receive the VC II Plus programming and descramble it.

When you subscribe to VCII Plus programming, your supplier sends authorization messages over VCII Plus channels to your IRD. If you discontinue a VCII Plus service, the messages will not be sent, and you will not be able to view the programming.

The presence of a VCII Plus descrambler module in your Star Trak Six IRD is not sufficient for program viewing. You will need to receive authorization from your local program supplier or contact the program distributors directly. They will set up an account for you and authorize your unit to descramble selected VCII Plus channels.


One way to find the program distributor's telephone number is by tuning your IRD or to the channel for which you want authorization. Most services broadcast subscription information to potential subscribers. Your IRD will need to be tuned to the 6.8 MHz audio subcarrier on a VCII Plus channel so that you may hear this subscription information if you are not already a subscriber.

## WHEN YOU ARE NOT WATCHING

If you subscribe to a VCII Plus service, we recommend that you aim your dish at a satellite that carries a VCII Plus channel when you are not watching satellite TV. Your IRD will automatically tune to a VCII Plus channel to receive Authorization updates when your unit is in the Stand By mode (turned off).

## VideoCipher II Plus Tuning

1. Turn your satellite system and TV on.
2. Aim the dish at a satellite that has VCII Plus programming and select a VCII Plus channel.
3. The VideoCipher Signal LED on the front of the Star Trak Six will light, but you may see a message on a black background on your screen, as displayed, until you subscribe to the channel and receive authorization.



No subscription for  
this channel.

## Authorization

The program distributor will need your Unit ID, which can be read off your TV screen by pressing a few

keys on your remote control.

1. Press [SET UP], [1], [1].  
Your Unit ID number will be displayed on the screen. The first 8 digits of this number should be the same as those in the window on the back of your unit. The last 4 digits on the screen are for Program Distributor use. Write all 12 numbers in the front of this manual.

### VIDEOCIPHER II PLUS INSTALLATION DATA

Unit ID: 0290 80B3 0003  
Provider ID: 83  
Location: Not Set  
Category: C0  
Quality: 10.0

2-Oct-89 8:30am  
(Press ENTER)

[SETUP] [1] [1]

This screen also displays a signal quality number between 1 and 10 which measures VCII Plus message reception (NOT picture quality). For proper operation, this number should be at least 6.0. Dish alignment,

video fine tuning and weather conditions can affect VCII Plus signal quality.

2. Call the program supplier for the VCII Plus service to which you wish to subscribe. The Customer Service Representative will ask for your Unit ID Number and other billing information.
3. Leave your unit tuned to a VCII Plus channel until you receive authorization. This may take a few minutes, depending upon the service.

## VideoCipher II Plus Features

Once you have received authorization, you can view VCII Plus channels just as you would unscrambled channels. However, VCII Plus channels provide additional features and services. The following features can be used only on VCII Plus channels. Here's how to use them:

## VIEW KEY

Press the [VIEW] key to view information about the current program being broadcast on the channel. This may include program title, running time and rating.

## DESCRAMBLER OPERATIONS...

After 3 seconds, this program information will disappear from the screen. The [VIEW] key is also used when you want to return to program viewing from a VCII Plus setup screen.

### NEXT KEY

Press the [NEXT] key to view information about the next program to be broadcast on the channel. This may include program title, start time and rating.

After 3 seconds, this program information will disappear from the screen.

### HELP KEY

Press the [HELP] key to receive instructions for many of the VCII Plus operations features. Press the [HELP] key again to exit from the Help screen.

### MSG KEY

VCII Plus channels have the ability to broadcast messages addressed to individual users. Press the [MSG] key to view these personal messages. Press the [LEFT] or [RIGHT] arrow key to erase the message after you read it. If message prompting is enabled, a star [\*] will appear on your screen when a personal message is received. See "Unit Settings" for message prompting description.

### TEXT KEY

Some VCII Plus channels may broadcast information service text messages over the channel (e.g. news bulletins, program information, etc.). The [TEXT] key allows direct access to the two types of information services - channel based, and system wide. To view information service text:

1. Press the [TEXT] key.
2. Press [1] to access the Channel Information Service text which pertains to the current channel only.
3. Press [2] to access the System Information Service text (for information on the entire system).

### SETUP KEY

Press the [SETUP] key to view the Available Services Menu. This menu provides access to the Unit

Setup submenu and lists the services on this channel (Audio, Video, Data, Channel Information, or System Information). On any given channel, the number of available services will vary, but there will always be Personal Messages and the program video/audio. A small arrow will point to the service currently selected.

#### AVAILABLE SERVICES MENU

- > 1. Unit Setup
- 2. Personal Messages
- 3. Program Name (line 1)  
Program Name (line 2)
- 4. Data Service A
- 5. Channel Information Service
- 6. System Information Service

(Press 1 - 6, or VIEW)

SETUP

#### 1. Unit Setup

The Unit Setup submenu is used to customize other VCII Plus features. Press [1] to access the Unit Setup submenu.

#### 2. Personal Messages

VCII Plus offers access to personal messages through both the [MSG] key and the AVAILABLE SERVICE menu. See "MSG KEY" for details. Press [2] to read any personal messages.

#### 3. Program Name

This is the name of the current audio/video program. Press [3] to select the current program.

#### 4. Data Services

Some VCII Plus channels may broadcast up to three data services (stocks, news) along with the current audio/video program. You can receive only one data service at a time. To receive a data service:

(a) Connect your data receiver equipment (computer) to the DATA port on the back of the Star Trak Six IRD. NOTE: You will need a specialized data receiver device for this connection.

(b) Press the appropriate number key to select the desired data service.

## 5-6. Channel/System Information Service

VCII Plus offers access to information service messages through both the [TEXT] Key and the AVAILABLE SERVICES menu. See "TEXT KEY" for details. Press the appropriate number key to access either Channel or System Information Service.

### UNIT SETUP

Press [SETUP], [1] to access the Unit Setup submenu as shown. You can then choose any one of these VCII Plus setup screens by pressing the appropriate number key on your remote control.

#### VIDEOCIPHER UNIT SETUP

- 1. Installation Data
- 2. Unit Settings
- 3. Rating Ceiling
- 4. Rating Password
- 5. Purchase Password
- 6. Purchase History
- 7. Credit Information
- 8. Consumer Key Entry

(Press 1 - 8, or VIEW)

SETUP 1

The following VCII Plus features can be accessed through the Unit Setup menu:

#### 1. Installation Data

This screen displays your Unit ID number, signal quality and other unit status information. See "Authorization" for details.

#### 2. Unit Settings

This screen allows you to enable/disable message prompting and to select primary/alternate audio.

##### (a) AUDIO SELECTION

Some VCII Plus channels offer second languages on their programs.

Press [1] to switch between the PRIMARY (usually English) and the ALTERNATE (second language) audio selection.

##### (b) MESSAGE PROMPTING

When message prompting is enabled, a [\*] will appear on your TV screen when a personal message is received. Press [2] to enable/disable message prompting.

## UNIT SETTINGS

Current Audio Selection is

\*\*\*Primary\*\*\*

Press 1 for Alternate Audio

Personal Message Prompting is

\*\*\*Disabled\*\*\*

Press 2 to Enable Prompting.

(Press 1,2, or ENTER)

[SETUP] [1] [2]

**3. Rating Ceiling (Parental Lockout)**

Rating ceilings are used to control the types of VCI Plus programs you wish other family members to view. Rating ceilings are based on those used by the motion picture industry to rate their films according to age groups.

By setting Rating Levels, you can prevent viewing all VCI Plus programs that have been rated above the level that you set. For example, if you set the level at PG-13, your system will allow only NR, G, PG, and PG-13 rated programs. Both R and X-rated programs will be locked out. (NOTE: Not all VCI Plus channels use rating levels so you may want to consult a satellite guide for details on a particular program.)

To set your Rating Ceiling:

- Tune to any VCI Plus channel.
- Press [SETUP], [1] and then [3].
- Enter your password if one has been set.
- Use the [LEFT/RIGHT] keys to lower/raise the Rating Ceiling.

## SET RATING CEILING

Program Rating: NR  
Rating Ceiling: X

(Press &lt;, &gt;, or ENTER)

[SETUP] [1] [3]

**4. Rating Password**

The Rating Password is used to control access to the Rating Ceiling screen. We suggest that you pick as a password a number that is easy to remember: your zip code, date of birth, phone number, street address, etc. If you forget your password, you will need to contact your program distributor to have it reprogrammed.

To set or change a rating password:

- Press [SETUP], [1], [4].
- If your system already has a password stored, you will need to enter it and press [ENTER] before the system will accept a new one.
- Enter your new password (up to 8 digits), then press [ENTER].
- Repeat the new password a second time and press [ENTER] to confirm.

## SET RATING PASSWORD

Enter the new Program  
Rating Password (0 to 8  
digits, followed by ENTER)

Password:

[SETUP] [1] [4] [ENTR] [ENTR]

If you don't want rating password control:

Press [SETUP], [1], [4] and then press the [ENTR] key twice when prompted to enter a password.

**5. Purchase Password**

The Purchase Password controls access to program purchases. See Rating Password for instruction on setting and using the Purchase Password.

**6. Purchase History**

The Purchase History screen displays information about the last 15 pay-per-view programs purchased. This information includes, date/time of purchase, program name and cost. Use the [LEFT/RIGHT] keys to view

all programs in the list. NOTE: Your unit must be equipped with General Instrument VIDEOpal® Order Recorder to receive pay-per-view programming.

**7. Credit Information**

The Pay-Per-View Credit Information screen may display your credit limit and credit verification. This screen is for informational use only.

**8. Consumer Key Entry**

VCI Plus is designed to accept secondary authorization in the form of a Consumer Key. The Consumer Key Entry screen allows for entry of this key. If the Consumer Key is not needed, this entry will not appear in the Setup Menu.

**PROGRAM MESSAGES**

VCI Plus program suppliers offer a wide variety of services, some of which may require pay-per-view or other restrictions on viewing. If this occurs, you will see one of the following messages on your TV screen when you are tuned to that channel:

**A. "No subscription for this channel."**

This indicates that your unit has not been authorized to receive this channel. Contact the program supplier to receive authorization.

**B. "Blacked out."**

The program is not available in your geographical area.

**C. "Program locked out."**

The rating of the program currently being broadcast exceeds your Rating Ceiling. If this happens, you will be prompted to override the rating lockout. If you have set a Rating Password (see "Rating Password"), you will be prompted to enter it.

NOTE: The rating override is in effect for the duration of the program (even if you change channels and then tune back to the overridden channel). To cancel rating overrides, you must turn your unit off.

# **TROUBLE SHOOTING GUIDE**

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## **PROBLEMS**

**No Picture or Sound  
No Standby Light**

**No Picture or Sound  
No Snow on Screen**

**No Picture or Sound  
TV Screen full of Snow**

**Picture full of Snow**

**Sparkles or complete  
picture loss on C-Band Channels**

## **CAUSE/SOLUTION**

**No power to receiver.**  
Check AC Power cord and outlet.  
Check and reset CB1 circuit breaker.

**Receiver is not turned on.**  
Press POWER on the remote control

**Weak batteries in remote control**  
Replace "AA" batteries.

**Monitor not switched to satellite input.**  
Select the correct monitor input.

**No power to LNB.**  
Check the cable(s) to the LNB(s).

**TV and receiver not tuned to same channel.**  
Set the TV channel selector and receiver  
CH3/4 switch to the same channel.

**No signal on current channel.**  
Press STEP UP or STEP DOWN to select an active  
channel on the current satellite.

**Dish not aimed at any satellite.**  
Select a satellite and active channel.

**Bad cable connections.**  
Check all cables and connections for breaks,  
corrosion and loose fit. Repair and replace as needed.

**Dish aimed incorrectly.**  
Adjust the dish position, see page 14. If this improves  
the picture, see Align Dish, page 17.

**Video Frequency or polarity (skew) incorrect for  
current channel.**  
Fine tune the video, see page 14, and/or adjust the  
skew, see page 15.

**Poor cable connections.**  
Check cables for breaks, corrosion, loose fit.

**Terrestrial Microwave Interference**  
Activate optional TI filter, see page 25 and 12.

**Solar Outage.**  
See page 25.



# **TROUBLE SHOOTING GUIDE**

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## **PROBLEMS**

**No sound and /or clear picture on scrambled channels**

**Picture OK, No Sound**

**Noisy Audio**

**Sound does not match the picture**

**Channel cannot be accessed**

**"Password Invalid", lost or forgotten**

**Infrared Remote Control not operating or range is very short.**

## **CAUSE/SOLUTION**

**Channels are not being descrambled for viewing.**  
Verify subscription authorization.  
See Descrambler Operations as solution also.

**Volume turned down.**  
Check the receiver, TV and audio amplifier volume controls and MUTE controls.

**Poor audio connections.**  
Check cables to audio amplifier.

**Audio frequency not tuned properly**  
Check subcarrier frequency tuning. Some channels are transmitted using a 6.20 MHz audio subcarrier. You may have to adjust your audio to 6.20 MHz to receive the sound clearly.

**Audio bandwidth incorrect.**  
Select the correct audio bandwidth. Some audio subcarriers are narrow bandwidth and will be very noisy if the wide bandwidth is selected. See page 16.

**Audio subcarrier incorrect.**  
Select the correct audio subcarrier for that channel. A satellite TV programming guide will be helpful.

**Receiver has been programmed to skip channel.**  
Enter channel number directly, see page 13.

**Channel may be locked out by parental lockout features.**  
To override parental lockout, see pages 16 & 20.

**You are not using the last programmed password.**  
Change your password, see page 7.

**Weak batteries in remote control.**  
Replace "AA" batteries.

**Infrared noise is interfering with the remote control operation.**  
Make sure that the receiver front panel or any infrared remote eyes in the system are out of direct sunlight.

# **TROUBLE SHOOTING GUIDE**

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## **PROBLEMS**

**Remote Indicator Light on front panel flashes when remote is used but the Receiver does not respond**

**Dish does not move**

**Dish does not move, "JACK ERROR" is displayed**

**Cannot watch VHF or cable.**

If you still cannot solve your problem, try one more thing before you call for service:

1. WITH THE RECEIVER KEYSWITCH TURNED TO THE RUN POSITION, PULL THE POWER PLUG FROM AC SOURCE.
2. WAIT 10 SECONDS
3. RECONNECT THE RECEIVER TO POWER SOURCE, AND TRY YOUR PROCEDURE AGAIN.

If this does not correct your problem, contact your Star Trak Dealer. If your dealer is unable to solve your problem, contact:

TEE-COMM CUSTOMER SERVICE

Canada: Telephone (416) 878-8181 U.S.A. Telephone (305) 477-3298

## **CAUSE/SOLUTION**

**The receiver memory has been corrupted by external noise entering the receiver.**

Press the remote control POWER key twice to turn the receiver off and back on. Test the remote for proper operation.

**Receiver is in Program Mode.**

Turn keyswitch on back panel to the RUN position.

**No power to actuator motor.**

Reset CBII circuit breaker on receiver back panel.

**Poor wire connections.**

Check and reconnect all actuator wires.

**Mount or actuator binding.**

Check and correct that outside mount components are not frozen or bound.

**SAT/TV Mode not set correctly.**

Press SAT/TV key on the remote control.

**DO NOT OPEN THE CABINET AND ATTEMPT TO REPAIR YOURSELF AS OPENING OR REMOVING THE COVER MAY EXPOSE YOU TO DANGEROUS VOLTAGES OR OTHER HAZARDS. ALSO, UNQUALIFIED SERVICE ATTEMPTS WILL VOID YOUR WARRANTY.**

# SATELLITE LOG

For selecting satellites from the Star Trak Six Remote Control, using Method 1, described on Page 12.

You may want to take note of the dish position for each satellite in the space provided below. This will be helpful information should it ever become necessary to reprogram satellite positions.

Satellite Name	Band	Keystroke on Remote Control [SAT], then	Dish Position	Satellite Name	Band	Keystroke on Remote Control [SAT], then	Dish Position
ANIK C1	KU	SKEW 7	_____	SBS B1	KU	9 1	_____
ANIK C2	KU	SKEW 8	_____	SBS B2	KU	9 2	_____
ANIK C3	KU	SKEW 9	_____	SBS B3	KU	9 3	_____
ANIK D1	C	SKEW 1	_____	SBS B4	KU	9 4	_____
ANIK D2	C	SKEW 2	_____	SBS B5	KU	9 5	_____
ANIK E1	C	SKEW 3	_____	SBS B6	KU	9 6	_____
ANIK E2	C	SKEW 4	_____	SPACENET 1	C	7 1	_____
ANIK E2	KU	SKEW 5	_____	SPACENET 2	C	7 2	_____
ASC 1	C	0 1	_____	SPACENET 3	C	7 3	_____
ASC 1	KU	0 7	_____	SPACENET K1	KU	7 7	_____
ASC 2	C	0 2	_____	SPACENET K2	KU	7 8	_____
ASC 2	KU	0 8	_____	TELSTAR 301	C	5 1	_____
AURORA 1	C	6 1	_____	TELSTAR 302	C	5 2	_____
GALAXY 1	C	2 1	_____	TELSTAR 303	C	5 3	_____
GALAXY 2	C	2 2	_____	WESTAR 4	C	3 4	_____
GALAXY 3	C	2 3	_____	WESTAR 5	C	3 5	_____
GALAXY 5	C	2 5	_____				
GALAXY 6	C	2 6	_____	<u>SPARES:</u>			
GSTAR R1	KU	BW 1	_____	SPARE	C	FINE 1	_____
GSTAR R2	KU	BW 2	_____	SPARE	C	FINE 2	_____
GSTAR R3	KU	BW 3	_____	SPARE	C	FINE 3	_____
INTELSAT I1	C	8 1	_____	SPARE	KU	FINE 6	_____
INTELSAT I2	KU	8 2	_____	SPARE	KU	FINE 7	_____
MORELOS M1	C	MODE 1	_____	SPARE	KU	FINE 8	_____
MORELOS M1	KU	MODE 3	_____	SPARE	KU	FINE 9	_____
MORELOS M2	C	MODE 2	_____				
SATCOM 1	C	1 1	_____				
SATCOM 2	C	1 2	_____				
SATCOM 4	C	1 4	_____				
SATCOM C1	C	1 3	_____				
SATCOM C2	C	1 5	_____				
SATCOM C3	C	1 6	_____				
SATCOM K1	KU	1 7	_____				
SATCOM K2	KU	1 8	_____				

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## COMMON TERMS & HELPFUL HINTS

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**Actuator** - The motor and drive system attached to the dish. It points the dish to the satellite arc.

**Antenna** - consists of reflector and feedhorn.

**Block Downconverter** - Allows the conversion of multiple microwave signals so many channels may be viewed from the same dish.

**C-Band Satellites** - Satellites that broadcast to earth signals in the 3.7 to 4.2 GHz band.

**Descrambler** - A device which decodes encoded or encrypted TV signals, once authorized.

**Dish** - the parabolic reflector of a microwave antenna used to concentrate and focus satellite signals to the antenna's feedhorn.

**Downconverter** - This unit takes the 3.7 - 4.2 GHz signal from the LNA and converts it to a lower frequency, which the TV receiver

**Feedhorn** - The device that sits at the focal point of the dish and collects the focused signals from the satellite; also selects the polarity for the LNA or LNB.

**Focal point** - That point on the dish where the received signals are concentrated.

**IRD** - Integrated receiver/descrambler.

**Ku-Band Satellites** - Satellites that broadcast to earth signals in the 11.7 to 12.2 GHz band.

**LNA** - A device that mounts on the feedhorn and amplifies the microwave signals from the satellite.

**LNB** - A combination LNA and blockdown converter in a single housing.

**Polarity** - The vertical and horizontal polarization overlapping adjacent channel signals, so they can be transmitted with minimum interference.

**Polar Mount** - An antenna mount and drive system that allows the dish to track satellites across the satellite arc.

**Scrambling** - Encoding or encrypting the satellite signals so they are too garbled for ordinary reception and can only be viewed with the use of authorized decoders/descramblers.

**Subcarrier** - An audio signal R.F. carrier transmitted along with the video signal. It carries the TV sound channel or radio signals or data.

**Transponder** - Another name for a satellite channel. On the satellite, transponders receive, amplify and transmit the signal received from earth.

**TVRO (HTVRO)** - TeleVision Receive Only refers to a home satellite TV system.

### Terrestrial Interference

The most common cause of interference for a satellite television system is Terrestrial Interference. It is caused by local telephone or data microwave links. If your antenna is located close to, or in the path of a microwave tower you may experience snowy video, sparkles or distorted picture. This kind of interference is usually not constant and may appear to increase and decrease at different times of the day. Since telephone traffic is busiest during the daytime you may notice the most interference during daytime viewing. You may also notice that this interference occurs only on vertical or horizontal channels. The Star Trak Six has an optional TI filter. If this option has been installed in your IRD and you experience terrestrial interference, turn the TI filter ON. (See Page 11). If the problem still persists or if your IRD is not equipped with this option, contact your Star Trak Dealer for more information.

### Solar Outage

Another cause of interference is the biannual solar outage. Due to the seasonal changes of the earth's axis the satellite belt moves between the earth and the sun. When the satellite belt moves directly between the sun and your antenna, the satellite transmissions will be overpowered by the natural radio transmissions of the sun. This kind of satellite eclipse occurs twice a year around the spring and fall equinox. As the satellite eclipse approaches you may notice a gradual, daily increase in interference. It will peak for about 10 - 30 minutes with a completely distorted picture. As the eclipse decreases so will the amount of interference until the picture is back to clear, normal operation. The degree of interference and the timing of this phenomenon varies with the satellite, your geographical location and the size of your antenna. Unfortunately the only solution is to tune to a satellite that is east of the sun's position until it has passed the satellite you were watching.

# SPECIFICATIONS

RF Input Frequency	950 to 1450 MHz
RF Input Impedance	75 Ohm
RF Input level	-70 dBm to -20 dBm
RF Noise Figure	15 dB maximum
Second IF Frequency	479.5 MHz
IF Bandwidth	27 MHz at 3 dB point
Threshold (static)	Typical 7.0 dB C/N maximum
Local Oscillator Radiation	Less than -60 dBm
Video De-emphasis	525 line CCIR/Rec. 405-1

## VIDEO

Frequency Response	10 Hz to 4.2 MHz $\pm 0.7$ dB max.
C/L Gain Inequality	7 IRE max.
Differential Gain	5% maximum
Differential Phase	5% maximum
C/L Delay Inequality	50 n sec. max.
Output Impedance	75 Ohm
Clamping	Better than 40 dB
SN Ratio	52 dB min. weighted
(at 16 dB C/N)	(10.7 MHz peak dev.)
Output Level	1 V p-p

## VHF OUTPUT

Impedance	75 Ohm
Channel	CH 3 or 4
Level	6.5 dBmV $\pm 3$ dB from VHF modulator

## AUDIO

Subcarrier Frequency	5.0 to 8.5 MHz
Bandwidth	150 KHz narrow at 3 dB 330 KHz wide at 3 dB Mono, and VC Stereo
Modes	
Frequency Response	$\pm 1.0$ dB, 30 Hz to 15 KHz in VC mode $\pm 1.0$ dB, 30 Hz to 15 KHz in non-VC mode
De-emphasis	75 micro sec.
Harmonic Distortion	0.2% maximum in VC mode 1.0% maximum in non-VC mode
S/N	80 db minimum in VC mode 50 dB minimum in non-VC mode at 9 dB C/N

## BASEBAND OUTPUT

Frequency Response	10 Hz to 8 MHz $\pm 1$ dB
Output Impedance	75 Ohm
Output Level	1 V p-p

## PHYSICAL / ENVIRONMENT

Temperature	0° to 40°C normal
Humidity	95% relative
Weight	18-1/2 lbs. / 8.4 kgs. approx.
Dimension	17-1/16" W x 3-7/8" H x 13-7/8" D
Power Input	115V $\pm 10\%$ AC 60W Nominal, 300W Maximum

Features, Functions and Specifications are subject to change without notice.



## LIMITED WARRANTY

(A) Subject to the provisions of paragraph (B) below, Tee-Comm warrants to the purchaser that, under normal use and service, the STAR TRAK SIX sold hereunder shall be free of defects in design, materials and workmanship, ordinary wear and tear excepted, for a period of one (1) year after delivery to the purchaser, provided that the STAR TRAK SIX is installed, maintained and operated in compliance with Tee-Comm's written specifications and recommendations. Should any STAR TRAK SIX covered by this Warranty prove defective during the warranty period, purchaser shall notify Tee-Comm in writing of such defect and must provide Tee-Comm with the original proof of purchase no later than thirty (30) days after discovery or ten (10) days after the expiration of the warranty period, whichever is the first to occur. Tee-Comm's sole obligation, and the purchaser's exclusive remedy, under this warranty shall be limited to the repair or replacement, at Tee-Comm's option, of any STAR TRAK SIX or component thereof covered by this warranty which proves defective in design, materials or workmanship during the warranty period; provided, however that Tee-Comm shall have no obligation with respect to any such defect unless Tee-Comm is given written notice of the defect in the manner and within the time provided above. If any defective STAR TRAK SIX or component covered by this warranty requires repair or replacement, purchaser shall, at their expense, deliver the defective STAR TRAK SIX or component to their nearest STAR TRAK dealer for repair. EXCEPT AS EXPRESSLY PROVIDED IN THIS PARAGRAPH, TEE-COMM MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, NATURE, OR DESCRIPTION, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS OF ANY OF THE PRODUCTS FOR ANY PARTICULAR PURPOSE, AND HEREBY DISCLAIMS THE SAME.

(B) The limited warranty provided in paragraph (A) above shall not apply to (i) normal deterioration due to wear and tear; (ii) alterations or modification in a manner not authorized by Tee-Comm in writing; (iii) defects in the system or application in which the STAR TRAK SIX is installed; or (iv) any damage to or any failure of any STAR TRAK SIX resulting from acts of God or conditions beyond the reasonable control of Tee-Comm, including, but not limited to, accidents, fire, misuse, negligence, improper installation, modifications, alterations, tampering, vandalism, or failure to properly maintain or service the STAR TRAK SIX.

# **SUBSCRIPTION** \_\_\_\_\_

## **Descrambler Subscription Information**

Program Supplier: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Subscription Info: \_\_\_\_\_

\_\_\_\_\_

## **Descrambler Subscription Information**

Program Supplier: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Subscription Info: \_\_\_\_\_

\_\_\_\_\_

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Program Supplier: \_\_\_\_\_

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**TEE-COMM**