DTR4000CA

User Manual

Satellite Solutions

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RADIO FREQUCNCY INTERFERENCE STATEMENT

Note : This equipment has been tested and found to comply with the limits for a Class B Digital device, pursuant to part 15, Subpart B of the FCC Rules. This equipment generates, Uses, and can radiate radio frequency energy. If not installed and used in accordance with The instructions, it may cause interference to radio communications.

The limits are designed to provide reasonable protection against such interference in a Residential situation. However, there is no guarantee that interference will not occur in a Particular installation. If this equipment does cause interference to radio or television Reception, which can be determined by turning the equipment on and off, the user is Encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna of the affected radio or television.
- Increase the separation between the equipment and the affected receiver.
- Connect the equipment and the affected receiver to power outlets on separate circuits.
- Consult the dealer or an experienced radio/TV technician for help.

SAFETEY PRECAUTIONS

This IRD has been manufactured to meet international safety standards.
Please read carefully the following safety precautions before you handle the IRD.

MAINS SUPPLY	Use only 85-265V AC 50/60Hz.
LOCATION	Locate the IRD indoor place properly to prevent any hazards or malfunctions from lightening, raining and direct sunlight.
CLEANING	1. Disconnect the IRD power cord from the wall socket before cleaning it. 2. Use a cloth lightly dampened with water (no solvents) to clean the exterior of the IRD.
OVERLOADING	Do not overload wall outlets, extension cords or adapters. These can cause fire or electrical shock.
VENTILATION	1. Do not block the decoder's ventilation slots. 2. Ensure that a free airflow is maintained around the IRD. 3. NEVER stand the IRD on soft furnishings or carpets. 4. Do not use or store the IRD where it is exposed to direct sunlight or near a heater. NEVER stack other electronic equipment on top of the IRD.
LIQUIDS	Keep liquids away from the IRD.
SAMILL OBJECTD	Coins or other small objects must be kept away from the IRD. They can fall through the ventilation slots of the IRD and cause serious damage.
ATTACHMENTS	Do not use any attachments that are not recommended. These may cause hazards or damage the equipment.
CONDITIONAL ACCESS (CAM) and/or COMMON INTERFACE MODULE	Main power cord must be disconnected before inserting or removing the CA Module and/or CI Module
CONNECTION TO THE SATELLITE DISH LNB	Before connecting or disconnecting the cable from the satellite dish to the IRD, disconnect the IRD from the main power. FAILURE TO DO SO CAN DAMAGE THE LNB.
EARTHING	The LNB cable MUST BE EARTHED to the system earth for the satellite dish. The earthling system must comply with SABS 061.
LIGHTNING	1. It is recommended that the IRD should remain connected at all times to the main power supply and satellite dish (except when working on the LNB). 2. However, the Manufacturer's instructions for safeguarding other equipment connected to the IRD, i,e, TV set, etc., must be followed during lightning storms. 3. Lightning protection devices for the terrestrial antenna, mains, LNB and the modem telephone line, are essential.
SERVICING	1. Do not attempt to service this product yourself. 2. Refer all servicing to qualified service agents.

Introduction

About This Manual

This manual describes how to install and operate the Model DTR4000CA. Only qualified personnel should handle any problems beyond this manual.

General Description

The DTR4000CA is a high-performance IRD (Integrated Receiver Decoder). DTR4000CA is fully compliant with the MPEG2 based DVB transmission standards for in-home reception of satellite digital broadcast services such as digital TVs and radio channels.

General Features

Features equipped in DTR 4000CA are as follows :

- Fully compliant with MPEG2 based DVB transmission standards
- Fully Universal Tuner with 950-2150MHz
- QPSK Demodulator
- Extended Symbol Rate (2-45MS/s)
- SCPC and MCPC, C-/Ku-bands
- Automatic Detection of Video Polarity
- Automatic Detection of Forward Error Correction
- Automatic Channel Surfing Function
- Automatic NTSC/PAL Detection
- Simple Video Converter (NTSC PAL)
- Lip-sync Error Correction Function
- Wide PLL Modulator (CH21-69, PAL-B, G, I, D, K)
- Useful High Speed System Port for System Diagnostic and Upgrade
- DiSEqC1.0 LNB Control Software
- TV/VCR scart connectors
- Teletext : CCIR/ITU-R Broadcast Teletext System B
- Smart Card interface for CAS
- Simultaneous decoding of up to Max. 32 PIDs with the exception of A/V
- Internal Modem (Optional)
- User-friendly defined On-screen-display (OSD)

Hardware description

Here, you will be given the explanation of the front and rear panel of DTR4000CA. Each of display, ports, connections will be explained.

Front Panel Configuration

1 LED DISPLAY

This shows the channel number or other information as follows :

During power is off, the dash '-' will be displayed at each digit, which indicates that your DTR4000CA is in stand-by mode. Immediately after your decoder turns on, 'C . . .' will light up at each digit, which means that your DTR4000CA is ready to operate.
If your DTR4000CA locks a channel, its channel number will be displayed. Whenever you change the channel, the number of the changed channel will be displayed.

2 REMOTE SENSOR

It receives the infrared signal from Remote Control and operates your DTR4000CA.

3 ④ Smart Card and/or PCMCIA Card Slot (Option), or Not Used

These two slots can be used either for Conditional Access System with Smart card, or Common Interface Module with PCMCIA card, or may not be used at all in case of free-to-air only set-top-box according to the option configuration

of the DTR5000N.

When you want to watch Pay-per-view TV program or enjoy Internet service on a usage basis, you should purchase a smart card or PCMCIA card from the service provider and insert it into this slot. The detailed usage explanation will come with the card that you purchased.

5 CHANNEL DOWN

You can sequentially select the previous service by pressing this DOWN key.

6 POWER

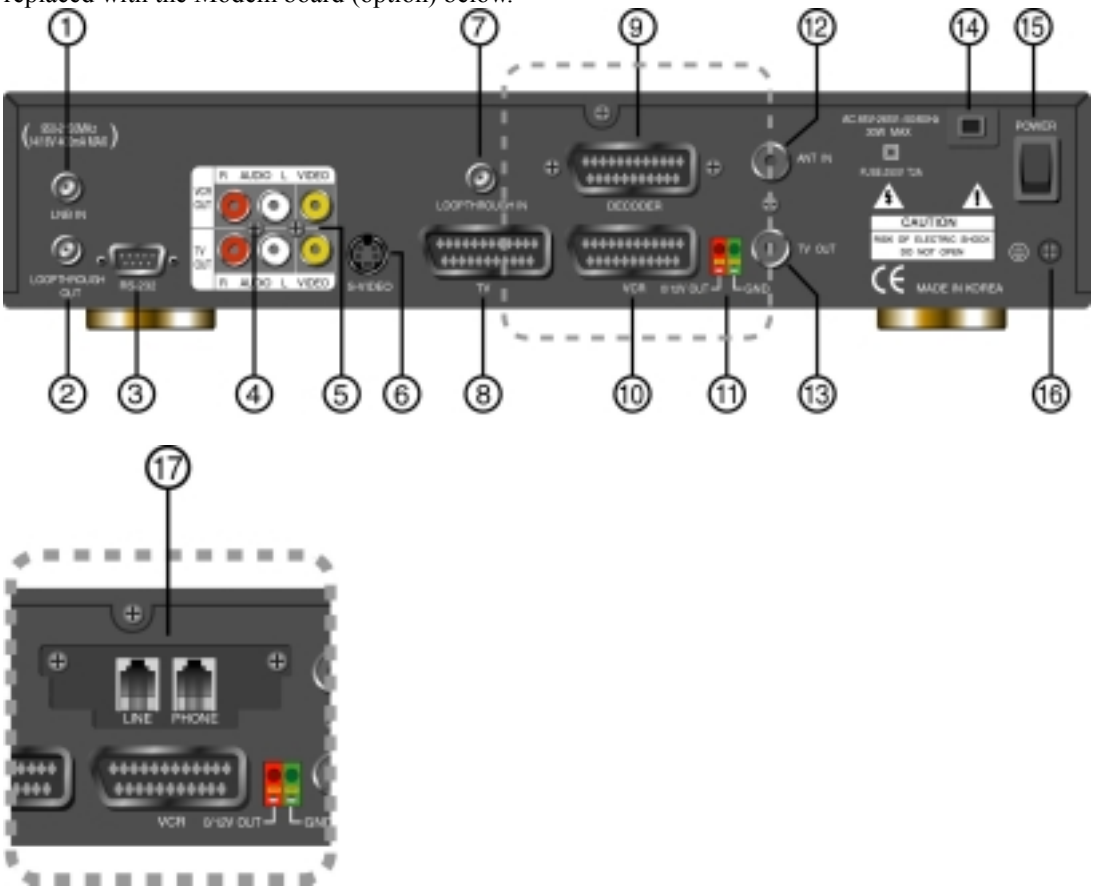
This key allows you to turn your DTR4000CA on or off.

7 CHANNEL UP

You can use this key to select the next channel sequentially.

Rear Panel Configuration

The following diagram shows the DTR4000CA with analog board. Here the dotted line can be replaced with the Modem board (option) below.



1 LNB IN

Satellite antenna input terminal. The LNB power (14/18V) and the switching signals (22KHz/DiSEqC) are also supplied to LNB through this terminal.

2 LNB OUT

It is for connecting another STB to your DTR4000CA. Connect this terminal to LNB IN terminal of the other STB via RF cable.

3 RS-232 serial port

An operator for customer services can use this port for the transmission of the preprogrammed channel information from a PC to the DTR4000CA. Or this port can also be used for main board testing and software upgrading.

4 AUDIO L/R output terminals

Connect these terminals to audio L/R input terminals of TV, VCR, or Hi-Fi audio system.

5 VIDEO output terminal

Connect this terminal to video input terminal of TV or VCR.

6 S-VIDEO output terminal

This terminal is connected to S-VIDEO input terminal of TV or VCR to output S-VIDEO signal.

7 TV SCART connector

Connect this connector to that of TV via a SCART cable.

8 Modem Port (Option)

When you use Conditional Access System, you should use modem to send your usage information to the operator.

9 VCR SCART connector

Connect this connector to that of VCR via a SCART cable.

10 0/12V OUT

Connect this terminal to an external 0/12Volt switch box.

11 ANT IN

Connect this terminal to a terrestrial UHF antenna via coaxial cable.

12 TV OUT

Connect this terminal to the input of TV or VCR via a coaxial cable.

13 POWER INPUT

Connect the power cord of AC85V to 265V, 50/60Hz

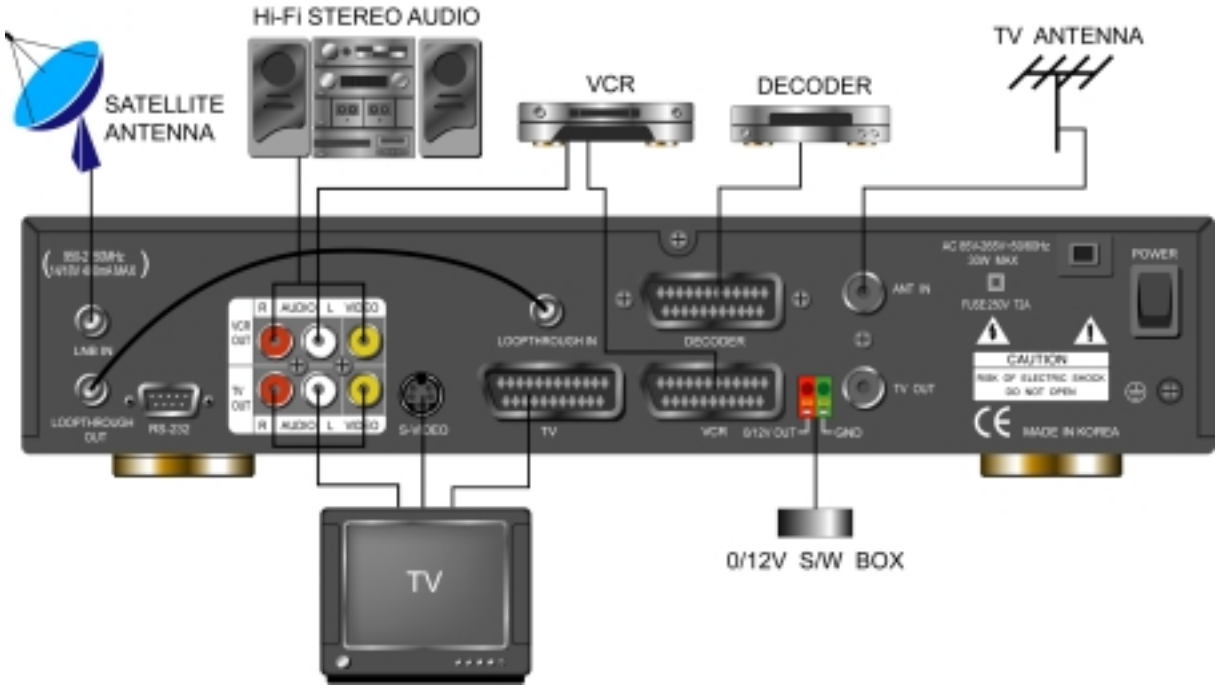
14 Ground

How to Connect Your DTR4000CA to Various Systems

As shown in the figure below, you can connect your DTR4000CA to a TV set, a VCR and a Hi Fi system. Consult your local supplier for assistance in setting-up your system best suited to your requirements.

CAUTION !

Please DO NOT plug in the main power supply cord until you have finished all other connection!



Connection of your DTR4000CA to a TV set
Connect your DTR4000CA to a TV set with SCART.

Connection of your DTR4000CA to a VCR
Connect the SCART connector of VCR to that on your DTR4000CA.

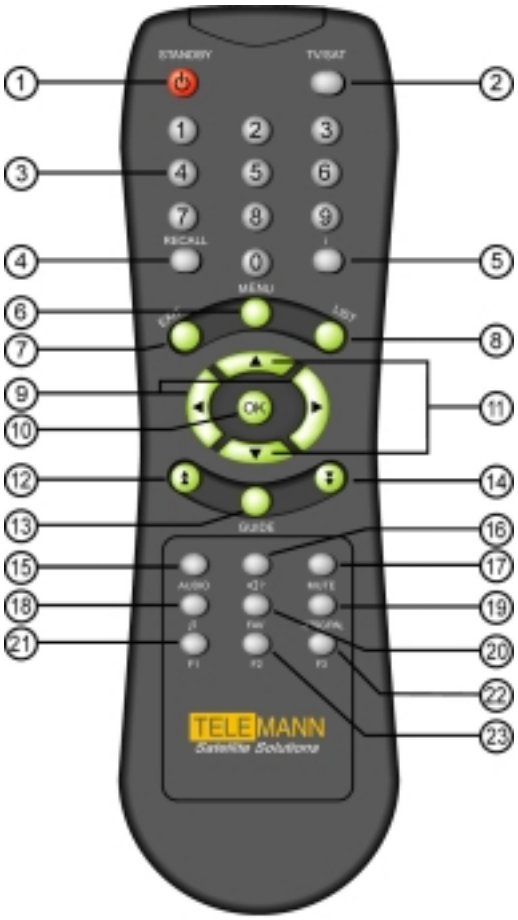
Connection of your DTR4000CA to a Hi Fi system
Connect a RCA/Cinch stereo cable from the AUDIO L/R terminals on your DTR4000CA to the LINE, AUX, SPARE or EXTRA input terminals on your Hi Fi system.

Connection of the analog decoder SCART to outside scramble decoder
When you watch scrambled analog video, you should connect the analog SCART to outside scramble decoder.

Remote Control

Remote Control Unit

This section describes how to operate the DTR4000CA using the buttons on your Remote Control Unit as shown below.



(1)	**POWER**	To turn your DTR4000CA on/off.
(2)	**TV/SAT**	To toggle from TV mode to satellite broadcasting mode and vice versa
(3)	**Number**	To select channel number or input parameters on menu.

(4)	**RECALL**	To return back to the previous channel.
(5)	**i**	To display the program information on the screen
(6)	**MENU**	To display the main menu on the screen. Or to move back to previous menu from current menu.
(7)	**EXIT**	To get completely out of menu.
(8)	**LIST**	To list all channels available on the screen
(9)	**VOL UP/DN**	To increase/decrease the volume or select item on menu
(10)	**OK**	To confirm your choices
(11)	**CH UP/DN**	To select a channel
(12)	**Page UP**	To step pages up in the channel list
(13)	**GUIDE**	Program Guide on the screen
(14)	**Page DOWN**	To step pages down in the channel list
(15)	**AUDIO**	To select Audio mode
(16)	**Language(◀?)**	To select the desired language or Audio PID.
(17)	**MUTE**	To turn the sound on/off
(18)	♫	To select TV and Radio
(19)	**NTSC/PAL**	To convert video mode (NTSC/PAL/AUTO).
(20)	**FAV**	To display Favorite channel list on the screen
(21)	F1	Function Key 1 (Add channel)
(22)	F2	Function Key 2
(23)	F3	Function Key 3 (Delete Channel)

System Set-up

Here, we will go through the menu system. To manipulate the menu, you use mainly the following key strokes : UP/DOWN, Left / Right, OK Menu, Exit

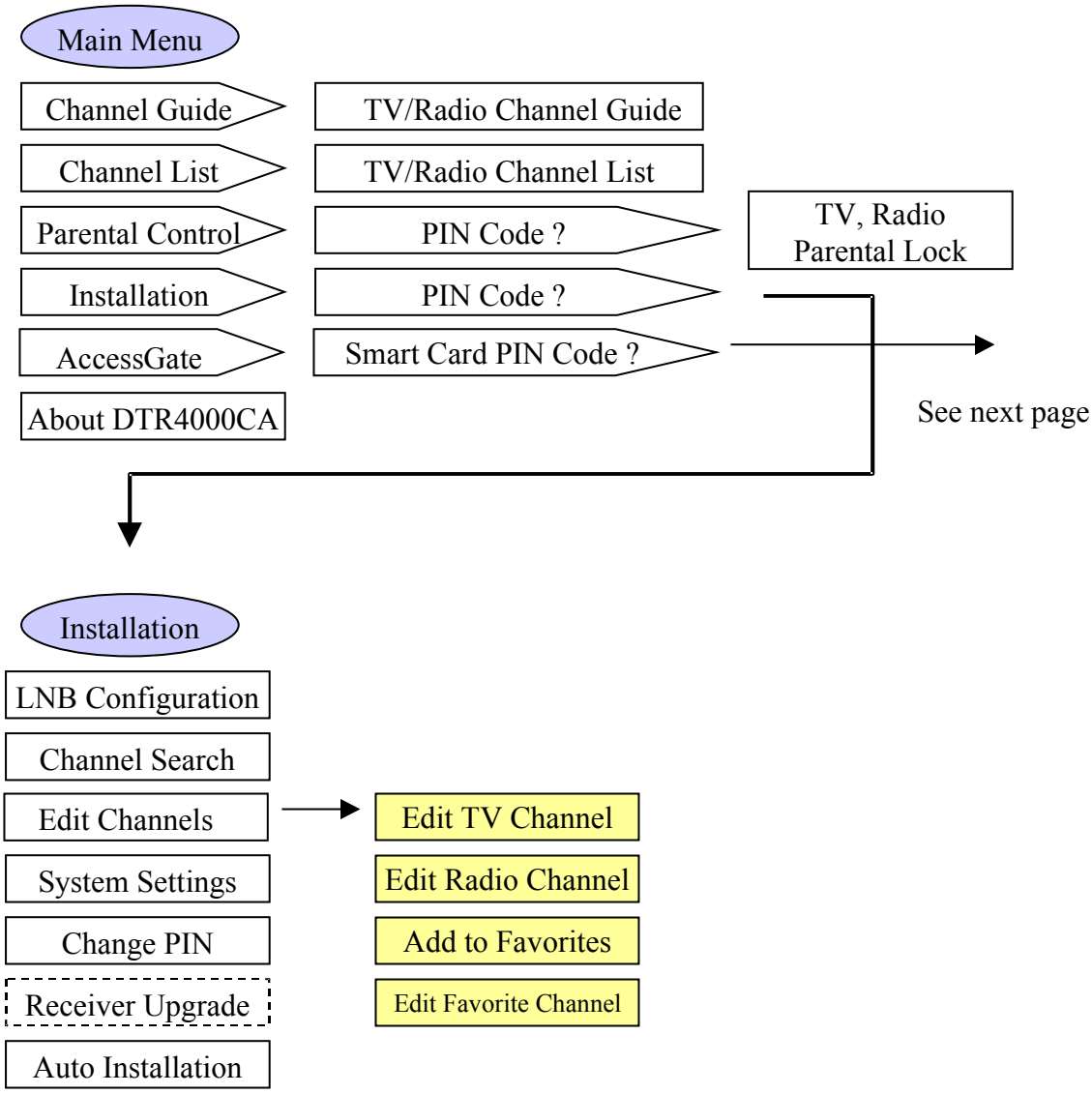
Basic Menu Operation

To maneuver the Menu, you can use the following keys

UP/DOWN key (▲ ▼)	Moves menu selection up and down
Left / Right key (◀ ▶)	Can change option values
Page Up/Down (⏫ ⏬)	Move up/down by page (6 channels)
OK Key (OK)	Selects menus or You can move directly to a certain channel by pressing the channel number.
Menu key	Displays main Menu or goes to previous menu
Numeric Key	Enters numbers. Or Selects a certain channel by pressing the channel number.
Exit key	Quits the whole Menu
F1, F2, F3	Function Keys. The function varies depending on each menu

Flow of Menu System

Here, the following diagram shows the hierarchy of menu system.
For detailed explanation of each menu, refer to the following Menu explanation.



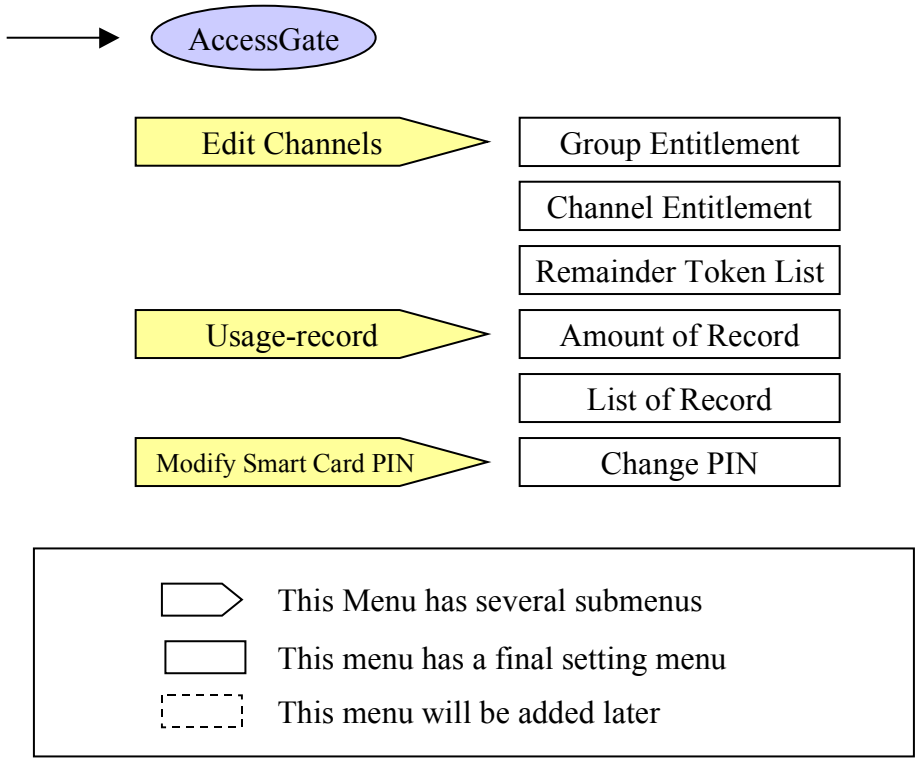
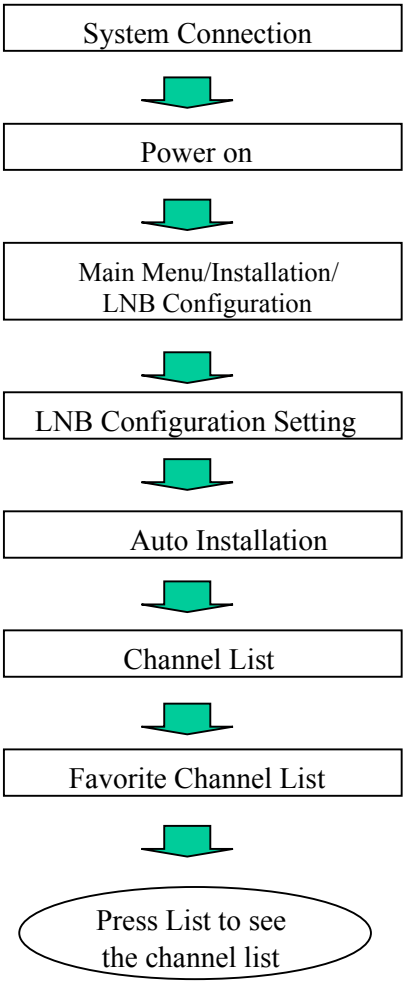


Fig 5. Flow chart of menu system

Automatic Channel Set-up

Automatic channel set-up for a satellite

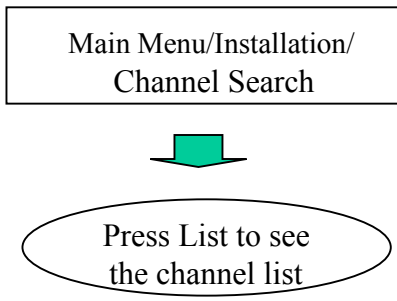
You can automatically detect and save all TV and Radio channels for a Satellite As follows.



- Connect DTR4000CA with all peripheral devices.
- Turn on the power of DTR4000CA and other devices.
- Move to the menu of Installation, and then LNB configuration
- Insert all LNB information of your Antenna.
- Save changes by pressing O.K button.
- DTR4000CA will automatically searches and saves into channel list all TV and Radio channels from a satellite.
- If you push List button of the remote controll, you should see all channel lists that you saved.
- Move to Menu/Installation/Edit Channels/Add to Favorite
- Choose Favorite Group on the right side of the screen.
- Press F1 to transfer the selected channel from the channel list to Favorite Channel List.

Automatic channel set-up for a transponder

You can automatically detect and save all TV and Radio channels for a transponder as follows.



- At Channel Search Menu, enter all the Transponder information of a transponder.
- Press O.K. The DTR4000CA will automatically find channel information for that transponder.

Menu Operation

Main Menu

Main menu shows the following information.

Channel Guide	Shows general information about each channel such as Channel Name, LNB Number, PID Number.
Channel List	Shows the whole channel list registered in DTR4000CA
Parental Control	Allows only those people with knowledge of the PIN code to watch the programs.
Installation	Allows you to set various parameters on LNB configuration, System Settings, and etc.
AccessGate	Shows information about AccessGate system.
About DTR4000CA	Shows the version information of DTR4000CA software

- Turn on TV and your DTR4000CA after you have connected all peripheral devices to it.
- Press the Menu button of the remote control. You will get the Main Menu on the TV screen as follows.

- You can move into submenus by selecting each menu.
- Press the Menu button to return to previous menu. Or press Exit to quit the Menu system completely.

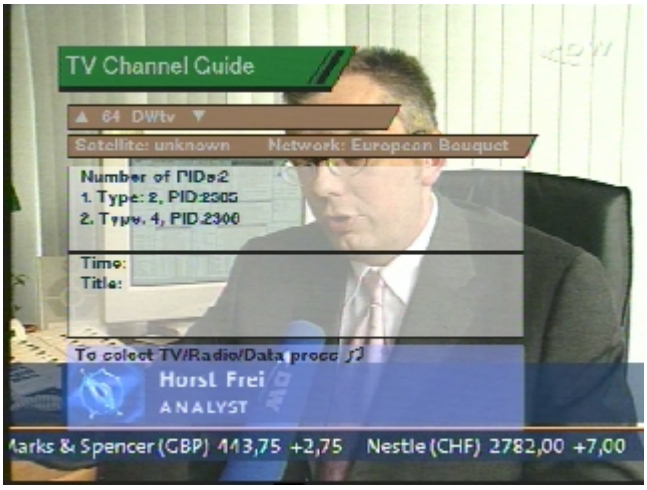
Channel Guide

TV and Radio Channel Guide

Here you can see the information about Channel Name and Number, Number of PIDs, and PID Types.

- In Main Menu, select Channel Guide. Then you will see TV Guide display as follows. You can change the channel by pushing the Up/Down keys.
- When you push "♫" on the Remote Control, you can select TV or Radio

Guide.



Channel List

TV and Radio Channel List

This menu helps you easily select the channel that you want to watch.

- In Main Menu, select Channel List. Then you will see TV Channels display as follows. You can get the information of Channel Number, Channel Name, and whether the program Scrambled or Clear.
- To watch a specific channel, first select a certain channel by pushing the Up/Down key, Page Up/Down key. Then, hit the OK button on the Remote Control. This enables you to move into that specific channel.
- When you push "♫" on the Remote Control, you can select TV and Radio Guide.

Parental Control

PIN Code / TV and Radio Lock

This function prevents children or unauthorized persons from watching programs.

- Select the Parental Control on the Main Menu. Then you will be asked to enter

PID number. The PIN code is four digit numbers. Factory default value is 0000.

- Press UP/DOWN key to highlight the program you want, then press OK to have the channel locked so that others who do not know the PID can not watch the program.

- Once the program is locked, every time you try to watch the program, you will be asked to enter PIN code.
- When you push "♫" on the Remote Control, you can select either TV or Radio Guide.

- Press the Menu button to return to previous menu. Or press Exit to get out of Menu completely.

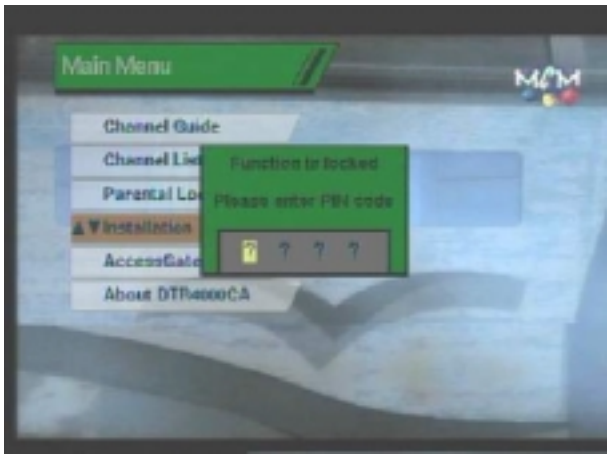
Installation

Installation Menu helps you setup the system and manage channel information.

PIN Code ?

- Select the Installation menu from the Main menu. You will then be asked to enter your PIN.

- Enter your PIN, then press OK to confirm it. Then submenus will appear, which allows you to change the preferences that were set factory default values. You can also add features to the existing selections.



LNB Configuration

LNB Configuration helps you enter information of LNB that is connected to DTR4000CA

- In Installation menu, select LNB Configuration. Then the following screen pops up

LNB Names	Selects one LNB out of eight LNBs
LNB Frequency(KHz)	Either you can select predefined LNB Frequency by Left/Right keys or manually enter a specific frequency in KHz unit.
0V/12V Antenna Switch	Depending on the use's antenna switch box, you can pick up either 12V by setting "On" or 0V by setting "off"
LNB Power	Depending on the use's antenna LNB, you can supply either LNB power by setting "On" or not by setting "off"

22KHz	Depending on the use's antenna switch box or LNB, you can supply either 22KHz by setting "On" or off by setting "off"
Tone Burst	Depending on the user's antenna switch box, you can pick up either A by setting "SA", B by setting "SB", or "Off".
DiSEqC	If you have DiSEqC box(es), you can choose port one to four by selecting port number one to four. Or if you do not have DiSEqC box, choose "off"

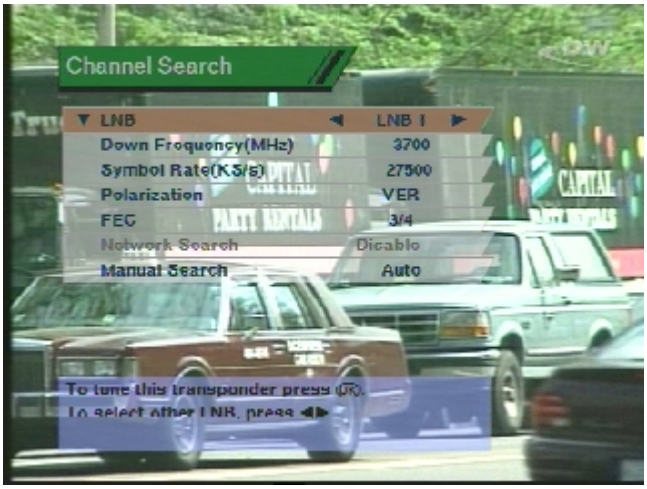
* This setting should be done for all the LNBs that you want to connect to by changing the LNB name.

Channel Search

Channel Search helps you catch the channel information of each transponder.

- In Installation menu, select Channel Search menu. Then the Channel Search screen pops up

LNB	From LNBs that you set up in LNB Setup menu, select one LNB.
Down Frequency(MHz)	Enter the transponder frequency of the satellite that you choose by setting LNB parameters.
Symbol Rate(KS/s)	Enter the symbol rate of the above-mentioned transponder or set up "Auto" if you do not know the symbol rate. In latter case, it will take time.
Polarization	Choose the Polarization of the above-mentioned transponder. Select "VER" if the polarization is vertical, or "HOR" if it is horizontal. if you do not know the Polarization, select "Auto". In latter case, it will take time.
FEC(Forward Error Correction)	Choose FEC of the above-mentioned transponder. – 1/2, 2/3, 3/4, 5/6, 7/8. If you do not know the value, choose "Auto".
Manual Search	If the channel information that you are looking for is not included in the SI Information that comes from the satellite, user can manually enter those information. In Auto mode, you can automatically search channel information that comes from satellite. If you want to manually enter TV channel, select "TV". Then you should enter those PIDs of Video, Audio, and PCR. In case of Radio, enter the PIDs of Audio and PCR.



Edit Channels

User can manage Channels stored in DTR4000CA – Delete, Add programs to Favorite Channels.

- In Installation Menu, select Edit Channel menu. Then the following Edit Channel Menu screen will display.

Edit TV Channel

You can delete the unnecessary TV Channels from the registry of DTR4000CA.

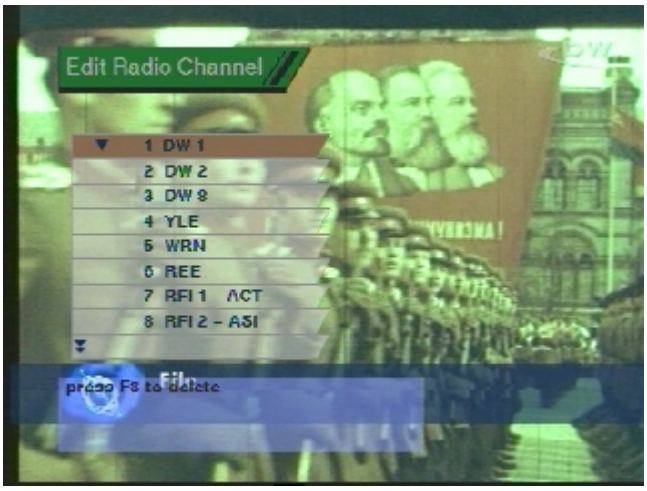
- In Edit Channel menu, select Edit TV Channel menu. Then the following screen pops up

- From the channel list on the screen, you select the channel that you do not want to watch. Then click “F3” button twice. The channel disappears from the DTR4000CA program list.

Edit Radio Channel

You can delete the unnecessary Radio Channels from the registry of DTR4000CA.

- In Edit Channel menu, select Edit Radio Channel menu. Then the following screen pops up

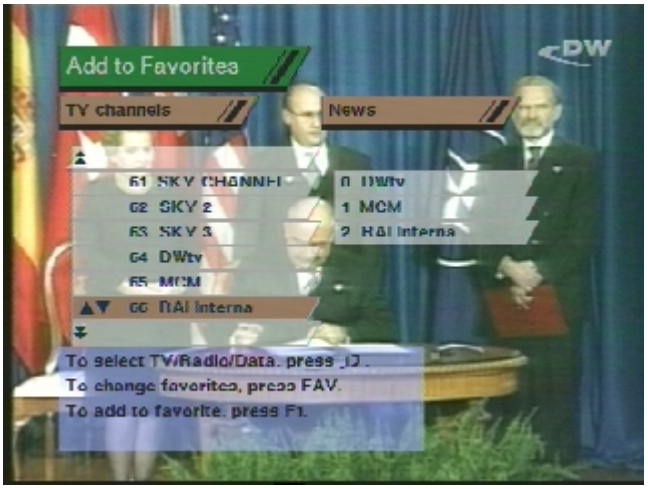


- From the channel list on the screen, you select the channel that you do not want to watch. Then click “F3” button twice. The channel disappears from the DTR4000CA program list.

Add to Favorite

Your favorite channels can be saved to your favorite channel list. So, later you can easily find your favorite channels from the list.

- In Edit Channel Menu, select Add to Favorites. Then the following screen pops up

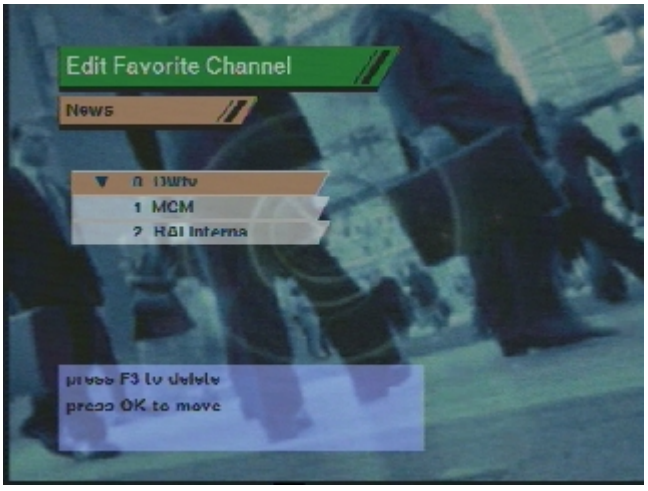


- For the left side of the screen, you can choose TV channels or Radio Channels in a consecutive way by pushing " ♫ " on the Remote Control.
- For Favorite channel side, by clicking "FAV" button on the Remote Control, you can choose your favorite channel group out of 12 favorite groups such as Sports, Children, Music, Arts/Culture, Social, Education, Leisure, Special, User, Movie/Drama, News, Show/Game
- After selecting a channel that you want to save into the favorite channel list, by pressing "F1", you can add the channel into the favorite channel list.

Edit Favorite Channel

You can delete channels from your favorite channel list, and you can change the order of channel selection priority.

- In Edit Channel Menu, select Edit Favorite Channel. Then the following screen pops up



- From the favorite channel list on the screen, you select the channel that you do not want to watch. Then click "F3" button twice. The channel disappears from the DTR4000CA program list.
- In order to change channel selection priority, highlight the channel that you want to upgrade the priority by Up/Down key and push "OK" button of the Remote Control. Then by using Up/Down key, bring the channel the right place

and click “OK” button again. Then the moved channel resides in that place from that time.

System Settings

This menu helps you set up several thing such as TV Select, PAL mode, and Factory Default, and etc.

- Select the DTR4000CA setup submenu on the Main Menu. The following submenu will show up on your TV.

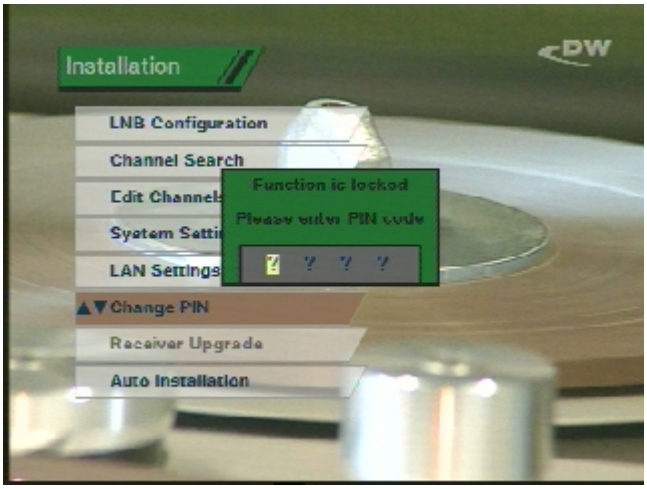
TV select	Selects the type of TV Receiver – RGB, CVBS, S-VHS
Local Time	Selects local time by 30 minute unit
RF Channel	Select or input RF channel number when DTR4000CA is connected to TV by RF connector.
PAL Mode	In the above case, you can choose PAL standard mode.
Antenna Line Length	If the line from antenna to DTR4000CA is too long, choose “long”, otherwise “choose “short”
Factory Default	Select this option when you want to change all setting to Factory default. * In this case, all setting information of Channel, LAN, and System settings will be erased.
Screen Type	You can choose either 4:3 or 16:9 according to the TV type.

Change PIN

PIN Code

You can change PIN number with this menu

- Select Change PIN menu from the MAIN menu.



- When you are asked to enter PIN Code, you enter current PIN Code. Then you will be asked for new PIN Code. You enter new PIN code, and the system re-asks you to repeat the PIN Code. If you enter the new PIN Code again, then the PIN code is permanently changed.

** Be sure not to forget the PIN code. If you forget the PIN Code, you have to contact the distributor to clear up the problem

Receiver Update

- At the moment, the DTR4000CA can be upgraded via RS-232C cable from the PC. The upgrade software can be downloaded from the manufacturer's web site. "Http://WWW.Telemann.com".
- Upgrade through Satellite will be added later.

Auto Installation

Based on the Satellite and Transponder information attached at the end of this manual, DTR4000CA automatically sets all channels from a Satellite. This information may change from time to time. When you cannot receive any signal from any satellite or transponder, check the information of those satellite or transponder.

- Select the Auto Installation from the MAIN menu.

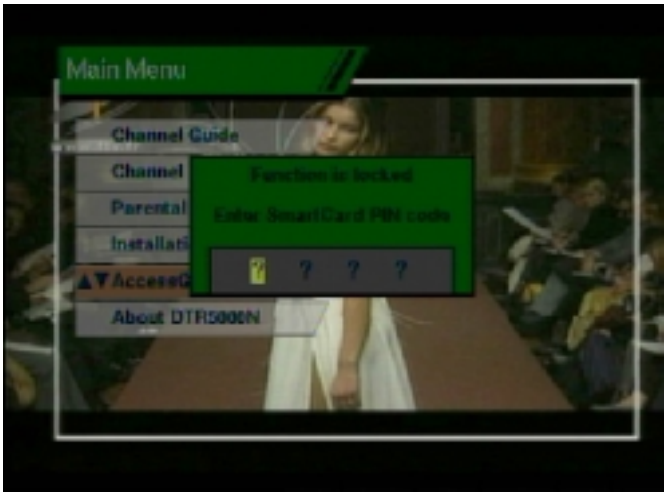
LNB Selection	From LNBs that you set up in LNB Setup menu, select one LNB.
Region Selection	Selects from Europe, Asia, or America based on where the DTR4000CA is used.
Satellite Selection	Select the satellite that you wants.

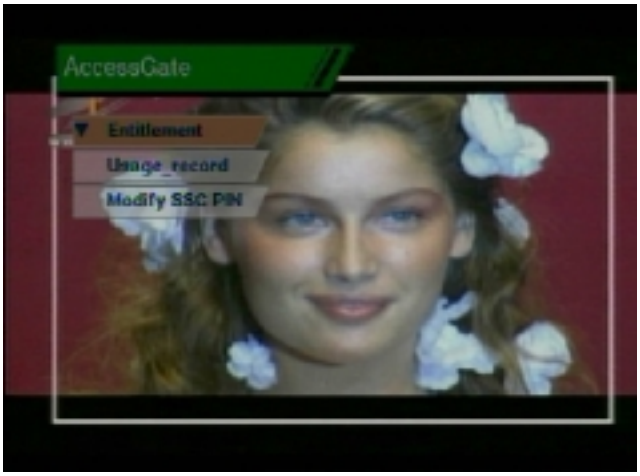
- After you set up the above three menus, press “OK”. Then, DTR4000CA will start to automatically search and set channels. To search the whole satellite, It will take time.
- The Factory Default Satellite information is listed in Annex “Factory Default Satellite Information”. This satellite information can be updated. For upgrade, please refer to the manufacturer’s web site.

AccessGate

AcessGate is a kind of Conditional Access System(CAS) manufactured by Global Telemann Systems Inc. CAS allows a service provider to provide its subscribers a variety of services such as Pay-Per-View Service by using a smart card. In a person's smart card, there is the information of what channel group that person can access to, how much tokens are left in the smart card, and what are the usage record. After a certain time has passed, this information is sent back to the service provider. The service provider uses this information to charge its subscriber. To access the CAS service, a subscriber should contact the Service Provider and get assigned a Smart Card.

At the main menu when you select the AccessGate, you will be asked to enter smart card PIN number. Please enter smart card PIN number that you are given when you subscribe to a service provider



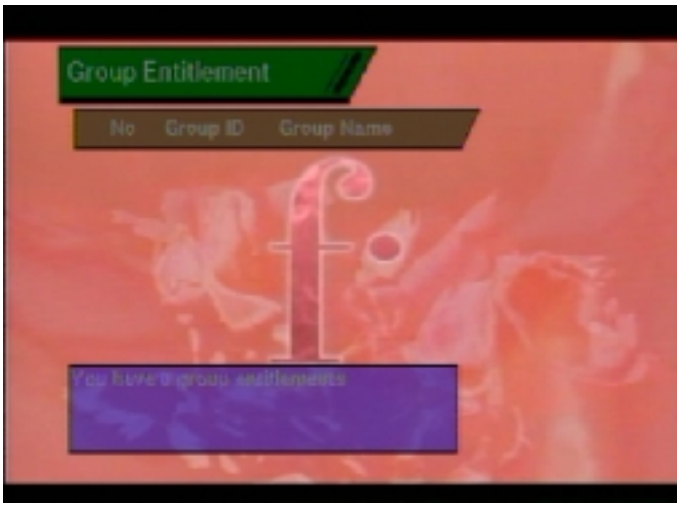


Entitlement

Entitlement shows you what service groups you subscribe to, what channels you can watch, and the remaining amount of the token. Token is a kind of money by which you can pay for watching TV.

Group Entitlement

Group entitlement displays what groups you subscribe to as of now. For detailed explanation about Group, please see materials given by the service provider. With one smart card, a subscriber can watch up to 20 groups. For group selection, please contact the service provider.

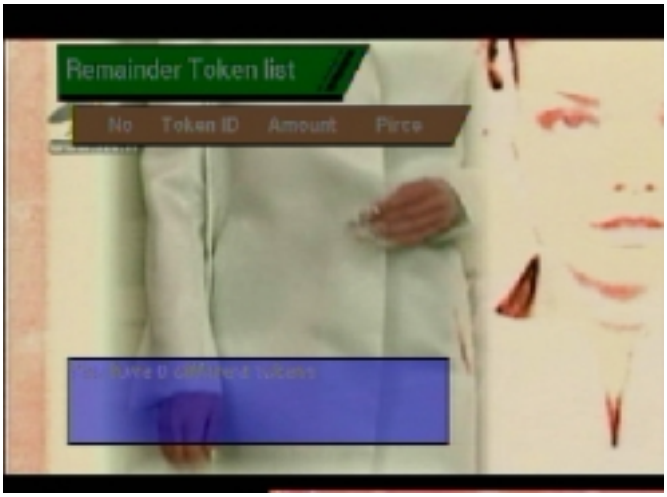


Channel Entitlement

This menu shows all channel list within the groups that you subscribe to.

Remainder Token List

This menu shows how many tokens you have and the unit price of each token at that time. As you use the service, the number of token will decrease. If you need more token, you should contact the service provider to have additional token.



Usage-record

This menu shows the record of a subscriber usage.

Amount of record

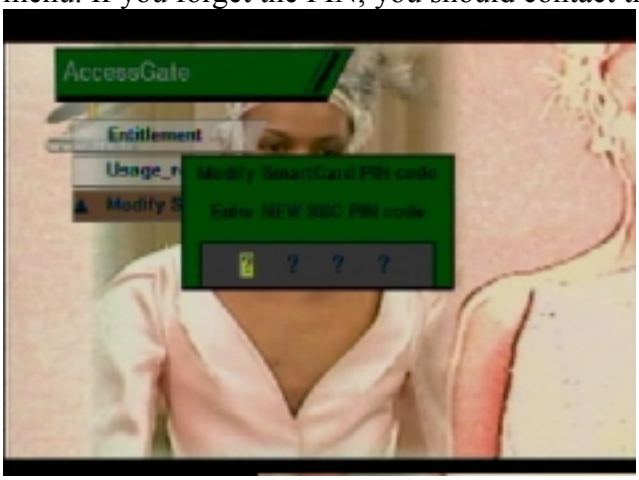
This menu shows the record of your usage. The smart card that each subscriber has keeps the usage information. If the amount of record exceeds certain level of the total, the information should be sent to the service provider and be cleared.

List of Record

This menu shows the list of usage record of a subscriber.

Modify Smart Card PIN

The smart card PIN(Personal Identification Number) is different from that PIN that you enter at the installation menu. The PIN is initially given by the service provider when you subscribe to a service. If you want to change the number, you can use this menu. If you forget the PIN, you should contact the service provider.



Trouble Shooting

OSD Display Message

Message or Display	Possible Causes	Remedies
Initializing System Please Wait ….	Displayed when power on and during initialization and self diagnosis.	
No Satellite Information in the memory. To exit, press EXIT or MENU	Displayed when the Satellite information in IRD was not valid	Download Satellite Information from Telemann's web site. Http://www.telemann.com
No Signal Check System or Select other Channel	Displays when power-on, channel changes, or when not locked. The system will retry to catch the signal.	Check if the antenna cable is correctly connected. Check if the information was correctly entered in LNB configuration and Channel Search Menu.
No Transponder Data Enter The Data	When Power on, there is no Channel Data in IRD	After setting LNB configuration, select Auto installation or enter channel data in Channel Search Menu
Radio Channel !	The current channel is a Radio Channel	
Scrambled Channel	The current channel is scrambles	
Search Channel Please Wait ……	Displays when power on, channel changes, or when not locked.	
Updating Information Please Wait …	Displayed when the information in IRD is updated due to addition or deletion of Channel Data or Parental Lock. Displayed also due to the information change of Edit Channel Menu.	

Message or Display	Possible Causes	Remedies
Warning !. You will lose current IRD settings. If you want to continue, press OK again.	Displayed when you run "Factory Default Menu" under Installation/System settings. All information in IRD will be reset to Factory Default information. Any new information will be erased and cannot be restored.	
Wrong Password !	Wrong Password was entered In Parental Lock, Installation Menu, and Channel of Parental Lock	Enter correct Password.

Front Panel Display Message

Message or Display	Possible Causes	Remedies
------	IRD is at standby	Press Standby key on Front Panel or Remote control and activate the IRD.
0000	Displayed when IRD does not work within three seconds after transition to Active Mode.	Refer to Service Center
BERR	Displayed when error occurred at the conversion from Bootloader to Main Program.	Refer to the service center.
C . . .	At the change from Standby mode to Active Mode, displayed untill Bootloader activates.	

Message or Display	Possible Causes	Remedies

D OK	Displayed when Main Program or Satellite Information has been successfully downloaded. When rebooting happens fast, you can not see this Message.	
DERR	Displayed when when downloading of Main Program or Satellite Information has been failed.	Try to download the latest information from the Telemann's web site. If you have the same error again, please refer to the service center.
DOWN	Displayed while downloading the Main Program or Satellite Program.	
NOCH	Displayed when there is no channel data in IRD at power on	Do Auto Installation or Enter channel data at Channel Search Menu.
SERR	Displayed when the version of downloaded information (Main program or Satellite Information) has the same as or previous than the current information version in IRD.	Download the latest Main Program or Satellite Information.

Technical Specifications

Tuner
- Input Frequency 950-2150MHz
- Input Impedance 75Ω
- Connector 2xF-type
- LNB Power Supply 14/18V/OFF, Max.600mA With Short Circuit Protection
- Band Switch Control 22KHz, DiSEqC1.0

Demodulator
- Waveform QPSK
- Symbol Rate 2-45MS/s
- Roll of Factor 0.35
- Outer Decoder Reed Solomon (204,188,16)
- Deinterleaver Convolutional, Depth 12
- Inner Decoder Convolutional, Length 7
- Code Rate 1/2,2/3,3/4,5/6,7/8
- SCPC and MCPC Capable

Demultiplexer
- CD ISO/IEC 13818-1 Compliant

Video Decoder
- Video Decoder CD ISO/IEC 13818-2 Compliant MPEG-2 Main Profile @Main Level
- Video Format 4:3, 16:9 (PAN and SCAN)
- Video System PAL/SECAM<-->NTSC Converter
- RF Output CH21-69 (PAL B/G/I/D/K) or CH3, 4 (NTSC)

Audio Decoder
- Audio Decoder MPEG-1 & MPEG-2 Layer I and II (Musicam Audio)
- Audio Channel Mono, Dual Channel, Stereo
- Volume Control 40 Level Adjust

Serial Data Interface
- Connector 9-Pin D-Sub(Male)
- Signal RS-232 Max.384Kbaud
- Software available from our WWW site : http://www.telemann.com

System Service Interface
- Connector 15-Pin D-Sub(Female)
- Signal DCU LINK Signal

Audio/Video Connectors
- TV Scart RGB, CVBS, Audio
- VCR Scart CVBS, Audio
- Audio Output 2xRCA Cinch (L/R)
- Composite Video Output 1xRCA Cinch
- S-VHS Video Output 1xMini-DIN

Internal Modem(Optional)
- Modular Jack RJ11 Type
- Up to 33.6 kbps

General
- Remote Control Unit
- Color OSD, Easy-to-Use Menu
- Operating temp. +5□ to +40□
- Power Supply Voltage 85 to 265VAC 50/60Hz
- Power Consumption Max. 30W (Stand-by 5W)
- Weight Approx. 3.0Kg
- Dimensions 380(W) x 250(D) x 80(H)mm
- Channel Memory
- LNB 8
- Transponder Max 200
- Channel Max 1,000

Factory Default Satellite Information

Based on the Satellite and Transponder information here, DTR4000CA automatically sets all channels from a Satellite. This information may change from time to time. When you cannot receive any signal from any satellite or transponder, check the information of those satellite or transponder.

<<< Version : 00.01

<<< Region : ASIA :
<<< The number of Satellite : 11

Satellite Name : NSS 703 at 57° East	
*** The number of Transponder : 12	
*** Downlink Frequency	
* 1 : 3825	* 6 : 4187
* 2 : 3843	* 7 : 4196
* 3 : 4027	* 8 : 10992
* 4 : 4095	* 9 : 11057
* 5 : 4143	* 10 : 11075
	* 11 : 11555
	* 12 : 11600

Satellite Name : Apstar 2R at 76.5° East	
*** The number of Transponder : 17	
*** Downlink Frequency	
* 1 : 3695	* 9 : 12303
* 2 : 3720	* 10 : 12360
* 3 : 3814	* 11 : 12365
* 4 : 3849	* 12 : 12370
* 5 : 3880	* 13 : 12400
* 6 : 3920	* 14 : 12403
* 7 : 3960	* 15 : 12430
* 8 : 12280	* 16 : 12493
	* 17 : 12629

Satellite Name : Asiasat 2 at 100.5° East	
*** The number of Transponder : 34	
*** Downlink Frequency	
* 1 : 3700	* 18 : 3830
* 2 : 3706	* 19 : 3834
* 3 : 3713	* 20 : 3840
* 4 : 3720	* 21 : 3847
* 5 : 3727	* 22 : 3854
* 6 : 3734	* 23 : 3900
* 7 : 3740	* 24 : 3940
* 8 : 3765	* 25 : 4000
* 9 : 3766	* 26 : 4007
* 10 : 3774	* 27 : 4020
* 11 : 3786	* 28 : 4133
* 12 : 3796	* 29 : 4143
* 13 : 3799	* 30 : 4185
* 14 : 3806	* 31 : 12244

* 15 : 3813	* 32 : 12329
* 16 : 3820	* 33 : 12339
* 17 : 3827	* 34 : 12349

Satellite Name : Asiasat 1 at 105.5° East	
*** The number of Transponder : 2	
*** Downlink Frequency	
* 1 : 3780	
* 2 : 3880	

Satellite Name : Cakrawarta 1 at 107.7° East	
*** The number of Transponder : 4	
*** Downlink Frequency	
* 1 : 2536	* 3 : 2596
* 2 : 2566	* 4 : 2656

Satellite Name : Apstar 1 at 138° East	
*** The number of Transponder : 11	
*** Downlink Frequency	
* 1 : 3684	* 6 : 3900
* 2 : 3730	* 7 : 3914
* 3 : 3742	* 8 : 3924
* 4 : 3860	* 9 : 3980
* 5 : 3870	* 10 : 4195
	* 11 : 3800

Satellite Name : Superbird C at 144° East	
*** The number of Transponder : 17	
*** Downlink Frequency	
* 1 : 12362	* 9 : 12613
* 2 : 12508	* 10 : 12628
* 3 : 12523	* 11 : 12643
* 4 : 12538	* 12 : 12658
* 5 : 12553	* 13 : 12673
* 6 : 12568	* 14 : 12688
* 7 : 12583	* 15 : 12703
* 8 : 12598	* 16 : 12718
	* 17 : 12733

Satellite Name : Agila 2 at 146° East	
*** The number of Transponder : 6	
*** Downlink Frequency	
* 1 : 3915	* 4 : 4133
* 2 : 4085	* 5 : 4155
* 3 : 4126	* 6 : 12301

Satellite Name : Optus B3 at 156° East	
*** The number of Transponder : 6	
*** Downlink Frequency	
* 1 : 12407	* 4 : 12595
* 2 : 12438	* 5 : 12626
* 3 : 12564	* 6 : 12689

Satellite Name : Optus B1 at 160° East	
*** The number of Transponder : 5	
*** Downlink Frequency	
* 1 : 12367	* 4 : 12518
* 2 : 12391	* 5 : 12546

* 3 : 12418	

Satellite Name : Panamsat 2 at 169° East	
*** The number of Transponder : 35	
*** Downlink Frequency	
* 1 : 3716	* 18 : 4189
* 2 : 3743	* 19 : 12265
* 3 : 3776	* 20 : 12295
* 4 : 3778	* 21 : 12305
* 5 : 3804	* 22 : 12325
* 6 : 3836	* 23 : 12492
* 7 : 3859	* 24 : 12513
* 8 : 3901	* 25 : 12525
* 9 : 3939	* 26 : 12529
* 10 : 3940	* 27 : 12605
* 11 : 3963	* 28 : 12629
* 12 : 4034	* 29 : 12637
* 13 : 4093	* 30 : 12646
* 14 : 4148	* 31 : 12656
* 15 : 4153	* 32 : 12665
* 16 : 4174	* 33 : 12703
* 17 : 4183	* 34 : 3778
	* 35 : 3901

<<< Region : AMERICA
<<< The number of Satellite : 14

Satellite Name : Echostar 4 at 212° East (148° West)	
*** The number of Transponder : 6	
*** Downlink Frequency	
* 1 : 12253	* 4 : 12428
* 2 : 12311	* 5 : 12486
* 3 : 12370	* 6 : 12545

Satellite Name : Satcom C4 at 225° East (135° West)	
*** The number of Transponder : 2	
*** Downlink Frequency	
* 1 : 3800	* 2 : 4067

Satellite Name : Galaxy 1R at 227° East (133° West)	
*** The number of Transponder : 8	
*** Downlink Frequency	
* 1 : 3760	* 5 : 4014
* 2 : 3834	* 6 : 4025
* 3 : 3960	* 7 : 4060
* 4 : 4000	* 8 : 4160

Satellite Name : Satcom C3 at 229° East (131° West)	
*** The number of Transponder : 9	
*** Downlink Frequency	
* 1 : 3720	* 5 : 4000
* 2 : 3760	* 6 : 4075
* 3 : 3784	* 7 : 4100
* 4 : 3820	* 8 : 4140

	* 9 : 4176

Satellite Name : SBS 5 - Galaxy 9 at 237° East (123° West)	
*** The number of Transponder : 10	
*** Downlink Frequency	
* 1 : 3795	* 6 : 3920
* 2 : 3814	* 7 : 3960
* 3 : 3840	* 8 : 4160
* 4 : 3880	* 9 : 11735
* 5 : 3900	* 10 : 11792

Satellite Name : Echostar 1/2 at 241° East (119° West)	
*** The number of Transponder : 21	
*** Downlink Frequency	
* 1 : 12224	* 11 : 12370
* 2 : 12239	* 12 : 12384
* 3 : 12253	* 13 : 12399
* 4 : 12268	* 14 : 12414
* 5 : 12282	* 15 : 12428
* 6 : 12297	* 16 : 12443
* 7 : 12311	* 17 : 12457
* 8 : 12326	* 18 : 12472
* 9 : 12341	* 19 : 12486
* 10 : 12355	* 20 : 12501
	* 21 : 12516

Satellite Name : Anik E2 at 252.7° East (107.3° West)	
*** The number of Transponder : 40	
*** Downlink Frequency	
* 1 : 3760	* 21 : 11865
* 2 : 3855	* 22 : 11878
* 3 : 3920	* 23 : 11900
* 4 : 3984	* 24 : 11913
* 5 : 4016	* 25 : 11926
* 6 : 4034	* 26 : 11939
* 7 : 4080	* 27 : 11961
* 8 : 4120	* 28 : 11974
* 9 : 4140	* 29 : 11987
* 10 : 4180	* 30 : 12000
* 11 : 11717	* 31 : 12022
* 12 : 11730	* 32 : 12035
* 13 : 11743	* 33 : 12048
* 14 : 11756	* 34 : 12061
* 15 : 11778	* 35 : 12083
* 16 : 11791	* 36 : 12096
* 17 : 11804	* 37 : 12109
* 18 : 11817	* 38 : 12157
* 19 : 11839	* 39 : 12170
* 20 : 11852	* 40 : 12183

Satellite Name : GE 1 at 257° East (103° West)	
*** The number of Transponder : 21	
*** Downlink Frequency	

* 1 : 3760	* 11 : 11834
* 2 : 3780	* 12 : 11940
* 3 : 3800	* 13 : 12065
* 4 : 3840	* 14 : 12075
* 5 : 4060	* 15 : 12085
* 6 : 4100	* 16 : 12095
* 7 : 11812	* 17 : 12105
* 8 : 11818	* 18 : 12115
* 9 : 11823	* 19 : 12125
* 10 : 11827	* 20 : 12135
	* 21 : 12160

Satellite Name : DBS 1/2/3 - Spacenet 4 at 259° East (101° West)	
*** The number of Transponder : 0	
*** Downlink Frequency	

Satellite Name : Telstar 5 at 263° East (97° West)	
*** The number of Transponder : 20	
*** Downlink Frequency	
* 1 : 3740	* 11 : 11900
* 2 : 3760	* 12 : 11904
* 3 : 3780	* 13 : 11936
* 4 : 3800	* 14 : 11966
* 5 : 3940	* 15 : 11991
* 6 : 4060	* 16 : 12084
* 7 : 4100	* 17 : 12090
* 8 : 4160	* 18 : 12115
* 9 : 11748	* 19 : 12152
* 10 : 11874	* 20 : 12177

Satellite Name : Galaxy 7 at 269° East (91° West)	
*** The number of Transponder : 21	
*** Downlink Frequency	
* 1 : 3720	* 11 : 11780
* 2 : 3780	* 12 : 11810
* 3 : 3800	* 13 : 11840
* 4 : 3880	* 14 : 11870
* 5 : 3960	* 15 : 11900
* 6 : 4020	* 16 : 11930
* 7 : 4040	* 17 : 11960
* 8 : 4160	* 18 : 11990
* 9 : 4180	* 19 : 12080
* 10 : 11720	* 20 : 12110
	* 21 : 12140

Satellite Name : GE 2 at 275° East (85° West)	
*** The number of Transponder : 2	
*** Downlink Frequency	
* 1 : 3886	* 2 : 3987
Satellite Name : Echostar 3 at 298.5° East (61.5° West)	
*** The number of Transponder : 13	
*** Downlink Frequency	

* 1 : 12239	* 7 : 12414
* 2 : 12268	* 8 : 12443
* 3 : 12297	* 9 : 12472
* 4 : 12326	* 10 : 12501
* 5 : 12355	* 11 : 12530
* 6 : 12384	* 12 : 12559
	* 13 : 12574

Satellite Name : Panamsat 5 at 302° East (58° West)	
*** The number of Transponder : 27	
*** Downlink Frequency	
* 1 : 3760	* 14 : 4120
* 2 : 3795	* 15 : 4134
* 3 : 3800	* 16 : 10727
* 4 : 3840	* 17 : 10768
* 5 : 3880	* 18 : 10809
* 6 : 3909	* 19 : 10850
* 7 : 3915	* 20 : 10891
* 8 : 3920	* 21 : 10932
* 9 : 3934	* 22 : 11219
* 10 : 4000	* 23 : 11261
* 11 : 4040	* 24 : 11303
* 12 : 4064	* 25 : 11345
* 13 : 4111	* 26 : 11387
	* 27 : 11429

<<< Region : EUROPE
<<< The number of Satellite : 19

Satellite Name : Sirius 1/2 at 5° East	
*** The number of Transponder : 22	
*** Downlink Frequency	
* 1 : 11747	* 12 : 12453
* 2 : 12111	* 13 : 12590
* 3 : 12130	* 14 : 12600
* 4 : 12153	* 15 : 12608
* 5 : 12169	* 16 : 12618
* 6 : 12245	* 17 : 12632
* 7 : 12284	* 18 : 12634
* 8 : 12303	* 19 : 12641
* 9 : 12334	* 20 : 12659
* 10 : 12380	* 21 : 12674
* 11 : 12399	* 22 : 12677

Satellite Name : Eutelsat II F2 at 10° East	
*** The number of Transponder : 14	
*** Downlink Frequency	
* 1 : 11006	* 8 : 11061
* 2 : 11011	* 9 : 11130
* 3 : 11014	* 10 : 11135
* 4 : 11016	* 11 : 11581
* 5 : 11020	* 12 : 11608
* 6 : 11024	* 13 : 12576
* 7 : 11026	* 14 : 12712

Satellite Name : Hotbird 1-5 at 13° East	

*** The number of Transponder : 69	
*** Downlink Frequency	
* 1 : 10719	* 35 : 11938
* 2 : 10722	* 36 : 11958
* 3 : 10758	* 37 : 11996
* 4 : 10775	* 38 : 12015
* 5 : 10796	* 39 : 12034
* 6 : 10834	* 40 : 12054
* 7 : 10873	* 41 : 12073
* 8 : 10892	* 42 : 12092
* 9 : 10911	* 43 : 12111
* 10 : 10914	* 44 : 12149
* 11 : 11034	* 45 : 12169
* 12 : 11054	* 46 : 12201
* 13 : 11131	* 47 : 12221
* 14 : 11205	* 48 : 12226
* 15 : 11242	* 49 : 12245
* 16 : 11304	* 50 : 12265
* 17 : 11331	* 51 : 12303
* 18 : 11338	* 52 : 12341
* 19 : 11371	* 53 : 12380
* 20 : 11422	* 54 : 12399
* 21 : 11457	* 55 : 12418
* 22 : 11464	* 56 : 12460
* 23 : 11548	* 57 : 12520
* 24 : 11642	* 58 : 12558
* 25 : 11662	* 59 : 12573
* 26 : 11681	* 60 : 12581
* 27 : 11766	* 61 : 12590
* 28 : 11804	* 62 : 12597
* 29 : 11823	* 63 : 12616
* 30 : 11843	* 64 : 12635
* 31 : 11862	* 65 : 12654
* 32 : 11881	* 66 : 12673
* 33 : 11900	* 67 : 12692
* 34 : 11919	* 68 : 12713
	* 69 : 12735

Satellite Name : Astra 1A 1B 1C 1D 1E 1F 1G at 19.2° East	
*** The number of Transponder : 46	
*** Downlink Frequency	
* 1 : 11720	* 24 : 12246
* 2 : 11740	* 25 : 12266
* 3 : 11758	* 26 : 12285
* 4 : 11778	* 27 : 12304
* 5 : 11798	* 28 : 12324
* 6 : 11817	* 29 : 12344
* 7 : 11837	* 30 : 12363
* 8 : 11856	* 31 : 12382
* 9 : 11895	* 32 : 12402
* 10 : 11934	* 33 : 12422
* 11 : 11973	* 34 : 12480
* 12 : 11992	* 35 : 12515
* 13 : 12012	* 36 : 12522
* 14 : 12032	* 37 : 12552
* 15 : 12051	* 38 : 12574
* 16 : 12070	* 39 : 12581

* 17 : 12090	* 40 : 12604
* 18 : 12129	* 41 : 12663
* 19 : 12148	* 42 : 12670
* 20 : 12168	* 43 : 12692
* 21 : 12188	* 44 : 12722
* 22 : 12207	* 45 : 11837
* 23 : 12226	* 46 : 12012

Satellite Name : Kopernikus 3 at 23.5° East	
*** The number of Transponder : 15	
*** Downlink Frequency	
* 1 : 11466	* 8 : 11650
* 2 : 11498	* 9 : 11680
* 3 : 11530	* 10 : 12524
* 4 : 11541	* 11 : 12559
* 5 : 11573	* 12 : 12610
* 6 : 11605	* 13 : 12658
* 7 : 11616	* 14 : 12692
	* 15 : 12725

Satellite Name : Arabsat 2A at 26° East	
*** The number of Transponder : 6	
*** Downlink Frequency	
* 1 : 3977	* 4 : 12505
* 2 : 4013	* 5 : 12563
* 3 : 4044	* 6 : 12605

Satellite Name : Gals 1/2 -Eutelsat II F3 - Most 1 - TDF 2 36° East	
*** The number of Transponder : 8	
*** Downlink Frequency	
* 1 : 11050	* 5 : 12399
* 2 : 11139	* 6 : 12508
* 3 : 12322	* 7 : 12516
* 4 : 12380	* 8 : 12534

Satellite Name : Turksat 1C at 42° East	
*** The number of Transponder : 19	
*** Downlink Frequency	
* 1 : 10980	* 10 : 11143
* 2 : 10986	* 11 : 11146
* 3 : 11014	* 12 : 11158
* 4 : 11020	* 13 : 11166
* 5 : 11041	* 14 : 11508
* 6 : 11046	* 15 : 11582
* 7 : 11068	* 16 : 11587
* 8 : 11129	* 17 : 11607
* 9 : 11138	* 18 : 11660
	* 19 : 11665

Satellite Name : PanAmSat 4 at 68.5° East	
*** The number of Transponder : 20	
*** Downlink Frequency	
* 1 : 3716	* 11 : 11464
* 2 : 3743	* 12 : 11584
* 3 : 3786	* 13 : 12517
* 4 : 3800	* 14 : 12544
* 5 : 3932	* 15 : 12577

* 6 : 3994	* 16 : 12604
* 7 : 4034	* 17 : 12637
* 8 : 4086	* 18 : 12664
* 9 : 4113	* 19 : 12729
* 10 : 4155	* 20 : 3971

Satellite Name : Panamsat 1 at 315° East (45° West)	
*** The number of Transponder : 7	
*** Downlink Frequency	
* 1 : 3883	* 4 : 11594
* 2 : 4058	* 5 : 11637
* 3 : 4080	* 6 : 11678
	* 7 : 11724

Satellite Name : Panamsat 6/6B/3R at 317° East (43° West)	
*** The number of Transponder : 34	
*** Downlink Frequency	
* 1 : 3707	* 18 : 10970
* 2 : 3716	* 19 : 11050
* 3 : 3735	* 20 : 11170
* 4 : 3743	* 21 : 11262
* 5 : 3785	* 22 : 11342
* 6 : 3846	* 23 : 11729
* 7 : 3863	* 24 : 11789
* 8 : 3872	* 25 : 11849
* 9 : 3936	* 26 : 11914
* 10 : 3958	* 27 : 11979
* 11 : 3966	* 28 : 12039
* 12 : 3991	* 29 : 12099
* 13 : 4026	* 30 : 12164
* 14 : 4046	* 31 : 12568
* 15 : 4106	* 32 : 12580
* 16 : 10722	* 33 : 12611
* 17 : 10802	* 34 : 12731

Satellite Name : Orion 1 - Columbia 515 at 322.5° East (37.5° West)	
*** The number of Transponder : 15	
*** Downlink Frequency	
* 1 : 11481	* 8 : 11622
* 2 : 11534	* 9 : 11672
* 3 : 11542	* 10 : 12187
* 4 : 11561	* 11 : 12607
* 5 : 11567	* 12 : 12650
* 6 : 11590	* 13 : 12705
* 7 : 11596	* 14 : 12732
	* 15 : 12734

Satellite Name : Intelsat 601 at 325.5° East (34.5° West)	
*** The number of Transponder : 1	
*** Downlink Frequency	
* 1 : 11158	

Satellite Name : Intelsat 801 at 328.5° East (31.5° West)	

*** The number of Transponder : 14	
*** Downlink Frequency	
* 1 : 3732	* 8 : 10999
* 2 : 10960	* 9 : 11007
* 3 : 10966	* 10 : 11016
* 4 : 10972	* 11 : 11025
* 5 : 10977	* 12 : 11060
* 6 : 10983	* 13 : 11627
* 7 : 10990	* 14 : 11640

Satellite Name : Hispasat 1A 1B at 330° East (30° West)	
*** The number of Transponder : 24	
*** Downlink Frequency	
* 1 : 11509	* 13 : 12226
* 2 : 11517	* 14 : 12380
* 3 : 11539	* 15 : 12456
* 4 : 11643	* 16 : 12545
* 5 : 11654	* 17 : 12549
* 6 : 11659	* 18 : 12591
* 7 : 11664	* 19 : 12631
* 8 : 11673	* 20 : 12655
* 9 : 11683	* 21 : 12666
* 10 : 12015	* 22 : 12671
* 11 : 12078	* 23 : 12673
* 12 : 12149	* 24 : 12711

Satellite Name : Intelsat 605 at 332.5° East (27.5° West)	
*** The number of Transponder : 14	
*** Downlink Frequency	
* 1 : 3715	* 8 : 11058
* 2 : 3762	* 9 : 11476
* 3 : 3970	* 10 : 11494
* 4 : 4000	* 11 : 11500
* 5 : 4047	* 12 : 11661
* 6 : 4080	* 13 : 11665
* 7 : 4090	* 14 : 11689

Satellite Name : NSS K at 338.5° East (21.5° West)	
*** The number of Transponder : 21	
*** Downlink Frequency	
* 1 : 3650	* 11 : 11494
* 2 : 3775	* 12 : 11550
* 3 : 3850	* 13 : 11558
* 4 : 3914	* 14 : 11567
* 5 : 4013	* 15 : 11590
* 6 : 4082	* 16 : 11862
* 7 : 4093	* 17 : 11870
* 8 : 4142	* 18 : 11880
* 9 : 11481	* 19 : 11892
* 10 : 11488	* 20 : 11910
	* 21 : 12616

Satellite Name : Amos 1 at 356° East (4° West)	
*** The number of Transponder : 7	
*** Downlink Frequency	
* 1 : 11094	* 4 : 11270
* 2 : 11159	* 5 : 11308
* 3 : 11224	* 6 : 11337
	* 7 : 11388

Satellite Name : Intelsat 707 at 359° East (1° West)	
*** The number of Transponder : 17	
*** Downlink Frequency	
* 1 : 3915	* 9 : 11015
* 2 : 3990	* 10 : 11107
* 3 : 4000	* 11 : 11174
* 4 : 4175	* 12 : 11458
* 5 : 4180	* 13 : 11514
* 6 : 10960	* 14 : 11540
* 7 : 10974	* 15 : 11592
* 8 : 11014	* 16 : 11679
	* 17 : 11691