

User's Manual
Manuel Utilisateur
Manual del usuario

DTV & IPTV Tuner Module SB-11TM



English



Français



Español



License

Table of contents

| | |
|--|------------|
| Important Information | English-2 |
| Declaration | English-2 |
| Contents | English-2 |
| Safety Precautions and Maintenance | English-4 |
| Installation | English-5 |
| Part Names | English-6 |
| Connections | English-7 |
| Basic Operation | English-8 |
| OSD (On-Screen-Display) Controls | English-9 |
| Channel Search | English-9 |
| Auto Scan | English-9 |
| Manual Scan | English-9 |
| Check DTV Signal | English-10 |
| Network Settings | English-10 |
| IP Program Settings | English-10 |
| Channel Edit | English-11 |
| Output Resolution | English-11 |
| Menu Language | English-11 |
| Time Zone | English-11 |
| Parental Control | English-12 |
| Closed Caption Options | English-12 |
| Channel Lock | English-12 |
| Password Setting | English-13 |
| Sound | English-13 |
| Setting Copy | English-13 |
| Information OSD | English-14 |
| System Information | English-14 |
| Software Update | English-14 |
| Reset | English-14 |
| Controlling the module via LAN Control | English-15 |
| Troubleshooting | English-16 |
| Methods for Initializing Output Resolution | English-17 |
| Specifications | English-18 |
| Limited Warranty | English-19 |
| GPL/LGPL Software Licenses Used by the Product | English-20 |

Important Information

Refer to the “Safety Precautions, Maintenance & Recommended Use” of the LCD Monitor in the User’s Manual for notes on handling.

Declaration

FCC Information

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult your dealer or an experienced radio/TV technician for help.

If necessary, the user should contact the dealer or an experienced radio/television technician for additional suggestions.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful: “How to Identify and Resolve Radio-TV Interference Problems.” This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

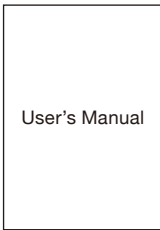


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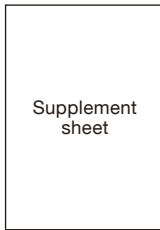
Contents



SB-11TM



User's Manual



Supplement sheet

[Notice] About the MPEG-4 AVC license included in this product


THIS PRODUCT IS LICENSED UNDER THE AVC PATENT PORTFOLIO LICENSE FOR THE PERSONAL USE OF A CONSUMER OR OTHER USES IN WHICH IT DOES NOT RECEIVE REMUNERATION TO (i) ENCODE VIDEO IN COMPLIANCE WITH THE AVC STANDARD ("AVC VIDEO") AND/OR (ii) DECODE AVC VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED TO PROVIDE AVC VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION MAY BE OBTAINED FROM MPEG LA, L.L.C. SEE [HTTP://WWW.MPEGLA.COM](http://www.mpegla.com)

Safety Precautions and Maintenance

For optimum performance, please note the following when setting up and using this product. Please adhere to the precautions stated in the user's manual of the display to be connected to this product.

To ensure safe and proper use of this product, some pictograms are used in this manual based on seriousness of considerable result by wrong usage.

The pictograms and their meanings are described below. Be sure to understand them thoroughly before starting to use this product.

| | |
|--|---|
|  WARNING | Failing to heed this pictogram and handling the product erroneously could result in accidents leading to death or major injury. |
|--|---|

| |
|--|
|  WARNING |
|--|

- **In the event of a fault occurring, pull out the power plug of the display immediately!**
If not, this may result in fire or electric shock. Pull out the power plug from the electrical outlet immediately. Consult your dealer for repairs subsequently.
- **Do not use when there is a failure (e.g. the screen does not appear etc.) or when there is smoke or strange odors**
This may result in fire or electric shock.
- **Do not place foreign objects inside the product**
Do not place foreign objects inside the device when mounting the display or projector to this product. This may result in fire or electric shock.
- **Do not disassemble or modify the product**
This may result in injury, fire or electric shock.
- **Do not touch the power cable when there is thunder**
Do not touch the power cable of the display when there is thunder. This may result in electric shock.
- **Do not replace this product with the power cable still connected to the electrical outlet**
Do not replace this product with the power cable of the display still connected to the electrical outlet. This may result in a failure.
- **Do not use this product in a location where it may get wet**
Cut off the power supply immediately if water were to get inside this product or the display, consult your dealer after pulling out the power cable from the electrical outlet. If not, this may result in a failure, fire or electric shock.

Installation

Install this product into a display. Refer to the display manual during this process.

Contact your dealer about the compatible display models.

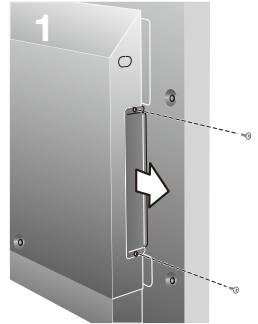
NOTE: This product is not compatible with installation environments requiring an SB-02AM adapter.

WARNING:

- When removing and installing this product, disconnect the display power cord from the power outlet.
- Pay attention not insert foreign objects into the display when installing this product. Be also careful not to drop this product or the expansion slot cover.

1. Remove the two screws from the expansion slot (type 2), and remove the slot cover.
2. Install this product into the display.

NOTE: When installing this product, ensure that the top side of the accessory is facing the rear of the display (see figure 2). This product may be damaged if inserted with the wrong orientation.

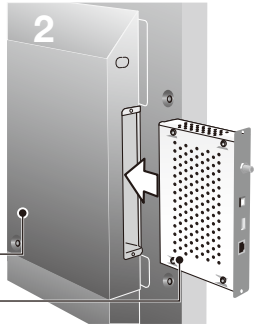


3. Secure this product with the expansion slot screws (torque: 49.0 N·cm to 68.6 N·cm). Secure the display handle with screws if it has been removed. See the display User's Manual for the torque of the handle screws.

NOTE: Do not apply a force exceeding the specified torque when tightening the screws. Otherwise, the screw holes may be damaged.

Press the OPTION button on the display remote control to switch the input to this product.

Rear of the display
Top side of this board



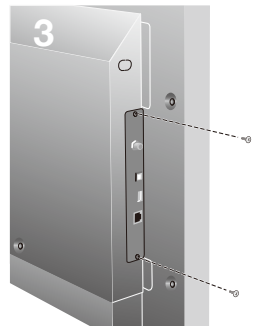
4. To remove this board, remove the screws that hold the board to the chassis, then remove the board by using the tab.

NOTE: Do not touch the option board immediately after it has been removed. It may have a high temperature.

<<Important>>

It takes approximately 1 minute before displaying a picture after this product is turned on.

Please do not operate the remote control and wait for initialization to complete.

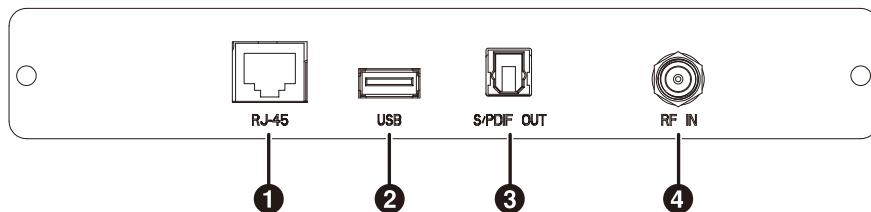


NOTE: When using the product, set the OPTION POWER setting of the display to OFF.

Also check the POWER SAVE setting (ENABLE / DISABLE or TIME SETTING) of the display. The display may automatically go into standby during the start-up period of this product.

For information on display operations, refer to the display manual.

Part Names



1. Ethernet port (RJ-45)

Ethernet port for used IPTV input.

2. USB

USB 2.0 Type A port for USB flash drive.

Insert a USB flash device when you execute Setting Copy function.

3. S/PDIF OUT (optical)

Digital audio output for connection to external digital audio system.

4. RF IN (F Type)

RF input that connects to your VHF/UHF Antenna or Cable TV Service.

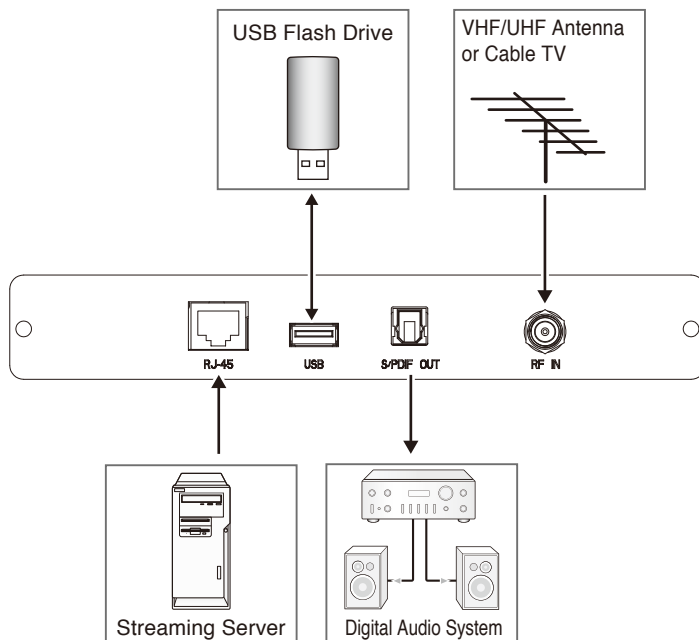
Connections

NOTE: Do not connect/disconnect cables when turning on the display or other external equipment as this may result in a loss of the display image.

Before making connections:

- * First turn off the power of all the attached equipment and make connections.
- * Refer to the user manual included with each separate piece of equipment.

Wiring Diagram



NOTE:

- During IPTV reception, there may be times when the picture is not displayed properly depending on the network environment you are using.
- If you use Gigabit Ethernet, be sure to use a proper-category cable.

Basic Operation

<<Important>>

It takes approximately 1 minute before displaying a picture after this product is turned on.
Please do not operate the remote control and wait for initialization to complete.

Selecting Tuner

Press OPTION button on the remote.

Opening Tuner OSD menu

When the input signal of the display is "OPTION", press OPTION MENU button to turn on/off the Tuner OSD.

NOTE : If your display's Wireless Remote Control does not have "OPTION MENU" button, press the "OPTION" button.

Wireless Remote Control

NOTE : Use your display's Wireless Remote Control. For details about procedures other than those listed below, or, if your Wireless Remote Control is different from the picture below, see the display's user's manual.

1. POWER button

Switches the power on/standby.

2. ASPECT button

Selects picture aspect, [FULL],[WIDE],[ZOOM] and [NORMAL].

3. OPTION button

Set Input signal to "OPTION".

4. OPTION MENU button

When "OPTION" button is set, turn on/off the Tuner OSD.

5. KEYPAD

Press buttons to set and change passwords and change channel.

6. ENT button

Sets channels.

7. DISPLAY button

Turn on/off the current channel information.

8. MENU button

Turn on/off the display OSD menu.

Refer to your display's user's manual for more display OSD information.

9. UP/DOWN button

Act as ▲▼ button to move the highlighted area up or down to select items within OSD menu.

10. MINUS/PLUS (-/+) button

Act as ◀▶ button to move the highlighted area right or left to select items within OSD menu.

11. EXIT button

Returns to previous menu within OSD menu.

12. VOLUME UP/DOWN button

Increases or decreases audio output level.

13. GUIDE button

Turn on/off EPG (Electronic Program Guide).

14. CH +/- button

Moves channel up or down.

15. MUTE button

Turn on/off the audio mute.

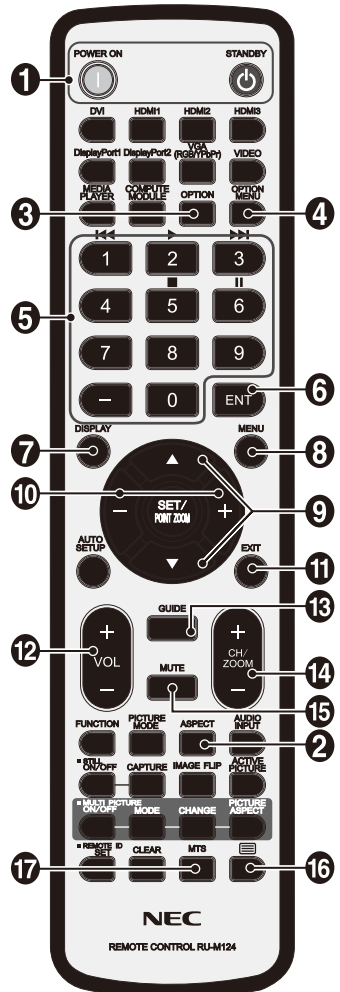
When mute is on, S/PDIF OUT is also muted.

16. CC button

Activates closed captioning.

17. MTS button

Select Multi-language.



OSD (On-Screen-Display) Controls

Channel Search

When powering on for the first time, you will be prompted to scan and memorize all available channels from your RF input signal. To start this process, press OPTION MENU button to display the TV OSD menu.

NOTE: Digital channels are indicated with a “-” followed by a number.

NOTE: When Channel Lock function is “On”, the Channel Search cannot be used. If Channel Lock is “On”, set it to “Off” before proceeding.

Auto Scan

Depending upon the RF input signal, you will need to scan for either off air (antenna) or cable channels.

Off Air Scan

1. On the “Tuner” menu page, press ▲▼ button to select “Channel Search” and press SET button. There are two sub-menu are listed.
 - (1) Auto Scan
 - (2) Manual Scan
2. Select “Auto Scan” and press SET button.
3. Select “Off Air” and press SET button.
4. Press SET button to start channel scanning.

NOTE: It takes several minutes to complete the wholes scanning process; the percentage bar displays the progress.

5. When the scan has been completed, “Scan finish.” message will be displayed. Press OPTION MENU or EXIT button to leave this window. Press CH+ and CH- buttons to verify the channels found and memorized.

Cable Scan

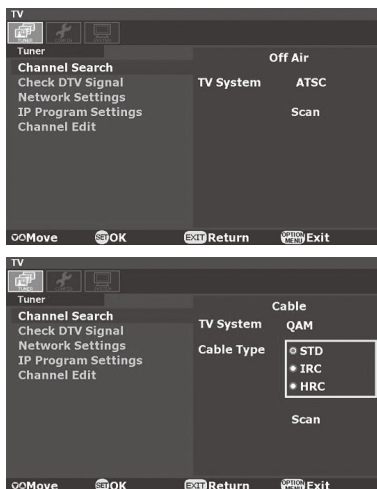
1. Follow steps 1 to 2 listed above to activate the “Auto Scan” function for cable signals.
2. Select “Cable” and press SET button.
3. Press ▲▼ button and SET button to select “Cable Type”. Select “STD”, “IRC” or “HRC” and press SET button.

NOTE: STD, IRC and HRC identify various types of cable TV systems. Contact your local cable company for the type of cable system that exists in your particular area.

4. Press ▲▼ button to select “Scan” and press SET button to start channel scanning.

NOTE: It takes several minutes to complete the wholes scanning process; the percentage bar displays the progress.

5. When the scan has been completed, “Scan finish.” message will be displayed. Press OPTION MENU or EXIT button to leave this window. Press CH+ and CH- buttons to verify the channels found and memorized.



Manual Scan

Manual Scan allows you to individually add new channels into memory without running Auto Scan.

1. On the “Channel Search” menu page, select “Manual Scan” and press SET button. There are two sub-menu are listed. Choose the channel map you are using and press SET button.

(1) Off Air

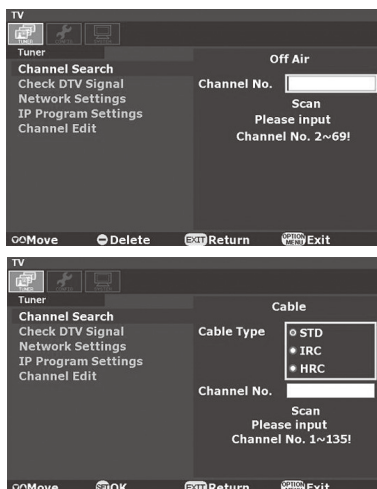
For Off Air additions, enter the new channel number on the remote control’s numeric key pad. Press ▼ button to select “Scan”, and press SET button to scan for and load the channel.

(2) Cable

When adding Cable channels, verify your cable type, “STD”, “IRC” or “HRC”, and enter the new channel number on the remote control’s numeric keypad. Press ▼ button to select “Scan”, and press SET button to scan for and load the channel.

The scanned channels will appear if the desired scanning channel has been searched successfully.

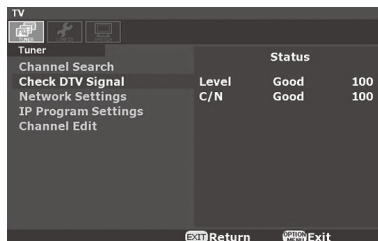
2. When finished, press OPTION MENU or EXIT button to leave this window.



Check DTV Signal

This function indicates the status for the Digital TV signal level and the C/N.

1. On the "Tuner" menu page, press ▲▼ button to select "Check DTV Signal" and press SET button.
2. The status for the Digital TV signal level and the C/N will be indicated. [Good/ Normal/ Weak: 0-100]

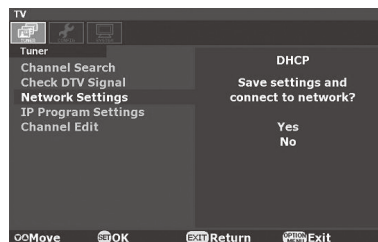


Network Settings

DHCP

This product will automatically attempt to establish a network connection using DHCP when an active network cable is connected. You can also manually attempt to connect by selecting "Static IP" from the "Network Settings" on the "Tuner" menu page.

1. On the "Network Settings", press ▲▼ button to select "DHCP" and press SET button.
2. Select "Yes" and press SET button to connect. (To confirm a successful connection, select "System Information" on the "System" menu page to check for the presence of an IP address.)

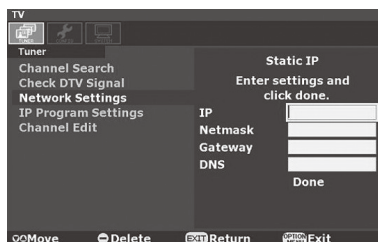


Static IP

If desired, this product can be manually configured to use a static IP address by following the instructions below. (Contact your network administrator to acquire the correct values for each parameter before making the changes.)

1. On the "Network Settings", press ▲▼ button to select "Static IP" and press SET button.
2. Press the numeric buttons on the remote control to input the IP Address, Netmask, Gateway and DNS parameters. When finished, select "Done" and press SET button to manually implement the network settings.

(To confirm a successful setting, select "System Information" on the "System" menu page to check for the presence of an IP address.)



IP Program Settings

This function sets the channel number for IP channel programs.
Add

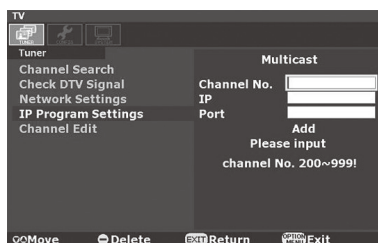
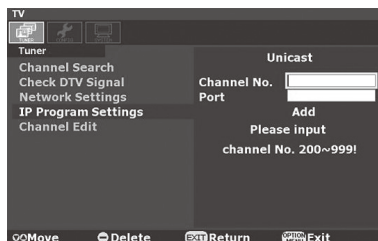
1. On the "Tuner" menu page, press ▲▼ button to select "IP Program Settings" and press SET button.
2. Select "Add" and press SET button, then there are two sub-menus listed.

(1) Unicast

Press ▲▼ button to select "Unicast" and press SET button, you will see the "Channel No" and "Port" to be typed. Then press ▼ button to select "Add" and press SET button to apply.

(2) Multicast

Press ▲▼ button to select "Multicast" and press SET button, you will see the "Channel No", "IP Address" and "Port" to be typed. Then press ▼ button to select "Add" and press SET button to apply.



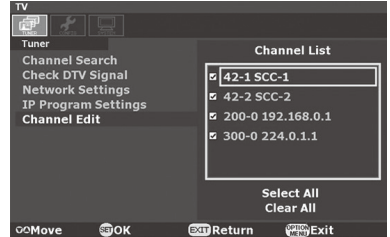
Delete

1. Select “Delete” on the step 2 above and press SET button.
2. Type the “Channel No.” to delete the IP channel program.
Then press ▼ button to select “Delete” and press SET button to apply.

Channel Edit

This feature allows you to select which channels in memory are tuned when using CH + or CH- buttons.

1. On the “Tuner” menu page, press ▲▼ button to select “Channel Edit” and press SET button to display the list of memorized channels. Press SET button again to enter the channel list.
2. Press ▲▼ button to select each channel in the list. Pressing SET button on a checked channel will remove it from the list (skip), while pressing SET button on an unchecked channel will add it to memory.

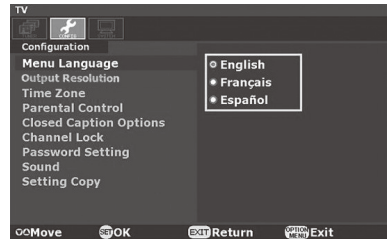


NOTE: When IP channels are listed, the setup IP address is displayed beside the channels.

Menu Language

This function selects OSD menu Language.

1. On the “Configuration” menu page, press ▲▼ button to select “Menu Language” and press SET button.
2. Press ▲▼ button to select OSD Menu Language and press SET button to apply.

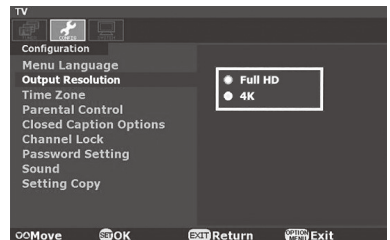


Output Resolution

This function selects the output resolution of this product.

1. On the “Configuration” menu page, press ▲▼ button to select “Output Resolution” and press SET button.
2. Press ▲▼ button to select Output Resolution and press SET button.
3. Select “Keep this resolution” and press SET button to change the output resolution.

Select “Return to previous resolution” and press SET button to not change the output resolution.



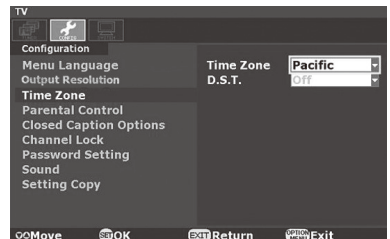
NOTE: The confirmation screen will be displayed for 15 seconds.

NOTE: To initialize output resolution without using the OSD screen, refer to Troubleshooting (page 16).

Time Zone

This function selects the Time Zone and D.S.T. (Daylight Saving Time) settings.

1. On the “Configuration” menu page, press ▲▼ button to select “Time Zone” and press SET button.
2. Press ▲▼ to highlight “Time Zone” and press SET button.
3. Press ▲▼ to select the “Time Zone” and press SET button.
4. Press ▲▼ to highlight “D.S.T.” and press SET button.
5. Press ▲▼ to select the “D.S.T.” and press SET button.



Parental Control

Parents can block certain types of programming based on the rating and content.

NOTE: This function is protected by a password.

1. On the “Configuration” menu page, select “Parental Control” and press SET button.
2. Enter your password. The default password is “0000”. Then select “OK” and press SET button. There are three sub-menus are listed.
 - (1) U.S. TV Rating
 - (2) MPAA
 - (3) RRT(Region Rating Table)

NOTE: RRT is the Region Rating Table downloadable function.

3. Select “U.S. TV Rating”, “MPAA” or “RRT”, and press SET button. Then you will see the U.S. TV Rating system, MPAA system or Region Rating Table.
4. Press ▲▼ + buttons and SET button to activate the appropriate restrictions.

NOTE: Blocking one type of programming will automatically block all higher rated programming also, however it is possible to unlock this programming while keeping the desired programming blocked.

Closed Caption Options

This function selects Closed Caption Options, Size, Font, Font Color, BG Color, Font Opacity, BG Opacity, Edge Color and Edge Type.

1. On the “Configuration” menu page, press ▲▼ button to select “Closed Caption Options” and press SET button.

NOTE: When “Default” is selected for the Style, default setting for all selection is used.

2. Press ▲▼ to highlight the desired option and press SET button.
3. Press ▲▼ to select the desired selection and press SET button.

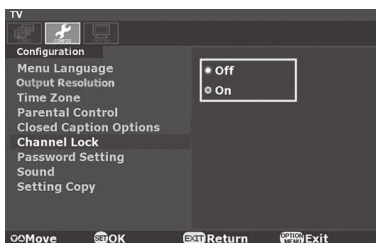
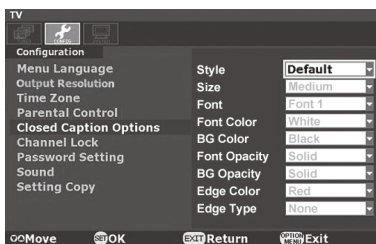
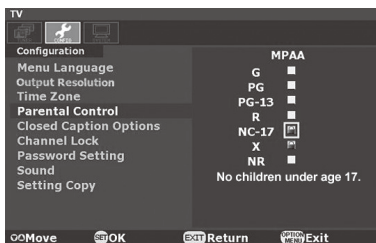
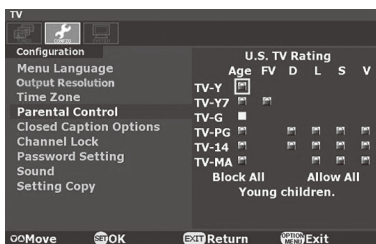
Channel Lock

The Channel Lock function controls the display of channels. When Channel Lock is “On”, the same channel is fixed until unlocked with a password.

NOTE: This function is protected by a password.

When Channel Lock function is “On”, the Channel Search cannot be used.

1. On the “Configuration” menu page, press ▲▼ button to select “Channel Lock” and press SET button.
2. Enter your password. Then select “OK” and press SET button. The default password is “0000”.
3. Select “On” or “Off” and press SET button.



English

Password Setting

The password controls access to “Parental Control”, “Channel Lock”, “Setting Copy” and “Reset” functions. Therefore, be sure to keep a record of or memorize the new password.

The default password is “0000”.

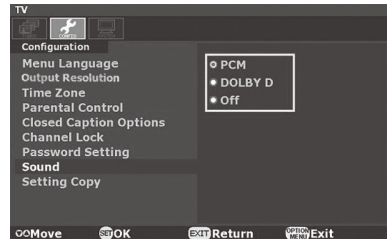
1. On the “Configuration” menu page, press ▲▼ button to select “Password Setting” and press SET button.
2. Enter your password on the remote control’s numeric key pad. Then select “OK” and press SET button.
3. Enter “New Password” and “Confirm Password” on the numeric key pad. Then select “Change” and press SET button to change the password.



Sound

This function selects S/PDIF output format.

1. On the “Configuration” menu page, press ▲▼ button to select “Sound” and press SET button.
2. Press ▲▼ to select the S/PDIF output format and press SET button.



NOTE: When “Off” is selected, the S/PDIF output will be muted.

NOTE: Audio is only available in digital format.

Setting Copy

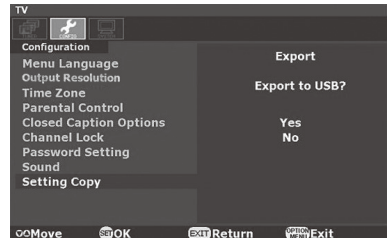
This function export or import the settings of this product via USB flash device.

The settings are Searched channels, Network Settings, IP Program Settings, Channel Edit, Output Resolution, Menu Language, Time Zone, Parental Control, Closed Caption Options, Channel Lock, Password Setting, Sound and Information OSD.

NOTE: This function is protected by a password.

Export

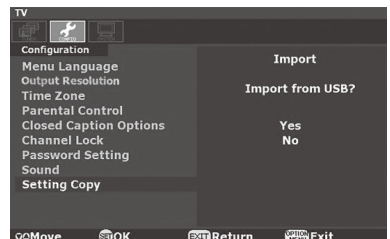
1. Insert your USB flash drive to the USB port of this product.
2. On the “Configuration” menu page, press ▲▼ button to select “Setting Copy” and press SET button.
3. Enter your password. Then select “OK” and press SET button. The default password is “0000”.
4. Select “Export” and press SET button.
5. Select “Yes” and press SET button. Then the product’s settings data will be exported to your USB flash drive.
6. When the export has been completed correctly, “Export succeeded.” message will be displayed.



NOTE: If an error message is displayed, operate according to the message content.

Import

1. Insert your USB flash drive with the product’s settings data to the USB port of this product.
2. On the “Configuration” menu page, press ▲▼ button to select “Setting Copy” and press SET button.
3. Enter your password. Then select “OK” and press SET button. The default password is “0000”.
4. Select “Import” and press SET button.
5. Select “Yes” and press SET button. Then the exported settings data will be imported from your USB flash drive.



6. When the import has been completed correctly, "Import succeeded." message will be displayed.

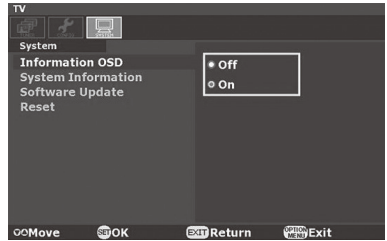
NOTE: If an error message is displayed, operate according to the message content.

NOTE: When "Static IP" is selected in the "Network Settings", the IP Address, Netmask, Gateway, and DNS settings will be copied as they are, so change these settings to appropriate values after import.

Information OSD

The Information OSD displays channel, signal source, resolution and (if available) programming data on the screen upon the channel change.

1. On the "System" menu page, press ▲▼ button to select "Information OSD" and press SET button.
2. Press ▲▼ button to select "On" or "Off" and press SET button.



System Information

This function displays the software version and the network settings.

1. On the "System" menu page, press ▲▼ button to select "System Information".
2. Press SET button. Then system information will be displayed.



Software Update

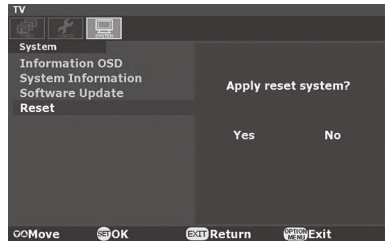
This function is for service use only.

Reset

This function returns all OSD settings to their default settings. Password is also reset to default.

NOTE: This function is protected by a password.

1. On the "System" menu page, press ▲▼ button to select "Reset" and press SET button.
2. Enter your password. Then select "OK" and press SET button. The default password is "0000".
3. Select "Yes" and press SET button, then all settings will be returned to the default value.



Controlling the module via LAN Control

This product can be controlled by connecting a personal computer via this product's Ethernet port.
NOTE: This LAN control can not control the LCD monitor.

1. Connection

First turn off the power of the LCD monitor and the computer, then make connection with LAN cable.
NOTE: Use a category 5e or higher LAN cable.

2. Network Setting

Set the IP address of the product on the "Network Settings" OSD menu.

NOTE: Refer to the "OSD Controls" - "Network Settings" section of this manual for the IP address setting.

3. Operation

- 1) Access is gained to the HTTP server function by starting the Web browser on the computer via the network connected to the product, then entering the following URL.

http://<the product's IP address>

Example: When the IP address of the product is "192.168.0.1", the URL is
http://192.168.0.1

- 2) Click the button on the control panel of the computer to execute the function or the setting.

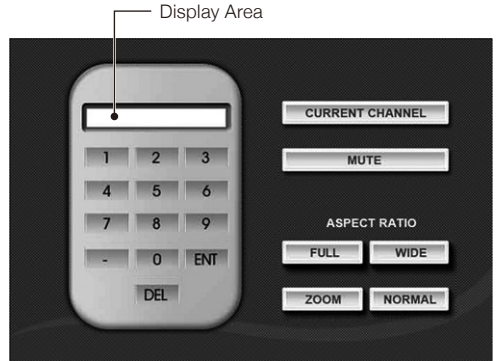
NOTE: Refer to the "Basic Operation" section of this manual for the function.

Example 1: Direct Channel Setting

Clicking numeric buttons [1],[2],[3],[4],[ENT] will change the channel to "123-4".

Example 2: Current Channel Read

Clicking the [CURRENT CHANNEL] button will display the current channel number to the Display Area.




Troubleshooting

<<Important>>

It takes approximately 1 minute before displaying a picture after this product is turned on. Please do not operate the remote control and wait for initialization to complete.

NOTE: When using the product, set the OPTION POWER setting of the display to OFF.

For information on display operations, refer to the display manual.

| Problem | Solution |
|--|--|
| No picture, but a message is displayed. | <ul style="list-style-type: none"> • Be sure to perform a channel scan before you watch the TV program. • Check to see if antenna/cable is properly connected. |
| No picture | <ul style="list-style-type: none"> • Check to make sure that Video Input is selected to "OPTION". • Check to see if this product is properly installed. Move them away from the display if necessary. • Check to see if the output resolution settings are suitable for your display. To forcibly initialize the output resolution, refer to "Methods for Initializing Output Resolution" on next page. • Press CH+ and CH- button on the Remote Control to change the channels. • Switch another input signal once, then press the OPTION button on the Remote Control again. • Press POWER button to turn off the display, and on again. • The display may automatically go into standby during the start-up period of this product. Press the power on button on the remote control or press the power button on the display again. Also check the POWER SAVE setting (ENABLE / DISABLE or TIME SETTING) of the display. |
| No sound | <ul style="list-style-type: none"> • Check to see if display's speaker cable is properly connected. • Check to see if mute is activated. • Check to see if volume is set at minimum. • Check to make sure that Audio Input is selected to "OPTION". • Check display's Internal/External speaker switch. • Check to see if display's AUDIO setting of the OPTION SETTING menu is selected to "DIGITAL". • Press the MTS button on the remote control to check for the selected language. |
| No sound from S/PDIF out | <ul style="list-style-type: none"> • Check to see if optical cable is properly connected. • Check to see if audio output format (PCM/DOLBY D) for "Sound" setting is suitable for your digital audio system. • Check to see if audio output format setting is not set to "Off". |
| Not all channels are available after performing an Auto Scan | <ul style="list-style-type: none"> • Perform an Auto Scan to scan these missing channels. Once the tuner picks up the signal, all the transmission parameters will be stored in tuner's memory automatically. |
| No Closed Caption displayed | <ul style="list-style-type: none"> • Make sure the channel you are watching carries closed caption information. • Press the  button on the Remote Control to check for closed caption data output. |
| IPTV does not work | <ul style="list-style-type: none"> • Check to see if LAN cable is properly connected. • Check to see if the network settings of both of this product and your system is correct. • Check to see if the devices, hubs, and cables connecting to the network are adequate. |
| Remote control does not work | <ul style="list-style-type: none"> • Make sure the batteries are inserted properly. • Test the batteries for strength/life. • Make sure to point the remote directly at the sensor on the display. • Check if the remote is in Remote ID mode. • The remote control may not function when in direct sunlight or when there is strong illumination on the remote sensor of the display. |
| USB Flash Drive is not recognized | <ul style="list-style-type: none"> • Check to see if USB Flash Drive is properly connected. • Check to see if USB Flash Drive meets the requirements. (See USB Flash Drive Requirements page 18.) |

Methods for Initializing Output Resolution

Method 1

1. Press OPTION button on the remote control to switch the input signal of the display to the tuner.
2. Press DISPLAY button on the remote control 10 times. Then, the output resolution will be changed to Full HD and the confirmation screen for changing the output resolution will be displayed.
3. Select "Keep this resolution" and press SET button.

Method 2

1. Prepare a USB flash drive and create a "ResetOutputResolution" file in the root folder.

NOTE: Only the file name "ResetOutputResolution" (not case-sensitive) with no file extension is recognized.

2. Turn off the power to the display and insert the USB flash drive into the USB port of this product.
3. Turn on the power to the display.

Specifications

| | | |
|------------------------------------|---------------------|---|
| Digital TV | System | ATSC / Clear QAM |
| | Receiving Frequency | ATSC: 57 - 803MHz, Clear QAM: 57 - 861MHz |
| | Channel Coverage | ATSC: 2 - 69ch, Clear QAM: 1 - 135ch |
| | Modulation | ATSC: 8-VSB, Clear QAM: 64/256 QAM |
| | Band Width | 6MHz |
| | Video Codec | MPEG-2 MP@HL |
| | Audio Codec | Dolby Digital |
| IPTV | Streaming Type | Unicast, Multicast |
| | Network Protocol | Ethernet IEEE 802.3, IPv4, TCP/IP UDP/IP, HTTP, DNS Client, DHCP Client |
| | Streaming Protocol | RTP |
| | Multicast Protocol | IGMP v2/v3 |
| | Video codec | |
| | HEVC (H.265) | MP@L5.0, Main 10 Profile@L5.0 |
| | MPEG-4/AVC (H.264) | MP@L4.0, HP@L4.2 |
| | MPEG-2 | MP@ML, MP@HL |
| | WMV | MP@HL |
| | Audio codec | |
| | MPEG-1 | Layer I, Layer II, Layer III (MP3) 2.0 |
| | MPEG-4 | AAC-LC, HE-AAC |
| | Dolby | Dolby Digital, Dolby Digital Plus |
| WMA | WMA 9 | |
| Interface | Antenna Input | F Type Connector |
| | Audio Output | Digital Audio S/PDIF Optical Connector |
| | Ethernet | RJ-45 (10/100/1000Mbps Ethernet) |
| | USB | USB2.0 Type A Firmware upgrade and Settings copy USB Flash Drive Requirements <ul style="list-style-type: none"> • Capacity: 512MB - 16GB • File System: FAT, FAT32 • Allocation unit size: 2KB - 64KB |
| OSD language | | English/ French/ Spanish |
| Power Supply | | +16VDC (from Option slot Interface) |
| Power Consumption | | 7.0W |
| Operational Environment | Temperature | 0 - 40 degrees |
| | Humidity | 10 - 80% (without condensation) |
| Storage Environment | Temperature | -10 - 60 degrees |
| | Humidity | 10 - 90% (without condensation) |
| Dimensions | Net | 180.0mm(W) x 30.0mm(H) x 119.0mm(D) |
| | Gross | 261.0mm(W) x 83.5mm(H) x 196.0mm(D) |
| Weight | Net | 0.6kg |
| | Gross | 0.9kg |
| Complied Regulatory and Guidelines | | FCC : ClassB, BETS-7 |
| Accessories | | User's manual |
| Control Method | | Display's Remote Control / Ethernet Control |
| Limited Warranty | | 3 Years Parts and Labor |

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curve25519-donna: Curve25519 elliptic curve, public key function <http://code.google.com/p/curve25519-donna/>
Adam Langley <agl@imperialviolet.org>

Derived from public domain C code by Daniel J. Bernstein <djb@cr.yp.to>

More information about curve25519 can be found here <http://cr.yp.to/ecdh.html>

djb's sample implementation of curve25519 is written in a special assembly language called qhasm and uses the floating point registers.

This is, almost, a clean room reimplementaion from the curve25519 paper. It uses many of the tricks described therein. Only the crecip function is taken from the sample implementation.

PTPd2

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