



Part No. GL68-00261A(Ed.03)

SMT-H3090

User Guide



The purposes of Safety Concerns are to ensure users' safety and to prevent property losses.
Please read this document carefully for proper use.



SAFETY CONCERNS

The purpose of the Safety Concerns section is to ensure the safety of users and prevent property damage. Please read this document carefully for proper use.

Conventions

- 
Warning
 Provides information or instructions that you should follow in order to avoid personal injury or fatality.
- 
Caution
 Provides information or instructions that you should follow in order to avoid a service failure or damage to your STB.
- 
Note
 Indicates additional information for reference.
- 
Checks
 Provides the operator with checkpoints for stable system operation.

Symbols

- 
Caution
 Indication of a general caution
- 
Restriction
 Indication for prohibiting an action for a product
- 
Instruction
 Indication for commanding a specifically required action



WARNING

Doing so may cause a fire or electric shock.

Power	
 Insert the power plug firmly.	 Do not connect multiple devices to a single outlet simultaneously.
 Do not touch the main body, power cord, or power plug with wet hands.	 If video/sound cable generates heat after connection, pull out the power cord and contact customer service immediately.

Installation/Maintenance	
 Install the product in an area with good ventilation.	 Do not cover the top.
 Do not install in humid or dusty areas, and avoid installing near heating devices.	 Pull out the power plug during thunderstorms or when not used for a prolonged period of time.
 Keep flammable substances or sprays away from the STB.	 Pull out the power plug at once and contact customer service if unusual noise, smell, or smoke comes out.
 Do not place heavy objects on this product.	

General	
 Check if the coaxial cable is correctly grounded before connecting to the STB.	 Ask the installation engineer to check if the STB to be connected is correctly grounded.
 Class 1 Laser Product.	 This product complies with 21 CFR Chapter 1, subchapter J



CAUTION

Doing so may cause the damage to the product and the product to be out of order.

Power



Connect your TV after powering off the TV and the STB by pulling out the power plugs.



Do not insert the power plug before connecting the power cable to the product.



The socket-outlet shall be installed near the equipment and shall be easily accessible



Before connecting the power source, permanent protective earth connection to the Cable distribution should be made

Installation/Maintenance



Install the product correctly complying with the instructions in the user guide.



Do not remove the CableCARD™ from the STB.



Do not spray water directly on the unit and do not use chemical solvents such as wax, mosquito spray, alcohol or detergent.



Do not place any metal items such as pins, paper clips or coins on the top of the product.



Do not place the product on unstable support.



Risk of Electric Shock, Do NOT OPEN.



Do not disassemble, repair, or remodel.



Wipe the product with a soft and dry cloth when cleaning.

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BEFORE USE

Digital HD DVR STB

Digital HD DVR OCAP STB (Digital High-Definition Digital Video Recorder OpenCable Application Platform Set-Top Box) provides high quality video and audio broadcasting, and interactive services including Video-On-Demand.

Digital HD DVR STB (SMT-H3090) provides the following functions.

- An MPEG decoder capable of processing HD/SD stream
- SCTE55-1, 55-2 and DOCSIS Cable Modem for OOB Signaling
- Digital AV transmission, such as IEEE1394 and HDMI
- Content Protection
- CableCARD Interface for CAS
- OCAP™ 1.0 application platform
- DVR Features
- Recording :

HDD	Capacity
160GB	Up to 65 hours for SD (Standard Definition) stream Up to 15 hours for HD (High Definition) stream.
320GB	Up to 130 hours for SD (Standard Definition) stream Up to 30 hours for HD (High Definition) stream.

Checking Items

Please make sure the following items are contained in your product package box.



SMT-H3090



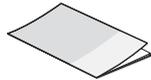
Audio Cable



Video Cable (Component Cable)



Power Cable



User guide

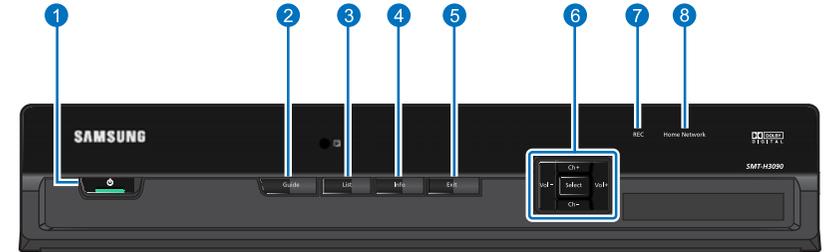
BEFORE USE

Names and Functions

Names and functions on the front and rear panel of Set-top box are described as follows:

Front Panel

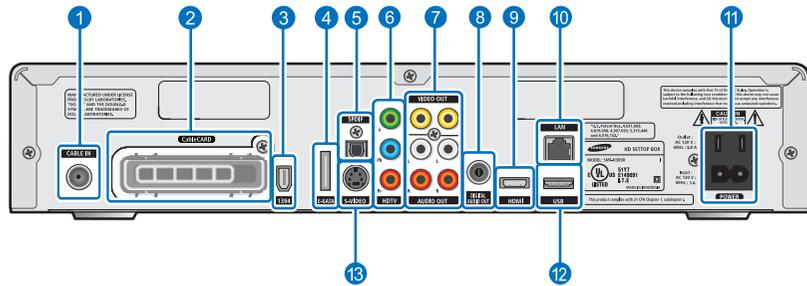
The buttons and LEDs on the front are described as follows:



Name	Function
① [Active/Standby] Button	Enable/Disable Standby mode. When Standby mode is on, the LED display is dimmed and all the A/V outputs are disabled. In normal operation mode, the LED in the button is illuminated. - Active Mode: The STB is in operation mode and you can get broadcasting. - Standby Mode: The power is supplied and it is in ready to active status.
② Guide Button	Move to the [On screen Guide] screen.
③ List Button	Display the program list saved in HDD.
④ Info Button	Check the current channel number and display the selected menu or detailed information of an item.
⑤ Exit Button	Exit menus, guide and program information.
⑥ CH±/Vol±/Select Button	- [Ch +] [Ch -]: menu movement, channel selection. - [Vol +] [Vol -]: menu movement, volume adjustment. - [Select] : select the menu.
⑦ REC LED	Turns on red when STB is recorded to HDD.
⑧ Home Network LED	Turns on when MoCA is online. (Optional service)

Rear Panel

The port names and functions of the rear panel are described as follows:



BEFORE USE

Name	Function
① CABLE IN	Connect the coaxial cable that transmits the signal from the Cable Service Provider.
② CableCARD Slot	Allows CableCARD access.
③ 1394	Connect an IEEE1394 cable to IEEE1394 (Firewire) supported HDTV.
④ E-SATA	Connect to external HDD
⑤ SPDIF	Connect an optical cable to send a digital audio signal to an digital audio device.
⑥ Y/Pb/Pr Out (HDTV)	Connect the component output ports to the component input on your HDTV.
⑦ VIDEO/AUDIO OUT	Connect a RCA cable to send an analog Video/Audio signal to the TV or VCR.
⑧ DIGITAL AUDIO OUT	Connect a RCA cable to send digital audio signal to the digital audio device.
⑨ HDMI	Connect a HDMI cable to a HDMI supported HDTV.
⑩ LAN	Connect a LAN cable to a LAN port of another STB. (Optional function)
⑪ POWER	Connect the power cord to supply AC power to the STB.
⑫ USB	Connect to external USB devices, such as a keyboard or mouse.
⑬ S-VIDEO	Connect a S-Video cable from S-Video to a TV or VCR. Only Standard Definition (SD) format is supported.

DVR Features

SMT-H3090 supports DVR feature through the Hard Disk Drive as follows.

Feature	Description
File Playback	Play, Stop, Rewind, Pause for recorded contents.
File Trick Mode	1, 4, 8, 32 times FFP (Fast Forward Play) 1, 4, 8, 32 times FRP (Fast Rewind Play) 1/2, frame by frame skipping SFP (Slow Forward Play) 1/2, Frame by frame SRP (Slow Rewind Play)
Time-Shift Recording	User can pause live TV program for a certain amount of time, and resume it to watch. The STB allows 90 minutes of recording for Time-shift recording.
Instant Recording	Record live TV program instantly
Watching and Recording	Record two live TV programs simultaneously while watching two recorded programs on HDD.
Audio/Radio Recording	Audio or Radio program recording
Simultaneous Recording and Time Shift Recording	Up to two Simultaneous Recording and Time-Shift Recording on live TV programs
EPG Recording	Scheduled recording using EPG

CableCARD™

CableCARD is an STB authorization device, which allows subscribers to watch digitally encrypted programs.

CableCARD is installed by the service provider when a digital broadcasting receiver is installed.



CableCARD USE

Do not remove the CableCARD. CableCARD failure or service disruption may occur.

INSTALLATION

Follow the instructions below to see how to install the Digital HD DVR STB.

Installation Environment

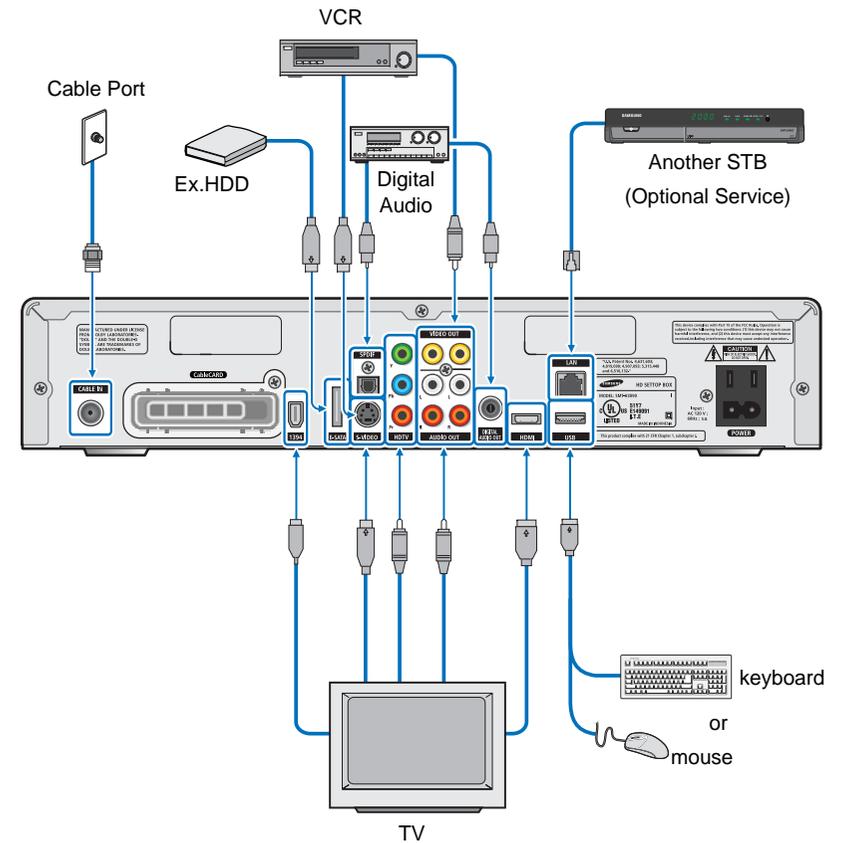
The proper installation environment for the STB is as follows.

Item	Description
Operation Temperature	32~104 °F
Operation Humidity	Equal to or lower than 95% (104 °F)
Power Consumption	Maximum 45 Watts
Rated Input Voltage	AC 120 V, 60 Hz
Channel Input Frequency	54~1002 MHz

INSTALLATION

Peripheral Device Connection

The method of connecting the cable and each peripheral device to the STB is as follows:

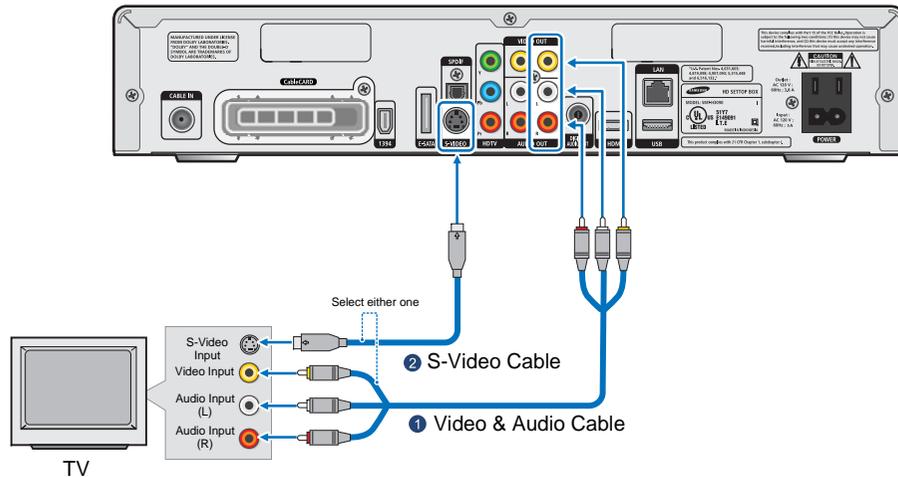


(The product image may differ from the actual product.)

Connection Device	Reference Page	Connection Device	Reference Page
TV	15~17	Digital Audio	18
VCR	19	Home Network	20
E-SATA	21	USB	22

Connection to a TV Having a Composite or S-VIDEO Jack

Below is the method for connecting to a TV having a composite or S-VIDEO jack.



Video Connection

1 Connection to the VIDEO OUT jack

Using a video connector of Video & Audio cable, connect the **VIDEO OUT** jack to the **Video Input** jack on the TV.

2 Connection to the S-VIDEO OUT jack

Using an S-Video cable, connect the **S-VIDEO OUT** jack to the **S-Video Input** jack on the TV.

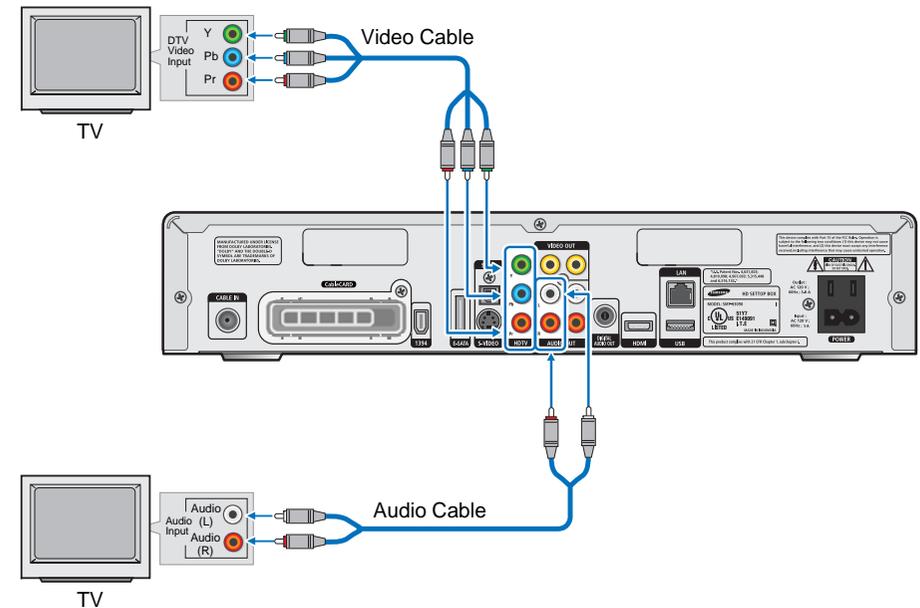
Audio Connection

Using the offered Audio cable or audio connectors of Video & Audio cable, connect the **AUDIO OUT (L/R)** jacks on the rear panel to the **Audio Input (L/R)** jacks on the TV. Be sure to match the audio jacks with the plugs of the same color.

Connection to a TV Having Component Jacks (Y, Pb, Pr)

See below to connect to a TV having a Component port (Y, Pb, Pr).

When connecting the Component Video and Audio cables, be sure to match the jacks to the plugs of the same color.



Video Connection

Using the offered Video (Component) cable, connect the **Y, Pb, Pr (HDTV)** jack to the **Y, Pb, Pr (DTV Video Input)** jack on the TV.

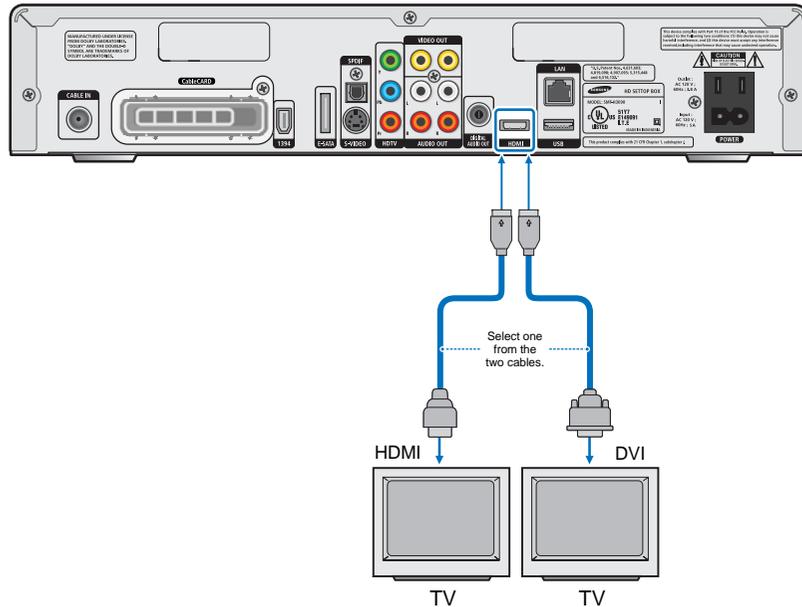
Audio Connection

Using the offered Audio cable, connect the **AUDIO OUT (L/R)** jacks on the rear panel to the **Audio Input (L/R)** jacks on the TV.

Be sure to match the audio jacks with the plugs of the same color.

HDMI Cable Connection

This section describes how to connect the television to the STB by using an HDMI cable.



HDMI Connection

Connect the **HDMI** port on the rear of the STB with the **HDMI** port of your digital TV by using an HDMI cable. As an HDMI cable carries audio signals, a separate audio connection to your TV is not needed.

DVI Connection

Connect the **HDMI** port on the rear of the STB with the **DVI input** port of your digital TV by using the HDMI-DVI conversion cable.

If using a DVI cable, a separate audio connection must also be made.

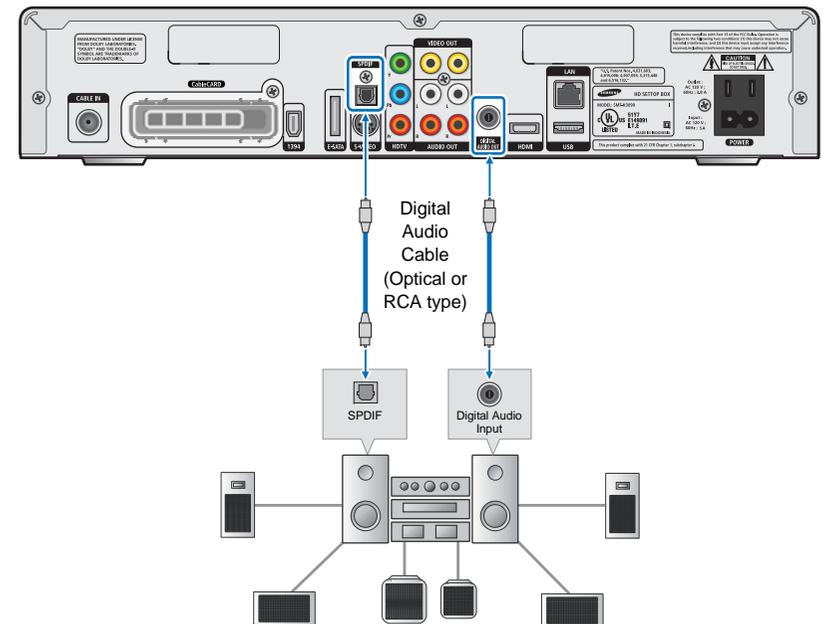


High Definition Multimedia Interface (HDMI)

The HDMI port provides high-definition video and is the highest quality video connection.

DOLBY DIGITAL Amplifier Connection

See below to connect a receiver amplifier (an amplifier or Home Theater that has a Dolby Digital decoding function).



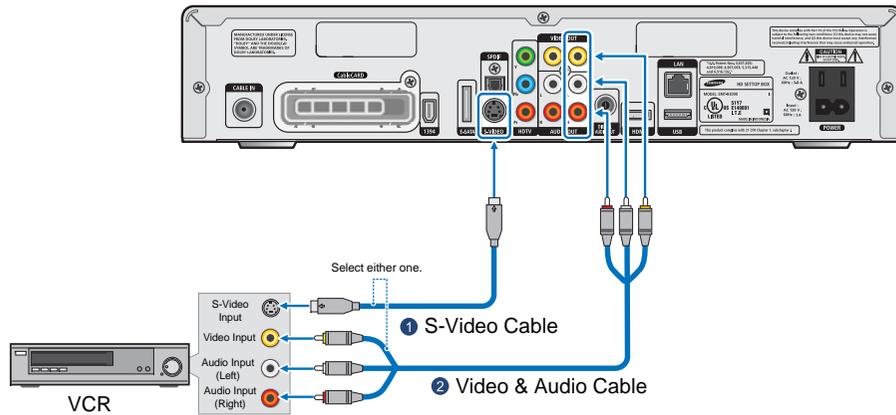
Using an Optical cable, connect the **SPDIF** port of the Dolby digital amplifier to the **SPDIF** port on rear panel of the STB.

If you do not have an Optical cable, use a regular RCA type audio cable to connect the **DIGITAL AUDIO OUT** port on the STB to the **Digital Audio Input** on the Dolby Digital Amplifier.

Use either connection to enjoy the digital sound of 5.1 channels.

VCR Connection

See below to connect a VCR to the STB.



Video Connection

1 Connection to S-VIDEO OUT jack

Using an S-Video cable, connect the **S-Video Input** jack of the VCR to the **S-VIDEO OUT** jack on the rear panel of the STB.

2 Connection to VIDEO OUT jack

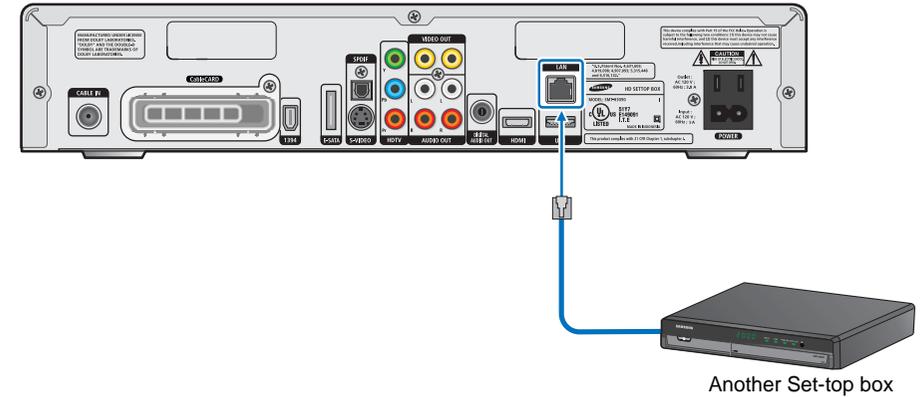
Using a video jack of Video & Audio cable, connect the **Video Input** jack of the VCR to the **VIDEO OUT** jack on the rear panel of the STB.

Audio Connection

Using the offered Audio cable or audio connectors of Video & Audio cable, connect the **Audio Input (L/R)** jack of the VCR to the **AUDIO OUT (L/R)** jack on the rear panel of the STB. Be sure to match the audio jacks with the plugs of the same color.

Home Network Connection (optional service)

This section describes how to connect another STB to your STB by using an Ethernet Cable.

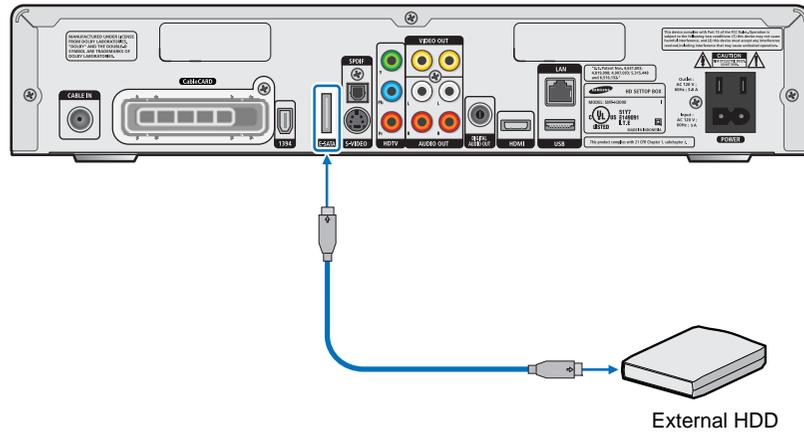


Connect the **LAN** port on the rear of the STB with the **LAN** port of another STB by using an Ethernet cable.

INSTALLATION

E-SATA Connection (External HDD)

This section describes how to connect additional HDD for DVR(Digital Video Recording).

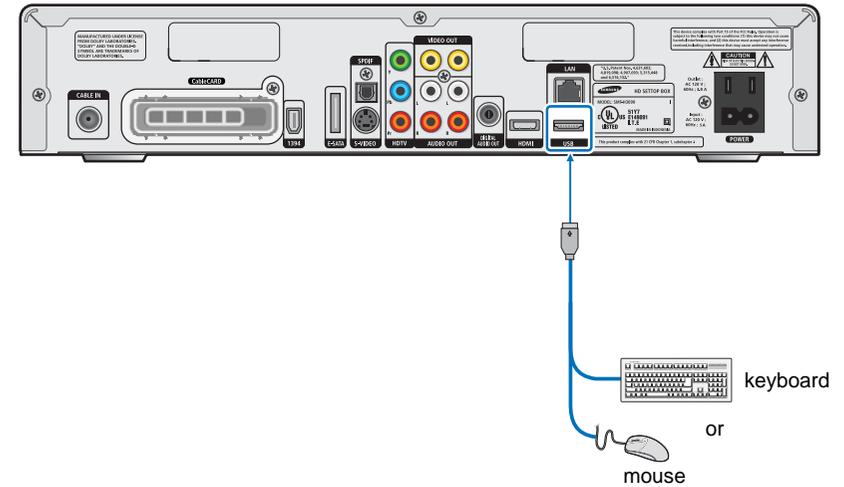


Connect the **E-SATA** port on rear of the STB with **E-SATA** port of external HDD by using E-SATA cable.



USB Connection

This section describes how to connect additional USB devices like USB a keyboard or mouse.



Connect the **USB** port on rear of the STB with USB devices by using USB cable.

TROUBLESHOOTING

This section describes problems you may encounter while using SMT-H3090. If a problem occurs in SMT-H3090, check the following items first.

Screen

Trouble	Solution
The TV screen does not appear.	<ol style="list-style-type: none">1. Check if the power of the TV and Set-top box are turned on.2. Check if the cable is connected to the 'CABLE IN' jack.3. Check if the STB is selected as the TV's source.

Remote Control

Trouble	Solution
The remote control does not operate.	<ol style="list-style-type: none">1. Check if the remote control is suitable for use with the STB.2. Check if the remote control operates normally after changing the batteries.3. Check if the batteries are inserted correctly in the remote control.4. Check if any obstacle exists between the STB and the remote control.5. Check if the remote control operates normally when used at a close distance.

TROUBLESHOOTING

General

Trouble	Solution
No sound is emitted in the TV or the audio.	<ol style="list-style-type: none">1. Check if the audio jacks of the TV are properly connected to the audio output jacks of the STB.2. If the audio cable is connected properly, check if the mute function is set. If the mute function is set, press the [Mute] button of the remote control in order to release the mute function.

ANNEX

Specification

The specification of SMT-H3090 as follows:

Category	Description
Video Output	Composite (VIDEO OUT), Component(Y, Pb, Pr), S-Video
Audio Output	Stereo L/R (AUDIO OUT), SPDIF Optic(SPDIF), SPDIF PCM (DIGITAL AUDIO OUT)
Video/Audio Output	HDMI, IEEE1394
OOB (Out of Band)	FDC (Forward Data Channel) - RF Input Tuning Range: 70 MHz to 130 MHz. - RF Input level range: -15 to +15 dBmV - Format: SCTE 55-1, 55-2 RDC (Reverse Data Channel) - RF Output Frequency Range: 5 MHz to 42 MHz. - Transmit level range: +26 to +60 dBmV - Encoding: QPSK
DSG (DOCSIS Set-top Gateway)	Downstream - RF Input Tuning Range: 88 to 860 MHz - RF Input Modulation: 64QAM/256QAM - RF Input level range: -15 to +15 dBmV Upstream - RF Output Frequency Range: 5 MHz to 42 MHz. - RF Output Modulation: QPSK/16QAM, 64QAM - Transmit level range: +8 to +60 dBmV
Rated Input Voltage	AC 120 V, 60 Hz
Power Consumption	Maximum 45 Watts
Operation Temperature	32~104 °F
Size (mm)	400 (Width) × 290 (Depth) × 75 (Height)
Weight (kg)	3.25
HDD	160GB / 320 GB

ANNEX

Cable Specifications

Category	Description
Channel Input Frequency	54 MHz to 1002 MHz
Cable Input Signal level Range	-15 to +15 dBmV
Cable Input Signal Modulation	64QAM/256QAM, NTSC

Macrovision Product Notice

This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited consumer uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

Macrovision Installation Recommendation

Do not connect the unit through a VCR. Video signals fed through VCRs may be affected by copyright protection systems and the picture will be distorted on the television. Some PPV or VOD programs may be protected by copyright protection systems.

Dolby Logo Usage Approval

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B Class IT Device of Registration Compatible with Electromagnetic Waves for Home

This product can be used for home as device of the registration compatible with electromagnetic waves. This can be used in all areas.

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The following GPL and LGPL software are used in this product and are subject to the GPL/LGPL License Agreements included as part of this documentation:

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- Linux Kernel
- Busybox
- xfsprogs
- dhcpcd
- tftpd
- fdisk

LGPL SOFTWARE

- libuClibc.so
- ld.so
- libc.so
- libm.so
- libpthread.so

To obtain the source code covered under those Licenses, please visit <http://www.samsungnetwork.com/Home/opensource> or contact opensrc.stb@samsung.com.

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Version 2, June 1991

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