

SAMSUNG



Digital Video Recorder

SVR-3200/1680C/1660C/1645/960C/945/480 Install Manual

Thank you for choosing this Samsung Digital Video Recorder product. Before attempting to connect or operate this product, please read the instructions contained in this manual carefully. Please save this instruction manual for future reference.

ENGLISH

Introduction

Thank you for purchasing a Samsung SVR series digital video recorder.

This manual is for SVR-3200, SVR-1680C, SVR-1660C, SVR-1645, SVR-960C, SVR-945, SVR-480. Before product installation and operation, please become thoroughly familiar with this user manual and other manuals referenced by this manual.

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This specification may change without prior notice for improvement of product performance.

Product Warranty and Limits of Responsibility

The manufacturer does not assume any responsibility concerning the sale of this product and does not delegate any right to any third party to take any responsibility on its behalf. The product warranty does not cover cases of accidents, negligence, alteration, misuse or abuse. No warranty is offered for any attachments or parts not supplied by the manufacturer.

The warranty period for this product is for 3 years from the date of purchase. The following cases are not covered by the warranty and payment is required for repairs.

- ❖ Malfunctions due to negligence by the user
- ❖ Deliberate disassembly and replacement by the user
- ❖ Connection of a power source other than a properly rated power source
- ❖ Malfunctions caused by natural disasters (fire, flood, tidal wave, etc.)
- ❖ Replacement of expendable parts (HDD, FAN, etc.)
- ❖ ※ The warranty period for the HDD and Fan is one year after purchase.

Warranty only refers to the warranty covering products that have been paid for.

After the expiration of the warranty period (3 years), examination and repair will be provided for a fee. Even during the warranty period, repair and examination of items outside the warranty scope will require payment.

This product is not for exclusive use of crime prevention but for assistance in cases as fire or theft. We take no responsibility for damage from any incident.

Experience and technical skills are needed for the installation of this product as an improper installation may cause fire, electric shocks, or defects. Any installation job should be performed by the vendor you purchased this product from.

This manual is authored SVR-3200, SVR-1680C, SVR-1660C, SVR-1645, SVR-960C, SVR-945, SVR-480 according to firmware version **1.8.0**

The content of this manual may differ according to Firmware or Software upgrades, and the standard and appearance of the product is changeable without prior notice to users.

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Chapter 1. Safety Precautions

1.1 Explaining the Symbols



Warning

Refers to information users need to know in order to prevent serious injury or death.

- ❖ Before installation
 - ✓ Verify the supplied voltage (AC100V~AC240V) before connecting to the power supply.
 - ✓ Make sure the power supply is off before installation.
 - ✓ Do not install in a very humid environment. Doing so may cause an electric shock or fire.
 - ✓ Make sure ground line is connected to reduce electric shock risk.
- ❖ During operation
 - ✓ Do not open the product cover except by qualified personnel or system installer.
Opening the product cover may cause an electric shock.
 - ✓ Do not plug multiple appliances into a single power outlet. Doing so may cause fire.
 - ✓ Do not place dishes holding water or heavy objects on the product. Doing so may cause a malfunction.
 - ✓ Do not use in areas where inflammable substances such as propane gas or gasoline or high amount of dust is present. Doing so may cause an explosion or fire.
 - ✓ Do not touch the power line with a wet hand. Doing so may cause an electric shock.
 - ✓ Do not insert a hand into the opening of the DVD. Doing so may cause an injury.
 - ✓ Make sure conductive materials do not enter the cooling ventilator opening.
 - ✓ Do not apply excessive force when pulling on the power cord. Damaging the cord may cause an electric shock or fire.
 - ✓ Improper replacement of the built-in battery by other types of batteries may cause explosion. The batter must be replaced by the same battery type. Also, expired batteries may cause pollution and must be disposed of with care.
 - ✓ Do not place the battery in fire or in extreme heat. Also, do not dissect or disassemble the battery.
 - ✓ Recharge the batteries for the remote controller.

❖ Dismantling and cleaning

- ✓ Do not dismantle, repair or modify the product deliberately. Doing so may cause a damage, an electric shock or an injury.
- ✓ Do not use water, paint thinner or organic solvent for cleaning the product exterior. Doing so may cause a malfunction or an electric shock. Use a dry cloth to clean the exterior.



Caution

Provides information users need to know in order to prevent minor injury or product damage.

❖ During installation

- ✓ To get adequate ventilation, install the product with at least 15cm of space between the cooling ventilation opening and a wall.
- ✓ To prevent falling, install the product in a flat area . Dropping the product may cause an injury or a malfunction.
- ✓ Avoid areas exposed to sun light or heat since they may cause deformation or a malfunction.
- ✓ If a camera is installed while the DVR is recording, image in another channel may be disrupted. Start the storage after installing the camera is recommended.

❖ During use

- ✓ Make sure the product is not exposed to shocks or shaking when using the product or during moving.
- ✓ Do not move the product while it is in operation, and apply strong shocks to the product or throw the product.
- ✓ If hard disk drives other than those recommended are used additionally, abnormal operation may occur. Inquire at the point of purchase of the product before installing such a hard disk drive.
- ✓ Product warranty will not cover deliberate additional use of such hard disk drives.
- ✓ This product is a supplementary rather than primary means for preventing fire and theft. Our company is not responsible for incidence of incident or damage that may occur.



Samsung Techwin cares for the environment at all product manufacturing stages, and is taking a number of steps to provide customers with more environmentally friendly products. The Eco mark represents Samsung Techwin's will to create environmentally friendly products, and indicates that the product satisfies the EU RoHS Directive.

FCC Compliance Statement

NOTE : This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which cause the user will be required to correct the interference at his own expense.

Correct Disposal of This Product

(Waste Electrical & Electronic Equipment)



(Applicable in the European Union and other European countries with separate collection systems.) This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling. Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

Correct Disposal of Batteries in this Product

(Applicable in the European Union and other European countries with separate battery return systems.)



This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC

Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment. To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system. The rechargeable battery incorporated in this product is not user replaceable. For information on its replacement, please contact your service provider.

Chapter 2. Summary

This unit is a digital video recording and playback device to record image and video input from 32/16/9 channels to its built-in hard disk. The buttons on the front of the unit as well as the mouse and GUI allow easy setup and operation.

The Samsung SVR series of digital video recorders (DVRs) provide additional safety and security to banks, apartment buildings and complexes, government offices as well as other public, private and commercial facilities. Recorded high-quality video and images are stored on hard disk for later retrieval or playback. Real time functionality delivers users with the ability to simultaneously record multiple channels, playback video, and copy video. A few of the more advanced user-conveniences include motion detection, Pan/Tilt/Zoom controls (PTZ), password protection, real time audio recording, event lists, and log files.

2.1 Features

Monitoring Screen

The monitoring screen supports vivid, high-definition live visual feed from each channel and provides multiple screens.

- ❖ Real time MPEG-4 visual output (480 frames)

- ❖ Multiple split-screen monitoring modes
 - SVR-3200/1680C/1660C/1645: Single, 4, 9, 10, 16
 - SVR-960C/945: Single, 4, 9
 - SVR-480 : Single, 4

- ❖ Automatic Screen Switching (AUTO)

- ❖ Supports various monitor output modes
 - SVR-3200: 4 Composite, 2 VGA
 - SVR-1680C: 4 Composite, 1 VGA
 - SVR-1660C/1645/960C/945/480: 2 Composite, 1 VGA

- ❖ Pan/Tilt, Digital Zoom, PIP (Picture-In-Picture), The PIP function will be available with a firmware upgrade in the future.

Audio Recording

SVR series DVRs provide real time audio recording.

- ❖ Simultaneous recording of 16/9/4 channels of audio in real time
SVR-3200/1680C/1600/1645 : Input - 16 channels (4 RCA in rear, 12 D-SUB),
Output - 1 in rear, SVR-960C/945 : 9 channels (4 RCA in rear, 5 D-SUB),
Output - 1 in rear, SVR-480 : 4 channels (4RCA), Output – 1 in rear

- ❖ Supports simultaneous recording and playback

Video Recording

The product is capable of storing visual image data as high resolution MPEG-4 video at up to 480 frames per second, as well as pre-emptively initiating recording sequences up to five seconds prior to an event. The COVERT feature (concealment of private visual data) helps to protect privacy.

- ❖ High quality real time MPEG-4 recording

- ❖ Three screen-resolution levels for improved control over data sizes

- ❖ Multi-recording for manual and scheduled events

- ❖ Simultaneous recording/playback/backup/networking

- ❖ Easily accessible options for channel-specific resolution and motion detection ranges

- ❖ Per-second frame rates (up to 30 frames per channel) are user customizable
SVR-3200 Half D1 : NTSC (704x240) 960fps, PAL (704x288) 800fps
SVR-1680C D1 : NTSC (704x480) 480fps, PAL (704x576) 400fps
SVR-1660C/1645 CIF : NTSC (352x240) 480fps, PAL (352x288) 400fps
SVR-960C/945 CIF : NTSC (352x240) 270fps, PAL (352x288) 225fps
SVR-480 D1 : NTSC (704x480) 120fps, PAL (704x576) 100fps

- ❖ Manual and scheduled recording

- ❖ Video signal loss detection

- ❖ Event logs (sensors, D-I/O, video loss, motion detection, text)

- ❖ Each channel supports pre-emptive recording sequences up to 5 seconds prior to an actual event

Search/Playback

Various search and playback options are offered for the user's convenience.

- ❖ Playback by time, date and channel
- ❖ Mouse interface increases data searchability
- ❖ Forward/backward search while playback is paused
- ❖ Playback by event log entry (sensor, video loss, motion detection and text)
- ❖ Remote controller and Jog/Shuttle further improve searching (The SVR-960C/945/480 models do not support Jog/Shuttle.)
- ❖ Full-frame playback (Available in SVR-3200/1680C/1660C only)

Data Storage

The hard disk included with the product is for data storage. If desired, recorded data can be backed up or stored to DVD-R, CD-R or a USB storage device.

- ❖ The built-in hard disk is provided as primary storage
- ❖ Multiple portable data storage media are supported: DVD-R, CD-R and USB
- ❖ ※ Refer to the appendix on the back of the manual regarding compatible media types.
- ❖ Hard disk expansion device (external recording device): SVS-5E (optional) External hard disk expansion is supported with the SVS-5E (Available for purchase separately)

Networking

The product supports LAN, xDSL and other networking capabilities. Combined with the PC interface client, the core features of the device can be easily remotely controlled.

- ❖ E-mails can be sent via TCP/IP or DHCP upon an event trigger

- ❖ Remote live visual feed (single or 4 section split-screen)

- ❖ PC playback, storage, search and DVR control functions via Network Viewer

- ❖ Remote recording, search and playback scheduling

- ❖ Supports 10/100Mbps Ethernet/xDSL

- ❖ Multiple DVR connections

Miscellaneous

- ❖ User-friendly GUI and mouse interface

- ❖ Simplified firmware upgrades through USB

- ❖ Visual data recording and backup to USB

- ❖ Supports PTZ control (SPEED DOME), Coax, PRESET

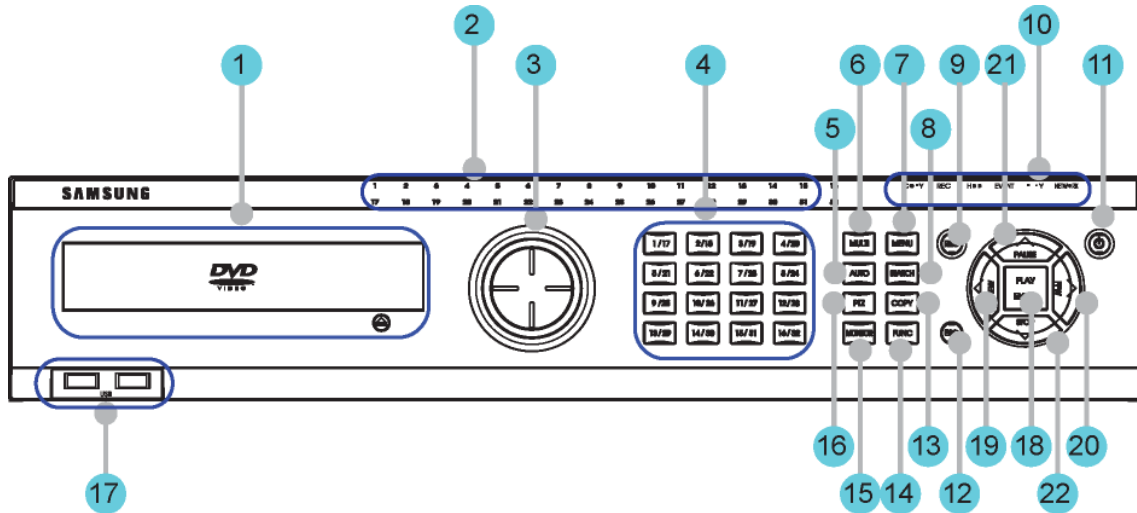
- ❖ Multilingual support: Korean, English, Italian, Spanish, Japanese

- ❖ Single remote controller to control 16 DVRs

2.2 Description of product

2.2.1 Front view

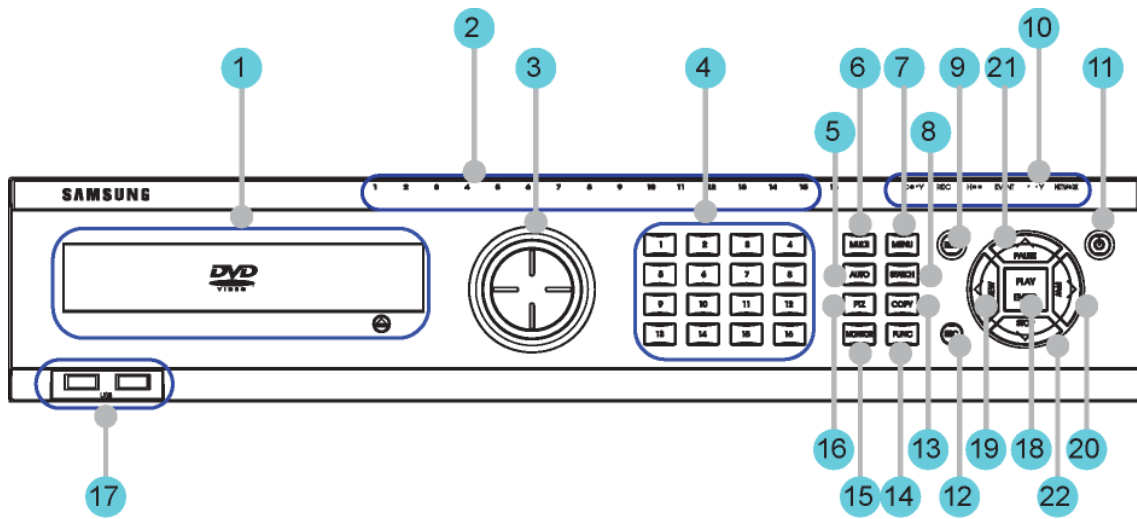
2.2.1.1 SVR-3200



No.	Classification	Function
1	DVD-Multi for copying	For copying recorded video and images to DVD/CD optical media.
2	Channel LED	Shows the data input and event operation status
3	JOG/SHUTTLE	Jog can adjust setting values, control the STEP function, navigate through the menu, and adjust the playback speed and direction. Shuttle controls PTZ.
4	Channel button	Selects channel in live feed or playback
5	AUTO	Starts or stops user defined sequences.
6	MULTI	Changes split-screen sections for live video feeds or playback.
7	MENU	Navigates into the Menu.
8	SEARCH	Starts Search mode.
9	REC button	Starts or stops manual recording
10	REC lamp	Lit when recording.
	HDD lamp	Lit when HDD is working.
	NETWORK lamp	Lit when network is connected.
	EVENT lamp	Lit when an event is detected.
	COPY lamp	Indicates copying operation.

	PLAY lamp	Lit when copying.
11	Power button	Turns on or off the device.
12	ESC button	The Escape button navigates up the menu tree and closes dialog windows.
13	COPY	Starts Copy mode.
14	FUNC	Starts Function mode.
15	MONITOR	Cycles through from Monitor 1 to 4.
16	PTZ	Starts or ends PTZ function.
17	USB1, USB2	USB ports for external devices (mouse, USB memory stick).
18	PLAY/ENTER	Start playback or select an item on the menu.
19	◀/REW	Navigates or selects in the menu, or for playback, changes the reverse playback speed.
20	▶/FWD	Navigates or selects in the menu, or for playback, changes the forward playback speed.
31	▲/PAUSE	Navigates or selects in the menu, or for playback, pauses live or recorded video.
22	▼/STOP	Navigates or selects in the menu, or for playback, stops playback.

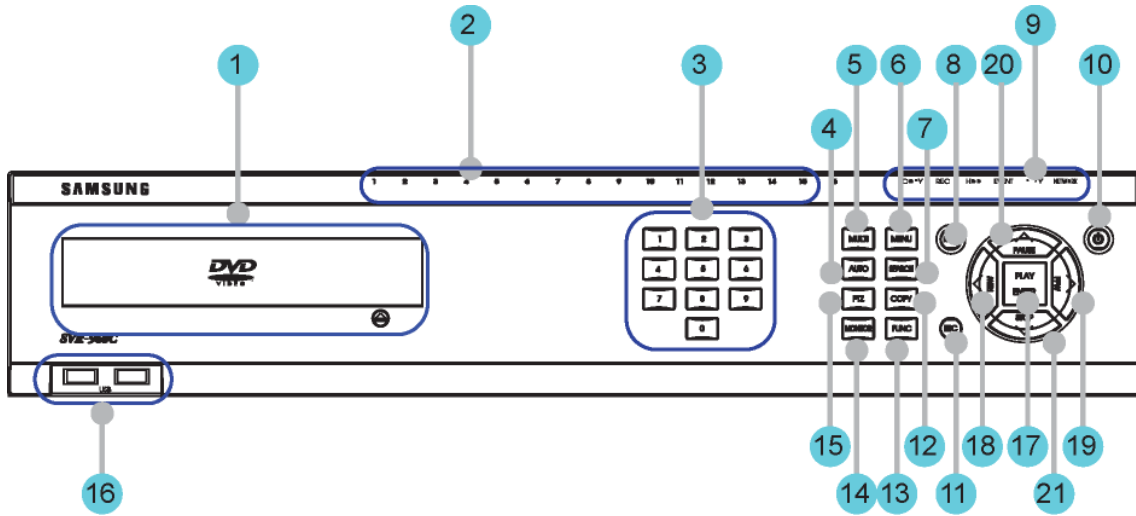
2.2.1.2 SVR-1680C, SVR-1660C, SVR-1645



No.	Classification	Function
1	DVD-Multi for copying	For copying recorded video and images to DVD/CD optical media.
2	Channel LED	Shows the data input and event operation status
3	JOG/SHUTTLE	Jog can adjust setting values, control the STEP function, navigate through the menu, and adjust the playback speed and direction. Shuttle controls PTZ.
4	Channel button	Selects channel in live feed or playback
5	AUTO	Starts or stops user defined sequences.
6	MULTI	Changes split-screen sections for live video feeds or playback.
7	MENU	Navigates into the Menu.
8	SEARCH	Starts Search mode.
9	REC button	Starts or stops manual recording
10	REC lamp	Lit when recording.
	HDD lamp	Lit when HDD is working.
	NETWORK lamp	Lit when network is connected.
	EVENT lamp	Lit when an event is detected.
	COPY lamp	Indicates copying operation.
	PLAY lamp	Lit when copying.
11	Power button	Turns on or off the device.
12	ESC button	The Escape button navigates up the menu tree and

		closes dialog windows.
13	COPY	Starts Copy mode.
14	FUNC	Starts Function mode.
15	MONITOR	Cycles through from Monitor 1 to 4 : SVR-1680C, Switches from main and sub monitor : SVR-1660C, SVR-1645
16	PTZ	Starts or ends PTZ function.
17	USB1, USB2	USB ports for external devices (mouse, USB memory stick).
18	PLAY/ENTER	Start playback or select an item on the menu.
19	◀/REW	Navigates or selects in the menu, or for playback, changes the reverse playback speed.
20	▶/FWD	Navigates or selects in the menu, or for playback, changes the forward playback speed.
31	▲/PAUSE	Navigates or selects in the menu, or for playback, pauses live or recorded video.
22	▼/STOP	Navigates or selects in the menu, or for playback, stops playback.

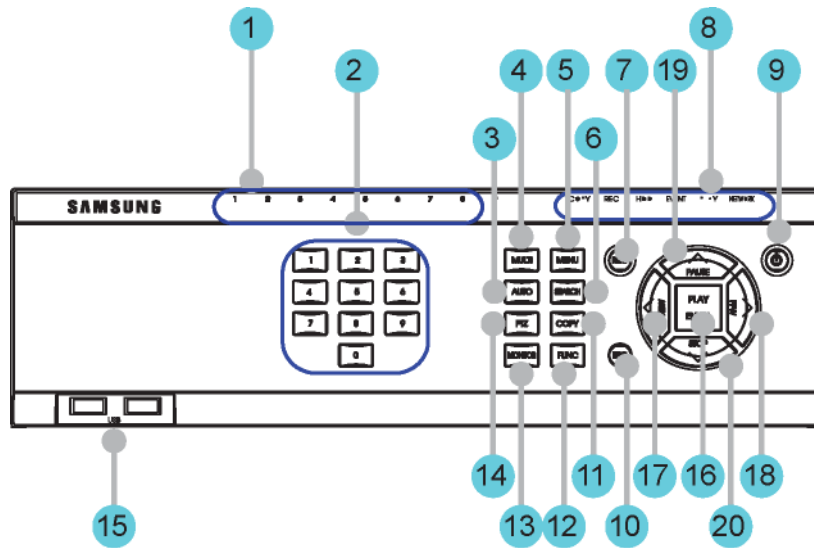
2.2.1.3 SVR-960C



No.	Classification	Function
1	DVD-Multi copying	For copying recorded video and images to DVD/CD optical media.
2	Channel LED	Shows the data input and event operation status
3	Channel button	Selects channel in live feed or playback
4	AUTO	Starts or stops user defined sequences.
5	MULTI	Changes split-screen sections for live video feeds or playback.
6	MENU	Navigates into the Menu.
7	SEARCH	Starts Search mode.
8	REC button	Starts or stops manual recording
9	REC lamp	Lit when recording.
	HDD lamp	Lit when HDD is working.
	NETWORK lamp	Lit when network is connected.
	EVENT lamp	Lit when an event is detected.
	COPY lamp	Indicates copying operation.
	PLAY lamp	Lit when copying.
10	Power button	Turns on or off the device.
11	ESC button	The Escape button navigates up the menu tree and closes dialog windows.
12	COPY	Starts Copy mode.
13	FUNC	Starts Function mode.

14	MONITOR	Switches from main and sub monitor
15	PTZ	Starts or ends PTZ function.
16	USB1, USB2	USB ports for external devices (mouse, USB memory stick).
17	PLAY/ENTER	Start playback or select an item on the menu.
18	◀/REW	Navigates or selects in the menu, or for playback, changes the reverse playback speed.
19	▶/FWD	Navigates or selects in the menu, or for playback, changes the forward playback speed.
20	▲/PAUSE	Navigates or selects in the menu, or for playback, pauses live or recorded video.
21	▼/STOP	Navigates or selects in the menu, or for playback, stops playback.

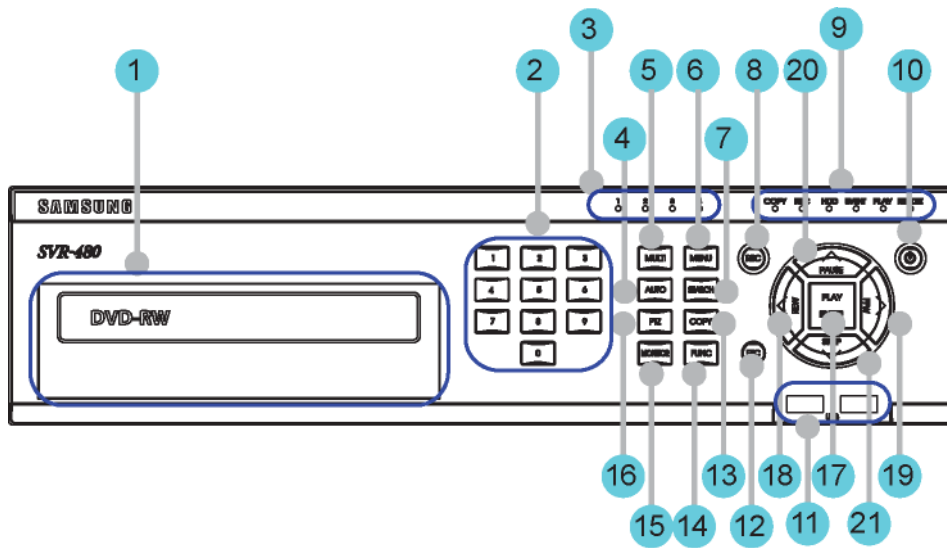
2.2.1.4 SVR-945



No.	Classification	Function
1	Channel LED	Shows the data input and event operation status
2	Channel button	Selects channel in live feed or playback
3	AUTO	Starts or stops user defined sequences.
4	MULTI	Changes split-screen sections for live video feeds or playback.
5	MENU	Navigates into the Menu.
6	SEARCH	Starts Search mode.
7	REC button	Starts or stops manual recording
8	REC lamp	Lit when recording.
	HDD lamp	Lit when HDD is working.
	NETWORK lamp	Lit when network is connected.
	EVENT lamp	Lit when an event is detected.
	COPY lamp	Indicates copying operation.
	PLAY lamp	Lit when copying.
9	Power button	Turns on or off the device.
10	ESC button	The Escape button navigates up the menu tree and closes dialog windows.
11	COPY	Starts Copy mode.
12	FUNC	Starts Function mode.
13	MONITOR	Switches from main and sub monitor

14	PTZ	Starts or ends PTZ function.
15	USB1, USB2	USB ports for external devices (mouse, USB memory stick).
16	PLAY/ENTER	Start playback or select an item on the menu.
17	◀/REW	Navigates or selects in the menu, or for playback, changes the reverse playback speed.
18	▶/FWD	Navigates or selects in the menu, or for playback, changes the forward playback speed.
19	▲/PAUSE	Navigates or selects in the menu, or for playback, pauses live or recorded video.
20	▼/STOP	Navigates or selects in the menu, or for playback, stops playback.

2.2.1.5 SVR-480

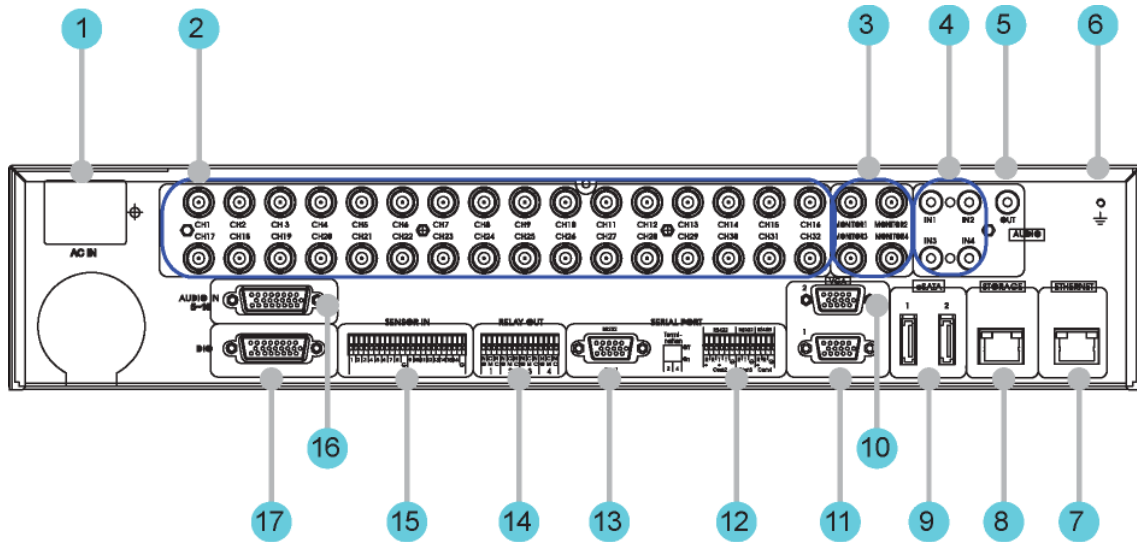


No	Classification	Function
1	DVD-Multi for copying	For copying recorded video and images to DVD/CD optical media.
2	Channel button	Selects channel in live feed or playback
3	Channel LED	Shows the data input and event operation status
4	AUTO	Starts or stops user defined sequences.
5	MULTI	Changes split-screen sections for live video feeds or playback.
6	MENU	Navigates into the Menu.
7	SEARCH	Starts Search mode.
8	REC button	Starts or stops manual recording
9	REC lamp	Lit when recording.
	HDD lamp	Lit when HDD is working.
	NETWORK lamp	Lit when network is connected.
	EVENT lamp	Lit when an event is detected.
	COPY lamp	Indicates copying operation.
9	PLAY lamp	Lit when copying.
	PLAY lamp	Lit when copying.
10	Power button	Turns on or off the device.
11	USB1, USB2	USB ports for external devices (mouse, USB memory stick).
12	ESC button	The Escape button navigates up the menu tree and closes

		dialog windows.
13	COPY	Starts Copy mode.
14	FUNC	Starts Function mode.
15	MONITOR	Switches from main and sub monitor
16	PTZ	Starts or ends PTZ function.
17	PLAY/ENTER	Start playback or select an item on the menu.
18	◀/REW	Navigates or selects in the menu, or for playback, changes the reverse playback speed.
19	▶/FWD	Navigates or selects in the menu, or for playback, changes the forward playback speed.
20	▲/PAUSE	Navigates or selects in the menu, or for playback, pauses live or recorded video.
21	▼/STOP	Navigates or selects in the menu, or for playback, stops playback.

2.2.2 Rear Part

2.2.2.1 SVR-3200

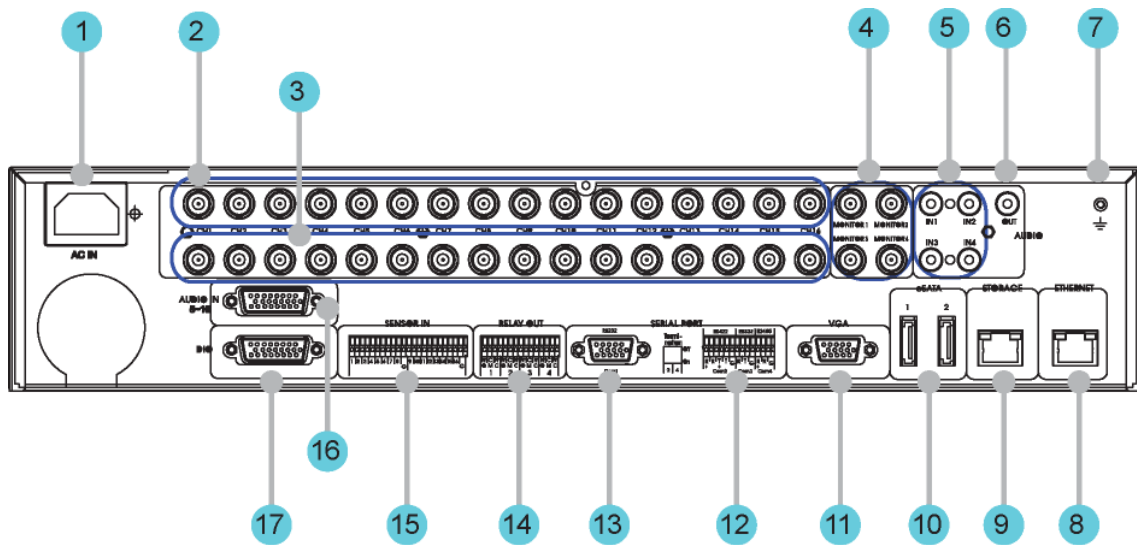


No.	Input/Output terminal name	Function
1	POWER IN	Socket for AC 100V ~ AC 240V power cord.
2	CH1 ~ 32	Connection terminal for camera BNC input.
3	MONITOR 1 ~ 4	Connection terminal for monitor BNC output.
4	AUDIO IN(RCA)	RCA audio jack for RCA input.
5	AUDIO OUT	Audio jack for speaker output.
6	GROUND	Ground terminal between DVR and external device.
7	ETHERNET	Ethernet port for network connections (RJ-45).
8	STORAGE	External storage connection port (Function not supported in the current version)
9	eSATA	Connection terminal for external eSATA HDD or HDD for backups.
10	VGA OUTPUT 2	Output port for PC monitor.
11	VGA OUTPUT 1	Output port for PC monitor.
12	Serial Port (Terminal Block) RS-232C/485/422	Connection terminal for expanded controller, speed dome camera, etc.
13	Serial Port (D-Sub)	RS-232C D-SUB connector.
14	RELAY OUT	Connection terminal for relay output.

Install Manual

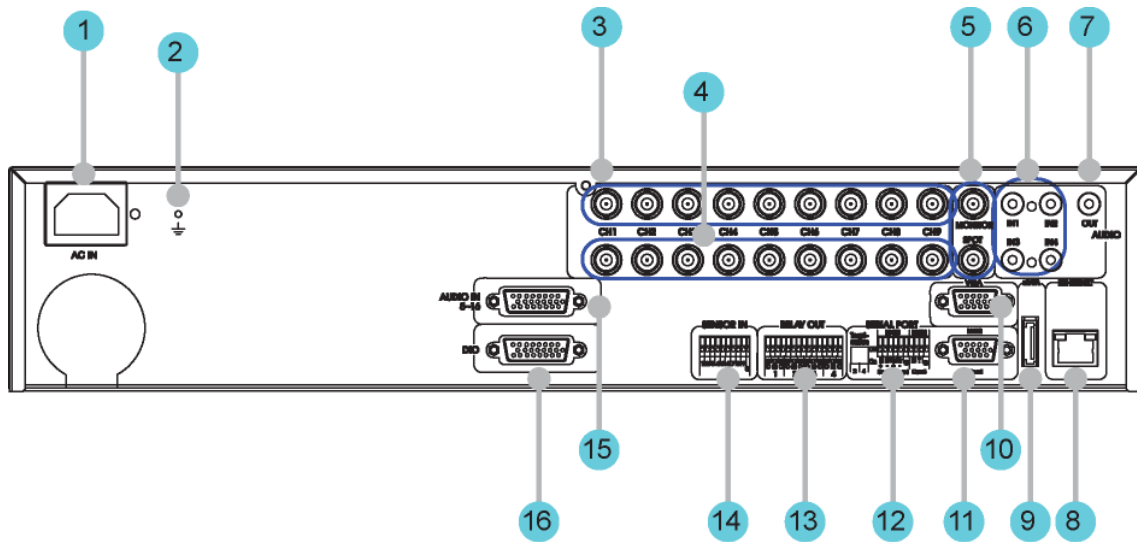
15	SENSOR IN	Connection terminal for sensor input.
16	AUDIO IN(D-SUB)	Connection terminal for audio output D-SUB.
17	D-I/O	Connection terminal for DIGITAL IN/OUT.

2.2.2.2 SVR-1680C, SVR-1660C, SVR-1645



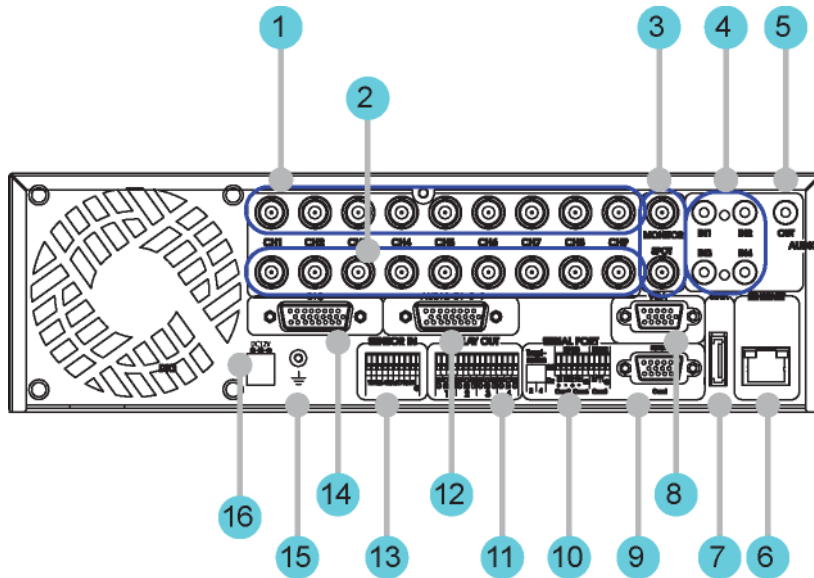
No.	Input/Output terminal name	Function
1	POWER IN	Socket for AC 100V ~ AC 240V power cord.
2	CH1~16	Connection terminal for camera BNC input.
3	LOOP OUT	Connection terminal for camera BNC output (loop).
4	MONITOR 1 ~ 2	Connection terminal for monitor BNC output.
5	AUDIO IN(RCA)	RCA audio jack for RCA input.
6	AUDIO OUT	Audio jack for speaker output.
7	GROUND	Ground terminal between DVR and external device.
8	ETHERNET	Ethernet port for network connections (RJ-45).
9	STORAGE	External storage connection port (Function not supported in the current version)
10	eSATA	Connection terminal for external eSATA HDD or HDD for backups.
11	VGA OUTPUT	Output port for PC monitor.
12	Serial Port (Terminal Block) RS-232C/485/422	Connection terminal for expanded controller, speed dome camera, etc.
13	Serial Port (D-Sub)	RS-232C D-SUB connector.
14	RELAY OUT	Connection terminal for relay output.
15	SENSOR IN	Connection terminal for sensor input.
16	AUDIO IN(D-SUB)	Connection terminal for audio output D-SUB.
17	D-I/O	Connection terminal for DIGITAL IN/OUT.

2.2.2.3 SVR-960C



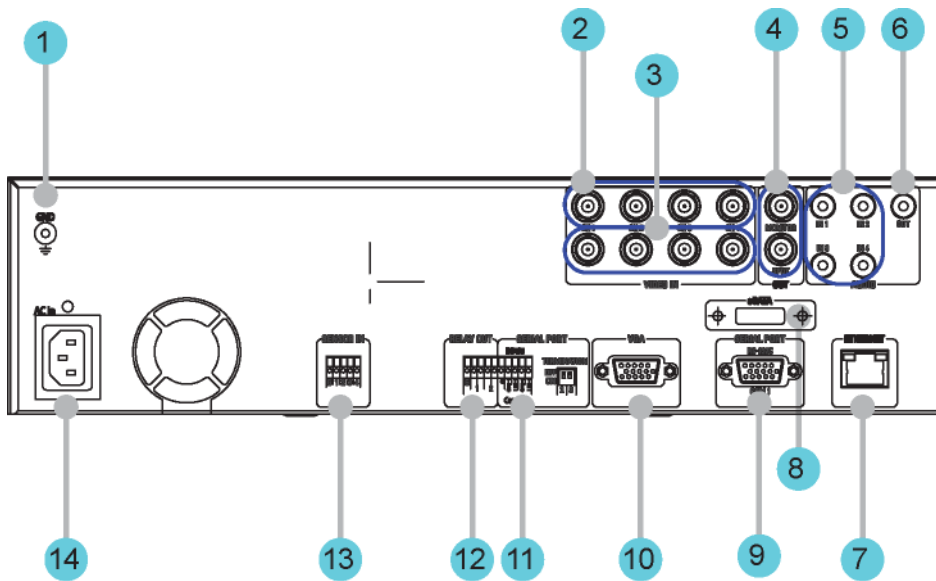
No.	Input/Output terminal name	Function
1	POWER IN	Socket for AC 100V ~ AC 240V power cord.
2	GROUND	Ground terminal between DVR and external device.
3	CH1~9	Connection terminal for camera BNC input.
4	LOOP OUT	Connection terminal for camera BNC output (loop).
5	MONITOR 1 ~ 2	Connection terminal for monitor BNC output.
6	AUDIO IN(RCA)	RCA audio jack for RCA input.
7	AUDIO OUT	Audio jack for speaker output.
8	ETHERNET	Ethernet port for network connections (RJ-45).
9	eSATA	Connection terminal for external eSATA HDD or HDD for backups.
10	VGA OUTPUT	Output port for PC monitor.
11	Serial Port (D-Sub)	RS-232C D-SUB connector.
12	Serial Port (Terminal Block) RS-232C/485/422	Connection terminal for expanded controller, speed dome camera, etc.
13	RELAY OUT	Connection terminal for relay output.
14	SENSOR IN	Connection terminal for sensor input.
15	AUDIO IN(D-SUB)	Connection terminal for audio output D-SUB.
16	D-I/O	Connection terminal for DIGITAL IN/OUT.

2.2.2.4 SVR-945



No.	Input/Output terminal name	Function
1	CH1~9	Connection terminal for camera BNC input.
2	LOOP OUT	Connection terminal for camera BNC output (loop).
3	MONITOR 1 ~ 2	Connection terminal for monitor BNC output.
4	AUDIO IN(RCA)	RCA audio jack for RCA input.
5	AUDIO OUT	Audio jack for speaker output.
6	ETHERNET	Ethernet port for network connections (RJ-45).
7	eSATA	Connection terminal for external eSATA HDD or HDD for backups.
8	VGA OUTPUT	Output port for PC monitor.
9	Serial Port (D-Sub)	RS-232C D-SUB connector.
10	Serial Port (Terminal Block) RS-232C/485/422	Connection terminal for expanded controller, speed dome camera, etc.
11	RELAY OUT	Connection terminal for relay output.
12	AUDIO IN(D-SUB)	Connection terminal for audio output D-SUB.
13	SENSOR IN	Connection terminal for sensor input.
14	D-I/O	Connection terminal for DIGITAL IN/OUT.
15	GROUND	Ground terminal between DVR and external device.
16	POWER IN	Socket for AC 100V ~ AC 240V power cord.

2.2.2.5 SVR-480



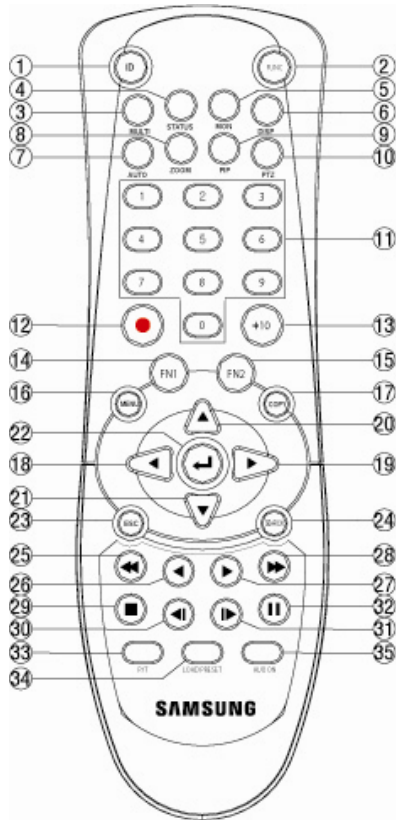
No.	Input/Output terminal name	Function
1	GROUND	Ground terminal between DVR and external device.
2	CH1~4	Connection terminal for camera BNC input.
3	LOOP OUT	Connection terminal for camera BNC output (loop).
4	MONITOR 1 ~ 2	Connection terminal for monitor BNC output.
5	AUDIO IN(RCA)	RCA audio jack for RCA input.
6	AUDIO OUT	Audio jack for speaker output.
7	ETHERNET	Ethernet port for network connections (RJ-45).
8	eSATA	Connection terminal for external eSATA HDD or HDD fo backups.
9	Serial Port (D-Sub)	RS-232C D-SUB connector.
10	VGA OUTPUT	Output port for PC monitor.
11	Serial Port (Terminal Block) RS-485/422	Connection terminal for expanded controller, speed dome camera, etc.
12	RELAY OUT	Connection terminal for relay output.
13	SENSOR IN	Connection terminal for sensor input.
14	POWER IN	Socket for AC 100V ~ AC 240V power cord.



Please refer to the detailed description for installation & use in the “Install Manual”.

2.2.3 Remote control

All DVR unit features can be controlled with the remote controller; 16 units can be controlled with a single remote controller. Unit IDs should be set in the DVR Menu > Communication > Remote > Remocon ID.



No.	Classification	Function
1	ID	Selects ID.
2	FUNC	Starts function mode.
3	MULTI	Changes split-screen sections for live video or playback.
4	STATUS	Displays system setup information.
5	MON	Changes screen to spot monitor.
6	DISP	Selects split-screen and channel options.
7	AUTO	Switches to automatic display.
8	ZOOM	Executes digital zoom.
9	PIP	Displays picture-in-picture.
10	PTZ	Switches to PTZ mode.
11	Channel buttons	Changes channels.
12	RECORD (●)	Starts and stops manual recording.
13	+10	Uses for channels over 9 (e.g. "+10" + "1")
14	FN1	Spare button 1.
15	FN2	Spare button 2.
16	MENU	Switches to menu screen.
17	COPY	Displays copy menu and saves recorded video to external storage device (USB).

No.	Classification	Function
18	(◀)	Moves cursor left in setup menu.
19	(▶)	Moves cursor right in setup menu.
20	(▲)	Moves cursor up in setup menu.
21	(▼)	Moves cursor down in setup menu.
22	ENTER	Saves settings and execute.
23	ESC	Cancel settings or navigates up in menu.
24	SEARCH(🔍)	Displays the search menu.
25	FAST REWIND(◀◀)	Fast reverses playback.
26	REWIND PLAY(◀)	Reverses playback.
27	FORWARD PLAY(▶)	Forwards playback.
28	FAST FORWARD(▶▶)	Fast forwards playback.
29	STOP(■)	Stops playback.
30	STEP REVERSE(◀)	Reverses playback frame by frame.
31	STEP FORWARD(▶)	Forwards playback frame by frame.
32	PAUSE(⏸)	Pauses playback.
33	P/T	Controls PAN/TILT.
34	LOAD PRESET	Loads presets.
35	AUX ON	Turns auxiliary on.

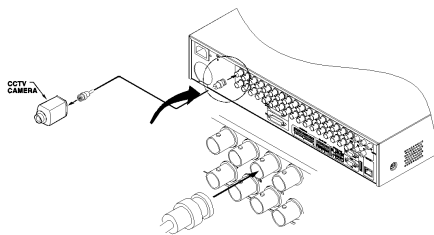
Chapter 3. Installation

3.1 Installation & Connection

3.1.1 Basic connection and operation

3.1.1.1 Camera connection

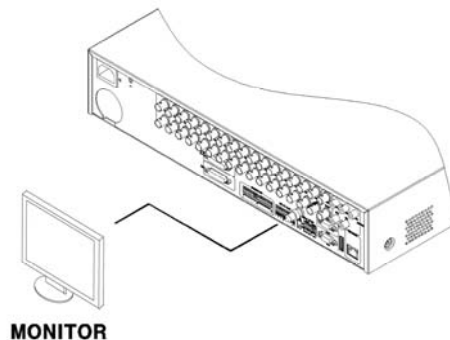
Connect the DVR and CCTV cameras using coaxial cable as in the following figure.



- The cameras' video input type must be one and only of NTSC or PAL. Both types should not be used together.
- Automatic settings for 75 Ω terminal resistance
While terminal resistance is generally 75 Ω with only one video input port in use, when the lower video input port is also connected, the settings automatically separate into 75 Ω terminal resistance while the status is Hi-Z (high impedance).
- The video input type (NTSC/PAL) is automatically recognized when the device is operation.
When multiple cameras are used, the video input type is taken from the first camera detected starting from channel 1 and progressing sequentially to channel 16.

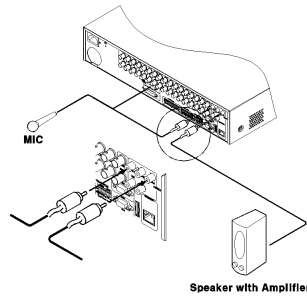
3.1.1.2 Monitor connection

Monitors connect to the DVR unit using a video cable as shown in the following figure.

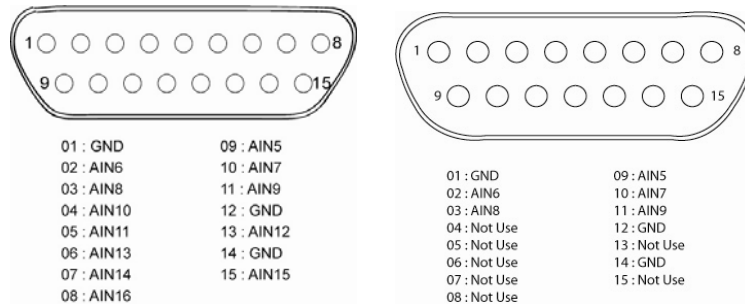


3.1.1.3 Audio connection

Audio equipment connects to the DVR unit using RCA audio cables or D-SUB as shown in the following figure. SVR-480 does not support D-SUB audio.

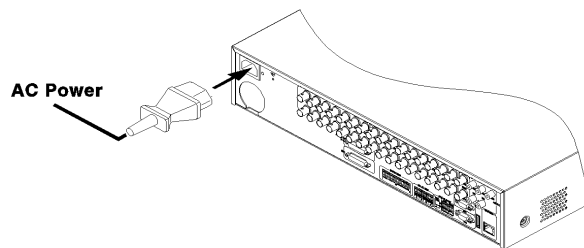


Refer to the following figure when connecting D-SUB. The audio inputs are pin numbers 5 ~ 16.

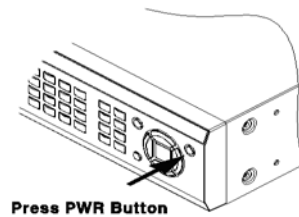


3.1.1.4 Power connection & operation

Connect the power cable as shown in the following figure.



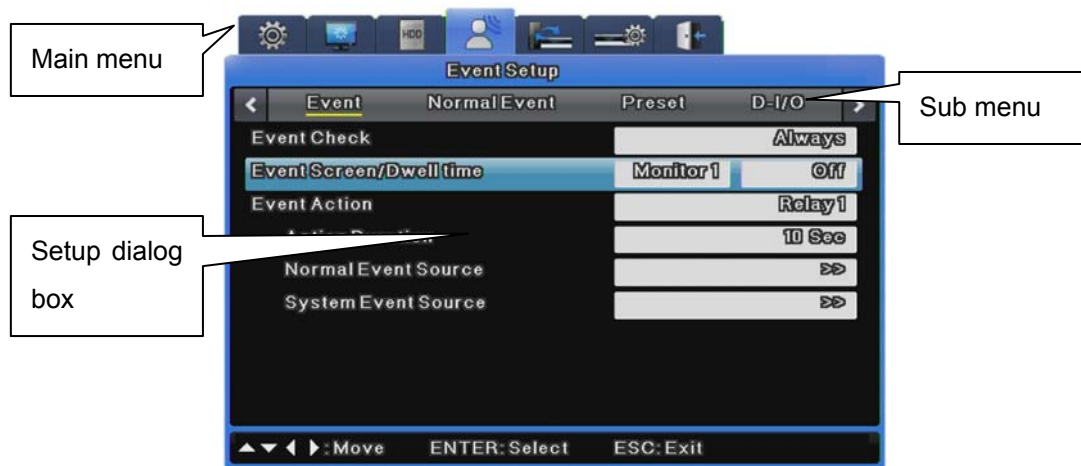
- The DVR unit will boot automatically when the power is connected.
- To turn the DVR unit off, press the power button for 5 seconds, then choose "Yes" when the power-off dialog appears.
- To turn the power on again, press the power button.



3.2 OSD Menu structure & Operation

3.2.1 Menu structure

Press the [MENU] button on the front panel to change to setup mode and display the following dialog.



(1) Main menu: The currently selected tab is highlighted in blue with submenus and options displayed below. Use the cursor [◀/▶] keys to navigate between submenu items then press [Enter] to activate it.

(2) Sub menu: The currently selected submenu name is displayed in the title bar. Use the cursor [◀/▶] keys to navigate across submenus and press [Enter] to display it in the dialog box. Press [ESC] to navigate up to the main menu tabs.

(3) Setup dialog box: The currently selected setting is highlighted in blue. Use the cursor [◀/▶] keys to move between settings and press [Enter] or [▼] to enter edit mode and change a setting. All setting values are either numeric or text based. Use the cursor [◀/▶] or [▲/▼] keys to edit numeric values. Text based values are edited with the character input dialog. To save a value and resume navigation, press [ESC]. Press [ESC] again to navigate up to the main menu.

3.2.1.1 Character input dialog box

The characters input dialog lets you input text.



Character input

Use the cursor [▲/▼] and [◀/▶] keys to choose characters then press [Enter] to input it. Use [←] to backspace, and [→] to insert a space. When finished, press [Enter] to exit the character input dialog with the newly inputted value.

3.2.2 Remote control setup & basic operation

3.2.2.1 ID setup

When operating multiple units, a single remote controller can be used to control all of them by assigning each unit a unique ID. Setup each unit's unique ID as follows.



- (1) Press [MENU].
- (2) Press [▶] to select "Network" then press [Enter] or [▼].
- (3) Press [▼] to select "Remote" then press [Enter].
- (4) Press [▶] to select "Remote Control ID" then press [Enter].
- (5) Adjust the ID value using [◀/▶] then press [ESC].
- (6) Press [ESC] several times until you are back in monitor mode.



Remote Control ID supports a maximum of 16 IDs.

For unused remote controllers, set Remote Control ID to Off.

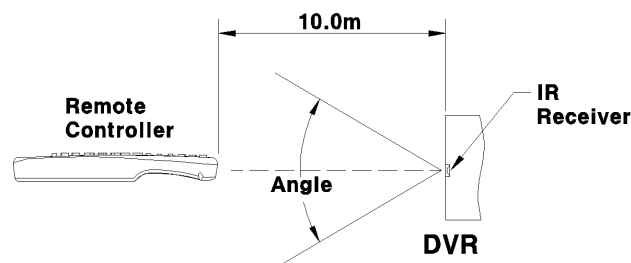
3.2.2.2 Selecting IDs

All DVR unit features can be controlled with the remote controller; 16 units can be controlled with a single remote controller. Unit IDs should be set.

- 1) Check the remote controller ID in DVR Menu.
- 2) Press the ID button on the remote controller.
- 3) Press the number button on the remote controller.

If the remote controller ID and the DVR ID are the same, the DVR buzzer beeps

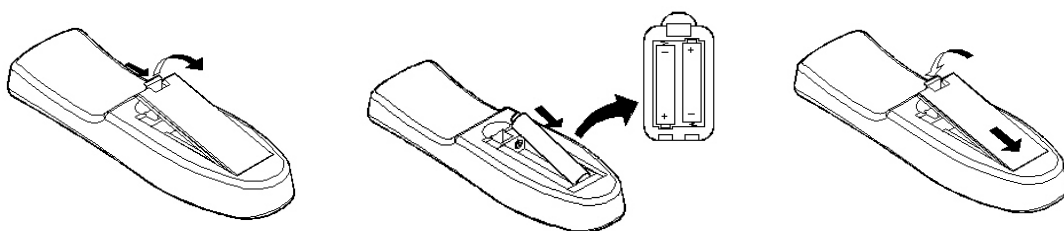
3.2.2.3 Usable range of Remote Controller



Horizontal Angle : $\pm 30^\circ$
Vertical Angle : $\pm 30^\circ$

3.2.2.4 Inserting and changing batteries in the Remote Controller

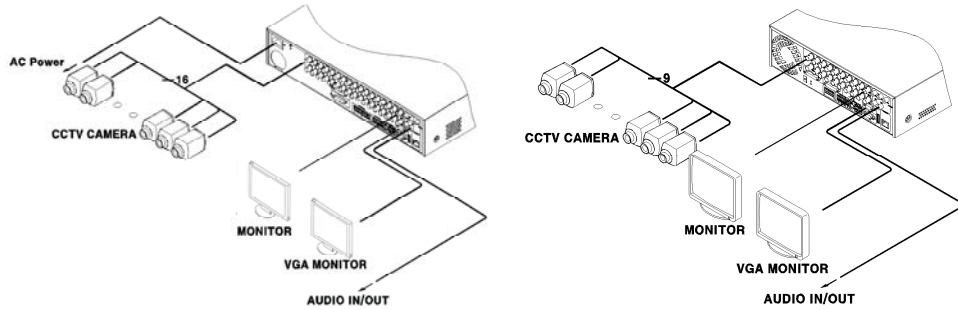
The remote controller takes AAA sized batteries.



1. Open the battery cover on the back.
2. Check the positive(+) and negative(-) battery poles and insert or replace the batteries.
3. Close the battery cover.

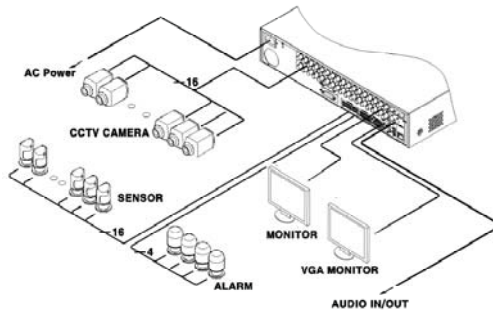
3.2.3 Example of installation structure

3.2.3.1 Basic connection diagram



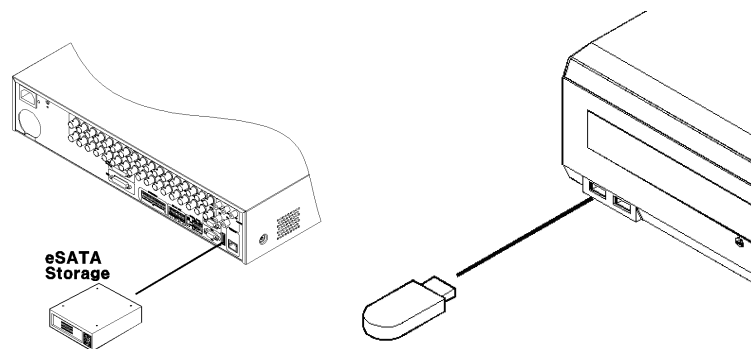
Connect the cameras, monitors and audio.

3.2.3.2 Extended connection diagram



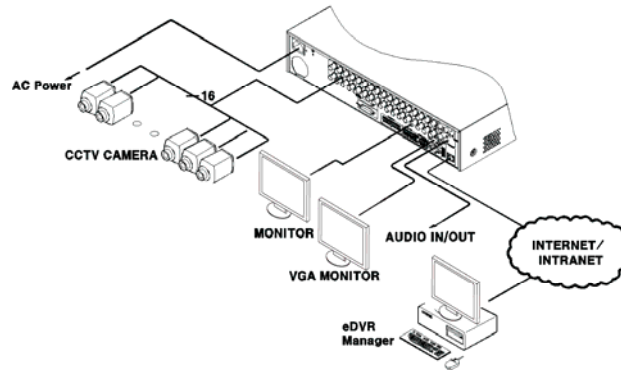
Connect the cameras, monitors, audio, sensors, relays and other peripherals.

3.2.3.3 External storage and backup connection diagram



Connect a USB memory device or a "Samsung SVS-5E external HDD (eSATA)" unit.

3.2.3.4 Internet/Intranet connection diagram



3.2.4 Basic setup

3.2.4.1 Video check

The product automatically powers on when the power cord is plugged in. Once it finishes booting up, the default 16 channel split-screen is displayed.



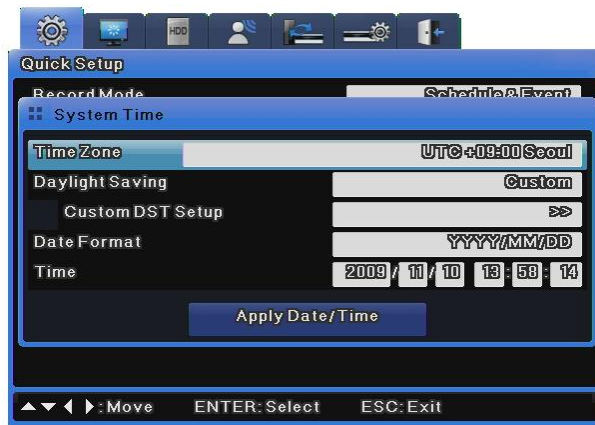
If a password for the unit has been set, the password input dialog is displayed.

Only the numeric buttons work here and all others are temporarily disabled until the correct password is entered. (The factory default has no password protection.)



3.2.4.2 Date & time setup

- Press [MENU] and select "Quick Setup" when the OSD menu appears.
- After selecting "System Time", press [Enter].

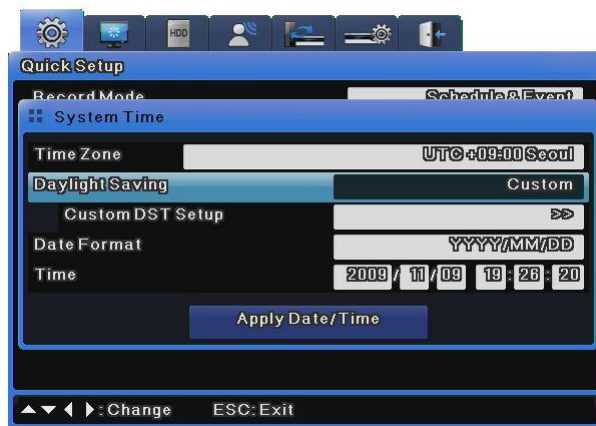


Time Zone

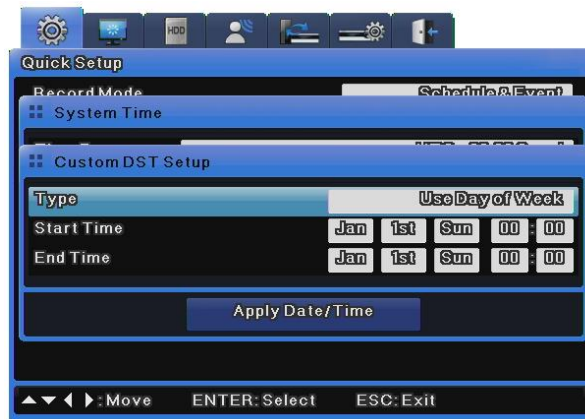
- (1) Press [◀/▶] or [▲/▼] to select “Time Zone”, and then press [Enter].
- (2) Press [◀/▶] to set the correct Time Zone, and then press [ESC].

Daylight Saving

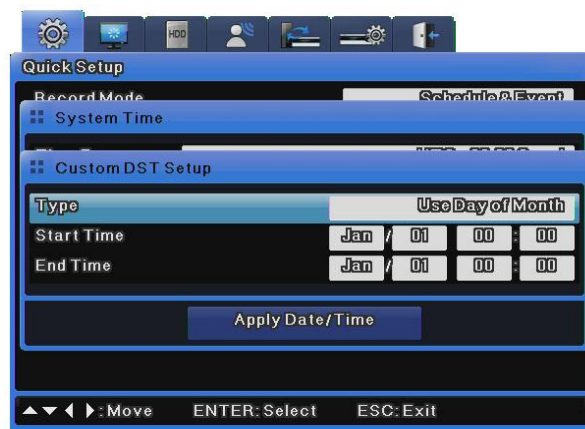
- (1) When selecting a Daylight Saving Time zone, Daylight Saving automatically changes to On, and is Off for other time zones.
- (2) To customize the start and end time of DST, use the [◀/▶] buttons and change Daylight Saving to Custom.



- (3) Changing Daylight Saving to Custom displays the Custom DST Setup options. Upon clicking on Custom DST Setup, two setup methods display. The first is for selecting a month and date to define the start and end times of DST.



The second is for selecting a month, week, and day to define the start and end times of DST.



Date Format

- (1) Press [◀/▶] or [▲/▼] to select “Date Format”, and then press [Enter]. Press [◀/▶] to select a date format: YYYY/MM/DD, MM/DD/YYYY, or DD/MM/YYYY.
- (2) Press [ESC] to exit edit mode.

Time

- (1) Press [◀/▶] or [▲/▼] to select “Time”, and then press [Enter].
- (2) Press [◀/▶] to individually select “Date” and “Time”. Press [▲/▼] to set the proper values for each.
- (3) Press [ESC] to exit edit mode.

Apply Date/Time

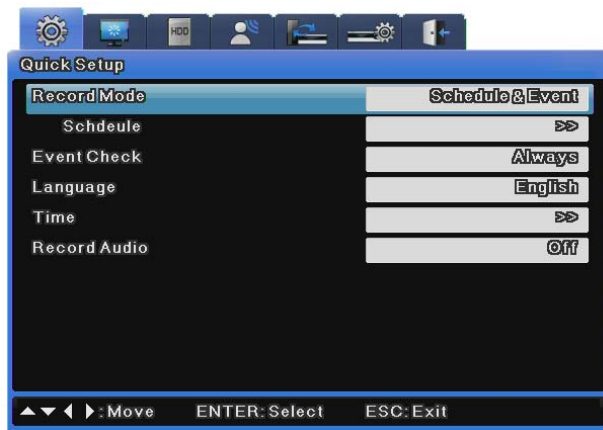
Setting a new date and/or time has a serious impact on the HDD recording file system. As such, unlike other settings that are automatically saved, the date and time settings must be manually saved to avoid the possibility of an inadvertent change. Click the **[Apply Date / Time]** button to confirm and save the settings.

- (1) Press [**◀/▶**] or [**▲/▼**] to select “Apply Date / Time” and then press [Enter]. A confirmation dialog is displayed as shown below.
- (2) Press [**◀/▶**] or [**▲/▼**] to select “YES” and then press [Enter]. Press [ESC] to cancel the new date/time and return to the original value from before.



3.2.4.3 Record setup

Press [Menu] and select “Quick Setup” when the OSD menu appears.



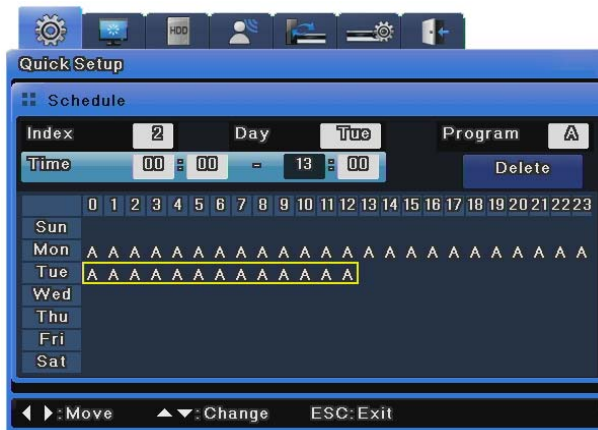
Program setup

This menu allows user to set resolution, frame rates, and quality for each channel individually. Please refer to the “Record setup” sections for more information.



Schedule Setup

Select the "Schedule & Event" option, and set the Day & Time options.



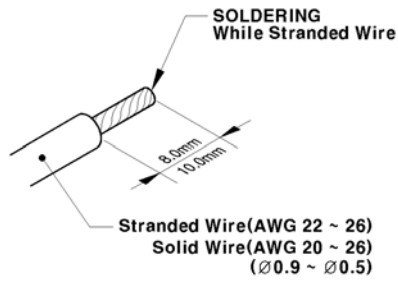
How to check the record status

If the record setup is configured correctly, [REC LED] on the front panel will light up RED. Also, record status [S] will be displayed on the video screen. [S] indicates scheduled recording.

3.3 Using input/output terminals

3.3.1 Handling cable ends

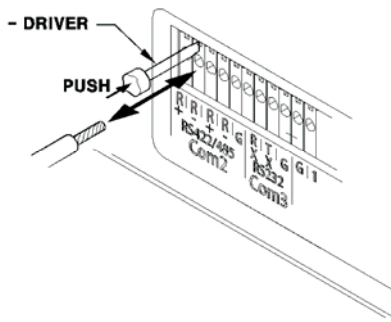
The following details how to handle cables for the terminal block. Please note that different gauges of wire are needed for stranded wire and solid wire.



- Stranded wire: Strip 8 ~ 10mm of insulation off the end of the wire and solder it together. Use AWG 22 ~ 26 wire.
- Solid wire: Strip 8 ~ 10mm of insulation off the end of the wire. Use AWG 20 ~ 26.

3.3.2 Wire insertion/removal

When inserting/removing wires to/from the terminal block, push the driver as shown below and insert or remove the wire.



3.3.3 Sensor connections & settings

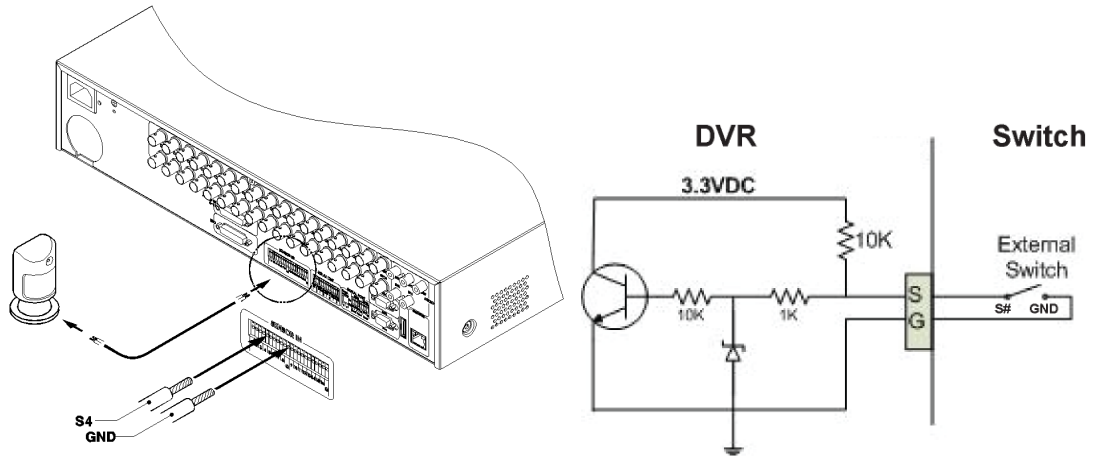
3.3.3.1 Specification

The sensor specifications are as follows.

Specification	No. of inputs	16 transistor input
	Input types	N.C, N.O support
	Support Sensor	Dry contact sensor
	Connection method	Insert stripped wire end into terminal block
Electric capacity	Pulse width of usable input	Minimum 500ms
	Output power	Typical DC 12mA

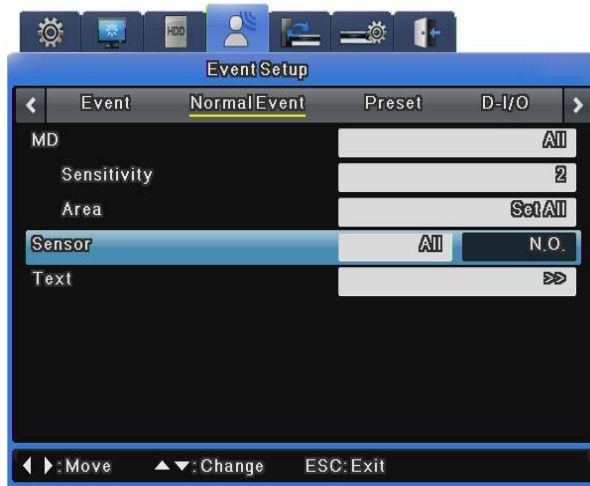
Sensor input terminal connection

Connect sensors to S1 ~ S16 as illustrated in the figure below. Please note that the figure shows connecting sensors with dry contacts. Refer to the section on handling wiring for more information about connecting or disconnecting sensor wires.



Sensor Settings

- (1) Press [Menu] and select "Event" when the OSD menu appears.
- (2) Press [Enter] or [▼] to enter the submenu, select "Sensor" and press [Enter].



All

This allows setting all 16 sensors simultaneously to off or Normal Open (N.O.) / Normal Close (N.C.).

- (1) Set the input type after setting "All".

Individual sensor

This option allows setting each of the 16 sensor input types individually.

- (1) Select a sensor then press [Enter].
- (2) Set the input type for the selected sensor.
- (3) Press [ESC] to exit to the OSD menu when you are finished.



Sensor setup lets you choose whether or not to use sensors and their type, and Record & Relay setup, while set separately, should be set according to the sensor type. Please refer to the “Record setup”, the “Event Action” heading in the “Event setup”, and “Relay out” sections for more information.

3.3.3.2 Relay connections & settings

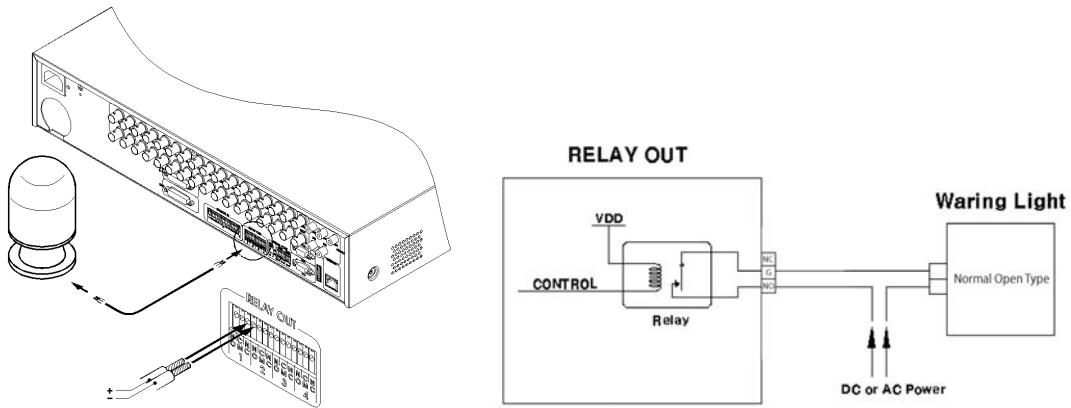
Specification

The alarm specifications are as follows.

Specification	No. of outputs	4 relay outputs
	Output type	Dry contact
	Connection method	Insert stripped wire end into terminal block
Rated current	DC	30V 1A
	AC	125V 0.5A

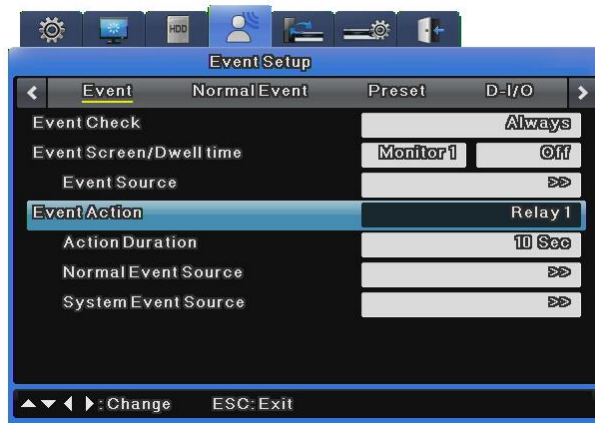
Relay out connection

Connect relays to R1 ~ R16 as illustrated in the figure below. The example shows how to connect a warning light. Refer to the section on handling wiring for more information about connecting or disconnecting relay wires.



Relay Out Settings

Relays can be triggered by following events; alarm sensor, motion detection, video loss, hard disk fail, hard disk full, fan fail, password fail, and DDNS registration failure. Relays can also be triggered remotely over the network using the Samsung Network Video Management software.



For more information, refer to the user manual.

The user manual can be downloaded from www.samsungcctv.com or on the CD provided with the product.

3.3.3.3 D-I/O (Digital Input/Output) connection & settings

The D-I/O has 12 D-I/O ports and can accommodate 12 inputs/outputs. If sensors are working

as Relay out, the Output can be operated with digital I/O. Also, if Input is operated, the emergency recording is started. Then the emergency recording starts to record with the Event Record value.

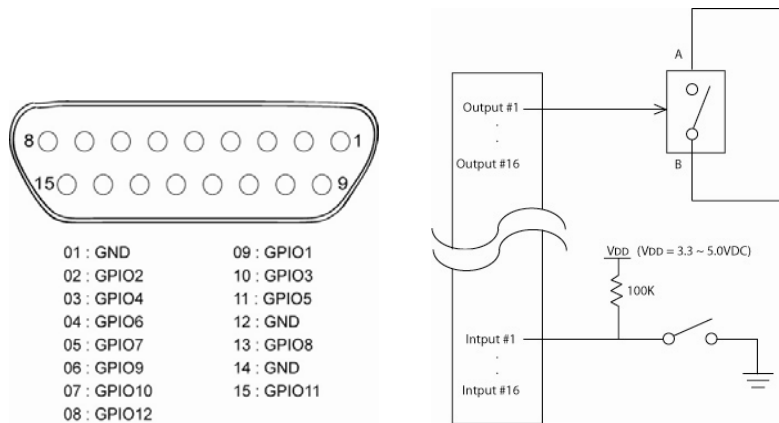
Specification

The D-I/O specifications are as follows.

Specification	No. of inputs/outputs	12
	Output type	DC 3V output
	Connection method	Connect stripped wire end with 15 pin D_SUB.
Rated current	DC	3.3 ~ 5V

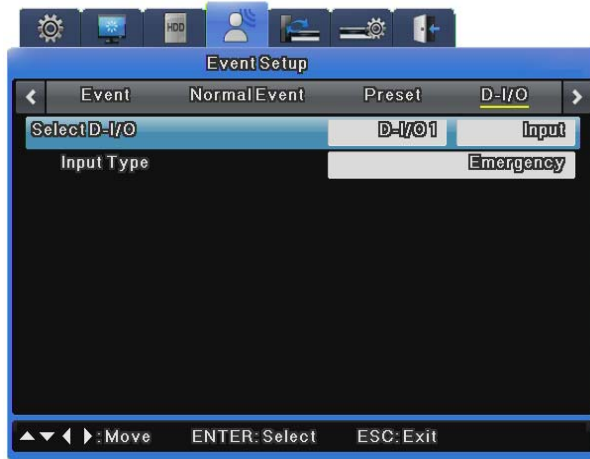
D-I/O Connection

D-I/O inputs/outputs are connected shown in the following figure. Please refer to the section on handling wiring for information about connecting and disconnecting.



D-I/O Settings

The 12 D-I/O ports are split with 6 for input and 6 for output. They can be configured under the Event Setup menu tab.



For more information, refer to the user manual.

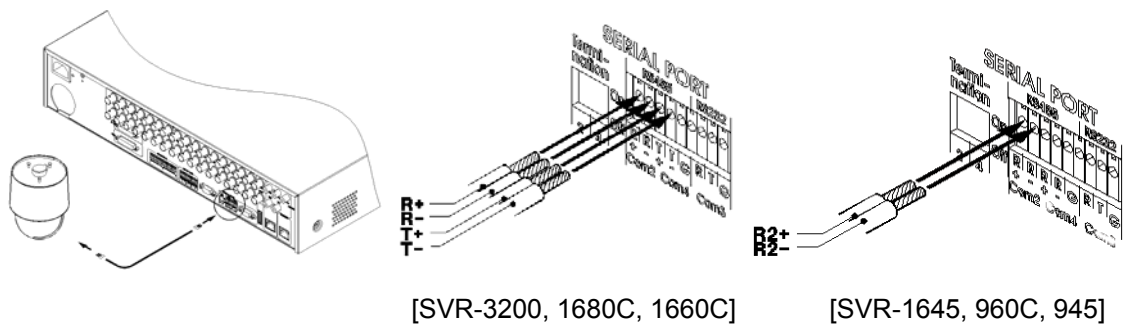
The user manual can be downloaded from www.samsungcctv.com or on the CD provided with the product.

3.3.3.4 Serial communication terminal connections & settings

Serial communication terminal connection for Pan/Tilt/Zoom

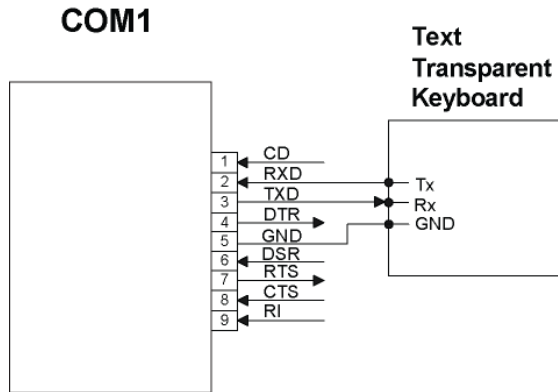
PTZ cameras for the DVR unit can be connected through the COM port, and supported models configured through the OSD menu.

The following figures illustrate how to connect PTZ cameras through the RS-422/485 port (COM2/COM4) and how to connect other devices through the serial port connection terminals. Refer to the section on handling wiring for more information about connecting or disconnecting wires.



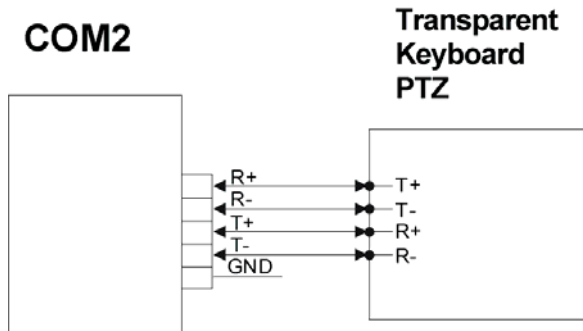
Serial Comm. Terminal Connection Diagram

COM1 connection diagram(RS-232)

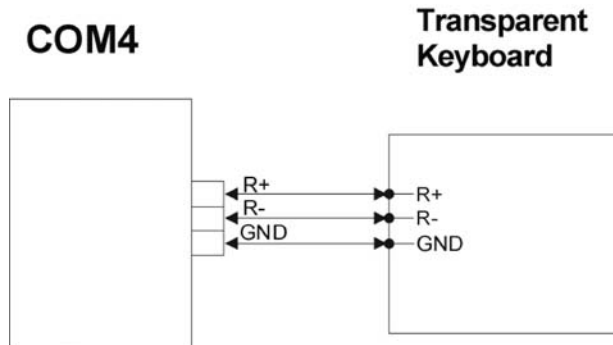


COM2 connection diagram (RS-422/485)

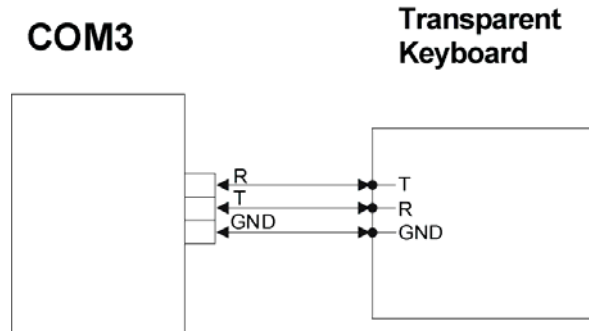
RS-422(SVR-3200, 1680C, 1660C)



RS-485(All SVR series)



COM3 connection diagram (RS-232)



PTZ, Keyboard Compatible List

Model	Manufacturer
SDZ160/330, Samsung SPD Keyboard SCC3000, Samsung SRX-100B	SAMSUNG TECHWIN
BOSCH AutoDome, TC8560X-4	BOSCH
PELCO(P), PELCO(D)	PELCO
Honeywell 755/655, HRX-2000, ScanDome2	HONEYWELL
Sony EVI-D3x	SONY
VT VPT-4x	VT
AD SpeedDome	AD
SungJin SJ372R1'	SUNGJIN
Samsung SCC641	SAMSUNG ELECTRONICS
Panasonic WV-CS850	PANASONIC
LG GAC-PT2	LG
Keyboard KBD300A, WGI SPD1800/2600	WEBGATE Inc.
Merit-Lilin FastDome	MERIT
Elmo PTC200C	ELMO
Canon VC-C4	CANON
HTC-230S	D-MAX
RVision	RVISION
Elbex	ELBEX
VIDO	VIDO
VICON	VICON
Hunt	HUNT
ORX-1000	SYSMANIA
Fine CRR-1600	LIVEI

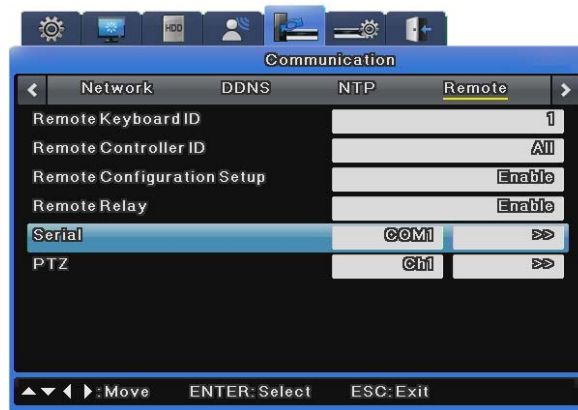
Tokina	TOKINA
Kodicom KRE	KODICOM
Nuvico	NUVICO

Serial Settings

A total of four serial ports are available for the DVR. Two are RS-232C(Com1, Com3) and the other two are RS-422/485(Com2, Com4).

The Serial Port settings are available under Communication > Remote.

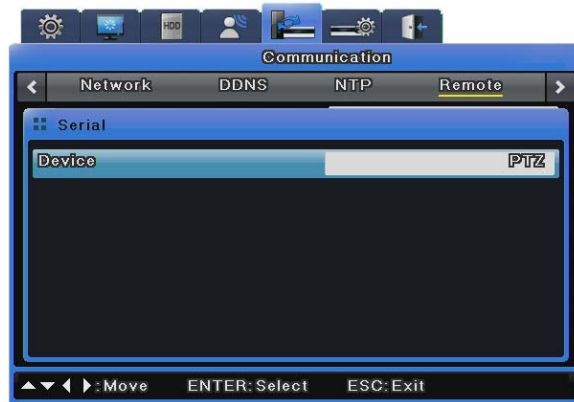
The following options are provided for the Serial Port settings.



PTZ(Serial)

Select PTZ.

To control the PTZ operation via serial port, select PTZ in the Device options, and then set up a serial port. To control the PTZ operation via coax protocol, you do not need to set up this option.



**Type**

Select a serial port.

Protocol

Select a connected PTZ device.

Camera ID

Enter the ID of the selected camera.

Interface

Select one from among Com2 to 4.

To use RS-232, select Com3. For RS-422 or 485, select Com2 or 4.

Baud rate/Parity/Stop Bit/Data Bit

Enter the same settings as the ones for the PTZ device.

Idle Time

Activate or disable PTZ Home, and set up a standby duration for the device before moving to

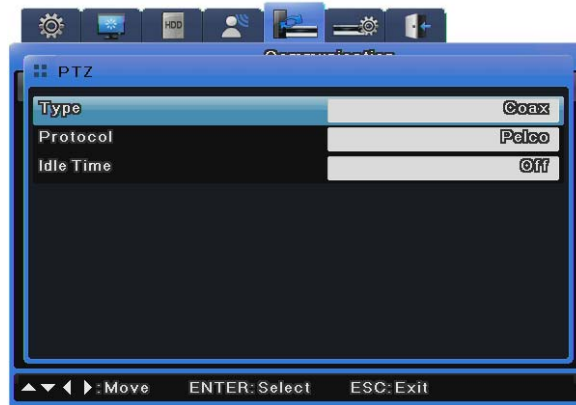
PTZ home.

PTZ(Coax)

The Coax Protocol option does not support normal PTZ protocols, but rather supports the Pelco Standard and Extended Protocols.

The standard protocol supports basic PTZ functions such as PTZ and presets. The extended protocol supports more expansive features such as menu control and video playback in addition to the basic PTZ functions.

To use this option, a PTZ device must be embedded with a coax standard or extended protocol.



Type

Select Coax.

Protocol

Select Pelco or Pelco Extended according to the coax protocol type of Pelco camera.



AD Dome does not support menu control, Presets or AUX when setup with a coax protocol.

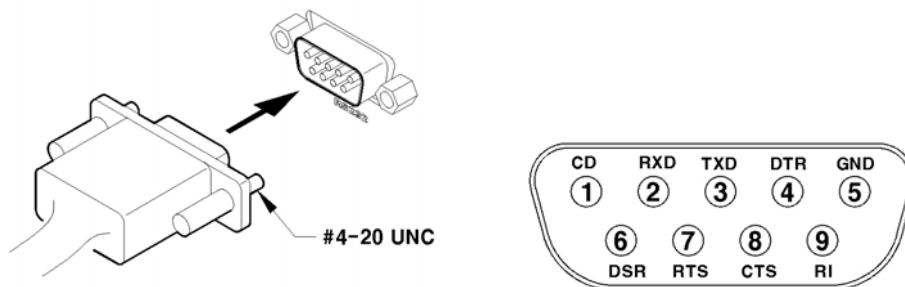
Idle Time

Activate or disable PTZ Home, and setup a standby duration of the device before moving to PTZ home.

3.3.3.5 External device connection using Serial port

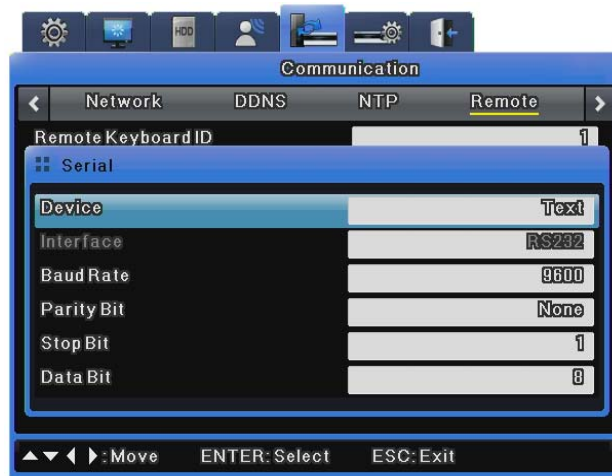
Text Input Device Connection (ATM / POS / Access Control)

Text and video data from POS/ATM terminals can be synchronously recorded through COM1/RS-232.



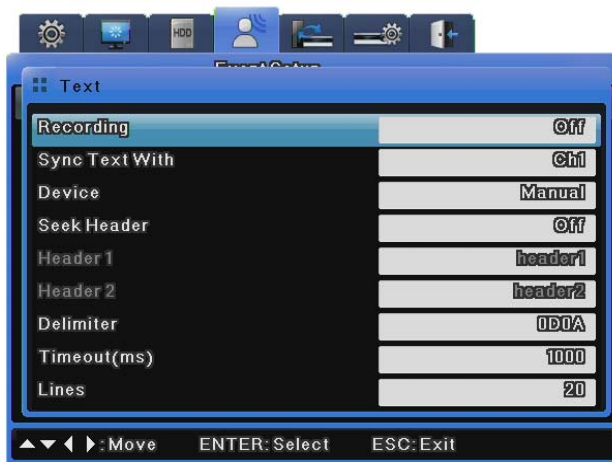
As shown in the above figure, COM1/RS-232 (9-pin D-SUB) are used to receive text data that is configured under the OSD Communication > Event menu.

Serial Settings (COM1)



- (1) In the OSD menu, navigate to Communication > Serial.
- (2) Set the “Serial Number” option to COM1 for text.
- (3) Set the Baud Rate/Parity/Stop bit/Data bit options identical to the Input device.

Text Settings



- (1) On the OSD menu, select Event Setup > Text.
- (2) Set text and relations options.



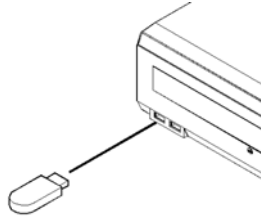
Some external devices may not be recognized. Please consult your product distributor prior to installation.

3.3.3.6 USB device connections

The USB ports are mainly used to copy video data to supported external USB storage devices like USB memory sticks (copies data within an hour).

Supported USB devices conform to the following specifications.

USB Spec.	Ver. 2.0
Supported device types	USB memory stick
Output voltage/current	Max. 200mA per DC 5V / Port



The storage device should be formatted with the FAT32 file system.

Supported storage devices are automatically recognized when copying. To copy video, set copying options in the Copy dialog, select the storage device, then copy the data.



[CD/DVD Copy]

[RE4 Copy]

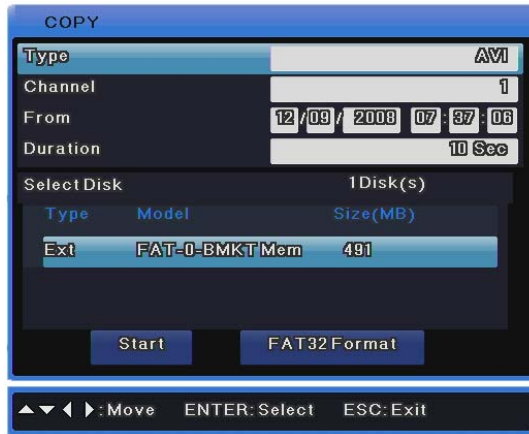
Select the channel to copy.



[SVR-960C/945]

[SVR-1680C/1660C/1645]

[SVR-3200]



[AVI Copy]

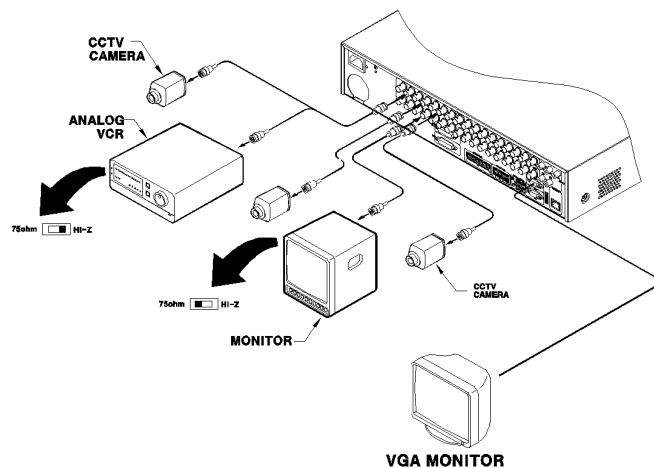


Some USB storage devices may require additional software and drivers. Care should be taken in these cases as the DVR may not recognize some USB products like this. If copied files do not playback on another computer, double check that proper playback software and codecs are installed.

3.3.3.7 Video in/out connections

The DVR video input/output are “Loop through” and detect connection status automatically to set terminal resistance.

For example, when only video input is connected, terminal resistance is internally set to 75Ω. However, when video input and output are connected, terminal resistance is set to Hi-Z. As such, when input and output are connected, the external output device should have its resistance set to 75Ω.

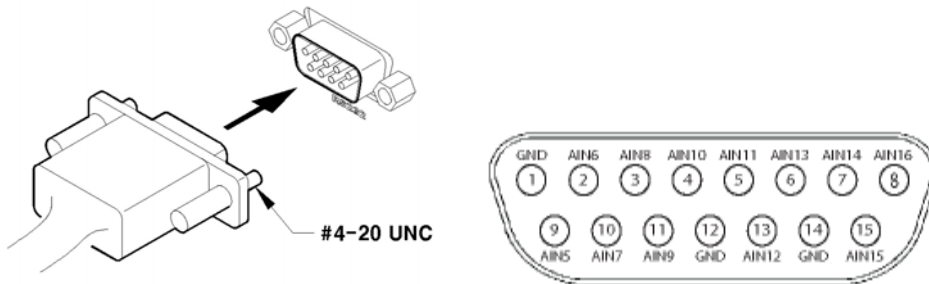


3.3.3.8 Audio in/out connections

There are 4 RCA audio in and 12 D-SUB audio in.

All 16 audio sources can be monitored through a single output.

The 12 D-SUB audio inputs use terminals 5 ~ 16 and are connected as shown in the following figure.



3.3.4 External Storage connections

3.3.4.1 eSATA Port

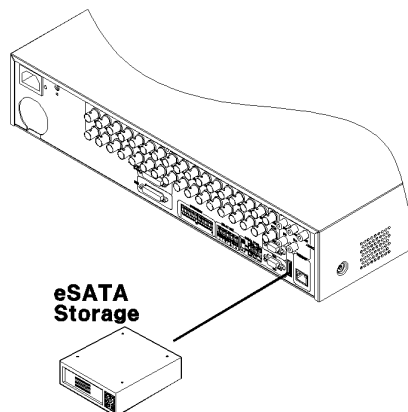
One eSATA external storage device can be connected through the eSATA port in the back of the DVR unit for a maximum of 8TB of storage space.



The eSATA port only supports the “SVS-5E” eSATA external HDD from Samsung Techwin.

3.3.4.2 eSATA device connection

Use the eSATA port in the back of the DVR unit to connect your SVS-5E external HDD. External storage requires its own power source as the DVR unit does not supply power to it.



Since some external devices may not be recognized if connected with the DVR unit on, the following procedure should be followed.

1. Turn DVR power OFF.
2. Connect external device and eSATA interface cable.
3. Turn external device power ON.
4. Turn DVR Power ON.

3.3.4.3 Supported HDD

Refer to the appendix in the back of the manual for information on supported HDDs.

3.3.4.4 Registering & formatting HDDs

When the DVR is first booted after a new HDD is physically installed, the "Disk Manager" automatically runs as shown in the following figure.

If the "Disk Manager" does not run, check that the HDD is properly installed.

Type	Model	Bad Blk	Size(MB)	Enabled
IntA	ATA WDCWD3200AV	0	305245	Yes
IntB	ATA WDCWD3200AV	0	305245	Yes
CD/DV	TSSTcorp CDDVDWS		AUTO	

MOVE: ▲ ▼ ◀ ▶ SELECT:ENTER EXIT:ESC

- (1) Press [Enter] with "Disk Manager" selected.
- (2) Press [▲/▼] to select the new HDD ("No" under the "Enabled" column heading), and then press [Enter].
- (3) If prompted to format the disk, select "YES".
- (4) Close "Disk Manager" by pressing [ESC].

3.3.4.5 Attaching & Detaching HDD

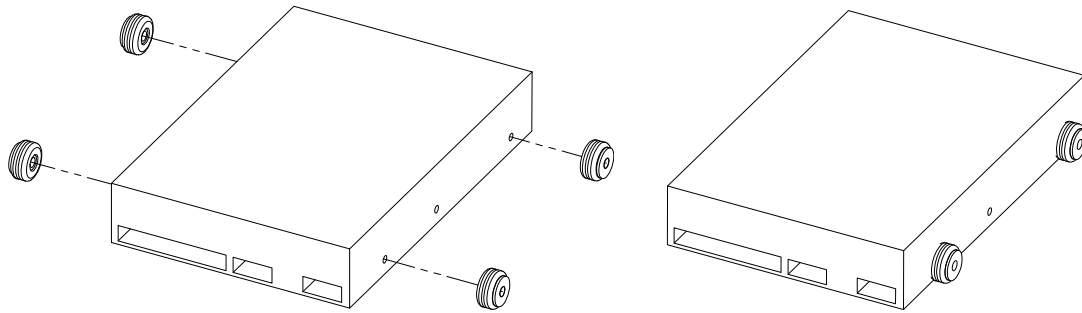
Please follow the instructions below to add or replace an HDD.

Attaching an HDD

Attach the enclosed HDD fixture screws to both sides of the HDD.

With 2 fixture screws to a side, attach 4 screws to the HDD.

The following picture shows an HDD attached with 4 fixture screws.

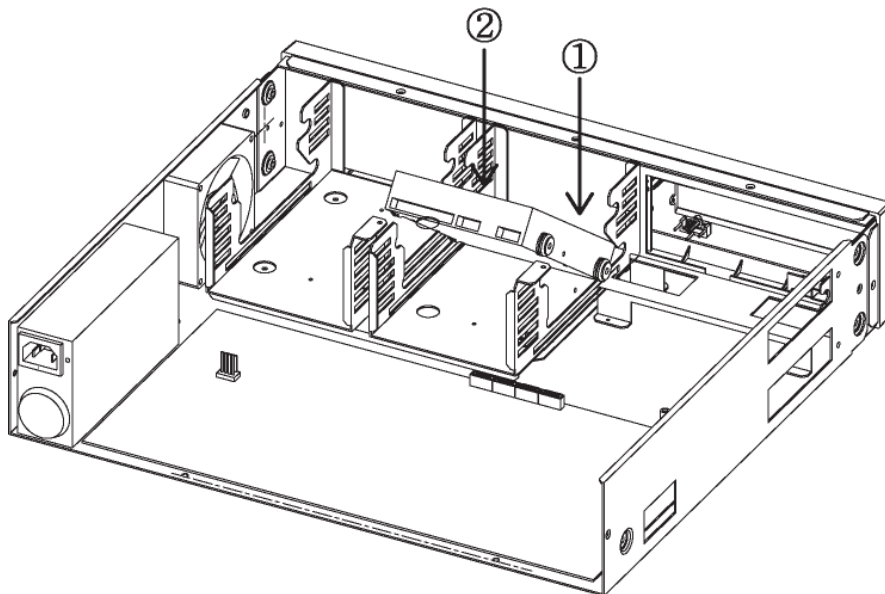


Once the HDD is attached with the screws, insert it into an HDD bracket.

For the location of HDDs, IntA is the bottom right, IntB is the upper right, IntC is the bottom left, and IntD is the upper left.

The following picture shows an HDD being inserted to IntA.

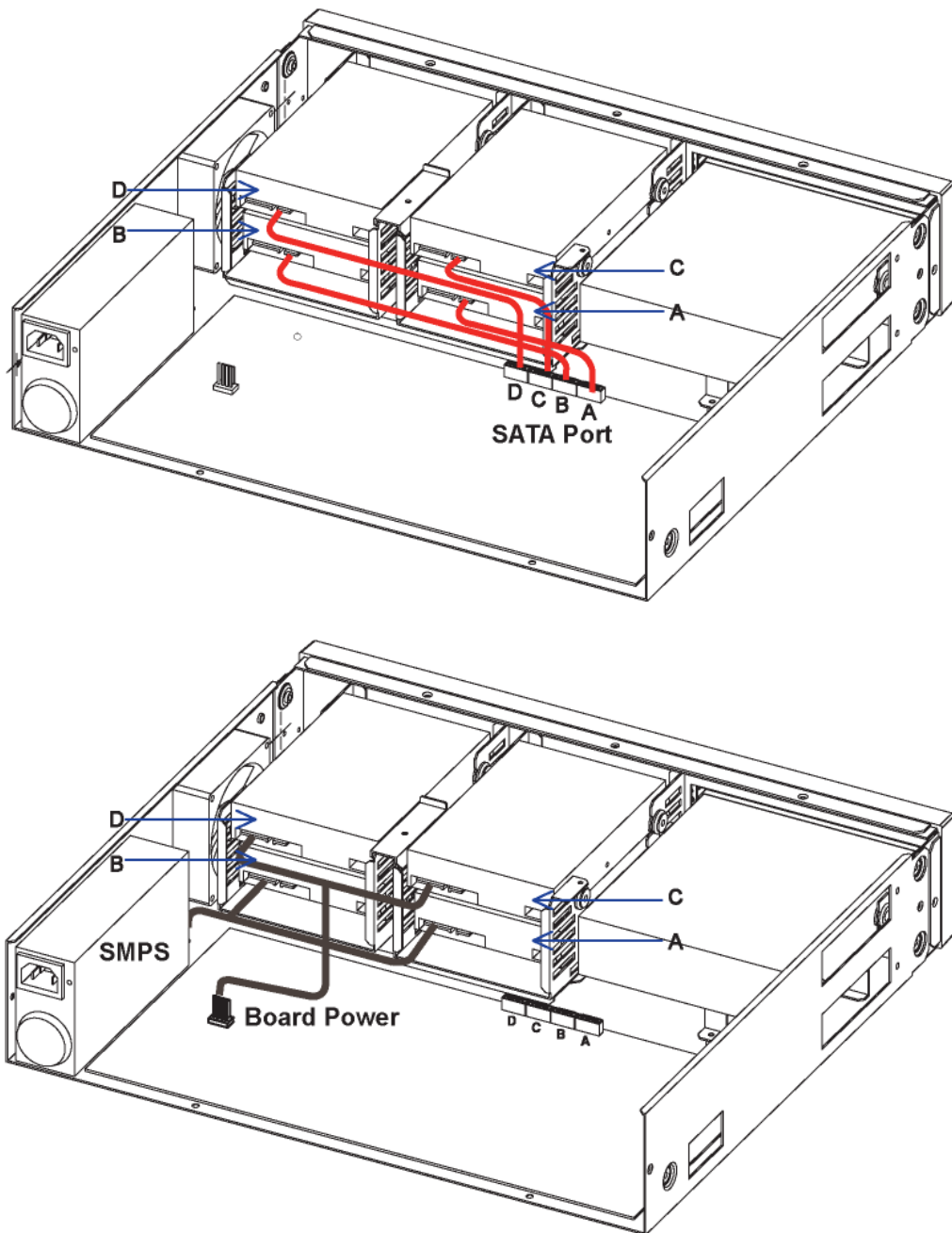
When attaching an HDD, first insert the front part of the HDD to the bracket, and then press down on the other side with the SATA port.



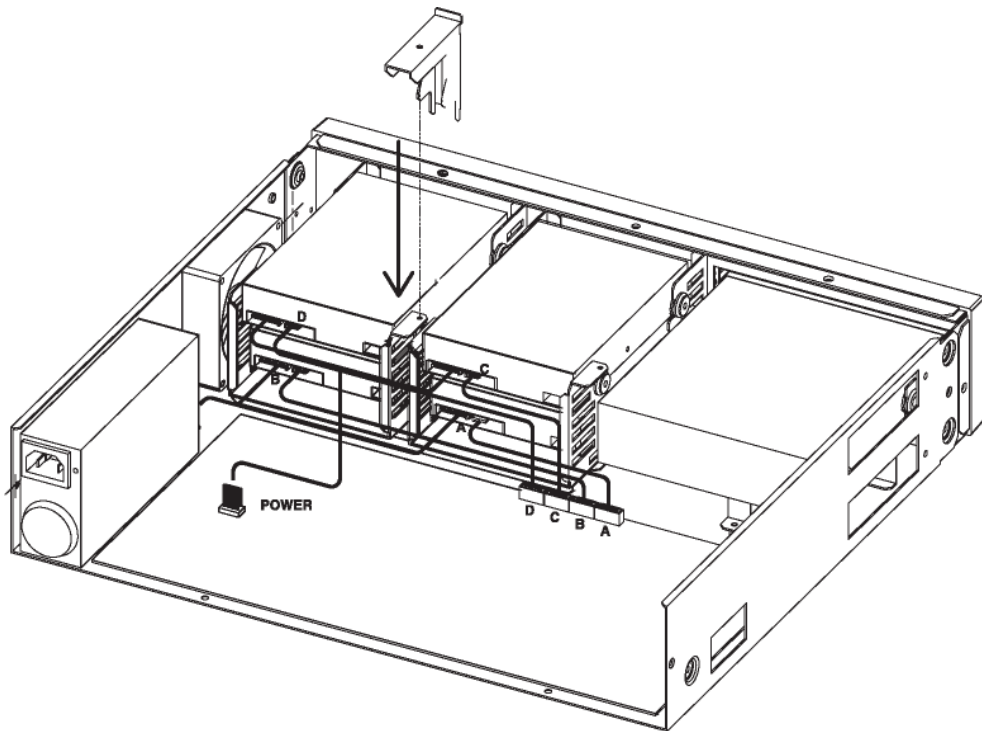
Once the HDD is inserted, connect the SATA and power cables.

As shown in the picture below, connect the enclosed SATA cable, and then an SMPS power cable.

The following picture shows the product attached with the maximum 4 HDDs.



After inserting the HDD, fasten the HDD fixture bracket as shown in the picture below.
Now the HDD is fully attached to the product.



To enable the newly attached HDD, you must change the availability of the HDD to "Yes" under the DVR Disk menu.

To access the menu, go to Menu > System Settings > Disk > Disk Manager.

The newly attached HDD will display in the HDD list with No in the Availability pane.

DISK MANAGER				
Type	Model	Bad Blk	Size(MB)	Enabled
IntA	ATA WDCWD3200AV	0	305245	Yes
IntB	ATA WDCWD3200AV	0	305245	Yes
CD/DV	TSSTcorp CDDVDWS		AUTO	

MOVE: ▲ ▼ ◀ ▶ SELECT:ENTER EXIT:ESC

To change the availability, place the cursor on No and then press Enter.

When a dialog window appears, select "Yes." Now the HDD is ready to use.

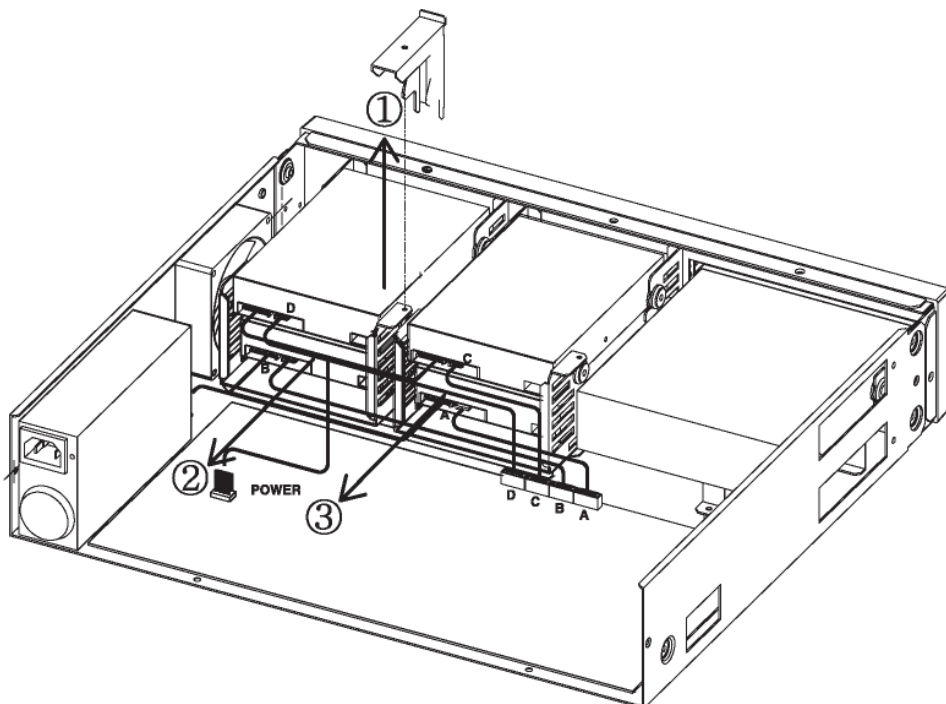
DISK MANAGER				
Type	Model	Bad Blk	Size(MB)	Enabled
IntA	ATA WDCWD3200AV	0	305245	Yes
IntB	ATA WDCWD3200AV	0	305245	Yes
CD/DV	TSSTcorp CDDVDWS		AUTO	

MOVE: ▲ ▼ ◀ ▶ SELECT:ENTER EXIT:ESC

Detaching HDD

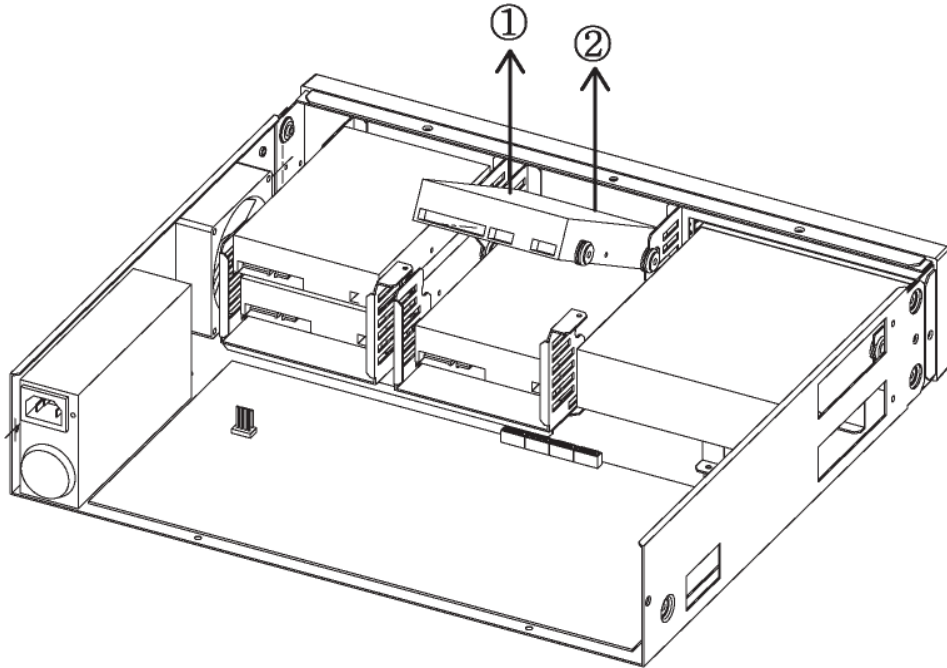
Detaching an HDD is the same as attaching it, but in reverse order.

Loosen the HDD fixture bracket. Unplug the SATA and power cables.



Detach the HDD.

When detaching an HDD, first lift up the back part of the HDD with the SATA port, and then the front part. Remove or keep the HDD fixture screws in case you want to attach an HDD later.



Go to Menu > System Settings > Disk > Disk Manager.

Select the detached HDD, and then press Enter. Select "Yes" in the dialog window and remove the HDD from the HDD list.

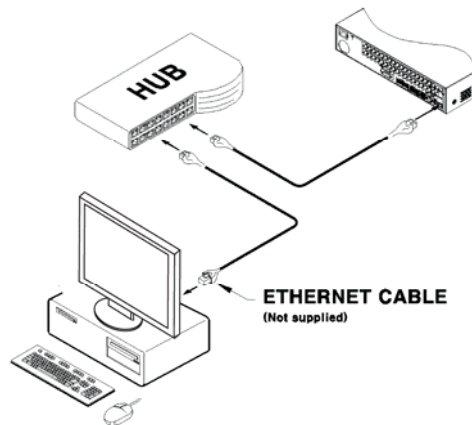
DISK MANAGER				
Type	Model	Bad Blk	Size(MB)	Enabled
IntA	ATA WDCWD3200AV	0	305245	Yes
IntB	ATA WDCWD3200AV	0	305245	Yes
CD/DV	TSSTcorp CDDVDWS		AUTO	

MOVE: ▲ ▼ ◀ ▶ SELECT:ENTER EXIT:ESC

3.3.5 Remote monitoring & control

Connections can be made through Internet/Intranet by using the remote computer. This connection can be used to control DVRs and monitor areas same as local spot.

3.3.5.1 Ethernet connection



- (1) Shut the DVR power off.
- (2) Connect the Ethernet cable to the DVR and hub or router.
- (3) Turn the DVR power on.



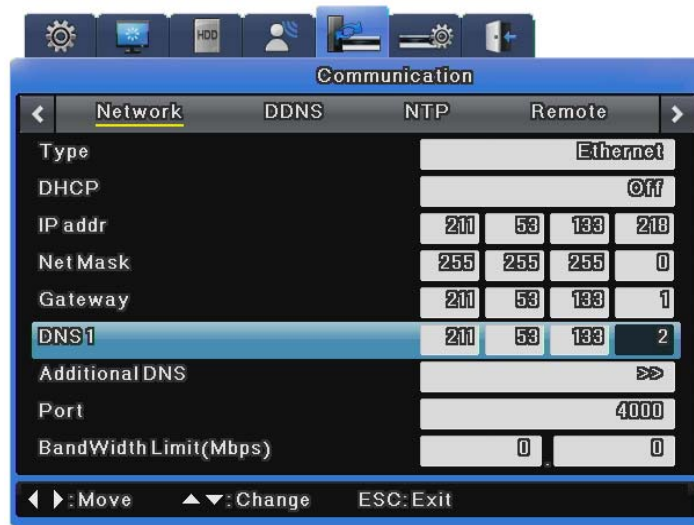
To prevent damage to the DVR, turn the power on after connecting the Ethernet cable. The Ethernet cable should be securely connected. After powering on the DVR, check the connection.

3.3.5.2 Network settings

The following describes settings for Ethernet.



Refer to “User Manual” when using xDSL for detailed setup instructions. The user manual can be downloaded from www.samsungcctv.com or found on the CD provided with the product.



When using Ethernet

Set the type to Ethernet and fill in the IP address, Netmask, Gateway, and DNS information provided by your network administrator. Use Up/Down direction keys or the mouse wheel to select the items, and then setup with the appropriate values.

When using PPPoE

Change the network configuration type to xDSL then navigate to the xDSL menu.

Change the port from Ethernet. (IMPORTANT: You must remember the port.)

In the xDSL screen, input the login ID and password that you received when you registered for PPPoE.

When using DDNS

Change the DDNS polling interval to more than 1 minute and enter the login ID and password for your DDNS server.

Trouble Shooting

1. DVR does not boot

- Check power
- Check power cord

2. Monitor does not display camera video

- Check monitor power
- Check cable between the monitor and DVR
- Check monitor cable port
- Check that DVR power is on

3. Some channels do not display images

- Check camera power
- Check camera video input
- Check DVR video input port
- Check whether the Screen > Activity option is on/off
- Check the Monitor > Covert option for privacy settings

4. DVR does not record

- Check Disk Manager to see that the HDD is installed
- Check the Record settings

5. DVR does not playback

- Check the Record settings
- Check for button activation

6. Video is overly bright / dark

- Check the camera settings
- Check that video and power cables are properly plugged in
- Check brightness and contrast settings under the "Screen" menu

7. Remote controller does not work

- Check the Remote controller battery
- Check the Remote controller ID
- Check Remote controller usage specifications

8. Front buttons do not work

- Check DVR power
- Check screen lock status

9. Cannot connect to network

- Check that network cable is properly connected
- Check DVR IP address
- Check PC IP address
- Run a ping test

10. When to contact your reseller

If any of the following happen, immediately turn off the DVR and contact the reseller that you purchased it from.

- The product exhibits extremely abnormal behavior, e.g. strange noises, odors, or smoke
- The power jack is damaged
- Rain, water, or other liquids get into the product
- The product does not work as described in the user manual
- The product has fallen and become damaged
- Product performance changes significantly

Compatible HDD List

Western Digital	
Capacity	Model
1000GB	WD10EVCS
750GB	WD7500AVCS
500GB	WD5000AVVS
320GB	WD3200AVVS

Compatible Media List

DVD-R manufacture	CD-R manufacture
Mitsubishi (16X)	Mitsubishi (16X)
TDK (16X)	TDK (16X)
Imation (16X)	Imation (16X)
Sony (16X)	Sony (16X)

Specification

Item		Description
Display		
Video	Inputs	SVR-3200 : 32 composite video 0.5–2 Vpp, 75 ohm automatic termination SVR-1680C/1660C/1645 : 16 composite video 0.5–2 Vpp, 75 ohm automatic termination SVR-960C/945 : 9 composite video 0.5–2 Vpp, 75 ohm automatic termination SVR-480 : 4 composite video 0.5–2 Vpp, 75 ohm automatic termination
	Resolution	704x480 NTSC
Live	Frame rate	SVR-3200 : NTSC(960Cfps), PAL(800fps) SVR-1680C/1660C/1645 : NTSC(480fps), PAL(400fps) SVR-960C/945 : NTSC(270fps), PAL(225fps) SVR-480 : NTSC(120fps), PAL(100fps)
	Resolution	704x480 NTSC, 704x576 PAL
	Multi Screen	SVR-3200/1680C/1660C/1645 : 1/4/9/10/16 SVR-960C/945 : 1/4/9 SVR-480 : 1/4

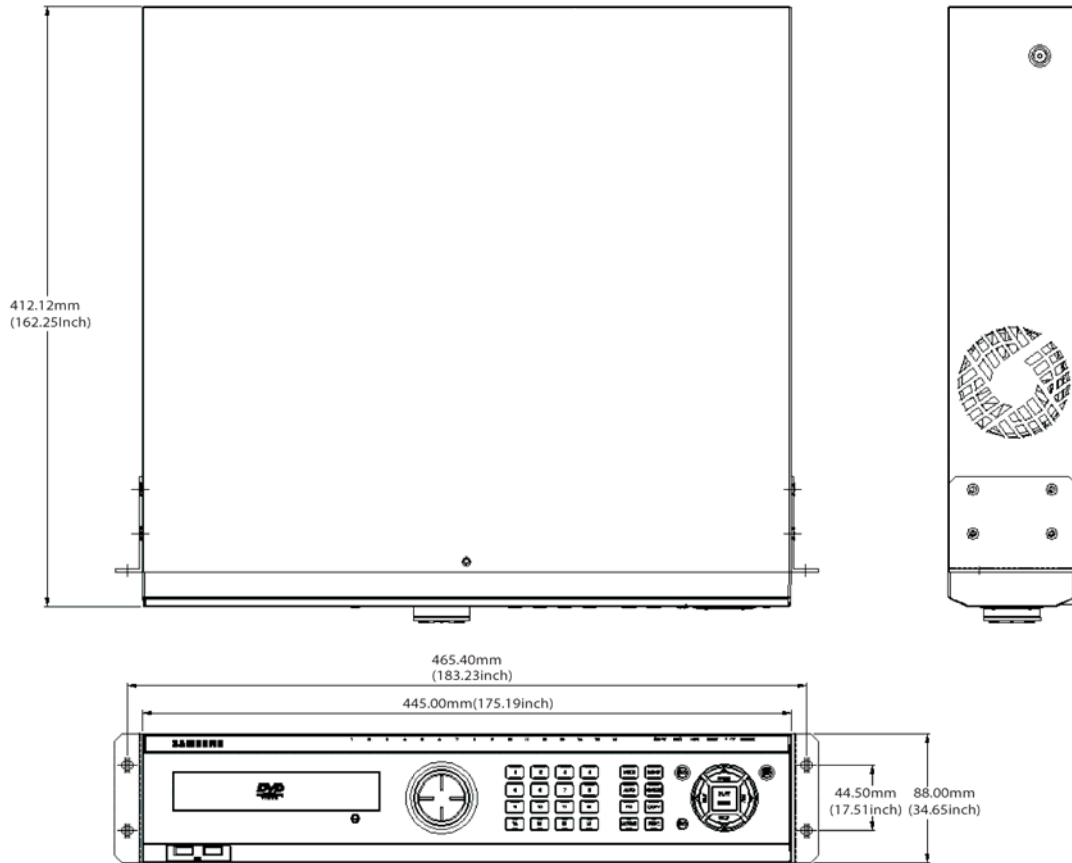
Performance		
Recording	Compression	MPEG-4
	Record Rate/NTSC	SVR-3200 : 480fps@704x480, 960Cfps@704x240, 960Cfps@352x240 SVR-1680C : 480fps@704x480, 480fps@704x240, 480fps@352 x 240 SVR-1660C/1645 : 120fps@704x480, 240fps@704x240, 480fps@352x240 SVR-960C/945 : 120fps@704x480, 240fps@704x240, 270fps@352x240 SVR-480 : 120fps@704x480, 120fps@704x240, 120fps@352x240
	Record Rate/PAL	SVR-3200 : 400fps@704x576, 800fps@704x288, 800fps@352x288 SVR-1680C : 400fps@704x576, 400fps@704x288, 400fps@352x288 SVR-1660C/1645 : 100fps@704x576, 200fps@704x288, 400fps@352x288 SVR-960C/945 : 100fps@704x576, 200fps@704x288, 225fps@352x288 SVR-480 : 100fps@704x576, 100fps@704x288, 100fps@352x288
	Mode	Manual, Schedule, Event, Emergency
	Overwrite modes	Continuous
	Pre-Event	Up to 5 sec.
	Post-Event	Up to 60 sec.
	Search & Playback	Search mode
Frame rate		480 fps D1 NTSC, 400 fps D1 PAL
Playback function		REW, FWD, Frame advance (control keys and jog shuttle)
Network	Transmission speed	SVR-3200/1680C : 16 Mbps SVR-1660C/1645/960C/945/480 : 9 Mbps
	Bandwidth control	Automatic
	Multi Stream	MPEG-4(Dual Streams)/JPEG
	Remote Users	Up to 10 simultaneous users

	Protocol support	TCP/IP, DHCP, DNS, DDNS, HTTP, ARP, ICMP and NTP
	Monitoring	CMS Software(SNM-128S/P), Built-in web server
Storage	Maximum Capacity	SVR-3200/1680C/1660C : 16 TB SVR-1645/960C/945/480 : 8 TB
	Internal HDD	SVR-3200/1680C/1660C : 4 HDD SVR-1645/960C/945/480 : 2 HDD
	External HDD	SVR-3200/1680C/1660C : External eSATA 2 port SVR-1645/960C/945/480 : External eSATA 1 port
	DVD Writer (Back-up)	DVD-R / CD-R
	USB (Back-up)	2 External USB Ports(USB 2.0)
	File Format (Back-up)	BMP, AVI, Proprietary format / JPG(Exclusive viewer)
Security	Password Protection	10 User Level
	Data Authentication	Watermark
Interface		
Monitors	VGA	Analog RGB 800x600, 1024x768, 1280x1024 resolution
	Main Composite	BNC, 1 Vp-p, 75 ohm, Multi-screen, Menu, Playback
	Sub Composite	Monitor2~4 : SVR-3200/1680C(Menu, Event Pop-up, Covert, Display Switching) Sport : SVR-1660C/1645/960C/945/480(event Pop-up, Display switching), 1 Vp-p, 75 ohm
	Loop Outputs	SVR-3200 : None SVR-1680C/1660C/1645 : 16 Output, 1 Vpp, 75 ohm SVR-960C/945 : 9 Output, 1 Vpp, 75 ohm SVR-480 : 4 Output, 1 Vpp, 75 ohm
Audio	Inputs	SVR-3200/1680C/1660C/1645 : 16 input, 30k ohm SVR-960C/945 : 9 input
	Output	1 line, 100k ohm
	Compression	ADPCM
	Sampling rate	16 kHz
Alarm	Inputs	SVR-3200/1680C/1660C/1645 : 16 Input, NO/NC SVR-960C/945 : 9 Input SVR-480 : 4 Input

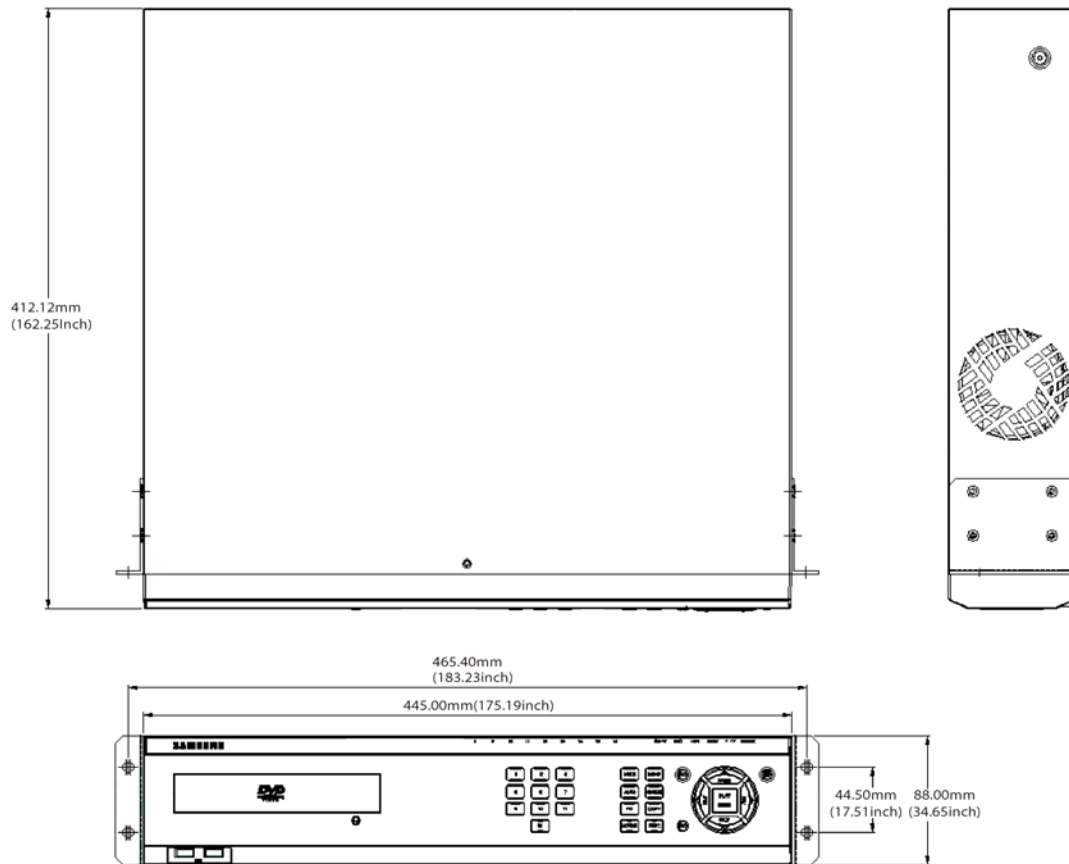
	Outputs	Screw terminal 4 relay outputs, NO/NC (SVR-480 : Screw terminal 2 relay outputs, NO/NC)
	Remote notification	Notification via e-mail
Connections	Ethernet	RJ45 10/100 Base-T
	Serial interface	RS232
	PTZ control interface	SVR-3200/1680C/1660C : RS485/RS422 SVR-1645/960C/945/480 : RS485 Via coax cable (SVR-1680C/1660C/960C)
	PTZ Keyboard	RS485, max. signal voltage ± 12 V
	USB	2 USB 2.0 ports
	eSATA	SVR-3200/1680C/1660C : External eSATA 2 port SVR-1645/960C/945/480 : External eSATA 1 port
	Application Support	ATM/POS, Mouse, Remote Controller
Dome Protocols	Supported PTZ cameras	Samsung Techwin, Pelco D, Pelco P, Pelco Coaxitron, Panasonic, Bosch, SEC
General		
Electrical	Input Voltage	100 to 240 VAC $\pm 10\%$; 50/60 Hz, Auto-ranging
	Power consumption	Max. 65 W (with 1x HDD) Max. 88 W (with 2x HDD) Max. 90 W (with 4x HDD)
Environmental	Operating Temperature	+5°C to +40°C (+32°F to +104°F)
	Operating Humidity	0% RH to 60% RH
Mechanical	Dimensions (W x H x D)	445 x 88 x 388 mm (17.5 x 3.5 x 15.3 in) SVR-945 : 300 x 88 x 302 mm(118.11 x 34.65 x 130.7 in) SVR-480 : 350 x 88 x 401.3 mm(13.77 x 3.46 x 15.79 in)
	Weight (1x hard disks)	Approx. 10 kg (22.1 lb), SVR-945 : 5 kg (11 lb) SVR-480 : 5.6kg
	Rack mount kit	For mounting one unit in an EIA 19-inch rack (SVR-945 Stand type)
Language		English, Spanish, French, German, Italian, Polish, Portuguese, Russian, Turkish, Japanese, Czech, Serbian, Swedish, Rumanian, Danish, Chinese, Korean, Taiwanese

Dimensions

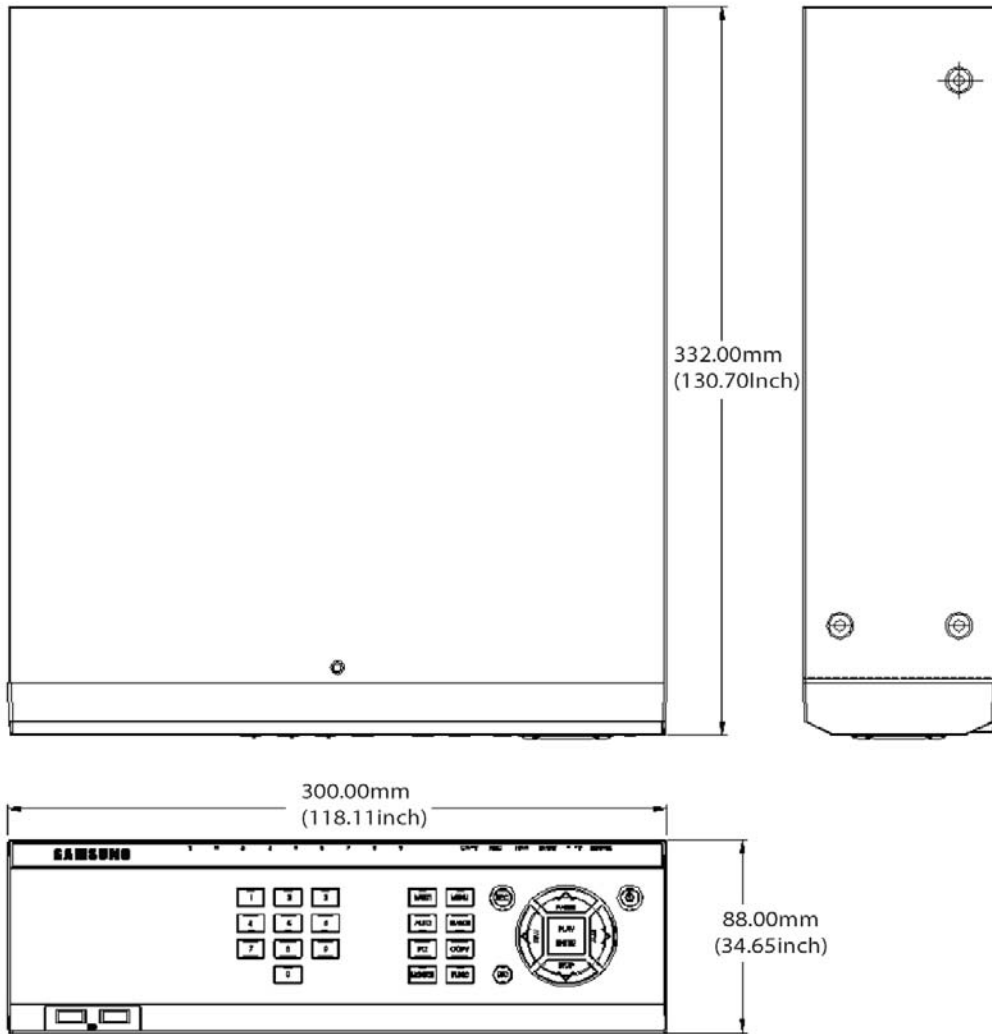
SVR-3200, SVR-1680C, SVR-1660C, SVR-1645



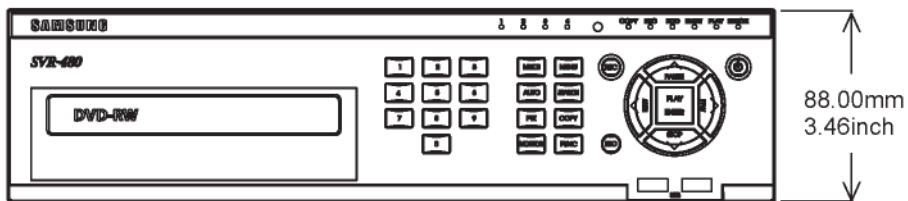
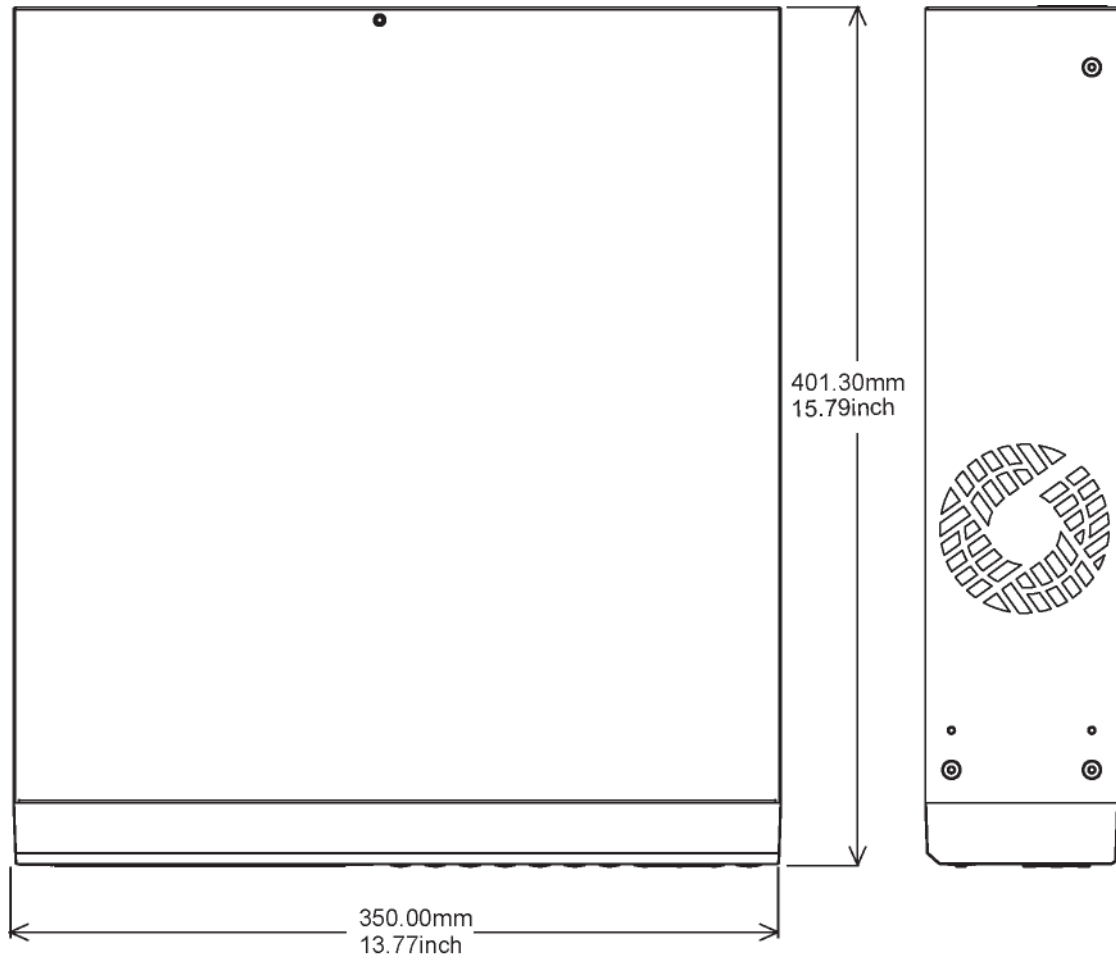
SVR-960C



SVR-945



SVR-480



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Version 2, June 1991

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145-3, Sangdaewon-dong, Jungwon-gu, Seongnam-si, Gyeonggi-do, 462-120, Korea
TEL : +82-31-740-8151~8 FAX : +82-31-740-8145

SAMSUNG TECHWIN EUROPE CO., LTD.

Samsung House, 1000 Hillswood Drive, Hillswood Business Park Chertsey,Surrey,UNITED KINGDOM KT16 OPS
TEL : +44-1932-45-5308 FAX : +44-1932-45-5325

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