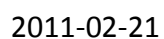

































【Hardware】



Safety Precautions

-  **Do Not touch live electrical parts.**
Electric shock can be avoided. Follow the recommended practices listed below. Faulty installation, improper grounding, and incorrect operation and maintenance of electrical equipment are always sources of danger.
-  **Do Not try to install equipment outdoor, when the wind and rain is strong.**
-  **Do Not install or remove equipment outdoor ,when the weather is raining.**
-  **Do Not try to install or operate any equipment , when the thunderstorm happened.**
-  **Always Ground all electrical equipment and the work platform.**
Prevent accidental electrical shocks. Connect power source, control cabinets, and work platform to an approved electrical ground.
-  **Always use the correct cable size.**
Sustained overloading will cause cable failure and result in possible electrical shock or fire hazard. Work cable should be the same rating as the torch cable or factory .
-  **Always keep cables and connectors in good condition.**
Improper or worn electrical connections can cause short circuits and can increase the chance of an electrical shock. Do not use worn, damaged, or bare cables.
-  **Always avoid open-circuit voltage.**
The added voltages increase the severity of the shock hazard.
-  **Always wear insulated gloves while you adjust equipments.**
Power should be shut off and insulated gloves should be worn when making any equipment adjustment to assure shock protection.
-  **Always wear protective clothing such as long sleeve shorts while you are installing or removing equipments.**
-  **Always Wear high, snug fitting shoes.**
-  **Always Wear clean clothes without grease or oil.**
Do not wear clothing that has been stained with oil and grease. It may burn if ignited by the heat of the arc.
-  **Protect neighboring workers from exposure to arc radiation.**
-  **Always Wear long trousers or jeans while you are installing or removing equipments.**
-  **Always wear safety helmet or hard head and safety shoes before work.**
-  **Always keep the equipments in dry places.**
-  **Always wear safety harnesses/belt while you work in high places.**
-  **Always wear dry clothing and avoid moisture and water.**
-  **Always wear Public Safety Vest , while you work at night.**
-  **Make sure all electrical connections are tight, clean, and dry.**
-  **Make sure that you are well insulated and eliminate the electric static charge.**

-  ***Always wear dry gloves, rubber-soled shoes, or stand on a dry board or platform.***
-  ***Always Follow recognized safety standards.***
-  ***Always wear correct eye, ear, and body protection.***
-  ***Always have second person on-site, while you work in the darkness places, poor ventilation places and high places.***
-  ***Make sure that you are well protected against arc flashes, mechanical injury, or other mishaps.***
-  ***Make sure that the polarity of wire is correct, before installing equipments.***
-  ***Always handle equipment with care.***
-  ***Do Not block the ventilation of equipment.***
-  ***Do Not put the magnetic parts around the Equipment.***
-  ***Do Not put the objects on top of equipment.***



Warning

This is the symbol for indicating any potential hazard, risk or condition requiring special attention. The user need to refer to the important operating and maintenance or servicing instructions.



Caution

The lighting flash with an arrow head symbol, in an equilateral triangle, is intended to alert the user. There is dangerous “voltage” presence near by the product’s enclosure which may be risk of person.



information

This is the symbol for notice you that more information in the other pages or additional information.



Environmental-friendly

This is the symbol for recycling , in order to create the green planet.

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- UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
- ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED WITH THE DEVICES OF THE THIRD PARTY;

ANY CLAIM OR ACTION FOR DAMAGES, BROUGHT BY ANY PERSON OR ORGANIZATION BEING A PHOTOGENIC SUBJECT, DUE TO VIOLATION OF PRIVACY WITH THE RESULT OF THAT SURVEILLANCE-CAMERA’S PICTURE, INCLUDING SAVED DATA, FOR SOME REASON, BECOMES PUBLIC OR IS USED FOR THE PURPOSE OTHER THAN SURVEILLANCE.

FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

FCC CAUTION!

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



Before using this user manual , please check the model name of DVR from sticker, due to the user manual combined with 4 channels/8channels/16channels DVR together.



SH122E.V2→4 Channels DVR

SH222E.V2→8 Channels DVR

SH522E.V2→16 Channels DVR

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Introduction:

The H.264 digital video/audio recorders are designed for use within a surveillance system with limited space, and are a combination of a hard disc recorder, a video multiplexer, and a web server.

To achieve the highest inter-connectivity and inter-operability, this series of digital video/audio recorders are all based on industry-leading front-end to back-end surveillance infrastructure. With state-of-the-art system architecture, powerful compression/decompression engine, and intelligent recording algorithms, hexaplex operation can be easily achieved without sacrificing the increasing demands of functionality, performance, reliability, and availability in the surveillance industry.

Chapter 1. SH-122E.V2 Overview

Packing List



SH122E.V2



Remote Controller



Power Adapter



Power Cord



CD



Quick Guide



Screws

Optional items



RS-485 to RS-232 Converter
(optional)



RS-232 connector
(optional)

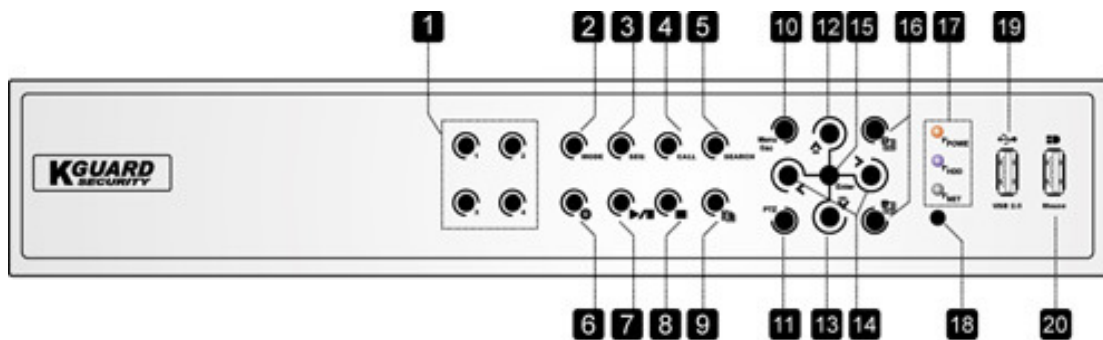
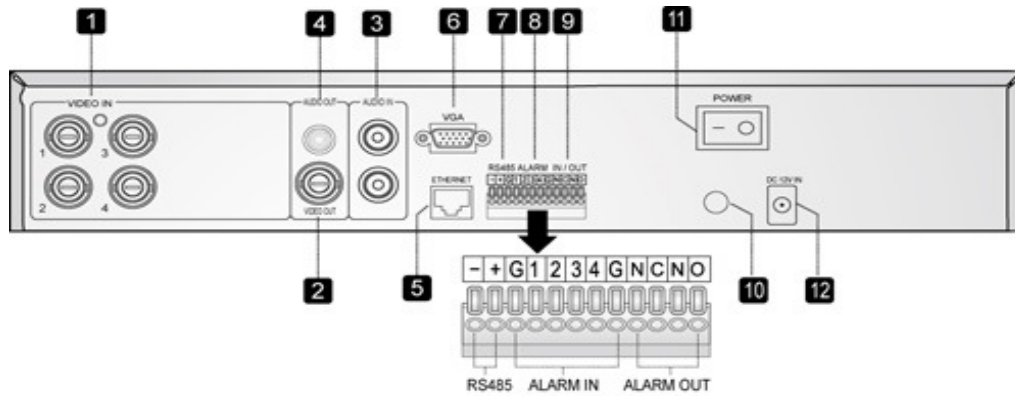





RS-232 Y-Cable
(optional)




If you would like to purchase the optional items, above, please contact the local vendors.

Components

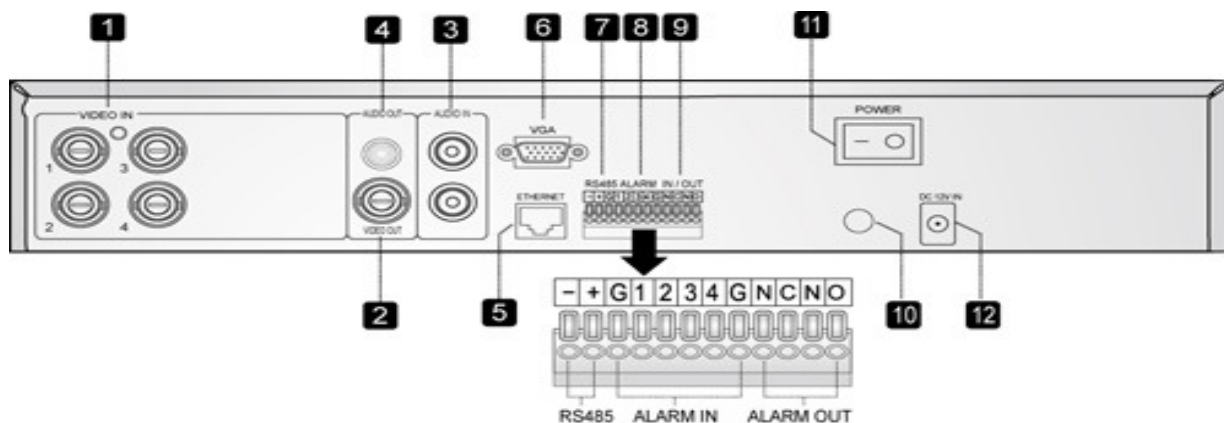



Area A (Front view)			
No.	Symbol	Button	Functions
1	1-4	Alpha-numeric	For selecting Channels. Also, it can be used for typing text and number, when use mobile functions.
2	Mode	MODE	For toggling between live mode and playback mode in main screen display. Also, as the function of “backward/slow backward”, when you used the playback mode.
3	SEQ	SEQ	For changing channels.
4	CALL	CALL	For switching to or return from full screen display of the focus camera in main screen display.
5	SEARCH	SEARCH	For displaying the search menu.
6	REC	RECORD	For manual recording. To stop manual recording, press button once again.
7		Play/Pause	For playing the recorded images, or pausing the playback.
8		Stop	For stopping the playback.
9		Copy	For copying the playback images to the storage device connected to the USB port. Press this button once to stop copying.
10	Menu/Esc	MENU / ESC	For displaying the main menu or exit to previous page.
11	Page	Page	In main screen display, press this button to enter/exit PTZ control if the focus camera is a PTZ camera.
12	▲/BS	Up/BS	As the function of moving up or focus window in normal operation. *In PTZ control, it used for tilting up the camera. **In text editing mode, the function as “**backspace” key.
13	▼/DEL	Down/DEL	As the function of moving down or focus window in normal operation. *In PTZ control, it used for tilting up the camera. **In text editing mode, the function as “del” key. ***In playback mode, it used for single step.
14	◀,▶	Left/Right	In PTZ control, it is used for panning the camera. In playback mode, the function as fast backward/forward. In the other screens, it is used for cursor or focus window.
15	ENTER	ENTER	This button is used as “enter” key in normal operation. *In PTZ control, this button is used to start/stop the selected PTZ control mode.


16	 + / -	Split Windows	For next/previous split-window display.
17	LEDs	LED indicator	Main power, HDD and Network access indicators.
18		IR sensor	For receiving signal from I/R remote controller
19		U.S.B port	For USB 2.0 compatible storage device
20		U.S.B port	For USB MOUSE connection.







For detailed information, please refer to appendix.



Area B (Rear view)		
No.	Connector	Functions
1	Video Input(camera) (1-4ch)	For Camera video input(BNC connector/internal 75Ω termination).
2	Video output(Main out)	For video output(BNC connector)
3	Audio input	For audio input(RCA connector)
4	Audio output (AUDIO)	For audio output(RCA connector)
5	Ethernet socket	For internet connection
6	VGA	For VGA output (optional D-SUB 15-pin female connector).
7	RS-485	For RS-485 compatible PTZ camera(s) or keyboard.
8	Alarm Input (ALARM IN 1-4)	For Connecting to external devices such as sensors or door switches.
9	Alarm Output (ALARM OUT NC/NO)	For connecting Alarm. (Normally Closed (NC) (left), for alarm output) (Normally Open (NO) (right) , for alarm output)
		 NC and NO only have 4 ports, Make sure that it is in right position, before connection.

		 Please note that only one of the NC or NO connectors can be connected .
10	IR extension port(IR optional)	For connection IR receiver(Optional)
11	Main Power switch(DC +12V)	For DC 12V POWER SWITCH .
12	Power cord socket(DC +12V)	For DC12V POWER INPUT.

 For more information , please refer to appendix.

Remote Controller			
	No	Symbol	Functions
	1	REC	Press to start the recording.
	2	Alarm Reset	Press to restore the alarm status to default.
	3	Numeric/ alpha button (1-9, 0, *, #)	For camera selection ,and also it can be used for entering text and numbers.  The symbol “#” is also used for page down in multi-split-window displays.
	4	MENU/ESC	For displaying the OSD menu and exit.
	5	PTZ	Click to access the PTZ control when there is a PTZ camera supported.
	6	Mute/Next	Audio mute and the “Next” is used for choosing next text when you typing the text in Text input.
	7	X2/ GOTO	*Zoom in/Zoom out(Digital Zoom (X2/X4)) *Click to view the image taken by PTZ camera at its preset location.
	8	Mode	Press to switch between live and playback mode.
	9	SEQ	For changing channels.
	10	Call	To call monitor and for video only(For switching to or return from full screen display of the focus camera in main screen display). To search the record video.
	11	Search	 There are five types of search modes: search by time, search by event, smart search, search

			archived files and POS search.
	12	<p>Enter</p> <p>▲/BS:</p> <p>◀:▶</p> <p>▼/DEL</p>	<p>For confirming the options or goto certain pages.</p> <p>Click to move up or backspace for text/numeric entry.</p> <p>*BS: BACKSPACE</p> <p>LEFT/RIGHT BUTTON.</p> <p>Click to move down or delete text for text/numeric entry.</p>
	13		<p>(Volume/Zoom) +/- Buttons.</p> <p>*In PTZ control, press these buttons to zoom in/out the camera.</p>
	14		<p>To switch between different screen layouts.</p>
Playback			
	15	<p>MODE</p> <p>SEQ</p>	<p>Fast backward 2X,4X</p> <p>Click to play or pause the playback.</p> <p>Fast Forward 2X,4X,8X,16X</p> <p>To copy the image to an external storage device.</p> <p>Stop the playback, click again will back to normal record mode.</p> <p>Single Step the system will pause first and then jump to next step.</p> <p>Fast/slow backward 2x/4x/8x/16X</p> <p>Fast/slow forward 2x/4x/8x/16X</p>
DVR1 – DVR4	16		Reserved

For environmental-friendly, please recycle the battery or use rechargeable battery.

Installation and Connections

Hard Disc



Caution !

Do NOT install or remove hard drive while DVR is running!



Warning !

Make sure that you already turn off the power and disconnect the power cord, Before performing any services or maintenances.



Warning !

Do NOT use electric screw-driver for installing or removing Hard Disc, when you installing or removing Hard disc, or you will damage the Hard disc, Use screw driver manual only.

Make sure to install one SATA hard disc (Max. storage size 2TB) inside the DVR




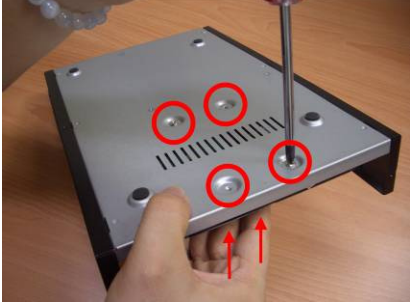



Step 1.

Loosen 4 screws on the two sides of the case (Using cross screw driver),(As shown).



Step 2.

Remove the top cover by lifting and slide back.(by hand)

	<p>Step 3.</p> <p>Connect Hard Disc to the cable of SATA.</p>
	<p>Step 4.</p> <p>Install the hard disc in the bracket, and tighten 4 screws on the side of hard disc(hand tight).</p> <p> Before install the cover, make sure that the cable all in the correct position without loosing parts or cables.</p>
	<p>Step 5.</p> <p>Install the top cover and tighten 4 screws on the side of top cover(hand tight).</p>
<p> The HDD must be formatted before use.</p> <p>For more information of H.D.D format, please refer to Chapter 3.1.17.</p> <p>(the system will detect the H.D.D and format automatically, in the initial starting).</p>	<p>Step 6.</p> <p>Check the top cover to see it is in good condition, and then connect the power cord.</p>



Warning !

Make sure that the switch is in off position , before you connect the power cord.

Camera & Monitor

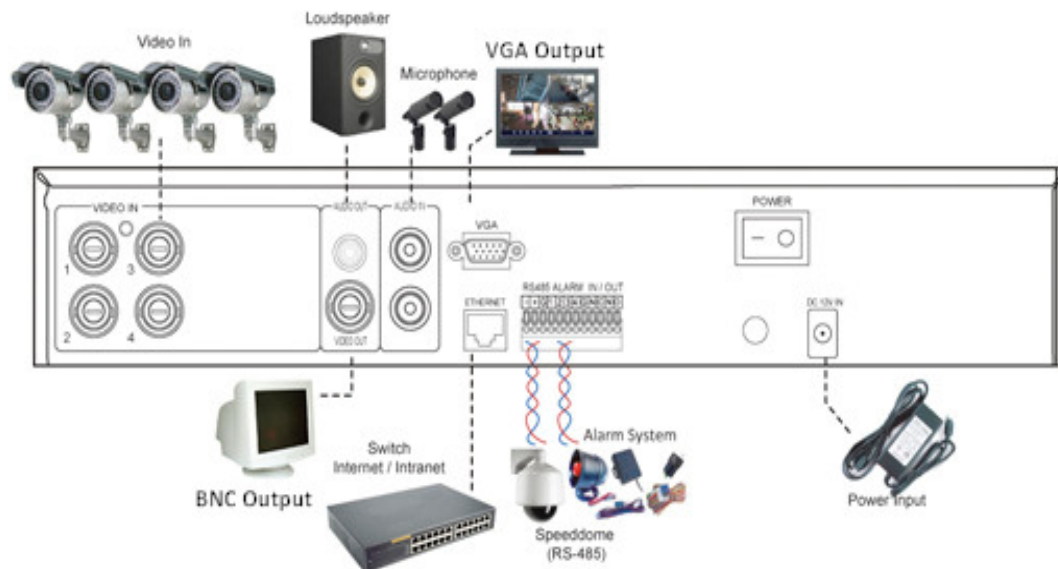


Warning !

Make sure that the switch is in off position ,before you connect the power cord. and also make sure that the power is correct of adaptor.




Make sure to set the NTSC/PAL Selector Switch on the main board according to the local TV system for the system to work correctly.

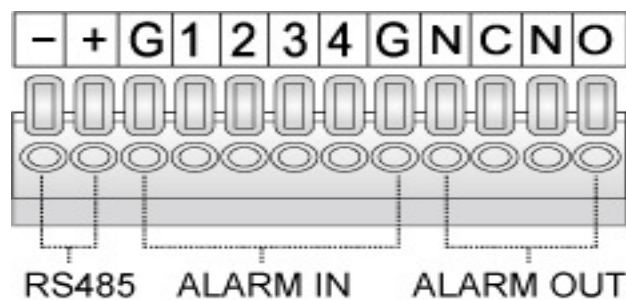


(Connection diagram)

Items	Description
Camera	Connect the camera video input connectors to the video outputs from system cameras or other composite video sources via coaxial cables. The internal 75Ω termination is always ON.
Power connector	Connect power source to DC 12V,3A
Monitor(VGA)	Connect the main monitor output connector (BNC) to a surveillance TV monitor, or connect the VGA output connector to a VGA monitor. The TV/VGA monitor displays selected live or recorded cameras in any available split window format.
Monitor(Main out)	Connect the main monitor output connector (BNC) to a surveillance TV monitor.
Audio input	Connect the audio input connector to the audio line-out from system


	cameras or other audio sources.
Audio output	Connect the audio output connector to the audio line-in from speakers
Alarm inputs	Connect the alarm inputs to NC and/or NO type of alarm signals.
Alarm outputs	Connect the alarm output #1 to NC type of alarm signal, or alarm output #2 to NO type of alarm signal.  Please note that only one of the NC or NO connectors can be connected only.
Ethernet	Connect the Ethernet connector to a standard twisted-pair Ethernet cable for remote access via LAN or internet.
I/R remote controller	The user may use I/R remote controller to control the digital video/audio recorder

PTZ CAMERA

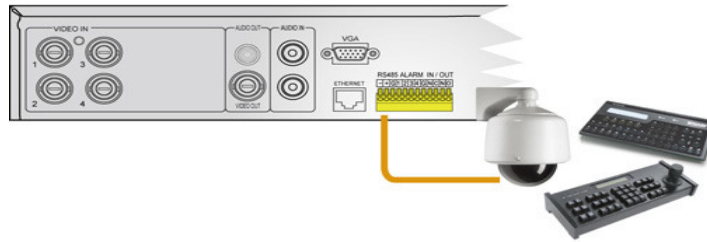


Connect the RS-485 connector to PTZ camera(s) via the appropriate cable. The system supports a variety of different PTZ cameras, including Pelco D protocol Dome, SamSung SCC-641P, Kalatel Cyber Dome, Bosch AutoDome, etc.

But different PTZ cameras can coexist in a system only if they support the same protocol.

 Please make sure to set the PTZ ID of the camera(s), and setup the camera and RS-232 or RS-422/485 accordingly.

keyboard



For Keyboard

RS-485+	—	TxD+
RS-485-	—	TxD-
GND	—	GND

For PTZ Device

R-S485+	—	RxD+(Data+)
RS-485-	—	RxD-(Data-)
GND	—	GND

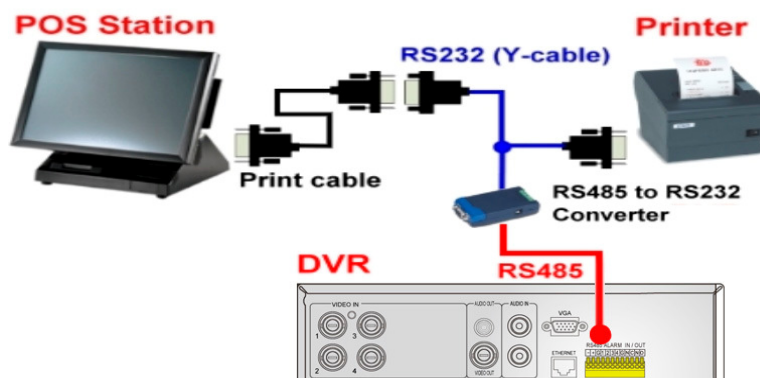
RS-485 keyboard or Terminal

Connect the RS-485 connector to a RS-485 keyboard controller or VT-100 terminal via the appropriate cables.

Please refer to the diagram above for the correct connection (as shown).

POS system

Connect the RS-485 connector to POS system via the appropriate cable. The system supports the POS systems which can be connected to the following printers – Epson-TM200, Epson-TMU295, Epson-TMU300, Epson-TMU675, Epson-TMT882, Epson-RPU420, and Epson-MD332S. Please make sure to setup the RS-485 port accordingly.



*The connection of POS is for your reference only.

*The POS station, Printer , Y cable(RS-232),RS485 to RS-232 converter are optional items.

Chapter 2. SH-222E.V2 Overview

Packing List



SH222E.V2



Remote Controller



Power Adapter



Power Cord



CD

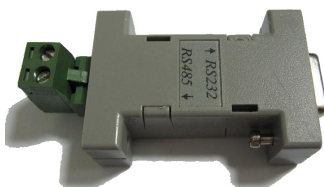


Quick Guide



Screws

Optional items



**RS-485 to RS-232 Converter
(optional)**



**RS-232 connector
(optional)**

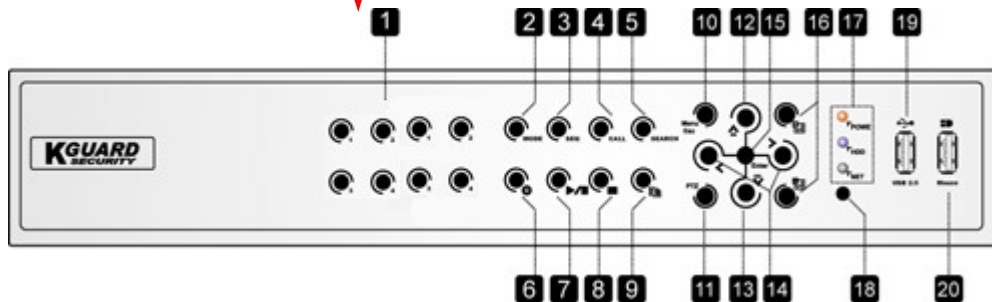
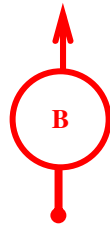
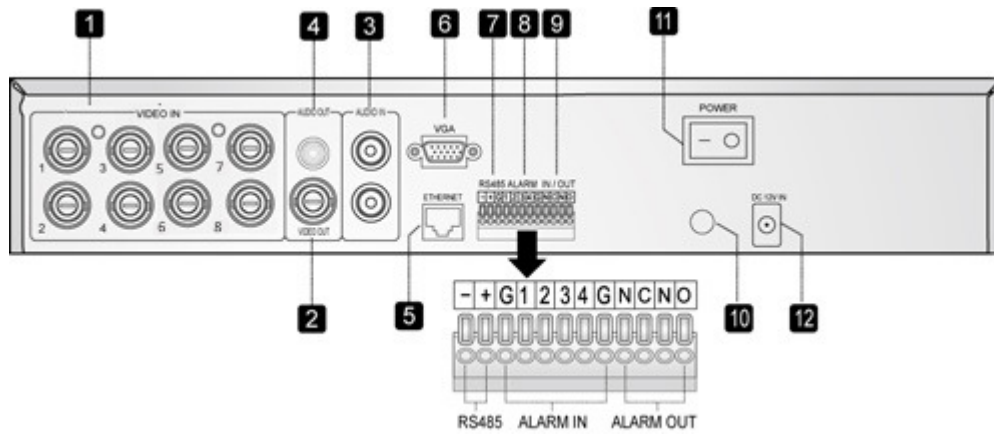





**RS-232 Y-Cable
(optional)**




If you would like to purchase the optional items, above, please contact the local vendors.

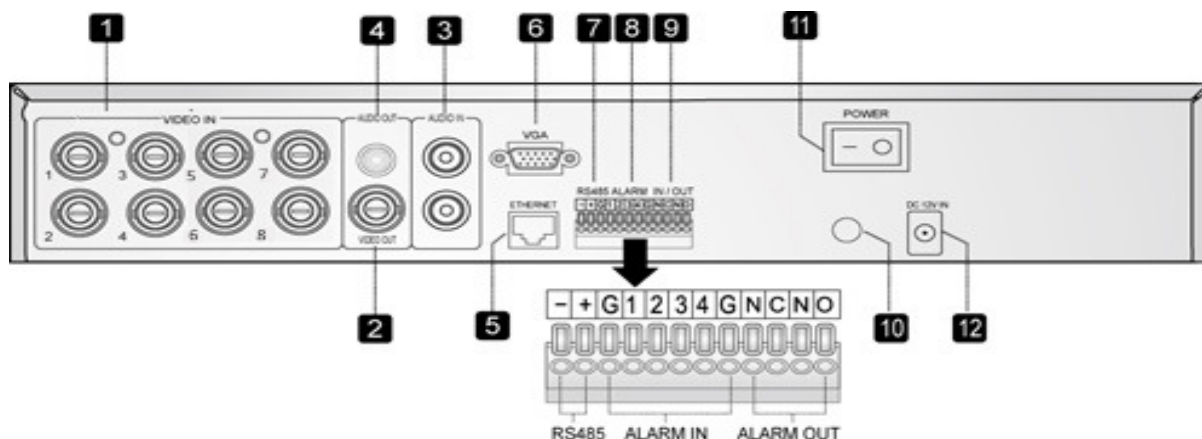
Components






Area A (Front view)			
No.	Symbol	Button	Functions
1	1-8	Alpha-numeric	For selecting Channels. Also, it can be used for typing text and number, when use mobile functions.
2	Mode	MODE	For toggling between live mode and playback mode in main screen display. Also, as the function of "backward/slow backward ",when you used the playback mode.
3	SEQ	SEQ	For changing channels.
4	CALL	CALL	For switching to or return from full screen display of the focus camera in main screen display.
5	SEARCH	SEARCH	For displaying the search menu.
6	REC	RECORD	For manual recording. To stop manual recording, press button once again.
7		Play/Pause	For playing the recorded images, or pausing the playback.
8		Stop	For stopping the playback.
9		Copy	For copying the playback images to the storage device connected to the USB port. Press this button once to stop copying.
10	Menu/Esc	MENU / ESC	For displaying the main menu or exit to previous page.
11	Page	Page	In main screen display, press this button to enter/exit PTZ control if the focus camera is a PTZ camera.
12	▲/BS	Up/BS	As the function of moving up or focus window in normal operation. *In PTZ control, it used for tilting up the camera. **In text editing mode, the function as ***"backspace" key.
13	▼/DEL	Down/DEL	As the function of moving down or focus window in normal operation. *In PTZ control, it used for tilting up the camera. **In text editing mode, the function as "del" key. ***In playback mode, it used for single step.


14	◀, ▶	Left/Right	In PTZ control, it is used for panning the camera. In playback mode, the function as fast backward/forward. In the other screens, it is used for cursor or focus window.
15	ENTER	ENTER	This button is used as “enter” key in normal operation. *In PTZ control, this button is used to start/stop the selected PTZ control mode.
16	☐ + / -	Split Windows	For next/previous split-window display.
17	LEDs	LED indicator	Main power, HDD and Network access indicators.
18		IR sensor	For receiving signal from I/R remote controller
19		U.S.B port	For USB 2.0 compatible storage device
20		U.S.B port	For USB MOUSE connection.



 For detailed information, please refer to appendix.


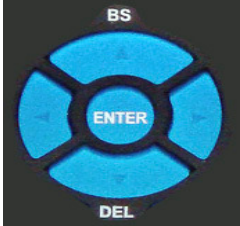






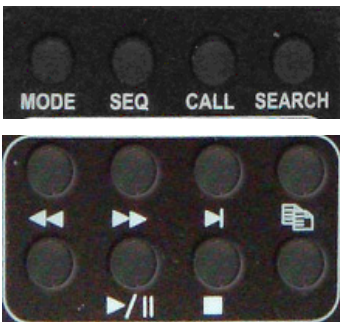








Area B (Rear view)		
No.	Connector	Functions
1	Video Input(camera) (1-8ch)	For Camera video input(BNC connector/internal 75Ω termination).
2	Video output(Main out)	For video output(BNC connector)
3	Audio input	For audio input(RCA connector)
4	Audio output (AUDIO)	For audio output(RCA connector)
5	Ethernet socket	For internet connection
6	VGA	For VGA output (optional D-SUB 15-pin female connector).

7	RS-485	For RS-485 compatible PTZ camera(s) or keyboard.  For more information , please refer to installation and removal(RS-485 setting).
8	Alarm Input (ALARM IN 1-4)	For Connecting to external devices such as sensors or door switches.
9	Alarm Output (ALARM OUT NC/NO)	For connecting Alarm.(Normally Closed (NC) (left), for alarm output) (Normally Open (NO) (right) , for alarm output)  NC and NO only have 4 ports, Make sure that it is in right position, before connection.  Please note that only one of the NC or NO connectors can be connected .
10	IR extension port(IR optional)	For connection IR receiver(Optional)
11	Main Power switch(DC +12V)	For DC 12V POWER SWITCH .
12	Power cord socket(DC +12V)	For DC12V POWER INPUT.

 For more information , please refer to appendix.

Remote Controller				
		No	Symbol	Functions
	1	REC	Press to start the recording.	
	2	Alarm Reset	Press to restore the alarm status to default.	
	3	Numeric/ alpha button (1-9, 0, *, #)	For camera selection ,and also it can be used for entering text and numbers.  The symbol “#” is also used for page down in multi-split-window displays.	
	4	MENU/ESC	For displaying the OSD menu and exit.	
	5	PTZ	Click to access the PTZ control when there is a PTZ camera supported.	
	6	Mute/Next	Audio mute and the “Next” is used for choosing next text when you typing the text in Text input.	
	7	X2/GOTO	*Zoom in/Zoom out(Digital Zoom (X2/X4)) *Click to view the image taken by PTZ camera at its preset	

			location.
	8	Mode	Press to switch between live and playback mode.
	9	SEQ	For changing channels.
	10	Call	To call monitor and for video only(For switching to or return from full screen display of the focus camera in main screen display).
	11	Search	To search the record video.  There are five types of search modes: search by time, search by event, smart search, search archived files and POS search.
	12	Enter ▲/BS: ◀:▶ ▼/DEL	For confirming the options or goto certain pages. Click to move up or backspace for text/numeric entry. *BS: BACKSPACE LEFT/RIGHT BUTTON. Click to move down or delete text for text/numeric entry.
	13	  	(Volume/Zoom) +/- Buttons. *In PTZ control, press these buttons to zoom in/out the camera.
	14		To switch between different screen layouts.
Playback			
	15		Fast backward 2X,4X
			Click to play or pause the playback.
			Fast Forward 2X,4X,8X,16X
			To copy the image to an external storage device.
			Stop the playback, click again will back to normal record mode.
			Single Step the system will pause first and then jump to next step.

		MODE	Fast/slow backward 2x/4x/8x/16X
		SEQ	Fast/slow forward 2x/4x/8x/16X
DVR1 – DVR4	16		Reserved



For environmental-friendly, please recycle the battery or use rechargeable battery.

Installation and Connections

Hard Disc



Caution !

Do NOT install or remove hard drive while DVR is running!



Warning !

Make sure that you already turn off the power and disconnect the power



Warning !

Do NOT use electric screw-driver for installing or removing Hard Disc, when you installing or removing Hard disc, or you will damage the Hard disc, Use screw driver manual only.

Make sure to install one SATA hard disc (Max. storage size 2TB) inside the DVR



Step1.

Loosen 4 screws on the two sides of the case (Using cross screw driver),(As shown).



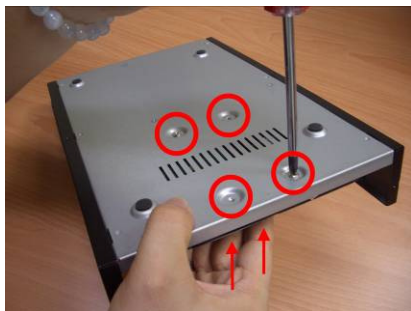
Step 2.

Remove the top cover by lifting and slide back.(by hand)



Step 3.

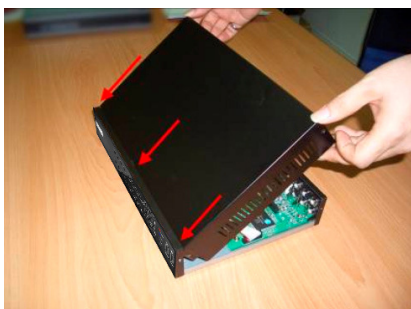
Connect Hard Disc to the cable of SATA.

**Step 4.**

Install the hard disc in the bracket, and tighten 4 screws on the side of hard disc(hand tight).



Before install the cover, make sure that the cable all in the correct position without loosening parts or cables.

**Step 5.**

Install the top cover and tighten 4 screws on the side of top cover(hand tight).



The HDD must be formatted before use.

For more information of H.D.D format, please refer to Chapter 3.1.17.

(the system will detect the H.D.D and format automatically, in the initial starting).

Step 6.

Check the top cover to see it is in good condition, and then connect the power cord.

**Warning !**

Make sure that the switch is in off position , before you connect the power cord.

Camera & Monitor

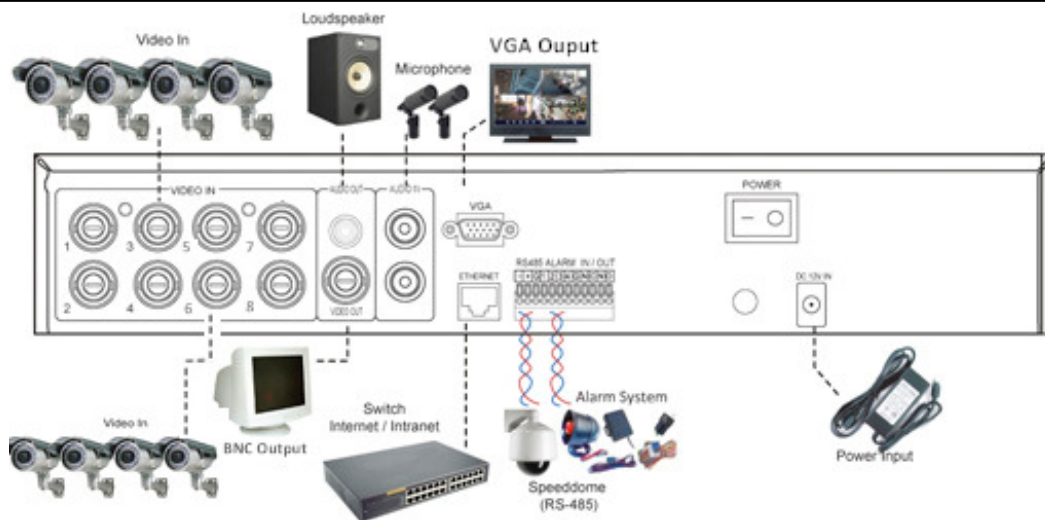


Warning !

Make sure that the switch is in off position ,before you connect the power cord. and also make sure that the power is correct of adaptor.




Make sure to set the NTSC/PAL Selector Switch on the main board according to the local TV system for the system to work correctly.

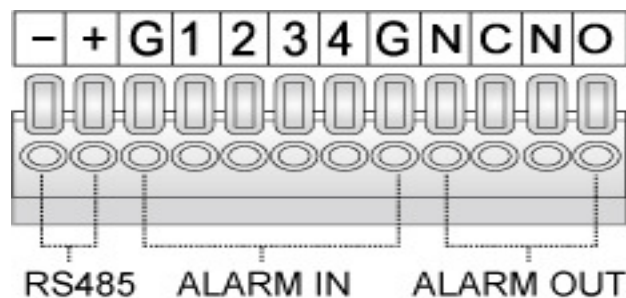


(Connection diagram)

Items	Description
Camera	Connect the camera video input connectors to the video outputs from system cameras or other composite video sources via coaxial cables. The internal 75Ω termination is always ON.
Power connector	Connect power source to DC 12V,3A
Monitor(VGA)	Connect the main monitor output connector (BNC) to a surveillance TV monitor, or connect the VGA output connector to a VGA monitor. The TV/VGA monitor displays selected live or recorded cameras in any available split window format.
Monitor(Main out)	Connect the main monitor output connector (BNC) to a surveillance TV monitor.
Audio input	Connect the audio input connector to the audio line-out from system cameras or other audio sources.
Audio output	Connect the audio output connector to the audio line-in from

	speakers
Alarm inputs	Connect the alarm inputs to NC and/or NO type of alarm signals.
Alarm outputs	Connect the alarm output #1 to NC type of alarm signal, or alarm output #2 to NO type of alarm signal.  Please note that only one of the NC or NO connectors can be connected only.
Ethernet	Connect the Ethernet connector to a standard Ethernet cable for remote access via LAN or internet.
I/R remote controller	The user may use I/R remote controller to control the digital video/audio recorder

PTZ CAMERA



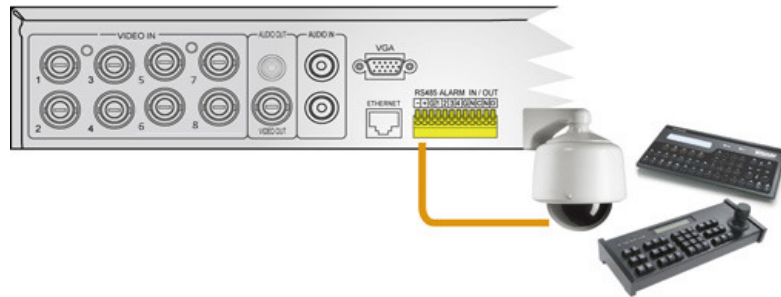
Connect the RS-485 connector to PTZ camera(s) via the appropriate cable. The system supports a variety of different PTZ cameras, including Pelco D protocol Dome, SamSung SCC-641P, Kalatel Cyber Dome, Bosch AutoDome, etc.

But different PTZ cameras can coexist in a system only if they support the same protocol.

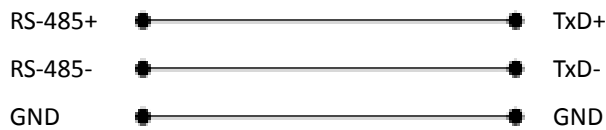


Please make sure to set the PTZ ID of the camera(s), and setup the camera and RS-232 or RS-422/485 accordingly.

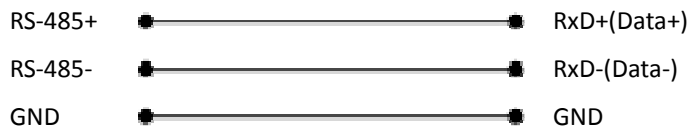
keyboard



For Keyboard



For PTZ Device



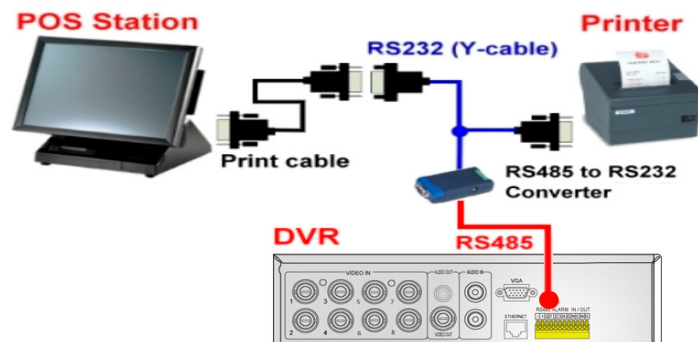
RS-485 keyboard or Terminal

Connect the RS-485 connector to a RS-485 keyboard controller or VT-100 terminal via the appropriate cables.

Please refer to the diagram above for the correct connection (as shown).

POS system

Connect the RS-485 connector to POS system via the appropriate cable. The system supports the POS systems which can be connected to the following printers – Epson-TM200, Epson-TMU295, Epson-TMU300, Epson-TMU675, Epson-TMT882, Epson-RPU420, and Epson-MD332S. Please make sure to setup the RS-485 port accordingly.



*The connection of POS is for your reference only.

*The POS station, Printer , Y cable(RS-232),RS-485 to RS-232 converter are optional items.

Chapter 3. SH-522E.V2 Overview

Packing List



SH122E.V2



Remote Controller



Power Adapter



Power Cord



CD



Quick Guide



Screws

Optional items



**RS-485 to RS-232 Converter
(optional)**



**RS-232 connector
(optional)**

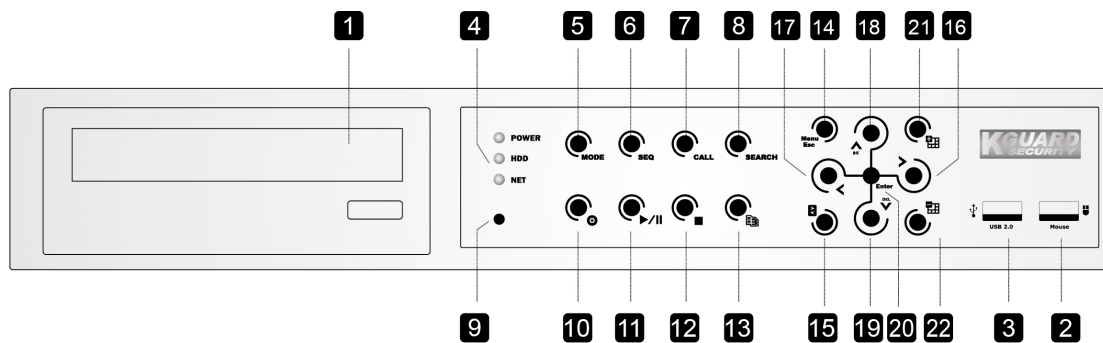
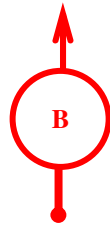
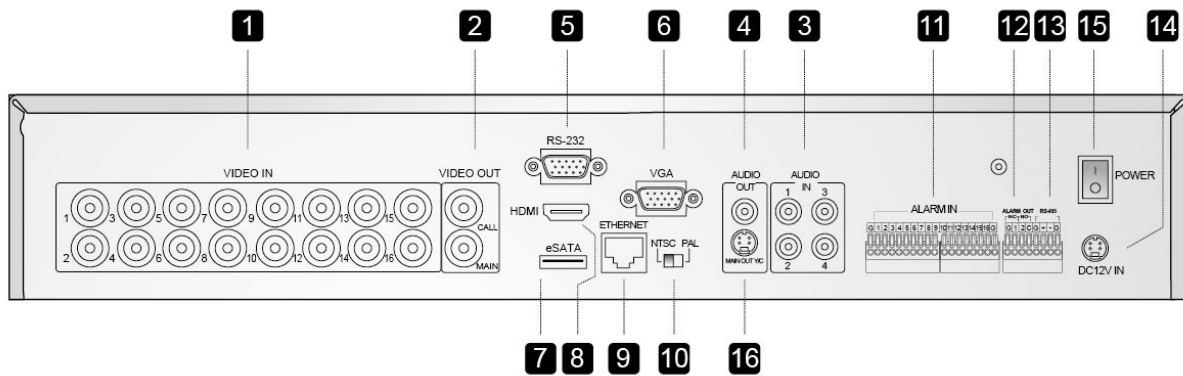


**RS-232 Y-Cable
(optional)**





If you would like to purchase the optional items, above, please contact the local vendors.

Components

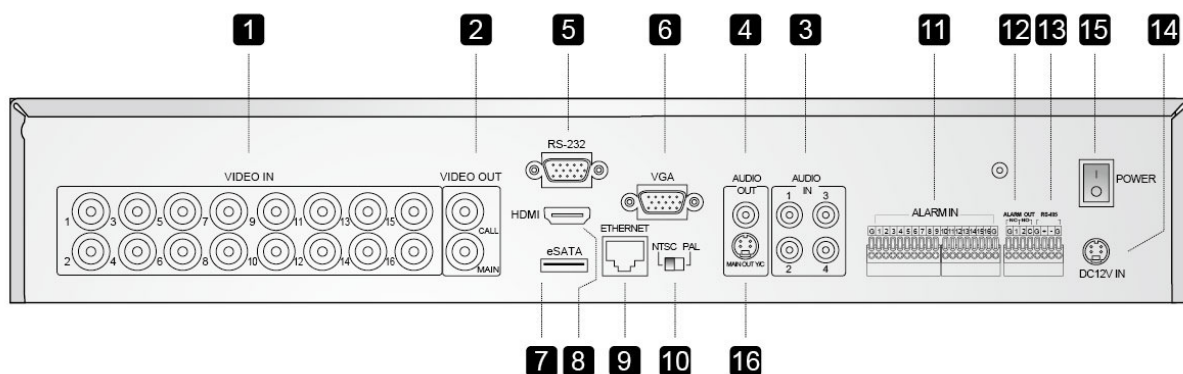


Area A (Front view)		
No.	Symbol/Button	Functions
1	DVD Writer (optional)	Used for backup purpose if installed.
2	USB Mouse Connector	Connect to USB 1.1 compatible mouse before the DVR is power on.
3	USB connector	Connect to USB 2.0 compatible storage device, such as USB 2.0 disk drive, DVD+RW, card reader, etc.
4	LEDs	Indicators for POWER, HDD, and Net.
5	MODE Button	Press this button to toggle between live mode and playback mode in main screen display. In some dialogs, this button is used as a miscellaneous function key. At playing, this button is used as "slow backward".
6	SEQ Button	Press this button to switch to or return from SEQ display mode in main screen display. In some dialogs, this button is used as a miscellaneous function key. At playing, this button is used as "slow forward".
7	CALL Button	Press this button to switch to or return from full screen display of the focus camera in main screen display. In some dialogs, this button is used as a miscellaneous function key.
8	SEARCH Button	Press this button to display the search menu in main screen display. In some dialogs, this button is used as a miscellaneous function key.
9	Remote I/R Sensor	Used to receive signal from I/R remote controller.
10	REC Button	Press this button to force manual recording. To stop manual recording, press it again.
11	Play/Pause Button (▶/)	Press this button to play the recorded images, or pause the playback.
12	Stop Button (■)	Press this button to stop the playback.
13	Copy Button (📄)	Press this button to copy the playback images to the internal DVD writer or the storage device connected to the USB port. Press this button again to stop copying.
14	MENU / ESC Button	Press this button to display the main menu or escape to the upper level display.
15	PAGE Button	Press this button for page down in multi-split-window displays.
16	Right Buttons (▶)	In PTZ control, press these buttons to pan the camera. In the other screens, press this button to move the cursor or focus window.
17	Left Buttons (◀)	In PTZ control, press these buttons to pan the camera. In the other screens, press this button to move the cursor or focus window.
18	Up/BS Button (▲/BS)	Press this button to move the cursor or focus window in most circumstances. In PTZ control, press this button to tilt up the camera. In text editing mode, this button is used as "backspace" key.
19	Down/DEL Button	Press this button to move the cursor or focus window in most

	(▼/DEL)	circumstances. In PTZ control, press this button to tilt down the camera. In text editing mode, this button is used as “del” key.
20	ENTER Button	This button is used as “enter” key in most circumstances. In PTZ control, this button is used to start/stop the selected PTZ control mode.
21	(Split Windows) + Buttons ()	In split-window display, press these buttons for next split-window display. In the others, press these buttons to change the contents.
22	(Split Windows) - Buttons ()	In split-window display, press these buttons for previous split-window display. In the others, press these buttons to change the contents.






For detailed information, please refer to appendix.

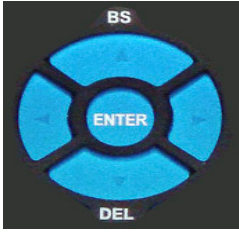

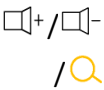











Area B (Rear view)		
No.	Connector	Functions
1	Video Input(camera) (1-16ch)	For Camera video input (BNC connector/internal 75Ω termination).
2	Video output(Main out)	For video output(BNC connector)
3	Audio input	For audio input(RCA connector)
4	Audio output (AUDIO)	For audio output(RCA connector)
5	RS-232 Connector	For connecting POS..etc.
6	VGA Connector	For VGA output (optional D-SUB 15-pin female connector).
7	eSATA connector	For connecting external eSATA HDD storage device.
8	HDMI connector	For connecting Monitor which with HDMI connector.
9	Ethernet Connector	Connect this unit to a 10/100Base-T Ethernet network through this port.
10	NTSC/PAL Selector Switch	Set this unit to NTSC or PAL according to the local TV system.
11	Main Monitor Output Connector (MAIN OUT Y/C)	Connect TV monitor to the mini-din S-video connector for main monitor display.
12	Alarm Output Connectors (ALARM OUT 1-2)	Connect these connectors to 1 Normally Closed (NC) alarm outputs and 1 Normally Open (NO) alarm outputs.
13	RS-485	For RS-485 compatible PTZ camera(s) or keyboard.

14	Power Input (DC 12V)	Connect to DC 12V power source.
15	Power Switch (POWER)	Turn the power of this unit on/off.
16	S-video Monitor Output Connector (MAIN OUT Y/C)	Connect TV monitor to the mini-din S-video connector for main monitor display.

 For more information , please refer to appendix.

Remote Controller				
		No	Symbol	Functions
		1	REC	Press to start the recording.
		2	Alarm Reset	Press to restore the alarm status to default.
		3	Numeric/ alpha button (1-9, 0, *, #)	For camera selection ,and also it can be used for entering text and numbers.  The symbol “#” is also used for page down in multi-split-window displays.
		4	MENU/ESC	For displaying the OSD menu and exit.
		5	PTZ	Click to access the PTZ control when there is a PTZ camera supported.
		6	Mute/Next	Audio mute and the “Next” is used for choosing next text when you typing the text in Text input.
		7	X2/ GOTO	*Zoom in/Zoom out(Digital Zoom (X2/X4)) *Click to view the image taken by PTZ camera at its preset location.
		8	Mode	Press to switch between live and playback mode.
		9	SEQ	For changing channels.
		10	Call	To call monitor and for video only(For switching to or return from full screen display of the focus camera in main screen display).
		11	Search	To search the record video.  There are five types of search modes: search by time, search by event, smart search, search archived files and POS search.

	12	<p>Enter</p> <p>▲/BS:</p> <p>◀:▶</p> <p>▼/DEL</p>	<p>For confirming the options or goto certain pages.</p> <p>Click to move up or backspace for text/numeric entry.</p> <p>*BS: BACKSPACE</p> <p>LEFT/RIGHT BUTTON.</p> <p>Click to move down or delete text for text/numeric entry.</p>
	13		<p>(Volume/Zoom) +/- Buttons.</p> <p>*In PTZ control, press these buttons to zoom in/out the camera.</p>
	14		<p>To switch between different screen layouts.</p>
Playback			
	15	      <p>MODE</p> <p>SEQ</p>	<p>Fast backward 2X,4X</p> <p>Click to play or pause the playback.</p> <p>Fast Forward 2X,4X,8X,16X</p> <p>To copy the image to an external storage device.</p> <p>Stop the playback, click again will back to normal record mode.</p> <p>Single Step the system will pause first and then jump to next step.</p> <p>Fast/slow backward 2x/4x/8x/16X</p> <p>Fast/slow forward 2x/4x/8x/16X</p>
DVR1 – DVR4	1 6		Reserved

 For environmental-friendly, please recycle the battery or use rechargeable battery.

Installation and Connections

Hard Disc



Caution !

Do NOT install or remove hard drive while DVR is running!



Warning !

Make sure that you already turn off the power and disconnect the power cord, Before performing any services or maintenances.



Warning !

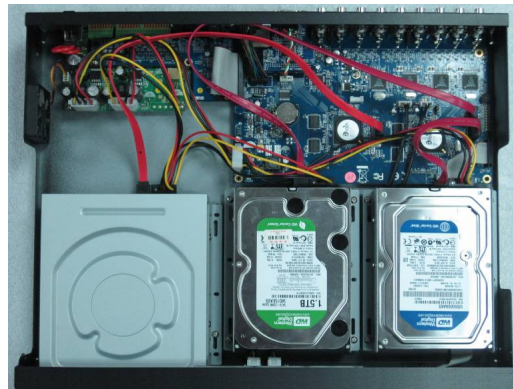
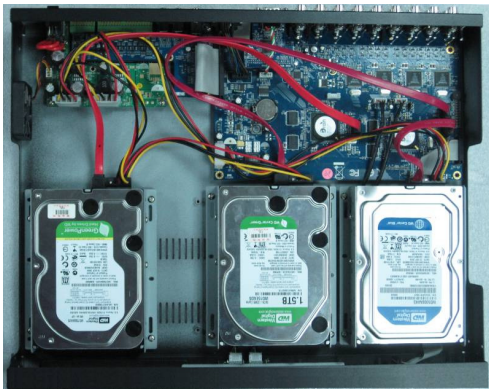
Do NOT use electric screw-driver for installing or removing Hard Disc, when you installing or removing Hard disc, or you will damage the Hard disc, Use screw driver manual only.

Loosen 4 screws on the two sides and the back of DVR (Using cross screw driver),(As shown).

And remove the cover by pushing back.



Install the HDD or DVD Reader



Reinstall cover



The HDD must be formatted before use. (the system will detect the H.D.D and format automatically, in the initial starting).

Camera & Monitor

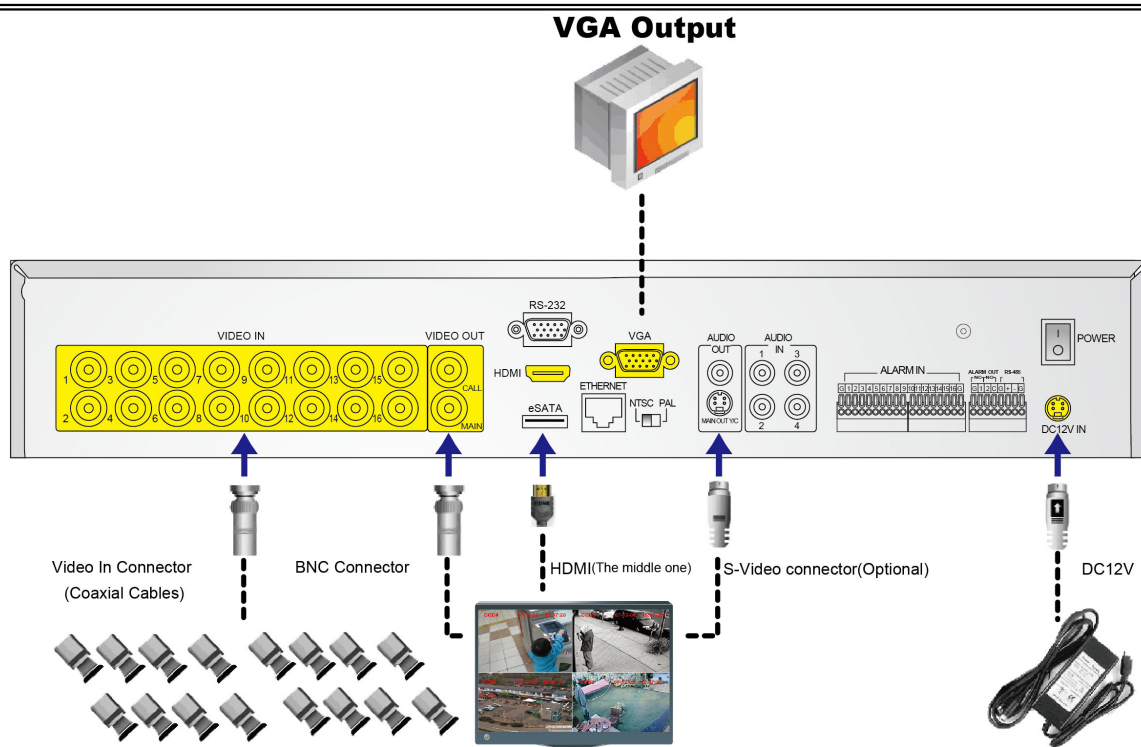


Warning !


Make sure that the switch is in off position ,before you connect the power cord. and also make sure that the power is correct of adaptor.



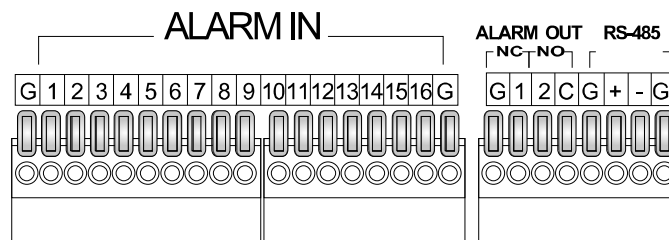
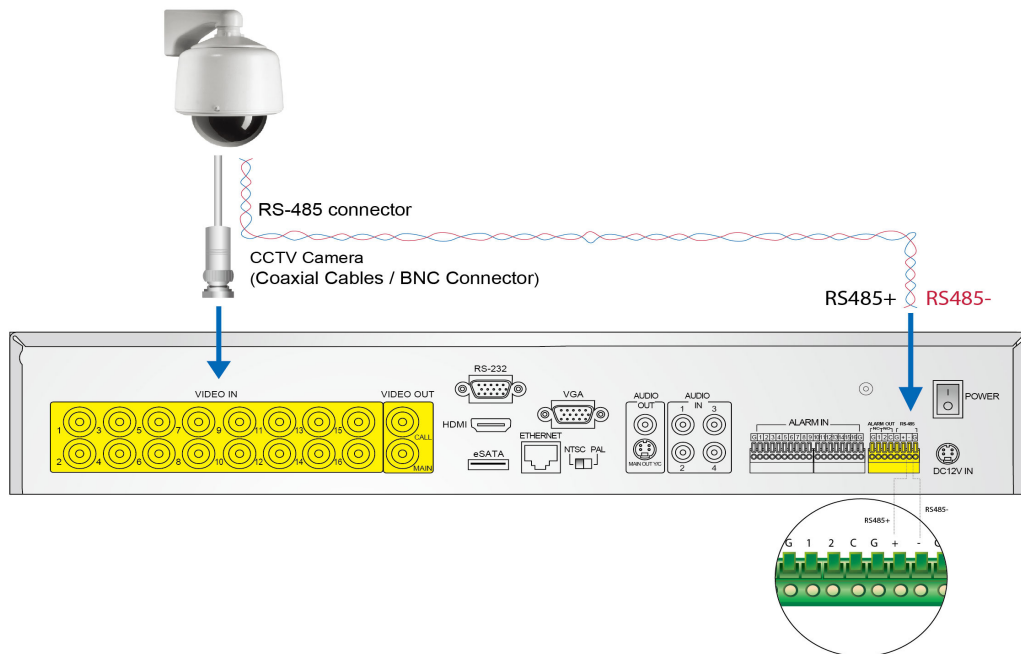
Make sure to set the NTSC/PAL Selector Switch on the back panel according to the local TV system for the system to work correctly.



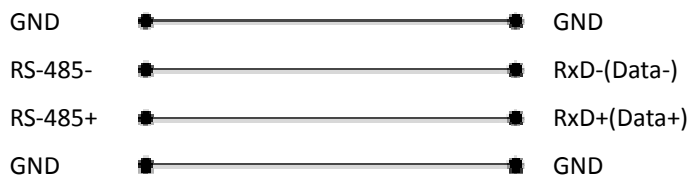
Items	Description
Camera	Connect the camera video input connectors to the video outputs from system cameras or other composite video sources via coaxial cables. The internal 75Ω termination is always ON.
Power connector	Connect power source to DC 12V
Monitor(VGA)	Connect the main monitor output connector (BNC) to a surveillance TV monitor, or connect the VGA output


	<p>connector to a VGA monitor.</p> <p>The TV/VGA monitor displays selected live or recorded cameras in any available split window format.</p>
Monitor(Main out)	Connect the main monitor output connector (BNC) to a surveillance TV monitor.
Audio input	Connect the audio input connector to the audio line-out from system cameras or other audio sources.
Audio output	Connect the audio output connector to the audio line-in from speakers
Alarm input	Connect the alarm inputs to NC and/or NO type of alarm signals.
Alarm output	<p>Connect the alarm output #1 to NC type of alarm signal, or alarm output #2 to NO type of alarm signal.</p> <p> Please note that only one of the NC or NO connectors can be connected only.</p>
Ethernet	Connect the Ethernet connector to a standard Ethernet cable for remote access via LAN or internet.
I/R remote controller	The user may use I/R remote controller to control the digital video/audio recorder

PTZ CAMERA



PTZ Device




 Please refer to the diagram above for the correct connection (as shown).

*Connect the RS-485 connector to PTZ camera(s) via the appropriate cable.

The system supports a variety of different PTZ cameras, including Pelco D protocol Dome, SamSung SCC-641P, Kalatel Cyber Dome, Bosch AutoDome, etc.

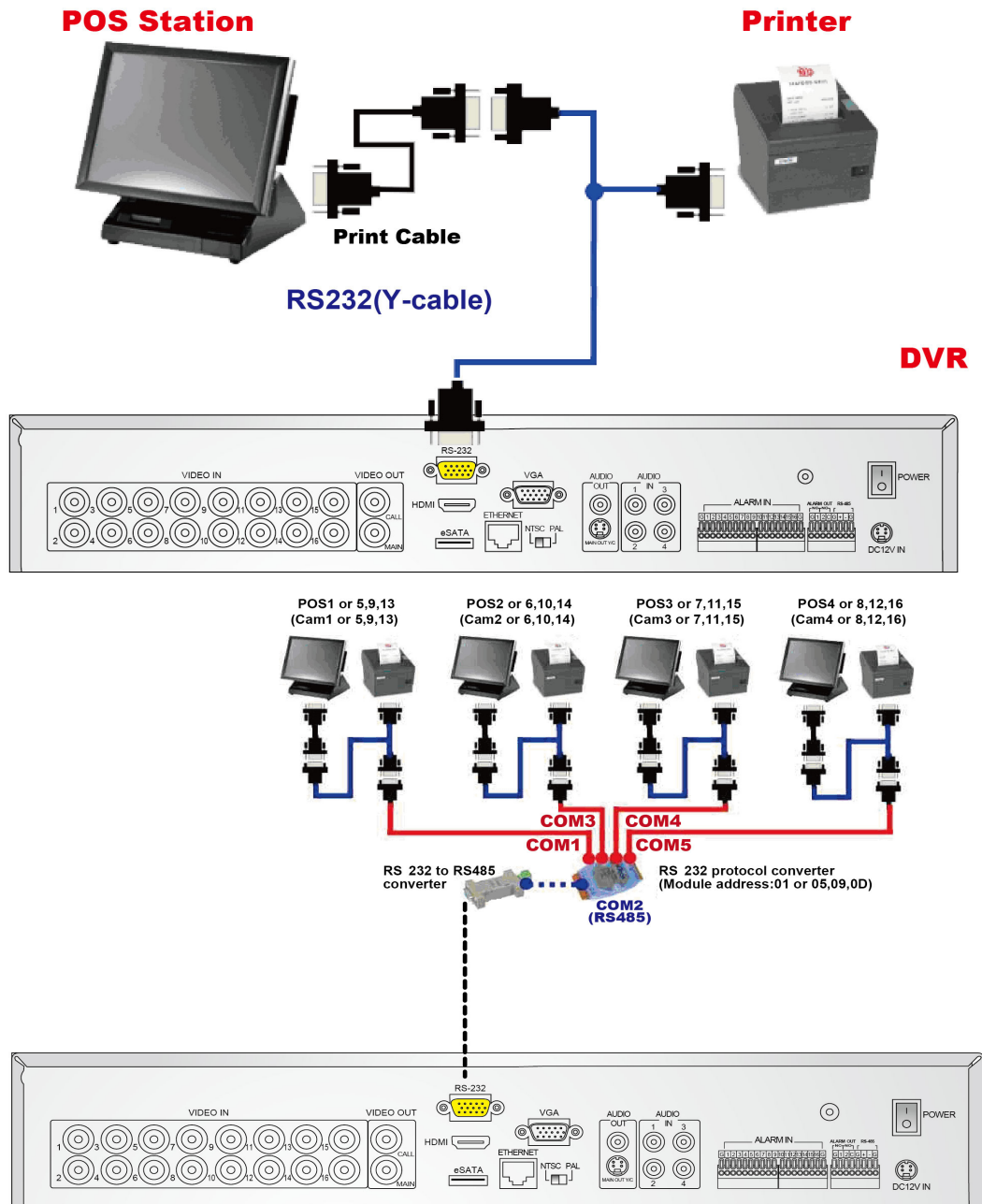
But different PTZ cameras can coexist in a system only if they support the same protocol.

 Please make sure to set the PTZ ID of the camera(s), and setup the camera and RS-232 or RS-422/485 accordingly.

POS system

Connect the RS-232 connector to POS system via the appropriate cable. The system supports the POS systems which can be connected to the following printers – Epson-TM200, Epson-TMU295, Epson-TMU300, Epson-TMU675, Epson-TMT882, Epson-RPU420, and Epson-MD332S.

Please make sure to setup the RS-232 port, accordingly.



*The connection of POS is for your reference only.

*The POS station, Printer, Y cable(RS-232), RS485 to RS-232 converter and RS-232 protocol converter are optional items.

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Chapter 4. Appendix

Specification

Model	SH-122E.V2/SH-222E.V2	
System	O.S.	Embedded Linux 2.6
	Multiplex	Hexaplex operation - simultaneous record, live, playback, backup, control, & remote access
	Certification	FCC, CE, LVD
Video	Format	NTSC or PAL
	Input	4-CH, BNC, 1Vp-p/75ohm
	Main monitor	BNC x 1, 1Vp-p/75ohm VGA D-SUB 15-pin connector
	3-D de-interlace & de-noise	Yes
	Loss detection	Yes
	Motion detection	Yes, with configurable detection area & sensitivity
Audio	Input	2 RCA-jack connector, line-in level (100mV-2Vrms)
	Output	1 RCA-jack connector, line-out level (up to 2Vrms)
Record	Compression	Video: H.264 Audio: ADPCM
	Frame rate (IPS) & Resolution	NTSC – 60 / 720*480, 120 / 720*240, 240 / 360*240 PAL – 50 / 720*576, 100 / 720*288, 200 / 360*288
	Mode	Manual/Schedule/Alarm/Motion
	Pre-record time	0 - 10 seconds
	Post-record time	0 - 60 minutes
Display	Resolution	NTSC – 720*480, PAL – 720*576
	Split windows	1/4
	Frame rate	Up to 30 (NTSC) / 25 (PAL) IPS per display window
	Freeze	Yes
	Sequential switch	User adjustable
	Digital Zoom	X2, X4
Playback	Frame rate (IPS) & Resolution	NTSC – 60 / 720*480, 120 / 720*240, 240 / 360*240 PAL – 50 / 720*576, 100 / 720*288, 200 / 360*288
	Search	Smart search , Date/time, Camera, Alarm, Motion, & Video Loss
	Operation	Remote playback from IE or CMS3000
Storage	HDD	1 set of 3.5" SATA type HDD,

		> 2TB of HDD storage size, Advanced format HDD supported
	Partitions	Configurable alarm partition size Configurable auto-overwrite or not
	Backup	1 USB 2.0 ports for USB 2.0 disc drives, DVD+RW, DVD+R, DVD-R , card readers, HDD, etc. Self playback for backup files
Alarm	Input	4 contact or TTL/CMOS signal, polarity selectable
	Output	1 Normally Open or 1 Normally Closed relay output
	Buzzer	Yes
	Triggered by	Sensor input, Video loss, & Motion
	Event log	Yes
Network	Ethernet	1 RJ-45 10/100BaseT Ethernet connector
	Web	Remote setup, monitoring, backup, alarm notification, & remote software upgrade 1 I.E./Firefox for multiple DVRs Configurable HTTP/e-mail/FTP/Control/Data port
	E-mail	Alarm notification to stationary or mobile devices
	FTP	Alarm video/audio file storage
	Video	1/4 split-window & SEQ mode for I.E. and CMS3000 e-maps for CMS3000
	Audio	Bidirectional
	Protocol	TCP/IP, HTTP, PPPoE, DHCP, DDNS, FTP, TSP
	Remote users	Up to 6 users simultaneously
	Bandwidth	TCP/IP type dynamic sliding window control
	Remote stations	PC, mobile phone, or PDA
Control / POS	I/R	1 I/R remote controller
	RS-485	2-pin for keyboard, PTZ or POS
Setup	Local	On screen setup via keypad, I/R remote controller, mouse, and/or RS-485 keyboard controller
	Remote	Setup & upload via Windows application software
	Multi-lingual	Yes
Reliability	System recovery	Auto power on after power loss recovery
	Watch Dog Timer	Yes
	Timer	Built-in real time clock
	Security	Multi-level password (3 levels, up to 18 accounts) protection with authentication key for remote access

Weights & Measures	Dimension	320(W) x 210(D) x 50(H)mm
	Weight	2.0 KG (without HDD)
Power	Source	+12 VDC
	Consumption	30W Max.
Operating Temperature		0°C ~ +45°C



For more information, please refer to Appendix.

Model	SH522E.V2 16ch	
System	O.S.	Embedded Linux 2.6
	Multiplex	Sixplex operation - simultaneous record, live, playback, backup, control, & remote access
	Processor	Multiple
	Certification	FCC, CE
Video	Format	NTSC/ PAL
	Input	16-CH, BNC, 1Vp-p/75ohm
	Main monitor	BNC x 1, S-video x 1, 1Vp-p/75ohm VGA D-SUB 15-pin connector HDMI Connector
	Call monitor	BNC x 1, 1Vp-p/75ohm
	Loss detection	Yes
	Motion detection	Yes, with configurable detection area & sensitivity
Audio	Input	4 RCA-jack connectors, line-in level (100mV-2Vrms)
	Output	1 RCA-jack connector, line-out level (up to 2Vrms)
Record	Compression	H.264 compression Audio: ADPCM
	Frame rate (IPS) & Resolution	NTSC – 120 / 720*480, 240 / 720*240, 480 / 360*240 PAL – 100 / 720*576, 200 / 720*288, 400 / 360*288
	Watermark	Yes
	Mode	Manual/Schedule/Alarm/Motion
	Pre-record time	0 – 10 seconds
	Post-record time	0 - 60 minutes
Display	Resolution	NTSC: 720*480, PAL: 720*576
	Split windows	1/4/7/9/10/13/16
	Frame rate	Up to 30(NTSC) / 25(PAL) IPS per display window
	Freeze	Yes
	Digital Zoom	X2, X4
	Sequential switch	User adjustable
Playback	Frame rate (IPS) & Resolution	NTSC: 60 / 720*480, 120 / 720*240, 240 / 360*240 PAL: 50 / 720*576, 100 / 720*288, 200 / 360*288
	Search	Smart search , Date/time, Camera, Alarm, Motion & Video Loss
	Operation	Play, Fast Forward, Backward, Pause, Stop, etc.
	Remote	Remote playback from IE or CMS3000
Storage	HDD (> 2TB for each HDD)	Up to 3 x 3.5 SATA HDDs / 3 x 3.5 SATA HDDs + 1 x eSATA / 2 SATA HDDs + 1 eSATA +1x internal DVD-RW (optional) Failure detection & privacy law supported. Advanced format HDD supported.
	HDD Extension	1 eSATA connector for eSATA HDD
	Partitions	Configurable alarm partition size Configurable auto-overwrite or not
	External Backup	1 USB 2.0 port : USB 2.0 disk drives, DVD+RW, DVD+R, DVD-R, card

		readers, HDD, etc. DVD models: DVD+RW, DVD+R, DVD-R (optional) Auto player for backup files
Alarm & DI/DO	Digital Input	16 contact or TTL/CMOS signal, polarity selectable
	Relay Output	NO(Normally Open) x 2, NC(Normally Closed) x 2
	Buzzer	Yes
	Trigger	Via Sensor input, Video loss, & Motion
	Event log	Yes
Network	Ethernet	1 RJ-45 10/100BaseT Ethernet connector
	Web	Remote setup, monitoring, backup, alarm notification, & remote software upgrade One I.E. page for unlimited DVRs connection Configurable HTTP/Control/Data port
	E-mail	Alarm notification to stationary or mobile devices
	FTP	Alarm video/audio file storage
	Video	1/4/9/16 split-window & SEQ mode for I.E. and CMS3000 e-maps for CMS3000
	Audio	Two way audio and Audio Broadcasting
	Protocol	TCP/IP, HTTP, PPPoE, DHCP, DDNS, FTP, TSP
	Remote users	Up to 8 users simultaneously
	Bandwidth	TCP/IP type dynamic sliding window control
	Remote stations	PC, mobile phone, or PDA
Control Interface	I/R	1 I/R remote controller
	RS-232	1 D-type female connector for PTZ, POS, or GPS
	RS-485/422	2-pin for keyboard/PTZ control
	PTZ	Pelco (D-Type), SCC-641P, PIH-Series, DyanColor, Kalatel, Bosch AutoDome, Video Trek, PTC-400C, VC-C4
	POS	Plain text (ex. Epson printer and others)
	GPS	Support protocol NMEA0183
Setup	Local	On screen setup via mouse, keypad, I/R remote controller, and/or RS-485 keyboard
	Remote	Setup & upload via Windows application software
	Multi-language	Yes
System	System recovery	Auto power on after power loss recovery
	Watch Dog Timer	Yes
	Timer	Built-in real time clock
	Security	Multi-level password (3 levels, up to 18 accounts) protection with authentication key for remote access
Weights & Dimension	Dimension	430(W) x 300(D) x 66(H)mm
	Weight	4.5 KG (without HDD)
Power	Source	+12VDC
	Consumption	80W Max. (with 3 HDDs)
Operating Temperature		0°C ~ +45°C

Compatible device table

SH-122E.V2/222E.V2/522E.V2	
U.S.B 2.0 Devices compatible table	
USB-Storage Enclosures 5.25"	
Brand	Capacity
Macpower's Alumni Prefect USB 2.0 - PF-U2MS	—
USB-Disc Storage	
Brand	Capacity
Transcend's JetFlash 150/V60 Series, JetFlash V33	8GB
Apacer's Handy Steno AH220	—
Pretec's i-Disc Wave (Black)	512M
Kingston's DataTraveler USB Flash Driver(DTI/512FE)	512M
Kingston's DataTraveler DT100	8GB
SanDisc's Cruzer micro USB Flash Driver	—
Sandisc's Cruzer Titanium	4GB
Sandisc's Cruzer Contour	4GB
Sony's MICRO VAULT Classic Series	—

DVD WRITER compatible table	
Brand	Velocity
Asus DRW-1608P Series	—
Pioneer DVR-A11, DVR-X152 Series	—
BenQ EW200G Series	—
LITEON LightScribe DVD Writer SHM-165H6S, DVD Writer DX-20A4P	20X
Sony DVD/CD Rewritable Drive Model DRX-810UL Series	—
NEC DVD/CD Rewritable Drive Model ND-4550A Series	—
HP dvd9404e External Super Multi DVD Writer Series	18X
Single side ,single player disc(DVD)	
Brand	Velocity
Infomedia DVD+R	16X
Mitsubishi DVD+RW	1-4X
Philips DVD+RW	1-4X
Ritek DVD-R 8X, DVD+RW 1-4X	—
Verbatim DVD+RW	1-4X

POS Printer compatible table
Brand
Epson General (EX. Epson-TM200, Epson-TMU300, Epson-TMU675, Epson-TMT882, Epson-RPU420, and Epson-MD332S) and Epson-TMU295.

PTZ	KEYBOARD
Model	Model
Pelco D protocol Dome	Terminal (EX. VT-100)
SamSung SCC-641P	Control Protocol
Kalatel Cyber Dome	—
PIH-series	—
Dynacolor	—
Bosch AutoDome	—
Video Trek	—

POS
Model
Epson General
Epson-TM200
Epson-TMU300
Epson-TMU675
Epson-TMT882
Epson-RPU420
Epson-MD332S
Epson-TMU295

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