

VMAX[®] A1 Plus[™]

HD over Coax[™] DVRs

4-Channel	8-Channel	16-Channel
DW-VA1P41T	DW-VA1P81T	DW-VA1P162T
DW-VA1P42T	DW-VA1P82T	DW-VA1P163T
DW-VA1P43T	DW-VA1P83T	DW-VA1P164T
DW-VA1P44T	DW-VA1P84T	DW-VA1P166T
DW-VA1P46T	DW-VA1P86T	DW-VA1P168T
DW-VA1P46T	DW-VA1P88T	DW-VA1P1610T
DW-VA1P410T	DW-VA1P810T	DW-VA1P1612T
		DW-VA1P1616T
		DW-VA1P1620T



Default Login Information	Username: admin	Password: no password
----------------------------------	------------------------	------------------------------

NOTE: Download All Your Support Materials and Tools in One Place

1. Go to: <http://www.digital-watchdog.com/support-download/>
2. Search for your product by entering the part number in the “**Search by Product**” search bar. Results for applicable part numbers will populate automatically based on the part number you enter.
3. Click “**Search**”. All supported materials, including manuals, Quick Start Guides (QSG), software and firmware will appear in the results.

※ The picture might differ according to the specification and model.

※ Contents of this user manual are protected under copyrights and computer program laws.

Rev: 04/19

Thank You!

Before operating the system, please read this User Manual and retain it for future reference.

WARNING

TO REDUCE FIRE OR SHOCK HAZARD,
DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE.

The installation should be made by a qualified service
person and conformed to all local codes.

Cautions

Read Before System Operation

Follow these details to prevent material damage or personal injury.

Signs of Caution and Warning

 Warning: This sign indicates that the user could die or be seriously wounded if not used or installed properly.

 Caution: This sign indicates that the user could be wounded or could expect property damage if not used or installed properly.

 Warning: Do not expose the product to fog, rain or too much humid to decrease danger from electric shock or fire.

General Warning

 Warning

1. Use the power cord, which is supplied or recommended by the supplier, or it may cause fire.
2. Do not disassemble or reassemble the product. It may cause malfunction or fire.
3. Enquire to your vendor for repair. It may cause electric shock or fire if the repair is not done properly.
4. Do not touch the product with wet hands. It may cause malfunction or electric shock.
5. Product installation must be ensured to a professional for product installation, or it may cause malfunction, electric shock or fire.
6. Ground applies to video products equipped with a 3-wire grounding type plug having a third (grounding) pin. This plug only fits into a grounding-type power outlet. If grounding is not done, it may cause malfunction or electric shock.
7. Ground connection must not touch gas pipe, water pipe or telephone line. If grounding is not done properly, it may cause electric shock.
8. Prevent metallic foreign substance from going inside the product. It may cause malfunction or electric shock.
9. Do not spray insecticide or flammable spray while driving. It may cause fire.
10. Place the system in an open place where air ventilation is guaranteed, or it may cause over-heating and seriously damage the system to be fired.
11. Prevent water from instilling inside electrical parts. Clean with a dry towel or malfunction or electric shock could result.

 Caution

1. Use the power cord, which is supplied or recommended by the supplier. The internal fan rotates at high speed and may cause an accident.

2. Do not drop, give strong vibration, or shock to the product. It may cause malfunction.
3. The air inhaler of the front panel and air outlet of the back panel must not be blocked during installation.
The internal temperature of the product would be greater than allowable and could cause malfunction or fire.
4. Do not touch the product or the power cord when there is thunder. It may cause electric shock.
5. Do not install the product near or on top of heating source. The internal temperature of the product would be greater than allowable and could cause malfunction or fire.
6. Do not install the product on inclined or unstable location or where vibration could be committed. It may cause malfunction.

Cautions about the Power

Warning

1. Must use the outlet of the grounding to connect the power cord, or it may cause fire.
2. Do not connect on the middle of power cord or use extension cord. It may generate heat or cause fire.
3. Do not touch the power cord with wet hands. It may cause electric shock.
4. Keep power cord dry and protect from humidity. It may generate heat or cause fire. The power cord is not waterproof.
5. Hold the body of the plug while removing the power plug. Do not pull the power cord. Damage to the power cord may generate heat or cause fire.
6. Check the power plug regularly. Humidity and moderation in smoking may cause fire.
7. Remove power cord from outlet when product is not used for a long time. It may cause short-circuit or electric shock.

Caution

1. Do not turn off the power by removal of the power plug. To turn off the power, click the power button from the front panel. When the system stops abnormally, the power button might not work. Click power button for 5 full seconds to turn power off.
2. Do not cut off the power artificially, or give shock or vibration to unit while the hard disk is activating. It may cause hard disk failure or loss of data.

Remarks

- ※ Pictures and buttons are subject to be changed or modified up to different models.
- ※ Function or configuration is subject to be changed or modified without prior notice for improvement of the product.



Table of Contents

1. GETTING STARTED	2
1.1 CHECKING SUPPLIED ITEMS	2
1.2 SYSTEM SETUP	3
1.3 SYSTEM SHUTDOWN	4
1.4 SYSTEM EXPLANATION	5
2. STARTUP WIZARD.....	9
2.1 LANGUAGE.....	9
2.2 NETWORK.....	9
2.3 NAME AND TIME ZONE.....	12
2.4 CAMERA CONNECTION.....	12
2.5 PRODUCTION REGISTRATION.....	13
2.6 FIRMWARE UPGRADE	13
2.7 FINISH.....	13
3. OPERATION.....	14
3.1 USER LOG-IN.....	14
3.2 LIVE DISPLAY MODE.....	14
3.3 PTZ OPERATION.....	17
3.4 PLAYBACK RECORDED IMAGES.....	18
3.5 SEARCH RECORDED IMAGE.....	19
3.6 DST SETTING AND IMAGE PLAYBACK.....	23
4. SETTING	25
4.1 SYSTEM	26
4.2 DEVICE.....	32
4.3 ALARM	39
4.4 RECORD	42
4.5 NETWORK.....	45
4.6 EXPORT.....	51
5. WEB SURVEILLANCE THROUGH INTERNET EXPLORER	54
5.1 WEB LOGIN	54
5.2 WEB MONITORING.....	54
5.3 WEB PLAYBACK.....	55
5.4 DVR'S SETUP FROM THE WEB VIEWER.....	57
6. Q & A	58
7. SPECIFICATIONS.....	60

1. Getting Started

1.1 Checking Supplied Items

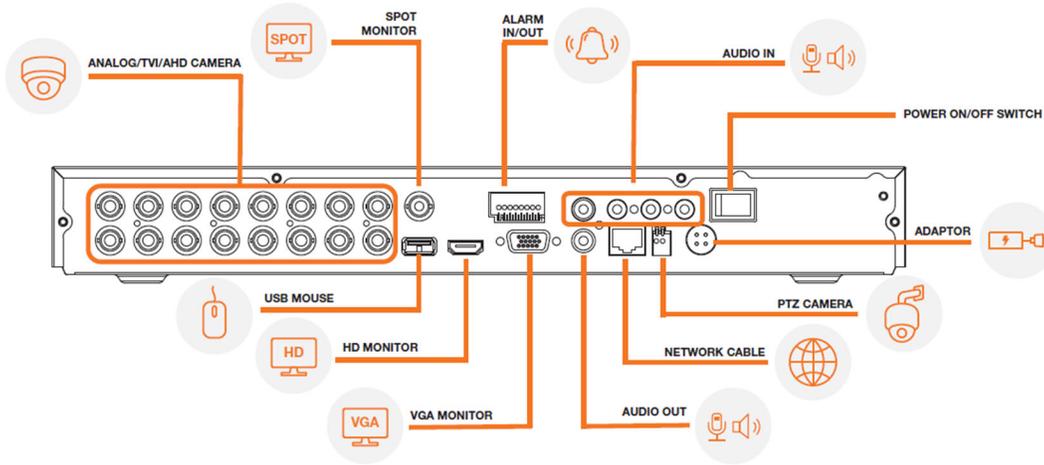
Make sure that you have the following items supplied with your DVR. If any of these items is missing or damaged, notify your vendor immediately. Keep the packing utilities for moving or storage purposes.

Items	Photo	Quantity
Quick start guide and download instruction card		1 Set
12V D/C adaptor and power cable		1 Set
Rubber mount*	 *Included contents may differ depending on the DVR model	1 Set (4 Pieces)
USB mouse		1 Set

1.2 System Setup

1.2.1. Connect External Devices

Follow the diagram below to connect all necessary external devices to your DVR. Please note that the number of ports available may differ based on the model. See product's specifications at the end of the manual for more information.

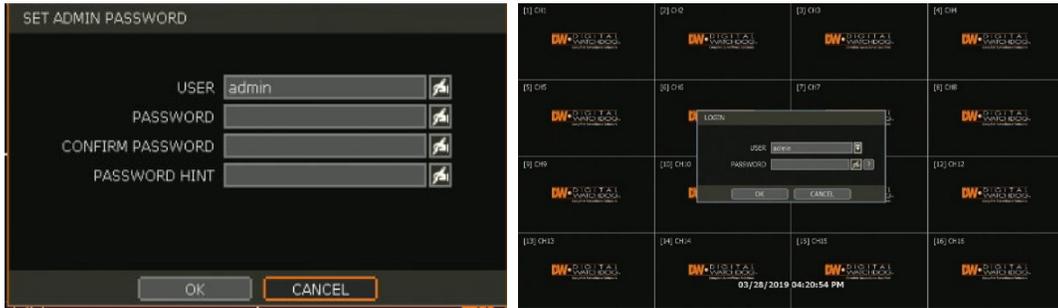


To prevent the DVR from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 104°F (40°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.



1.2.2. System Startup

After connecting all external devices to the DVR, power up the DVR by connecting 12V adaptor/ power cable to the power jack on the rear panel. The boot logo will display. Please wait until the boot process completes.



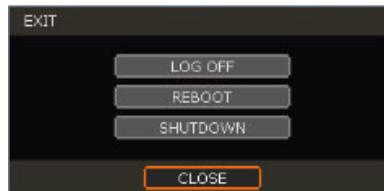
When the system starts, the PASSWORD CHANGE window will be displayed. User can set the password for any available user. Or click “cancel” to keep the default password as empty (no password). To login, right-click anywhere on the screen and enter the username and password in the popup screen (default admin username / password: admin / no password). There is only one administrator account configurable in the DVR. It is assigned with an unchangeable user ID marked as “admin”. The default password is empty (no password). Administrator account has full access to the DVR and its configurable parameters and can also create new users and assign rights to new user accounts.

If the DVR is set to AUTO LOGIN, login process is not necessary.

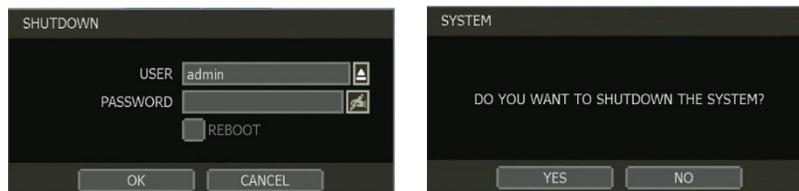
-
- NOTE**
- 1) If the network configuration is set to DHCP mode but there is no DHCP server in the network or the network is not connected it may take a few minutes to start the system after turning on the power.
 - 2) The mouse is included with the DVR. In case you need to replace it, it is highly recommended to choose from well-known major brands such as DELL, MICROSOFT, LOGITECH, or SAMSUNG.
 - 3) Do not forget the administrator's password that was set for the first time. In case the password is forgotten, contact your local dealer for help.
 - 4) Refer to section 4.1.2 User for AUTO LOGIN and AUTO LOGOFF.
-

1.3 System Shutdown

To turn the DVR's power off, click the exit button  on the tool bar and [SHUTDOWN] in the pop-up screen as below. Do not turn off the power by unplugging the power plug.



Enter the password and click [OK] to shut down the system. Click [YES] to confirm and turn the OFF button on the back side of the device for complete shutdown.



THE SYSTEM HAS BEEN SHUTDOWN. PLEASE TURN OFF THE POWER.

NOTE User can input password by virtual keyboard or IR remote-control (if available).

1.4 System Explanation

1.4.1. Front Panel



** Front panel may differ according to the model.

1.4.2. Power: System ON/OFF

- ☒ Power button (On the back side)
- ☒ LED indicator: indicates system status for power, record and network status.
- ☒ USB port: for backup and upgrade.

1.4.3. IR Remote Controller (Optional Item)



- Power: system ON/OFF
- DVR ID selection
- Numeric button: channel selection or password input
- PTZ button
- Preset button: select preset in PTZ mode
- Focus button: focus IN/OUT in PTZ mode
- ZOOM button: zoom IN/OUT in PTZ mode
- Preset tour: tour ON/OFF in PTZ mode
- Direction button
- Enter button
- Menu button
- Return button
- Playback buttons on search mode
- Emergency recording button
- Auto-sequence button in live mode
- Screen mode button
- Backup button

NOTE

User can control multiple DVRs with one IR remote controller. In order to control multiple DVRs, each DVR must have a different remote ID. (The default ID is set as "0".)

To setup the ID # in IR remote controller:

- 1) Keep pressing ID selection button (Ⓢ) for about 5 seconds.
- 2) Set the ID number by pressing numeric button on IR remote controller. ID number is available from 000 up to 255.
- 3) You have to press numeric button as three-digit number format. For example, press "000" for 0, "023" for 23, and "234" for 234.

1.4.4. Tool Bar in Live Mode

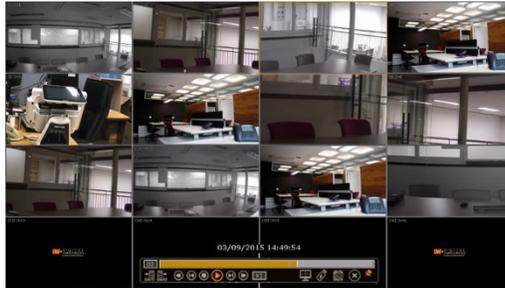
In live view, move the mouse cursor to the bottom of the screen to show the menu bar.



-  Menu: click on the menu button to access the DVR's main menu screen. See section **4. Setting**.
-  Display mode: select the display split mode from the available options. Select 1CH, 4CH, 9CH or 16CH mode. Available options may differ based on the model.
-  Sequence: start and stop sequence mode in live mode. Sequence is disabled if all channels are displayed.
-  Channel number: switch to single channel view of a specific channel by pressing the corresponding number.
-  Emergency recording: the system records all channels with full frame rate at the maximum resolution regardless of recording setting. To stop emergency recording, click the same icon again.
-  Export: backup recorded video to an external device. See section **4.6 Export**.
-  Playback: switch to playback mode. See section **3.4 Playback Recorded Image**.
-  Search: open the search options screen. See section **3.5 Search Recorded Image**.
-  Exit: exit the DVR with three different options: log off, reboot and shutdown.
-  Pin: when selected, the DVR's menu bar will be displayed on the screen permanently, regardless of the mouse's position.

1.4.5. Tool Bar in Playback Mode

In Playback view, move the mouse cursor to the bottom of the screen to show the menu bar.



-  Channel: indicates the currently selected channel.
-  Intelligent search bar: shows recording status for the selected channel from 00:00 to 24:00 hours. A white-vertical line indicates the time currently displayed. Moving the white-vertical line will update the video shown.
-   Previous / next date search: Move to a previous date or the next date to search.
- Playback controls:
 -  : Playback speed control. (X32 / x16 / x8 / x4 / x2).
 -  : Move backward one frame
 -  : Stop button
 -  : Play button
 -  : Move forward one frame
 -  : Playback speed control. (X2 / x4 / x8 / x16 / x32)
 -  : Current playback speed
-  Screen display mode: select the display split mode from the available options. Select 1CH, 4CH, 6CH, 9CH, 10CH, 13CH or 16CH mode. Available options may differ based on the model.
-  Export: backup recorded video to an external device. See section **4.6 Export**.
-  Playback: switch to playback mode. See section **3.4 Playback Recorded Image**.
-  Exit: close playback mode and move to live mode.
-  Pin: when selected, the DVR's menu bar will be displayed on the screen permanently, regardless of the mouse's position.

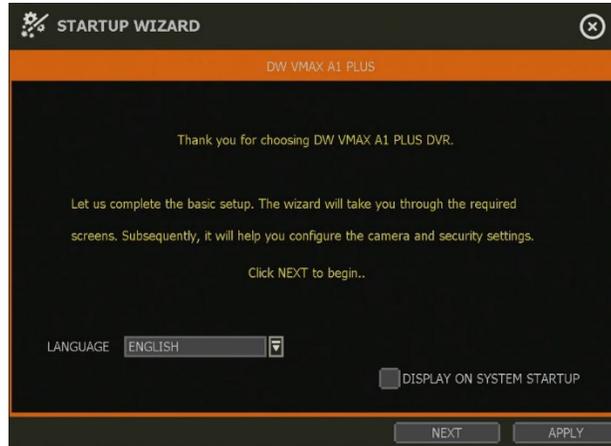
2. Startup Wizard

When the DVR is launched for the first time, the STARTUP WIZARD will appear. This wizard helps you setup the DVR's most basic settings for proper functioning. You can access the startup wizard any time by clicking the startup wizard [] button in MENU > SYSTEM > SETTINGS. (See section 4.1.5 Settings).

2.1 Language

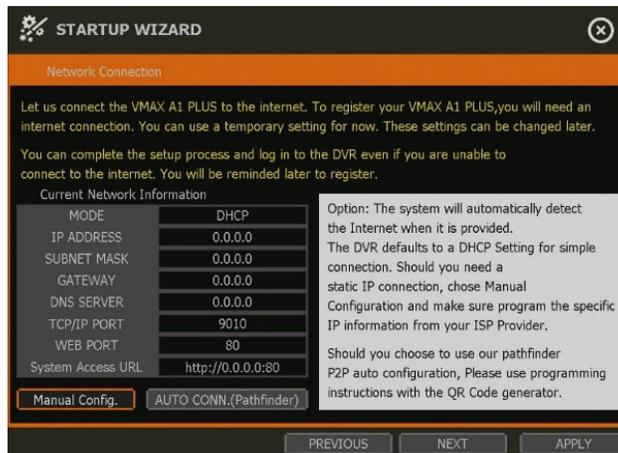
Select the language according to the country or user's preference.

If "DISPLAY ON SYSTEM STARTUP" is selected, startup wizard will pop up every time the system is started.



2.2 Network

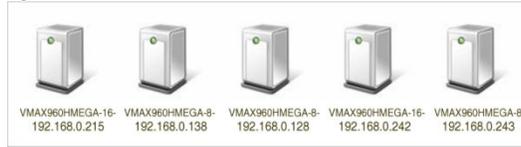
Setup the DVR's network settings for remote connection. You can select to manually configure the DVR's network settings (Manual Config.). You can also allow the system to setup the network settings automatically by selecting AUTO CONN. (Pathfinder™).



If Manual Config. has been selected, setup the information below:

- NETWORK TYPE:** Select either STATIC IP or DHCP for dynamic IP. If DHCP is selected, the DVR will automatically configure the network settings according to the current network requirements. If DHCP is selected, click “IP DETECT” button to detect automatically all the network settings. If Static IP is selected, manually enter all necessary network settings. For proper configuration, it is recommended to assign the DVR a DHCP address and let it auto discover all the proper network settings, and then change the Network Type back to Static IP and save the changes
- IP ADDRESS:** Displays the DVR’s IP address. If DHCP is selected, the IP address will automatically adjust to match the network’s requirements. You can also manually change the IP address as needed.
- SUBNET MASK:** Subnet Mask address classifies the subnet that the system belongs to. For more information, please consult your network administrator or your internet provider.
- GATEWAY:** This is the IP address of the router or gateway server. It is required when connecting to the DVR through the external router over the internet (from another network). For more information, consult your network administrator or your internet provider.
- DNS SERVER:** Enter the IP address of the Domain Name Server. You should input the DNS Server information in order to use DDNS, E-mail notifications and NTP Server. For more information, please consult your network administrator or your internet provider.
- TCP/IP PORT:** Input the port number to use when connecting to the DVR locally or remotely. Default is 9010. If your ISP blocks the port # 9010, you need to input another valid port number (ex, 9020).
- WEB PORT:** Input the port number to use when connecting from the Web Browser. Default is 80. If your ISP blocks the port # 80, you need to input another valid web port number (ex, 8080).
- AUTO IP:** Displays the system IP which is assigned through Auto-IP, automatically.
- BANDWIDTH LIMIT:** Depending on the setting made by user, the system can control the data volume transmitted over network ranging from 25 kbps up to 1Gbps. This function is effective especially under narrow bandwidth network condition or when user wants to limit “network bandwidth occupied by video transmission” to a certain level. Default is 100 Mbps
- USE UPnP (Universal Plug and Play):** UPnP is a plug-and-play feature that allows the DVR to be automatically discovered by a PC on the same network. To locate the DVR,

go to “My Network” on your PC. The computer will scan your network for all supported devices. The first five characters of the file name of a detected DVR represent the model number, followed by the DVR’s IP address

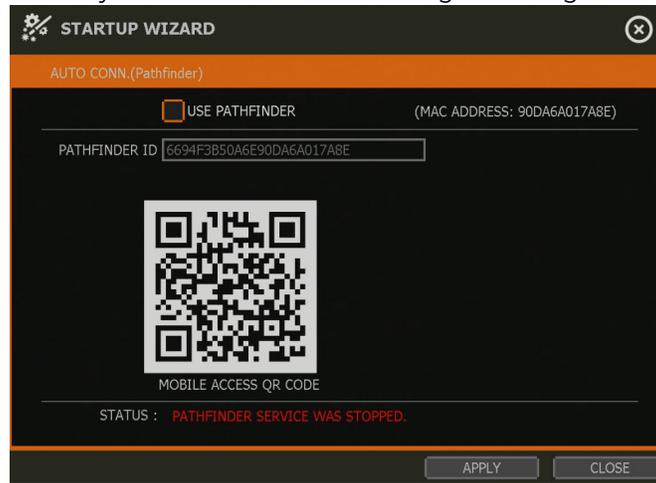


Once the PC discovered the DVR, double click on the icon to open the DVR’s web client. Enter your User ID and Password to login and click “Connect” to connect.

NOTE

- The maximum number of simultaneous connection is 15 users.
- For the other network settings, such as DDNS, Notification, Mobile Push & P2P Cloud, please see section **4.5 Network**.

If Auto connection (Pathfinder) has been selected, connect the DVR to the network by using the Pathfinder™ system. The DVR can be configured using the QR code.



NOTE

- For more information, please see section **4.5.5 Pathfinder™**.

2.3 Name and Time Zone

Set the DVR's name and select the time zone.



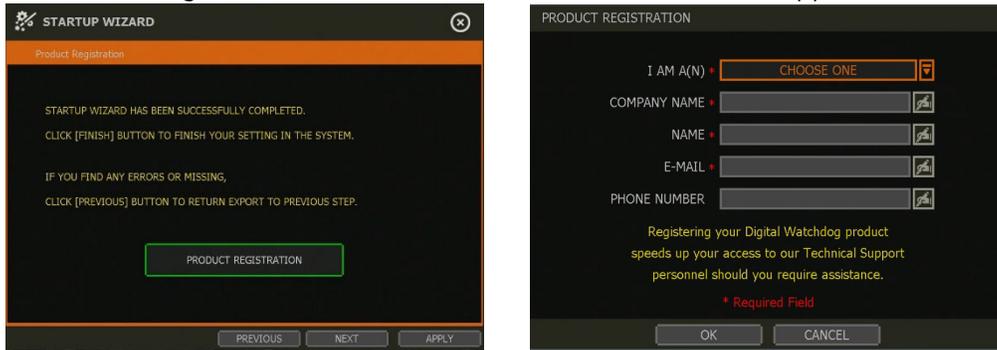
2.4 Camera Connection

Enter a camera name for each channel of the DVR according to the cameras connected.



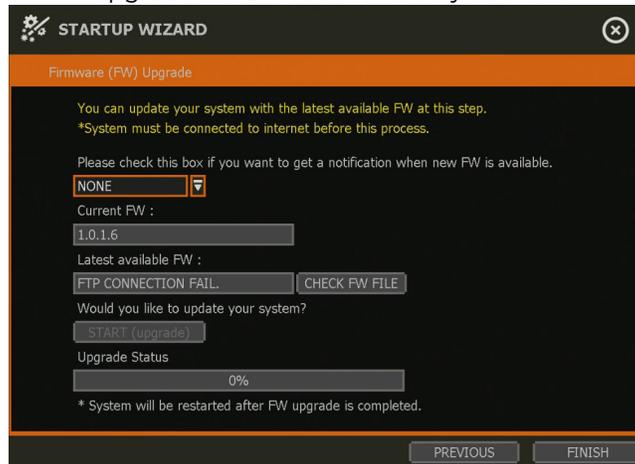
2.5 Production Registration

Register the DVR and user information for technical support



2.6 Firmware Upgrade

Upgrade the DVR's firmware by network



2.7 Finish

When the Setup Wizard is completed, click “FINISH” to close the wizard and go to the live view screen.

3. Operation

3.1 User Log-in

Input USER and PASSWORD after turning on the system. The factory default of USER and PASSWORD are “admin” and no password.



- NOTE**
- 1) LOGIN window will be permanently displayed until a user logs in with the right USER and password.
 - 2) If DVR is set as AUTO LOGIN, login process is not necessary. See “4.1.2 User” for more information.

NOTE The  key in the virtual keyboard includes common words, such as Admin, root, http://, rtsp://, www., .com, .net, .org etc.

3.2 Live Display Mode

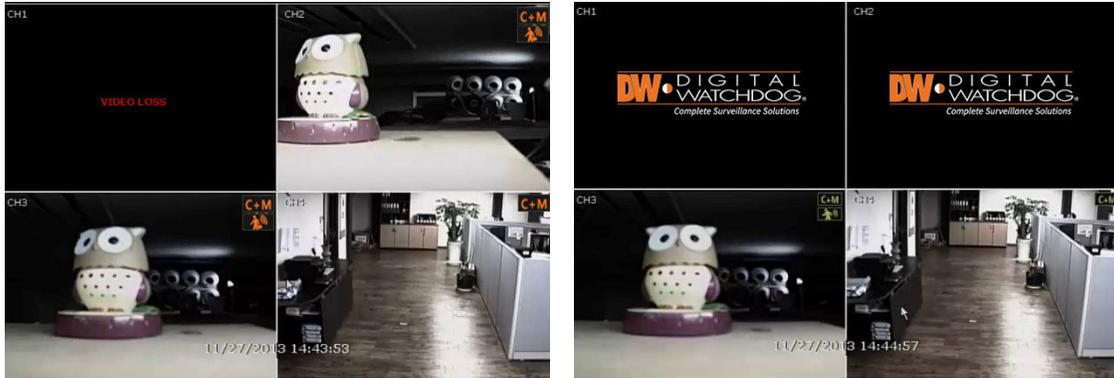
3.2.1. Channel Selection

Live image can be seen by easy button operation after power-up. The images can be seen in 1, 4, 6, 9, 10, 13 and 16 screen splits (some split options may not be available according to the DVR's number of channels). Whenever the up/down on IR remote controller is pressed, and whenever the screen display mode button () on the tool bar is clicked, the screen will change to display the next channel or sequence of channels.

To switch from a multi-channel view to a single camera, click on the selected channel. To return to previous screen mode, click of the left mouse button again.

“VIDEO LOSS” is shown on the display screen when no camera is connected or disconnects suddenly. When a camera is disconnected, a warning sound shall be generated depending on the system setting.

Admin users can set different level of authorization for each user, granting them specific access to specific channels. If a certain user is not authorized to view a channel, no image is shown on the display screen as below.



3.2.2. Icons

In live mode, icons will appear on the screen to notify of the system mode or status.

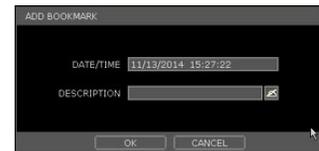
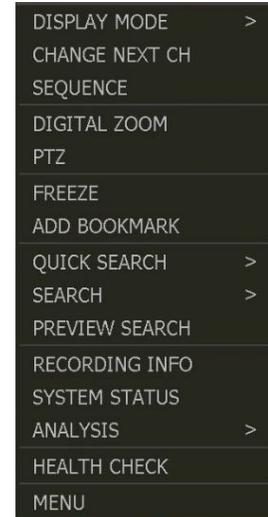
Icon shown at the right-upper corner on each channel screen		Icon shown at the right-bottom corner on full screen	
	Continuous recording		No HDD detected
	Motion detection recording		Emergency recording is in use
	Sensor activated recording		PTZ is enabled
	Continuous + motion alarm recording		Warning for exceeding temperature
	Continuous + sensor activated Recording		Sequence mode is enabled
	Motion detection + sensor activated recording		Digital zoom is enabled
	Emergency recording		
	Sensor activated		
	Motion detected		
	Audio channel		
	PTZ camera		
	Transaction verification		

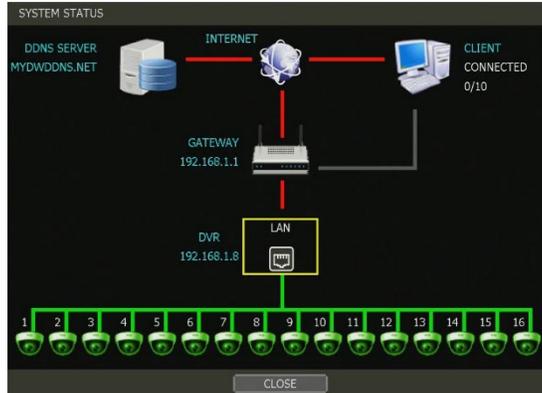
NOTE If you cannot find any recording icon in the right corner of screen, the system is not recording. Check the recording schedule or camera in the main setup menu.

3.2.3. Pop-up Menu

User can click the right button of the mouse to pop up sub-menu as below. If user want to control a specific channel, put the mouse cursor on that channel and then click the right button.

- Display mode: User can change screen display mode from the available split options (1, 4, 6, 9, 10, 13, 16 split option).
- Change next CH: View the next channel or next group of cameras in the current split mode.
- Sequence: When SEQUENCE is selected, **SEQ** icon will appear on the right-bottom corner of the screen. Display screen will be sequentially changed.
 - Digital zoom: Digital zoom is available in single channel view only. When ZOOM is selected, **ZOOM** icon will appear on the right-button corner of the screen and digital zoom control is available.
 - To zoom-in, drag the mouse's cursor on the desired area to create a zoom square. You can also control zoom-in & zoom-out by mouse scrolling the mouse's wheel up and down. Once the image is zoomed-in, user can move the zoom area by clicking on the edge of the square and dragging it.
 - To exit from the zoom mode, click the right and select "ZOOM EXIT" in the menu.
- PTZ: Enable PTZ mode. See section **3.3 PTZ Operation** for more information. The available PTZ options depend on the camera's settings. See the camera's manual for more information.
- Freeze: Freeze the current live view. System clock (date/time information) will continue running at the bottom of the screen. Select FREEZE again to resume the live view.
- Add to bookmark: Add a bookmark with description on the currently displayed image. When the bookmark menu appears, enter a description and click OK to save.
- Quick search: Select a specific prior time (10sec. / 15sec. / 30sec. / 60sec. / 2min. / 3min. / 5min.) to instantly switch to playback mode.
- Search: Search recorded video using the Calendar, Date/Time, First Data, Last Data, System Log, Event Log, Transaction Verification and Bookmark options. See section **3.5. Search Recorded Image** for more information.
- Preview search: Search recorded video in thumbnail search modes. See section **3.5.9 Preview Search** for more information.
- Recording info: Check the recording status of the DVR, such as Recording Period, Daily Recording Size (Average), Recording Days and Remaining Recording Days.
- System status: See the system status, including information on the network condition, number of clients currently connected to the DVR etc. A green line means the connection is live and working.





- Analysis: Check the system performance, conditions and network conditions for the entire system.

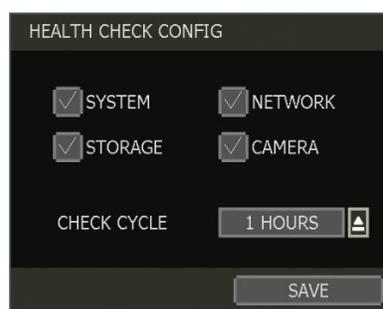
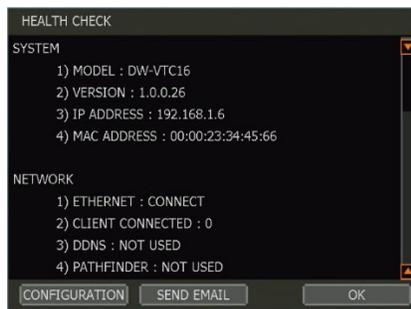


[Performance monitor]



[Network monitor]

- Health check: Display the information of DVR system, network, camera, HDD as text. Select which information to display and setup check cycle time. You can also setup an e-mail to received updates on the system's health.



- Menu: Open the main menu setup screen.

3.3 PTZ Operation

In order to operate a PTZ camera, the channel which is connected to a PTZ camera should be in



full screen mode. To activate PTZ control, right-clicking and selecting PTZ in the pop-up menu. When in PTZ mode, **PTZ** will appear on the right-button corner of the screen.

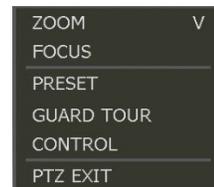


- **PTZ Control:** In PTZ mode, user can control PTZ camera using the USB mouse. While pressing the left button, drag the mouse cursor up/down or left/rightward to move the camera's pan/tilt position. The further away from the center the mouse's cursor moves, the faster the PTZ camera will move. To move the camera to a preset position, click the preset position number in the bottom of the screen to move the camera accordingly. The presets must be set prior to selection.



NOTE Full PTZ functions are available by using the USB mouse, IR remote control, or keyboard controller. Availability of functions depends on the camera. Consult the camera's manual for more information.

- **Zoom / focus:** Move zoom-in / out by rolling the wheel of mouse up/down. If mode is changed to "Focus", the camera's focus can be controlled by rolling the wheel of mouse.
- **Preset:** When the preset menu pops-up, select the preset number and click "Enter" to move to the corresponding preset position. Maximum Preset number supported is 255.
- **Guard tour:** When enabled, the camera will automatically switch positions according to the sequence of presets set in the GUARD TOUR settings. See section **4.2.3 PTZ** for more information.



CAUTION User can set interval for each preset position. Some presets might be skipped in case the camera cannot mechanically move or control focus within the interval time.

- **Control:** Go to PTZ control menu. See section **4.2.3. PTZ**.
- **PTZ exit:** Close PTZ control mode.

3.4 Playback Recorded Images

To playback recorded image, press the Play button on the IR remote controller or playback icon



 in the menu bar. When the DVR transitions to playback mode, it will automatically playback the latest recording image.



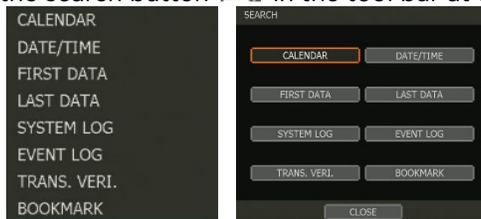
- Date / time: Shows date & time of the image that is being displayed.
- Tool bar: Contains playback control, recorded data check, screen mode etc. See section **1.4.5. Tool Bar on Playback Mode** for more information.
- Pop-up menu:
 - Display mode: Change display mode (1, 4, 6, 9, 10, 13, 16 screen mode)
 - Change next CH: Change to next playback channel
 - Digital zoom: Enable or disable digital zoom (available in single channel view).
 - Export: Open the backup window.
 - Add bookmark: Add a bookmark to the current image.
 - Search: Search recorded data by various conditions. See section **3.5 Search Recorded Image**.
 - Preview Search: Search recorded data with thumbnail search. See section **3.5.9 Preview Search**.
 - Live Mode: Go to live mode.
- Exit playback mode: Clicking the Exit icon  in the menu bar will return you to the live view.

3.5 Search Recorded Image

Search recorded image by date and time, first and last data, events, bookmarks etc.

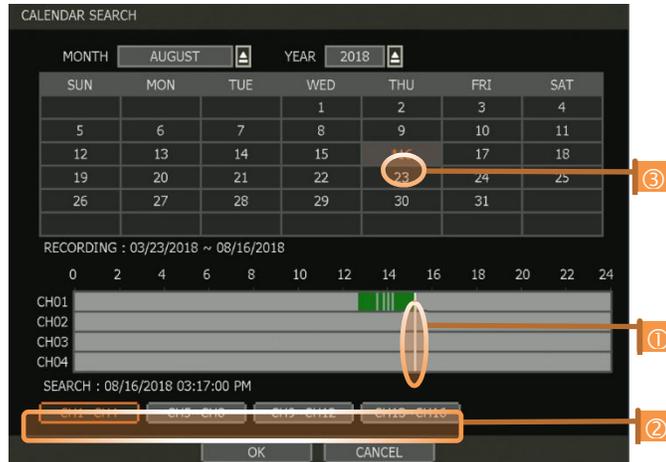
To enter the search options menu:

- In playback mode, right-click to open the popup menu and select the search menu.
- In live mode, press the search button  in the tool bar at the bottom of the screen.



3.5.1. Calendar Search

To search data for a specific date and time, select the date and time.



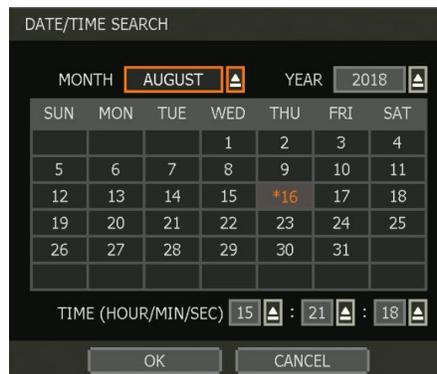
- Move the white-vertical line to the time you want to search.
- The colors of the time bar represent the different recording modes. The time bar displays four channels at a time. To check the next 4 channels, change the channel group on the bottom of the window.
- "*" mark on dates indicate days with recorded video available.

3.5.2. Search Date/Time

Enter the desired date and time in the calendar screen.

Use the arrow button or mouse to move to each day/month/year and time category for selecting second / minute / hour / month / year.

Days with recorded data will be highlighted in red and "*" next to them.



3.5.3. First Data

Go to the first screen of the recorded image. This is the oldest image recorded.

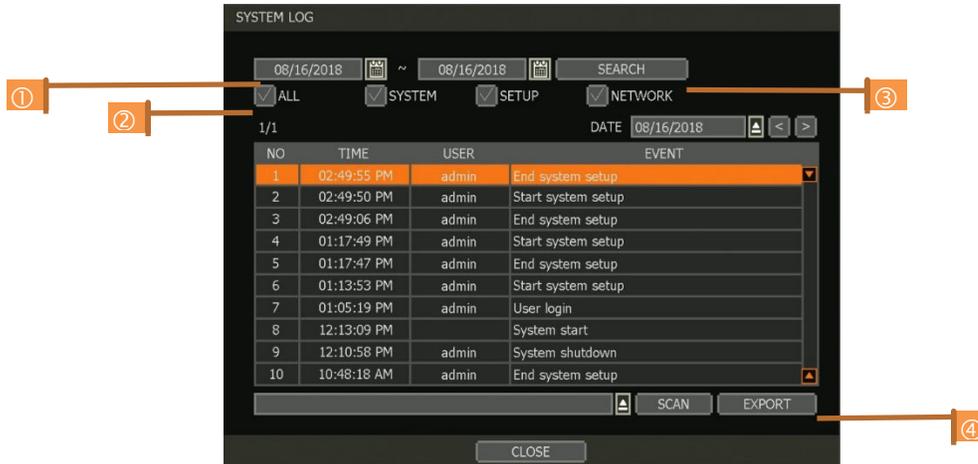
3.5.4. Last Data

Go to the last screen of the recorded image. This is the latest image recorded.

3.5.5. System Log

Find particular system log information such as System, Setup or network.

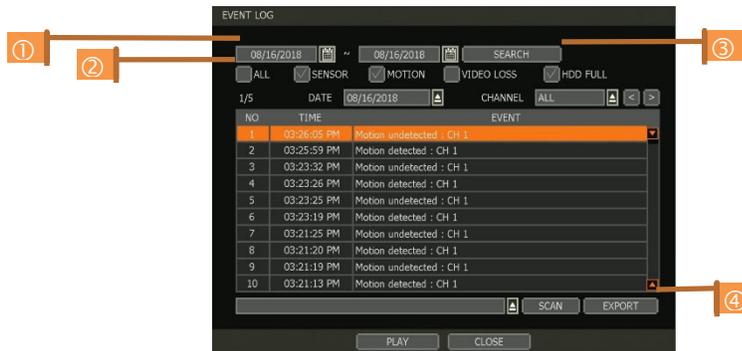




- Select a date to search.
- Select log type to search. User can search individual events or all at once.
- Click SEARCH to show the search results in the list.
- Click EXPORT to copy the list to an external device such as USB flash drive as “.txt” file.
- Once export is completed, user can find a date folder created in USB flash drive. There is “system.log” file stored in the date folder.

3.5.6. Event Log

Find particular events such as sensor activation, motion detection, video loss, HDD full or keyword.

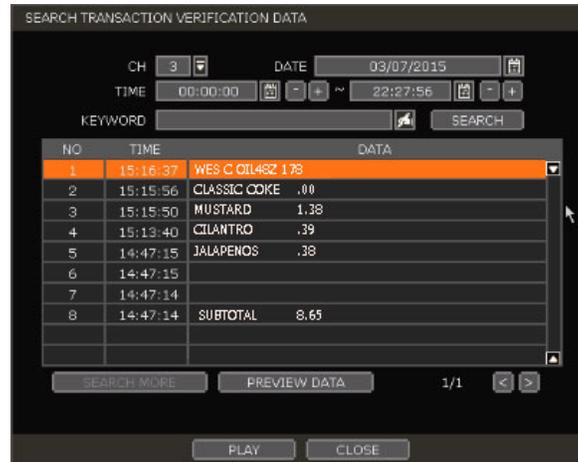


- Select a date to search.
- Select log type to search. User can search individual events or all at once.
- Click SEARCH to show the search results in the list.
- Click EXPORT to copy the list to an external device such as USB flash drive as “.txt” file.

NOTE 50 records will be shown in one page. Click the arrow buttons (◀ ▶) to search the log records on another page.

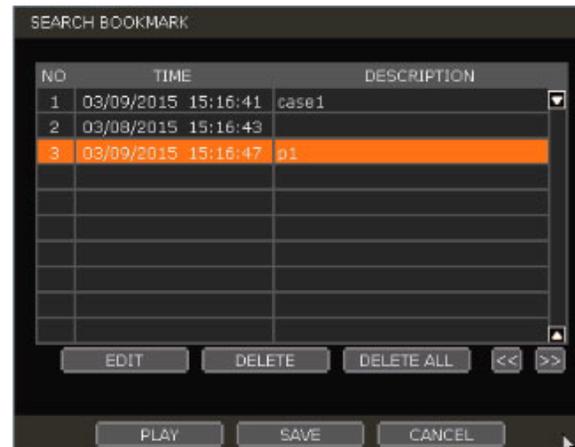
3.5.7. Transaction Verification

Search text from a Transaction Verification™ integration such as a POS device. Input the search information (channel #, date, time & keyword) and then click SEARCH to view search results. Enter a keyword to filter the results. Click PLAY to go to playback video and transaction data.



3.5.8. Bookmark

Bookmark search allows you to can check, modify and delete bookmarks. Select a bookmark from the search results list and PLAY to display the correspondent video image.



3.5.9. Preview Search

User can search recorded video at split screen mode by hour or minute units.

Thumbnail search breaks down a day's worth of recorded video for a camera into 12 still images, one for each hour. You can then "zoom" into the hour to display images for every minute of that hour. To use this search:

- Right-click on the selected channel and go to Smart Search > Preview Search.
- Select the date you wish to search. Days with recorded video will appear in orange.
- Click SEARCH. The DVR will display 24 screen images (1 hour unit) of the channel on that day.

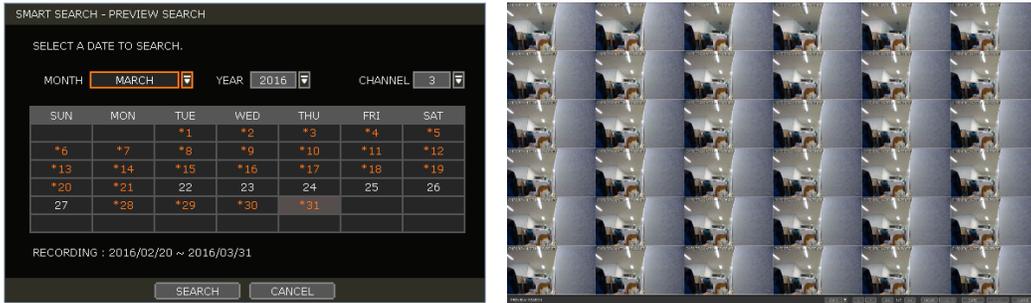


- Double-click on a specific image, or press the minute button to display 60 screen images (1 minute unit) on that hour.

User can easily & quickly search large amounts of video for specific events with this preview search, allowing you to playback the recorded image of that moment.

The number of thumbnail image and the size of each image can be increased/decreased and the maximum no. is 196(14 x 14), depending on the resolution.

In the preview search mode, user can change search date, display unit (time/minute) and go to playback mode directly.



3.6 DST Setting and Image Playback

Daylight Saving Time (DST) starts at 2:00AM local time on 2nd Sunday of March, and ends at 2:00AM DST on 1st Sunday of November. During DST, the DVR's clock will be adjusted according to regional time zone. The DVR's time will shift one hour after DST starts, and restore the time clock back to normal after DST ends.

3.6.1. DST Setting

To enable DST on the DVR, go to SYSTEM > INFORMATION and click DATE / TIME . Select "USE DST" to apply DST time change. (Select the proper Time Zone in order to activate DST)



3.6.2. DST Image Playback

When there is overlapped data due to DST, the overlapping hour will appear blue in the search bar during playback.



To playback data from the overlapped hour, select a time in the intelli-search bar. A “Data Selection” message will appear. Select whether to play DST data or Non-DST data.

4. Setting

General settings consist of “System”, “Device”, “Event”, “Record”, “Network” and “Backup”. Each Setup menu consists of sub-menus and additional categories.



Main Classification	Sub Classification
SYSTEM	INFORMATION
	USER
	DISPLAY
	HDD
	SETTINGS
DEVICE	CAMERA
	AUDIO
	PTZ
	TRANS. VERI.
	KEYBOARD
ALARM	SENSOR
	MOTION ALARM
	EXTRA ALARM
RECORD	CAMERA
	SECOND STREAM
	RECORDING SCHEDULE
	QUICK SETUP
NETWORK	NETWORK
	DDNS
	NOTIFICATION
	MOBILE PUSH
	PATHFINDER
EXPORT	EXPORT

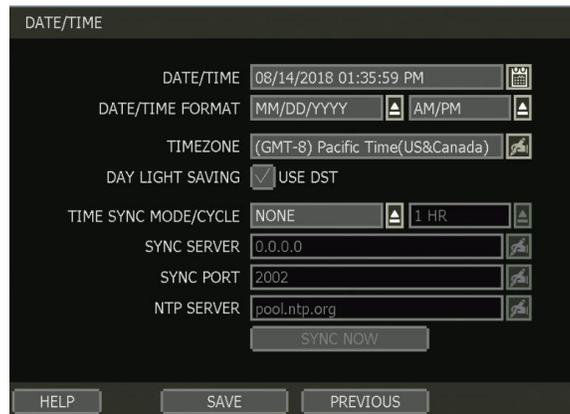
To access the setup menu, click the  button in the menu bar or right-click anywhere on the screen and select SETUP MENU.

4.1 System

4.1.1. Information



- Site name: Enter a site name to differentiate the DVR from other sites.
- Keyboard ID: Setup SITE ID to match the ID settings of a keyboard controller. Keyboard model and BUAD RATE must be setup in MENU > DEVICE > KEYBOARD (See section 4.2.5 Keyboard).
- Remote ID: User must setup REMOTE ID to match with the ID setting of IR remote controller, if user wants to use it to control DVR.
- Date / time: Using the available options, manually adjust the date and time, select the display mode for the time and the date, and select the appropriate time zone. If applicable, check the “USE DST” box.



There are three types of time sync mode.

- Server mode: The operating DVR is set as a time sync server, which can synchronize the time other DVR(s) connected over the same network.
- Client mode: Input the IP address of a designated DVR or PC running remote software as a time sync server in “SYNC SERVER”. The DVR’s time clock will be synchronized with the server by interval time set in “TIME SYNC CYCLE”.
- NTP client mode: “pool.ntp.org” is the recommended NTP server. To activate, set the TIME ZONE of your local area and then click [SYNC NOW]. For DST setting, see section 3.6 DST Time Setting.
- Language: Select the display language from the available options.

- Version: View the DVR's current firmware version and update to a newer version via USB memory stick or an FTP server connection.



CAUTION Do not click CANCEL during firmware upgrade. It may cause serious damage to the system.
Settings may be changed to factory default. It is recommended to check the settings and operating condition of the DVR after firmware upgrade.

Upgrading system using USB memory stick:

- Insert a USB drive with the firmware file formatted by FAT/FAT32 in any USB port of the DVR (compatible with USB 2.0).
- Select "USB" from the Method drop down options and press the "Scan" button.
- Once the system detects the USB drive, it will display the firmware file under "CURRENT VER" and the "NEW VER".
- Click START to begin the upgrade process.

Upgrading system using DW's Automatic Firmware Upgrade via FTP server:

- Select FTP in the drop-down options under "Method".
- Enter the FTP's address: <ftp.dwcc.tv> and enter the username and password (these should be filled out automatically). Username: vmaxiplus, password: vmaxiplus.

NOTE The FTP server address is subject to change without a prior notice.

- Enter the CHECK TIME. The system will automatically check the FTP server for a newer firmware every day at set hour.
- Click OK to proceed with the automatic firmware upgrade. Once the firmware update is completed, the system will reboot.
- Click CHECK to allow the DVR to connect to the FTP server and check the latest Firmware version. If a new firmware is available, the DVR will ask you whether you want to upgrade it or not.
- Click OK to confirm and click START to start upgrading.

To setup the DVR to check for new firmware automatically:

- Select FTP from the METHOD drop-down options.



- b. Make sure the ftp information is entered correctly (see section above).
- c. Enter your convenient time at CHECK TIME and then click SAVE.

The screenshot shows the 'UPGRADE FIRMWARE' menu with the following fields and values:

METHOD	FTP
DEVICE	
HOST ADDRESS	ftp.dvcs.tv
USER/PASSWORD	vmaxahd *****
CURRENT VER	1.0.0.26
NEW VER	
FILENAME	
CHECK TIME	NONE
PROGRESS	0%

Buttons: SCAN, CHECK, START, SAVE, CANCEL

Warning: DO NOT REMOVE THE DEVICE OR TURN OFF POWER, WHILE FIRMWARE UPGRADE IS IN PROGRESS!

Callouts: ① points to METHOD, ② points to HOST ADDRESS, ③ points to CHECK TIME.

- Video signal: Check the right video signal (NTSC or PAL). This setting should match the NTSC/PAL selection switch located on the rear panel. Video images might heavily shake and blink if NTSC/PAL is not properly set.
- IP address: Shows the DVR's current IP address. It can be set at MENU > NETWORK > NETWORK.
- Auto IP: Shows the DVR's IP address.
- MAC address: Shows the unique identity number for the DVR.
- System monitor: Monitor the system performance and condition.
- Keypad beep: User can turn on or off the beeping sound of key pad.

4.1.2. User

The ADMIN user (default password is no password) has full authority for system setting and can change the system password or add/delete users and assign different permission level to them.

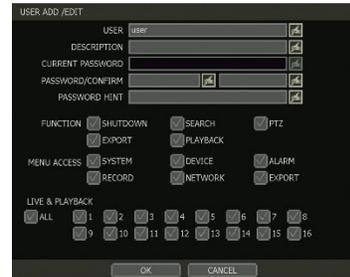
NOTE Maximum number of users including administrator is 16.

- User Management

Admin user can control authorization for each function. This authorization is applied when the user connects to the DVR from a remote software as well.



- To add a user
 - Click ADD.
 - In the new setup window, set new user's ID, description, password and hint.
 - Select which functions and menu options the user will have access to by checking the box next to the corresponding functions.
 - In Live and Playback mode, only the selected channels are visible to the user.
 - To change the setting, select user and click EDIT.
- To delete a user
 - Select user in the list by highlighting their name and click DELETE.
- Login option
 - If Auto Logon ON BOOT is enabled, the DVR will not request ID and password after power up.
 - If AUTO LOGOFF is enabled, the DVR will log off the current user after the set time of inactivity.
 - If AFTER LOGOFF option is enabled, the DVR will show live screen or last screen mode.



- Setting authorized level at the remote software (CMS)

Level of authority for the user is linked between the DVR and Remote Software. If a user has been restricted in the DVR, those restrictions will also be applied when operating the Remote Software.

4.1.3. Display

Set the sequence dwell time, display resolution, mouse cursor size, OSD display options and spot-out channel & dwell time as below picture.



- Sequence: Set the dwell time for sequence channel display.
- Display resolution: The system supports the following kinds of resolutions:
 - HDMI: 2560x1440, 3840x2160 (4K), 800x600, 1024x768, 1280x1024, 1920x1080
 - VGA: 1920x1080, 800x600, 1024x768, 1280x1024,
- Spot: D1.
 - Set the proper resolution in accordance with the monitor resolution.
- OSD: Select what information will appear over the display by checking the corresponding boxes.
- Screen saver: The screen saver features protects the screen and data of the DVR by turning off after a set time of inactivity. Set the screen saver's waiting time for when the monitor will automatically turn off. Set in between 1 minute and 180minutes. If applicable, select to log off the current user when the screen saver is on.
- Channel swap: Check for swapping the channel by drag and drop.

4.1.4. HDD



- HDD full: When an HDD is full, select whether to “Overwrite” or “Stop recording”.
 - Overwrite: DVR deletes the oldest data and record new data.
 - Stop recording: DVR stops recording.
- HDD check: Click CHECK next to each HDD to open the health check window. See full information for each HDD such as model name, serial no, capacity, bad sector ratio, life time (used time) and temperature.



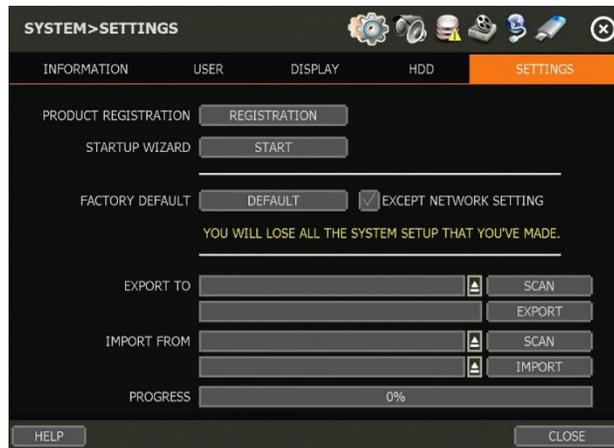
WARNING To achieve high-level system stability, warning message of high temperature will pop up when temperature inside the system exceeds optimum range. This problem may be driven from malfunction of ventilation fans. Inspect if the cooling fan is properly working, or temperature around the system is properly kept.

- HDD format: When the new HDD is installed or there seems to be a problem on the HDD, formatting the HDD is recommended. If system resources are occupied such as during a network connection while the HDD format is in process, the formatting may fail. Reboot the system to release system resources and then try to format again. Select the HDD to format by checking the check box next to the HDD name and pressing the format button.

NOTE

- 1) It may take a few minutes to format an HDD.
- 2) When the format is done, all data in the HDD will be deleted.
- 3) The system always reserves some space in each built-in HDD to effectively utilize archiving memory.

4.1.5. Settings



- Product registration: User can register their information on DW server. It make you speed up when user need technical support from DW.
- Startup wizard: Manually start the startup wizard.
- Factory default: Reset the system back to its factory default configuration. Once the factory default is done, all the configurations will be deleted and the system setting will



- return to its original factory default. Recorded video will not be deleted.
- Export / import: Copy the system configuration values from this DVR to save for your records or copy to another DVR.
 - Export: Copy the settings of this system to a USB memory device.
 - Import: apply settings from another DVR via USB memory device.

NOTE During the import process, make sure that the F/W version of the sourced DVR is the same as the target DVR's

4.2 Device

4.2.1. Camera

Set each camera's title, covert channel settings, privacy masks and general camera adjustments.

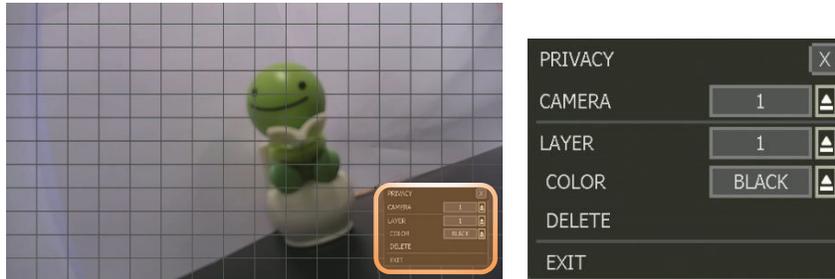


- Group REC.: You can assign each cameras to a group (A, B, C or D). Cameras in the same group will have the same recording settings when an event occurs. For example, if CAM 1-4 are assigned to group A, and an event is detected on CAM 1, all cameras under group A will record as if they detected the event as well.
- Title: Enter a name to distinguish each channel on your recorder.
- Covert: Also known as hidden camera, covert status hides the camera's display in live and playback as if no camera was connected to the channel. Covert settings apply to both Live and Playback view in both the DVR and remote software.
- Adjust: Set the camera's brightness, contrast, color etc. Settings available under ADJUST depend on the camera's model and features.
 - Click SET in the ADJUST section to get into the setup screen.



- Adjust the applicable options using the drop-down menu options.

- c. Click DEFAULT to set camera's option as a default value.
 - d. Click SET A or SET B to change camera setup value quickly.
 - e. APPLY ALL makes all channels have the same value.
 - f. Click SAVE to save the changes.
 - g. Click EXIT to exit.
- Privacy mask: Hide specific areas in the camera's Field of View (FoV) in live and playback mode. Please check that your camera supports this feature.
 - a. Click SET to get into the setup mode.
 - b. Using the popup menu on the bottom right, select where to place the privacy mask, assign a color and index number to it. Click SAVE to save the changes and EXIT to return to the main setup page.



4.2.2. AUDIO

Select an audio input and output during live display and match it to a specific channel. The number of audio channel may differ depending on DVR model. User can hear audio sound under both live display and playback mode depending on the system setting.

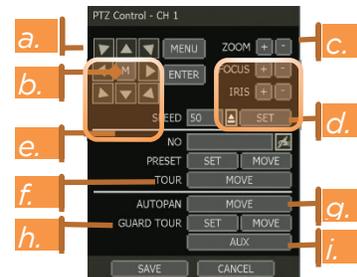


4.2.3. PTZ

Full control of PTZ camera is available in this menu. Please refer to section 3.3 PTZ Operation for more information on operating a PTZ camera.



- Protocol: Select the proper protocol of the connected PTZ camera. If PTZ camera is connected by UTC type protocol, baud rate and address setup is disabled.
- Baud rate: Select the baud rate level from 2,400bps up to 57,600bps. (Not supported in UTC type protocol).
- Address: Set the PTZ driver address of the connected camera. It should be the same as that of the PTZ. (Not supported in UTC type protocol).
- Control (The functions depends on the camera's model and supported features): When the PROGRAM button is selected, the OSD menu of the camera will appear on the monitor. Set the PTZ's speed, preset, tour, auto pan etc.
 - a. Direction buttons: move camera up, down, left and right.
 - b. M (depends on PTZ model): Show/ hide the camera's OSD menu on the DVR monitor. Use the directional arrows to navigate the menu options.
 - c. Zoom, focus and iris: Control IN (+) and OUT (-) for each functions. (Depending on camera's model and supported features).
 - d. Speed: Change the PTZ speed (0-100). This sets the speed in which the camera will move when controlled from the DVR using the virtual joystick. Save the changes by clicking SET.
 - e. Preset
 - Add: Move the camera's position and zoom to the desired position. Select the preset number using the  button. Press ADD to save the new preset. (The system supports preset the number of preset from 1 to 255.)
 - Delete: delete the preset currently selected.
 - Move: Enter a present number and press Move to move the camera to the preset position of that number.



- f. Tour: Set the camera to move between preset positions in order. The camera will keep running the tour until it manually is disabled.
- g. Auto-pan: Set the camera to move 360° in one direction. The camera will keep running the auto-pan until it manually is disabled.
- h. Guard-tour: Set the camera to move between selected presets in a set order and interval. The camera will keep running the guard tour until it is manually disabled.
 - Set: Set the time interval (in seconds) and select the preset position. Add to sequence by clicking **>>** button. The preset will appear in the sequence column indicating the preset number and the set interval time.
 - Delete: To delete a preset position form the sequence, select the preset in the Sequence column and click **<<** button.
 - Move: Start the guard-tour.
- i. Home: Set the camera to move to an original position memorized by the camera. In case the PTZ is directly connected to the rear panel of DVR, user can control additional settings such as power, light, wiper and pump, etc. through AUX control button (**AUX**).



4.2.4. PTZ (UTC Connection)

The DVR supports connection and control of cameras up the coax (UTC). This means you can control a camera's OSD settings and movement (on PTZ cameras) with no need for additional cables.



- Protocol: If the PTZ camera is connected via UTC, select the UTC-protocol of the connected PTZ camera. Please check the camera protocol type before connection.
- HD-A(C) TYPE: Some of HDA camera which not detected on the HD-A / HD-TVI, apply this protocol
- HD-A/HD-TVI TYPE: In case of menu-enter is worked preset 95 or IRIS, the connection is auto detected
- HD-TVI(C): Some of TVI camera which non-detected on the HD-A / HD-TVI, apply this protocol
- Control (The functions depends on the camera's model and supported features): When the PROGRAM button is clicked, the control menu of the camera will appear on the monitor. Show the camera's OSD menu on the screen and setup camera's configuration



- **M** **MENU**: Show the camera's OSD menu for setup and adjust.
- **↑** **↓**: Move to menu options.
- **←** **→**: Adjust the camera settings.
- **→** **ENTER**: Select the camera settings or enter to submenu.

To use UTC in the live mode:

- Select the single channel which adjust the camera setup and change the PTZ control mode.
- Click the right button of mouse on live screen and select PTZ for activating UTC.
- Click CONTROL button and open control menu and then activate OSD menu and setup the camera.



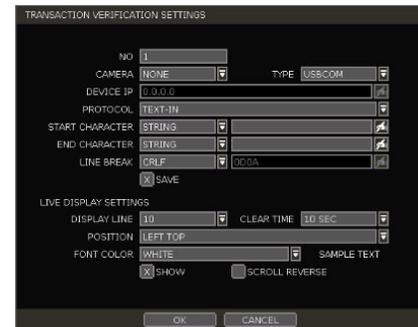
4.2.5. Transaction Verification Settings

TRANSACTION VERIFICATION equipment can be connected to DVR through RS-232 port or LAN.





- No: Port Number of the Serial connection. For example: NO1 = COM1, NO4 = COM4.
- Cam: Assign a camera to the transaction verification device.
- Type: Connection type between DVR and transaction verification device.
- Protocol: Communication protocol between DVR and transaction verification device.
- Save: Enable or disable the DVR to save the transaction data.
- Show: Enable or disable the DVR to display the transaction data.
- Setup
 - NO: ID# of transaction verification device.
 - Camera: Select the camera to assign to the transaction verification device.
 - Type: Select COM (RS-232) or TCP/IP (LAN)
 - Device IP: Input the IP address of the transaction verification device when it is connected through the network.
 - Protocol: Communication protocol between DVR and the transaction verification device.
 1. Text-in: Receive ASCII character.
 2. SDVR-POS: Manufacturer's own protocol.

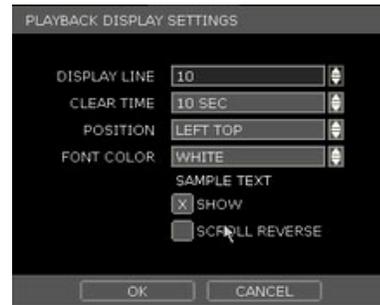


❖ Contact your transaction verification dealer for information.

- Start character: Input the assigned character to start display and save. If there is no input, the system will display and save all data without classification per transaction.
- End character: Input the assigned character to terminate display and save. It must have a start character to work correctly.
- Line break: Set the line change character. (It should be 16 digits HEX Value.)
 1. CRLF, CR, LF: The character that is generally used in ASCII-type transaction verification. (Please contact transaction verification manufacturer for the detail.)
 2. Custom: It can be used except the above general character. Only number (0-9) and alphabet (A - F) can be used and even numbers should be input. For example: Hexadecimal: 0x0D 0x0A → 0D0A
- Save: Save the transaction verification data.

Live display settings:

- Display line: Set the number of lines to display on the screen.
- Clear time: Set the time period to display text on the screen. Data will be deleted from the screen if no new data is entered after the set time. If it is set as "0", the data will not be deleted (If there is start character and the character is input, current data will be deleted regardless of the clear time setting).
- Position: Designate the display position of transaction data.
- Font color: Select the font color which will be displayed on the screen. It will be displayed with the color that is shown on SAMPLE TEXT.
- Show: Select to display transaction data in the live mode.
- Scroll reverse: Select to change the direction of scrolling. If it is selected, you can scroll from the bottom to top, the latest data is displayed on the top.
- Playback display settings: Open setup screen for playback mode
 - Display line: Set the number of lines to display on the screen.
 - Clear time: Set the time period to display text on the screen. Data will be deleted from the screen if no new data is entered after the set time. If it is set as "0", the data will not be deleted (If there is Start Character and the character is input, current data will be deleted regardless of the Clear Time setting).
 - Position: Designate the display position of transaction data.
 - Font color: Select the font color which will be displayed on the screen. It will be displayed with the color that is shown on "SAMPLE TEXT"
 - Show: Select to display transaction data in the playback mode.
 - Scroll reverse: Select to change the direction of scrolling. If it is selected, you can scroll from the bottom to top, the latest data is displayed on the top.
- Port setup: Open setup screen for communication port
 - Type: Setup the type of communication port.
 - Serial: It is for 1-to-1 connection between DVR and transaction verification device without serial mux.
 - Mux: It is for 1-to-Nulti connection between DVR and transaction verification device.
 - Baud rate: Set baud rate according to the transaction verification device.
 - Parity: Set parity according to the transaction verification device.
 - Data bit: Set data bit according to the connected transaction verification device.
 - Stop bit: Set stop bit according to the connected transaction verification device.
 - TCP/IP PORT: Set the TCP/IP port number.



4.2.6. Keyboard

When an external keyboard is used, select the model and corresponding baud rate from the drop-down options. The baud rate must match the one set in the keyboard itself. Make sure the Keyboard ID in SYSTEM> INFORMATION setup page matched the one set in the keyboard.



4.3 Alarm

4.3.1. Sensor

User can install multiple sensors on the system to get the pre and post alarm recording and intensive recording function as well.



- On, off: Turn on or turn off the sensor.
- Cam: Select the associated camera.
- Relay: Select the associated alarm output.

CAUTION Relay contact can stand up to 24V/1A. In case that it is connected to the external circuit which is over 24V/1A, it can cause a problem on the system.

- Preset: Set a PTZ camera to move to a preset position when the sensor is triggered.

- Dwell (post alarm): Set the recording period from when the sensor is activated. During this period, the selected camera will record according to the record setting. The recording stops and alarm output is turned off when the set period is completed.
- Pre-alarm: Set recording period in seconds just before a sensor is activated. Input up to 5 seconds. The pre-alarm recording mode is always continuous at the recording speed set in the RECORD menu.
- Type: Select the sensor type as N/O (Normal Open) or N/C (Normal Close). The circuit of an N/O sensor type is usually open, and the activation of the sensor occurs at the time of close, and N/C type works the reverse way.

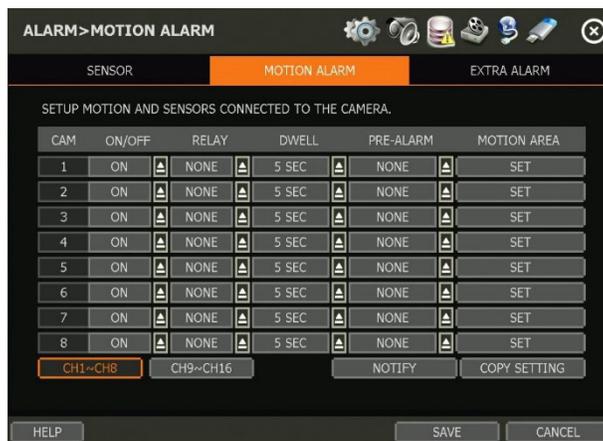
NOTE Check the setting of the sensor type (N/O or N/C). It is recommended to use “dry contact type” while “wet contact type” may cause damage to the system.

- Notify: Enable sensor notification via a buzzer sound and/or a pop-up warning.

NOTE When “camera pop-up” is enabled, in a multi-screen mode, the system will switch to single channel mode automatically when the alarm is triggered.

4.3.2. Motion Alarm

Setup the DVR to start recording when motion is detected. The system can also trigger an alarm signal via the selected sensor-out channel.



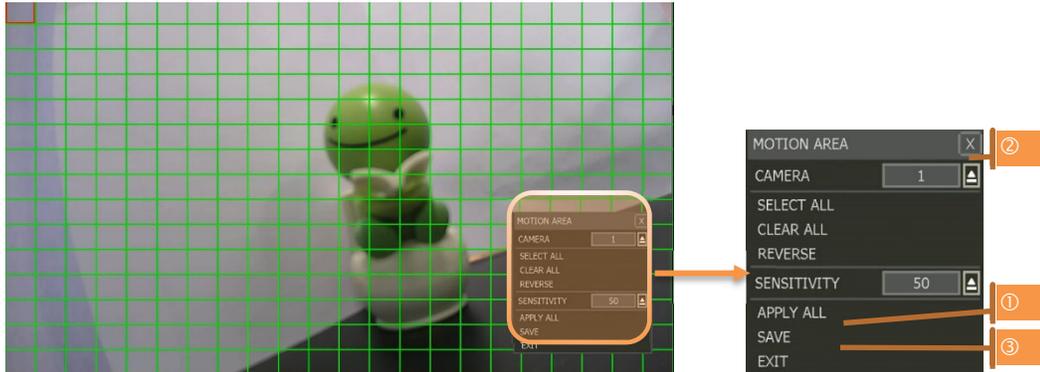
- On, off: Turn on or turn off the motion
- Relay: Select related output.

CAUTION Relay contact can bear up to 24V 1A other devices. If it is connected to the power more than 24V 1A, the system may have problem with it.

- Dwell: Set sensor operation time in between 1 and 15 seconds.
- Pre-alarm: Set recording period in seconds just before motion is detected. Input up to 5 seconds. The pre-alarm recording mode is always “continuous” at the recording speed that user sets in the “Record” menu.
- Motion area: Set the camera’s motion area and sensitivity. The area can be selected by clicking on a specific block or dragging the mouse’s cursor across the screen to select multiple blocks. Areas where motion detection is activated will appear with a green border line. Unselected areas will be shown with grey border.



- Click SET in the MOTION AREA section to set area.
- Select the motion detection area and click SAVE and then EXIT to save the changes.
- Clicking on SELECT ALL will enable motion detection in the entire camera's FoV.

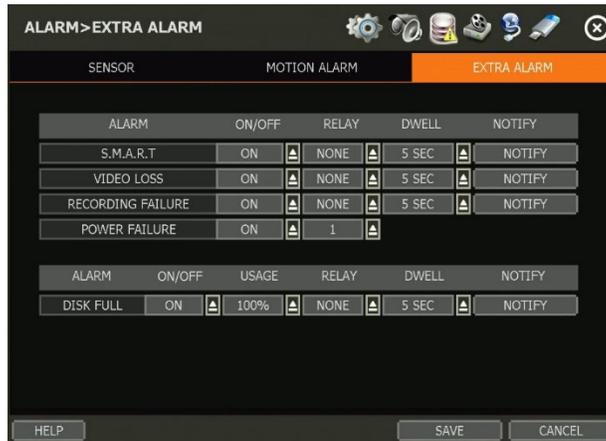


NOTE Motion detection area and sensitivity should be set, properly, in consideration of the actual motion happened in the site.

- Notify: Enable motion notification via a buzzer sound and/or a pop-up warning.
- Copy setting: To apply the settings to all cameras connected to the DVR, click on the Copy Settings button:
- Select the channel to get the setting from
- Select the property(s) to copy.
- Select the target channel(s) to apply the setting.
- Click OK to apply the setting to all the other selected channel(s).

4.3.3. Extra Alarm

Setup alarms for additional DVR abnormalities such as smart HDD check, video loss, recording failure and disk full.



- S.M.A.R.T.: Trigger an alarm signal when HDD is about to be out of operation. Please refer to "4.1.4 HDD" to check the HDD status.
- Video loss: Trigger an alarm signal when a camera signal is disconnected.

- Recording failure: Trigger an alarm signal when the system does not record images due to an error in HDD or system.
- Power failure: Trigger an alarm signal when the power does not work normally.
- Disk full: Trigger an alarm signal when the HDD is occupied with a certain percentage of its capacity. If user set HDD FULL as STOP RECORDING and the HDD is occupied with the certain percentage set here, DVR stops recording and alarm trigger.

NOTE Extra alarm will appear in the event log only when it is set as "ON".

4.4 Record

4.4.1. Camera

User can make recording setting for each channel separately.



- On, off: Set recording on and off in each channel. If recording is not required on the selected channels, even when the camera signal is input, set the recording of the corresponding channel as OFF. Then, recording of the channel stops without pulling camera BNC cable off. ON or OFF can be selected. The default is ON.
- Resolution: Image resolution for recording can be set. Select one setting from 352×240, 720×240, 720×480, 960×480, 1280×720 & 1920×1080. As the resolution number increases, the picture quality becomes higher. For example, 352×240 is VHS level and when high quality camera is used, 960×480/576 shows DVD level picture quality. When the picture quality gets higher, the recording file size becomes bigger and the recording period will be shorter. Thus, selecting appropriate resolution according to the situation is important.
- FPS: Set frame for each channel. The system automatically calculates remaining FPS.
- Quality: Set recording quality from 1M up to 4M.
- Audio: Select the associated audio channel.

4.4.2. Second Stream

Set the frame rate and resolution for second stream to effectively manage recording image quality and network traffic. For example user can make recording setup as “30fps at 1080P resolution” while the network setup as “7fps at CIF resolution”.



- Resolution: Select the resolution to be transmitted. The higher resolution requires the bigger network bandwidth due to its data size.
- FPS: Select the frame rate to be transmitted. It is not related to the record setting.
- Quality: Select the image quality to be transmitted. It is not related to the record setting. The higher quality requires the bigger network bandwidth due to its data size.
- Audio: Select On or off to transmit audio or not.

4.4.3. Recording Schedule

Set recording schedule for each camera. Select the camera to set schedule, or ALL. Recording can be set by each hour from 00 through 23 a day, for all days of the week. You can also setup a special recording mode for holidays.



- No color (Off): No recording. Even though user set recording frames in the CAMERA setup menu, the system will not record anything if user sets OFF in the schedule table.
- Yellow (Continuous Recording): Record all the time as set in the CAMERA settings.

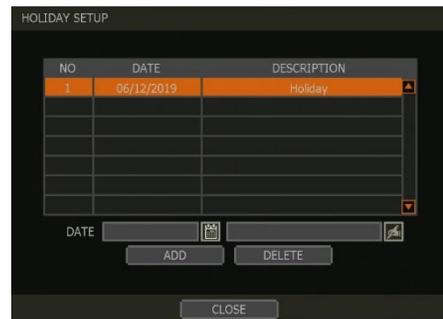


- Green (Motion-Detection Recording): The system records only when motion is detected. If EVNET > MOTION ALARM is disabled, the system will record when motion is detected but motion alarm will not be activated.
- Orange (Sensor-Activated Recording): The system records only when a sensor is triggered as set in EVNET > SENSOR menu. If EVNET > SENSOR is disabled, the system will record when a sensor is triggered but sensor alarm will not be activated.
- Sky blue (Continuous + Motion Detection Recording): The system records continuously as set by RECORD > CAMERA menu. When motion is detected according to the settings in EVENT > MOTION ALARM, the DVR will switch recording mode to motion configuration. If EVNET > MOTION ALARM is disabled, the system will record when motion is detected but motion alarm will not be activated.
- Brown (Continuous + Sensor-Activated Recording): The system records continuously as set by RECORD > CAMERA menu. When a sensor is triggered according to the settings in EVNET > SENSOR, the DVR will switch recording mode to motion configuration. If EVNET > SENSOR is disabled, then the system will record when a sensor is triggered but sensor alarm will not be activated.
- Pink (Motion Detection + Sensor-Activated Recording): The system records only when motion is detected AND when a sensor is triggered at the same time. If both EVNET > SENSOR and EVENT > MOTION ALARM are disabled, the system will record when a sensor is triggered and motion is detected but neither sensor nor motion detection alarms will be activated.

NOTE

- In case the recording schedule is set to “CONT + MOT” or “MOT + SENS”, the system records by continuous or motion detection mode in normal operation. When motion occurs in motion area or alarm is activated, recording mode will switch to recording as set by MOTION ALARM or SENSOR in the EVENT menu.
- Dark Blue Color: The data recorded during DST (Daylight Saving Time) will be indicated in dark blue color in intelli-search bar on playback mode.

- Holiday setup: Setup specific days as holidays in to assign special recording schedule for those days. The system supports up to 32 holidays. Press DATE button (📅) write a description, and press ADD to save the data as a holiday.



NOTE

Instant recording (emergency recording)
 In the case of emergency, user enables instant record by pressing the panic recording button in the menu bar. The system will instantly start recording all the channels with full frame rate at the maximum resolution regardless of recording mode setting.

E-REC will appear in live mode and red-colored bar is shown in the time search bar

for video recorded by instant recording.

- Record 1fps continuous with “CONT+” mode: Check the box to set continuous recording to 1FPS when selecting “continuous + xx” modes.
- Limit emergency recording time: Set a limit to how long the system will record in emergency recording mode. Select from 30sec/60sec/90sec/2min/5min/10min.

4.4.4. Quick Setup

User can setup whole channel's recording setting and second stream at once.



User can setup recording resolution, FPS, quality and mode on recording settings. And user can also setup network resolution, FPS. Quality and audio on second stream setting.

4.5 Network

DVR can be connected to the network or internet through either fixed IP or dynamic IP by proper setting of the DVR and router.

4.5.1. Network



- Network type: Select either STATIC IP or DHCP for dynamic IP.
If DHCP is selected, the DVR will automatically configure the network settings according to the current network requirements. If DHCP is selected, click IP DETECT to detect automatically all the network settings.
If Static IP is selected, manually enter all necessary network settings. For proper configuration, it is recommended to assign the DVR a DHCP address and let it auto discover all the proper network settings, and then change the network type back to static IP and save the changes
- IP address: Displays the DVR's IP address. If DHCP is selected, the IP address will automatically adjust to match the network's requirements. You can also manually change the IP address as needed.
- Subnet mask: subnet mask address classifies the subnet that the system belongs to. For more information, please consult your network administrator or your internet provider.
- Gateway: This is the IP address of the router or gateway server. It is required when connecting to the DVR through the external router over the internet (from another network). For more information, consult your network administrator or your internet provider.
- DNS server: Enter the IP address of the Domain Name Server. You should input the DNS server information in order to use DDNS, E-mail notifications and NTP server. For more information, please consult your network administrator or your internet provider.
- TCP/IP port: Input the port number to use when connecting to the DVR locally or remotely. Default is 9010.
If your ISP blocks the port # 9010, you need to input another valid port number (ex, 9020).
- Web port: Input the port number to use when connecting from the web browser. Default is 80. If your ISP blocks the port # 80, you need to input another valid web port number (ex, 8080).
- Auto IP: Displays the system IP which is assigned through auto-IP, automatically.
- Bandwidth limit: Depending on the setting made by user, the system can control the data volume transmitted over network ranging from 25 kbps up to 1Gbps. This function is effective especially under narrow bandwidth network condition or when user wants to limit "network bandwidth occupied by video transmission" to a certain level. Default is 100 Mbps.
- Use UPnP (Universal Plug and Play): UPnP is a plug-and-play feature that allows the DVR to be automatically discovered by a PC on the same network. To locate the DVR, go to "My Network" on your PC. The computer will scan your network for all supported devices. The first five characters of the file name of a detected DVR represent the model number, followed by the DVR's IP address.



Once the PC discovered the DVR, double click on the icon to open the DVR's web client. Enter your User ID and Password to login and click "Connect" to connect.

NOTE The maximum number of simultaneous connection is 15 users.

4.5.2. DDNS

Use can use either a public DDNS server or the DDNS server operated by DVR maker (MYDWDDNS.NET) to connect through dynamic IP.

DDNS server: DW® offers free and reliable DDNS service support. This allows you to assign the DVR a URL address rather than a long complicated IP Address. This simplified the connection process to the DVR. The DDNS service is supported by DW® and is free of charge for our customers. To setup DDNS:

The screenshot shows the 'NETWORK > DDNS' configuration screen. At the top, there are navigation tabs: NETWORK, DDNS (selected), NOTIFICATION, MOBILE PUSH, and PATHFINDER. Below the tabs, there is a 'USE DDNS' checkbox which is checked. To its right is an 'UNREGISTER' button. The 'DDNS SERVER' is set to 'MYDWDDNS.NET' in a dropdown menu. The 'TCP/IP PORT' is set to '80'. The 'HOST NAME' field is empty, with a 'CHECK' button and an 'AUTO GENERATE' button to its right. The 'MAC ADDRESS' is set to '90:DA:6A:01:7A:8E'. At the bottom of the screen, there are 'HELP', 'SAVE', and 'CANCEL' buttons.

- 1) Enable Use DDNS box.
- 2) DDNS server: Select MYDWDDNS.NET
- 3) TCP/IP port: Default is 80.
- 4) Domain name: Assign a domain name for your DVR (ex, DVROFFICE). If the same domain name is assigned, the message sill pop up when you click CHECK.
- 5) IP mapping and external IP: If you are using IP mapping and port forwarding (e.g. using router for internet connection), enable both USE DEVICE IP MAPPING and USE EXTERNAL IP for proper connection.
- 6) Setting at the remote software (C3™ CMS): In the menu of Option > Setting, input DDNS Address and Port number.
- 7) Address of DDNS server is "mydwddns.net" and Port is "80".
- 8) Setting at an Internet Explorer web browser: User can type the DVR's mac address + MYDWDDNS.NET. If you are using a sub domain name, type the domain name + MYDWDDNS.NET.
 Ex) 1. If Mac address is "00:1C:84:01:00:02" → input as "http://001c84010002.mydwddns.net"
 Ex) 2. If the domain name is "DVROFFICE" → input as "http:// DVROFFICE.mydwddns.net"

4.5.3. Notification

NETWORK > NOTIFICATION

NETWORK DDNS **NOTIFICATION** MOBILE PUSH PATHFINDER

REMOTE NOTIFY E-MAIL NOTIFY

NO	ADDRESS

NO	E-MAIL

ADD EDIT DELETE ADD EDIT DELETE

OUTGOING MAIL SMTP SERVER: smtp.mailserver.com PORT: 25

YOUR EMAIL ACCOUNT USER NAME: PASSWORD: E-MAIL TEST

YOUR EMAIL ADDRESS: user@mailserver.com INTERVAL: NONE

USE SSL AUTHENTICATION

HELP SAVE CANCEL

- Remote notify: The system can send an alarm message to the IP address of a remote software PC. Select REMOTE NOTIFY to use this function and set IP address & events. To add, edit or delete notification:
 - a. IP address: Input the IP address of the Remote Software PC which will receive events notification.
 - b. Port: Input Port number which is set at the Remote Software PC. Default is 8003.
 - c. Event: Select events to be notified. When ALL is selected, all of the events will be notified.

REMOTE NOTIFY ADD/EDIT

IP ADDRESS: 0.0.0.0

PORT: 8003

EVENT ALL

LOGIN SETUP

SYSTEM START SHUTDOWN

SENSOR MOTION ALARM

VIDEO LOSS S.M.A.R.T

RECORDING FAILURE HDD FULL

OK CANCEL

- E-mail notify: The system can send a notification to an e-mail address. Select E-MAIL NOTIFY to use this function and set e-mail address & events. To add, edit or delete notification:
 - a. E-Mail: Input e-mail address which will receive events notification.
 - b. Event: Select events to be notified. When ALL is selected, all of the events will be notified.
- Outgoing mail SMTP server: Input SMTP server address.
- Your e-mail account username: Input the e-mail username from which the notifications are sent.
- Your e-mail address: Input the e-mail address from which the notifications are sent.
- Port: Input the port number that will be used for e-mail sending.
- Password: Input password of the sending account.
- Interval: For e-mail notify, select the time interval indicating how often the system will send out an update e-mail.
- E-mail test: Check if the settings were entered correctly. The DVR will send an e-mail and inform you of the result. In some cases, SMTP server does not send e-mail if the e-mail is received.
- Use SSL AUTHENTICATION: In case the SMTP server requires SSL authentication (e.g. Gmail, Yahoo mail, etc.), select this option.



Snapshot Notify: Send a live snapshot image of a selected channel to the e-mail address. You can setup the notification to be sent periodically, every setup amount of time.

- Sender settings (SMTP): Enter the sender settings.
- Outgoing Mail SMTP Server: Input SMTP server address.
- Port: Input the port number that will be used for e-mail sending.
- Your Email Account User Name: Input the user of the sending account.
- Password: Input password of the sending account.
- Your Email Address : Input e-mail address to receive notification.
- E-mail test: Check if the settings were entered correctly. The DVR will send an e-mail and inform you of the result. In some cases, SMTP server does not send e-mail if the e-mail is received.
- Use SSL AUTHENTICATION: In case the SMTP server requires SSL authentication (e.g. Gmail, Yahoo mail, etc.), select this option



NOTE RECORD > SCHEDULE should always be configured before notifications settings. The system will not e-mail alarm messages if these recording settings are not setup first in the DVR's recording schedule. To receive motion and sensor e-mail notifications, set the SCHEDULE > RECORD, EVENT > MOTION ALARM and EVENT > SENSOR accordingly.

4.5.4. Mobile Push

The system can send an event notification to the mobile device registered in the DVR. The mobile app DW Mobile Plus™ must be installed in your smartphone device prior to registration. Select USE MOBILE NOTIFY to use this function and select event to notify.

In the mobile app, add your DVR using the IP address or DDNS by clicking the + sign on the top right side of the app.

Once the site has been added to the device list on the app, highlight the DVR in the list and press the Setup button on the bottom right side of the app. Make sure USE PUSH CHECK is

enabled.

The mobile device's ID will appear in the Mobile Notify table in the DVR.



- NOTE**
1. Mobile Push Notification function is available with iPhone, iPad & Android devices.
 2. Registration for Mobile Push Notification is available when it is set at the mobile device.
 3. Deletion of the list will be available when you click DELETE button in the DVR menu or when you select disable Push Notify function in the mobile device.
 4. Maximum number of mobile devices is 50.

- Delete: When the mobile device is registered to the DVR correctly, it shows in the list. Device ID is a unique ID of the mobile device. If you want to delete it, select the device and click Delete button. Then, push notification setup in the mobile device will be disabled.

NOTE Push Notification only works when the DVR & mobile device has network connection to internet.

4.5.5. Pathfinder™

The system supports QR reading. When the Pathfinder™ Use is selected, Pathfinder™ service is being used.



When user scan QR code with DW's mobile application (DW Mobile Plus™), they can easily register the system and monitor it. Users can also check the Pathfinder™ status for their devices at the bottom of the screen. STATUS will display "PATHFINDER SERVICE IS STOPPED" or "PATHFINDER SERVICE ACTIVATED" according to the system's status.

4.6 Export

4.6.1. Manual Export

User can easily archive video while viewing the video playback.

- 1) In live mode, click the EXPORT icon in the menu bar to open the export menu.
- 2) In playback mode, press the QUICK export icon in the menu bar. Pressing it once will indicate the start time for the backup file. Click the icon again to indicate the end time for the backup clip. The backup menu screen will appear.



- 3) Connect an appropriate USB memory drive and press SCAN to recognize it before starting the backup process.
- 4) Adjust the following options as needed:

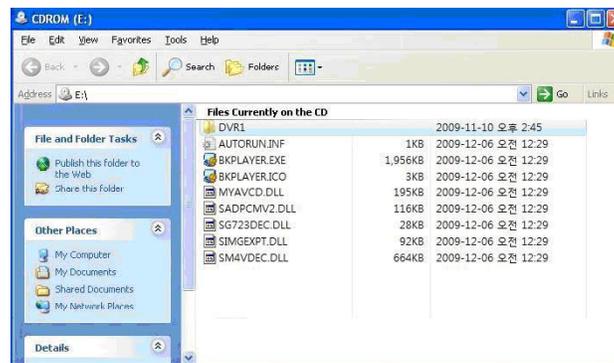


- Select the channels to be included in the backup file.
- Adjust the start and end time of the backup file.
- Select to include the Backup Viewer with the archived file.
- Press the “Estimate” button to see the expected size of the backup file.
- Check the box next to [ADD VIEWER] to add the backup player to the backup file. The backup player allows to play the video clip without installing any programs.
- Edit the file name and add a protection password if needed.
- Press “Start” to start the backup process. A progress bar will appear on the screen.

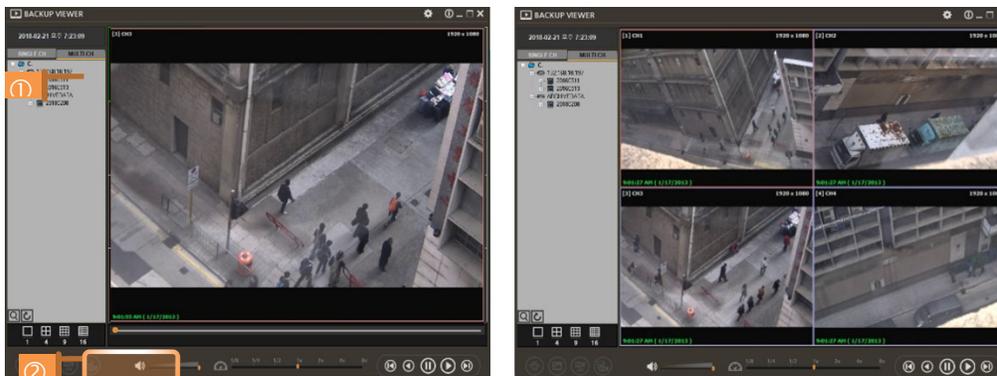
4.6.2. Backup Video Playback

If ADD VIEWER is selected, the backup image can be reviewed in a PC with no need for additional installation. Once the backup device (USB) is connected to a PC, the files will appear in the USB's folder.

To play recorded data, double click the “MultiBackupPlayer.exe” file. In the backup player, open the video data file (SSF format) you wish to playback in the date folder.



To playback a single channel, click SINGLE CH tab and select an SSF file to playback and drag it to the viewing area. To playback multiple channels, click MULTI CH tab and “Search” to open the folder that keeps all SSF files.

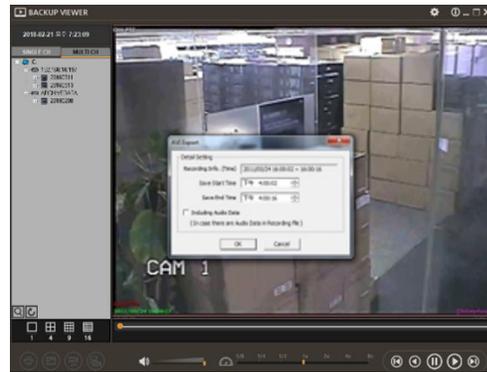
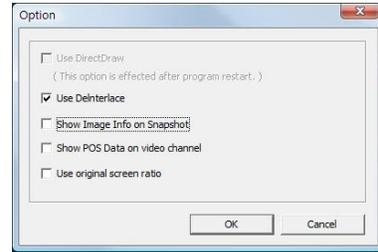


You can print, export an image, and zoom by using the icons at the bottom-left of the player window.

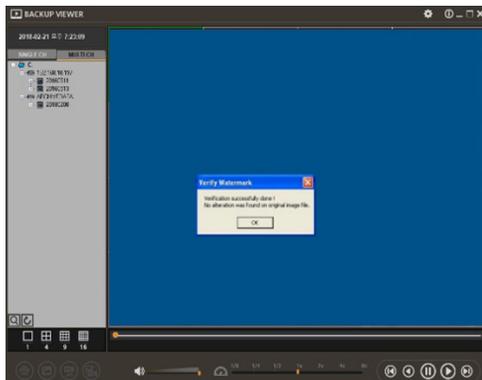
- Option MENU: Various settings are available in OPTION window of the backup player

software. Use DirectDraw: There are some PCs that do not support “Direct Draw”. In this case, user can uncheck the DirectDraw check-box in the “Option” menu.

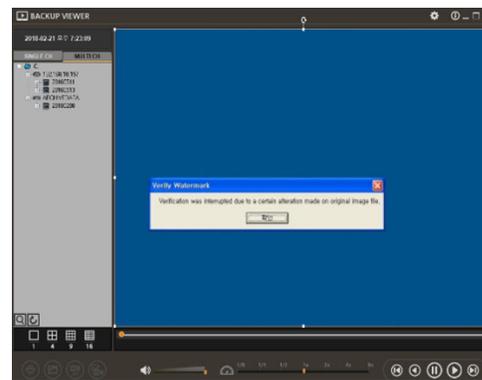
- Show Image Info on Snapshot: Image information will be added as text overlay when exporting an image.
- Show POS Data on video channel: POS data that has been backed up can be displayed during playback.
- WATERMARK Verification on AVI File
- Convert the backup file to an AVI file to play the file in ordinary media players.
- Playback the SSF file in Single CH mode and click PAUSE.
- Click AVI Convert.
- Define the start and end time.



When the AVI file is played back in the Backup Player, verify whether the file has been altered or not by pressing [Watermark] button (). If the file has been altered, a popup message will appear



No alteration was found



AVI video clip has been altered

5. Web Surveillance through Internet Explorer

The VMAX® A1 Plus™ has a built-in web server by itself. This allows you to access the system by ordinary web-browser via network for live monitoring, playback or remote configuration without installing any additional software.

5.1 Web Login

In an Internet Explorer page, type the DVR's IP Address or DDNS address in the address bar. When the login page appears, enter the user ID and password. Default user ID and password are "admin" and n password. Once you are connected to the DVR, you will be prompted to download and install Active-X file.



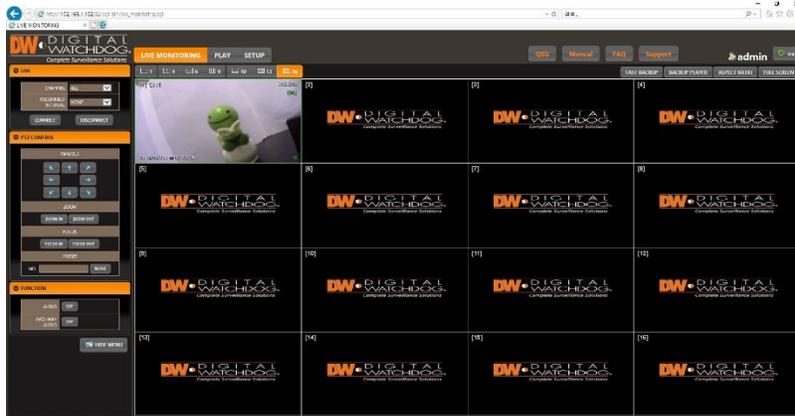
Active-X Installation:

- 1) If the PC does not have Active-X installed, installation guide message will appear automatically.
- 2) Click "install" and follow the installation wizard to complete the ActiveX installation.
- 3) To avoid download restrictions for the Active X file, make sure that Active X controls are enabled in the web browser's security settings. Go to "Tools > Internet Options > Security > Internet > Custom Level" and enable all Active-X controls and plug-in.
- 4) Failing to install the Active-X files properly may result in no video showing from the DVR.

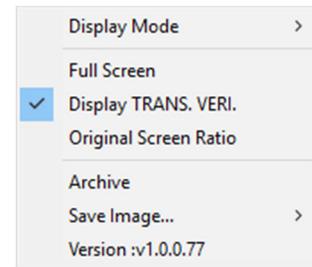


5.2 Web Monitoring

Once the Active-X files are properly installed, the live view from the DVR will appear on the web page automatically. User can select other menus such as PLAYBACK and SETUP, or LOGOUT.



- Live: User can select which channels to view in live mode, set the reconnection time interval in case of connection loss, and connect or disconnect all channels.
- PTZ control: User can control pan, tilt, zoom in/out, focus in/out and preset buttons to control PTZ cameras connected to the DVR.
- Function: Enable or disable audio in from the camera or enabled or disable interlace function to improve image quality.
- Hide or show menu: To hide the menu bar, press the HIDE MENU. To view the menu bar again, press the SHOW MENU.
- POP-UP MENU: Right-click to open additional options:
 - Display mode: change the current split view option from 1x, 4x, 9x, or 16x options.
 - Full screen: View current split view in full screen view. Right-click anywhere on the screen to exit full screen view.
 - Display POS: show Transaction Verification text.
 - Original screen Ratio: view the cameras in their original aspect ratio.
 - Archive: Backup a clip to your PC. Click the screen once to start the backup. Select the directory where you want the files to be stored. Click the Archive option again to end the backup process. A popup screen will ask you to save the archive or not.
 - Save image: save a still image (JPG or BMP) of a selected channel.
- Aspect ratio: Manually select the size ratio of the image either original ratio or monitor ratio.
- Full screen: User can change view to full screen. Right-click on the screen to exit full screen mode.

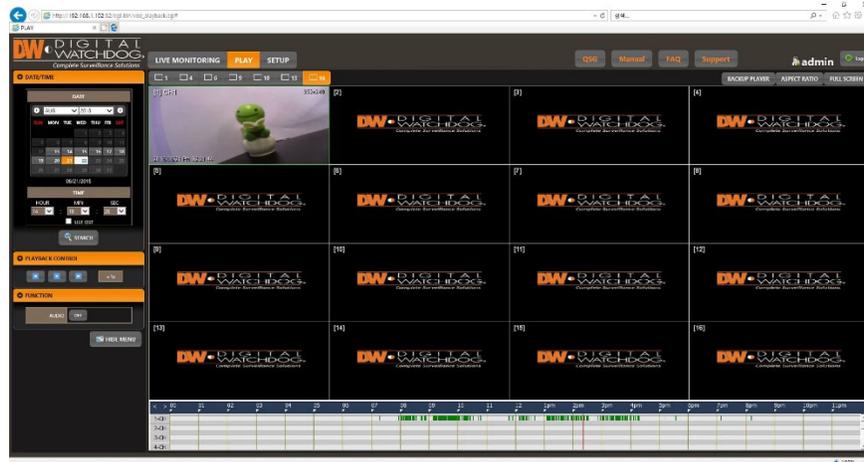


5.3 Web Playback

To remotely playback video from the DVR, click “PLAY” on the top of the window.

- Playback time: Select the date and time and click “GO” to view video from the selected time.
- Playback icon: Use the Fast Forward, Rewind and Play/ Pause buttons to control the playback video.
- Play DST: Check this box to play overlapped images during DST (Daylight Saving Time) period. For details, please refer to section **3.7.DST Setting and Image Playback** menu.





- Intelli-search bar: Move the red-vertical line to the time that user wants to search. The colors of the time bar indicate the different recording modes. Refer to “4.3.2” for more information.

5.4 DVR's Setup from the Web Viewer

Main Classification	Sub Classification
SYSTEM	INFORMATION
	USER
	DISPLAY
	HDD
	UPGRADE
	CONFIGURATION
DEVICE	CAMERA
	AUDIO
	PTZ
	KEYBOARD
EVENT	SENSOR
	CAMERA ALARM
	EXTRA ALARM
RECORD	CAMERA
	SCHEDULE
NETWORK	NETWORK
	DDNS
	NOTIFICATION
LOG	SYSTEM LOG
	EVENT LOG

NOTE This DVR system has its own built-in web server. Therefore, this web CGI screen is directly supported from the built-in web server of DVR regardless of Internet connection.

NOTE SYSTEM REBOOT enables user to reboot the system without any change of the setup. User can use this function when the network is disconnected due to abnormal operation of the system and try to reconnect. IP number assigned to the system may be changed in case of DHCP mode.

6. Q & A

- 1) DVR does not record images in sensor mode and/or motion mode.
 - It records images only when there is an event for the corresponding mode.
 - Check that the settings are correct at the menus: EVENT > SENSOR, EVENT > MOTION ALARM, and RECORD > SCHEDULE.
- 2) There is a HDD installed but “No HDD” icon () is still shown on the screen.
 - Check the cable connection of the HDD again.
 - If you can see the HDD list at SYSTEM > HDD but the capacity indicates “0”, the HDD requires format.
- 3) There is nothing displayed on the HDMI / VGA monitor though electric power is supplied to the DVR.
 - Check if the power is supplied properly. You should be able to hear the noise from the fan and HDD operation.
 - Check the HDMI / VGA cable connection with the DVR. Remove all the cable connections, except for the monitor cable, and then apply power to the DVR again.
 - In case that the display screen is stopped at logo screen, please contact DW's technical support for additional information.
- 4) Is it necessary to open the port when using DDNS?
 - Yes, it is. DDNS is the function that lets remote connections acknowledge the changed address of the DVR (dynamic IP provided by ISP) or to allow connection to the DVR by domain (domain.dynlink.net) without memorizing IP.
- 5) Remote software connection to the DVR works fine but WEB connection does not work.
 - Some ISP blocks port number 80. Please try again after changing WEB port. (8080 is recommended.)
 - Check whether port 80 is opened or not.
- 6) Image is not shown after login at WEB monitoring
 - TCP Base port should be opened. Default of TCP base port is 9010.
- 7) Image on the remote software has suddenly disappeared after displaying for a short time.
 - Some ISP restricts upload data/traffic volume. Please contact your ISP.
 - Upload traffic restriction can be easily checked with the following steps.
 - i. Turn off the power of your Modem & Router.
 - ii. After 60seconds, turn on the power of your Modem first and then Router.
 - iii. After reconnection, if it is disconnected again after a shot time (in a similar period later), it means that the ISP restricts upload traffic.
- 8) Backup or firmware upgrade through USB memory stick cannot be made though it is detected by the DVR.
 - USB memory stick should be formatted by FAT or FAT 32.
 - It is not allowed to use a partitioned or password-encoded USB memory.
- 9) Time sync through NTP server does not work.
 - NTP server requires DNS server address. Check if DNS server address is correct at the NETWORK setup page.
- 10) E-mail transmission does not work in using E-mail notify function.
 - E-mail notify function works based on SMTP service.
 - Check if the sending mail address is correct and if the mail server supports SMTP service.
 - If you are using an SMTP service which is based on TLS authentication (including SSL) such as Gmail and yahoo mail, enable USE SSL AUTHENTICATION at the NOTIFICATION setup page.
 - SMTP service is provided based on DNS. Check if DNS server address is correct at

the NETWORK setup page.

7. Specifications

Part numbers		DW-VA1P4xT	DW-VA1P8xT	DW-VA1P16xT	
VIDEO					
Operating system		Embedded Linux®			
System	channel	4CH	8CH	16CH	
	Signals Supported	Analog signal up to 960H, HD-Analog and HD-TVI up to 5MP			
Video-out	Monitor	True HD, VGA and Spot outputs			
	Framerate	120fps	240fps	480fps	
	Resolution	HDMI: 2560x1440, 3840x2160 (4K), 800x600, 1024x768, 1280x1024, 1920x1080 VGA: 800x600, 1024x768, 1280x1024, 1920x1080 Spot: D1			
	Screen mode	1 & 4	1, 4, 6 & 9	1, 4, 6, 9, 10, 13 & 16	
Audio	Input	4 inputs			
	Output	1 output			
	Codec	ADPCM			
Alarm	Alarm input	4 inputs			
	Alarm output	1 output			
Serial		1x RS485 for keyboard and PTZ control			
User interface		Graphical user interface (GUI), IR remote control, USB mouse			
PERFORMANCE					
Recording	Compression	H.264			
	Recording mode	Continuous, scheduled, sensor-activated and motion detection recording pre & post alarm recording, emergency recording, quick backup			
	Pre recording	0- 5sec			
	Post recording	0-5Min			
	Recording rate	960x480/576(960H): 120 fps	960x480/576(960H): 240 fps	960x480/576(960H): 480 fps	
		1280x720 (HD): 120 fps	1280x720 (HD): 240 fps	1280x720 (HD): 480 fps	
		1920x1080 (HD): 120 fps	1920x1080 (HD): 240 fps	1920x1080 (HD): 480 fps	
		2560x1600(4MP): 60 fps	2560x1600(4MP): 120 fps	2560x1600(4MP): 240 fps	
	2560x1944(5MP): 40 fps	2560x1944(5MP): 80 fps	2560x1944(5MP): 160 fps		
Recording resolutions	352 x 240, 720 x 480, 960 x 480, 1280x720, 1920x1080, 2560x1600, 2560x1440, 2560x 1944				
Playback	Playback rate	960x480/576(960H): 120 fps	960x480/576(960H): 240 fps	960x480/576(960H): 480 fps	
		1280x720 (HD): 120 fps	1280x720 (HD): 240 fps	1280x720 (HD): 480 fps	
		1920x1080 (HD): 120 fps	1920x1080 (HD): 240 fps	1920x1080 (HD): 480 fps	
		2560x1600(4MP): 60 fps	2560x1600(4MP): 120 fps	2560x1600(4MP): 240 fps	
		2560x1944(5MP): 40 fps	2560x1944(5MP): 80 fps	2560x1944(5MP): 160 fps	
	Playback resolution	1, 4, 9 & 16 CH at 1080P (up to 4K 3840x2160)			

	Fast forward functions	x1, x2, x4, x8, x16, x32		
	Playback functions	Intelli-search by time bar, calendar (date & time), event search and thumbnail Search		
Storage	HDD interface	1x SATA HDD	1x SATA HDD	2x SATA HDD
	Max. internal storage	10TB	10TB	20TB
	HDD interface type	SATA		
	HDD health check	Temperature, S.M.A.R.T. with e-mail notifications		
Features	Camera color control	Via UTC		
	Digital zoom	Live and playback		
	Software upgrade	USB flash drive, network upgrade, FTP remote upgrade		
	Mobile client	Mobile app for Apple® & Android® smart phones & tablets		
	Covert channel	Yes		
	Settings import/ export	Import and export DVR settings		
NETWORK				
	LAN	Ethernet (1 x Gigabit)		
Streaming	Transmission speed live	960x480/576(960H): 120 fps	960x480/576(960H): 240 fps	960x480/576(960H): 480 fps
		1280x720 (HD): 120 fps	1280x720 (HD): 240 fps	1280x720 (HD): 480 fps
		1920x1080 (HD): 120 fps	1920x1080 (HD): 240 fps	1920x1080 (HD): 480 fps
		2560x1600(4MP): 60 fps	2560x1600(4MP): 120 fps	2560x1600(4MP): 240 fps
		2560x1944(5MP): 40 fps	2560x1944(5MP): 80 fps	2560x1944(5MP): 160 fps
Protocol	Fixed IP, DHCP, UPnP, DDNS			
Access	Web viewer	Live Monitoring, Playback & System Configuration		
	Client monitoring software	C3 CMS		
Network Features	Dual stream, separate local recording and network transmission			
	Network bandwidth control (25 Kbps - 1000 Mbps)			
	Time synchronization by NTP server ("pool.ntp.org")			
	Remote & E-mail notification, remote system reboot by IE, remote PTZ control			
	Pathfinder P2P service (auto port forwarding)			
Backup device	Local backup by USB and CMS over the network and FTP			
System recovery after power failure	Auto-Reboot and Journaling File System			
GENERAL				
Operating temperature and humidity	41°F - 104°F (5°C - 40°C), less than 80% (non-condensing)			
Certification	CE & FCC & KCC & WEEE, RoHS			
Power requirements	DC12V			



Power consumption	1.5A	3.3A	5A
Dimension (W x D x H)	12.4" x 9.52" x 1.77" (315 x 242 x 45 mm) (1U)	12.4" x 9.52" x 1.77" (315 x 242 x 45 mm) (1U)	15.15" x 12.4" x 1.88" (385 x 315 x 48 mm) (1U)
Weight	2.64 lbs (1.2kg)	2.86 lbs (1.3kg)	4.4 lbs (2kg)
Warranty	5 year limited		