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About This Guide

The User Guide is intended for anyone who needs to operate, configure, or troubleshoot the Explorer® DX-HD Mobile Digital Video Recording (DVR) System. Related user guides include:

- *Explorer DX-HD Install and Setup Guide, 700-0189*
- *vMax Commander Install and Setup Guide, 700-0100*
- *vMax Commander User Guide, 700-0120*
- *vMax View User Guide, 700-0137*
- *vMax View Quick Archiving Guide, 700-0037*

Conventions Used



CAUTION

Cautions identify conditions or practices that could result in damage to the unit or other equipment, or data loss.

Recommendation: These notes provide tips for optimum performance of the DVR system.

Important: These notes provide important information, which are not as serious as a Caution.

Abbreviations and Acronyms

Acronym	Definition	Acronym	Definition
DVR	Digital video recorder	IR	Infrared
FPS	Frames per second	LAN	Local area network
GPS	Global Positioning System	MJPEG	Motion Joint Photographic Experts Group
HD	High Definition	OSD	On-Screen Display
HDD	Hard disk drive	RA	Return Authorization
H.264	Video compression standard	TCP/IP	Transmission Control Protocol/Internet Protocol
IPS	Images per second	USB	Universal Serial Bus
		UTC	Universal Time Coordinated

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CHAPTER 1

Introduction

This chapter contains the following sections:

Overview, on page 1–2

DX-HD DVR Product Features, on page 1–3

DVR Video Configuration Playback and Archiving, on page 1–9

DX-HD System Components, on page 1–4

Recording Capacity for DVR Hard Drive Storage, on page 1–4

Front Panel Features, on page 1–5

Back Panel Features, on page 1–7

Using the Trackball Mouse, on page 1–8

DVR Video Configuration Playback and Archiving, on page 1–9

1.1. Overview

This section introduces the product features of the Explorer DX-HD Plus Mobile Digital Video Recording (DVR) System.

The DX-HD DVR integrates with the optional Smart-Reach Mobile wireless technology and works with optional vMax Commander and vMax View video management software for on-board video data management, as shown in [Figure 1-1](#).



Figure 1-1 DX-HD DVR System with Smart-Reach Mobile Wireless and vMax Commander Software

1.2. DX-HD DVR Product Features

The Explorer DX-HD has the following product features:

- supports up to 12 video channels and 12 audio channels
- has one high-definition video channel
- records up to 30 frames per second (FPS) at 720×480 D1 resolution on all video channels simultaneously
- offers H.264 and MJPEG video compression for enhanced compression and quality
- has removable dual HDD cartridge
- stores up to 2.0 TeraBytes (TB)
- offers dual stream recording; high-resolution stream for playback on a PC, and a lower resolution stream for viewing over a cellular phone network
- DVR Health Check monitors DVR and hard drive status and notifies the administrator of any issues, ensuring all onboard events are captured, using the vMax Commander video management software Health Check feature
- uses Global Positioning System (GPS) technology for Geo-fencing, to designate a geographic boundary for the vehicle and provides an alert if the vehicle leaves the area
- logs and displays G force data and provides incident alerts with G-Sensor
- authorized personnel only restricted access to DVR via keyed Security front cover and secure cable cover with slotted cable entries, see Figure 1-2
- configure, playback, and archive video from the DVR locally with trackball mouse, monitor, and DVR On Screen Display (OSD)
- configure, playback, and archive video from the DVR remotely with vMax Web via Ethernet
- interfaces with network using RJ-45 connections on the front and back panels, see Figure 1-3 and Figure 1-4.
- mounting options that can accommodate horizontal or vertical installation

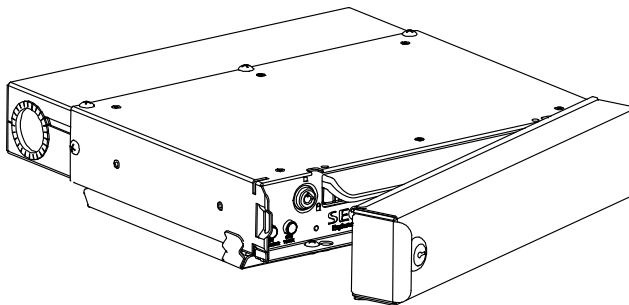


Figure 1-2 DX-HD DVR with Security Front Cover and Secure Cable Cover

1.2.1. DX-HD System Components

A typical DX-HD Plus system has the following components (see [DVR Video Configuration Playback and Archiving](#), on page 1–9):

- Explorer DX-HD DVR and DVR drive with dual HDD cartridge
- Cameras and camera cables, one connector per camera
- HD camera option
- Smart-Link™ module and cables and harnesses
- Diagnostic Button
- Optional equipment: Smart-Reach™ Mobile wireless bridge, portable video monitor, speed harness, GPS, and IR illuminator
- Trackball mouse for navigating on-screen display

1.2.2. Recording Capacity for DVR Hard Drive Storage

The DX-HD DVR uses H.264 video compression to extend the recording time on the dual HDD cartridge. The recording time varies, depending on the FPS, resolution (horizontal x vertical pixel count), and picture quality settings. Lower picture quality results in higher compression and a lower memory requirement. Higher picture quality results in lower compression and a higher memory requirement.

The following tables estimated recording time of analog and HD cameras in hours for 1 TB (two 500 GB dual HDD cartridges), including Record 2 set at 5 FPS, (3) 360x240. 1.5 TB and 2 TB cartridges are also available.

Important: The average image size is dependent on the scene content, lighting conditions, and amount of movement recorded. External facing cameras will consume disk space more rapidly. Estimated recording times are based on simulated test conditions. Actual recording times will vary greatly.

Table 1-1 Estimated Recording Time for 1 HD Camera

FPS	Picture Quality (3) 720p (1280x720)
30	864 hours
15	1728 hours
10	2608 hours
5	5184 hours

Table 1-2 Estimated Recording Time for 1 HD and 12 Analog Cameras

FPS	Picture Quality (3) 720p (1280x720)		
	CIF 360x240 resolution	Half D1 720x240 resolution	D1 720x480 resolution
30	168 hours	109 hours	68 hours
15	285 hours	193 hours	125 hours
10	431 hours	314 hours	171 hours
5	610 hours	483 hours	294 hours

Table 1-3 Estimated Recording Time for 1 HD and 8 Analog Cameras

FPS	Picture Quality (3) 720p (1280x720)		
	CIF 360x240 resolution	Half D1 720x240 resolution	D1 720x480 resolution
30	214 hours	146 hours	104 hours
15	354 hours	216 hours	179 hours
10	577 hours	394 hours	232 hours
5	699 hours	514 hours	353 hours

Table 1-4 Estimated Recording Time for 12 Analog Cameras

FPS	Picture Quality (3)		
	CIF 360x240 resolution	Half D1 720x240 resolution	D1 720x480 resolution
30	576 hours	288 hours	144 hours
15	1152 hours	576 hours	288 hours
10	1728 hours	864 hours	432 hours
5	3456 hours	1296 hours	864 hours

Table 1-5 Estimated Recording Time for 8 Analog Cameras

FPS	Picture Quality (3)		
	360x240 resolution	720x240 resolution	720x480 resolution
30	864 hours	432 hours	216 hours
15	1728 hours	864 hours	432 hours
10	2608 hours	1304 hours	652 hours
5	5184 hours	2592 hours	1296 hours

1.2.3. Front Panel Features

Figure 1-3 shows the front panel features followed by a short description in Table 1-6.

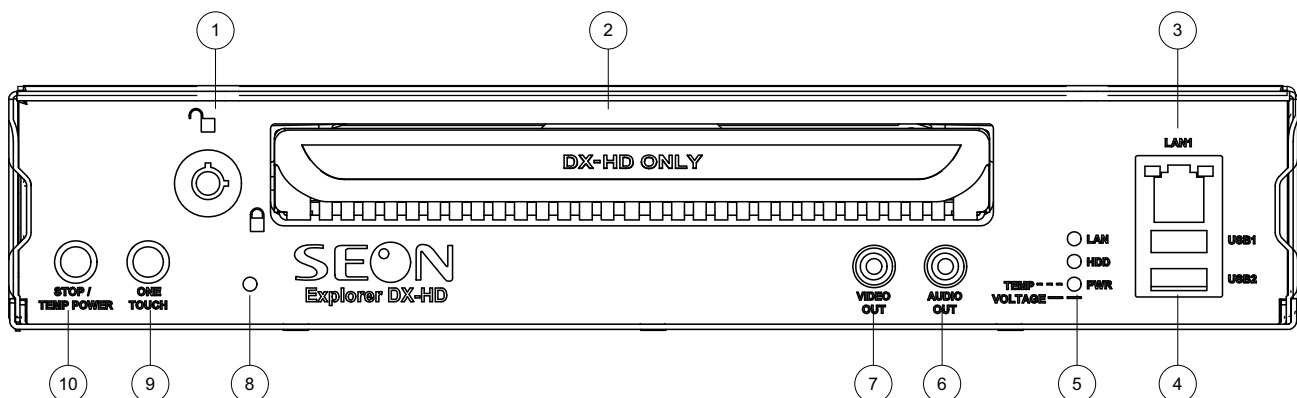

**Figure 1-3** DX-HD DVR Front Panel

Table 1-6 DX-HD DVR Front Panel Feature Descriptions

Feature	Description		Item
Controls	DVR drive lock	<p>Requires the dual HDD cartridge key to unlock and remove the dual HDD cartridge.</p> <p>When the DVR is recording, turn the hard drive key to the open position. The DVR HDD Activity LED blinks while the recordings are stopping. After ten seconds or until the red HDD activity indicator is off, gently pull out the hard drive.</p>  <p>CAUTION: Data Loss</p> <p>Do not remove the dual HDD cartridge until 10 seconds after power to the hard drive is turned off and the red HDD activity indicator is off. Failure to do so may result in lost data.</p>	1
	Dual HDD cartridge	Remove the dual HDD cartridge to a separate location for playback using the DVR HDD to USB Interface connected to a PC or laptop. See Remove and Replace the DVR Hard Drive, on page 2-2 .	2
	ONE TOUCH	Press to start one touch downloading to a USB memory device in a USB port. See Using One-Touch Download, on page 2-14 .	9
	STOP/TEMP PWR	<ul style="list-style-type: none"> • Powers on the DVR for five minutes, when held for more than 5 seconds. • Powers down the DVR if held for more than 5 seconds when the DVR is in temporary power mode, or in shutdown sequence and ignition is off. • Press the STOP button to temporarily stop the DVR from recording or playing. 	10
Connections	LAN1	Ethernet port with RJ-45 connector for connecting to the local area network (LAN). Ethernet is used to connect either to a PC, laptop, or directly to the Smart-Reach wireless bridge and other equipment.	3
	USB1, USB2 ports (supporting USB 2.0)	<p>Supports USB devices for:</p> <ul style="list-style-type: none"> • Copying video and audio information. • Exporting video clips. • Updating the DVR firmware. • Connecting the trackball mouse. 	4
	AUDIO OUT (red)	Audio output RCA jack.	6
	VIDEO OUT (yellow)	Video output RCA jack for configuring the DVR and viewing recorded video.	7
Indicators	LAN (green)	Illuminates when there is network activity on the LAN connection.	5
	HDD (red)	Illuminates when the DVR is accessing the dual HDD cartridge.	
	PWR (green LED) TEMP VOLTAGE	<ul style="list-style-type: none"> • Illuminates when the DVR is powered on. • Flashes quickly when the DVR cannot power up due to temperature limitations. • Flashes slowly when the DVR cannot power up due to voltage limitations. 	

1.2.4. Back Panel Features

Figure 1-4 shows the back panel features followed by a short a description.

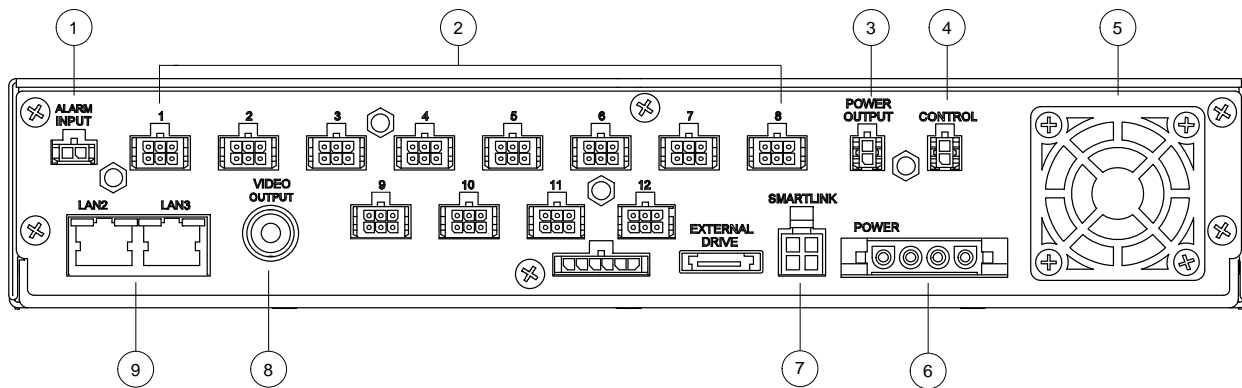


Figure 1-4 Back Panel Features

Item	Feature	Description
1	ALARM INPUT	Alarm input connector for the alarm button and cable (2-pin).
2	1 to 12	Twelve camera input connectors (6-pin).
3	POWER OUTPUT	Auxiliary power connector (2-pin). Used to supply DVR power to the HD Camera using the HD Camera connector cable 060-0670. Turns off after recording as configured in delay settings. See the DX-HD DVR Installation Guide 700-0189 for details.
4	CONTROL	Control connector (2-pin) for controlling the Smart-Reach Mobile wireless bridge equipment.
5	Fan	Intake fan with filter and removable cover. See Chapter 5, Maintenance, Troubleshooting, and Service .
6	POWER	Power input connector (4-pin) for connecting the power harness.
7	SMART-LINK	Smart-Link connector.
8	VIDEO OUTPUT	Configurable video output for viewing video, BNC connector
9	LAN2, LAN3	Ethernet ports with RJ-45 connector for connecting an HD camera or to LAN. Ethernet is used to connect either to a PC or laptop or directly to the Smart-Reach wireless bridge and other equipment.

1.2.5. Using the Trackball Mouse

Figure 1-5 shows the buttons on the trackball mouse followed by a description of the features.



Figure 1-5 Trackball Mouse

To do this...	Use
Select the highlighted menu option by pressing the middle button.	1
Select the highlighted menu option by pressing the left button with your thumb.	2
<ul style="list-style-type: none">Delete a character entered into a field or go back to a previous items by pressing the button on the right.Press the right button to enter the configuration menu.	3
Move the cursor around the screen by rotating the blue button.	4

Many other USB mice will also work with the DVR.

1.3. DVR Video Configuration Playback and Archiving

Here is an introductory overview of the configuration, playback, and archiving methods available on the DX-HD.

The DX-HD DVR content can be accessed and archived in three ways:

- locally via OSD, mouse, and portable video monitor. See [DVR Operation, on page 2–1](#).
- remotely via vMax Web browser interface and Ethernet/wireless connection. See [vMax Web Remote Operation, on page 3–1](#).
- via vMax View video management software and dual HDD cartridge interface. See [vMax View and DVR Hard Drive Interface, on page 2–3](#). See also:

Explorer DX-HD Installation Guide, 700-0199

vMax Commander Software User Guide, 700-0120

vMax View User Guide, 700-0137

The following table shows which methods support video configuration, playback, and archiving.

To do this...	Use...		
	On-screen display with monitor and trackball mouse	vMax Web remote access with Internet Explorer	DVR Hard Drive Interface & vMax View software
Configure the DVR menu settings.	✓	✓	
Playback and view recorded video with single channel view or multiple views.	✓	✓	✓
Playback recorded HD camera video in single channel view or with multiple views.	x	✓	✓
Search for video from a Segment, an Events list, or by time and date.	✓	✓	✓
Archive video to .avr file format.	✓	✓	✓
Archiving options — each individual channel can be archived as an AVI file and individual images saved to .bmp or .jpg files			✓

CHAPTER 2

DVR Operation

This chapter provides information on using the DX-HD DVR, and viewing recorded video. This chapter contains the following sections:

Remove and Replace the DVR Hard Drive, on page 2-2

Search, Playback, and Archive Video, on page 2-2

vMax View and DVR Hard Drive Interface, on page 2-3

On-Screen Display Access, on page 2-4

Playback Menu Access, on page 2-6

Using the Search Function, on page 2-8

Using the Archive Function, on page 2-11

Copy to USB, on page 2-13

Using One-Touch Download, on page 2-14

2.1. Remove and Replace the DVR Hard Drive

The DVR has two hard drives contained in a single removable cartridge. A dual HDD cartridge lock secures the hard drive during operation. Use the hard drive key to lock and unlock the dual HDD cartridge.



CAUTION: Data Loss Risk

Do not remove the dual HDD cartridge until the red HDD activity indicator is off. Failure to do so may result in lost data. While the dual HDD cartridge is hot swappable (the dual HDD cartridge can be removed when the DVR is powered up), do not remove the dual HDD cartridge while the DVR is recording, as the video segment may not be recorded.

To remove the dual HDD cartridge:

1. Insert the dual HDD cartridge key.
2. Turn the key counter clockwise by $\frac{1}{4}$ turn until the hard drive lock is in the unlocked position.
3. After the red HDD LED is off, gently pull out the dual HDD cartridge.



CAUTION: Hard Drive Identification

Notice that the DX-HD hard drive has an identifying label to identify it as for this DVR series. Placing the DX-HD hard drive in a DX12 DVR and vice versa will result in lost data.

To replace the dual HDD cartridge:

1. Slide in a dual HDD cartridge until the hard drive seats inside the front panel.
2. Insert the dual HDD cartridge key, turn clockwise by $\frac{1}{4}$ turn until the hard drive lock is in the locked position.

2.2. Search, Playback, and Archive Video

The HD camera output is visible from vMax Web and vMax View, but not in the DVR onscreen monitor view.

To search, playback, and archive recorded video, use one of three methods:

vMax View and dual HDD cartridge Interface

Remove the dual HDD cartridge from the DVR, and use the DVR HDD to USB Interface and vMax View software. See [vMax View and DVR Hard Drive Interface, on page 2–3](#).

On Screen Display Menus

For local video access, connect a portable video monitor to the DX12 DVR. Use the trackball mouse to navigate the OSD menus. See [Using the Search Function, on page 2–8](#).

vMax Web Menus

For remote video access, use a laptop and the vMax Web browser user interface with Ethernet connectivity. Video recorded with the HD camera is only available for playback via vMax Web if the DVR's Ethernet port is connected to a network. See [vMax Web Remote Operation, on page 3–1](#).

2.3. vMax View and DVR Hard Drive Interface

The DX-HD hard drive interface is provided with vMax View software to accommodate the DX-HD dual HDD cartridge. It requires AC power to read the dual HDD cartridge.

To access video from the hard drive using vMax View:

1. Remove the dual HDD cartridge from the DVR.
2. Connect to a USB port on a PC or laptop with vMax View installed, as shown in Figure 2-1.

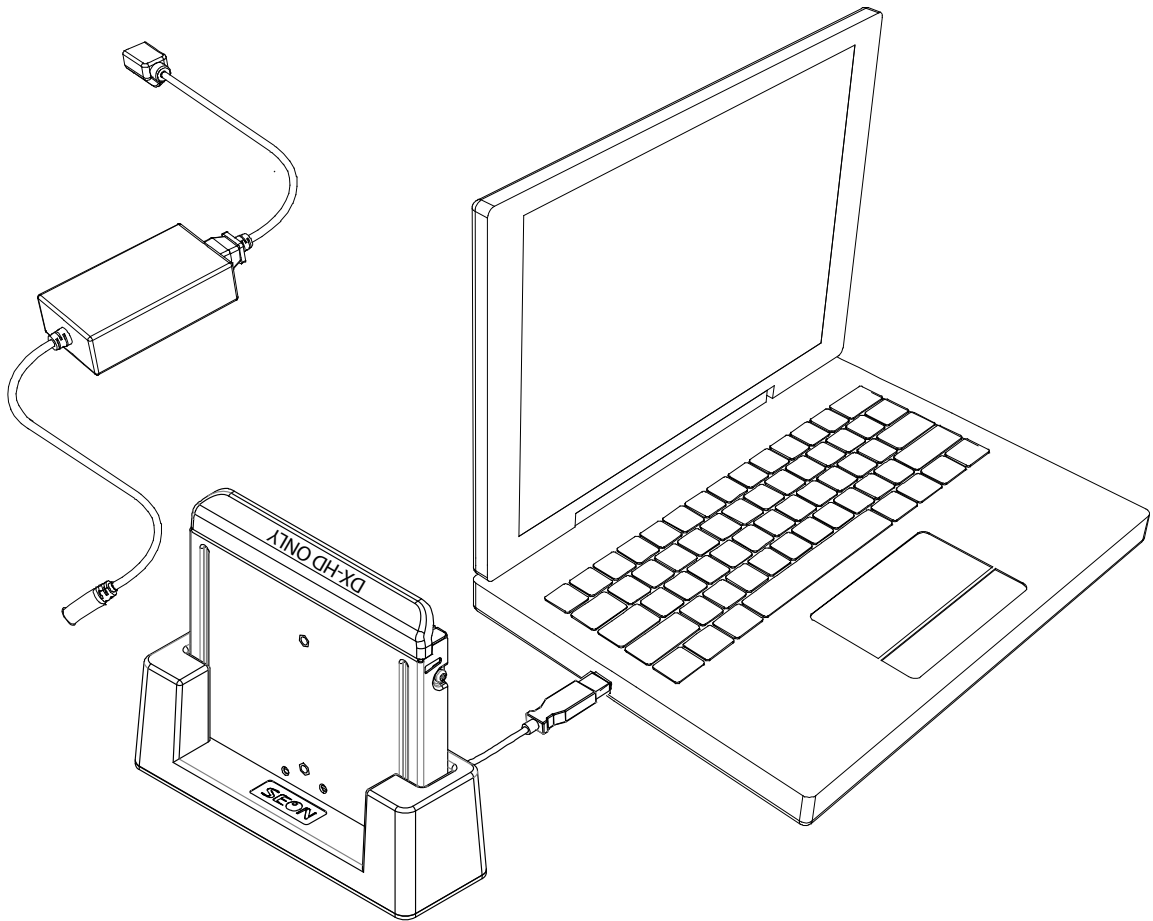


Figure 2-1 DX12 Hard Drive Interface with Hard Drive

3. Open the vMax View software to search, playback and archive dual HDD cartridge contents. vMax View sees the information read from the dual HDD cartridge as a single drive full of data. See *vMax View User Guide 700-0137* for detailed procedures.

2.4. On-Screen Display Access

Use the On-Screen Display mode to locally access the dual HDD cartridge content.

To use the on-screen display (OSD) with trackball mouse and monitor:

1. Connect a portable video monitor to the VIDEO OUT RCA jack on the DX-HD front panel. Plug the USB trackball or mouse in the USB socket on the front of the DVR.

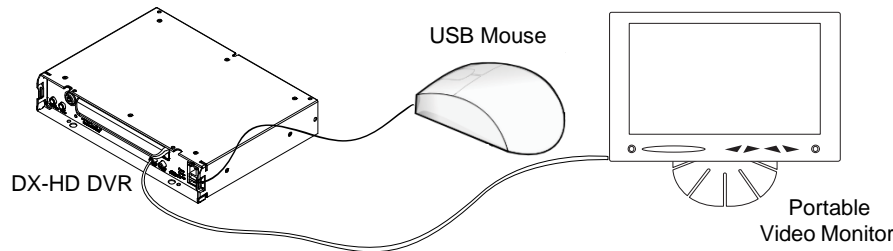


Figure 2-2 Mouse and Monitor Connected to DVR

When the on-screen display starts up, the Seon Explorer DX-HD splash screen (see Figure 2-3) appears briefly before the DVR enters live view.

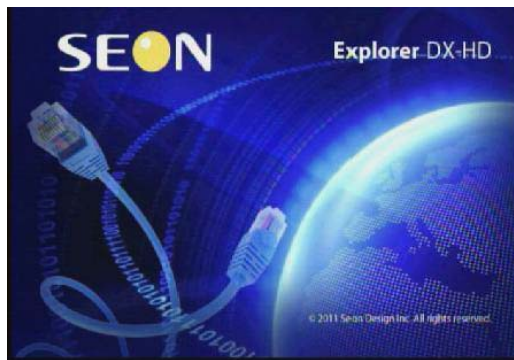


Figure 2-3 DX-HD Splash Screen

During recording and live viewing, the screen information is dynamic and can include the items shown in Figure 2-4 and described in Table 2-1. The screen items can be configured in the main menu.



Figure 2-4 On-Screen Display during Live Viewing and Recording

Table 2-1 On-Screen Display Information

Feature	Description
Camera 1 to Camera 12	Camera titles, maximum 8 characters each.
Main_Title	Main title of the DVR, maximum 32 characters.
HD_Size	Formatted size of the dual HDD cartridge, in gigabytes (GB).
HD_Used	Percentage of recorded video on the dual HDD cartridge. At 100%, the message displayed depends on the Repeat Record settings in the Recording Settings menu. <ul style="list-style-type: none"> When Repeat Record is set to On, the HD Used message reads “N/A Repeating”. N/A means that information on how much of the hard drive space is used is not available because the hard drive is full. Repeating means the DVR continues recording, overwriting the oldest recorded data. When Repeat Record is set to Off, the HD Used message reads “100%”. The DVR stops recording.
Version	DVR firmware version. To update, see Firmware Updates, on page 4-2 .
Status	DVR operation status: <ul style="list-style-type: none"> LIVE (live mode not recording) PLAYBACK (the DVR is playing locally, displays RECORD, ALARM or TIMER) RECORD (normal recording) ALARM (alarm recording) TIMER (timer recording) V. LOSS (video loss or camera signal loss)
Speed Display	Vehicle speed.
Voltage	System voltage from 8 to 32 VDC.
Temperature	DVR temperature in degrees Fahrenheit or Celsius.
GPS	If the GPS receiver is installed, the vehicle’s latitude and longitude is displayed.
Time and Date	Current/recorded time and date.
AC (Alarm count)	Count of alarm(s) triggered. Resets to 0 when the DVR is restarted.

2. Use the trackball mouse (right-click) to access the DVR’s configuration, playback, and archiving menu settings as required.
3. Proceed to the Configuration or Operation and Playback chapters for details on available setting options.

2.5. Playback Menu Access

Use the Playback menu to search, playback, and archive video directly from the DVR hard drive.

To access the playback menu from the OSD:

1. In the OSD view, right-click the live view to access the Main Menu and click Playback.

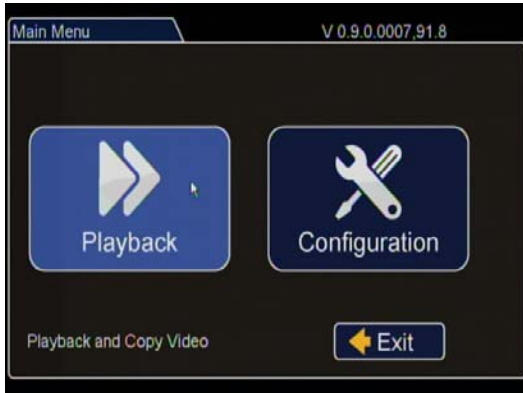



Figure 2-5 Main Menu > Playback












2. In the middle of the screen click the Show/Hide Toolbar icon .

The Playback Toolbar appears.



Figure 2-6 Playback Toolbar Screen

Table 2-2 Playback Toolbar Items

Toolbar Icon		Description
	Start of clip/End of clip	Click to set the start of clip and end of clip points for one-touch download.
	Search	Click to search by date, time or by Time, Alarm, Signals, or System Event. See Figure 2-7 and Figure 2-8.
	Archive	Click to display Archive screen to copy a video clip to a USB memory device.
	Rewind	<ul style="list-style-type: none"> Click to reverse during playback 1, 2, 4, 8, 16, or 32×. With playback paused, each click reverses the video by one frame.
	Play/Pause	Click to start playback. Click again to pause playback.
	Fast Forward	<ul style="list-style-type: none"> Click to fast forward during playback 1, 2, 4, 8, 16, or 32×. With playback paused, each click advances the video by one frame.
	Individual camera/16-up mode	Click to display Camera 1 to 12 or 16-up mode.
	Audio	Click to cycle through Audio channels 1 to 12.
	Metadata Text overlay	Click to show or hide the text overlay such as temperature, system voltage, GPS data (if recorded), speed, date, and time. These items can be set in the Title/Display menu or Diagnostic Display sub-menu.
	Show/Hide Playback toolbar	Click to show or hide the playback toolbar.
	Exit	Click to exit to on-screen display.

2.5.1. Using the Search Function

The DX-HD includes a powerful search function that lets you quickly find recorded information by Date and Time, Alarm, Signals, and by System Event.

To view the search menu:

1. From the playback tool bar, click on the Search  icon. to display the Search menu.

The items appearing in the dialog box will depend on the item selected in Search Only box.

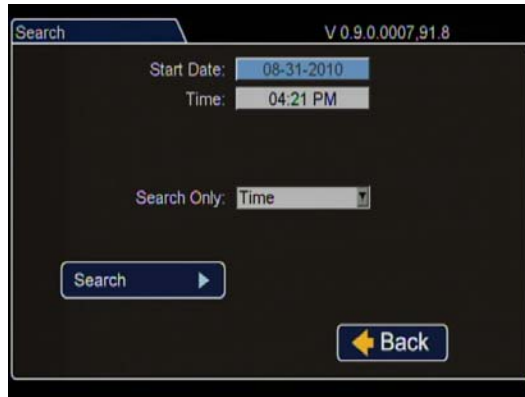


Figure 2-7 Search Menu

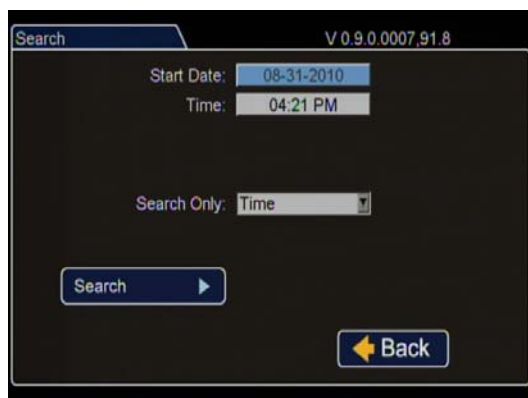
Table 2-3 Search Configuration Items

Menu Item	Description	Value [Default]	
Start Date	Set the start date for the search.		
Time	Set the start time for the search.		
Search Only	Select the desired search type.	• [Time]	
		• Alarm	• Alm0, Alm1, Alm2, Alm3, Alm4, All
		• Signals	• Signal1, Signal2, Signal3, Signal4, Signal5, All
		• System Event	<ul style="list-style-type: none"> • An Alarm event, n = alarm input • Dn Hard Drive over temperature warning, n = disk number • GPS = geo fence event • LH Logical head: beginning of recording date and time after hard drive has been overwritten • LUn Logical user login $n = 1$ is Administrator, 2 is Operator, 3 is General • PH Physical head: Beginning point of hard disk space • PL Power loss • RUn Remote user login through HTTP, n = user level • Sn Signal, n = signal input • Tn Scheduled recording • TN • Vn Video loss, n = camera • All
Search	Press Enter to Start Search.		

Table 2-4 DVR Event Descriptions

Event	Description	Event	Description
Almn Off	Alarm Off	GSN Z+	Limit exceeded in Z+
Almn On	Alarm On	Idle0	Idle limit not exceeded
EXSpeed	Excessive speed occurred	Idle1	Idle limit exceeded/stopped
FAN	Fan fault	IG0	Ignition off
GPS	Crossed GPS Fence	IG1	Ignition on
GSN	Gsensor exceeded limit	LIVE	DVR changes to live mode
GSN X-	Limit exceeded in X-	PLoss	Power Loss
GSN X+	Limit exceeded in X+	Rec On	Normal Recording event
GSN Y-	Limit exceeded in Y-	RUn	Remote User Login n
GSN Y+	Limit exceeded in Y+	Signaln	Signal Event n
GSN Z-	Limit exceeded in Z-	Vlossn	Video loss on channel n

2. Click the Start Date and Time fields to set the search ranges. Click Search.

**Figure 2-8** Search Menu

Depending on the item selected in the Search Only box, the DX-HD will retrieve recorded video. For example, select Time or Alarms, Signals or System Event to display the recorded video at the time point selected.



Event No.	Start Date / Time	Event Type
1	10-13-2009 01:03:39 PM	RU1
2	10-13-2009 01:03:05 PM	TN
3	10-13-2009 01:02:35 PM	TN
4	10-13-2009 01:01:55 PM	TN
5	10-13-2009 01:00:09 PM	RU1

Prev Pg

Next Pg

1 / 1

Play

Exit

Figure 2-9 Event List

- 3. From the Event List, select the required list item.
- 4. Click Play to review the video. Note the time when the event occurs and which camera captures the event details.




Figure 2-10 Playback View

2.5.2. Using the Archive Function

An archive dialog box lets you specify the start and end date and time of the video clip to be archived to a USB memory device.

To view the Archive menu:

1. From the Playback tool bar, click on the Archive  icon.

The Archive menu displays as shown in Figure 2-11. The items appearing in the dialog box depend on the item selected in the Filter By drop down menu.



Figure 2-11 Archive Menu

Table 2-5 Archive Menu Items

Menu Item	Description	Value [Default]
Start Date	Set the start date (month, day, and year) for the archive clip.	[Current]
Time	Set the start time for the archive clip.	[1 hour before current time]
End Date	Set the end date (month, day, and year) for the archive clip.	[Current]
Time	Set the end time for the archive clip.	[Current time]
Filter By:	Filter recorded data by one of three types.	<ul style="list-style-type: none"> • Time • Alarm Data • Log File
Copy to USB	Click to archive the video clip to USB memory device.	


To establish an archive clip:


To archive a clip using the one touch download, you must have the One touch settings (in the system settings menu) set to "Clip". See Figure 2-9.



Figure 2-12 One-Touch Settings: clip

1. Use the video playback or search controls to view the start date and time of the video you want to archive.

2. Click start of clip icon  to set the start point of the archive clip.
3. Locate the end of the video you want to archive in Play mode, and click Pause.

4. Click end of clip icon  to set the end point of the archive clip.
5. Press the ONE TOUCH button on the DVR front panel.

The One-Touch Process menu appears. The archive clip is saved to the USB memory device.

6. Remove the USB drive when complete and return to the Archive screen.

2.5.3. Copy to USB

To copy video files to a USB memory device:


1. Insert a USB memory device into the USB port on the DVR front panel.
2. In the Playback tool bar, click the archive icon  to display the Archive screen.
3. Click on Copy to USB to start archiving. See [Figure 2-13](#).
A progress bar appears.
4. OR Click Cancel to stop the archiving process.
5. Remove the USB drive when complete and return to the Archive screen.



Figure 2-13 Copy to USB Progress Bar

2.5.3.1. Archive Segmentation

Archives larger than 2GB are segmented when downloaded from the DX, MX, TX, and TL series DVRs. The segments are saved as separate archive files with the following naming convention:

- Archive.avr (original)
- Archive-002.avr (next segment)
- Archive-003.avr (next segment)

If your archive seems too short it could have been segmented.

vMax View will automatically stitch together segmented archive video when played.

2.6. Using One-Touch Download

Use One-Touch download for downloading specific alarm or event information to a USB memory device via the USB port. One-Touch download is available when the DVR is in live, playback, or record mode. Use the ONE TOUCH button on the DVR.

Video is downloaded in the Seon proprietary format and can be viewed using the vMax View application. See the *vMax View User Guide*, 700-0137.

Recommendation: Retrieving several minutes or hours of video may take a long time. For large volume video transfers, retrieve the dual HDD cartridge from the DVR and view the video playback via the vMax software.

The default setting for One-Touch download is Alarms. See the One Touch Settings menu in the DX-HD DVR Installation and Configuration Guide, 700-0189, for details on setting the menu to Clip to enable One-Touch downloads.

To use the One-Touch download option:

1. If the DVR is powered off, press the STOP/TEMP PWR button for 5 seconds to power up the DVR.

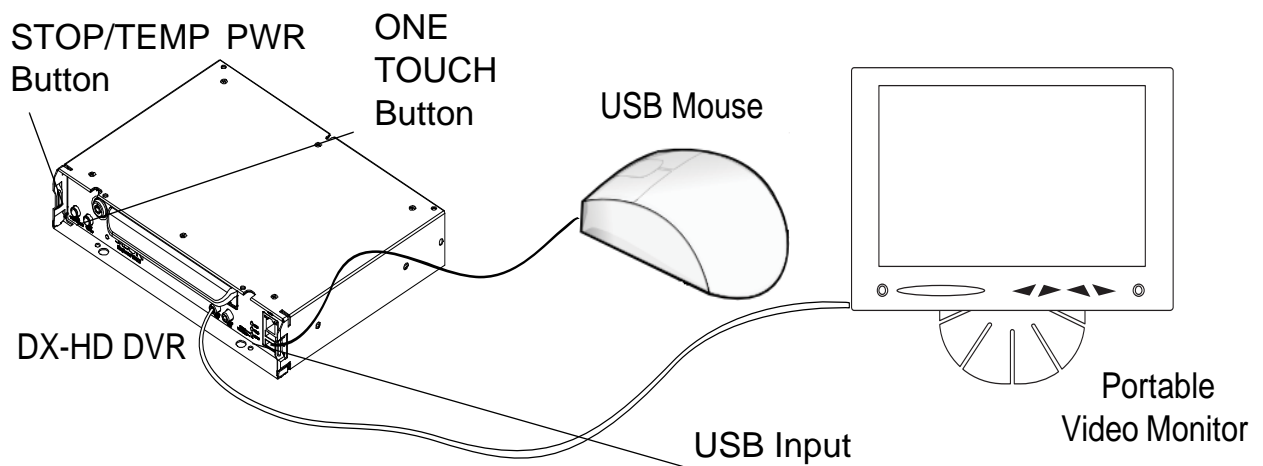


Figure 2-14 Mouse and Monitor Connected to DVR

The status line of the on-screen display indicates DOWNLOAD.

2. When the DVR is on, connect a portable video monitor to VIDEO OUT on the DVR front panel.
3. Insert a USB memory device into the USB port on the DVR front panel.
4. Press the ONE TOUCH button to download information to the USB memory device.

A progress bar moves as the content is downloaded. The screen shows the size of the USB Media Size and the data file size. The status line of the on-screen display indicates DOWNLOAD.

The information that is downloaded is pre-selected by the settings for one touch download button behavior.



Figure 2-15 One-Touch Progress

When transfer is complete, the on-screen display closes.

5. Remove the USB drive.
6. To power off the DVR immediately, press STOP/TEMP PWR for five seconds.
The DVR will power off automatically after 5 minutes.

CHAPTER 3

vMax Web Remote Operation

This chapter provides information on using vMax Web to remotely access the DX-HD DVR for viewing live and recorded video and archiving recorded video. This chapter contains the following sections:

[System requirements, on page 3-1](#)

[Accessing vMax Web, on page 3-2](#)

[vMax Web User Interface, on page 3-4](#)

[vMax Web Live Tab, on page 3-5](#)

[vMax Web Configuration Tab, on page 3-6](#)

[vMax Web Playback Tab, on page 3-7](#)

[vMax Web Archive Tab, on page 3-12](#)

[Viewing DX-HD Video Archives, on page 3-13](#)

3.1. System requirements

The following minimum system requirements are necessary to access DVRs with vMax Web:

Table 3-1 Minimum System Requirements

Computer/Processor	<ul style="list-style-type: none"> • Intel Core® I7 or greater • High performance video card with DirectX Ver. 10 or higher support • 1280 × 1024 monitor resolution • 32 bit color quality • Sound card and speakers • USB 2.0 • 1 GBit Ethernet adaptor
Operating Systems	Windows® XP Service Pack 3, Windows Vista™, or Windows 7 (32-bit and 64-bit versions) Microsoft .NET Ver. 3 or higher support
Web browser	Internet Explorer®, Version 8 or 9 (32 bit versions only)
Memory	2GB RAM or more available to the program (4GB or more total) recommended
Disk Space	10GB of available hard-disk space (depending on the amount of video to be stored locally)
Drive	CD/DVD writer drive and software if the archives to be stored on CD/DVD media

3.2. Accessing vMax Web

When the DX-HD DVR is connected to the network, users can remotely access the DVR over the web to view, playback, and archive video as well as configure the DVR.



CAUTION: System Access Restriction

DVR menu access is restricted to persons with system access permission. If you require permission to access configuration settings, contact your system administrator.

NOTE: The default network settings allow for connection to a laptop computer for configuration and usage of the DVR only. For remote network access, consult with your IT staff or Seon Design to configure the DVR to be on the same sub net as the laptop..

To access vMax Web

1. On a PC with an Ethernet connection to the DVR, right click the Internet Explorer 8 icon and select Run as Administrator.

Windows may prompt for confirmation.

NOTE: vMax Web is not compatible with 64-bit versions of Internet Explorer. Internet Explorer should be set to default settings. If firewall security, access restrictions, or custom IE settings are applied, they may adversely affect vMax Web performance. vMax Web is not compatible with browsers other than Internet Explorer.



CAUTION: System Access Restriction

It is assumed that archiving is performed by users with administration level login permissions, and that the computer, network, and Internet Explorer 8 have been configured to enable archiving and downloading video files.

If you require permission to access computer, network, and Internet Explorer 8 configuration settings, contact your system administrator.

2. Confirm in the browser tray that Protected Mode is set to Off, as shown in [Figure 3-1](#).

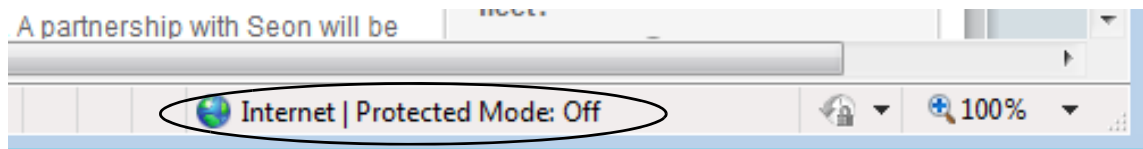


Figure 3-1 Internet Explorer Protected Mode: Off

3. In the browser's URL field, enter the DVR IP address from the Network Settings menu.
Zeroes before value digits need not be entered. For example, enter 092.068.010.002 as 92.68.10.2.
4. Click Enter on the keyboard.

5. At the prompt, enter the user name and password, as shown in Figure 3-2 .

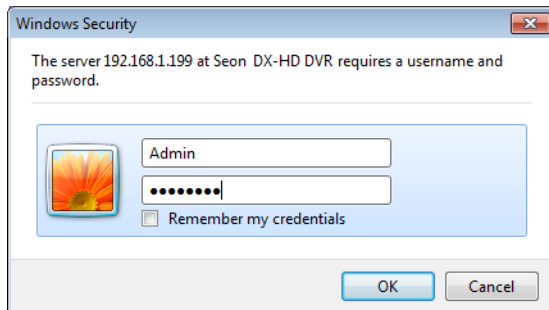


Figure 3-2 vMax Web DVR Login Prompt

The default user name is Admin.

The default password is 11111111.

This login data can be edited in the DVR > Configuration > Network > User Levels menu.



CAUTION: System Access Restriction

DVR user names and passwords are provided by Seon Design with specific permissions assigned depending on user requirements. If you require permission to access DVRs, contact your system administrator.

6. Click OK.

vMax Web opens.

NOTE: The first time a computer connects to this model of DVR, users not running in administrator mode may be prompted to confirm installation, as shown in the following images.

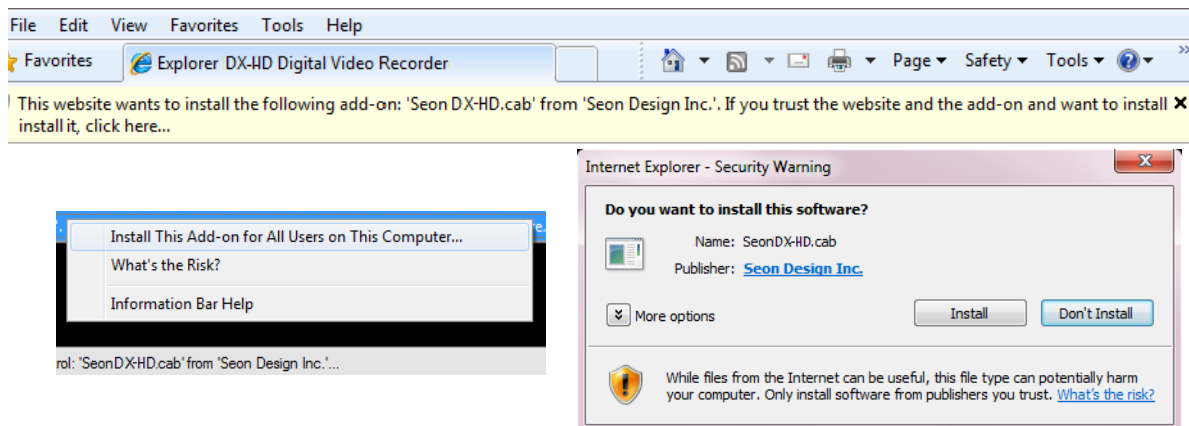


Figure 3-3 Windows Warnings

3.3. vMax Web User Interface

vMax Web opens with the Live tab selected and live video from the DX-HD and cameras displaying.

By default, vMax Web will stay active for 10 minutes after you last used it and then close the connection to the DVR. If you have a file saving menu open and are downloading an archive, this does not apply. This vMax Web Timeout time can be adusted in the Configuration tab's System menu.



Figure 3-4 vMax Web User Interface for DX-HD DVR

Table 4 User Interface Components

ID	Description
1	Tab area. <ul style="list-style-type: none"> • Live tab — live DVR video display and viewing controls • Configuration tab — DVR setup menus • Playback tab — search recorded DVR video • Archive tab — archive recorded DVR video
2	Viewing Area — view multiple or single cameras and telemetry information
3	User login name
4	DVR firmware version
5	Overlay information — DVR configurable; camera title, date and time
6	DVR information — DVR ID, firmware version, and operating status
7	Telemetry information — DVR location, speed, and hard drive temperature

3.3.1. vMax Web Live Tab

Upon login, vMax Web opens with the Live tab selected, as shown in Figure 3-5 . Users see current camera output, as shown in Figure 3-4 .

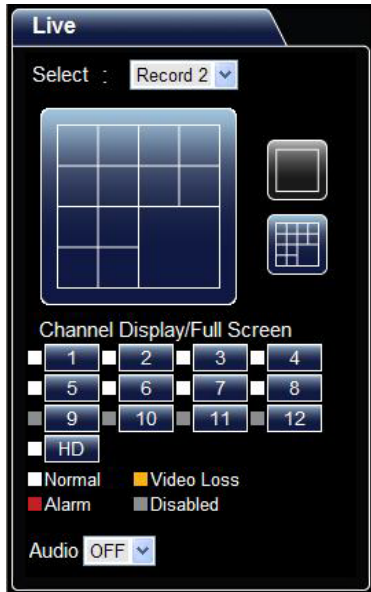


Figure 3-5 Live tab for DX-HD DVR

To setup the Live tab view

1. In the Select drop down menu, select the Record 2 or Record video stream.

The Explorer DX-HD DVR records two streams of video, one for low bandwidth remote viewing, and one with higher video speed, quality, and resolution settings for creating archives. When accessing the DVR with vMax Web, the Record 2 video stream is selected for use with low bandwidth connections while viewing live video.

Higher video speed, quality, and resolution settings will provide clearer pictures and will require more storage space and longer archiving time. These settings are adjustable in the Configuration tab's Record menu.

2. Use the Channel Display/Full Screen tools to display all or individual channels.
Each camera's status is indicated by a color and explained in the color legend below the 12 display buttons.
3. In the Audio drop down menu, select whether to have the Audio coming from one of the cameras or off.

3.3.2. vMax Web Configuration Tab

The Configuration tab contains menus specific to DVR features and setting options. Features vary depending on the DVR model used.

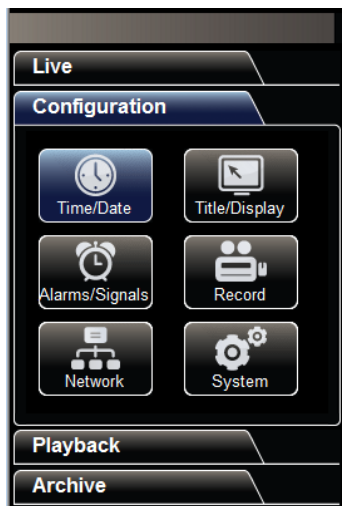
The vMax Web configuration menus are similar to the DVR OSD menus. See the DX-HD DVR Installation and Configuration Guide, 700-0189 for specific details when configuring DVR function settings.



CAUTION: System Access Restriction

DVR user names and passwords are provided by Seon Design with specific permissions assigned depending on user requirements. If you require permission to access DVR configuration settings, contact your system administrator.

DX-HD DVR setup menus include:



- Time/Date
- Title/Display
- Alarms/Signals
- Record
- Network
- System

Figure 3-6 DX-HD DVR Configuration tab

NOTE: For each menu selected and edited, click Save in each configuration menu to save the changes before clicking on other menus.

3.3.3. vMax Web Playback Tab

To search the recorded video, select the Playback tab as shown in Figure 3-7 .



Figure 3-7 Playback tab views, searching by Time or Event

Table 3-2 Time Search Fields

Menu Item	Description	Value [Default]
Select	Choose which recording stream to search for video in. <ul style="list-style-type: none"> With Record selected, high resolution video is available for archiving. With Record2 selected, low resolution video is available for faster searching and remote playback. 	Record, [Record2]
Search By	Choose whether to search by the time the event occurred or by specific events.	[Time], Event
Start Date	Set the start date (month, day, and year) for the search.	[Current]
Time	Set the start time for the search.	[1 hour before current time]

Table 3-3 Event Search Fields

Menu Item	Description	Value [Default]
Select	Choose which recording stream to search for video in. <ul style="list-style-type: none"> With Record selected, high resolution video is available for archiving. With Record2 selected, low resolution video is available for faster searching and remote playback. 	Record, [Record2]
Search By	Choose whether to search by the time the event occurred or by specific events.	[Time], Event
Event Type	Enabled when Event is selected in Search By. Select the type of event to search for.	[Alarms], Signals, System Events
Event Filter	Enabled when Event is selected in Search By. Select the specific alarm to search for.	[ALL], ALM 0, ALM 1, ALM 2, ALM 3, ALM 4
Start Date	Set the start date (month, day, and year) for the search.	[Current]
Time	Set the start time for the search.	[1hour before current time]
End Date	Enabled when Event is selected in Search By. Set the end date (month, day, and year) for the search.	[Current]
Time	Enabled when Event is selected in Search By. Set the end time for the search.	[Current time]

Table 3-4 DVR Event Descriptions

Event	Description	Event	Description
Almn Off	Alarm Off	GSN Z+	Limit exceeded in Z+
Almn On	Alarm On	Idle0	Idle limit not exceeded/stopped
EXSpeed	Excessive speed occurred	Idle1	Idle limit exceeded/stopped
FAN	Fan fault	IG0	Ignition off
GPS	Crossed GPS Fence	IG1	Ignition on
GSN	Gsensor exceeded limit	LIVE	DVR changes to live mode
GSN X-	Limit exceeded in X-	PLoss	Power Loss
GSN X+	Limit exceeded in X+	Rec On	Normal Recording event
GSN Y-	Limit exceeded in Y-	RUn	Remote User Login n
GSN Y+	Limit exceeded in Y+	Signaln	Signal Event n
GSN Z-	Limit exceeded in Z-	Vlossn	Video loss on channel n

There are two ways to search the DVR for video:

- by the time an event occurred
- by alarm, signal or system events recorded by the DVR

To Search Video from a Time Point

1. Use the Channel Display/Full Screen tools to display all or individual channels.

Each camera's status is indicated by a color and explained in the color legend below the 12 display buttons.

2. In the Select drop down menu, select the Record 2 or Record video stream.

The Explorer DX-HD DVR records two streams of video, one for low bandwidth remote viewing, and one with higher video speed, quality, and resolution settings for creating archives. When accessing the DVR with vMax Web, the Record 2 video stream is selected for use with low bandwidth connections while viewing live video.

Higher video speed, quality, and resolution settings will provide clearer pictures and will require more storage space and longer archiving time. These settings are adjustable in the Configuration tab's Record menu.

3. In the Search By drop down menu, select Time.
4. Click the Calendar icon to select a start date.
5. Select the start time of the recorded video to view.
6. Click the Play button.

The DVR begins playback of video from the designated or next available time point.

7. Use the play, pause, fast forward or reverse (up to 32x speed) controls to locate the event video.
8. Note the event start and end date and time for use on the Archive tab.

To Search Video from an Event Marker

1. Select Event in the Search By drop down menu.

The Event Type and Event Filter menus appear, as shown in Figure 3-7 .

2. From the Event type menu, select an event type.
3. From the Event Filter menu, select a filter type.

Table 4 Playback tab Event Types and Filter Options

Event Types	Event Filters
Alarms	Alarms recorded that occurred within the selected time range are listed. Options include: <ul style="list-style-type: none"> • Alarm 0-5 — as set in DVR Configuration menus, depending on DVR type • ALL — All alarms
Signals	Signals recorded that occurred within the selected time range are listed. Options include: <ul style="list-style-type: none"> • Signal 1-10 — as set in DVR Configuration menus, depending on DVR type • ALL — All signals
System Events	Telemetry events recorded that occurred within the selected time range are listed. Options include: <ul style="list-style-type: none"> • GPS — position data • Idle — when vehicle idles for longer than configured time, the event is recorded • G Sensor — when vehicle G Sensor data exceeds preset ranges, the event is recorded • Speed — when vehicle speed exceeds preset limit, the event is recorded System events recorded that occurred within the selected time range are listed. Options include: <ul style="list-style-type: none"> • Ignition — when vehicle ignition is engaged, the event is recorded • Recording — DVR is recording • Timers — as configured, when vehicle actions exceed preset timer ranges the event is recorded • Video Loss — when any camera is not detected, the event is recorded ALL — all recorded telemetry and system events that occurred within the selected time range are listed

4. Select a search range start and end date and time.
5. Click Search.

The progress bar appears while the events are located on the DVR.

6. From the list that appears in the View area, select an event and click Play. Windows may request to download an Active X control..

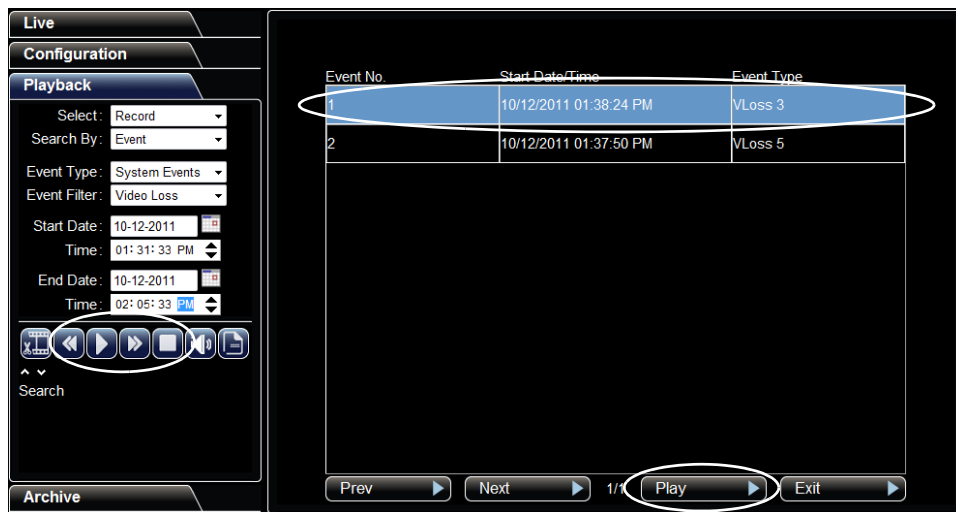


Figure 3-8 Playback Event Search Results

7. On the Playback tab area, use the play, pause, fast forward or reverse (up to 32x speed) controls to locate the video loss event.
When reviewing the event list, you can also click on the first (Archive) playback icon to set the start and stop time and then archive from here.
8. Using the displayed overlay information, note the specific event start and end date and time for archiving.
9. Click Stop to return to the Event list, if necessary.

3.3.1. vMax Web Archive Tab

To archive the specific recorded video, select the Archive tab as shown in Figure 3-9 .

Figure 3-9 Archive tab for DX-HD DVR

Table 3-5 Archive Tab Fields

Menu Item	Description	Value [Default]
Select	Choose which recording stream to search. <ul style="list-style-type: none"> With Record selected, high resolution video is available for archiving. (Recommended) With Record2 selected, low resolution video is available for faster searching and remote playback. (Not recommended) With Log File selected, the user can export a log file of all selected events to a text file. 	[Record], Record2, Log File
Camera	Select the camera(s) with the required recorded video.	1-12, HD
Available	Read only. This area displays the earliest and latest dates containing recorded video on the DVR drive.	Start, End
Start	Set the start date (month, day, and year) for the archive.	[Current]
Time	Set the start time for the archive.	[1 hour before current time]
End	Enabled when Event is selected in Search By. Set the end date (month, day, and year) for the archive.	[Current]
Time	Enabled when Event is selected in Search By. Set the end time for the archive.	[Current time]
Archive	Select to save the selected range of video to a file on the PC.	

In the Archive tab, the Record video stream is selected to provide the best quality video for the archive segment.

To Archive Video Segments

1. In the Select drop down menu, select the Record video stream.

The Explorer DX-HD DVR records two streams of video, one for low bandwidth remote viewing, and one with higher video speed, quality, and resolution settings for creating archives. When accessing the DVR with vMax Web, the Record 2 video stream is selected for use with low bandwidth connections while viewing live video.

Higher video speed, quality, and resolution settings will provide clearer pictures and will require more storage space and longer archiving time. These settings are adjustable in the Configuration tab's Record menu.

2. Select the check box(es) for the camera(s) to archive.
3. In the Archive Range area, select the archive start and end dates and times.
4. Click Archive.

5. In the Save As window, choose a file saving location and enter a file name.

vMax Web saves archives in the Seon DVR format, preserving all video and telemetry data, which for security purposes can only be viewed with Seon Design's vMax View application.

6. Click Save.

The progress bar appears while the archive is being created.

7. In the confirmation dialog, click OK when the archive is complete.

The archive is ready to be viewed with the vMax View archive viewer.

3.3.1.1. Archive Segmentation

Downloaded archives larger than 2 GigaBytes are segmented when downloaded from the DX-HD DVR. The segments are saved as separate archive files with the following naming convention:

- Archive.avr (original)
- Archive-002.avr (next segment)
- Archive-003.avr (next segment)

If your archive seems too short it could have been segmented.

vMax View has an option to stitch together segmented archive video if required.

3.3.2. Viewing DX-HD Video Archives

View the archive using the vMax View software application. When the application is installed, double click the archive file to open it in vMax View. See the vMax View User Guide, 700-0137. for detailed procedures.

CHAPTER 4

DVR Firmware and Configuration Uploads

This chapter provides information and procedures for uploading firmware updates and DVR configuration files to the DVR.

**CAUTION: Administrator Permissions Required**

These procedures should only be performed by administrator level staff.
If you have questions about these procedures, contact Seon support.

This chapter contains the following sections:

Firmware Updates, on page 4–2

Configuration Uploads, on page 4–3

USB Memory Device to DVR Configuration Upload, on page 4–3

Uploading Configuration Files to DVR via vMax Web, on page 4–7

For complete configuration settings and menu options, see the *Explorer DX-HD Installation and Configuration Guide*, 700-0182.

4.1. Firmware Updates

The firmware version is displayed on the top right corner of every menu. The firmware update must be obtained from Seon Design. To install a firmware update, a USB memory device must be formatted by a Windows®-based computer using the FAT file format. Load the Program Update file onto the USB memory device.

	CAUTION: Equipment damage Do not remove power while updating the DVR firmware. Equipment damage may result.
---	---

To install a firmware update on the DX-HD:

1. Power up the DVR using the vehicle ignition.
2. Insert the USB memory device with the new firmware version into a USB port on the DVR.
3. After the DVR has started, go to the System Settings menu > Program Update.
4. Click Update.

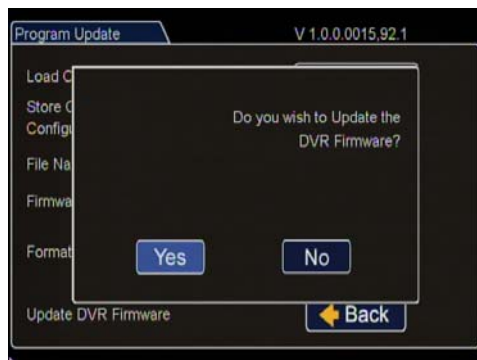


Figure 4-1 Updating DVR Firmware Dialog Box

A window appears asking if you wish to update the DVR firmware.

5. Click Yes to proceed, or No to cancel.
6. Once the update is finished, the DVR will automatically restart.

Important: On restarting, the DVR will take up to 3 minutes to load as it completes the upgrade process. Wait until the DVR finishes loading.

7. Remove the USB memory device.

4.2. Configuration Uploads

A configuration file is uploaded to a DVR when the DVR is first installed or when settings need to be changed on multiple DVRs in a fleet.

Configuration files can be uploaded at the DVR with a USB drive or over the network using vMax Web or vMax Commander applications. Use these procedures upload DVR configuration files.

To upload configurations with vMax Commander, see the the vMax Commander Installation and Configuration Guide (700-0100).

4.2.1. USB Memory Device to DVR Configuration Upload

This method requires physical access to the DVR and an portable video monitor and trackball USB mouse.

To load a configuration update to the DVR, the USB memory device must be formatted by a Windows®-based computer using the FAT32 file format.

To upload a configuration update on the DX-HD via USB:

1. Load the configuration file onto the USB memory device.
2. Copy the configuration file at the root of the USB memory device folder.

Important: For USB uploading, the configuration file name can have no more than four characters. Example: DXHD.seon.

3. Power up the DVR using the vehicle ignition.
4. With the DVR on, connect the portable video monitor and USB mouse.
5. Insert the USB memory device with the new configuration file into the USB port on the DVR.
6. In the DVR on screen display, double right click to open the menu, click Configuration, and then click Network.



Figure 4-2 Main Menu and System Menu

7. In the System Settings menu click Program Update.



Figure 4-3 System Program Update Menu

8. From the Load Configuration menu, select the file to upload.



Figure 4-4 Select Configuration File

Important: The Load Configuration menu displays only the ten most recent configuration files on the USB drive.

9. From Include Network, select whether or not to overwrite the existing DVR network settings with the new configuration settings. The default setting of NO keeps your existing network settings.



CAUTION: DVR Communication Disruption Risk

Avoid unintentionally changing the DVR network settings when uploading a new configuration. When saving or changing network settings, communication with the DVR can be disrupted.



Figure 4-5 Program Update Menu

10. Click Load.



Figure 4-6 Program Update Menu

A window appears asking if you wish to update the DVR configuration.

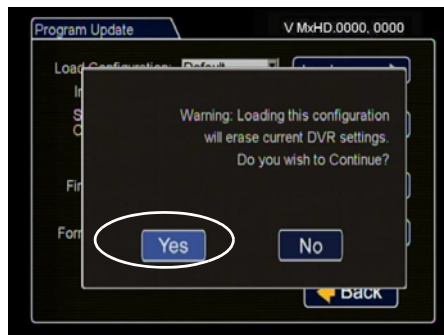


Figure 4-7 Load Configuration: Warning Message

11. Click Yes to continue or No to cancel.
12. Click Back in the Program Update and then System Settings menus to save and exit the menus.



Figure 4-8 Click Back to Save Configuration

13. From the Configuration menu, click Title/Display, and in the Titles and Display menu, update the text in the Main_Title field.



Figure 4-9 Titles and Display Menus

14. Click Back to save.
15. Remove the USB memory device.
16. Turn off the DVR, restart the DVR, and confirm that the new configuration settings have been applied.

4.2.2. Uploading Configuration Files to DVR via vMax Web

To remotely install a configuration update, the configuration file (received from Seon or created and saved from a DVR in your network) must be on a computer with network access to the DVR and with Internet Explorer 8 (32 bit version) to access vMax Web.

To upload a configuration update on the DX-HD via vMax Web:

1. On a computer, copy the DVR configuration file.
2. Power up the DVR using the vehicle ignition.
3. Open Internet Explorer, and in the address bar, type in the DVR IP address.
The default IP address is http://169.254.1.1.
4. The vMax Web login screen appears.



Figure 4-10 Login vMax Web

5. At the login prompt, enter a user name and password to access the internet browser user interface.
User names and passwords are case sensitive.
 - Default User name: Admin.
 - Default Password: 11111111.



CAUTION: DVR Password Security

The default password is 11111111. For security purposes, Seon recommends that the user default login and system settings passwords should be changed. Seon is not responsible if the password is lost or forgotten.

6. Click OK or press Enter on the keyboard to display the vMax Web interface live view screen.

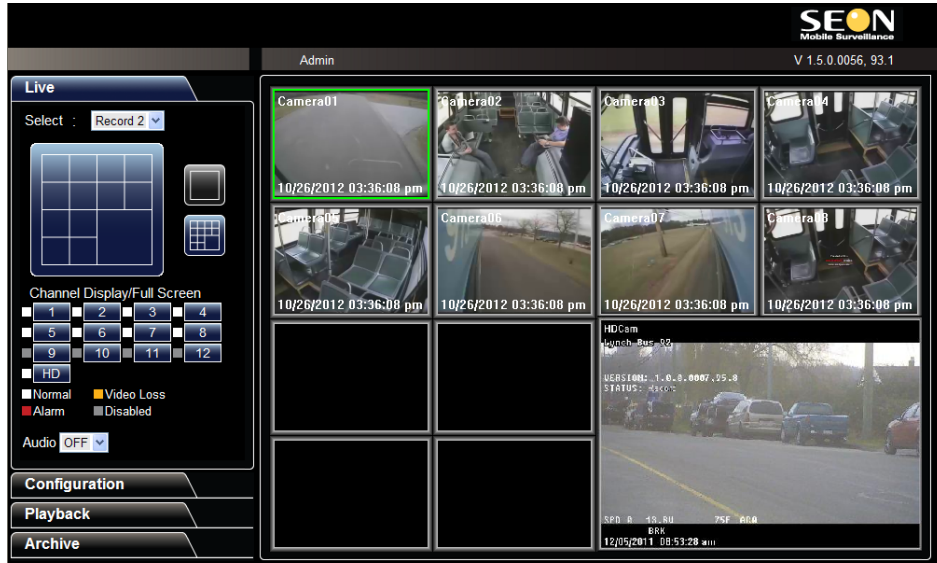


Figure 4-11 vMax Web Live View

7. Select the Configuration Tab.
8. On the Configuration tab, click the System icon.

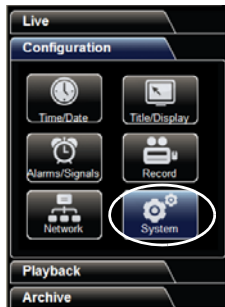



Figure 4-12 vMax Web System Settings

9. In the Program Update Settings area, select the Include Network Settings check box to overwrite the existing DVR network settings with the new configuration settings. The default (cleared) setting keeps your existing network settings during the configuration upload.



CAUTION: Risk of Network Settings Loss

Configurations uploaded to the DVR with vMax Web do not get written to the DVR until it powers down and restarts.

If anyone edits the DVR settings locally after this configuration is uploaded but before the DVR is restarted, the settings uploaded from vMax Web will be lost.

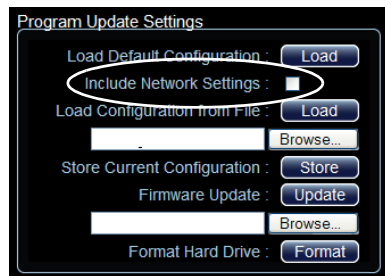


Figure 4-13 vMax Web System Configuration Program Update Settings

10. In the Program Update Settings area, below the Load Configuration from File field, select Browse to open the computer search window.

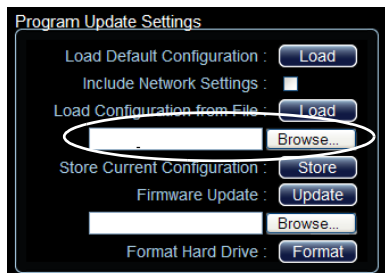


Figure 4-14 vMax Web Program Update Settings

11. In the computer file search window, navigate to the configuration file and click Open.

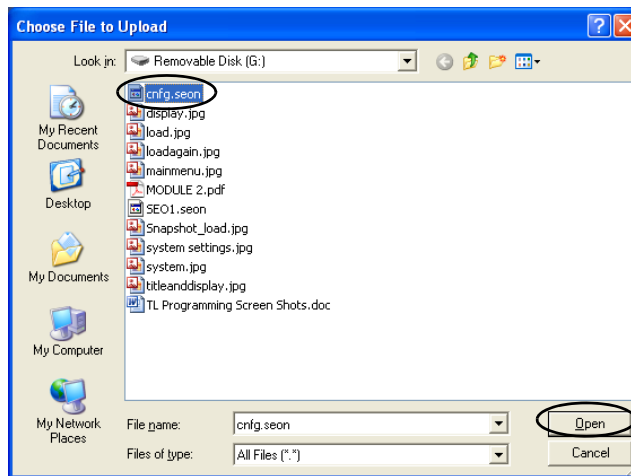


Figure 4-15 Windows File Search

Important: For consistency, Seon recommends that the configuration upload file name should be kept to four characters maximum (****.seon) in the event that the file needs to be loaded to the DVR from the USB port. The DVR USB upload interface supports only four characters in the file name.

12. The configuration file name and location appear in the location field.

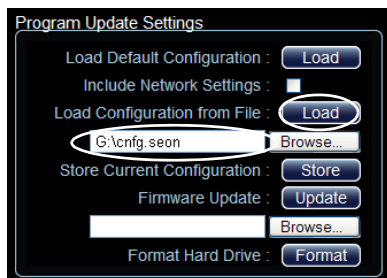


Figure 4-16 vMax Web Load Configuration from File

13. Beside the Load Configuration from File field, click Load.
14. In the Message from web page, click OK to proceed or Cancel to return to the previous menu.

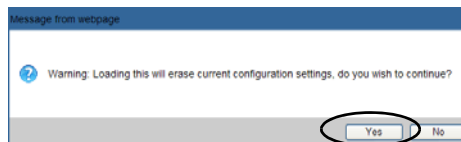


Figure 4-17 Loading Confirmation

15. If necessary, agree to Windows Run Add-On requests.

16. When the progress bar shows the update is 100% complete, click OK.

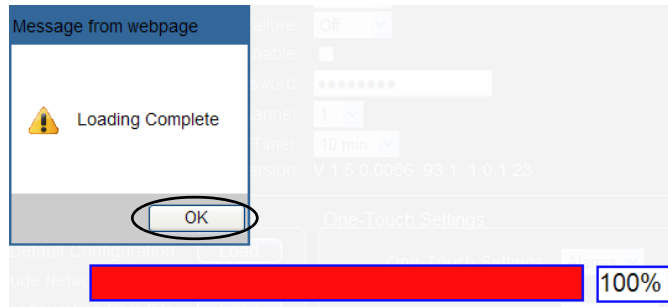


Figure 4-18 Loading Complete

17. In the Titles/Display menu, update the text in the Main_Title field.

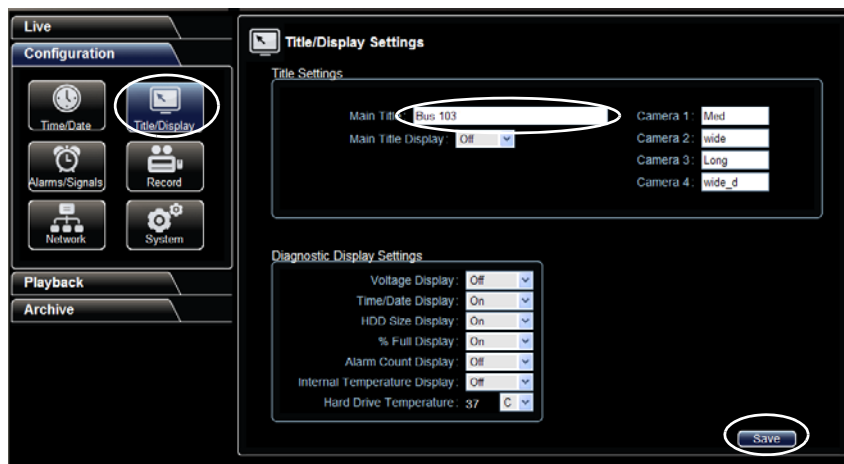


Figure 4-19 Titles and Display Menu

18. Click Save to save the settings to the DVR.
19. Power down and restart the DVR.
20. Login with vMax Web and refresh the vMax Web browser view.
21. Confirm that the new configuration settings are in place.
22. If the DVR's IP address has changed as part of the configuration upload, check and set the network computer's DVR detection settings accordingly.

CHAPTER 5

Maintenance, Troubleshooting, and Service

This chapter provides information on maintenance, troubleshooting procedures, and returning product for service.

5.1. Maintenance Tasks

To do this...	What to do
Synchronizing the DVR Clock	If the system does not have a GPS sensor, synchronize the DVR clock every six months to ensure accurate video recording of the time and date. For setting the time and date, see the DX-HD DVR Installation Guide 700-0189.
Clean the front cover, cable cover, and DVR	The DVR, front cover and cable covers are made from 18 gauge steel, coated with an outdoor powder paint, and only require periodic cleaning. To clean, use a damp cloth with a mild detergent. Do not allow water into the holes.
Clean the camera and window	Refer to the product documentation for cleaning the camera.
Replace the fan filter	<p>Check the fan filter for excess dirt on a regular basis, and replace the filter when it restricts airflow. Failure to replace a blocked filter may result in the DVR shutting down on a hot day due to inadequate air circulation. Contact your dealer or Seon Design to obtain a replacement.</p> <ol style="list-style-type: none"> 1. Remove the filter cover by gently prying it off with a small flat screwdriver. Discard the used filter and place a new filter back into the filter holder. 2. Push the filter cover back into the holder and snap it into place.



CAUTION: Equipment damage

Do not remove the four screws holding the fan in place. Loose components inside the unit could cause internal damage.

5.2. Troubleshooting the DX-HD

The DX-HD is designed for highly reliable operation. However, if you have any problems with your system, read this chapter. If you cannot resolve the issue, contact Customer Service at Seon Design.

Symptom	Possible Cause and Solution
All problems.	<p>Many system problems are caused by issues with the power supplied to the DVR. Check the following:</p> <ul style="list-style-type: none"> • The voltage to the system may be too low. Check the voltage display (On or Off) Diagnostic Display. If the voltage display is turned OFF, go to the Diagnostic Display menu and turn Voltage Display to ON. The voltage range should be between 8 to 32 VDC. • The power harness from the DVR must be connected as close to the battery as possible. Check the wiring to the battery. • Check the in-line fuses and fuse holders. If a fuse is blown, determine the cause before replacing it.
The DVR does not power on.	<ul style="list-style-type: none"> • Is the internal temperature below 40°F (4°C)? The TEMP LED on the front panel will be flashing. • Is the constant and switched power harness plugged into the DVR securely?
The DVR turns on but does not start recording.	<ul style="list-style-type: none"> • Check the ignition wiring from the power input harness. Is the yellow wire connected to an ignition switched circuit? • Is the DVR drive installed properly with the key in the locked position on the front panel? • Is the temperature below 40°F (4°C)? Check the temperature display on the main menu. See the Diagnostic Display menu. Wait for the DVR to warm up and start recording. • Is the temperature above 122°F (50°C)? Check the temperature display on the main menu. • Check the battery voltage. • Check the settings for Record Delay-On time in the Record menu. • Are the timers on? See the Timers menu.
No picture on the video monitor output.	<ul style="list-style-type: none"> • Check the connections inside the camera, as well as the connections inside the DVR cable cover. • The voltage to the system may be less than 8 VDC. If the status LED on the front panel is illuminated, the DVR is receiving low voltage.
The live camera picture is snowy, fuzzy, or grainy.	<ul style="list-style-type: none"> • Check all connections inside the camera. • Is the camera cable damaged? • Check the connections inside the DVR lock box. • Is the DVR power harness connected directly to the bus battery?
The playback picture is snowy, fuzzy, or grainy.	<ul style="list-style-type: none"> • Is the power input harness connected to the battery? • Check the video monitor cable attached to the front or back of the DVR.
Vloss event indicated when all cameras display	<p>When A DVR is installed with less than the full complement of cameras connected, unused camera input settings must be disabled to prevent the DVR from generating Video Loss (VLoss) events for those camera inputs.</p> <p>In the DVR Configuration menus, disable unused camera inputs as follows:</p> <ul style="list-style-type: none"> • Record Settings menu: Camera Speed OFF, Camera Audio OFF (to save disk space) • Record 2 Settings menu (DX and MX series DVRs only): Camera Speed OFF • Alarms/Signals menu: Channel Speed OFF

5.3. Returning Product for Service

If any part of the DX-HD DVR is to be returned to Seon Design Inc. for service, contact Seon with the model and/or serial number of your unit, and ask for a Return Authorization (RA) number which allows the service technicians to track your product when it comes in for service.

Please have the RA number clearly marked on the outside of the shipping box.

ANY PRODUCT SENT TO SEON DESIGN INC. WITHOUT AN RA NUMBER MAY BE REFUSED.

The contact numbers for Seon Design Inc. are:

Toll Free Telephone	1.877.630.7366
Telephone	604.941.0880
Toll Free Fax	1.866.664.3677
Fax	604.941.0870

Please refer to the Seon Design Inc.® Product Warranty, on page W-1 to review the terms of warranty service, contact, and shipping information, as well as other important issues regarding the service and operation of your system.

Appendix A

Specifications

This appendix provides the product specifications for the Explorer® DX-HD Mobile Digital Video Recording (DVR) System.

Note: Specifications are subject to change without notice.

A.1. Explorer DX-HD

Video Input/Output	75 Ohm NTSC video
Video Resolution	High definition: 1280 x 720 pixels Analog: 720 × 480, 720 × 240, or 360 × 240 pixels
Video Compression	H.264, MJPEG
Media Storage	Dual DVR drive, solid state
DVR Drive Removal	Hot swappable, locking key-secured
Camera Input Connectors	6-pin Molex
Audio Input Level	−8 dBm
Audio Output Level	−6 dBm, 10 kOhm
Operating Temperature	−22°F to 122° F (−30°C to 50°C)
Storage Temperature	−40°F to 158°F (−40°C to 70°C)
Operating Humidity	0 to 95% relative humidity, non-condensing
Operating Voltage	8 to 32 VDC
Transient Protection	600 W per signal input, 1.5 kW power input
Temperature Protection	Advanced Smart-Temp
Power Harness Connector	4-pin Molex
Alarm Input Connector	2-pin Molex
DVR Drive Dimensions (H × W × D)	0.83 × 3 × 5.1" (21 × 76 × 130 mm)
DVR Dimensions (H × W × D)	2.8 × 11.6 × 10.5" (72 × 294 × 267 mm)
DVR Weight	6.6 lb (3 kg) with front cover, cable cover
Fuses: Power Circuit and Ignition Circuit	5 A and 1 A
Ethernet	Gigabit

A.1.1. Advanced Smart-Temp™

DVR internal temp.	Advanced Smart-Temp...
Below -4°F (-20°C)	The DVR is not powered, although the DVR drive can still be removed from the DVR, heater is on. If the temperature falls below a preset value with the heater on, the DVR shuts down.
Above 149°F (65°C)	The DVR shuts down to protect the DVR drive from damage.

A.1.2. Explorer DX-HD Functional Features

Time Format	12-hour or 24-hour format
Date Format	mm-dd-yyyy, dd-mm-yyyy and yyyy-mm-dd
Camera Title	8 characters
Repeat Record	User selectable On/Off
Record Delay-On and Record Delay-Off	0 seconds to 60 minutes
Power Delay-Off	0 minutes to 4 hours
Daily Timers	10
Alarm	5 Alarm inputs: ALM 0 to ALM 4
Playback Search	Date and Time, Ignition, Alarms, or All Events
Playback Speed	Image-by-Image, 1×, 2×, 4×, 8×, 16×, 32×, step
USB Memory Device	USB 2.0 compatible

A.1.3. Explorer DX-HD Front Cover, Cable Cover

Main Enclosure	18 GA cold rolled steel (CRS), powder-coated black paint
Door Lock	Industrial cam lock, keyed alike.
Dimensions (H × W × D)	2.8 × 11.6 × 10.5 in. (72 × 294 × 267 mm)

A.1.4. Smart-Link™ Module

Power Harness Connector	4-pin Molex
Auxiliary Power Output Connector	2-pin Molex
GPS Input Connector	4-pin Molex
Signals Connector	6-pin Molex
CAN bus Network Connector	4-pin Molex
Serial Port/GPS	9-pin DB9
Alarm Input Connector	8-pin Molex
Indicator Panel Connector	5-pin Molex
Speed Input Connector	3-pin Molex
Dimensions (H × W × D)	5.88 × 3.25 × 0.88" (150 × 83 × 23 mm)
Weight and material	9 oz (255 g), steel, powder-coated black paint

Legal Notice

Seon Design® Inc.

Seon Design Inc. is a specialist in the design and manufacture of video surveillance systems for mobile applications. Seon has been the preferred solutions provider for the pupil transportation industry since 1999. Today, we are proud that our success in this area has made us the leading manufacturer of mobile video surveillance systems in North America.

Contact Information

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Printed in Canada

Seon Design Inc.® Product Warranty

Seon Design Inc. (Seon) warrants the cameras and components listed below against defects in workmanship and materials provided that such defects appear or are discovered within the respective periods specified below and provided further that the purchaser of such products notifies Seon of such defects within thirty (30) days of the appearance or discovery of such defects:

- Three (3) years from date of purchase, parts and labor on all Cameras
- Three (3) years from date of purchase, parts and labor on the Explorer® Premier, DX, TX, EX, MX, and Trooper® TL series mobile DVR Systems
- One (1) year from date of purchase, parts and labor on the Smart Reach® Wireless systems and other Wireless products
- One (1) year from date of purchase, parts and labor on the VML Controller and other vMax Live Plus hardware products
- One (1) year from date of purchase, parts and labor on all other products and accessories

All service/replacement parts and repairs are warranted for a period of 90 days.

Subject to the terms and conditions listed below, during the relevant warranty period, Seon will repair, replace, or refund the purchase price for the defective product, whichever Seon considers to be appropriate in the circumstances, in Seon's sole and arbitrary opinion, free of charge, any defective products returned prepaid. In the event purchaser has a problem with any Seon product, please call and request a **RETURN AUTHORIZATION (RA) NUMBER** from the Service Department. Please call 877-630-7366 or (604) 941-0880 and ask for the Service Department. Be sure to have the model number, serial number and the nature of the problem available for the customer service representative. Prior authorization **MUST** be obtained for all returns, exchanges, or credits. **ITEMS SHIPPED TO SEON WITHOUT A CLEARLY IDENTIFIED RA NUMBER MAY BE REFUSED.**

Products returned will be tested to verify the defect. Upon verification of the defect, the product will be repaired or exchanged, or the purchase price will be refunded or credited to the customer's account, at the sole option of Seon. In the event of replacement, the returned product will be credited to the customer's account and a new invoice issued for the replacement item. Seon reserves the right to refund the purchase price or to issue a credit only in lieu of replacement. Seon may use new or refurbished replacement parts for repairing its products, at its sole and arbitrary discretion. Seon may replace an entire unit with an equivalent model, at its sole and arbitrary discretion. If a unit is exchanged, the returned product shall become the property of Seon and the exchange product becomes the property of the purchaser, and the remainder of the warranty that applied to the original unit purchased shall apply to the exchanged product. Exchange units may be new units or units that have been repaired to full factory specifications at Seon's discretion. If the product is found to be in good working order or its inability to function properly is not covered by this warranty, the product will be returned in the same condition as received unless repair is possible and requested by the customer. Repairs of such nature will incur a charge for parts and labor and will proceed only by agreement with the customer to accept the charge.

This warranty shall not apply:

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- (b) to equipment, including, any components, which shall have been operated in excess of rated capacity, subject to negligence, accident, or damage by circumstances beyond Seon's control, or to improper installation, operation, maintenance, servicing, alterations or storage, modification without Seon's written authorization, misuse, vandalism, fire, floods or acts of nature so as, in Seon's exclusive and arbitrary judgment, to affect the same adversely;
- (c) if the serial number for the product has been altered in any way; or
- (d) if the product has been operated outside of the specified Operating Environment specified in the Seon Users Manual for such product.

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For those customers whose mailing address is in Canada, Seon's offer and any agreement of sale resulting therefrom shall be governed by and construed in accordance with the internal and domestic laws of the Province of BRITISH COLUMBIA and the laws of Canada applicable therein without giving effect to the conflict of laws rules thereof. The courts of British Columbia (the "Canadian Closed Courts") shall have exclusive jurisdiction to entertain and determine all disputes and claims, whether for specific performance, injunction, declaration or otherwise arising out of or in any way connected with the construction, breach, or alleged, threatened or anticipated breach of the contract resulting from this offer and shall have jurisdiction to hear and determine all questions as to the validity, existence or enforceability thereof. The purchaser attorns to the exclusive jurisdictions of the jurisdiction of the Canadian Closed Courts, waives any obligation to venue in any action or proceeding regarding Seon Products and waives any objection that the Canadian Closed Courts are an inconvenient forum or do not have jurisdiction over the purchaser of Seon. The United Nations Convention On Contracts For The International Sale Of Goods shall not apply.

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