



## Vi-R3000 Series Net Recorder User Manual

Products covered by this manual

Vi-R3005



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# 1 Getting Started

## 1.1 Monitors

The DVR can provide the follow output screens:

- **Main** This is used for full-screen or multi-screen live, play and configuration
- **Aux** This is used for full-screen or multi-screen live and play

These output screens are displayed on the monitors with a priority depending on what types of monitor are connected:

HDMI	VGA	Main	Aux
-	Connected	VGA	BNC
Connected	-	HDMI	BNC
Connected	Connected	HDMI	BNC
-	-	BNC	n/a

Note that the HDMI and VGA monitors VGA Monitor must be connected prior to power-up so that they are detected and given the correct usage.

### 1.1.1 VGA Monitor

A VGA monitor is recommended for most application for ease of interface and to benefit from high resolution images. Supported resolutions are: 1920×1080, 1600×1200, 1280×1024, 1280×720 and 1024×768. The Vi-R4000 series allows units to be cascaded and to share a common VGA monitor (and mouse). Refer to section **Error! Reference source not found.**

### 1.1.2 Low Resolution VGA Monitor

If you are using a VGA monitor with a resolution lower than the factory default (1280×1024), there is a macro command to lower the resolution to 1024×768 so that the menu and images will be visible on the monitor: Press and hold **LIVE key and enter 9001, release LIVE key. Press and hold LIVE key and enter 8000, release LIVE key.**

### 1.1.3 HDMI / DVI Monitor

A HDMI or DVI Monitor may also be connected and is especially useful when used in conjunction with a VGA monitor to provide dual independent high-resolution displays. Supported resolutions are: 1920×1080, 1600×1200, 1280×1024, 1280×720 and 1024×768. Note that a HDMI to DVI cable is required to use a monitor with a DVI port.

### 1.1.4 BNC Monitor

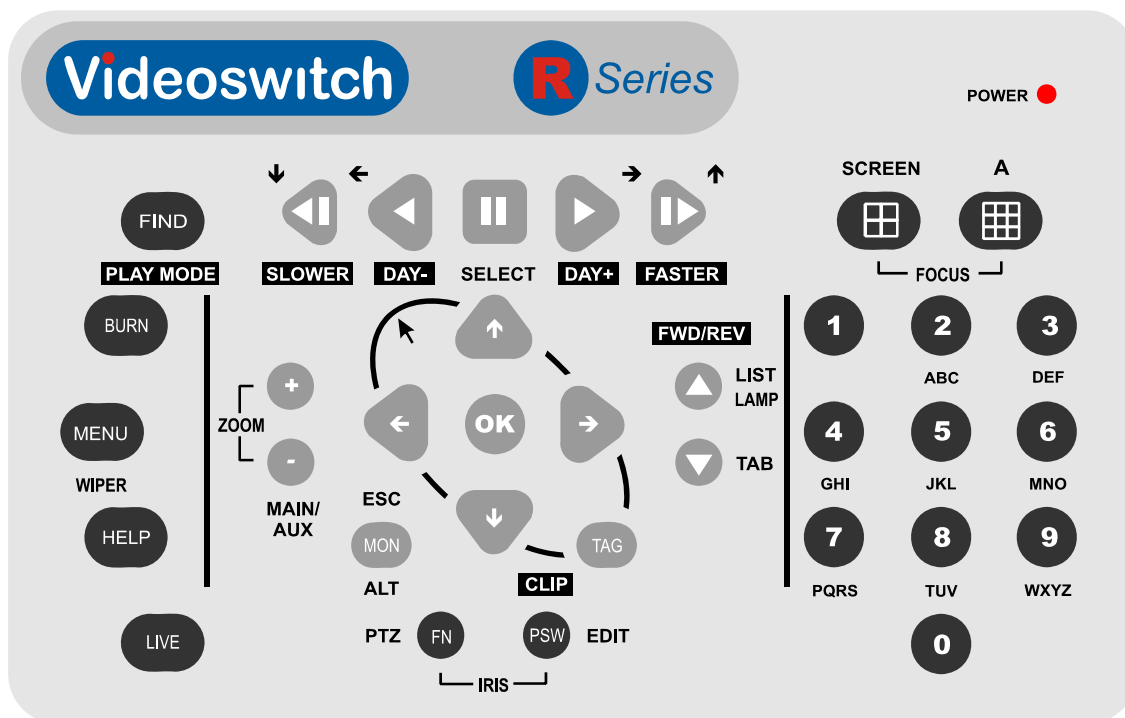
A BNC monitor output is provided which may be used for Main or Aux displays.

### 1.2 Control

The R-series Recorders offer various methods of control. A single method or a mixture of methods can be employed according to personal preference:

- Control by keys in keyboard mode - arrow keys step from field to field in the menus.
- Control by external mouse – a mouse moves pointer smoothly around the screen.
- Control by mouse emulator – the Up/Down/Left/Right, **OK** and **TAG** keys perform the functions of a mouse, moving the pointer smoothly around the screen. Turn mouse emulator ON or OFF by pressing **ESC** and **TAG** together.

#### 1.2.1 Keyboard Control



Key	Live or Play Modes	Menu/Password Modes
1, 2, 3, 4, 5, 6, 7, 8, 9, 0	0 - 9 Select full screen cameras. When entering multiple digits, enter them within ½ second of each other.	Press <b>EDIT</b> key until “123” appear in edit box. Hold <b>ESC</b> down while using 0-9 for data entry
Up, Down, Left, Right	Select cameras 1-4 or 5-8 in quad mode, or 1-9 or 10-16 in Multi-screen x9 mode	Move from field to field or move mouse pointer around screen in mouse emulator mode. Hold <b>ESC</b> to move faster.
OK	Start/stop auto sequence	Select menu option Press and hold <b>ESC</b> then press OK key for double click in mouse emulator



		mode.
<b>FN/PTZ</b>	Press to enter PTZ dome mode	
<b>EDIT</b>		Enter edit mode when a numeric entry is required in for password or menu. Also used to delete character when in edit mode.
<b>A</b>		Select numeric, alphabetic or symbols
<b>FWD/REV/LIST/LAMP</b>	Control LAMP in PTZ mode. Set Play in Forward or Reverse	
<b>TAB</b>		Step through tabbed pages
<b>SCREEN</b>	Step through multi-screens.	
<b>FIND/PLAY MODE</b>	Enter play mode	
<b>BURN</b>	Enter Export Mode	
<b>MENU</b>	Controls wiper in PTZ mode. Enter MENU mode.	
<b>HELP</b>	View firmware revision, go to system maintenance menu.	
<b>LIVE</b>	Return to LIVE mode from any other mode. Shift key for programming functions.	
<b>MON/ESC/ALT</b>	Shift key for alternate functions.	Escape one level in menu.
<b>TAG</b>	Right mouse click in mouse emulator mode. To turn mouse emulator on or off: press and hold <b>ESC</b> key and also press the <b>TAG</b> key When mouse emulator is <b>ON</b> the arrow pointer appears on screen. Note that pointer will also be present if a mouse in connected.	
<b>SLOWER</b>	Makes replay speed slower	
<b>DAY-</b>	Steps back to prior day. Hold <b>ESC</b> while pressing to step back by 10 minutes (programmable)	
<b>PAUSE/SELECT</b>	Switch between play and pause	Select menu items or acknowledge pop-up boxes
<b>DAY+</b>	Steps forward next day. Hold <b>ESC</b> while pressing to step back by 10 minutes (programmable)	
<b>FASTER</b>	Makes replay speed faster	

**Note:** some key functions require you to log on. If so, log on and press the key again.

### 1.2.2 Mouse Control

The DVR can be fully controlled by a mouse and this is recommended especially for ease of system configuration.

- Move mouse to move pointer around screen
- Right click to bring up menu
- Left click to select items pointed to by the on-screen mouse pointer

Note: The mouse would normally plug into the **USB MOUSE** port on the rear of the DVR. If you enable the mouse emulator (i.e. use keys to simulate mouse), the mouse will be disabled.

### 1.2.3 Mouse Emulator Control

The mouse emulator provides all the control of a mouse but using the front panel keys. The mouse emulator function may also be used via a remote keyboard,

- Press **Left, Right, Up, Down** keys to move pointer around screen
- Press **TAG** key to bring up menu when in live mode.
- Press **OK** key to select items pointed to by the on-screen mouse pointer.

To enable/disable the mouse emulator, press **ESC** key and at same time, press the **TAG** key.

### 1.2.4 External Keyboards

The external keyboard ports supports Vi-K1 and Vi-K2 series keyboards and allow remote control of the DVR. The DVR sends video over CAT5 to the BNC output connectors on each keyboard for connection to a monitor. When DVRs are cascaded, the keyboard monitor outputs can display images from any of the DVRs.

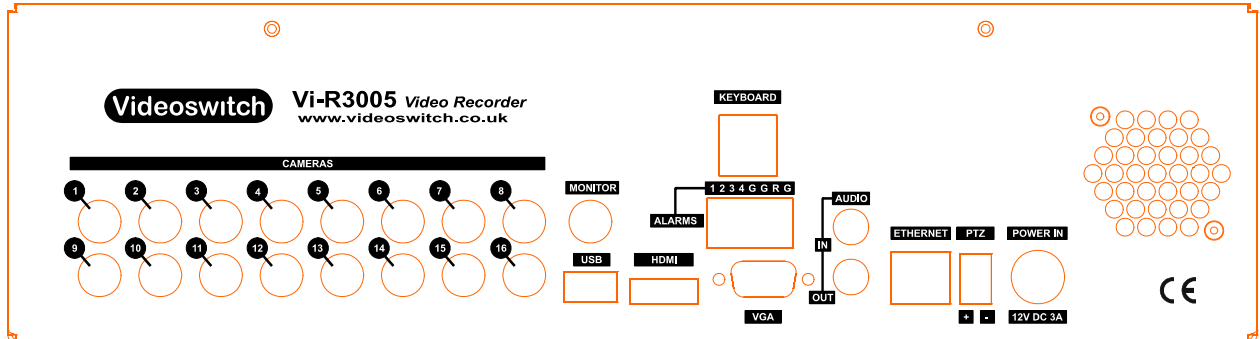
# 2 Installation

## 2.1 Preventive and Cautionary Tips

Before connecting and operating your device, please be advised of the following tips:

- Ensure unit is installed in a well-ventilated, dust-free environment.
- Unit is designed for indoor use only.
- Keep all liquids away from the device.
- Ensure environmental conditions meet factory specifications.
- Ensure unit is properly secured to a rack or shelf. Major shocks or jolts to the unit as a result of dropping it may cause damage to the sensitive electronics within the unit.
- Use the device in conjunction with an UPS if possible.
- Power down the unit before connecting and disconnecting accessories and peripherals.
- A factory recommended HDD should be used for this device.
- Improper use or replacement of the battery may result in hazard of explosion. Replace with the same or equivalent type only. Dispose of used batteries according to the instructions provided by the battery manufacturer.

## 2.2 Rear Panel Connections



### 2.2.1 Essential Connections

- Connect cameras to camera inputs 1-16 as required
- Connect VGA monitor to VGA port and/or connect a BNC monitor to MONITOR (CVBS) port. The two monitors can display different full screen and multi-screens. Note that the VGA monitor must be connected prior to switching on the DVR as it is auto-detected on boot-up unless specified as main monitor in the menu.
- Connect mains supply to power 12V adaptor provided and connect to DVR

### 2.2.2 Optional Connections

- Connect an HDMI monitor or a DVI monitor (via adaptor cable) to the HDMI port. This will be the main monitor. Note that the HDMI/DVI monitor must be connected prior to switching on the DVR as it is auto-detected on boot-up.
- Connect mouse to the rear MOUSE port. Note that while the mouse emulator is enabled, the mouse is disabled
- Connect Ethernet network to ETHERNET port using CAT5 cable (included)
- Connect Videoswitch remote keyboards to KBD port (Vi-K1 or Vi-K2 range). A BNC video monitor may be connected to the BNC connector on the keyboards.
- Connect dome(s) to RS485 Dome port
- Connect alarm device and alarm sensor contacts to ALARMS port inputs 1, 2, 3, 4
- Connect a USB memory stick to the USB port on the front of the unit (above the DVD drive) for exporting video, importing/exporting configuration and for importing firmware updates.
- Connect line level audio input and output equipment. 1 channel audio is supported.

## 2.3 Replacing a Hard Drive

If a hard drive needs replacing, the DVR will product an audible warning.

The status of all drives fitted can be checked in this menu:

**Menu>HDD>General**                      Status for each drive should be: **Normal**

If you need to replace a drive:

- Turn off power to the DVR
- Unscrew the 2 black M4 screws on the front panel that secure the drive tray and carefully withdraw
- Unplug the SATA connector and remove the old drive
- Plug SATA connector into new drive and fix the drive to drive tray
- Carefully push the drive tray with the new drive back into the DVR
- Fix drive tray with the twoblack M4 screws
- Power up the DVR and wait until boot has completed. The audible alarm will be sounding.
- Go into this menu: **Menu>HDDI**
- Tick the box relating to new drive
- Click on **Init** to format the drive
- Wait until complete.

# 3 Commissioning

## 3.1 Password Access

If password protection is enabled, a password will need to be selected to gain access to protected functions such as the menu. When the password box appears, enter the password using one of these methods:

### 3.1.1 Keyboard Mode

- If you want to select a different User Name press arrow keys to highlight User Name field, press OK, press down arrow, press OK again.
- Press arrow keys to select Password field
- Press **EDIT** key to enter edit mode
- Enter the password using **0-9** keys
- Press **OK**
- Press arrow keys to select **OK** on screen
- Press **OK**

### 3.1.2 Mouse

- Click on user name if you wish to change it and select another use
- Click on password field, enter password numbers and click on **ENTER**.
- Click on **OK**

### 3.1.3 Mouse Emulator Mode

This is the same as using a mouse, except the up, down, left, right keys are used to move the mouse pointer and the **OK** keys act s as a left mouse click.

- Click on user name if you wish to change it and select another use
- Click on password field, enter password numbers and press **OK** while on **ENTER**.
- Click on **OK**

### 3.1.4 Default Passwords

The DVR is shipped with default users and passwords pre-configured as shown in this table (note Username is case sensitive). Access rights may be changed and other users may be added when logged in as **admin**. Default settings may be restored in **Menu->Maintenance->Default**

Username	Default Password	Access Rights
admin	12345	Access to everything for system configuration
User1	111111	Full local and remote access and configuration
User2	222222	Local and remote viewing, playback and export.
User3	333333	Local viewing, playback and export
User4	444444	Local manual operation of cameras



## 3.2 Default Configuration

### 3.2.1 Factory Configuration

The DVR is delivered with the system configuration already defaulted.

These settings ensure that it will record and play cameras once correctly connected up. The configuration settings may be adjusted in the menu to suit the particular installation.

To restore the factory defaults, use this menu page:

**Menu->maintenance->Default**

### 3.2.2 Import/Export Configuration

To import or export a configuration for backup or use on another DVR, go to this menu:

**Menu >System Maintenance > Import/Export**

You can now import or export the configuration from/to a USB stick or CD/DVD.

**Note:** The configuration file only works with the same version of firmware. If you upgrade the DVR firmware you will need to export the configuration again if you wish to retain a copy of the settings for future use.

## 3.3 Record Settings

If you use the default configuration supplied recording will be enabled for all cameras at Medium quality at a default frame rate of 4fps.

To adjust record setting to suit your application, enter the Record menu by pressing MENU key and selecting the **Record** menu. The most important things that need to be set are outlined in the following sections.

### 3.3.1 Schedule

For most applications, make sure the schedule is enabled for all connected cameras and for all times of each day. This is indicated by all blocks being BLUE. If you need to set the whole schedule:

- Select Enable Schedule
- Click **Edit**
- Select **All Day**
- Select **Copy**
- Select **All**
- Click **OK**
- Click on **Apply**
- Click on **OK**
- Click on **Apply**

**Note:** If some of the 16 camera inputs are not used, make sure the schedule for those inputs are disabled so disc space is not wasted.

### 3.3.2 Resolution

Resolution determines the number pixels recorded. For analogue (BNC) cameras the recommended setting to use is either 2CIF or 4CIF.

Resolution	Usage
<b>704x288 (2CIF)</b>	Recommended when smaller capacity hard drives are fitted (2Tbytes or less)
<b>704x576 (4CIF)</b>	Recommended for best quality when larger capacity hard drives are fitted (4Tbytes) or if event triggered recording is used.
<b>960x576 (WD1)</b>	This allows 960pixel resolution wide-screed analogue cameras to be used for best possible quality. Suitable for use with wide-screen monitors.

Set the resolution for both **Normal** and **Event** recording. Event recording applies when Activity detection or external alarm inputs are used.

**Note:** 4CIF resolution is equivalent to D1 resolution (720x576). Higher resolutions are available for IP cameras.

### 3.3.3 Quality

Medium quality is appropriate for most applications but this can be adjusted to achieve required playback quality. Setting this higher will use disc space up more quickly.

When you change the quality, make sure you also change the **Max Bitrate (Kbps)** accordingly.

### 3.3.4 Frame Rate

The frame rate has the next greatest impact on disc space usage. Refer to the tables in section **Error! Reference source not found.** to choose highest record rates whilst achieving sufficient retention of recordings. Set this for **Normal** and **Event** recording. Typically, normal recording would have a lower frame rate to conserve disc space and achieve the required retention period whereas activity recording would use the maximum rate to maximise evidence during periods of particular interest.

When you change the quality, make sure you also change the **Max Bitrate (Kbps)** accordingly. It should be within the range indicated by **Max Bitrate Range Recommended** which is displayed on the screen.

### 3.3.5 Max Bitrate

This should be set once the Resolution, Quality and Frame Rate have been selected. Set Max Bitrate within the range indicated by **Max Bitrate Range Recommended**, somewhere near the higher figure is recommended.

Note:

If Max Bitrate Mode is set to **General** you can chose Max Bitrate from a list of options

If Max Bitrate Mode is set to **Customer** you can enter any value for Max Bitrate.

Recommended max bit-rates are shown in this table:

Frames per second	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	147	221	258	295	370	518	295	370	445	518	592	890
2	167	252	295	336	421	590	336	421	506	590	675	1012
4	208	313	366	418	523	733	418	523	626	733	838	1258
6	250	375	438	500	626	877	500	626	751	877	1002	1503
8	291	436	510	582	728	1020	582	728	875	1020	1166	1750
10	331	497	581	663	831	1163	663	831	997	1163	1330	1996
12	372	558	653	746	933	1307	746	933	1120	1307	1493	2241
15	433	651	761	868	1087	1522	868	1087	1305	1522	1740	2610
16	455	682	796	910	1138	1593	910	1138	1366	1593	1821	2732
18	495	743	868	991	1241	1737	991	1241	1488	1737	1985	2978
20	536	803	940	1073	1343	1880	1073	1343	1612	1880	2148	3225
22	577	866	1011	1155	1446	2023	1155	1446	1735	2023	2312	3470
25	640	960	1120	1280	1600	2240	1280	1600	1920	2240	2560	3840

### 3.3.6 Copy settings to all other Cameras

Once you have set everything for one camera, you can copy its settings to all other cameras:

1. Click on **Copy**
2. Click on **Analog** to select all cameras
3. Click on **OK**
4. Click on **Apply**

### 3.3.7 Retention Period

The displayed retention period is very much the worst case and assumes the maximum bit-rate on all cameras at all times and also assumes that event recording is occurring all the time.

### 3.3.8 Retention Period Tables

The time period for which video recording is retained for before being over-written depends on these factors:

- Hard drive capacity (1 to 4 Tbyte)
- Frame rate (1 to 10)
- Quality setting (Highest, higher, medium, low, lower, lowest)
- Resolution (4CIF, 2CIF)
- Number of cameras (1 to 16)
- Complexity and movement in each camera view

The tables below give a guide to how many **days** retention to expect, assuming recommended max bit rates, continuous recording and the same settings on all cameras. The exact retention period achieved may differ according to how complex the images are that the cameras are looking at and how much movement there is.

Depending on how many cameras you have and what hard drive capacity is available, you can see the trade off between resolution, quality, frame-rate and retention period.

### 3.3.8.1 16 Camera Systems

#### 3.3.8.1.1 Retention Period for 1Tbyte, 16 cameras

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	42	28	24	21	17	12	21	17	14	12	10	7
2	37	25	21	18	15	11	18	15	12	11	9	6
4	30	20	17	15	12	8	15	12	10	8	7	5
6	25	17	14	12	10	7	12	10	8	7	6	4
8	21	14	12	11	9	6	11	9	7	6	5	4
10	19	13	11	9	7	5	9	7	6	5	5	3
12	17	11	10	8	7	5	8	7	6	5	4	3
15	14	10	8	7	6	4	7	6	5	4	4	2
16	14	9	8	7	5	4	7	5	5	4	3	2
18	13	8	7	6	5	4	6	5	4	4	3	2
20	12	8	7	6	5	3	6	5	4	3	3	2
22	11	7	6	5	4	3	5	4	4	3	3	2
25	10	6	6	5	4	3	5	4	3	3	2	2

#### 3.3.8.1.2 Retention Period for 2Tbyte, 16 cameras

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	85	56	48	42	34	24	42	34	28	24	21	14
2	74	49	42	37	30	21	37	30	25	21	18	12
4	60	40	34	30	24	17	30	24	20	17	15	10
6	50	33	28	25	20	14	25	20	17	14	12	8
8	43	29	24	21	17	12	21	17	14	12	11	7
10	38	25	21	19	15	11	19	15	12	11	9	6
12	33	22	19	17	13	10	17	13	11	10	8	6
15	29	19	16	14	11	8	14	11	10	8	7	5
16	27	18	16	14	11	8	14	11	9	8	7	5
18	25	17	14	13	10	7	13	10	8	7	6	4
20	23	15	13	12	9	7	12	9	8	7	6	4
22	22	14	12	11	9	6	11	9	7	6	5	4
25	19	13	11	10	8	6	10	8	6	6	5	3

**3.3.8.1.3 Retention Period for 4Tbyte, 16 cameras**

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	169	112	96	84	67	48	84	67	56	48	42	28
2	149	99	84	74	59	42	74	59	49	42	37	25
4	119	79	68	59	48	34	59	48	40	34	30	20
6	99	66	57	50	40	28	50	40	33	28	25	17
8	85	57	49	43	34	24	43	34	28	24	21	14
10	75	50	43	37	30	21	37	30	25	21	19	12
12	67	45	38	33	27	19	33	27	22	19	17	11
15	57	38	33	29	23	16	29	23	19	16	14	10
16	55	36	31	27	22	16	27	22	18	16	14	9
18	50	33	29	25	20	14	25	20	17	14	13	8
20	46	31	26	23	19	13	23	19	15	13	12	8
22	43	29	25	22	17	12	22	17	14	12	11	7
25	39	26	22	19	16	11	19	16	13	11	10	6

### 3.3.8.2 12 Camera Systems

#### 3.3.8.2.1 Retention Period for 1Tbyte, 12 cameras

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	56	37	32	28	22	16	28	22	19	16	14	9
2	50	33	28	25	20	14	25	20	16	14	12	8
4	40	26	23	20	16	11	20	16	13	11	10	7
6	33	22	19	17	13	9	17	13	11	9	8	6
8	28	19	16	14	11	8	14	11	9	8	7	5
10	25	17	14	12	10	7	12	10	8	7	6	4
12	22	15	13	11	9	6	11	9	7	6	6	4
15	19	13	11	10	8	5	10	8	6	5	5	3
16	18	12	10	9	7	5	9	7	6	5	5	3
18	17	11	10	8	7	5	8	7	6	5	4	3
20	15	10	9	8	6	4	8	6	5	4	4	3
22	14	10	8	7	6	4	7	6	5	4	4	2
25	13	9	7	6	5	4	6	5	4	4	3	2

#### 3.3.8.2.2 Retention Period for 2Tbyte, 12 cameras

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	113	75	64	56	45	32	56	45	37	32	28	19
2	99	66	56	49	39	28	49	39	33	28	25	16
4	80	53	45	40	32	23	40	32	26	23	20	13
6	66	44	38	33	26	19	33	26	22	19	17	11
8	57	38	32	28	23	16	28	23	19	16	14	9
10	50	33	29	25	20	14	25	20	17	14	12	8
12	45	30	25	22	18	13	22	18	15	13	11	7
15	38	25	22	19	15	11	19	15	13	11	10	6
16	36	24	21	18	15	10	18	15	12	10	9	6
18	33	22	19	17	13	10	17	13	11	10	8	6
20	31	21	18	15	12	9	15	12	10	9	8	5
22	29	19	16	14	11	8	14	11	10	8	7	5
25	26	17	15	13	10	7	13	10	9	7	6	4



3.3.8.2.3 Retention Period for 4Tbyte, 12 cameras

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	225	150	128	112	90	64	112	90	74	64	56	37
2	198	132	112	99	79	56	99	79	65	56	49	33
4	159	106	91	79	63	45	79	63	53	45	40	26
6	133	88	76	66	53	38	66	53	44	38	33	22
8	114	76	65	57	46	32	57	46	38	32	28	19
10	100	67	57	50	40	28	50	40	33	28	25	17
12	89	59	51	44	36	25	44	36	30	25	22	15
15	77	51	44	38	30	22	38	30	25	22	19	13
16	73	49	42	36	29	21	36	29	24	21	18	12
18	67	45	38	33	27	19	33	27	22	19	17	11
20	62	41	35	31	25	18	31	25	21	18	15	10
22	57	38	33	29	23	16	29	23	19	16	14	10
25	52	35	30	26	21	15	26	21	17	15	13	9

**3.3.8.3 8 Camera Systems**
**3.3.8.3.1 Retention Period for 1Tbyte, 8 cameras**

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	85	56	48	42	34	24	42	34	28	24	21	14
2	74	49	42	37	30	21	37	30	25	21	18	12
4	60	40	34	30	24	17	30	24	20	17	15	10
6	50	33	28	25	20	14	25	20	17	14	12	8
8	43	29	24	21	17	12	21	17	14	12	11	7
10	38	25	21	19	15	11	19	15	12	11	9	6
12	33	22	19	17	13	10	17	13	11	10	8	6
15	29	19	16	14	11	8	14	11	10	8	7	5
16	27	18	16	14	11	8	14	11	9	8	7	5
18	25	17	14	13	10	7	13	10	8	7	6	4
20	23	15	13	12	9	7	12	9	8	7	6	4
22	22	14	12	11	9	6	11	9	7	6	5	4
25	19	13	11	10	8	6	10	8	6	6	5	3

**3.3.8.3.2 Retention Period for 2Tbyte, 8 cameras**

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	169	112	96	84	67	48	84	67	56	48	42	28
2	149	99	84	74	59	42	74	59	49	42	37	25
4	119	79	68	59	48	34	59	48	40	34	30	20
6	99	66	57	50	40	28	50	40	33	28	25	17
8	85	57	49	43	34	24	43	34	28	24	21	14
10	75	50	43	37	30	21	37	30	25	21	19	12
12	67	45	38	33	27	19	33	27	22	19	17	11
15	57	38	33	29	23	16	29	23	19	16	14	10
16	55	36	31	27	22	16	27	22	18	16	14	9
18	50	33	29	25	20	14	25	20	17	14	13	8
20	46	31	26	23	19	13	23	19	15	13	12	8
22	43	29	25	22	17	12	22	17	14	12	11	7
25	39	26	22	19	16	11	19	16	13	11	10	6

**3.3.8.3.3 Retention Period for 4Tbyte, 8 cameras**

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	338	225	193	169	134	96	169	134	112	96	84	56
2	298	197	169	148	118	84	148	118	98	84	74	49
4	239	159	136	119	95	68	119	95	79	68	59	40
6	199	133	113	99	79	57	99	79	66	57	50	33
8	171	114	97	85	68	49	85	68	57	49	43	28
10	150	100	86	75	60	43	75	60	50	43	37	25
12	134	89	76	67	53	38	67	53	44	38	33	22
15	115	76	65	57	46	33	57	46	38	33	29	19
16	109	73	62	55	44	31	55	44	36	31	27	18
18	100	67	57	50	40	29	50	40	33	29	25	17
20	93	62	53	46	37	26	46	37	31	26	23	15
22	86	57	49	43	34	25	43	34	29	25	22	14
25	78	52	44	39	31	22	39	31	26	22	19	13

### 3.3.8.4 4 Camera Systems

#### 3.3.8.4.1 Retention Period for 1Tbyte, 4 cameras

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	169	112	96	84	67	48	84	67	56	48	42	28
2	149	99	84	74	59	42	74	59	49	42	37	25
4	119	79	68	59	48	34	59	48	40	34	30	20
6	99	66	57	50	40	28	50	40	33	28	25	17
8	85	57	49	43	34	24	43	34	28	24	21	14
10	75	50	43	37	30	21	37	30	25	21	19	12
12	67	45	38	33	27	19	33	27	22	19	17	11
15	57	38	33	29	23	16	29	23	19	16	14	10
16	55	36	31	27	22	16	27	22	18	16	14	9
18	50	33	29	25	20	14	25	20	17	14	13	8
20	46	31	26	23	19	13	23	19	15	13	12	8
22	43	29	25	22	17	12	22	17	14	12	11	7
25	39	26	22	19	16	11	19	16	13	11	10	6

#### 3.3.8.4.2 Retention Period for 2Tbyte, 4 cameras

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	338	225	193	169	134	96	169	134	112	96	84	56
2	298	197	169	148	118	84	148	118	98	84	74	49
4	239	159	136	119	95	68	119	95	79	68	59	40
6	199	133	113	99	79	57	99	79	66	57	50	33
8	171	114	97	85	68	49	85	68	57	49	43	28
10	150	100	86	75	60	43	75	60	50	43	37	25
12	134	89	76	67	53	38	67	53	44	38	33	22
15	115	76	65	57	46	33	57	46	38	33	29	19
16	109	73	62	55	44	31	55	44	36	31	27	18
18	100	67	57	50	40	29	50	40	33	29	25	17
20	93	62	53	46	37	26	46	37	31	26	23	15
22	86	57	49	43	34	25	43	34	29	25	22	14
25	78	52	44	39	31	22	39	31	26	22	19	13

3.3.8.4.3 Retention Period for 4Tbyte, 4 cameras

Frames per second per camera	2CIF						4CIF					
	Lowest	Lower	Low	Medium	Higher	Highest	Lowest	Lower	Low	Medium	Higher	Highest
1	676	450	385	337	269	192	337	269	223	192	168	112
2	595	395	337	296	236	169	296	236	196	169	147	98
4	478	318	272	238	190	136	238	190	159	136	119	79
6	398	265	227	199	159	113	199	159	132	113	99	66
8	342	228	195	171	137	97	171	137	114	97	85	57
10	300	200	171	150	120	85	150	120	100	85	75	50
12	267	178	152	133	107	76	133	107	89	76	67	44
15	230	153	131	115	91	65	115	91	76	65	57	38
16	219	146	125	109	87	62	109	87	73	62	55	36
18	201	134	115	100	80	57	100	80	67	57	50	33
20	185	124	106	93	74	53	93	74	62	53	46	31
22	172	115	98	86	69	49	86	69	57	49	43	29
25	155	104	89	78	62	44	78	62	52	44	39	26

### 3.3.9 Retention Period Calculator

A PC application is also available to calculate update rates and disc capacity requirements. This application caters for configurations with different settings for each camera.

Program name: DiskCalculator.exe

Download from: [www.videoswitch.co.uk](http://www.videoswitch.co.uk) located in **Free Software**

## 3.4 Auto-Sequencing

### 3.4.1 Auto-Switch

Menu auto-switch is simple to set up and applies to the main monitor (HDI, VGA or BNC). Auto-switching is enabled by setting a dwell time in this part of the menu:

**Menu>Configuration>Live View>Dwell Time**

### 3.4.2 Start/Stop Auto-Switching

To start switching,:

Press **OK**

To stop switching:

**Right click mouse and select Stop-Auto-Switch**

## 3.5 Covert Cameras

Covert cameras are camera that are hidden from view by are nevertheless recording. They are hidden from view for all users, but can be made available for playback on selected user login-ins.

### 3.5.1 Main Monitor

#### 3.5.1.1 Set Covert

Make sure that covert cameras are removed from view by clicking on the “x” next to the camera number displayed on the screen. For example, if you wish to make camera 16 covert, click on the “x” wherever “A16 x” is displayed. It will now display “X x”. This indicates that this camera will not be displayed.

This will prevent cameras from being viewed in live mode. To prevent them being viewed remotely or in playback, you must also make sure the user logins restrict viewing of any covert cameras:

- Go into this menu (must be admin login): **Menu>Configuration>User**
- Click on green tick icon
- Select this tab: **Camera Configuration**
- Select this drop down option: **Local Playback**
- Disable any cameras that you wish this user to be unable to replay.
- Select this tab: **Local Configuration**
- Disable **Local Camera Management**
- Click **Apply**

#### 3.5.1.2 Clear Covert

To restore cameras to view (or re-arrange the displays), selected one of the screen areas and click on the camera symbol to the left of the camera reference A1, S2 A3 etc. This will allocate the corresponding camera to the selected screen zone.

Make sure the user login allows local playback of that camera again (see previous section).

### 3.5.2 Video export and Remote View

User rights can be set to restrict exporting or viewing of particular cameras in this menu:

**Menu>Configuration>User**

Click on **green** tick symbol to edit user viewing rights (you need to be logged in as admin)



## 3.6 PTZ Control

### 3.6.1 Connection for dome control via menu or ethernet

In order to control domes using the mouse or remotely control domes via ethernet, a connection is required on the back of the DVR between the green terminal block the dome(s):

Terminal Block	Dome connection
PTZ +	RS485+
PTZ -	RS485-

### 3.6.2 RS485 Dome Protocols

If you want to control PTZ domes, protocol and baud rate is set in the menu to suit the dome(s).

**Menu>Camera>PTZ**

Select PTZ mode either using pressing the PTZ key or right-clicking the mouse on a live camera image and pressing the PTZ icon. The dome may now be controlled by the mouse.

### 3.6.3 RS485 Dome Control via Ethernet

If you want to control PTZ domes via a network, whether locally or via broadband, this is achieved using mouse control as above except from the remote viewing software.

# 4 User

## 4.1 Live Viewing

### 4.1.1 Full screen

To select full screen camera images:

- Enter the camera number using the number keys: **1,2,3,4,5,6,7,8,9,0**
- Pressing the **←** and **→** keys to step through cameras
- Right click on mouse and select Main or Aux monitor and required camera.

### 4.1.2 Multi-Screen

To select multi-screen camera images:

- Press the **SCREEN** key to get the format you require. Use **←** and **→** for different camera groups in multi-screens.
- Right click on mouse and select Main or Aux monitor and required screen format

### 4.1.3 Auto-Switching

If a dwell time has been set in the **Configuration>Live View** menu, pressing **SEL** will start camera switching on the main monitor.

To stop switching:

**Left click on mouse and select Stop Auto-Switch**

### 4.1.4 Main or Aux Monitor Selection

Press the **MAIN/AUX** key then **SELECT** to switch between main and aux monitors so that camera can be selected.

**Note:** Take care if the other monitor isn't attached or visible to you, as you will lose sight of your cursor. If this happens, just press **MAIN/AUX** key then **SELECT** again and control will return to your monitor.

### 4.1.5 Screen Warning Symbols

The following symbols may appear on the screen for each camera.



To find what has caused the alert:

- Press **HELP** key to go to menu path: **Menu>Maintenance->System Info**
- Look at **Camera, Record, Alarm, Network** and **HDD** tabs and check for errors
- Select **Log Information**

Click on **Search** (change date and **Major Type** and **Minor Type** to narrow down the events as required)

#### 4.1.5.1 Yellow Triangle

The yellow triangle is an alert cause by either:

- An alarm such as movement detection or external alarm input
- An exception such as a hard drive failure.

### 4.1.5.2 Red Cross

A red cross indicates that recording has stopped on that camera. This may be due to a variety of reasons, including:

- Time is outside programmed schedule
- Recording has been manually stopped
- Camera is faulty
- Hard drive is faulty
- Network problem (if IP camera)

### 4.1.6 Quick setting Toolbar

If you right-click on the mouse (or mouse emulator) in Live mode, you will see this toolbar.



This provides these functions (in order):

Enable manual record	If schedule is inactive, record may be manually enabled or disabled
Instant playback	Instant Playback only shows the last five minutes recorded
Mute audio	Mute/Enable audio
Capture an image	Take a snapshot of the current image
PTZ control	Control dome via keyboard
Digital Zoom	Left-click and draw to select the area for zooming
Image settings	Adjust image appearance
Close toolbar	Close this toolbar

### 4.2 Play

To enter playback mode	Press the <b>FIND</b> key, or Right click mouse and select <b>All Day Playback</b> , or select <b>Play</b> in the main menu.
To select cameras	Make sure playback is paused. Move mouse pointer to right of screen and select which cameras you want to playback.
To select day	Move mouse pointer to right of screen and use calendar to select which day you wish to view.
To select time of day	Move slider bar across bottom of screen
To play or pause	Click on <b>PLAY</b> or <b>PAUSE</b> icon

## 4.3 Video Clip Export

One or more vVideo clips may be exported to a USB stick or to CDs or DVDs using the the built-in DVD drive. These clips may be for one or more cameras.

Follow these steps to export one or more video clips:

1. Press the **FIND** key to enter playback mode
2. Select cameras, day and time as above, section 4.2
3. Pause playback at start of clip you wish to export
4. Press **CLIP** key or click on the scissor icon near the bottom left of screen.
5. Move slider to the end of the video section to be exported.
6. Press **CLIP** key again or click on the scissor icon to mark end of clip to be exported
7. Repeat steps 3 to 6 if there are other clips you require.
8. Press **ESC** and if clip size is ok to fit on your backup media, click on **YES**.
9. Put in CD, DVD or USB memory stick and refresh.
10. When ready, press **START** to export. Wait until completed. Create duplicate copies as required.

### Note

Keep clips as small as possible and only include cameras that are required so that exported data fits onto the backup media.

## 4.4 Remote Viewing

### 4.4.1 Browser

Connect to a Videoswitch R-series Net Recorder with a browser for remote viewing and management. You will need to allow the browser to install some add-ons.

### 4.4.2 Vi-Viewer1000 Remote Viewer

Install Vi-Viewer1000 on PC running Windows (XP, Vista, Windows 7, 8) to remotely monitor and manage up to 256 Videoswitch Net Recorders.

### 4.4.3 Vi-Viewer4000 Camera Management System

Install Vi-Viewer4000 on PC running Windows (XP, Vista, Windows 7, 8) to remotely monitor and manage up to 256 Videoswitch Net Recorders. Up to 64 simultaneous images from different DVRs may be displayed on screen at once.

# 5 Reference



## 5.1 Menu

### 5.1.1 Playback

### 5.1.2 Recording Configuration

#### 5.1.2.1 Quick Schedule

#### 5.1.2.2 Advanced Schedule Configuration

#### 5.1.2.3 Record Quality Settings

#### 5.1.2.4 Motion Detection Settings

#### 5.1.2.5 Trigger Settings

### 5.1.3 Cameras Setup

#### 5.1.3.1 Privacy Zones

#### 5.1.3.2 Video Tampering Detection

#### 5.1.3.3 Video Loss Detection

#### 5.1.3.4 OSD Configuration

### 5.1.4 Status

#### 5.1.4.1 Drive Information

#### 5.1.4.2 Chan Status

#### 5.1.4.3 Record Status

#### 5.1.4.4 Alarm Status

#### 5.1.4.5 Network Status

#### 5.1.4.6 HD Status

### 5.1.5 System Configuration

#### 5.1.5.1 Time/Date

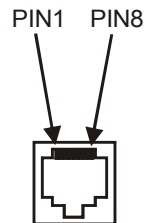
#### 5.1.5.2 Network

- 5.1.5.3 PTZ
- 5.1.5.4 Serial Settings
- 5.1.5.5 On Camera Settings
- 5.1.5.6 Exception
- 5.1.5.7 Display
- 5.1.5.8 Disk Management
- 5.1.5.9 Email
- 5.1.6 File Management
- 5.1.7 Maintenance
  - 5.1.7.1 Firmware Upgrade
  - 5.1.7.2 Factory Default
  - 5.1.7.3 Shutdown
  - 5.1.7.4 Configuration Export/Import
  - 5.1.7.5 System Logs

## 5.2 Connector Pin-outs

### 5.2.1 Keyboard

Connector Type: RJ45 Female



Pin	Function
1	RS485 RX+
2	RS485 RX-
3	RS485 TX+ (KBD1 only)
4	9V
5	GND
6	RS485 TX-+ (KBD1 only)
7	Twisted Pair Video+
8	Twisted Pair Video-

### 5.2.2 VGA

Connector Type: 15-way High Density D-type Female

Pin	Function
1	RED
2	GREEN
3	BLUE
4	N/C
5	GND
6	GND
7	GND
8	GND
9	N/C
10	GND
11	N/C
12	N/C
13	HSYNC

14	VSYNC
15	N/C



## 5.3 Specifications

### 5.3.1 Video

- Video Compression H.264
- Video Input 16-ch, BNC, 1.0 Vp-p
- Termination 75Ω switchable
- Video format PAL/NTSC
- BNC outputs 4-ch, 704×576 (PAL)
- VGA/HDMI Outputs 1920×1080P/60Hz, 1600×1200/60Hz, 1280×1024/60Hz, 1280×720/60Hz, 1024×768/60Hz
- Screen formats Full screen, 2x2, 1+6, 1+7, 3x3, 4x4

### 5.3.2 Audio

- Audio Inputs 1-ch, 2.0 Vp-p, 1 kΩ
- Audio output 1-ch, 600Ω
- Two-way Audio 2.0Vp-p, 1kΩ
- Audio Compression OggVorbis
- Audio Bit Rate 16kbps

### 5.3.3 Recording

- Recording formats 4CIF(D1), WD1, 2CIF, CIF, QCIF
- Frame rate per camera 1/16 to 10 fps (8 fps WD1)
- Video Bit Rate 32K to 8M bits per second
- Sub-stream CIF, QCIF up to 25 fps
- Pre and post alarm 5s default, programmable
- Time-lapse recording 1, 2, 3, 4, 5 seconds
- Scheduling timers Yes
- Activity detection Yes

### 5.3.4 Playback

- Multi-channel playback 16-ch
- Playback rate Single step, variable speed, forward/reverse
- Search Date/time, alarms, activity, retrospective activity (smart search)

### 5.3.5 Storage

- Removable hard discs x1, up to 4Tbytes, SATA

- DVD/CD backup Built-in writer (also plays back)

### 5.3.6 Network

- Network Interface RJ45 10M/100M/1000M Ethernet
- Remote access Web browser, Vi-Viewer4000, iPod, Android

### 5.3.7 Interface

- Keyboard RS485
- Video via CAT5 Keyboard has BNC video output
- Alarm Inputs 4-ch
- Alarm Outputs 1-ch relay
- Mouse USB
- Backup USB 2.0
- Dome control RS485
- GUI Graphical user interface can be controlled by Internal or external keyboard, mouse or mouse emulator

### 5.3.8 Power

- DVR Power Input 12V, 3A
- Adaptor Power input IEC, 100~240VAC, 2A, 50~60Hz
- Power consumption 36W max

### 5.3.9 Environmental

- Temperature 0 to 35deg C operating, -10 to 40deg C storage
- Humidity 10 to 90% non-condensing

### 5.3.10 Dimensions & Weight

- Dimension 355mm x 105mm x 360mm (W x H x D)
- Weight 6kg

