Vi-R2000 Series Net Recorder
User Manual

Products covered by this manual

Vi-R2001	Vi-R2005
	

Document Reference	Date	Firmware
Mdr601a1.doc	14/12/2012	120823

Videoswitch
Ocean House, Redfields Industrial Park
Redfields Lane, Church Crookham
Hants GU52 0RD

Telephone 01252-851510
Fax 01252-851296
Email sales@videoswitch.co.uk
Web www.videoswitch.co.uk

Contents

1 Getting Started

1.1. Monitors

VGA Monitor

A VGA monitor is recommended in order to benefit from high resolution images. Supported resolutions are: 1024x768 and 1280x1024. The VGA monitor should be plugged in before applying power to the DVR so that is detected. If no monitor is attached, the BNC output becomes the main monitor.

BNC Monitor

The BNC monitor is the AUX monitor if a VGA monitor is used and can display full screen and split screen formats that are independent to the VGA monitor.

The BNC is the MAIN monitor if no VGA monitor is present.

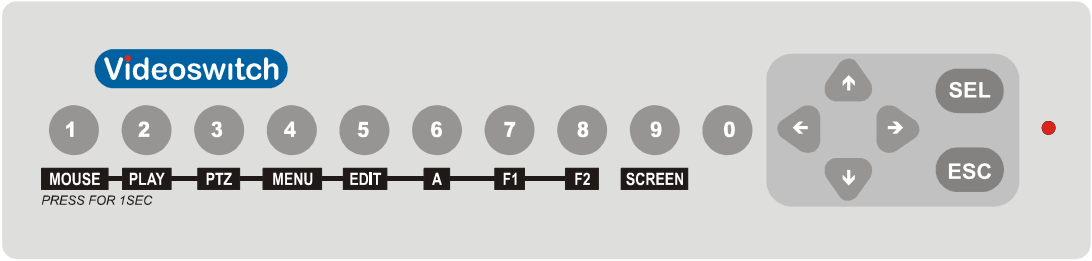
The external keyboard port supports Vi-K1 and Vi-K2 series keyboards and allows remote control of the DVR. The DVR sends video over CAT5 to a BNC connector on the keyboard for connection to a monitor. This displays the same image as the BNC output on the DVR.

1.2. Control

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

- Control by keys in standard mode - arrow keys step from field to field in the menus.
- Control by external mouse – a mouse moves pointer smoothly around the screen. The left button selects items on the screen and right button brings up a menu when in live mode.
- Control by mouse emulator – the Up/Down/Left/Right keys perform the functions of a mouse, moving the pointer smoothly around the screen. SEL is the left button. Press the 0 button and hold for 1 second to simulate a right button click. The ESC key takes you back a menu level.

1.1.1 Vi-R2001 Keyboard Control

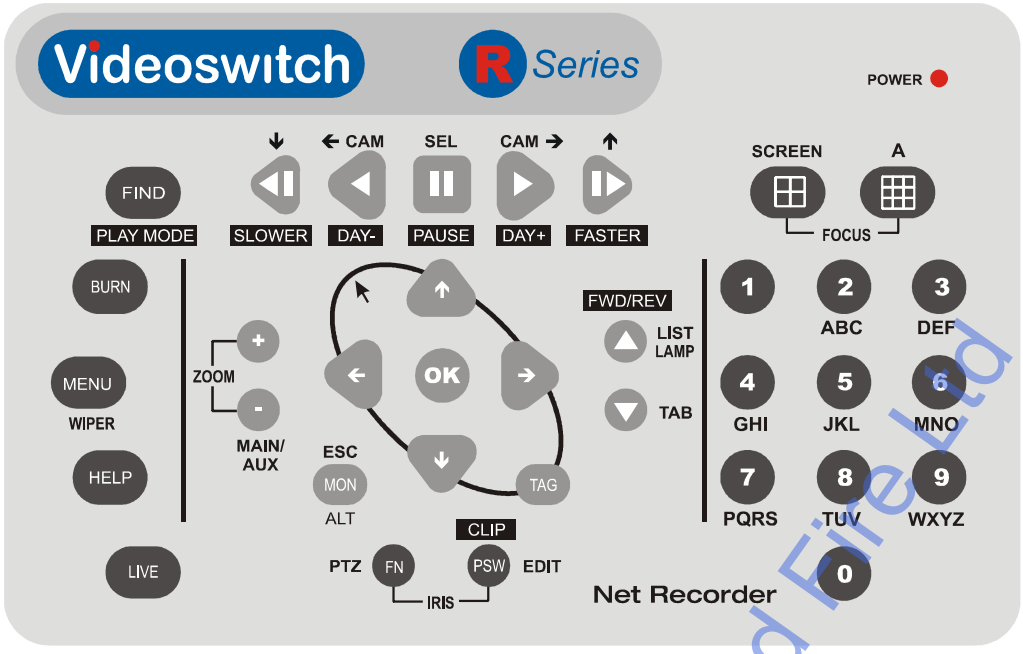


Key	Function(s)
1, 2, 3, 4, 5, 6, 7, 8, 9, 0	Live: 1 – 8 Select full screen cameras **Mouse Emulator Mode** Press and hold the 0 key for 1 second to bring up right-click menu
Up, Down, Left, Right	**Standard Mode:** Live: Select cameras Menu Mode: Move from field to field **Mouse Emulator:** Move mouse pointer around screen
SEL	**Standard Mode** Live: Start/stop auto sequence Menu: Select menu option **Mouse Emulator Mode** Select (Left mouse click)
ESC	Escape from current menu level. Also used as an ALT key for extra functions.
MOUSE	Press and hold for 1 second to turn mouse emulator on or off. When mouse emulator in ON, pointer appears on screen. Do select the mouse emulator if an external mouse is connected to the MOUSE USB port.
PLAY	Press and hold for 1 second to enter PLAY mode. If password is enabled you will need to log-in before entering PLAY mode.
PTZ	Press and hold for 1 second to enter PTZ dome mode If password is enabled you will need to log-in and enter PTZ mode via menu.
MENU	Press and hold for 1 second to enter MENU. If password is enabled you will need to log-in before entering MENU mode.
EDIT	Press and hold for 1 second to enter edit mode when a numeric entry is required in for password or menu.
F1	Not used
F2	Press and hold for 1 second to step through tabs in some menu screens.
SCREEN	Step through multi-screens. Use arrow keys to select cameras 1-4 or 5-8 in quad mode.

Note:

Some keys have different functions depending on current mode of the DVR

1.1.2 Vi-R2005 Keyboard Control



Key	Function(s)
1, 2, 3, 4, 5, 6, 7, 8, 9, 0	Live: Select cameras 1-8. Menu: Password entry
Up, Down, Left, Right	**Standard Mode** Live: Select cameras Menu Mode: Move from field to field **Mouse Emulator** Move mouse pointer around screen Press and hold ALT then also press Up, Down, Left, Right for faster pointer movement.
OK	**Standard Mode** Live Start/stop auto sequence Menu Select menu option **Mouse Emulator Mode** Select (Left mouse click) Press and hold ALT then also press OK key for double click.
ESC/MON/ALT	Escape from current menu level
FN	Press to enter PTZ dome mode
PSW/EDIT/CLIP	Enter edit mode when a numeric entry is required in for password or menu. Also used to delete character when in edit mode. In play mode, this keys marks the start/end of a clip ready for backup.
A	Select numeric, alphabetic and symbol entry when in menu
LIST/LAMP	Control LAMP in PTZ mode
TAB	Step through tabs in some menu screens.

SCREEN	Step through multi-screens. Use arrow keys to select cameras 1-4 or 5-8 in quad mode.
FIND/PLAY MODE	Enter play mode
BURN	Go to export menu
MENU	Enter MENU mode. Controls wiper in PTZ mode.
HELP	Go to system information menu
LIVE	Return to LIVE mode from any other mode
MON/ESC/ALT	Escape one level in menu. Also used at shift key for alternate functions.
TAG	**Mouse Emulator Mode:** Right mouse click To turn mouse emulator on or off, press and hold ALT then also press TAG key. When mouse emulator in ON, arrow pointer appears on screen.
SLOWER	Makes replay speed slower
DAY-	Steps back 30 seconds
PAUSE/SELECT	Switch between play and pause Select menu items or acknowledge pop-up boxes
DAY+	Steps forward 30 seconds
FASTER	Makes replay speed faster

Note:

Some keys have different functions depending on current mode of the DVR

1.1.3 Mouse Control

Control is the same when using either a real mouse or the mouse emulator.

- Move left/right/up/down 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: If you want to use the mouse emulator (i.e. use keys top simulate mouse), do not plug a mouse into the MOUSE port. Similarly, if you want to use a mouse, don't select mouse emulator mode. A conflict will occur if both methods are selected and control will not be possible until one or other is removed.

1.1.4 Mouse Emulator Control

Control is the same when using either a real mouse or the mouse emulator.

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

To enable/disable the mouse emulator, press the **MOUSE** key and hold for 1 second

1.1.5 External Keyboards

The external keyboard port 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 the keyboard for connection to a monitor.

2 Installation

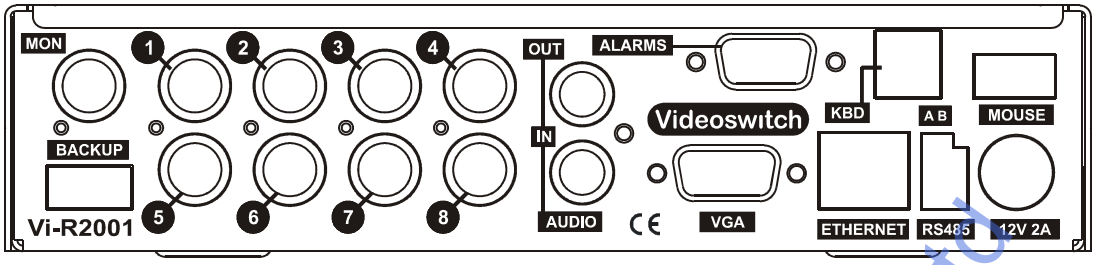
1.3. Preventive and Cautionary Tips

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

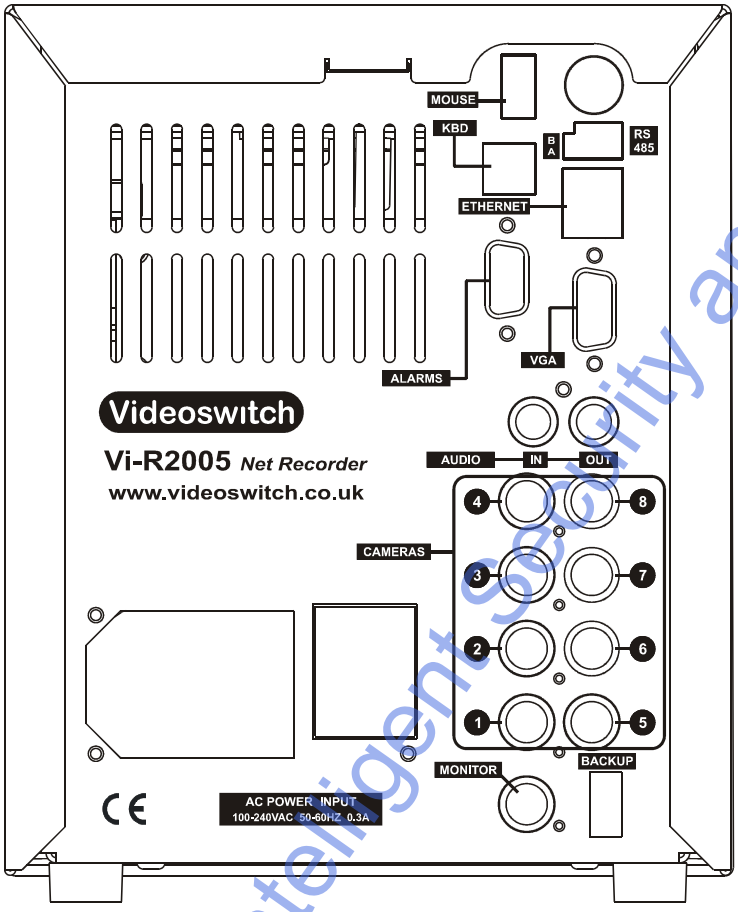
- Ensure unit is installed in a well-ventilated, dust-free environment.
- Unit is designed for indoor use only.
- Keep all liquids away from the device.
- Ensure environmental conditions meet factory specifications.
- Ensure unit is properly secured to a rack or shelf. Major shocks or jolts to the unit 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.

1.4. Connecting Up

Vi-R2001 Rear Panel



Vi-R2005 Rear Panel



Essential Connections

- Connect Cameras to camera inputs 1-8
- Connect VGA monitor to VGA port and/or connect 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.
- Vi-R2005: Connect mains supply to IEC mains input connector on using IEC cable (included).
- Vi-R2001: Connect 12VDC Power adaptor (included) to 12V POWER port.

Optional Connections

- Connect mouse to MOUSE port if keypad mouse emulator is not required or to BACKUP port if control is required by both the mouse and the keypad mouse emulator
- Connect Ethernet network to ETHERNET port using CAT5 cable (included)

- Connect a Videoswitch remote keyboard to KBD port (Vi-K1 or Vi-K2 range). A BNC video monitor may be connected to the BNC connector on the keyboard.
- Connect dome(s) to A and B of RS485 port
- Connect alarm device and alarm sensor contacts to ALARMS port
- Connect a USB memory stick to BACKUP port for exporting video, importing/exporting configuration and for importing firmware updates.
- Connect line level audio input and output equipment

3 Commissioning

1.5. 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:

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 password

Press OK

Press arrow keys to select OK on screen

Press OK

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

Mouse Emulator Mode

- 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**

3.1.1 Default Passwords

The Vi-R4000 series DVR is shipped with default users and passwords setup as shown in this table. Access rights may be changed and other users may be added when logged in as **admin.** All default settings may be restored by importing the default configuration from a USB memory stick.

Username	Default Password	Access Rights
admin	12345	Access to everything for system setup
user1	111111	Local, Remote & Camera config all options
user2	222222	Local: search, Camera control & playback and export. Remote log search
user3	333333	Local manual operation of cameras
user4	444444	Local manual operation of cameras

1.6. Record Settings

If you use the default configuration supplied (which may be reloaded at any time from a USB memory stick), recording will be enabled for all cameras at Medium quality at a reasonable frame rate.

To adjust record setting to suit your application, enter the Record menu by pressing the **MENU** key (hold for 1 second on a Vi-R2001), selecting **Settings** then selecting **Record**. The most important things that need to be set are outlined in the following sections.

3.1.2 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 in the **Schedule** tab. If you need to set the whole schedule:

1. Select **Schedule** screen
2. Select **Enable Schedule**
3. Click on **Apply**
4. Click on **OK**

3.1.3 Resolution

Select the **General** screen. A resolution of **4CIF** is recommended for best quality but it does use nearly twice as much hard disc space as **2CIF** which may also be used.

3.1.4 Quality

Medium quality is appropriate for most applications. If you change the quality setting, make sure you also change the **Max Bitrate (Kbps)** to a value equal or higher to that indicated 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

3.1.5 Frame Rate

The frame rate has next greatest impact on disc space usage. Refer to the tables in section 3.1.7 to choose highest record rates that achieves sufficient retention of recordings.

3.1.6 Copy settings to all other Cameras

Once you have set one camera, you can copy these settings to all other connected cameras by clicking on **Copy**.

3.1.7 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 2 Tbyte)

- Frame rate (1 to 8)
- Quality setting (Highest, higher, medium, low, lower, lowest)
- Resolution (4CIF, 2CIF)
- Number of cameras (1 to 8)
- 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.

3.1.7.1 8 Camera Systems

3.1.7.1.1 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

3.1.7.1.2 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

3.1.7.2 4 Camera Systems

3.1.7.2.1 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

3.1.7.2.2 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

4 User

1.7. 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**
- Pressing the ← and → keys to step through cameras (not available on Vi-R2001 keypad)
- 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 (not available on Vi-R2001 keypad)
- Right click on mouse and select Main or Aux monitor and required screen format

4.1.3 Auto-Sequencing

If a dwell time has been set in the **Display** menu, pressing **SEL** will start sequencing.

1.8. Playback and Video Export

Video clips may be backed up to USB sticks. The Vi-R2005 also has a DVD drive that may also be used to backup.

The simplest and quickest method of backing up video data is as follows:

1. Press The PLAY key to enter playback mode
2. Using the mouse or mouse emulator, select which cameras you wish to view and backup (click on the triangle on the bottom right of the screen to bring up list of cameras and calendar)
3. Double click on the calendar to select a day (highlighted if recording is available)
4. Click on the slider bar to select different times of day
5. Use playback buttons to control play/pause and speed (on a Vi-R2005 you can also use playback keys to control play/pause and speed)
6. Select the start of the video that you wish to export. Press EDIT (hold for 1 second if Vi-R2001). Alternatively, click on clip button near bottom left of screen.
7. Move slider to end of video section to be exported. Press EDIT again (hold for 1 second if Vi-R2001). Alternatively, click on clip button near bottom left of screen.
8. Repeat 6 and 7 if there are other clips you require.
9. Press ESC and then click on YES.
10. Put in CD, DVD or USB memory stick and refresh.
11. When ready, press START to export. Wait until completed.

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

5 Reference

1.9. Menu

5.1.1 Manual Record

5.1.2 Video Search

5.1.3 Event Search

5.1.4 Manual Alarm

5.1.5 HDD

5.1.5.1 General

5.1.5.2 Advance

5.1.5.3 Set Cameras of HDD Group

5.1.6 Settings

5.1.6.1 General

5.1.6.1.1 General

5.1.6.1.2 DST Settings

5.1.6.1.3 More Settings

5.1.6.2 Camera

5.1.6.2.1 General

5.1.6.2.2 Advanced

5.1.6.3 Record

5.1.6.3.1 General

5.1.6.3.2 Advanced

5.1.6.3.3 Schedule

5.1.6.4 Network

5.1.6.4.1 General

5.1.6.4.2 Advanced

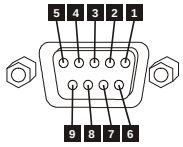
5.1.6.4.3 Network Status

5.1.6.5 Alarm

5.2 Connector Pin-outs

5.2.1 Alarms

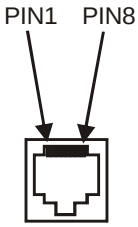
Connector Type: 9-way D-type Female



Pin	Function
1	Alarm Input 1
2	Alarm Input 2
3	Alarm Input 3
4	Alarm Input 4
5	GND
6	Relay
7	
8	Keyboard 2 RS485 RX+
9	Keyboard 2 RS485 RX-

5.2.2 Keyboard

Connector Type: RJ45 Female



Pin	Function
1	RS485 RX+
2	RS485 RX-
3	n/c
4	9V
5	GND
6	n/c
7	Twisted Pair Video+
8	Twisted Pair Video-

5.2.3 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

1.10. Technical Specifications

5.2.4 Video

- Video Compression H.264
- Video Input 8 channel, BNC, 1.0 Vp-p
- Termination 75Ω
- Video format PAL/NTSC
- BNC output 704×576 (PAL)
- VGA Output 1280×1024/60Hz, 1024×768/60Hz
- Screen formats Full screen, 2x2, 3x3

5.2.5 Audio

- Audio Inputs Phono, 2.0 Vp-p, 1 kΩ
- Audio output Phono, 600Ω
- Two-way Audio 2.0 Vp-p, 1kΩ
- Audio Compression G.711
- Audio Bit Rate 64kbps

5.2.6 Recording

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

5.2.7 Playback

- Multi-channel playback x8
- Playback rate Variable speed
- Step Forward or back by seconds, minutes, hours
- Search Date/time, alarms, activity, events

5.2.8 Storage

- Removable hard disc Up to 2Tbyte SATA
- DVD/CD backup Built-in writer (also plays back). Not in Vi-R2001.
- USB Backup Memory stick or external USB DVD writer

5.2.9 Network

- Network Interface RJ45 10M/100M Ethernet

- Remote access — Web browser, Vi-Viewer4000, iPod, Android

5.2.10 Interface

- Keyboards — x2, RS485
- Video via CAT5 — Keyboard has BNC video output
- Alarm Inputs — x4, normally open
- Alarm Output — Relay
- Mouse — USB 2.0
- Backup — USB 2.0
- RS485 dome control — Pelco-D, Pelco-P and other protocols
- Graphical user interface — Can be controlled by mouse or keyboard

5.2.11 Power

5.2.11.1 Vi-R2001

- Power input — 12V DC, 2A
- Power Adaptor — 240Vac, 50Hz

5.2.11.2 Vi-R2005

- Power input — 100~240VAC, 50~60Hz, 30W
- Cable — IEC cable

5.2.12 Environmental

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

5.2.13 Dimensions & Weight

5.2.13.1 Vi-R2001

- Dimension — 195mm x 50mm x 340mm (WxHxD)
- Weight — 2.5kg

5.2.13.2 Vi-R2005

- Dimension — 170mm x 210mm x 340mm (WxHxD)
- Weight — 5.5kg