VDM Digital Recorder
User Manual
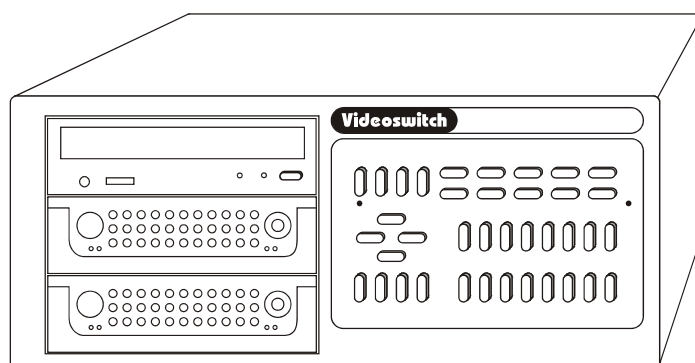
Products covered by this manual:

Cameras / Hard Drive Capacity	4	9	16
80 Gbytes	**VDM-4G80**	**VDM-9G80**	**VDM-16G80**
120 Gbytes	**VDM-4G120**	**VDM-9G120**	**VDM-16G120**
160 Gbytes	**VDM-4G160**	**VDM-9G160**	**VDM-16G160**
320 Gbytes	**VDM-4G320**	**VDM-9G320**	**VDM-16G320**
500 Gbytes	**VDM-4G500**	**VDM-9G500**	**VDM-16G500**
600 Gbytes	**VDM-4G600**	**VDM-9G600**	**VDM-16G600**

Document Reference   Date   Firmware

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1 Overview

1.1 The VDM Digital Recorder

The VDM Digital Recorder provides a one-box solution for multiplexing, digital recording of video images from up to 16 cameras, CD backup and remote dial-up viewing of live or recorded images.

- All you need for a digital recording system is the VDM recorder, up to 16 cameras and a display monitor. This set-up will permit the video images from all the cameras to be recorded onto hard disc for a period of typically 31 days. Beyond that time, the oldest images will be over-recorded by new images.

- Any images available on the hard disc can be played back without interrupting the recording process. An instant search facility allows images to be found by time and date. Events can be tagged by the built-in activity detection and by external alarms (e.g. PIR detectors), and tagged events may be instantly recalled and stepped through.

- The SWEEP mode allows the contents of the hard drives to be rapidly scanned for the easy location of particular areas of interest even when the date and time is not known.

- For permanently archiving images, a CD writer is included as standard in all VDM recorders. Any incidents on the hard disc that you wish to archive onto CD may be marked. These are then copied onto a blank CD. Both CD-R and CD-RW type CDs may be used. The CD-R discs have the advantage for evidence of being permanent and completely protected from possible alteration. The CD-RW discs on the other hand may be erased and re-used.

- Incidents stored onto CD may be played back in any VDM.

- CDs may also be played back on a PC with the free "VDM Replay" or "VDM Play" software.

- The CD drive also stores of the VDM's configuration, which can facilitate subsequent installations.

- The CD drive is also used to install firmware updates to the system. These will be made available on CD and on the Internet as new features are added.

An important feature of the VDM Digital Recorder is the inclusion of removable hard drives. This offers the significant advantage over products with in-built hard drives in providing the user with the ability to upgrade the drive capacity at any time. Additionally, it also means zero down-time if one of the two drives fails in service; a replacement drive can be sourced and plugged in while the system continues unaffected on its single remaining drive.

The removable hard drive facility also allows additional hard drives be used to extend the storage capability. A further application is in situations where review of the recordings is required at another site; a hard drive can be readily removed and transported.

Whilst the VDM Digital Recorders are designed to run out of the box with no set-up required, there is great flexibility in the configuration options. The update rate and the image qualities of each camera may be programmed to optimise the usage of the available hard drive capacity. These settings can be different depending on time of day and on the alarm and activity status. An important feature of the VDM Digital Recorders is that the actual size of the recorded images depends on how much detail there is in them. Images with less information content use less discs space than those containing a lot of detail, such as faces, people and number plates. The benefit is that the hard drive space is used much more efficiently; enabling higher quality images and faster updates than would otherwise be possible. This is in contrast to other systems where images are forced to a constant size, irrespective of their information content.

A variety of multi-screen screen modes are provided, including real-time quads and real-time picture-in-picture (PIP). Dual monitor outputs are provided for the main monitors, and a spot monitor output provides a completely independent full screen display. Independent covert protection is possible on main and spot monitors. Each monitor also has auto-sequencing facilities, with a user programmable set of cameras for each.

The keyboard and menu system are fully protected by a multiple level password system that may be used if required.

1.2   The Front Panel
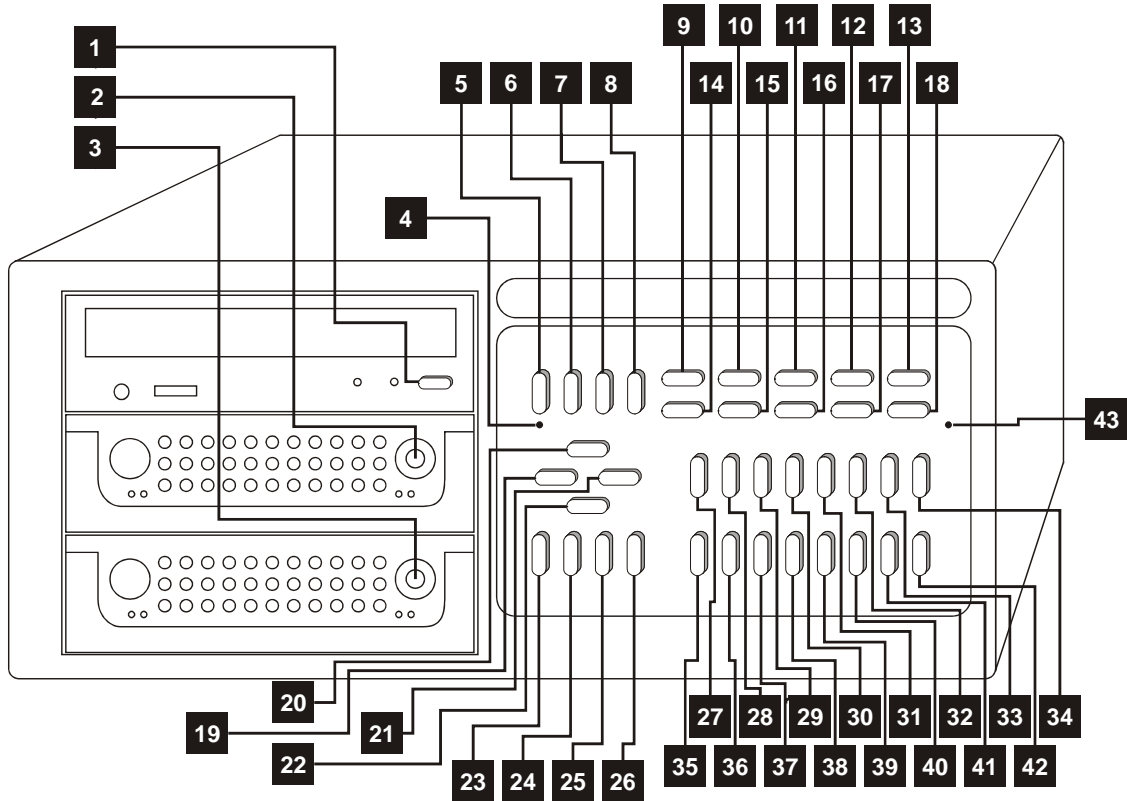
	Standard Functions	ALT Functions		Standard Functions	ALT Functions
1	Open/Close CD Drawer		23	**ALT**	n/a
2	Lock for Hard Drive 2		24	PIP (**NO**)	Zoom
3	Lock for Hard Drive 1		25	Quad (**YES**)	Sequence Main
4	**RECORD**		26	Multi-Screen (**DEFAULT**)	Sequence Spot
5	**SETUP**	**SYSTEM INFO**	27	Camera 1 (Main)	Camera 1 (Spot)
6	**INCIDENT**	**DRIVE**	28	Camera 2 (Main)	Camera 2 (Spot)
7	**EVENT**	**IMAGE**	29	Camera 3 (Main)	Camera 3 (Spot)
8	**SEARCH**		30	Camera 4 (Main)	Camera 4 (Spot)
9	◀ Reverse Play		31	Camera 5 (Main)	Camera 5 (Spot)
10	◀❙ Reverse Single Step		32	Camera 6 (Main)	Camera 6 (Spot)
11	❚❚ Pause Play		33	Camera 7 (Main)	Camera 7 (Spot)
12	❙▶ Single Step Play		34	Camera 8 (Main)	Camera 8 (Spot)
13	▶ Forward Play		35	Camera 9 (Main)	Camera 9 (Spot)
14	▶▶ Fast Forward Play	⊢**SET START** of Incident	36	Camera 10 (Main)	Camera 10 (Spot)
15	◀ **EVENT** Prior Event	❙◀ Incident Start	37	Camera 11 (Main)	Camera 11 (Spot)
16	■ Live	**CLEAR**	38	Camera 12 (Main)	Camera 12 (Spot)
17	**EVENT** ▶ Next Event	▶❙ Incident End	39	Camera 13 (Main)	Camera 13 (Spot)
18	◀◀ Fast Reverse Play	**SET END**⊣ of Incident	40	Camera 14 (Main)	Camera 14 (Spot)
19	← **LEFT**		41	Camera 15 (Main)	Camera 15 (Spot)
20	↑ **UP**		42	Camera 16 (Main)	Camera 16 (Spot)
21	→ **RIGHT**		43	Power LED	
22	↓ **DOWN**				

Note: To get an ALT function, press the ALT key and another key.

1.3   The Rear Panel
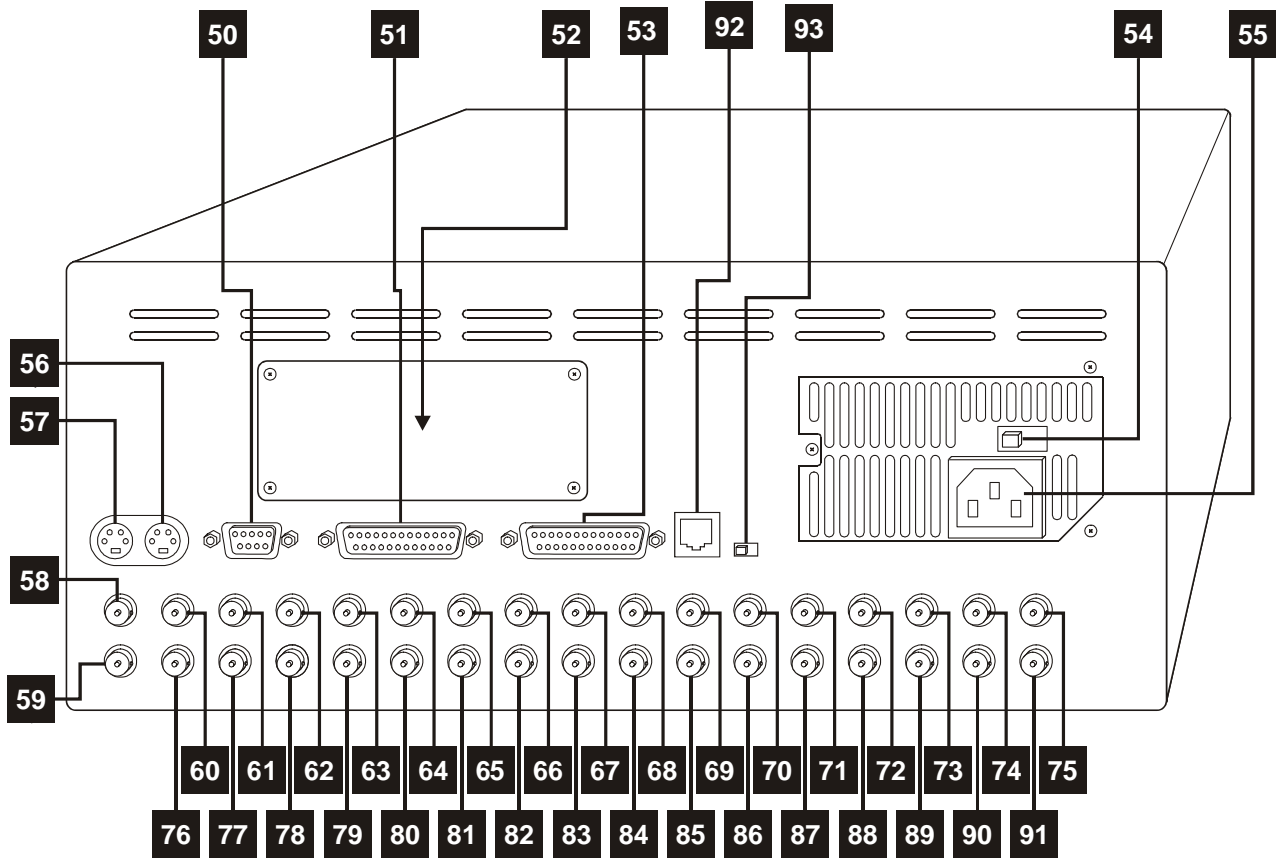
Connectors

50	Modem/Computer (RS232)
51	Alarm Inputs, Relays, Keyboard (RS485)
52	Options Module blanking panel
53	Parallel Port (Printer)
54	Mains voltage selector switch (115 or 230Vac)
55	Mains input connector (IEC)
56	S-Video Input
57	S-Video Monitor Output
58	Main Monitor composite output
59	Spot monitor composite output
60	Camera 1 Loop Output
61	Camera 2 Loop Output
62	Camera 3 Loop Output
63	Camera 4 Loop Output
64	Camera 5 Loop Output
65	Camera 6 Loop Output
66	Camera 7 Loop Output
67	Camera 8 Loop Output
68	Camera 9 Loop Output
69	Camera 10 Loop Output
70	Camera 11 Loop Output
71	Camera 12 Loop Output

Connectors

72	Camera 13 Loop Output
73	Camera 14 Loop Output
74	Camera 15 Loop Output
75	Camera 16 Loop Output
76	Camera 1 Input
77	Camera 2 Input
78	Camera 3 Input
79	Camera 4 Input
80	Camera 5 Input
81	Camera 6 Input
82	Camera 7 Input
83	Camera 8 Input
84	Camera 9 Input
85	Camera 10 Input
86	Camera 11 Input
87	Camera 12 Input
88	Camera 13 Input
89	Camera 14 Input
90	Camera 15 Input
91	Camera 16 Input
92	RS485 Keyboard Input
93	RS485 Termination (shown ON)

1.4   Operating Modes

The VDM Digital Recorder is controlled via the front panel keys. All status information is displayed on the main monitor.

The VDM has a number of operating modes that are called up during the set-up and operation of the system. Each of these modes has a different easily identifiable screen display. Note that the camera-select keys are used for entering numbers in some of the modes, and the camera 10 key is used to enter zero.

Screen Modes:

- The **SELF-TEST** mode is entered following power up. The VDM displays a blue start-up screen while the self-test is in progress. On completion, the system will move on to the LIVE screen mode. If the self-test fails, a critical alert message will be displayed.

- The **LIVE** mode is the default state of the system in which live camera images are displayed. Different cameras and screen formats may be selected. For example, full screen, zoom, picture-in-picture (PIP), quad or multi-screen.

- The **PLAY** mode allows previously recorded images to be replayed. A wide range of keys allows forward and reverse re-play, fast play, single-step and event stepping.

- The **SYSTEM INFO** mode displays details about the system such as the model, firmware revision, checksum and the self-test results. In addition, the alarm input status and activity status is also displayed for test purposes.

- The **SEARCH** mode allows a date and time to be entered in order to recall images from that date and time. A single key press calls up the most recently recorded image.

- The **SWEEP** mode allows images to be recalled and viewed when date and time may not be known. The whole range of images stored on the hard drive(s) may be rapidly swept to search for an incident.

- The **EVENT** mode allows events generated by activity and external to be instantly recalled and replayed, and also keeps a record of system alerts such as power-up and menu access.

- The **INCIDENTS** mode is used to specify incidents for backup onto CD.

- The **DRIVES** mode displays information about the disc drives, such as the range of dates and times of video that is stored on each drive.

- The **IMAGES** mode displays information either about live image record rates and sizes, or about individual replay images.

- The **SETUP** mode provides access to the menus for configuring the system and for archiving images to CD.

1.5   Screen Icons

The following icons may appear on the screen during the normal operation of the system:

Auto sequencing of Main monitor is on
Auto sequencing of Spot monitor is on
Zoom has been selected
An alarm input has been triggered
Activity has been detected
Alarms or activity are currently disabled by their timers
A hard disc drive
The CD drive
Pause
Single frame Forward play
Single frame Reverse play
Forward Play
Reverse Play
Fast forward play
Fast Reverse play
System is busy
The displayed image is at the beginning of an incident
The displayed image is at the end of an incident
Incidents have been selected for archiving onto CD
Incidents have been de-selected and will not be archived onto CD

1.6   Menu Structure

The following sections summarise the menu structure. Note that the menu may vary slightly between different versions of firmware installed in the VDM.

Press the **SETUP** key to enter and exit the menu system. Use the cursor keys ↑ , ↓ , ← and → to navigate through the menus. The **DEFAULT** key is very useful within the menus as it is used to set the currently selected menu item to a default condition. In certain cases within the menu, the **YES** key needs to be pressed to confirm that the selected action is required. Refer to section 10 for details.

1.7   User Menu

```
┌──────────────┐
│  User Menu   │
└──────┬───────┘
       │
       │         ┌────────────────────┐          ┌─────────────────────────┐
       ├─────────│  Incident Options  │──────────│        Erase CD         │
       │         └────────────────────┘          ├─────────────────────────┤
       │                                          │        Filename         │
       │                                          ├─────────────────────────┤
       │                                          │  Erase Incident Markers │
       │                                          └─────────────────────────┘
       │
       │         ┌──────────────────────────────┐     ┌─────────────────────┐
       ├─────────│ Auto Sequence (Main Monitor) │─────│    Sequence Mode    │
       │         └──────────────────────────────┘     ├─────────────────────┤
       │                                               │     Camera List     │
       │                                               ├─────────────────────┤
       │                                               │     Dwell Times     │
       │                                               └─────────────────────┘
       │
       │         ┌─────────────────────────────┐      ┌─────────────────────┐
       ├─────────│ Auto Sequence Spot (Monitor)│──────│    Sequence Mode    │
       │         └─────────────────────────────┘      ├─────────────────────┤
       │                                               │     Camera List     │
       │                                               ├─────────────────────┤
       │                                               │     Dwell Times     │
       │                                               └─────────────────────┘
       │
       │         ┌──────────────┐
       ├─────────│   PIP Mode   │
       │         └──────────────┘
       │                                          ┌───────────────────────┐
       │         ┌────────────────────┐           │   Main Monitor Mode   │
       ├─────────│  Power-Up Options  │───────────├───────────────────────┤
       │         └────────────────────┘           │    Sequence Main      │
       │                                           ├───────────────────────┤
       │                                           │  Sequence Spot (Day)  │
       │                                           ├───────────────────────┤
       │                                           │ Sequence Spot (Night) │
       │                                           ├───────────────────────┤
       │                                           │     Main Camera       │
       │                                           ├───────────────────────┤
       │                                           │     PIPCamera         │
       │                                           ├───────────────────────┤
       │                                           │   Spot Camera (Day)   │
       │                                           ├───────────────────────┤
       │                                           │  Spot Camera (Night)  │
       │                                           └───────────────────────┘
       │
       │         ┌──────────────┐                  ┌─────────────────────┐
       ├─────────│ Anti-Flicker │──────────────────│    Full Screen      │
       │         └──────────────┘                  ├─────────────────────┤
       │                                            │     PIP Screen      │
       │                                            ├─────────────────────┤
       │                                            │    Quad Screen      │
       │                                            ├─────────────────────┤
       │                                            │  X9 Multi-Screen    │
       │                                            ├─────────────────────┤
       │                                            │  X16 Multi-Screen   │
       │                                            ├─────────────────────┤
       │                                            │   Text Windows      │
       │                                            ├─────────────────────┤
       │                                            │  Always Interlace   │
       │                                            └─────────────────────┘
       │
       │         ┌──────────────┐          ┌─────────────────────┐        ┌─────────────────────┐
       ├─────────│    Titles    │──────────│  Multiplexer Title  │        │  Full Screen Titles │
       │         └──────────────┘          ├─────────────────────┤        ├─────────────────────┤
       │                                    │    Camera Titles    │        │      PIP Titles     │
       │                                    ├─────────────────────┤        ├─────────────────────┤
       │                                    │ Show Camera Titles  │────────│     Quad Titles     │
       │                                    ├─────────────────────┤        ├─────────────────────┤
       │                                    │    Alarm Titles     │        │      x9 Titles      │
       │                                    └─────────────────────┘        ├─────────────────────┤
       │                                                                    │      x16 Titles     │
       │         ┌────────────────────┐                                     └─────────────────────┘
       ├─────────│   Text Alignment   │
       │         └────────────────────┘
       │
       │         ┌─────────────────────┐
       ├─────────│ Time/Date Alignment │
       │         └─────────────────────┘
       │
       │         ┌──────────────────────────┐
       └─────────│ Upgrade Firmware from CD │
                 └──────────────────────────┘
```

1.8   Supervisor Menu

```
┌─────────────────────┐
│ Supervisor Menu     │
└─────────────────────┘
         │
         │            ┌──────────────────────────┐
         ├────────────│ Covert Permission (Main) │
         │            └──────────────────────────┘
         │
         │            ┌──────────────────────────┐
         ├────────────│ Covert Cameras (Main)    │
         │            └──────────────────────────┘
         │
         │            ┌──────────────────────────┐
         ├────────────│ Covert Cameras (Spot)    │
         │            └──────────────────────────┘
         │
         │            ┌──────────────┐        ┌──────────────────────┐
         ├────────────│ Passwords    │────────│ Supervisor Password  │
         │            └──────────────┘    │   └──────────────────────┘
         │                                │   ┌──────────────────────┐
         │                                ├───│ User Password        │
         │                                │   └──────────────────────┘
         │                                │   ┌──────────────────────┐
         │                                ├───│ Incident Password    │
         │                                │   └──────────────────────┘
         │                                │   ┌──────────────────────┐
         │                                ├───│ Playback Password    │
         │                                │   └──────────────────────┘
         │                                │   ┌──────────────────────┐
         │                                └───│ Keyboard Password    │
         │                                    └──────────────────────┘
         │            ┌──────────────────────────┐
         ├────────────│ Password AccessTimeout   │
         │            └──────────────────────────┘
         │
         │            ┌──────────────────────────┐
         ├────────────│ Erase Event List         │
         │            └──────────────────────────┘
         │
         │            ┌──────────────────────────┐
         └────────────│ Event List Needs Password│
                      └──────────────────────────┘
```

1.9   Engineer Menu

```
Engineer Menu
    ├── Date and Time ──────┬── Summer/Winter Time
    │                       └── Date/Time (DD/MM/YY HH:MM:SS)
    │
    ├── Timers ─────────────┬── Custom Recording
    │                       ├── Alarm Enable /Disable
    │                       ├── Activity Enable /Disable
    │                       └── Daytime
    │
    ├── Record Settings ────┬── Normal Mode ──────┬── Image Retention (Days)
    │                       │                     ├── Cameras
    │                       │                     └── Image Quality
    │                       │
    │                       ├── Custom Mode ──────┬── Rate
    │                       │                     ├── Cameras
    │                       │                     └── Quality
    │                       │
    │                       ├── Activity/Alarm Mode ──┬── Rate
    │                       │                         ├── Cameras
    │                       │                         ├── Quality
    │                       │                         ├── Record
    │                       │                         └── Storage Allocation (%)
    │                       │
    │                       └── Record Options ───┬── Recording Enabled
    │                                             ├── Image Size Control
    │                                             ├── Record Drives
    │                                             └── Drive Full Options
    │
    ├── Activity/Alarms ────┬── Activity Detection
    │                       ├── Enable Activity
    │                       ├── Alarm Polarities
    │                       ├── Enable Alarms
    │                       ├── Alarm Input/Camera Mapping
    │                       ├── Pull-Up Settings ──┬── Pull-Up Monitor
    │                       │                       ├── Pull-Up Hold Time
    │                       └── Display Active Pixels├── Sequence Time
    │                                               ├── Relay Hold Time
    │                                               └── Restore after Activity/Alarm
    │
    ├── Critical Alerts ────┬── Cameras
    │                       ├── Drive Fail
    │                       └── Drive Full
    │
    ├── Camera Inputs ──────┬── Brightness
    │                       ├── Colour Boost
    │                       └── Termination
    │
    ├── Remote Access ──────┬── System Address       ┌── Network Interface
    │                       ├── Remote Password      ├── IP Address
    │                       ├── Remote Covert Cameras├── Sub-Net Mask
    │                       ├── Network Settings ────┼── Gateway
    │                       ├── RS232 Baud Rate      ├── Port
    │                       └── Keyboard/Clock Synchronisation├── PSTN Rings
    │                                                ├── ISDN Answer Mode
    │                                                └── ISDN MSN/Sub-Address
    │
    └── Configurations ─────┬── Restore Factory Configuration
                            ├── Get Config from CD
                            ├── Erase Hard Drive(s) ──┬── Erase Hard Drive 1
                            ├── Engineer Password     ├── Erase Hard Drive 2
                            └── Upgrades need Engineer password└── Erase Hard Drives 1 and 2
```

2 Installation

2.1   Connecting Up (4 Camera example)

Make these Connections…

100	Connect the video input of the Monitor to the main monitor output of the VDM using a BNC cable
101	Make sure that the monitor termination is switched on (i.e. to 75 Ohms)
102	Connect the first camera to Camera Input 1 on the VDM using a BNC cable
103	Connect the next camera to Camera Input 2 on the VDM using a BNC cable
104	Connect the next camera to Camera Input 3 on the VDM using a BNC cable
105	Connect the next camera to Camera Input 4 on the VDM using a BNC cable
106	Make sure that the voltage select switch is set to suit the mains supply voltage prior to applying power otherwise damage may occur. The setting required in UK and Europe is 230Vac.
107	Connect the mains power using the IEC cable supplied using an IEC to 13A plug cable (provided)

When power is applied, the system will perform a self-test and display some system information on the screen such as the serial number and firmware and hardware revision of the unit. Press any key while this information is being display to keep it on the screen for longer.

2.2   Setting Date and Time

For proper operation of the VDM Digital Recorder is essential that the date and time are set correctly.

If the displayed date and time is incorrect, set it as follows (numbers refer to Front Panel diagram 1.2):

Follow these steps…

SETUP	Press the **SETUP** key to enter the menu screen.
↓	Press the DOWN key to select the **ENGINEER** sub-menu
→	Press the RIGHT key to enter the **DATE and TIME** sub-menu
↓	Press the DOWN key to select the **DATE/TIME** option
→	Press the RIGHT key to enter the **DATE/TIME** option
1..10	Use the 1-10 keys (10 key is Zero for numeric entry) to enter the date and time in the following order: Day, Month, Year, Hours, Minutes (Time is in 24-hour mode). The displayed day and summer/winter-time must also be correctly displayed (automatic).
SETUP	Press the **SETUP** key to exit the menus.

Note:

If the system clock has an invalid date or time when the VDM is powered up (or at any time during operation), the date and time setting window will be automatically displayed. This makes it easy for the user to enter the correct date and time without needing to go into the menu.

When the clocks change between standard time (Winter) and summertime, the **DATE/TIME** setting must **not** be changed. Instead, the Summer/Winter time setting should be used. In the UK and the rest of Europe, the default **AUTO** Summer/Wintertime setting ensures that this happens automatically at the correct dates so no action is required by the user.

2.3   Critical Alerts

The VDM constantly monitors the hard drives, camera inputs and system so that any fault condition will be reported to the user as soon as possible by means of a red alert message on the screen and, if required, an external alarm connected to the alert relay. Make sure that the alert settings are set correctly to take full advantage of the Critical Alert monitoring facility.

If you get a red "Critical Alert" message when you first set up the system (or after a factory reset), this may be because the Alert Monitoring menu options are not set correctly. Refer to section 10.4.5 for details.

Press the **EVENTS** key to view the alerts (pressing the **DEFAULT** key automatically scrolls to the most recent events. The "Critical Alert" message is cleared when you exit the events screen (e.g. by pressing the **EVENTS** key again), but may return if the alert condition is still present.

2.4   Operation

The VDM Digital Recorder should now be fully operational and recording images from all cameras. Refer to the following sections of this manual for details on controlling and configuring the system.

3 Recording

Unless specifically configured otherwise, the system will always be recording images from all cameras. Even when you are playing back images, the system will continue recording.

RECORD	When the record LED is *on*, this indicates that recording is taking place.

3.1   Update Rates

This table gives an indication of the overall update rate in images per second that will apply for different Image Retention settings (see section 10.4.3.1.1) and hard drive capacities assuming an average image size of 20K bytes. Note that if the average image size is lower, update rates will be *higher*; if the average image size is higher, update rates will *lower*.

To get the update rate per camera, divide the overall update rate by the number of cameras.

Image Retention/ Drive Size	80G	120G	160G	320G	500G	600G
7 Days	6	10	12.5	12.5	12.5	12.5
14 Days	3	5	6	12.5	12.5	12.5
31 Days	1.5	2	3	6	9	12
60 Days	0.75	1	1.5	3	5	6

Note that 24-hour mode operation on a conventional VCR time-lapse recorder is about $5\frac{1}{2}$ images per second. The shaded cells in this table show where the update rate will be equal or *better* than a VCR in 24-hour mode.

3.2   CD Capacity

This table gives an indication of the number of minutes of video that can be archived onto a 700Mbyte CD. Note that all cameras are recorded.

Drive Size/Image Retention	80G	120G	160G	320G	500G	600G
7 Days	88	58	44	22	14	12
14 Days	176	118	88	44	28	23
31 Days	352	252	190	97	62	52

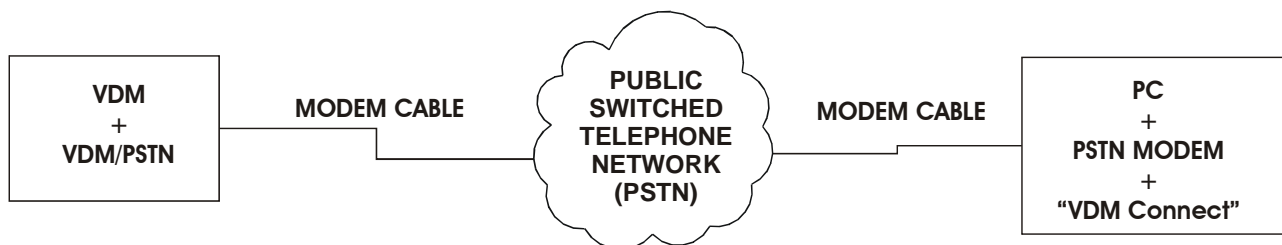# 4 Remote Access

4.1   Configurations

The various standard remote access configurations are illustrated in the following diagrams.

4.1.1   PSTN

Standard telephone lines (PSTN) provide the lowest cost and easiest method of achieving remote viewing of images. A VDM/PSTN (modem) module must be installed in the VDM and the PC must have a standard internal (or external) modem fitted. A telephone socket is required both at the VDM and at the PC end.

Image update rates of around an image every two seconds are typical, depending on the image quality selected in the VDM-Connect remote access software.

The public telephone network is worldwide, and any number of PCs can access any number of VDMs on a one-to-one basis.

```
┌──────────┐              ╭─────────╮              ┌──────────┐
│   VDM    │  MODEM CABLE │ PUBLIC  │ MODEM CABLE  │    PC    │
│    +     │──────────────│SWITCHED │──────────────│    +     │
│ VDM/PSTN │              │TELEPHONE│              │PSTN MODEM│
│          │              │ NETWORK │              │    +     │
└──────────┘              │ (PSTN)  │              │"VDM Connect"│
                          ╰─────────╯              └──────────┘
```
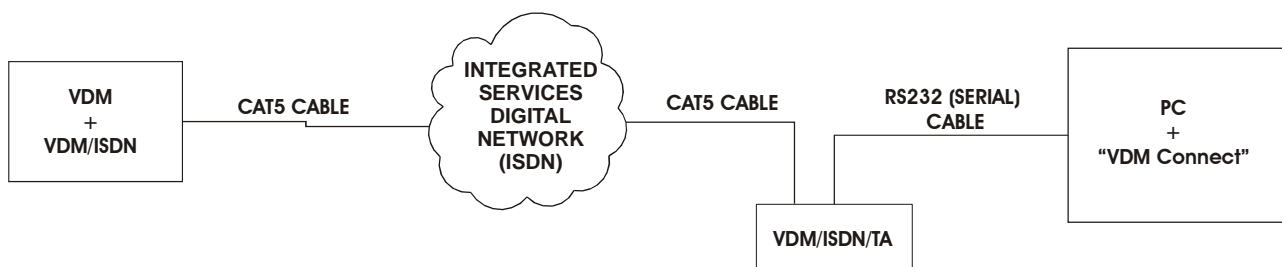
4.1.2   ISDN

ISDN provides almost instant dialling and faster update rates than PSTN. A VDM/ISDN module must be installed in the VDM and a VDM/ISDN/TA terminal adaptor must be attached to the PC. An ISDN socket is required both at the VDM and at the PC end.

Image update rates of around an image per second are typical, depending on the image quality selected in the VDM-Connect remote access software.

The ISDN network is available in many countries (subject to regional variations), and any number of PCs can access any number of VDMs on a one-to-one basis.

```
┌──────────┐             ╭─────────╮              ┌──────────┐
│   VDM    │ CAT5 CABLE  │INTEGRATED│ CAT5 CABLE  RS232(SERIAL) │    PC    │
│    +     │─────────────│ SERVICES │──────── CABLE─────────────│    +     │
│ VDM/ISDN │             │ DIGITAL  │          │    │           │"VDM Connect"│
└──────────┘             │ NETWORK  │      ┌────────┐           └──────────┘
                         │ (ISDN)   │      │VDM/ISDN/TA│
                         ╰─────────╯      └────────┘
```
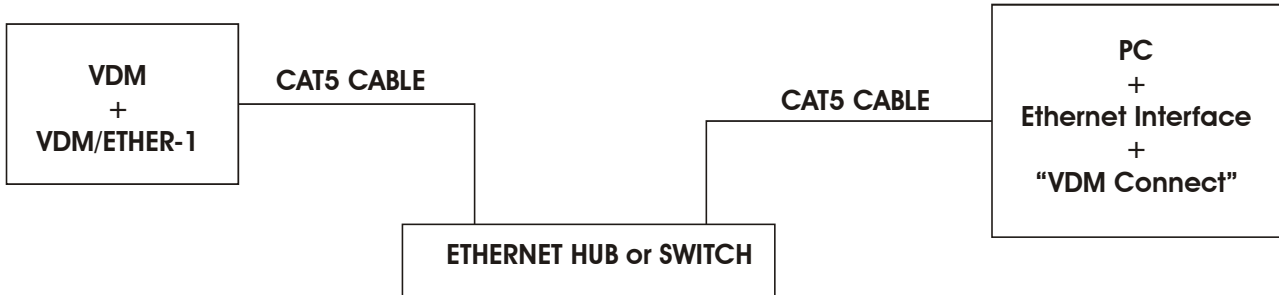
4.1.3   Ethernet Local Area Network (LAN)

Ethernet provides almost instant connection and faster update rates than ISDN. A VDM/ETHER-1 module must be installed in the VDM and the PC must have an Ethernet card installed.

Image update rates of around four images per second are typical, depending on the image quality selected in the VDM-Connect remote access software. Local area networks (LANs) generally employ Ethernet hubs or switches, and the VDM plugs into this in the same way as a PC. Standard CAT5 cables are used throughout.
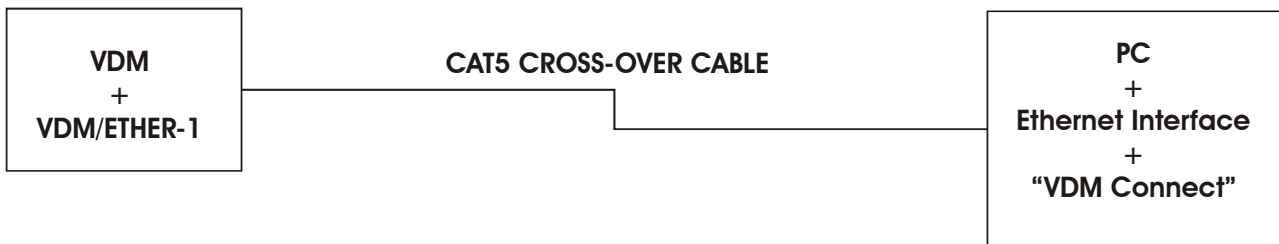
Any number of PCs can access any number of VDMs on a one-to-one basis, subject to the size of the network. The network can be an independent network for the CCTV, or an existing computer network. In the latter case, the network administrator may need to designate suitable IP addresses for the VDM(s) that avoid conflicts with the PCs and printers on the network.

```
┌─────────────┐  CAT5 CABLE              CAT5 CABLE    ┌─────────────────┐
│    VDM      │                                        │       PC        │
│     +       │──────┐                          ┌──────│       +         │
│ VDM/ETHER-1 │      │                          │      │Ethernet Interface│
└─────────────┘      │                          │      │       +         │
                     │  ┌───────────────────┐   │      │  "VDM Connect"  │
                     └──│ETHERNET HUB or SWITCH│──┘      └─────────────────┘
                        └───────────────────┘
```

4.1.4   Ethernet using a Cross-over Cable

Where access to a single VDM is required by a single PC, it is possible to connect the VDM directly using a CAT5 cross-over cable. A VDM/ETHER-1 module must be installed in the VDM and the PC must have an Ethernet card installed. Note that a fixed IP Address will have to be entered into the PC.

Image update rates of around four images per second are typical, depending on the image quality selected in the VDM-Connect remote access software. Using this configuration, one PC can access one VDM.

```
┌─────────────┐   CAT5 CROSS-OVER CABLE    ┌─────────────────┐
│    VDM      │                            │       PC        │
│     +       │────────────┐               │       +         │
│ VDM/ETHER-1 │            └───────────────│Ethernet Interface│
└─────────────┘                            │       +         │
                                           │  "VDM Connect"  │
                                           └─────────────────┘
```
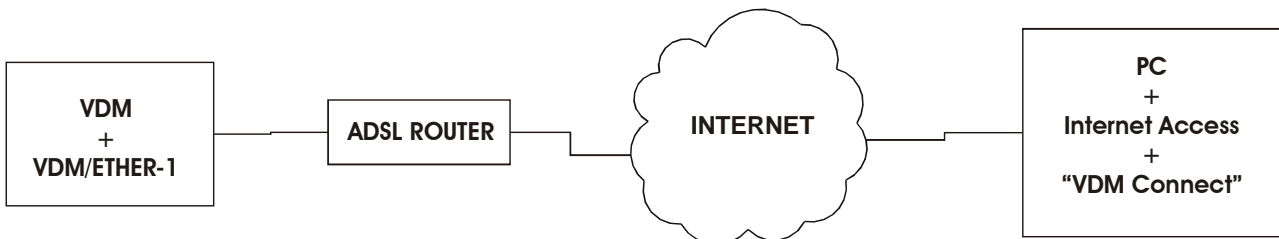
4.1.5   Broadband (ADSL)

One or more VDMs can be accessed via the Internet from anywhere in the world if connected to a service provider via an ADSL broadband router. A VDM/ETHER-1 module must be installed in the VDM and both the ADSL router and the PC must have access to the Internet.

The ADSL router at the VDM end must have a fixed IP address so it can always be addressed remotely, and must be configured to route connections with the specified port to IP address of the VDM(s).

The image update rate depends on the uplink speed and the downlink speed at the PC end. If a data rate of 128Kbit/s is available, image update rates of around two images per second are typical, depending on the image quality selected in the VDM-Connect remote access software. Note that where bandwidth is shared, update rates may suffer. This is in contrast to ISDN where data rates are guaranteed.

```
┌─────────────┐        ┌──────────────┐      ╭──────────╮      ┌─────────────────┐
│    VDM      │        │              │     (            )     │       PC        │
│     +       │────────│ ADSL ROUTER  │─────( INTERNET   )─────│       +         │
│ VDM/ETHER-1 │        │              │     (            )     │ Internet Access │
└─────────────┘        └──────────────┘      ╰──────────╯      │       +         │
                                                               │  "VDM Connect"  │
                                                               └─────────────────┘
```

Note: please check that installed firmware revision supports this mode of operation.

4.2   Option Modules

The following option modules are available for remote access. Any one of these modules may be either pre-fitted into the VDM or may be retro fitted.

- VDM/PSTN   Connect via a PSTN (standard telephone) line
- VDM/ISDN   A faster connection may be achieved via an ISDN digital line.
- VDM/ETHER-1   This module allows one or more VDMs to be monitored on a local area network (10baseT or 100baseT Ethernet, using TCP/IP protocol).

4.2.1   Installation

- The diagram below indicates how the module is fitted. Note that all the modules mount with their metal plate at the *top* (as indicated in this diagram).

- The VDM/ETHER-1 module has a ribbon cable that is permanently attached.
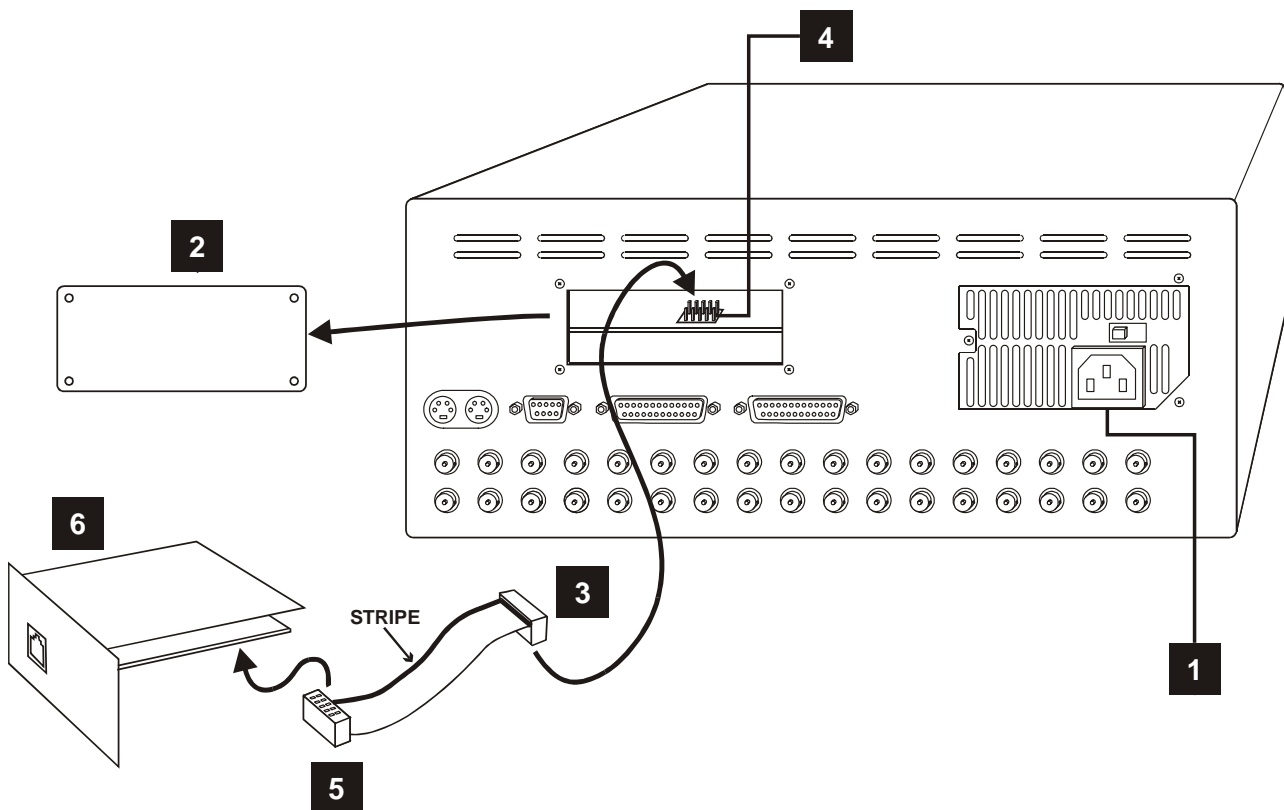
1. Remove the mains power to the VDM Digital Recorder
2. Remove the options module blanking on the VDM Digital Recorder (4 screws)
3. Plug one end of the supplied ribbon into…
4. … the 10-pin header inside the VDM (make sure all the pins line up on both rows and the stripe is to the left when viewed from the rear of the VDM.
5. Plug the other end of the ribbon into 10-pin header on the VDM/PSTN or VDM/ISDN module, making sure all the pins line up on both rows (cable is fixed to VDM/ETHER-1).
6. Carefully fit the module into the VDM Digital Recorder and replace the 4 screws to securely fix it to the rear panel of the VDM Digital Recorder.

Connect to a PSTN, ISDN or Ethernet socket using the cable provided. If you wish to connect the VDM-ETHER-1 directly to a PC (without a hub), a CAT5 cross-over cable will be required.

4.2.2   VDM Firmware Upgrades

The firmware revision in the VDM must be VDM001G3 or later. Upgrade using an upgrade CD as described in section 10.2.10. Refer to section 10.4.7.4 for details of the menu settings necessary for remote access operation.

4.3   PC Software

In order to remotely view images on a PC, the software "VDM-Connect" must first be installed on the PC that will be used for viewing.

4.3.1   Installing VDM-Connect

"VDM-Connect " may be installed from the CD supplied with the VDM, from an upgrade CD or from the internet at www.videoswitch.co.uk.

Double click on the installation file (or select from the menu if the CD auto-runs), and follow the instructions.

4.3.2   Configuring VDM-Connect

In the case of PSTN and ISDN connections, it is necessary to configure VDM-Connect to use the appropriate COM port to communicate with the PSTN modem and/or ISDN terminal adaptor.

Click on the "Remote" menu, click on "Configure…" and select the PSTN or ISDN tab.

Now click on the "Defaults" button and change the port to "COM1", "COM2" etc. to correspond with the RS232 port that is used to connect to your PSTN modem or ISDN terminal adaptor. Click on OK to finish.

If you have both a PSTN modem and ISDN adaptor on the same PC, set up both tabs, using a different COM port for each one.

Note that the port configuration need only be done once. There is no configuration in VDM-Connect required for Ethernet. However, if used on a network or on a PC with a dial-up internet connection, it may be necessary to reserve the IP addresses of a connected VDM to avoid conflict and to ensure that the computer knows that the VDM is a local device. Contact the IT staff responsible for the computer system in case of queries.

4.3.3   Adding Sites to VDM-Connect

Before you can connect to a VDM, it must first be added to a list of "sites". To add a site, run VDM-Connect, click on "Sites" and then click on "Add Site".

Now enter the following:

- A location of the site that will appear on the list (e.g. "Videoswitch Demo Site").
- A telephone number (for PSTN or ISDN) or an IP Address (for Ethernet).
- The connection type (PSTN, ISDN or ETHERNET)
- The VDM address (normally 001)
- The TCP/IP port address

To simplify matters for Ethernet connections, a default button is provided which fills in all the above to the same default settings that the VDM uses.

Press OK to finish.

4.3.4   Using VDM Connect

Any VDM that is in the list of sites, may be accessed as follows:

- Click on "Sites"
- Select the VDM you want
- Click on "Connect".

The "Receiving" indicator will start flashing and images will start to appear once connection has been established.

Click on the following buttons…

- Camera buttons 1, 2, 3 etc. select different cameras
- "Search" recalls recorded images (not that images only update if playing or single stepping)
- "Live" reverts to live images (also re-starts update if it has stopped)
- The five "Hi-Res" to "Faster" buttons select the required update/quality trade-off
- Images may be printed via the "File" menu
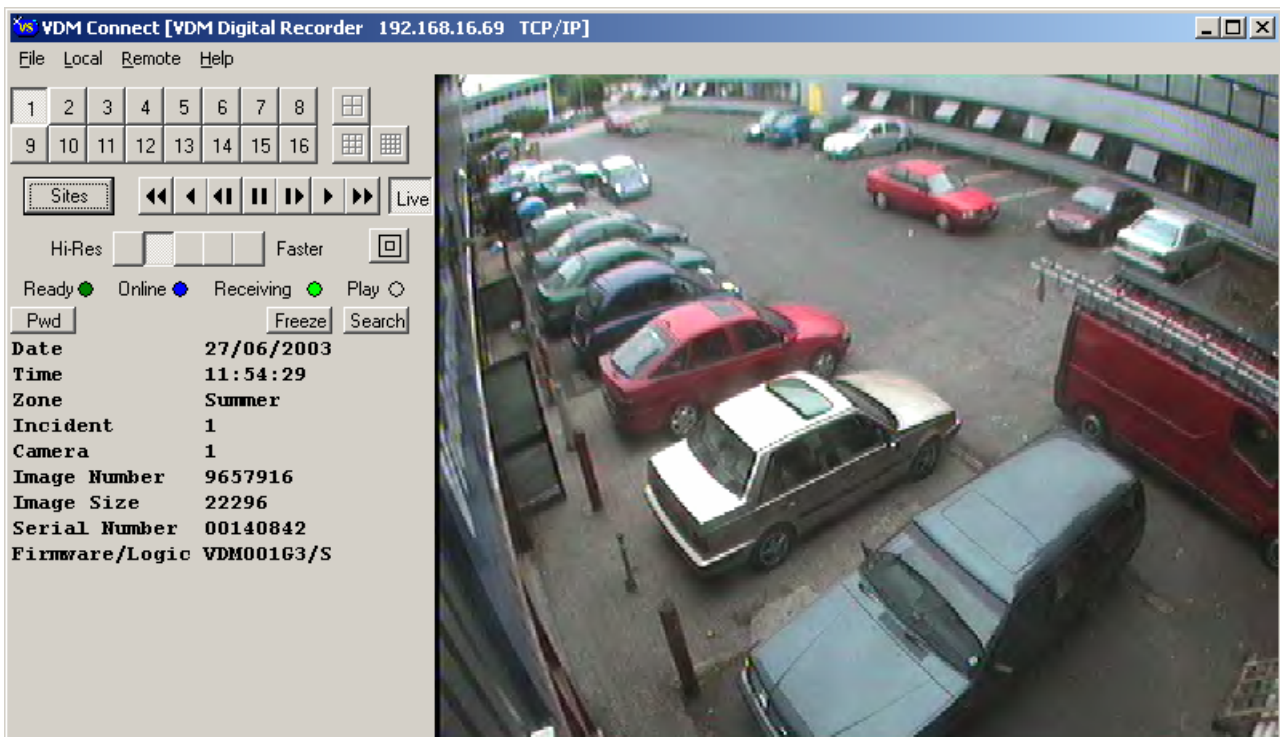
5 Routine Checks

Although the system is intended for continuous un-attended operation**, it is recommended that the user regularly check that images from all cameras replay correctly.** Any potential problems with the cameras or recording system will then be detected as soon a possible, rather continuing un-noticed until a critical incident needs to be recalled from the system.

Similarly, **when a CD has been created you should check that it plays back correctly**, before the images are over-recorded on the VDM. The CD may be checked by either by playing it on a VDM or on a PC.

If a red "Critical Alert" message appears on the screen, this indicates to the user that a fault condition has been automatically detected that could affect recording. The nature of the alert should be checked in the events screen and appropriate action taken.

5.1 Critical Alerts

The VDC constantly monitors the hard drive, camera inputs and system so that detected fault conditions will be reported to the user as soon as possible by means of a "critical alert" message on the screen. Alerts are also added to the event list.

Press the **EVENTS** key to view the event list (pressing the **DEFAULT** key automatically scrolls to the most recent events.

Viewing the list will cancel the alert message. However if the condition persists, the message will re-appear.

- **FailTest**   *This alert indicates that the system self-test has failed.*
    - o   Press **ALT** and **SETUP** to call up the System Information screen. The positions of any solid blocks displayed on the "Self Test" row indicate various fault conditions.
    - o   Try power cycling the VDC to see if the problem is fixed, or failing this.
    - o   Try a power-on reset (See section **Error! Reference source not found.**).
    - o   If the problem persists, contact your supplier.

- **VidLoss**   *This alert means that video has been lost on one or more of the camera inputs.*
    - o   Make sure that the video loss setting in the menu (see section **Error! Reference source not found.**) corresponds with cameras actually fitted.
    - o   Check connections to all cameras.
    - o   Check that each camera can be viewed in live, full screen mode.
    - o   Swap a camera input that is working with the one that is not. Does the problem move with the camera (i.e. faulty camera or cable) or stay with the input (possible faulty VDC)
    - o   If a camera is suspected as being faulty, connect it directly to a monitor to test it.

- ▤**1 Fail**   *This alert indicates that a hard drive is not working.*
    - o   Check that the drive drawer is correctly fitted
    - o   Check the lock in the drive drawer is turned full counter-clockwise
    - o   Check the **DISC ACTIVITY** LED is flickering (see diagram in section **Error! Reference source not found.**)
    - o   Check that the green **FAN1 OK** and **FAN2 OK** LEDs are lit.
    - o   Check that the red **DISC POWER** led it lit.

- ▤ **1 SMART** *This alert indicates that a hard drive may stop working soon*

The SMART monitoring detects imminent failure of a hard drive, so if this warning occurs, the drive should be changed at the earliest opportunity.

6 Viewing Live Images

6.1   Enter Live Mode

■

Press the LIVE key to enter LIVE mode

6.2   Live Display Modes

6.2.1   Full Screen Main Monitor

1..16

Select full screen views of different cameras by pressing the keys Camera 1, 2, 3 etc

6.2.2   Spot Monitor

The spot monitor output is a completely independent monitor output that always displays a full screen live image.

ALT

and

1..16

Select cameras on the spot monitor by pressing the ALT key in combination with the keys 1, 2, 3 etc

6.2.3   Picture-in-Picture

⬚

To view a Picture-in-Picture image on the main monitor, press the PIP key.

1..16

The camera select keys may then be used to select the main camera displayed in the main part of the image. You may alternatively specify that these key select the PIP image via the **SETUP** menu (SETUP/Display/PIP mode).

↑   ← →   ↓

Press the LEFT, RIGHT, UP, DOWN keys to move the PIP image to the required part of the screen.

To swap the main and the PIP image, press:

ALT

and

ᛩ

Press the ALT key in combination with the ᛩ key to exchange the two displayed images while in PIP mode. If both images are the same, press one of the camera keys **1..16** to change the main image.

To exit the PIP mode, press the ⬚ , ⊞ or ⊞ key.

6.2.4   Quad

⊞

Press the quad key to view four pictures at once on the screen. If there are more than four cameras, you can press it again to see another four of the cameras.

6.2.5   9-way and 16-way Multi-Screen
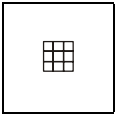
If you have a VDM-9 or VDM-16, press multi-screen key to view nine pictures at once on the screen. If you have a VDM-16, press multi-screen key again to view sixteen pictures at once on the screen.
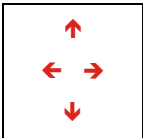
6.2.6   Zoom

To magnify a full-screen live image, you must enter **LIVE** mode (section 6.1) then:

ALT   and   Press the **ALT** key and the ZOOM key to enter zoom mode.

Use the cursor keys to move around the image to see the magnified part that you require

To exit zoom mode, press the **ALT** and ☌ key again.

6.3   Auto-Sequencing

6.3.1   Auto-Sequencing Main Monitor

ALT   and   **MAIN**   Select auto-sequencing on the main monitor to by pressing the **ALT** and the **MAIN** keys. Auto sequencing is cancelled by pressing these two keys again, or by pressing any camera select key.

The auto-sequence symbol is displayed at the top of the screen on the main monitor when sequencing is enabled.

If a PIP image is being displayed, the main image will normally be sequenced. You may alternatively specify sequencing of the PIP via the **SETUP** menus (SETUP/Display/PIP mode).

If quads are being displayed and there are more than four cameras installed, selecting auto-sequence will cause the quads to sequence.
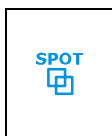
You may specify that only some of the cameras are to be included in the sequence. Refer to the **SETUP** menu (SETUP/ User Menu /Auto Sequence (Main)/Camera List).

You may also specify the dwell time on each camera (SETUP/Display/Auto Sequence (Main)/Dwell Times).

6.3.2   Auto-Sequencing Spot Monitor

ALT   and   **SPOT**   Select auto-sequencing on the spot monitor to by pressing the **ALT** and the **SPOT** keys.
Auto sequencing is cancelled by pressing these two keys again.

The auto-sequence symbol is displayed at the top of the screen on the main monitor when sequencing is enabled.

You may specify that only some of the cameras are to be included in the sequence. Refer to the **SETUP** menu (SETUP/User Menu/Auto Sequence (Spot)/Camera List).

You may also specify the dwell time on each camera (SETUP/Display/Auto Sequence (Spot)/Dwell Times).

7 Replaying Recorded Images

7.1   Enter PLAY mode

7.1.1   Replay from Hard Drive(s)

If there is no CD in the CD drive, playback will be from the hard drive(s). Before being able to replay, you may need to locate valid images using the **SEARCH**, **EVENT** or **INCIDENTS** keys.

| ◀◀   ◀   ◀❙   ❙❙   ❙▶   ▶   ▶▶ |

Press any of the **PLAY** keys to enter PLAY mode.

Once in PLAY mode, these play keys may be used to move forwards and backwards through the recorded video images. Different full screen cameras and quad screens may be selected during replay by pressing the cameras or QUAD key:

7.1.2   Replay from CD

The VDM Digital Recorder can play back images previously recorded onto a CDR or CD-RW either by the same or another VDM unit.

Insert a CD containing incidents previously recorded on a VDM Digital Recorder in the CD drive.

INCIDENTS	Press the **INCIDENTS** key to view the incidents screen
✪	Wait for the CD symbol to appear at the top of the screen. The displayed incidents are now those previously recorded on the CD.
↑ ↓	Scroll through the list using the up and down cursor keys to select the required incident.

| ◀◀   ◀   ◀❙   ❙❙   ❙▶   ▶   ▶▶ | Press one of the **PLAY** keys to play back the incident |

Note that when playing from a CD, you may need to wait a few seconds for the CD to run up to full speed. Press a PLAY key again if necessary to start playing. Within this incident, replay may be controlled as for normal hard drive replay (section 7.1.1).

7.2   Normal, Single Frame and Fast Play

Once in PLAY mode, you can play forwards and backwards through the recording using the following keys:

| ▶ | Play forwards at normal speed |

| ◀ | Play backwards at normal speed |

| ❙▶ | Step forwards a single image |

| ◀❙ | Step backwards a single image |

▶▶	Play forwards at fast speed. Press repeatedly to increase the replay speed.

◀◀	Play forwards at fast speed. Press repeatedly to increase the replay speed.

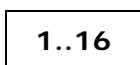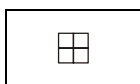| ❚❚	Pause at current image.

7.3   Replay Display Modes

Different cameras may be selected for display while in PLAY mode as follows:

7.3.1   Full Screen (Main Monitor)

1..16	Select full screen views of different cameras by pressing the keys Camera 1, 2, 3 etc

7.3.2   Quad

⊞	Press the quad key to view four pictures at once on the screen. If there are more than four cameras, you can press it again to see another four of the cameras.

7.3.3   Zoom (Replay)

To magnify a full-screen replay image:

ALT	and	🔍	Press the **ALT** key and the **ZOOM** key to enter zoom mode.
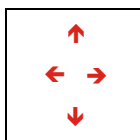
↑ ← → ↓	Use the cursor keys to move around the image to see the magnified part that you require

To exit zoom mode, press the **ALT** and 🔍 key again.

7.4   Searching by Date and Time

SEARCH	Press the SEARCH key to enter SEARCH mode

DEFAULT	Optionally press the **DEFAULT** key to fill in the date and time of the most recently recorded image.

← →	The left and right cursor keys may be used to move between digits, so only the ones that require altering need be entered.
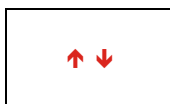
↑ ↓	The currently selected digit may be incremented or decremented using these keys. This provides a convenient means of stepping in time by tens of days, days, tens of hours, hours, tens of minutes or minutes etc.

NO, YES	These keys provide a quick means of moving the cursor to the start of the date or time.
1..10	Enter the required date and time using the number keys 1, 2, 3, 4, 5, 6, 7, 8, 9 and zero
◄◄ ◄ ◄❘❘ ❙❙ ❘❘► ► ►►	Press any of the PLAY keys to enter PLAY mode at specified the date and time
SEARCH	Alternatively, to exit without searching, press the search key again.

The format for the date and time is **DD/MM/YY HH:MM:SS** where:

- DD is the day of the month (00 to 31),

- MM is the month (01 to 12),

- YY is the year (e.g. 02 for the year 2002),

- HH is the hour in 24-hour format (00 to 23),

- MM is the number of minutes past the hour (00 to 59) and

- SS is the number of seconds past the minute (00 to 59).

If the search fails to find anything:

- Check that you have entered a valid date and time.

- Check that images with this date and time exist on the hard drives (see section 9.1)

- Use the SWEEP mode (section 7.5).

7.5   Sweep Mode

This mode allows you to search through the contents of the hard drives (or CD) and provides a quick method of finding stored images even if you do not know the date and time that you require.

❙❙	Press the **PAUSE** key to enter replay mode
ALT + SEARCH	Press the **ALT** key and the **SEARCH** key to enter **SWEEP** mode. The displayed dashes represent the contents of a whole disc drive. The block indicates which part of the drive is currently being displayed.
↑ ↓	If you have a VDM with dual hard drives (and a CD is not currently inserted), the up or down keys to select which drive you wish to sweep through. The drive symbol is displayed at the top of the screen to indicate the currently selected drive.
DEFAULT	Press the **DEFAULT** key to go to the start, middle or end of the currently selected drive.
← →	Use the left and right cursor keys to sweep through the hard drive. If an image is found, its date and time will be displayed. If the date and time display is blank, no images exist at this part of the hard drive.
🔎	Press the 🔎 key to allow finer sweep steps. The horizontal displayed bar now represents just one dash of the non-zoomed bar. Use the left and right cursor keys to sweep through this section of the selected drive. Press 🔎 again to return to the non-zoomed state.
◄◄ ◄ ◄❘❘ ❙❙ ❘❘► ► ►►	When you have found a section of video that you wish to play, press the **PLAY** keys as required.

7.6   Recalling Events

The event log records the date and time of various events:

- On power-up, the system records an event in the even log,

- If activity detection has been enabled and activity occurs

- If external alarm inputs are being used

- If a system alert occurs (e.g. disc full)

When playing back from hard disc, events may be views as followed:

EVENTS	To view the event log, press the **EVENTS** key
↑ ↓	You may scroll through the list using the up and down cursor keys. The first image of the event will be displayed on the screen.
← →	The list has a number of pages that may be accessed by using the left and right cursor keys
◄◄ ◄ ◄❙ ❙❙ ❙► ► ►►	If you wish to play back images from the date and time of the selected event* press one of the **PLAY** keys.
EVENTS	To exit without replaying an event, press the event key

*If the selected event is too old and has therefore been over-written on the hard drive(s), it will not be possible to re-play it.

7.7   Stepping through Events

When playing back from hard disc, you can also step through events without entering the event screen by means of the dedicated event keys. On stepping forwards or backwards to an event, the event will start to play (forwards). This provides an easy way to review each recorded event in turn. When you have seen what you need, press ◄ EVENT or EVENT ► to move on to the next one, or press ❙❙ (pause) to freeze the replay image.

EVENT ►	Steps forward to next event
◄ EVENT	Steps back to next event

7.8   Replaying Incidents

If incidents have been set on the hard drive or if a CD is being re-played, you may go straight to the start of or end of any of the incident.

7.8.1 Selecting an Incident

| INCIDENTS | To view the incident list, press the **INCIDENTS** key |

| ↑ ↓ | You may scroll through the list using the up and down cursor keys |

| ◀◀ ◀ ◀❘ ❚❚ ❘▶ ▶ ▶▶ | If you wish to play back images from the date and time of the selected incident* press one of the **PLAY** keys. |

| INCIDENTS | To exit without replaying an event, press the event key |

*If the selected incident is too old and has therefore been over-written on the hard drive(s), it will not be possible to re-play it.

7.8.2 Go to the start of the current incident

You must already be in play mode for these operations.

| **ALT** | and | ❘◀ | If you are within an incident, the incident number will be displayed in the top, centre of the screen. Press ALT and ❘◀ to go to the start of this incident. |

7.8.3 Go to the end of current incident

| **ALT** | and | ▶❘ | If you are within an incident, the incident number will be displayed in the top, centre of the screen. Press ALT and ▶❘ to go to the end of this incident. |

8 Archiving Images onto CD

Sections of the recording that you wish to store onto CD are called "incidents". Up to ten incidents may be set. These may then be recorded onto a CD. Incidents are marked while the VDM is in **PLAY** mode.

The **INCIDENT** mode displays the start and end time of any incidents that have been marked, and the total amount of space on the CD that will be used (in Megabytes). This must not exceed the available size of the CD (around 650 to 750 Mbytes). After you have stored incidents onto a CD you may of course clear the markers and mark further incidents for storing onto another CD. If no CD is currently in the drive, the system assumes that 650Mbytes will be available.

8.1   Quick Incident Recording

A simple press of the **DEFAULT** key while viewing the **INCIDENT** screen is all that is required to set an incident. A press of the **ZERO** key will write the incident to CD. The overall sequence is shown here:

◀◀ ◀ ◀❙❙ ❙❙ ❙❙▶ ▶ ▶▶	Use any of the **PLAY** keys may be used or the **SWEEP**, **SEARCH** or **EVENTS** functions to locate the section of recorded video that you wish backup to CD.
❙❙	Press the **PAUSE** key.
INCIDENTS	Press the **INCIDENTS** key to enter the **INCIDENTS** screen
DEFAULT	Press the **DEFAULT** key. This will automatically create an incident of 100 images (for each camera) either side of the currently displayed mage.
ZERO	Press the **ZERO** key to write the incident to CD

8.2   Adjusting the Size of an Incident

Prior to writing to CD, you may wish to alter the size of the marked incident:

8.2.1   Enlarge an Incident by Moving the End

➔	Press the ➔ key to move the end of an incident forward by 100 images

8.2.2   Enlarge an Incident by Moving the Start

←	Press the ← key to move the start of an incident back by 100 images

8.2.3   Reduce an Incident by Moving the End
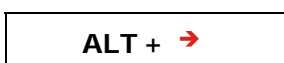
ALT + ➔	Press the **ALT** and ➔ keys to move the end of an incident back by 100 images

8.2.4   Reduce an Incident by Moving the Start

ALT + ←	Press the **ALT** and ← keys to move the start of an incident forward by 100 images

8.2.5   Reduce an Incident by Moving the Start or End

NO	Press the **NO** key to reduce the size of the incident by 100 images. The reduction will be at the start or end depending on whether the ← or → key was used last.

8.3   Creating an Incident by Setting the Start and End

An alternative method of creating an incident it to pause the replay at the start of the recorded video that you wish backup and set that point, then pause the replay at the end of the recorded video that you wish backup and set that point.

8.3.1   Set the start of an incident

◄◄ ◄ ◄‖ ‖ ‖► ► ►►	Go to the *start* of the recording that you wish to mark as an incident. Any of the **PLAY** keys may be used.
SEARCH	You may wish to use the **SEARCH** facility to get to the required place.
EVENTS	You may wish to use the **EVENTS** list to get to the required place.
‖	Press the **PAUSE** key when you are at the required place in the recording
INCIDENTS	Enter the **INCIDENTS** mode
↑ ↓	Select a spare incident (or an existing incident if you wish to move the marker)

ALT	and	⊢ SET START	Press the **ALT** and **SET START** keys. The time and date of the start of the incident will added to the list

8.3.2   Set the end of an incident

◄◄ ◄ ◄‖ ‖ ‖► ►	Go to the *end* of the recording that you wish to mark as an incident. Any of the **PLAY** keys may be used.
SEARCH	You may wish to use the **SEARCH** facility to get to the required place.
EVENTS	You may wish to use the **EVENTS** list to get to the required place.
‖	Press the **PAUSE** key when you are at the required place in the recording
INCIDENTS	Enter the **INCIDENTS** mode

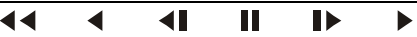| ↑ ↓ | Select a spare incident (or an existing incident if you wish to move the marker) |

| **ALT** and **SET END ⊣** | Press the **ALT** and **SET END** keys. The time and date of the end of the incident will added to the list |

8.4   Selecting Incidents

Up to ten incidents may be marked, and any number of these may be selected for copying onto CD.

When you have marked incidents for archiving onto CD, select which ones you wish to store onto CD:
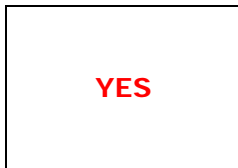
| ↑ ↓ | Scroll through the list using the up and down cursor keys |

| **YES** | Press the **YES** key to select or de-select the incident. Selected incidents are marked with a tick ✔ and only these will be recorded onto CD. Those marked with a cross ✗ will *not* be recorded. |

If the size of the selected incidents exceeds the capacity of a CD, you will have to de-select (or delete) incidents before you can archive them to CD. If necessary, you may need to use more than one CD to store all the incidents that you require, selection different ones before writing each CD.

Note that a single incident cannot exceed the capacity of a CD. Additionally, each incident must reside completely on one hard drive. If the evidence you wish to archive crosses from one drive to another, you will have to split it into two incidents.

8.5   Clearing unwanted incidents

If you wish to remove incident markers from the incident list prior to marking new ones:

| **INCIDENTS** | View the currently marked **INCIDENTS**. |

| ↑ ↓ | You may scroll through the list using the up and down cursor keys |

| **ALT** and **CLEAR** | Press **ALT** and **CLEAR** of you wish to delete the selected incident markers. This does not delete any images, only the markers that are used for copying to CD. |

8.6   Writing to CD

Having marked one or more incidents, and selected at least one, writing to CD is started by pressing the **ZERO** key (for firmware revisions prior to VDM001G4, use the Incident menu to start writing to CD).

Note that you can only write incidents to a *blank* CD. If you need to erase a CD-RW, enter "**Incident Options**" in the "**User Menu**" select the "**Erase CD**" option and press **YES.** It is *not* possible to erase a CD-R.

When important incidents have been written to a CD, always check that the CD plays back correctly, either by playing it on the VDM or on a PC (see below).

8.7   Replaying a CD

A CD recorded on a VDM Digital Recorder may be played back:

- In any VDM (section 7.1.2) or

- In a PC directly. Replay software is automatically recorded onto the CD together with the image information so that the CD will play on a PC without any software installation on the PC being required. The CD should auto-run when placed in a PC, unless auto-run is disabled in the PC configuration.

- The file on the CD with extension ".VDM" may played directly or copied onto hard disc (or another CD) and replayed using "Vdm-Play" or "VDM-Connect". This software is obtainable via the Videoswitch Internet site (www.videoswitch.co.uk) or on request from Videoswitch. It is also provided with the CD included with the VDM digital recorder.

9 Information Screens

9.1   Viewing Drive Information

To see what drives are fitted and whether a CD is in the CD drive press these keys:

| ALT | and | DRIVES | Press ALT and DRIVES to see whether a CD has been detected in the CD drive, what size and type hard disc drives are fitted, and which hard drive is currently allocated for recording. |

This screen displays this information:

- Drive Type

- CD status

- Drive Capacity

- Earliest Date and Time of recorded video

- Latest Date and Time of recorded video

- Which drive is currently being used to record

9.1.1   Re-Scan Drives

If for any reason the start and end dates of images on the hard drives need updating, the drives may be re-scanned by pressing the **YES** key. This is normally necessary only if a drive has been changed.
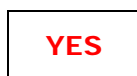
| YES | Press this key to update the information on all drives. This will cause a momentary interruption to the recording process while drive information is updated. |

9.2   Viewing Image Information

This screen displays different information in LIVE and PLAY modes.

- In LIVE mode, use this screen to see the current update rate and images size, together with a summary of update rates for normal, custom and alarm/activity conditions.

- In PLAY mode, information about the currently displayed image is shown. Press ❚❚ first to ensure that the displayed information is static before selecting this screen.

| ALT | and | EVENT | Press **ALT** and **EVENT** to see image rate and quality information. |

9.2.1   Image Authentication

Each image contains a digital signature, which enables the system to verify its integrity. The signature is checked on replay, and this status screen will report either that it has been authenticated or rejected.

The signature is carried with the image if it is copied to CD and subsequently transferred to a computer, so the replay software may also authenticate the image.

9.3   System Information

| ALT | and | SETUP | Press ALT and SETUP to view system information.

The information displayed includes:

- Model
- Serial Number
- Firmware Revision
- Firmware Checksum
- Logic Revision
- PCB revision
- Self test results (and error codes if applicable)
- Current list of inputs with video present
- Current status of alarm inputs (subject to alarm timer)
- Current status of activity detection (subject to activity timer)

This screen also allows alarms and activity detection to be temporarily locked out. Press the **YES** key to toggle the lock symbols *on* or *off* as required. This facility may be prevented in the Engineer menu if required Section 10.4.4.6).

10 Setup

The **SETUP** menu is used to access the CD writer functions and all system configuration options. Once in the menu system, a number of the keys have dedicated functions for navigation around the menu. The functions of these keys are described on this page. There is a summary of the menu system in section 1.6, and more details in the following section of this manual [pending up-issue]. Due to the regular addition of software enhancements, there may be some differences between the menu items detailed in this manual and in your VDM Digital Recorder.

10.1   Navigating the menus

Enter the menu system by pressing the **SETUP** key:

SETUP

You navigate through the menu by means of the UP, DOWN, LEFT and RIGHT keys.

↑
← →
↓
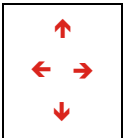
Where numbers need to be entered, the camera keys 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 are used (the 10 key is used to enter zero).

1..10

Some actions require the **YES** key to be pressed:

YES

If an action is not required, the **NO** key should be pressed (or the BACK key):

NO

In most cases, a default option can be selected by pressing the **DEFAULT** key. In some cases, press this key again to toggle between alternative default settings:

DEFAULT

To exit the menu from anywhere within it, press the **SETUP** key. Any changes that have been made will be saved, and a message will momentarily appear on the bottom left of the screen to confirm this.

SETUP

10.2   User Menu

10.2.1   Incident Options

10.2.1.1   Erase CD

This option erases all information on a CD-RW in the CD drive. Press YES to erase the CD-RW. Note that CDR discs cannot be erased. For this reason they are preferred for recordings of important evidence.

10.2.1.2   Filename

You may specify (numerical) filename to be used when storing incidents. Use 1-10 keys (10 key is used to enter zero).

The VDM automatically increments the filename each time incidents are written to CD, so there is typically no need to manually alter the filename.

10.2.1.3   Erase Incident Markers

This option allows you to clear all the incident markers. No recorded video is affected. Individual incidents may be cleared within the **INCIDENT** screen.

10.2.2   Auto Sequence (Main Monitor)

10.2.2.1   Sequence Mode

Random or normal auto-sequencing may be selected

10.2.2.2   Camera List

The cameras that you wish to be sequenced are specified here.

10.2.2.3   Dwell Times

The dwell times are set here individually for each camera. Times are in seconds.

10.2.3   Auto Sequence (Spot Monitor)

10.2.3.1   Sequence Mode

Random or normal auto-sequencing may be selected

10.2.3.2   Camera List

The cameras that you wish to be sequenced are specified here.

10.2.3.3   Dwell Times

The dwell times are set here individually for each camera. Times are in seconds.

10.2.4   PIP Mode

This option allows you to specify whether the main screen or the PIP screen is changed when a camera key is pressed while in PIP mode. The other image is determined by the currently selected full screen when PIP mode is first selected. This setting also determines whether the main screen or the PIP screen is sequenced if siqeuncing is selected in PIP mode.

10.2.5   Power-Up Options

The screen settings on power-up may be specified so that the system always powers up into the required state.

10.2.5.1 Main Monitor Mode

The display mode of the main monitor following power-up may be specified here.

10.2.5.2 Sequence Main

The sequencing of the main monitor following power-up may be specified here.

10.2.5.3 Sequence Spot (Day)

The sequencing of the spot monitor following power-up may be specified here. This setting applies if the time is within a period specified by the Daytime timers (See section 10.4.2.4).

10.2.5.4 Sequence Spot (Night)

The sequencing of the spot monitor following power-up may be specified here. This setting applies if the time is outside all periods specified by the Daytime timers (See section 10.4.2.4).

10.2.5.5 Main Camera

The Full Screen camera displayed on the main monitor following power-up may be specified here (if Full Screen or PIP mode selected).

10.2.5.6 PIP Camera

The PIP camera displayed on the main monitor following power-up may be specified here (if PIP mode also selected)

10.2.5.7 Spot Camera (Day)

The camera displayed on spot monitor following power-up may be specified here. This setting applies if the time is within a period specified by the Daytime timers (See section 10.4.2.4).

10.2.5.8 Spot Camera (Night)

The camera displayed on spot monitor following power-up may be specified here. This setting applies if the time is outside all periods specified by the Daytime timers (See section 10.4.2.4).

10.2.6 Anti-Flicker

10.2.6.1 Full Screen

If this option set to "Anti-Flicker On", interlacing is removed, reducing flicker. The normal setting is "Anti-Flicker Off"

10.2.6.2 PIP Screen

If this option set to "Anti-Flicker On", interlacing is removed, reducing flicker. The normal setting is "Anti-Flicker Off"

10.2.6.3 Quad Screen

If this option set to "Anti-Flicker On", interlacing is removed, reducing flicker. The normal setting is "Anti-Flicker Off"

10.2.6.4 x9 Multi-Screen

If this option set to "Anti-Flicker On", interlacing is removed, reducing flicker. The normal setting is "Anti-Flicker Off"

10.2.6.5 x16 Multi-Screen

If this option set to "Anti-Flicker On", interlacing is removed, reducing flicker. The normal setting is "Anti-Flicker Off"

10.2.6.6 Text Windows

If this option set to "Anti-Flicker On", interlacing is removed, reducing flicker. The normal setting is "Anti-Flicker On", which makes the text steadier.

10.2.6.7   Always Interlace

If set to "Yes", an interlaced image is always output on the Main Monitor. Although this results in some degree of flicker in the text screens, this option is necessary for some video capture cards to operate correctly. The normal setting is "No".

10.2.7   Titles

10.2.7.1   Digital Recorder Title

A title may be entered for the Digital Recorder. This is displayed at the top of the screen (not in menu or play modes). Characters are entered using the cursor keys to scroll through all characters or the camera select keys for numbers. Press the **DEFAULT** key to toggle between the default title and a blank title.

10.2.7.2   Camera Titles

A title may be entered for each camera. Alternatively the default titles may be used ("Camera1", "Camera2" etc). Characters are entered using the cursor keys to scroll through all characters or the camera select keys for numbers. Press the **DEFAULT** key to toggle between the default title and a blank title.

10.2.7.3   Alarm Titles

A title may be entered for each alarm input. These are displayed in the event log to identify alarm sources. Note that each alarm input may be mapped to any camera for the purpose of "pulling-up" a full screen image. Alternatively the default titles may be used ("ALM-1", "ALM-2" etc). Characters are entered using the cursor keys to scroll through all characters or the camera select keys for numbers. Press the **DEFAULT** key to toggle between the default title and a blank title.

10.2.8   Show Camera Titles

10.2.8.1   Full Screen Titles

The options for the identification of full screen images are:

- Off
- Show Text

10.2.8.2   PIP Titles

The options for the identification of PIP screen images are:

- Off
- Show Numbers
- Show Text

10.2.8.3   Quad Titles

The options for the identification of Quad screen images are:

- Off
- Show Numbers
- Show Text

10.2.8.4   X9 Titles

The options for the identification of 9-way multi-screen screen images are:

- Off
- Show Numbers
- Show Text

10.2.8.5   X16 Titles

The options for the identification of 16-way multi-screen screen images are:

- Off

- Show Numbers

- Show Text

10.2.9   Text Alignment

The vertical and horizontal alignment of the text may be adjusted using the cursor keys such that all the text is visible on monitors that over-scan. Press the **DEFAULT** key for standard positioning, and the **NO** key to exit.

10.2.10   Time/Date Alignment

The vertical and horizontal alignment of the time and date may be adjusted using the cursor keys to suit the user. Press the **DEFAULT** key for standard positioning, and the **NO** key to exit.

10.2.11   Upgrade from CD

Firmware upgrades are be undertaken via this option. The ENGINEER password needs to be entered to upgrade the firmware if the "Upgrades need engineer password" option is set in the Engineer menu (section 10.4.8.3.4)

To upgrade, insert the upgrade CD in the CD drive and wait a few seconds for it to get up to speed. When the upgrade information is displayed, check that the upgrade version is what you want and, if so, press **YES** to start the upgrade process. Enter the engineer password if asked.

Once started, the process **must not be interrupted** otherwise the system could be left inoperable. The upgrade process takes about a minute. During this time, recording stops. The system will re-start automatically following successful upgrade.

10.3   Supervisor Menu

10.3.1   Covert Permission (Main)

This option allows covert cameras to be replayed.

10.3.2   Covert Cameras (Main)

This is the list of cameras that are hidden from view on the main monitor (except when enabled in play mode as above).

10.3.3   Covert Cameras (Spot)

This is the list of cameras that are hidden from view on the spot monitor.

10.3.4   Passwords

There are a total of seven passwords in the system (also see engineer password in section 10.4.9 and remote access password in section 10.4.7.2) that may be used to protect at different levels against unauthorised access.

Set passwords for items that you wish to provide protection against unauthorised access. Having set the passwords, access (after the time-out has elapsed) will require entry of either the corresponding password, or a password with a higher access level.

If any of the passwords in this menu are set, it is recommended that the Supervisor Password be also set to prevent access to the passwords. If an item is protected by password, access to it will be logged in the event list.

Protection

Password	Protects these items
Engineer	Engineer menu
Supervisor	Supervisor menu
User	User Menu
Incident	Incident Menu
Playback	Playback
Keyboard	Engineer menu, Supervisor menu, User Menu, Incident Menu, Playback, Keyboard
Remote	Remote dial-in

Access

Password	Allows access to these items
Engineer	Engineer menu, Supervisor menu, User Menu, Incident Menu, Playback, Keyboard
Supervisor	Supervisor menu, User Menu, Incident Menu, Playback, Keyboard
User	User Menu, Incident Menu, Playback, Keyboard
Incident	Incident Menu, Playback, Keyboard
Playback	Playback, Keyboard
Keyboard	Keyboard
Remote	Remote dial-in

10.3.4.1   Supervisor Password

This password, if set to a non-zero value, protects the Supervisor menu. On entering this password, access is granted to the Supervisor menu, User Menu, Incident Menu, Playback functions and the Keyboard.

10.3.4.2   User Password

This password, if set to a non-zero value, protects the User menu. On entering this password, access is granted to the User Menu, Incident Menu, Playback functions and the Keyboard.

10.3.4.3   Incident Password

This password, if set to a non-zero value, protects the Incident menu. On entering this password, access is granted to the Incident Menu, Playback functions and the Keyboard.

10.3.4.4   Playback Password

This password, if set to a non-zero value, protects the playback function. On entering this password, access is granted to the Playback functions and the Keyboard.

10.3.4.5   Keyboard Password

This password, if set to a non-zero value, protects all key functions. On entering this password, access is granted to the Playback functions and the Keyboard.

10.3.5   Password Access Timeout

Password access is granted for a certain time after the last key press. This means you can go in and out of menus without having to re-enter passwords. After the specified time (e.g. 1 minute), password protected access will be prevented unless the necessary password is entered again.

10.3.6   Erase Event List

This option allows you to clear the event list. No recorded video is affected.

10.3.7   Event List needs Password

This options allows you to specify whether or not the **EVENT** screen is protected by the **Supervisor** password.

10.4   Engineer Menu

10.4.1   Date and Time

10.4.1.1   Summer/Winter Time

When the clocks change between wintertime and summertime, the **DATE/TIME** setting must **not** be changed. Instead, the Summer/Wintertime setting should be used. In the UK and the rest of Europe, the default **AUTO** Summer/Wintertime setting ensures that this happens automatically at the correct dates so the user requires no action.

10.4.1.2   Date/Time (DD/MM/YY HH:MM:SS)

For proper operation of the VDM Digital Recorder is essential that the date and time are set correctly. If the displayed date and time is incorrect, set it as follows:

Use the 1-10 keys (10 key is Zero for numeric entry) to enter the date and time in the following order: Day, Month, Year, Hours, Minutes (Time is in 24-hour mode). The displayed day and summer/winter-time must also be correctly displayed (automatic).

10.4.2   Timers

Each of the timers has a start and end time for each day of the week so any period of each day may be specified. For example you might enter 80:30 as the first time and 17:30 as the second time. This makes the time active during the day.

If rather than a specifying single period during the day, you wish to specify a nighttime period that overlaps one day to the next, entering the latest time *first* and the earliest time *last*. For example, if you enter 17:30 as the first time and 08:30 as the second time, the timer will be active from 17:30 in the evening to mid-night and from mid-night to 080:30 in the morning.

10.4.2.1   Custom Recording

This timer is used in conjunction with the Custom record settings (section 10.4.3.2). Custom record settings apply during the specified time periods.

Examples:

- All Day: 00:00   to   23:59
- Typical Working Hours   08:30   to   17:30
- Typical Night time Hours   17:30   to   08:30

Custom recording can be used for a number of purposes, two in particular:

- To *increase* recording rates to a defined frame rate during specific peak periods. Note that more hard drive space will be used, and that the update rate under Normal recording conditions will be reduced. If too high a rate is specified for too long, it may be impossible for the system to attain the specified image retention period (section 10.4.3.1.1).

- To *decrease* recording rates to a low level during off-peak periods. This will free up more hard drive space for Normal recording periods and therefore *increase* Normal recording update rates. For a given image retention period. If cameras are turned off (Section 10.4.3.2.2), then *no* recording will occur during the programmed Custom recording periods.

10.4.2.2   Alarms Enable/Disable

Alarms are enabled for particular times of day, for each day of the week

Examples:

- All Day   00:00   to   23:59
- Typical Working Hours   08:30   to   17:30
- Typical Night-time Hours   17:30   to   08:30

10.4.2.3   Activity Enable/Disable

Activity detection is be enabled for particular times of day, for each day of the week

Examples:

- All Day: 00:00   to   23:59
- Typical Working Hours   08:30   to   17:30
- Typical Night-time Hours   17:30   to   08:30

10.4.2.4   Daytime

The Daytime timer allows the spot monitor to change camera and/or start/stop sequencing at particular times of day. Refer to the Power-Up Options (section 10.2.5) for Day and Night settings for the Spot Monitor.

Examples:

- All Day: 00:00   to   23:59
- Typical Working Hours   08:30   to   17:30
- Typical Night-time Hours   17:30   to   08:30

10.4.3   Record Settings

In many applications, the only record setting you need to specify is the **Image Retention** period (system default is 31 days). This specifies how long images are kept before being over-written by new ones. Note that **Recording Enabled must be set to YES**.

There are three possible recording states. Each of these has its own settings, so the cameras that are recorded, the image quality and update rate may all be controlled according to time of day and alarm conditions.

The recording states are:

- Normal
- Custom
- Alarm

10.4.3.1   Normal Mode

10.4.3.1.1   Image Retention (Days)

Image will be retained for this number of days. If two drives are used, they will be recorded onto alternately. This setting is, in most installations, the most important. Unlike most other digital recording systems, this equipment works out the frame rate automatically in order to achieve the specified number of days recording.

If Custom record periods are set (section 10.4.2.1), this will be allowed for when the system calculates the normal update rate required to ensure that the image retention period is attained. Similarly, if storage space is allocated for alarms (section 10.4.3.3.5), this will be allowed for.

Note that the Image Retention period is a target that the system aims for rather than an exact figure and may vary slightly depending on alarms and picture compression details. Check the Image information screen (section 9.2) for the current true status.

10.4.3.1.2   Cameras

This list determines which camera will be recorded in Normal recording periods. If inputs have no video, they will *not* be recorded, so normally this option should have all cameras turned *on*.

If you only wish to record only during Custom time periods or only when activity occurs, turn *off* all the cameras in the Normal settings.

10.4.3.1.3   Quality

The quality (image size) of each camera may be set here for Alarm and Activity recording conditions. Lower image sizes will enable faster update for a given image retention period.

The image size (in Kbytes) is displayed on this menu screen. Note that it may take a few seconds to reach its target value.

Note that if the Image Size Control (section 10.4.3.4.2) is set to *Variable*, the exact size of the image, for a particular quality setting, depends on the level of detail the camera is looking at. Simple scenes, such as empty or dark rooms or car parks, result in smaller image sizes, thereby saving disc space and allowing faster updates. Conversely, where more details exist, the image size will correspondingly increase.

10.4.3.2   Custom Mode

10.4.3.2.1   Rate

This option specifies the frame rate that is used under Custom recording periods. A higher than normal custom frame rate will use up more hard drive capacity and cause a *reduction* the Normal recording rate. A lower than normal custom frame rate will use up less hard drive capacity and thereby cause and *increase* the Normal recording rate.

10.4.3.2.2   Cameras

This list determines which camera will be recorded in Custom recording periods. If inputs have no video, they will *not* be recorded, so normally this option should have all cameras turn *on*.

10.4.3.2.3   Quality

The quality (image size) of each camera may be set here for Alarm and Activity recording conditions. Lower image sizes will enable faster update for a given image retention period.

The image size (in Kbytes) is displayed on this menu screen. Note that it may take a few seconds to reach its target value.

Note that if the Image Size Control (section 10.4.3.4.2) is set to *Variable*, the exact size of the image, for a particular quality setting, depends on the level of detail the camera is looking at. Simple scenes, such as empty or dark rooms or car parks, result in smaller image sizes, thereby saving disc space and allowing faster updates. Conversely, where more details exist, the image size will correspondingly increase.

10.4.3.3   Activity/Alarm Mode

10.4.3.3.1   Rate

This option specifies the frame rate that is used under Alarm and Activity conditions. A higher frame rate will use up the hard disc more quickly.

10.4.3.3.2   Cameras

This list determines which camera will be recorded in Alarm and Activity conditions. If inputs have no video, they will *not* be recorded, so normally this option should have all cameras turn *on*.

10.4.3.3.3   Quality

The quality (image size) of each camera may be set here for Alarm and Activity recording conditions. Lower image sizes will enable faster update for a given image retention period.

The image size (in Kbytes) is displayed on this menu screen. Note that it may take a few seconds to reach its target value.

Note that if the Image Size Control (section 10.4.3.4.2) is set to *Variable*, the exact size of the image, for a particular quality setting, depends on the level of detail the camera is looking at. Simple scenes, such as empty or dark rooms or car parks, result in smaller image sizes, thereby saving disc space and allowing faster updates. Conversely, where more details exist, the image size will correspondingly increase.

10.4.3.3.4   Record

This option allows you to specify which cameras are recorded under alarm conditions. The options are:

- Selected (cameras selected in the "Camera" list)

- Alarm/Activity Only (only cameras that have Alarm or Activity)

- Selected + Alarm/Activity (selected cameras plus cameras that have Alarm or Activity)

- Normal/Custom + Alarm/Activity (cameras in the Normal or Custom mode plus cameras that have Alarm or Activity)

- Disable Alarm/Activity Recording (alarms are recorded in the event log, but do not cause the Activity/Alarm recording mode to be entered).

Notes:

The Relay Hold Timer extends the time for which the Alarm/Activity recording mode is applied.

Any cameras which do not have video are automatically excluded even if specified in any of the camera select lists.

10.4.3.3.5   Storage Allocation (%)

An allocation may be made here for reserving disc space for alarm and activities. This enables the automatic Image Retention calculator to make an allowance for alarms. The higher the percentage that is set, the lower the update rate will be for Normal recording.

If this setting is *lower* than required for the actual alarm activity, the image retention period will be reduced. If set higher than necessary, the update rate will be reduced.

As the amount of alarms cannot be known in advance, a suitable estimate must be made for this setting.

10.4.3.4   Record Options

10.4.3.4.1   Recording Enabled

Recording may be disabled by setting this option to **NO**. This should be done if a VDM is used solely to play back hard drives from another location. Also if evidence of a serious crime has been recorded, it may be prudent to disable recording to ensure that over-writing cannot occur until all necessary evidence has been removed.

10.4.3.4.2   Image Size Control

This option determines how the size of images is calculated by the VDM.

- If set to **Fixed** image size, the VDM will force the image size to a fixed value, depending on the quality setting for the camera and recording mode.

- If set to **Variable** image size, the VDM will adjust the image according to the content of the image. The quality setting limits the *maximum* size of the image. Images with high information content will be larger (more Kbytes) than images with lower information content. This is the preferred mode of operation as it maximises the utilisation of the hard drives. Space is not wasted, for example, on nighttime images where there is little detail, or images of nearly empty rooms. When lights are turned on, or if people come into the room, the image size will automatically rise to record the increased amount of information.

10.4.3.4.3   Record Drives

This specifies the drive or drives to be used for recording. The normally setting is "Alternate 1 and 2" (even if only one drive is actually fitted).

10.4.3.4.4   Drive Full Options

When a drive becomes full, recording can be set to stop. Normally the Auto setting is used, where the hard drives are continuously re-written after the image retention period has expired.

10.4.4   Activity/Alarms

10.4.4.1   Activity Detection

Activity detection may be set for each camera. Use the up/down keys to highlight the part you want to change, and the camera keys to make the changes.

If the top row is highlighted in red, you can set the sensitivity and pixel count as follows:

- Use cameras keys 1 to 8 to set the sensitivity of the zones. The same sensitivity applies to all zones that are enabled. A higher number means greater sensitivity. A typical setting would be around 5 or 6.

- The pixel count is set using camera keys 9 to 16. The pixel count indicates how many zones have to be active before detection occurs. A typical setting is 3 or 4. A higher the pixel setting reduces the instances of false alarms, but also means that large changes are required to trigger detection

If other rows are highlighted in red, you can set specific zones. Each row has 16 zones, and the camera keys 1 to 16 are used to turn these on or off. A plus (+) indicates a particular zone is enabled. If it is enabled and detecting activity, a white block will appear instead of the plus sign.

The **DEFAULT** key can be used to turn all zones on or off. The **YES** key turns the selected row on and off.

10.4.4.2   Enable Activity

The activity detector for each camera may be set to be either always active, or active only during the Activity periods specified (section 10.4.2.3).

10.4.4.3   Alarm Polarities

Each alarm input may be set to normally open or normally closed. If an input is *not* used, ensure it is set to normally open, or the system will continuously be detecting an alarm condition.

10.4.4.4   Enable Alarms

The alarm input for each camera may be set to be either always active, or active only during the Alarm periods specified (section 10.4.2.2).

10.4.4.5   Alarm Input/Camera Mapping

Each alarm input may be mapped to any camera for the purpose of "Pulling-up" a full screen image. The default is that alarms 1 to 16 map to cameras 1 to 16 respectively, but you may map more than one alarm to a camera (subject to the maximum number of 16 alarm inputs). Alarms may be given titles (section 10.2.7.3), which are subsequently displayed in the Event log. This is useful for recording, for example, multiple till or PIR events on some of the cameras.

10.4.4.6   Permit alarm/activity locking?

If this option is set to "YES", all alarm and activity detection may be temporarily locked out via the System Information screen (Section 9.3).

10.4.4.7   Pull-Up Settings

This option selects whether a full screen image is "pulled-up" when an alarm or activity condition occurs. Full screen pull-up may be applied to either the main or the spot monitor.

10.4.4.7.1   Pull-Up Monitor

This option specifies whether the MAIN or SPOT monitor (or neither) is affected when an alarm occurs.

10.4.4.7.2   Pull-Up Hold Time

When a full screen image is pulled-up, it is held for this time even if further alarms occur on other cameras.

10.4.4.7.3   Sequence Time

If multiple alarms exist, the camera images from each will be displayed in sequence, with a dwell time on each as specified by this option.

10.4.4.7.4   Relay Hold Time

When an alarm or activity event occurs, the event relay operates. It is on held for this time after all alarms and activity has finished. This timer also determines how long the Activity/Alarm settings will be applied (section 10.4.3.3).

If the Relay Hold Timer is set to *zero*, the relay does not operate and the recording mode does not use the Alarm/Activity settings. This setting can be useful if you wish to log alarms and activity in the event log, but do not wish to change any of the record settings (rate, cameras or quality).

10.4.4.7.5   Restore after Activity/Alarm

This setting determines whether the camera and screen mode that applied before an alarm or activity condition is restored after all the alarmed cameras have been displayed and the pull-up hold times have elapsed.

10.4.4.8   Display Active Pixels

This option allows the currently active pixels to be displayed (as a running person) when activity detection is used. The purpose of this is to monitor whether appropriate pixels have been enabled and whether the sensitivity setting is suitable.

10.4.5   Critical Alerts

If a fault condition is detected by the VDM, a red "Critical Alert" message appears on the screen. The alert is also stored in the alert log. If the alert options have been set up correctly, <u>an alert message indicates that engineer attention is required</u> to determine the source of the problem.

The red alert message may be cancelled by pressing the EVENT key and entering the event screen. However, if the alert condition still exists afterwards, the alert message will re-appear. The alert relay stays activated while an alert condition exists.

Most critical alerts require no user set-up. Three alert types that do require set-up by the user are detailed here:

10.4.5.1   Cameras

Cameras that should have video *present* are set in this option. (Solid boxes should be displayed where cameras are fitted and dashes where no cameras are present). If there is no video on any of the specified cameras, an alert condition will arise. Press the **DEFAULT** key to automatically set this option to suit the currently connected cameras.

10.4.5.2   Drive Fail

This option must be set to indicate which hard drives are *fitted*. If a drive that is specified either fails or is removed, an alert condition will arise. Press the **DEFAULT** key to automatically set this option to suit the currently installed hard drives.

10.4.5.3   Drive Full

If you wish to be notified when drives become full (if for example the drives are to be changed), set this option. Normally, the system automatically over-records on the drives and this option should be **Disabled**.

10.4.6   Camera Inputs

10.4.6.1   Brightness

The brightness of each camera may be adjusted to allow for cable losses. Press the **DEFAULT** key to set brightness to its default state.

10.4.6.2   Colour Boost

The colour intensity of each camera may be increased to allow for cable losses. This is useful in particular where passive transceivers are used for video transmission over twisted pair cable between the cameras and the VDM. Press the **DEFAULT** key to set colour intensity to its default state.

10.4.6.3   Termination

Camera termination may be set her. Normally all cameras should be terminated, unless looped through to other equipment that is terminated. Press the **DEFAULT** key to toggle all input terminations on or off, or use the cursor keys to set them individually.

10.4.7   Remote Access

The VDM may be controlled remotely and viewed via:

- Hard wired RS485 twisted pair link to remote keyboard(s)
- Dial-up via PSTN (telephone line)
- Dial-up via ISDN (64kbit/s digital)
- Networking via Ethernet (TCP/IP)
- RS232 connection to computer

10.4.7.1   System Address

If several VDM systems are to be controlled by one keyboard, or computer, assign each a different address.

10.4.7.2   Remote Password

A password may be set to prevent unauthorised remote access. Set to all zeros if the revision of remote access software ("VDM Connect") used does not support password protection.

10.4.7.3   Remote Covert Cameras

Cameras may each be set as visible or hidden (covert) when accessed remotely via PSTN or ISDN. Note that only cameras that are currently recording may be viewed live.

10.4.7.4   Network Settings

10.4.7.4.1   Network Interface

The setting of this option depends on whether or not there is a remote access module is fitted into the rear of the VDM.

- If a VDM-MODEM module is fitted, select "Modem"

- If a VDM-ISDN module is fitted, select "ISDN"

- If a VDM-ETHERNET module is fitted, select "ETHERNET"

- If no option modules are fitted, select "RS232" (factory default).

10.4.7.4.2   IP Address

If the Ethernet option module is being used, enter a valid IP Address here. The address is entered using the camera keys 1..9 for numbers 1 to 9, camera key 10 for zero, and camera key 11 for a dot.

Alternatively, press the **DEFAULT** key to default the address to:

> 192.168.16.50

In order to view images on a PC, the software "VDM-Connect" must be installed, and the IP address must be entered as part of the "site" information for this VDM.

If a PSTN or ISDN option module is being used, the address may be used for a telephone number for testing the ISDN or PSTN connection. Press **ALT** and ◀◀ to select the modem monitoring mode. Make sure that "CTS" is displayed (*not* BSY), then press **ALT and** ❚❚ to dial or end a call.

If you have a PSTN option module, you can enter the number of a telephone, and can check that the phone rings to test the PSTN line. Press **ALT and** ❚❚ again to terminate the call. Press **ALT** and ◀◀ again to exit the modem monitoring mode

10.4.7.4.3   Sub-Net Mask

The Sub-Net Mask may be set in the same manner as the IP Address.

10.4.7.4.4   Gateway

The Gateway may be set in the same manner as the IP Address.

10.4.7.4.5   Port

If the Ethernet option module is being used, enter a valid Port number. The port number is entered using the camera keys 1..9 for numbers 1 to 9 and camera key 10 for zero.

Alternatively, press the **DEFAULT** key to default the port number to:

> 9221

In order to view images on a PC, the software "VDM-Connect" must be installed, and the port number must be entered as part of the "site" information for this VDM.

10.4.7.4.6   PSTN Rings

This determines how may rings occur before the PSTN modem (if fitted) answers an incoming call.

10.4.7.4.7   ISDN Answer Mode

The ISDN answer mode may be set to:

- Normal – An incoming ISDN call will always be answered if it is of the correct type (i.e. V120)

- Sub-Address – If this option is set, an incoming call will only be answered if it is of the correct type (i.e. V120) and a sub address is specified from the calling end which matches the "ISDN MSN/Sub-Address" (section 10.4.7.4.8).

- MSN - The Multiple Subscriber Numbering option ensures that the incoming call is only answered if it is of the correct type (i.e. V120) and the last digits of the called number match the "ISDN MSN/Sub-Address" (section 10.4.7.4.8).

10.4.7.4.8   ISDN MSN/Sub-Address

Up to three digits may be entered using the Camera 1.16 keys to specify either the Sub-Address or MSN number as described above. Press **DEFAULT** key clear this setting.

10.4.7.4.9   RS232 Baud Rate

Select the RS232 baud rate as required. The standard rate for the VDM-Remote software is 9600. If a modem or ISDM module is selected in 10.4.7.2, the baud rate is automatically selected and this setting is not used (in revision VDM001E9 this option should be set to 57K when a modem is used).

10.4.7.5   Keyboard/Clock Synchronisation

The RS485 connectoron the VDM may be used for a remote keyboard. It may also be used to synchronise the clocks of two or more VDMs.

The options are:

- Keyboard Disabled   No keyboard or clock synchronisation is being used.
- Enable Keyboard/Clock Slave   Keyboard or clock synchronisation is being used.
- Enable Keyboard/Clock Master   Keyboard or clock synchronisation is being used.

Make sure that the RS485 input of the VDM is terminated by:

- Using the link on the T25 terminal adaptor PCB,
- Using th eswitch on the T25 terminal adaptor PCB,
- Connecting pins 4 and 14 together on the 25-way Alarm/Keyboard Connector of the VDM or
- Using the miniature slide switch on the VDM rear panel.

If two of more VDMs are being used on the same site, it may be desirable to synchronise their clocks so that the recorded images from each units have exactly corresponding times and dates (within 1 second).

To achieve this, set one VDM as a "Master" by setting the menu option to "Enable Keyboard/Clock Master". Set the other as a slave by setting the menu option to "Enable Keyboard/Clock Slave".

Connect the RS485 *output* of the master VDM to the RS485 *input* of the "Slave" VDM .

The clocks of the two units will now been synchronised each minute.

If a remote keyboard is being used, connect it to the "Master" VDM that has been chosen as the Master.

10.4.8   Configurations

10.4.8.1   Restore Factory Configuration

This option restores all setting the factory defaults. This is recommended after a major firmware upgrade.

10.4.8.2   Get Configuration from CD

All incident CD recordings also save the configuration. The stored configuration may be restored using this option, but only if there has not been a firmware upgrade since the recording was made, otherwise changes and additions to the menu structure may have occurred.

10.4.8.3   Erase Hard Drives

10.4.8.3.1   Erase Hard Drive 1

Erase all image indexes on hard drive 1 (lower). The hard drive will appear blank in the drive information screen.

10.4.8.3.2   Erase Hard Drive 2

Erase all image indexes on hard drive 2 (upper). The hard drive will appear blank in the drive information screen.

10.4.8.3.3 Erase Both Hard Drives

Erase all image indexes on both hard drives. The hard drives will appear blank in the drive information screen.

10.4.8.3.4 Upgrades need engineer password?

All firmware upgrades are performed via the User Menu (section 10.2.10). The upgrade process may be password protected if required but setting this option to YES. The Engineer password (if set) will then have to be entered in order to upgrade the firmware of the VDM.

If this option is set to NO, access to the User Menu is all that is required to perform the upgrade.

10.4.9 Engineer Password

This password, if set to a non-zero value, protects the Engineer Menu.

On entering this password, access is granted to the Engineer Menu, Supervisor menu, User Menu, Incident Menu, Playback functions and the Keyboard.

If other passwords are set, it is recommended that the Engineer Password be also set to allow a way into the menus in case any of the others are forgotten.

11 Changing Hard Drives

The VDM Digital Recorders are supplied with two removable hard drive draws. Depending on the configuration, hard disc drives may be fitted in both of these drawers, on just one or in neither.

The VDM requires at least one hard drive in order to be capable of recording images.

A hard drive may be changed while the unit is powered up. A drive may need changing for one of these reasons:

- To transfer all the recorded images to another VDM system, for example at another location

- To keep all the evidence relating to a serious crime

- To extend the storage capacity by using a pool of hard drives

- If a drive fails, it can be quickly replaced without having to return the whole unit for repair.

- If a VDM being swapped out for any reason, the all the recorded data can be transferred to the replacement unit.

11.1 Managing Hard Drives

11.1.1 Single Hard Drive Operation

A single hard drive may be fitted in either **DRIVE1** or **DRIVE2** drawers.

11.1.2 Dual Hard Drive Operation

When two drives are fitted, the VDM (normally) automatically alternates between them, switching when the one currently being used becomes full.

11.1.3 Changing Hard Drives

The hard drive drawers require a special key to unlock them. Insert the key, and turn it *clockwise* to unlock the drive. This will remove power from the drive. **Wait for 30 seconds for the drive to stop spinning**, and then remove the drive by lifting the drawer handle up, and pulling firmly.

Hard drives are sensitive mechanical devices that may be damaged by shock or vibration. Always handle with care and when transporting drives, ensure they are well cushioned with suitable padding to protect them from shock and vibration.

To put a hard drive back into the VDM, make sure that the lock in the drive drawer is in the *unlocked* position. Carefully slide the drawer in as far as it can go with the handle in the up position. Carefully push the handle down such that the drawer is pulled into the drive bay. When it is properly located, lock the drawer by turning the key *counter-clockwise.* The LEDs should come on again, indicating that power has been applied to the drive again.

After changing a drive, enter the **DRIVES** screen, and press **YES** make the system re-scan the drives (see section 9.1). Check that the correct drive information is reported.

11.1.4 Warnings

A hard drive should not be changed while it is being used to record as this may affect parking of the heads within the drive. Always allow approximately 30 seconds after removing power before moving a hard drive. This ensures that the platters have stopped spinning.

Do not remove a hard drive while a CD is being written to as the write process may be affected.

12 Specifications

12.1 Image Capture and Storage

Displayed Image Format	720 x 576 Pixels, 16 Million colours
Compressed Image Format	720 x 288 Pixels, 16 Million colours
Sample rate	13.5Mhz
Image Compression System	Wavelet

12.2 Connectors

12.2.1 Power Input

Main input is switch-selectable 230/115 Volts AC 50/60Hz, 100W maximum. **Check switch setting before applying power or damage may occur.**

12.2.2 Camera Inputs and Loop-Though Outputs

PAL compatible, 1 Volt pk-pk, 75 Ohm termination (may be switched off in the **SETUP** menu)

12.2.3 Coax Monitor Outputs

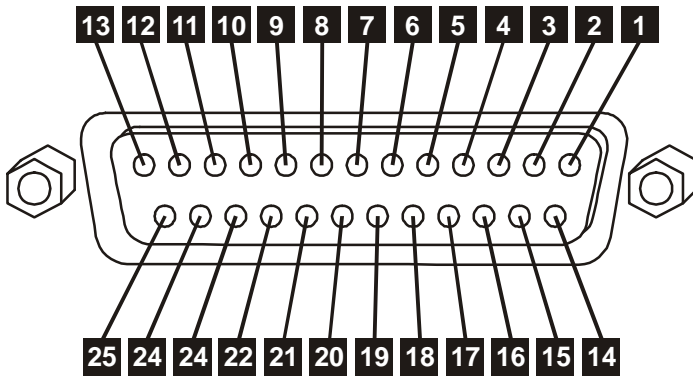PAL compatible, 1 Volt pk-pk, 75 Ohm termination.

12.2.4 S-Video Monitor Output

PAL compatible, 1 Volt pk-pk, 75 Ohm termination.

12.2.5 S-Video Input

PAL compatible, 1 Volt pk-pk, 75 Ohm termination (not used).

12.2.6 Alarms and Keyboard

	Pin Function			Pin Function
1	GND		**14**	Connect to Pin 4 to terminate RS422 Input
2	Alarm Input 15		**15**	Alarm Input 16
3	RS422 Out-		**16**	RS422 Out+
4	RS422 In-		**17**	RS422 In+
5	Alarm Input 9		**18**	Alarm Input 10
6	Alarm Input 11		**19**	Alarm Input 12
7	Alarm Input 13		**20**	Alarm Input 14
8	Alarm Input 1		**21**	Alarm Input 2
9	Alarm Input 3		**22**	Alarm Input 4
10	Alarm Input 5		**23**	Alarm Input 6
11	Alarm Input 7		**24**	Alarm Input 8
12	Relay 2		**25**	Relay COM
13	Relay 1			

12.2.7 Serial Port (RS232)
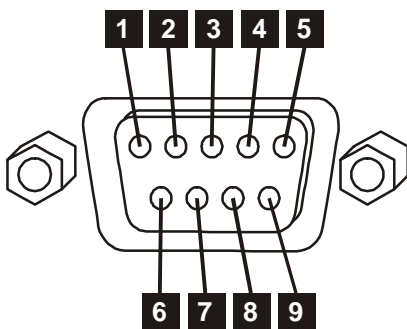
	Pin Function			Pin Function
1	DCD		**6**	Not connected
2	RXD		**7**	RTS
3	TXD		**8**	CTS
4	DTR		**9**	Not connected
5	GND			

Mating plug required: 9-way female D-type.

12.2.8 Parallel Port (Printer)
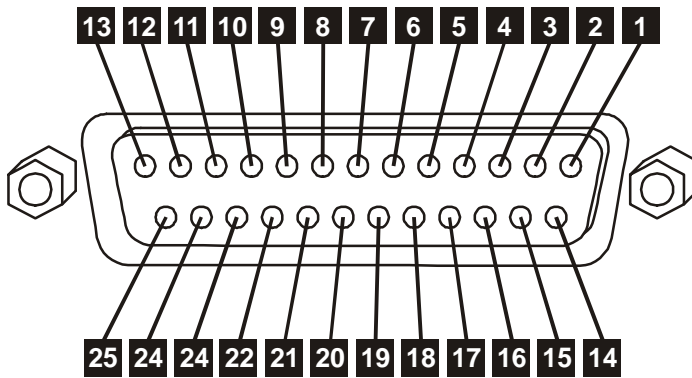
	Pin Function			Pin Function
1	STRB\		**14**	AUTOFD\
2	Data 0		**15**	ERROR\
3	Data 1		**16**	INIT\
4	Data 2		**17**	SEL IN\
5	Data 3		**18**	GND
6	Data 4		**19**	GND
7	Data 5		**20**	GND
8	Data 6		**21**	GND
9	Data 7		**22**	GND
10	ACK\		**23**	GND
11	BUSY		**24**	GND
12	PE		**25**	GND
13	SEL			

Mating plug required: 25-way male D-type.

12.3 Options Module

A removable panel is provided for the installation of options modules (e.g. PSTN, ISDN or Ethernet).

12.4   Power Requirements

Voltage	115Vac or 240Vac 50/60 Hz
Power	100W maximum

12.5   Dimensions and Weight

	Width	Depth	Height	Weight
Unit	360 mm	380 mm	160 mm	10kg
Packaged	490 mm	570 mm	270 mm	12kg

12.6   Temperature and Humidity

	Operating	Storage
Temperature	10 to 30 º C	-20 to 60 º C
Humidity	5 to 95% non-condensing	5 to 95% non-condensing

12.7   Ventilation

The VDM Digital Recorder has ventilation holes in the base, front and rear. Using internal fans, the unit creates a continuous flow of air through the unit to control the temperature of the disc drives and other internal components.

The ventilation holes must not be obstructed otherwise the lifetime and reliability of the system may be affected.

12.8   Safety

For warranty and safety reasons, the cover of this equipment must not be removed. There are no user serviceable parts inside.