



Ai150 Digital Recorder User Manual



Models covered by this manual

Hard Drive Capacity	4 Cameras	9 Cameras
300 Gbytes	Ai150-G300-4	
300 Gbytes		Ai150-G300-9

Document Reference

Vi606c.doc

Date

21/10/2009

Firmware

From Vi015B09/F

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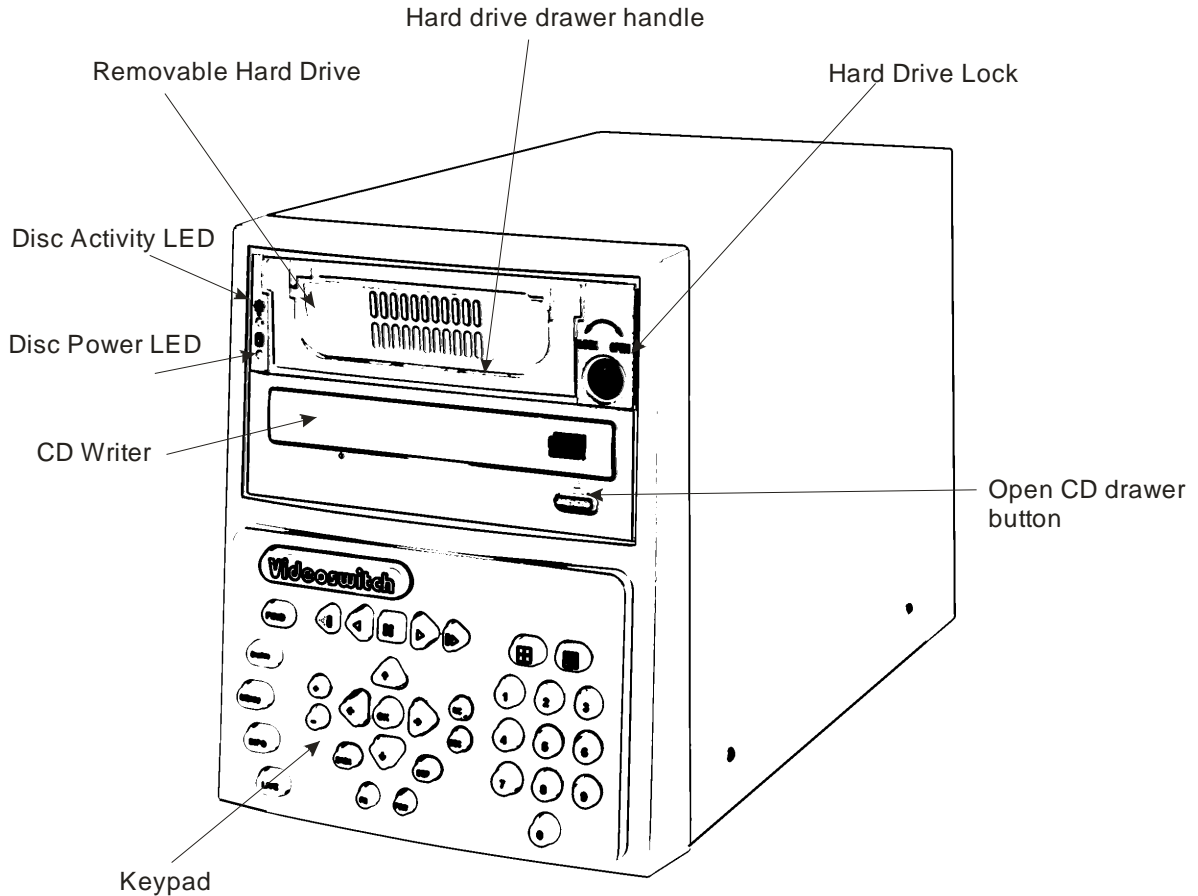
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1 Start Here

Please fill in the warranty fax-back form on page 28 and return it to Videoswitch



The Ai150 is designed to be easy to use whilst offering high quality digital video recording and playback, primarily for CCTV security applications.

The video images from all connected cameras are continuously recorded onto the built-in hard disc. When the disc is full, the Ai150 keeps on recording, overwriting the oldest images.

Images are retained for a specified user programmable number of days, typically 14 or 31. All images recorded within the period will be available for replay. Older images are no longer available.

Several methods are provided for finding the recorded images you want quickly.

The built-in CD writer allows a selected part of the recorded information to be written onto a CD, typically to back-up an incident for use as evidence by the Police.

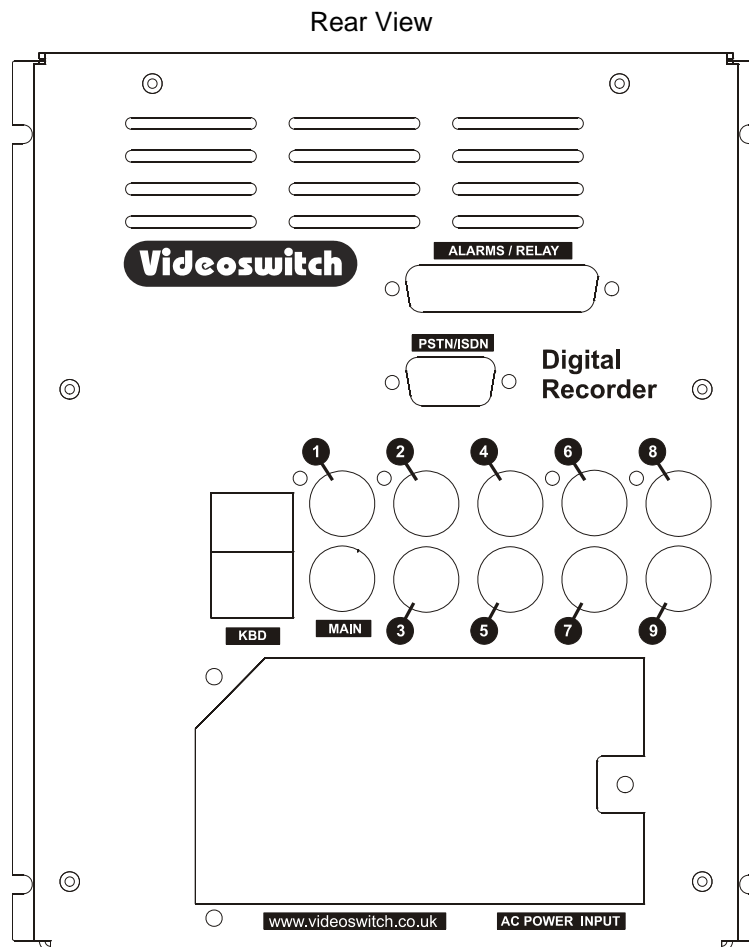
The recording process continues all the time, even when playing back or writing to CD.

An optional dial-up module allows images to be viewed on a PC (with a modem) via a telephone line.

1.1 Connecting Up

For a standard digital recording system you will need

- The Ai150 recorder
- Some cameras with lenses
- A video monitor (with BNC composite video input).
- BNC cables



Connect the monitor output (MAIN) of the Ai150 to a Video Monitor to the using a BNC cable

Make sure that the monitor termination is switched on (i.e. to 75 Ohms)

Connect the a camera to Camera Input 1 on the Ai150 using a BNC cable

Connect further cameras to Inputs 2,3,4 etc

Make sure that the voltage select switch is set to suit the mains supply. The setting required in UK and Europe is 230Vac.

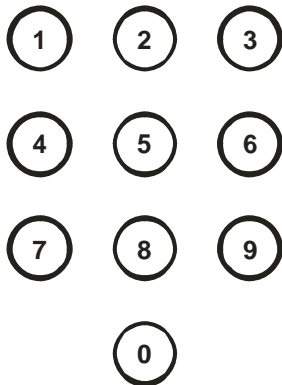
Connect the mains power using main cable provided

1.2 Setting Date/Time

For proper operation of the Ai150 Digital Recorder it is essential that the date and time are set correctly.

If the system clock has an invalid date or time when the Ai150 is powered up (or at any time during operation), the date and time setting window will be automatically displayed

If this occurs, use the number keys to enter the date and time.



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. 04 for the year 2004),
- 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).

The arrow keys may be used to move the cursor to different positions if only some digits need changing:



Press OK to finish:



If you need to adjust the time and date at any other time, refer to section 9.1. Note that the time is automatically adjusted forwards or backwards by an hour at the appropriate dates to take account of British Summertime so no user action is required.

1.3 Recording

The Ai150 Digital Recorder should now be fully operational and recording images from all cameras. The default image retention period is 31 days.

1.4 Routine Checks

If the Ai150 is *not* recording, the message **STOP** will be displayed on top right of the video monitor. This should only happen if no hard drive is fitted or if it is faulty.

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 as possible, rather than 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 on the hard drive in the Ai150 become over-written. The CD may be checked by either by playing it on the Ai150 or on a PC.

1.5 Care of the Hard Drive

The hard drive is a delicate mechanical item that should be handled with care. Before moving a Ai150 that has been powered up, remove power and **wait for 30 seconds for the drive to stop spinning.** This is a precaution to avoid possible damage to the hard drive.

1.6 Critical Alerts

The Ai150 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.

- **FailTest** *This alert indicates that the self-test has failed – try the following*
 - Press the **INFO** key to call up the “**FIND-2 Status**” screen. The positions of any solid blocks displayed on the “Self Test” row indicate various fault conditions.
 - Enter the menu, change any setting and return to LIVE mode so that settings are saved.
 - Switch off the Ai150, wait 10 seconds and switch on again.
 - Try a power-on reset (See section 0).
 - If the problem persists, contact your supplier.

- **HD1 Fail** *This alert indicates that the hard drive is not working.*
 - Check that the drive drawer is correctly fitted
 - Check the lock in the drive drawer is turned full counter-clockwise
 - Check the **DISC ACTIVITY** LED is flickering (see diagram in section 1)
 - Check that the red **DISC POWER** led is lit.

- **HD1 SMART** *This alert indicates that the 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.

To cancel a critical alert, press the **FIND** key several times until the “**FIND-3 Event**” screen is displayed.



The time of alert will be displayed on the list (see section 3) and the alert will be cancelled.

Note that if the alert condition persists, the alert message will re-appear.

2 LIVE

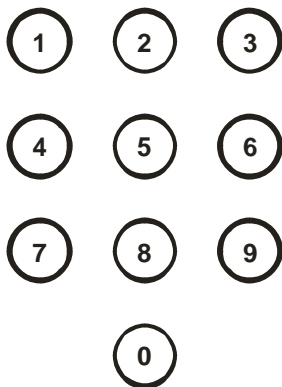
Press this key to view live images:



This key may be pressed at any time to exit from any other screen.

2.1 Viewing Full Screen Images

Select full screen views of different cameras by pressing the **NUMBER** keys:



2.2 Quad Display

Select quad display by pressing the **QUAD** key (live display only):



2.3 9-way Multi-Screen

Select x9 Multi-Screen display by pressing the **MULTISCREEN** key (live display only):



Note: this applies only to 9-camera model.

3 FIND

If there is a CD in the CD drive with previously stored images on it, the Ai150 will replay from the CD. Otherwise, the Ai150 will replay from the built-in hard drive.

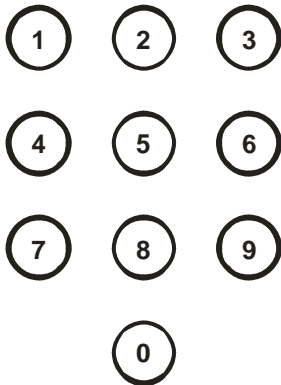
3.1 FIND-1 Date/Time

This mode is finds images by date and time. Press this key to enter the Date/Time search mode:



Sometimes it is useful to press the **DEF** key when in search mode, to call up the latest available recorded images

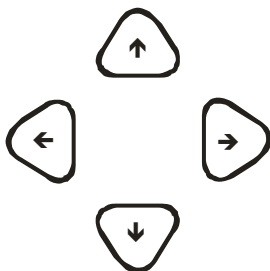
Use the **NUMBER** keys to enter any date and time for which there is still video available.



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. 04 for the year 2004),
- 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).

Scroll through dates and times using the **ARROW** keys:



Note that as any digit of the date and time is changed, the corresponding image is immediately found on the hard drive and displayed.

This is the "active search" facility.

When you have found what you want, use the play keys to view the video:



3.2 FIND-2 Sweep

An alternative to the date/time search, is the sweep facility. Press this key until the sweep mode is displayed:



Use these keys to scan through the whole range of recorded images:



To step in finer time increments, press the **OK** key to access the fine mode.

Note that the slider changes from a solid block to a diamond.

Press again to cancel.

To quickly step between start, middle and end, press this key:



When you have found what you want, use the play keys to view the video:



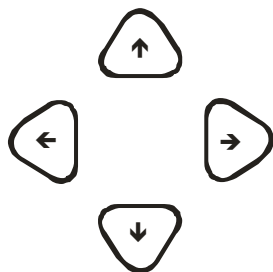
3.3 FIND-3 Event List

If alarm contacts are being used, there may be events in the event list. Press **FIND** key until the event screen is displayed:



Entering the EVENT screen clears any critical alert conditions. If a critical alert problem still exists, new alert events will be created.

Use the up/down keys to scroll through events and the left/right keys to select different pages of events.



Up to 480 events can be recorded before older ones are over-written.

As events are highlighted, the corresponding image will be immediately recalled and displayed.

Press this key to go to the latest event:



When you have found what you want, use the play keys to view the video:



4 PLAY

If there is a CD in the CD drive with previously stored images on it, the Ai150 will replay from the CD. Otherwise, the Ai150 will replay from the built-in hard drive.

Having found what you want using the **FIND** key, you can use these keys to move forwards and backwards through the recorded video images.



The function of each key is:



Step backwards one image



Step forwards one image



Play backwards (press again to increase speed)



Play forwards (press again to increase speed)



Pause at currently displayed image

Press the forward or reverse play keys repeatedly to increase the replay speed.



View different cameras by pressing the **NUMBER** keys:



5 BURN

To burn a section of video recording to CD you must go to the middle the video that you wish to backup, using the FIND and PLAY facilities as described in sections 3 and 4. Then do the following:

Call up the **BURN** screen by pressing this key.



If there is a CD in the CD drive that is *not* blank, the BURN screen will not be displayed.

Create an “incident” by pressing this key.



Change the duration of the incident as required using the left/right keys:



The start and end times can also be individually adjusted by using the **UP** and **DOWN** arrow keys to highlight the start or end times, and the **LEFT** and **RIGHT** keys to adjust the time.

Alternatively if you highlight the start time and press **BACK** it will be set to the current play image. Similarly if you highlight the end time and press **BACK** it will be set to the current play image.

Press the “Open CD drawer” button on the CD drive and place a *new* CD-R in the CD drive. Press the “Open CD drawer” button again to close the drawer.

Start writing to **CD** by pressing this key:



Note that you can only write incidents to a *blank* CD. **When an important incident has been written to a CD, always check that the CD plays back correctly**, either by playing it on the AI150 or on a PC.

6 PSW

A password may be set in the menu to prevent unauthorised access to the menu (see section 9.4.1).

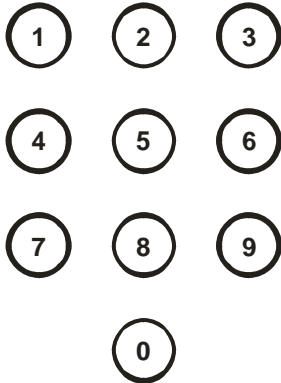
6.1 Log-On

To log-on to the Ai150 and thereby gain access to the menus:

Press this key:



Enter the correct password using the **NUMBER** keys:



Press this key:



A message on the screen will indicate whether user access has been granted. If it has, the menus may now be entered.

6.2 Log-Off

When you have finished accessing the menu, you should log-off again to prevent other users gaining unauthorised access:

Press this key:



Press this key:



The menus are now protected again.

7 FN

The “FN” key provides additional functions as listed below:

7.1 Auto sequence - Yes

Press these keys to start auto-sequencing of all cameras on the monitor



7.2 Auto sequence - No

Press these keys to stop auto-sequencing of all cameras on the monitor



8 INFO

A number of information screens are available to tell you about the Ai150 and to confirm that it is operating in the way that you intend:

- **INFO-1** Configuration
- **INFO-2** Status
- **INFO-3** Drives
- **INFO-4** Record
- **INFO-5** Play

Press this key to step through these various information screens:



To return to viewing live images, press this key:



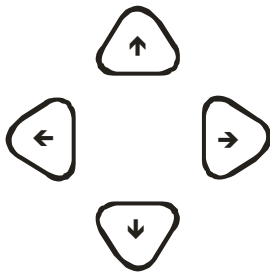
9 MENU

To enter the menu, press this key:



Changes within the menu system require the use of the following keys:

The **ARROW** keys are used to move through the menus and to alter settings within the menu:



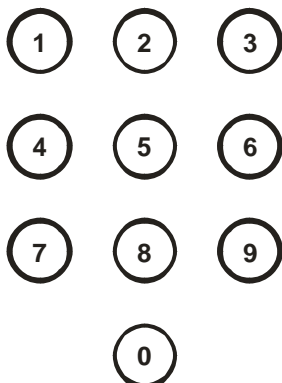
If you are uncertain about a menu setting, the default option can be selected using this key:



In parts of the menu you may need to initiate an action by pressing the **OK** key:



In parts of the menu you may need to enter numbers using the **NUMBER** keys:



To exit the menu, press this key:



9.1 Date/Time

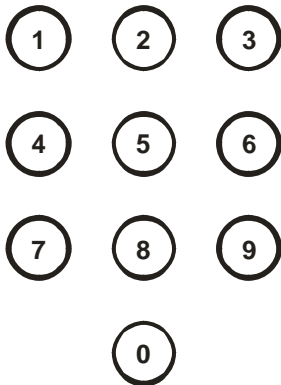
For proper operation of the Ai150 Digital Recorder it is essential that the date and time are set correctly.

9.1.1 Date/Time

When you have found this menu item (see start of section 9), press this key to start editing the date and time:



Use the **NUMBER** keys to enter the date and time:



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. 04 for the year 2004),
- 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).

The arrow keys may be used to move the cursor to different positions if only some digits need changing:



Press OK to finish:



9.1.2 Summer/Winter Time

If this menu item is set to Automatic, the displayed time and date will automatically change in spring and autumn. If you are in a country with different light saving hours, you can use this menu item to manually select summer-time (1 hour ahead) or winter-time. The date/time setting in section 9.1 should *not* be changed other than to adjust and drift in the timekeeping of the Ai150.

9.2 Record

9.2.1 Days

Enter here the number of days that you wish images to be retained for before being overwritten. The Ai150 will automatically calculate the number of images per second recorded to achieve this.

- More days results in fewer images per second
- Fewer days results in more images per second

The image rate may be viewed at any time using the **INFO-4** screen (see section 8).

Note that the actual number of days retained may vary from the programmed value, particularly if alarms are used. This is because alarms record at the maximum record rate and therefore use up hard disc space more rapidly. You may wish to increase the number of days to allow for this.

The following table shows examples of overall record rates (images per second) for different numbers of days. An average image size of 18K is assumed (medium quality).

Hard Drive Capacity	7 days	14 days	31 days
300	12.5 (25)	12.5 (13.8)	6.2

The figures in brackets are the update rates when a single camera is being recorded, using camera 1 input.

To get the image rate per camera, divide by the number of cameras being recorded.

9.2.2 Quality

Select the image quality here. Note that the quality (i.e. image size) affects the record rate for a given number of days recording. Image quality may be adjusted to suit the particular installation. Note that:

- Higher quality images result in fewer images per second
- Lower quality images result in more images per second

The actual size of the stored image in (Kbytes) depends on the content of the image. Scenes with a lot of information result in larger images. Scenes with little information (e.g. empty rooms), result in smaller images. The use of variable image size maximises the use of the available hard drive capacity.

9.2.3 Image Size Control

Select option to provide required image quality for application.

9.3 Display

9.3.1 Keypad Brightness

The brightness of the backlit keypad may be adjusted here using the **UP** and **DOWN** keys.

9.3.2 Auto Seq Dwell

When auto-sequencing cameras (see section 7.1), the dwell time is specified by this option using the **NUMBER** keys.

9.3.3 Camera Titles

Each camera may be given a title, or the default title may be used ("Camera1", "Camera2" etc).

You can use the **NUMBER** keys for numbers and the **UP** and **DOWN** arrow keys to get letters and other characters. Press the **BACK** or **LEFT** key to go back to the previous menu level.

9.4 Configuration

9.4.1 User Password

If you wish to set a password, enter a six digit number here. Enter all zeros to remove the password.

When a password has been set, access to the menu will be prohibited until the user “logs on” by pressing the PSW key and entering the correct password.

If you set a password, be very careful to make sure that it is recorded, otherwise access to the menus will not be possible again.

9.4.2 Camera Inputs

9.4.2.1 Record Brightness

The brightness of the images being recorded can be adjusted to compensate for cable losses. Adjust the brightness as required for each camera.

- If the displayed image (which is digitised) is too dim or is tearing, *increase* the brightness setting.
- If an image is too bright, *decrease* the brightness setting.

9.4.2.2 Record Colour Boost

The colour content of the images being recorded can be adjusted here to compensate for cable losses. Adjust so that the colour content of the displayed image is not too weak or too strong.

9.4.3 Restore Factory Config

Press the **YES** key to restore the configuration to the factory defaults.

9.4.4 Erase Hard Drive

Press the **YES** key to erase the hard drive.

9.4.5 Unit Address

This address need only be changed if more than one Ai150 is to be controlled from one remote keyboard.

In this case, give each Ai150 a different unit address. For example “001”, “002”, “003” etc.

10 Dial-Up Access

Images may be viewed on a PC via a telephone line (PSTN or ISDN) if an optional external Vi-PSTN or Vi-ISDN adaptor is attached.

10.1 Vi-PSTN

This external adaptor is for use with a standard telephone line. The adaptor plugs into the PSTN/ISDN connector on the Ai150. A PC with a modem is required to view the images. Software for the PC is provided with the adaptor.

11 Technical Data

11.1 Power-On Reset

If you wish to perform a power-on-reset to restore all settings to their factory defaults, press the **DEF** key while you apply power, and keep pressing it until the Ai150 has powered up and displays **FACTORY RESET**. Note that this process will reset all user settings, including camera titles. The **DEF** key will need to be pressed for about 10 seconds.

The factory configuration can also be recalled via the menu (see section 9.4.3).

11.2 Changing the Hard Drive

Hard drives are sensitive mechanical devices that may be damaged by shock or vibration. Always protect them from shock and vibration when transporting.

Remove power from the Ai150 before removing the hard drive. **Wait for 30 seconds for the drive to stop spinning** before moving the Ai150 or removing the hard drive. Moving a drive that is still spinning can damage it.

The hard drive drawers require a special key to unlock them. This is supplied with the Ai150. Insert the key, and turn it *clockwise* to unlock the drive.

To put a hard drive back into the Ai150, 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*.

After changing a drive, re-apply power to the Ai150.

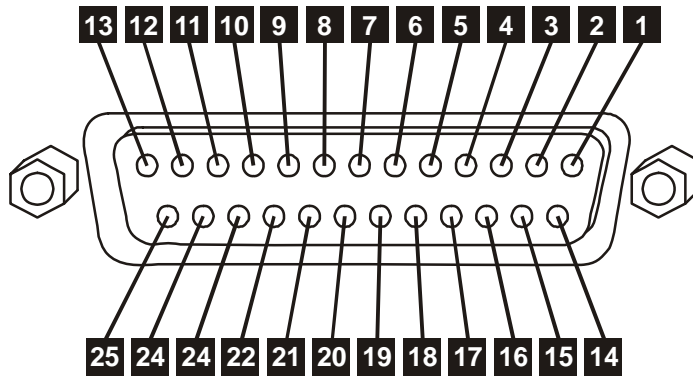
11.3 Accessories Included

Ai150
Main Cable
Vi-X1 Alarm Break-out module
Hard Drive Key
Manual
Blank CDs (2)

11.4 Connector Pin-Outs

11.4.1 Alarms

Physical: 25-way D-Type (female)



Pin Number	Signal	In/Out
1	Alarm Common (Ground)	In
5	Alarm 9	In
8	Alarm 1	In
9	Alarm 3	In
10	Alarm 5	In
11	Alarm 7	In
12	Relay N/C	Out
13	Relay N/O	Out
21	Alarm 3	In
22	Alarm 4	In
23	Alarm 6	In
24	Alarm 8	In
25	Relay Common	Out

Note:

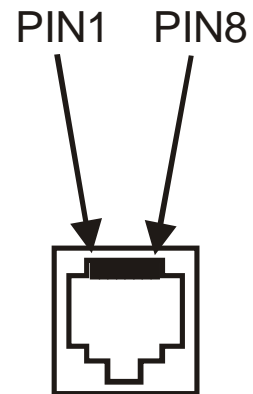
The Vi-X1 break-out adaptor supplied with the Ai150 provides a convenient means of making connection to the alarm inputs and relay outputs via screw terminals.

11.4.2 Remote Keyboard

Physical: RJ45 (lower connector)

Electrical: RS485

Pin Number	Signal	In/Out
1	RS485+ (A)	In
2	RS485- (B)	In
3	Not used	N/a
4	+12V for Keyboard	Out
5	0V for keyboard	Out
6	Not used	N/a
7	Twisted-Pair Video+	Out
8	Twisted-Pair Video-	Out



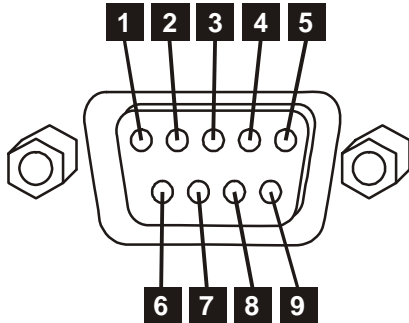
Note:

A standard CAT5 patch cable may be used to connect the Ai150 to the optional Vi-K1 keyboard.

11.4.3 PSTN/ISDN Modem

Physical: 9-way D-type (female)

Electrical: RS232



Pin Number	Signal	In/Out
1	DCD	In
2	RXD	In
3	TXD	Out
4	DTR	Out
5	GND	In/Out
6	+8V	Out
7	RTS	Out
8	CTS	In
9	RI	In

11.5 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

11.6 Physical and Environmental

11.6.1 Power Requirements

	Power supply switch set to 115V	Power supply switch set to 230V
Voltage	90-135 Vac 47-63Hz	180-265 Vac 47-63Hz
Current	2A maximum	1A maximum

11.6.2 CE Marking

This product is CE marked. It has been fully tested and complies with 89/336/EEC Electromagnetic Compatibility and 73/23/EEC Low Voltage directives, and with EN 60950:2000 safety standards.

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

11.6.3 Dimensions and Weight

	Width	Height	Depth	Weight
Unit	165mm	200mm	310mm	6Kg
Packaged	275mm	380mm	475mm	8Kg

11.6.4 Temperature and Humidity

	Operating	Storage
Temperature	10 to 35 ° C	-20 to 60 ° C
Humidity	5 to 95% non-condensing	5 to 95% non-condensing

11.6.5 Ventilation

The Ai150 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.

11.6.6 Safety

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

Notes



Digital Recorder

12 Warranty Fax-Back

Please fill-in and fax or post this form (or a copy) back to Videoswitch. This will enable us to inform you of free upgrades when they become available. If this form is filled in fully and returned within 1 month of purchase the warranty on this product will be extended from 1 year to 2 years for no extra charge.

Serial Number of Ai150
(this is on the label under Ai150)

Your Name

Company Name

Address & Email

Date Purchased

Purchased From

Fax to:

01252-851296

or Send to:

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

Notes

Empty rectangular box for notes.