



PRO DVR SYSTEM HARDWARE MANUAL & SETUP INSTRUCTIONS



Image Vault PRO

IMPORTANT
READ THIS DOCUMENT FIRST

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SETUP INSTRUCTIONS INCLUDE:

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WARNING: Your new Image Vault Digital Recorder is a Personal Computer based electronic device. To perform a complete and satisfactory installation, **Image Vault REQUIRES that an Uninterruptible Power System (UPS) be installed as part of the digital recorder system. The Image Vault recorder must be the ONLY item plugged into UPS. The DVR must be plugged into the battery backup segment of the UPS. Failure to properly install a UPS may cause damage to the system's hard drive, resulting in a loss of recorded images, or the inability to record and will void Image Vault manufacturer's warranty.**



WARNING: Your image vault recorder can operate as a stand-alone device, or may be connected to a playback computer via network or other means. Regardless of the connection or mounting methods, the case of the Image Vault recorder may not be modified or penetrated in any way. **Any effort to mount other equipment to the Image Vault, modify the chassis, or penetrate the chassis in any way will void Image Vault manufacturer's warranty.**



WARNING: Do not turn off or reboot the DVR while it is in the boot-up process. Rebooting or turning off while in the boot up process may prevent boot up on next attempt.

1 PHYSICAL INVENTORY

You should have the following list of items with the DVR. If any items are missing, contact your Image Vault distributor immediately.

- | | |
|------------------------|--|
| (1) Blank CD-R Disk | (1) Power Cable |
| (1) Phone Line Cable | (1) CAT-5 Crossover (Peer-to-Peer) Cable |
| (1) Null-Modem Cable | (1) PC Mouse |
| (1) Setup Instructions | (1) User Guide CD with Playback Software |

2 FACILITIES

Image Vault PRO models all use the same chassis and offer the same hardware features. This section provides detailed information about each hardware component. From time to time Image Vault may modify the chassis slightly. Regardless of such changes, all major components described in this section will be present, though may be in a different position than indicated in these drawings.

2.1 FRONT PANEL

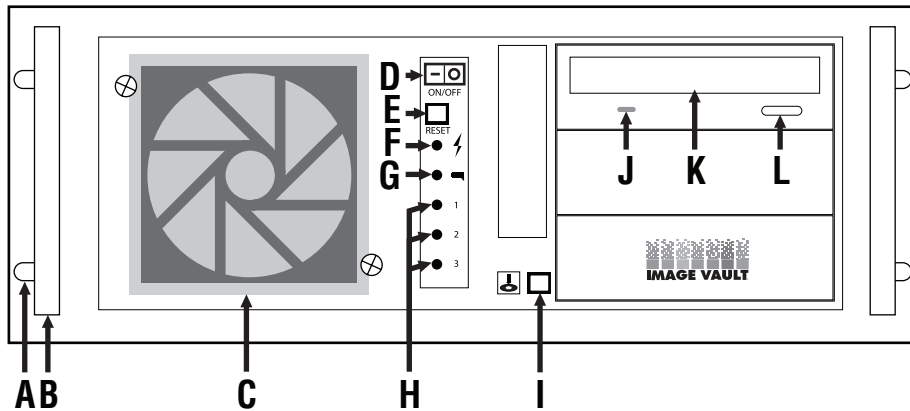


Image Vault Digital Video Recorder Front Panel
(Key Lockable Front Door Not Shown)

A RACK EAR

The PRO chassis features built-in rack ears for rack mounting. Holes are provided on 1.75" centers for standard rack installation. The chassis occupies 4U (standard rack unit spaces).

B HANDLE

The aluminum rack handles make it easily to lift and position the chassis as desired for handling and installation.

C FRONT VENTILLATION

The front panel air vent cover is removable with a screwdriver for easy filter cleaning.

D POWER SWITCH

Rocker switch turns the DVR on or off.

E RESET SWITCH

Pushbutton reset switch causes the DVR to shutdown and automatically reboot.

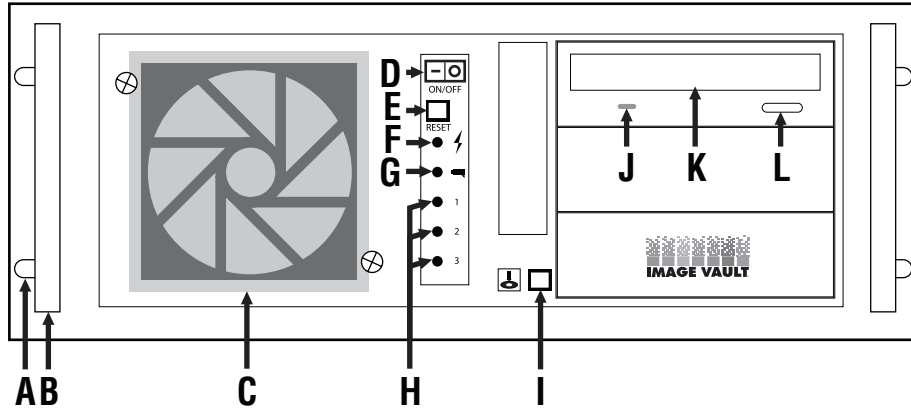


Image Vault Digital Video Recorder Front Panel
(Key Lockable Front Door Not Shown)

- F ON-OFF INDICATOR**
Tells you the unit has power and is turned on.
- G CAMERA RECORDING INDICATOR**
Tells you that the unit is currently writing video images to its hard drive.
- H INDICATOR LIGHTS**
These indicator lights are unused.
- I VIDEO DOWNLOAD TO CD BUTTON**
Press after an event, such as a robbery, to start immediate copying of most recent video images to CD.
- J CD INDICATOR**
This indicator lights up green to indicate reading from CD or yellow to indicate writing to CD.
- K CD-R DRIVE**
The CD-R drive is used to copy video images to disk and to copy or load setup data.
- L CD EJECT BUTTON**
Press to eject or close the CD tray.

2.2 REAR PANEL

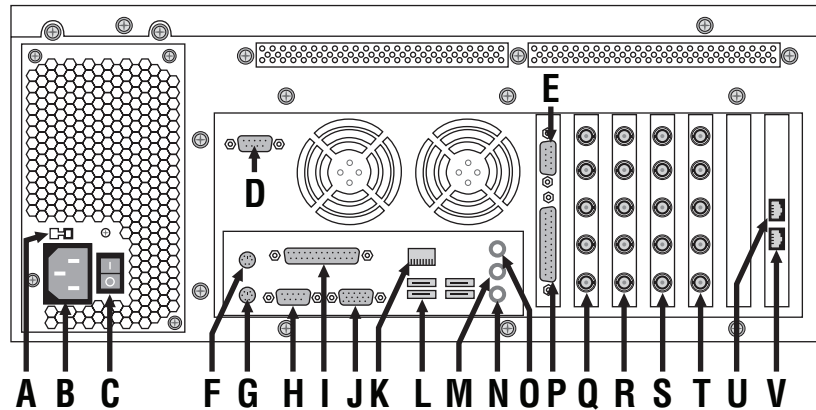


Image Vault Digital Video Recorder Rear Panel

- A INPUT VOLTAGE**
Set to 115 V_{AC} for use in USA. Set to 230 V_{AC} for other countries, as appropriate.
- B AC POWER INPUT**
Standard 3-prong IEC inlet used with 115 V_{AC} or 230 V_{AC} at 50/60 Hz.
- C POWER SUPPLY SWITCH**
Use this switch to completely remove power. Turning this switch on does not automatically start the recorder (refer also to Front Panel Power Switch).
- D PTZ CONTROL / ALARM OUTPUT**
Female DB-9 jack (black). Refer to Section 3.4 for further details.
- E M.A.D.E. SERIAL PORT 1**
Male DB-9 jack (black). M.A.D.E. Serial Port 1 for capturing serial data from journal printing devices such as cash registers at point-of-sale (POS), ATM machines, intelligent safes, alarm panels, access control systems, or other serial printing devices.
- F PS2 PORT: MOUSE**
PS-2 jack (green). Connect your PC Mouse to this port to operate the DVR locally.
- G PS2 PORT: KEYBOARD**
PS-2 jack (violet). Keyboard may be attached for service purposes, but otherwise unused.
- H RS232 PORT/M.A.D.E. SERIAL PORT 2**
Female DB-9 jack (green). Used for direct RS232 communication with a playback PC. Alternatively, if the DVR is configured to capture journal data from its M.A.D.E. Serial Port 2, this port will be used and the RS232 option will not be available.
- I PARALLEL PORT**
Female DB-25 (pink). Unused.

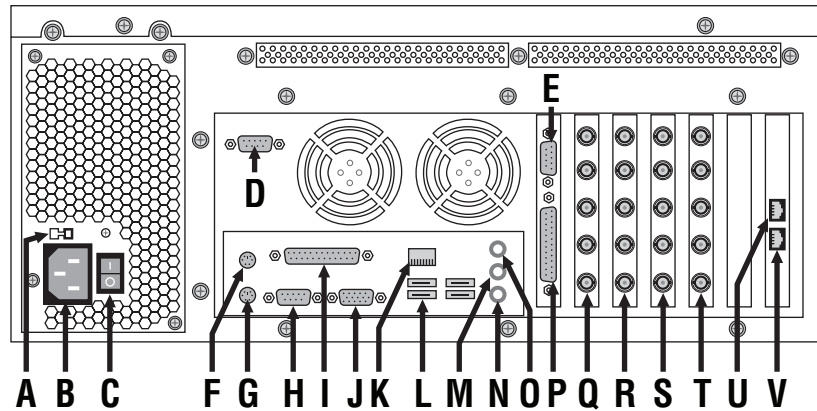


Image Vault Digital Video Recorder Rear Panel

J VIDEO PORT

Male DB-15 jack (blue). Connect your SVGA monitor to this port.

K NETWORK INTERFACE

This RJ45 port is used for Ethernet (10/100-Base-T) communication. The DVR may be networked to a playback PC through a network LAN or via peer-to-peer network connection using the network crossover cable provided. A network connection is typically much faster than a modem connection. Refer to the User's Guide for complete information on how to use this port. For connection to a LAN, use standard CAT-5 network cables (commercially available).

L AUDIO OUTPUT

1/8" TRS jack (green). This stereo phone jack output connects to a local speaker for audio playback.

M MICROPHONE INPUT

1/8" TRS jack (pink). Unused.

O LINE INPUT

1/8" TRS jack (blue). Connect an audio surveillance microphone with line level audio output to this phone jack for audio recording.

P EXTERNAL INPUTS

Female DB-25 jack (black). Use this port to connect dry contacts to signal the DVR to record.

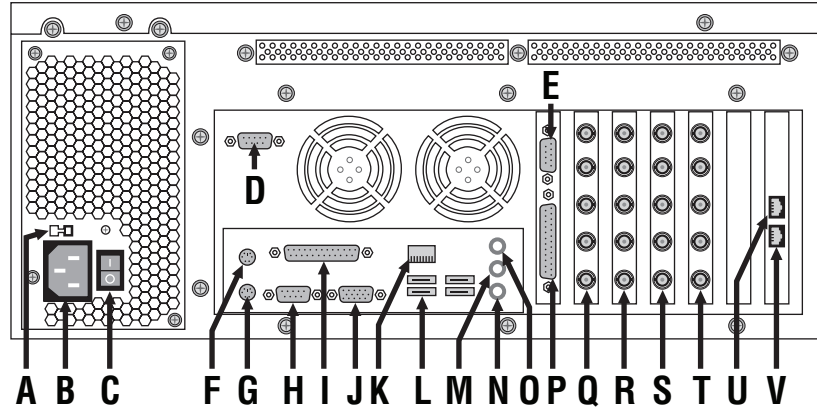


Image Vault Digital Video Recorder Rear Panel

Q VIDEO CAPTURE CARD 1

The unit will have up to four video capture cards. For visual reference, the first card is always to the left, the first input is always at the top. Cameras are numbered top to bottom, left to right. The bottom port on each card is a switching video output (cycles through the four inputs to that capture port card). The video switcher function is built into the video capture card. Routing and timing are controlled by software configuration.

R VIDEO CAPTURE CARD 2

The second capture card is present on models 8001 and above.

S VIDEO CAPTURE CARD 3

The third capture card is present on models 1201 and above.

T VIDEO CAPTURE CARD 4

The second capture card is present on models 1601 and above.

U MODEM PORT: MODEM TO PHONE

RJ11 jack. Unused.

V MODEM PORT: PHONE LINE INPUT TO MODEM

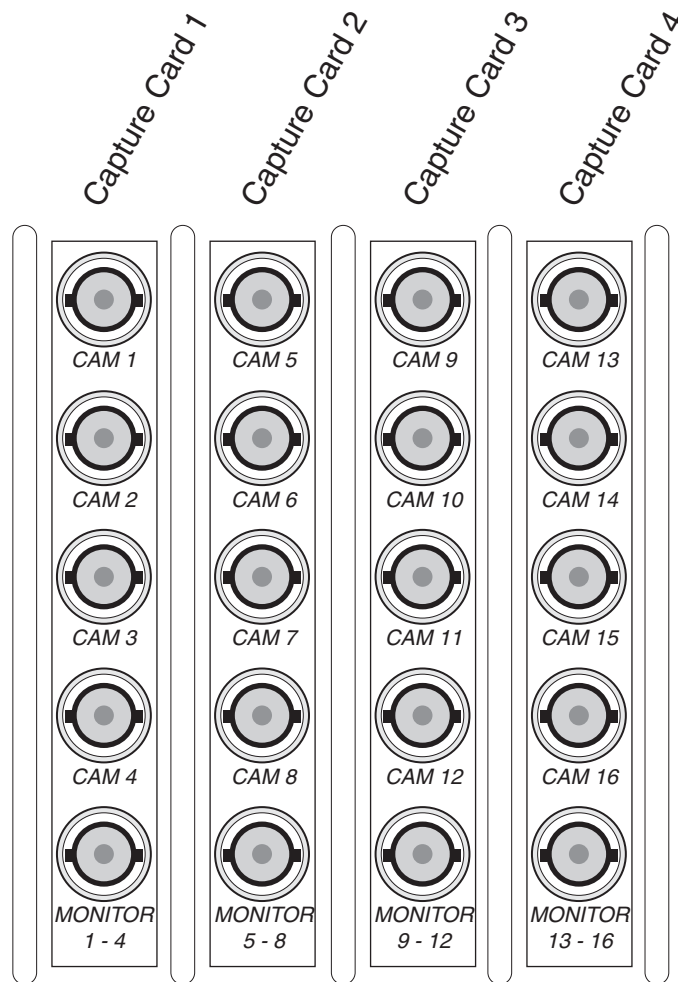
RJ11 jack. Used to connect to a phone line or switcher with throughput. The 56K modem requires a standard analog phone line.

3 CONNECTING SYSTEM COMPONENTS

Pick a level surface to place the Digital Video Recorder (DVR). The system should have adequate ventilation and should be clear of moisture and dirt. The following sections detail setup of specific items.

3.1 VIDEO INPUT: CAMERAS

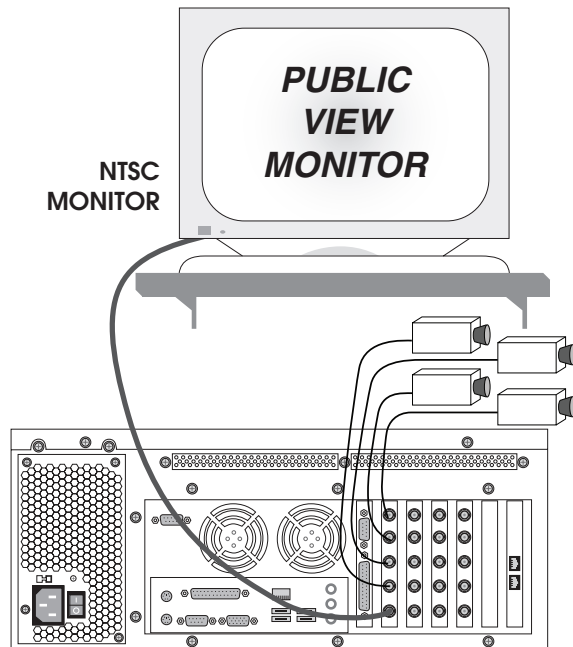
Locate and attach the coax connections for each camera to the camera inputs on the video Capture Cards at the rear of the DVR. Start with the upper left connector and work across. The cameras will automatically be titled Camera 1 through Camera 16 in the software. The software captures images working from top to bottom, left card to right card. When you have fewer cameras than ports available, you may use any combination of available ports to connect your cameras.



Camera Inputs and Monitor Outputs, 16 Cameras Shown

3.2 VIDEO OUTPUT: PUBLIC VIEW MONITORS (NTSC)

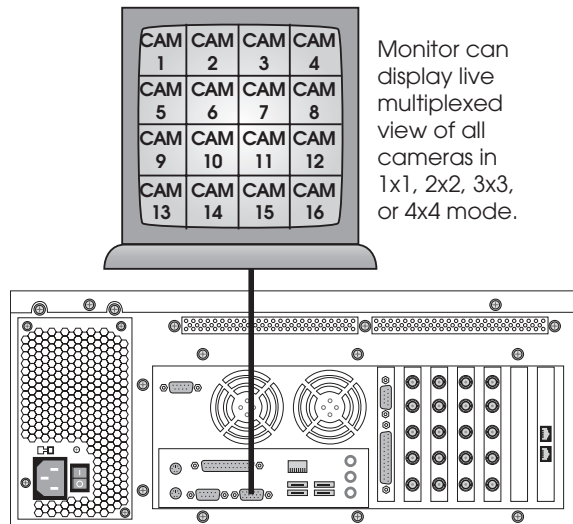
Analog monitors are typically used as public view monitors (PVM). Often only one or two cameras are shown on a PVM. The bottom BNC connector on each capture card is an analog (composite) video output. Each output cycles between camera sources coming into that capture card. Software settings allow exclusion of inputs and adjustment of dwell time. Because only a few cameras are usually needed for PVM, those cameras should be placed on the same capture card so that only one monitor is needed.



Analog (Composite) Monitor
for Public View Monitor Applications

3.3 VIDEO OUTPUT: SECURITY MONITOR (SVGA)

Image Vault will interface with a standard PC SVGA (800x600 or 1024x768) monitor. The SVGA monitor output is generally used as the security monitor. It may display 1, 4, 9 or all 16 camera inputs in the live monitor mode. When a mouse is connected to the DVR, you may also use the VGA monitor to review recorded images, setup software, or check status. Selected cameras may be hidden from the VGA output by adjusting software setup.



VGA Monitor Output
For Security Monitor Applications

3.4 PTZ CONTROL / ALARM OUTPUT

For space considerations, the alarm output and PTZ control output share the same female DB9 port on the rear panel. For PTZ control, use Pins 2 and 3. Do not connect Pins 4 and 5. The software configured alarm output relay actuates a normally open contact between Pins 6 and 7. The contact closes momentarily (for one half second) when the alarm feature is activated (where the electrical contact output notification option is enabled). The watchdog timer feature produces a contact closure output at Pins 8 and 9. The normally closed watchdog timer goes open in the event of power loss or if the recorder stops recording. Both the watchdog and alarm output contacts are rated for a maximum of 1 ampere at 24 VDC. A cable accessory (IV-PTZAOC) included with your DVR is a break-out cable which may easily be connected to your alarm system and/or PTZ control cables.



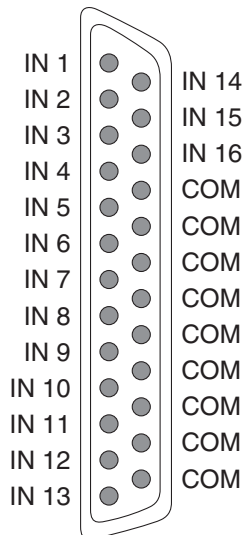
Alarm & PTZ Wiring Diagram

Pin#	Wire Color	Function
2	Black	PTZ -
3	Red	PTZ +
6	Green	Alarm Com
7	Brown	Alarm N/O
8	Orange	Watchdog Com
9	Yellow	Watchdog N/C

IV-PTZAOC Wire Chart

3.5 EXTERNAL INPUTS

Your DVR is equipped to handle up to 16 external dry contact inputs connected to the DB25 external input port. The external input allows connection of dry contacts from devices such as remote motion detectors, door switches, etc. Pins 17 through 25 are internally connected to a common ground. Please refer to software documentation for instructions to configure inputs for “normally open” and “normally closed” signaling devices. No break-out cable is provided for your External Inputs.

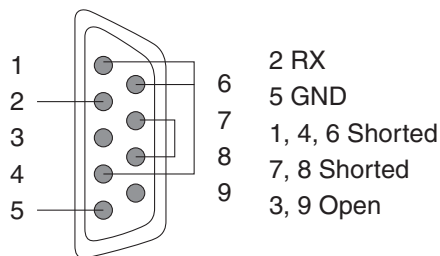


External Input Wiring Diagram

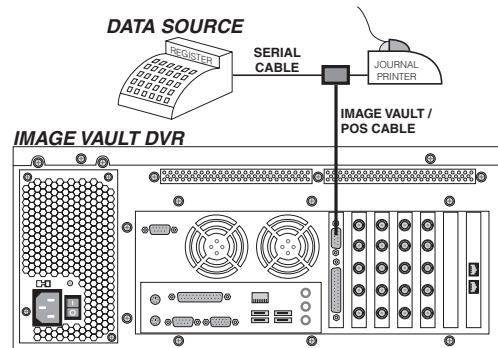
3.6 M.A.D.E. INTERFACE

If you are utilizing the Multi-Application Data Exchange (M.A.D.E.) Interface feature, ensure that you have obtained the correct interface connector from Image Vault for the approved device. Note: You can harm the DVR by connecting a POS or ATM device that is not approved by Image Vault. If you manufacture your own cable, tap the POS device as follows: data from POS to journal printer tap goes to Pin 2 at the Image Vault POS input and the ground tap goes to Pin 5 at the Image Vault POS input. At the Image Vault, short Pins 7 and 8 together, then short pins 1, 4 and 6 together. Leave pins 3 and 9 open. Wiring from POS source to journal printer depends on the POS device manufacturer.

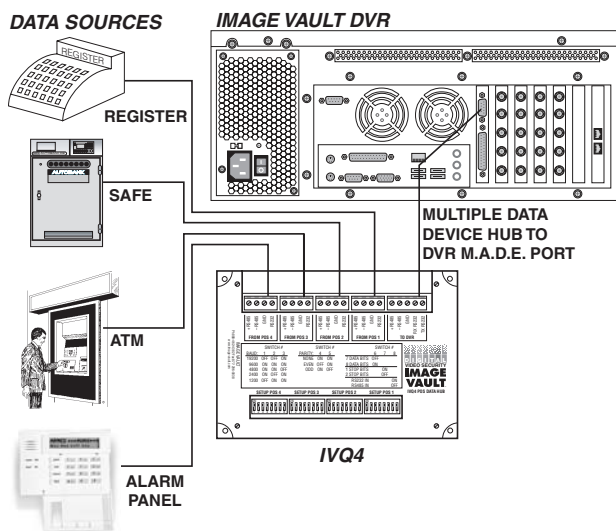
POS SERIAL INPUT



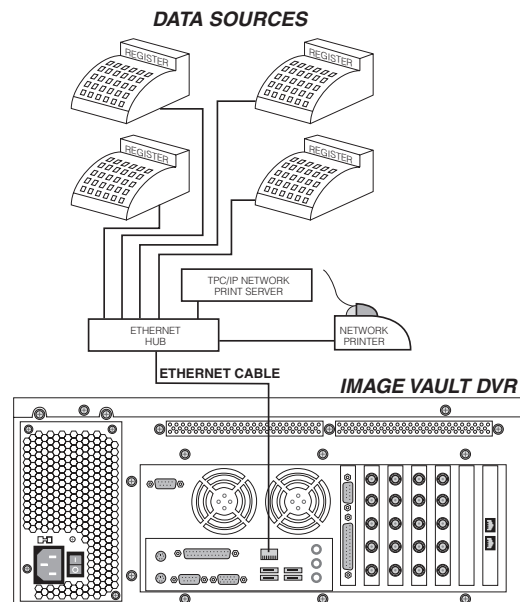
Serial Connector Wiring Diagram



Typical M.A.D.E. Interface
Single Data Source Application



M.A.D.E. Interface Application
Using IVQ4 (optional accessory) Quad Hub
With Multiple Unique Data Sources

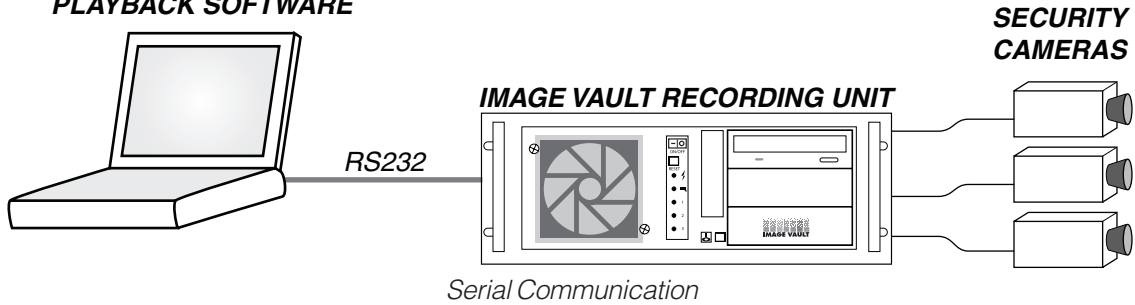


M.A.D.E. Interface
Multi-Source to Network Printer Application

3.7 PC-DVR COMMUNICATION: RS232

Connect this cable to the RS232 input on the DVR . Leave this cable with the DVR for on-site access.

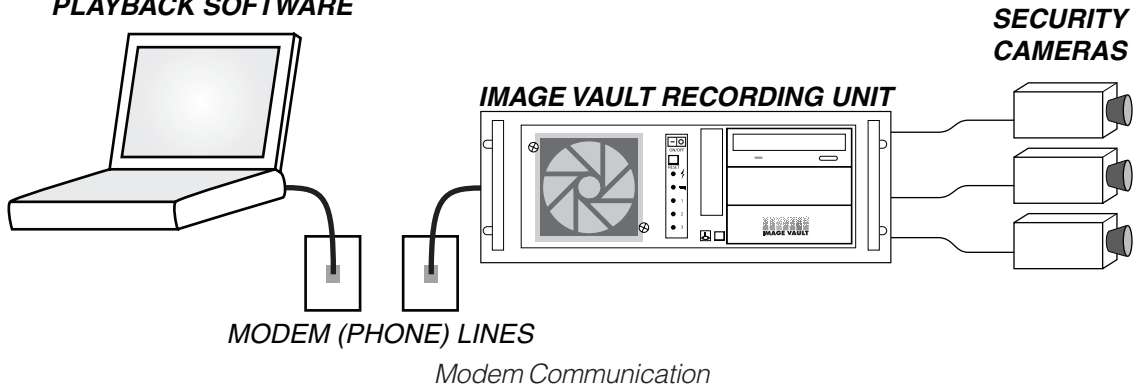
**YOUR PC WITH IMAGE VAULT
PLAYBACK SOFTWARE**



3.8 PC-DVR COMMUNICATION: MODEM

If you are using the remote dial-up capabilities of the system, you will need to hook the phone cable from the modem to your phone line. If you do not have a phone line dedicated for this and are using a regular installed voice line, some type of line switching device should be used to distinguish between modem and voice calls. On the back of the DVR, locate the RJ11 phone jack and insert one end into your phone jack or switching device.

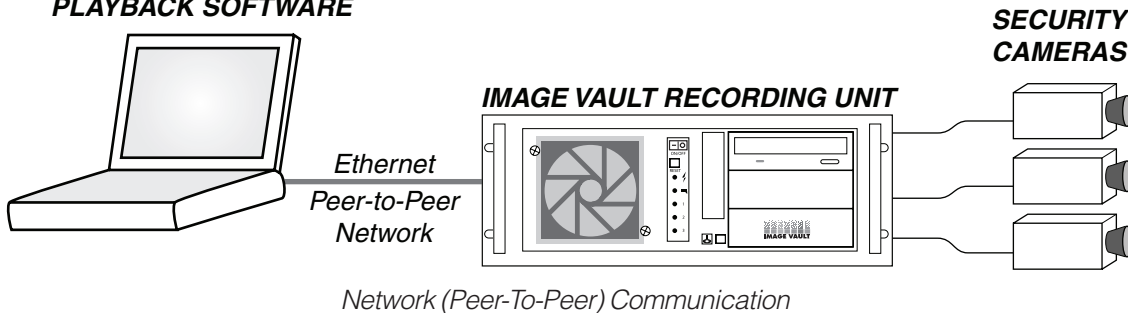
**YOUR PC WITH IMAGE VAULT
PLAYBACK SOFTWARE**



3.9 PC-DVR COMMUNICATION: PEER-TO-PEER NETWORK

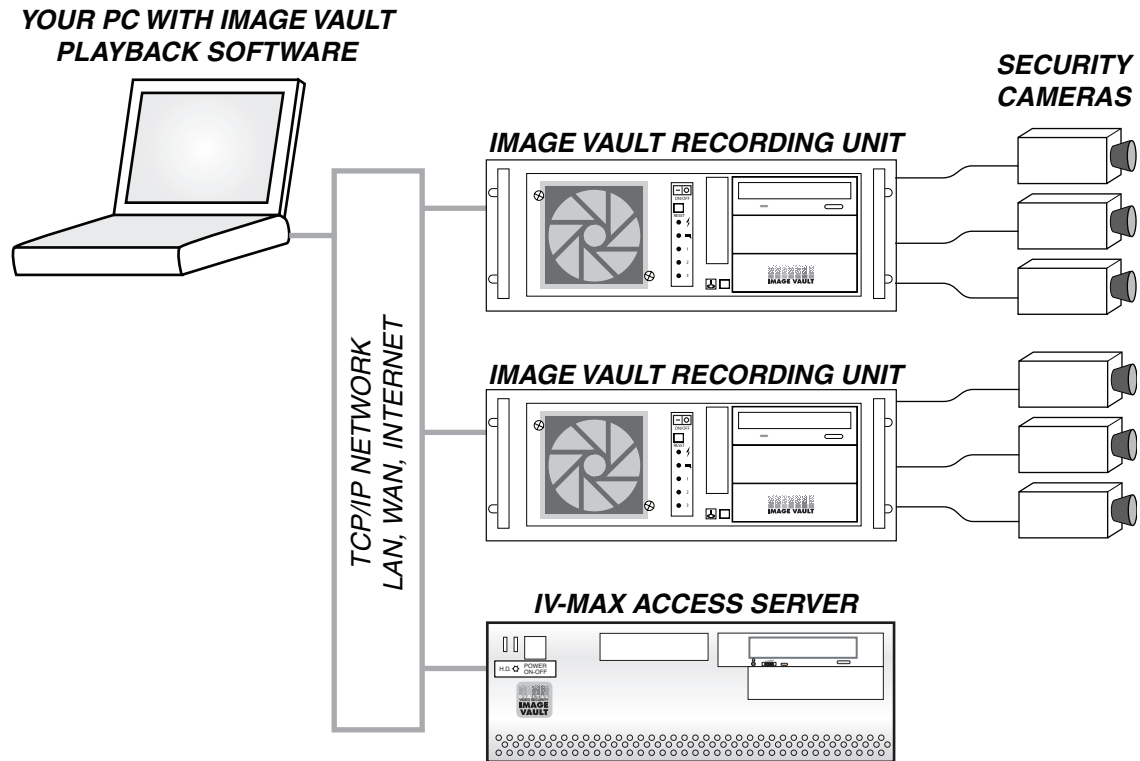
Connect the network crossover cable supplied with your DVR to the RJ45 input on the DVR. Connect the other end directly to the remote PC. If the DVR is not being setup on a network, you may connect this cable to the DVR and leave the other end available to the user for a later connection.

**YOUR PC WITH IMAGE VAULT
PLAYBACK SOFTWARE**



3.10 NETWORK (STANDARD ETHERNET)

Connect the DVR to a conventional Ethernet network using standard, commercially available CAT-5 network cables. Do not use the network crossover cable supplied with your DVR when connecting your DVR to a LAN hub. Contact the Network Administrator before connecting the DVR to any existing network. Some software setup on the DVR is required before it may be connected to an existing network. If more than one DVR is being installed on the same network, you might also have an IV-MAX Access Server. If so, connect it to the network in the same way you connect your DVRs. If you want to offer internet access via your network, you must open your Network Firewall Port 32001. The default DVR IP address is 192.168.0.1 and the default host name is based on the serial number. For additional software setup information refer to the software help system and your software manual.



Network (LAN) Communication
Shown with Optional IV-MAX Access Server

3.11 CABLE MODEM (DSL)

It is becoming increasingly popular to use DSL to connect the DVR to the internet or a virtual private network (VPN). The following procedure assumes the DSL cable modem connects a LAN to the internet through a router. Use this procedure even if Image Vault is the only network device used on the “inside” side of the router. Refer to Image Vault software instructions for additional information about configuring Image Vault settings.

1. Obtain the following information from your Internet Service Provider (ISP) before connecting Image Vault to a DSL/Cable Modem:
 - a. Static IP Address
 - b. Subnet Mask
 - c. Gateway
 - d. DNS Settings
2. Obtain the following equipment:
 - a. Router
 - b. Ethernet patch cable
3. Log onto the router from a computer using instructions provided with your router.
4. In the “WAN” section of the router software setup, input the information from your ISP (Step 1).
5. In the “LAN” section of the router software setup, make note of the router’s IP address and subnet mask. This is the IP address you will use to make remote connections from your PC using IVPlay playback software.
6. Make note of the range of IP addresses from the router’s DHCP routing table.
7. Select an IP address from the router’s DHCP routing table to use for Image Vault. This address must not be used by any other networked device.
8. Go to the “Port Forwarding” section of the router software setup and forward port “32001” to the IP address chosen for Image Vault.
9. Save the router settings and log off.
10. Log onto Image Vault using at the Service level.
11. From the Status menu select Edit Params, then select sub-menu item TCP/IP.
12. On the TCP/IP Settings dialog box insert the IP address selected in Step 7. Enter the Gateway and Subnet used to connect to the router. Save your settings.

When connecting remotely to Image Vault from “inside” your network (LAN) use the internal IP address you assigned to Image Vault (Step 12). When you connect remotely from “outside” the network (Internet or VPN) use the router IP address (Step 1). If you are confident that you have performed these steps and remain unable to make a remote connection through the router, contact Image Vault Technical Service at 1-888-462-4382. Be sure to have the information required in Step 1.

3.12 CD-R Disk

Insert the blank CD-R disk into the CD-R drive on the front of the unit. Image Vault will perform the necessary disk processing when it write video or setup data to the disk.

3.13 POWER

Plug the power cord to the back of the DVR and the other end into the UPS (uninterruptible power supply) battery backup electrical receptacle. The DVR must be the only item using a battery backup receptical on the UPS. Plug the UPS into the main ac outlet. The UPS is required to prevent damage to the DVR from power surges or dips. This prevents data errors and to ensures you have the ability to continue capturing images during a temporary power loss. **CAUTION: DO NOT TURN OFF OR REBOOT DURING BOOT-UP PROCESS.**

3.14 POSITIONING

Turn the DVR so that all cables and connections are to the rear of the unit and the front with the “Robbery Button” is clearly viewable and accessible.

CONGRATULATIONS!

You are now ready to power up the system and check operation.

4 HOW TO CHECK IF THE SYSTEM IS WORKING PROPERLY

Turn on the power supply switch (next to the power cable input). Press the power button on the rear of the DVR to start the recorder.

Within moments of power-up, you should hear a series of beeps. The number of beeps will equal the number of active cameras detected. If a video monitor is connected to the monitor output(s), you should begin seeing video from the cameras, switching approximately every four seconds. If a VGA monitor is connected you will be able to watch the system startup.

Wait a minimum of five (5) minutes before attempting to connect to the system by modem or other means. The DVR must begin capturing and storing images in order to properly begin configuring cameras.

At this point the DVR is operating properly and recording images. The system is operating with default settings that are pre-programmed in the unit. Refer to the Operations Manual for instructions on how to connect to the unit via modem or network in order to configure and monitor the unit.

5 TROUBLESHOOTING INSTALLATION

Verify connections and that all components appropriate have power. If everything appears connected correctly per Section 2, contact your local Image Vault distributor or call Image Vault directly at 1-888-IMAGEVAULT.

6 PLAYBACK SOFTWARE INSTALLATION

Refer to the User Guide for complete installation and usage instructions for playback software on your PC. Your DVR has its own version of playback software already installed for local setup, viewing and monitoring.

7 HARDWARE SPECIFICATIONS

Dimensions (typical):	15.5 in (d) x 15.5 in (w) x 6 in (h)
Power:	115/230 Vac; 6/3 Amp; 50/60 Hz
Operating Temperature:	32 to 95°F (0 to 35°C)

8 POWER REQUIREMENTS

A dedicated NEMA 15 amp 115VAC grounded outlet must be provided within 6 feet (2 m) of the DVR. The DVR may share its AC circuit with other point of sale electronic equipment, but must not be on the same circuit as rotating machinery such as a cooler or other refrigeration equipment. Do not connect other loads to the DVR's UPS (see warnings on page 2).

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