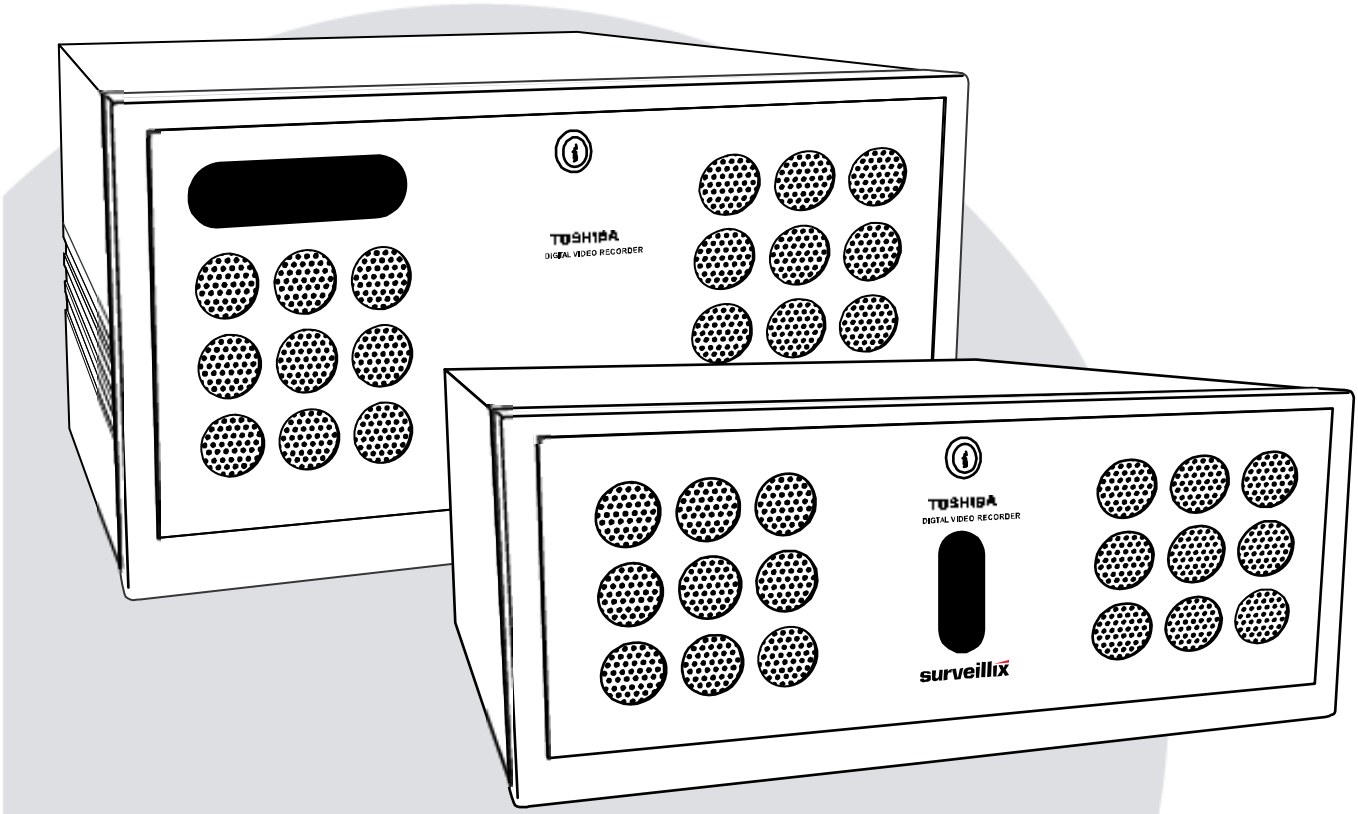
surveillix

NVR
Network Video Recorder

Hardware Manual

model no. NVR8-X
NVR16-X



Please carefully read these instructions before using this product.
Save this manual for future use.

TOSHIBA

Surveillix™ NVR
Hardware Manual

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Hardware Manual

Manual Edition 27891AB –DECEMBER 2006

Printed in USA

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	CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

LIMITED WARRANTY
NETWORK VIDEO RECORDER

The Imaging Systems Division of Toshiba America Information Systems, Inc. ("ISD") makes the following limited warranties. These limited warranties extend to the Original End-User ("You[r]").

Limited Two (2) Year Warranty of Labor and Parts

The Imaging Systems Division of Toshiba America Information Systems warrants this product and parts against defects in material or workmanship for a period of two years from the date of original retail purchase by the end-user. During this period, ISD will repair or replace a defective product or part with a new or refurbished item. The user must deliver the entire product to the Surveillix DVR Repair Facility. The user is responsible for all transportation and insurance charges for the product to the DVR Repair Facility. ISD reserves the right to substitute Factory Refurbished Parts and / or Factory Refurbished Product in place of those in need of repair.

Step-by-step Procedures - How to Obtain Warranty Service
[1] Verify operation of the unit by checking the instruction manual and web site for the latest updates at

www.toshiba.com/taisisd

[2] If there is a defect in material or workmanship, contact the Surveillix DVR Support Center at (877) 855-1349 [877-1-FIX] to speak to a technical support representative and schedule service.

[3] Arrange for delivery of the product to the Surveillix DVR Repair Facility. Products must be insured and securely packed, preferably in the original shipping carton. A letter explaining the defect and a copy of the bill of sale or other proof of purchase must be enclosed with a complete return street address and daytime telephone number. The Tracking Number should also be indicated on your documents. Charges for transportation and insurance must be prepaid by the end-user.

Critical Use Disclaimer
The product is not designed for any “critical applications.” “Critical applications” means life support systems, exhaust or smoke extraction applications, medical applications, commercial aviation, mass transit applications, military applications, homeland security applications, nuclear facilities or systems or any other applications where product failure could lead to injury to persons or loss of life or catastrophic property damage. Accordingly, Toshiba disclaims any and all liability arising out of the use of the product in any critical applications.

Your Responsibilities
The above warranty is subject to the following conditions:
[1] You must retain the bill of sale or provide other proof of purchase.
[2] You must schedule service within thirty days after you discover a defective product or part.
[3] All warranty servicing of this product must be made by the Surveillix DVR Repair Facility.
[4] The warranty extends to defects in material or workmanship as limited above, and not to any products or parts that have been lost or discarded by user. The warranty does not cover damage caused by misuse, accident, improper installation, improper maintenance, or use in violation of instructions furnished by ISD. The warranty does not extend to units which have been altered or modified without authorization of ISD, or to damage to products or parts thereof which have had the serial number removed, altered defaced or rendered illegible.

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TOSHIBA AMERICA INFORMATION SYSTEMS, INC.
Imaging Systems Division

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TOSHIBA

Rack Mount Instructions

A) Elevated Operating Ambient – If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

B) Reduced Air Flow – Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C) Mechanical Loading – Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D) Circuit Overloading – Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

E) Reliable Earthing – Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

UL Notice

Underwriters Laboratories Inc. has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested for fire, shock and casualty hazards as outlined in UL's Standard for Safety UL 60950-1. UL Certification does not cover the performance or reliability of the security or signaling aspects if this product. UL MAKES NO REPRESENTATIONS, WARRANTIES OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING RELATED FUNCTIONS OF THIS PRODUCT.

CE Notice

This product is in conformity with the following European Directives:

ELECTROMAGNETIC COMPATIBILITY DIRECTIVE, 89/336/EEC
(as amended by 92/31/EECand by Article 5 of 93/68/EEC)

per the provisions of:

EN 55022:1994	EN 55024:1998	EN 61000-4-4:1995
EN 61000-3-2:1995	CISPR 24:1997	EN 61000-4-5:1995
EN 61000-3-3:1995	EN 61000-4-2:1995	EN 61000-4-6:1995
CISPR 22:1997	EN 61000-4-3:2002	EN 61000-4-11:1994

LOW VOLTAGE DIRECTIVE, 73/23/EEC
(as amended by Article 13 of 93/68/EEC)

per the provisions of:

EN 60950-1: 2001

Safety Precautions

WARNING: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

IMPORTANT SAFETY INSTRUCTIONS

1. Read Owner's Manual

   After unpacking this product, read the owner's manual carefully, and follow all the operating and other instructions.

2. Power Sources

   This product should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supply to your business or home, consult your product dealer or local power company.

3. Ventilation

   Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

4. Heat

   The product should be situated away from heat sources such as radiators. Heat registers, stoves, or other products that produce heat.

5. Water and Moisture

   Do not use this product near water. Do not exceed the humidity specifications for the product as detailed in the Appendix section in this manual.

6. Cleaning

   Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

7. Power Cord Protection

   Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

8. Overloading

   Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electrical shock.

9. Lightning

   For added protection for this product during storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power line surges.

10. Object and Liquid Entry Points

    Never insert foreign objects into the NVR unit, other than the media types approved by Toshiba, as they may touch dangerous voltage points or short-out parts that could result in a fire or electrical shock. Never spill liquid of any kind on the product.

11. Accessories

    Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious personal injury and serious damage to the product.

IMPORTANT SAFETY INSTRUCTIONS

12. Disc Tray

Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.

13. Burden

Do not place a heavy object on or step on the product. The object may fall, causing serious personal injury and serious damage to the product.

14. Disc

Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

15. Damage Requiring Service

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions.

- When the power–supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or damaged in any way.
- When the product exhibits a distinct change in performance – this indicates a need for service.

16. Servicing

Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified personnel.

17. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electrical shock, or other hazards.

18. Safety Check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

Notes on Handling

- When shipping the NVR unit, the original shipping carton packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the NVR unit. Do not leave rubber or plastic products in contact with the NVR unit for long periods of time. They will leave marks on the finish.
- The top and rear panels of the NVR unit may become warm after long periods of use. This is not a malfunction.

Notes on Locating

- Place the NVR unit on a level surface. Do not use it on a shaky or unstable surface such as a wobbling table or inclined stand.
- When you place this NVR unit next to a TV, radio, or VCR, the playback picture may become poor and the sound may be distorted. In this case, place the NVR unit away from the TV, radio, or VCR.

Notes on Cleaning

Use a soft dry cloth for cleaning.

- For stubborn dirt, soak the cloth in a weak detergent solution, wring well and wipe. Use a dry cloth to wipe it dry. Do not use any type of solvent, such as thinner and benzene, as they may damage the surface of the NVR unit.
- If you use a chemical saturated cloth to clean the unit, follow that product's instructions.

Notes on Maintenance

This NVR unit is designed to last for long periods of time. To keep your NVR unit always operational we recommend regular inspection maintenance (cleaning parts or replacement). For details contact your nearest dealer.

Notes on Moisture Condensation

Moisture condensation damages the NVR unit. Please read the following carefully.

Moisture condensation occurs during the following cases.

- When you bring the NVR unit directly from a cold place to a warm place.
- When you use the NVR unit in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In the summer, when you use the NVR unit in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the NVR unit in a humid place.

Do not use the NVR unit when moisture condensation may occur.

If you use the NVR unit in such a situation, it may damage discs and internal parts. Remove any CD discs, connect the power cord of the NVR unit to the wall outlet, turn on the NVR unit, and leave it for two to three hours. After two to three hours, the NVR unit will have warmed up and evaporated any moisture. Keep the NVR unit connected to the wall and moisture will seldom occur.

Table of Contents

PREFACE **1**
ABOUT THIS GUIDE 1
TECHNICIAN NOTES 1
INTRODUCTION **2**
PRODUCT DESCRIPTION 2
FEATURES 2
CONTROLS AND CONNECTIONS **3**
BASIC FEATURES 4
FRONT PANEL CONTROLS AND LEDS 5
NVR 4U Chassis 5
NVR 5U Chassis 6
REAR PANEL CONNECTORS 7
NVR 4U Chassis 7
NVR 5U Chassis 8
GETTING STARTED **9**
IDENTIFYING INCLUDED COMPONENTS 10
KEYBOARD SETUP 11
MOUSE SETUP 11
MONITOR SETUP 12
POWER SETUP 12
CONNECTING A VIDEO SOURCE 12
HARD DRIVE ARRAY 13
Swapping a Hard Drive 13
OPTIONAL COMPONENTS 14
APPENDIX A **16**
NVR SPECIFICATIONS 17

PREFACE

ABOUT THIS GUIDE

This manual is a setup and maintenance guide that can be used for reference when setting up the NVR unit and for troubleshooting when a problem occurs. Only authorized personnel should attempt to repair this unit.

Toshiba reserves the right to make changes to the NVR units represented by this manual without notice.

The following text mark special messages throughout this guide:

NOTE: Text set off in this manner indicates topics of interests that can help the user understand the product better.

TIP: Text set off in this manner indicates topics and points of interests that can be helpful when using or settings up the NVR unit.

TECHNICIAN NOTES

WARNING: Only authorized technicians trained by Toshiba should attempt to repair this NVR unit. All troubleshooting and repair procedures that may be shown are for reference and minor repair only. Because of the complexity of the individual components and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard. And any indications of component replacement or printed wiring board modifications may void any warranty.

WARNING: To reduce the risk of electrical shock or damage to the equipment:

- Do not disable the power grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Disconnect the power from the computer by unplugging the power cord either from the electrical outlet or the computer.

CAUTION: To properly ventilate your system, you must provide at least 3 inches (7.6 cm) of clearance at the front and back of the NVR unit.

INTRODUCTION

PRODUCT DESCRIPTION

A Surveillix NVR is simply a server that performs as a High Definition Digital Recorder. By utilizing the many features of a computer, including processing power, storage capacity, graphics compression, network cameras and security features, the NVR unit is more powerful than the analog recorders of the past with its ability to utilize digital network cameras.

The Surveillix NVR server software comes pre-configured for fast and seamless integration within your existing IT infrastructure. Designed around Microsoft® Windows® XP Embedded, the server software offers unparalleled stability, security, and ease of use. Accordingly, your security investment has never been easier to maintain. Multiple users may simultaneously connect through any network connection for instantaneous live viewing, digital search, and off site video storage. Users can also connect remotely through DSL, Cable Modems, ISDN, or 56K dial-up. This powerful software enables users to establish recording schedules, create motion detection zones, use PTZ controls, and configure alarm inputs and outputs for each of the system's cameras. With the latest advancements in the NVR Server Software, searching and indexing your video archive has never been easier. Video can now be found, viewed, and exported in a number of file formats with just a few clicks.

The Surveillix NVR is high performance security product ready to meet today's security demands.

FEATURES

Toshiba's Surveillix NVRs include the following features:

- Field Upgradeable, Replaceable HDD Array
- Large Storage Capacities (Over 2 TB)
- Internal RAID 5 (optional)
- Removable HDD bays for quick and easy maintenance
- PAN / TILT / ZOOM Controls on supported IP Cameras
- Simultaneous Search, Playback and Backup
- Up to 16 IP Cameras
- Multiple Levels of Security Access
- Output the video to an NTSC/PAL display
- Advanced POS and ATM support
- Continuous, Motion Detection and Alarm Recording Modes
- Video Signal Loss Detection
- Records at the Encoding Resolution of the IP Camera
- Digital Signature Support for Tamper Proof Exporting
- Up to 8 TB External RAID 5 Available
- Output the Video to a NTSC/PAL Display

CONTROLS AND CONNECTIONS

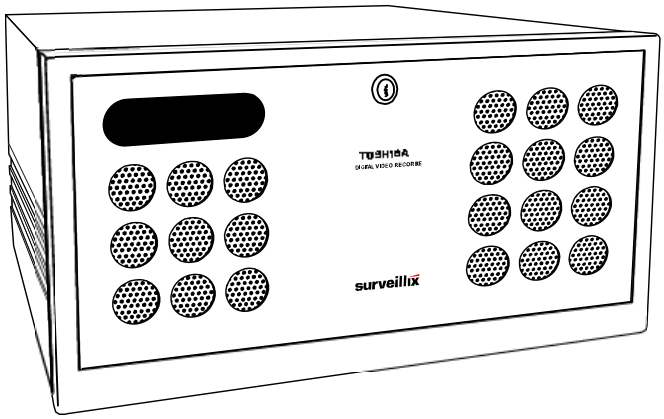
This chapter includes the following information:

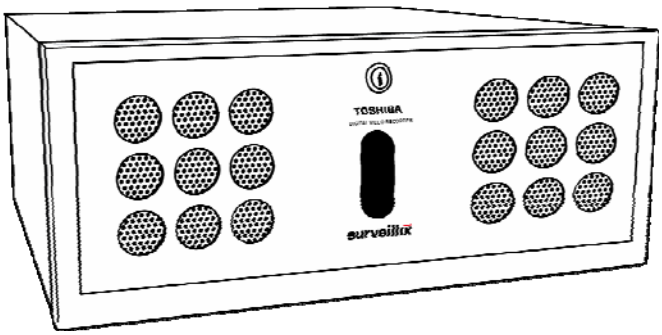
- Input/Output connector locations
- Front Panel Controls and LEDs
- Rear Panel Connectors

BASIC FEATURES

Surveillix™ state-of-the-art High Definition Digital Recorders are housed in a high performance and versatile 5U or 4U Aluminum Rack-Mount case allowing easy storage of multiple NVRs for enterprise applications. Every Surveillix NVR Unit comes equipped with the latest technology:

- Intel® Dual Core 3.4 Ghz CPU
- 10/100/1000 Gigabit Ethernet
- 1GB of System Memory
- 128 MB Video Card
- DVD±RW Recorder
- Full Duplex High-Fi Sound Functionality

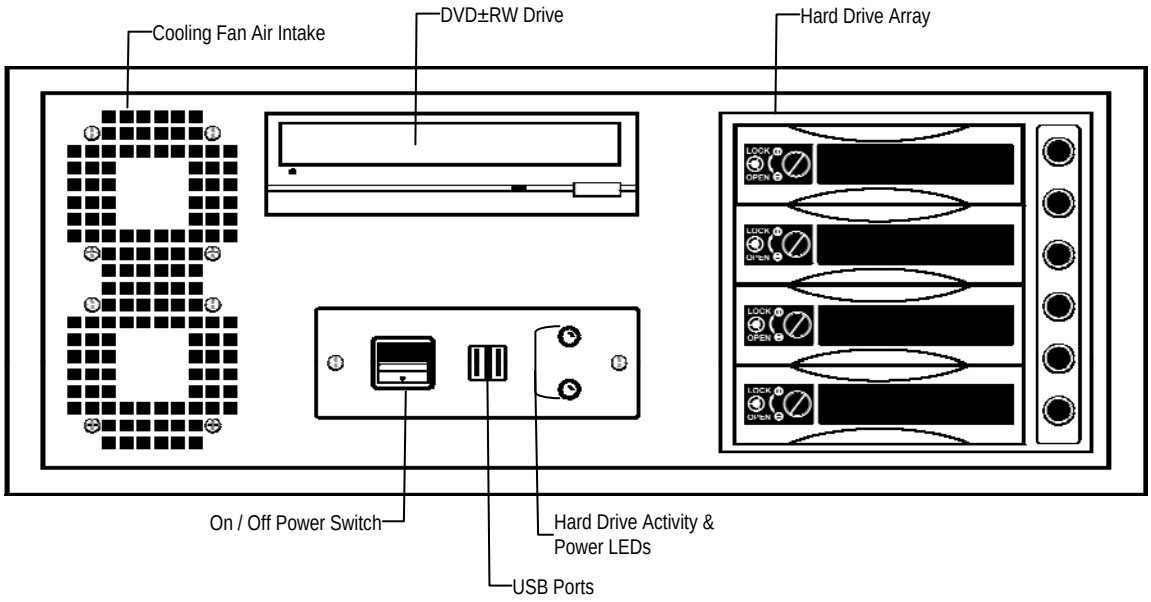




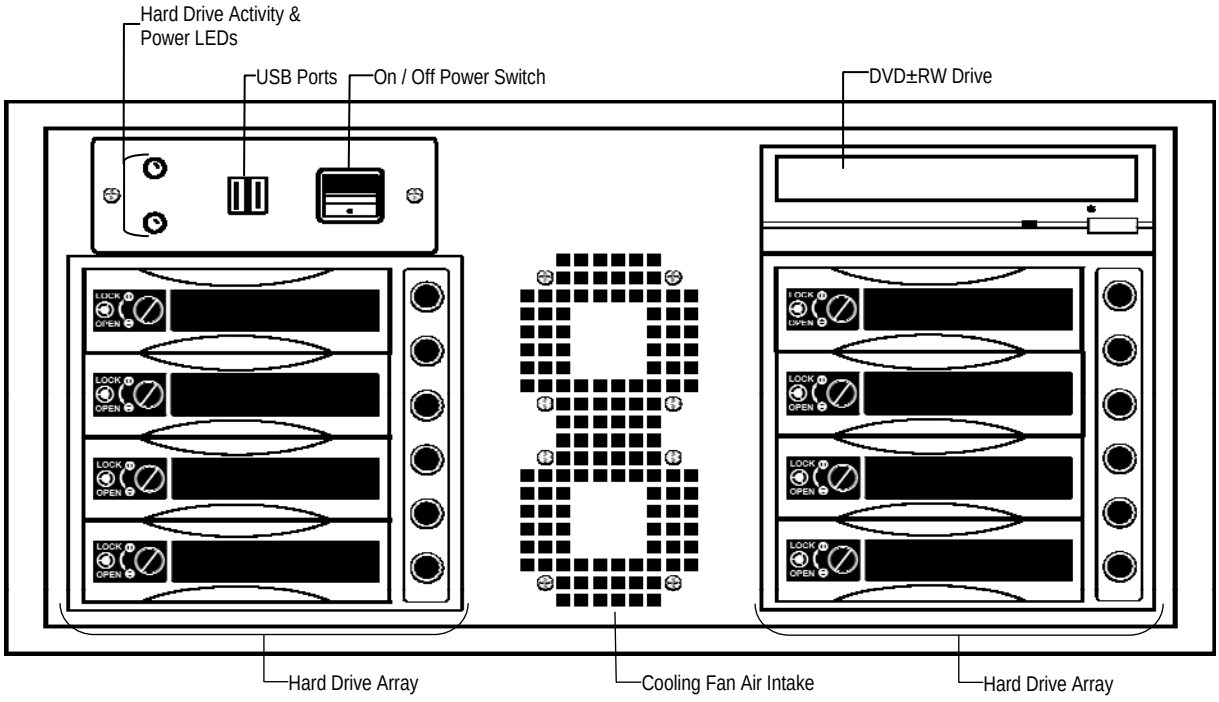
FRONT PANEL CONTROLS AND LEDS

The front panel of the NVR unit contains the devices that will be commonly used for data removal, retrieval, and backup replacement. The most common components and buttons are shown below.

NVR 4U Chassis



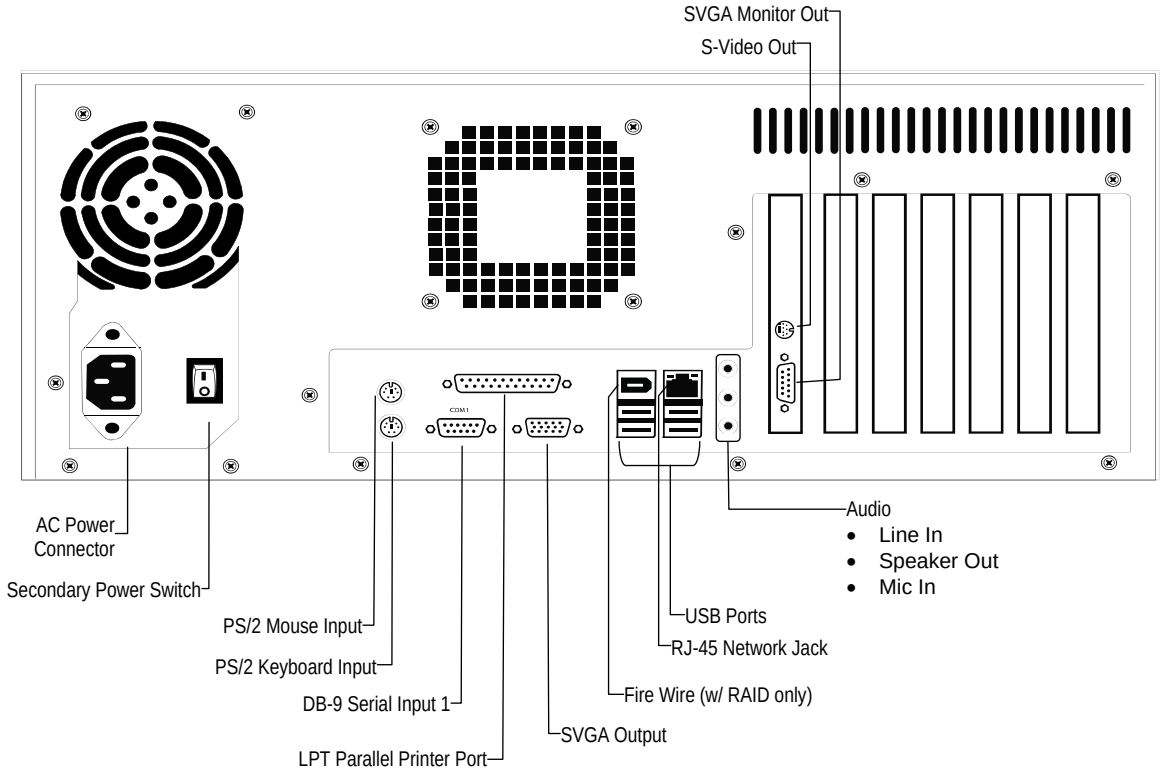
NVR 5U Chassis



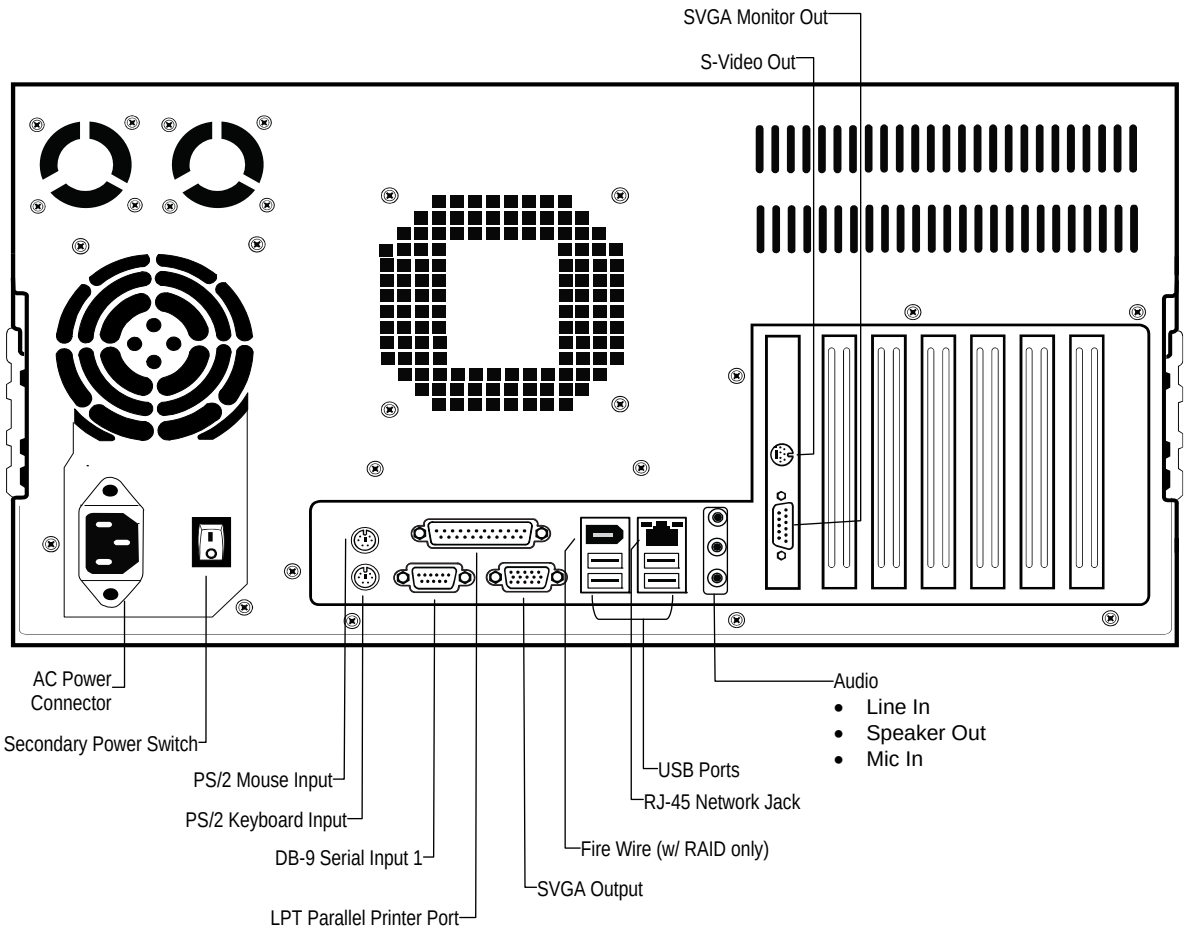
REAR PANEL CONNECTORS

The rear panel of the NVR unit contains virtually all of the connectors you will be using. Below is a diagram that outlines the location and description of each connector:

NVR 4U Chassis



NVR 5U Chassis



GETTING STARTED

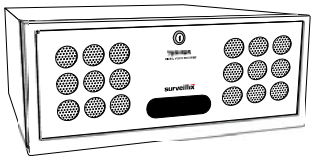
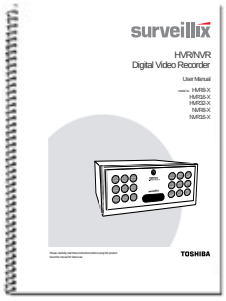
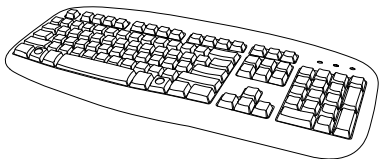
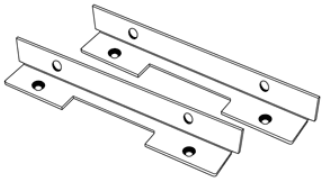
This chapter includes the following information:

- Included Components
- Setting up your NVR Hardware
- Optional Components

IDENTIFYING INCLUDED COMPONENTS

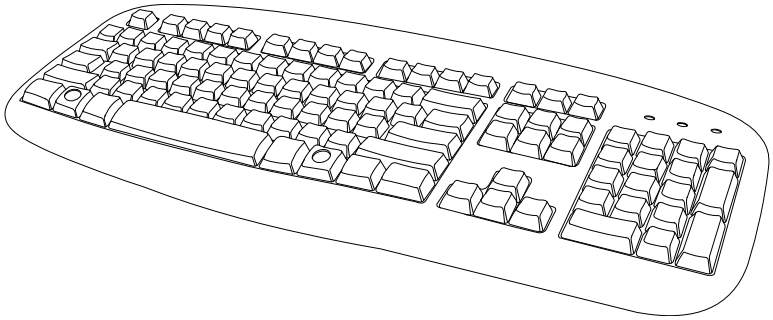
Surveillix™ NVRs come with a mouse, keyboard and selected software and cables. Identify the following components to make sure everything has been properly included with your new NVR unit. If any of the following items are missing, contact your dealer to arrange a replacement.

Included Components:

 NVR Unit	Mouse	NVR Key
 Manual	Repair CD	Software Installation CD
 Keyboard	 Rackmount Attachments with Screws	Power Cable

KEYBOARD SETUP

To attach the keyboard to the NVR unit, plug the end of the Keyboard into the keyboard PS/2 Port located on the back of the machine. The keyboard PS/2 Port can be identified by the purple color. Refer to the Rear Panel Connectors diagram for more information.



MOUSE SETUP

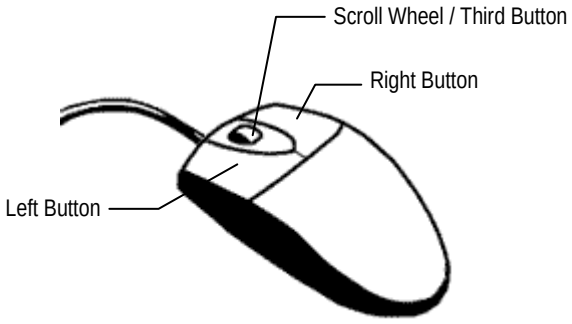
To attach the mouse to the NVR unit, plug the end of the mouse into the mouse PS/2 Port located on the back of the machine. The mouse PS/2 Port can be identified by the green color. Refer to the Rear Panel Connectors diagram for more information.

The mouse uses a cursor. Cursors come in many different shapes but are most commonly shaped like an arrow.

Your mouse has two buttons: a left button and a right button. Quickly pressing and releasing one of these buttons is called clicking. Sometimes you will need to double-click – or click the same button twice quickly.

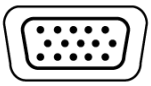
In this manual, click means to position your mouse cursor on an icon and to single click the left button. When a right click is required, this is stated clearly. Double-click also refers to the left button.

The scroll wheel in between the two buttons is added to provide easier scrolling capability. By simply moving the wheel with your index finger, you can quickly move through multiple pages, line, or windows. The wheel may also function as a third button allowing you to quickly click or double-click an icon or a selected item.



MONITOR SETUP

There are up to 2 available connections for monitors which can be used individually or in tandem.



SVGA Output To VGA Monitor.

S-Video Output To TV/VCR.

Attach the Monitor or Monitors to the Rear of the NVR unit using the cable supplied by the Monitor Manufacturer. Refer to your monitor manual for detailed information on how to setup and use it.

NOTE: The monitor must be capable of having a screen resolution of 1024 x 768 and display colors of at least 32 Bit

POWER SETUP

Attach the AC power cable to the rear of the NVR Unit. See Rear Panel Connectors for more information.

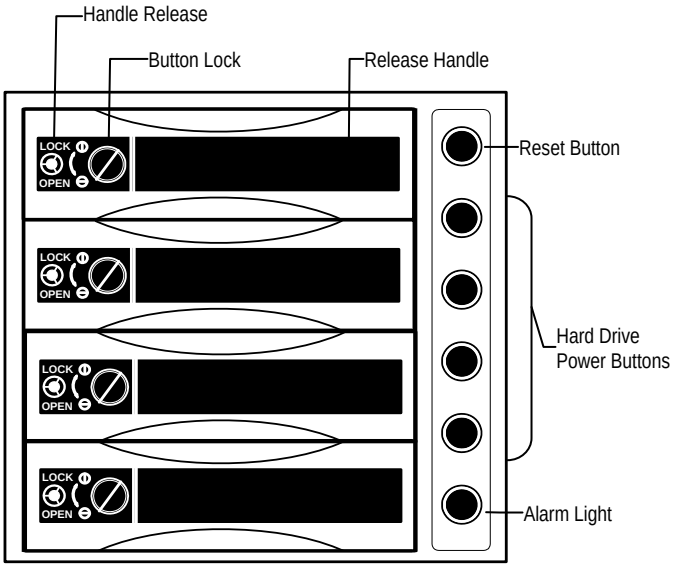
WARNING: To reduce the risk of electrical shock or damage to the equipment:

- Do not disable the power grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Disconnect the power from the computer by unplugging the power cord either from the electrical outlet or the computer.

CONNECTING A VIDEO SOURCE

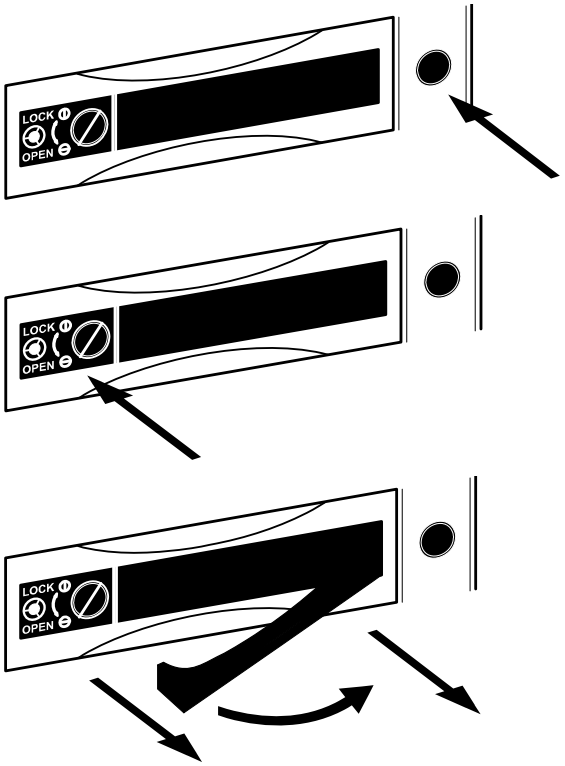
The NVR, or Network Video Recorder has no visible video inputs because the NVR unit connects and records only using IP / Network video cameras. To connect video sources to the NVR unit, simply plug in a network cable to the NVR unit.

HARD DRIVE ARRAY



NOTE: The Alarm Light will turn on if the Hard Drives reach a temperature above safe operating conditions

Swapping a Hard Drive



1. Press the hard drive power button to turn off power to the hard drive you wish to remove.

2. Turn the button lock to the open position and push the handle release button.

3. Pull the lever outward while removing the hard drive. Reverse steps to install.

OPTIONAL COMPONENTS

To fully utilize the NVR unit's potential, several optional Surveillix components are listed below. Contact your dealer for more information.

- Extra Video Storage Hard Drive – Each NVR unit has a virtually unlimited storage potential. By adding additional Video Data Hard Drives you can extend the amount of Video Data your NVR system can store before overwriting older data.
- NP-FM56USB 56K External Modem – This 56K modem allows you to connect the NVR to a standard phone line. Using this modem, you can either connect the unit to the Internet or allow a direct NVR to computer connection.
- PW-UPS UPS Power Backup – UPS Power Backups allow your NVR unit to remain fully functional even in the event of a power failure. UPS Power Backups also even the fluctuating power current out to provide a consistent, reliable power flow. This creates a stable environment for the NVR unit and reduces failure.
- NP-4PKVM 4 Channel KVM Switch – The 4 Channel KVM switch allows you to have multiple boxes (up to 4) using only one keyboard, mouse and monitor. You can simply switch between the NVR units using the keyboard.
- Hot Swappable Redundant Power Supplies – Every NVR and EVR has the option of a dual redundant hot swappable power supply. In the event of a component failure the inoperable power supply may be removed leaving the NVR running so no break in recording occurs. Simply replace the power supply with a new one and you are finished.
- Raid Controller – A raid controller is available for increased performance or data reliability.

APPENDIX

The Appendix contains technical specifications for many of the NVR internal components

NVR SPECIFICATIONS

	8	16
CPU	Intel® Dual Core 3.4 GHz CPU	
Storage (Hard Drive)	250 GB Standard / Virtually Unlimited Storage Potential	
Storage MAX	Up to 8 HDD with DVD±RW	
Operating System	Microsoft® Windows® XP Embedded	
Viewing Rate	Max 480 PPS	
Recording Rate	Dependant on Network Video Device Encoding Rate	
Resolution	Recording resolutions dependant upon the resolutions the Network Camera supports	
Image Compression	MJPEG	
Average File Size	360x240 – 3~5k	
	720x240 – 4~8k	
	720x480 – 7~12k	
Video Outputs	S-Video, SVGA	
Max PPS Per Channel	30 PPS (NTSC) / 25 PPS (PAL)	
Motion Detection	Up to 5 Regions Per Channel / Adjustable Sensitivity	
Remote Operation	Full Remote Control Through PSTN, ISDN, ADSL, LAN, and TCP/IP	
Remote Software	Compatible with Microsoft Windows 2000,XP	
PAN / TILT / ZOOM	Built in Software Interface	
Recording Mode	Continuous, Motion Detection, Sensor, Scheduled Recording	
Backup	USB, DVD±RW	
Digital Signature	Supports Digital Signature Verification	
Emergency Agent	Transmitted through TCP/IP – Pop-Up Window	