

SONY®

Image Capture Device

Installation and User Manual

Before operating the product, please read this manual thoroughly and retain it for future reference.

BZMD-1

BZMD-1000

Version 1.5



1st Edition



NOTICE TO USERS

© 2009 Sony United Kingdom Limited. All rights reserved. This manual or the software described herein, in whole or in part, may not be reproduced, translated or reduced to any machine readable form without prior written approval from Sony United Kingdom Limited.

SONY UNITED KINGDOM LIMITED PROVIDES NO WARRANTY WITH REGARD TO THIS MANUAL, THE SOFTWARE OR OTHER INFORMATION CONTAINED HEREIN AND HEREBY EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE WITH REGARD TO THIS MANUAL, THE SOFTWARE OR SUCH OTHER INFORMATION. IN NO EVENT SHALL SONY UNITED KINGDOM LIMITED BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, WHETHER BASED ON TORT, CONTRACT, OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THIS MANUAL, THE SOFTWARE OR OTHER INFORMATION CONTAINED HEREIN OR THE USE THEREOF.

Sony United Kingdom Limited reserves the right to make any modification to this manual or the information contained herein at any time without notice. The software described herein may also be governed by the terms of a separate user license agreement.

Trademark Notice

- Sony is a registered trademark of Sony United Kingdom Limited.
- Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and other countries.
- Other system names, product names and company names appearing in this manual are trademarks or registered trademarks of their respective holders. In this manual such names are not indicated by ® or ™ symbols.

BZMD-1

This product has been exclusively manufactured for Sony United Kingdom Limited* by:

Advantech Co., Ltd
No. 1, Alley 20, Lane 26
Rueiguang Road
Taipei, 114
Taiwan

BZMD-1000

This product has been exclusively manufactured for Sony United Kingdom Limited* by:

Kontron Embedded Computers GMBH
Oskar von Millerstrasse 1
D-85386 Eching
Germany.

*Sony United Kingdom Limited
The Heights
Brooklands
Weybridge
Surrey
KT13 0XW
United Kingdom
Registered company number: 2422874

For customers in the U.S.A (BZMD-1000).

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

Warning

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

THIS APPARATUS MUST BE EARTHED

To disconnect the main power, unplug the AC IN connector.



This symbol indicates the equipotential terminal which brings the various parts of a system to the same potential.

Laser Notice

THE OPTICAL DRIVE (DVD or Blu-ray) PROVIDED WITH THIS EQUIPMENT COMPLIES WITH APPROPRIATE SAFETY STANDARDS INCLUDING IEC 60825.



This product is classified as a CLASS 1 LASER PRODUCT.

The CLASS 1 LASER PRODUCT label is located on the top panel of the optical drive.

Disposal of equipment and batteries

Before disposal please study the leaflets supplied with this product.

For more detailed information about recycling of this product, please contact your local Sony office or visit Sony Europe's web site for business customers:

<http://www.sonybiz.net/environment>

Warning on power connection for medical use

Use the correct types of power supply cord for your country.

For connectors (plug or female) and cord types other than those indicated in this table, use the power supply cord that is approved for use in your area

Description	United States and Canada	Continental Europe
Plug Type	Hospital grade*	LP-34A
Female end	IEC 320	LS-60
Cord type	Min. Type SJT Min. 18 AWG	H05VV-F
Minimum cord set rating	10A/125V	10A/250V
Safety approval	UL Listed and CSA	VDE

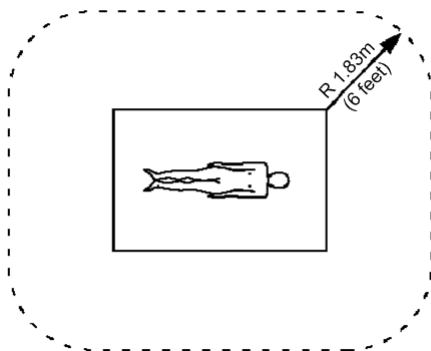
*Note: Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked 'Hospital Only' or 'Hospital Grade'.

Power supply

This equipment shall be used in conjunction with an IEC 60601-1 approved power supply, as supplied with the product. Specifically, model number PMP-150-13-2, 150 Watt, 19 Volts DC output.

For customers in the U.S.A and Canada

Patient Vicinity

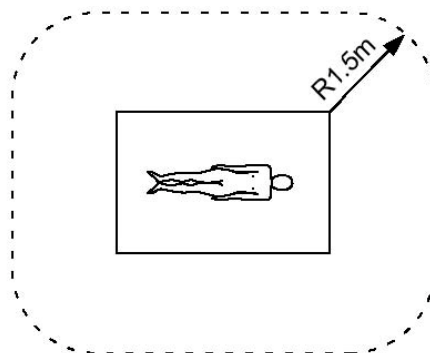


When you use this product connected to 240 V single phase, be sure to connect this product to a center tapped circuit.

For customers in Europe

Important safeguards/notices for use in the medical environment

- All the equipment connected to this unit must be certified according to Standard IEC60601-1, IEC60950, IEC60065 or other IEC/ISO Standards applicable to the equipment. Furthermore all configurations shall comply with the valid version of the system standard IEC 60601-1-1. It is the responsibility of the end user to ensure that accessories connected to the equipment meet the requirements of IEC 60601-1-1 as a complete system. If in doubt please consult the technical service department or your local representative.
- When this unit is used together with other equipment in the patient area*, the equipment must be either powered by an isolation transformer or connected via an additional protective earth terminal to system ground unless it is certified according to Standard IEC60601-1.



***Patient Area**

- The leakage current could increase when connected to other equipment.
- This equipment generates, uses, and can radiate frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference to other equipment. If this unit causes interference (which can be determined by unplugging the power cord from the unit), try these measures: Relocate the unit with respect to the susceptible equipment. Plug this unit and the susceptible equipment into different branch circuits. If the problem persists, consult your dealer. (According to Standard EN60601-1-2 and CISPR11, Class B, Group 1)
- Periodic Safety Checks must be performed on the unit and accessories by qualified personnel. These checks must be defined by the end application integrator.

Recommended safety checks are visual inspection of the unit for signs of damage, earth resistance and earth leakage tests in accordance with IEC 60601-1.

Safety Instructions

Important Safety Information

Read these safety instructions carefully.

- Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
- For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
- Keep this equipment away from humidity.
- Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage or injury.
- The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
- Make sure the voltage of the AC power source is correct before connecting the equipment to the power outlet.
- Position the power cord so that it does not present a trip hazard. Do not place anything over the power cord.
- All cautions and warnings on the equipment should be noted.
- If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- Never pour any liquid into an opening. This may cause fire or electrical shock.
- Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
- If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has entered the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work as expected, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of damage.
- **DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS MAY DAMAGE THE EQUIPMENT.**

Equipment installation

Warning

IMPROPER INSTALLATION OF VESA MOUNTINGS CAN RESULT IN DAMAGE OR SERIOUS PERSONAL INJURY!

VESA mounts should be installed only by a professional technician.

CAUTION for LAN port

For safety reasons, do not connect the LAN port to any network devices that might have excessive voltage.

Specifications Applying to the Sony Image Capture Device

- Class I Equipment
- Degree of protection against electric shock – Not classified, this product has no applied part and so is not intended for direct intentional contact with the patient.
- Mode of operation – Continuous
- Not AP or APG category
- This equipment shall not be used as part of a life support system.
- This equipment shall be interconnected only to IEC 60601-1 approved equipment.
- Degree of protection against harmful ingress of water – IPX0, ordinary equipment. Take care to avoid liquids and moisture entering the cabinet parts behind the screen and the power supply unit.
- This equipment is not suitable for use in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide.
- The sound pressure level at the operator's position according to IEC 704-1:1982 must not exceed 70dB(A).
- Storage and transport temperature -20°C to 60°C (50°F to 104°F)
- Storage and transport humidity 10% to 90% (no condensation allowed)
- Atmospheric Pressure 700 – 1060hPa

Cleaning and Disinfecting

During normal use, the Image Capture Device may become soiled, and should therefore be cleaned regularly. Use only approved products or clean with a dry applicator.

Agents: Green tintured soap and enzymatic detergents

Caution

Do not allow moisture or liquids to enter the rear of the cabinet or any power unit.

Steps:

- 1** Disconnect this equipment from the AC Outlet before cleaning. Isolate the equipment by disconnecting the AC supply from the PSU inlet connector.
- 2** Wipe the Image Capture Device with a clean cloth that has been moistened in the cleaning solution.
- 3** Prepare agent per manufacturer's instructions or hospital protocol.
- 4** Wipe thoroughly with a clean cloth.

Service Personnel Warning

Servicing is only permitted by qualified personnel. Refer to the Service Manual before opening the cabinet.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

Replace with: 3 V @190 mA Lithium Battery (Model Number: CR2032).

Safety Precaution - Static Electricity

Follow these precautions to protect yourself from harm, and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Service and warranty

For any service or guarantee matters, please refer to the addresses given in separate service or warranty documents.

The supplier shall make available upon request circuit diagrams, component parts lists, descriptions or other information which would assist an appropriately qualified person to repair parts of the unit which are designated by the manufacturer as repairable.

Design and specifications are subject to change without notice.

Declaration of conformity

These products have been tested and comply with the following rules and requirements.

BZMD-1

EMC

USA

FCC (Class B Radiated & Conducted Emissions)

European Union—CE

This equipment complies with the following requirements of the EMC Directive 2004/108/EC:

EN55022 (Emissions (Class B)) EN55024 (Immunity)

EN60601-1-2 (Emissions and Immunity)

EN61000-3-2 (Mains Harmonics)

EN61000-3-3 (Voltage Flicker)

Safety

European Union—EC

This equipment complies with the following requirements of the Low Voltage Directive 2006/95/EC:

EN60601-1

CB Scheme Certificate number: (pending)

Certification Marks

This product is provided with the following certification markings:

Regulatory compliance	Country	Marking
CE mark	Europe	

BZMD-1000

EMC

USA

FCC (Class B Radiated & Conducted Emissions)

European Union—CE

This equipment complies with the following requirements of the EMC Directive 2004/108/EC:

EN55022 (Emissions (Class B)) EN55024 (Immunity)

EN60601-1-2 (Emissions and Immunity)

EN61000-3-2 (Mains Harmonics)

EN61000-3-3 (Voltage Flicker)

Safety

USA/Canada

Medical equipment with respect to electrical shock, fire and mechanical hazards only in accordance with

UL60601-1 (File Number E327824),

IEC/EN 60601-1,CAN/CSA C22.2 No.601.1

CB Scheme Certificate number: (pending)

European Union—EC

This equipment complies with the following requirements of the Low Voltage Directive 2006/95/EC:

EN60601-1

CB Scheme Certificate number: (pending)

Certification Marks

This product is provided with the following certification markings:

Regulatory compliance	Country	Marking
cULus Classified mark	USA/Canada	
CE mark	Europe	

Before Using the Image Capture Device

About the Hard Disk

- A hard disk should never be placed near magnetic fields.
- Hard disks contain built-in safety mechanisms to protect data against dust and vibrations. However, to avoid losing data, you should take the following precautions.
- Do not use the hard disk in areas prone to vibrations or on unstable surfaces.
- Do not move the hard disk while it is on.
- Do not turn the power off while the hard disk is performing an operation.
- Do not use the hard disk in areas prone to sudden temperature fluctuations (i.e. more than 10 °C). Note that if the hard disk is damaged, data may not be recoverable.
- Do not forget to back up data stored on the hard disk

Hardware replacement/data back-up

Special note on component failure and replacement

The components used within the Image Capture Device have been individually selected to optimise performance. You should be aware that using components not sourced from an approved source may compromise operation - and will invalidate warranty.

Please be sure to make backup copies of hard disk drives and store the copies in a safe place. Sony will not be liable for damages of any kind including, but not limited to, compensation or reimbursement on account of the loss of present or prospective profits due to failure of this unit, either during the warranty period or after expiration of the warranty, or for any other reason whatsoever.

About the optical drive

Operation and Storage Precautions

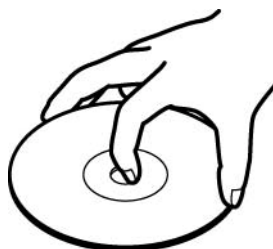
- When using the optical disc drive to write information on discs, please pay attention to the following:
- Do not use or store the drive where it might be subjected to vibrations or shocks.
- Do not use or store the drive in hot or humid locations, or direct sunlight.
- When writing data on a disc, do not turn the unit off or push the Eject button of the optical disc drive.

Avoiding Condensation Problems

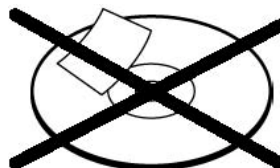
As much as possible, avoid areas prone to sudden temperature changes. Do not attempt to use the drive immediately after moving it from a cold to a warm location or raising the room temperature suddenly, as condensation can form within the drive. If the temperature changes suddenly while you are using the drive, stop using it but keep the power on for at least an hour.

Handling Discs

- Handle discs only by the edges as illustrated below. Never touch the recording surface.



- Do not write (except with a felt-tip marker) or affix labels to discs.



- Do not store discs in dusty, dirty, or humid locations, in direct sunlight, or near heat-generating devices.
- Avoid spilling liquid on discs.
- To protect important data, always keep discs in their protective case.

Table of Contents

Chapter 1 Overview

Introduction	13
Role of the Image Capture Device	13
Features	15
BZMD (both models)	15
BZMD-1000 Additional features	15
About this manual	16

Chapter 2 BZMD-1 Installation

Introduction	17
Location and function of controls, indicators and connectors.	17
Front view	17
Rear Panel	19
Connecting power	20
Connecting the equipment	21
Capture card connections	21
Power on the unit	22
Power off/shut down	22

Chapter 3 BZMD-1000 Installation

Introduction	23
Location and function of controls, indicators and connectors.	24
Front view	24
Side view	25
Using the Blu-ray/CD/DVD drive	25
Handling discs	25
Loading and ejecting discs	26
Bottom view	27
Mounting	27
Connecting power	28
Connecting the equipment	29
Power supply unit	29
Display unit	30
PC connector group	30
Capture card connections	30

DVI - SDI converter card connections	31
Power on the display unit	31
Power off/shut down	31
Touch screen.....	31
On-Screen Display (OSD) Control.....	33

Chapter 4 Configuration

Introduction.....	34
Administrator types	34
Network settings.....	34
Configuring Local Connection Properties.....	34
Firewall settings	35
BZMD configuration settings.....	36
Starting the BZMD application (configuration).....	36
Configuring BZMD: General tab	37
Configuring BZMD: Storage/Worklist tab.....	38
Configuring SCP connections	38
Configuring BZMD: Printers tab	42
Configuring BZMD: Hardware Tab.....	43
Configuring BZMD: Default Study Data tab	47
Configuring BZMD: File Deletion tab	48
Configuring BZMD: Advanced tab.....	49

Chapter 5 Operation (application)

Introduction.....	52
Before turning on the BZMD-1	53
Before turning on the BZMD-1000.....	53
Starting the application.....	53
The Main window	54
Creating a Study	55
Opening a study.....	56
The Study window	57
Configuring the display	59
Capturing the procedure.....	59
Grabbing/Capturing still images	59
Recording a video.....	60
Adjusting capture settings	60
Voice recording	61
Creating, Removing or Displaying a Series	61

Reviewing/Replaying captured material	62
Printing, Burning and Storing studies	64
Printing from an open study	64
Printing from the Main window	65
Burning a study to	
Blu-ray, DVD, CD or USB from an open study	66
Burning studies to	
Blu-ray, DVD, CD or USB from the Main window	68
BZMD Player application	70
Storing a study (DICOM or Original files) from an open study	70
Storing studies (DICOM or Original files) from the Main window....	72
Convention for Study folders and file names	73
Closing a study	74
Recovering lost data and study management	74
Viewing version numbers.....	75

Chapter 6 Troubleshooting

Introduction	77
Communications problems	77
Printing problems	79
Blu-ray/DVD/CD problems	79
Recording problems	79
Review/Replay problems	80
Audio problems	80

Appendix 1 Technical Specification

Technical data BZMD-1	81
Enclosure	81
PC system unit.....	81
Operating system and software components	81
Operating conditions	81
Dimensions / weight.....	81
Power.....	81
DVD disc drive specification	81
Technical data BZMD-1000	82
Enclosure	82
PC system unit.....	82
Capture card	82
Operating system and software components	82
LCD / touch screen.....	82

Operating conditions	82
Dimensions / weight (Display unit).....	82
Power supply (external).....	82
Blu-ray disc drive specification.....	82
Gefen DVI conversion card specification	82
Capture card video input specifications	83

Appendix 2 Capture Card Specification

Overview	85
Capture card connectors	85
GPIO connector	85
BNC connector	85
HD15 connector	86
S-Video connector	87
Audio connector	87
Setting S1 and S2	87

Appendix 3 HD15 Settings and Calibration

Settings for HD15 inputs.....	89
Fine tuning an HD15 format signal	89
Advanced settings for HD15 inputs	90

Introduction

This manual describes the Sony Image Capture Device. The capture station/capture device is available as two different models. The BZMD-1 and BZMD-1000. Both models use the same capture software application, this provides a common configuration, and similar operational features.

Please note

This manual provides information for both models. for convenience where details are intended to apply to both models the manual will refer to **BZMD**. Where details differ they will be indicated by referring to the individual model names; **BZMD-1**, **BZMD-1000**.

- **BZMD-1** is based on a high performance desktop PC, with a conventional, separate monitor. With the installed capture card, (either BKBU-7000 or BKBU-8000), a comprehensive range of video input types may be captured. BZMD-1 is fitted with a DVD optical drive.
- **BZMD-1000** is an integrated unit utilising a built-in touch-screen. At the core of the unit is a high performance PC motherboard and CPU. High definition (HD) capability is enhanced by the use of a HD codec fitted to the BKBU-8000 capture card. DVI input capability is provided by a pre-installed DVI to HD-SDI convertor card. BZMD-1000 is fitted with a Blu-ray optical drive.

About this chapter

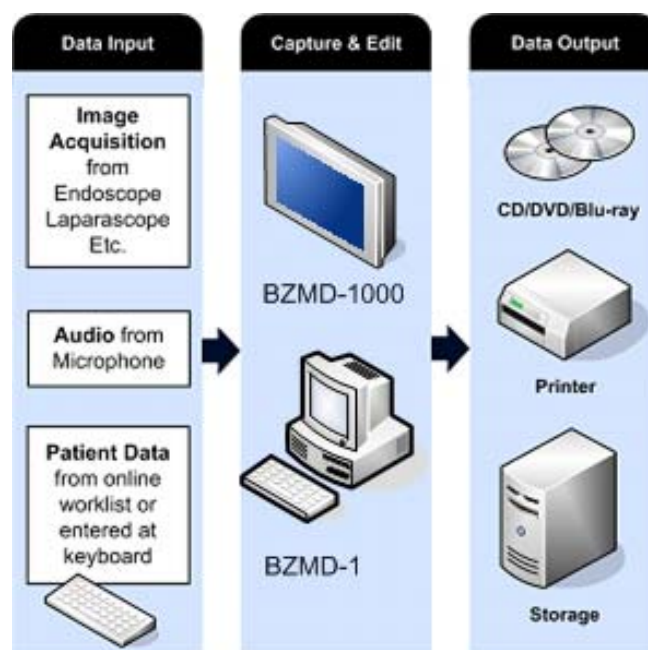
This chapter provides an overview of the functions and features of the BZMD Image Capture Device.

Role of the Image Capture Device

BZMD-1 and BZMD-1000 are designed for use in operating theatres and other clinical environments, and

comply fully with the latest Medical Devices Directive standards.

Both models capture still and video images from medical imaging equipment, such as endoscopes or laparoscopes, and combines them with patient data to create DICOM-compliant files. An audio track can also be recorded to accompany video recordings. Patient data can be collected from on-line worklists, where available, or entered manually.



A Typical Image Capture Device System

Once captured, images and video clips are displayed as a series of 'thumbnail' images on an intuitive graphical user interface. The interface also enables review and analysis of captured media, highlighting of key frames, and simple management of studies.

Studies containing standard definition (SD) images and videos, or high definition (HD) images, can be output as either DICOM files or original files. Studies containing high definition videos may only be output as original files.

Studies can be output to any video-compliant networked storage system, to a DICOM printer, or 'burned' onto a writeable disc - either Blu-ray, (this can also write and read CD, and DVD discs), or DVD/CD, depending on the model.

Features

BZMD (both models)

Simultaneous image and video capture

Still images may be captured at any time during continuous live video recording. Similarly, when the captured video is reviewed, key sections and individual frames of the video may be marked to highlight significant events or images. (DICOM viewer only).

Buffered pre-recording

To ensure that no significant event is missed, live video is buffered to enable it to automatically capture events occurring before the 'Record' button was activated.

DICOM networking

The BZMD may need to be configured for the hospital specific DICOM network, please make sure qualified personnel carry this out and that the hospital's computer department or equivalent is informed (Installation may require information such as IP address, SUBNET mask, Gateway or DNS settings). In addition, the DICOM AE (Application Entity) Title settings must be filled in correctly to connect to the hospital's DICOM system.

Standalone or network operation

Where networked storage is not available, the Image Capture Device can operate as a standalone device, allowing studies to be printed, or copied onto writable discs.

Voice recording

Audio commentary may be captured along with the video image by connecting a microphone (with pre-amplifier) to the Capture Card's (line in) connector.

- BKBU-7000 - One line level standard (+4 dBu)
- BKBU-8000 - Two switchable line level standards (+4 dBu, -10 dBV).

DICOM Viewer

A DICOM viewer may be burned on to an optical disk alongside studies to simplify viewing of DICOM images and videos.

Video input types

The capture card has a number of different input types, and is compatible with the majority of medical video cameras. These include:

- DVI (BZMD-1000 only)
- HD-SDI
- SD-SDI
- SVGA - SXGA
- RGB - YPbPr 525/625
- S-Video 525/625
- Composite 525/625

Note

For details available video input formats see "*Technical Specification*" on page 81.

HD or SD output

HD (High-definition) video files may be output, printed, burned and stored; provided a suitable high definition (720p or 1080i) source is used. HD videos are output as ORIGINAL files. The output formats used are compatible with a wide range of viewers. SD (Standard-definition) material can be output as either ORIGINAL files or as DICOM-compliant standard definition files.

XML Study and PowerPoint

Recorded/captured images and associated Study and PowerPoint description files may be output for viewing by third-party applications.

Remote footswitch/button operation

Recording and capture of images may be controlled by external triggers, enabling footswitch or button operation.

Windows XP Professional operating system

BZMD application has been developed for use with Windows™ XP Embedded (BZMD-1), Windows™ XP Professional (BZMD-1000).

BZMD-1000 Additional features

- HD MPEG 2 video recording
- Touch-screen operation
- Blu-ray/DVD/CD disc drive
- DVI - SDI converter

About this manual

This manual is intended to be used by installers, administrators and users. To assist in finding the information you need please refer to the following table which lists which sections are relevant to you.

Section	Installer	Administrator	User
Chapter 1 "Overview"	Y	Y	Y
Chapter 2 "BZMD-1 Installation"	Y	Y	
Chapter 3 "BZMD-1000 Installation"	Y	Y	
Chapter 4 "Configuration"	Y	Y	
Chapter 5 "Operation (application)"		Y	Y
Chapter 6 "Troubleshooting"	Y	Y	Y
Appendix 1 "Technical Specification"	Y	Y	
Appendix 2 "Capture Card Specification"	Y		
Appendix 3 "HD15 Settings and Calibration"	Y		

Introduction

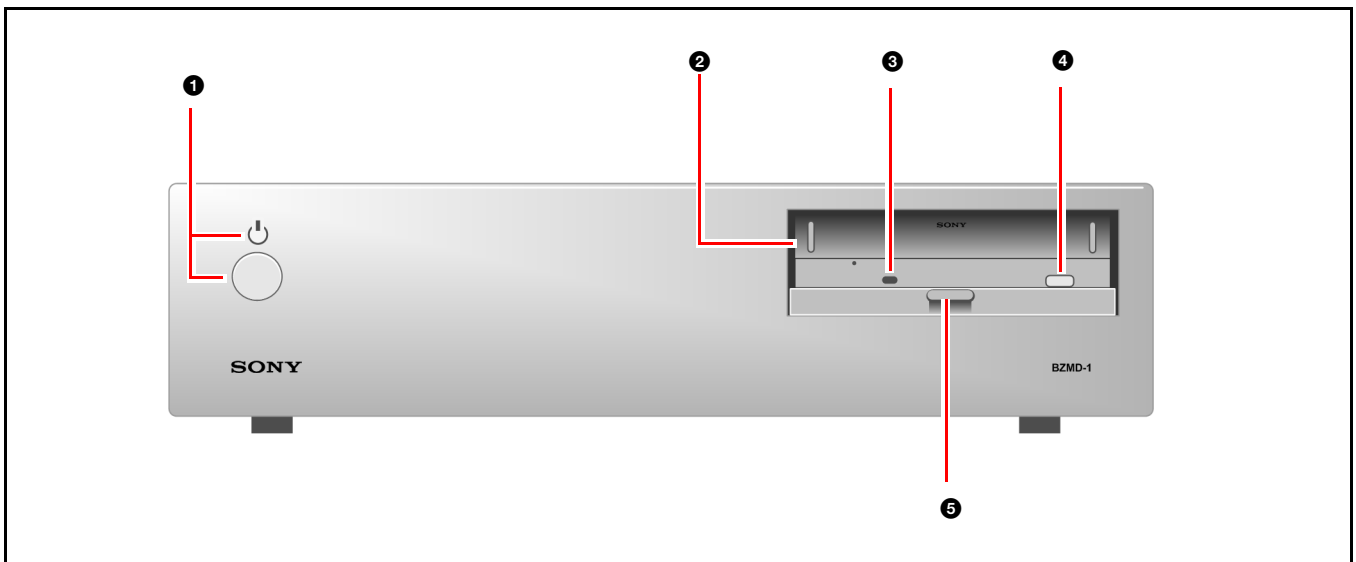
This chapter describes the connectors and their functions, and contains connection information.
After installation please see “*Configuration*” on page 34.

Important note

This equipment is designed for use in medical environments. Installation must only be done by suitably qualified personnel.

Location and function of controls, indicators and connectors

Front view



❶ Power Switch and Indicator

The button turns the unit on or off. The green power indicator lights up when the unit is on. To turn on the BZMD-1, press the power switch firmly. To turn the unit off, use the Windows Shut down procedure, or press and hold the button until the unit powers off.

❷ DVD+/-RW Drive

Situated behind the slide cover, the DVD+/-RW drive is used to write the images captured on the unit's hard disk to DVD +/-R discs. The images on the DVD+/-RW discs created with the unit's DVD+/-RW drive can be accessed from most DVD-ROM drives.

③ DVD+/-RW Drive Eject Button

This button is used to open or close the DVD+/-RW drive. When writing to a DVD+/-RW disc, this button should not be used.

④ DVD+/-RW Drive Busy Indicator

This indicator blinks when the DVD+/-RW drive is busy writing information to a DVD+/-RW disc.

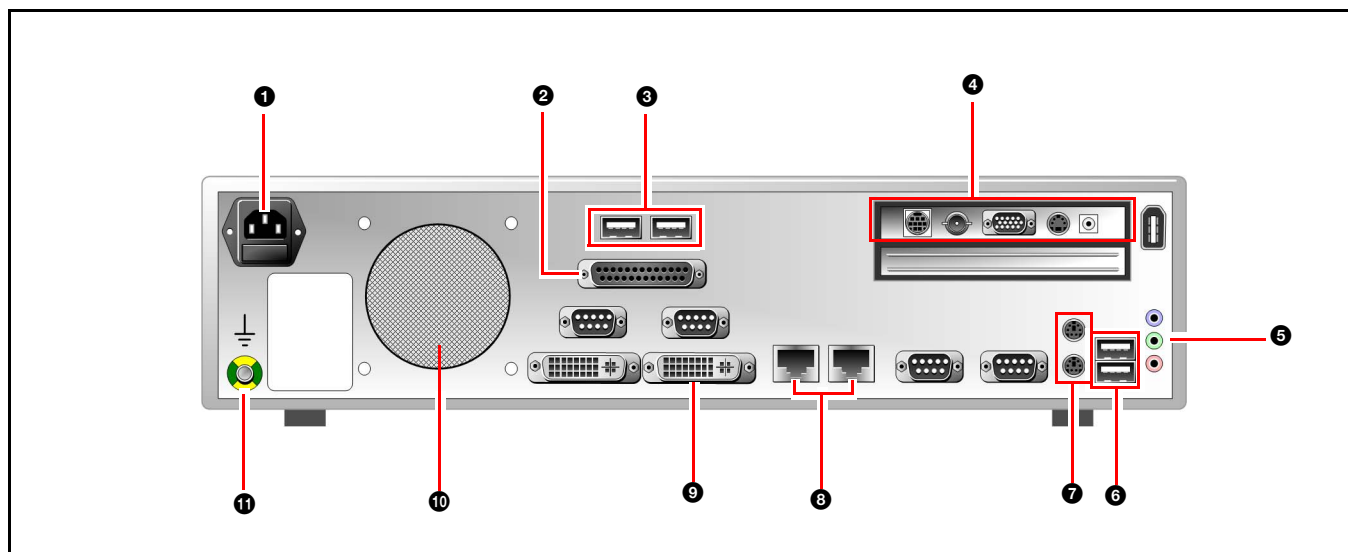
⑤ DVD+/-RW Drive Slide Cover

This DVD+/-RW drive is protected by a slide cover. Pull the cover down half-way to reveal the drive itself. Pull the slide cover fully down to reveal the Eject button and the Busy indicator.

Note

Because the DVD+/-RW tray opens automatically before and after writing to a disc, ensure the slide cover is open, and do not place any obstruction in front of the DVD+/-RW tray.

Rear Panel



❶ AC Inlet Connector

A power connector accepts 100-200/200-240 Vac, 50-60 Hz. See Appendix A Technical Specification for details.

❷ Printer Port

A Printer port may be used to connect to a local Windows printer, if required.

❸❹ USB Ports

USB (1, 2, 3 and 4) interfaces, version 2.0 and may be used to connect a USB storage device, or a USB keyboard and mouse.

❺ Capture card connector panel

Provides connection to a range of imaging devices. See “Capture card connections” on page 21.

- GPIO - remote control interface
- BNC - digital and analogue video input
- HD15 - RGB and YPbPr component input
- S-Video - S-video input
- Audio - audio line level input

See “Overview” on page 85 for details of the Capture Card capabilities and connector pin-outs.

❻ Audio out connector

Jack socket connector 3.5mm. Provides connection for external speakers or headphones. (Optional)

Caution

If audio is replayed, do not wear headphones until you are sure the correct sound volume is present.

Note

Line in (blue) and Microphone (pink) connectors are NOT USED.

❼ PS/2 Keyboard and Mouse Connectors

Mini-Din connectors for PS/2 type keyboard and mouse.

❽ LAN connectors

RJ-45 connector. Connect to hospital network. 10/100/1000 BASE-T speeds supported.

❾ Monitor out Connector

DVI 1 is used to connect the main monitor. Connect directly to a DVI-D, or a VGA monitor with DVI-A to VGA cable adaptor.

Note

DVI 2 is NOT USED (and may not present)

❿ Fan

A Fan expels warm air from the rear of the unit. Ensure that it is not obstructed or that the unit is not placed up against anything which may interfere with air flow.

⓫ Equipotential bonding (Grounding plug)

This connector MUST be connected to the correct ground using the correct connector type.

I/O Interfaces

Several additional input/output interfaces are provided by the PC. These are not required by the BZMD-1 application.

- COM (1, 2, 3 and 4) are NOT USED
- IEEE-1394 interface is NOT USED

If any questions arise about connectivity to/from the BZMD-1 product, please contact your Sony Dealer.

Connecting power

WARNING

The internal power supply for this product has no isolating power switch. When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power cord to a socket-outlet which must be provided near the unit and easily accessible, so that the user can turn off the power in case a fault should occur.

Recommended power cords

This unit is not supplied with power cords. Please obtain the correct power cord for your area. In case of difficulty, please contact your dealer or sales office.

Description	United States and Canada	Continental Europe
Plug Type	Hospital grade*	LP-34A
Female end	ICE 320	LS-60
Cord type	Min. Type SJT Min. 18 AWG	H05VV-F
Minimum cord set rating	10A/125V	10A/250V
Safety approval	UL Listed and CSA	VDE

Note

Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked 'Hospital Only' or 'Hospital Grade'.

WARNING

Use the approved Power Cord (3-core mains lead)/Appliance Connector/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.

Use the Power Cord (3-core mains lead)/Appliance Connector/Plug conforming to the proper ratings (voltage, current).

If you have questions on the use of the above Power Cord/Appliance Connector/Plug, please contact your local dealer or sales office.

WARNING

Never use a damaged power cord.

WARNING

This warning is applicable for USA only. If used in USA, use the UL LISTED power cord specified below.

DO NOT USE ANY OTHER POWER CORD.

Plug Cap: Parallel blade with ground pin

(NEMA 5-15P Configuration)

Cord: Type SJT, three 16 or 18 AWG wires

Length: Minimum 1.5 m (39 3/8 in.)

Less than 2.5 m (8 ft. 3 in.)

Rating: Minimum 10 A, 125 V

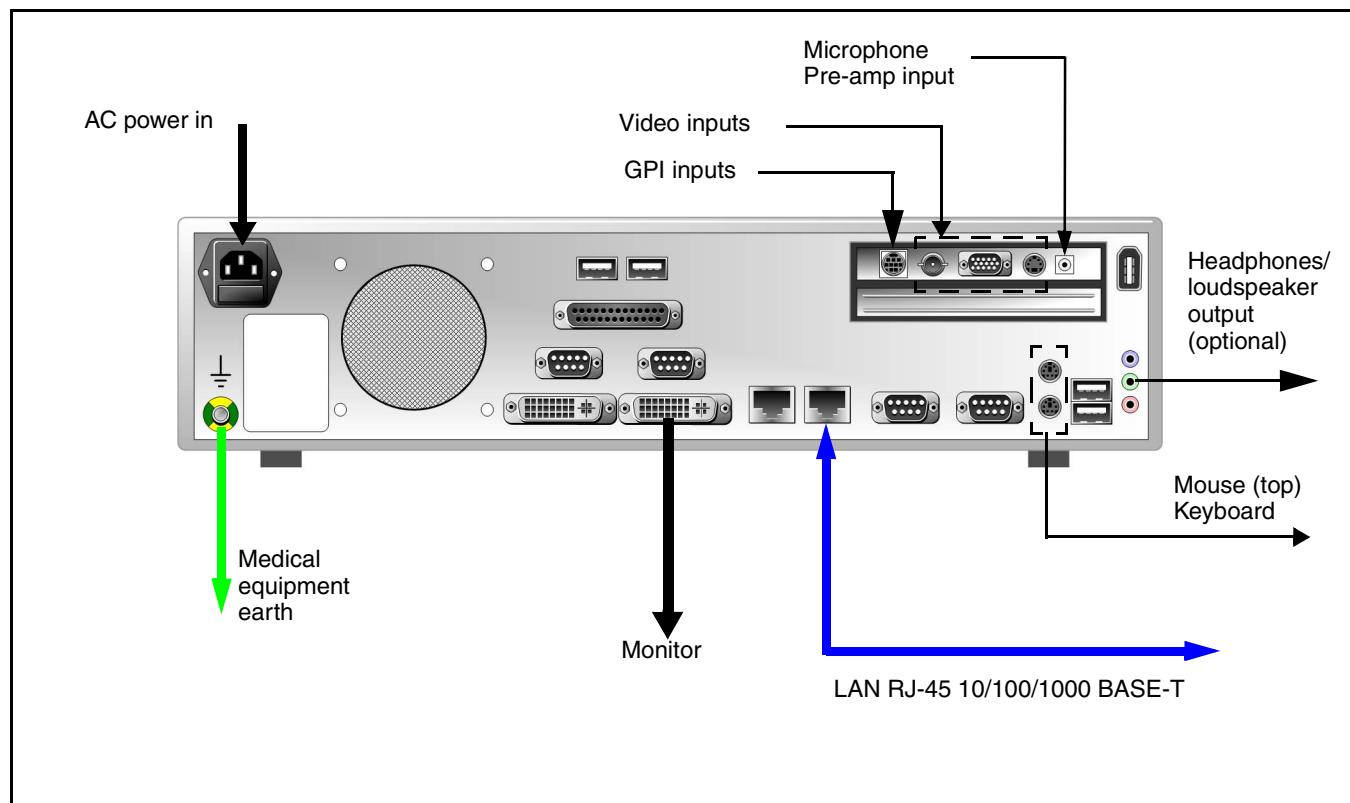
Using this unit at a voltage other than 120 V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

Connecting the equipment

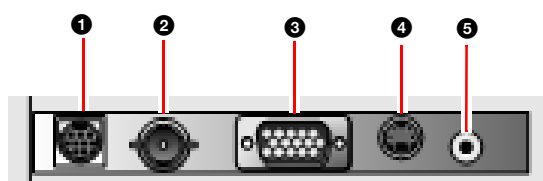
All equipment connectors are located on the rear panel (see below).

Caution

Make all connections to the display unit before applying AC power.



Capture card connections



1 GPIO connector

Mini-DIN 9 pin connector. For connection to a remote switch unit. For pin-out connection details see "GPIO connector" on page 85.

2 SDI/Composite input connector

BNC connector. (Factory default: SDI. For details of the selector switch see page 87. This setting can only be changed by qualified personnel.)

3 HD-15 connector

Sub-min D type connector.

4 S-Video connector

Mini-DIN 4 pin connector.

5 Audio line in connector

Jack socket connector 3.5mm. Provides connection for input from a microphone/pre amplifier combination.

- BKBU-7000 input reference level +4 dBu only.
- BKBU-8000 input reference level -10 dBV or +4 dBu (Factory default: -10dBV). For details of the selector switch see page 87. This switch can only be accessed by qualified personnel.

Note

Connecting a microphone without pre-amplification will result in a low, unusable audio level.

Power on the unit



To power on the unit, depress the power On/Off located on the front panel. Ensure the monitor is turned on.

The unit will run through its boot-up process and then display the BZMD-1000 Main menu screen. This may take up to two minutes.

Power off/shut down

Cautions

- Before powering off, ensure that the current study has been closed.
- Do not turn off the power supply, or remove the AC supply before the unit has completed its shut-down procedure. Failure to do this may result in loss of data.

To power off:

- 1 Close the BZMD-1 application.
- 2 Click **Start > Shut Down** then click the **Turn Off** button on the **Turn off computer** confirmation dialog box.



Note

If the unit is not responding, depress the power On/Off switch for five seconds, this will cause a forced shutdown.

- 3 When the display unit has completed its shutdown, confirmed by the power indicator lamp turning off, disconnect or switch off the AC supply to the power supply unit.

Introduction

This chapter describes the connectors and their functions. It also contains connection information and instructions for the use of the touch screen and adjustment of display settings.

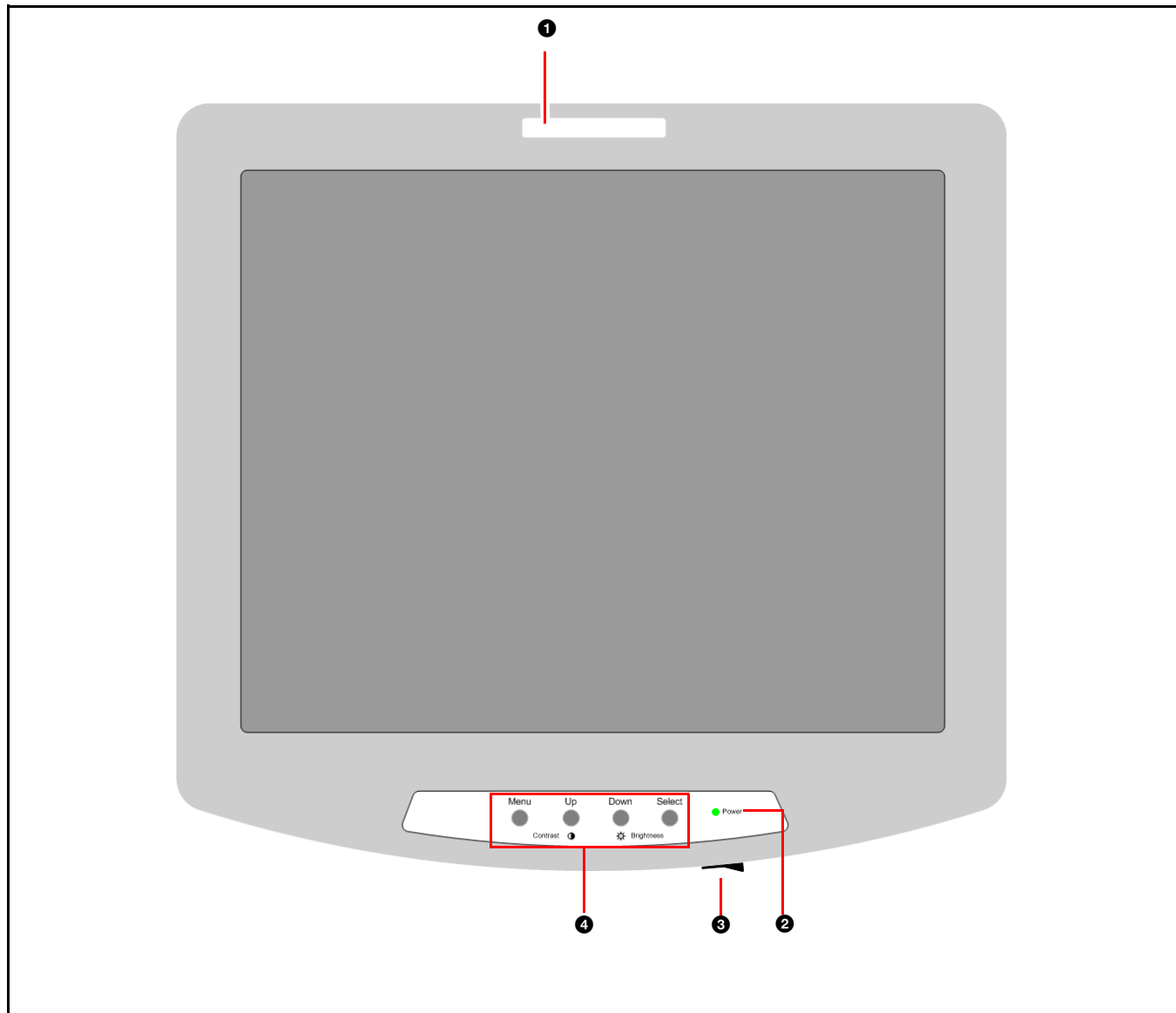
After installation please see “*Configuration*” on page 34

Important notes

- This equipment is designed for use in medical environments. Installation must only be done by suitably qualified personnel.
- During unpacking and installation take care not to damage the touch-screen of the display unit.
- The BZMD-1000 uses an external power supply. This should be mounted in a location where it will not be at risk from liquids.
- Use only the same make and model of power supply as provided with the unit. Do not substitute with any other type.

Location and function of controls, indicators and connectors

Front view



❶ Record indicator (Tally)

When lit green, indicates that recording is in progress.

❷ Power indicator

When lit green, indicates that the unit is powered on.

Caution

Even when the power indicator is not lit, the separate power supply may still be delivering power to the display unit.

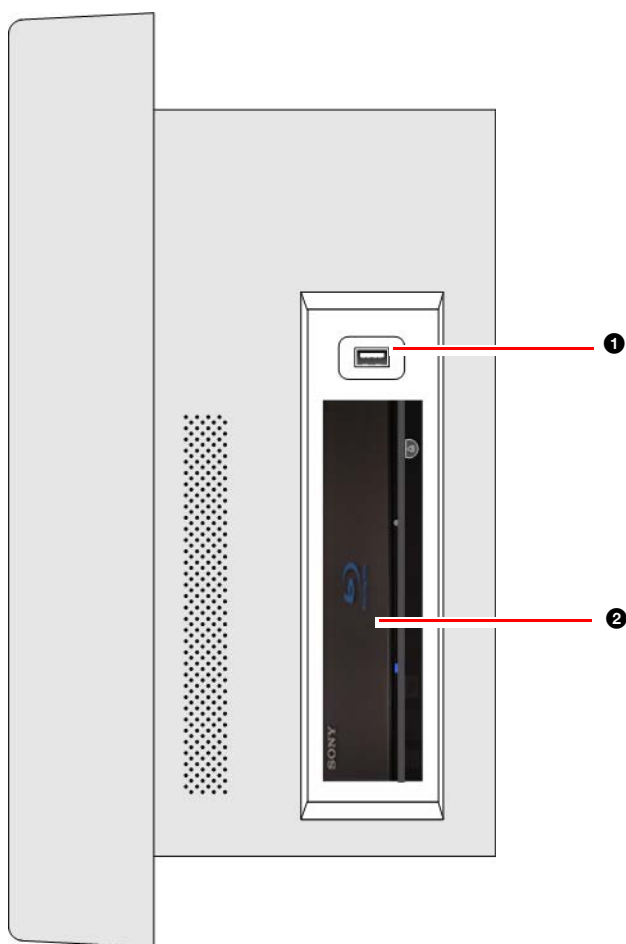
❸ Power On/Off switch

Power On/Off switch located under the bezel. Momentary action rocker switch.

❹ Screen display controls

Four membrane type buttons used to adjust Contrast, Brightness and other screen settings. Uses an On Screen Display (OSD) to show settings. (see page 33) for a description of these controls.

Side view



① USB-2 connector

Connector suitable for high-speed USB memory storage devices. May be used with the 'Burn' utility. See *"Burning a study to Blu-ray, DVD, CD or USB from an open study"* on page 66

② Disc drive

Can use Blu-ray, DVD or CD type discs. Refer to the specification section *"Capture card video input specifications"* on page 83 which shows the types of discs that can be used with this drive.

Using the Blu-ray/CD/DVD drive

The BZMD-1000 contains a Blu-ray/CD/DVD disc drive.

Cautions

Observe the following safety precautions when using the disc drive. Failure to observe these cautions may result in injury or damage:

- Do not leave the disc tray open.
- If audio is replayed, do not wear headphones until you are sure the correct sound volume is present.

Handling discs

Observe the following precautions when handling discs:

- Do not drop discs.
- Do not bend discs or place objects on top of them.
- Do not attach labels to discs.
- Do not touch the recording side (the side with nothing printed on).
- Protect discs against scratches, and do not write on them with a pen or pencil.
- Do not expose discs to high temperatures, for example by leaving them in direct sunlight or near heaters.
- Protect discs from cigarette smoke.

Caring for discs

Keep discs clean, remove dust and fingerprints.

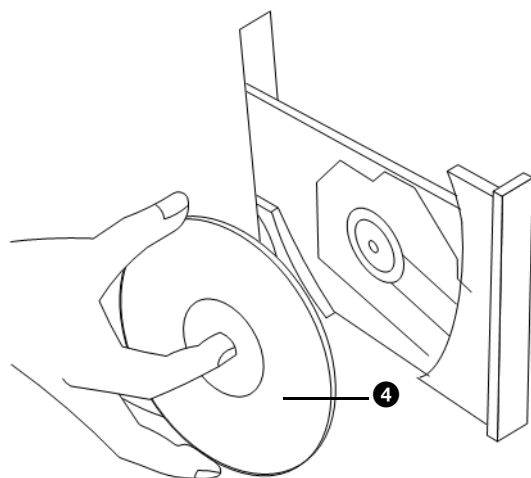
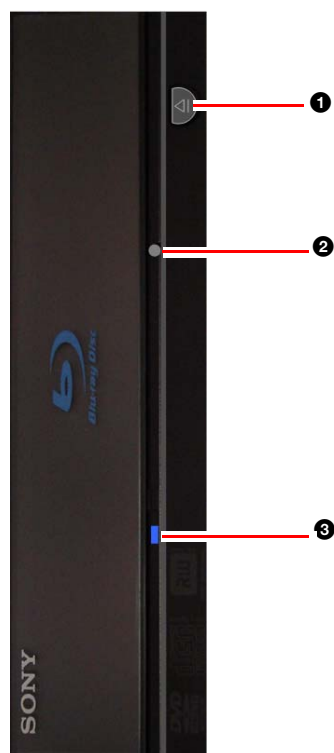
Storing discs

For long-term storage of discs, use a case designed for that purpose.

Loading and ejecting discs

Loading a disc

- 1 Confirm that the unit is switched on.
- 2 Press the CD/DVD tray open/close **1** button to open the tray.



- 3 Place the disc gently onto the tray **4** with the printed side towards you, taking care that the disc does not fall out.
- 4 Press the tray open/close button **1** to close the tray.

Note

If the spinning noise of the drive seems louder than normal, eject the disc by pressing the tray open/close button, check the disc is correctly loaded and re-close the drive.

Ejecting a disc

- 1 Press the tray open/close button **1** to open the tray.
- 2 Remove the disc from the tray **4**.
- 3 Press the tray open/close button **1** to close the tray.

Note

The disc drive active indicator **3** will be lit blue when the drive is accessing data on the disc. The tray will not open immediately while data is being accessed.

Opening the disc tray manually

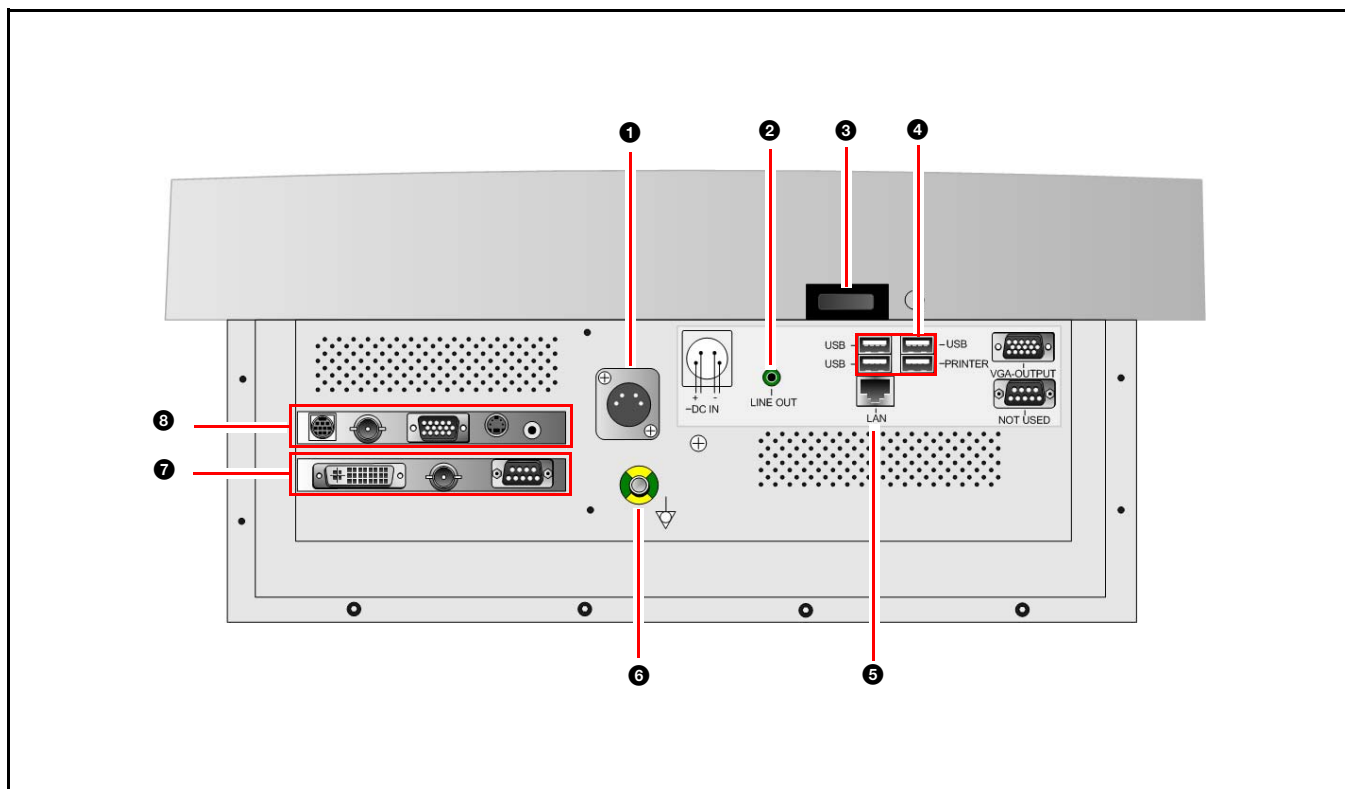
If the disc tray cannot be opened by using the open/close button, open it manually by using the following procedure:

- 1 Shut down and power off the unit (*see page 31*).
- 2 Insert a pin or paper clip (about 1.2 mm in diameter and 100 mm long) into the tray eject hole **2**. Push the pin into the hole until the tray opens.
- 3 Grasp the tray and open it fully.
- 4 Remove the disc from the tray **4**.
- 5 Push the tray in to close it.

Notes

- Do not insert easily-breakable objects such as toothpicks or plastic pins into the tray eject hole.
- Contact your Sony service representative if you cannot eject the disc using the above procedure.

Bottom view



① Power connector

XLR 4 pin connector. Supplies the display unit from the separate 19 Volt power supply.

② Audio out connector

Provides connection for external speakers or headphones.

③ Power On/Off switch

Power On/Off switch located under the bezel. Momentary action rocker switch.

④ USB Connectors

Four USB connectors for general use.

⑤ LAN Connector

LAN connector. Connect to the hospital network using RJ45 connector cable.

⑥ Equipotential bonding (Grounding plug)

This connector **MUST** be connected to the correct ground using the correct connector type.

⑦ DVI - SDI converter card connector panel

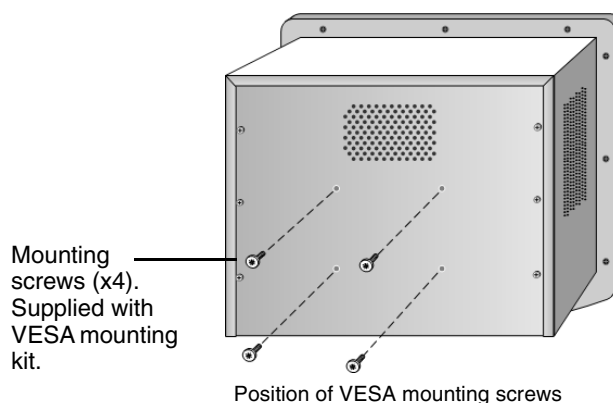
Provides connection and conversion between imaging devices with DVI output and the capture card's SDI input.

⑧ Capture card connector panel

Provides connection to a range of imaging devices. See "Capture card connections" on page 30.

Mounting

The display unit can be mounted on an equipment trolley, or supported using a VESA 100 mounting. (Not supplied) The drawing below shows the position of the four mounting screws for a VESA mount. For installation details refer to the instructions supplied with the VESA mounting kit.



Connecting power

WARNING

The power supply for this product has no power switch. When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power cord to a socket-outlet which must be provided near the unit and easily accessible, so that the user can turn off the power in case a fault should occur.

Recommended power cords

This unit is not supplied with power cords. Please obtain the correct power cord for your area. In case of difficulty, please contact your dealer or sales office.

Description	United States and Canada	Continental Europe
Plug Type	Hospital grade*	LP-34A
Female end	ICE 320	LS-60
Cord type	Min. Type SJT Min. 18 AWG	H05VV-F
Minimum cord set rating	10A/125V	10A/250V
Safety approval	UL Listed and CSA	VDE

Note

Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked 'Hospital Only' or 'Hospital Grade'.

WARNING

Use the approved Power Cord (3-core mains lead)/Appliance Connector/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.

Use the Power Cord (3-core mains lead)/Appliance Connector/Plug conforming to the proper ratings (voltage, current).

If you have questions on the use of the above Power Cord/Appliance Connector/Plug, please contact your local dealer or sales office.

WARNING

Never use a damaged power cord.

WARNING

This warning is applicable for USA only. If used in USA, use the UL LISTED power cord specified below.

DO NOT USE ANY OTHER POWER CORD.

Plug Cap: Parallel blade with ground pin

(NEMA 5-15P Configuration)

Cord: Type SJT, three 16 or 18 AWG wires

Length: Minimum 1.5 m (39 3/8 in.)

Less than 2.5 m (8 ft. 3 in.)

Rating: Minimum 10 A, 125 V

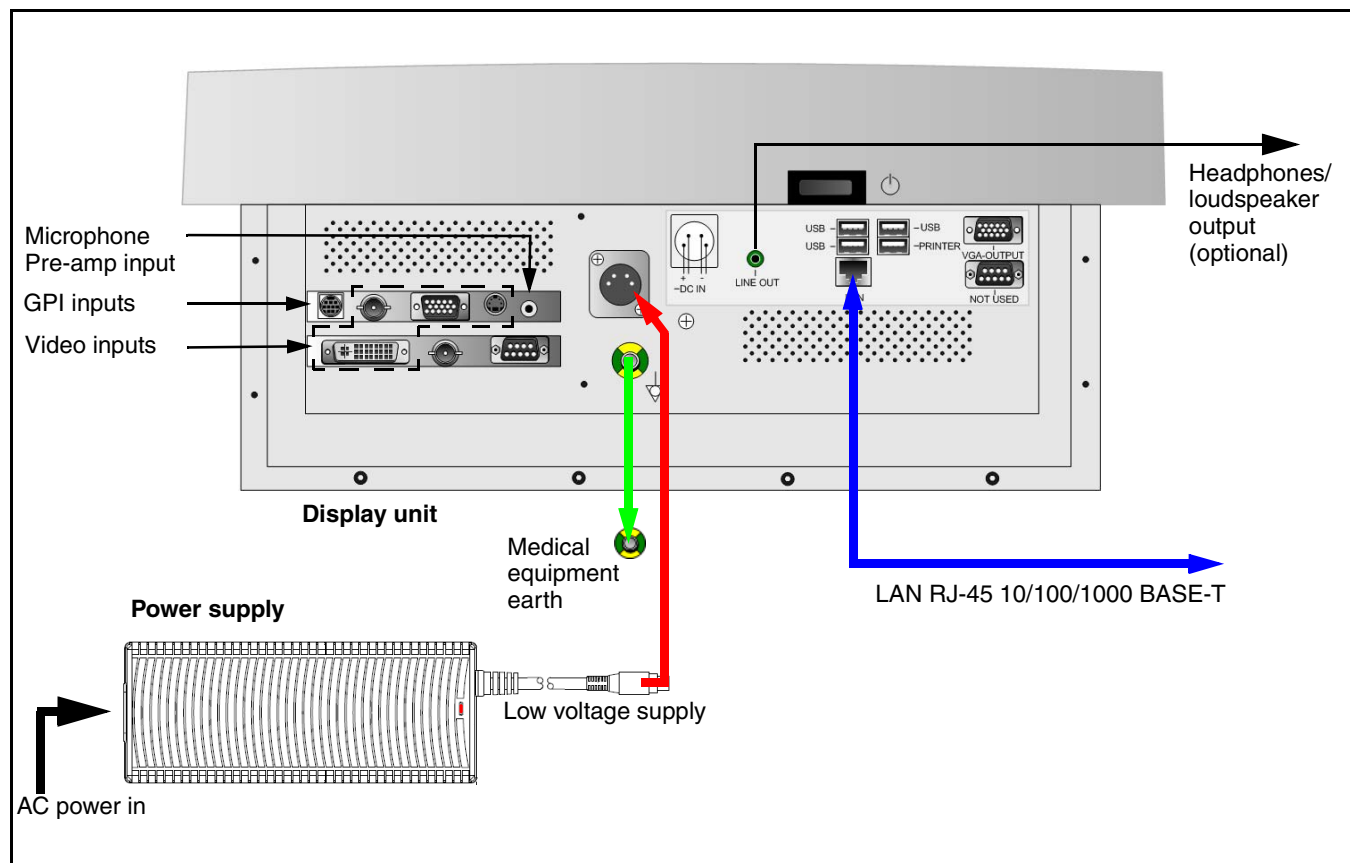
Using this unit at a voltage other than 120 V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

Connecting the equipment

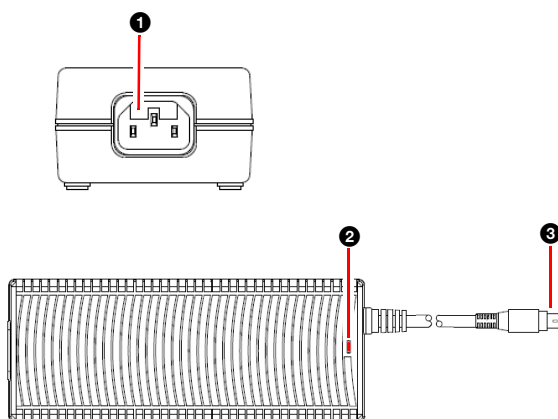
All equipment connectors are located on the lower side of the display unit (see below).

Caution

Make all connections to the display unit before applying AC power.



Power supply unit



1 AC inlet connector

IEC 320 connector for the AC power cord.

Caution

Do not disconnect power from an active display unit. Only remove DC or AC power when the display unit is shut-down. Failure to observe this may result in loss of data.

2 LED indicator

When AC power is present the LED will be lit red.

3 Low voltage outlet

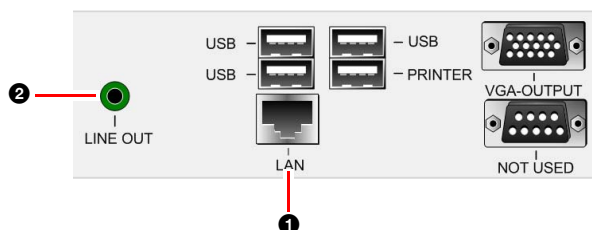
Fixed lead with XLR 4 pin connector to connect to the display unit.

Display unit

PC connector group

Note

Only the connectors required for use are described.



① LAN connector

RJ-45 connector. Connect to hospital network. 10/100/1000 BASE-T speeds supported.

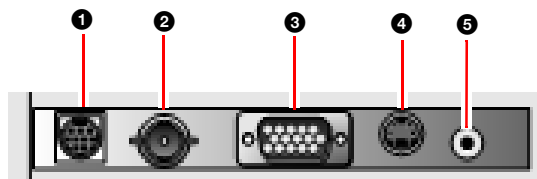
② Audio out connector

Jack socket connector 3.5mm. Provides connection for external speakers or headphones. (Optional)

Caution

If audio is replayed, do not wear headphones until you are sure the correct sound volume is present.

Capture card connections



① GPIO connector

Mini-DIN 9 pin connector. For connection to a remote switch unit. For pin-out connection details see “GPIO connector” on page 85.

② SDI/Composite input connector

BNC connector. (Factory default: SDI. For details of the selector switch see page 87. This setting can only be changed by qualified personnel.)

③ HD-15 connector

Sub-min D type connector.

④ S-Video connector

Mini-DIN 4 pin connector.

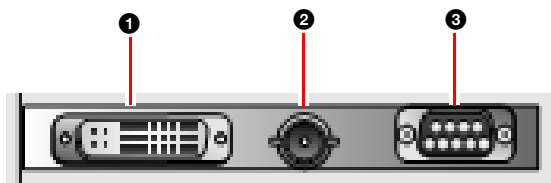
⑤ Audio line in connector

Jack socket connector 3.5mm. Provides connection for input from a microphone/pre amplifier combination. (Factory default: -10dBV. For details of the selector switch see page 87. This setting can only be changed by qualified personnel).

Note

Connecting a microphone without pre-amplification will result in a low, unusable audio level.

DVI - SDI converter card connections



❶ DVI connector

DVI-I connector. Connect to an imaging device with DVI output.

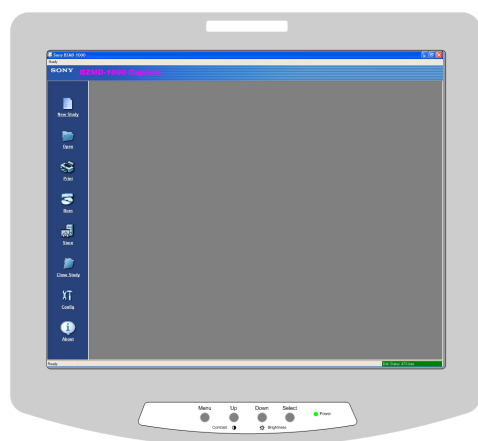
❷ SDI input connector

BNC connector. When using a DVI input source, connect the SDI-HD signal to the SDI/Composite BNC connector on the Capture card using the short coaxial cable (supplied).

❸ Remote control connector

D type 9 way connector. For service use only.

Power on the display unit



Power On/Off

To power on the unit, momentarily depress the spring loaded power switch located on the bottom edge of the bezel. Note that the spring action causes the switch to return to its normal position when released. The unit will run through its boot-up process and then display the BZMD-1000 Main menu screen. This may take up to two minutes.

Note

If the display unit does not power on, check that the power supply indicator is lit red.

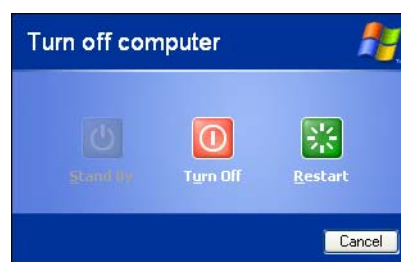
Power off/shut down

Cautions

- Before powering off, ensure that the current study has been closed.
- Do not turn off the power supply, or remove the AC supply before the unit has completed its shut-down procedure. Failure to do this may result in loss of data.

To power off:

- 1 Momentarily depress the power switch on the bottom edge of the display unit's bezel (see previous illustration).
- 2 After releasing the power switch the **Turn off computer** dialog box will be displayed.



- 3 Click the **Turn Off** button to complete shut-down process. Alternatively, use the normal Windows shut-down procedure: Click **Start > Shut Down** then click **OK** on the **Shut Down Windows** confirmation dialog box.

Note

If the unit is not responding, depress the power On/Off switch for five seconds, this will cause a forced shutdown.

- 4 When the display unit has completed its shutdown, confirmed by the power indicator lamp on the display unit turning off, disconnect or switch off the AC supply to the power supply unit.

Touch screen

BZMD-1000 utilises a touch screen. This can be used to operate the unit without the need for a keyboard and mouse. Keyboard and mouse may be used in addition to the touch screen, this may be useful when large amounts of data are entered.

The touch screen should be operated using your fingertip or a suitable touch screen stylus.

Cautions

- Do not use a ball-point pen or a sharp object as a stylus, this may damage the screen.
- Use only recommended cleaning agents on the touch screen. Refer to the section “*Cleaning and Disinfecting*” on page 6.

Operating the touch screen

Touching the screen with a small amount of pressure will cause the on-screen cursor to follow your finger or stylus. Selection of an on-screen object is the same as using the left-hand mouse button. A tap or double-tap has the same effect as a click, or double-click of a mouse.

Touch screen alignment

If you find that the on-screen cursor is offset from the pointing device you can re-align the screen. To re-align the touch screen:

- 1 Click Start > Control Panel, then double-click the  icon.
- 2 The Elo Touchscreen properties window is displayed.



- 3 Click the [Align] button and follow the on-screen instructions to carry out the procedure.

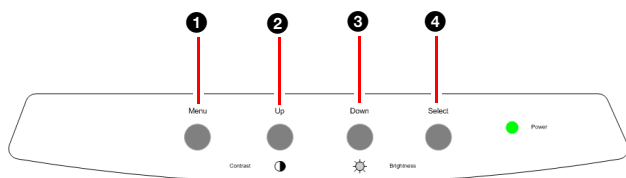
Note

Using the BZMD-1000 does not require the use of right-click functions, however If you do require a right-click function, this can be achieved through a setup utility. Instructions for this and other adjustments can be found by clicking the About tab, then click the [Users Manual](#) link to show the stored on-line manual.



On-Screen Display (OSD) Control

These four buttons allow you to change settings for the monitor screen. Once set they will not normally require adjustment. These controls only affect the display as viewed, they have no effect on the recorded images.



Use the control buttons for the following functions:

- Contrast adjustment
- Brightness adjustment
- OSD Lock/unlock
- Geometry
- Colour temperature (of display)
- OSD adjustment
- Language (OSD only)

After adjusting the values, the monitor will automatically save the changes.

Functions of buttons

1 Menu

Displays/Exits the OSD Menu.

2 Up

Directly enters the contrast adjustment of the OSD when the OSD is not currently displayed. When the OSD is displayed, increases the value of the selected adjustment (central area of OSD is black), or moves the OSD choice clockwise (central area of OSD is blue).

3 Down

Directly enters the brightness adjustment of the OSD when the OSD is not currently displayed. When the OSD is displayed decreases the value of the selected adjustment (central area of OSD is black), or moves the OSD choice counter clockwise (central area of OSD is blue).

4 Select

Selects/Deselects the current choice from the OSD menu. Toggles the central area from blue (select menu item) to black (adjust value).

Note

By default, the OSD screen will disappear if no button presses are detected for 45 seconds.

Changing settings

Adjusting contrast

- 1 Press the Up button, this will display the OSD in the Contrast adjustment mode.
- 2 Use the Up/Down buttons to change the setting.
- 3 Press the Menu button to exit the menu.

Adjusting brightness

- 1 Press the Down button, this will display the OSD in the Brightness adjustment mode.
- 2 Use the Up/Down buttons to change the setting.
- 3 Press the Menu button to exit the menu.

OSD Lock/unlock

Use this function to lock the OSD to prevent inadvertent use. The monitor is shipped in the unlocked position.

To lock:

Press the MENU button and UP button simultaneously for 2 seconds. A window will appear displaying: "OSD Unlock."

Continue to hold the buttons down for another 2 seconds until the window toggles to "OSD Lock."

To unlock:

Press the MENU button and UP button simultaneously for 2 seconds. A window will appear displaying: "OSD lock."

Continue to hold the buttons down for another 2 seconds until the window toggles to "OSD Unlock."

Adjustment of geometry, display colour temperature, OSD adjustment and OSD language

All these adjustments are individually selected using the OSD menu. To select the required function:

- 1 Press the Menu button.
- 2 Use the Up/Down buttons to highlight the required item.
- 3 Press the Select button - The central area of the OSD will change from blue to black.
- 4 Use the Up/Down buttons to change the value, or select the required option.
- 5 Press the Menu button to exit the menu.

Introduction

About this Chapter

This chapter describes the procedures and information required for configuring both BZMD models. This also includes settings to match the imaging device. These are required before the BZMD will be ready to use. Any differences between BZMD-1 and BZMD-1000 are indicated by using the full model names.

Administrator types

Two types of administrator are described: Windows and BZMD. Both administrator accounts require passwords. These passwords are case-sensitive. It is recommended that they are changed during installation.

As a **Windows administrator** you can change:

- User accounts
- Network connections and properties

Note

To logon as the Windows administrator you must know the Windows administrator password. The default password is:

Administrator

As a **BZMD administrator** you can access the configuration section:

- Storage devices and printers
- Configure the Capture card for different input sources
- Configure the GPIO behaviour
- File deletion
- Advanced settings

Note

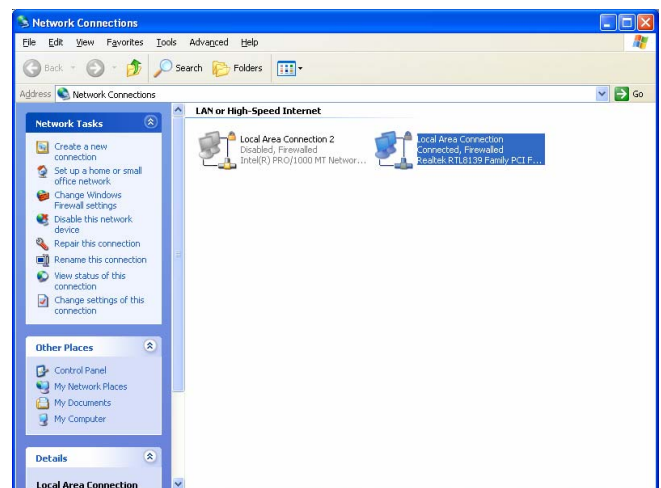
To logon as the BZMD administrator you must know the BZMD administrator password. The default password is:
SonyBZMD

Network settings

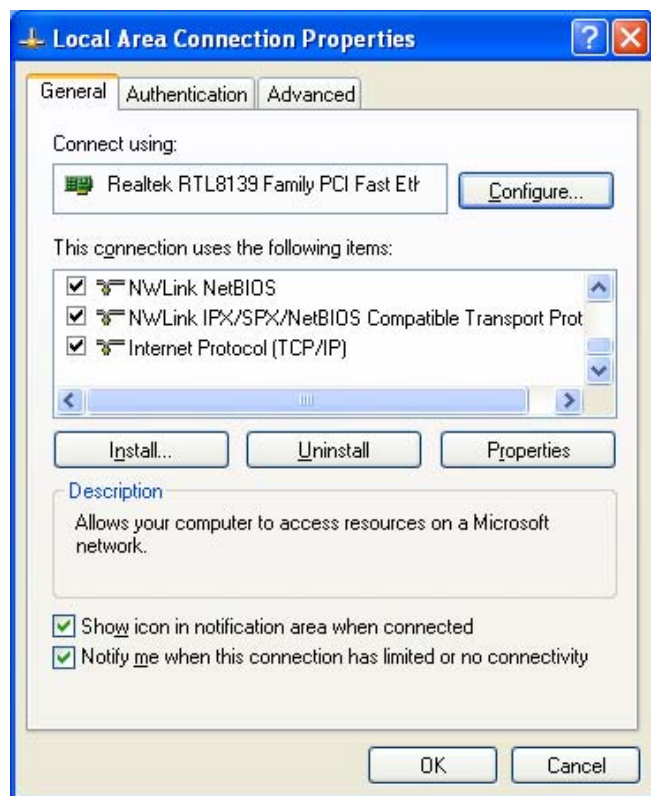
If you intend to connect to the hospital network, you will need to configure the network settings. Please contact the hospital network administration department before connecting to the hospital network.

Configuring Local Connection Properties

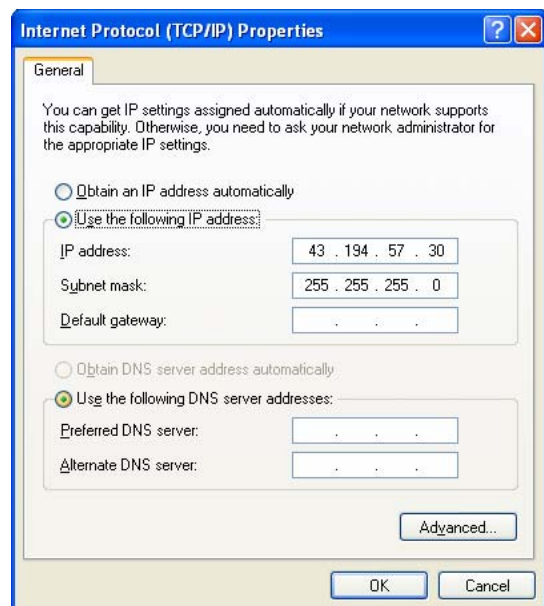
- 1 Click Windows **Start > Control Panel**.
- 2 Double-click the **Network Connections** icon to display the Network Connections window.
- 3 The Network Connections window opens. Click on **Local Area Connection** and then on **Change settings of the connection** in the left hand menu.



- 4 In the Local Area Connection Properties dialog, select **Internet Protocol [TCP/IP]** and click the **Properties** button.



- 5 In the **Internet Protocol [TCP/IP] Properties** dialog, the settings for **IP Address**, **Subnet mask**, **Default gateway** and **DNS server** can be directly accessed. Configure your settings with or according to the Hospital Network Administration requirements. Click the **Advanced** button if more advanced settings are required.



- 6 After the above settings have been configured, click **OK** on all open dialog windows and close down the Network Connections dialog.

You have now completed your network settings in order to communicate to the Hospital Network. If prompted to, restart the BZMD.

Firewall settings

For added security it is recommended that the BZMD is isolated from all incoming network traffic. With the BZMD isolated, the possibility of virus attack is minimised.

Under normal operation there is no incoming network traffic to the BZMD and operation with all external traffic blocked is recommended. However, access to the Windows WinSCP32 - DICOM Store Provider will be needed in order to test the network connection if problems are encountered. This uses a 'Ping' test (See "Ping the device" on page 77. Communications Problems).

- 1 Click Windows **Start > Control Panel**.
- 2 Double-click **Windows Firewall**.
- 3 On the Windows Firewall window select the **Exceptions** tab located at the top.
- 4 On the Exceptions tab un-tick all check-boxes.
- 5 Select **OK**.

Note

When the system is restarted, the following Security Alert may be received to confirm that access to the WinSCP32 - DICOM Store Provider has been blocked. The appropriate button should be selected to Keep Blocking or Unblock. If this reminder is not required, un-tick the 'Display a notification when Windows Firewall blocks a program', which is found on the Windows Firewall > Exceptions tab window.



BZMD configuration settings

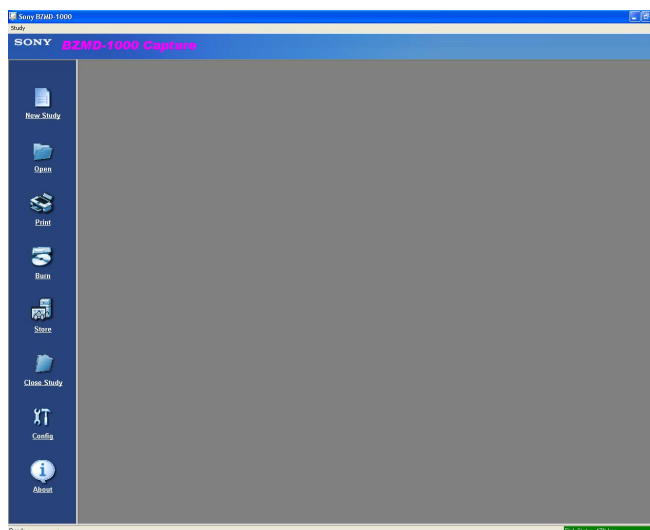
Before using the Image Capture Device, it must be correctly configured. The settings will depend on the type of equipment that will be used for image capture, printing, storage etc. Please contact the hospital network administrator to obtain the DICOM connectivity information of networked equipment.

Starting the BZMD application (configuration)

Starting the application

To power on and start the application:

- 1 Power on the display unit using the power On/Off switch located on the bottom edge of the front bezel (see page 24).
- 2 When the BZMD has completed its boot-up, the Main window is displayed.



- 3 Click on the **Config** icon.



At the **Password** prompt, enter the default password:

SonyBZMD



Note

The password is case-sensitive. If the default password is rejected, check with the administrator.

Logon Security

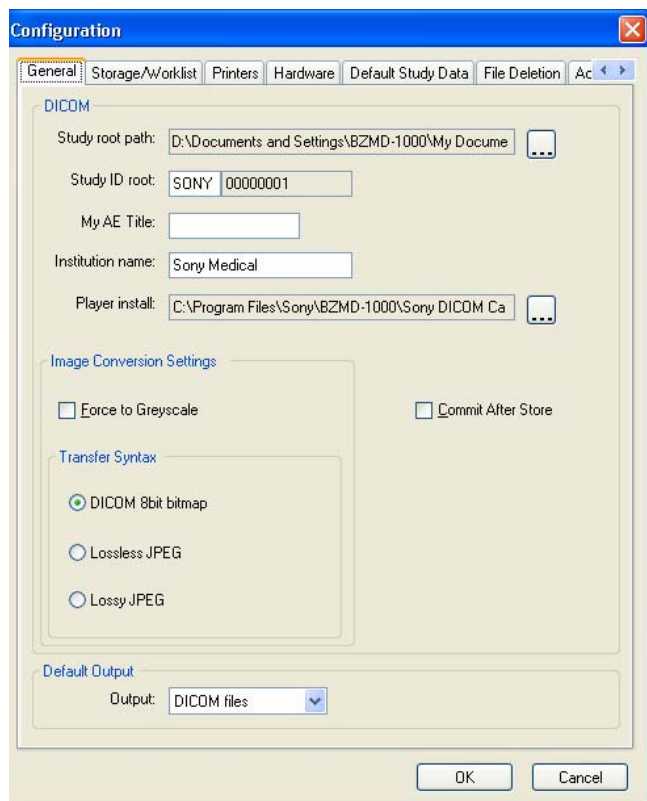
Windows logon provides a level of security to prevent unauthorised use of the Image Capture Device. If after power on, you are prompted for Username and Password, enter your user name and password. See your hospital network administrator if you are unsure of the correct details.

When the start-up has completed, follow the instructions below to configure the capture device.

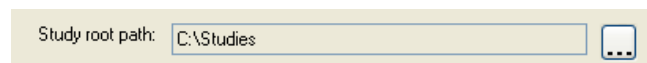
Configuring BZMD: General tab

To be able to store, transfer and replay studies, you must configure the general settings:

- 1 In the **Configuration** dialog window, select the **General** tab.



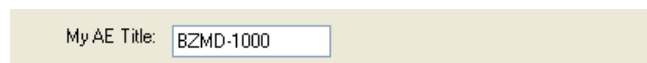
- 2 Under **Study root path** set the location for storing the DICOM studies (e.g. C:\Studies). Click the Browse ... button to change to a different location.



- 3 Under **Study ID root** modify the prefix of the unique ID that identifies each DICOM study created by the BZMD, as required (default ='SONY').



- 4 Under **My AE Title** set the BZMD unit's Application Entity title. Please check with the hospital DICOM network administrator.

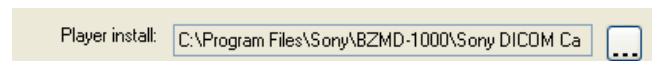


- 5 Under **Institution Name** enter the name of your department or institution. Please check this with the hospital DICOM network administrator.

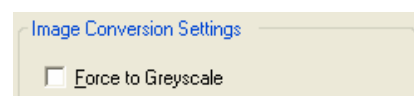


- 6 Under **Player install**, if the folder location is set, the BZMD player application will automatically be burnt when storing a DICOM study onto CD, DVD or Blu-ray.

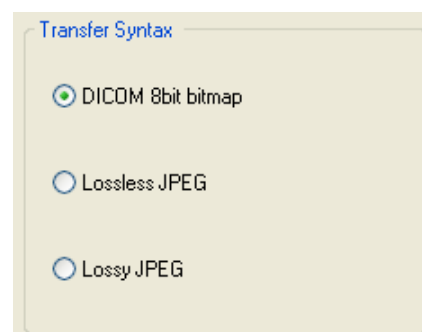
e.g. C:\Program Files\Sony\BZMD-1000\Sony DICOM Capture\Player installer



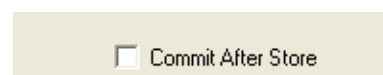
- 7 Under **Image Conversion Settings**, click the **Force to Greyscale** check box to convert images to DICOM-compatible greyscale images. When selected, all images saved for this study will be stored as greyscale.



- 8 Under **Transfer Syntax** set the format of the Still Images stored in each DICOM study, as required. **DICOM 8bit bitmap** is the best quality. **Lossy JPEG** generates the smallest file sizes.

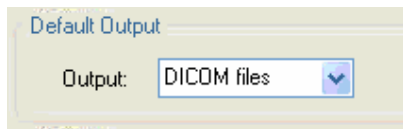


- 9 By selecting **Commit After Store**, BZMD can be integrated into a MPPS (Modality Performed Procedure Step) enabled DICOM network. Please check with your DICOM network administrator.



- 10 Use the **Default Output** option to select between DICOM and Original files output. HD video can only

be output as Original files. Click the drop-down arrow to select.



Note

The Image Conversion settings are also presented in a dialog when a print, burn or store action is initiated. Previous settings are remembered.

Configuring BZMD: Storage/Worklist tab

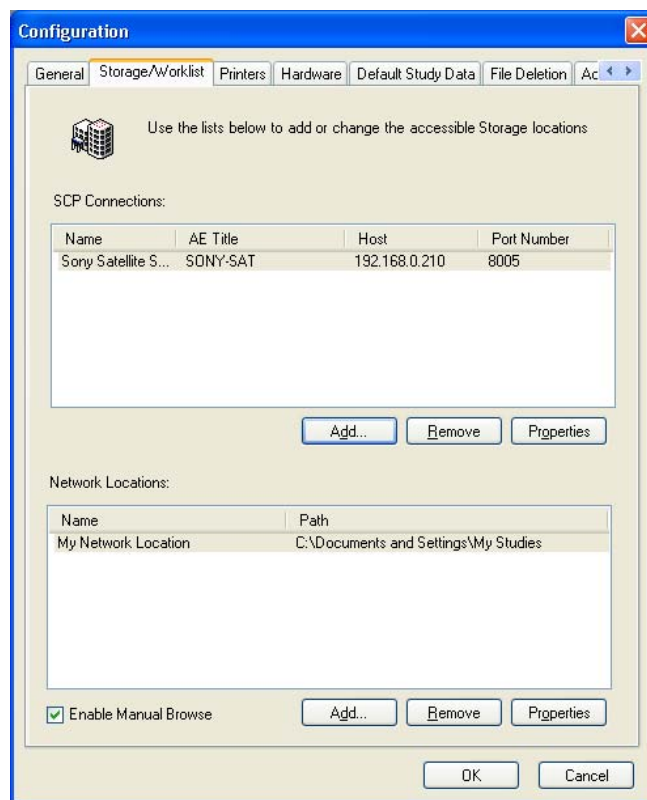
Use this tab to set up where studies can be stored, and the location of patient worklists. Note that HD video files cannot be stored on an SCP server, however they may be stored as Original files at a suitable network storage location.

The bottom half of the **Storage/Worklist** tab shows a list of available network locations. The following two sections describes the configuration wizards for both **SCP** and **Network Locations**.

Configuring SCP connections

To connect other DICOM devices and peers - known as Service Class Providers (SCP) - such as a Worklist Provider or a Storage Provider (Sony Satellite Server), you must configure the Storage/Worklist settings:

- 1 In the **Configuration** dialog window, select the **Storage/Worklist** tab.



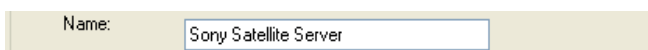
- 2 Click the **Add** button to start the **Add SCP Wizard**.



- 3 Click **Next** to begin the configuration.



- 4 Under **Name** set the everyday working title of the DICOM SCP (e.g. Sony Satellite Server).



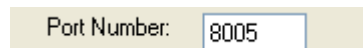
- 5 **AE Title** (Application Entity) is a required setting for each device or peer on the DICOM network. It is the identification of the service you are requesting. If you do not know it you need to ask your Hospital DICOM network administrator (e.g. SONY_SAT).



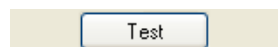
- 6 **Host** is the IP address of the targeted DICOM device such, as the Sony Satellite Server.



- 7 **Port Number** is the port number of the targeted DICOM device, such as the Sony Satellite Server.



- 8 Click on **Test** to confirm that the BZMD can communicate with the target DICOM Peer with the settings made.



- 9 Finally, click on the type of service to be provided by the DICOM Peer: Worklist Service Providers provide patient information together with the schedule of procedures. Storage Service Providers provide a destination where completed studies can be sent for storage (for example the Sony Satellite Server is a Storage provider). If uncertain what type of service is being provided by the target DICOM Peer, seek assistance from your hospital DICOM network administrator.

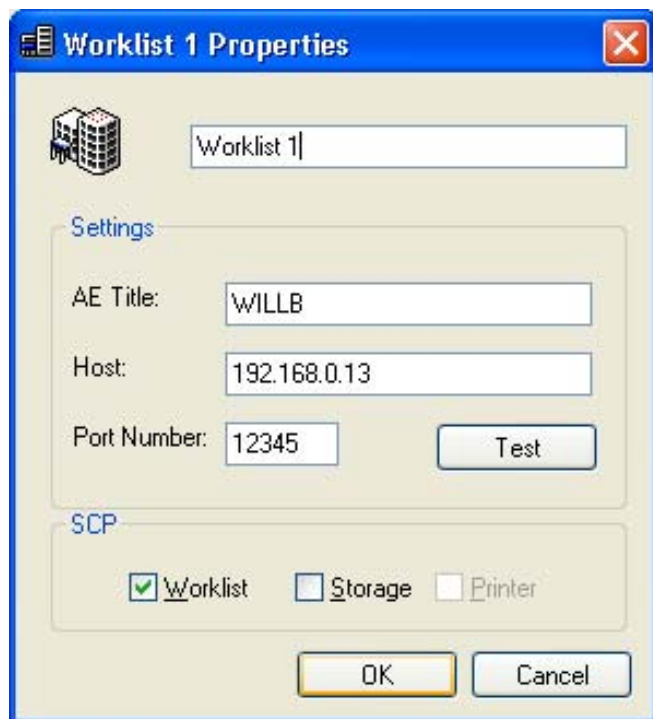


- 10 If successful, click on **Next** to complete the installation. If not, seek assistance from your hospital DICOM network administrator.



Modifying SCP properties and testing communications

Select an item in the **Storage/Worklist** tab **SCP Connections** list and click the **Properties** button to display a dialog enabling you to change the properties of the worklist or storage provider.



A **Test** button enables you to test the connection between the BZMD and the DICOM device.

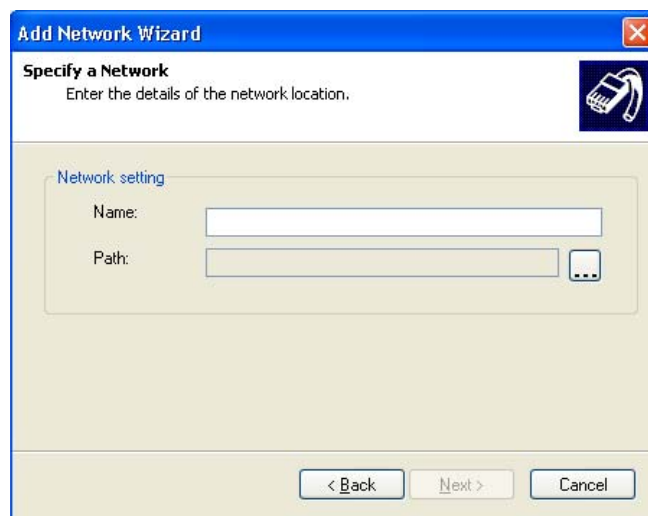
Configuring network locations

The method of configuring Network Locations is similar to that described for SCP Connections above.

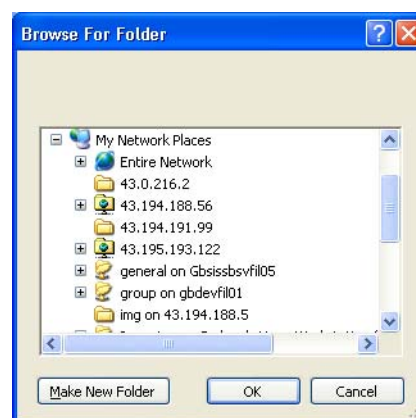
- 1 To add a new network location click the **Add** button to start the **Add Network Location Wizard**.



- 2 Click **Next** to begin the configuration.

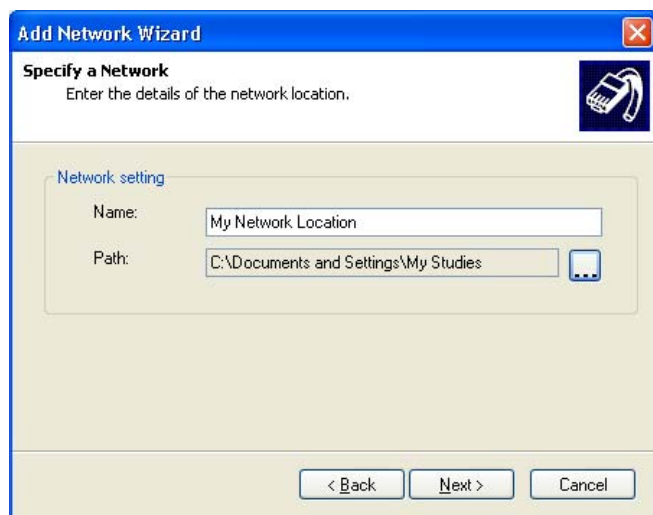


- 3 Under **Name** enter your chosen name for the location. This name will appear in a drop-down box when you store studies.
- 4 Under **Path** click the browse (...) button to choose a network location.



- 5 To create a new folder click on an existing location, then click the **Make New Folder** button to create a new storage folder under the selected location. Rename the new folder by right-clicking on the new folder and selecting **Rename** and typing on the highlighted name. Click **OK** to accept or **Cancel** to return without saving.

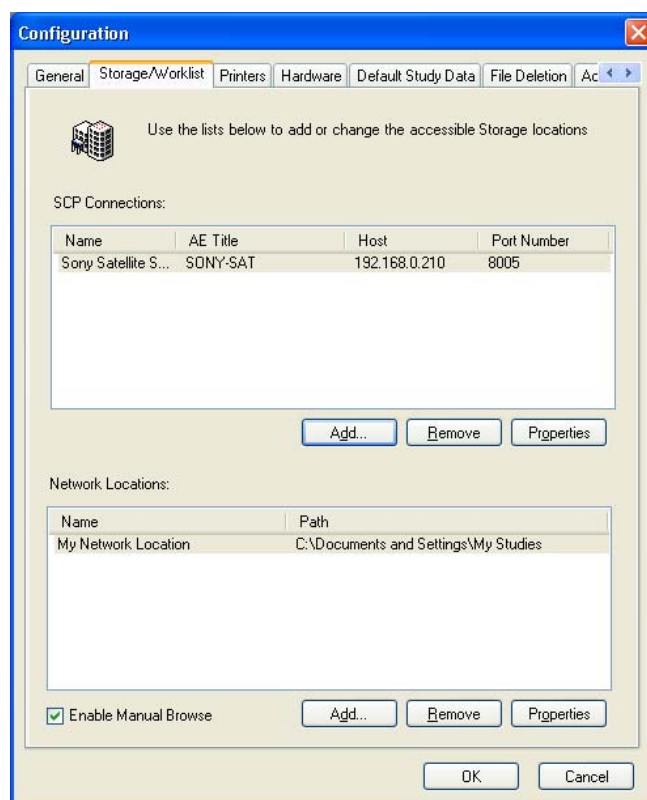
- 6 Click **Next** if the details are correct or the **Back** button to make corrections.



- 7 Click the **Finish** button to close the wizard



Modifying the Network Locations properties



Clicking the **Remove** button deletes the currently selected network entry.

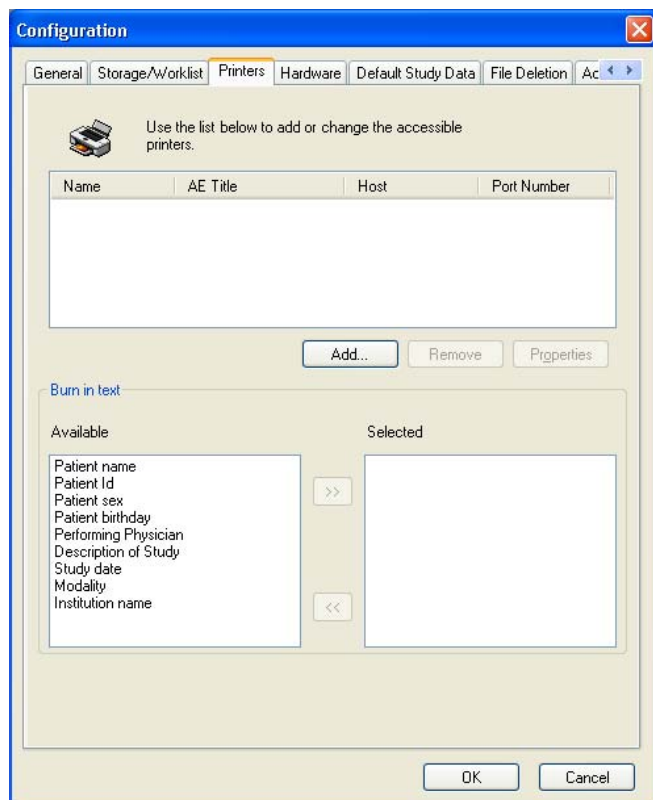
Clicking the **Properties** button displays a dialog for editing the properties of the network location.

When ticked, the **Enable Manual Browse** check box causes a Browse button to be displayed on the **Send Study to Storage Wizard** for Original files. See “*Storing a study (DICOM or Original files) from an open study*” on page 70.

Configuring BZMD: Printers tab

To connect the Image Capture Device to other DICOM devices and peers on the Hospital DICOM Network, you will need to configure the printer settings.

- 1 In the **Configuration** dialog window, select the **Printers** tab.



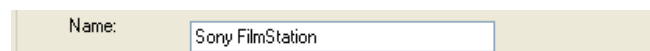
- 2 Click the **Add** button to start the **Add Printer Provider Wizard**.



- 3 Click **Next** to begin the configuration.



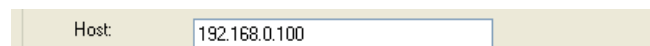
- 4 Under **Name** enter a memorable name for the DICOM Printer (e.g. Sony FilmStation).



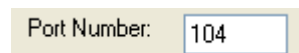
- 5 **AE Title** (Application Entity) is a required setting for each device or peer on the DICOM network. It is the identification of the service you are requesting. If you do not know the correct entry ask your hospital DICOM network administrator.



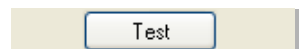
- 6 **Host** is the IP address of the targeted DICOM device such, as the Sony FilmStation DICOM printer.



- 7 **Port Number** is the port number of the targeted DICOM device, such as the Sony FilmStation DICOM printer.



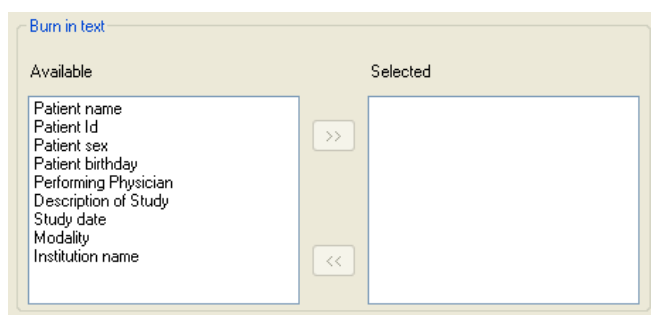
- 8 Click **Test** to confirm that the BZMD can communicate with the target DICOM Printer with the settings made.



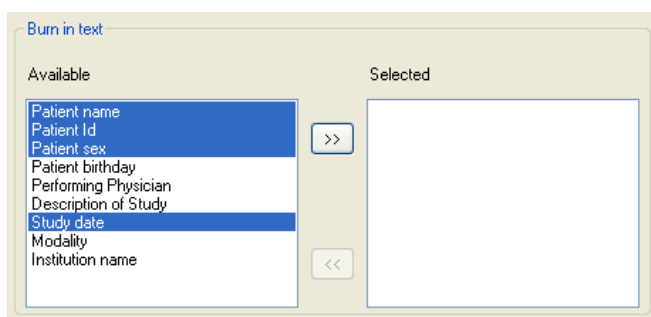
- 9 If successful, click on **Next** to complete the installation. If not, seek assistance from your hospital DICOM network administrator.



- 10 Now choose what pieces of Patient data you would like to see burnt into displayed studies, and in printed studies.



- 11 Click on the desired items in the list in the **Available** column.



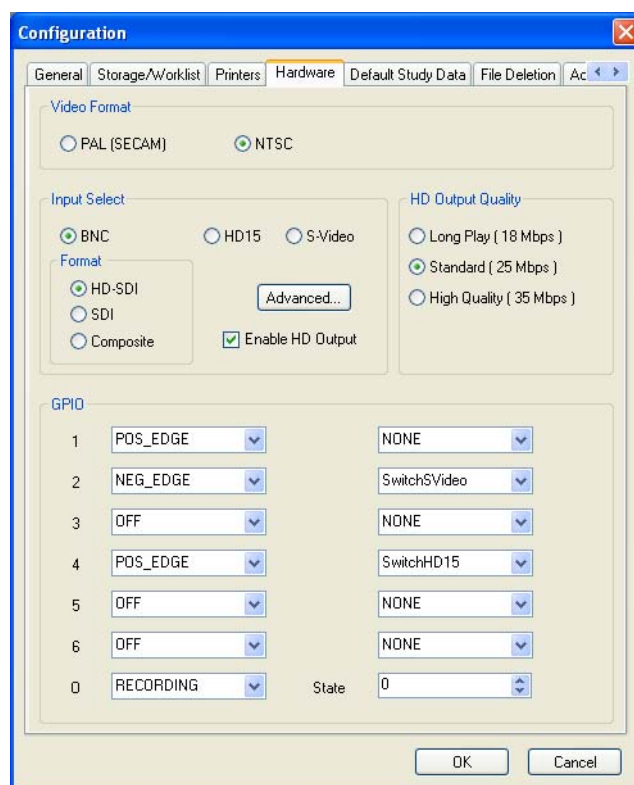
- 12 Click on the  button to Select the **Burn in text**.

Configuring BZMD: Hardware Tab

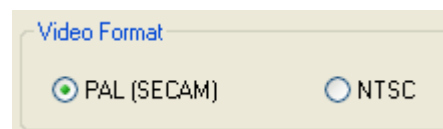
The heart of the Image Capture Device is a Capture Card that allows connection to a host of video sources from legacy to next generation equipment - maximising flexibility both now and in the future.

More information regarding the Capture Card is given in Appendix 2 “*Capture Card Specification*” on page 85 at the end of the manual. You should familiarise yourself with that section and refer to it when configuring the following settings.

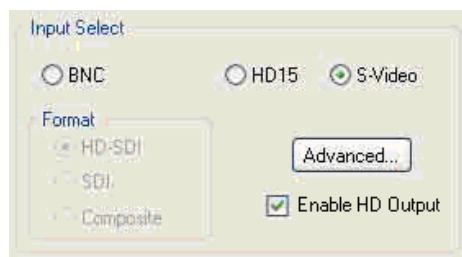
- 1 In the **Configuration** dialog window, select the **Hardware** tab.



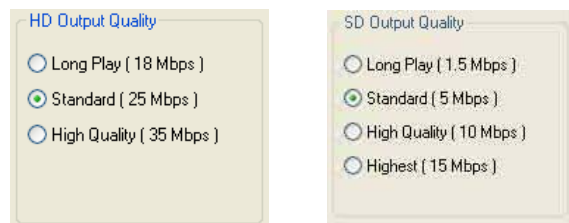
- 2 In the **Video Format** section, the system wide setting for the Video standard can be set. This setting relates to the video standard of video source devices connected to the various Inputs (PAL, SECAM and NTSC), as well as the encoded video generated by the BZMD (PAL or NTSC).



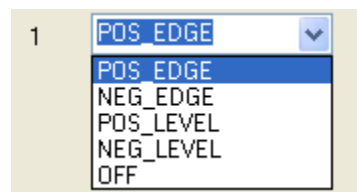
- 3** In the **Input Select** section, select the radio button corresponding to the input connector used for the video source. BNC, HD15 or S-Video. For BNC the format can be set as HD SDI, SDI or Composite.



- 4** The quality of encoding used when the video is being recorded can be set using the **Output Quality** section. **Highest** is the best quality. **Long Play** generates the smallest file sizes. If the **Enable HD Output** check box is ticked, HD Output Quality options are displayed. Otherwise SD Output Quality options are displayed for recording the video stream.



- 5** Use the **GPIO** section to configure remote control integration of the BZMD. The Capture Card provides six GPIs (General Purpose Inputs) and one GPO (General Purpose Output). For GPIs 1 to 6, select the type of trigger that is sent from your remote controlling device. If uncertain, please check with the manufacturer of the equipment.



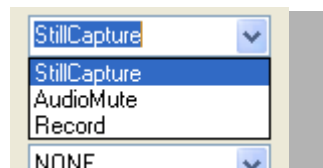
The selection of the above trigger types will determine what actions are available from an external input.

LEVEL type triggers are used when the action is required to be continuous while the trigger is present.

EDGE type triggers will perform a single action when a button is pressed, or released. Which way is controlled by the polarity, i.e. **POS_** or **NEG_**.

- 6** After selection of the trigger type select the desired BZMD action for each configured GPI.

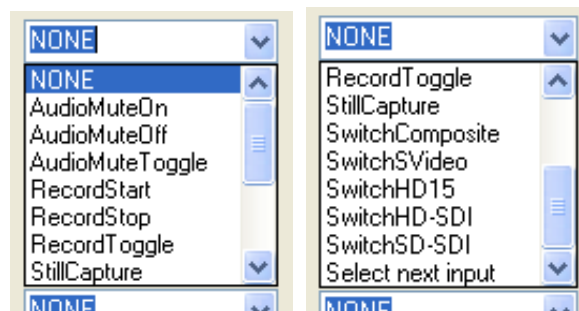
If **POS_LEVEL** or **NEG_LEVEL** is selected, the available actions are:



Note

Although available within the drop-down menu, it is recommended that **StillCapture** is used with an edge trigger type.

If **POS_EDGE** or **NEG_EDGE** is selected, the actions available are:



The **Select next input** action allows the user to cycle through the inputs sequentially. E.g. **HD-SDI > SD-SDI > S-Video > HD-15 > HD-SDI**.

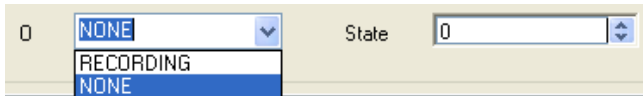
Note

AudioMuteOn and **AudioMuteOff** would normally be used with a pair of buttons.

RecordStart and **RecordStop** would normally be used with a pair of buttons.

The final pair of drop-down boxes are used to select the recording tally lamp, (if connected). Select either **NONE** or **RECORDING**. The polarity of the output

can be changed using the **State** drop-down box to provide a normally on, or normally off signal.



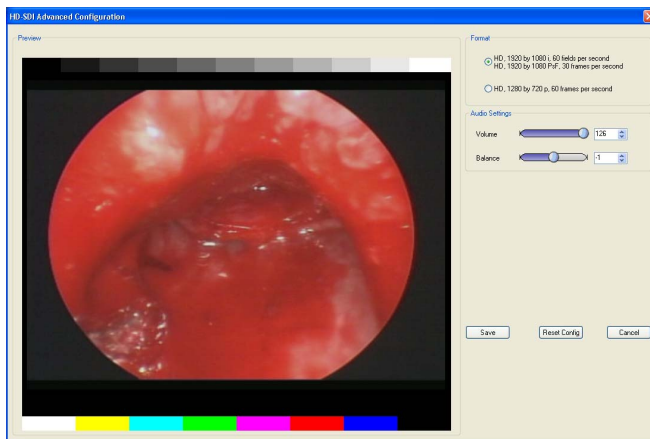
- 7 Clicking the **Advanced...** button displays the **Advanced Configuration** dialog, showing a live preview, enabling you to adjust video and audio settings. Each type of input format has a different set of adjustments available.

Note

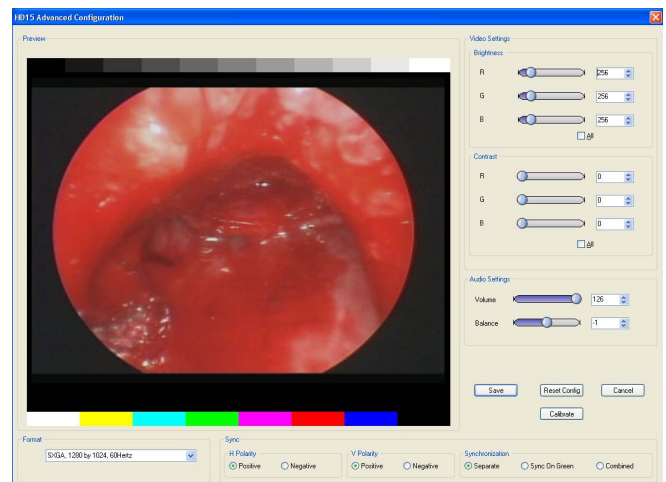
Audio is not available in preview. Please make a test recording to confirm audio level.



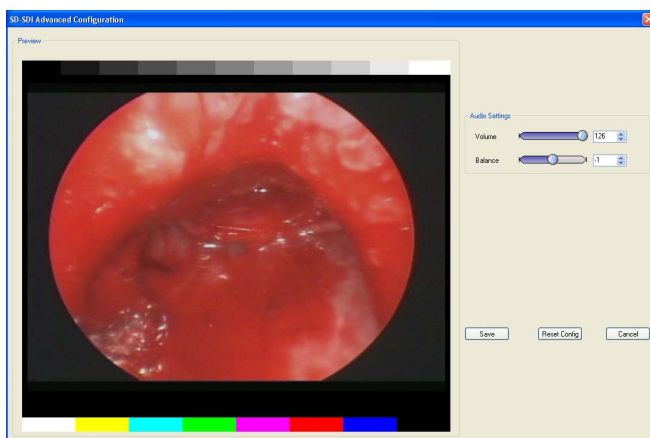
S-Video (and Composite) advanced settings



HD-SDI advanced settings



HD15 advanced settings



SD-SDI advanced settings

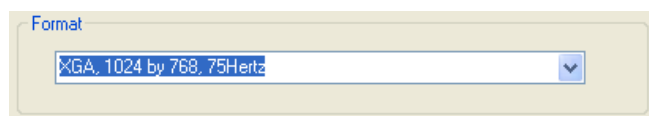
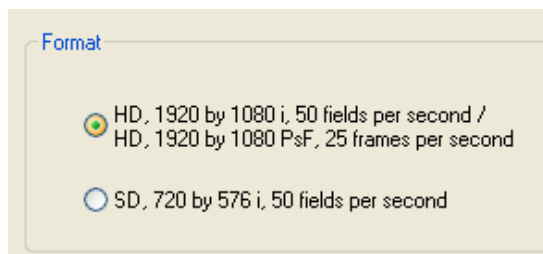
Greyscale and colour bars references are displayed above and below the Preview window to assist the set up of the input video signal.

Tip

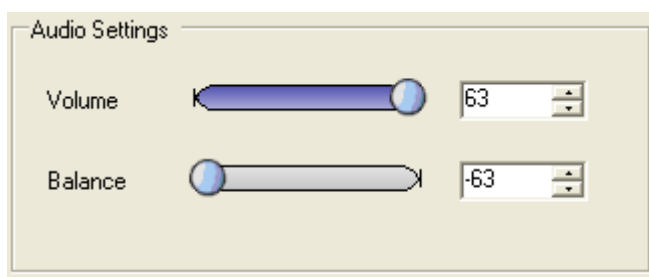
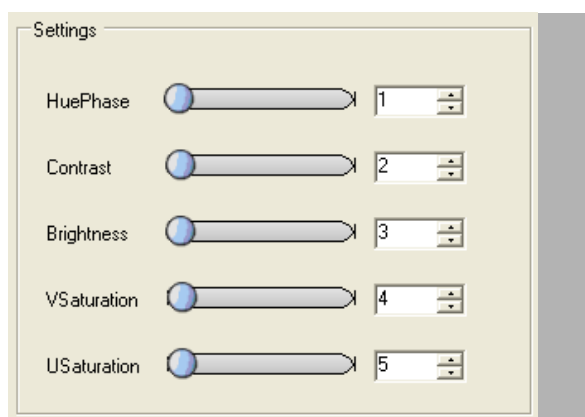
To adjust brightness and contrast, turn the contrast down, then use the **Brightness** control to match a known black area in the video with the black reference; then use the **Contrast** control to match a known white area in the video with the white reference.

- 8 For the HD-15 and BNC SDI/HD-SDI connectors, the **Format** of the video signal output by your video

source may be set. If uncertain, please check with the manufacturer of the equipment.



- 9** For Composite, S-Video and HD15 inputs, settings are provided for control over brightness, contrast and colour. Audio input controls for volume and balance are also provided.

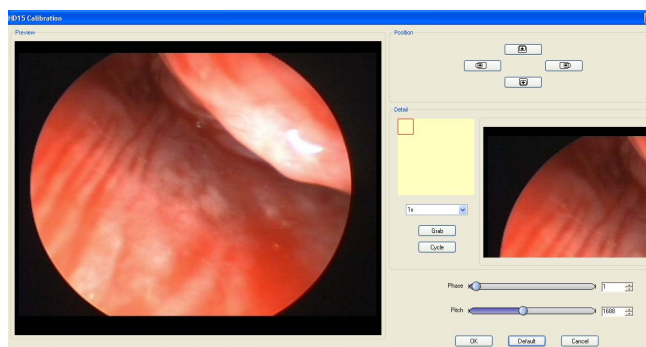


Tip

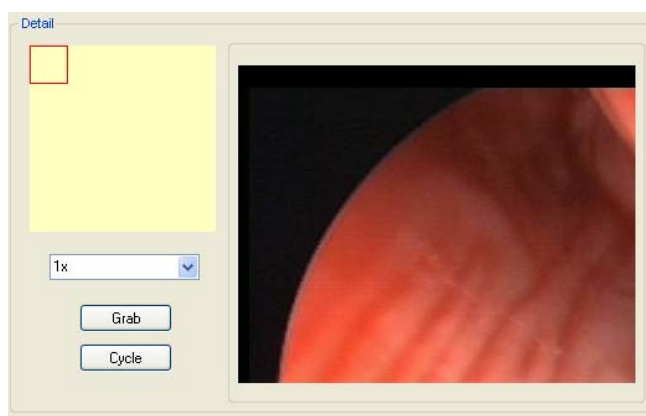
You may return to the previously saved settings by clicking **Reset Config**.

Reset Config

- 10** HD-15 video sources may be further fine tuned by clicking the **Calibrate** button. Controls to adjust the **Position**, **Pitch** and **Phase** of the video image are available.



You may also zoom in on a detailed area of the video in order to check image clarity. The **Cycle** button automatically grabs a new image every five seconds thus displaying the results of the fine-tuning. This is fully explained in Appendix 3. See “*HD15 Settings and Calibration*” for further details.



- 11** Click **Save** to keep your new settings and exit.

Save

Note

To switch between Composite and SDI/HD-SDI video formats, both of which use the BNC connector, requires altering the setting of Switch **S1** on the Capture Card.



If you need to change the switch settings refer to Appendix 2 “*Setting S1 and S2*” on page 87. This requires the

workstation to be opened - this must only be done by qualified personnel.

Configuring BZMD: Default Study Data tab

When new studies are created (see “*Creating a new study*” on page 55), you may choose to pre-populate the form with default data rather than having a blank electronic form to complete. This may help you to save time when creating several studies with the same patient or physician details, or with similar descriptions.

- 1 In the **Configuration** dialog window, select the **Default Study Data** tab.

The screenshot shows the 'Configuration' dialog box with the 'Default Study Data' tab selected. At the top, there is a message: 'This is the default study data to auto populate the new study.' Below this is an 'Enable' checkbox which is checked. The 'Patient' section contains fields for 'Patient Name' (John William T Smith), 'Prefix' (Mr), 'Suffix' (empty), 'ID' (ABC123), 'Sex' (Male), and 'Date of birth' (01/01/1970). The 'Study' section contains fields for 'Accession number' (123456789), 'Referring physician' (Dr. Graham Jones, Ph.D.), 'Performing physician' (Dr. Steven White, M.Div.), 'Study Description' (This is the study description), and 'Series Description' (This is the series description). At the bottom are 'OK' and 'Cancel' buttons.

- 2 At the top of the dialog, an **Enable** check-box enables you to use the default data entered in this dialog.

This close-up shows the message 'This is the default study data to auto populate the new study.' and the 'Enable' checkbox, which is checked.

- 3 Under **Patient**, you may enter the default **Patient Name, Prefix, Suffix, ID, Sex** and **Date of birth**.

This close-up shows the 'Patient' section of the configuration dialog. It includes fields for 'Patient Name' (John William T Smith), 'Prefix' (Mr), 'Suffix' (empty), 'ID' (ABC123), 'Sex' (Male), and 'Date of birth' (01/01/1970).

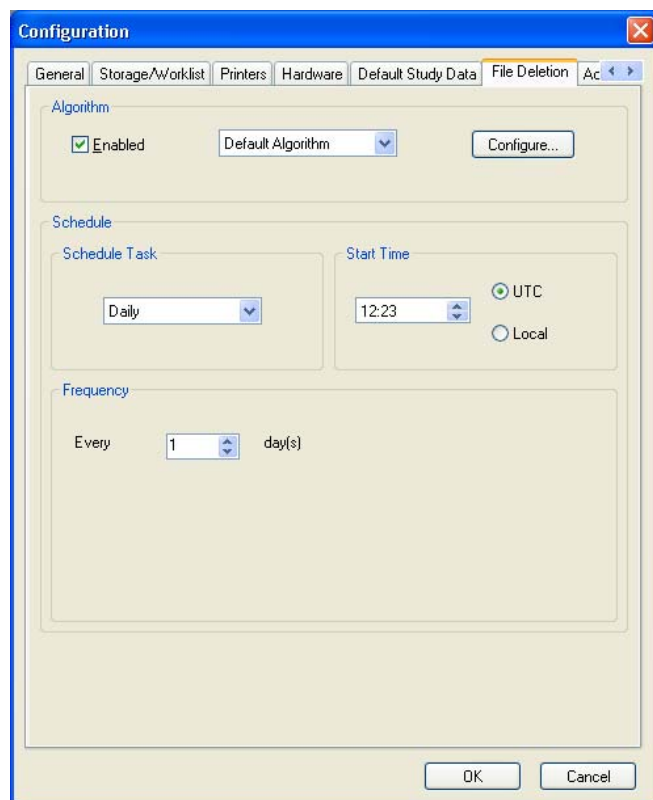
- 4 Under **Study**, you may enter the default **Accession number, Referring physician, Performing physician, Study Description** and **Series Description**.

This close-up shows the 'Study' section of the configuration dialog. It includes fields for 'Accession number' (123456789), 'Referring physician' (Dr. Graham Jones, Ph.D.), 'Performing physician' (Dr. Steven White, M.Div.), 'Study Description' (This is the study description), and 'Series Description' (This is the series description).

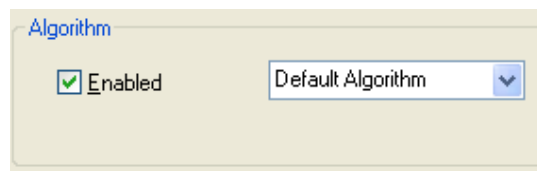
Configuring BZMD: File Deletion tab

To reduce the amount of data held on the PC's hard drive the Automatic file deletion setting may be used. This may be configured using rules to delete files just based on time or including whether the files have been stored, printed or burned.

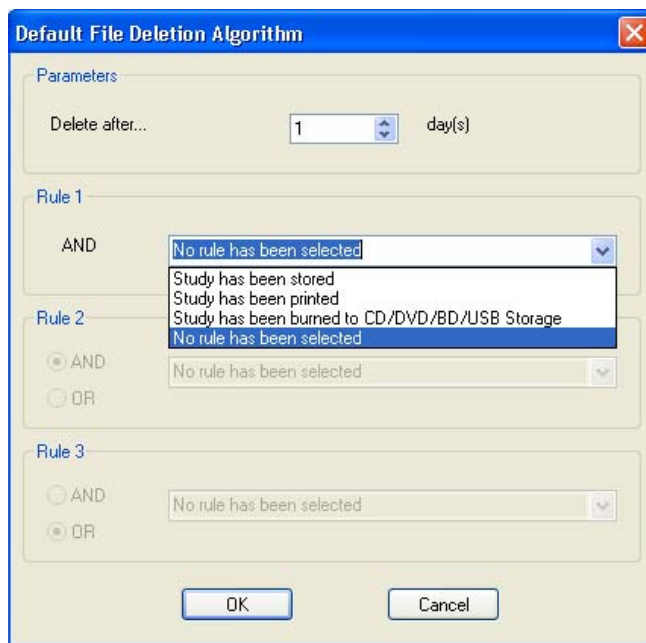
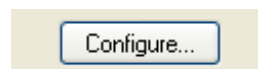
- 1 In the **Configuration** dialog window, select the **File Deletion** tab.



- 2 Under **Algorithm**, an **Enable** check box enables you to turn the file deletion feature on or off, and to choose the algorithm used for deletion from a drop-down menu.



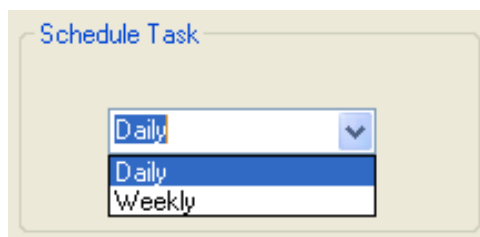
- 3 Under **Algorithm**, a **Configure** button enables you to display a further dialog in which to set the file deletion parameters and rules.



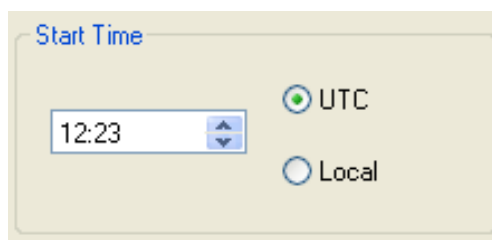
Use this dialog to set the number of days to delete after, and the rules for deletion, for example it is possible to set file deletion to occur only when the file has been stored, printed and burned to CD/DVD, thus ensuring vital data is not lost:

- File has been stored
- File has been printed
- File has been burned on CD/DVD/BD/USB Storage
- No rule has been selected

- 4 Under **Schedule**, a **Schedule Task** drop-down menu enables you to specify daily or weekly file deletion.



- 5 Under **Schedule**, a **Start Time** selector enables you to specify the time at which you want to enable file deletion.



- 6** Under **Frequency**, set the frequency at which you want to delete files.

Configuring BZMD: Advanced tab

Various 'advanced' options for configuring the operation of the BZMD are provided by this dialog.

- 1** In the **Configuration** dialog window, select the **Advanced** tab.

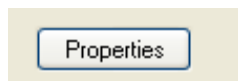
- 2** In the **Password** section, Settings made in the Configuration dialog can be protected from unauthorised changes. The default password is: **SonyBZMD**

Note

The password is case-sensitive.

- 3** Un-tick the **Use Password** check-box to allow all users to access the Configuration settings. (Not recommended).

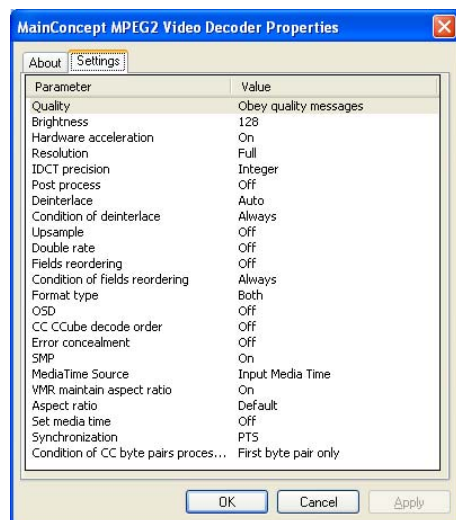
- 4** In the **MPEG-2 Video Decoder** section, properties can be set that will adjust the appearance of how video is played back in the Review pane. Click the **Properties** button to display the **MainConcept MPEG2 Video Decoder Properties** window



The **About** tab on the properties dialog displays the version number of the video decoder.



The **Settings** tab on the properties dialog displays the decoder parameters.

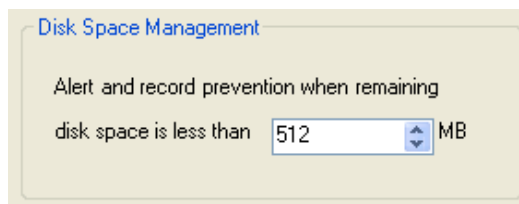


Tip

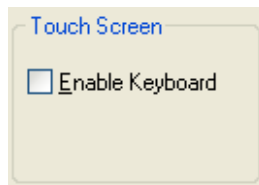
Experiment with the De-interlace setting to minimize the appearance of Interlace artefacts in the video playback.

- 5** In the **Disk Space Management** section, a threshold may be adjusted that will determine when the BZMD

will report when the remaining free disc space limit set here is reached.



- 6** In the **Touch Screen** section, an **Enable Keyboard** check-box allows the touch screen feature to be turned on or off.



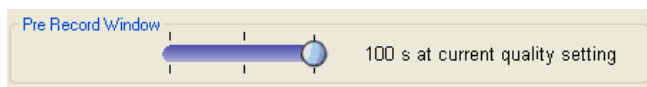
In the **MPEG-2 File Size** section, a limit may be adjusted that will set the maximum video file size. As the limit is reached, a new video file is automatically started, so that no part of the recording is lost. There is an upper limit of 4,096 MB the duration of this maximum size is dependent on the signal format and recording quality setting.



Tip

You can use the MPEG File Size limit to ensure files will fit on a CD, USB Storage Media or better meet the network traffic requirements.

- 7** In the **Pre Record Window** section, a selector enables a choice of none, medium or maximum pre-record time. The actual number of seconds available for pre record will vary according to the **HD Output Quality** or **SD Output Quality**, set on the **Hardware** Tab.



Note

The pre-record buffer is only active when a study is opened. The exact amount of video captured by the pre-record feature will vary, depending on how long the video source has been connected and whether the

unit has recently recorded and stopped, since the unit requires time to capture and process the pre-recorded video.



Introduction

About this chapter

This chapter describes the Image Capture Device graphical user interface, and details the procedures required to use it to successfully capture information.

The screenshots in this chapter are applicable to both BZMD-1 and BZMD-1000. Note however that within BZMD-1 references to HD videos will be absent.

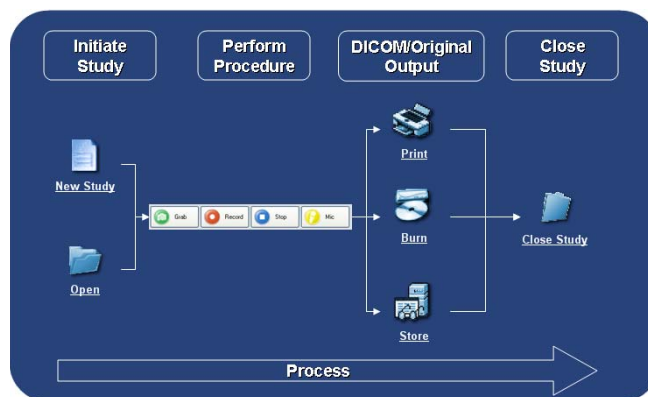
The process of capturing information

The Image Capture Device creates DICOM data with images and video coming from analogue or digital video sources, accurately recorded with the details of the associated patient and physician.

The process capturing this information typically comprises the following steps:

- 1 Initiate Study
- 2 Perform Procedure
- 3 DICOM or Original files Output

4 Close Study



The Process of Capturing Information

To facilitate the accurate recording and retrieval of information, a study must first be created, or an existing study opened.

During the procedure, images from the medical imaging device are routed to, and recorded by, the Image Capture Device. These images are automatically stored as part of the Study.

The Image Capture Device graphical user interface provides controls and displays for viewing live images from the connected medical imaging device, as well as captured images, significant sections and frames of which may be marked and identified for review and analysis.

When the procedure is complete, the output from the system, in the form of DICOM or Original file data, can be printed, burned to disc media and/or stored to a network-connected device.

Note

The study material stored is not altered when either DICOM or Original files output option is used. Therefore, if required, the same study can output in both formats.

Terminology

DICOM

DICOM stands for Digital Imaging and Communication in Medicine, a standard for the exchange of digital information between medical imaging equipment and other systems, ensuring interoperability between devices. The standard specifies protocols, command syntax, services and file format to facilitate communication, storage and access to information.

Original files

Files which are in their original recorded format and do not contain the information which is associated with DICOM files. These files may be stored and viewed with proprietary software. High definition video files can only be stored and burned in this format.

Study

A study is a record, or file, of the patient details, the procedure performed, the associated performing and referring physicians, and any associated series of media images captured during the procedure. Studies are stored, printed or burned to a CD, DVD or Blu-ray disc for future reference.

Series

A series is a collection of images, still and video (which may include audio, if a microphone is used), captured from the connected medical imaging device used during the procedure. A study can contain one or more series.

Before turning on the BZMD-1

Before turning on please refer to the following sections which contain information for the user:

- “Power on the unit” on page 22
- “Power off/shut down” on page 22

Before turning on the BZMD-1000

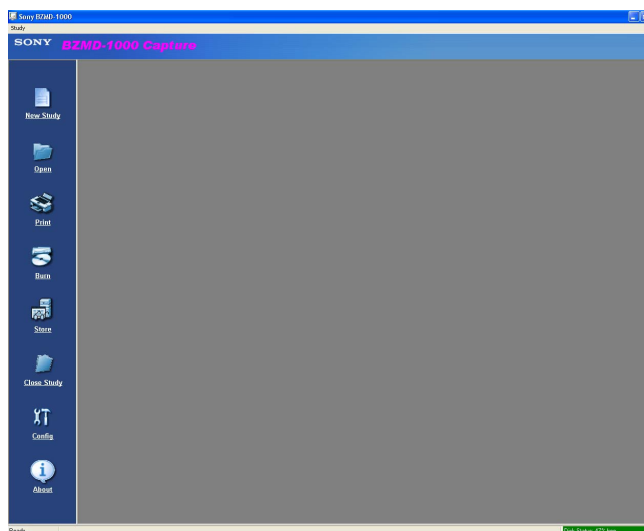
Before turning on please refer to the following sections which contain information for the user:

- “Power on the display unit” on page 31.
- “Power off/shut down” on page 31.
- “Touch screen” on page 31

Starting the application

To power on and start the application:

- 1 Power on using the power On/Off switch according to the model type.
- 2 When the BZMD has completed its boot-up, the application will start automatically and the Main window will be displayed.



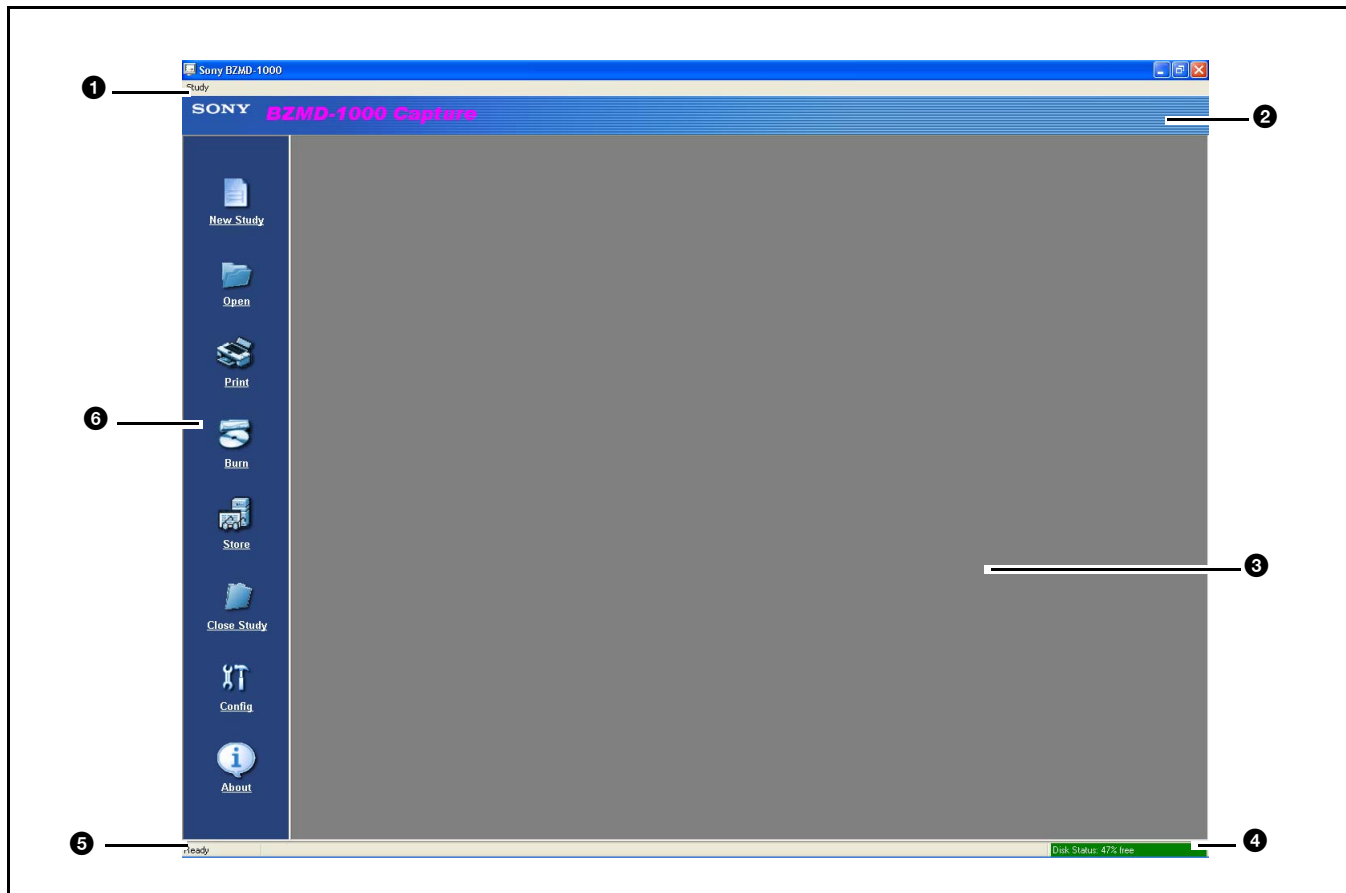
Logon Security

Windows logon provides a level of security to prevent unauthorised use of the Image Capture Device. If after power on, you are prompted for Username and Password, enter your user name and password. See your hospital network administrator if you are unsure of the correct details.

When the start-up has completed, (this may take up to two minutes,) the Image Capture Device is ready for use.

The Main window

After start-up, the Main window is displayed.



The Main Window

1 Menu

At power up, a single menu is displayed (**Study**) to enable you to create a new study or open an existing one.

2 Title Bar

The Title Bar displays the title of the graphical user interface e.g. 'BZMD-1000 Capture'.

3 Main Pane

On power up the main pane is empty. From here you can select an icon from the sidebar, or a menu option.

4 Hard disc status

The Hard Disc Status area indicates the percentage free of available storage space on the PC (in green). When the free space falls below 10% the indicator changes to orange. When there is no remaining free space, further recording and image grabs are inhibited, and the indicator changes to red.

5 Status

The Status Bar displays the operational status of the BZMD unit.

6 Sidebar

The stages of the capturing process are represented by icons in the left-hand sidebar, which are described in detail in the following pages.

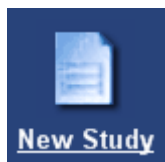
- **New Study** - creates a new study.
- **Open** - opens an existing study.
- **Print** - prints DICOM or Original data to a connected printer.
- **Burn** - burns DICOM or Original data to a CD, DVD or Blu-ray (BZMD-1000 only). You can also copy studies to a USB memory.
- **Store** - stores DICOM or Original data to a networked storage device.
- **Close Study** - closes the current study.
- **Config** - configuration of the BZMD.
- **About** - displays version information about the BZMD.

Creating a Study

Creating a new study

New studies can be created by either entering the study details manually, or by retrieving study details from a DICOM worklist server

Use the **New Study** icon, located on the sidebar of the main window, to create a new Study.



A **Create a new Study** dialog box is displayed to enable you to enter patient and study related information. The dialog box has three tabs, these are:

- **Patient** - Patient related information
- **Study Part 1** - Procedure related information
- **Study Part 2** - Descriptions

Click the tabs in turn to enter the study information.

Entering study details manually

Patient details may be entered manually under the **Patient** tab.

Study Part 1 tab

Enter the **Accession number** and names of physicians. To enter a physician's name, click the **Full Name...** button to display the **Check Full Name** Dialog box.

Enter the physician's details then click OK to return to the Study Part 1 tab. the details will appear in the correct format.

Study Part 2 tab

Enter the required descriptions.

Retrieving study details from a DICOM worklist server

If there is a DICOM worklist server available, click the **Worklist...** button to display the **Patient Worklist Query Wizard**. By default, the Worklist returns the procedures scheduled for today.

Tip

If no worklist is available, but default study details have been entered by the BZMD administrator, then clicking the **!** default data button will populate all tabs of the **Create a new Study** dialog box entry fields with pre-prepared study information. See “*Configuring BZMD: Default Study Data tab*” on page 47.

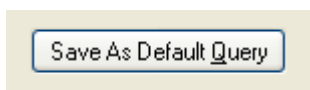
Name	ID	Sex	Modality	Start	Scheduled Descr...	Requ...
DEMO-A.B. veR A y...	VIO19540804	M	GM	5/29/2000 2:30 PM	ProcDesc	Proce
DEMO-SIROB NIAV...	SYL19850703	M	GM	5/29/2000 2:30 PM	ProcDesc	Proce
DEMO-ELICEC EIH...	SOP19840602	F	GM	5/29/2000 2:30 PM	ProcDesc	Proce
DEMO-ENILEC NEL...	SEB19830501	F	GM	5/29/2000 2:30 PM	ProcDesc	Proce
DEMO-KCID NALLA	ALL19820430	F	GM	5/29/2000 2:30 PM	ProcDesc	Norm
DEMO-EUGINIMOD ...	PIE19810329	F	GM	5/29/2000 2:30 PM	ProcDesc	Norm
DEMO-NIWRE SAL...	NIC19800228	M	GM	5/29/2000 2:30 PM	ProcDesc	Norm
DEMO-AVE UEIHT...	MAT19790127	F	GM	5/29/2000 2:30 PM	ProcDesc	Norm
DEMO-NIALSIHG U...	MAT19781226	M	GM	5/29/2000 2:30 PM	ProcDesc	Proce
DEMO-EILUJ ENIAR...	LOR19771125	F	GM	5/29/2000 2:30 PM	ProcDesc	Proce
DEMO-LLEIRUE EIL...	EUR19761024	F	GM	5/29/2000 2:30 PM	ProcDesc	Proce
DEMO-UEIHTAM N...	GH19750923	M	GM	5/29/2000 2:30 PM	ProcDesc	Proce
DEMO-UEIHTAM A...	EVA19740822	M	GM	5/29/2000 2:30 PM	ProcDesc	Proce
DEMO-SALOCIN NI...	ERW19730721	M	GM	5/29/2000 2:30 PM	ProcDesc	Proce

If the desired patient information is displayed in the **Patient Worklist**, click the name to select the patient and click the Finish button.

Entering patient details using the Wizard

If the desired patient information is not displayed, click on the **Refine Query...** button to modify the search parameters and launch the **Patient Worklist Query Wizard**.

If required, the **Save As Default Query** allows you to use your modified search parameters as the default method of retrieving relevant patient information the next time the **Worklist** button is pressed.

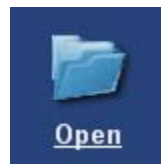


Tips

- To return procedures scheduled on all dates, deselect the check box for **Start date**.
- The Study may be closed at this point, enabling patient data for numerous studies to be entered in preparation for the procedure. You can then use the **Open** icon in the **Sidebar** to locate and retrieve the desired study when beginning the procedure.

Opening a study

Use the **Open** icon, to open a previously created study located on the local hard disc.



A list of the locally stored studies is displayed. To open one, either double-click on the item in the list, or single-click the item, to select it, and then click the **Open** button.

The **Auto Preview** check box, if selected, enables a preview of the first series of image thumbnails to be displayed at the bottom of the window.

Once an existing study has been opened, the first series will be opened and the images of this series displayed in the thumbnail section.

The Study window

When a study is opened, the Study window is displayed. The BZMD buttons and controls may be operated using the built-in touch-screen.

The operation of each button is explained in more detail in the following sections.



The BZMD Study Window

1 Menus

When a Study is open, four application menus are provided: **Study**, **Series Capture** and **View**.

Note

The **Study** menu duplicates the functions provided on the left-hand sidebar and lists the short-cut keys for these functions.

2 Series, Patient and Study details

Series, patient and study information are displayed in the **Study** box.

3 Review selection buttons

These buttons provide selection and control options for the current reviewed image.

4 Playback speed control

This control is present when a video is selected in the Review Image Display. Slider control for slow motion playback. Use this control during playback to change the playback speed. Adjusts play speed in increments from approximately 1/8 to x1 play-speed.

5 Review image display (Review pane)

Displays either the last grabbed image, or the selected image/recorded video from the thumbnail strip.

6 Video replay buttons

These are present when a video is selected in the Review Image Display. They provide control of video replay in either direction at various speeds, or frame-by-frame.

7 Marker buttons

These enable start and end markers to be added to highlight a particular section of a recorded video. A keyframe marker may be used to identify frames of particular importance.

8 Mode buttons

These provide functions for hiding the sidebar, toggling the size of the live/review display and selecting video input type.

9 Thumbnail select buttons

These are used to select single, multiple or all thumbnail images for printing.

10 Hard disc status

The Hard Disc Status area indicates the percentage free of available storage space on the PC (in green). When the free space falls below 10% the indicator changes to orange. When there is no remaining free space, further recording and image grabs are inhibited, and the indicator changes to red.

11 Thumbnail strip

Thumbnails of grabbed images and marked video frames are displayed at the bottom of the screen in a sequential timeline.

12 Live Image display (Preview pane)

The live image received from the imaging device connected to the BZMD unit is displayed on the left.

13 Live Recording buttons

These buttons provide Grab, Record, Stop and Mic functions for the live image displayed below them.

Menus

The **Study** menu duplicates the functions provided on the left-hand sidebar and lists the short-cut keys for these functions.

Study	
New	Ctrl+N
Open	Ctrl+O
Print	Ctrl+P
Burn	Ctrl+B
Store	Ctrl+S
Close	Ctrl+C
Config	Ctrl+G
About	Ctrl+Shift+A
Exit	Ctrl+E

The **Series** menu provides options for locking or unlocking the series associated with the selected Study.

Series	
Lock	
Unlock	
Select All Ctrl+A	

The **Capture** menu provides options for grabbing still images and adjusting video and audio capture settings (see “Adjusting capture settings” on page 60).

Capture	
☒ Frame	
Odd Field	
Even Field	
☒ Beep On Grab	
Settings...	

The **View** menu provides options for the behaviour of video playback.

View	
Consecutive Playback	
Auto Full Screen	

Consecutive Playback

When **Consecutive Playback** is enabled, playback will continue with the next available video in the thumbnail strip.

Auto Full Screen

When **Auto Full Screen** is enabled, the player will automatically enter full-screen mode when a video is played.

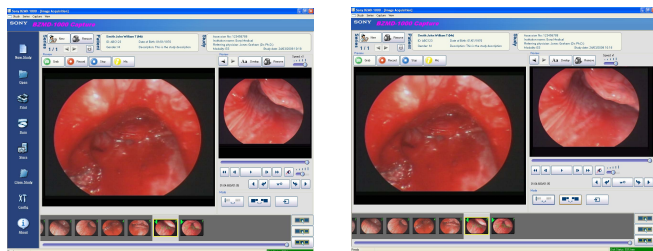
Configuring the display

Showing/Hiding the Sidebar

The **sidebar mode** button may be used to show or hide the left-hand sidebar.



The Review Pane on the right of the screen automatically adjusts in size to the increased space available.

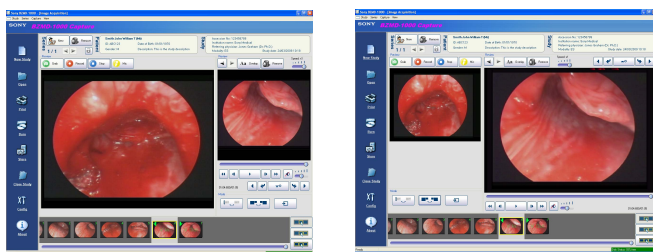


Toggling the display size

Use the **pane mode** button to swap the positions of the Preview and Review panes.



The Preview (or 'live') pane remains on the left-hand side and the Review pane remains on the right-hand side. This toggle action button allows you to give more area for the preview or for reviewing.



Capturing the procedure

Selecting the Video Input Type

Use the video type button to specify the video input type of the connected medical imaging device. This sets up the BZMD to specify the required format. Click on this button to show the available list of input types.



Clicking the button brings up a short menu which contains the possible options depending on the configuration set for the input video. Options include HD-SDI, SD-SDI, S-Video, HD-15, or composite, S-Video, HD-15.

Note

Using this button does not alter the configuration settings. If a study is closed the next opened study will reset to the settings contained within the configuration menus.

Grabbing/Capturing still images

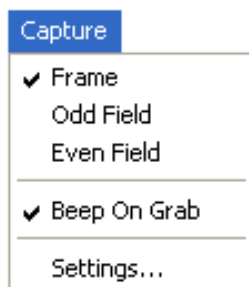
Use the Grab button to capture a still image to the current series. A thumbnail of the grabbed image appears in the thumbnail strip at the bottom of the screen. As the thumbnail is selected in the thumbnail strip, it is loaded into the Review pane on the right of the screen. To maintain image quality, the grabbed still image is stored at the resolution of the connected video source.



Note

Still images may be captured using the Grab button while video recording is taking place.

During the procedure, you can adjust the settings to maximize capture quality. The **Capture** Menu allows various capture modes to be accessed.



By default, the BZMD captures an entire frame of data. For interlaced sources, this can produce artefacts in the captured still image. BZMD's field capture modes allow one of the two fields that comprise a Frame to be captured instead. Either the **Odd Field** or the **Even Field** may be selected, and BZMD automatically doubles the lines so that the aspect ratio of captured image is maintained

The **Beep On Grab** menu item enables/disables the sound that is made as the BZMD grabs a Still Image.

Recording a video

The **Preview** pane on the left of the screen displays the live images received from the connected imaging device. Above the display are buttons for controlling record functions on the incoming video.



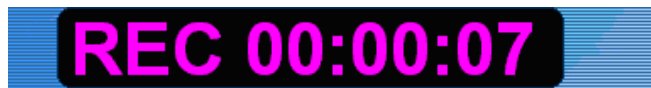
Use the **Record** button to record an excerpt of video to the current series. A placeholder thumbnail, labelled **Video In**, appears in the Thumbnail strip at the bottom of the screen.



During a recording the **Review** pane at the right of the screen displays the following message:



The time elapsed from the start of recording, (or from the start of most recent auto-segmented recording), is displayed in the Title Bar.



Video recordings are automatically segmented if the maximum file size limit is reached. (see “*Configuring BZMD: Advanced tab*” on page 49).

Use the **Stop** button to stop recording a clip of video and place it into the current series. A **Video Out** thumbnail now appears in the Thumbnail strip at the bottom of the screen, and both the Video In and Video Out are updated to have thumbnail images rather than placeholders.



The Review pane is loaded with the captured video clip and cued to the Video Out point automatically.

Pre-Record buffer

When configured, a pre-record buffer will contain recorded material prior to the record button being pressed, enabling you to capture unexpected events that would otherwise have been missed. The amount of pre-recorded material depends on the setting of the Pre Record window, and the format of the recorded video. See **Pre Record Window** within “*Configuring BZMD: Advanced tab*” on page 49.

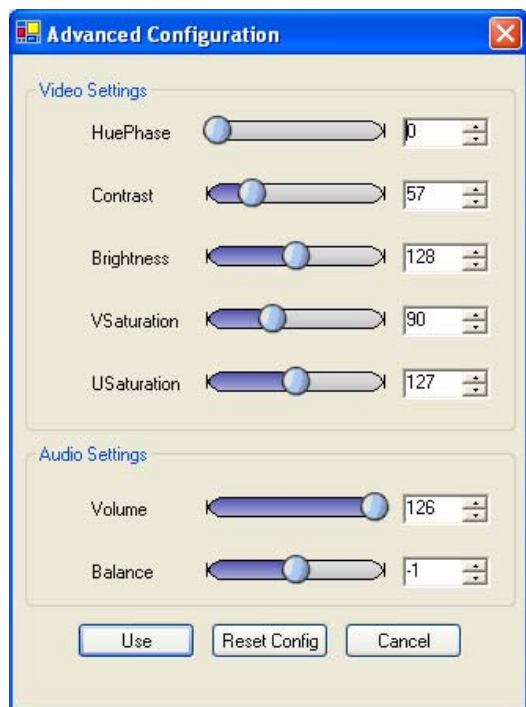
Note

The pre-record buffer becomes active from when a study is opened. The exact amount of video captured will vary, depending on how long the video source has been connected and whether the unit has recently recorded and stopped, since the unit requires time to capture and process the pre-recorded video.

Adjusting capture settings

The **Capture > Settings...** menu item opens the **Advanced Configuration** dialog to enable temporary adjustments to be made to the brightness and contrast during a procedure. The previously saved settings may be

recalled at any time during the procedure using the **Reset Config** button.



Notes

- The controls available depend on the video input type.
- When the current study is closed, any temporary adjustments will be reset back to the saved Configuration settings. Permanent changes to the settings should be made using the Config icon.

Voice recording

Use the **Mic** button to enable/disable a microphone, connected via the audio input, thus enabling the captured recording to include verbal notes or commentary.



Notes

- Audio cannot be monitored during recording. Please make a test recording to ensure that audio is present before starting a procedure.
- When the **Mic** button is grey, the microphone input is disabled.

Creating, Removing or Displaying a Series

When a study is opened, you may create a new series, remove a series from the current study, or display the next/previous series within the study.



To create a new series click the **New** series button. You will be prompted to enter a name for the series.

To remove a series click the **Remove** button, then confirm the deletion. Use this button with care, deleted series cannot be recovered.

You may also lock the current series to protect it from modification or accidental deletion.

To lock the series, click the Lock icon  or use the menu item **Series > lock** as shown below:



The Lock icon will change to indicate the series is locked.



When locked the series can only be unlocked by using the menu item **Series > Unlock**.



Use the Left/Right arrow buttons to select other series in the study.



Reviewing/Replaying captured material

The **Review Display Image** pane on the right of the screen is used to display individual captured images and video.

Use the **arrow** buttons to step forward and backwards through the available thumbnails at the bottom of the screen. Alternatively, you can click on a thumbnail directly to display it in the Review pane.



Use the **Overlay** button to display the Patient text on top of the Review pane. This button has a toggle on/off action.



Tip

If you cannot see the required text, check that the required selection has been made in the “*Configuring BZMD: Printers tab*” on page 42. You will need the BZMD administrator’s password to change this setting.

If a **Video In** or **Video Out** thumbnail is selected, the video clip is automatically loaded into the Review pane, and the video is cued to the corresponding Video In or Video Out point.

Media Player controls

Use the Media Player controls to navigate around the video.



Tip

You can access Full Screen mode by double-clicking on the video area, or by right clicking and selecting it from the pop-up menu.

Use the **play** button to play the selected video excerpt.



If the **Auto full-screen** option in **Menu -> View** is enabled then the playback will enter full-screen mode when the play button is used. To exit full-screen, double-click the playback image.

If the **Consecutive Playback** option in **Menu -> View** is enabled, then at the end of the current playback the next video in the Thumbnail strip will be played.

When in play mode the **play** button changes to a **pause** button to enable the video to be paused at the displayed frame.



Use the **fast forward** and **fast rewind** buttons to play the selected video at faster speeds in the forward or reverse direction. Three speeds are available x2, x5 and x10. The initial speed is x2. Pressing and releasing the button causes the playback to cycle through the three speeds.

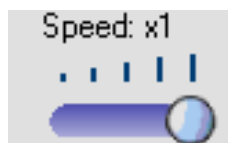


Use the **frame forward** and **frame reverse** buttons to advance or reverse the video frame-by-frame.



Playback speed control

Located above the Review pane, use this control during playback to reduce the playback speed



During video playback the speed may be adjusted between approximately 1/8 and x1 full-speed. Move the slider to obtain the desired playback speed.

Playback audio level control

Use the **mute** button and **volume** slider to set the audio level as desired.



Marking video excerpts and frames

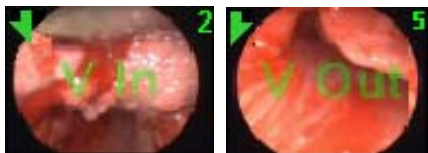
The Review pane on the right of the screen displays the captured image associated with the selected thumbnail. A captured video is automatically identified with the start (Video In) and end (Video Out) markers on the thumbnail.



Use the Marker buttons to aid the navigation of the video by moving the **Video In** and **Video Out** markers around material of interest.



The thumbnail timeline is automatically updated to reflect the newly positioned Video In and Video Out thumbnails.



Note

Using this feature does not delete any portion of the video.

Use the **Goto Marker** buttons to display the relevant Video In or Video Out frame in the Review pane.



Use the **Keyframe** button to identify a significant image within the video excerpt.



The keyframe symbol is displayed on the relevant thumbnail.



Use the **Remove** button to delete material (still images, video, marked video and keyframes) from the current series.



Caution

Removing a Video In or Video Out thumbnail, automatically removes the entire video clip including keyframes.

Printing, Burning and Storing studies

When printing, burning or storing a study, you may choose to output the files in one of two formats:

- **DICOM files** - All standard definition (SD) video files and all still images (including HD) will be output corresponding to the DICOM standard.

Note

HD video files cannot be output.

- **Original files** - Files in their native resolution. All files (including HD video) are output.

Note

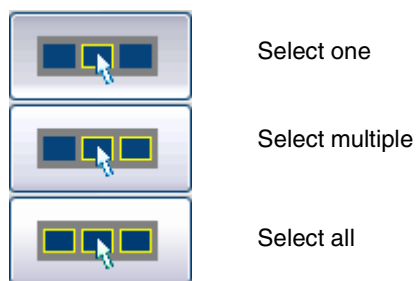
Captured material is not affected by this choice, and will be available (if it remains stored on the BZMD) to be output at a later date in the other format.

The options available for printing, burning and storing are different depending on whether the command is started from within an open study, or from the Main window.

Printing from an open study

Selecting still images for printing

Three buttons are provided for selecting images to print.



The top two buttons are interlinked, only one can be selected at a time. The bottom button when selected (by mouse click or touch screen) will select ALL thumbnail images for printing.

To select an individual image, click the top button, then click on the thumbnail image you wish to select. Any previously selected images will be de-selected. Selected images will have a yellow border.

To select multiple images, click the middle button, then select the required images one at a time. (Clicking again on a selected image will de-select it).

If you are using a mouse and keyboard you can use **Ctrl** + click to select multiple individual thumbnails, or **Shift** + click to select a sequence of thumbnail images.

Note

Video cannot be printed.

To print images:

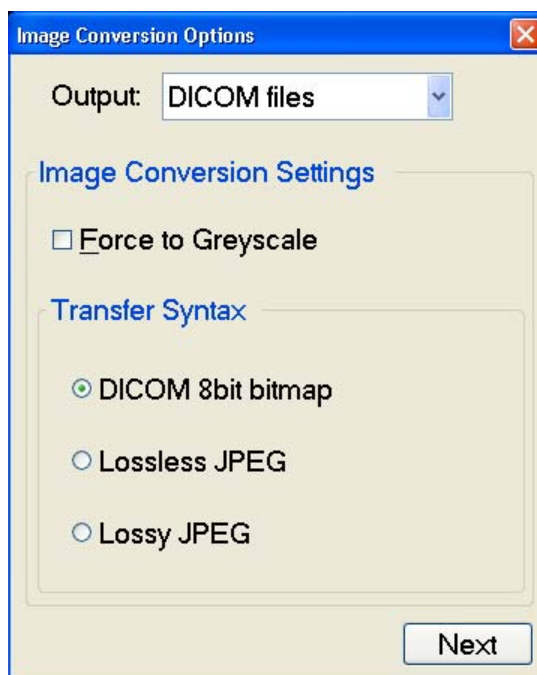
- 1 Select the images to be printed.
- 2 Click on the **Print** icon.



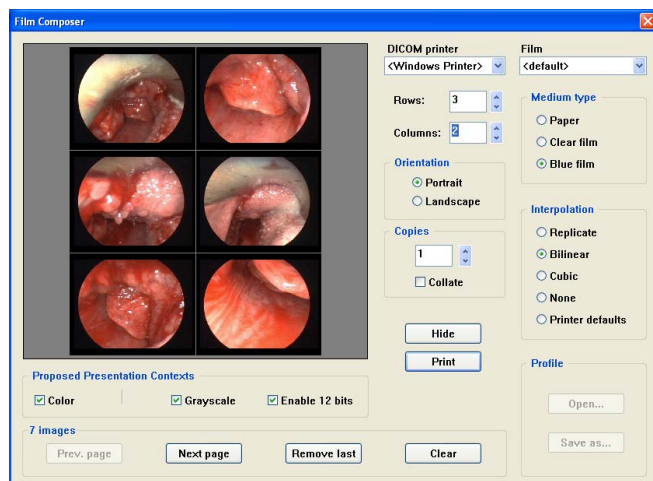
- 3 The **Image Conversion Options** dialog box opens. Choose between **DICOM** or **ORIGINAL** files.

Note

Overlay information will only be printed if **DICOM** files is chosen.



- 4 Click the **Next** button. The **Film Composer** dialog box will be displayed.



- 5 Use the dialog box to set the destination printer (including Windows Printers), film size, print media type, magnification type (interpolation method), orientation and number of copies. Printing profiles can be saved and re-loaded.

- 6 Click the **Print** button.

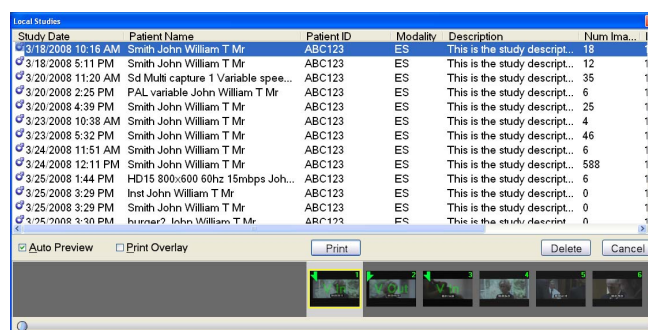
Printing from the Main window

You can print from the Main window (no study open) as follows:

- 1 From the Main window click on the **Print** icon.



- 2 A window showing the local studies is displayed.



- 3 Select the study, or multiple studies to be printed.

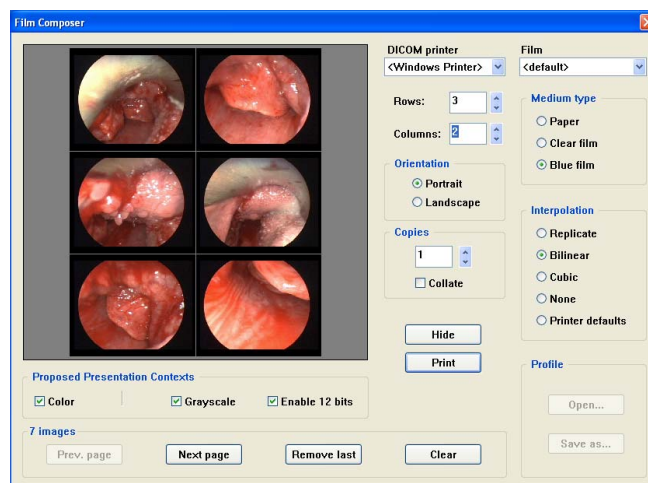
- 4 Tick the **Auto Preview** check-box to see the images.

Note

The preview will display video In and Out point images, these cannot be printed.

- 5 Tick the **Print Overlay** check-box to enable printing of the selected overlay text.

- 6 Click the **Print** button. The **Film Composer** dialog box will be displayed.



7 Use the dialog box to set the destination printer (including Windows Printers), film size, print media type, magnification type (interpolation method), orientation and number of copies. Printing profiles can be saved and re-loaded.

8 Click the **Print** button.

Burning a study to Blu-ray, DVD, CD or USB from an open study

Use the **Burn** icon to send a study to the built-in disc burner or to USB Storage Media.

The following disc formats are supported:

- BD-R, BD-RE (BZMD-1000 only)
- CD-R, CD-RW
- DVD+R, DVD+RW
- DVD-R, DVD-RW
- DVD+R DL

To burn a study:

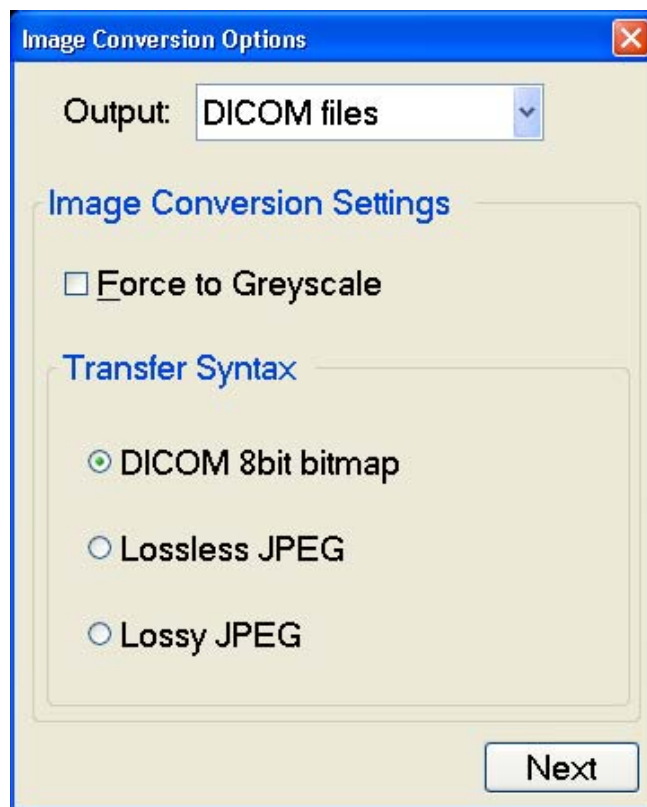
1 Insert a blank disc in the optical drive, or insert a USB storage device in a USB port.

2 Click the **Burn** icon.



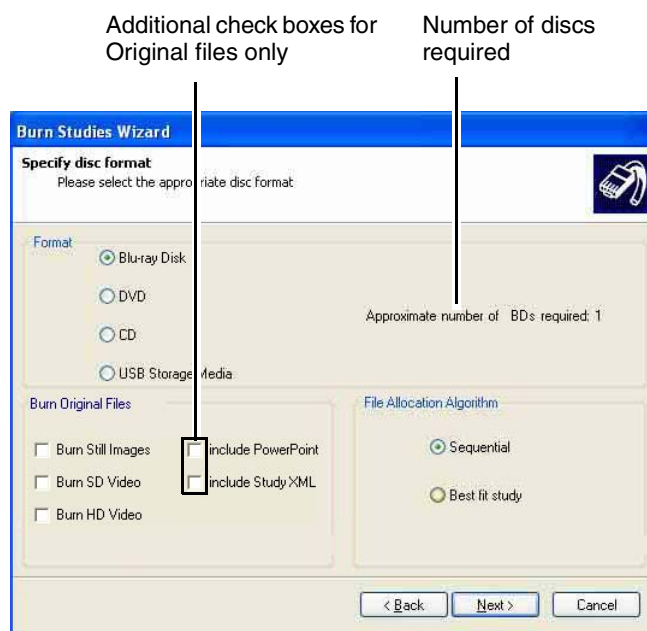
3 Click the **Yes** button to confirm that the study can be closed.

4 The **Image Conversion Options** dialog box is displayed.



5 If required, change the settings. If the **Output** is set to **Original files**, the other settings are 'greyed out' and are not available.

6 Click the **Next** button to start the **Burn Studies Wizard** which will take you through the process of burning a study.



Note

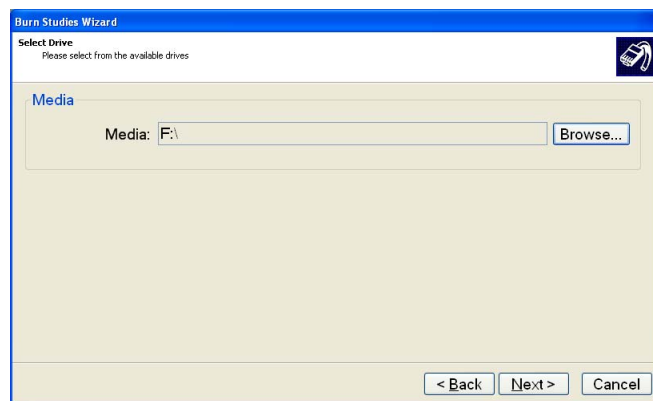
Storage to USB Storage Media, requires sufficient space on the selected media for the selected study or studies.

- 7 Select the appropriate storage **Format**: Blu-ray, DVD, CD or USB storage media. Storage will, if necessary, be automatically split across multiple discs.
- 8 Select the type of files to burn. Depending on whether **DICOM files** or **Original files** is selected at the **Image Conversion Options** dialog, the lower-left corner of the wizard displays appropriate option check-boxes. Additional options for **Include PowerPoint** and **Include Study XML** are available if storing Original files.
- 9 Choose **File Allocation Algorithm**:
 - **Sequential** - starts a new disc when the next still image or video does not fit on the current disc.
 - **Best fit study** - attempts to fit complete studies on a disc, starting a new disc when there are no more complete studies that can fit in the remaining space on the current disc.

Note

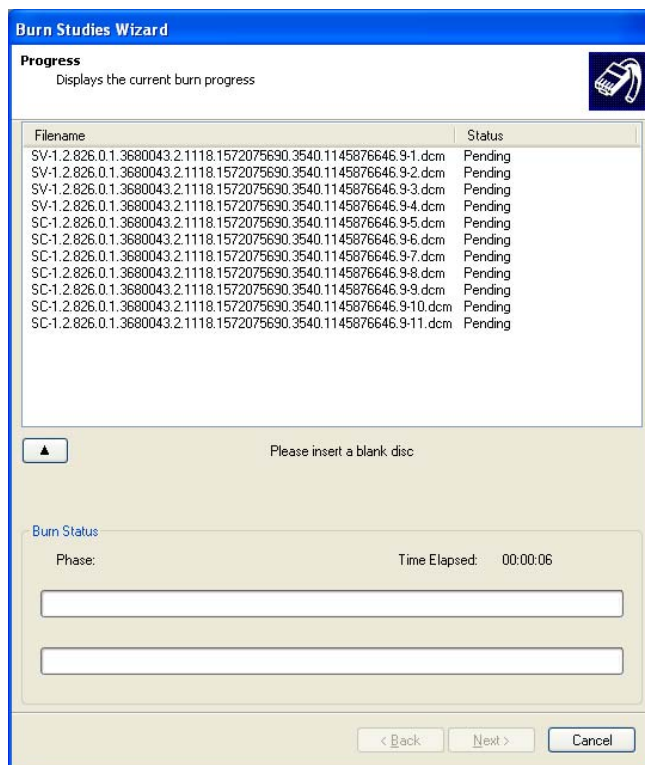
If an individual file is too large for the media type selected you will be requested to select another disc type.

- 10 Clicking the **Next** button will start the burn process, except where **USB Storage Media** is selected. If USB format has been selected, a dialog box will open to allow you to enter the location of the USB device.

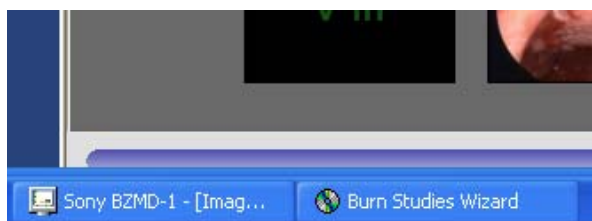


Click the **Next** button to start the burn process.

- 11 When the burn process begins the progress window is displayed.



When burning is initiated, the BZMD main application may continue to be used, while burning continues as a background activity. Requests to insert additional discs will appear as balloon tips from the Taskbar. Studies that have been allocated to the burning process, are locked, and are unavailable for selection in the **Local Studies** dialog. If a burn job is in progress, any additional burn jobs are automatically queued.



Burning studies to Blu-ray, DVD, CD or USB from the Main window

Use the **Burn** icon to send a study to the built-in disc burner or to USB Storage Media.

The following disc formats are supported:

- BD-R, BD-RE (BZMD-1000 only)
- CD-R, CD-RW
- DVD+R, DVD+RW
- DVD-R, DVD-RW
- DVD+R DL

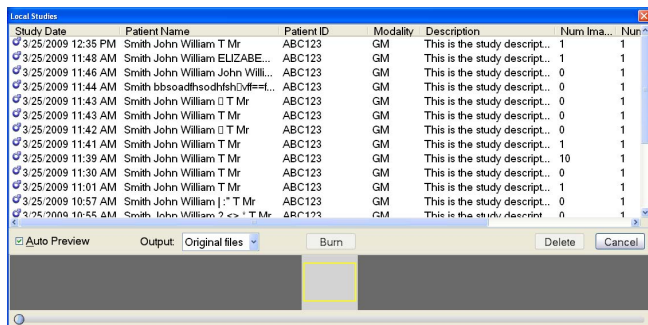
To burn a study:

1 Insert a blank disc in the optical drive, or insert a USB storage device in a USB port.

2 Click the **Burn** icon.



3 A window showing the local studies is displayed.

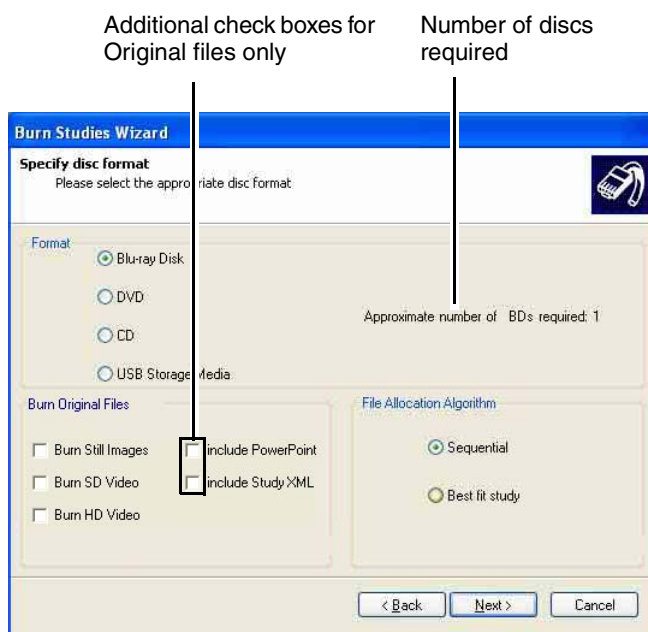


4 Select the study, or multiple studies to be burned.

5 Select the **Output** to be **DICOM files** or **Original files**.

6 Tick the **Auto Preview** check-box to see the images.

7 Click the **Burn** button to start the **Burn Studies Wizard** which will take you through the process of burning a study.



Note

Storage to USB Storage Media, requires sufficient space on the selected media for the selected study/studies.

8 Select the appropriate storage **Format**: Blu-ray, DVD, CD or USB storage media. Storage will, if necessary, be automatically split across multiple discs.

9 Select the type of files to burn. Depending on whether **DICOM files** or **Original files** is selected at the **Image Conversion Options** dialog, the lower-left corner of the wizard displays appropriate option check-boxes. Additional options for **Include PowerPoint** and **Include Study XML** are available if storing Original files.

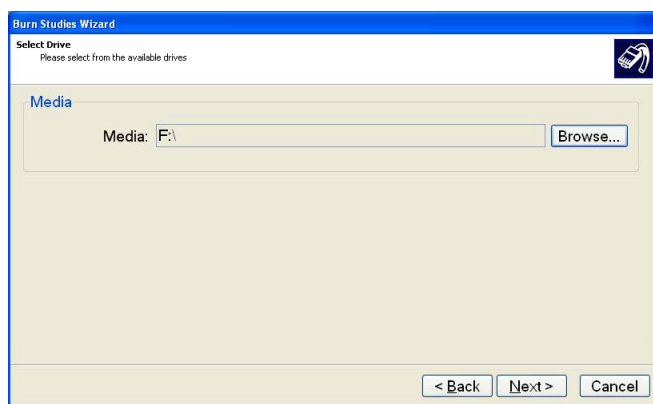
10 Choose **File Allocation Algorithm**:

- **Sequential** - starts a new disc when the next still image or video does not fit on the current disc.
- **Best fit study** - attempts to fit complete studies on a disc, starting a new disc when there are no more complete studies that can fit in the remaining space on the current disc.

Note

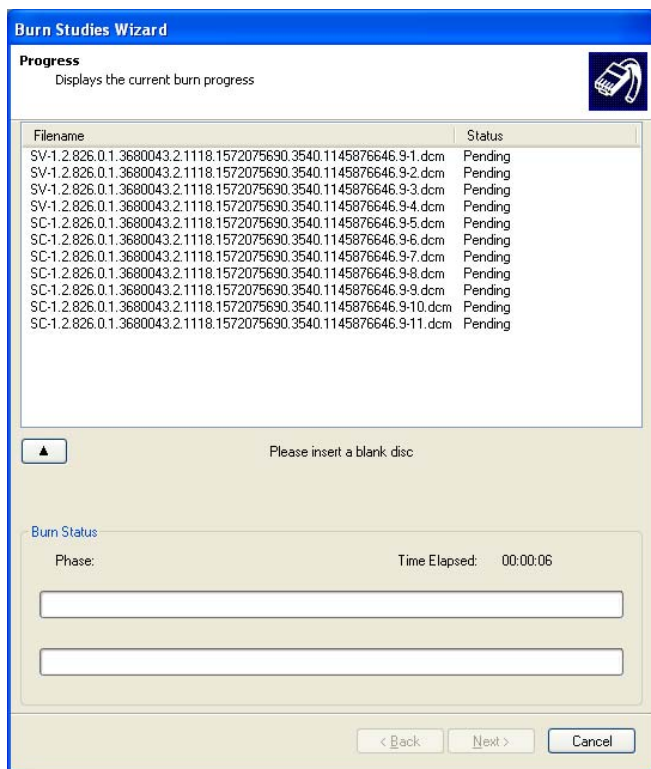
If an individual file is too large for the media type selected you will be requested to select another disc type.

- 11** Clicking the **Next** button will start the burn process, except where **USB Storage Media** is selected. If USB format has been selected, a dialog box will open to allow you to enter the location of the USB device.



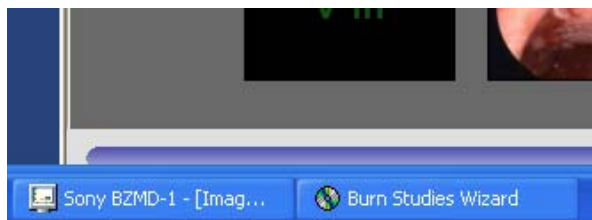
Click the **Next** button to start the burn process.

- 12** When the burn process begins the progress window is displayed.



When burning is initiated, the BZMD main application may continue to be used, while burning continues as a background activity. Requests to insert additional discs will appear as balloon tips from the Taskbar. Studies that have been allocated to the burning process, are locked, and are unavailable for selection in the **Local Studies** dialog. If a burn job is in

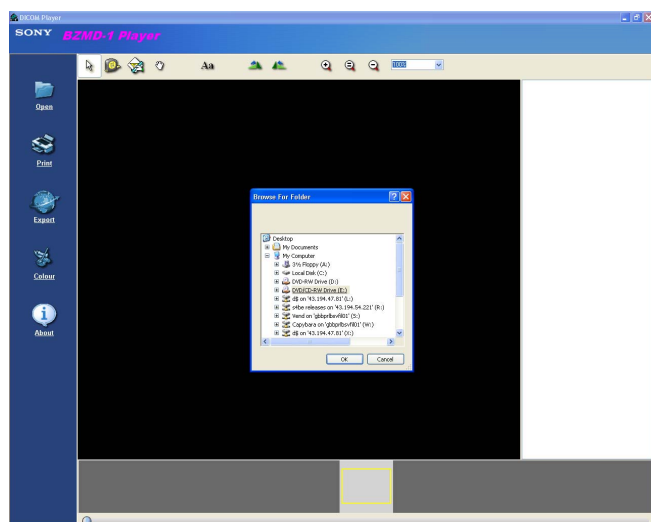
progress, any additional burn jobs are automatically queued.



BZMD Player application

If the burned disc contains DICOM material then the disc will also contain the BZMD Player application, provided the **Player install** path is set, see “*Configuring BZMD: General tab*” on page 37.

Insert the disc into the review PC, and follow the on-screen instructions to install the software.



Click **Open** and the BD, DVD or CD drive will automatically be selected. If the correct drive has been selected, simply click OK to continue.

The Study will be loaded into the tree control on the right of the screen. Navigate to the desired Series and the Still Images and Video will be loaded into the Thumbnail strip at the bottom of the screen.

Tools are provided to facilitate the review of the images. Tools for measuring distance and angles (pen colour can be changed), displaying Patient data, rotating and zooming the images are available along with functionality to Export the DICOM video and still images as conventional BMP or JPEG or MPEG-2 files.



Note

BZMD is supplied with an MPEG-2 codec pre-installed. If videos cannot be replayed on a separate reviewing PC, you may need to install an MPEG-2 codec.

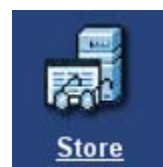
Storing a study (DICOM or Original files) from an open study

Use the **Store** icon to send a study to a remote DICOM files or Original files Storage device for archiving.

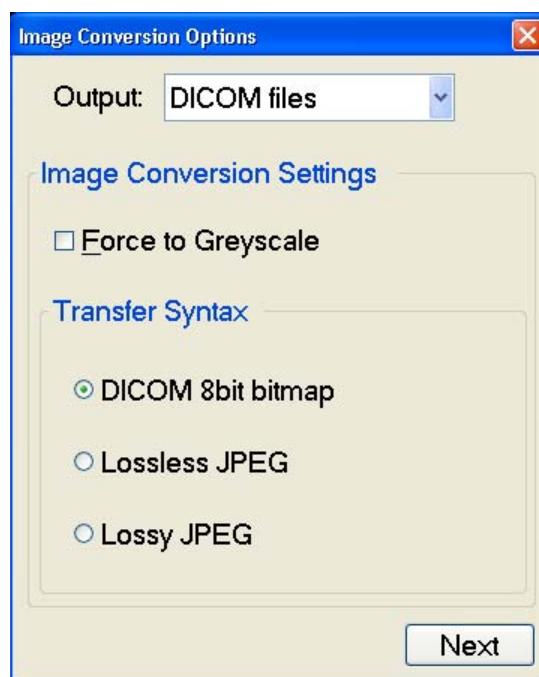
Before attempting to store DICOM files, ensure that a DICOM storage device is available. Original files may be stored on most types of computer storage devices.

To store a study:

- 1 Click on the Store icon.



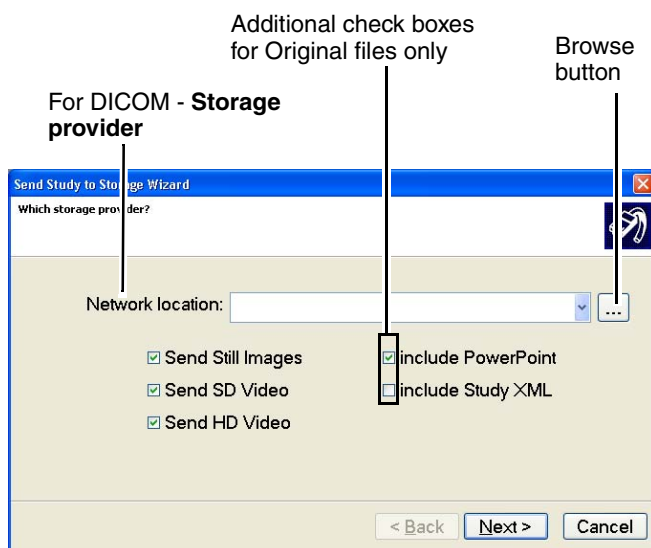
- 2 The **Image Conversion Options** dialog box is displayed.



- 3 If required, change the settings. If the **Output** is set to **Original files**, all other settings are 'greyed out' and are inactive.
- 4 Click the **Next** button to start the **Send Study to Storage Wizard** which will take you through the storage process.

Depending on whether **DICOM files** or **Original files** is selected at the **Image Conversion Options** dialog, the dialog displays appropriate option check boxes. Additional options for PowerPoint and XML are available if storing Original files.

For DICOM storage a drop-down list box enables you to select from the previously configured **Storage provider**, configured using the **Storage/Worklist** tab in the **Configuration** dialog.

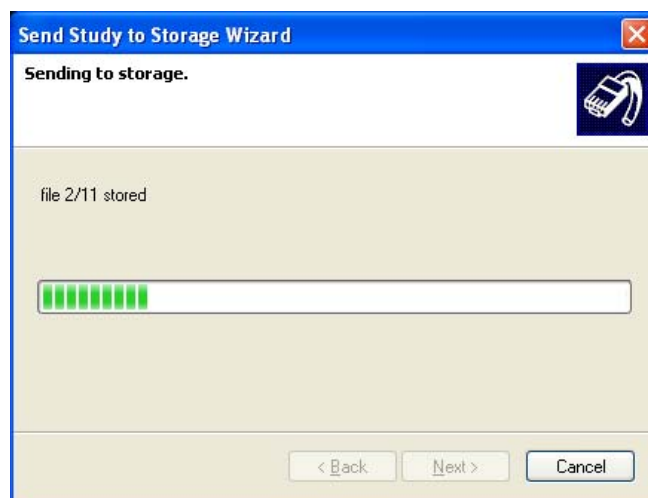


If the **Enable Manual Browse** check box is ticked in the **Storage/Worklist** tab in the **Configuration** dialog, a **Browse** button is displayed on the dialog for temporarily configuring an Original files network folder location. Changed settings are automatically remembered for each study.

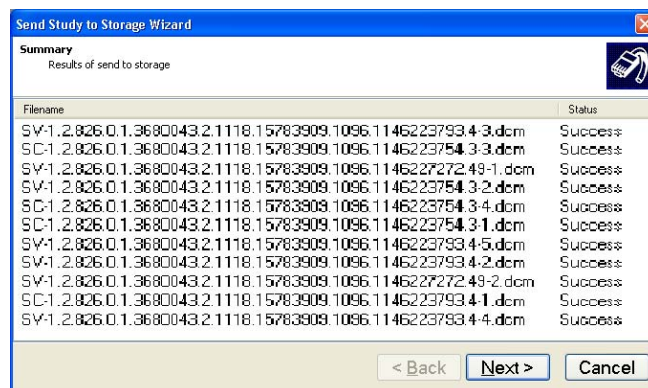
Note

Some DICOM storage devices may be unable to support DICOM MPEG-2 video files (e.g. Filenames beginning with "SV"). Ensure that only check-boxes that the storage device can accept are ticked.

- 5 Click the **Next** button to start the storage process. The progress bar shows the status of the transfer.



- 6 When transfer has completed, a window provides a summary of the files, and whether their storage was successful. Click the **Next** button to exit the wizard.



Storing studies (DICOM or Original files) from the Main window

Use the **Store** icon to send a study or studies to a remote DICOM files or Original files Storage device for archiving.

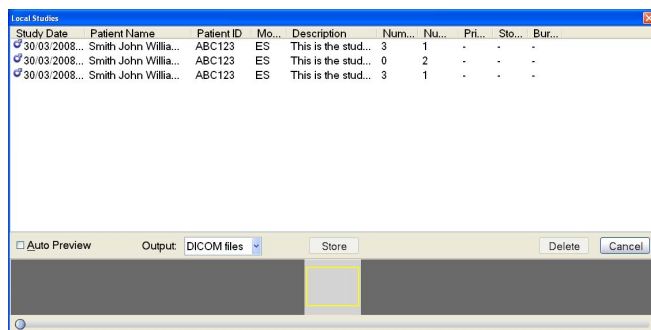
Before attempting to store DICOM files, ensure that a DICOM storage device is available. Original files may be stored on most types of computer storage devices.

To store a study:

- 1 Click on the Store icon.



- 2 A window showing the local studies is displayed.

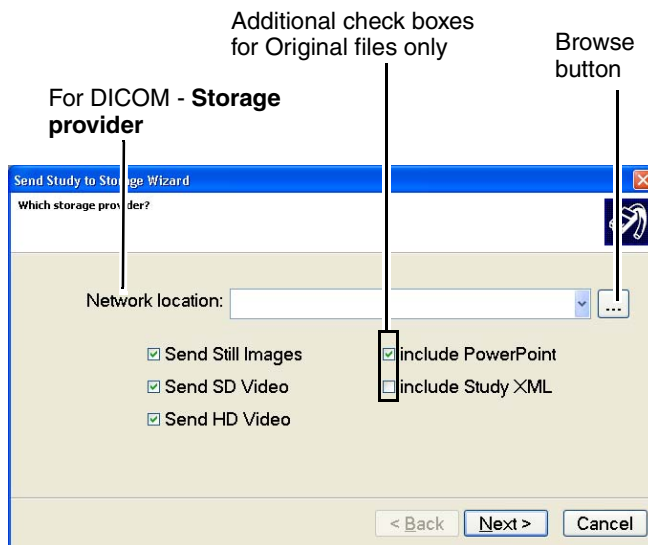


- 3 Select the study, or multiple studies to be burned.
- 4 Select the **Output** to be **DICOM files** or **Original files**.
- 5 Tick the **Auto Preview** check-box to see the images.
- 6 Click the **Store** button to start the **Send Study to Storage Wizard** which will take you through the storage process.

Depending on whether **DICOM files** or **Original files** is selected at the **Image Conversion Options** dialog, the dialog displays appropriate option check boxes. Additional options for PowerPoint and XML are available if storing Original files.

For DICOM storage a drop-down list box enables you to select from the previously configured **Storage**

provider, configured using the **Storage/Worklist** tab in the **Configuration** dialog.

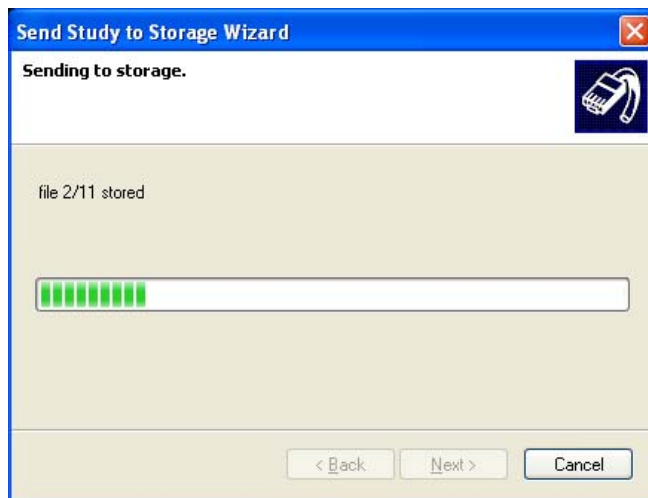


If the **Enable Manual Browse** check box is ticked in the **Storage/Worklist** tab in the **Configuration** dialog, a **Browse** button is displayed on the dialog for temporarily configuring an Original files network folder location. Changed settings are automatically remembered for each study.

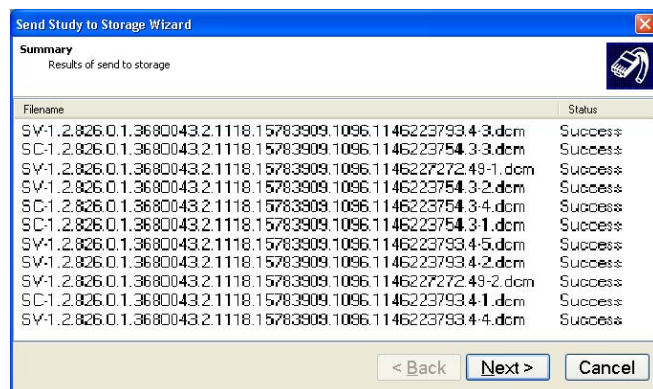
Note

Some DICOM storage devices may be unable to support DICOM MPEG-2 video files (e.g. Filenames beginning with "SV"). Ensure that only check-boxes that the storage device can accept are ticked.

- 7 Click the **Next** button to start the storage process. The progress bar shows the status of the transfer.



- 8 When transfer has completed, a window provides a summary of the files, and whether their storage was successful. Click the **Next** button to exit the wizard.



Convention for Study folders and file names

When a study is burned or stored, the selected image and video files along with any XML or PowerPoint description files are copied to a dedicated folder at the specified network location. The naming conventions used are as follows.

Level 1: Destination folder

A folder for each study using the naming convention:

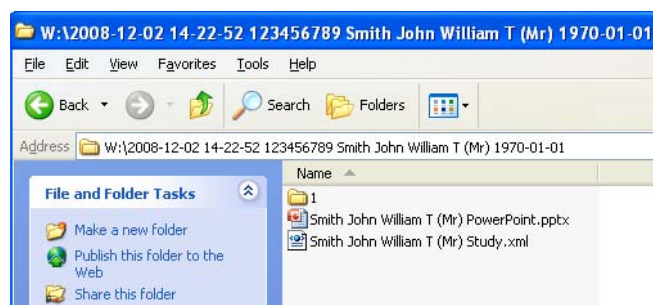
Study Date + Accession No + Patient Name + Title + Date of Birth

Level 2: Series folder

A folder for each series, named sequentially, '1', '2', '3', etc., plus the PowerPoint file .pptx (containing references to the original files, and embedded thumbnails) and the Study XML file.

Note

The viewing PC must have Microsoft PowerPoint installed. (Visit www.microsoft.com).

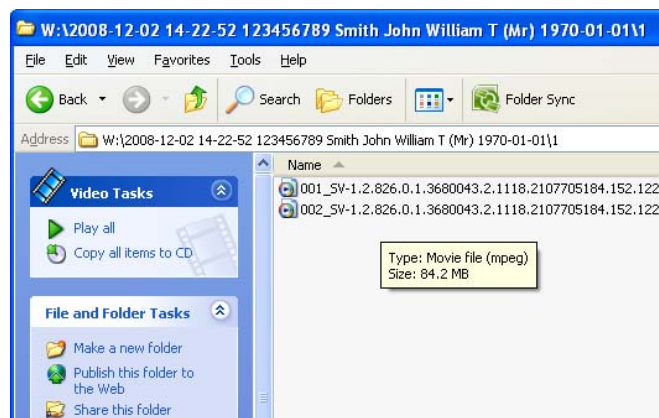


Level 3: Files name

Each numbered series folder contains the image and video files using the naming convention:

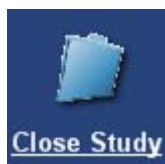
XXX UID

Where XXX is the number of the image/video on the series, e.g. 001).



Closing a study

Use the **Close Study** icon to close the current study. The study is automatically saved to the local hard disk, provided there is at least one image in a series.



Recovering lost data and study management

Studies are automatically saved to the hard disc of the unit and may be retrieved if a study is lost. To retrieve a study, click the **Open** icon to display the available local studies.



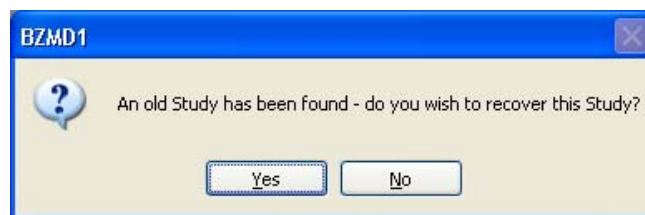
The **Local Studies** dialog lists the available Studies, which can be arranged as required by clicking the relevant column title header.

Tick the **Auto-Preview** check box to view thumbnails from the first Series in the selected Study. After recalling the Study using the **Open** button you can process them in the same way as newly captured material.



If the BZMD application ends unexpectedly (e.g. perhaps because of a power failure), upon restarting the

application, the BZMD automatically attempts to recover the interrupted Study and presents the following prompt:



Click the **Yes** button to allow the application to attempt to recover the study. When the study is displayed, check that the study is complete.

If you do not wish to recover the study, click the **No** button to discard the study.

Deleting old studies

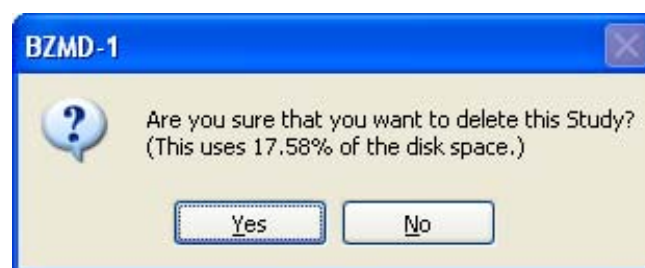
The **Local Studies** dialog can also be used to delete old studies and free up space on the hard disc. Use the column title header to sort the studies, and select one or multiple studies from the list (multiple selection is possible using the **Shift** and **Ctrl** keys on the keyboard when clicking with the mouse).



Note

You can also delete studies from the Print, Burn and Store dialog windows.

Use the **Delete** button to delete the selected studies.



If a Burn job is in progress, then studies allocated for burning will not be available for selection and will be greyed in the Local Studies dialog.

Notes

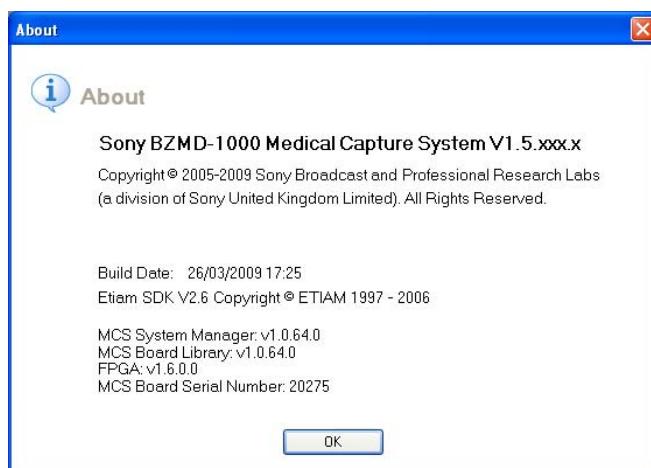
- Purge Studies and defragment the hard drive regularly to maximise performance - if you are uncertain, seek advice from your hospital network administrator.
- The back-up of the Local Study data is your responsibility - please coordinate with your hospital network administrator.

Viewing version numbers

Use the **About** icon to view the BZMD version numbers.



A dialog is displayed containing the version number, copyright information, and version numbers of hardware and software components.





Introduction

About this chapter

This chapter provides troubleshooting procedures and information to be used in the event of a fault occurring on the BZMD unit.

Communications problems

No communications with DICOM device

If you are having problems sending data, or communicating with a storage device or other networked DICOM device, then troubleshoot as follows:

Note

The 'Ping' test is a Windows utility and does not require the BZMD application to be running.

Check IP address of the Image Capture Device

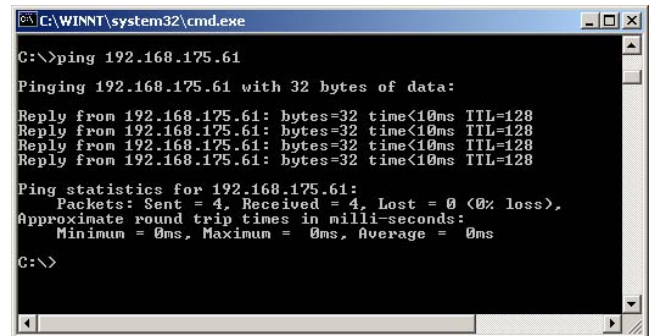
This may be useful to confirm that the BZMD is correctly configured for your network.

- 1 From Windows **Start** select the **Control Panel**.
- 2 From Control Panel select **Network Connections**.
- 3 Right click on the appropriate local area connection.
- 4 Select **Properties**.
- 5 Select the **General** tab.
- 6 Select the **TCP/IP Internet protocol** then **Properties**.
- 7 The configuration data is listed in the properties window.

'Ping' the device

Use the Ping command from the BZMD to check communications are established between the BZMD and the device, printer, storage device etc.

- 1 From **Start** select **Run**.
- 2 Type **cmd** in the box and click **OK**.
- 3 On the command line type **ping** and the IP address of the device.



```
C:\WINNT\system32\cmd.exe
C:\>ping 192.168.175.61
Pinging 192.168.175.61 with 32 bytes of data:
Reply from 192.168.175.61: bytes=32 time<10ms TTL=128
Reply from 192.168.175.61: bytes=32 time<10ms TTL=128
Reply from 192.168.175.61: bytes=32 time<10ms TTL=128
Reply from 192.168.175.61: bytes=32 time<10ms TTL=128
Ping statistics for 192.168.175.61:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

If the ping is successful the messages shown above will be displayed.

Check BZMD configuration

- 1 Double click the Windows Desktop BZMD Shortcut icon. Alternatively click the Windows **Start** > **All Programs** > **Sony** > **BZMD** to start the application.
- 2 Click the **Config** icon.
- 3 Select the **Storage/Worklist** tab.
- 4 Double click the storage device entry. For example a Satellite Server.
- 5 A Satellite Server Properties window opens up.
- 6 Click the **Test** button.

- 7** If the test is not successful then check the settings. IP Address, AE Title, Port No.

Check network is operational

When the communications settings and BZMD configuration have been confirmed, check with the Hospital Network Administrator that the network is operational. If it is, there may be a possible problem with the network interface or cables on the associated device(s).

Testing communication between DICOM devices

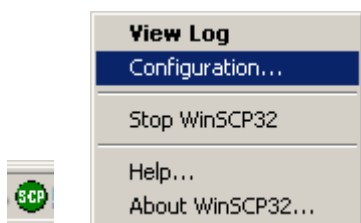
When configuring the BZMD, a **Test** button is available to ensure that communication with the remote DICOM device or peer had been established.

Similarly, when configuring new DICOM devices and peers, you may wish to test from the remote DICOM device that communication has been established with the BZMD.

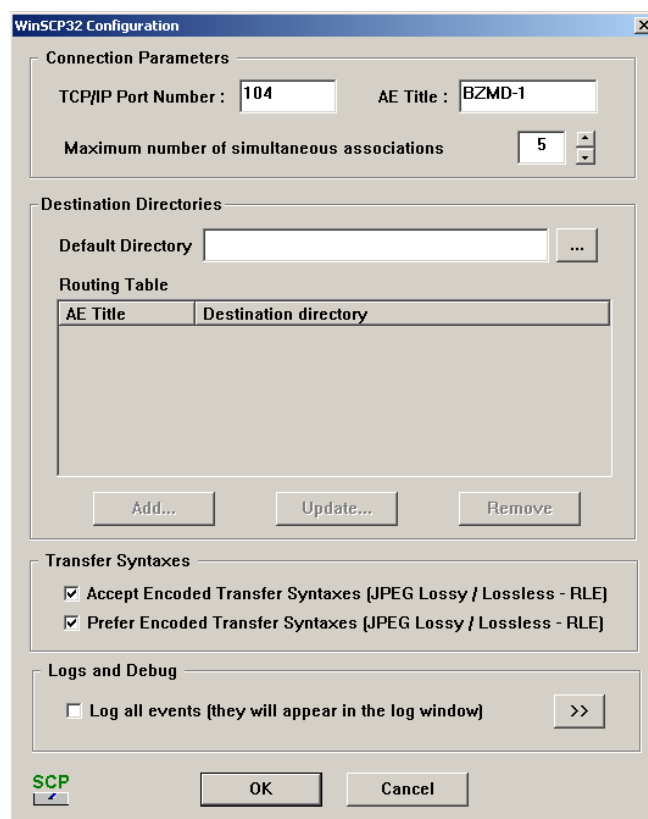
BZMD uses the ETIAM WinSCP program to respond to incoming DICOM pings (also known as DICOM echo or verification).

Configuring WinSCP

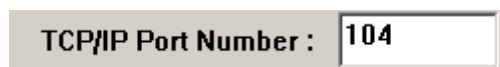
- 1** To configure WinSCP, left-click on the **SCP** icon in the system tray and select **Configuration...**



- 2** The **WinSCP32 Configuration** dialog is displayed.



- 3** Specify the **TCP/IP Port Number** that you would like to use for the BZMD (e.g. **104** is the most common setting for DICOM peers).



- 4** Specify the **AE Title** for the BZMD (this should be the same setting as that set in the My **AE Title** field in the **General** tab of the **Configuration** dialog).

- 5** Click on **OK** to accept the settings.

You should now be able to use the Test function in the remote DICOM device to confirm that communication with the BZMD has been established.

Printing problems

Cannot print from a DICOM printer

Check printer status

Confirm that the printer is switched on and operational.

Check IP address

See Communication Problems, above.

'Ping' the printer device

See Communication Problems, above.

Check BZMD configuration

- 1 Start the BZMD application.

Select the **Config** icon and enter the password for the Admin user (if prompted). The default password is:

SonyBZMD

- 2 Select the **Printers** tab.
- 3 Double click the appropriate printer entry.
- 4 A **Printers Properties** window opens up.
- 5 Click the **Test** button.
- 6 If the test is not successful then check the settings. IP Address, AE Title, Port No.

Blu-ray/DVD/CD problems

Files do not burn to disc

Check that you are using a compatible type of recording media. See Appendix 1 Technical Specification "*Capture card video input specifications*" on page 83 for a list of compatible media types for the DVD/CD or Blu-ray drive.

Note

If using the Burn Wizard to copy the study to a USB memory device, ensure that you will not exceed the available storage capacity.

Recording problems

No image displayed in preview window

Check capture card cable

Ensure the appropriate cable is plugged into the connector on the Capture Card. If the signal is SDI or Composite, the switch (S1) on the card must be set to receive the correct format. See "*Setting S1 and S2*" on page 87.

Check input type

- 1 Start the BZMD application.
- 2 Select the **Config** icon and enter the password for the Admin user (if prompted). The default password is **SonyBZMD**
- 3 Select the **Hardware** tab.
- 4 Check that the correct input type has been selected. Check Composite/SDI/S-Video/HD15.

Check format

- 1 Start the BZMD application.
- 2 Select **Config** and enter the password for the Admin user (if prompted). The default password is **SonyBZMD**
- 3 Select the **Hardware** tab.
- 4 Check that the correct format has been selected. Check PAL or NTSC.

Incorrect operation with HD15 camera

Many cameras deviate from the base specification and may require special configuration files. Contact Sony, or your supplier for details.

No thumbnails generated for video recordings

When logged on as Administrator run explorer and check that the following file is present:

C:\Program Files\MainConceptDecoder\mcm2vd.ax

To ensure that this file is registered, double-click the file's thumbnail. A confirmation message should be shown which says '*DllRegisterServer in FileName succeeded*'.

Cannot grab frame or record video

Use the following procedure when you cannot grab a frame or record a video when a series is opened.

Check series is not locked

- 1 Check to see that a video source has been connected.
- 2 Check to see if the grab/record/stop/mic buttons are disabled and the closed padlock shows the series is locked.
- 3 From the top menu select **Series > Unlock**.

Note

The series may be locked for good reason. It is advisable to check before unlocking.

Review/Replay problems

No thumbnails generated for video recordings

A temporary folder is required for the player to use. If this folder is not present it may not be possible to play the video clips back or see the thumbnails on the GUI. To resolve this problem create a directory:

C:\Temp
on the player PC.

Locating the DICOM Player installation files

If a study contains dicomized material, then when a CD, DVD or Blu-ray disc is burned, the BZMD Player application is automatically added onto the disc as well. If the player is not already installed on a viewing PC it may be installed from the disc.

In order for this installer to be burnt to the disc, the BZMD software needs to know where the installer files are located. This is configured in the BZMD “*Configuring BZMD: General tab*” on page 37.

Select **General TAB** then **Player Install**.

The correct path that should be entered into this field for both BZMD-1 and BZMD-1000 is:

C:\Program Files\Sony\BZMD-1000\Sony DICOM
Capture\Player Install

Note

If using Windows Explorer to look at the folders you will find there is a Sony DICOM Player folder located at:

C:\Program Files\Sony\BZMD-1000

However, this folder is not used by the installer and it is normal for this folder to be empty.

Audio problems

Quiet or too loud audio during replay

The BZMD-1000 and BZMD-1 fitted with BKBU-8000 Capture cards supports two reference audio levels. Check the position of S2 on the capture card and compare with the positions shown on “*Setting S1 and S2*” on page 87 to ensure that it is compatible with the connected audio source. The wrong setting may result in the recorded audio being too quiet or too loud with distortion during playback.

BZMD-1 fitted with BKBU-7000 Capture cards support only the +4 dBu reference level.

Tip

When using a new microphone/pre-amplifier, make and replay a test recording to check level and quality.

Technical data BZMD-1

Enclosure

- Desktop format PC for use in the medical area

PC system unit

- Processor: Intel Pentium Mobile M @ 1,7 GHz
- 512 MB DDR 333 Unbuffered 184 pin
- Graphics: Onboard chipset with integrated graphics
- Hard disk 80 GB IDE, 7200 rpm
- DVD/CD compatible

Operating system and software components

- Microsoft® Windows XP Embedded, SP2
- Microsoft .NET Framework 2.0 Service Pack 2
- Microsoft .NET Framework 3.0 Service Pack 2
- Microsoft .NET Framework 3.5 SP1
- Nero Suite
- Windows Media Player 10

Operating conditions

- Temperature: 10°C ... +40°C
- Humidity: 30%...75% relative humidity, not condensing
- Atmospheric pressure: 700-1060 hPa
- Patient area: Type B

Dimensions / weight

- Width: 431.6 mm
- Height: 109.1 mm
- Depth: 370.5 mm
- Weight: approx. 12.2 kg

Power

- Input: 100-120/200-240 V, AC, 50/60 Hz
- Power consumption: 180 W
- Input current: 4-2 A
- Fuse: 3A H (High Breaking Capacity) 250V T (Time lag)

DVD disc drive specification

Item	Specification
Recording Media	CD, DVD+/-RW /+/-R
File Format	DICOM files. Original format files

Technical data BZMD-1000

Enclosure

- Modular build PC box for use in the medical area
- Light intensive and high contrast LCD with touch sensitive surface
- Dust proof and hose-proof cabinet front
- Mountable on swivel arm according to VESA 100
- Silent cooling system with exhausting fan and air duct

PC system unit

- Kontron Mini-ITX main board 986LCD-M
- Processor: Intel Core 2 Duo T7400 @ 2,16 GHz
- 4 GB DDR 400/533/667SDRAM (PC 3200/PC2400/PC5300)
- Graphics: Onboard Intel 82945 GM chipset with integrated graphics engine Second VGA output from VGA plug in board
- External interfaces:
 - 1 x 10/100/1000 LAN
 - 4 x USB 2.0 interfaces
 - 1 x VGA connector
 - 1 x Audio Line-out
- Hard disk 750 GB SATA, 7200 rpm 16MB cache, 3GB/sec
- Blu-ray RW, DVD/CD compatible

Capture card

- Header to connect internal cable for Tally Light trigger
- Converter board, DVI to HD-SDI converter, Gefen Rev.2, wiring to second PCI I/O bracket

Operating system and software components

- Microsoft© Windows XP professional, SP2
- CyberLink Blu-ray Disc Suite
- ELO Universal Driver
- Microsoft .NET Framework 1.1
- Microsoft .NET Framework 2.0 Service Pack 1
- Microsoft .NET Framework 3.0
- Windows Media Player 10

LCD / touch screen

- Resolution: 1280 x 1024 pixels
- Brightness: 300 cd/m²
- Contrast ratio: 500:1
- Backlight
- Surface acoustic wave touch with dual serial/USB touch interface

Operating conditions

- Temperature: 0°C ... +35°C
- Humidity: 20%...80% relative humidity, not condensing
- Protection class: IPX0 (front).
- Patient area: Type B

Dimensions / weight (Display unit)

- Width: 412 mm
- Height: 380 mm
- Depth: 191 mm
- Weight: approx. 13 kg

Power supply (external)

- Input: 100-240 V AC, 50/60 Hz, 1.63-0.7 A
- Inrush current 60A @115VAC, 120A @ 230VAC)
- Output: 150 W max, 19V, 7.9 A

Blu-ray disc drive specification

Item	Specification
Recording Media	BD-R/RE CD, DVD+/-RW +/-R BD and DVD Dual Layer
File Format	DICOM files. Original format files

Gefen DVI conversion card specification

Input video format	Specification	Output video format
DVI-D (Will accept DVI-I connector)	1280x1024/60	1920x1080i/60 (HD-SDI)

Capture card video input specifications

Input video format	Specification	Connector type
Composite	From 0.5 V to 1.0 V p-p, 75 Ohms	BNC
Y/C	Y: 0.5 V to 1.0 V p-p, 75 Ohms C: 0.5 V to 1.0 V p-p, 75 Ohms	Mini DIN, 4-pin
Component YPbPr/RGB	Red (Pr): 0.5 V to 1.0 V p-p, 75 Ohms Green (Y): 0.5 V to 1.0 V p-p, 75 Ohms Blue (Pb): 0.5 V to 1.0 V p-p, 75 Ohms	HD-15 connector (High density 15 pin 'D' type)
SDI/HD-SD	Conforms to the SMPTE 292M/259M-C standards SD: 525/625 HD: 1080i/50/60, 720p50/60	BNC
Audio	BKBU-7000 Reference level: +4dBu BKBU-8000 Reference level: +4dBu or -10dBV	3.5 mm mini-jack (Left and Right)

Note

This specification is subject to change with out prior notice. Consultation with either the Sony dealer, from which the product was purchased, or the local Sony Company is mandatory for any uncertainty about usage, safety regulations or other matters regarding this solution.

Overview

The capture card is available in two versions:

- BKBU-7000
- BKBU-8000

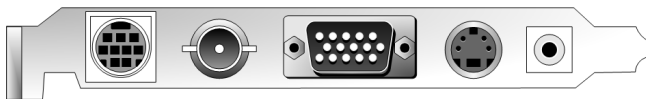
Operationally they are virtually identical. The differences are:

BKBU-7000 Supports only one audio reference level +4 dBu.

BKBU-8000 Supports two reference levels -10dBu and +4 dBu (Switchable). Also supports HD video recording using a plug-in codec daughter card.

BZMD-1 may be fitted with either card, BZMD-1000 is designed to use only the BKBU-8000 card.

Capture card connectors



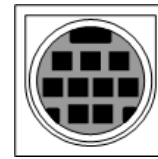
Capture Card used with BZMD

The connectors from left to right are: GPIO, BNC, HD15, S-Video, and Audio.

GPIO connector

GPIO (General Purpose Inputs and Outputs). The BZMD can be controlled from its GUI (Graphical User Interface) using a mouse and keyboard, or a GPIO interface provided

to allow integration with other equipment and allowing the remote control of key BZMD features.



The function of the pins is described below:

GPIO connector pin-outs

Pin	Function	Conditions
1	GND	Ground
2	Input 1	Input
3	Input 2	Input
4	Input 3	Input
5	Input 4	Input
6	Input 5	Input
7	Input 6	Input
8	Output 1A	Connected when active (See caution below)
9	Output 1B	

Connecting any of the 6 inputs (Input 1-6) to ground (GND) will trigger the BZMD function configured for that input (*see page 43*). The Capture Card also has a General Purpose Output (GPO) that can be configured to act as a trigger for an external device by connecting to pins 8 and 9.

Caution for BZMD-1000

Do not make connection to pins 8 and 9 without consulting your Sony dealer or Sony sales office.

BNC connector

The BNC connector can be used for both serial digital and composite analogue video sources. The initial factory setting is HD-SDI and SD-SDI. To select composite analogue the position of S2 should be changed. Please

refer to the instructions on “Setting S1 and S2” in this appendix.



The following digital formats (HD-SDI and SDI) are supported by the BNC input:

BNC supported digital formats

Video Size	Pixel Format	Def.	fps	SMPTE Standard
1920 x 1080 i	4:2:2	HD	60	260M
1920 x 1080 i	4:2:2	HD	50	295M
1920 x 1080 PsF	4:2:2	HD	30	274M
1920 x 1080 PsF	4:2:2	HD	25	274M
720 x 483 i	4:2:2	SD	59.94	125M
720 x 576 i	4:2:2	SD	50	125M

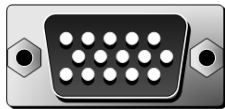
The following analogue formats are also supported by the BNC input (via appropriate jumper setting).

BNC supported analogue formats

Format	Description
NTSC-M	525 lines, 60 fields per second
NTSC-Japan	
PAL-M	
PAL-B	625 lines, 50 fields per second
PAL-G	
PAL-H	
PAL-D	
PAL-I	
PAL-NC	
SECAM	

HD15 connector

The HD15 connector can be used for Component analogue input (both RGB and YPbPr). It can also be used for monochrome (Y) video sources. In addition, the HD15 connector will also accept video sources with computer style formats with resolutions from VGA (800 x 600) up to SXGA (1280 x1024 @ 60 Hz).



The specifications for the pins of the HD15 connector are as below:

HD15 connector pin-outs

Pin	Function	Signal
1	Red	0.5V to 1.0V pp (75 Ohms)
2	Green	0.5V to 1.0V pp (75 Ohms)
3	Blue	0.5V to 1.0V pp (75 Ohms)
4	Ground	
5	Ground	
6	Ground - Red	
7	Ground - Green	
8	Ground - Blue	
9	+ 5V DC	
10	Ground - HSYNC COMBINED SYNC	
11	Ground - VSYNC	
12	N/C	
13	HSYNC/ COMBINED SYNC	≥2.4V
14	VSYNC	≥2.4V
15	N/C	

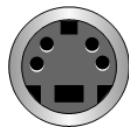
The following formats are supported by the HD15 input:

HD15 supported formats

Format	Size	FPS (Hz)	Pixel Rate (MHz)	Pixel Format
SXGA	1280 x 1024 p	60	108	RGB
XGA	1024 x 768 p	75	78.75	RGB
XGA	1024 x 768 p	72	75.6	RGB
XGA	1024 x 768 p	60	63	RGB
SVGA	800 x 600 p	75	52	RGB
SVGA	800 x 600 p	72	50	RGB
SVGA	800 x 600 p	60	42	RGB
PAL	720 x 576 i	25	13.5	RGB
NTSC	720 x 473 i	30	13.5	RGB
PAL	720 x 576 i	25	13.5	YPbPr
NTSC	720 x 473 i	30	13.5	YPbPr
PAL	720 x 576 i	25	13.5	Y
NTSC	720 x 473 i	30	13.5	Y

S-Video connector

The S-video connector accepts an input using the popular format used by a wide range of analogue video sources.



The pins have the following functions:

S-Video connector Pin-outs

Pin	Function
1	Ground (Y)
2	Ground (C)
3	Y (Luminance)
4	C (Chrominance)

The following analogue formats are supported.

S-Video supported analogue formats

Format	Description
NTSC-M	525 lines, 60 fields per second
NTSC-Japan	
PAL-M	
PAL-B	625 lines, 50 fields per second
PAL-G	
PAL-H	
PAL-D	
PAL-I	
PAL-NC	
SECAM	

Audio connector

Audio may be recorded along with the video by connecting a Line Level source using a 3.5 mm mini-jack connector.



A switch on the Capture Card switches the input level standard. Please refer to the instructions on “*Setting S1 and S2*” on this page. Two different input reference are available -10 dBV and +4 dBu. The -10 dBV setting provides additional gain (sensitivity) over the +4 dBu setting.

Note

A microphone pre-amplifier will usually be required to generate a Line Level signal.

Setting S1 and S2

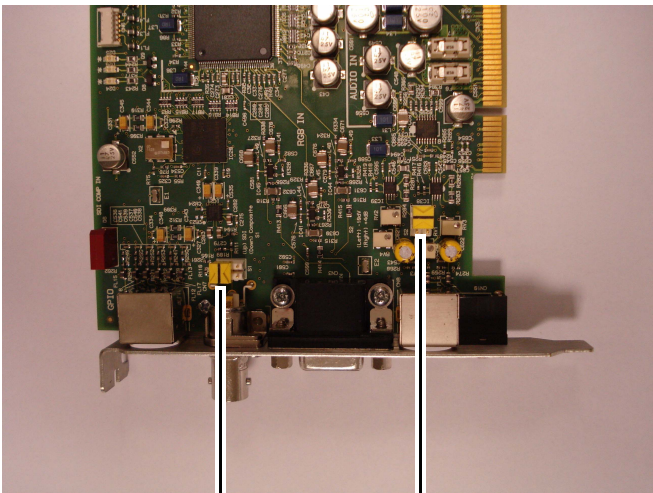
WARNING
VOLTAGES WITHIN EQUIPMENT CAN BE SUFFICIENTLY HIGH TO ENDANGER LIFE. ONLY QUALIFIED AND APPROVED SERVICE ENGINEERS ARE PERMITTED TO OPEN EQUIPMENT.

CAUTION
ELECTROSTATIC DISCHARGE (ESD) CAN CAUSE IMMEDIATE AND LATENT DAMAGE TO INTEGRATED CIRCUITS. IN ORDER TO MINIMIZE ESD, ANTI-STATIC PRECAUTIONS SHOULD BE TAKEN WHEN HANDLING STATIC SENSITIVE EQUIPMENT.

Note

S2 is only applicable to the BKBU-8000 card.

To access Switch S1 or S2, refer to the BZMD-1 or BZMD-1000 Service Manual for instructions to access the Capture Card. Switch S1 is on the top side of the Capture Card adjacent to the BNC connector. S2 is located just above the S-Video input connector.



S1 S2

Slide the switch S1 to the left (as seen in the photograph above) for SDI/HD-SDI or to the right (toward the PCI connector) for Composite signals. The other switch, S2 (shown in the picture above) is set depending on the level of input audio. Slide the switch S2 up (as seen in the photograph above) for signals which have a reference level of +4 dBu or down for signals which have a reference level of -10 dBV.

Reassemble the BZMD before use.



Settings for HD15 inputs

The physical HD15 connector can carry many different video formats. The BZMD Capture card implementation handles a wide variety of these. Colour signals in both the RGB format and the YPbPr format are handled. Furthermore, the three most common types of synchronization may be configured i.e. separate H and V syncs; combined H and V syncs; and sync on Green.

Knowledge of the type of video format connected to the BZMD will help in configuring the HD15 input appropriately. The source will usually be a piece of surgical equipment such as an Endoscope, and the video format may range from the typical Component YPbPr format to less common RGB formats usually associated with PC video. The BZMD has been provided with a number of default settings to cope with the more common formats found on the HD15 connector.

In Video signals, the pixel information is located in a block with blanking data at the front and rear of the frame. The position of this block within the frame is variable, as is the number of pixels that are expected on a line of video. The BZMD provides position, phase and pitch settings to allow the fine tuning and calibration of these parameters.

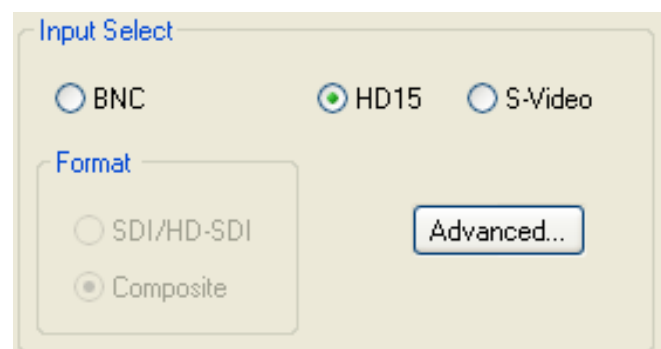
Nevertheless the default settings provided by BZMD should be adequate for synchronizing with the input video in most situations. The HD15 inputs are analogue signals so there will be variations detected at the receive circuitry. Adjustment of the Contrast and Brightness settings should deal with these variations. The settings are adjusted by altering the Video Settings found on the Advanced Tab of the Hardware Settings window

Before starting the adjustment process the Format of the signal sent by the video source and applied to the HD15 connector should be known. This information should be available from the manufacturer of the equipment feeding the BZMD-1000. For example, SXGA 1280x1024 60Hertz is a common PC video type format, and is usually implemented with separate H and V syncs. If the polarity

of the H and V sync signals is not supplied by the manufacturer, simply experiment with the options provided.

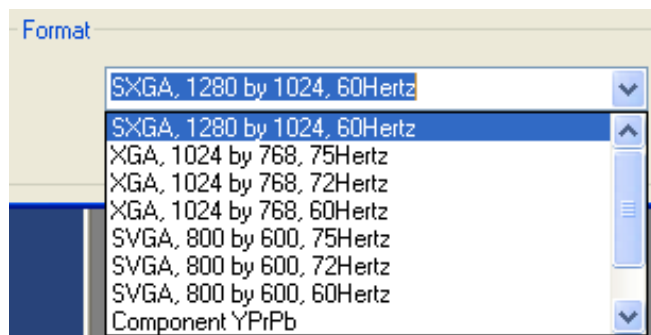
Fine tuning an HD15 format signal

- 1 Start the BZMD application.
- 2 Select the **Config** icon and enter the password for the Admin user (if prompted). The default password is: **SonyBZMD**
- 3 Select the **Hardware** tab.
- 4 In the **Input Select** area select the **HD15** radio button, then click **Advanced...**

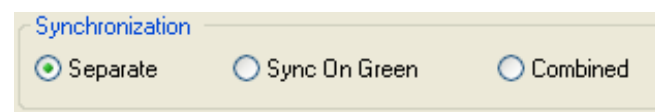


- 5 After a moment the HD15 Advanced Configuration Window will open.

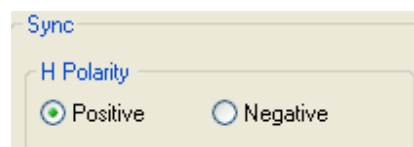
- 6 Select the format of the connected input source from the drop down box found in the Format area.



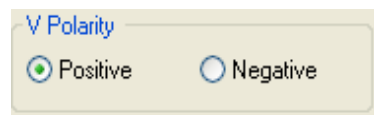
- 7 Try changing the settings found in the synchronization area. Experiment by selecting synchronization provided by Separate, Combined or Sync On Green. Choose the setting which provides the best picture.



- 8 For H Polarity experiment by selecting Positive or Negative and choose the setting which gives the best picture quality.



- 9 Go through the same process for V Polarity.

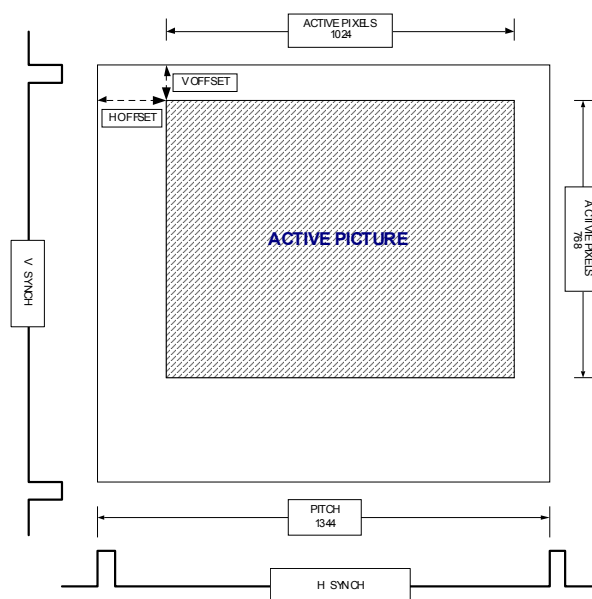


- 10 Tick the **all** box in the Contrast area then set all the contrast sliders to zero. With the **all** box ticked, all the contrast sliders will move as one. With the **all** box ticked in the brightness area, adjust the brightness sliders. Match a known black area in the video picture with the black reference at the bottom of the screen.
- 11 Repeat the process in step 10 to adjust the Contrast. With the colour set to zero match a known white area with the white reference.
- 12 The **Save** button saves the current setting and the **Reset Config** button returns to the last saved settings.
- 13 Continue onto the next section if adjustment of the Position, Phase and Pitch settings are required.

Advanced settings for HD15 inputs

This procedure allows fine tuning of the video signal when the default settings provided by the BZMD-1000 are not adequate. The fine tuning is achieved by using the HD15 Calibration window. This window provides adjustment of the Position, Phase and Pitch. These terms are explained below and their use is explained in steps 1 to 8. See *“Calibration procedure for a format not included within the BZMD default settings”*.

The diagram below shows the active picture which is a block of pixel data. This data is positioned between blanking data at the front and rear of the frame. The V synch and H synch provide the vertical and horizontal timing required.



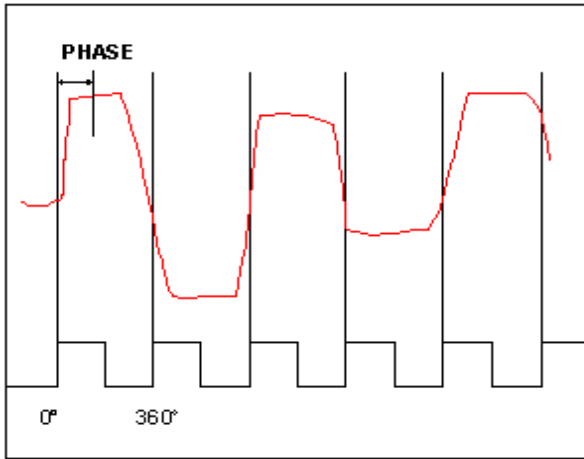
The V offset and H offset, which position the active picture in the Frame, are adjustable in the BZMD-1000 using the Position Tabs. The use of the Position Tabs is explained in step 2. See Calibration Procedure for a Format Not Covered by BZMD Default Settings.

Pitch is defined as the number of samples per line including blanking and active pixels. In the example shown in the Active Picture diagram the pitch is 1344. This figure is provided by the default settings for a 1024x768 60Hz signal. The default settings for a range of HD15 formats is available to the BZMD. The extracted clock must have 1344 pulses between the rising edges of the H synch. The H synch is available as it is passed via the HD15 connector. The clock is extracted from the data stream shown in the Phase diagram and synchronised to contain the necessary 1344 samples per H sync.

However, if the video signal is sourced from a format that is not covered by a default setting, the pitch of the signal will have to be adjusted manually. This is done with the Pitch Slider described in step 3 of the next section. The

value of the pitch is shown in the counter to the right of the slider. The offset can also be increased or decreased by clicking on the up or down arrows of the counter.

Phase is defined as the offset that must be applied to the clock so that the position of the rising edge of the phase shifted clock is central to the incoming data stream. This ensures that the data contained in the data stream is extracted correctly and any errors due to the variations that result from an analogue signal are minimised. As in the case of Pitch, the BZMD software provides default values of Phase for known video formats.



If the video signal is an unknown format the phase of the signal will have to be adjusted manually. This is done with the Phase Slider and is described in step 3 in the next section. The offset in degrees is shown by the counter to the right of the slider. The offset can also be increased or decreased by clicking on the up or down arrows of the counter.

Calibration procedure for a format not included within the BZMD default settings

- 1 Select the **Calibrate** button.



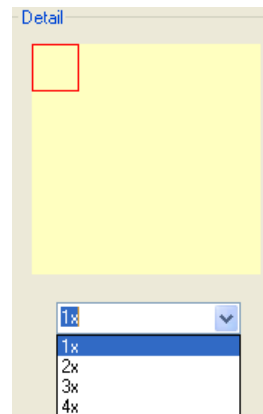
- 2 In the HD15 Calibration Window the **Position Tabs** will move the position of the picture within the Preview Window.
- 3 The **Phase** and **Pitch** sliders are adjusted to achieve the best picture quality. Changes made to the slider

settings will immediately change the picture shown in the Preview Window.

Note

The fine tuning process using the Phase or Pitch sliders will typically be a capture followed by a check on the effect of the change on the picture. Then follows successive capture and check until adjustment has been achieved.

- 4 The Detail Window shows a magnified view of the picture in the Preview Window and has been provided because the image in the Preview Window is a compressed version of the picture. The framing of the picture shown in the Detail Window is changed by moving the 'picture frame' around in the Ghost Window.
- 5 The magnification (1x, 2x, 3x, 4x) can be selected in the drop down box under the Ghost Window.



- 6 The **Grab** button will grab a picture and display it in the Detail Window. As the sliders are altered the result of the adjustment can be captured as a magnified picture in the Detail Window.

Note

The adjustment process using the **Grab** will typically be a capture followed by a check on the effect of the change on the picture followed by another capture and check until adjustment has been achieved.

- 7 The **Cycle** button takes and displays a magnified picture in the Detail Window about once every five seconds.

Note

The adjustment process using the **Cycle** will be similar to that used by **Grab**. However the cycle provides a periodic capture which is designed to make the capture followed by check process easier.

- 8 Selecting the **OK** button will save the current settings. The **Default** button returns the settings to the default and the **Cancel** cancels the calibration.

<http://sonybiz.net/>

Sony United Kingdom Limited