DVD RECORDING SYSTEM
Installation & Operation Instructions
**DVD Recording System from M.A.S. Medical Ltd**

M.A.S. Medical Ltd has been supplying video recorders for fluoroscopy since 1991.

We have a wealth of experience to enable us to deal with or advise on issues such as, Control of the Recorder, Video Standards Conversion and Aspect Ratio, and, as Radiographers, we understand the needs of the user in a busy, modern Imaging Department.

The DVD Recording System from M.A.S. Medical Ltd utilises the DVO-1000MD Medical Grade DVD recorder from Sony. This enables the system to be simple and easy to use.

The recordings are made in high quality, on DVD, using the MPEG compression format allowing high quality replay on different types of equipment including Personal Computer, Laptop Computer or standard DVD player. The recording media is inexpensive and compact for storage.

Features unique to the M.A.S Medical System include automatic Stop/Start of the recording linked to the X-Ray system, and the Keyboard, to allow annotation of patient details to the DVD.

Applications for the system include Barium Swallows for Speech Therapy, Paediatric Urography Studies, Cardiac Studies and Ultrasound.
System Components

Sony DVO-1000MD DVD Recorder
Jog/Shuttle Remote Control
LCD Monitor
Video Control System
Title Editor
Housing Unit
Opto Isolator (Optional)

Installation

The Sony DVO-1000MD and Video Control System (VCS-2) are supplied pre-assembled and connected in a purpose built housing unit. Care should be taken when removing the equipment from the packaging as most items are connected together.

Installation should only be carried out by a competent person and will normally require the appropriate X-ray engineer to connect the required signals.

The following connections need to be made.

Mains Power Using the 13A plug supplied connect to a suitable 13A supply.

Video-In This connects to a 625 line 50Hz video signal from the X-Ray system.

Video-Out This connects to the display monitor supplied.

Monitor Power This is the mains power for the monitor.

Control Signal The VCS-2 video control system requires a Fluoroscopic and a Radiographic "active on" signal from the X-ray equipment to control the VCR or DVD functions.

To optimise the VCR picture lock at the beginning of video record sequences it is suggested that the Radiographic "active on" signal be taken during “prep” or at the start of anode rotation.
To connect the X-ray unit to the VCS-2 video control system an active or passive interface is employed.

The active interface connection requires a high level +24v signal from the X-ray equipment.

The passive interface connection requires an isolated normally open relay or switch contact from the X-ray equipment.

The VCS-2 inputs are opto-isolated and the BS-AA25 & BS-AP25 connecting cables are pre-wired to comply with IEC 601 part 1. See Diagram below.

**Connecting the X-Ray Interface**

To accommodate a wide range of X-ray equipment either an active or passive connection can be made between the X-ray unit and the VCS-2 video control system.

**PLEASE NOTE THAT THE ACTIVE AND PASSIVE CONNECTION CABLES ARE NOT INTERCHANGEABLE. INCORRECT USE WILL CAUSE DAMAGE TO THE VCS UNIT AND WILL INVALIDATE THE WARRANTY.**

**The Active interface (BS-AA25)**

A high level +24v signal is required from the X-ray system for both the Fluoroscopic and Radiographic acquisition "start". Electrical isolation is achieved between the X-ray equipment and the VCS-2 video control system by the use of opto-isolators. The connecting lead BS-AA25 provides the active interface connection. The diagram below shows the 25 metre BS-AA25 active connection.
The Passive interface (BS-AP25)

For X-ray systems not providing a high level +24v Fluoroscopic and Radiographic acquisition “start” signal the passive interface should be employed. An isolated normally open relay or switch contact should be made available for both the Fluoroscopic and Radiographic acquisition “start”. The connecting lead BS-AP25 provides the passive interface. The diagram below shows an example of the 25 metre BS-AP25 passive connection.

Testing and Operation of VCS-2 Lite

1. Depress the VCS-2 video control unit FLUORO and ACQ buttons. This enables the VCS-2 video control unit to record both Fluoroscopic and Radiographic acquisition events. Insert a blank DVD+RW disk into the DVD recorder.

2. At the X-ray equipment, make a Fluoroscopic test and confirm the DVD records the video images. At the X-ray equipment make a Radiographic acquisition test, if appropriate, and confirm the DVD records the Radiographic images.

3. Press the VCS-2 MANUAL button and the DVD should start recording. Press and release of the MANUAL button should pause or stop the DVD recording.

4. To complete the testing procedure, remove the disc from the machine. Press the VCS-2 MANUAL button. The ERROR warning light should now be displayed and an audible warning activated. Press and release the MANUAL button to re-set the ERROR warning circuit.

5. Deselecting the VCS-2 video control unit FLUORO button will disable the automatic Fluoroscopic start function. Similarly, deselecting the ACQ button will disable the automatic acquisition function. The VCS-2 MANUAL function is also disabled when either FLUORO or ACQ buttons are deselected.
Operation Instructions

Switch on the mains power and check the following:-
The Sony DVD recorder display is on.
The VCS-2 green power light is on.
The monitor is switched on, “Line A” is illuminated, and the image from the X-Ray system is displayed.

Insert a DVD+RW into the DVD recorder using the “Open/Close” button.

On the VCS-2, select either “Fluoro” or “Acq” to enable the automatic recording function. Most installations will only use “Fluoro”.

Each time either “Fluoro” or “Acq” on the X-Ray equipment is activated, the DVD recorder will record.
When “Fluoro” or “Acq” is stopped, the DVD recorder will go to the record/pause mode.

At the end of the examination press “STOP” on the DVD recorder.
This creates a “Title” on the DVD which can now be edited to show patient details or other information.

To disable automatic recording, deselect “Fluoro” or “Acq” as appropriate.
To Edit Titles on the recorded DVD

Press “LIST”
This will show a list of the recordings on the disc.
Highlight the recording you wish to edit by using the “↑” or “↓” buttons.
The displayed Date and Time should help you to identify the title to edit.
Press the “→” button.
Highlight “TITLE NAME” using the “↓” button.
Press the “→” button.
Enter the required title using the keyboard. If numbers rather than letters are displayed, press the “Numlock” key, on the keyboard and re-type.
To save the edited title, press “SET”.
The title is now saved to the disc.
Press list to return to the normal mode.

To Playback a Recording

Press “LIST”.
Highlight the recording you wish to play using the “↑” or “↓” buttons.
Then press “→”.
When “PLAY” is highlighted press “→”.
This will show the Title and a list of chapters within the title. These chapters are the individual recordings for that patient.
Press “SET”. This will play the title.
The Jog/Shuttle remote control may be used for more controlled replay. Jog/Shuttle is enabled with the Jog/Shuttle button on the remote control.

To set the Time for the DVD recorder

Press “MENU”.
Highlight “SET MENU” using the “↑” or “↓” buttons and press “→”.
Using the “↑” or “↓” buttons, highlight “DATE/TIME Preset”.
Press “→”.
Follow the on screen instructions to set the date and time.

Please note that more detailed instructions are supplied, in a manual for the monitor, and on a CD for the DVD recorder. The above instructions will allow the user to make a recording, edit the titles and play back the DVD.
DVO-1000MD Rear Connections

- Video “IN”
- S-Video “Out”
- RS232 Socket
- Audio IN & OUT

DVO-1000MD Front Panel

- Remote 1
  - For SVRM 100
- Remote 2
  - For VCS-2
**Specifications**

**DVD Recorder**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Sony DVO-1000MD</td>
</tr>
<tr>
<td>Recording Media</td>
<td>DVD+RW (2.4x and 4x speed)</td>
</tr>
<tr>
<td>Recording Time</td>
<td></td>
</tr>
<tr>
<td>HQ Mode</td>
<td>60 minutes</td>
</tr>
<tr>
<td>SP Mode</td>
<td>120 minutes</td>
</tr>
<tr>
<td>LP Mode</td>
<td>180 minutes</td>
</tr>
<tr>
<td>Recording Format</td>
<td>MPEG-2 Compression</td>
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<tr>
<td>Video Input</td>
<td>625 Lines PAL</td>
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**System**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tape error warning</td>
<td>Visual and audible, 75dB @ 30cm</td>
</tr>
<tr>
<td>X-Ray Interface</td>
<td>Fluoroscopy and/or Acquisition</td>
</tr>
<tr>
<td></td>
<td>+24V Active Interface</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>N.O. Contact Passive Interface</td>
</tr>
<tr>
<td>Size (Excluding Monitor)</td>
<td>52cm (D) x 29cm (W) x 20cm (H)</td>
</tr>
<tr>
<td>Weight (Excluding Monitor)</td>
<td>14Kg</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>230 V AC 50 Hz 1 A</td>
</tr>
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</table>
The system comprises of a microphone and pre-amplifier for recording and amplified speakers for playback where required. A phono lead is provided for connection between the pre-amplifier and the DVD recorder.

The items are connected as below.

The rear panel of the DVD recorder housing will need to be removed for access to the audio connectors on the DVD recorder. The panel is retained with a single 4mm screw.

Note that the Select Input switch on the Pre-amplifier should be set to MIC.
Frequently Asked Questions (FAQ)

**How do I add Titles to a disc?**

The title editor supplied with the M.A.S Medical Ltd, DVD Recording, system allows the default date and time titles to be edited with a QWERTY keyboard to show patient names or other information. Please refer to the instruction manual.

**Can I record sound?**

Sound can be recorded to DVD using a Microphone and pre-amplifier. A sound upgrade kit is available from M.A.S. Medical Ltd.

**How do I delete recordings?**

Individual recordings can be deleted from a disc. Select the title you wish to delete and then select the “Erase” option. Follow the on-screen prompts to erase the title. Please note that due to limitations of the format, this will not always free up disc space.

**Can I reformat a disc?**

If required, a previously recorded disc can be reformatted as a blank disc. Press the “Menu” button and select “Disc Info”. Then select “Format” and follow the on screen prompts.

**Is finalising necessary?**

With DVD+RW Discs, finalising is not necessary. The disc can be ejected after recording and will play in most modern DVD replay systems.

**Can I edit recordings on a disc?**

Using an appropriate Video editing software package, recordings can be edited and re-burned to disc.

**Can I show recordings in Power Point presentations?**

Using the appropriate software, still images and/or clips can be captured for inclusion in presentations.
**What types of discs can I record with?**

The SONY DVO-1000MD uses DVD + RW discs. We recommend that good quality discs from a reputable manufacturer are used. Appropriate discs can be supplied by M.A.S Medical Ltd.

**How do I play back discs?**

With the DVO-1000MD

With a normal DVD player

With a computer equipped with a DVD drive and the appropriate replay software, for example “Win On DVD” or “Power DVD”.

**Can I Re-record a disc?**

All recordings are stored to a hard disc within the recorder. If required, these can be accessed to re-record to disc. Please contact your service provider for details on how to do this. Dubbing instructions are available on our website [http://www.mas-medical.co.uk/t-downloadsAndSupport.aspx](http://www.mas-medical.co.uk/t-downloadsAndSupport.aspx)