

***Visette® Pro***  
***– HMD System***

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## IMPORTANT

### **HEALTH AND SAFETY**

#### **PLEASE READ THE FOLLOWING INFORMATION CAREFULLY**

To illuminate the Visette® to view an image, the user must first press the red 'Visette Power' button, at the top centre on the Multi-Media-Distribution (MMD) box. The Visette® Pro will stay illuminated for twenty minutes from the last time the button was pressed. Virtuality has introduced this feature as part of its positive drive in supporting the user in health and safety matters.

Virtuality has supported extensive independent studies on the effects of immersion in virtual environments. Studies carried out at Edinburgh University showed that users immersed for periods of up to thirty minutes duration did not suffer any signs of discomfort. However, as is the case when using any optical apparatus, Virtuality recommends that after prolonged periods of use, the user should take a short break, to re-adjust and relax the eyes, prior to further operation.

Consequently, Virtuality has set a built-in timer into the MMD to dim the backlights to the LCDs (dark image) after twenty minutes, indicating to the user that they should take a break, re-adjust their awareness to the real world and give their eyes a rest.

After forty minutes of being in the 'Dim' mode, the backlights will automatically be switched off to preserve the life of the Visette® Pro. The backlights are switched to full brightness for twenty minutes following any depression of the 'Visette Power' button.

Dr. P F Sheppard  
Senior Engineering Manager: Virtuality Ltd.

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# *SECTION 1*

## *Introduction*

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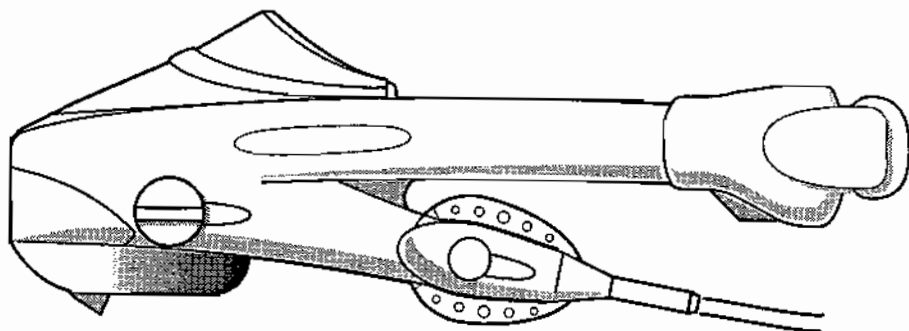
**VISETTE® PRO – Overview**

The Visette® is a Head Mounted Display system and is the primary user interface to the virtual world.

The Visette® Pro features twin active matrix LCDs and is available in a pseudo VGA format. Designed using high impact polymer moulded components, the Visette2® series include high quality, adjustable stereo earphones, a built-in omnidirectional microphone and, focus and intar-ocular adjustment switches.

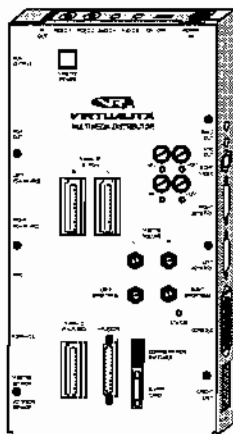
Adjustment of the visor and is provided by a single ratchet adjustment knob at the rear of the headband, also providing sufficient clearance for donning and removal of the Visette® when open to its maximum position.

The Visette® backlights will only operate if a correct video signal is fed to them – this is to decrease the possibility of the backlights burning out. If there is no video signal present, the Visette® backlights are automatically turned off.



## MMD Pro Overview

The MMD is designed to operate with all of Virtuality's VR peripherals, including the Visette® Pro.



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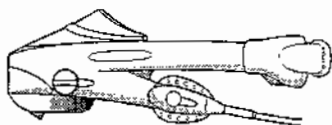
## *SECTION 2*

### *Unpacking*

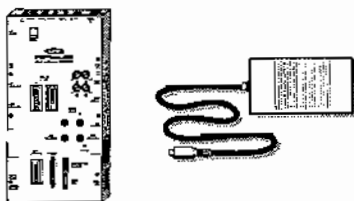
## Unpacking / List of Contents

The Visette® Pro HMD System comprises the following components;

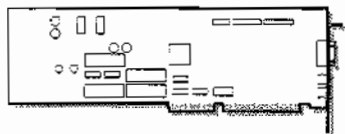
1x Visette® Pro HMD



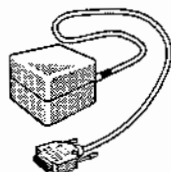
1x MMD Multimedia Interface Box  
and Power Supply Unit



1x Polhemus Insidettrak™ PCB



1x Polhemus Transmitter



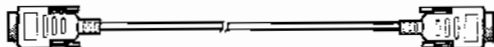
1x Frequency Modulator



1x Visette® Sensor Cable



1x VGA Connector Cable



1x Software Disk



1x CD-ROM Disk



1x Quickstart Guide







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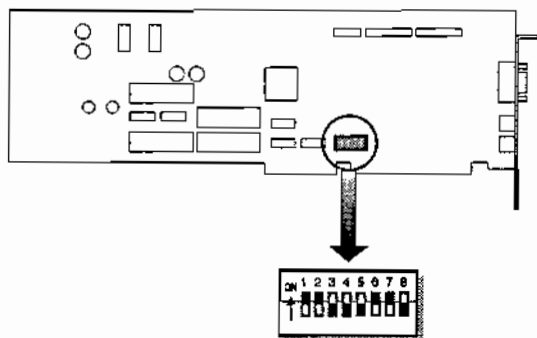
## ***SECTION 3***

# ***Connecting the System***

## Connecting the System

**NOTE:** BEFORE STARTING ANY WORK ON THIS INSTALLATION, MAKE SURE YOU ARE FAMILIAR WITH ANTI-STATIC PRECAUTIONS. ALWAYS WEAR AN EARTHING STRAP (available from VL Customer Services).

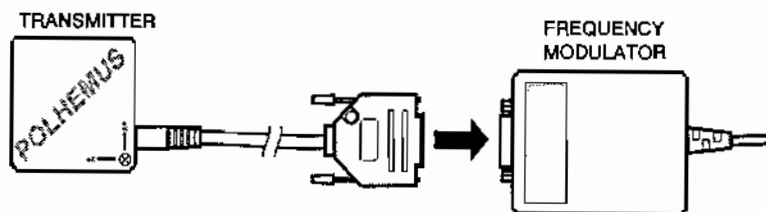
- 1 Set the switches on the Polhemus Insidetruk™ card as shown below



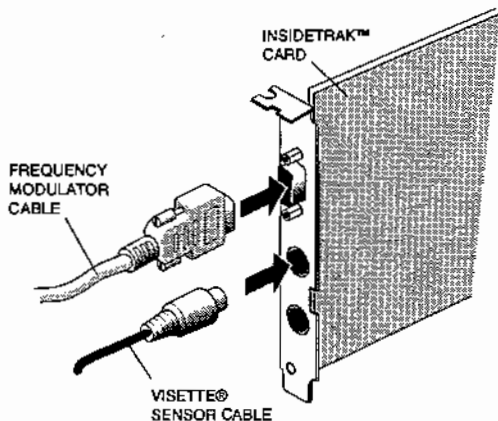
**CONFIG SWITCH SETTINGS FOR TRACKER CARD**

**NOTE:** ■ indicates switch set to ON

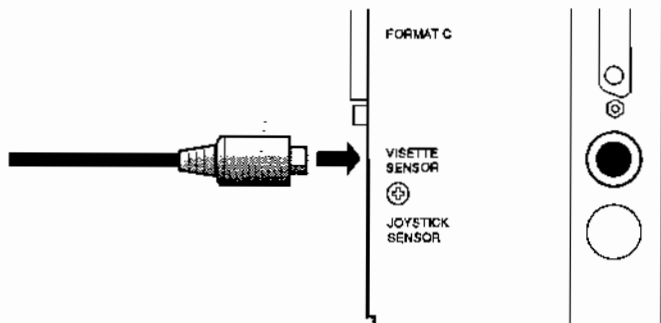
- 2 Install the Polhemus Insidetruk™ into your computer (please refer to the manuals which came with your PC) PLEASE OBSERVE ANTISTATIC PRECAUTIONS!
- 3 Connect the tracker transmitter cable to the socket on the frequency modulator. Place the transmitter on the desk in a suitable position away from large metal objects which will cause distortions in measurement accuracy.



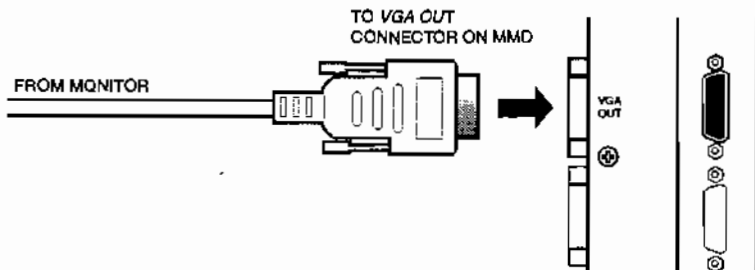
- 4 Connect the lead from the frequency modulator to the 9-way D shaped socket on the Polhemus Insidetruk® card.



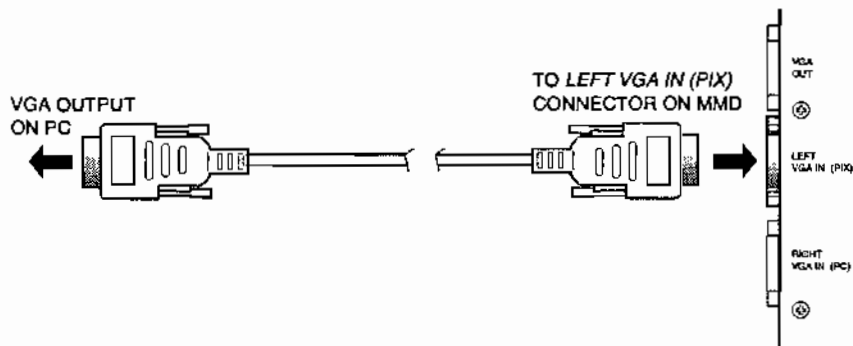
- 5 Connect one end of the Visette® Sensor cable to uppermost 5 pin mini-din socket on the Insidetrak™ card and the other to the socket on the MMD labelled 'visette sensor'



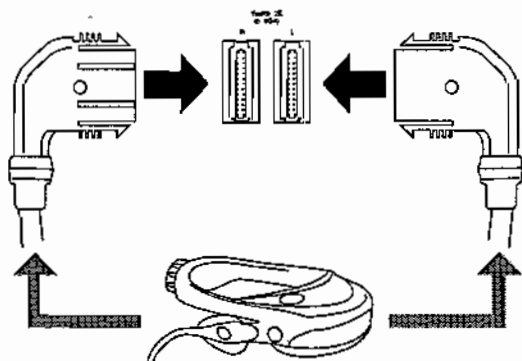
- 6 Disconnect the existing VGA monitor lead from the PC and connect it to the output connector labelled *VGA OUT* on the MMD (Page 3.6, item 16).



- 7 Connect the VGA lead to the input socket marked *LEFT VGA (PIX)* on the MMD (Page 3.6, item 17) and the other end to the VGA output connector on your PC.

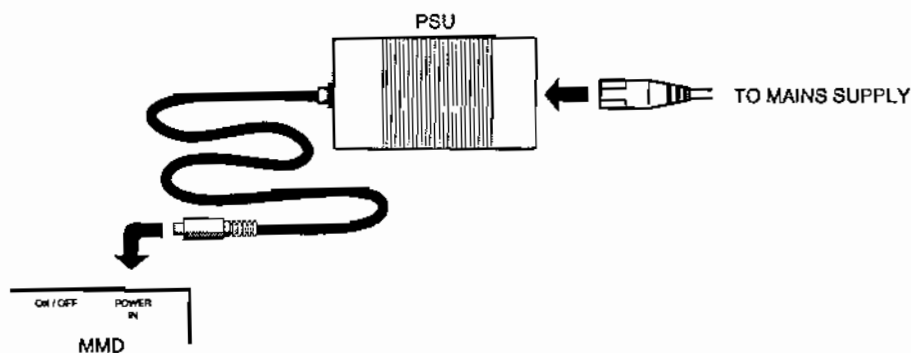


- 8 Connect the two end connectors on the Visette® to the MMD ensuring that the right hand connector goes in the socket labelled *R* and visa versa. (Page 3.6, items 14 and 15)



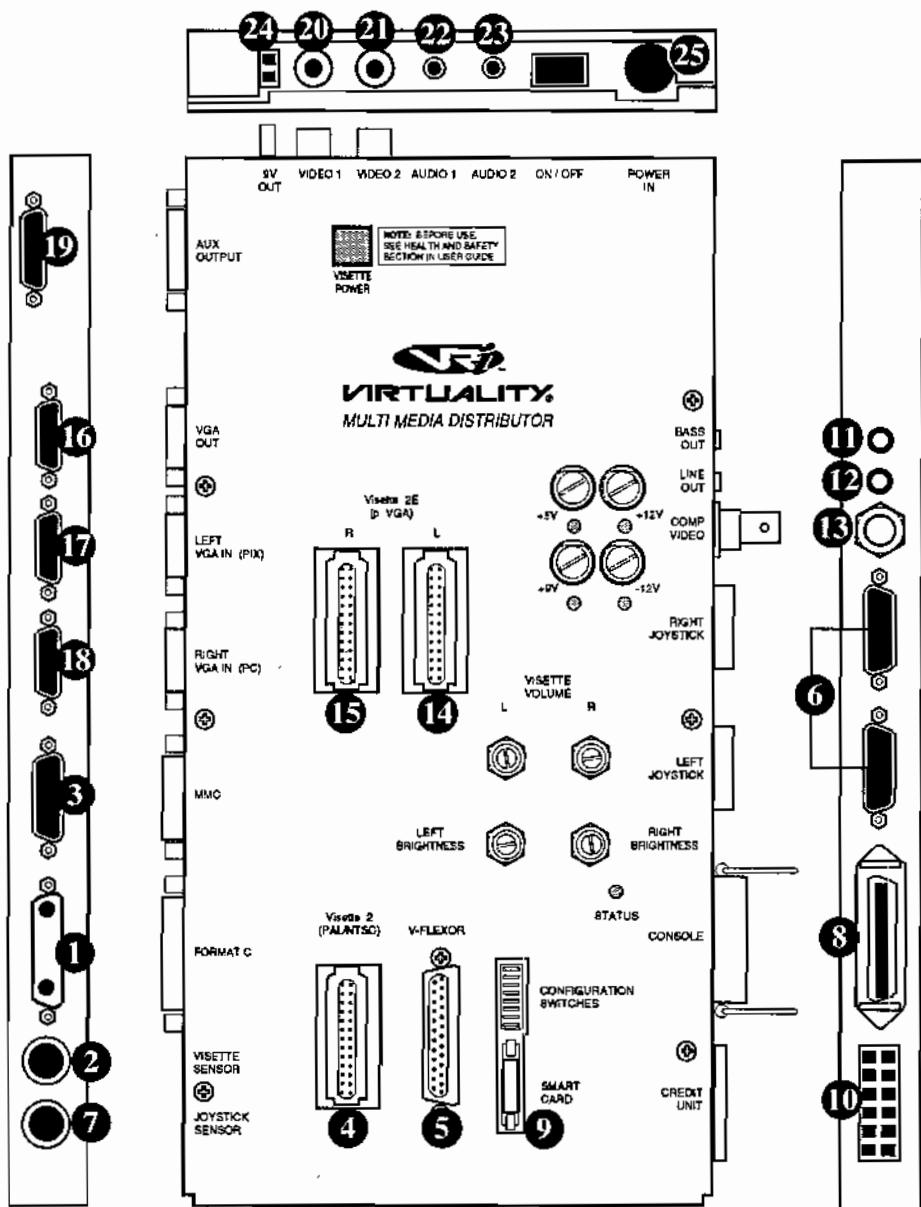
- 9 Connect the supply cable on the MMD PSU to the MMD - the connector is at the top of the unit marked *POWER IN* (Page 3.6, item 25)

- 10 Connect the MMD mains lead to the MMD PSU and connect the other end to the power supply.



Make sure the config. switches on the MMD unit are all set to the OFF position (see page 4.4). The system is now connected and is ready to be powered up. First, switch on your computer and monitor. Next switch on the MMD using the ON/OFF switch at the top of the unit.

MMD PRO - Inputs and outputs



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**MMD - Inputs and outputs**

- 1 Format C Connector (N/A)
- 2 Visette Sensor Output
- 3 MMC connector
- 4 Composite Visette output connector (N/A)
- 5 Glove/Joystick Connector
- 6 Joystick Connectors (N/A)
- 7 Glove Sensor Output
- 8 Console Output Connector (N/A)
- 9 Smart Card Connector (N/A)
- 10 Coin Mechanism Connector (N/A)
- 11 Bass Shaker Line Out Connector (N/A)
- 12 Line Out Connector
- 13 Composite Monitor Output Connector (N/A)
- 14 VGA Visette (Left) Connector
- 15 VGA Visette (Right) Connector
- 16 VGA Monitor Output Connector
- 17 Mono VGA In/Stereo left VGA in
- 18 Stereo right VGA in
- 19 Aux output (N/A)
- 20 Composite Video input 1 (N/A)
- 20 Composite Video input 2 (N/A)
- 22 Line Audio 1 (N/A)
- 23 Line Audio 2 (N/A)
- 24 9V Visette Power Supply Output Connector (N/A)
- 25 Power Supply Input Connector

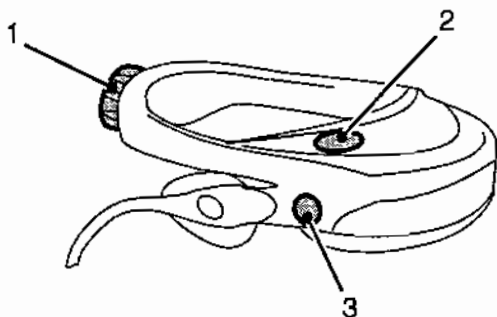
NOTE: items marked (N/A) are not applicable to the Visette® Pro System.

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# *SECTION 4*

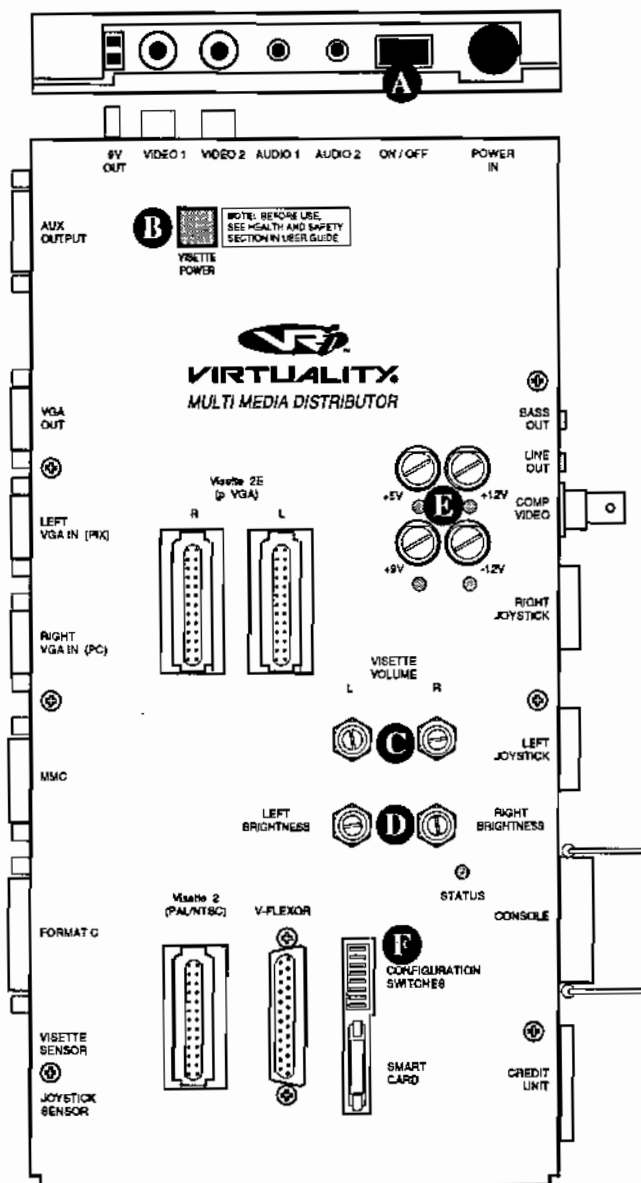
## *Controls*





**HEADSET CONTROLS** (See above)

1. **User Head Size Adjustment Knob**
2. **Inter-ocular Adjuster Switch**
3. **Focus Adjusters**

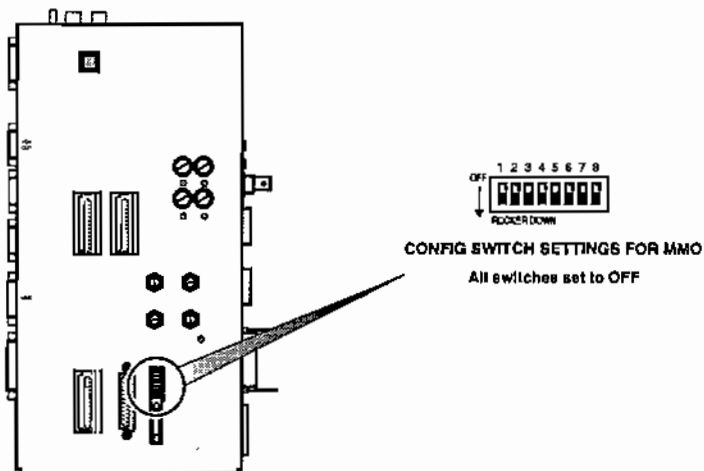


**MMD CONTROLS** (See previous page)

- A ON/OFF switch
- B Visette® Power On \*
- C Visette® Brightness L & R
- D Visette® Volume L & R
- E Internal Fuses
- F Config. Switches

\* **NOTE:** As a safety device to limit the amount of time spent immersed in the headset, the LCD backlights will be dimmed after a timeout period of 20 minutes. Pressing the *VISETTE POWER* button will reset the headset for a further 20 minutes operating time. This feature can be activated at any time during immersion. After 40 minutes of being in the 'Dim' mode, the backlights will automatically be switched off to preserve the life of the Visette® Pro. The backlights are switched to full brightness for 20 minutes following any depression of the 'Visette Power' button.

The Configuration switches on the MMD should all be set to OFF for this application. See below.





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# *SECTION 5*

## *Operating Instructions*



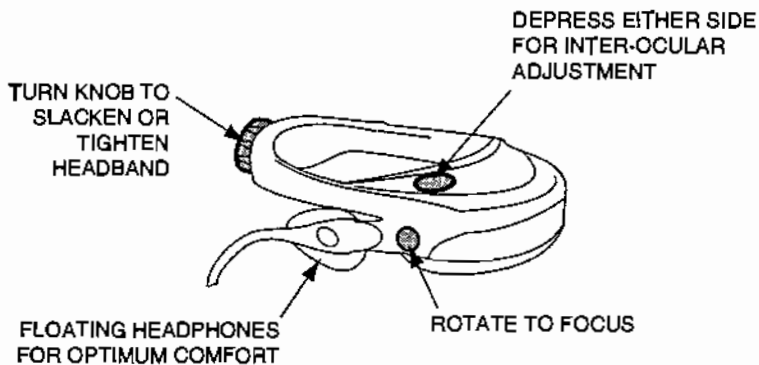
## SWITCHING ON

Always switch on the computer and monitor first, followed by the MMD.

## USING THE VISETTE®

- Place on the head end adjust to fit using the the rotating knob at the rear.
- Adjust the inter-ocular distance if required, using the switch pad at the front right of the Visette®. Note the BRAILLE effect dash for wider and dot for narrower.
- Adjust focus for the right eye by closing the left eye and turning the rotating dial on the right of the Visette® until optimum picture sharpness is achieved. Note: The screens have integral depixelators to diffuse the pixels, obviating the need for pin-sharp focus. Repeat the focussing process for the left eye.

Pressing the *VISETTE POWER* button on the MMD will give 20 minutes operating time for the headset. After this time, if this button has not been pressed, the headset optics will dim. (This is a safety feature to ensure the wearer is conscious o the time being spent in an immersive situation.) Pressing the button will always give 20 minutes operating time from the moment it was reset. If the headset is left dim for 40 minutes, the backlights are automatically turned off.



## SWITCHING OFF

Switch of the MMD first, followed by the computer and monitor.

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# *SECTION 6*

## *Troubleshooting*

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## Troubleshooting Guide

The following pages give hints and tips on possible operational problems with the system. Pages 49 and 50 detail possible problems with the Visette® head mounted display and page 51 covers possible problems with the tracker unit.

Listed below are some of the more common causes if problems are encountered. Check these out first then proceed to page

- Make sure that the tracker transmitter cube is correctly sited away from BOTH the PC and monitor. Failure to do this could result in interference from the electronics and/or electromagnetic radiation from these items, which could give distorted results from the tracker.
- Make sure the Visette® is above the level of the tracker transmitter module at all times. Failure to do this will show inconsistent results (i.e. the hand could disappear from view in the virtual world).
- Make sure all connectors and the tracker card are correctly seated. See the handbook which came with your computer.
- If experiencing problems with the image in the Visette®, check the picture through an external monitor. If the problems are not present on the monitor image, then check the Visette®. If the same fault is present in the monitor image, check the cables and connectors.

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## ***SECTION 7***

### ***Care and Maintenance***



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## **Cleaning and Maintenance**

It is good practice to clean your Visette® Pro System periodically to protect the surfaces and ensure trouble-free operation.

### **Computer and Monitor**

Use only mild cleaning solutions and a damp cloth to clean the painted surfaces of the computer end monitor. Do not use abrasive cleaners when cleaning the surface of the display screen. For further information and details on how to clean the mouse, please refer to the User Handbook which came with your PC.

### **MMD**

Use only mild cleaning solutions and a damp cloth to clean the MMD . Be very careful not to allow water to enter any part of the unit.

### **Visette®**

Use only mild cleaning solutions and a damp cloth to clean the outer surfaces of the Visette® . The face mask area should be cleaned periodically with moist medicated wipes but do not allow wipes to come into contact with the lenses as this can leave a residue. These should be an impregnated disinfectant wipe such as "Medi-wipes" from Smith and Nephew or a similar product. The earphones can also be cleaned with moist medicated wipes. Lenses should be cleaned with the soft dry Virtuality® lens cloths supplied with the machine.



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# ***SECTION 8***

## ***Specifications***



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**VISETTE ® PRO**

The Visette® Pro features twin active matrix LCDs and operates in a pseudo VGA format. Designed using high impact polymer moulded components, the Visette2® series include high quality, adjustable stereo earphones, a built-in omnidirectional microphone and, focus and inter-ocular adjustment switches.

**SPECIFICATION****Display**

<b>Video Format</b>	Pseudo VGA
<b>Resolution</b>	640(h) x 480 (v) 307,200 pixels
<b>Video Format</b>	Pseudo VGA
<b>Pixel Arrangement</b>	Delta

**Optical**

<b>Field of View per Eye</b>	60°(h) x 46.8°(v), 71.5° diagonal
<b>Focus Adjustment</b>	± 4 dioptres

**Head Tracker**

6 Degrees of Freedom
60 Hz Update Rate
12 milliseconds Latency

**Micnet System**

Omnidirectional voice-activated microphone
50Hz to 18Khz frequency response
-68DB sensitivity
Electret pressure transducer

**Ergonomic**

High impact nylon66 ZYTEL ST801 polymer moulded components
Single twist knob head size adjustment
Hygienic closed cell replaceable EVA comfort pads
Motorised inter-pupillary distance adjustments (58 mm - 70 mm)
Independent left and right eye focus adjustments
Independently positionable headphones
FCC and CE approved