

## User Manual

### 3Scope-DVI

Head-Mounted-Display (HMD) / Goggles



Subject to technical modifications

## **WARNING**

**Before using the 3Scope please read carefully these safety instructions.**

**Read this handbook and use the 3Scope device in strict accordance in order to prevent any damage to your eye, other injury, loss of visual functions, property damage or death.**

**Children under the age of fifteen may not use this product.**

**We strongly advise you to get familiar with the 3Scope device and its capabilities before you use it for the first time.**

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## 1 Safety instructions

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### 1.1 Health concerns

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➔ **WARNING:** Eye Disease, Eye Injury, and Glaucoma

If you have been diagnosed with or are susceptible to eye disease, eye injury, or glaucoma consult your doctor before use and do not use without your doctor's approval.

➔ **CAUTION:** Heart Disease, High Blood Pressure

If you have a history of heart disease or high blood pressure consult your doctor before use and do not use without his approval.

➔ **CAUTION:** Seizures

If you have a history of temporary spasm, unconsciousness, or epileptic seizures from light stimulation, consult your doctor before use and do not use without his approval.

If any of the following symptoms occur, if using 3Scope, stop using immediately and rest:

- eye fatigue or irritation,
- headaches or dizziness,
- aches and pain in the neck or shoulders,
- double vision,
- nausea or motion sickness,
- inability to focus on the displays.

Misuse or overuse of this product may result in eye damage, or loss of visual functions.

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## **1.2 General safety hints**

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- ➔ Avoid getting the cable entangled around your neck, body or arms. Use the belt pouch for the power unit and wear the cable close to your body.
- ➔ To ensure that the device does not fall off during use, always use the elastic strap, and have it tightened with an adequate tension.

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## **1.3 Warning for electrical products**

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- ➔ To avoid any risk of electrocution, do not bring any part of the 3Scope in contact with water when the power unit is connected to an AC outlet (e.g. when recharging batteries, using an external TV-, DVD-, Video- or PC-source).
- ➔ Avoid using and storing the 3Scope at wet, humid, dusty and smoky surroundings and extreme temperatures.
- ➔ Do not use 3Scope at temperatures below -10°C and above +40°C. Avoid dropping or mechanical shock, as frame and displays may be deformed.
- ➔ Always switch off and unplug the 3Scope when it will not be used.
- ➔ In case of damage contact your retailer. There are no user serviceable parts. Only qualified service personnel should perform any service required on this product.

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## 2 Content of the 3Scope Kit

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The 3Scope kit contains the following elements. Please check that all of these are included. If any item is not supplied contact your 3Scope dealer.

HMD or goggles (1),

Power unit (2)

AC/DC transformer (3)

Cleaning cloth (4), DVI-Cable (5), USB-cable (6)

Driver CD (7)



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### 3 Description

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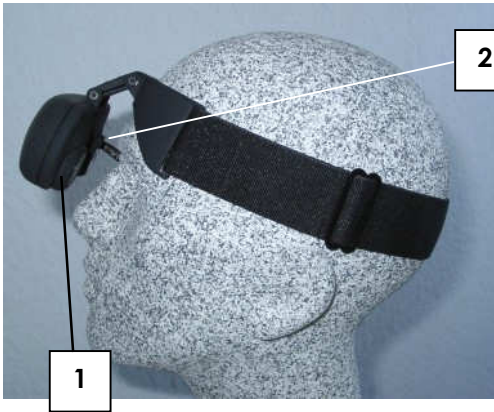
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#### 3.1 Head Mounted Display HMD / Goggles

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The HMD contains two **microdisplays** (1) to show the images. The **cable** (2) is permanently attached to the HMD and to the pocket element (power unit).

Without a PC or external video source connected to the power unit there is no image visible inside the HMD !



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## 3.2 Power unit

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The plastic casing contains the following elements:

- (1) HMD cable permanently attached
- (2) Plug connections for FireWire camera cables
- (3) Plug connections for PC (DVI and VGA)
- (4) Push button for power (illuminated)
- (5) Connector for power supply
- (6) Joystick for manual adjustments
- (7) Indicating LEDs
- (8) USB connection for image adjustments and firmware updates



The **push button** (4) on the top of the power unit is used to switch the 3Scope on and off. When the device is switched on, a light underneath the button lights up. For switching on/off the button must be pressed more than 1 second (see further).

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## 4 General Operating Instructions

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### 4.1 Preparation

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#### Unpacking the Device

- ➔ Please unpack the devices and compare with the list under paragraph 2 on page 6 to check that all parts are complete. Please contact your dealer if any parts are missing.

#### Using the HMD with external power supply

Please use only the AC/DC transformer that comes with the device. Its output is 12 V DC, available at the special plug. This plug (see also(5) page 8) fits into the connector at the power unit.



An external battery pack will be available soon.

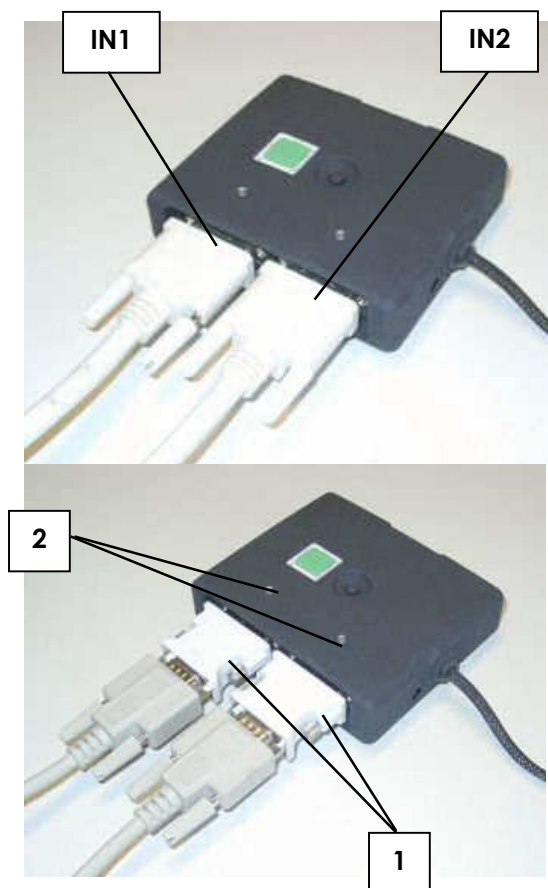
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## 4.2 Connecting external video sources

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You can either connect the device by one or two DVI cables or by one or two VGA cables using additional DVI to VGA adapter (1). The device will automatically recognize the correct signal. Input1 (IN1) and input2 (IN2) can independently receive DVI or VGA in 800x600 at 60Hz or 100Hz. The last used input channel is memorized. The indicating LEDs (2) will show the status (on=signal, slow flashing=no signal, fast flashing=active stereo, off=channel is not active).

A static image can burn into the microdisplays after an extended period of time !



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### 4.3 Putting on the 3Scope

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#### Putting on the HMD

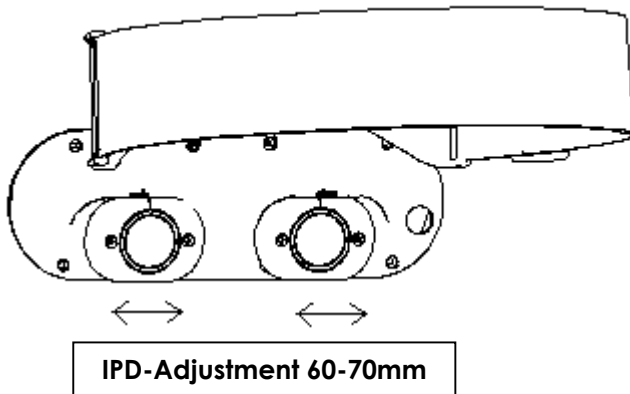
- ➔ Put on the 3Scope HMD. Place the headband around the back of your head and pull it just tight enough to make it fit safely and comfortably.
- ➔ On the displays inside the HMD, you can now see the pictures of your video sources.
- ➔ Wearing the HMD you will see your surroundings only constricted. For this reason, please, move only carefully or not at all.

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#### 4.4 Adjusting the Interpupil Distance

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To optimize the position of the two displays, so that both images are seen as a single visual field, carefully move the oculars into the right position.



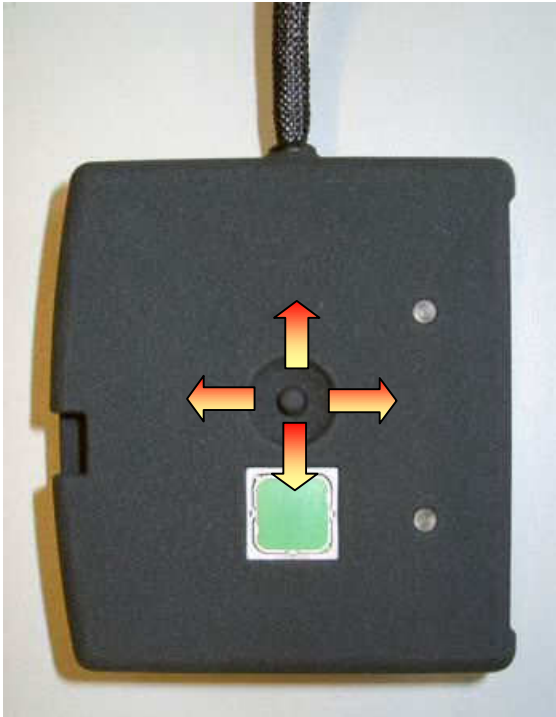
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## 4.5 On-Screen-Display Menu (OSD)

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### Using the joystick

Push the joystick to activate the OSD. Then you can navigate in menu by moving the joystick left/right or up/down. To exit the menu the joystick must be pushed again. You can change the joystick orientation, choosing it's UP direction in the menu.

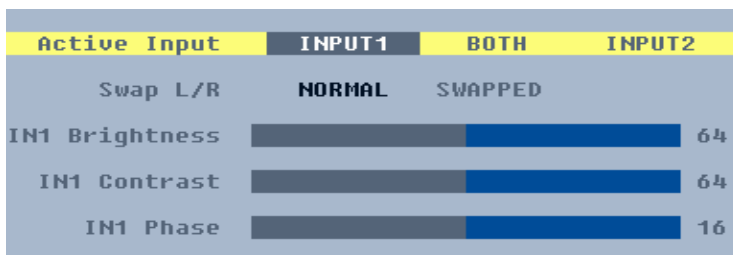


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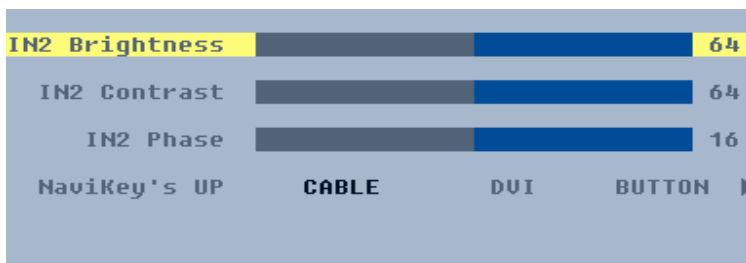
#### 4.6 Adjusting Brightness, Contrast and VGA Phase (OSD)

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First select the input channel IN1 or IN2 for left or right eye. Option "Both" can be used for passive stereo signals (see also page 15).

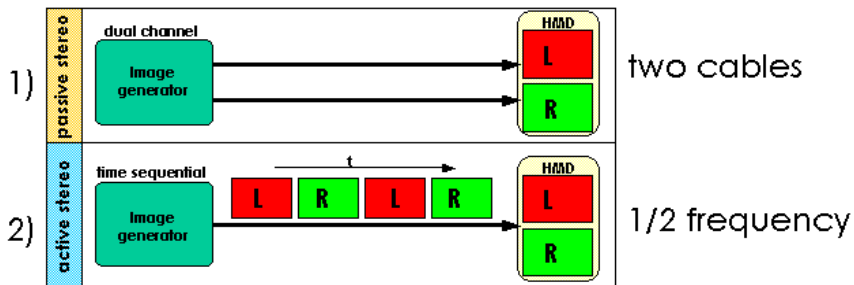


Then you can adjust the brightness, contrast and phase of VGA signal for both eyes independently.



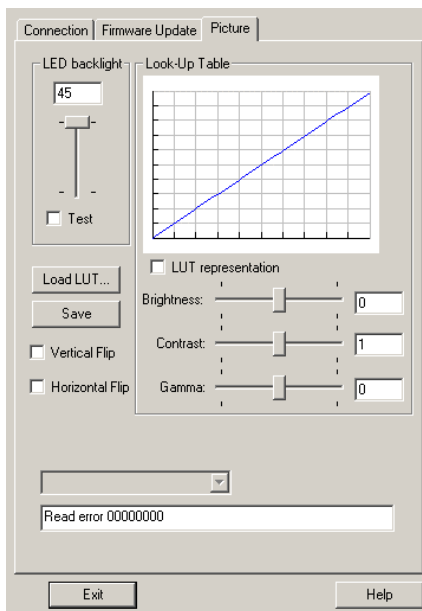
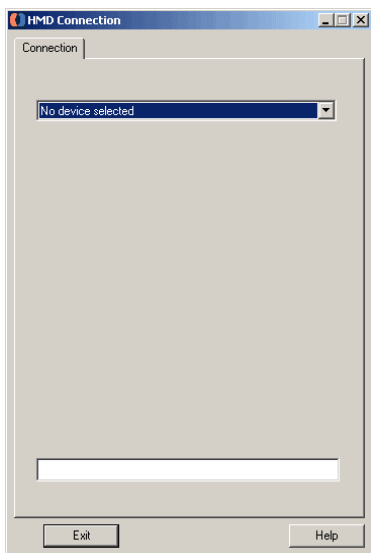
## 4.7 Using different Stereo Modes

The electronics of your 3Scope device allows two different stereo modes. The electronic is automatically detecting when active stereo signal is supplied by the graphics card of PC. To switch between monoscopic and passive stereo mode please select both input channels in OSD (see page 14).



## 4.8 Adjusting the image (Software)

Please install **first** the software from CD-ROM according instructions **before** you connect the power unit with the PC using the USB-cable. After installation process plug in the USB cable to the power unit and turn on the device. Windows will detect the hardware and install automatically. To adjust the image start the software "hmd\_connection.exe" either from icon or start menu. Then select the HMD (also serial number is shown here). Then you can go to menu "Picture" and adjust the brightness, contrast and gamma of the image. You can also change the look-up table (LUT) or flip the image.



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## 4.9 Audio features (optional)

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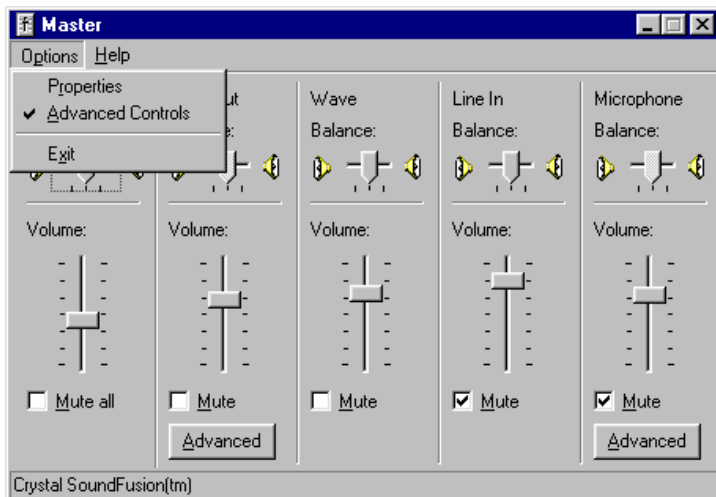


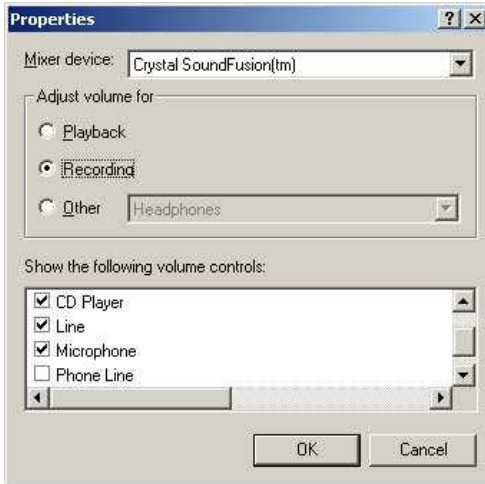
Microphone (optional)

Earphones (optional)

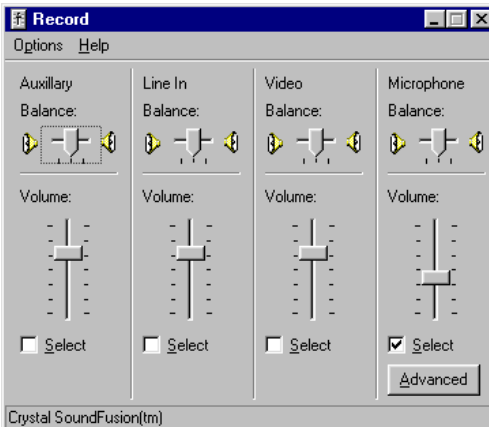
Connect your audio source or PC soundcard with the connectors on the backside of case (3.5mm jacks).

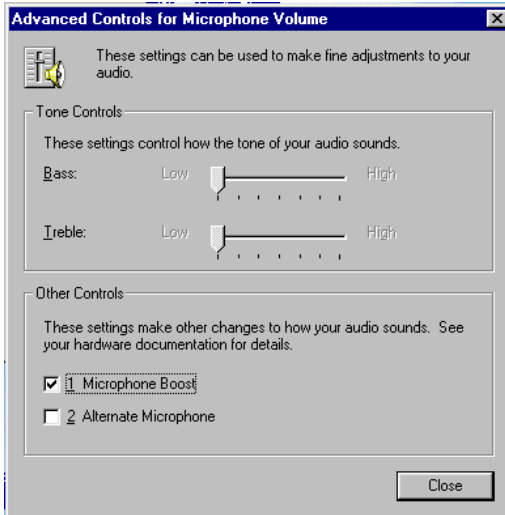
In MS-Windows® go to menue "Volume Control" and in "Properties" activate "Microphone".





If the microphone is not loud enough you can activate a booster: Click on menu "Volume Control" and select "Advanced Settings", then a button "Advanced" appear to reach next menu:



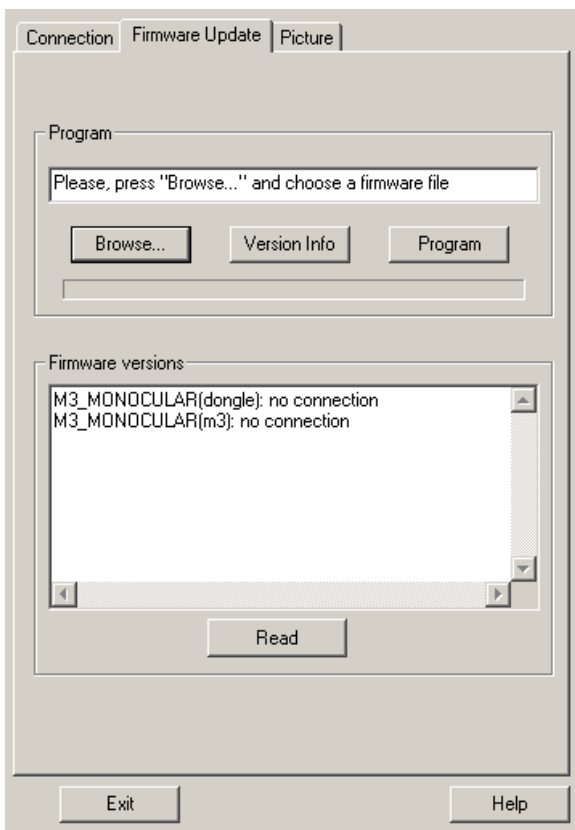


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## 4.10 Firmware update

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In the need of a firmware update select the menu of HMD-software "hmd\_connection.exe" and choose new firmware file by clicking on "Browse". The firmware is provided as "name.hex" file. Then click "Program". **During the update process never unplug the device and do not shut down the computer and do not turn off the power !**



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## **5 Maintenance and Cleaning Instructions**

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To clean the HMD or goggles and control unit, use a damp cloth. A light rinsing agent may be added to the water. Do not use any detergents.

To clean the oculars of the HMD/goggles use a dry, clean cloth. A cleaning cloth for this purpose is provided with the 3Scope-kit.

In case of damage contact your retailer. There are no user serviceable parts. Only qualified service personnel should perform any service required on this product.

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## 6 Troubleshooting

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| <b>Problem</b>                        | <b>Cause</b>                                      | <b>Remedy</b>   |
|---------------------------------------|---|---|
| <b>Only dark, or only white image</b> | Incorrect brightness.                             | See OSD or software and adjust correct                        |
| <b>No image</b>                       | In basic mode and no VGA or DVI signal applied    | Connect a video source (SVGA)                                 |
| <b>No image</b>                       | Device was used on the other input channel before | Push joystick and select input channel manually or swap cable |
| <b>No image</b>                       | Appliance switched off                            | Switch on 3Scope with main push button (>1 sec)               |

**All other problems should be performed by a trained and authorised service provider !**

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## 7 Returning used electronic devices in EU countries

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|   |   |
|---|---|
|  | <p>This HMD and accessories shall not be treated as household waste. The separate collection is a condition for reuse, recycling and utilisation of used electronic devices, which ensures the protection of resources. To comply with german ElektroG (Rücknahme und Entsorgung von Elektro- und Elektronikaltgeräten) and european WEEE (Waste Electrical and Electronic Equipment) electronic used devices from private households can be returned free of charge. For details please contact your local distributor or directly Trivisio Prototyping GmbH (<a href="http://www.trivisio.com">www.trivisio.com</a>).</p> |
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## 8 Technical Data

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### 8.1 Head Mounted Display / Goggles

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|                            |   |
|----------------------------|---|
| Display .....              | 2x SVGA microdisplays<br>480,000 pixels colour<br>equals 1,440,000 pixels |
| Field of view .....        | approx. 40° diagonal  |
| Eye distance.....          | 60-70 mm adjustable   |
| Operating temperature..... | -10°C to +40°C  |
| Weight HMD .....           | 120g  |
| Dimensions (W/H/D).....    | 155mm/50mm/50mm   |

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## 8.2 Power unit

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|                            |   |
|----------------------------|---|
| Brightness .....           | manually adjustable                                       |
| Contrast .....             | manually adjustable                                       |
| Gamma.....                 | manually adjustable                                       |
| Input Signal.....          | DVI-D or VGA, 800x600 pixel<br>color at 60Hz or 100Hz     |
| Modes.....                 | 2 stereo modes (passive and<br>active), 1 monoscopic mode |
| Weight .....               | 150 g   |
| Dimensions (W/H/D).....    | 95mm/26mm/110mm   |
| Operating temperature..... | -10°C to +40°C  |