

Made in USA
Patent Pending

PT-01™

Professional Personal Video Display™

USER'S MANUAL

O1 Products

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INTRODUCTION

The **PT-O1 Professional Personal Video Display** is the result of extensive research and clever engineering, designed to enhance a wide variety of operations. You will be using a unique piece of equipment incorporating new technology and lightweight materials into a device with the specific purpose of making your work easier and more effective.

For most people, using a head-mounted display will be a new experience. We recommend that each user spend time acquainting him/herself with the unit's various adjustments, for both fit and performance, before trying the **PT-O1** in its intended application. Each individual will find settings that best suit personal tastes and job requirements.

Follow all safety guidelines carefully to ensure optimum comfort and ease of use.

PRODUCT REGISTRATION

There is a serial number located on the headset. Be sure to take a moment and enter it here in your User's Manual and on the registration card. Promptly returning the registration card to **O1 Products** will enable us to keep you informed of product upgrades, technical bulletins, new accessories, and occasional special offers.

Model _____
Serial No., Headset _____
Date purchased: _____
Dealer/Sales Agent: _____

ELECTRONIC DEVICE STANDARDS COMPLIANCE

U.S.A. Standards

FCC PART 15

Subpart B, Class A

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/her own expense.

Subpart B, Class B

Additionally, this equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

European Standards

CE Mark

This product complies with the requirements of the EMC Directive 89/336/EEC, conforming to the following standards:

EN50081-1
EN50082-1

IMPORTANT SAFETY INFORMATION

*Read these instructions. Follow them. Save them.
Be sure others using the equipment read them as well.*

WARNING

Do not expose the **PT-O1** to rain or moisture to reduce risk of fire or electric shock.

Electrical, Fire Hazards

The **PT-O1** is not weatherproof --keep it dry. Do not immerse the device in liquid or expose it to rain. Do not use close to a sink, wash basin or tub; in or near standing water; or near a swimming pool or lake.

Operating With Cars, Other Vehicles or Equipment

Don't. Do not drive or operate any vehicle, motorized or not. This includes cars, trucks, tractors, forklifts, motorcycles, and even bicycles or skateboards. Federal and state laws may, in fact, prohibit you from doing so. Your field of vision is often obstructed by the **PT-O1**, creating dangerous conditions and the potential for injury to you and/or others.

Falling Precautions

Activities such as climbing stairs, running, or other such activities could result in a falling accident while wearing the **PT-O1**. Avoid these or any such activities that might cause damage to the equipment which could break and in turn cause injury to the eyes or other body parts.

Pay Attention

The **PT-O1** is designed to afford contact with your surroundings while accessing video image. Keep the headset adjusted so that you can maintain awareness of your environment while wearing the equipment. If using earphones, keep volume levels low so you can hear what may be going on around you.

Wires and Cords

Wires and cords attached to your **PT-O1** unit can present a safety hazard if the user is not careful. Please take care not to become tangled in the headset or audio cables or trip over the AC power adapter cord.

Attachments, Accessories

Use only attachments or accessories recommended or approved by the manufacturer. Others may cause hazards.

Power Sources

Use the **PT-O1** only with the type of power source identified on the unit. Operate only with the AC power adapter or battery provided or recommended by the manufacturer.

IMPORTANT SAFETY INFORMATION

continued

Eyestrain

Keep the unit adjusted properly. Set brightness, interpupillary adjustments, and focus (if so equipped) for maximum personal comfort. Much effort went into the design of this device to maximize image quality and minimize eyestrain potential. If, however, your eyes become fatigued or stressed, discontinue use.

If you have a stereoscopic **PT-O1** system, DO NOT attempt to view two separate and distinct images through the discreet video channels at the same time. These stereoscopic units are designed to display carefully engineered professional 3-D imagery only. "Home-made" stereo video devices or computer-generated images might not be aligned properly and could cause serious eyestrain or damage.

Hearing

If you choose to use stereo earphones with your **PT-O1**, do not use the system with the sound turned up for extended periods of time. Our hearing tends to adapt to higher volume levels over time if we push it. You can avoid this by setting the volume at a safe level and maintaining that level before you force your ears to adapt.

If you hear ringing or experience any pain in the ears, discontinue use immediately.

Continuing to use earphones with high volume levels when your ears hurt can result in damage to your ears or permanent hearing loss.

Cleaning

Disconnect power (unplug cord or remove battery) before cleaning the **PT-O1**. DO NOT IMMERSE OR POUR LIQUIDS on the unit. Avoid aerosols or sprays. Wipe with a damp cloth or use a mild cleanser. A dilute solution of chlorine can be used to disinfect exterior plastic parts.

DO NOT ATTEMPT TO CLEAN INTERIOR LENSES. **PT-O1** lenses have a delicate precision optical coating that can be marred permanently if rubbed or touched. Clean dust or debris from outer windows with "canned" air or by *gently* brushing with a dry cotton swab.

Service

There are no user-serviceable parts in the **PT-O1** headset. DO NOT open these cases. Doing so will invalidate the manufacturer's warranty and is likely to cause damage requiring expensive repairs. Do not attempt to insert a foreign object into the power input jack; this, too, can damage the product. If an object or liquid should fall or spill into the **PT-O1**, disconnect the power and have the unit inspected by authorized personnel before further operation.

PT-O1 COMPONENTS

Your PT-O1 is shipped with the following separate pieces:

Standard equipment

- 1 Headset including display module, headgear, and padded browband
- 1 Headset cable, with connectors for power input (9 - 24 vDC) BNC conn. & audio input **
- 1 110 volt AC/DC power adapter **

Commonly provided *optional* equipment

- "Privacy bud" style stereo earphones
- Unterminated power lead for battery connection
- AC/DC adapters suited to local power supplies
- Sunshade visor for neoprene browband
- BNC to BNC coaxial video cable

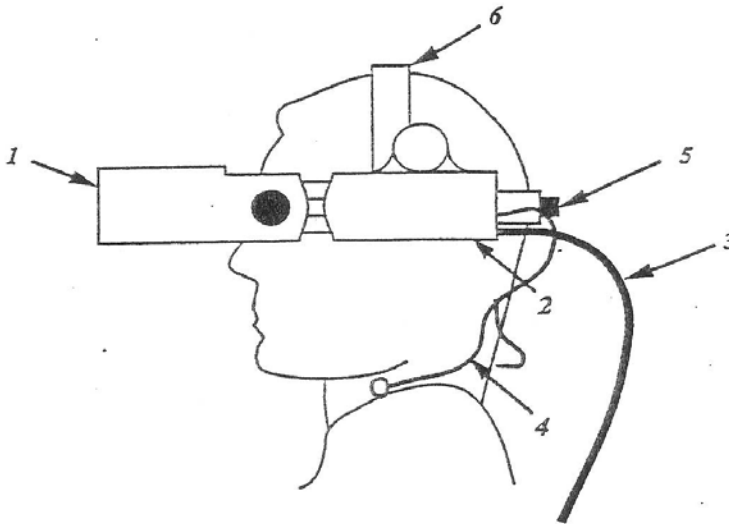
** Stereoscopic models have two of each of these components.

If, upon unpacking your PT-O1, you find any standard or ordered optional components to be missing, please notify O1 immediately.

PT-O1 PARTS

The following diagram identifies these parts of your video display unit:

- | | |
|-------------------|------------------------------------|
| 1) Display module | 4) Earphones wire (if so equipped) |
| 2) Pivot housing | 5,6) Headgear |
| 3) Headset cable | |



SET UP

Plug the 9-pin connector on the headset cable into the headset, at the rear of the right side pivot housing. Connect your video source (camera, scope, sensor, video player, monitor, etc.) to the BNC connector at the other end of the headset cable (wide end). The round BNC connector is appropriate for most professional and personal video sources; adapters for RCA connection are commercially available.

If using sound, plug the optional stereo earphones into the 1/8" jack at the rear of the right side pivot housing. You will need to supply audio to the headset through the 1/8" jack at the wide end of the cable. This jack can handle stereo & mono audio inputs; adapters for RCA connection are commercially available.

The AC/DC power adapter plugs into any standard household current 110-volt outlet. Plug the round end (barrel-plug) into the receptacle at the wide end of the headset cable.

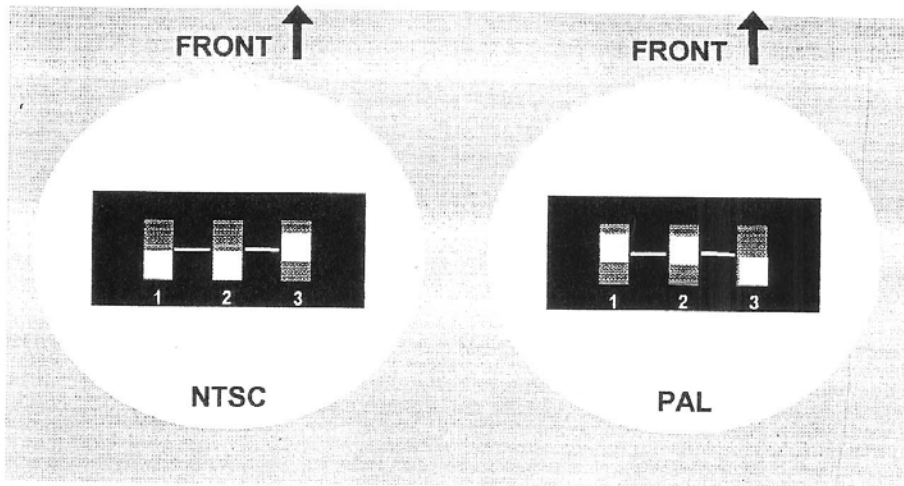
Place the unit on your head so the brow band rests approximately on the middle of your forehead. Set the pin adjuster strap on top of the headgear to allow the ratchet knob to ride as low as possible on the rear of your head. Adjust the ratchet knob at the back of the headgear so that the band is snug but not so tight as to cause discomfort. If you wear the headgear too loosely, however, you will find it tricky to make the tilt and pivot adjustments. Pivot point tensions are set at the factory to prevent slippage while you move. You may find it helpful to steady the browband with your fingers while tilting the display module.

Turn on your video (and audio, if applicable) source. Switch on power to your **PT-O1** by turning the wheel on the bottom right of the headset. Adjust brightness by turning the wheel also.

ADJUSTMENTS

Your **PT-O1** headmounted display unit has been engineered optically and mechanically to provide maximum adaptability. With a little experimentation, you will quickly find a position that is both comfortable and most efficient for your specific display requirements.

Video Standard Adjustment



Access Port Blow-Up

The video standard selector switches (for those units so equipped) are accessed from the top of the display module, just in forward of the right eye window.

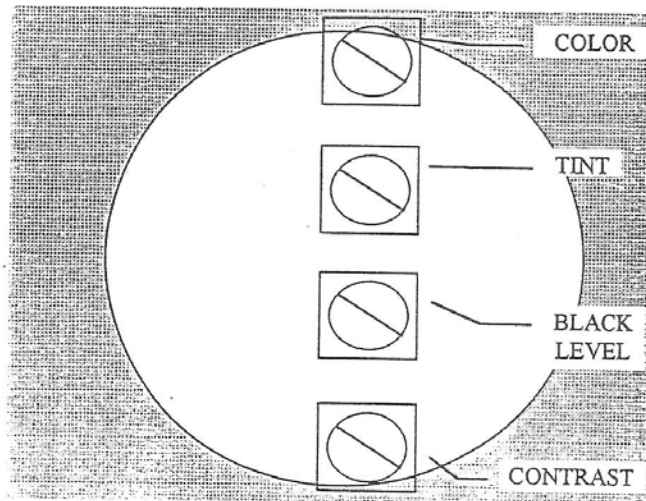
To select the proper video standard setting:

- 1) Remove the access port plug to expose the dip switch panel.
- 2) With a soft instrument (wood or plastic), move the switches to the desired setting:
(Please refer to the diagram above.)
for NTSC: 1 and 2 switch should be down; 3 switch in the up position.
for PAL: 1 and 2 switch should be up; 3 switch in the down position.
- 3) View the PT-O1 display with your video source to ensure proper setting has been made.
- 4) Replace access port plug. Make sure the plug is securely in place to protect the electronics.

Please contact our technical staff if you have any questions.

PT-O1 Professional Head Mounted Video Display

DISPLAY CONTROLS
(for only those units equipped with this option)



Access Port Blow-Up

PLEASE NOTE: While these potentiometers can be accessed and adjusted when end users feel it is necessary, we recommend leaving them at factory-set values unless you are using them to compensate for switching to and from NTSC and PAL display modes (normally you should need only to adjust the "color" level in this case). Levels are optimized on our lab benches, and backlight brightness is controlled at the backpack interface box. Color saturation and tint often vary according to the source object or equipment, and *changing settings for one circumstance may result in unsatisfactory display quality for all others.*

Please exercise caution when turning the pots; touching components with your tool could create a damaging short. **DAMAGE DONE TO THE BOARD WHILE MAKING THESE ADJUSTMENTS IS NOT COVERED BY YOUR WARRANTY.** Similarly, we cannot take responsibility for color accuracy after end user adjustments have been made. If you think your display may be improperly adjusted when you first receive it, contact us immediately. Please call us anytime you have questions.

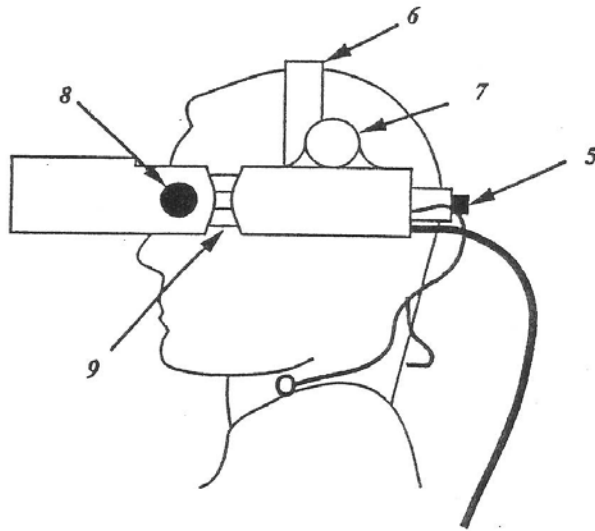
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Mechanical Adjustments

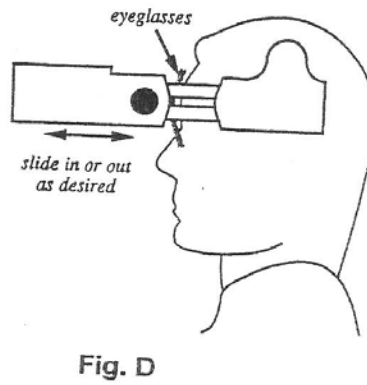
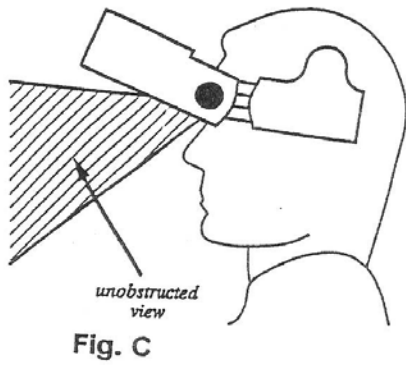
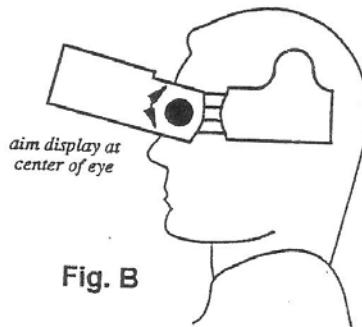
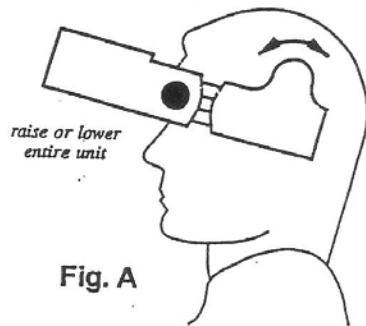
The following diagram identifies the mechanical adjustment points built into your PT-O1:

- 5) Ratchet knob adjuster on headgear
- 6) Pin adjuster strap on headgear
- 7) Ear pivot to tilt entire unit
- 8) Eye plane pivot to tilt display module only
- 9) In/out slide to move display module closer to or further from the face



The following diagrams show how you can adjust the PT-01 unit to suit your needs and preferences.

The entire unit can be raised or lowered at the ear pivot (see Fig. A); and, the display module can be tilted up or down at the eye plane pivot (see Fig. B). This allows the user to maintain a clear view in front of him/her without losing contact with the video information (see Fig. C). Additionally, the display module can slide in and out, front to rear, to allow users to wear their own corrective eyeglasses (see Fig. D).



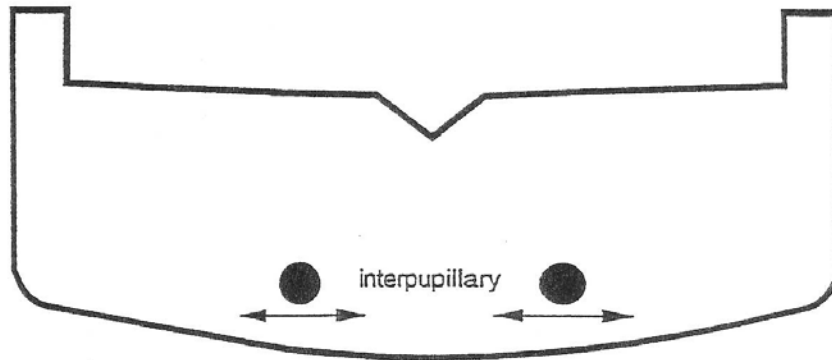
Optical Adjustments

Two round knobs on the bottom and toward the front of the display module adjust interpupillary distance (the distance between the eyes), or IPD. With your thumbs, slide the spring-loaded knobs laterally for correct placement. Set too wide, you will notice a scalloped blur in the center of the video image. Set too narrow, you will notice the outsides of the image clipped or scalloped.

TIP: Set IPD by closing one eye and centering the frame of the LCD within the sphere of the lens, then follow the same procedure for the other eye.

Standard PT-O1 units are shipped with the apparent image distance set at approximately six meters (almost twenty feet). This focus distance has been demonstrated to be optimum for relaxing the eye, and is especially conducive to extended viewing. Consequently, there is no adjustment for focus. Our rule of thumb for those who wear eyeglasses: if you wear glasses to drive, wear them when using the PT-O1.

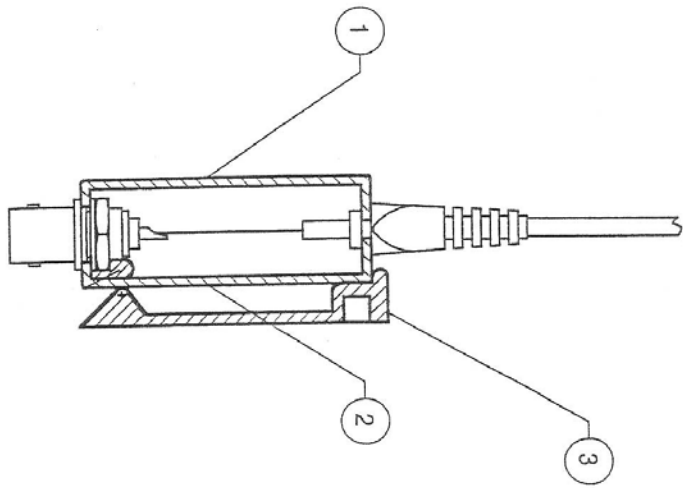
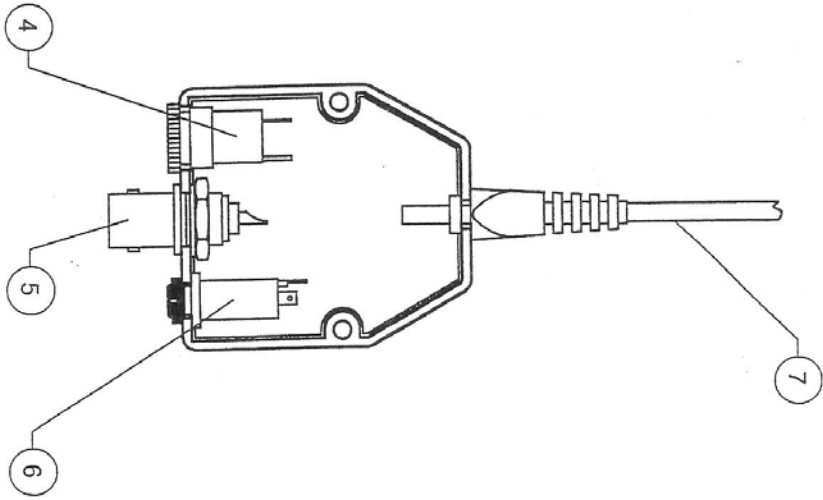
These are subjective adjustments and with a little experimentation you will make these adjustments quickly and easily. The diagrams below identify and describe the optical adjustments.



SPECIFICATIONS & ENVIRONMENTAL TOLERANCES

DISPLAY	AMLCD 800 x 225 total pixels, color triads (Horizontal TV lines of resolution: 400)
CONTRAST RATIO	200:1
SIGNAL INPUT	NTSC (RS-170) or PAL video, <i>optional</i> : switchable unit
INTERFACE	Video: BNC connector Audio input: 1/8" stereo jack at the wide end of cable. playback: 1/8" stereo earphone mini-plug jack provided <i>optional</i> : stereo earbud-style earphones Power: Center-positive barrel pin plug (5.5mm - 2.5mm)
POWER SOURCE	9 - 24 volt DC <i>optional</i> : local AC adapters
POWER CONSUMPTION	1.5 - 3 watts, average depending on brightness, w/o audio
INTERPUPILLARY RANGE	55-72mm
TEMPERATURE	Storage range: -30°C (-22°F) to 85°C (185°F) Operating range: -10°C (14°F) to 70°C (158°F)
DE-PRESSURIZATION TOLERANCE	approx. 40,000 feet
DIGITAL DEVICE STANDARDS COMPLIANCE	U.S.: Meets or exceeds FCC standards for Class B digital devices under FCC Part 15, Subpart B Europe: Conforms as Class B equipment to Council Directive 89/336/EEC; standards EN50081-1, EN50082-1

1. Outer housing piece
2. Inner housing piece
3. Belt clip
4. Power input
5. BNC video input
6. Audio mini jack input
7. Headset cable



PT-O1 LIMITED WARRANTY

O1 Products warrants this head-mounted display product against defects in material and workmanship for one full year from the date of purchase by the original end-user purchaser. O1 Products agrees to correct such defects without charge, or, at our option, to replace defective units with a comparable or superior model upon its return to O1 Products or an authorized service center, postage prepaid (a list of authorized service centers is available from O1 Products upon request – contact information is printed at the top of this page). Proof of purchase *and* a Returned Material Authorization number **must** accompany all returned goods. *Any returned units determined by O1 Products not to be covered by warranty will be subject to current labor rate charges and return shipping charges.*

Any goods returned without proof of purchase or authorization will not be repaired or evaluated until such information is provided by the end user. It is the responsibility of the end user to ensure O1 Products is provided with the required information.

This warranty will not apply to any products found to be improperly installed or set up, modified, damaged through accident or neglect, or used in any way not in accordance with instructions supplied with the product. There are no user-serviceable parts in this product, and evidence of opening any of the casings will invalidate this warranty.

O1 Products does not warrant the fitness for a particular purpose of its products and does not make any warranty, express or implied, other than the warranty contained herein. The duration of any implied warranty created by state law will not extend beyond the term of this warranty. Some states do not allow limitations on how long an implied warranty may last, so the above limitation may not apply to you.

O1 Products will in no event be liable or obligated for payment for any special, consequential, or incidental damages. Some states do not allow exclusion of consequential or incidental damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

USER REGISTRATION CARD

Complete this card and mail to O1 Products today, and we'll send you a FREE pair of high-fidelity, name-brand stereo earphones to use with your PT-O1. Registering your unit also will allow us to tell you about product upgrades, new accessories, occasional special offers, and other important information.

We are always interested in hearing from PT-O1 users.

Please send us your comments, questions, application and product suggestions.

First Name

Last Name

Company

Street Address

Suite/Unit No.

City

State

Zip

Date of Purchase

Model

Serial No.

Dealer or Sales Agent

Please send me my free earphones.

Tell us how you'll be using your PT-O1 Professional Personal Video Display