

## **DIRECTIONS FOR USE OF PLATO SPECTACLES**

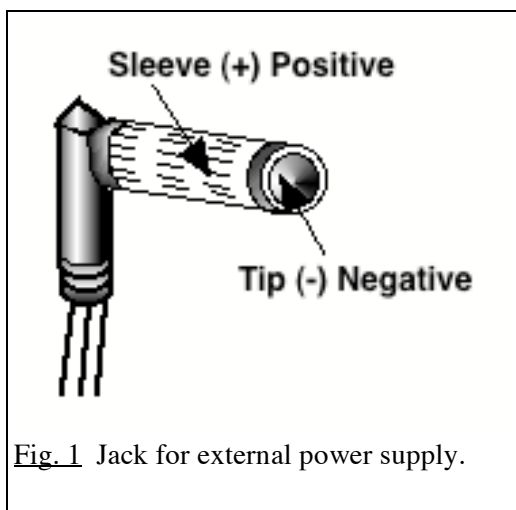
**WARNING: THE AIM OF THIS PRODUCT IS TO ALLOW AN EXPERIMENTER, WORKING UNDER CONTROLLED CONDITIONS, TO INFLUENCE THE ABILITY OF THE WEARER OF THE PLATO SPECTACLES TO VIEW THE WORLD AROUND HIM / HER. CAUTION IS THEREFORE NECESSARY TO ENSURE THAT NO HARM BEFALLS A SUBJECT WEARING THE SPECTACLES WHILE VISION IS OCCLUDED.**

1. The spectacle driver unit (the black box labelled PLATO Model P-1) is powered by an ordinary 9 volt battery (not supplied). It can be replaced by opening the battery compartment at the rear of the box. Use of either Alkaline or rechargeable batteries is advised.

The piece of foam is provided to prevent movement of the battery within the box.

If the unit is to be stored for a significant period of time (several weeks or more), it is advisable to remove the battery, to protect the unit from possible battery leakage.

2. A DC voltage jack is provided on the side of the Model P-1 spectacle driver unit. As an alternative to the 9 volt battery, a suitable external AC Adapter / DC voltage supply may be used. The Model P-1 spectacle driver unit has been designed to operate when fed with a DC voltage source supplying between 6 volts (minimum) and 12 volts (maximum). The external DC source must be capable of supplying at least 100 ma of current.



**Fig. 1** Jack for external power supply.

Note that some commercial DC supplies have an open loop voltage which is much higher than their proclaimed value. (For example, an unregulated 9 VDC supply may provide a voltage of 15 VDC when unloaded.) If the external voltage when connected to the P-1 driver unit remains outside of the 6-12 VDC range, no damage to the P-1 driver unit will result; however, the unit will not work.

When using an external DC supply, make sure that it is of the sleeve type, with a diameter of between 5 and 5.5 mm, as shown in Figure 1. ***It is imperative that the central tip of the supply be negative with the outside sleeve positive, as shown.***

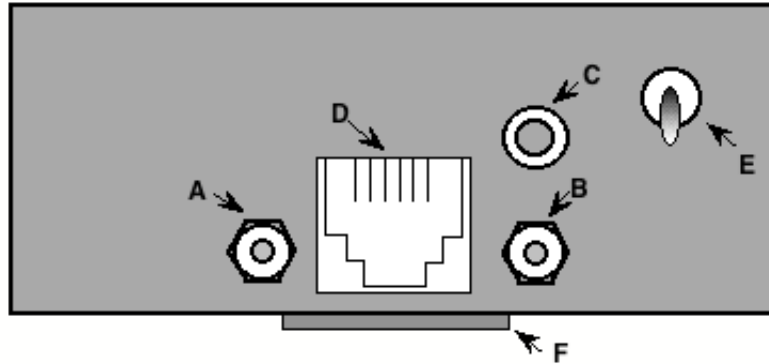
The ON-OFF toggle switch (E) is situated on the top right hand part of the panel, with ON corresponding to an upward position.

Note that, because a significant amount of power is consumed within the circuit *even when the spectacles are not operating*, it is advisable to leave the circuit in the OFF state whenever possible, especially if you are using a 9 volt battery as your primary power source.

4. The cable leading from the PLATO spectacles is terminated by a 3.5 mm stereo audio jack. It can plug into only one possible receptacle (C) on the P-1 driving circuit panel, as shown.

***Make sure that the ON-OFF toggle switch (E) on the P-1 panel is in the OFF position before plugging in or unplugging the cable from the spectacles.***

Fig. 2: P-1 Driving Circuit Panel (Top View)



5. Operation of each PLATO lens can be tested with the single push-button switches (A,B) on the P-1 panel. Each PLATO lens will turn from translucent (milky) to transparent for as long as the corresponding switch is depressed.  
The left switch (A) controls the left lens, and the right switch (B) controls the right lens.

***NB: It is important never to disconnect the PLATO spectacles – that is, never to pull out the 3.5 mm stereo jack – while the spectacles are in their transparent state. Doing so may cause subsequent short circuiting of the liquid crystal cells, which will render them permanently damaged.***

6. TTL logic signals are to be used to control the switching of the lenses during operation. The lenses are naturally "closed" (milky translucent), unless short-circuited, in which case they "open" (become transparent) immediately. See Fig. 3 below.

The switching logic signals are to be supplied through the modular phone plug on the P-1 panel (D in Fig. 2). One cable has been supplied for your convenience. This cable is terminated on one end by a modular male 4-connector phone jack, which fits into the modular plug (D) on the P-1 panel.

***NB: Commercial telephone equipment is NOT to be connected through this receptacle; serious damage may result if this is done.***

The wire connections for the logic signals are as follows:

The **Red** wire controls the **right** lens.  
The **Black** wire is ground for the **right** lens.

The **Yellow** wire controls the **left** lens.  
The **Green** wire is ground for the **left** lens.

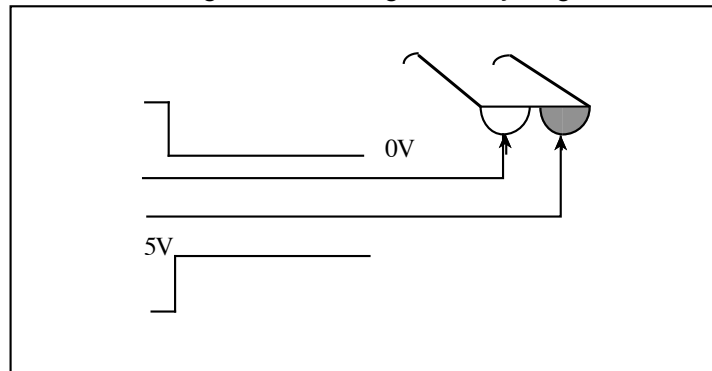
Note that the black and the green wires are equivalent; both are ground leads

Either an open circuit or 5V DC (Red-Black and/or Yellow-Green) will keep the corresponding lens on either side translucent, or milky, as illustrated in Fig. 3.

Either a short circuit to ground or 0V DC will make the corresponding lens on either side transparent, as illustrated in Fig. 3. (Note: The low voltage (0V) signal can be achieved simply by short-circuiting the corresponding pairs of leads.)

7. The P-1 unit may be inserted in the subject's breast pocket, or it may be clipped on the subject's belt using the attached belt clip (F in Fig. 2).

Fig. 3: Switching Circuitry Logic



8. *Cleaning.* The liquid crystal lenses inside the PLATO spectacles are constructed using special plates of glass. The lens surfaces can thus in one sense be cleaned just like any other glass surface. However, it is imperative to keep in mind that there are electrical connections inside the spectacle frame, as well as special sealing material holding the lenses together. One should therefore prevent any water or any other cleaning fluid from entering *inside* of the spectacles. Consequently, if cleaning with a dry cloth proves to be inadequate, you may try using a suitable glass cleaning solution. However, you are advised not to spray any liquids directly onto the lenses or the frame. Instead you should slightly dampen a cloth with the solution and *then* wipe the lenses with the dampened cloth.

**In case there are any problems .....**

- a. **Symptom:** The spectacles do not respond to any command signals.  
**Solution:** Check that the battery is in place, or that the external voltage supply is connected, and that the On-Off Toggle Switch (E) is in the ON position.
- b. **Symptom:** Liquid crystal cells behave erratically, flickering on and off, etc.  
**Solution:** The 9 V battery may be too weak (< 6-7 volts). Replace it.  
 If an external power source is used, check that the current supplied is adequate (>100 ma).
- c. **Symptom:** The logic signals do not drive the unit properly.  
**Solution:** Check that the wire connections for the logic signals are correctly configured, according to Point 6 in the Instructions.

NOTE: Your driving circuit has been equipped with special circuitry to protect it against current surges due to any short circuit in the spectacle system. Whenever this circuit is activated, the driving circuit system will cease to function normally and the spectacles will not be able to be opened. The unit must be *restarted* in this condition. Clearly, if this symptom recurs, and persists – that is, if your driving circuit continues to shut itself down – you should assume that something is seriously wrong with your system. In that case, please contact Translucent Technologies, in order to arrange for the problem to be fixed.

***Under no circumstances are either the PLATO Spectacles or the Model P-1 Spectacle Driver Unit to be disassembled or are any of the internal connections to be altered. Doing so will void all warranties, and any ensuing damages are the responsibility of the owner.***