



6FG6/EM84, Magic Eye Audio Visualizer – Dual input version

Brief description

The visualizer is designed to use a 6FG6 or EM84 Tuning Bar Magic Eye tube, in such a way that a music or voice input causes the bar(s) on the 'eye tube' to move in sympathy with the incoming signal. We have designed various types of this device and this version is designed to use either the on-board microphone or a wired connection to an audio input to cause the tuning bar on the 'eye tube' to move.

Safety Note



This visualizer uses voltages as high as 300 Volts DC, this is a high voltage and caution needs to be used when using the board in an unprotected condition (bare board). We advise locating the unit in the final product enclosure or an enclosure to reduce the risk of problems.



Initial Set up

Please refer to the overview photo 1 of the visualizer board while reading this section, it will assist in providing clarity.

1. A 12 volt DC power source is required, 1000mA recommended.
2. The power plug on the PCB is center positive and 5.5 x 2.1 mm, please ensure your power plug is center positive.
3. **BEFORE APPLYING POWER COMPLETE STEPS 4 - 8**
4. First, decide if you will be using the on board microphone or the wired input for the audio input. Move the header shunt to either short the center and left pin for the wired input or the center and right pin for the on-board microphone (see photos).
5. We do not supply a suitable 6FG6 (EM84) tube so you will need to supply this. Install the tube by carefully lining up the pins on the tube with the tube holder receiving sockets. You may need to straighten the tube pins as these can bend in storage. Use care with straightening as these pins are quite fragile. Carefully press the tube into the socket.
6. The PCB is supplied with right angled stand-off foot style spacers or vertical spacers; this is to assist in preventing shorts on the PCB. Position the PCB unit such that the tube fluorescent bar faces forwards and if using the on-board microphone, in a position near your audio source.



7. If using a wired input, use a cable that is terminated in an RCA jack on one end to connect to the PCB and a plug or other arrangement on the other that matches your audio source. The audio can be tapped from a speaker directly or a headphone socket.
8. Set the incoming audio level by moving the sensitivity control fully anti-clockwise, then clockwise to the center position. This control can be further adjusted when in use to match the audio levels coming in.
9. Apply power to the unit and after allowing about one minute for warm up of the tube a pair of bars should be visible on the fluorescent bar. Adjust the sensitivity control to match the incoming audio level. If using the on-board microphone sensitivity is also controlled by the distance the PCB is from the audio source.

Photo 1 – Overview of the Audio Visualizer





Photo 2 – Input Selection Header



The header shunt needs to be correctly positioned so that the audio input is either from an external input or the built in microphone. Do not leave the header off as this will stop audio reaching the tube.

The header can be moved either using your fingers or a pair of small pliers, pull the header up vertically to remove and re-position

Additional notes and Warnings

1. The unit as supplied has the HV adjust pot set to 250 volts, it should not be necessary to adjust this trim pot, but if needed it can be, follow these instructions;
 - a. Set the board on a clean dry surface, remove the tube and set aside.
 - b. Using the photo as a guide, and using a voltmeter capable of measuring up to at least 500 volts DC, Set the voltmeter to a range above 250 V DC place the common probe in the pin 3 position on the tube socket, and the positive lead in the pin 6 position. Pin number 1 is on the lower right of the tube socket and the count is anti-clockwise. Apply power and then adjust the HV pot for desired voltage reading with a small screwdriver.
 - c. When satisfied detach the probes and power supply. Replace the tube
2. When the audio input is via the built in microphone insert. Placing the unit near a source of sound/music will cause the display to start registering. Input sensitivity is user adjustable using the potentiometer, adjust the sensitivity using the potentiometer by carefully rotating the control, clockwise increases sensitivity. Only small adjustments of this control will be needed to match the incoming audio.



3. In use the PCB will get warm, tube circuits and tubes by their nature run warm. Be careful if working on the board outside an enclosure, as while we have worked hard to make the board as safe as possible we are talking high voltages! Observe normal safe working habits associated with high voltages. Avoid touching the underside of the PCB & components.

Troubleshooting

In the unlikely event that the unit does not function 'out of the box', please refer to these simple help steps. If the unit is still not working contact us at this email: steve@electroresales.com

1. The tube heaters are glowing, but the display is blank – the audio sensitivity control may be fully closed or anti-clockwise, adjust to the mid-point and see if that solves the issue.
2. Unit not working, heaters in tube not glowing – check the power supply being used, is it working, is the output jack of the power supply center positive, try another power block.
3. Unit not working, heaters in tube not glowing – as you have supplied your own tube, is it an EM84 or equivalent, and is it functional, try a tube substitution if possible.
4. Fluorescent display moves a little – adjust sensitivity control, increase music volume, move unit closer to the audio source.
5. Fluorescent display 'arms' are touching – adjust sensitivity control, it is too far advanced.
6. If all else fails we are here to help, contact us at – steve@electroresales.com



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