Universal MPU Plasma Ball Circuit

What makes this PCB (Printed Circuit Board) so universal is that it uses an Arduino Pro copycat MPU (Micro Processing Unit). The unit is a LGT8F328P-SSOP20. This unit in combination with the software that was written for the MPU, will connect to every type of Plasma Ball I've come across over the past 5 years. It only requires two wire to be connected to the Plasma Ball's native circuit board. Those two wires are a ground connection and trigger wire connection to the Plasma Ball.

There is always a three terminal NPN transistor or three terminal MOSFET connected directly to the driving transformer on the native Plasma Ball PCB. One only has to disconnect the native Plasma Ball PCB trigger connection and connect the 2nd connection from Universal board to the point that was just disconnected. A pictures and the schematic are worth a thousand words, refer to them to clarify this connection explanation.

One of the previous problems with earlier Plasma Ball conversions was that the user could easily overdrive the Plasma Ball. This would minimumally degrade the plasma streamers, also known as "Birkeland Currents". Additionally, over time the driving transistor or MOSFET would burn out. The Universal board eliminate this problem by taking control of the driving current based on the users input frequency. The MPU basically has a frequency counter employed within its design along with the several other software driven capabilities. The advantages are extraordinary.

- No Fan is needed for cooling, resulting in a quieter unit.
- No temperature sensory circuit is needed, resulting in a simpler design and connection scheme.
- No Plasma Ball oscillator needed because the MPU provides one via a PWM software control function.

Additionally, for those that are Arduino familiar, the MPU can be programmed with additional features such as an LCD display or a user designated oscillator frequency. There are many other possibilities available for Arduino familiar users.

Now all these MPU improvements come at a small price. That price presently is that two power modules are needed to energize everything. The native Plasma Ball comes with its own 12 volt supply and it was discovered that the 12 volts needed for the Universal board could not handle the 'Electric Field' noise generated by the Plasma Ball. In trying to resolve this problem it was discovered a separate 12 volt power supply resolved the issue. Since the Universal Board only requires about 100 milliamps, the second power supply can be a very simple unit found on Ebay or Amazon for less than $5.

Presently, identical 500 milliamp 12 volt supplies are provide with every Plasma Ball along with a two for one AC wall adapter socket or an extension cord. You will have to watch the video to see this arrangement to appreciate the simplicity of this technique.

One last point is the Universal PCB can be programmed to do a lot more than to just run a Plasma Ball. Hence the board was designed with a prototype work area with an additional 4 and 6 pin socket.