

PVM500/DIDRIVE10 Corona Cell and Plasma Driver Instructions

Intended for capacitive loads and single ended plasma gas displays

This useful high frequency driver allows the user to tune to a capacitive load within the range of 25 to 200 pfd. This value is found in many corona cells and plasma filled vessels. The maximum voltage across the capacitive load is a function of the circuit Q and can peak to levels that can destroy the out put transformer and associated circuitry.

The unit is not totally “user friendly” and is intended for use by those experienced in powering up these resonant capacitive loads. Caution as the output transformer can be easily damaged if allowed to spark over encapsulation.

Controls reference figure

VA1..... Voltage level control

S1/RFreq.....Main power switch and frequency control

S2....HI/LO input voltage switch.

Always start with this switch in the “LO” position

Rdc....Dutycycle/power control

NEON1...Power on indicator and reset lamp

AMP....Meter 0-5 amps for power input monitoring

FUSE....2 amp slo blo



Operation

1. Connect HV output lead to load. Note output is referenced to chassis ground that is earth ground via the green lead of the power cord.
2. Verify that the **HI/LO** switch is in the down position and **Rdc** is fully CCW/OFF.
3. Plug into a 115 vac source and rotate **VA1** midrange. Apply power via rotating **S1/RFreq** control until it clicks on noting that the **NEON1** indicator lamp comes on.
4. Slowly adjust **S1/RFreq** until the display starts to activate. IMPORTANT! This adjustment tunes the load capacitance to the units intrinsic inductance and should NEVER be set to a peak reading. It should always be set on the CCW side of the peak meter reading. Note that the S1/RFreq control increases frequency in the CCW direction. Now slowly rotate VA1 to full CW noting desired display effect. Also note reading on the **AMP** meter for reference.
5. Repeat step 4 if necessary for required effect
6. You may switch the **HI/LO** to HI for more power if output is low in the LO position. Do not allow to exceed 2 amps and check transformer and circuit for heating and any excessive corona around transformer or leads.
7. Now set **Rdc** to the desired current reading or display texture.

Special Notes

Always check the output transformer for excessive heating, corona or arcing. Do not allow to operate in this state as the transformer will burn out. Note that it may take at least 30 minutes for transformer to overheat.

A **SHUT DOWN** circuit will trigger if output voltage becomes excessive, disabling the output. Reset will require power removal and waiting several minutes before reapplying as indicated by the neon lamp fully extinguishing. This can be readjusted by slowly rotating the orange trimpot closest to the front panel CCW for more output or vice versa if output is excessive. **However if you burn out the transformer it will cost you \$50.00 for factory replacement.** You might want to contact the factory at <riannini@metro2000.net> before moving this control from it's factory setting.

Even though the out put lead is rated for 40 kv, it must be clear of all conductive objects to prevent breakdown.

Certain loads may have different Q factors that will effect operation. Q factors is determined by the ratio of circuit reactance to resistance of the load. Reactance being the inductive and capacitive values at resonance. The resistance part is determined by component losses and the amount of useful corona or plasma ionization produced.

Always attempt to operate RFfreq below the current peak as indicated on the AMP meter. This is especially important when operating above 1 ampto avoid overheating the switching transistors