

## ***AstroVid Flat Fielder™ - Power Supply Operation***

The standard power supply that is supplied with your Flat Fielder is a manually operated unit that takes a 12V input and generates the require Electroluminescent lamp (EL Lamp) required high voltage. An upgraded power supply is available for digital controlled operation of the Flat Fielder. Operation of each of these devices is shown below.

### **Common Information:**

- Both power supplies require a 12V DC input voltage from a battery or AC driven 12V power supply. The voltage can be anywhere from 11.5V DC to 15VDC at 0.5A maximum. Operation outside of these limits may damage your power supply.
- Never operate the power supply without the EL Lamp unit connected. If the time this occurs is more than approximately 60 seconds, damage to the power supply may result. The power supply requires the load that the EL lamp presents so as to operate within safe limits.
- An input power connector is supplied with your unit for connecting the 12V input power (center connection is +). Also supplied is a cable with appropriate connectors for connecting the power supply to the lamp. The power supply does not have an ON/OFF switch and starts generating EL Lamp power as soon as the 12V input connection is made.
- While the EL Lamp will operate at low input voltages it will not start generating light until a mid-range voltage is applied to it. See the specific sections below on how to deal with this.
- Do not attempt to operate the EL lamp from a substitute power supply. The design of the lamp unit and power supply has bee done assuming these are operated as a system to assure proper light flatness, color, and reliability of the system. Operation with another power supply may damage or greatly shorten the life of the EL Lamp and will void your warranty.
- Do not open the power supply unit as high voltages are present. Opening the power supply will void your warranty.

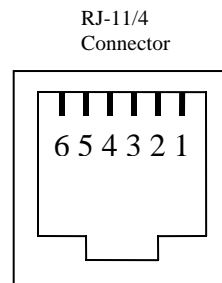
### **Basic (Manual) Power Supply:**

- Intensity control of the Flat Fielder is accomplished by simply adjusting the control available at the end of the power supply unit with a full clockwise rotation of the control generating maximum lamp voltage and hence maximum light output.
- If the intensity control is set to the full counter-clockwise position when the power supply is connected to 12V input power, the EL Lamp will not light due to insufficient starting voltage. Simply rotate the control fully clockwise and back to the desired setting to start the lamp. Once the lamp has started it can be operated at a much lower voltage than when first powered.

### Digital Power Supply:

- The digital power supply allows manual operation using a set of Up/Down buttons and a 7-segment single digit readout. The readout range is 0, 1-9, F. 0 turns off the power supply by providing no input voltage to the EL Lamp, 1-9 are intermediate steps, and F is full voltage available to the EL Lamp.
- The power supply can be operated remotely in two ways. These are using remote control discrete signals (remote buttons or control circuit) or connected to a PC's serial port (or USB to serial adapter). Serial control is done using the available PC control program or through application software using simple 9600, 8-N-1 serial communication described below.
- You may notice a flash of bright light when the system is turned on or when the control setting goes from 0 to 1. This is due to the internal microprocessor kick starting the EL Lamp voltage in the same way as described using the manually control above. In the digital power supply this is an automatic feature.
- The digital power supply will remember the last setting it was at and restore that value when restarted.
- Brightness levels for each step (1-0, F) of the power supply are controlled internally by a stored table of values and is preset to a general purpose set of steps. If you wish to change these you may do so. Contact Adirondack Video Astronomy for assistance in doing this or refer to the serial commands below. The preset or modified values remain persistent in the power supply at all times until changed as above.
- The RJ-11/6 connector on the power supply is used for remote control or serial port control of the power supply. Only one mode or the other is available at one time.
- The RJ-11/6 pin-out is as follows:

<b>RJ-11 Pin</b>	<b>Signal or Function</b>	<b>DB-9 RS-232</b>
1	RTS (UP)	7
2	GND	5
3	DTR (DOWN)	4
4	RX	3
5	TX	2
6	CTS (see below)	8



- Remote button operation is accomplished by using momentary pushbuttons to connect pin 6 >+3V for an Up command and pin 3 to >+3V for a Down command. A PC cannot be connected to the RJ-11 connector in this mode. Operation in this mode should be reliable over several hundred feet of wire if the electrical noise in the area is not severe.
- An automation interface is available with the use of the FlatCtrl utility program and can be used to control the digital power supply via custom application software or VB scripts. An example script is available along with the FlatCtrl utility and the program to set a custom voltage vs light out curve from the AVA website.

The FlatCtrl.exe program must be registered with Windows and the automation object "FlatCtrl.FlatControl" will then be available.

The available properties of the object are:

FirmwareVersion  
ProgramVersion  
Step  
Level

Refer to the sample script for use of these properties.

- Control from a PC can be done using the available control utility program (FlatCtrl) or using the following serial commands at 9600, 8-N-1:

Command	Value		Response
Get Step	9000		90xx, xx is 0x00 to 0xFF
Set Step	91xx	xx is 0x00 to 0xFF	90xx, xx is 0x00 to 0xFF
Up Step	B001		Echo
Down Step	B002		Echo
Off Level	B003		Echo
Full Level	B004		Echo
Get Table	7000		7000 followed by 11 bytes of data then <CR>
Set Table	8000	followed by 11 bytes of data then <CR>	None
Get Level	6100		61xx, xx is 0x00 to 0xFF
Set level *	62xx	xx is 0x00 to 0xFF	61xx, xx is 0x00 to 0xFF
Get Voltage	6000		6000 followed by 2 bytes of data then <CR> scaled 0-12V = 0-5V = 0-1024 (voltage input to HV inverter)
Set Voltage *	6001	followed by 2 bytes of data MSB first then <CR>	none, scaled 0-12V = 0-5V = 0-1024
Version	"VV"		"v1234\r"
Reboot	"!!"		None

All communication is in two HEX bytes with a command echo unless a value response is required

All commands are followed by a <CR> (0x0D)

Note: CTS will be set to >+4V for 10ms on a manual button push so application software can detect the change

(\*) Displays "U" on 7 segment readout indicating uncalibrated operation. Current step is still maintained