

MODEL 735 INTENSIFIER POWER SUPPLY

The Model 735 power supply provides variable 1kV and 5kV high voltage for operation of open, single-stage microchannel plate (MCP) intensifiers. It provides 5kV to the phosphor and 1kV to bias the MCP. It has a low voltage source too, for use when suppression is necessary.

Operation of a microchannel plate requires a vacuum of at least mid 10E-6 torr. The best vacuum systems, however, are still subject to power failures or human error. The Model 735 features a vacuum interlock circuit that when connected to a suitable vacuum gauge adds a safety factor not available with other power supplies.

Additional features include an arc protection circuit, preset voltage limit capability, and the option to change channel output voltage and/or polarity. Negative channel mode is available but not recommended for use with MCP intensifiers that McPherson provides.

Ramping high voltage at start up extends MCP life by eliminating 'instant' charge that may cause arcing and damage the MCP or phosphor layer.

Screen Supply

- Screen Voltage: +5000V, variable
- Max. Current: 500 μ A
- Ripple: < 10 mV (peak to peak at max. output)
- Stability: 0.005%/Hr, 0.02%/8Hr
- Readout: Back lit LCD display

Channel Supply

- Channel Voltage: +1000V, variable (\pm 2kV avail.)
- Max. Current: 2.5 mA (at +1000V)
- Ripple: 1 mV (peak to peak at max. output)
- Stability: 15ppm/15min, 50ppm/8hr
- Readout: Back lit LCD display

Suppression (Offset) Supply

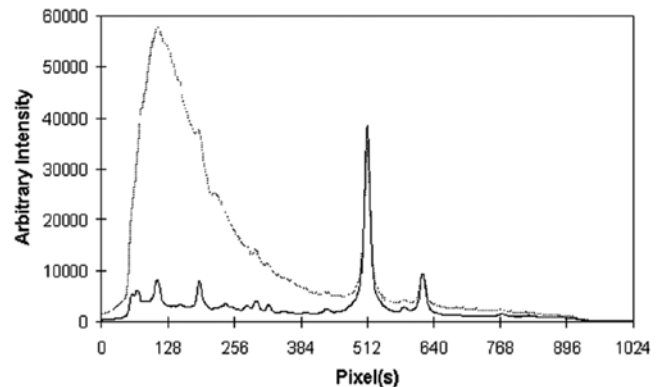
- Voltage: \pm 10 VDC, variable
- Max. Current: 1 mA
- Ripple: < 10 mV (peak to peak at max. output)
- Stability: 0.05% per hour; 0.10% per 8 hours
- Readout: Back lit LCD display

Addition of a high voltage pulser module allows the end user to gate channel voltage if the application requires. We currently offer a variable HV pulser (sold separately) capable of operation from ~60nanoseconds to DC, intended for use with the Model 735 power supply.

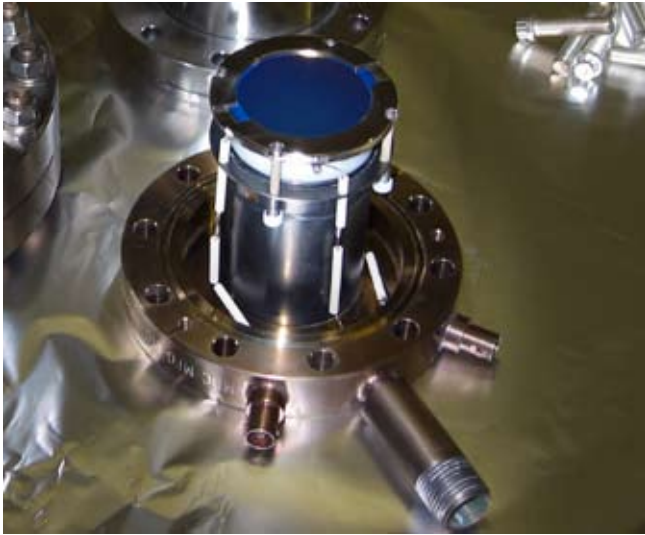
**Model 735 General Features**

- Remote Operation: TTL, analog, contact closure
- HV, Arc & Vacuum Status LED indicators
- Vacuum Failure: audible alarm with adjustable volume
- Supply: 100 to 240 VAC Universal Input

On grazing incidence spectrometers sometimes "noise" caused by stray electrons and ions overwhelms the signal of interest. Use of the suppression voltage eliminates this unwanted contribution. The graph below shows electron noise as a gray line eliminated from the spectra (black) by applying a low negative voltage to the microchannel plates face. The suppression feature is standard in the Model 735 power supply.

**Physical Dimensions**

Width: 16.75 In (42.6 cm)
Height: 5.22 In (13.3 cm)
Depth: 14.38 In (36.5 cm)



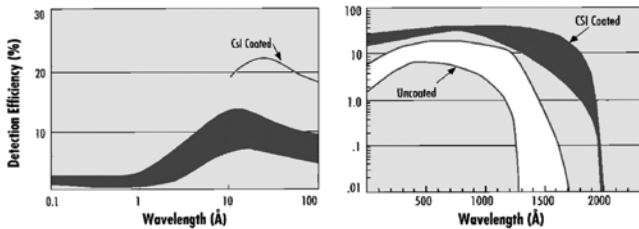
MICROCHANNEL PLATE INTENSIFIER

Operating in the Soft X-ray Extreme UV or Vacuum UV requires specialized detection systems. Difficulties with conventional detection schemes in this wavelength range include window transmittance, vacuum sealing and photocathode materials sensitivity.

In order to operate a multichannel or array based detection system in the vacuum ultraviolet, one method is to use an open, windowless microchannel plate (MCP) as an intensifier. MCP intensifiers are most frequently employed when direct detection charge coupled detectors (CCDs) cannot be implemented due to geometry or packaging (e.g. at grazing angles) or when shutter, or gating is required.

The MCP converts invisible vacuum UV radiation into a visible phosphor emission easily detected by photodiode array (PDA) or charge coupled device (CCD). Coupling the phosphor emission to the CCD is by direct fiber-to-fiber coupling, or by lens relay.

Safe operation of open microchannel plates requires a vacuum of at least mid 10E-6 torr.



Property	Options	Specification
Microchannel Plate Diameter	40 25	40mm diameter active area, image grade 25mm diameter available as option
Pore / Space	-	10 / 12 microns
MCP Stages	Standard Chevron	1 plate, single stage (gain ~10E3) 2 stage available as option (gain ~10E6)
Mounting	-	Photocathode 2.75" ahead of DN80CF flange
Photocathode	CsI MgF2 Au	~1 to 200nm ~1 to 120nm ~20 to 120nm
Phosphor	P43 P11	green, several msec decay blue, tenths of msec decay
Image Transfer	Standard -	Fiber Optic, coherent, tapered 40mm to 25mm at CCD Fiber Optic, coherent, 25mm straight
Gating	Standard Gated	DC, use with Model 735 power supply variable gate width, 60nsec to DC, with suitable pulser
Baking	Standard High Temp	80deg C 250deg C
Grazing Angles	-	cut-away retainer for grazing angle access
Power	Ground front Ground rear Ground phos.	no HV danger to user vacuum system independent power supplies, safest pulse counting with Vis images