

FAST HIGH VOLTAGE MODULES UP TO 10kV DC

FIXED POLARITY REGULATED FAST 1mSec SETTLING CURRENT SOURCE/SINK CAPABLE



- COMPACT MODELS 1 TO 10kV OUTPUT VOLTAGE, 3W POWER
- OUTPUT IS CAPABLE OF CURRENT SOURCE OR SINC OPERATION
- HIGH STABILITY 50 PPM/HR AFTER ½ HR WARM-UP
- LOW 200mV p-p RIPPLE AND NOISE
- 1% CONTROL AND MONITORING ACCURACY
- 0.01% REGULATION
- 50 ppm TEMPERATURE COEFFICIENT
- REMOTE TRIP ON/OFF INPUT
- LOCAL AND REMOTE PROGRAMMING
- VOLTAGE AND CURRENT MONITORING OUTPUTS, SHORT CIRCUIT PROTECTED
- SHORT CIRCUIT CURRENT LIMITED AND ARC PROTECTED POWER OUTPUT
- OVERVOLTAGE AND REVERSE POLARITY FUSE PROTECTED POWER INPUT
- OVERVOLTAGE AND REVERSE POLARITY PROTECTED CONTROL INPUTS
- CUSTOM MODELS AND PACKAGING AVAILABLE

Particle Beam Systems & Technology

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DESCRIPTION

FPM series of high-voltage modules is a family of regulated, fixed polarity, high voltage DC power supply modules with 1mSec fast output settling time. Unique feature of these modules is current source and sink capability, offering exceptional flexibility in beam control and deflection applications. Flexible configuration of output voltage and current parameters is providing exceptional performance and value for many applications, including but not limited to lasers, mass-charge spectrometers, charged particle detectors, scientific imaging, mass spectrometers, research, ion and electron beam control and instrumentation.

The FPM Series modules require DC input power in +24V to +30V range and providing a wide range of stable and controlled output voltages up to 10kV. The units are enclosed with 3U form factor and designed for system integration. Custom packaging for bench top operation with grounded case and custom models with up to 30kV outputs are available.

In local control mode voltage output and current limit are set by an internal multi-turn potentiometers. Analog monitor outputs provide for remote monitoring of both the high voltage and current outputs. Remote control capability includes a remote ON/OFF input.

In remote control mode output voltage and current are set by analog control inputs.

! DANGER !

High voltage modules provide extreme electrical tension and may output electrical current or store charge at levels which are inherently hazardous. Improper installation or usage could result in electrical discharge or sustainable arc, and may cause fire, burns, shock, electrocution, and death. User is solely responsible for high voltage safety and fully accepts all liability for any damages or harm sustained, caused, or inflicted while handling, installing, or operating high voltage modules, power supplies, and other instrumentation, systems, or components.

OUTPUT SPECIFICATIONS

	OUTPUT		
MODEL	VOLTAGE	CURRENT	RIPPLE
FPM-10P,N	0 to 1Kv	± 3mA	100mV
FPM-30P,N	0 to 3kV	± 2mA	150mV
FPM-50P,N	0 to 6kV	± 0.5mA	200mV
FPM-100P,N	0 to 10kV	± 0.3mA	250mV

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Polarity:

All models have fixed output source polarity, either positive or negative (suffix P or N).

POWER INPUT

+24Vdc to +30Vdc $\pm 5\%$ @ 0.75 Amperes, reverse-polarity internal fuse protected.

PERFORMANCE

Line Regulation:

$\pm 0.001\%$ of maximum for $\pm 5\%$ input line change.

Load Regulation:

$\pm 0.002\%$ of maximum for 0 to maximum rated output current change.

Ripple, p-p:

See output table

Temperature Coefficient (0 to 50°C):

50ppm maximum per °C.

Stability (after ½ hr warm-up):

50ppm per 8 hours.

FEATURES

Local Control:

Internal multi-turn potentiometer for 0 to maximum output voltage ($\pm 0.2\%$).

Remote Programming:

0 to +5 Volt dc analog input signal proportional to 0 to maximum rated output. Accuracy is $\pm(0.1\%$ of setting + 0.1% of maximum). The programming input impedance is greater than 10 megohms.

Voltage Monitor:

0 to +5 Volts proportional to 0 to maximum output high voltage. Accuracy is $\pm(0.1\%$ of reading + 0.1% of maximum). The monitor output impedance is 10 kilohms.

Current Monitor:

0 to +5 Volts proportional to 0 to maximum output current. Accuracy is $\pm(2.0\%$ of reading + 1.0% of maximum). The monitor output impedance is 10 kilohms.

Interlock:

Remote interlock disables (low), enables (high) the high voltage output.

Current Limit:

All units provide short circuit limiting to less than 110% of the maximum rated output current.

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Protection:

Arc and short circuit protected, self-restoring power output.
Power input is protected from over-voltage and reverse polarity by internal fuse.
Control inputs are over-voltage and reverse polarity protected.

MECHANICAL SPECIFICATIONS

Size:

5" H x 2.75" W x 4.75" D (127 x 70 x 121 mm).

Weight:

3.2lbs (1.45kg).

High Voltage Connector:

All models use a JGA high voltage connector. The mating connector PGC (Alden 8101) assembled to 1 meter (~3 feet) of high voltage cable is provided.

Low Voltage Power and I/O Connector:

Eurocard connector for input power, remote programming, remote voltage monitoring, remote current monitoring and remote turn ON/OFF functions. Models with custom packaging have 15 pin D-SUB connector.

Grounding:

Case ground terminal must have permanent and reliable connection to low-impedance ground and/or common-potential chassis of the system at all times.

USER RESPONSIBILITY AND LIABILITY DISCLAIMER

User is solely responsible for all aspects of safe operation of the high voltage power supplies and modules, including but not limited to installing, establishing and following all the necessary insulating, grounding, guarding, interlocking, shielding, and discharging procedures, measures, and connections. By purchasing PBS&T high-voltage power supply or module user declares that (s)he is in the possession of technical expertise for safely building, powering, connecting, and operating high voltage electrical machinery with hazardous levels of electrical tension, supplied currents, and stored energy, and unconditionally accepts full and complete responsibility for all and any possible damage, injury, harm, loss of life, loss of property, loss of profits, and any other direct, indirect, and consequent damages sustained, inflicted, resulted from, or associated with use, misuse, or inability to use PBS&T™ high-voltage power supplies or modules for any purpose or application. Any PBS&T liability for such damages is hereby unconditionally disclaimed and fully waived.

CUSTOM MODELS

The Series FPM can be economically and quickly adapted to satisfy custom applications. Other output voltage and/or current ratings, custom control features, digital programming, or special mechanical constraints are some of the varied requirements which can be satisfied.