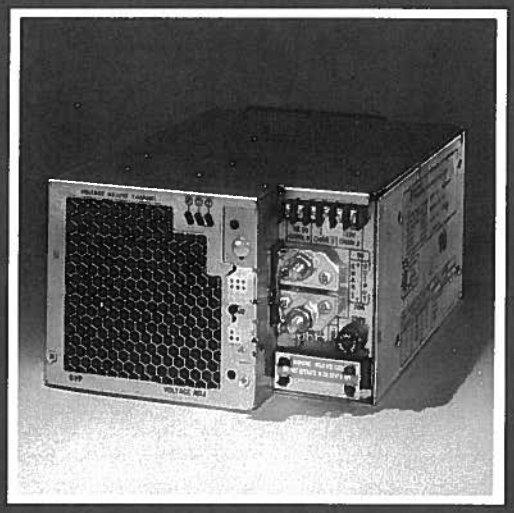
PIONEER MAGNETICS, INC.

International

Series PM 2970A-77A

MULTIPLE OUTPUT
SWITCHING POWER SUPPLIES
250–1250 WATTS



FEATURES

- Approved to UL, CSA, and IEC (Class I, SELV) Safety Standards
- Meets VDE and FCC EMI Specifications
- 5 x 8 x 11″ Envelope (250 to 625 Watts)
- No Minimum Load
- 0 to 50°C Operation at Full Load
- AC Input Fuse
- Overvoltage Protection
- Overcurrent Protection
- Overtemperature Protection
- Soft Start
- Remote Sense
- No Turn-On or Turn-off Overshoot
- Completely Isolated Outputs
- Self-Contained Forced Air Cooling
- 40,000 Hour MTBF
- Dual Input 115V/230V

TYPICAL OPTIONS

- (–1) Power Fail Signal
- (–2) Logic Inhibit
- (–3) Main Channel Crowbar
- (–3S) Secondary Channel OV Shutdown
- (–5) Margining/Programming
- (–6) Direct Paralleling
- (–8T) Power Good
- (SCB) Battery Back-up

Models PM2970A through PM2977A

MULTIPLE OUTPUT
SWITCHING POWER SUPPLIES
250–1250 WATTS

Pioneer's PM2900 series,multi-output supplies provide up to five independently regulated channels ideally suited for mainframe computer and peripheral environments (consult factory for five channel capability). Employing the very latest technology, the 2900 series meets today's stringent international safety and EMI standards.

Pioneer Magnetics can provide special custom options on request for units in suitable OEM quantities. Mechanical packaging considerations may limit the number of options that can be combined. Consult factory for details.

CONFIGURATION DESCRIPTION

The main channel is brought out on 5/16"-18 THD studs and is regulated by the main feedback loop of the supply. Output currents up to 180 amperes are available. The secondary channels are brought out on 6-32 screw terminal blocks and are fully isolated and regulated. 6, 12 and 15 amp channel ratings are standard. 30 or 45 amp outputs can also be ordered. The PM2900 series does not require a minimum load on the main channel to guarantee operation of the secondary outputs.

The PM2900 series of multiple output supplies is packaged in the industry standard 5 x 8 x 11" fan-cooled envelope for output powers up to 625 watts. Units in the 750 to 1250 watt power range extend the 11" dimension to 12¾". Plug-in units available. Consult factory.

The AC input is via a 6-32 screw terminal block and is protected with a front panel serviceable fuse (8-32 screw and internal fuse on PM2976A). A dual voltage switch at the rear of the supply allows for worldwide operation. Dedicated input voltage units are also available at lower cost. Automatic soft-start circuitry minimizes inrush surges.

Option interface connections, where required, are brought out on two Molex connectors (6 pin and 12 pin) at the front panel.

All voltages are adjustable from the front panel along with the main channel OVP.

SPECIFICATIONS

INPUT:
- Continuous voltage range: 90 to 138 VAC, single phase (115 volt select) 180 to 264 VAC, single phase (230 volt select)
- 10 minute operation: 80 VAC minimum (115 volt select) 160 VAC minimum (230 volt select) Not applicable for PM2975A
- Brown-out point: 75/145 VAC (PM2975 have 86/167 VAC brown-out)
- Frequency: 47 to 63 Hz.
- Inrush Limiting: Automatic soft start circuitry minimizes inrush surges. Inrush circuitry will reset within 100 msec at full load.
- Turn-on Delay: 1 second maximum from application of AC line. 200 msec. maximum from inhibit turn-on.
- Leakage current to ground: 0.75 mA maximum @264 VAC, 63Hz.
- Surge Withstand test: IEEE Spec 472. Rev 1974.

OUTPUT:
See Selection Chart.

OUTPUT VOLTAGE ADJUSTMENT RANGE:
±10% of nominal output voltage.

STATIC REGULATION:
(ALL CHANNELS)
- Line: ± 0.25% over full line range.
- Load: ± 0.25% over no load to full load.
- Voltage Stability: ± 0.1% after 30 minutes warm-up for a 24 hour period.
- Temperature coefficient: ± 0.02%/°C from 0°C to 50°C.

(Note: For units less than 5V the following apply: Line: ±12.5mV, Load: ±12.5mV, VS: ±5mV, TC: 1 mV/°C)

DYNAMIC REGULATION:
- Output Transient Response: 2% deviation (100 mV deviation for units under 5V) with recovery to 0.5% in less than 500 μsec for a 25% load step, 1A/μsec slew rate (3% or 200 mV for PM2976).
- Overshoot: No turn-on or turn-off overshoot.

International

MULTI-OUTPUT SUPPLY SELECTION CHART

Model Number		PM2970A	PM2971A	PM2972A	PM2973A	PM2974A	PM2975A	PM2976A	PM2977A(5)
Maximum Total Output Power (Watts)		250W	375W	500W	625W	750W	850W	1000W	1250W
Main Channel	DC Voltages Available	2, 3, 5, 12, 24, 28, 48 VDC							
	Max 5V Power (Watts)	200W	300W	400W	500W	600W	750W	750W	900W
	Max Current @5V (Amps)	40A	60A	80A	100A	120A	150A	150A	180A
Channels 2, 3, & 4 Maximum Output Current (Amps) (2) (3)	DC Voltages Available	2, 3, 5, 12, 15, 24, 28, 30, 48 (4) VDC							
	Low current	6A (up to 3A at 30 or 48 VDC)							
	Standard	12A (up to 6A at 30 or 48 VDC)							
	High Current (1)	15A (up to 7.5A at 30 or 48 VDC)							

P-P RIPPLE AND NOISE:
1% of nominal output at full load current, 20Hz to 20 MHz band-width for 5V to 48V outputs. 50mV for outputs less than 5V.

HOLD-UP TIME:
30 milliseconds minimum from 115/230 VAC (20msec for PM2975) with output voltage set to nominal.

OVERSHOOT:
No turn-on or turn-off overshoot.

OVERVOLTAGE PROTECTION:
3V-48V outputs: Unit will shutdown at 125% ±10% of nominal output.
2V outputs: Unit will shut down at 3V ±0.1V.

OVERLOAD PROTECTION:
(Automatic recovery from overload or short circuit).
- Foldback Point: 105 to 120% of full output current.
- Short Circuit Current: Consult factory.

OVERTEMPERATURE PROTECTION:
Automatic latching shut-down type. After a suitable cool down period, unit can be reset by cycling AC power.

REVERSE VOLTAGE PROTECTION:
Protection against reverse voltage applied across output terminals up to rated output current (with fan running).

REMOTE SENSE:
Will compensate for up to ½ volt total loop drop on output lines. Internal 100-ohm resistors prevent output from rising more than 100 mV should sense line be disconnected.

OPTIONS:
(−1) Power Fail Signal—Provides a typical 5 msec warning of output drop upon loss of AC power.
(−2) Logic Inhibit and Enable—System can be turned on or off with a TTL compatible signal or switch contact.
(−3) Main Channel Crowbar—Triggered by an overvoltage condition (125% ± 10% of nominal), discharging the output within 50 μsec (Note: Shut-down type OV on main channel is standard and can be used in lieu of OV crowbar).
(−3S) Secondary Channel OV Shutdown—Triggered by overvoltage condition (125% ±10% of nominal), latching the entire supply off. Resettable by cycling AC power.
(−5L) Margining/Programming—Allows ±5% change of main output.
(−6) Direct Paralleling—Current foldback is set between 100% and 105% of rated output allowing direct parallel operation.
(−8T) Power Good Signal—Monitors the output terminals of one or more channels and sinks to logic return when output(s) are beyond ±4% of nominal voltage.
(SCB) Single Channel Battery Back-up—Provides battery back-up of one secondary channel during AC power outages.

TEMPERATURE:
- Operating: 0 to 50°C at full load.
- Storage: −55°C to +85% C.

HUMIDITY:
5% to 95% without condensation.

ISOLATION:
Class I SELV.

SAFETY:
Recognized to UL114,1012 and 478 5th edition, certified to CSA 22.2 -142/143/154, and approved to VDE 0806 Class I SELV, and IEC 380 and435.

EMI:
- Conducted: Meets VDE 0871, level A and FCC Docket 20780, Part 15 Subpart J, Level A with internal filtering from 150 kHz to 30MHz. (Level B available with higher leakage current.)
- Radiated: Meets VDE 0871B.

MECHANICAL DIMENSIONS:
- PM2970/71/72/73: 5 x 8 x 11" (12.7 x 20.3 x 27.9 cm).
- PM2974/75/76: 5 x 8 x 12¾" (12.7 x 20.3 x 32.38 cm).

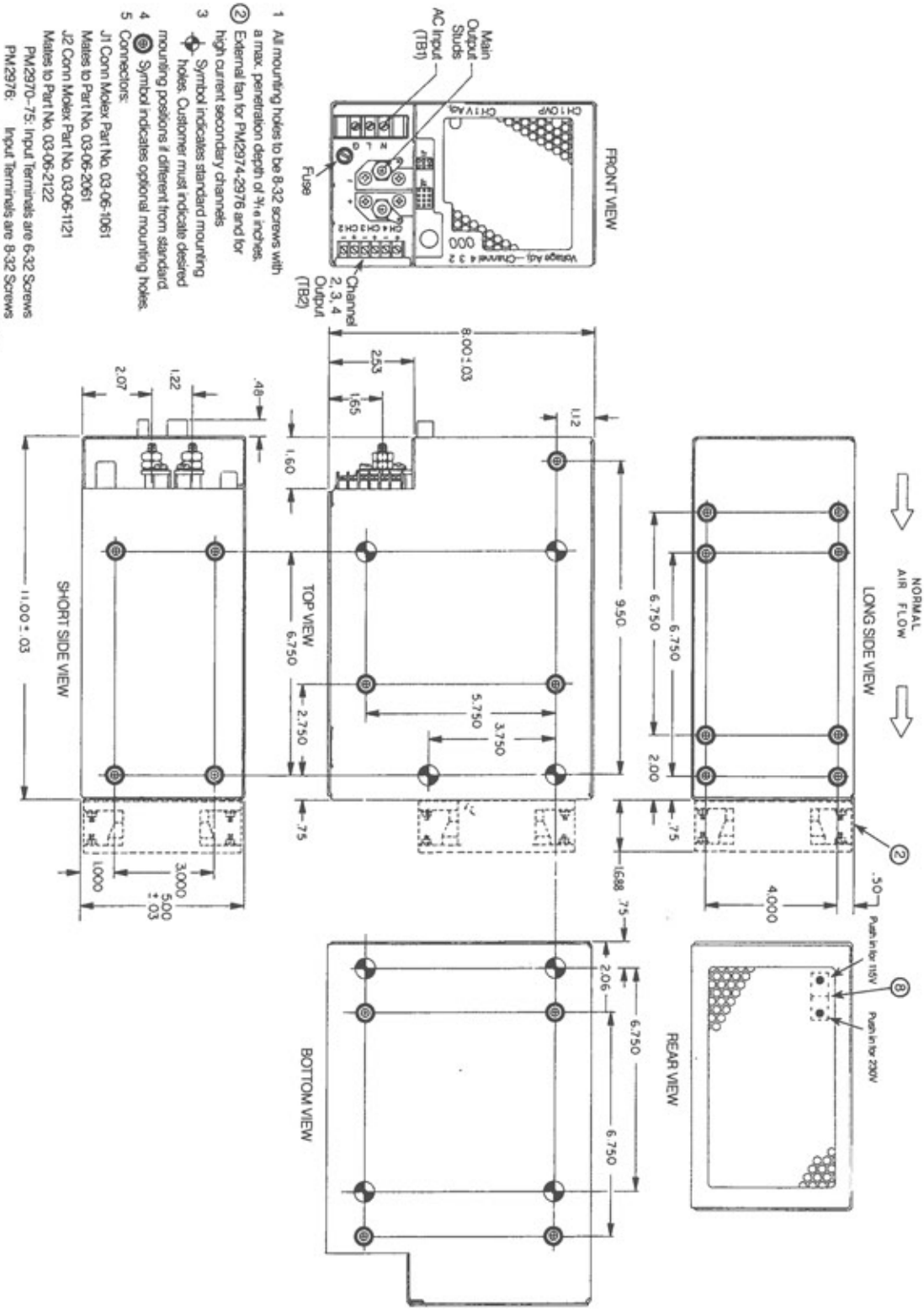
WEIGHT:
- PM2970/71/72/73: 18 pounds (8.2 kg) maximum.
- PM2974/75/76: 20 pounds (9.1 kg) maximum.

CONNECTORS:
- Main Output: 5/16"-18 THD studs.
- Secondary Outputs: 6-32 screw terminal barrier block. Magnum #A104206-NL-826 or equivalent.
- AC Input: PM 2970-PM2975: 6-32 screw terminal barrier block. (Magnum #A307103-NL-R53-AB or equivalent). PM2976: 8-32 screw terminal barrier block.
- Options Interface: (1) 6 pin and (1) 12 pin Molex type. Mates with Molex 03-06-2061 (6 pin) and Molex 03-06-2122 (12 pin). Uses Molex 02-06-2103 male pin.

AC INPUT FUSE:
- PM2970-PM2975: 20A, 250V (115V input or 115/230V selectable). Buss ABC 20 or equivalent. 12A, 250V (220V input only). Buss ABC 12 or equivalent.
- PM2976: 25A, 250V (internal fuse). Gould OTM 25 or equivalent.

MTBF:
- Greater than 40,000 hrs.

(1) 5 x 8 x 12¾" case.
(2) 30-ampere and 45-ampere channels are available. Consult factory.
(3) Five channel configurations are available and have above ratings for CH2 and CH3; CH4 and CH5 are 2-24V at up to 5A.
(4) Outputs above 42V non SELV. Approvals upon request.
(5) Available in limited configurations.



1 All mounting holes to be 8-32 screws with a max. penetration depth of 3/16 inches.

(2) External fan for PM2974-2976 and for high current secondary channels

3 ✥ Symbol indicates standard mounting holes. Customer must indicate desired mounting positions if different from standard.

4 ◎ Symbol indicates optional mounting holes.

5 Connectors:
J1 Conn Molex Part No. 03-06-1061
Mates to Part No. 03-06-2061
J2 Conn Molex Part No. 03-06-1121
Mates to Part No. 03-06-2122
PM2970–75: Input Terminals are 6-32 Screws
PM2976: Input Terminals are 8-32 Screws
Main Output Studs are 5/16"–18 THD
TB2: Channel 2, 3, 4 Output Terminals are 6-32 Screws

6 PM2976: Fuse is internal to supply.

7 All dimensional tolerances are .XX ± .02
.XXX ± .010

(8) Input selector switch (not used for dedicated input models).