MODEL 6050A

UNIPLY®
UNIVERSAL DC POWER SOURCE

0-7 V at 5 A

0-15 V at 3 A

0-25 V at 2 A

0-60 V at 1 A

MODEL 6050A is a voltage regulated DC power source that functionally replaces four conventional power supplies. It utilizes a regulator technique* trademarked UNIPLY® which provides regulator efficiencies and operating features not obtainable with common dissipative type circuits.

The Model 6050A is an updated version of its predecessor, the Model 6050, and reflects improved circuit techniques and human engineering design reflecting two years of field experience with this unique instrument.

The UNIPLY circuit comprises a number of unregulated DC sources, a number of power semiconductors, a series of "OR" gates and a single control amplifier which selects that combination of unregulated source and power transistor which most satisfies the demands of the load and the setting of the panel controls, with minimum power loss.

Ranging is transient-free and automatic. Operation is completely electronic without relays or manual switching. In the improved Model 6050A an inhibit switch concentric with the voltage control limits the ranging to 6 volts to avoid accidental damage to integrated circuit loads.

The regulator system is RFI-free and employs linear circuits only. No triacs, SCR's or switching circuits are used.

Power output capability increases with increasing AC line voltage. Up to 150% of rating is available at line voltages over 105 volts. Useful regulated output at reduced levels is available at line voltages as low as 85 volts. The Model 6050A may be operated continuously into an overload or short circuit without damage. A flashing panel indicator signals loss of regulation when load demands exceed the supply capability or the AC line voltage is too low to support increased output levels.

An integral, front panel adjustable, "crowbar" protects load circuits against overvoltage conditions due to internal or external malfunctions. Two voltage and two current ranges are provided on the Model 6050A to increase meter resolution. Ranges switch automatically with panel range setting. A taut-band suspension, flush mounting meter offers superior reliability in dusty environments.

Lightweight and portable, the Model 6050A is suitable for both laboratory bench and rack applications. A bail/carrying handle permits tilting of the panel for viewing ease. Panel adapters are available for the assembly of one or two units in a standard 5¼" x 19" relay rack.

An etched metal rear panel lists the salient performance characteristics of the supply as well as general operating instructions.

PAT. 3,699,352

POWER DESIGNS SERIAL NO: 801029

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RELIABILITY FEATURES

- Specifications based on anticipated performance after five years of service.
- Semiconductors are processed under a "Predictable Reliability" program which includes: 100% incoming inspection; measurement of parameters beyond operating regions to expose channeling phenomena, surface contamination, safe operating area limitations, etc. Zener voltage references, IC's and input stage transistors are preaged and life expectancy extrapolated through measurement of I/F noise changes. Semiconductors are vendor coded for field history analysis.
- Resistors in critical circuits are 1% metal film types for ratings under 1 watt and low TC wirewound types over 1 watt. Ratings are based on power supply failure rather than operating conditions to avoid chain reaction burn-outs.
- Electrolytic capacitors are computer quality types with 10-year minimum life expectancy.
- Each power supply is operated at maximum stress conditions for 50 hours prior to final inspection.
- Manufacturing processes and procedures equal or exceed MIL-Q-9858.

ELECTRICAL SPECIFICATIONS

Input: 105-125 volts, 57-440 Hz, 100 watts at nominal 115 V line. 210-250 volt, 50 Hz operation is available as an option.

Output: 0-60 volts DC, continuously adjustable with the following minimum output levels:

0-7 V, 0-5 A	0-25 V, 0-2 A
0-15 V, 0-3 A	0-60 V, 0-1 A

Line Regulation. 0.01% +1 millivolt for AC line variations from 105-125 volts.

Load Regulation: 0.01% +1 millivolt for 0-100% changes in rated output current, measured at the rear terminals or at the junction of load and remote sense leads. Regulation at the front panel terminals is 0.01% +1.5 millivolts per ampere of load current due to binding post voltage drops.

Polarity: Either the positive or negative output terminal may be grounded or the supply may be "floated" up to 200 VDC between any output terminal and chassis.

Ripple and Noise: Less than one millivolt peak-to-peak over a 1 MHz band at an input line frequency of 60 Hz.

Source Impedance: Less than 5 milliohms at DC, 100 milliohms at 20 KHz, one ohm to 1 MHz.

Recovery Time: Output voltage will return to within a 15 millivolt band of the original voltage setting within 50 microseconds for a step change (1 microsecond rise time) in rated load of 10-100%.

Stability: Better than 0.02% +3 millivolts per 24 hours at constant line, load and ambient temperature, after warm-up. Better than 0.01% +1 millivolt with external low temperature coefficient programming resistance.

Temperature: Operating: 0-50°C
Storage: −20 to +85°C

Temperature Coefficient: Output voltage change is less than 0.02% per degree C.

Voltage Control: Concentric switch/potentiometer provides continuous adjustment of the output voltage in two ranges: 0-6V, 0-60V. Precious metal contact potentiometer provides 20 millivolt resolution in the 0-6V range.

Current Control: Concentric switch/potentiometer provides continuous adjustment of the output current (current limit) in two ranges: 0-500 milliamperes, 0-5 amperes. Precious metal contact potentiometer provides 2 milliampere resolution in the 0-500MA range.

Metering: Flush, front panel taut-band suspension meter monitors output voltage or current in four ranges, automatically selected by the position of the voltage or current range switches: 0/6V/60V 0/500MA/5A, with an accuracy of better than 3% of full scale.

Overvoltage Crowbar: 3-60V panel adjustable crowbar operates to short circuit the output of the supply in less than 500 microseconds at any output voltage in excess of a preset level. When operating the supply in the 0-6V range, the crowbar may be set to operate instantaneously if the 6V/60V range switch is inadvertently thrown.

Output Terminals:
FRONT PANEL: Three insulated "5-way" binding posts for positive, negative and ground.
REAR PANEL: Seven screw terminals on a molded barrier block for positive, negative, ground, remote voltage programming, remote sensing and parallel operation.

Remote Programming: Terminals are provided for remote resistance programming of the output voltage. Programming resistance ratio to output voltage is 1000 ohms per volt with the voltage range switch in the 6V position and 100 ohms per volt in the 60V position. When the supply is remote programmed, the overvoltage crowbar may be set to provide a voltage compliance limit to protect load circuits if the remote programming resistance is open-circuited.

MECHANICAL SPECIFICATIONS

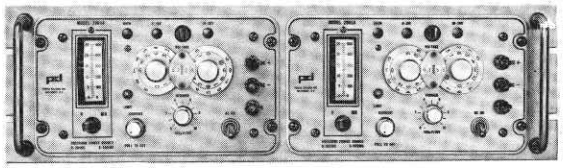
Dimensions: 8⅜" wide x 4¾" high x 11 9/16" deep.

Weight: 15½ lbs.

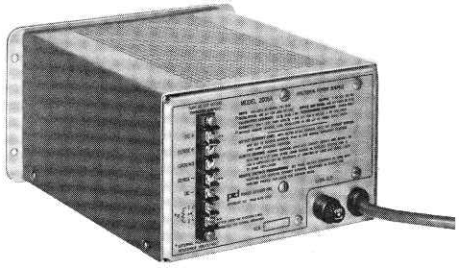
Finish: Etched natural aluminum panel with black nomenclature. Blue vinyl coated steel dust cover.

Rack Panel Adapters: Brushed aluminum 5¼" x 19" panels are available for mounting one or two units in a standard relay rack. Type RRG-1 (unit mounts left or right side of panel). Type RRG-2 (two units side by side. See photograph). Type RRG-3 (unit mounts in center of panel).

Price: RRG-1, RRG-3: $15.00 Ea. RRG-2: $17.50 Ea.



Pair of power supplies in type RRG-2 Panel Adapter



Model 6050A: $229.00
FOB Westbury, N.Y.
Prices subject to change without notice.

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