Power Supplies: AC/DC & DC/DC

Modular AC/DC Power Supplies

Analog Devices ac/dc Power Supplies are designed to provide OEM's and circuit designers with a broad line of high reliability, regulated and short circuit protected power supplies at low overall cost. These modules are available with 5 volt to 12 volt outputs (single, dual and triple) and current ratings from 25mA to 2 amps. Most Analog Devices' Power Supplies are available from stock in both large and small quantities. Substantial discounts apply on quantity orders.

ADVANTAGES

Packaged circuit modules have found wide acceptance. Engineers have discovered the convenience and economy of plug-in building blocks . . . op amps, logic cards, miniature A/D and D/A converters are now available in wide varieties. Now a complete line of modular power supplies is available from Analog Devices. These encapsulated units are shipped ready to use, at prices below the internal manufacturing cost of most OEM users.

TRIPLE OUTPUT SUPPLIES — NEW

Analog Devices offers two new triple output ac/dc designs which are particularly useful in A/D, D/A and signal conditioning applications. Using a triple output supply is often less expensive than purchasing two separate supplies and also saves on space.

Model 923 is designed to provide power to data acquisition systems as well as A/D and D/A converters. The ±15V @ ±100mA outputs can drive linear circuits such as op amps, while the +5V @ 500mA output can power the digital logic.

Model 2B35 is designed to provide regulated excitation to transducers such as strain gages, pressure transducers or load cells, as well as ±15V power for amplifiers and other analog circuits. The single-resistor programmable transducer excitation output may be operated in two modes: constant voltage, providing a +1V to +15V output or a constant current, adjustable from 100μA to 10mA.

AC/DC POWER SUPPLIES FEATURES

- Current limited short circuit protection
- PC mounted and chassis mount designs
- Single, dual and triple output designs
- Current outputs of 25mA to 500mA for dual output supplies, 250mA to 2A for single output supplies
- Free-air convection cooling—no external heat sink required

GENERAL SPECIFICATIONS FOR ALL MODELS

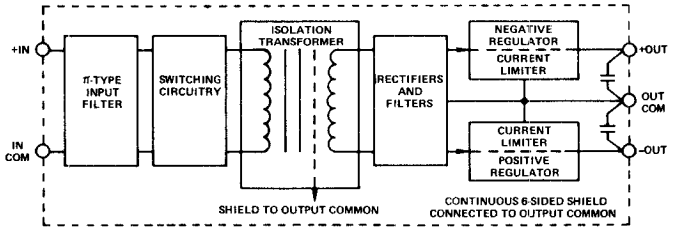
Input Voltage: 105V ac to 125V ac, 50 to 400Hz
Temperature Coefficient: 0.02%/°C
Input Isolation: 50 megohms
Breakdown Voltage: 500V rms, minimum
Operating Temperature: -25°C to +71°C
Operating at elevated temperatures may require derating. Consult factory.
Storage Temperature: -25°C to +85°C
Short Circuit Protection: All of the ac/dc Power Supplies employ current limiting. They can withstand substantial overload including direct shorts. Prolonged operation should be avoided since excessive temperature rises will occur.

Modular DC/DC Converters

Analog Devices' compact dc-dc converters satisfy a wide variety of floating power requirements in analog (Computational Circuits, Op Amps, Instrumentation Amps) and digital (a-d/d-a) applications. Available in three power levels of 1.8 watt (models 949), 4.5 watt (models 940, 941, 943, 945 and 953) and 12 watt (model 951), these designs offer accurate (±0.05% max error), regulated outputs with very low noise. Most models are high efficiency (typically over 60% at full load) that feature complete 6-sided continuous shielding for EMI/RFI protection.

DUAL OUTPUT MODELS

Logic to analog power conversion is available with models 940, 941, 949 and 951. These modules deliver floating power (±12V and ±15V) from logic power sources (+5V). This permits analog networks to be separated from digital systems in order to avoid intersystem grounding problems. Model 945 derives regulated ±15V outputs from any combination of inputs between 23 and 31 volts. The 945 can be powered from dual 12 volt, dual 15 volt, +24 volt or +28 volt power supplies.



Block Diagram — Models 940, 941, 945, 951 and 953

DC/DC CONVERTERS FEATURES

- Inaudible (>20kHz) converter switching frequency
- Continuous, Six-Sided EMI/RFI shielding except on model 949
- Free air convection cooling—no external heat sink or specification derating is required over operating temperature range
- Output short circuit protection(either output to common) for at least 8 hrs. at T_A = +71°C
- Automatic restart after short condition removed
- Automatic starting with reverse current injected into outputs

GENERAL SPECIFICATIONS FOR ALL MODELS

Line Regulation—full range: ±0.05% max (±1% max, 949)
Load Regulation—no load to full load: ±0.05% max (±0.5% max, 949)
Output Noise and Ripple: 1mV rms max (2mV rms max, 949)
Breakdown Voltage: 500V dc minimum
Input Filter Type: π (except model 949)
Operating Temperature Range: -25°C to +71°C
Storage Temperature Range: -40°C to +100°C

Power Supply Specifications

MODULAR AC/DC POWER SUPPLIES

SPECIFICATIONS (typical @ +25°C and 115V ac 60Hz unless otherwise noted)

Type		Model	Output Voltage Volts	Output Current mA	Line Reg. Max %	Load Reg. Max %	Output Voltage Error Max	Ripple and Noise mV rms Max	Inches Dimensions
PC Board Mounted	Dual Output	915	±15	±25	0.2	0.2	±1%	1	3.5X2.5X0.875
		904	±15	±50	0.02	0.02	+200mV -0mV	0.5	3.5X2.5X0.875
		902	±15	±100	0.02	0.02	+300mV -0mV	0.5	3.5X2.5X1.25
		902-2	±15	±100	0.02	0.02	+300mV -0mV	0.5	3.5X2.5X0.875
		920	±15	±200	0.02	0.02	+300mV -0mV	0.5	3.5X2.5X1.25
		925	±15	±350	0.02	0.02	±1%	0.5	3.5X2.5X1.62
		921	±12	±240	0.02	0.02	+300mV -0mV	0.5	3.5X2.5X1.25
	Single Output	906	5	250	0.02	0.04	±1	1	3.5X2.5X0.875
		903	5	500	0.02	0.04	±1	1	3.5X2.5X1.25
		905	5	1000	0.02	0.05	±1	1	3.5X2.5X1.25
		922	5	2000	0.02	0.05	±1	1	3.5X2.5X1.62
	Triple Output	923	±15	±100	0.02	0.02	±1	0.5	3.5X2.5X1.25
			+5	500	0.02	0.05	±1	0.5	
		2B35J	±15	±65	0.08	0.1	(-0, +300mV)	0.5	3.5X2.5X1.25
			+1 to +15*	125	0.08	0.1	*	0.25	
		2B35K	±15	±65	0.01	0.02	(-0, +300mV)	0.5	3.5X2.5X1.25
			+1 to +15*	125	0.01	0.02	*	0.25	
	Chassis Mounted	952	±15	±100	0.05	0.05	±2	1	4.4X2.7X1.44
		970	±15	±200	0.05	0.05	±2	1	4.4X2.7X1.44
		973	±15	±350	0.05	0.05	±2	1	4.4X2.7X2.00
		975	±15	±500	0.05	0.05	±2	1	4.4X2.7X2.00
		955	5	1000	0.05	0.15	±2	2	4.4X2.7X1.44

*Resistor Programmable

MODULAR DC/DC CONVERTERS

SPECIFICATIONS (typical @ +25°C over the full range of input voltages unless otherwise noted)

Model	Output Voltage Volts	Output Current mA	Input Voltage Volts	Input Voltage Range Volts	Input Current Full Load	Output Voltage Error Max	Temperature Coefficient /°C Max	Efficiency Full Load Min	Dimensions Inches
943	5	1000	5	4.65/5.5	152A	±1%	±0.02%	62%	2.0 X 2.0 X 0.375
941	±12	±150	5	4.65/5.5	1.17A	±0.5%	±0.01%	58%	2.0 X 2.0 X 0.375
949	±15	±60*	5	4.65/5.5	0.6A	±2%	±0.03%	58%	2.0 X 1.0 X 0.375
940	±15	±150	5	4.65/5.5	1.35A	±0.5%	±0.01%	62%	2.0 X 2.0 X 0.375
953	±15	±150	12	11/13	0.6A	±0.5%	±0.01%	62%	2.0 X 2.0 X 0.375
945	±15	±150	28	23/31	250mA	±0.5%	±0.01%	61%	2.0 X 2.0 X 0.375
951	±15	±410	5	4.65/5.5	3.7A	±0.5%	±0.01%	62%	3.5 X 2.5 X 0.88

*Single-ended or unbalanced operation is permissible such that total output current load does not exceed a total of 120mA.