DPS SERIES DC POWER SUPPLIES

ADAPTIVE POWER SYSTEMS

DPS SERIES: 15kW - 60kW

Key features:

- 15kW to 60kW Models
- Higher Power Configurations Available
- 3U Compact Form Factor
- Voltage Ranges up to 1200 Vdc
- Current Ranges up to 3000 Adc
- High-Speed Precision Metering
- Active Parallel Operation for Higher Power
- Operating Modes: CV, CC and CP
- All Digital Controllers
- Simple Front Panel Operation
- Large LCD Display
- SD Memory Card Option
- PV Simulation Mode
- Isolated Analog Inputs and Outputs
- Digital I/O
- Three Phase AC Input
- Available Interfaces are USB, RS485, RS232 (standard), GPIB and LAN

GPIB RS232 USB UNIVERSAL SERIAL BUS LAN

OVERVIEW

The ADAPTIVE POWER SYSTEMS DPS Series of precision programmable DC power supplies are aimed at demanding test applications that require stable and precise high power DC. DPS models differ from most general purpose DC power supplies on the market today by using state-of-the-art, highly efficient soft-switching power conversion technology in a compact form factor. This space saving design allows up to 15 kWatt of power in a 3U height rack mount enclosure. Higher power systems consist of 2 or more 3U DPS units. For the occasional higher power demand, multiple DPS units can be paralleled using the optional Master/Slave (M/S) interface that actively controls current sharing between DPS units. This allows large DC Power Systems to be configured with ease.

The DPS Series offers a wide range of voltage models from 20 Vdc through 1200 Vdc and allows the user to select the optimal model for his or her application.

A wide choice of operating modes ranging from constant voltage (CV), constant current (CC), constant power (CP) and internal resistance mode (IR) offers the user unparalleled flexibility.

WIDE RANGE OF APPLICATIONS

Target applications for these power supplies are research & development, production test, incoming inspection, quality control and service of a wide range of industrial, consumer, military and space related products.

The flexible DPS Series is equally suited for use in the engineering lab, the production or test floor, the EMC lab or the service lab.

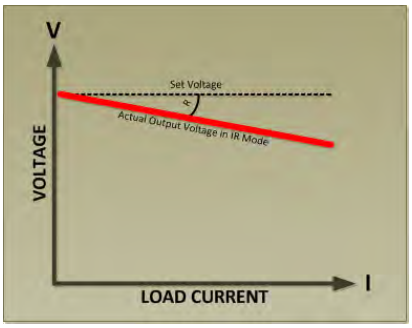
The DPS Series offers industry-leading performance and durability at an affordable price point.

ALL DIGITAL CONTROLLERS

Unlike conventional DC power supplies that use analog control loops to implement voltage and current control, the DPS Series uses advanced digital signal processing for enhanced performance and increased flexibility. The controller regulates voltage, current, power, internal impedance and special application modes like PVSim (see below). Users can program custom I-V tables and even adjust feedback loops to optimize the DC power supply's response to specific load conditions. This is useful for dealing with difficult loads that may have high inductance and can oscillate when powered by conventional DC power supplies.

Since the controller is all digital, there is no difference in behavior between front panel control or any of the remote control interfaces.

INTERNAL RESISTANCE MODE



The DPS Series offers a special internal resistance programming mode that supports simulation of a specific source impedance. This will cause the output voltage to sag as a function of the load current. This mode is particularly useful when testing inverters or loads that draw high inrush currents or to simulate battery discharge characteristics.

ATE SYSTEM FEATURES

For integrated automated test systems or automotive test systems uses, the DPS Series offers a range of available options that facilitate test system development and integration:

- Interfaces: USB, LAN, GPIB, RS232 or RS485
- Digital I/O
- Isolated Analog Programming Inputs
- Isolated Analog Monitoring Outputs
- Numerous Protection Modes
- Rear Panel Load Connections
- Quiet Speed Controlled Fans
- Embedded Scripting (SD-Card Option)
- No Front Panel Controls Option Available

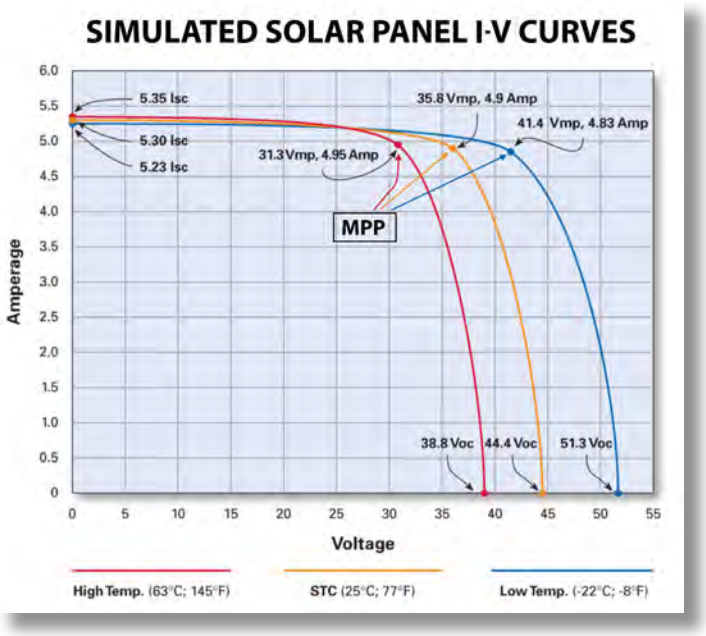
SD-CARD Option

The available SD-Card storage option adds removable data storage for settings, measurements and data logging as well as program scripting. The scripting mode allows complex sequences of voltage or current transients to be programmed and executed on the internal DPS controller. This allows test execution without the need to be connected to a computer and eliminates remote control command processing overhead. Complex automotive starting current patterns can be easily programmed this way.

SOLAR PANEL SIMULATION

The advanced digital controller described above allows special application programming such as photo-voltaic solar panel simulation. This PVSim mode accurately simulates the output voltage and current of a solar panel under various irradiance levels and solar angles. User settings for open circuit voltage (Voc) and short circuit current (Isc) allow easy generation of I-V control curves for various panel types. During inverter testing, the DPS Series can display maximum power point (MPP), Vmp and Imp for a given I-V curve. This is illustrated for various panel temperatures in the graph to the right.

PVSim mode allows design and testing of solar inverters without the need to use actual panels.



FRONT PANEL OPERATION

The DPS Series power supplies use a very straightforward front panel layout with a minimal number of controls. User settings are menu driven and the SELECT rotary knob if used to slew settings as well as parameters. A large, back-lit multi-function graphic LCD is used to display settings, readings and any other pertinent information. Large display characters allow for easy reading of measurement data, even from a distance if needed.

PARALLEL AND SERIES OPERATION

The available Master/Slave control option can be used to configure parallel or series configuration consisting of two or more DPS power supplies. This enables 30kW and higher DC power systems to be configured. In M/S mode, all units are interconnected through a high speed digital bus that synchronizes all settings and data of each DPS power supply. A simple USB cable is used to daisy chain all power supplies together. Once inter-connected, either serial, parallel or stand-alone operation can be selected.

Parallel Mode

In parallel mode, outputs of two or mode DPS supplies are connected in parallel. This allows for higher current and power. Current settings are automatically distributed among the number of parallel supplies in the system. Current and power read back on all units shows total load dissipation.

Serial Mode

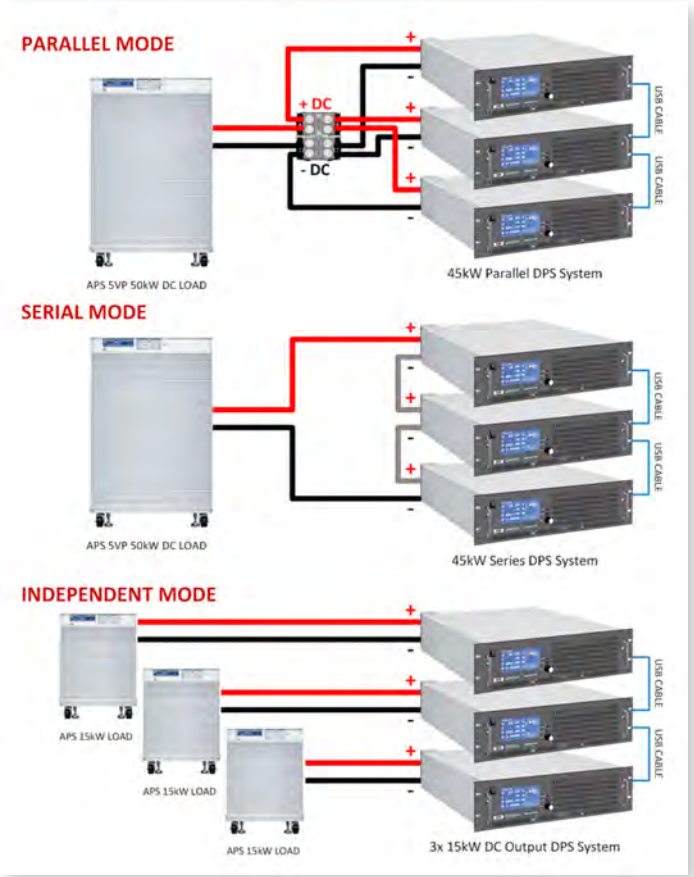
In serial mode, outputs of two or mode DPS supplies are connected in series. This allows for higher output voltages. Voltage settings are automatically distributed among the number of series supplies in the system. Voltage read back on all units shows total voltage into the load. Note that maximum DC output voltage restrictions do apply in Series mode.

Independent Mode

This mode allows multi-channel DC systems to be configured. Each supply operates independently and outputs are not tied together in any way. Settings can be sent to all units simultaneously so they act in unison.

MS Off Mode

In this mode, there is no synchronization or settings between multiple DPS supplies. Each unit operates independently of all others. No outputs should be tied together in this mode of operation.



AVAILABLE DPS MODELS

Tables below list typical DPS model configurations. For power configurations above 15kW, multiple 3U DPS units are combined using the Master/Slave control bus. If you are unable to find your required voltage/current combination, please contact Adaptive Power Systems to discuss additional model configurations.

15 KW UNITS

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DPS20-750	15000	0-20	0-750	3ø, 208/400/440/480Vac, 47-63 Hz	3U
DPS40-375	15000	0-40	0-375	3ø, 208/400/440/480Vac, 47-63 Hz	3U
DPS80-195	15000	0-80	0-195	3ø, 208/400/440/480Vac, 47-63 Hz	3U
DPS100-150	15000	0-100	0-150	3ø, 208/400/440/480Vac, 47-63 Hz	3U
DPS150-100	15000	0-150	0-100	3ø, 208/400/440/480Vac, 47-63 Hz	3U
DPS300-50	15000	0-300	0-50	3ø, 208/400/440/480Vac, 47-63 Hz	3U
DPS600-25	15000	0-600	0-25	3ø, 208/400/440/480Vac, 47-63 Hz	3U
DPS1000-15	15000	0-1000	0-15	3ø, 208/400/440/480Vac, 47-63 Hz	3U
DPS1200-12	15000	0-1200	0-12	3ø, 208/400/440/480Vac, 47-63 Hz	3U

30 KW SYSTEMS

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DPS20-1500	30000	0-20	0-1500	3ø, 208/400/440/480Vac, 47-63 Hz	6U
DPS40-750	30000	0-40	0-750	3ø, 208/400/440/480Vac, 47-63 Hz	6U
DPS80-375	30000	0-80	0-375	3ø, 208/400/440/480Vac, 47-63 Hz	6U
DPS100-300	30000	0-100	0-300	3ø, 208/400/440/480Vac, 47-63 Hz	6U
DPS150-200	30000	0-150	0-200	3ø, 208/400/440/480Vac, 47-63 Hz	6U
DPS300-100	30000	0-300	0-100	3ø, 208/400/440/480Vac, 47-63 Hz	6U
DPS600-50	30000	0-600	0-50	3ø, 208/400/440/480Vac, 47-63 Hz	6U
DPS1000-30	30000	0-1000	0-30	3ø, 208/400/440/480Vac, 47-63 Hz	6U
DPS1200-25	30000	0-1200	0-25	3ø, 208/400/440/480Vac, 47-63 Hz	6U

45 KW SYSTEMS

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DPS20-2250	45000	0-20	0-2250	3ø, 208/400/440/480Vac, 47-63 Hz	9U
DPS40-1125	45000	0-40	0-1125	3ø, 208/400/440/480Vac, 47-63 Hz	9U
DPS80-585	45000	0-80	0-585	3ø, 208/400/440/480Vac, 47-63 Hz	9U
DPS100-450	45000	0-100	0-450	3ø, 208/400/440/480Vac, 47-63 Hz	9U
DPS150-300	45000	0-150	0-300	3ø, 208/400/440/480Vac, 47-63 Hz	9U
DPS300-150	45000	0-300	0-150	3ø, 208/400/440/480Vac, 47-63 Hz	9U
DPS600-75	45000	0-600	0-75	3ø, 208/400/440/480Vac, 47-63 Hz	9U
DPS1000-45	45000	0-1000	0-45	3ø, 208/400/440/480Vac, 47-63 Hz	9U
DPS1200-36	45000	0-1200	0-36	3ø, 208/400/440/480Vac, 47-63 Hz	9U

60 KW SYSTEMS

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DPS20-3000	60000	0-20	0-3000	3ø, 208/400/440/480Vac, 47-63 Hz	12U
DPS40-1500	60000	0-40	0-1500	3ø, 208/400/440/480Vac, 47-63 Hz	12U
DPS80-750	60000	0-80	0-750	3ø, 208/400/440/480Vac, 47-63 Hz	12U
DPS100-600	60000	0-100	0-600	3ø, 208/400/440/480Vac, 47-63 Hz	12U
DPS150-400	60000	0-150	0-400	3ø, 208/400/440/480Vac, 47-63 Hz	12U
DPS300-200	60000	0-300	0-200	3ø, 208/400/440/480Vac, 47-63 Hz	12U
DPS600-100	60000	0-600	0-100	3ø, 208/400/440/480Vac, 47-63 Hz	12U
DPS1000-60	60000	0-1000	0-60	3ø, 208/400/440/480Vac, 47-63 Hz	12U
DPS1200-50	60000	0-1200	0-50	3ø, 208/400/440/480Vac, 47-63 Hz	12U

SPECIFICATIONS - COMMON TO ALL DPS MODELS

DC OUTPUT	
Operation Modes	Constant Voltage, Constant Current, Constant Power, Internal Resistance
Voltage	
Accuracy	± 0.25 % of F.S.
Dynamic Response	< 2 ms (typ.)
Ripple	< 0.2 % (typ.)
Stability	± 0.05%
Line Regulation	< ± 0.1 % of F.S.
Load Regulation	< ± 0.1 % of F.S.
Current Limit	
Accuracy	± 0.4 % of F.S.
Regulation	± 0.1 % of F.S.
Output Isolation	3000V

MEASUREMENTS	
Voltage Range	See Model Tables
Accuracy	± 0.25 % of F.S. + 1 Digit
Current Range	See Model Tables
Accuracy	± 0.5 % of F.S. + 1 Digit
Power Range	See Model Tables
Accuracy	± 1.0 % of F.S. + 1 Digit

PROTECTION MODES	
Protection Modes	Over Current, Over Voltage Over Power, Over Temperature
OVP Range	0 - 120% Vmax

DIGITAL INTERFACES	
Available Types	USB, LAN, GPIB, RS232, RS485
Command Syntax	ASCII
GPIB Compatibility	IEEE488.1

DIGITAL & ANALOG I/O	
Digital Inputs	Analog I/O Enable Output Disable (+5V to +10V)
Digital Outputs	Output Enabled Status
Analog Inputs	Set V, I, OVP / 0-5 V or 0-10 V for Full Scale / Isolated
Analog Outputs	Monitor Vset, Vmeas, Iset, Imeas, Pmeas / 0-5 V or 0-10 V for Full Scale / Isolated

POWER INPUT	
AC Voltage	208V, 400V, 440V, 480V ±10%, 4 or 5 Wire. Must specify at time of order!
Frequency	47-63 Hz
Power Factor	> 0.7
Efficiency	up to 94%

DIMENSIONS & WEIGHT					
Models		15kW	30kW	45kW	60kW
Dimensions -	Height	133/5.25"	267 / 10.5"	400 /15.75"	533 / 21"
	Width	483 mm /19"			
	Depth	620 mm/24.4"			
Weight -	net, kg / lbs	33/72.8	66/145.5	99/218.3	132/291
	Est. shipping	40 kg 88 lbs	80 kg 176 lbs	120 kg 264 lbs	160 kg 352 lbs

ENVIRONMENTAL	
Cooling	Fan Cooled
Operating Temperature	0 to 50 °C / 32 to122 °F
Storage Temperature	-20 to 70 °C / -4 to 158 °F
Humidity	< 80%, non-condensing
Altitude (max.)	2000 m / 6500 feet
Vibration Resistance	10 - 55 Hz, 1 minute, 2 G XYZ
Shock	< 20 G

SAFETY & REGULATORY	
Safety Standard	EN 60950
EMC Emissions	EN61000-6-4:2007
EMC Immunity	EN61000-6-2:2005
Product Category	EN61010-1:2006 (Measurement, Laboratory and Control Equipment)
Approvals	CE Mark

MISCELLANUOUS FEATURES AND OPTIONS	
PV Sim Mode (std.)	I-V Curve, MPP
Master/Slave I/F (std.)	Active Parallel Mode
Option -SD	SC-Card Reader: Measurement Data logging, Command Scripting, Output Sequencing
Option -ATE	Removes front panel knob and buttons for remote control only applications

REAR PANEL

DPS SERIES DC POWER SUPPLIES

ORDERING INFORMATION:

Line 1: Specify DC Power Supply Model:
DPSnnn-nn

Configured Options (See Option Table):

Line 2: Specify one 3 Phase Power Input Option

Line 3: Specify Control Interface Option as needed

Line 4: Specify Other Options

Example:

DPS600-50-3P400-LAN

Model DPS600-50, 30KW, 400V 3 Phase AC input, RS232 & Ethernet Interface, Analog I/O.

Included in Ship kit:

- User Manuals in PDF Format on CD ROM.
- Certificate of Conformance.

Available Options:

Option P/N	*Description*
Power Input Options	
-3P208	3 Phase AC Input, 208V
-3P400	3 Phase AC Input, 400V
-3P440	3 Phase AC Input, 440V
-3P480	3 Phase AC Input, 480V
NOTE:	Specify 4 or 5 Wire AC Input Configuration at time of order
Remote Control Options[1,2]	
-GPIB	Interface - GPIB
-485	Interface - RS485
-LAN	Interface - LAN
-USB	Interface - USB
Analog Options	
-ATE	Removes Front Panel Controls (Display only)
Other Options	
-SD	SD Memory Card
-BSC12	Battery Starting Curve, 12VDC
-BSC24	Battery Starting Curve, 24VDC

Note 1: All models include RS232 interface
Note 2: Max. number of interfaces is four

Service and Support

Adaptive Power Systems' customer support is second to none. Our Customer Support Program provides the training, repair, calibration, and technical support services that our customers value. So, in addition to receiving the right test equipment, our customers can also count on excellent support before, during and after the sale. With company owned support and service centers around the world, support is never far away.

New Product Warranty: AC Sources & Loads: 1 year, DC Power Supplies: 2 years.

Complete calibration and repair services are offered at our US, European and Chinese manufacturing facilities (see contact info below). Calibrations are to original factory specifications and are traceable to NIST (National Institute of Standards and Technology).

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