

## DDP SERIES: 3kW - 10kW

### Key features:

- 3kW to 10kW Models
- 2U Compact Form Factor
- Voltage Ranges up to 1200 Vdc
- Current Ranges up to 500 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
- Single or Three Phase AC Input
- Available Interfaces are USB, RS485, RS232 (standard), GPIB and LAN



### OVERVIEW

The ADAPTIVE POWER SYSTEMS DDP Series of precision programmable DC power supplies are aimed at demanding test applications that require stable and precise DC power. DDP 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 10 kWatt of power in a 2U height rack mount enclosure. For less demanding power requirements, lower power versions are available in the same size package. For the occasional higher power demand, multiple DDP units can be paralleled using the optional Master/Slave (M/S) interface that actively controls current sharing between DDP units.

The DDP Series offers a wide range of voltage models from 15 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 DDP Series is equally suited for use in the engineering lab, the production or test floor, the EMC lab or the service lab.

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



# DDP SERIES DC POWER SUPPLIES

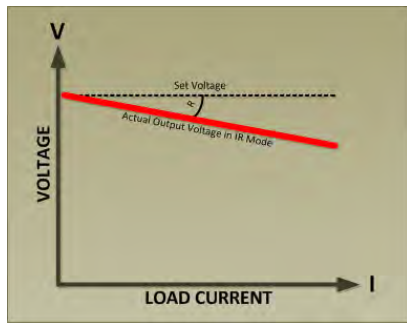
## ALL DIGITAL CONTROLLERS

Unlike conventional DC power supplies that use analog control loops to implement voltage and current control, the DDP 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 DDP 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, the DDP 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

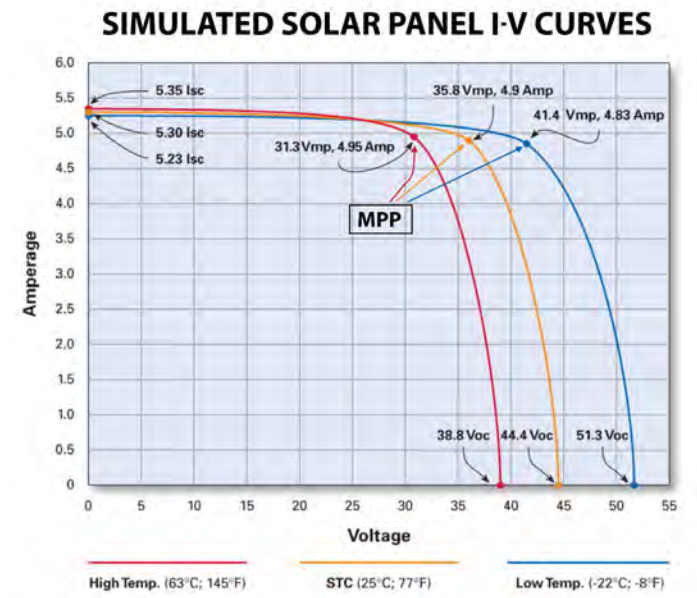
The available SD-Card storage option adds removable data storage for settings, measurements and data logging as well as program scripting. The scripting mode allows complex sequences of voltage or current transients to be programmed and executed on the internal DDP controller. This allows test execution 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 DDP 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.

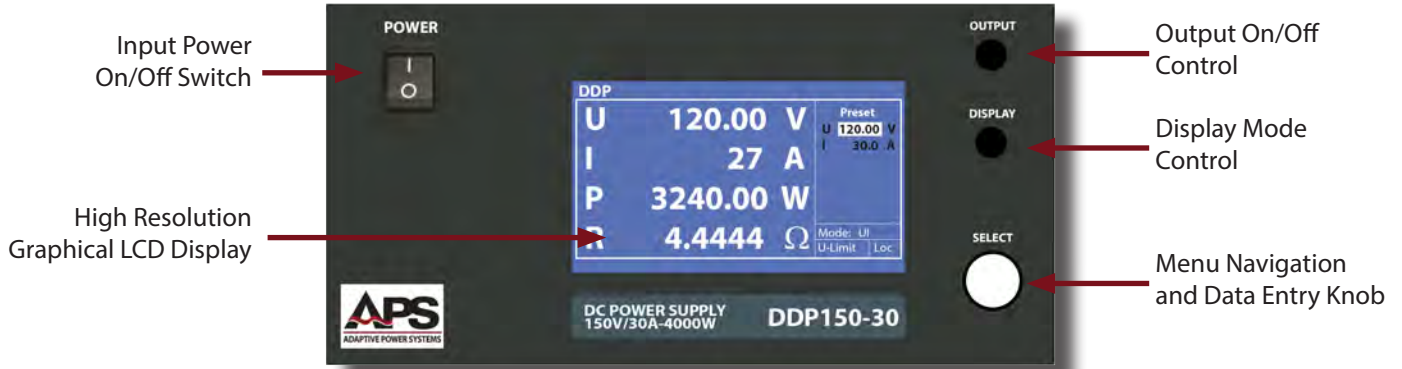
PVSim mode allows design and testing of solar inverters without the need to use actual panels.



# DDP SERIES DC POWER SUPPLIES

## FRONT PANEL OPERATION

The DDP 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 is 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.



## AVAILABLE DDP MODELS

Tables below and continued on next page list typical DDP model configurations. If you are unable to find your required voltage/current combination, please contact Adaptive Power Systems to discuss additional model configurations.

### 3000 WATT

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DDP15-200	3000	0-15	0-200	207-253Vac, 47-63 Hz	2U
DDP35-90	3000	0-35	0-90	207-253Vac, 47-63 Hz	2U
DDP60-50	3000	0-60	0-50	207-253Vac, 47-63 Hz	2U
DDP80-38	3000	0-80	0-38	207-253Vac, 47-63 Hz	2U
DDP100-30	3000	0-100	0-30	207-253Vac, 47-63 Hz	2U
DDP150-20	3000	0-150	0-20	207-253Vac, 47-63 Hz	2U
DDP300-10	3000	0-300	0-10	207-253Vac, 47-63 Hz	2U
DDP600-5	3000	0-600	0-5	207-253Vac, 47-63 Hz	2U
DDP1000-3	3000	0-1000	0-3	207-253Vac, 47-63 Hz	2U
DDP1200-2.6	3000	0-1200	0-2.6	207-253Vac, 47-63 Hz	2U

### 4000 WATT

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DDP20-200	4000	0-20	0-200	207-253Vac, 47-63 Hz	2U
DDP35-115	4000	0-35	0-115	207-253Vac, 47-63 Hz	2U
DDP60-67	4000	0-60	0-67	207-253Vac, 47-63 Hz	2U
DDP80-50	4000	0-80	0-50	207-253Vac, 47-63 Hz	2U
DDP100-40	4000	0-100	0-40	207-253Vac, 47-63 Hz	2U
DDP150-30	4000	0-150	0-30	207-253Vac, 47-63 Hz	2U
DDP300-15	4000	0-300	0-15	207-253Vac, 47-63 Hz	2U
DDP600-7	4000	0-600	0-7	207-253Vac, 47-63 Hz	2U
DDP1000-4	4000	0-1000	0-4	207-253Vac, 47-63 Hz	2U
DDP1200-3.4	4000	0-1200	0-3.4	207-253Vac, 47-63 Hz	2U

# DDP SERIES DC POWER SUPPLIES

## 5000 WATT

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DDP25-200	5000	0-25	0-200	207-253Vac, 47-63 Hz	2U
DDP35-150	5000	0-35	0-150	207-253Vac, 47-63 Hz	2U
DDP60-83	5000	0-60	0-83	207-253Vac, 47-63 Hz	2U
DDP80-63	5000	0-80	0-63	207-253Vac, 47-63 Hz	2U
DDP100-50	5000	0-100	0-50	207-253Vac, 47-63 Hz	2U
DDP150-35	5000	0-150	0-35	207-253Vac, 47-63 Hz	2U
DDP300-17	5000	0-300	0-17	207-253Vac, 47-63 Hz	2U
DDP600-8.5	5000	0-600	0-8.5	207-253Vac, 47-63 Hz	2U
DDP1000-5	5000	0-1000	0-5	207-253Vac, 47-63 Hz	2U
DDP1200-4.2	5000	0-1200	0-4.2	207-253Vac, 47-63 Hz	2U

## 6000 WATT

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DDP15-400	6000	0-15	0-400	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP20-300	6000	0-20	0-300	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP35-175	6000	0-35	0-175	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP60-100	6000	0-60	0-100	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP80-75	6000	0-80	0-75	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP100-60	6000	0-100	0-60	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP150-40	6000	0-150	0-40	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP300-20	6000	0-300	0-20	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP600-10	6000	0-600	0-10	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP1000-6	6000	0-1000	0-6	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP1200-5	6000	0-1200	0-5	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U

## 8000 WATT

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DDP20-440	8000	0-20	0-440	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP35-230	8000	0-35	0-230	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP60-133	8000	0-60	0-133	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP80-100	8000	0-80	0-100	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP100-80	8000	0-100	0-80	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP150-55	8000	0-150	0-55	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP300-30	8000	0-300	0-30	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP600-15	8000	0-600	0-15	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP1000-8	8000	0-1000	0-8	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP1200-6.7	8000	0-1200	0-6.7	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U

## 10000 WATT

MODEL	RATED POWER (W)	VOLTAGE (V)	CURRENT (A)	INPUT POWER	HEIGHT
DDP20-500	10000	0-20	0-500	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP35-300	10000	0-35	0-300	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP60-167	10000	0-60	0-167	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP80-125	10000	0-80	0-125	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP100-100	10000	0-100	0-100	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP150-70	10000	0-150	0-70	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP300-33	10000	0-300	0-33	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP600-17	10000	0-600	0-17	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP1000-10	10000	0-1000	0-10	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U
DDP1200-8.4	10000	0-1200	0-8.4	3 $\emptyset$ , 208/400/440/480Vac, 47-63 Hz	2U



# DDP SERIES DC POWER SUPPLIES

## SPECIFICATIONS - COMMON TO ALL DDP 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

INTERFACE OPTIONS	
Available Type	USB, LAN, GPIB, RS232, RS485 (max 3)
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

## REAR PANEL



POWER INPUT	
AC Voltage	230 Vac ±10% up to 5 kWatt, 3 Phase for 6kW and higher
Available 3 Phase Inputs	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	3kW, 4kW, 5kW	6kW, 8kW, 10kW
Dimensions (H x W x D)	89 x 483 x 432mm 3.5" x 19" x 17.3"	89 x 483 x 600mm 3.5" x 19" x 23.6"
Weight (net)	19 kg / 42 lbs	26 kg / 57.3 lbs
shipping	26 kg / 57.3 lbs	33 kg / 72.8 lbs

ENVIRONMENTAL	
Cooling	Fan Cooled
Operating Temperature	0 to 50 °C / 32 to 122 °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

MISCELLANEOUS FEATURES AND OPTIONS	
PV Simulation Mode	I-V Curve, MPP
Master/Slave Interface	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

# DDP SERIES DC POWER SUPPLIES

## ORDERING INFORMATION:

**Line 1:** Specify DC Power Supply Model:  
DDPnnn-nn

Configured Options (See Option Table):

**Line 2:** Specify one Power Input Option

**Line 3:** Specify Control Interface Option as needed

**Line 4:** Specify Other Options

### Example:

DDP100-100-3P208-LAN-SD

Model DDP100-100, 10KW, 208V 3 Phase AC input, RS232 & Ethernet Interface, Analog I/O and SD card option.

### Included in Ship kit:

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

## Available Options:

Option P/N	Description
<b>Power Input Options</b>	
-230	230Vac Single Phase Input (<= 5kWModels)
-3P208	3 Phase AC Input, 208V
-3P400	3 Phase AC Input, 400V
-3P440	3 Phase AC Input, 440V
-3P480	3 Phase AC Input, 480V
<b>NOTE:</b>	Specify 4 or 5 Wire 3 Phase AC Input Configuration at time of order
<b>Remote Control Options</b>	
-GPIB	Interface - GPIB
-485	Interface - RS485
-LAN	Interface - LAN
-USB	Interface - USB
<b>Analog Options</b>	
-ATE	Removes Front Panel Controls (Display only)
<b>Other Options</b>	
-SD	SD Memory Card
-BSC12	Battery Starting Curve, 12VDC
-BSC24	Battery Starting Curve, 24VDC

## 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).

### NORTH AMERICA

Adaptive Power Systems  
Irvine, USA  
Phone: +1(949) 752-8400  
Fax: +1 (949) 756-0838  
Email: [support@adaptivepower.com](mailto:support@adaptivepower.com)



### EUROPE

Caltest Instruments Ltd.  
Guildford, United Kingdom  
Phone: +44(0)1483 302 700  
Fax: +44(0)1483 300 562  
Email: [support@adaptivepower.com](mailto:support@adaptivepower.com)

### CHINA

PPST Shanghai Co. Ltd.  
Shanghai, China  
Phone: +86-21-6763-9223  
Fax: +86-21-5763-8240  
Email: [support@adaptivepower.com](mailto:support@adaptivepower.com)

## NEED HELP?

 [sales@adaptivepower.com](mailto:sales@adaptivepower.com)  
 OR CALL  
Toll Free: +1 (866) 517-8400  
Intl: +1 (949) 752-8400



Proudly Represented by:



ADAPTIVE POWER SYSTEMS

17711 Mitchell North  
Irvine, CA 92614  
United States  
Toll Free: 1.866.517-8400  
Tel: +1.949.752-8400  
Fax: +1.949.756-0838