DCS Series

U | I | P | R | OVP | OCP | OPP | OTP | 19" | MS | USB

PPST SOLUTIONS

Precision Programmable DC Power Supplies

DC Power

DCS Series
5kW to 960kW
Auto Ranging Output
Up to 2000Vdc, 1000A
4U Rack Height @ 30kW

KEY BENEFITS OF DCS POWER SUPPLIES

- Output voltage ranges from 80 V up to 2000 V
- Constant Power Auto-ranging Voltage/Current profile
- Current: 30 A up to 1000 A, parallelable for higher current
- Output power 5, 10, 15 or 30kW, expandable up to 960kW
- High overall efficiency up to 95.5% saves on energy cost
- Three phase input voltage 208Vac or wide range 380~480Vac
- Active Power Factor Corrected AC input
- Flexible, precisely regulated output power stages
- Various protection circuits (OVP, OCP, OPP, OTP)
- Intuitive TFT touch panel with display of settings, read-backs, status and notifications
- Remote sensing with automatic open sense detection
- Galvanically isolated analog interface and USB port
- Integrated function generator
- Photovoltaic array simulation, including EN 50530
- Internal resistance simulation and regulation
- Output Voltage Discharge circuit (Vout < 60 V in ≤ 10 s)
- Optional, digital interface modules
- SCPI command set and ModBus RTU (optionally: ModBus TCP) support

Look no further for powerful yet cost effective DC power test solutions than the compact DCS Series programmable DC power supplies from Adaptive Power Systems. Designed using state-of-the-art Digital Signal Processing, these power supplies support a wide range DC tests with excellent performance and reliability. The DCS units are versatile power sources with a auto-ranging constant power V-I output profile that offers both higher voltage and high current from a single model.

Available in four power levels of 5kW , 10kW, 15kW or 30kW (30kW on 380-480Vac input models only), there are eight voltage range models up to 2000Vdc and max. current per 4U chassis of 1000Adc. Available with either 208 Vac or 380 ~ 480 Vac three phase AC input.

Master/ Slave mode for series or parallel operation available for higher voltage and or power requirements.

APS™ ADAPTIVE POWER SYSTEMS

Worldwide Supplier of Power Conversion Equipment

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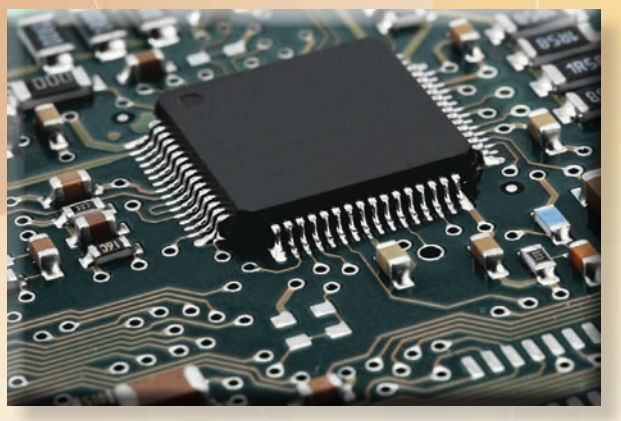
CE

USB UNIVERSAL SERIAL BUS | RS232 | LAN | GPIB

VALUE & PERFORMANCE BY LEVERAGING MODERN TECHNOLOGY

The DCS Series of precision DC power Supplies uses state of the art field programmable logic array (FPGA) technology to implement a digital power conversion topology that combines high efficiency with a rich feature set and excellent specifications. This results in 16-bit resolution precision for both set points and measurements throughout.

Packaged in a compact, standard 19" rack mount chassis, these powerful functions are easily accessible through an easy to use, color touch screen based user interface from the front panel or by sending commands over one of several available digital control interfaces.



BROAD RANGE OF APPLICATIONS

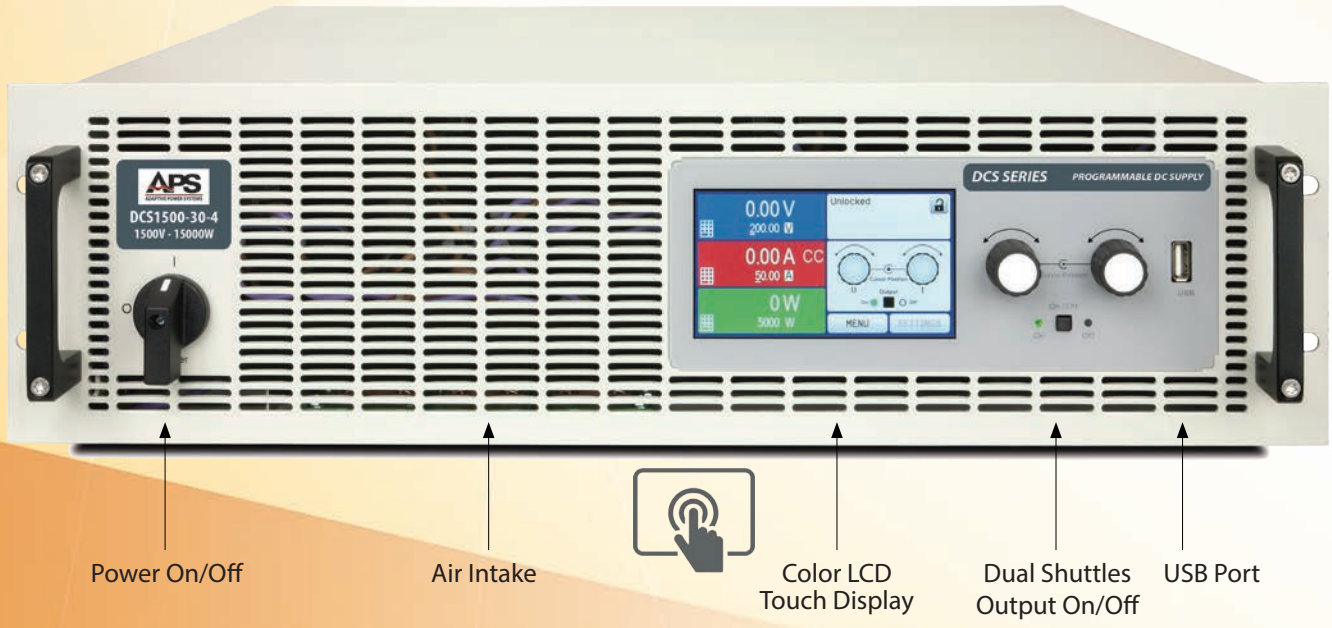
The extensive feature set of the DCS Series power supplies makes them suitable for a broad range of DC power applications. With power levels from 5000W to 15000W per 3U chassis and ability to parallel units for higher power needs, a wide range of present and future power demands can be met. **Put the DCS Series to the test!**

Electric Vehicle Component Test

Military Applications

Research & Development

MODERN COLOR TOUCH USER INTERFACE FOR EASE OF OPERATION



All DCS Series models share an intuitive user interface using a combination of a large color LCD touch screen and two rotary shuttle knobs. This results in an easy to use power supply for novice and experienced users alike.

The large color LCD allows visualization of output settings and configurations as well as a wide assortment of precision DC measurements.

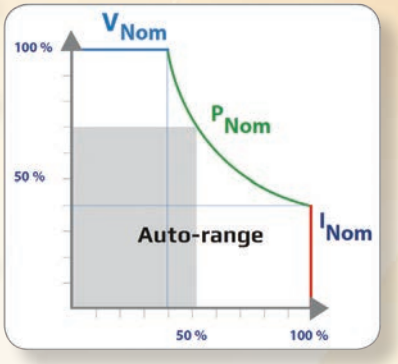
Changing parameters such as voltage or current can be done using the touch screen or the shuttle.

VALUE PROPOSITION

Why choose DCS Series?

When it comes to programmable DC power supplies, you have many brands to choose from. Not all power supplies are made the same however and design choices, features and capabilities can make a significant difference. Here are some of the things that make the DCS Series special:

Autoranging Power Stage



All models are equipped with a flexible autoranging output stage which provides a higher output voltage at lower output current, or a higher output current at lower output voltage, always limited to the adjustable power set value or the rated power. Therefore, a wide range of applications can be covered by the use of just one DCS model.

DC output

Choice of voltage, current and power. DC output voltages between 0~80 V and 0~1500 V, output currents between 0~20 A and 0~510 A and several output power ratings between 0~5 kW and 0~15 kW are available. The DC output bus bars are located on the rear panel.

Built-in Discharge Circuit

Models with a nominal output voltage of 200 V or higher include a discharge circuit for bleed-down of the output capacitors. For no load or low load situations, this ensures that any dangerous residual output voltage decays to under 60 Vdc after the power supply output has been switched off. This value is considered a safety limit for DC voltages dangerous to humans.

Protection Features

For protection of the equipment connected, it is possible to set an overvoltage protection threshold (OVP), as well as an overcurrent (OCP) and overpower (OPP) limit.

As soon as one of these thresholds is reached for any reason, the DC output will be immediately shut off and a status signal will be generated on the display and via the interfaces. There is also an overtemperature protection, which will shut off the DC output if the power supply overheats.

Remote Voltage Sensing

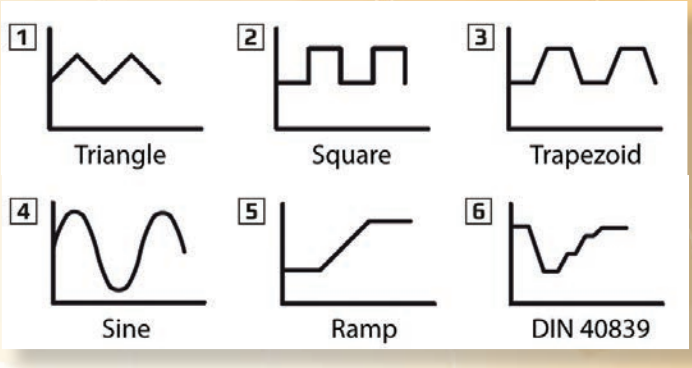
The voltage sensing input can be connected directly to the load in order to compensate for any voltage drop along the power cables, up to a certain level. If the Vsense input is connected to the load, the power supply will adjust the output voltage automatically to ensure the precise programmed voltage is available at the load.

Analog Interface

All models feature a galvanically isolated analog interface terminal, located on the rear of the supply. It offers analog inputs to set voltage, current, power and resistance from 0...100% through control voltages of 0~10 V or 0~5 V. To monitor the output voltage and current, there are analog outputs with 0~10 V or 0~5 V. Also, several inputs and outputs are available for controlling and monitoring the power supply status.

Function generator

All DCS models include a function generator which can generate typical functions, as displayed in the figure below. These waveforms can be applied to either the output voltage or the output current. The generator can be completely configured and controlled by using the touch panel on the screen of the power supply or via remote control using one of the digital interfaces.



The predefined functions offer all necessary parameters to the user, such as Y offset, time / frequency or amplitude, for full configuration ability.

In addition to the standard functions, which are all based upon an arbitrary generator, this base generator is accessible for the creation and execution of complex sets of functions, separated into up to 99 sequences. Those can be used for testing purposes in development and production. The sequences can be loaded from and saved to a standard USB memory stick via the USB port on the front panel, making it easy to change between different test sequences.

There is an XY generator, which is used to generate other functions, such as UI or IU, which are defined by the user in form of tables (CSV file) and then loaded from a USB memory stick. For photovoltaics related tests, a PV curve can be generated and used from user-adjustable key parameters. It also supports the European standard EN 50530.

Master-slave

All models feature a digital master-slave bus. It can be used to connect up to 32 identical models in parallel operation to a bigger system. The configuration of the master-slave system is done from the control panels of the units or by remote control. System control is accomplished by manual or remote control. As an alternative to the standard models, there are specific slave models available.

TECHNICAL SPECIFICATIONS 5KW Models

MODEL	DCS80-170[3]	DCS200-70	DCS360-40	DCS500-30	DCS750-20
Voltage Range	0~80 V	0~200 V	0~360 V	0~500 V	0~750 V
Current Range	0...170 A	0...70 A	0...40 A	0...30 A	0...20 A
CP V-I Range	29.4V@170A ~ 80V@62.5A	71.4V@70A ~ 200V@25A	125V@40A ~ 360V@13.9A	166.7V@30A ~ 500V@10A	250V@20A ~ 750V@6.7A
Voltage Ripple	<200 mVpp <16 mVrms	<300 mVpp <40 mVrms	<550mVpp <65mVrms	<350mVpp <70mVrms	<800mVpp <200mVrms
Current Ripple	<80 mArms	<22 mArms	<18 mArms	<16 mArms	<16 mArms
Insulation -DC to PE	±400 Vdc	±725 Vdc	±725 Vdc	±1500 Vdc	±1500 Vdc
Insulation +DC to PE	±400 Vdc	±1000 Vdc	±1000 Vdc	±1800 Vdc	±1800 Vdc
Power Range	0~5000 W	0~5000 W	0~5000 W	0~5000 W	0~5000 W
Efficiency	93%	95%	93%	95.5%	94%
Weight	18kg/39.7lbs	18kg/39.7lbs	18kg/39.7lbs	18kg/39.7lbs	18kg/39.7lbs

TECHNICAL SPECIFICATIONS 10KW Models

MODEL	DCS80-340[3]	DCS200-140	DCS360-80	DCS500-60	DCS750-40	DCS1000-30
Voltage Range	0~80 V	0~200 V	0~360 V	0~500 V	0~750 V	0~1000 V
Current Range	0...340 A	0...140 A	0~80 A	0~60 A	0~40 A	0~30 A
CP V-I Range	29.4V@340A ~ 80V@125A	71.4V@140A ~ 200V@50A	125V@80A ~ 360V@27.8A	166.7V@60A ~ 500V@20A	250V@40A ~ 750V@13.3A	333.3V@30A ~ 1000V@10A
Voltage Ripple	<320mVpp <25mVrms	<300mVpp <40mVrms	<550mVpp <65mVrms	<350mVpp <70mVrms	<800mVpp <200mVrms	<1600mVpp <350mVrms
Current Ripple	<160 mArms	<44 mArms	<35mArms	<32mArms	<32mArms	<22mArms
Insulation -DC to PE	±400 Vdc	±725 Vdc	±725 V DC	±1500 V DC	±1500 V DC	±1500 V DC
Insulation +DC to PE	±400 Vdc	±1000 Vdc	±1000 V DC	±1800 V DC	±1800 V DC	±1800 V DC
Power Range	0~10000 W	0~10000 W	0~10000 W	0~10000 W	0~10000 W	0~10000 W
Efficiency	93%	95%	93%	95%	94%	95%
Weight	25kg/55.1lbs	25kg/55.1lbs	25kg/55.1lbs	25kg/55.1lbs	25kg/55.1lbs	25kg/55.1lbs

TECHNICAL SPECIFICATIONS 15KW Models

MODEL	DCS80-510[3]	DCS200-210	DCS360-120	DCS500-90	DCS750-60	DCS1000-40	DCS1500-30
Voltage Range	0~80 V	0~200 V	0~360 V	0~500 V	0~750 V	0~1000 V	0~1500 V
Current Range	0~510 A	0~210 A	0~120 A	0~90 A	0~60 A	0~40 A	0~30 A
CP V-I Range	29.4V@510A ~ 80V@187.5A	71.4V@210A ~ 200V@75A	125V@120A ~ 360V@41.7A	166.7V@90A ~ 500V@30A	250V@60A ~ 750V@20A	375V@40A ~ 1000V@15A	500V@30A ~ 1500V@10A
Voltage Ripple	<320mVpp <25mVrms	<300mVpp <40mVrms	<550mVpp <65mVrms	<350mVpp <70mVrms	<800mVpp <200mVrms	<2000mVpp <300mVrms	<2400mVpp <400mVrms
Current Ripple	<240 mArms	<66 mArms	<50 mArms	<48 mArms	<48 mArms	<22 mArms	<26 mArms
Insulation -DC to PE	±400 Vdc	±725 Vdc	±725 Vdc	±1500 Vdc	±1500 Vdc	±1500 Vdc	±1500 Vdc
Insulation +DC to PE	±400 Vdc	±1000 Vdc	±1000 Vdc	±1800 Vdc	±1800 Vdc	±1800 Vdc	±1800 Vdc
Power Range	0~15000 W	0~15000 W	0~15000 W	0~15000 W	0~15000 W	0~15000 W	0~15000 W
Efficiency	93%	95%	93%	95%	94%	95%	95%
Weight	31kg/68.3lbs	31kg/68.3lbs	30kg/66.1lbs	31kg/68.3lbs	31kg/68.3lbs	31kg/68.3lbs	31kg/68.3lbs

Note 1: Ripple RMS value is measured at LF with BWL 300 kHz, Ripple PP value is measured at HF with BWL 20MHz
Note 2: Weight of the base version, models with option(s) may vary
Note 3: A 60V model DCS60-xxx is available as well with same max current rating. All other specs same as DCS80-xxx 80V model

5000 Watt Models 750V Max.

10000 Watt Models 1000V Max.

15000 Watt Models 1500V Max.

TECHNICAL SPECIFICATIONS 30kW

MODEL	DCS80-1000[3]	DCS200-420	DCS360-240	DCS500-180
Voltage Range	0~80 V	0~200 V	0~360 V	0~500 V
Current Range	0~1000 A	0~420 A	0~240 A	0~180 A
CP V-I Range	30V@1000A ~ 80V@375A	71.4V@420A ~ 200V@150A	125V@240A ~ 360V@83.3A	166.7V@180A ~ 500V@60A
Voltage Ripple[1]	<480mVpp <37mVrms	<450mVpp <60mVrms	<480mVpp <83mVrms	<525mVpp <105mVrms
Insulation -DC to PE	±500 Vdc	±725 Vdc	±1500 Vdc	±1500 Vdc
Insulation +DC to PE	+600 Vdc	+1000 Vdc	+2000 Vdc	+2000 Vdc
Power Range	0~30000 W (-4) 0~15000 W (-2)	0~30000 W (-4) 0~15000 W (-2)	0~30000 W (-4) 0~15000 W (-2)	0~30000 W (-4) 0~15000 W (-2)
Efficiency	94%	94.2%	94.6%	95.3%
Weight[2]	50kg/110lbs	50kg/110lbs	50kg/110lbs	50kg/110lbs

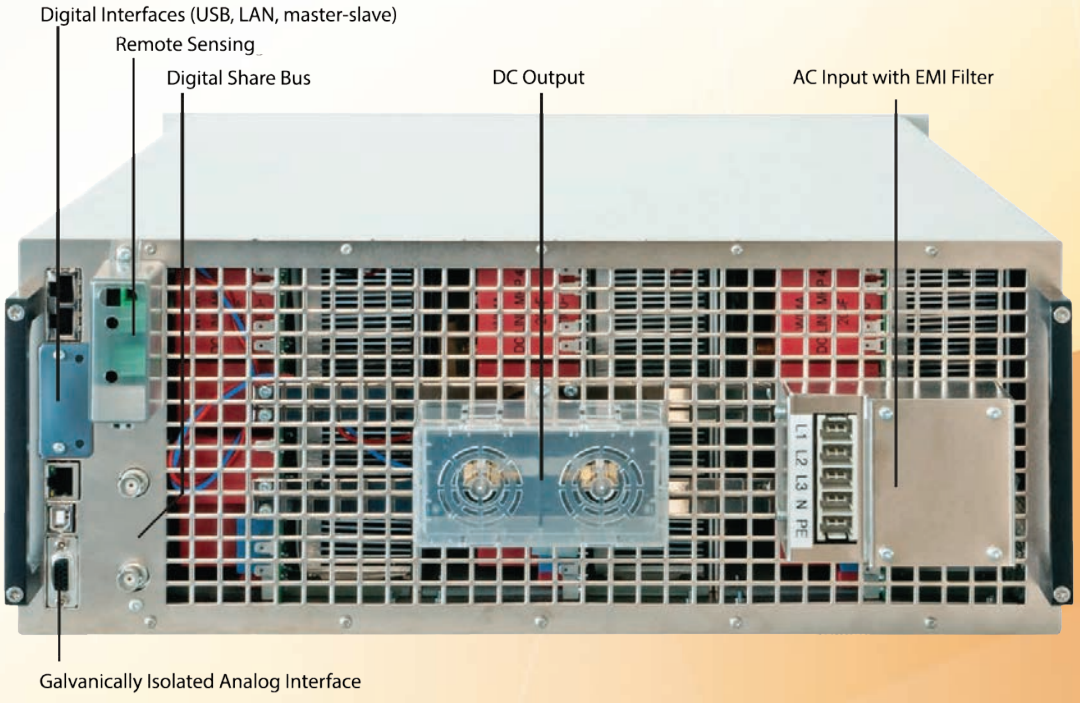
TECHNICAL SPECIFICATIONS 30kW continued

MODEL	DCS750-120[3]	DCS1000-80	DCS1500-60	DCS2000-40
Voltage Range	0~750 V	0~1000 V	0~1500 V	0~2000 V
Current Range	0~120 A	0~80 A	0~60 A	0~40 A
CP V-I Range	250V@120A ~ 750V@40A	375V@80A ~ 1000V@30A	500V@60A ~ 1500V@20A	750V@40A ~ 2000V@15A
Voltage Ripple[1]	<1200mVpp <300mVrms	<2400mVpp <450mVrms	<3600mVpp <600mVrms	<3600mVpp <600mVrms
Insulation -DC to PE	±1500 Vdc	±1500 Vdc	±1500 Vdc	±1500 Vdc
Insulation +DC to PE	+2000 Vdc	+2000 Vdc	+2000 Vdc	+2000 Vdc
Power Range	0~30000 W (-4) 0~15000 W (-2)	0~30000 W (-4) 0~15000 W (-2)	0~30000 W (-4) 0~15000 W (-2)	0~30000 W (-4) 0~15000 W (-2)
Efficiency	95.5%	94.6%	95.3%	95.5%
Weight[2]	50kg/110lbs	50kg/110lbs	50kg/110lbs	50kg/110lbs

Note 1: Ripple RMS value is measured at LF with BWL 300 kHz, Ripple PP value is measured at HF with BWL 20MHz
Note 2: Weight of the base version, models with option(s) may vary
Note 3: A 60V model DCS60-360 is available as well with same max current of 360A. All other specs same as DCS80-1000 80V model

REAR PANEL CONNECTIONS 4U MODELS

All power input and output connectors as well as interfaces are located on the rear panel of the power supply. This supports rack mounting of the power supplies in ATE systems as all internal cabinet wiring routes to the back of the unit and leaves the front panel display and controls accessible from the front. The illustration below shows the various connector locations on the rear panel.



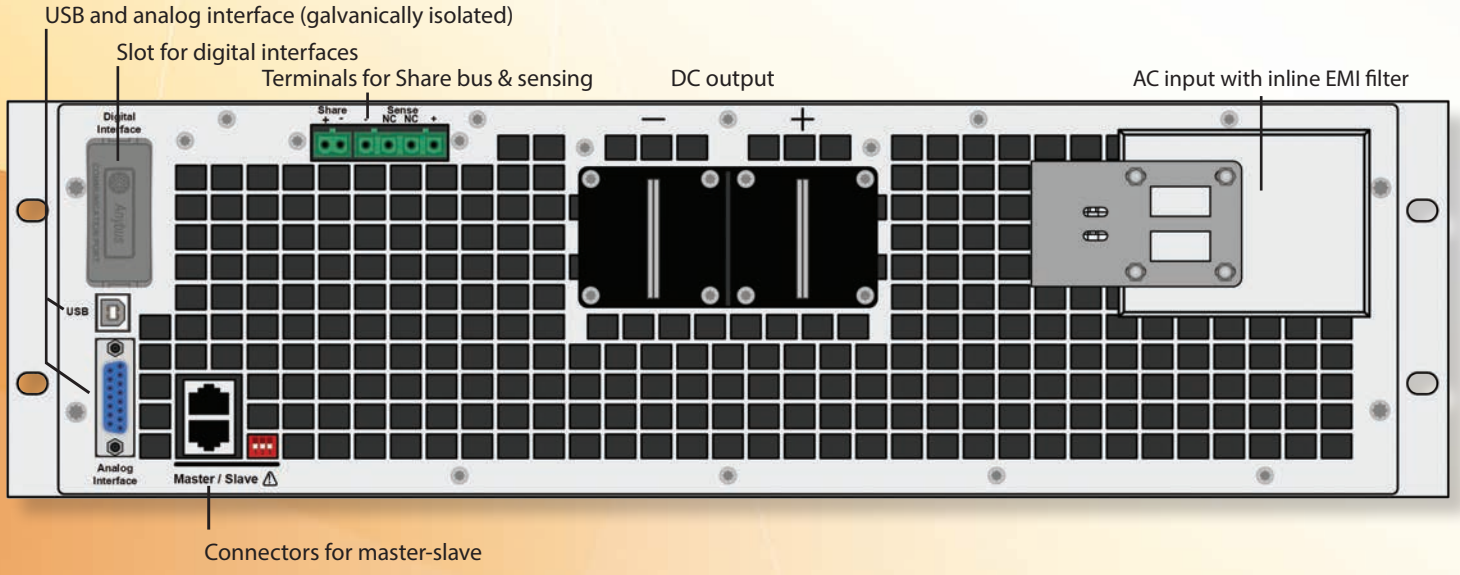
TECHNICAL SPECIFICATIONS

MODEL	All Models
AC Input	
Input Voltage	US 208 V models: 208V_{LL} ±10% 2ph/3ph
	US 480V models: 380V_{LL}~ 480V_{LL} 3ph
Frequency	45~66 Hz
Power Factor	> 0.99
DC Output - Voltage	
Accuracy	3U Models: < 0.1% of F.S. 4U Models: < 0.05% of F.S.
Load regulation 0-100%	< 0.05% of F.S.
Line regulation ±10% ΔVac	< 0.02% of F.S.
Response Time 10-100% load	< 2 msec
Slew rate 10-90%	< 30 msec
Overvoltage protection	Adjustable, 0~110% Vnom
Remote Sense Compensation	Max. 5% of Voltage Range
No load discharge time on DC off	100% V to < 60 V, less than 10 sec
DC Current	
Accuracy	3U Models: < 0.2% of F.S. 4U Models: < 0.1% of F.S.
Load regulation 0-100% ΔVdc	< 0.15% of F.S.
Line regulation ±10% ΔVac	< 0.05% of F.S.
DC Power	
Accuracy	3U Models: < 1.0% of F.S. 4U Models: < 0.3% of F.S.
Overvoltage category	2
Protection	OT, OVP, OCP, OPP, PF
Insulation	
AC input to enclosure	2500 Vdc
AC input to DC output	2500 Vdc
DC output to enclosure (PE)	Model specific. See model tables
Parallel Operation	Master-slave, up to 32 units
Regulatory Standards 3U Models	EN 61010, EN 61000-6-2:2016-05 and IEC 61000-6-3:2011-09 Class B
Regulatory Standards 4U Models	EN 61010-2:2010, EN 61000-6-2:2016-05, IEC 61000-6-3:2011-09 Class B

MODEL	All Models	
Environmental		
Pollution Degree	2	
Protection Class	1	
Cooling	Forced air, temperature controlled fans	
Temperature Operating	0~50 °C / 32~122 °F	
Storage	-20~70 °C / -4~158 °F	
Relative humidity	< 80%, non-condensing	
Altitude Operating	< 2000 m (1.242 mi)	
Front Panel		
Display	Color Touch Screen Graphics LCD	
Controls	Dual Rotary Digital Encoders	
Output on/off	Push Button	
Digital Interfaces		
Internal	1x USB type B for communication, 1x GPIB option (on 3U models only)	
Interface Slot	1x for retrofittable plug-in modules	
Analog Interfaces		
Internal	Built-in, 15 pole D-Sub (female), galvanically isolated	
Signal range	0~5 V or 0~10 V (selectable)	
Inputs	V, I, P, R, remote control on-off, DC output on-off, resistance mode on-off	
Outputs	V, I, alarms, reference voltage, status	
Accuracy V / I / P / R	0~10 V: < 0.2%	0~5 V: < 0.4%
Dimensions (W x H x D)		
208Vac Input Models	19" x 5.25" x 26.9" 483 x 133 x 683 mm	
480Vac Input Models	19" x 5.25" x 26.4" 483 x 133 x 670 mm	

REAR PANEL CONNECTIONS - 3U MODELS

All power input and output connectors as well as interfaces are located on the rear panel of the power supply. This supports rack mounting of the power supplies in ATE systems as all internal cabinet wiring routes to the back of the unit and leaves the front panel display and controls accessible from the front. The illustration below shows the various connector locations on the rear panel.



ORDERING INFORMATION

5KW MODELS	DESCRIPTION	208V AC 3ø INPUT	380~480V AC 3ø INPUT	RACK HEIGHT
DCS80-170	DC Power Supply, 5000W, 0-80V, 0-170A	-2	-4	3U
DCS200-70	DC Power Supply, 5000W, 0-200V, 0-70A	-2	-4	
DCS360-40	DC Power Supply, 5000W, 0-360V, 0-40A	-2	-4	
DCS500-30	DC Power Supply, 5000W, 0-500V, 0-30A	-2	-4	
DCS750-20	DC Power Supply, 5000W, 0-750V, 0-20A	-2	-4	
10KW MODELS	**DESCRIPTION**	**208V AC 3ø INPUT**	**380~480V AC 3ø INPUT**	**RACK HEIGHT**
DCS80-340	DC Power Supply, 10,000W, 0-80V, 0-340A	-2	-4	3U
DCS200-140	DC Power Supply, 10,000W, 0-200V, 0-140A	-2	-4	
DCS360-80	DC Power Supply, 10,000W, 0-360V, 0-80A	-2	-4	
DCS500-60	DC Power Supply, 10,000W, 0-500V, 0-60A	-2	-4	
DCS750-40	DC Power Supply, 10,000W, 0-750V, 0-40A	-2	-4	
DCS1000-30	DC Power Supply, 10,000W, 0-1000V, 0-30A	-2	-4	
15KW MODELS	**DESCRIPTION**	**208V AC 3ø INPUT**	**380~480V AC 3ø INPUT**	**RACK HEIGHT**
DCS80-510	DC Power Supply, 15,000W, 0-80V, 0-510A	-2	-4	3U
DCS200-210	DC Power Supply, 15,000W, 0-200V, 0-210A	-2	-4	
DCS360-120	DC Power Supply, 15,000W, 0-360V, 0-120A	N/A	-4	
DCS500-90	DC Power Supply, 15,000W, 0-500V, 0-90A	-2	-4	
DCS750-60	DC Power Supply, 15,000W, 0-750V, 0-60A	-2	-4	
DCS1000-40	DC Power Supply, 15,000W, 0-1000V, 0-40A	-2	-4	
DCS1500-30	DC Power Supply, 15,000W, 0-1500V, 0-30A	-2	-4	
30KW MODELS	**DESCRIPTION**	**208V AC 3ø INPUT**	**380~480V AC 3ø INPUT**	**RACK HEIGHT**
DCS80-1000	DC Power Supply, See AC input, 0-80V, 0-1000A	-2 / 15,000W	-4 / 30,000W	4U
DCS200-420	DC Power Supply, See AC input, 0-200V, 0-420A	-2 / 15,000W	-4 / 30,000W	
DCS360-240	DC Power Supply, See AC input, 0-360V, 0-240A	-2 / 15,000W	-4 / 30,000W	
DCS500-180	DC Power Supply, See AC input, 0-500V, 0-180A	-2 / 15,000W	-4 / 30,000W	
DCS750-120	DC Power Supply, See AC input, 0-750V, 0-120A	-2 / 15,000W	-4 / 30,000W	
DCS1000-80	DC Power Supply, See AC input, 0-750V, 0-80A	-2 / 15,000W	-4 / 30,000W	
DCS1500-60	DC Power Supply, See AC input, 0-1500V, 0-60A	-2 / 15,000W	-4 / 30,000W	
DCS2000-40	DC Power Supply, See AC input, 0-2000V, 0-40A	-2 / 15,000W	-4 / 30,000W	

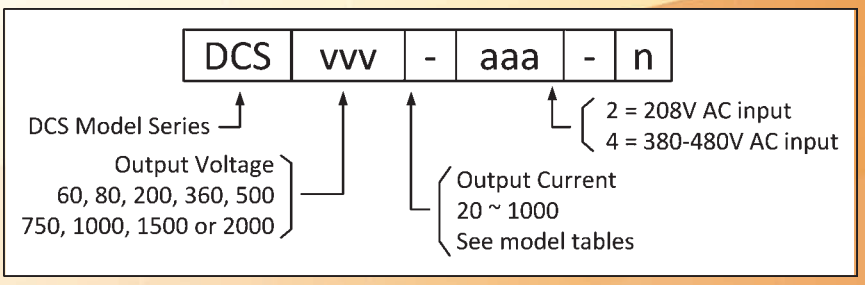
OPTIONS

OPTIONS	DESCRIPTION	OPTIONS	DESCRIPTION
OPT-232	RS232 Serial Interface	OPT-ETH2P	Ethernet/IP 2 Port Interface
OPT-PBUS	Profibus DPV1- Interface	OPT-PNET1P	Profinet-IO 1 Port Interface
OPT-CANO	CANopen Interface	OPT-PNET2P	Profinet-IO 2 Port Interface
OPT-DNET	DeviceNet Interface	OPT-CAN	CAN Interface
OPT-MBUS1P	Modbus-TCP 1 Port Interface	OPT-ECT	EhterCAT Interface
OPT-MBUS2P	Modbus-TCP 2 Port Interface	OPT-3IF	3 Way Interface Analog/USB/GPIB (3U models only)
OPT-ETH1P	Ethernet/IP 1 Port Interface	Opt-RCT	Redundant Contactors

Interchangeable Digital interface modules are available as options for RS232, CAN, CANopen, ModBus TCP, Profibus, Profinet/IO, EtherCAT or Ethernet. One slot is available for any module.

Model Number Encoder

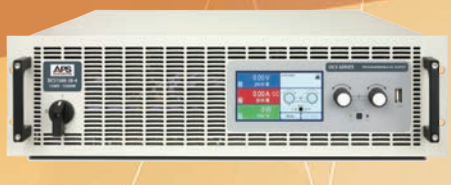
Use the encoder shown on the right to configure the model number with the required AC input voltage suffix.



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: Two (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).



5000 Watt Models 750V Max.

10000 Watt Models 1000V Max.

15000 Watt Models 1500V Max.

30000 Watt Model 80V

30000 Watt Models 500V

30000 Watt Model 2000V

NORTH & SOUTH AMERICA
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