

## 5VP Series DC LOADS

Key features:

- Models from 5kW to 60kW
- Master/Slave Parallel Operation of up to Eight 5VP Loads for Higher Power Needs up to 480kW
- Voltage Ranges, 60V, 150V, 600V, 1000Vdc, 1200Vdc or 1250Vdc
- Current Ranges up to 2000 Adc
- High-Speed 5 Digit Precision Metering Capability
- Parallel Operation for High Power Applications
- Operating Modes: CC, CP, CR, CV, CC+CV & CP+CV
- Static and Dynamic CC Modes
- Fast Current Slew Rates
- Built-in Short Circuit Test
- Built-in Power Supply Over Current Protection Test Mode
- Built-in Power Supply Over Power Protection Test Mode
- Built-in EV Battery Discharge Protocols
- MPPT Mode for PV Panel Testing
- Go/NoGo Test Support
- Auto-Sequencing
- Movable Cabinets
- Available Interface Options are USB, RS232, GPIB and LAN



### OVERVIEW

The ADAPTIVE POWER 5VP Series Programmable DC Electronic Loads are ideally suited for testing high current power supplies and batteries. With their ability to draw full current starting as low as 3.0 Vdc and as high as 1250Vdc, the 5VP Series loads can provide a wide dynamic range of load conditions.

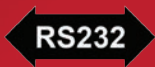
Target applications for these loads are product design & development, production test, incoming inspection, quality control and service.

The compact design and efficient air cooling of the 5VP Series cabinets represents industry-leading power density. The 5VP Series consists of a total of thirty four different model configurations, providing a wide variation of possible current and power ranges. Starting at 5 kW and ranging to 60 kW per cabinet, all models offer dual voltage and current range capability for optimal accuracy and resolution. For applications requiring more than 60kW, up to eight 5VP loads can be operated in a MASTER/SLAVE parallel configuration with all control and measurements performed by the MASTER unit.

### CABINET SYSTEMS

The 5VP Series cabinets are fully integrated programmable DC load systems with easy mobility using ball-bearing locking casters. All user controls are along the top edge of the front panel for convenient access and viewing. Lower power level models will fit under work benches. Rear panel mounted DC bus bars handle DC current up to 2000 Adc depending on model.

The 5VP Series offers high power load performance and durability at an affordable price point.



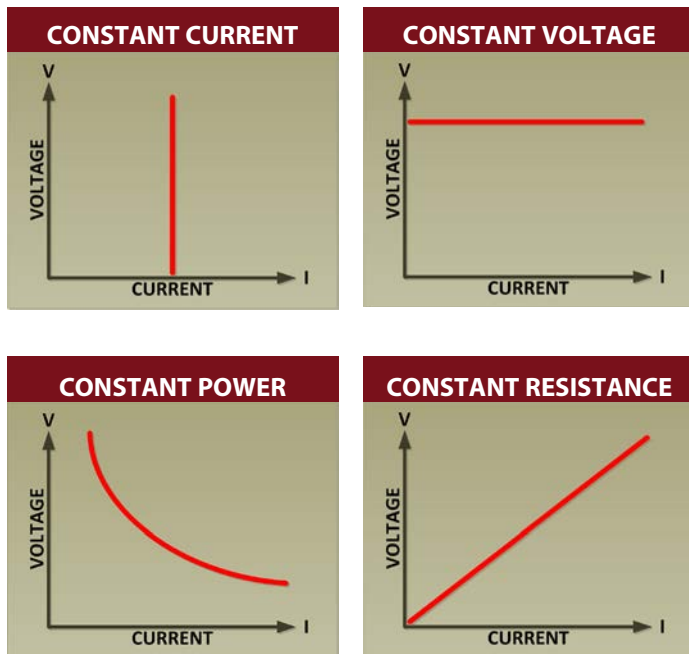
# 5VP SERIES HIGH POWER DC LOADS

## OPERATING MODES

All 5VP Series loads support several modes of operation to accommodate a wide range of test requirements. Voltage sources like AC/DC power supplies are best tested using Constant Current (CC) mode. Battery chargers on the other hand can be tested using an E-load in Constant Voltage (CV) mode. **CC+CV** mode and **CP+CV** mode are also supported.

The 5VP Series also supports a maximum power point tracking mode (MPPT Mode) for solar panel development and test applications.

The available operating modes are Constant Current, Constant Voltage, Constant Power and Constant Resistance. A graphical representation of these modes of operation is shown below.



## FLEXIBLE INPUT CAPABILITIES

5VP Series loads are designed to accommodate a wide range of current input values within their maximum voltage and power capability. This allows the same loads to be used for higher voltage and low current requirements as well as low voltage higher current applications. A typical V-I operating curve is shown on the right for load model 5VP60-24. Bounded by the maximum voltage of 600Vdc and maximum current of 240A, the input range follows a 60kW power curve as shown.

Each load continuously tracks its input voltage current and power and safeguards against any operation outside of its operating limits.

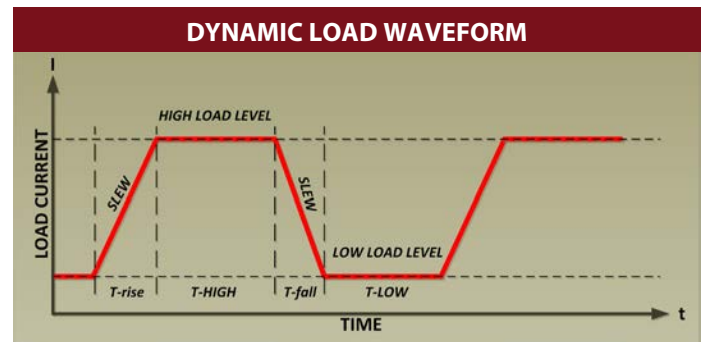
This flexible operating range allows the same load to be used for a wide range of EUTs and provides great flexibility.

*For V-I Curves by specific 5VP Series model, see pages 10 & 11.*

## STATIC & DYNAMIC MODES

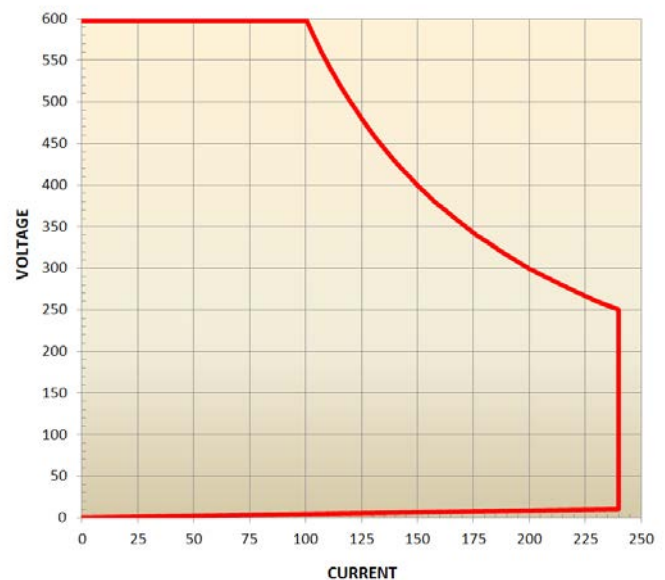
The demands put on power supplies to support increasingly complex electronics systems continue to escalate. It is no longer sufficient to test power supplies for static load conditions. Instead, dynamic load conditions requiring rapid changes in current demanded from the power supply need to be evaluated and tested. The 5VP Series Loads serve this purpose by offering high speed programmable dynamic load control.

The diagram below illustrates the variable load current slew rates and dwell times that can be programmed on the 5VP Series loads.



Sequences of variable slew rates and test levels can be stored in non-volatile memory for recall during dynamic transient load test execution. This makes it possible to simulate real-world demanding load conditions on power supplies driving modern electronics. With current slew rates ranging up to several Amps per microsecond and dwell times down to 50 microseconds, thorough transient stability testing of power supply designs is possible. Advanced remote sense and control feedback loops ensure stable and repeatable testing with little or no distortion during load transitions.

5VP60-24



# 5VP SERIES HIGH POWER DC LOADS

## BATTERY TEST MODES

For discharge testing of large electric vehicle (EV) battery packs, the 5VP Series offers built in Battery discharge profiles (BATT modes). This eliminates the need to develop special software for battery test applications. The five available battery test modes are shown in the table to the right.



BATT#	Test Type	Description
1	Discharge to state of charge and stop	Discharges battery in CC mode using set current level till preset battery end voltage is reached and then load is turned off.
2	Discharge to state of charge and hold	Discharges battery in CC mode using set current level till preset battery end voltage is reached and then switches to CV mode at set voltage.
3	Timed discharge test	Discharges battery in CC mode using set current level for the period of time specified. At end of test time, the load turns off and displays battery voltage.
4	Cycle Life test	Battery is discharged using current pulse mode using programmed sequence.
5	Ramp Discharge test	Expansion of Life Cycle test using programmed current slew rates between current discharge levels.

## BUILT-IN MPPT TRACKING MODE

To support testing of solar panel output under various light intensities and temperatures, the 5VP Series includes a standard Maximum Power Point Tracking (MPPT) mode. This mode uses a variation of the Perturbation and Observation (P&O) algorithm to establish the maximum operating point of the panel or panel string being tested.



## MASTER / SLAVE PARALLEL MODE

All 5VP DC Loads can be configured as either MASTER or SLAVE unit. In this mode, up to eight DC loads can be paralleled for higher power load applications. For all 60V 5VP models and models 5VP50-50 and 5VP60-60, all parallel units must be the same model. For all other 5VP DC load models, units of different power ratings can be mixed in parallel systems. Note that some features like BATT, MPPT, CC+CV and CP+CV modes are not available in this mode.

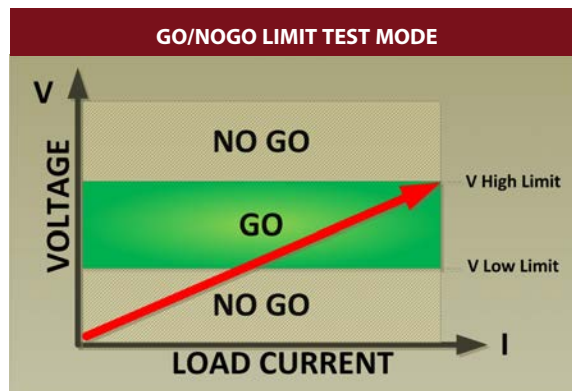
Configuring a parallel load system is easy by assigning one unit as the MASTER and up to seven additional units as SLAVES. This is accomplished from the front panel and parallel settings are retained at power off. A system cable connects between MASTER and SLAVES and routes all control and measurement signals. The MASTER unit will display total measurements. All load control is accomplished through the MASTER unit as well.



480kW MASTER / SLAVE Parallel System DC Load

## GO/NOGO LIMIT TESTING

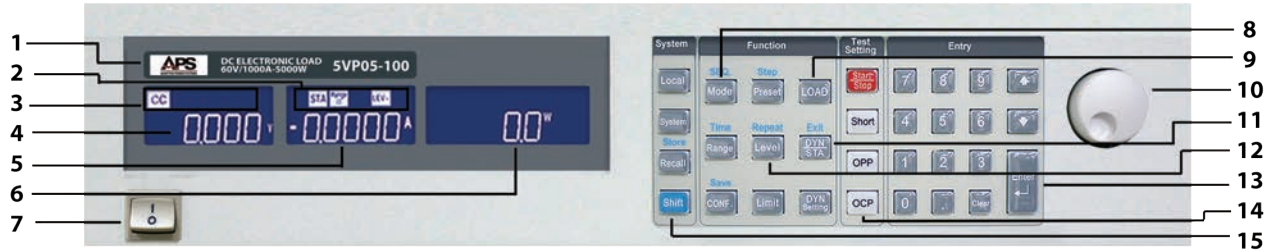
The GO/NG mode of operation is a convenient way to automatically check any measured parameter like voltage, current or power against predefined upper and lower limits. Once set, the load continuously compares readings against these limits and issues a GO or NoGo error output.



# 5VP SERIES HIGH POWER DC LOADS

## FRONT PANEL OPERATION

The 5VP Series Load has an easy to use front panel layout consisting of large white LED back-lit LCD readouts and a keypad, shuttle combination for settings and parameter entry. Status indicator LED's accompany the various function and mode setting keys so the operational state of the DC load is easily observed by the operator. The digital rotary encoder makes slewing of parameters very intuitive.



- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Model Number and ranges</li> <li>2. Go/NoGo indicator and REMOTE state indicator.</li> <li>3. Operating Mode Indicators</li> <li>4. Multi-purpose 5 digit display - Voltage</li> <li>5. Multi-purpose 5 digit display - Current</li> <li>6. Multi-purpose 5 digit display - Power</li> <li>7. Power On/Off Switch</li> </ol> | <ol style="list-style-type: none"> <li>8. MODE selection key</li> <li>9. LOAD ON/OFF button and indicator</li> <li>10. Shuttle Knob, parameter selection and slewing</li> <li>11. DYNAMIC mode button and indicator</li> <li>12. High or Low Range Selection and indicator</li> <li>13. Numeric keypad and cursor keys</li> <li>14. Start/Stop, SHORT, OCP and OPP Test keys and indicators</li> <li>15. System Key Area</li> </ol> |
|--|---|

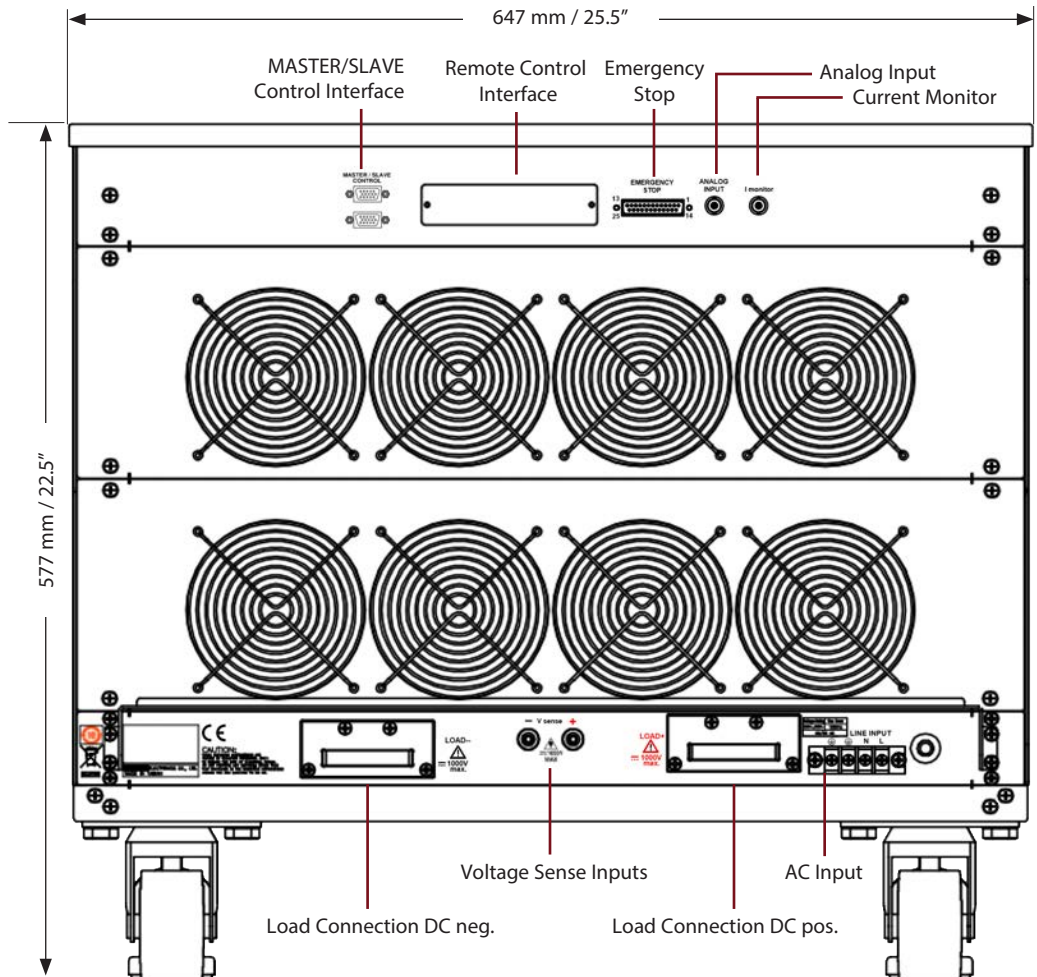
## REAR PANEL

All AC input and DC Load connections are made at the rear panel of the 5VP Series chassis. This leaves the front panel clear from any cable clutter and potential trip hazards.

Air intake is from the front and exhaust is at the rear. Some clearance behind the 5VP chassis rear panel is recommended to ensure adequate air circulation through the load.

The rear panel dimensions shown to the right are for a 5VP 10kW Chassis. Refer to specification tables on next pages for dimensions of other models.

**Note:** The Emergency Stop is an option. See Ordering Information on back page of datasheet for details.



# 5VP SERIES HIGH POWER DC LOADS

## SPECIFICATIONS - 5VP Series DC LOADS - 60V Range

MODEL	5VP05-100A	5VP10-100A	5VP15-100A	5VP20-100A	5VP25-100A	5VP30-100A	5VP35-100A	5VP40-100A
<b>OPERATING RANGES</b>								
Power Ranges	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW
Current Ranges	0-100A / 0-1000A	0-100A / 0-1000A	0-100A / 0-1000A	0-100A / 0-1000A	0-100A / 0-1000A	0-100A / 0-1000A	0-100A / 0-1000A	0-100A / 0-1000A
Voltage Range	0-60.0 V							
Minimum Voltage	0.1V @ 100A / 0.7V <sup>1</sup> @ 1000A							
<b>OPERATING MODES</b>								
CC Mode Range	0-100A / 0-1000A							
Resolution	1.6mA / 16.0mA							
Accuracy	± (0.1% OF SETTING + 0.2% RANGE)							
CR Mode Range	3600Ω - 0.06Ω / 0.06Ω - 0.001Ω							
Resolution	277 μS / 0.001 mΩ							
Accuracy	± 0.2% OF (SETTING + RANGE)							
CV Mode Range	0-60.0 V							
Resolution	1.0 mV							
Accuracy	± 0.05% OF (SETTING + RANGE)							
CP Mode Range	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW
Resolution	8mW / 80mW	16mW / 160mW	24mW / 240mW	32mW / 320mW	40mW / 400mW	48mW / 480mW	56mW / 560mW	64mW / 640mW
Accuracy	± 0.5% OF (SETTING + RANGE)							
CC+CV / CP+CV Modes	Accuracy: ± 1.0% OF (SETTING + RANGE). <b>Note:</b> Not available in MASTER/SLAVE mode.							
MPPT Mode	P&O + Scanning, sampling & P&O interval:10ms to 2000ms							
<b>PROTECTION</b>								
Over Power (OP)	5250 W	10500 W	15750 W	21000 W	26250 W	31500 W	36750 W	42000 W
Over Current (OC)	1040 A	1040 A	1040 A	1040 A	1040 A	1040 A	1040 A	1040 A
Over Voltage (OV)	63.0V							
Over Temperature (OT)	+85° C / +185° F							
<b>DYNAMIC OPERATION</b>								
T high & T low	0.150-9.999 / 99.99 / 999.9 / 9999ms							
Resolution, Accuracy	0.001 / 0.01 / 0.1 / 1ms, 1μs / 10μs / 100μs / 1ms + 50ppm							
Slew Rate, Resolution	24mA-1.5A/μs / 240mA-15A/μs, 6mA/μs / 60mA/μs							
Min. Rise Time	66.7μs Typical							
<b>METERING</b>								
Voltage Rng, Resol, Accuracy	0 - 60.0V / 0 - 60.0V, 0.1 mV / 1.0 mV, ± 0.025% OF (READING + RANGE)							
Current Rng, Resol, Accuracy	0-100A / 0-1000 A, 1.6mA / 16mA, ± 0.1% OF (READING + RANGE)							
Power Range	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW
Resolution, Accuracy	0.01 W / 0.1 W	0.1 W / 1.0 W, ± 0.125% OF (READING + RANGE)						
<b>SHORT CIRCUIT</b>								
Max. Short Current	1000 A							
<b>MASTER / SLAVE PARALLEL OPERATION</b>								
No of Units	MASTER + 7 SLAVES / All loads must be same model / Modes available: CC,CR, CV, CP							
<b>ANALOG I/O</b>								
Analog Monitor Out / Input	0 - 10V out F.S. / 1KΩ Zout, Non-isolated / 0 - 10V in for F.S. current @ 10V (CC Mode only)							
<b>AC INPUT AND PHYSICAL SPECIFICATIONS</b>								
AC Input	100-240Vac ± 10%, 50/60 Hz					208-240Vac ± 10%		
Power Consumption (max.)	600 W	1000 W	1450 W	1900 W	2350 W	2800 W	3250 W	3700 W
Dimensions (H x W x D)	577x647x766mm 22.7"x25.5"x30.2"		736x 647x766mm 29"x25.5"x30.2"	889x 647x 766mm 35"x25.5"x30.2"	1048x647x766mm 41.3"x25.5"x30.2"	1201x647x766mm 47.3"x25.5"x30.2"	1353x647x766mm 53.3"x25.5"x30.2"	1509x647x766mm 59.4"x25.5"x30.2"
Weight (Net)	100 kg / 220.5 lbs	130 kg / 286.6 lbs	170 kg / 374.8 lbs	220 kg / 485.0 lbs	280 kg / 617.3 lbs	340 kg / 749.6 lbs	390 kg / 860 lbs	430 kg / 948 lbs
Operating Range	0 - 40° C / 32 - 104° F							
EMC & Safety	CE Mark							

Note 1: 0.7Vdc @ 1000A applies to static load conditions. Starting voltage must be > 5Vdc. For dynamic operation, min. voltage is 5Vdc @ 1000A

# 5VP SERIES HIGH POWER DC LOADS

## SPECIFICATIONS - 5VP Series DC LOADS - 150V Range

MODEL	5VP06-60C	5VP08-80C	5VP10-100C	5VP12-120C	5VP15-150C	5VP18-180C	5VP20-200C	5VP24-200C
<b>OPERATING RANGES</b>								
Power Ranges	0-6kW	0-8kW	0-10kW	0-12kW	0-15kW	0-18kW	0-20kW	0-24kW
Current Ranges	0-60A/0-600A	0-80A/0-800A	0-100A/0-1000A	0-120A/0-1200A	0-150A/0-1500A	0-180A/0-1800A	0-200A/0-2000A	0-200A/0-2000A
Voltage Range	0-150.0 V							
Minimum Voltage	0.7V @ Max. Current							
<b>OPERATING MODES</b>								
CC Mode Range	0-60A/0-600A	0-80A/0-800A	0-100A/0-1000A	0-120A/0-1200A	0-150A/0-1500A	0-180A/0-1800A	0-200A/0-2000A	0-200A/0-2000A
Resolution	0.96 mA / 9.6 mA	1.28 mA / 12.8 mA	1.6 mA / 16 mA	1.92 mA / 19.2 mA	2.4 mA / 24 mA	2.88 mA / 28.8 mA	3.2 mA / 32 mA	3.2 mA / 32 mA
Accuracy	± 0.05% OF (SETTING + RANGE)							
CR Mode Range	15kΩ - 0.25Ω - 12mΩ	11.25kΩ - 0.1875Ω - 0.9mΩ	9kΩ - 0.15Ω - 0.7mΩ	7.5kΩ - 0.125Ω - 0.6mΩ	6kΩ - 0.1Ω - 0.5mΩ	5kΩ - 0.0833Ω - 0.4mΩ	4.5kΩ - 0.075Ω - 0.4mΩ	4.5kΩ - 0.075Ω - 0.4mΩ
Resolution	66.666μS/4.167μΩ	88.888μS/3.125μΩ	111.111μS/2.5μΩ	133.33μS/2.084μΩ	166.66μS/1.667μΩ	200μS/1.389μΩ	222.22μS/1.25μΩ	222.22μS/1.25μΩ
Accuracy	± 0.2% OF (SETTING + RANGE)							
CV Mode Range	0-150.0 V							
Resolution	2.5 mV							
Accuracy	± 0.025% OF (SETTING + RANGE)							
CP Mode Range	600W/6kW	800W/8kW	1000W/10kW	1200W/12kW	1500W/15kW	1800W/18kW	2000W/20kW	2400W/24kW
Resolution	9.6 / 96 mW	12.8 / 128 mW	16 / 160 mW	19.2 / 192 mW	24 / 240 mW	28.8 / 288 mW	32 / 320 mW	38.4 / 384 mW
Accuracy	Low Range: ± 0.2% OF (SETTING + RANGE) / High Range: ± 0.1% OF (SETTING + RANGE)							
CC+CV / CP+CV Modes	Accuracy: ± 1.0% OF (SETTING + RANGE). <b>Note:</b> Not available in MASTER/SLAVE mode.							
MPPT Mode	P&O + Scanning, sampling & P&O interval:1000ms to 60000ms, resolution 1000ms							
<b>PROTECTION</b>								
Over Power (OP)	6300 W	8400 W	10500 W	12600 W	15750 W	18900 W	21000 W	21000 W
Over Current (OC)	624 A	832 A	1040 A	1248 A	1560 A	1872 A	2080 A	2080 A
Over Voltage (OV)	157.5 V							
Over Temperature (OT)	+90° C / 194° F							
<b>DYNAMIC OPERATION</b>								
T high & T low	0.010-9.999 / 99.99 / 999.9 / 9999ms							
Resolution, Accuracy	0.001 / 0.01 / 0.1 / 1ms, 1μs / 10μs / 100μs / 1ms + 50ppm							
Slew Rate   Resolution	0.00144 -9A/ uS   0.036A/uS	0.00192 -12A/ uS   0.048A/uS	0.0024 -15A/ uS   0.06A/uS	0.00288 -18A/ uS   0.072A/uS	0.0036 -22.5A/ uS   0.009A/uS	0.00432 -27A/ uS   0.108A/uS	0.0048 -30A/ uS   0.12A/uS	0.0048 -30A/ uS   0.12A/uS
Min. Rise Time	66.7μs Typical							
<b>METERING</b>								
Voltage Rng, Resol, Accuracy	0 - 15.0 V / 0 - 150.0 V, 0.25 mV / 2.5 mV, ± 0.025% OF (READING + RANGE)							
Current Range	0-60A/0-600A	0-80A/0-800A	0-100A/0-1000A	0-120A/0-1200A	0-150A/0-1500A	0-180A/0-1800A	0-200A/0-2000A	0-200A/0-2000A
Resolution	0.96 / 9.6 mA	1.28 / 12.8 mA	1.6 / 16 mA	1.92 / 19.2 mA	2.4 / 24 mA	2.88 / 28.8 mA	3.2 / 32 mA	3.2 / 32 m
Accuracy	± 0.05% OF (READING + RANGE)							
Power Range	600W/6kW	800W/8kW	1000W/10kW	1200W/12kW	1500W/15kW	1800W/18kW	2000W/20kW	2400W/24kW
Resolution, Accuracy	0.1W / 1W, ± 0.075% OF (READING + RANGE)							
<b>SHORT CIRCUIT</b>								
Max. Short Current / Res.	600A/1.2mΩ	800A/0.9mΩ	1000A/7mΩ	1200A/6mΩ	1500A/5mΩ	1800A/4mΩ	2000A/4mΩ	2000A/4mΩ
<b>MASTER / SLAVE PARALLEL OPERATION</b>								
No of Units	MASTER + 7 SLAVES / All loads must be same model / Modes available: CC,CR, CV, CP							
<b>ANALOG I/O</b>								
Analog Monitor Out / Input	0 - 10V out F.S. / 1KΩ Zout, Non-isolated / 0 - 10V in for F.S. current @ 10V (CC Mode only)							
<b>AC INPUT AND PHYSICAL SPECIFICATIONS</b>								
AC Input	100-240Vac ± 10%, 50/60 Hz							
Power Consumption (max.)	400 VA	750 VA	750 VA	750 VA	1100 VA	1100 VA	1450 VA	1450 VA
Dimensions (H x W x D)	446x444x763mm 17.6" x 17.5" x 30"	572x444x763mm 22.5" x 17.5" x 30"	572x444x763mm 22.5" x 17.5" x 30"	572x444x763mm 22.5" x 17.5" x 30"	761x 444x763mm 30" x 17.5" x 30"	761x 444x763mm 30" x 17.5" x 30"	884x 444x763mm 34.8" x 17.5" x 30"	884x 444x763mm 34.8" x 17.5" x 30"
Weight (Net)	62 kg / 136.7 lbs	77.5 kg / 170.8 lbs	84.4 kg / 186.1 lbs	92 kg / 202.8 lbs	116.5 kg / 256.9 lbs	124 kg / 273.4 lbs	140.5 kg / 309.8 lbs	155 kg / 341.7 lbs
Operating Range	0 - 40° C / 32 - 104° F							
EMC & Safety	CE Mark							

# 5VP SERIES HIGH POWER DC LOADS

## SPECIFICATIONS - 5VP Series DC LOADS - 600V Range

MODEL	5VP06-42C	5VP08-56C	5VP10-70C	5VP12-84C	5VP15-105C	5VP18-126C	5VP20-140C	5VP24-168C
<b>OPERATING RANGES</b>								
Power Ranges	0-6kW	0-8kW	0-10kW	0-12kW	0-15kW	0-18kW	0-20kW	0-24kW
Current Ranges	0-42A/0-420A	0-56A/0-560A	0-70A/0-700A	0-84A/0-840A	0-105/0-1050A	0-126A/0-1260A	0-140A/0-1400A	0-168A/0-1680A
Voltage Range	0-600.0 V							
Minimum Voltage	10V @ Max. Current							
<b>OPERATING MODES</b>								
CC Mode Range	0-42A/0-420A	0-56A/0-560A	0-70A/0-700A	0-84A/0-840A	0-105/0-1050A	0-126A/0-1260A	0-140A/0-1400A	0-168A/0-1680A
Resolution	0.672 mA / 6.72 mA	0.896 mA / 8.96 mA	1.12 mA / 11.2 mA	1.344 mA / 13.44 mA	1.68 mA / 16.8 mA	2.016 mA / 20.16 mA	2.24 mA / 22.4 mA	2.688 mA / 26.88 mA
Accuracy	± 0.05% OF (SETTING + RANGE)							
CR Mode Range	85712Ω - 1.4285Ω - 11.66mS	64284Ω - 1.0714Ω - 0.01788Ω	51427Ω - 0.0143Ω - 0.0143Ω	42856Ω - 0.7142Ω - 0.01192Ω	34284Ω - 0.5714Ω - 0.009536Ω	28570Ω - 0.4161Ω - 0.007947Ω	25713Ω - 0.4285Ω - 0.007152Ω	21428Ω - 0.3571Ω - 0.00596Ω
Resolution	11.66μS/23.84μΩ	88.888μS/3.125μΩ	19.44μS/114.30μΩ	23.33μS/11.92μΩ	29.16μS/9.536μΩ	35μS/7.947μΩ	38.89μS/7.152μΩ	46.668μS/5.96μΩ
Accuracy	± 0.2% OF (SETTING + RANGE)							
CV Mode Range	0-600.0 V							
Resolution	10 mV							
Accuracy	± 0.025% OF (SETTING + RANGE)							
CP Mode Range	600W/6kW	800W/8kW	1000W/10kW	1200W/12kW	1500W/15kW	1800W/18kW	2000W/20kW	2400W/24kW
Resolution	9.6 / 96 mW	12.8 / 128 mW	16 / 160 mW	19.2 / 192 mW	24 / 240 mW	28.8 / 288 mW	32 / 320 mW	38.4 / 384 mW
Accuracy	Low Range: ± 0.2% OF (SETTING + RANGE) / High Range: ± 0.1% OF (SETTING + RANGE)							
CC+CV / CP+CV Modes	Accuracy: ± 1.0% OF (SETTING + RANGE). <b>Note:</b> Not available in MASTER/SLAVE mode.							
MPPT Mode	P&O + Scanning, sampling & P&O interval:1000ms to 60000ms, resolution 1000ms							
<b>PROTECTION</b>								
Over Power (OP)	6300 W	8400 W	10500 W	12600 W	15750 W	18900 W	21000 W	21000 W
Over Current (OC)	436.8 A	582.4 A	728 A	873.6 A	1092 A	1310.4 A	1456 A	1747.2 A
Over Voltage (OV)	630 V							
Over Temperature (OT)	+90° C / 194° F							
<b>DYNAMIC OPERATION</b>								
T high & T low	0.010-9.999 / 99.99 / 999.9 / 9999ms							
Resolution, Accuracy	0.001 / 0.01 / 0.1 / 1ms, 1μs / 10μs / 100μs / 1ms + 50ppm							
Slew Rate   Resolution	0.0336 -21A/ uS   0.084A/uS	0.0448 -28A/ uS   0.112A/uS	0.056 -35A/uS   0.14A/uS	0.0672 -42A/ uS   0.168A/uS	0.084 -52.5A/ uS   0.21A/uS	0.1008 -63A/ uS   0.252A/uS	0.112 -70A/uS   0.28A/uS	0.1334 -84A/ uS   0.336A/uS
Min. Rise Time	20μs Typical							
<b>METERING</b>								
Voltage Rng, Resol, Accuracy	0 - 60.0 V / 0 - 600.0 V, 1 mV / 10 mV, ± 0.025% OF (READING + RANGE)							
Current Range	0-42A/0-420A	0-56A/0-560A	0-70A/0-700A	0-84A/0-840A	0-105/0-1050A	0-126A/0-1260A	0-140A/0-1400A	0-168A/0-1680A
Resolution	0.672/6.72mA	0.896/8.96 mA	1.12/11.2mA	1.344/13.44mA	1.68/16.8mA	2.016A/20.1mA	2.24/22.4mA	2.688/26.88mA
Accuracy	± 0.05% OF (READING + RANGE)							
Power Range	600W/6kW	800W/8kW	1000W/10kW	1200W/12kW	1500W/15kW	1800W/18kW	2000W/20kW	2400W/24kW
Resolution, Accuracy	0.1W / 1W, ± 0.075% OF (READING + RANGE)							
<b>SHORT CIRCUIT</b>								
Max. Short Current / Res.	420A / 23.9mΩ	560A / 17.9mΩ	700A / 14.3mΩ	840A / 12mΩ	1050A / 9.6mΩ	1260A / 8mΩ	1400A / 7.2mΩ	1680A / 6mΩ
<b>MASTER / SLAVE PARALLEL OPERATION</b>								
No of Units	MASTER + 7 SLAVES / All loads must be same model / Modes available: CC,CR, CV, CP							
<b>ANALOG I/O</b>								
Analog Monitor Out / Input	0 - 10V out F.S. / 1KΩ Zout, Non-isolated / 0 - 10V in for F.S. current @ 10V (CC Mode only)							
<b>AC INPUT AND PHYSICAL SPECIFICATIONS</b>								
AC Input	100-240Vac ± 10%, 50/60 Hz							
Power Consumption (max.)	400 VA	750 VA	750 VA	750 VA	1100 VA	1100 VA	1450 VA	1450 VA
Dimensions (H x W x D)	446x444x763mm 17.6" x 17.5" x 30"	572x444x763mm 22.5" x 17.5" x 30"	572x444x763mm 22.5" x 17.5" x 30"	572x444x763mm 22.5" x 17.5" x 30"	761x 444x763mm 30" x 17.5" x 30"	761x 444x763mm 30" x 17.5" x 30"	884x 444x763mm 34.8" x 17.5" x 30"	884x 444x763mm 34.8" x 17.5" x 30"
Weight (Net)	62 kg / 136.7 lbs	77.5 kg / 170.8 lbs	84.4 kg / 186.1 lbs	92 kg / 202.8 lbs	116.5 kg / 256.9 lbs	124 kg / 273.4 lbs	140.5 kg / 309.8 lbs	155 kg / 341.7 lbs
Operating Range	0 - 40° C / 32 - 104° F							
EMC & Safety	CE Mark							

# 5VP SERIES HIGH POWER DC LOADS

## SPECIFICATIONS - 5VP Series DC LOADS - 600V Range

MODEL	5VP05-16A	5VP10-32A	5VP15-48A	5VP20-64A	5VP25-80A	5VP30-96A	5VP35-112A	5VP40-128A
<b>OPERATING RANGES</b>								
Power Ranges	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW
Current Ranges	0-16.0A / 0-160A	0-32.0A / 0-320A	0-48.0A / 0-480A	0-64.0A / 0-640A	0-80.0A / 0-800A	0-96.0A / 0-960A	0-112A / 0-1120A	0-128A / 0-1280A
Voltage Range	0 - 600.0 V							
Minimum Voltage	10V @ 160A	10V @ 320A	10V @ 480A	10V @ 640A	10V @ 800A	10V @ 960A	10V @ 1120A	10V @ 1280A
<b>OPERATING MODES</b>								
CC Mode Range	0-16.0A / 0-160A	0-32.0A / 0-320A	0-48.0A / 0-480A	0-64.0A / 0-640A	0-80.0A / 0-800A	0-96.0A / 0-960A	0-112A / 0-1120A	0-128A / 0-1280A
Resolution	0.256mA / 2.56mA	0.512mA / 5.12mA	0.768mA / 7.68mA	1.024mA / 10.24mA	1.28mA / 12.8mA	1.536mA / 15.36mA	1.792mA / 17.92mA	2.048mA / 20.48mA
Accuracy	± (0.1% OF SETTING + 0.2% RANGE)							
CR Mode Range	15000Ω-3.75Ω 3.75Ω-0.063Ω	12500Ω-1.875Ω 1.875Ω-0.0315Ω	15000Ω-1.25Ω 1.25Ω-0.021Ω	11250Ω-0.9375Ω 0.9375Ω-0.01575Ω	11250Ω-0.75Ω 0.75Ω-0.0126Ω	12500Ω-0.625Ω 0.625Ω-0.0105Ω	6428.4Ω-0.5357Ω 0.5357Ω-0.009Ω	5625Ω-0.46875Ω 0.46875Ω-0.00787Ω
Resolution	4.4μS / 63μS	8.8μS / 0.0315mS	13.3μS / 0.021mS	17.7μS / 0.01575mS	22.2μS / 0.0126mS	26.6μS / 0.0105mS	31.1μS / 0.009mS	35.5μS / 0.0078mS
Accuracy	± 0.2% OF (SETTING + RANGE)							
CV Mode Range	0-600.0 V							
Resolution	10 mV							
Accuracy	± 0.05% OF (SETTING + RANGE)							
CP Mode Range	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW
Resolution	8mW / 80mW	16mW / 160mW	24mW / 240mW	32mW / 320mW	40mW / 400mW	48mW / 480mW	56mW / 560mW	64mW / 640mW
Accuracy	± 0.5% OF (SETTING + RANGE)							
CC+CV / CP+CV Modes	See CC, CV and CP mode specifications. Not available in MASTER/SLAVE mode.							
MPPT Mode	P&O + Scanning, sampling & P&O interval:10ms to 2000ms							
<b>PROTECTION</b>								
Over Power (OP)	5250 W	10500 W	15750 W	21000 W	26250 W	31500 W	36750 W	42000 W
Over Current (OC)	168 A	336 A	504 A	672 A	840 A	1008 A	1164.8 A	1331.2 A
Over Voltage (OV)	630.0 V							
Over Temperature (OT)	+85° C / +185° F							
<b>DYNAMIC OPERATION</b>								
T high & T low	0.050-9.999 / 99.99 / 999.9 / 9999ms (20 kHz)							
Resolution, Accuracy	0.001 / 0.01 / 0.1 / 1ms, 1μs / 10μs / 100μs / 1ms + 50ppm							
Slew Rate	12.8mA-800mA/μs 128mA-8A/μs	25.6mA-1.6A/μs 256mA-16A/μs	38.4mA-2.4A/μs 384mA-24A/μs	51.2mA-3.2A/μs 512mA-32A/μs	64mA-4A/μs 640mA-40A/μs	76.8mA-4.8A/μs 768mA-48A/μs	0.0896A-5.6A/μs 0.896A-56A/μs	0.1024A-6.4A/μs 1.024A-64A/μs
Min. Rise Time	20μs Typical							
<b>METERING</b>								
Voltage Rng, Resol, Accuracy	0 - 60.0 V / 0 - 600 V, 0.1 mV / 1.0 mV, ± 0.025% OF (READING + RANGE)							
Current Range	0-16.0A / 0-160A	0-32.0A / 0-320A	0-48.0A / 0-480A	0-64.0A / 0-640A	0-80.0A / 0-800A	0-96.0A / 0-960A	0-112.0A / 0-1120A	0-128.0A / 0-1280A
Resolution	0.256mA / 2.56mA	0.512mA / 5.12mA	0.768mA / 7.68mA	1.024mA / 10.24mA	1.28mA / 12.8mA	1.536mA / 15.36mA	1.792mA / 17.92mA	2.04mA / 20.48mA
Accuracy	± 0.1% OF (READING + RANGE)							
Power Range	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW
Resolution	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W
Accuracy	± 0.125% OF (READING + RANGE)							
<b>SHORT CIRCUIT</b>								
Max. Short Current	160 A	320 A	480 A	640 A	800 A	960 A	1120 A	1280 A
<b>MASTER / SLAVE PARALLEL OPERATION</b>								
No of Units	MASTER + 7 SLAVES / Load can be different power / Modes available: CC,CR, CV, CP						All loads must be same model	
<b>ANALOG I/O</b>								
Analog Mon. Out / Input	0 - 10V out F.S. / 1KΩ Zout, Non-isolated / 0 - 10V in for F.S. current @ 10V (CC Mode only)							
<b>AC INPUT AND PHYSICAL SPECIFICATIONS</b>								
AC Input	100-240Vac ± 10%, 50/60 Hz				208-240Vac ± 10%, 50/60 Hz			
Power Consumption (max.)	600 W	1000 W	1450 W	1900 W	2350 W	2800 W	3250 W	3700 W
Dimensions (H x W x D)	577x647x766mm 22.7"x25.5"x30.2"		736x647x766mm 29"x25.5"x30.2"	889x647x766mm 35"x25.5"x30.2"	1048x647x766mm 41.3"x25.5"x30.2"	1201x647x766mm 47.3"x25.5"x30.2"	1353x647x766mm 53.3"x25.5"x30.2"	1509x647x766mm 59.6"x25.5"x30.2"
Weight (Net)	100 kg / 220.5 lbs	130 kg / 286.6 lbs	170 kg / 374.8 lbs	220 kg / 485.0 lbs	280 kg / 617.3 lbs	340 kg / 749.6 lbs	390 kg / 859.8 lbs	430 kg / 947.9 lbs
Operating Range	0 - 40° C / 32 - 104° F							
EMC & Safety	CE Mark							

# 5VP SERIES HIGH POWER DC LOADS

## SPECIFICATIONS - 5VP Series DC LOADS - 600V / 1000V Range

MODEL	5VP50-21A	5VP60-24A	5VP05-05A	5VP10-10A	5VP15-15A	5VP20-20A	5VP25-25A
<b>OPERATING RANGES</b>							
Power Ranges	0-5.0kW / 0-50kW	0-6.0kW / 0-60kW	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW
Current Ranges	0-21.0A / 0-210A	0-24.0A / 0-240A	0-5.0 A / 0-50 A	0-10 A / 0-100 A	0-15 A / 0-150 A	0-20 A / 0-200 A	0-25 A / 0-250 A
Voltage Range	0 - 600.0 V			0 - 1000 V			
Minimum Voltage	10V @ 210A	10V @ 240A	10V @ 50A	10V @ 100A	10V @ 150A	10V @ 200A	10V @ 250A
<b>OPERATING MODES</b>							
CC Mode Range	0-21.0A / 0-210A	0-24.0A / 0-240A	0-5.0 A / 0-50 A	0-10 A / 0-100 A	0-15 A / 0-150 A	0-20 A / 0-200 A	0-25 A / 0-250 A
Resolution	0.35mA / 3.5mA	0.4mA / 4.0mA	0.08mA / 0.8mA	0.16mA / 1.6mA	0.24mA / 2.4A	0.32mA / 3.2mA	0.4mA / 4mA
Accuracy	± (0.1% OF SETTING + 0.2% RANGE)			± (0.1% OF SETTING + 0.2% RANGE)			
CR Mode Range	8571Ω - 2.857Ω / 2.857Ω - 0.0477Ω	7500Ω - 2.5Ω / 2.5Ω - 0.0417Ω	24000Ω - 20Ω / 20Ω - 0.2004Ω	12000Ω - 10Ω / 10Ω - 0.1002Ω	8332.5Ω - 6.666Ω / 6.666Ω - 0.066792Ω	6000Ω - 5Ω / 5Ω - 0.0501Ω	4800Ω - 4Ω / 4Ω - 0.0804Ω
Resolution	5.83uS / 47.7uΩ	6.66uS / 41.7uΩ	0.833μS / 0.334mΩ	1.666μS / 0.167mΩ	2.4μS / 0.1132mΩ	3.33μS / 0.0835mΩ	4.166μS / 0.0668mΩ
Accuracy	± 0.2% OF (SETTING + RANGE)			± 0.2% OF (SETTING + RANGE)			
CV Mode Range	0-600.0 V			10.0 - 1000.0 V			
Resolution	10 mV			16mV			
Accuracy	± 0.05% OF (SETTING + RANGE)			± 0.05% OF (SETTING + RANGE)			
CP Mode Range	0-5.25kW / 0-50kW	0-6.0kW / 0-60kW	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW
Resolution	87.5mW / 875mW	0.1W / 1.0 W	8mW / 80mW	16mW / 160mW	25mW / 250mW	32mW / 320mW	40mW / 400mW
Accuracy	± 0.5% OF (SETTING + RANGE)			± 0.5% OF (SETTING + RANGE)			
CC+CV / CP+CV Modes	See CC, CV and CP mode specifications. Not available in MASTER/SLAVE mode.						
MPPT Mode	P&O + Scanning, sampling & P&O interval:10ms to 2000ms						
<b>PROTECTION</b>							
Over Power (OP)	52500 W	63000 W	5250 W	10500 W	15750 W	21000 W	26250 W
Over Current (OC)	220.5 A	252 A	52.0 A	104.0 A	156.0 A	208.0 A	260.0 A
Over Voltage (OV)	630.0 V			1040.0 V			
Over Temperature (OT)	+85° C / +185° F			+85° C / +185° F			
<b>DYNAMIC OPERATION</b>							
T high & T low	0.050-9.999 / 99.99 / 999.9 / 9999ms (20 kHz)		0.050 - 9.999 / 99.99 / 999.9 / 9999ms (20 kHz)				
Resolution, Accuracy	0.001 / 0.01 / 0.1 / 1ms, 1μs / 10μs / 100μs / 1ms + 50ppm						
Slew Rate	16.8mA-1.05A/uS	19.2mA-1.2A/uS	0.004A-0.25A/μs	0.008A-0.5A/μs	0.012A-0.75A/μs	0.016A-1A/μs	0.02A-1.25A/μs
	168mA-10.5A/uS	192mA-12A/uS	0.04A-2.5A/μs	0.08A-5A/μs	0.12A-7.5A/μs	0.16A-10A/μs	0.2A-12.5A/μs
Min. Rise Time	20μs Typical			20μs Typical			
<b>METERING</b>							
Voltage Rng, Resol, Accuracy	0-60.0V 0-600 V, 0.1 mV / 1.0 mV, ±0.025%		0 - 100.0 V / 100 - 1000 V, 1.6 mV / 16 mV , ± 0.025% OF (READING + RANGE)				
Current Range	0-21.0A / 0-210A	0-24.0A / 0-240A	0-5.0 A / 0-50 A	0-10 A / 0-100 A	0-15 A / 0-150 A	0-20 A / 0-200 A	0-25 A / 0-250 A
Resolution	0.35mA / 3.5mA	0.4mA / 4mA	0.08mA / 0.8mA	0.16mA / 1.6mA	0.24mA / 2.4mA	0.32mA / 3.2mA	0.4mA / 4mA
Accuracy	± 0.1% OF (READING + RANGE)			± 0.1% OF (READING + RANGE)			
Power Range	0-5.0kW / 0-50kW	0-6.0kW / 0-60kW	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW
Resolution	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W
Accuracy	± 0.125% OF (READING + RANGE)			± 0.125% OF (READING + RANGE)			
<b>SHORT CIRCUIT</b>							
Max. Short Current	210 A	240 A	50 A	100 A	150 A	200 A	250 A
<b>MASTER / SLAVE PARALLEL OPERATION</b>							
	MASTER + 7 SLAVES / Load can be different power / Modes available: CC,CR, CV, CP						
<b>ANALOG I/O</b>							
Analog Monitor Out / Input	0 - 10V out F.S. / 1KΩ Zout, Non-isolated / 0 - 10V in for F.S. current @ 10V (CC Mode only)						
<b>AC INPUT AND PHYSICAL SPECIFICATIONS</b>							
AC Input	208-240Vac ± 10%, 50/60 Hz		100-240Vac ± 10%, 50/60 Hz				
Power Consumption (max.)	5450 W	5500 W	600 W	1000 W	1450 W	1900 W	2350 W
Dimensions (H x W x D)	1360x853x766 mm	1513x853x766mm	577 x 647 x 766 mm		736 x 647 x 766 mm	889 x 647 x 766 mm	1048 x 647 x 766 mm
	53.6"x33.6"x30.2"	59.6"x33.6"x30.2"	29" x 25.5" x 30.2"		29" x 25.5" x 30.2"	35" x 25.5" x 30.2"	41.3" x 25.5" x 30.2"
Weight (Net)	510 kg / 1124.4 lbs	630 kg / 1388.9 lbs	100 kg / 220.5 lbs	130 kg / 286.6 lbs	170 kg / 374.8 lbs	220 kg / 485.0 lbs	280 kg / 617.3 lbs
Operating Range	0 - 40° C / 32 - 104° F			0 - 40° C / 32 - 104° F			
EMC & Safety	CE Mark			CE Mark			

# 5VP SERIES HIGH POWER DC LOADS

## SPECIFICATIONS - 5VP Series DC LOADS - 1000V Range (continued)

MODEL	5VP30-30A	5VP35-35A	5VP40-40A	5VP50-50A	5VP60-60A
<b>OPERATING RANGES</b>					
Power Ranges	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW	0-5.0kW / 0-50kW	0-6.0kW / 0-60kW
Current Ranges	0 - 30 A / 0 - 300 A	0 - 35 A / 0 - 350 A	0 - 40 A / 0 - 400 A	0 - 52.5 A / 0 - 500 A	0 - 60 A / 0 - 600 A
Voltage Range	0 - 1000 V				
Minimum Voltage	10V @ 300A	10V @ 350A	10V @ 400A	10V @ 500A	10V @ 600A
<b>OPERATING MODES</b>					
CC Mode Range	0 - 30 A / 0 - 300 A	0 - 35 A / 0 - 350 A	0 - 40 A / 0 - 400 A	0 - 52.5 A / 0 - 500 A	0 - 60 A / 0 - 600 A
Resolution	0.48mA / 48mA	0.56mA / 5.6mA	0.64mA / 6.4mA	0.875mA / 8.75mA	1.0mA / 10mA
Accuracy	± (0.1% OF SETTING + 0.2% RANGE)				
CR Mode Range	3999.6Ω - 3.333Ω / 3.333Ω - 0.033396Ω	3428.4 - 2.857Ω / 2.857Ω - 0.0286266Ω	3000Ω - 2.5Ω / 2.5Ω - 0.02505Ω	2280Ω - 1.9Ω / 1.9Ω - 0.02Ω	2000Ω-1.666Ω / 1.666Ω-0.01668Ω
Resolution	5μS / 0.056mΩ	5.833μS / 0.047711mΩ	6.66μS / 0.0417mΩ	8.7uS / 32μΩ	10uS / 27.833μΩ
Accuracy	± 0.2% OF (SETTING + RANGE)				
CV Mode Range	10.0 - 1000.0 V				
Resolution	16mV				
Accuracy	± 0.05% OF (SETTING + RANGE)				
CP Mode Range	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW	0-5.0kW / 0-50kW	0-6.0kW / 0-60kW
Resolution	50mW / 500mW	56mW / 560mW	64mW / 640mW	87.5mW / 875mW	0.1 W / 1.0 W
Accuracy	± 0.5% OF (SETTING + RANGE)				
CC+CV / CP+CV Modes	See CC, CV and CP mode specifications. Not available in MASTER/SLAVE mode.				
MPPT Mode	P&O + Scanning, sampling & P&O interval:10ms to 2000ms				
<b>PROTECTION</b>					
Over Power (OP)	31500 W	36750 W	42000 W	52500 W	63000 W
Over Current (OC)	312 A	364 A	416 A	520 A	624 A
Over Voltage (OV)	1040.0 V				
Over Temperature (OT)	+85° C / +185° F				
<b>DYNAMIC OPERATION</b>					
T high & T low	0.050 - 9.999 / 99.99 / 999.9 / 9999ms (20 kHz)				
Resolution	0.001 / 0.01 / 0.1 / 1ms				
Accuracy	1μs / 10μs / 100μs / 1ms + 50ppm				
Slew Rate	0.024A-1.5A/μs	0.028A-1.75A/μs	0.032A-2A/μs	42mA-2.5A/uS	48mA-3A/uS
	0.24A-15A/μs	0.28A-17.5A/μs	0.32A-20A/μs	0.42A-25A/uS	0.48mA-30A/uS
Min. Rise Time	20μs Typical				
<b>METERING</b>					
Voltage Rng, Resol, Accuracy	0 - 100.0 V / 100 - 1000 V, 1.6 mV / 16 mV, ± 0.025% OF (READING + RANGE)				
Current Range	0 - 30 A / 0 - 300 A	0 - 35 A / 0 - 350 A	0 - 40 A / 0 - 400 A	0 - 52.5 A / 0 - 500 A	0 - 60 A / 0 - 600 A
Resolution	0.48mA / 48mA	0.56mA / 5.6mA	0.64mA / 6.4mA	0.875mA / 8.75mA	1.0mA / 10mA
Accuracy	± 0.1% OF (READING + RANGE)				
Power Range	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW	0-5.0kW / 0-50kW	0-6.0kW / 0-60kW
Resolution	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W
Accuracy	± 0.125% OF (READING + RANGE)				
<b>SHORT CIRCUIT</b>					
Max. Short Current	150 A	175 A	200 A	250 A	300 A
<b>MASTER / SLAVE PARALLEL OPERATION</b>					
	MASTER + 7 SLAVES / Load can be different power / Modes available: CC,CR, CV, CP				
<b>ANALOG I/O</b>					
Analog Monitor Out / Input	0 - 10 V out F.S. / 1KΩ Zout, Non-isolated / 0 - 10V in for F.S. current @ 10V (CC Mode only)				
<b>AC INPUT AND PHYSICAL SPECIFICATIONS</b>					
AC Input	208-240Vac ± 10%, 50/60 Hz				
Power Consumption (max.)	2800 W	3250 W	3700 W	5450 W	6200 W
Dimensions (H x W x D)	1197 x 647 x 766 mm 47.3" x 25.5" x 30.2"	1353 x 647 x 766 mm 53.6" x 25.5" x 30.2"	1509 x 647 x 766 mm 59.6" x 25.5" x 30.2"	1353 x 853 x 766 mm 53.6" x 33.6" x 30.2"	1508 x 853 x 766 mm 59.6" x 33.6" x 30.2"
Weight (Net)	340 kg / 749.6 lbs	390 kg / 859.8 lbs	430 kg / 948.0 lbs	510 kg / 1124.4 lbs	630 kg / 1388.9 lbs
Operating Range	0 - 40° C / 32 - 104° F				
EMC & Safety	CE Mark				

# 5VP SERIES HIGH POWER DC LOADS

## SPECIFICATIONS - 5VP Series DC LOADS - 1200V Range

MODEL	5VP06-24C	5VP08-32C	5VP10-40C	5VP12-48C	5VP15-60C	5VP18-72C	5VP20-80C	5VP24-96C
<b>OPERATING RANGES</b>								
Power Ranges	0-6kW	0-8kW	0-10kW	0-12kW	0-15kW	0-18kW	0-20kW	0-24kW
Current Ranges	0-24A/0-240A	0-32A/0-320A	0-40A/0-400A	0-48A/0-480A	0-60/0-600A	0-72A/0-720A	0-80A/0-800A	0-96A/0-960A
Voltage Range	0-1200.0 V							
Minimum Voltage	15V @ Max. Current							
<b>OPERATING MODES</b>								
CC Mode Range	0-24A/0-240A	0-32A/0-320A	0-40A/0-400A	0-48A/0-480A	0-60/0-600A	0-72A/0-720A	0-80A/0-800A	0-96A/0-960A
Resolution	0.384 mA/3.84 mA	0.512 mA/5.12 mA	0.64 mA / 6.4 mA	0.768 mA/7.68 mA	0.96 mA/9.6 mA	1.152mA/11.52mA	1.28 mA/12.8 mA	1.536mA/15.36mA
Accuracy	± 0.05% OF (SETTING + RANGE)							
CR Mode Range	30kΩ - 5Ω - 3.33μS	22.5kΩ - 3.75Ω - 0.0468Ω	18kΩ - 3Ω - 0.0375Ω	15kΩ - 2.5Ω - 0.0312Ω	12kΩ - 2Ω - 0.0025Ω	10kΩ - 1.666Ω - 0.0208Ω	9kΩ - 1.5Ω - 0.0187Ω	7.5Ω - 1.25Ω - 0.00156Ω
Resolution	3.333μS/83.33μΩ	4.444μS/62.5μΩ	5.5555μS/50μΩ	6.6666μS/41.66μΩ	8.3333μS/33.33μΩ	10μS/27.778μΩ	11.111μS/25μΩ	13.333μS/20.83μΩ
Accuracy	± 0.2% OF (SETTING + RANGE)							
CV Mode Range	0-1200.0 V							
Resolution	20 mV							
Accuracy	± 0.025% OF (SETTING + RANGE)							
CP Mode Range	600W/6kW	800W/8kW	1000W/10kW	1200W/12kW	1500W/15kW	1800W/18kW	2000W/20kW	2400W/24kW
Resolution	9.6 / 96 mW	12.8 / 128 mW	16 / 160 mW	19.2 / 192 mW	24 / 240 mW	28.8 / 288 mW	32 / 320 mW	38.4 / 384 mW
Accuracy	Low Range: ± 0.2% OF (SETTING + RANGE) / High Range: ± 0.1% OF (SETTING + RANGE)							
CC+CV / CP+CV Modes	Accuracy: ± 1.0% OF (SETTING + RANGE). <b>Note:</b> Not available in MASTER/SLAVE mode.							
MPPT Mode	P&O + Scanni240ng, sampling & P&O interval:1000ms to 60000ms, resolution 1000ms							
<b>PROTECTION</b>								
Over Power (OP)	6300 W	8400 W	10500 W	12600 W	15750 W	18900 W	21000 W	25200 W
Over Current (OC)	249.6 A	332.8 A	416 A	499.2 A	624 A	748.8 A	832 A	998.4 A
Over Voltage (OV)	630 V							
Over Temperature (OT)	+90° C / 194° F							
<b>DYNAMIC OPERATION</b>								
T high & T low	0.010-9.999 / 99.99 / 999.9 / 9999ms							
Resolution, Accuracy	0.001 / 0.01 / 0.1 / 1ms, 1μs / 10μs / 100μs / 1ms + 50ppm							
Slew Rate   Resolution	0.0192 -12A/ uS   0.048A/uS	0.0256 -16A/ uS   0.064A/uS	0.032 -20A/uS   0.08A/uS	0.0384 -24A/ uS   0.096A/uS	0.048 -30A/uS   0.12A/uS	0.0576 -36A/ uS   0.144A/uS	0.064 -40A/uS   0.16A/uS	0.0768 -48A/ uS   0.192A/uS
Min. Rise Time	20 μs Typical							
<b>METERING</b>								
Voltage Rng, Resol, Accuracy	0 - 120.0 V / 0 - 1200.0 V, 2 mV / 20 mV , ± 0.025% OF (READING + RANGE)							
Current Range	0-24A/0-240A	0-32A/0-320A	0-40A/0-400A	0-48A/0-480A	0-60/0-600A	0-72A/0-720A	0-80A/0-800A	0-96A/0-960A
Resolution	0.384 mA/3.84 mA	0.512 mA/5.12 mA	0.64 mA / 6.4 mA	0.768 mA/7.68 mA	0.96 mA/9.6 mA	1.152mA/11.52mA	1.28 mA/12.8 mA	1.536mA/15.36mA
Accuracy	± 0.05% OF (READING + RANGE)							
Power Range	600W/6kW	800W/8kW	1000W/10kW	1200W/12kW	1500W/15kW	1800W/18kW	2000W/20kW	2400W/24kW
Resolution, Accuracy	0.1W / 1W , ± 0.075% OF (READING + RANGE)							
<b>SHORT CIRCUIT</b>								
Max. Short Current / Res.	240A / 62.5mΩ	320A / 46.9mΩ	400A / 37.5mΩ	480A / 31.3mΩ	600A / 25mΩ	720A / 20.9mΩ	800A / 18.8mΩ	960A / 15.7mΩ
<b>MASTER / SLAVE PARALLEL OPERATION</b>								
No of Units	MASTER + 7 SLAVES / All loads must be same model / Modes available: CC,CR, CV, CP							
<b>ANALOG I/O</b>								
Analog Monitor Out / Input	0 - 10V out F.S. / 1KΩ Zout, Non-isolated / 0 - 10V in for F.S. current @ 10V (CC Mode only)							
<b>AC INPUT AND PHYSICAL SPECIFICATIONS</b>								
AC Input	100-240Vac ± 10%, 50/60 Hz							
Power Consumption (max.)	400 VA	750 VA	750 VA	750 VA	1100 VA	1100 VA	1450 VA	1450 VA
Dimensions (H x W x D)	446x444 x 763mm 17.6" x 17.5" x 30"	572x444x763mm 22.5" x 17.5" x 30"	572x444x763mm 22.5" x 17.5" x 30"	572x444x763mm 22.5" x 17.5" x 30"	761x 444x763mm 30" x 17.5" x 30"	761x 444x763mm 30" x 17.5" x 30"	884x 444x763mm 34.8" x 17.5" x 30"	884x 444x763mm 34.8" x 17.5" x 30"
Weight (Net)	62 kg / 136.7 lbs	77.5 kg / 170.8 lbs	84.4 kg / 186.1 lbs	92 kg / 202.8 lbs	116.5 kg / 256.9 lbs	124 kg / 273.4 lbs	140.5 kg / 309.8 lbs	155 kg / 341.7 lbs
Operating Range	0 - 40° C / 32 - 104° F							
EMC & Safety	CE Mark							

# 5VP SERIES HIGH POWER DC LOADS

## SPECIFICATIONS - 5VP Series DC LOADS - 1250V Range

MODEL	5VP05-02.5A	5VP10-05A	5VP15-07.5A	5VP20-10A	5VP25-12.5A
<b>OPERATING RANGES</b>					
Power Ranges	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW
Current Ranges	0 - 2.5 A / 0 - 25 A	0 - 5 A / 0 - 50 A	0 - 7.5 A / 0 - 75 A	0 - 10 A / 0 - 100 A	0 - 12.5 A / 0 - 125 A
Voltage Range	0 - 1250 V				
Load ON Voltage	0 - 250 V				
<b>OPERATING MODES</b>					
CC Mode Range	0 - 2.5 A / 0 - 25 A	0 - 5 A / 0 - 50 A	0 - 7.5 A / 0 - 75 A	0 - 10 A / 0 - 100 A	0 - 12.5 A / 0 - 125 A
Resolution	0.04mA / 0.4mA	0.08mA / 0.8mA	0.12mA / 1.2mA	0.16mA / 1.6mA	0.2mA / 2mA
Accuracy	± (0.1% OF SETTING + 0.2% RANGE)				
CR Mode Range	60000Ω - 50Ω / 50Ω - 5.02Ω	30000Ω - 25Ω / 25Ω - 1.251Ω	20004Ω - 16.67Ω / 16.67 - 0.834Ω	15000Ω - 12.5Ω / 12.5Ω - 0.672Ω	12000Ω - 10Ω / 10Ω - 0.501Ω
Resolution	0.3334μS / 0.834mΩ	0.6667μS / 0.417mΩ	0.9998μS / 0.1278mΩ	1.333μS / 0.209mΩ	1.6667μS / 0.167mΩ
Accuracy	± 0.2% OF (SETTING + RANGE)				
CV Mode Range	10.0 - 1250.0 V				
Resolution	20mV				
Accuracy	± 0.05% OF (SETTING + RANGE)				
CP Mode Range	0-0.5kW / 0-5kW	0-1.0kW / 0-10kW	0-1.5kW / 0-15kW	0-2.0kW / 0-20kW	0-2.5kW / 0-25kW
Resolution	8mW / 80mW	16mW / 160mW	24mW / 240mW	32mW / 320mW	40mW / 400mW
Accuracy	± 0.5% OF (SETTING + RANGE)				
CC+CV / CP+CV Modes	See CC, CV and CP mode specifications. Not available in MASTER/SLAVE mode.				
MPPT Mode	P&O + Scanning, sampling & P&O interval:10ms to 2000ms				
<b>PROTECTION</b>					
Over Power (OP)	5250 W	10500 W	15750 W	21000 W	26250 W
Over Current (OC)	26.0 A	52.0 A	78.0 A	104.0 A	130.0 A
Over Voltage (OV)	1300 V				
Over Temperature (OT)	+85° C / +185° F				
<b>DYNAMIC OPERATION</b>					
T high & T low	0.050 - 9.999 / 99.99 / 999.9 / 9999ms (20 kHz)				
Resolution	0.001 / 0.01 / 0.1 / 1ms				
Accuracy	1μs / 10μs / 100μs / 1ms + 50ppm				
Slew Rate	0.002A-0.125A/μs 0.02A-1.25A/μs	0.004A-0.25A/μs 0.04A-2.5A/μs	0.006A-0.375A/μs 0.06A-3.75A/μs	0.008A-0.5A/μs 0.08A-5A/μs	0.01A-0.625A/μs 0.1A-6.25A/μs
Min. Rise Time	20μs Typical				
<b>METERING</b>					
Voltage Rng, Resol, Accuracy	0 - 125.0 V / 125 - 1250 V, 3 mV / 20 mV, ± 0.025% OF (READING + RANGE)				
Current Range	0 - 2.5 A / 0 - 25 A	0 - 5 A / 0 - 50 A	0 - 7.5 A / 0 - 70 A	0 - 10 A / 0 - 100 A	0 - 12.5 A / 0 - 125 A
Resolution	0.04mA / 0.4mA	0.08mA / 0.8mA	0.12mA / 1.2mA	0.16mA / 1.6mA	0.2mA / 2mA
Accuracy	± 0.1% OF (READING + RANGE)				
Power Range	0-1.0kW / 0-5kW	0-1.0kW / 0-10kW	0-1.0kW / 0-15kW	0-1.0kW / 0-20kW	0-1.0kW / 0-25kW
Resolution	0.01 W / 0.1 W	0.1 W / 1.0 W	0.1 W / 1.0 W	0.1 W / 1.0 W	0.1 W / 1.0 W
Accuracy	± 0.125% OF (READING + RANGE)				
<b>SHORT CIRCUIT</b>					
Max. Short Current	25 A	50 A	75 A	100 A	125 A
<b>MASTER / SLAVE PARALLEL OPERATION</b>					
	MASTER + 7 SLAVES / Load can be different power / Modes available: CC,CR, CV, CP				
<b>ANALOG I/O</b>					
Analog Monitor Out / Input	0 - 10 V out F.S. / 1KΩ Zout, Non-isolated / 0 - 10V in for F.S. current @ 10V (CC Mode only)				
<b>AC INPUT AND PHYSICAL SPECIFICATIONS</b>					
AC Input	100-240Vac ± 10%, 50/60 Hz				
Power Consumption (max.)	600 W	1000 W	1450 W	1900 W	2350 W
Dimensions (H x W x D)	577 x 647 x 766 mm 29" x 25.5" x 30.2"		736 x 647 x 766 mm 29" x 25.5" x 30.2"	889 x 647 x 766 mm 35" x 25.5" x 30.2"	1048 x 647 x 766 mm 41.3" x 25.5" x 30.2"
Weight (Net)	100 kg / 220.5 lbs	130 kg / 286.6 lbs	170 kg / 374.8 lbs	220 kg / 485.0 lbs	280 kg / 617.3 lbs
Operating Range	0 - 40° C / 32 - 104° F				
EMC & Safety	CE Mark				

# 5VP SERIES HIGH POWER DC LOADS

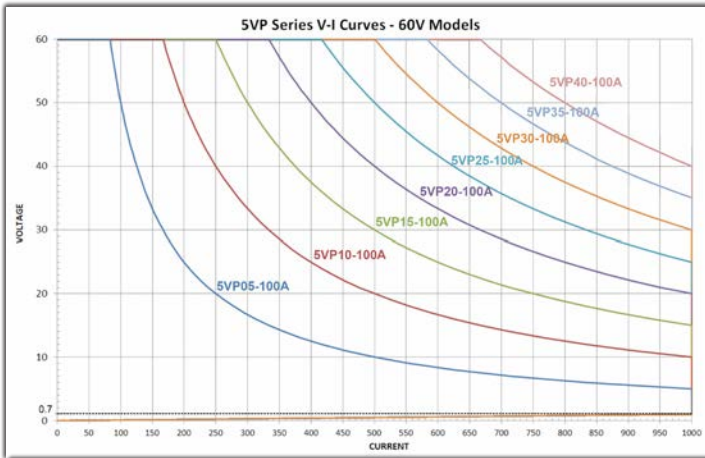
## SPECIFICATIONS - 5VP Series DC LOADS - 1250V Range (continued)

MODEL	5VP30-15A	5VP35-17.5A	5VP40-20A	5VP50-25A	5VP60-30A
<b>OPERATING RANGES</b>					
Power Ranges	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW	0-5.0kW / 0-50kW	0-6.0kW / 0-60kW
Current Ranges	0 - 15 A / 0 - 150 A	0 - 17.5 A / 0 - 175 A	0 - 20 A / 0 - 200 A	0 - 25 A / 0 - 250 A	0 - 30 A / 0 - 300 A
Voltage Range	0 - 1250 V				
Load ON Voltage	0 - 250 V				
<b>OPERATING MODES</b>					
CC Mode Range	0 - 15 A / 0 - 150 A	0 - 17.5 A / 0 - 175 A	0 - 20 A / 0 - 200 A	0 - 25 A / 0 - 250 A	0 - 30 A / 0 - 300 A
Resolution	0.24mA / 24mA	0.28mA / 2.8mA	0.32mA / 3.2mA	0.42mA / 4.2mA	0.48mA / 4.8mA
Accuracy	± (0.1% OF SETTING + 0.2% RANGE)				
CR Mode Range	9996Ω - 8.333Ω / 8.33Ω - 0.417Ω	8568Ω - 7.14Ω / 7.14Ω - 0.357Ω	7500Ω - 6.25Ω / 6.25Ω - 0.315Ω	5712Ω - 4.76Ω / 4.76Ω - 0.24Ω	5004Ω-4.17Ω / 4.17Ω-0.21Ω
Resolution	2.0008μS / 0.0139mΩ	2.334μS / 0.119mΩ	2.6667uS / 0.105mΩ	3.5014uS / 0.08mΩ	3.9968uS / 0.07μΩ
Accuracy	± 0.2% OF (SETTING + RANGE)				
CV Mode Range	10.0 - 1250.0 V				
Resolution	20mV				
Accuracy	± 0.05% OF (SETTING + RANGE)				
CP Mode Range	0-3.0kW / 0-30kW	0-3.5kW / 0-35kW	0-4.0kW / 0-40kW	0-5.0kW / 0-50kW	0-6.0kW / 0-60kW
Resolution	48mW / 480mW	56mW / 560mW	64mW / 640mW	84mW / 840mW	96 mW / 960 mW
Accuracy	± 0.5% OF (SETTING + RANGE)				
CC+CV / CP+CV Modes	See CC, CV and CP mode specifications. Not available in MASTER/SLAVE mode.				
MPPT Mode	P&O + Scanning, sampling & P&O interval:10ms to 2000ms				
<b>PROTECTION</b>					
Over Power (OP)	31500 W	36750 W	42000 W	52500 W	63000 W
Over Current (OC)	312 A	364 A	416 A	520 A	624 A
Over Voltage (OV)	1040.0 V				
Over Temperature (OT)	+85° C / +185° F				
<b>DYNAMIC OPERATION</b>					
T high & T low	0.050 - 9.999 / 99.99 / 999.9 / 9999ms (20 kHz)				
Resolution	0.001 / 0.01 / 0.1 / 1ms, 1μs / 10μs / 100μs / 1ms + 50ppm				
Accuracy	1μs / 10μs / 100μs / 1ms + 50ppm				
Slew Rate	0.012A-0.75A/μs 0.12A-7.5A/μs	0.014A-0.875A/μs 0.14A-8.75A/μs	0.016A-1A/μs 0.16A-10A/μs	0.02A-1.25A/uS 0.2A-12.5A/uS	0.024A-1.5A/uS 0.24A-15A/uS
Min. Rise Time	20μs Typical				
<b>METERING</b>					
Voltage Rng, Resol, Accuracy	0 - 125.0V / 125 - 1250 V, 2 mV / 20 mV, ± 0.025% OF (READING + RANGE)				
Current Range	0 - 15 A / 0 - 150 A	0 - 17.5 A / 0 - 175 A	0 - 20 A / 0 - 200 A	0 - 25 A / 0 - 250 A	0 - 30 A / 0 - 300 A
Resolution	0.24mA / 2.4mA	0.28mA / 2.8mA	0.32mA / 3.2mA	0.42mA / 4.2mA	0.48mA / 4.8mA
Accuracy	± 0.1% OF (READING + RANGE)				
Power Range	0-10kW / 0-30kW	0-10kW / 0-35kW	0-10kW / 0-40kW	0-10kW / 0-50kW	0-10kW / 0-60kW
Resolution	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W	0.1 W / 1.0W
Accuracy	± 0.125% OF (READING + RANGE)				
<b>SHORT CIRCUIT</b>					
Max. Short Current	300 A	350 A	400 A	500 A	600 A
<b>MASTER / SLAVE PARALLEL OPERATION</b>					
	MASTER + 7 SLAVES / Load can be different power / Modes available: CC,CR, CV, CP			MASTER + 7 SLAVES / All loads must be same model	
<b>ANALOG I/O</b>					
Analog Monitor Out / Input	0 - 10 V out F.S. / 1KΩ Zout, Non-isolated / 0 - 10V in for F.S. current @ 10V (CC Mode only)				
<b>AC INPUT AND PHYSICAL SPECIFICATIONS</b>					
AC Input	208-240Vac ± 10%, 50/60 Hz				
Power Consumption (max.)	2800 W	3250 W	3700 W	5450 W	6200 W
Dimensions (H x W x D)	1201 x 647 x 766 mm 47.3" x 25.5" x 30.2"	1360 x 647 x 766 mm 53.6" x 25.5" x 30.2"	1513 x 647 x 766 mm 59.6" x 25.5" x 30.2"	1360 x 853 x 766 mm 53.6" x 33.6" x 30.2"	1513 x 853 x 766 mm 59.6" x 33.6" x 30.2"
Weight (Net)	340 kg / 749.6 lbs	390 kg / 859.8 lbs	430 kg / 948.0 lbs	510 kg / 1124.4 lbs	630 kg / 1388.9 lbs
Operating Range	0 - 40° C / 32 - 104° F				
EMC & Safety	CE Mark				

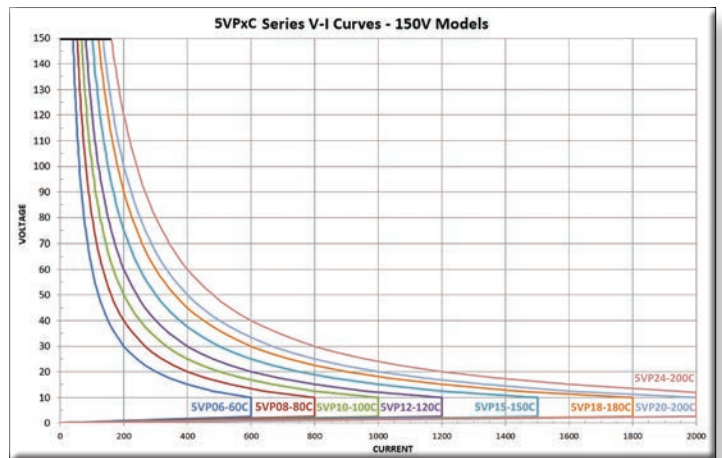
# 5VP SERIES HIGH POWER DC LOADS

## V-I OPERATING RANGE PROFILES BY VOLTAGE RANGE

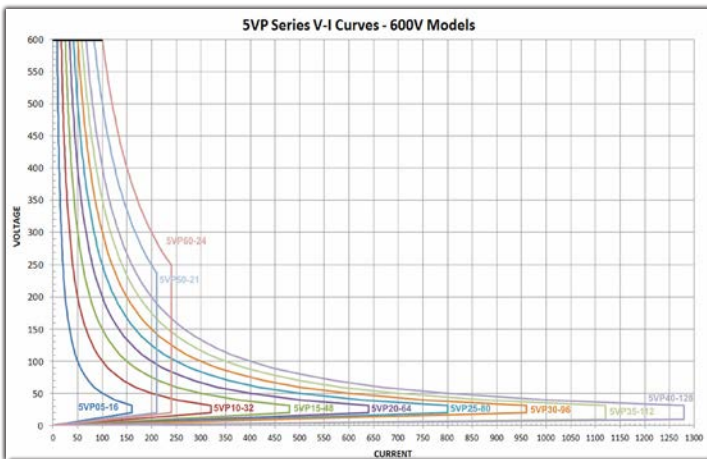
### 5VPxA - 60V Models



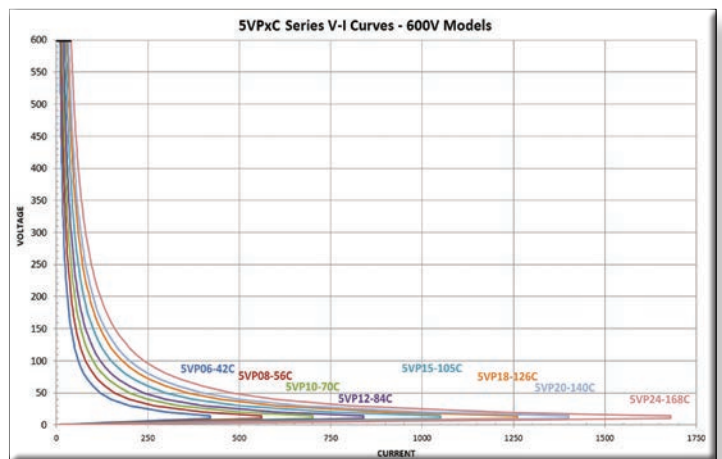
### 5VPxC - 150V Models



### 5VPxA - 600V Models



### 5VPxC - 600V Models

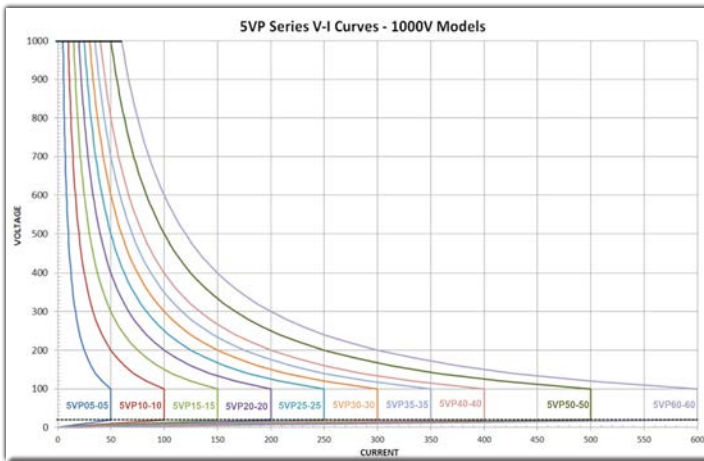


Various Sizes of 5VP Series Models shown

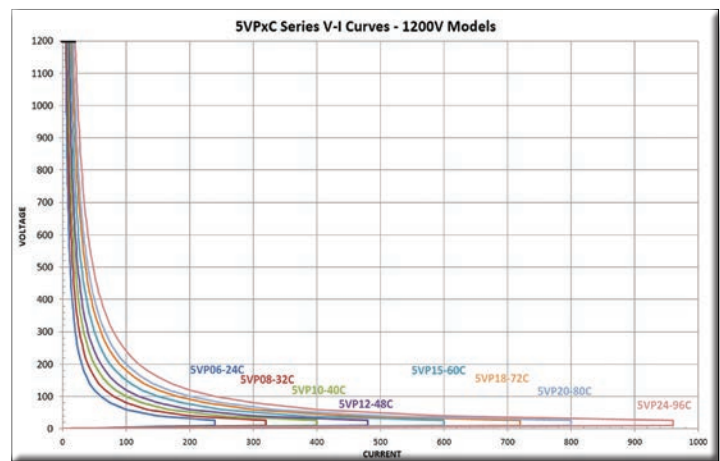
# 5VP SERIES HIGH POWER DC LOADS

## V-I OPERATING RANGE PROFILES BY VOLTAGE RANGE

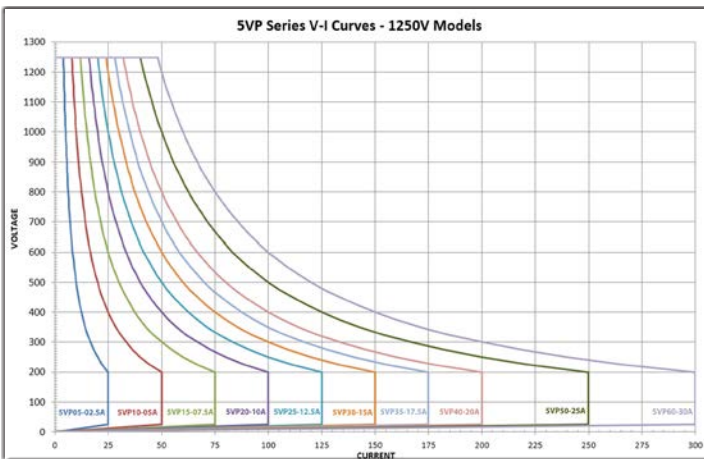
### 5VPxA - 1000V Models



### 5VPxC - 1200V Models



### 5VPxA - 1250V Models



# 5VP SERIES HIGH POWER DC LOADS

## ORDERING INFORMATION:

**Line 1:** Specify DC Load Model:  
5VPxxx-xxA Cabinet System

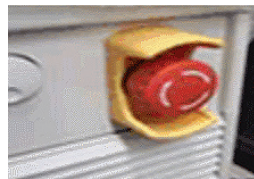
**Line 2:** Specify Remote Control Option:  
None, Opt GPIB, Opt RS232, Opt USB or Opt LAN

**Line 3:** Specify Load Cable Option. (See Table to the right)

### Emergency Stop & I/O Options:

Option P/N	Description
Opt -ES	Emergency Stop 5VP, 5VP-A Series
Opt -EIO-A	External I/O card 5VP-A Series, 60 ~ 1000V
Opt -EIO-A1	External I/O card 5VP-A Series, 1250V
Opt -ES-EIO-A	External I/O card 5VP-A Series, 60 ~ 1000V
Opt -ES-EIO-A1	External I/O card 5VP-A Series, 1250V

**Note:** These options cannot be retrofitted and **must** be specified at time of order.



Emergency stop Option

### Available Load Cable Options:

Option P/N	Description	MOQ
OPT-C1KA1	Load Cable, 1000A rated, 1 meter	2
OPT-C1KA2	Load Cable, 1000A rated, 2 meter	2
OPT-C1KA3	Load Cable, 1000A rated, 3 meter	2
OPT-C1KA4	Load Cable, 1000A rated, 4 meter	2
OPT-C1KA5	Load Cable, 1000A rated, 5 meter	2

### AC Input Voltage

Please specify AC Line input voltage at the ship-to location on the order as either 120Vac or 230Vac for 5VP models less than 30kW. For 30kW and higher power loads, AC input is 230Vac $\pm$ 10%.

### Included in Mainframe Ship kit:

- User Manuals in PDF Format on CD ROM.
- Analog Input BNC Cable (1 meter/39.4").
- Voltage Sense alligator clip lead, Red (1 meter, 39.4")
- Voltage Sense alligator clip lead, Black (1 meter, 39.4")
- LAN/USB Driver CD ROM (with Opt USB or Opt LAN).
- Certificate of Conformance.

## 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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