

# AFV-P series

High Performance Programmable AC Power Source

Preen®



Intuitive Touch Screen HMI



▼ Output Frequency up to  
**15-1000Hz**

▼ Power Line Simulations:  
Step & Ramp Features

▼ Fast Response Time:  $\leq 300\mu\text{s}$

▼ AC Source with DC output  
**AC & DC**

▼ 600VA to 5kVA only in 2U or 4U

▼ Low Distortion: THD  $\leq 0.3-0.8\%$

▼ Transient Generation  
for Disturbance Tests

▼ Complete Remote Interface:  
USB/RS232/RS485/Ethernet/GPIB

▼ User-friendly Control Software

**AC POWER CORP**  
<http://www.PreenPower.com>

**AC + DC**  
Power Solutions

# AFV-P series



## High Performance Programmable AC Power Source

Preen's AFV-P series is a programmable AC power source with stable DC output and precise measurement capability. This compact product comes in four power levels: 600VA, 1250VA, 2500VA and 5000VA, which provides clean power with distortion less than 0.3% at 50/60Hz. It delivers continuously adjustable output voltage 0-310VAC and output frequency 40-500Hz (opt. 15-1000Hz). Accordingly, AFV-P series is ideal for industries of commercial, defense and aerospace from design verification, quality assurance, ATE to mass production.

AFV-P series provides comprehensive programmable features (Step, Ramp and Transient features) and a total of 1200 Steps in 50 built-in Memory Sets, so that users now can easily configure various voltage and frequency combinations for simulating global AC power conditions, such as surge, sag, spikes and dropouts. With the advanced PWM technology, the AFV-P series is capable of delivering up to 4.5 times of peak current from its rated current, which is suitable for motor-type test with inrush current issue. Additionally, user can set the start/end angle of the product output from 0° to 359°.

AFV-P series includes measurement capability of RMS voltage, output frequency, RMS current, true power, apparent power, reactive power, power factor and crest factor. Its 5" touch screen with rotary knob eases local operation to quickly set the product output. Its complete remote interfaces and specialized control software offer an easy programming manner to remotely control the product.

- **Compact & High Power Density**

**2U/4U** 2U: 600VA / 1250VA / 2500VA  
4U: 5000VA

- **Ideal for Inrush Current Applications**

Capable of delivering up to **4.5 times** of peak current from RMS current

- **Low Distortion (THD)**

**≤0.3%** Less than 0.3% when output frequency is at 50/60Hz

- **AC Source with DC Output**

**DC** Available for AC & DC testing applications

- **Wide Output Voltage & Frequency**

**0-310V** **15-1000Hz**

- **Pre-compliance Tests**

**IEC-61000-4-11** An ideal pre-compliance solution for IEC-61000-4-11

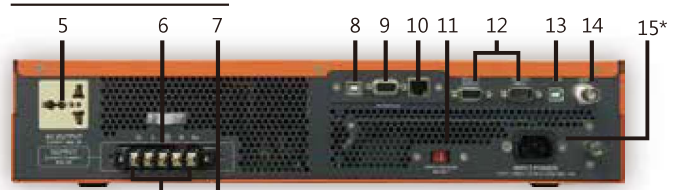
### PANEL DESCRIPTION

- |                     |  |
|---------------------|--|
| 1. Power Switch     | 10. Ethernet Interface                     |
| 2. Touch Screen HMI | 11. Input Voltage Selector                 |
| 3. Rotary Knob      | 12. PLC Remote In/Out                      |
| 4. Output / Reset   | 13. USB Interface<br>(for firmware update) |
| 5. AC Output Socket | 14. Sync. Signal I/O                       |
| 6. Output Terminals | 15. Input Socket *                         |
| 7. Remote Sense     |  |
| 8. USB Interface    |  |
| 9. RS232 / RS485    |  |

Front Panel Overview



Rear Panel Overview

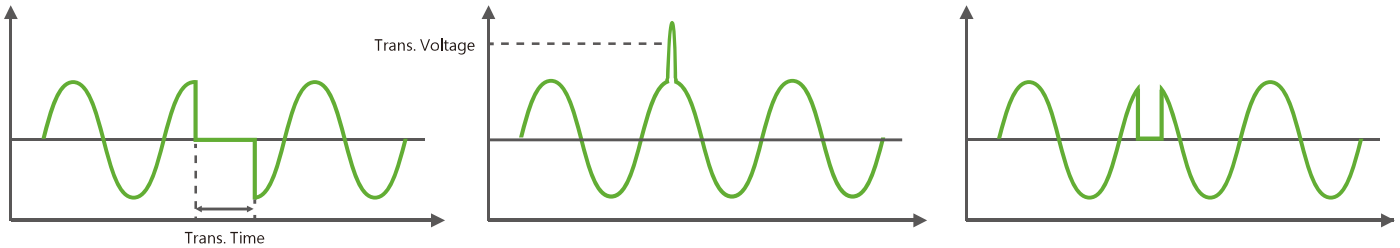


\*For AFV-P-1250, AFV-P-2500 and AFV-P-5000, the input socket is replaced by the input terminals.

# Maximize your devices' reliability with Preen's AFV-P series programmable AC source.



## Programmable Simulations: Transient Feature



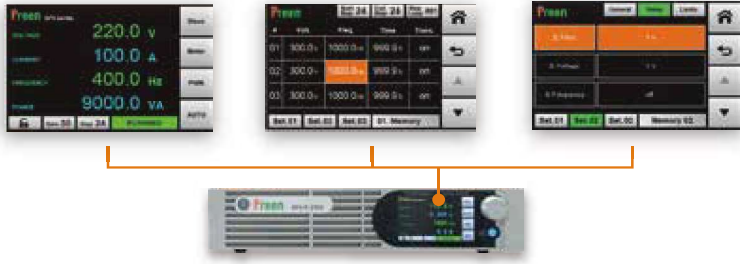
With the Transient feature, user can have more control over the output waveform by adding disturbance at user-defined locations with user-defined drop/rise range. This feature is useful to simulate different pre-compliance test and various types of power line disturbance, such as surge, sag, spike and dropout, for immunity tests.

## Complete Remote Interfaces & Control Software



AFV-P series is equipped with standard interfaces of USB, RS232, RS485 and Ethernet, so users no longer need to spend extra on interface card. Only GPIB and Analog Control are optional interfaces. AFV-P series also provides specialized control software with complete programming features and LabView driver, which allows easy control without further programming.

## Intuitive Touch Screen Control



To create a complex sequence on the local control HMI is no longer a difficult task for AFV-P series. Its 5" touch screen provides users a clear measurement display and an easy set up for product output. AFV-P series is also equipped with a rotary knob for better fine tune adjustments. Additionally, touch screen lock is available to avoid maloperation.

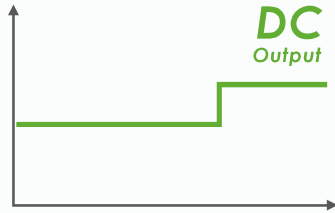
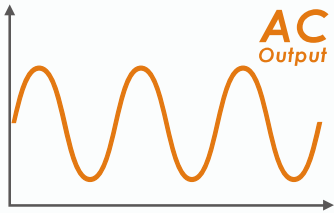
## Wide Applications

AFV-P series is ideal for power adapters test by varying output voltage and frequency to simulate different real-world grid conditions. Output frequency of AFV-P series can go up to 1000Hz, which is suitable for avionic test with 400Hz or 800Hz. With the comprehensive programmable features, such as Step, Ramp and Transient features, users are allowed to build a wide range of output waveforms in a sequence, so as to simulated grid faults and fluctuations.



# Key Features of AFV-P Series

## AC Output & DC Output

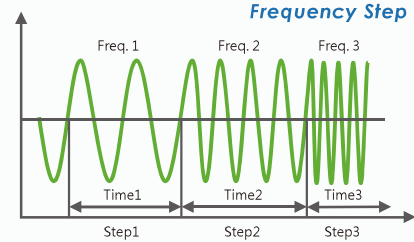
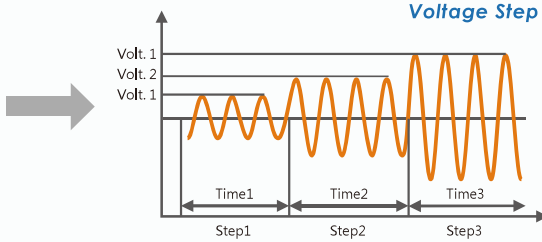
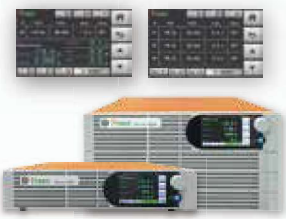


AFV-P series can selectively generate AC output or DC output according to user-defined settings. This feature not only extends applications to AC & DC component test, but allows effectively cost reduction of purchasing another DC source. Therefore, it is an ideal power testing solution for R&D unit and certification laboratories with limited space.

## Programmable Simulations: Step & Ramp Features

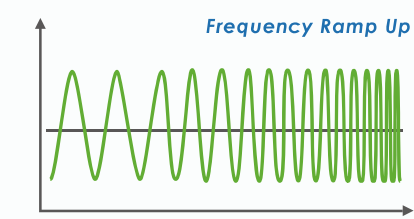
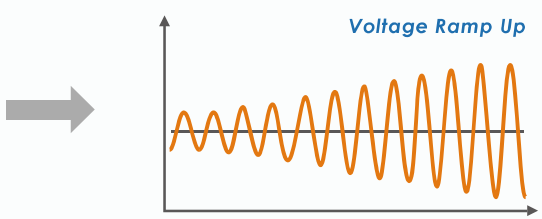
### Step Feature

With the Step feature, users can create complex sequences by linking up to 1200 self-defined Steps in 50 Memory Sets. Voltage, frequency and dwell time for each Step can be defined independently, and users can set start/end number of Step Loop to cyclically perform the Step feature, so as to simulate grid voltage fluctuations or ON/OFF test. Because of its fast response time, AFV-P series can perform Step change in less than a cycle and provide a reliable AC power simulations.



### Ramp Feature

With the Ramp feature, users can set Ramp time unit, Ramp time, voltage and frequency per unit, so as to define slew rate of voltage and frequency for each Step, then the product output will change according to user-defined slew rate. Additionally, this feature can effectively reduce the inrush current, and save the cost on selecting an AC source with much higher output power for inductive-type loads.



## Over Current Foldback

When it comes to over current, AFV-P series offers more than just shutdown protection. Over current foldback enables AFV-P series to maintain the output current at the rated current and correspondingly decrease the output voltage as the load impedance increases. It is an extended protection or an alternative to provide constant current for EUT.

## Remote Sense Feature

With the remote sense feature, voltage drop compensation is available when it comes to output voltage decrease due to the cable length. In other words, AFV-P series can automatically correct the reduced voltage and deliver accurate voltage to ensure stable voltage conditions.

## Ideal for High Inrush Current EUT & Start / End Angle Setting

### Power Supply Testing



### Motor Type Testing



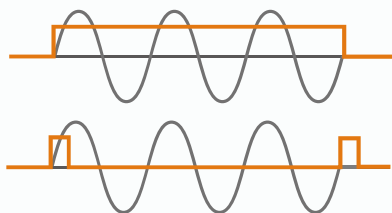
AFV-P series can deliver up to 4.5 times of peak current from its RMS current, and it can control the product output according to user-defined start/end angle, so it is suitable for testing switching power supplies with high inrush current issue. Additionally, it is able to provide a customized 150% overload capability for starting up motor-type DUT, such as electric motor.

## Waveform Display & Comprehensive Measurement Capability

With the advanced measurement circuitry and firmware design, AFV-P series is capable of providing output waveform display and precise measurement readings, so that user can easily check the readings of RMS voltage, output frequency, RMS current, true power, apparent power, reactive power, power factor and crest factor according to the product output. Additionally, all measurement readings can be exported as a report via the control software for analyzing and tracking EUT performance.



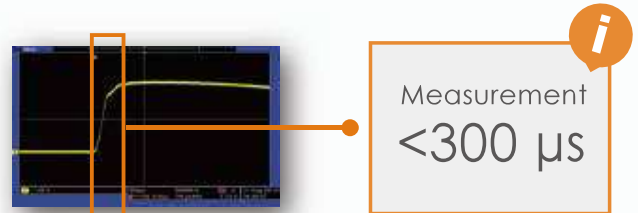
### Synchronized Signal



5V DC Synchronized Signal

AFV-P series provides two types of synchronized signal. It can either deliver a 5V DC signal continuously when the product output is on or deliver a 5V DC pulse signal every time there is a change on the product output. This feature makes AFV-P series an ideal AC source when applying with automatic test systems.

### Fast Response & High Stability



To simulate power line disturbance, such as sags, surges, dropouts and spikes, response time has always been a critical factor. AFV-P series is a high performance AC source with fast response time less than 300  $\mu s$ , and users are allowed to do pre-compliance tests accordingly, such as IEC-61000-4-11.

# SPECIFICATIONS

Model		AFV-P-600	AFV-P-1250	AFV-P-2500	AFV-P-5000
<b>INPUT</b>					
Phase		Single			
Voltage		98-132VAC / 196-264VAC		196-264VAC or 175-235VAC	
Frequency		47 - 63 Hz (opt. 400Hz)			
Max. Current		10A	20A	20A	40A
<b>OUTPUT</b>					
Power	VA	600VA	1250VA	2500VA	5000VA
	W	500W	1000W	2000W	4000W
Phase		1Ø / 2 Wire + G			
Voltage Ranges		0 - 155Vrms / 0 - 310Vrms, user selectable			
Voltage Resolution		0.1Vrms			
Frequency		40-500Hz (opt. 15-1000Hz)			
Frequency Resolution		0.1Hz, 1Hz at >100Hz			
Max. Current (RMS)		5A / 2.5A	10A / 5A	20A / 10A	40A / 20A
Max. Current (Peak)		15A / 7.5A	30A / 15A	60A / 30A	120A / 60A
Total Harmonic Distortion (THD)		≤0.3% at 40-100Hz, ≤0.5% at 101-500Hz, ≤0.8% at 501-1000Hz (Resistive Load)			
Line Regulation		± 0.1V			
Load Regulation		≤0.07% F.S. (Resistive Load)			
Response Time		≤ 300µs			
Crest Factor		≥ 3			
<b>DC OUTPUT</b>					
Power		300W	600W	1250W	2500W
Voltage Ranges		0 - 210V / 0 - 420V			
Max. Current		2.5A / 1.25A	5A / 2.5A	10A / 5A	20A / 10A
Ripple & Noise (RMS)		≤ 0.15%		≤ 0.24%	
<b>MEASUREMENT</b>					
Voltage Range		0 - 420Vrms			
Voltage Accuracy		±(0.2% of reading + 5 counts)			
Voltage Resolution		0.1V			
Frequency Range		15 - 1000Hz			
Frequency Accuracy		±0.1Hz at 40.0 - 500Hz, ±0.2Hz at 501 - 1000Hz			
Frequency Resolution		0.1Hz			
Current Range		Hi: 1 - 12A / Lo: 0.005 - 1.2A		Hi: 2 - 24A / Lo: 0.005 - 2.4A	Hi: 0.05A - 48.00A
Current Accuracy		±(1% of reading + 5 counts) at 40.0 - 500Hz, ±(1% of reading + 10 counts) at 501 - 1000Hz *2			
Current Resolution		Hi: 0.01A / Lo: 0.001A			Hi: 0.01A
Peak Current Range		0 - 45A		0 - 90A	0 - 180A
Peak Current Accuracy		±(1% of reading + 5 counts) at 40.0 - 500Hz, ±(1% of reading + 10 counts) at 501 - 1000Hz			±(1% F.S. + 5 counts)
Peak Current Resolution		0.1A			
Power Range		Hi: 100 - 1200W / Lo: 0 - 120W		Hi: 200 - 2400W / Lo: 0 - 240W	Hi: 0 - 4800W
Power Accuracy		±(2% of reading + 10 counts) @ 40 - 500Hz, ±(2% of reading + 15 counts) @ 501 - 1000Hz			
Power Resolution		Hi: 1W / Lo: 0.1W			Hi: 1W
<b>GENERAL</b>					
Efficiency		≥ 77% at max. power		≥ 80% at max. power	
Protection		OVP, OCP, LVP, OPP, OTP, RCP, Fan Fail			
Remote Interface		Standard: RS232 / RS485 / Ethernet / USB / PLC Remote In&Out, Optional: GPIB / Analog Control			
Over Current Foldback		Output Current maintains constant based on the load while output voltage varies			
Output Sync Signal		ON, Event for Voltage or Frequency Change (Output signal 5V, BNC type)			
Memories		50 Memories & 1200 Steps (24 Steps/Memory)			
Operating Temperature		0°C - 40°C			
Weight		approx. 16 kg	approx. 20 kg	approx. 31.3 kg	approx. 61.5 kg

\*1 All specifications are subject to change without notice.

\*2 AFV-P-2500 is ±(1% FS + 5 counts).

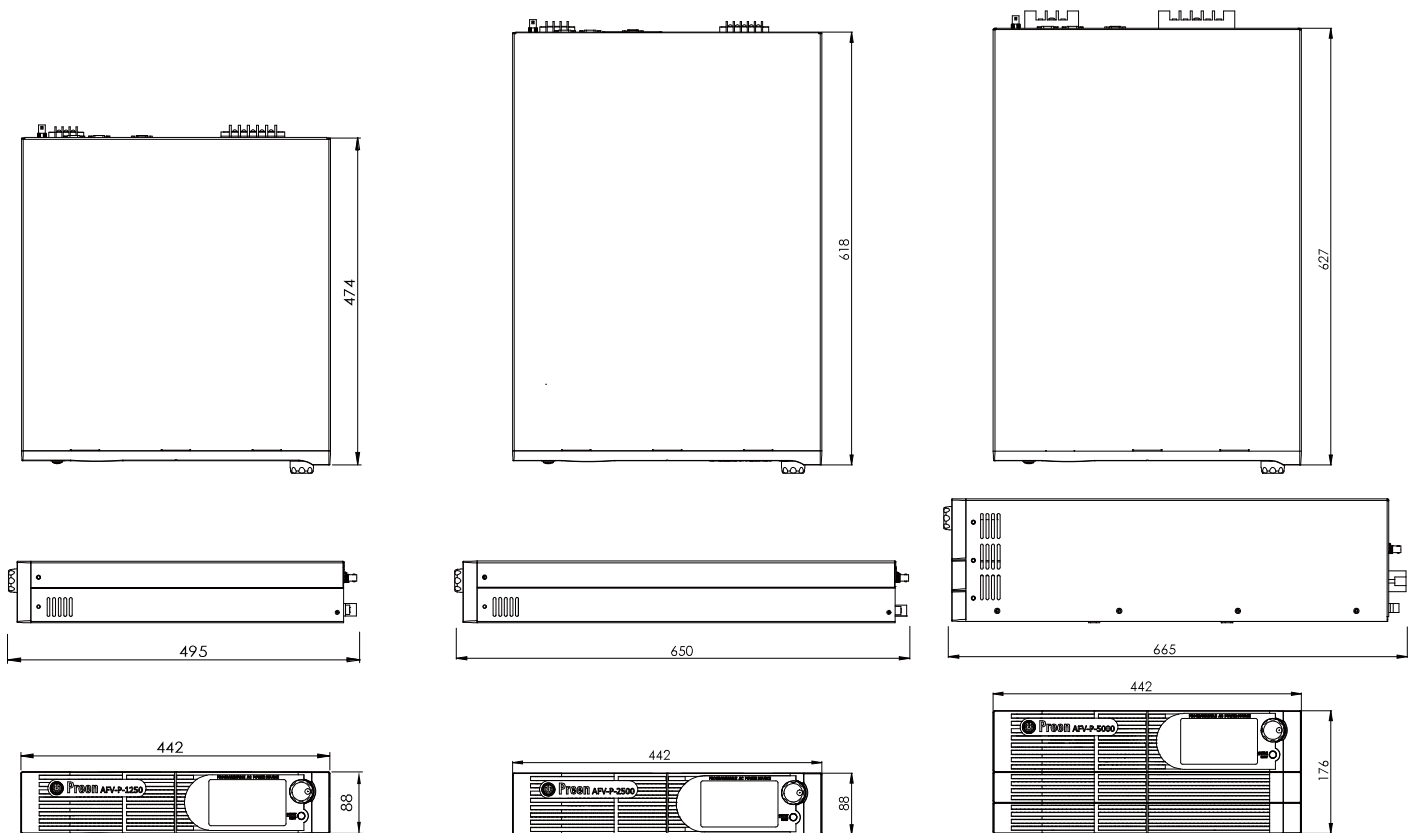
## Ordering Information

Model Number	Description
AFV-P-600A	Programmable AC Source 600VA/0-310VAC/15-1000Hz
AFV-P-600B	Programmable AC Source 600VA/0-310VAC/40-500Hz
AFV-P-1250A	Programmable AC Source 1250VA/0-310VAC/15-1000Hz
AFV-P-1250B	Programmable AC Source 1250VA/0-310VAC/40-500Hz
AFV-P-2500A	Programmable AC Source 2500VA/0-310VAC/15-1000Hz
AFV-P-2500B	Programmable AC Source 2500VA/0-310VAC/40-500Hz
AFV-P-5000A	Programmable AC Source 5000VA/0-310VAC/15-1000Hz
AFV-P-5000B	Programmable AC Source 5000VA/0-310VAC/40-500Hz

## Optional Selections

Accessories
GPIB Interface Board
Analog Interface Board
RS232 Cable (1.8m/female to male)
Input Power Cord (30m/5.5m2/20A; 30m/14mm2/40A)
0-600 High Voltage Module
150% Overload Capability for 1 Second

## Dimensions



Unit: mm

**AFV-P-600/1250**

**AFV-P-2500**

**AFV-P-5000**

# AC POWER CORP.

Specialized in power electronics, Preen (AC Power Corp.) has been developing products based on its core technology of Power Conversion. Product Line includes AC Power Sources, DC Power Supplies, Power Supplies for Defense Industry, Renewable Energy Simulators, Line Conditioners and UPS. Boasting one of the broadest product line in the industries, Preen specializes in High Power Source and has developed AC power source up to 2MVA with high power density.

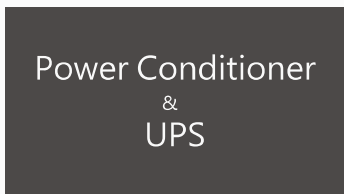
## Product Lines



- Up to 1000Hz
- 500VA ~ 2,000kVA
- Regenerative Function



- Up to 2,000V
- 2kW ~ 300kW
- Fast Response & Low Ripple



- Solid State & Inductive types
- Up to 1500kVA

## Applications



Renewable Energy



Laboratory



Aircraft Manufacturing



Transport System



EMC Chamber



Medical Equipment



Control Room/ Data Center



Electronics



ATE System



Airport Apron / Hangar



Home Appliance



Motor / Engine



Communication Equipment



Military Aircraft / Helicopter



Navy System



Defense Equipment

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Leading Test & Measurement Power Supply Provider