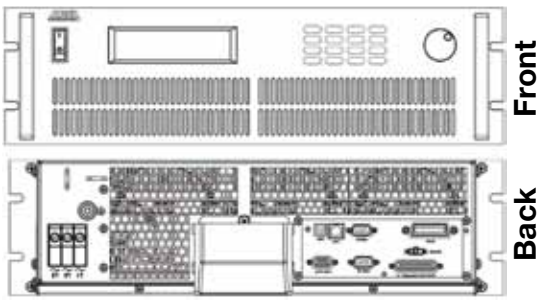
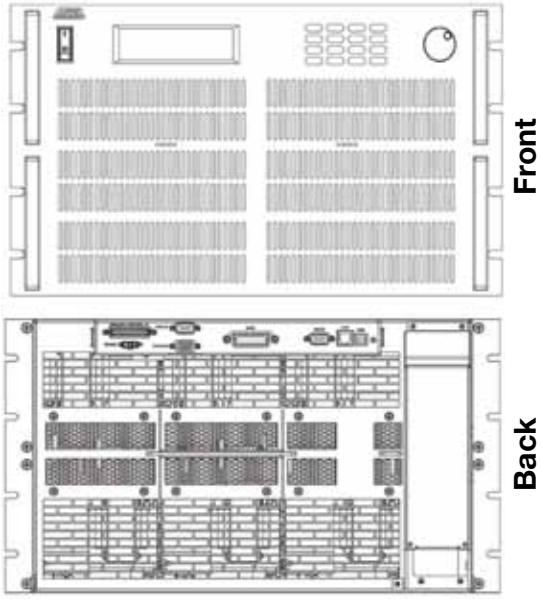
SPS Series (4kW-30kW)
ePower





The AMREL ePower SPS Medium Power Switching DC Power Supply Series 4kW - 30kW, delivers unsurpassed quality & reliable low-noise performance, fast and precise programmability, and premium features at an affordable value, all in a compact power-dense package

SPS Features and Benefits

- High Power Density: Up to 15 kW in a 3U / 30 kW in a 6U chassis
- Fast Load Transient Response: Protection from undesired voltage excursions
- Fast Slew Rate: Industry-leading rise/fall times for speed-critical applications
- Low RMS and P-P Noise: Suitable for the most sensitive applications
- Parallel up to 150 kW: Expandable as your requirement grows
- Low Audible Noise: Temperature controlled variable speed fans
- Ultra-precision accuracy: Voltage and current measurements without external DMMs
- Exclusive A Panel: The perfect balance between performance and value. The AMREL A panel offers digit LED readouts, 10-turn potentiometers for setting voltage and current, front panel over-voltage protection, preview/adjustment and reset and external analog programming.
- Exclusive K Panel: Sophisticated performance and premium features. The AMREL K panel offers voltage and current programming, keypad and encoder for simple navigation, and a wide array of interfaces such as external analog programming, GPIB & RS-232, and field-enabled USB & Ethernet option.

Standard Features

- Two Modes in One: Automatic constant voltage and constant current mode crossover
- Protection Against Hazardous Faults: Remote Shutdown (S/D) and Interlock provide various external output shutdown capability – in case of hazardous faults
- Advanced External Analog Programming: Increased control and convenience in external programming applications achieved through various external voltage current and control methods
- Protection Against Voltage Drops: Remote Sense corrects for errors from line voltage drops
- Sophisticated Power Conversion Technology: State-of-the-art FET-based high frequency switching technology provides accuracy, exceptional load transient response & low noise

Exclusive K Panel Features

- VFD (Vacuum Florescent Display) provides easy-to-read settings and accurate measurements
- Digital OVP, OCP, ILIST and VLIST display for easy function recognition
- Real-time encoder provides precise and on-the-fly voltage and current control
- Multi-functional front panel keypad for high resolution and precise digital OVP, OCP, ILIST & VLIST, current and voltage control
- Remote programming control with standardized SCPI commands, LabVIEW & LabWindow for advanced and integrated ATE Testing
- Embedded Ethernet and USB interface option without the need for interface converters
- Remote/Front Panel Lockout to ensure protection for remote ATE systems
- In-field USB, Ethernet and Firmware Upgrades to prevent down-time, satisfy new and dynamic system applications and provide up-to-date software maintenance
- 16 bit Read back and Programming DAC for high resolution and accuracy for standalone or burn-in testing without the need for external measuring equipment
- Convenient and robust voltage & current sequencing – 4 sequencing profiles; 20 points per profile

Markets and Applications

- Telecommunications & IT
- Industrial Automation & Process Control
- Magnets, RF Amplifiers & Beam Steering
- Heater Supplies
- Battery, Ultracapacitor & Energy Storage ValidationfTesting
- Material Research
- Electroplating, Sputtering & Coating
- Electrical Component Validation
- Burn-in & Lights-out Testing
- Laser Diode Validation &Testing
- PV Inverter, Fuel Cell & Renewable Energy
- Aerospace & Satellite Testing
- Test & Measurement
- Water Treatment & Purification
- Semiconductor Processing
- Industrial Automation
- Gas, Chemical, Petroleum & Utility Plants
- EOL Test, QC and Inspection
- Defense, Military ATE
- Automotive Component, ECU & HIL Testing
- Compliance Testing

TECHNICAL SPECIFICATIONS

The following subsections provide environmental, electrical, and physical characteristics for the SPS MEDIUM POWER Series power supplies.

ENVIRONMENTAL CHARACTERISTICS

PARAMETER	SPECIFICATION
TEMPERATURE COEFFICIENT	0.02% /°C of maximum output voltage rating for voltage set point. 0.03% /°C of maximum output current rating for current set point.
AMBIENT TEMPERATURES	
Operating	0 to 50°C
Storage	-25° to 65°C
COOLING	Internal fans; vents on sides and rear. (Units may be stacked without clearance above or below).
HUMIDITY	95% maximum, non-condensing, 0 to 50°C; 45°C maximum wet-bulb temperature
ALTITUDE	Operating full power available up to 5,000 feet (1 ,524m), derate 10% of full power for every 1,000 feet higher; non-operating to 40,000 feet (12, 192m)
Regulatory	Certified to UL/CSA 61010 and IEC/EN 61010-1 by a NRTL, CE Compliant, Semi-F47 Compliant. LVD Categories: Installation Category II: Pollution Degree 2; Class II Equipment: for Indoor Use Only. EMC Directive, EN 61326:1998

ELECTRICAL CHARACTERISTICS

PARAMETER	SPECIFICATION
INPUT POWER	
Voltage (Standard)	208/220 VAC±10% (allowed range 187-242 VAC)
Voltage (Options)	380/400 VAC±10% (allowed range 342-440 VAC) 440/480 VAC±10% (allowed range 396-528 VAC)
Frequency	47 to 63 Hz, 400Hz 3U models, 47 to 63 Hz 6U models
Phases	3-phase, 3-wire plus ground. Not phase rotation sensitive. Neutral not used.
Power Factor	>0.9 typical for 208/220 VAC input (10V - 800V) >0.78 typical for 380/400 VAC input (40V - 800V) >0.9 typical for 380/480 VAC input (10V - 30V) >0.7 typical for 440/480 VAC input (40V - 800V) >0.9 typical for 440/480 VAC input (10V - 30V)
Efficiency	87% typical at full load, nominal line
FRONT PANEL METER ACCURACY	
Voltage	A-Panel: ±0.5% of full-scale + 1 Digit K-Panel: ±0.15% of full-scale
Current	A-Panel: ±0.5% of full-scale + 1 Digit K-Panel: ±0.4% of full-scale
LOAD REGULATION	(Specified at no load to full load, nominal AC input, with sense wires used)
Voltage	±0.02% (40-800V output) ±0.5% (10-30V output) of maximum output voltage
Current	±0.1% of maximum output current
LINE REGULATION	(Specified ±10% of nominal AC input, constant load, with sense lines used)
Voltage	±0.01% of maximum output voltage (40-800V output), ±0.05% (10-30V output)
Current	±0.05% of maximum output current
TRANSIENT RESPONSE	A 50% step load will recover to within 0.75% of original value within 1 ms.
DOWN PROGRAMMING	With no load the output will program from 100 to 10% in less than 1.5 seconds
STABILITY	±0.05% of set point after 30 minute warm-up and over 8 hour line, load and temperature.

REMOTE CONTROL / MONITOR	On/Off control via contact closure, 6-120 VDC or 12-240 VAC, and TTL or CMOS switch, output voltage and current monitor, OVP limit set, summary fault status		
PARAMETER	SPECIFICATION		
FRONT PANEL AND REMOTE DIGITAL PROGRAMMING			
Voltage	A-Panel: ±0.5% of full-scale + 1 Digit K-Panel: ±0.1% of full-scale		
Current	A-Panel: ±0.5% of full-scale + 1 Digit K-Panel: ±0.4% of full-scale		
Overvoltage Protection (OVP)	±1% of full-scale output		
REMOTE DIGITAL READBACK			
Voltage	±0.15% of full-scale		
Current	±0.4% of full-scale		
REMOTE ANALOG PROGRAMMING			
Constant Voltage	±0.25% of full-scale output for 0-5V range (±0.5% 0-10V range)		
Constant Current	±0.8% (40-800V output), ±1.0% (10-30V output) of full-scale output		
Overvoltage Protection (OVP)	±1% of full-scale output		
REMOTE ANALOG READBACK			
Voltage	±1% (40-800V output), ±0.5% (10-30V output) of full-scale output		
Current	±1% (40-800V output), ±0.5% (10-30V output) of full-scale output		
RESISTIVE ANALOG PROGRAMMING			
Constant Voltage (0-100%)	0-5 kΩ		
Constant Current (0-100%)	0-5 kΩ		
VOLTAGE ANALOG PROGRAMMING			
Constant Voltage (0-100%)	0-5 VDC or 0-10 VDC		
Constant Current (0-100%)	0-5 VDC or 0-10 VDC		
REMOTE SENSING	Terminals are provided to sense output voltage at point of load. Maximum line drop 5% of rated voltage per line for 40-100V models, line drop 1V of rated voltage per line for 10-20V models, 1.5V for 30V models, 2% of rated voltage per line for models 160V and greater. (Greater line drop is allowed, but output regulation specifications no longer apply).		
REMOTE ANALOG CONTROL			
Input to Output Isolation	The control signal return for Non-Isolated Analog programming is connected to the negative output terminal. Under no condition should the negative terminal exceed 300V to earth ground. The maximum voltage from control signal return of the Remote Isolated Analog programming (option) to the negative output terminal is 600V.		
PHYSICAL	3U MODELS (10V-30V)	3U Models (40V-800V)	6U MODELS (40V-600V)
WIDTH	19.00 in (48.3 cm)	19.00 in (48.3 cm)	19.00 in (48.3 cm)
DEPTH	28.09 in (71.4 cm)	26.4 in (67.1 cm)	27.06 in (63.8 cm)
HEIGHT	5.25 in (13.3 cm)	5.25 in (13.3 cm)	10.5 in (26.7 cm)
WEIGHT (Physical)	(4kW, 10V 15V) ≈<65 lbs (29 kg) (5kW, 20V 30V) ≈<65 lbs (29 kg) (8kW, 10V 15V) ≈<85 lbs (39 kg) (10kW, 20V 30V) ≈<85 lbs (39 kg) (12kW, 10V 15V) ≈<110 lbs (50 kg) (15kW, 20V 30V) ≈<110 lbs (50 kg)	(5kW) ≈ 40 lbs (18 kg) (10kW) ≈ 60 lbs (27 kg) (15kW) ≈ 80 lbs (36 kg)	(20kW) ≈ 120 lbs (54 kg) (25kW) ≈ 140 lbs (64 kg) (30kW) ≈ 160 lbs (73 kg)

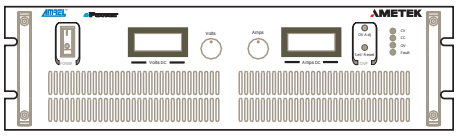
Important Notes:
1) Specifications are subject to change without notice
2) The SPS Series power supplies are intended for indoor use only.

ePower GENERAL SPECIFICATIONS

SPS SELECTOR GUIDE

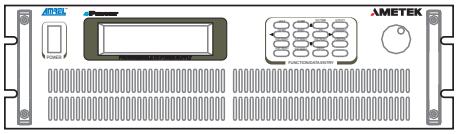
SPS UUU X VW - AOOZ (A-panel) | SPS UUU X VW - KOYZ (K-panel)

A-panel



Ordering Example (A-panel): SPS200X50-AOOC
Description: 200Vdc, 50Adc and 20S/220Vac 3-ph AC Input

K-panel



Ordering Example (K-panel): SPS200X50-K02C
Description: 200Vdc, 50Adc, GPIB &RS232 Interface and 208/220Vac 3-ph AC Input

O - OPTIONS	Y - INTERFACE (K-panel only)	UUU - VOLTAGE RATING	Z - AC INPUT VOLTAGE
0 - None	2 - GPIB & RS-232	VW - CURRENT RATING	C - 208/220Vac 3-ph
1 - Isolated Analog Interface	E - GPIB, RS-232, USB & ETHERNET		D - 380/400Vac 3-ph
			E - 440/480Vac 3-ph

Output: Voltage and Current Ranges

	3U			6U			Ripple & Noise	
Power	4/5 kW	8/10 kW	12/15 kW	16/20 kW	20/25 kW	24/30 kW	rms (20 Hz-300 kHz)	p-p (20 Hz-20 MHz)
Voltage	Current							
10	400	800	1200	1600*	2000*	2400*	20 mV	50 mV
15	267	534	801	1068*	1335*	1602*	20 mV	50 mV
20	250	500	800	1000*	1250*	1500*	20 mV	60 mV
30	167	334	501	668*	835*	1002*	20 mV	60 mV
40	125	250	375	500*	625*	750*	20 mV	75 mV
60	83	167	250	333	417	500	20 mV	75 mV
80	63	125	188	250	313	375	20 mV	100 mV
100	50	100	150	200	250	300	20 mV	100 mV
160	31	63	94	125	156	188	25 mV	150 mV
200	25	50	75	100	125	150	25 mV	175 mV
250	20	40	60	80	100	120	30 mV	200 mV
330	15	30	45	61	76	91	30 mV	200 mV
400	12	25	38	50	63	75	40 mV	300 mV
600	8	17	25	33	42	50	60 mV	350 mV
800	6.2	12.5	18.7	25*	31.2*	37.5*	80 mV	500 mV

* By way of paralleling 3U supplies

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