

FEATURES

- Digital or Analog Remote Control
- Voltage and Current Monitoring
- Over Current and Over Voltage Protection
- Software Configurable Features and Performance
- Serial Communications with SDK
- Available GPIO Pins
- Data logging of Power Supply Parameters
- User Programmable Fault Handling



The SPS Series are high voltage power supplies utilizing a fully digital control loop. This patented technology enables the products to provide unprecedented flexibility in performance, features, and system integration. Both performance and features can be configured and customized through software. They offer remote monitoring and control, constantly log essential statistics while running for use in design or troubleshooting and are expandable through available GPIO pins. A Windows application and full development SDK are available to further enable design work, making the SPS series the fastest way to design with high voltage.

SPECIFICATIONS

		Conditions	Value			Units
Input			4W	20W	30W	
Voltage	Nominal		+24	+24	+24	VDC
Voltage Range	Full Power		+23 to 31	+23 to 31	+23 to 31	VDC
Voltage Range	Derated Power		+12 to 32	+12 to 32	+12 to 32	VDC
Current	Standby / Disable		< 60	< 60	< 60	mA
Current	No Load, Max Vout		< 175	< 175	< 175	mA
Current	Max Load, Max Vout		< 385	< 1,180	< 1,650	mA
AC Ripple Current	Nominal Input, Full Load		< 120	< 120	< 140	mA PP
Output						
Line Regulation	Nom. Input, Max Vout, Full Power		< 0.01			%VDC
Static Load Regulation	No Load to Full Load, Max Vout		< 0.08			%VDC
Stability	30 Min. Warmup, per 8 hr / per day		< 0.01 / < 0.02			%VDC
Analog Controls and Monitoring						
Input Impedance	Nominal Input		1.0 MΩ to SIGGND			MΩ
Adjust Resistance	Typical Potentiometer Values		100 kΩ (Pot. Across VREF & SIGGND, Wiper to ADJ)			kΩ
Adjust Logic	0 to +5 V (Option "-5"*)		+4.5 VDC for Max Output			VDC
	0 to +10 V (Option "-10"*)		+9.0 VDC for Max Output			VDC
Reference Voltage	At +25 °C (Option "-5"*)		+5.0 VDC ±0.5%, Zout = 499 Ω ±1%			VDC
	At +25 °C (Option "-10"*)		+10.0 VDC ±0.5%, Zout = 1000 Ω ±1%			VDC
General Purpose Voltage	At +25 °C (Pin 8)		+5.0 VDC ±2%, Zout = 49 Ω ±1%			VDC
HV Output Enable / Disable	Default HV Enabled (Option "L"*)		0 to +1.5 Enable, +2.5 to 32 Disable			VDC
	Default HV Disabled (Option "H"*)		0 to +1.5 Disable, +2.5 to 32 Enable			VDC
Environmental						
Operating Temperature	Ambient – Full Load, Max Vout		-20 to +60			°C
Operating Temperature	Case Temperature – Full Load, Max Vout		-20 to +80			°C
Temperature Coefficient	Over the Operating Temperature		±50			PPM/°C
Storage Temperature	Non-operating, Case Temperature		-55 to +105			°C
Humidity	Non-condensing		0 to 95			%
Altitude	Standard Package, All Conditions		Sea Level to Vacuum			-

Note: Specifications based on 30 minute warmup, unless indicated otherwise.

MODELS*

Model Number	Output Voltage	Output Current	Low Freq. ¹ Ripple	High Freq. ² Ripple	Output Capacitance	I _{MON} Scaling ^{3, 4}	V _{MON} Scaling ³
4 W Models							
SPS-24-250•-4	25 to 250 V	16 mA	0.152	0.015	1 µF	12.0 mA/V	25 V/V
SPS-24-500•-4	25 to 500 V	8 mA	0.137	0.008	0.5 µF	6.0 mA/V	50 V/V
SPS-24-1000•-4	50 to 1,000 V	4 mA	0.095	0.011	0.33 µF	3.0 mA/V	100 V/V
SPS-24-2000•-4	100 to 2,000 V	2 mA	0.053	0.006	0.0068 µF	1.5 mA/V	200 V/V
SPS-24-4000•-4	200 to 4,000 V	1 mA	0.026	0.008	0.0034 µF	0.75 mA/V	400 V/V
SPS-24-6000•-4	300 to 6,000 V	0.67 mA	0.016	0.011	0.0023 µF	0.5 mA/V	600 V/V
20 W Models							
SPS-24-250•-20	25 to 250 V	80 mA	0.147	0.017	1 µF	12.0 mA/V	25 V/V
SPS-24-500•-20	25 to 500 V	40 mA	0.126	0.013	0.5 µF	6.0 mA/V	50 V/V
SPS-24-1000•-20	50 to 1,000 V	20 mA	0.116	0.007	0.33 µF	3.0 mA/V	100 V/V
SPS-24-2000•-20	100 to 2,000 V	10 mA	0.105	0.011	0.0068 µF	1.5 mA/V	200 V/V
SPS-24-4000•-20	200 to 4,000 V	5 mA	0.095	0.015	0.0034 µF	0.75 mA/V	400 V/V
SPS-24-6000•-20	300 to 6,000 V	3.3 mA	0.080	0.019	0.0023 µF	0.5 mA/V	600 V/V
30 W Models							
SPS-24-250•-30	25 to 250 V	120 mA	0.252	0.025	1 µF	12.0 mA/V	25 V/V
SPS-24-500•-30	25 to 500 V	60 mA	0.210	0.015	0.5 µF	6.0 mA/V	50 V/V
SPS-24-1000•-30	50 to 1,000 V	30 mA	0.164	0.013	0.33 µF	3.0 mA/V	100 V/V
SPS-24-2000•-30	100 to 2,000 V	15 mA	0.118	0.013	0.0068 µF	1.5 mA/V	200 V/V
SPS-24-4000•-30	200 to 4,000 V	7.5 mA	0.092	0.013	0.0034 µF	0.75 mA/V	400 V/V
SPS-24-6000•-30	300 to 6,000 V	5 mA	0.080	0.021	0.0023 µF	0.5 mA/V	600 V/V

* Refer to below table for hardware option details. • Substitute P or N for positive or negative output.

¹ % Vp-p 1 Hz to 1 kHz. ² % Vp-p 1 kHz to 1 MHz. ³ Full scale signal, values listed are for -10 option, double for -5 option.

⁴ I_{MON} for -10 option, at maximum output current will read 1.33 V on 4 W models, 6.67 V on 20 W models, and 10.0 V on 30 W models. Half for 5 V reference options.

HARDWARE OPTIONS

Standard Options (Choose 1)

Append to Part #	Option
-5L	5 Volt Reference, Default HV Enable
-5H	5 Volt Reference, Default HV Disable
-10L	10 Volt Reference, Default HV Enable
-10H	10 Volt Reference, Default HV Disable

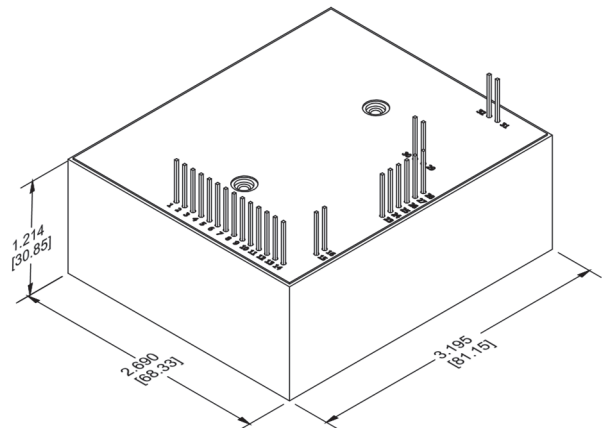
Additional Options

Append to Part #	Option	Incompatible With
-W	Flying High Voltage Lead (Approx. 18")	
-M	Mu-Metal Shielding Over Case	
-E	Eared Mounting Plate	-H
-H	Heatsink	-E

MECHANICAL / DIMENSIONS

Mechanical Specifications		
Volume	10.5 in ³	172 cm ³
Weight	10.4 oz	295 g
Case	DAP case certified to ASTM-D-5948	
Pins	0.100" Spacing	

Tolerances	
Overall	0.050" [±1.27 mm]
Pin to Pin	0.015" [±0.38 mm]
Mounting	0.025" [±0.64 mm]



ACCESSORY LIST

Accessory	Part Number	Description
USB Cable	SPS-USB-Cable	Standard USB-A Male Cable with pin connector for connecting to SPS power supply.
USB Isolator	SPS-USB-Isolator	Provides isolation between USB host and peripheral, helping to protect PC when connected to SPS power supply.

SOFTWARE AND CONFIGURATION OPTIONS

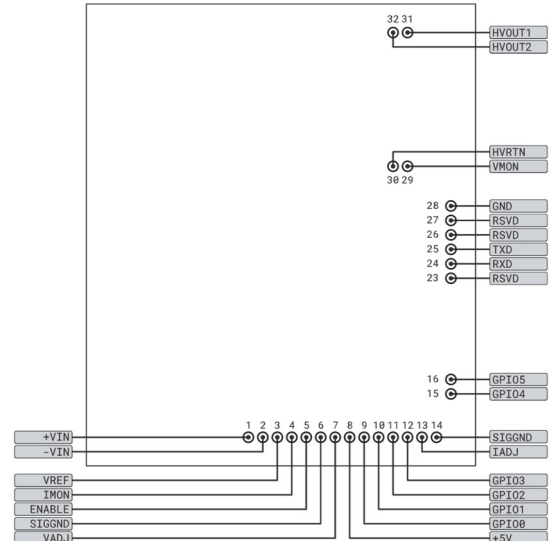
A Windows GUI application designed to aid in development using the SPS Series, and a full Software Development Kit (SDK) with essential libraries and documentation are available at www.deantechnology.com.

For a list of configuration options and default values see the SPS User Settable Parameters document. Virtually limitless configuration options as well as performance and feature customizations are possible through software changes. Contact the factory or authorized sales partner to discuss specific needs.

PINOUTS**

Pin	Name	Description	Min	Max
1	+VIN	Positive Power Input	12.5 V	32 V
2	-VIN	Power Ground Return	-	-
3	VREF	Reference Voltage	5 V or 10 V	5 V or 10 V 10 mA
4	IMON	Current Monitor	-	-
5	ENABLE	Enable Input (> 2.5 V)	-	-
6	SIGGND	Signal Ground	-	-
7	VADJ	Analog Voltage Adjust Input	0 V	5 V or 10 V
8	+5V	General Purpose Voltage	5 V	5 V 100 mA
9	GPIO0	GPIO (Default: 1s Pulse)	0 V	3.3 V 3.3 mA
10	GPIO1	GPIO (Default: High if HV Enabled)	0 V	3.3 V 3.3 mA
11	GPIO2	GPIO (Default: High if in Fault)	0 V	3.3 V 3.3 mA
12	GPIO3	GPIO	0 V	3.3 V 3.3 mA
13	IADJ	Analog Current Adjust Input	0 V	5 V or 10 V
14	SIGGND	Signal Ground	-	-
15	GPIO4	GPIO	0 V	3.3 V 3.3 mA
16	GPIO5	GPIO	0 V	3.3 V 3.3 mA
23	-	Reserved for Factory	-	-
24	RXD	TTL Receive Data	0 V	3.3 V
25	TXD	TTL Transmit Data	0 V	3.3 V
26	-	Reserved for Factory	-	-
27	-	Reserved for Factory	-	-
28	GND	Communication Ground	-	-
29	VMON	Voltage Output Monitor	-	5 V or 10 V
30	HVRTN	High Voltage Ground Return	-	-
31	HVOUT1	HV Output	-	-
32	HVOUT2	HV Output	-	-

** Total Current Output of All GPIO is 20 mA



CERTIFICATIONS



PATENTS

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