



Spellman's SL2KW Series of 2kW high voltage power supplies are designed to meet uncompromising performance standards in a minimum of space. Their circuitry includes a resonant high frequency inverter with proprietary control which provides fault-free operation in extreme transient and arcing environments with greater than 85% efficiency. These full featured supplies are available in a wide range of outputs with many options.

### TYPICAL APPLICATIONS

- Semiconductor Manufacturing
- Electrostatics
- E-Beam Systems
- Capacitor Charging
- CPT/CRT Testing
- Hipot Testing
- General Laboratory
- CW Lasers

### OPTIONS

See page 3 for options and descriptions

### SPECIFICATIONS

#### Status Indicators:

Voltage and Current Control Mode, Interlock Open and Closed, High Voltage Inhibit, Overcurrent and Overvoltage, Arc, Regulation Error, Overtemperature.

#### Input:

Standard: 208Vac  $\pm 10\%$ , 50/60Hz., three phase  
Optional: 220Vac  $\pm 10\%$ , 50/60Hz., single phase

#### Output:

Models available from 0.5kV to 50kV. Each model is available in positive, negative or reversible polarity output.

#### Front Panel Controls:

Voltage and current are continuously adjustable by ten-turn potentiometers with lockable counting dials, ON/OFF circuit breaker/lamp, high voltage ON switch/indicator and high voltage OFF switch/indicator.

#### Voltage Regulation:

Load: 0.005% of maximum voltage +500mV for full load change.  
Line:  $\pm 0.005\%$  of full voltage +500mV over specified input range

- **VERY COMPACT AND LIGHTWEIGHT**
- **LOW EMI AND RFI**
- **VOLTAGE RANGE FROM 500V TO 50KV**
- **REVERSIBLE POLARITY STANDARD UP TO 8KV**
- **SYSTEM STATUS INDICATORS**
- **EXTENSIVE ANALOG AND DIGITAL INTERFACE**
- **ARC QUENCH/ARC COUNT/ARC TRIP**
- **OEM CUSTOMIZATION AVAILABLE**

[www.spellmanhv.com/manuals/SL2KW](http://www.spellmanhv.com/manuals/SL2KW)

#### Current Regulation:

Load: 0.01% of maximum current  $\pm 100\mu\text{A}$   
for full voltage change.  
Line:  $\pm 0.005\%$  of maximum current for a  $\pm 10\%$   
input line change.

#### Ripple:

0.1% p-p +1Vrms, three phase line input  
0.3% p-p +1Vrms, single phase line input

#### Temperature Coefficient:

100ppm/ $^{\circ}\text{C}$  voltage or current regulated. Higher stability is available on special order.

#### Environmental:

Temperature Range:  
Operating:  $0^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ .  
Storage:  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$ .  
Humidity:  
10 to 90% relative humidity, non-condensing

#### Stability:

100ppm/hour after 1/2 hour warm-up for both voltage and current regulation.

#### Metering:

Digital voltage and current meters, 3 $\frac{1}{2}$  digit  $\pm 1$  least significant digit.

#### Interface Connector:

25 pin male D connector

#### Output Cable:

10' (3.3m) of shielded high voltage cable removable at the rear panel.

#### AC Line Input Cable:

A 6 foot (1.83m) cable is permanently attached to the unit. Single phase units use 3 conductor 12AWG cable, three phase units use 4 conductor 16AWG cable.

#### Dimensions:

3 $\frac{1}{2}$ "H(2U) x 19"W x 19"D  
(8.9cm x 48.3cm x 48.3cm).

#### Weight:

17 to 26lbs (7.7 to 11.8kg) depending on model.

#### Regulatory Approvals:

Compliant to 2004/108/EC, the EMC Directive and 2006/95/EC, the Low Voltage Directive.

## SL2KW SELECTION TABLE

MAXIMUM RATING		MODEL NUMBER
kV	mA	
0.5	4000	SL0.5PN2000
1	2000	SL1PN2000
2	1000	SL2PN2000
3	666	SL3PN2000
6	333	SL6PN2000
8	250	SL8PN2000
10	200	SL10*2000
15	133	SL15*2000
20	100	SL20*2000
30	66.6	SL30*2000
40	50	SL40*2000
50	40	SL50*2000

\*Specify "P" for positive polarity or "N" for negative polarity or "PN" for reversible polarity

## SL2KW 25 PIN D CONNECTOR

TB1	SIGNAL	SIGNAL PARAMETERS
1	Power Supply Common	Signal Ground
2	External Inhibit	Ground=Inhibit, Open=HV On
3	External Interlock	+15V at Open, <15mA at Closed
4	External Interlock Return	Return for Interlock
5	Current Monitor	0 to 10V=0 to 100% Rated Output
6	kV Test Point	0 to 10V=0 to 100% Rated Output
7	+10Vdc Reference	+10Vdc, 1mA Max
8	Remote Current Program In	0 to 10V=0 to 100% Rated Output
9	Local Current Program Out	Front Panel Program Voltage
10	Remote Voltage Program In	0 to 10V=0 to 100% Rated Output
11	Local Voltage Program Out	Front Panel Program Voltage
12	EFR Common	External Fault Relay
13	EFR-NC/EFR-NO	30V @ 2A Maximum
14	Local HV Off Out	+15V at Open, <25mA at Closed
15	HV Off	Connect to HV OFF for FP Operation
16	Remote HV On	+15V, 10mA Max=HV Off
17	Remote HV Off Indicator	0=HV On, +15V, 10mA Max=HV Off
18	Remote HV On Indicator	0=HV Off, +15V, 10mA Max=HV On
19	Remote Voltage Mode	Open Collector 35V Max, 10mA Max, On=Active
20	Remote Current Mode	
21	Remote Power Mode	
22	Remote PS Fault	0=Fault, +15V, 0.1mA Max=No Fault
23	+15V Output	+15V, 100mA Max
24	Power Supply Common	Signal Ground
25	Shield Return	Chassis Ground

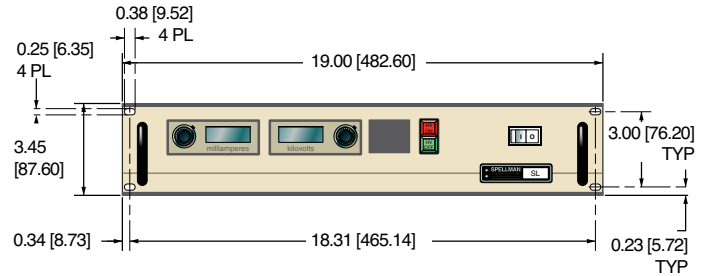
### How To Order:

Sample model number: SL20PN2000/NSS/DPM4  
 SL2KW Series unit, 20kV maximum output voltage, reversible polarity output, 2000 watts, no slow start, 4.5 digit panel meters

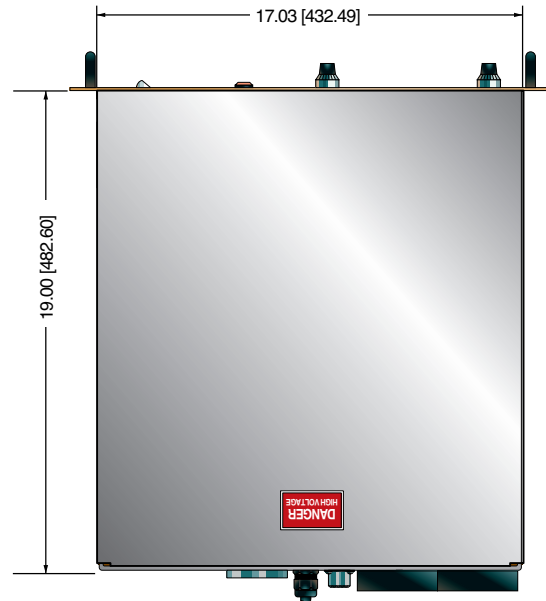
There may be some restrictions on multiple option combinations. Please contact our Sales department for more details.

DIMENSIONS: in.[mm]

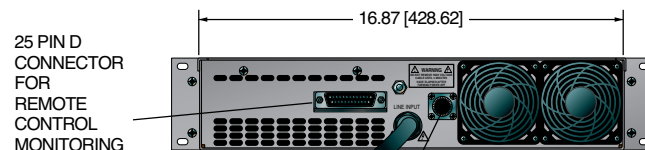
### FRONT VIEW



### TOP VIEW



### BACK VIEW



MATING CONNECTOR AND 10ft. OF HIGH VOLTAGE CABLE SUPPLIED WITH UNIT



## SL2KW SERIES OPTIONS

- AOL** *Adjustable Overload Trip*  
A control board jumper is moved to make the power supply shut down if it ever operates in current mode. This allows the user to set the current programming level as a trip point that will turn the power supply off with an Over Current fault if it ever tries to operate in Current Mode.
- APT** *Adjustable Power Trip*  
A third control loop is installed in the power supply, a power loop. This power loop uses an analog multiplier chip to multiply the voltage and current feedback signals to create a power feedback signal. Programming and feedback scaling is 0-10Vdc = 0-100% of rated power. The circuit is configured to trip the power supply off with an Over Power fault if the power loop ever tries to regulate.
- ARC** *Arc Sense*  
A signal is provided on a spare pin (TB1-21) that changes state whenever the power supply detects an arc.
- AT** *Arc Trip*  
A control board jumper is moved such that the first arc sensed will shut the power supply off with an ARC fault.
- BPM** *Bipolar Master*
- BPS** *Bipolar Slave*  
This option configures two identical but opposite polarity units to function as a single tracking bipolar supply. The voltage feedback of the master (positive unit) is provided to the voltage programming input of the slave (negative unit).
- CMS** *Current Mode Select*  
A front panel switch is provided to allow the power supply to either regulate in current mode or create an over current fault when operated in current mode, which will shut down the supply. This is basically a switch selectable AOL option.
- CPC** *Constant Power Control*  
Identical to the APT Option with the exception the power supply will run and regulate when the power loop becomes active.
- DPM4** *Digital Panel Meter, 4.5 digits*  
The standard 3.5 digit front panel meters are replaced with 4.5 digit panel meters.
- EFR** *External Fault Relay*  
A set of relay contacts are provided via the rear panel interface that will change state if the power supply shuts down due to a fault condition.
- FCV** *Fine Control Voltage*  
This option adds a second potentiometer to the front panel of the unit. This allows for a finer local adjustment of the output voltage setting.
- IO** *Instant On*  
A jumper is placed between TB1-15 and TB1-16 on the rear panel, causing the power supply to automatically toggle into HV ON when ever the line voltage is applied.
- LL(X)** *Lead Length*  
Extra long high voltage output cable. 20, 40, 60 and 100 feet are standard lengths. Non standard lengths can be custom ordered.
- NAD** *No Arc Detect*  
This option removes the arc intervention circuitry from the power supply. Care must be exercised when using this option as damage to the HV multiplier could occur.
- NSS** *No Slow Start*  
The standard 6 second long linear ramp of output voltage is removed allowing the high voltage to "step" to its set point when enabled.
- PN** *Positive/Negative*  
Reversible polarity option. Units that are not inherently reversible by design (10kV to 50kV) can have their output polarity reversed by the process of exchanging the high voltage multiplier section.
- RFR** *Remote Fault Reset*  
This option provides the ability to reset any power supply faults that might occur via toggling a signal on the rear panel interface.
- ROV** *Remote Over Voltage*  
The programming signal for the over voltage comparator circuit is made available to the customer remotely, allowing the power supply to be set to trip the OVP circuit anywhere from 0 -110% of rated output voltage.
- SL** *Slides*  
Industry standard rack mounted slides are installed on the power supply.
- SS(X)** *Slow Start(X)*  
The standard slow start is modified to provide a time of (X) seconds. Time frames of 0.1 seconds to 120 seconds can be accommodated.

There may be some restrictions on multiple option combinations. Please contact our Sales department for more details.