

**250 WATT  
TO  
400 WATT  
ENCLOSED POWER SUPPLIES**

**DESIGNED FOR  
PERSONAL COMPUTERS,  
SERVERS, AND  
RAID ENCLOSURES**

**LIEN ENGINEERING, INC.**

7940 Arjons Drive • San Diego, California 92126 U.S.A. • Phone: (619) 695-1070 • FAX: (619) 695-6501



# LIEN ENGINEERING, INC.

## PC POWER SUPPLIES

### 300 WATT ENCLOSED SWITCHING POWER SUPPLIES



#### FEATURES:

- Auto Selecting, Full Range 90 - 260 VAC Input
- Proven High Reliability Design
- High Efficiency
- UL, CSA, TUV Approved
- On Board EMI/RFI Filtering - Meets FCC Class B
- Reliable MOS-FET design

For over 25 years, Lien Engineering, Inc. has been producing innovative Power Conversion and Enclosure Products for Large and Small Computers, Computer Peripherals, Medical, Communications, and other Industrial requirements.

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Doc. #SP-SW300WX R-6261998

# SPECIFICATIONS

## INPUT

INPUT VOLTAGE: 90VAC to 260VAC  
47 - 63 Hz  
No external jumpers or switching required  
INRUSH CURRENT: <30A Peak @ 115VAC  
<15A Peak @ 230VAC  
INPUT CURRENT: 1A Max RMS @ 115VAC  
EFFICIENCY: >75% Typical at full load  
EMI FILTER: Meets FCC Class B

ADJUSTMENT RANGE:  $\pm 10\%$  Rated output  
CROSS REGULATION:  $\pm 2\%$  for +5V;  $\pm 5\%$  for +12V  
NOISE: (mv P-P) 60mV for +5V; 120mV for +12V  
HOLD-UP TIME: 12ms Minimum at full load and  
115VAC nominal line  
LINE REGULATION: 0.5% Maximum  
PROTECTION: Foldback @ 105% to 150% of  
rated output  
Automatic recovery  
5.6VDC  $\pm 10\%$  for +5V  
Continuous short circuit protection

## OUTPUT

OUTPUT RATING: (Amps) +24VDC @ 10.0pk  
for 350ms @ 50% duty cycle  
+5VDC @ 0 - 3.0pk  
-5VDC @ 0 - 1.0pk  
 $\pm 12$ VDC @ 0 - 1.0pk  
RIPPLE & NOISE: 1% Peak to peak  
maximum of all outputs

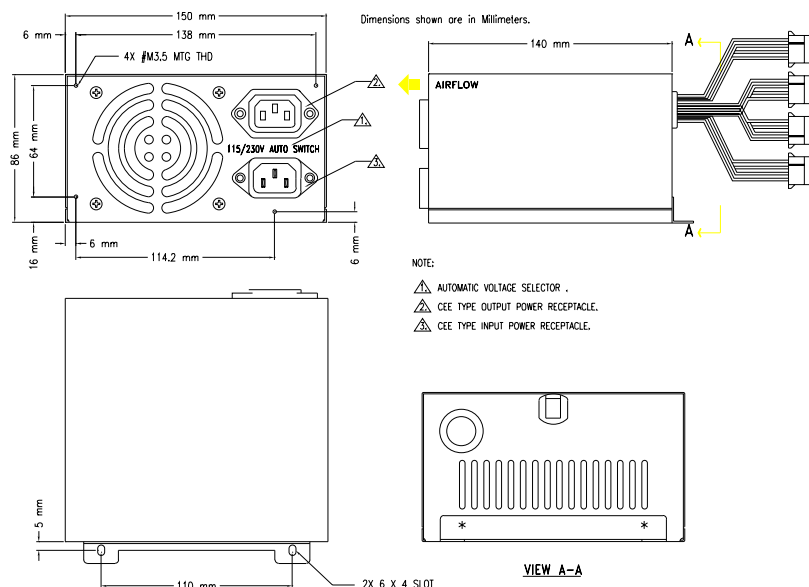
## ENVIRONMENTAL

OPERATING TEMPERATURE:  $0^{\circ}\text{C}$  to  $55^{\circ}\text{C}$   
STORAGE TEMPERATURE:  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$   
THERMAL REGULATION: Integrated high-speed ball bearing fan.  
MTBF: >100,000 POH at maximum operating temperature

MODEL NUMBER	POWER MODULE	CONN. TYPE
PC-SW300WA	300W	AT (P8, P9)
PC-SW300WX	300W	ATX (20pin)

DIMENSIONS: 140mm x 150mm x 86mm  
5.53" x 5.93" x 3.40"

DC VOLTAGE	MINIMUM LOAD		MAXIMUM LOAD		MAX. POWER	LOAD REG.	CROSS REG.	LINE REG.	RIPPLE %	NOISE %
	300WA	300WX	300WA	300WX						
+3.3V	-	1.0A	-	20.0A	150W	+5/-3%	+5/-3%	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
+5V	3.0A	3.0A	30.0A	30.0A	Combined	$\pm 5\%$	$\pm 5\%$	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
+12V	1.0A	1.0A	12.0A	12.0A	144W	$\pm 5\%$	$\pm 5\%$	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
-5V	0A	0A	0.5A	0.5A	2.5W	$\pm 10\%$	$\pm 10\%$	$\pm 1\%$	$\pm 1\%$	$\pm 2\%$
-12V	0A	0A	0.5A	0.5A	6W	$\pm 10\%$	$\pm 10\%$	$\pm 1\%$	$\pm 1\%$	$\pm 2\%$
+5VSB	-	0A	-	0.8A	4W	$\pm 5\%$	$\pm 5\%$	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$





# LIEN ENGINEERING, INC.

## *PC POWER SUPPLIES*

### **400 WATT ENCLOSED SWITCHING POWER SUPPLIES**



#### **FEATURES:**

- Auto Selecting, Full Range 90 - 260 VAC Input
- Proven High Reliability Design
- High Efficiency
- UL, CSA, TUV Approved
- On Board EMI/RFI Filtering - Meets FCC Class B
- Reliable MOS-FET design

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Doc. #SP-SW400WX R-6261998

# SPECIFICATIONS

## INPUT

INPUT VOLTAGE: 90VAC to 260VAC  
47 - 63 Hz

No external jumpers or switching required

INRUSH CURRENT: <30A Peak @ 115VAC  
<15A Peak @ 230VAC

INPUT CURRENT: 1A Max RMS @ 115VAC

EFFICIENCY: >75% Typical at full load

EMI FILTER: Meets FCC Class B

ADJUSTMENT RANGE:  $\pm 10\%$  Rated output

CROSS REGULATION:  $\pm 2\%$  for +5V;  $\pm 5\%$  for +12V

NOISE: (mv P-P) 60mV for +5V; 120mV for +12V

HOLD-UP TIME: 12ms Minimum at full load and 115VAC nominal line

LINE REGULATION: 0.5% Maximum

PROTECTION: Foldback @ 105% to 150% of rated output  
Automatic recovery  
5.6VDC  $\pm 10\%$  for +5V  
Continuous short circuit protection

## OUTPUT

OUTPUT RATING: (Amps) +24VDC @ 10.0pk  
for 350ms @ 50% duty cycle  
+5VDC @ 0 - 3.0pk  
-5VDC @ 0 - 1.0pk  
 $\pm 12$ VDC @ 0 - 1.0pk

RIPPLE & NOISE: 1% Peak to peak  
maximum of all outputs

## ENVIRONMENTAL

OPERATING TEMPERATURE: 0°C to 55°C

STORAGE TEMPERATURE: -40°C to 85°C

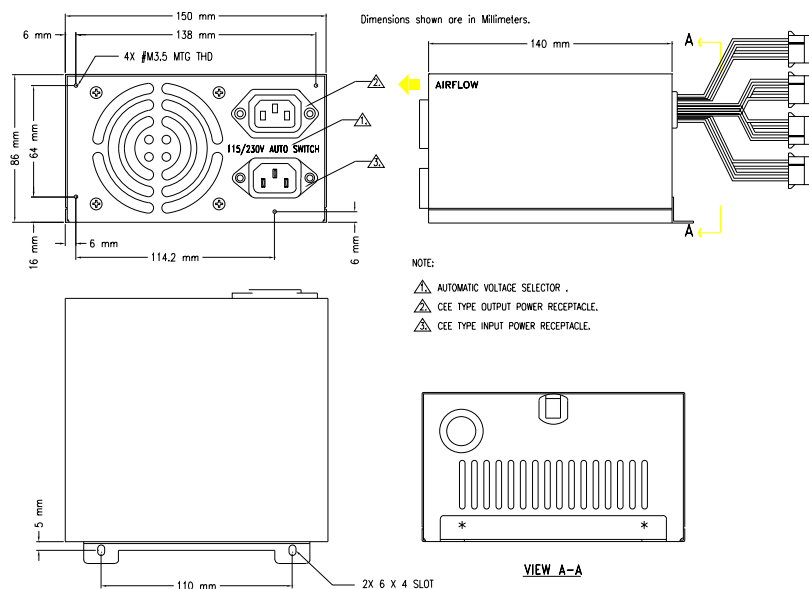
THERMAL REGULATION: Integrated high-speed ball bearing fan.

MTBF: >100,000 POH at maximum operating temperature

MODEL NUMBER	POWER MODULE	CONN. TYPE
PC-SW400WA	400W	AT (P8, P9)
PC-SW400WX	400W	ATX (20pin)

DIMENSIONS: 140mm x 150mm x 86mm  
5.53" x 5.93" x 3.40"

DC VOLTAGE	MINIMUM LOAD		MAXIMUM LOAD		MAX. POWER	LOAD REG.	CROSS REG.	LINE REG.	RIPPLE %	NOISE %
	400WA	400WX	400WA	400WX						
+3.3V	-	0.5A	-	30.0A	240W	+5/-3%	+5/-3%	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
+5V	3.0A	3.0A	50.0A	50.0A	Combined	$\pm 5\%$	$\pm 5\%$	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
+12V	0.5A	1.0A	15.0A	15.0A	144W	$\pm 5\%$	$\pm 5\%$	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
-5V	0A	0A	1.5A	1.5A	2.5W	$\pm 10\%$	$\pm 10\%$	$\pm 1\%$	$\pm 1\%$	$\pm 2\%$
-12V	0A	0A	1.5A	1.5A	6W	$\pm 10\%$	$\pm 10\%$	$\pm 1\%$	$\pm 1\%$	$\pm 2\%$
+5VSB	-	0A	-	0.8A	4W	$\pm 5\%$	$\pm 5\%$	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$





# LIEN ENGINEERING, INC.

## *DRIVE POWER SUPPLIES*

### **300/400 WATT ENCLOSED SWITCHING POWER SUPPLIES**



#### **FEATURES:**

- Auto Selecting, Full Range 90 - 260 VAC Input
- Proven High Reliability Design
- High Efficiency
- UL, CSA, TUV Approved
- On Board EMI/RFI Filtering - Meets FCC Class B
- Reliable MOS-FET design

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### **LIEN ENGINEERING, INC.**

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Doc. #SP-SWx00WX R-6301998

# SPECIFICATIONS

## INPUT

INPUT VOLTAGE: 90VAC to 264VAC  
47 - 63 Hz  
No external jumpers or switching required  
INRUSH CURRENT: <50A Peak @ 115VAC  
<25A Peak @ 230VAC  
INPUT CURRENT: 10A Max RMS @ 115VAC  
EFFICIENCY: >75% Typical at full load  
EMI FILTER: Meets FCC Class B

## OUTPUT

OUTPUT RATING: (Amps) +5VDC @ 0 - 35.0pk  
+12VDC @ 0 - 19.0pk  
RIPPLE & NOISE: 1% Peak to peak  
maximum of all outputs  
ADJUSTMENT RANGE: ±10% Rated output  
CROSS REGULATION: ±5% Rated output  
NOISE: (mV P-P) 60mV for +5V;  
120mV for +12V  
HOLD-UP TIME: 16ms Minimum at full load  
and 115VAC nominal line  
LINE REGULATION: 0.5% Maximum

PROTECTION: Foldback @ 105% to 150% of  
rated output  
Automatic recovery  
5.6VDC ±10% for +5V  
Continuous short circuit protection

## ENVIRONMENTAL

OPERATING TEMPERATURE: 0°C to 55°C  
STORAGE TEMPERATURE: -40°C to 85°C  
OPERATING HUMIDITY: 10% to 90% Non-  
condensing  
STORAGE HUMIDITY: 5% to 95% Non-  
condensing  
THERMAL REGULATION: Integrated high-  
speed ball bearing fan.  
ALTITUDE: 0 to 40,000 feet  
MTBF: >50,000 POH at  
maximum operating temperature  
DIMENSIONS: 140mm x 150mm x 86mm  
5.53" x 5.93" x 3.40"

DC VOLTAGE	MINIMUM LOAD		MAXIMUM LOAD		MAX. POWER		LOAD REG.	CROSS REG.	LINE REG.	RIPPLE %	NOISE %
	300W	400W	300W	400W	300W	400W					
+5V	3.0A	3.0A	35.0A	35.0A	175W	175W	±5%	±5%	±1%	±1%	±1%
+12V	1.0A	1.0A	11.0A	19.0A	230W	230W	±5%	±5%	±1%	±1%	±1%





# LIEN ENGINEERING, INC.

## REDUNDANT POWER SUPPLIES

**300 WATT  
HOT SWAPPABLE, N+1  
PC POWER SUPPLIES**



*Ideal For File  
Servers!*

*Perfect For RAID  
Systems!*

### FEATURES:

- User Selectable, 115 / 230 VAC Input
- Proven High Reliability Design
- High Efficiency
- UL, CSA, TUV Approved
- On Board EMI/RFI Filtering - Meets FCC Class B, VCCI Class 2, and CISPR 22 Class B
- Reliable MOS-FET design
- N + 1 Power Supply Operation
- Key lock Feature for Security
- Hot-Pluggable Gold Plated Contacts
- Real-Time Disaster Recovery - Zero Down Time
- Audible Alarm and LED Indicator of Module and Fan Failure
- Standard PC Wiring Interface
- Remote DC sense for specified load cable
- Active Current Sharing
- System Interface Signals

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**LIEN ENGINEERING, INC.**

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Doc. #DSP-SW300WX R-3261998



# SPECIFICATIONS

## INPUT

INPUT VOLTAGE: 115VAC / 230VAC  
47 - 63 Hz  
External switch

INRUSH CURRENT: <30A Peak @ 115VAC  
<15A Peak @ 230VAC

INPUT CURRENT: 6A Max RMS @ 115VAC  
3A Max RMS @ 230VAC

EFFICIENCY: 70% Minimum at full load and  
115VAC input

EMI FILTER: Meets FCC Class B,  
VCCI Class 2, and CISPR 22 Class B

## OUTPUT

ADJUSTMENT RANGE:  $\pm 10\%$  Rated output

HOLD-UP TIME: 20ms Minimum at full load and  
115VAC nominal line

PROTECTION: Overcurrent protection

MODEL NUMBER	POWER MODULE	CONN. TYPE
DSP-SW300WA	300W X 2	AT (P8, P9)
DSP-SW300WX	300W X 2	ATX (20pin)

Overvoltage protection

Continuous short circuit protection

Power Good Signal: the supply provides a  
TTL compatible "high" Level to indicate proper  
operation of the power supply

Power Fail Signal: The Power Good  
Signal will go low at least 1.0ms before any of the  
output voltages falls below the regulation limits

## ENVIRONMENTAL

OPERATING TEMPERATURE: 0°C to 50°C

STORAGE TEMPERATURE: -40°C to 70°C

THERMAL REGULATION: Integrated ball  
bearing fan.

MTBF: (Unit)  $\geq 100,000$  POH at maximum operating  
temperature  
(Fan)  $\geq 50,000$  POH at maximum operating  
temperature

KEY LOCK: "Locked" = power supply  
module is ON.  
"Unlocked" = power supply  
module is OFF.

DIMENSIONS: Please see drawings below.

DC VOLTAGE	MINIMUM LOAD		MAXIMUM LOAD		MAX. POWER	LOAD REG.	CROSS REG.	LINE REG.	RIPPLE %	NOISE %
	300WA	300WX	300WA	300WX						
+3.3V	-	1.0A	-	20.0A	150W	+5/-3%	+5/-3%	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
+5V	3.0A	3.0A	30.0A	30.0A	Combined	$\pm 5\%$	$\pm 5\%$	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
+12V	1.0A	1.0A	12.0A	12.0A	144W	$\pm 5\%$	$\pm 5\%$	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
-5V	0A	0A	0.5A	0.5A	2.5W	$\pm 10\%$	$\pm 10\%$	$\pm 1\%$	$\pm 1\%$	$\pm 2\%$
-12V	0A	0A	0.5A	0.5A	6W	$\pm 10\%$	$\pm 10\%$	$\pm 1\%$	$\pm 1\%$	$\pm 2\%$
+5VSB	-	0A	-	0.8A	4W	$\pm 5\%$	$\pm 5\%$	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$