

## PART IA — AC-TO-DC SWITCHING POWER SUPPLIES

# LAMBDA'S COMMERCIAL HSS AND SMLC SERIES



## IDEAL FOR COMMUNICATIONS AND LOW END COMPUTER SYSTEMS

Lambda's HSS and SMLC Series provide single package solutions for 3, 4 and 5 output requirements. Worldwide agency approvals, integral EMI filtering to Curve A (some meet Curve B), and a power fail signal make these products ideal for communications and low end computer systems.

- ❑ 39 unique models from 50W to 250W.
- ❑ Triple, Quad, and Pent Output models with semi and fully regulated outputs.
- ❑ Worldwide AC input of 98–132VAC/196–268VAC.
- ❑ Overvoltage protection on main outputs.
- ❑ Worldwide safety agency approvals on most models (UL, CSA, TUV, BABT).
- ❑ SELV on outputs below 24VDC.
- ❑ Conducted EMI filtering per FCC 20780 Class A and VDE 0871 A (some models meet Curve B).
- ❑ AC power fail signal.
- ❑ For precise performance information, ask for Lambda's operating manual.
- ❑ Grade 2 design.

# PART IA—AC-TO-DC SWITCHING POWER SUPPLIES

## LAMBDA'S COMMERCIAL HSS AND SMLC SERIES

### DC OUTPUT

Voltage range shown in tables.  
All outputs are preset at factory.

### REGULATED VOLTAGE

regulation, line ..... see tables.  
regulation, load ..... see tables.  
ripple and noise ..... see tables.  
minimum load ..... 2.4A on main output of HSS 100 and HSS 150 Series.  
4.0A on main output of HSS 180.  
1.0A on main output of SMLC Series.

### AC INPUT

line ..... 98-132VAC/196-264VAC, 48-440Hz (consult factory for operation above 63Hz).

### EFFICIENCY

78% minimum on all HSS models at full load. 70% minimum on all SMLC models at full load.

### OUTPUT POWER

SMLC 50R—50W convection.  
SMLC 75R—75W convection.  
HSS 100—100W convection, 150W with 20CFM of forced air.  
HSS 150—150W convection.  
HSS 180—180W convection, 250W with 20CFM of forced air.

### OPERATING TEMPERATURE RANGE

Continuous duty from 0°C to 70°C. Derating above 40°C for SMLC 50R and above 50°C for SMLC 75R.

### OVERLOAD PROTECTION ELECTRICAL

Automatic electronic current limiting on all outputs limits the output current to a preset value thereby providing protection to the load as well as the power supply.

### OVERVOLTAGE PROTECTION

Provided on main 5V output of all models.

### COOLING

The SMLC Series and the HSS 150 are convection cooled only. The HSS 100 and HSS 180 are convection cooled or forced air cooled for increased output power.

### IN-RUSH CURRENT LIMITING

The turn-on in-rush current will not exceed the following from a cold start:

Model	In-Rush Current
SMLC 50R	25A peak
SMLC 75R	40A peak
HSS 100	50A peak
HSS 150	50A peak
HSS 180	40A peak

### INPUT AND OUTPUT CONNECTIONS

All input, output, sensing and power fail connections are made via barrier strips.

### MOUNTING

Three mounting surfaces, one mounting position on the HSS Series. Two mounting surfaces, one mounting position on the SMLC Series.

### HOLD UP TIME

All models will remain within regulation limits for a minimum of 1/2 cycle at 115VAC, 50Hz, full load.

### POWER FAIL SIGNAL

When the input voltage is no longer sufficient to guarantee the output will be within specifications for more than another 5 msec, a power fail signal will provide a logic "0" to a logic "1" change. (Logic "1" to logic "0" on SMLC 75R.)

### EMI

Conducted EMI conforms to FCC Docket 20780 Class A and VDE 0871 Curve A. The HSS 150, SMLC 75R (and HSS 100 at an additional charge) conforms to FCC Docket 20780 Class B and VDE 0871 Curve B.

### COVERS

All models are provided with metal covers.

### PHYSICAL DATA

Package Model	Lbs. Net	Size Inches
SMLC 50R	2.0	7.20 × 4.41 × 2.36
SMLC 75R	2.2	7.99 × 4.72 × 2.40
HSS 100	2.64	8.42 × 4.61 × 2.36
HSS 150	3.3	10.57 × 4.53 × 2.36
HSS 180	4.75	10.59 × 4.80 × 2.80

### GUARANTEED FOR ONE YEAR

One year guarantee includes labor as well as parts. Guarantee applies to operation at full published specifications at the end of 1 year.

### SAFETY AGENCY APPROVALS

SELV for output voltages up to 24VDC. Most models have the following agency approvals: UL, CSA, TUV/IEC AND BABT. Consult the factory for information on specific models.

# PART IA—AC-TO-DC SWITCHING POWER SUPPLIES

## COMMERCIAL SWITCHING SELECTOR GUIDE

### HSS 100 Series. Triple, Quad and Pent Output. 98-132/196-264VAC Input.

Model No.	PRICING				Voltage and maximum continuous current rating at 50°C				
	QTY. 1	QTY. 10	QTY. 25	QTY. 100	Output 1	Output 2 <sup>(2)</sup>	Output 3 <sup>(2)</sup>	Output 4	Output 5 <sup>(2)</sup>
HSS 100	\$215	\$205	\$198	\$182	+5.1V 12A	+12V 5A	-12V 2A	-5.2V 1A	+24V 2A
HSS 100/1	215	205	198	182	+5.1V 12A	+15.6V 4A	-15.6V 1.5A	-5.2V 0.5A	+24V 2A
HSS 100/2	215	205	198	182	+5.1V 12A	+12V 5A	-12V 2A	-5.2V 1A	+12V 2A
HSS 100/3	215	205	198	182	+5.1V 12A	+12V 5A	-12V 2A	-5.2V 1A	48V 2A <sup>(1)</sup>
HSS 100/4	215	205	198	182	+5.1V 12A	+12V 5A	-12V 2A	-5.2V 1A	—
HSS 100/5	215	205	198	182	+5.1V 12A	+24V 3A	-12V 3A	—	-5.2V 2A
HSS 100/7	215	205	198	182	+5.1V 12A	+12V 5A	-15.6V 1A	-12V 0.5A	30V 2A <sup>(1)</sup>
HSS 100/11	215	205	198	182	+5.1V 12A	—	—	-12V 1.3A	+12V 3.5A
HSS 100/16	215	205	198	182	+5.1V 20A	+12V 5A	-12V 2A	-5V 1A	+24V 2A
HSS 100/18	215	205	198	182	+5.1V 12A	+15.6V 4A	-15.6V 1.5A	-5.2V 0.5A	+12V 2A

#### Performance Specifications

Line regulation ( $\pm 15\%$ line voltage change)	$\pm 0.2\%$	$\pm 0.4\%$	$\pm 0.4\%$	$\pm 0.5\%$	$\pm 0.1\%$
Load regulation (60% $\pm$ 40% load change)	$\pm 1.5\%$	$\pm 2.5\%$	$\pm 2.5\%$	$\pm 1.0\%$	0.25%
Cross regulation (OP1 75 $\pm$ 25%, all outputs 50% load)	N/A	$\pm 2.5\%$	$\pm 2.5\%$	$\pm 0.5\%$	$\pm 0.2\%$
Max temp coeff/ $^{\circ}$ C (0–50 $^{\circ}$ C)	0.02%	0.05%	0.05%	0.05%	0.02%
Short circuit protection	current limit	current limit	current limit	current limit	current limit
Overvoltage protection	6.2V $\pm$ 10%	—	—	—	—
Regulation	fully regulated	semi regulated	semi regulated	fully regulated	fully regulated
Initial accuracy setting (1/2 load)	$\pm 2\%$	$\pm 2\%$	$\pm 5\%$	$\pm 5\%$	$\pm 0.5\%$
Noise (peak to peak) (10Hz to 30MHz)	50mV	120mV	120mV	100mV	120mV

General Electrical Specifications for HSS 100 are on page 73. Mechanical Specifications for HSS 100 are on page 169. Contact the factory for operating information. Other output combinations available. Contact the factory to discuss your requirements.

NOTES: (1) Fully floating output

(2) Outputs 2, 3 and 5 are designed to provide surge currents on all HSS Series power supplies

### HSS 150 Series. Pent Output. 98-132/196-264VAC Input.

Model No.	PRICING				Voltage and maximum continuous current rating at 50°C				
	QTY. 1	QTY. 10	QTY. 25	QTY. 100	Output 1	Output 2 <sup>(2)</sup>	Output 3 <sup>(2)</sup>	Output 4	Output 5 <sup>(2)</sup>
HSS 150	\$276	\$262	\$255	\$235	+5.1V 20A	+12V 5A	-12V 2A	-5V 1A	+24V 2A
HSS 150/2	276	262	255	235	+5.1V 20A	+12V 5A	-12V 2A	-5V 1A	+12V 2A

#### Performance Specifications

Line regulation ( $\pm 15\%$ line voltage change)	$\pm 0.15\%$	$\pm 0.4\%$	$\pm 0.4\%$	$\pm 0.5\%$	$\pm 0.1\%$
Load regulation					
Output 1 (load changes 75% $\pm$ 25%)	$\pm 2.5\%$				
Outputs 2, 3, 4 & 5 (load change 60% $\pm$ 40%)	—	$\pm 2.5\%$	$\pm 2.5\%$	$\pm 1.0\%$	$\pm 0.06V$ ( $\pm 0.5\%$ if O/P5 > 48V)
Cross regulation (Output 1 75 $\pm$ 25% load)	N/A	$\pm 3.75\%$	$\pm 3.75\%$	$\pm 0.5\%$	$\pm 0.2\%$
Outputs 2 & 3 at 60% load					
Outputs 4 & 5 at 50% load					
Max temp coeff/ $^{\circ}$ C (25 $^{\circ}$ C $\pm$ 25 $^{\circ}$ C)	$\pm 0.02\%$	$\pm 0.05\%$	$\pm 0.05\%$	$\pm 0.05\%$	$\pm 0.02\%$
Short circuit protection	current limit	current limit	current limit	current limit	current limit
Overvoltage protection	6.2V $\pm$ 10%	—	—	—	—
Regulation	fully regulated	semi regulated	semi regulated	fully regulated	fully regulated
Initial accuracy setting (1/2 load)	$\pm 2\%$	$\pm 2\%$	$\pm 5\%$	$\pm 5\%$	$\pm 0.5\%$
Noise (peak to peak) (10Hz to 30MHz)	75mV	1.5%	1.5%	3%	0.75%

General Electrical Specifications for HSS 150 are on page 73. Mechanical Specifications for HSS 150 are on page 169. Other output combinations available. Consult factory to discuss your requirements. Contact the factory for operating information.

NOTES: (1) Fully floating output

(2) Outputs 2, 3 and 5 are designed to provide surge currents on all HSS Series power supplies

# PART IA—AC-TO-DC SWITCHING POWER SUPPLIES

## COMMERCIAL SWITCHING SELECTOR GUIDE

### HSS 180 Series. Quad and Pent Output. 98-132/196-264VAC Input.

Model No.	PRICING				Voltage and maximum continuous current rating at 50°C				
	QTY. 1	QTY. 10	QTY. 25	QTY. 100	Output 1	Output 2 <sup>(1)</sup>	Output 3 <sup>(1)</sup>	Output 4	Output 5 <sup>(1)</sup>
HSS 180 00 00	\$319	\$303	\$295	\$271	+ 5.1V 20A	+ 12V 6A	- 12V 6A	- 5V 1A	+ 24V 3A
HSS 180 01 00	319	303	295	271	+ 5.1V 20A	+ 12V 6A	- 12V 6A	- 5.2V 3A	+ 24V 3A
HSS 180 02 00	319	303	295	271	+ 5.1V 22A	+ 12V 7A	- 12V 6A	- 5V 0.5A	+ 30V 1.2A
HSS 180 05 00	319	303	295	271	+ 5.1V 20A	+ 12V 6A	- 12V 6A	- 5V 1A	+ 12V 3A
HSS 180 06 00	319	303	295	271	+ 5.1V 20A	+ 12V 6A	- 12V 6A	- 5V 1A	- 48V 2A
HSS 180 09 00	319	303	295	271	+ 5.1V 20A	+ 12V 6A	- 15.6V 5A	- 12V 1A	+ 30V 3A
<b>Performance Specifications</b>									
Line regulation ( $\pm 15\%$ line voltage change)					$\pm 0.15\%$	$\pm 0.4\%$	$\pm 0.4\%$	$\pm 0.5\%$	$\pm 0.1\%$
Load regulation (60% $\pm$ 40% load change)					$\pm 1.5\%$	$\pm 2.5\%$	$\pm 2.5\%$	$\pm 1.0\%$	$\pm 0.06V$
Cross regulation (OP1 75 $\pm$ 25%, all outputs 50% load)					N/A	$\pm 3.0\%$	$\pm 3.0\%$	$\pm 0.5\%$	$\pm 0.2\%$
Max temp coeff/°C (0-50°C)					0.02%	0.05%	0.05%	0.05%	0.02%
Short circuit protection					current limit	current limit	current limit	current limit	current limit
Overvoltage protection					6.2V $\pm$ 10%	-	-	-	-
Regulation					fully regulated	semi regulated	semi regulated	fully regulated	fully regulated
Initial accuracy setting (1/2 load)					$\pm 2\%$	$\pm 2\%$	$\pm 2\%$	$\pm 5\%$	$\pm 0.5\%$
Noise (peak to peak) (10Hz to 30MHz)					50mV	1.0%	1.0%	2.0%	0.5%

General Electrical Specifications for HSS 180 are on page 73. Mechanical Specifications for HSS 180 are on page 169.

Notes: (1) Outputs 2, 3 and 5 are designed to provide surge currents on all HSS series of power supplies (2) Fully floating output

# PART V—MECHANICAL DRAWINGS

## HSS SERIES

### HSS 100

**NOTES:**

- (1) Mounting holes are M3, 10 each for chassis mounting. Max depth 9/32".
- (2) Dimensions in inches.
- (3) 3 mounting surfaces.

**AC INPUT CONNECTOR**

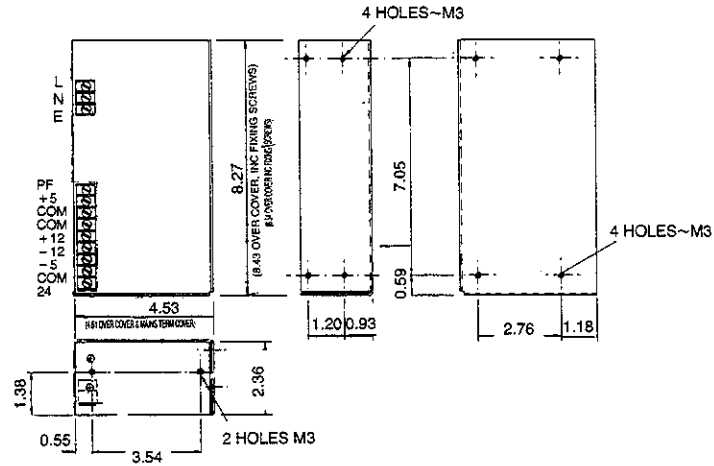
3 way block with UNC 6-32 screw terminals

- 1 (L) line
- 2 (N) neutral
- 5 (E) ground

**DC OUTPUT CONNECTOR**

9 way block with UNC 6-32 screw terminals

- (1) power fail (6) op3
- (2) op1 (7) op4
- (3) common (8) op5 return
- (4) common (9) op5
- (5) op2



### HSS 150

**NOTES:**

- (1) Mounting holes are M3, 10 each for chassis mounting. Max depth 9/32".
- (2) Dimensions in inches.
- (3) 3 mounting surfaces.

**AC INPUT CONNECTOR**

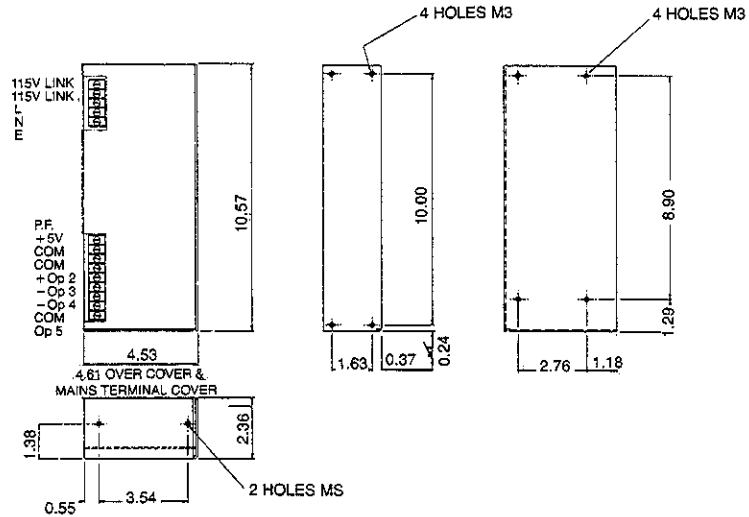
5 way block with UNC 6-32 screw terminals.

- 1 Link for 115V operation
- 2 (L) line
- 4 (N) neutral
- 5 (E) ground

**DC OUTPUT CONNECTOR**

9 way block with UNC 6-32 screw terminals

- (1) power fail (6) op3
- (2) op1 (7) op4
- (3) common (8) op5 return
- (4) common (9) op5
- (5) op2



### HSS 180

**NOTES:**

- (1) Mounting holes are M3, 10 each for chassis mounting. Max depth 9/32".
- (2) Dimensions in inches.
- (3) 3 mounting surfaces.

**AC INPUT CONNECTOR**

5 way block with UNC 6-32 screw terminals.

- 1 Link for 115V operation
- 2 (L) line
- 4 (N) neutral
- 5 (E) ground

**DC OUTPUT CONNECTOR**

10 way block with UNC 6-32 screw terminals

- (1) power fail (6) op2
- (2) op1 (7) op3
- (3) op1 (8) op5
- (4) common (9) op4
- (5) common (10) common

