

PART 1A — AC-TO-DC SWITCHING POWER SUPPLIES

INDUSTRIAL LAMBDA CARD™ LI SERIES



PLUG-IN DC POWER FOR VME-BASED SYSTEMS

Rack space is always at a premium in electronic systems. The plug-in capability of VME/DIN type power supplies as well as the back plane approach allows the power supply output to be located relatively close to the loads, thereby reducing the potential for power distribution problems associated with some electronic systems. Robotics, process control, factory automation, and other microcomputer based systems can benefit from the modularity and low MTTR associated with these pluggable systems. Many applications have system requirements that vary from simple RS-232 transmission, to the dedicated polling of a significant number of analog and digital remote data points which requires a considerable amount of memory and CPU throughput for system operation. The hardware is usually in card plug-in format giving the design engineer maximum versatility and ease of repair with every application.

Expandability is also a critical design parameter. For this reason, Lambda has paid close attention to power density in the form of front panel width leaving more space for the electronic system and possible expansion.

The VME/Eurocard solution is a growth technology primarily designed to reduce the time associated with the prototype, preproduction, and production cycle for electronic applications. With over 48 standard modules, Lambda makes it easy for the design engineer to tailor power supplies to the application with a versatile selection of modules.

- ☐ Up to 150W in a 3U height package.
- ☐ Worldwide 110/220 AC inputs available at output connector.
- ☐ Input/Output via industry standard type H-15 connector.
- ☐ Guaranteed operation to published specifications from 0–60°C.
- ☐ Mounting in standard 3U height subracks.
- ☐ Overvoltage protection (inverter shutdown) is standard on all units (main output of triple output units).
- ☐ 20 msec holdup after loss of AC power at full load, $V_{o,max}$, and 105VAC (210VAC) 60Hz (50Hz).
- ☐ Designed for worldwide safety agency approvals.
- ☐ Grade 2 design.

PART IA — AC-TO-DC SWITCHING POWER SUPPLIES

INDUSTRIAL LAMBDATM CARD LI SERIES

The LIS-3I, 5I, 6I, 7I, 8I, 9I and LIT-6I, 8I are standard enclosed units. These models include a front panel with handle, LED V_O indicator, and shields on both sides of the PC board to eliminate shock hazard.

DC OUTPUT

Voltage range shown in tables.

REGULATED VOLTAGE

regulation, line	0.1% from 95 to 132VAC or 187 to 265VAC on LIS-3I, 5I, 6I, 7I and 8I models. 85 to 132 VAC or 170 to 265VAC on LIS-9I and LIT models.
regulation, load	0.2% from 0 to full load. (0.1% on LIS-9, 9I and on all outputs of LIT models. All LIT outputs are independently isolated from each other and from the chassis.)
ripple and noise (20MHz Bandwidth)	20mV RMS, 120mV pk-pk on 2V, 5V and 6V single output models and 5V outputs of LIT-6I, 8I. 20mV RMS, 150mV pk-pk on 12V through 48V models of LIS Series and on secondary outputs of LIT-6I, 8I.
temperature coefficient	0.03%/°C.
remote programming resistance	1000 Ω /V nominal (LIS Series only).
remote programming voltage	volt per volt (LIS Series only).

AC INPUT

(User selectable at connector without changing internal jumper.)

line	95 to 132VAC, 187 to 265VAC, 47-440Hz (85 to 132VAC/170 to 265VAC on LIS-9, 9I and LIT models).
power	LIS-3I: 26.0 watts max. LIS-5I: 52.5 watts max. LIS-6I: 77 watts max. LIT-6I: 92 watts max. LIS-7I: 113 watts max. LIS-8I: 150 watts max. LIT-8I: 165 watts max. LIS-9I: 240 watts max.

DC INPUT

290V $\pm$ 10%. 240 to 370 VDC at 220V input on LIS-9, 9I, LIT-6I, 8I.

EFFICIENCY

55% minimum on 2V models. 70% minimum on 5V models of LIS Series and on LIT-6I, 8I. 75% minimum on 12V through 48V models. 60% minimum on all LIS-3I, 5I models.

OVERSHOOT

No overshoot at turn-on, turn-off or power failure.

OPERATING TEMPERATURE RANGE

Continuous duty 0°C to 60°C with suitable derating above 40°C.

STORAGE TEMPERATURE RANGE

-55°C to +85°C.

OVERLOAD PROTECTION ELECTRICAL

External overload protection. Automatic electronic current limiting circuit limits the output current to a preset value, thereby providing protection for the load as well as the power supply.

HOLD UP TIME

All models will remain within regulation limits for at least 20msec after loss of AC power when operating at full load, V_O max, and 105VAC (210VAC) at 60Hz (50Hz).

OVERVOLTAGE PROTECTION

Non-crowbar, inverter shutdown type OV protection is standard on all LIS models.

COOLING

Convection cooled. No fans or blowers required.

IN-RUSH CURRENT LIMIT

An in-rush current limiting device limits the peak in-rush current from a cold turn on, to 25A on LIS-3I and 5I; 45A on LIS-6I, 7I and LIT-6I, 8I; 80A on LIS-9I; 90A on LIS-8I.

DC OUTPUT CONTROLS

Single turn output voltage adjust pot located on front edge of PC board. Access hole is provided on front panel of LIS-3I, LIS-5I, LIS-6I, LIS-7I, LIS-8I, and LIS-9I. Three single turn pots on LIT-6I, 8I.

INPUT AND OUTPUT CONNECTIONS

All connections to the unit are made via a DIN type H15 connector.

MOUNTING

Mounting is compatible with standard 3U-high Eurocard subracks. Depth is standard 160mm (pc board only). Unit width is: 8Te (HP) for the LIT-6I; 10Te (HP) for the LIS-3I, 5I, 6I; 12Te (HP) for the LIS-7I, LIT-8I; 14Te (HP) for the LIS-8I, 9I.

REMOTE SENSING

Provision is made for remote sensing to eliminate the effects of power output lead resistance on DC regulation on all LIS models.

OUTPUT STATUS INDICATOR

LED indicates presence of voltage on all LIS models and on 5V output of LIT-6I, 8I.

ISOLATION RATING

1250VAC input to ground. 1250VAC input to output. 500VAC output to ground.

PHYSICAL DATA

Package Model	Lbs. Net	Lbs. Ship	Size Millimeters
LIS-3I	1.50	1.75	128.4 × 50.5 × 176.5
LIS-5I	1.50	1.75	128.4 × 50.5 × 176.5
LIS-6I	1.69	2.00	128.4 × 50.5 × 176.5
LIT-6I	1.80	2.20	128.4 × 40.64 × 176.5
LIS-7I	1.81	2.13	128.4 × 60.7 × 176.5
LIS-8I	2.06	2.38	128.4 × 70.8 × 176.5
LIT-8I	2.20	2.50	128.4 × 60.7 × 176.5
LIS-9I	2.06	2.38	128.4 × 70.8 × 176.5

FINISH

All models have tan covers and brown front panels with black handles, and brushed aluminum handle inserts.

GUARANTEE

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

SAFETY AGENCY APPROVALS

All models are UL recognized, CSA certified and TUV/IEC licensed.

PART IA—AC-TO-DC SWITCHING POWER SUPPLIES

INDUSTRIAL SWITCHING SELECTOR GUIDE

LAMBDA CARD™ LI Series. Din-Style. Single Output.

MAX CURRENT AT OPERATING TEMPERATURE OF			DIMENSIONS (millimeters)	COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	QTY. 1	QTY. 10	PRICE QTY. 25	QTY. 100	QTY. 250	MODEL
40°C	50°C	60°C									
2V ± 5% ADJ.											
30.00	27.00	24.00	128.4 × 70.8 × 176.5	47	167	\$365	\$348	\$334	\$297	\$285	LIS-9I-2
5V ± 5% ADJ.											
3.00	2.40	1.80	128.4 × 50.5 × 176.5	47	167	211	202	193	167	158	LIS-3I-5
6.00	4.20	3.20	128.4 × 50.5 × 176.5	47	167	225	214	205	176	168	LIS-5I-5
10.00	7.50	5.70	128.4 × 50.5 × 176.5	47	167	262	250	240	206	192	LIS-6I-5
15.00	12.00	8.00	128.4 × 60.7 × 176.5	47	167	288	274	263	226	215	LIS-7I-5
20.00	17.50	15.00	128.4 × 70.8 × 176.5	47	167	320	305	292	251	240	LIS-8I-5
30.00	27.00	24.00	128.4 × 70.8 × 176.5	47	167	365	348	334	297	285	LIS-9I-5
6V ± 5% ADJ.											
2.50	2.00	1.50	128.4 × 50.5 × 176.5	47	167	211	202	193	167	158	LIS-3I-6
5.00	3.50	2.60	128.4 × 50.5 × 176.5	47	167	225	214	205	176	168	LIS-5I-6
8.50	6.40	4.80	128.4 × 50.5 × 176.5	47	167	262	250	240	206	192	LIS-6I-6
12.50	10.00	6.70	128.4 × 60.7 × 176.5	47	167	288	274	263	226	215	LIS-7I-6
16.70	14.70	12.60	128.4 × 70.8 × 176.5	47	167	320	305	292	251	240	LIS-8I-6
26.00	23.00	21.00	128.4 × 70.8 × 176.5	47	167	365	348	334	297	285	LIS-9I-6
12V ± 5% ADJ.											
1.25	1.00	0.75	128.4 × 50.5 × 176.5	47	167	211	202	193	167	158	LIS-3I-12
2.50	2.00	1.50	128.4 × 50.5 × 176.5	47	167	225	214	205	176	168	LIS-5I-12
4.20	3.80	3.40	128.4 × 50.5 × 176.5	47	167	262	250	240	206	192	LIS-6I-12
6.30	5.70	4.40	128.4 × 60.7 × 176.5	47	167	288	274	263	226	215	LIS-7I-12
8.40	7.40	6.30	128.4 × 70.8 × 176.5	47	167	320	305	292	251	240	LIS-8I-12
13.00	12.00	10.00	128.4 × 70.8 × 176.5	47	167	365	348	334	297	285	LIS-9I-12
15V ± 5% ADJ.											
1.00	0.80	0.60	128.4 × 50.5 × 176.5	47	167	211	202	193	167	158	LIS-3I-15
2.00	1.60	1.20	128.4 × 50.5 × 176.5	47	167	225	214	205	176	168	LIS-5I-15
3.40	3.10	2.70	128.4 × 50.5 × 176.5	47	167	262	250	240	206	192	LIS-6I-15
5.00	4.50	3.50	128.4 × 60.7 × 176.5	47	167	288	274	263	226	215	LIS-7I-15
6.70	5.90	5.10	128.4 × 70.8 × 176.5	47	167	320	305	292	251	240	LIS-8I-15
11.00	10.00	8.80	128.4 × 70.8 × 176.5	47	167	365	348	334	297	285	LIS-9I-15

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MAX CURRENT AT OPERATING TEMPERATURE OF			DIMENSIONS (millimeters)	COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	QTY. 1	QTY. 10	PRICE QTY. 25	QTY. 100	QTY. 250	MODEL
40°C	50°C	60°C									
20V ± 5% ADJ.											
0.75	0.60	0.45	128.4 × 50.5 × 176.5	47	167	\$211	\$202	\$193	\$167	\$158	LIS-3I-20
1.50	1.20	0.90	128.4 × 50.5 × 176.5	47	167	225	214	205	176	168	LIS-5I-20
2.50	2.20	2.00	128.4 × 50.5 × 176.5	47	167	262	250	240	206	192	LIS-6I-20
3.80	3.40	2.60	128.4 × 60.7 × 176.5	47	167	288	274	263	226	215	LIS-7I-20
5.00	4.40	3.80	128.4 × 70.8 × 176.5	47	167	320	305	292	251	240	LIS-8I-20
8.20	7.40	6.60	128.4 × 70.8 × 176.5	47	167	365	348	334	297	285	LIS-9I-20
24V ± 5% ADJ.											
0.65	0.55	0.40	128.4 × 50.5 × 176.5	47	167	211	202	193	167	158	LIS-3I-24
1.30	1.05	0.80	128.4 × 50.5 × 176.5	47	167	225	214	205	176	168	LIS-5I-24
2.10	1.90	1.70	128.4 × 50.5 × 176.5	47	167	262	250	240	206	192	LIS-6I-24
3.20	2.90	2.20	128.4 × 60.7 × 176.5	47	167	288	274	263	226	215	LIS-7I-24
4.20	3.70	3.20	128.4 × 70.8 × 176.5	47	167	320	305	292	251	240	LIS-8I-24
6.90	6.20	5.50	128.4 × 70.8 × 176.5	47	167	365	348	334	297	285	LIS-9I-24
28V ± 5% ADJ.											
0.55	0.45	0.35	128.4 × 50.5 × 176.5	47	167	211	202	193	167	158	LIS-3I-28
1.10	0.90	0.65	128.4 × 50.5 × 176.5	47	167	225	214	205	176	168	LIS-5I-28
1.80	1.60	1.40	128.4 × 50.5 × 176.5	47	167	262	250	240	206	192	LIS-6I-28
2.70	2.40	1.90	128.4 × 60.7 × 176.5	47	167	288	274	263	226	215	LIS-7I-28
3.60	3.20	2.70	128.4 × 70.8 × 176.5	47	167	320	305	292	251	240	LIS-8I-28
6.20	5.50	5.00	128.4 × 70.8 × 176.5	47	167	365	348	334	297	285	LIS-9I-28
48V ± 5% ADJ.											
1.10	1.00	0.90	128.4 × 50.5 × 176.5	47	167	262	250	240	206	192	LIS-6I-48
1.60	1.50	1.10	128.4 × 60.7 × 176.5	47	167	288	274	263	226	215	LIS-7I-48
2.10	1.90	1.60	128.4 × 70.8 × 176.5	47	167	320	305	292	251	240	LIS-8I-48
3.60	3.20	2.30	128.4 × 70.8 × 176.5	47	167	365	348	334	297	285	LIS-9I-48

Triple Output.

OUTPUT NUMBER	ADJUSTABLE VOLTAGE RANGE (VDC)	MAX CURRENT AT AMBIENT OF (AMPS)			DIMENSIONS (millimeters)	COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	QTY. 1	QTY. 10	PRICE QTY. 25	QTY. 100	QTY. 250	MODEL
		40°C	50°C	60°C									
1	5V ± 5%	5.00	4.50	2.50	128.40 × 40.64 × 176.5	47	167	\$286	\$273	\$262	\$230	\$222	LIT-6I-5152
2	11.4-15.75	1.20	0.85	0.50	128.40 × 40.64 × 176.5								
3	11.4-15.75	1.20	0.85	0.50	128.40 × 40.64 × 176.5								
1	5V ± 5%	10.00	7.50	5.00	128.40 × 60.70 × 176.5	47	167	424	404	382	340	327	LIT-8I-5152
2	11.4-15.75	2.00	1.50	1.00	128.40 × 60.70 × 176.5								
3	11.4-15.75	2.00	1.50	1.00	128.40 × 60.70 × 176.5								

PART V—MECHANICAL DRAWINGS

PHIC SERIES AND LAMBDA CARD L SERIES

LIS-3I
LIS-5I
LIS-6I
LIS-7I
LIS-8I
LIS-9I
LIT-6I
LIT-8I

MODEL NO., RATINGS,
ETC. SCREENED ON
THIS SURFACE

VENTILATION HOLES

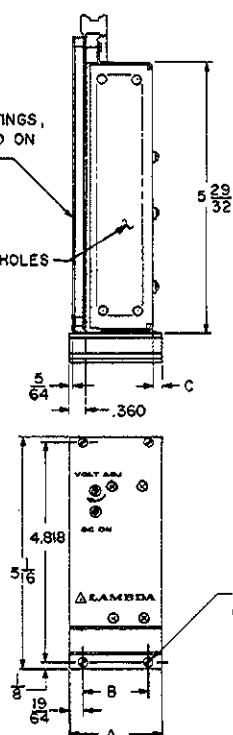


TABLE OF WEIGHTS		
MODEL:	NET. WT.	SHIPPING WT.
LIS-3I, 5I	1 LB, 8 OZ	1 LB, 12 OZ
LIS-6I	1 LB, 11 OZ	2 LBS
LIS-7I	1 LB, 13 OZ	2 LBS, 2 OZ
LIS-8I	2 LBS, 1 OZ	2 LBS, 6 OZ
LIT-6I	2 LBS, 6 OZ	2 LBS, 12 OZ
LIT-8I	2 LBS, 12 OZ	3 LBS
LIS-9I	2 LBS, 1 OZ	2 LBS, 6 OZ

TABLE OF DIMS			
MODEL	DIMS	A	B
LIS-3I, 5I	1 63/64	1.400	1/16
LIS-6I	1 63/64	1.400	3/16
LIS-7I	2 25/64	1.800	3/16
LIS-8I	2 51/64	2.200	1/8
LIS-9I	2-51/64	2.20	1/8
LIT-6I	1 37/64	63/64	1/8
LIT-8I	2 13/32	1.80	1/8

NOTES:

1. MOUNTING IS COMPATIBLE WITH STANDARD 3U HIGH EUROCARD SUBRACKS.
2. PC CONNECTOR TYPE H15 MALE PER DIN 41612
3. LOCAL SENSE JUMPERS: REMOVE FOR REMOTE SENSING OR REMOTE PROGRAMMING

