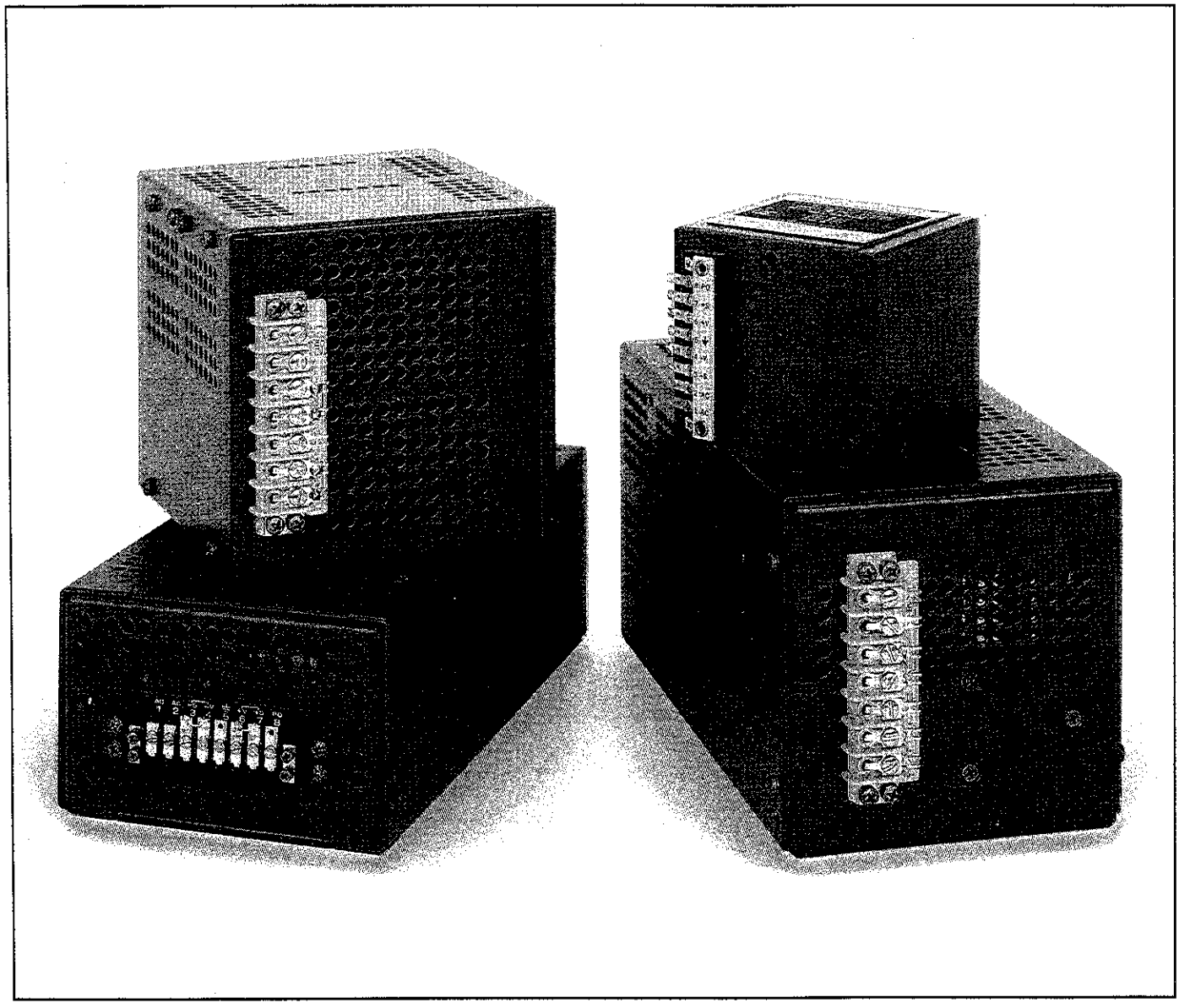
PART IB—AC-TO-DC LINEAR POWER SUPPLIES

LAMBDA'S MIL-ENVIRONMENT LC AND LX SERIES



FOR HIGH PRECISION, LOW NOISE APPLICATIONS

- The LC and LX Series operate over a wide temperature range with guaranteed operation to +71°C, and are designed to meet MIL-STD-810 environmental specifications. This makes the LC Series and LX Series ideal for a wide variety of applications where environmental extremes are encountered.

- Output ripple: 250μV RMS on LC Series;
  1.5mV RMS on LX Series.
  Regulation: .01% line and load on LC Series;
  0.1% on LX Series.
  Temperature coefficient: .01%/°C on LC Series;
  0.03%/°C on LX Series.

- Lambda's LC and LX Series are designed for use in breadboards, laboratories or in any application where high precision and low noise is required.
- The LC and LX Series are manufactured using only the highest grade MIL type components in conjunction with hermetically sealed power semiconductors and monolithic voltage regulators. This provides long, service-free operation in critical applications.
- Lambda guarantees each unit will meet or exceed all published specifications for the full 5 year guarantee period.
- Grade 1 design.

PART IB—AC-TO-DC LINEAR POWER SUPPLIES

LAMBDA'S MIL-ENVIRONMENT LC AND LX SERIES

DC OUTPUT
Voltage range shown in tables.

REGULATED VOLTAGE
regulation, line ..... 0.01% + 1mV on LC Series; 0.1% for LX Series.
regulation, load ..... 0.01% + 1mV on LC Series; 0.1% for LX Series.
ripple and noise ..... 250μV RMS, 1mV pk-pk on LC Series; 1.5mV RMS, 5mV pk-pk for LX Series with either positive or negative terminal grounded.
temperature coefficient ..... (0.01% + 300μV)/°C with external programming resistor; (0.015% + 300μV)/°C with internal programming resistor on LC Series. .03%/°C for LX Series.
remote programming resistance ..... 1000Ω/volt nominal.
remote programming voltage ..... volt per volt.

AC INPUT
line ..... 105 to 132VAC; 47-440Hz. Derate 10% for 50Hz operation. For operation at other than 57-63Hz and 187 to 242VAC, see AC input option. For 360-440Hz ratings consult factory.
power ..... LCS-A: 80 watts maximum.
LXS-A: 91 watts maximum.
LCS-B: 125 watts maximum.
LCS-C: 215 watts maximum.
LCS-CC: 300 watts maximum.

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

OPERATING TEMPERATURE RANGE
Continuous duty from −20°C to +71°C for LC Series and 0°C to +71°C for LX Series with corresponding load current ratings for all modes of operation.

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.

THERMAL
Thermostat, automatic reset when over-temperature condition is eliminated. (Not applicable to LCS-A models.)

COOLING
Convection cooled. No external heat sinking or forced air required.

DC OUTPUT CONTROLS
Simple screwdriver adjustment over the entire voltage range.

INPUT AND OUTPUT CONNECTIONS
Through terminal block on chassis.

CURRENT LIMIT
140% of 40°C rating for LCS-A. 130% of 40°C rating for LCS-B, LCS-C, LCS-CC.

MOUNTING
Three mounting surfaces. Designed to mount in Lambda standard rack adapters. The LX-E and LX-EE have only one mounting surface in a horizontal plane.

REMOTE SENSING
Provision is made for remote sensing to eliminate the effect of power output lead resistance on DC regulation. A terminal (RP) is provided for remote programming on LCS-CC models which eliminates interaction with internal voltage control.

FUNGUS PROOFING
All fungi nutrient components in the LX Series are rendered fungi inert. All models within the LC Series can be obtained with MIL-V-173 varnish to render fungi nutrient components inert. Add $30.00 to price.

MILITARY SPECIFICATIONS
The LC and LX Series are designed to pass the following tests.
1) Altitude—MIL-STD-810, Method 500.1, Procedure I.
2) High Temperature—MIL-STD-810B, Method 501.1, Procedures I and II.
3) Low Temperature—MIL-STD-810B, Method 502.1, Procedure I.
4) Temperature Shock—MIL-STD-810B, Method 503.1, Procedure I, MIL-E-5272C, Para. 4.3.1, Procedure I.
5) Humidity—MIL-STD-810B, Method 507.1, Procedure I, MIL-E-5272C, Para. 4.4.1, Procedure I.
6) Shock—MIL-STD-810B, Method 516.1, Procedures I and III, MIL-E-5272C, Para. 4.15.5.1, 4.15.5.2.
7) Vibration—MIL-STD-810B, Notice 1, Method 514, Procedures X, XI.
8) EMI—MIL-I-6181D conducted.

PHYSICAL DATA

Package Model	Lbs. Net	Lbs. Ship	Size Inches
LC-A	6	7	$3^{3}/_{16} \times 3^{3}/_{4} \times 6^{1}/_{2}$
LC-B	7	8	$3^{3}/_{16} \times 4^{15}/_{16} \times 6^{1}/_{2}$
LC-C	10	11	$3^{3}/_{16} \times 4^{15}/_{16} \times 9^{3}/_{8}$
LC-CC	15	17	$4^{15}/_{16} \times 4^{15}/_{16} \times 9^{3}/_{8}$
LX-A	6	7	$3^{3}/_{16} \times 3^{3}/_{4} \times 6^{1}/_{2}$
LXS-CC	15	17	$4^{15}/_{16} \times 4^{15}/_{16} \times 9^{3}/_{8}$
LX-D	23	26	$4^{15}/_{16} \times 7^{1}/_{2} \times 9^{3}/_{8}$
LX-E	27	29	$4^{15}/_{16} \times 7^{1}/_{2} \times 11^{3}/_{4}$
LX-EE	37	47	$4^{15}/_{16} \times 7^{1}/_{2} \times 16^{1}/_{2}$

FINISH
Gray. Fed. Std. 595 No. 26081.

ACCESSORIES
For rack adapters and other accessories, see Part IV of this catalog.

OPTIONS
AC INPUT

Add Suffix	For Operation at:	Price
−V	187 to 242VAC 47-440Hz	20% or $40*
−V1	205 to 265VAC 47-440Hz	20% or $40*

*Whichever is greater.

Derate current 10% for 47-53Hz operation.

GUARANTEED FOR 5 YEARS
5-year guarantee includes labor as well as parts. Guarantee applied to operation at full published specifications at end of 5 years.

SAFETY AGENCY APPROVALS
Recognized.

PART IB—AC-TO-DC POWER SUPPLIES

MIL-ENVIRONMENT LINEAR SELECTOR GUIDE

AC Input. Single Output. Fixed Voltage.

MAX CURRENT AT OPERATING TEMPERATURE OF 40°C	50°C	60°C	71°C	COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	LAMBDA'S CHOICE (△)*	QTY. 1	PRICE QTY. 10	QTY. 25	MODEL
5V ±5% ADJ.											
2.7	2.3	1.8	1.2	83	181	3 3/16 × 3 3/4 × 6 1/2	—	$ 555	$ 529	$ 508	LCS-A-5-0V(1)
9.0	8.0	6.8	5.3	83	181	3 3/16 × 4 15/16 × 9 5/8	—	869	829	795	LCS-C-5-0V(1)
10V ±5% ADJ.											
2.1	1.8	1.5	1.0	83	181	3 3/16 × 3 3/4 × 6 1/2	—	507	483	463	LCS-A-10
15V ±5% ADJ.											
1.8	1.5	1.2	0.9	83	181	3 3/16 × 3 3/4 × 6 1/2	—	507	483	463	LCS-A-15
3.2	2.8	2.5	1.5	83	181	3 3/16 × 4 15/16 × 6 1/2	—	704	672	645	LCS-B-15
6.0	5.6	5.1	4.5	83	181	3 3/16 × 4 15/16 × 9 3/8	—	854	813	781	LCS-C-15

*LAMBDA'S RECOMMENDED CHOICE FOR NEW DESIGN REQUIREMENTS.

NOTES: (1) Includes fixed overvoltage protection.
(2) All LX Series models have fungus proofing standard and is included in model notation and price.
(3) ±15 to ±12 Volts are dual tracking unit outputs.
(4) Ratings in parenthesis for LD and LN Series when cover is used.
(A) All outputs continuously adjustable over entire range.
(B) Current rating is from zero to I_{max}. With exception of LND Series, current rating applies over entire output voltage range.
(C) LD, LC, LN, and LX Series power modules are available for operation at 360-440Hz. Consult factory for ratings and specifications. For 50Hz operation, derate LC Series by 10%; for LX Series delete 40°C rating.
(D) Prices are U.S.A. list prices only, F.O.B. Melville, N.Y.; McAllen, Texas; Tucson, Arizona. All prices and specifications are subject to change without notice.

PART IB—AC-TO-DC LINEAR POWER SUPPLIES

MIL-ENVIRONMENT LINEAR SELECTOR GUIDE

AC Input. Single Output. Fixed Voltage.

MAX CURRENT AT OPERATING TEMPERATURE OF 40°C	50°C	60°C	71°C	COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	LAMBDA'S CHOICE (△)*	PRICE QTY. 1	QTY. 10	QTY. 25	MODEL
24V ±5% ADJ.											
2.1	2.0	1.8	1.2	83	181	3 3/16 × 4 15/16 × 6 1/2	—	704	672	—	LCS-B-24
28V ±5% ADJ.											
1.0	0.9	0.75	0.60	83	181	3 3/16 × 3 3/4 × 6 1/2	—	507	483	—	LCS-A-28

*LAMBDA'S RECOMMENDED CHOICE FOR NEW DESIGN REQUIREMENTS.

NOTES: (1) Includes fixed overvoltage protection.
(2) All LX Series models have fungus proofing standard and is included in model notation and price.
(3) ±15 to ±12 Volts are dual tracking unit outputs.
(4) Ratings in parenthesis for LD and LN Series when cover is used.
(A) All outputs continuously adjustable over entire range.
(B) Current rating is from zero to $I_{max.}$ With exception of LND Series, current rating applies over entire output voltage range.
(C) LD, LC, LN, and LX Series power modules are available for operation at 360-440Hz. Consult factory for ratings and specifications. For 50Hz operation, derate LC Series by 10%; for LX Series delete 40°C rating.
(D) Prices are U.S.A. list prices only, F.O.B. Melville, N.Y.; McAllen, Texas; Tucson, Arizona. All prices and specifications are subject to change without notice.

AC Input. Single Output. Wide Range

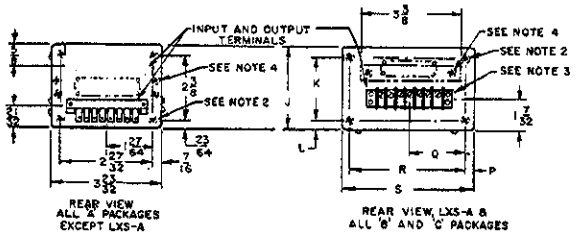
MAX CURRENT AT OPERATING TEMPERATURE OF 40°C	50°C	60°C	71°C	COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	LAMBDA'S CHOICE (△)*	QTY. 1	PRICE QTY. 10	QTY. 25	MODEL
0-32 VOLTS ADJ.											
0.69	0.64	0.60	0.45	79	179	3 3/16 × 3 3/4 × 6 1/2	—	531	507	—	LCS-A-03
0-60 VOLTS ADJ.											
0.370	0.340	0.310	0.250	79	179	3 3/16 × 3 3/4 × 6 1/2	—	531	507	—	LCS-A-04

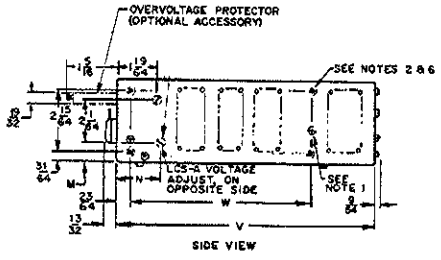
Notes: (1) Includes fixed overvoltage protection.
(2) All LX series models have fungus proofing standard and is included in model notation and price.
(3) ±15 to ±12 Volts are dual tracking unit outputs.
(4) Ratings in parenthesis for LD and LN series when cover is used.
(A) All outputs continuously adjustable over entire range.
(B) Current rating is from zero to I_{max}. With exception of LND Series, current rating applies over entire output voltage range.
(C) LD, LC, LN, and LX Series power modules are available for operation at 360-440Hz. Consult factory for ratings and specifications. For 50Hz operation, derate LC Series by 10%; for LX Series delete 40°C rating.
(D) Prices are U.S.A. list prices only. F.O.B. Melville, N.Y.; McAllen, Texas; Tucson, Arizona. All prices and specifications are subject to change without notice.

PART V—MECHANICAL DRAWINGS

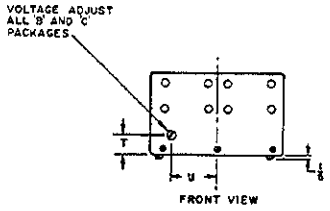
LCS-A, LCS-B, LCS-C, LXS-A, LXS-B AND LXS-D

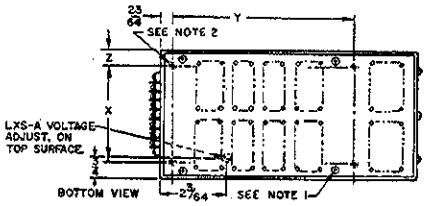
LCS-A,B,C
LCS-A Series
LCS-B Series
LCS-C Series
LXS-A Series





NOTES:
1. PROVIDE CLEARANCE HOLES, AS REQUIRED, FOR SCREW HEADS LOCATED ON BOTTOM OF "B" AND "C" PACKAGE SUPPLIES, AND ON SIDE OF "A" PACKAGE SUPPLIES.
2. NO. 8-32 TAPPED HOLES (4 ON EACH SURFACE) FOR CUSTOMER CHASSIS MOUNTING.
3. 8 POSITION TERMINAL STRIP USED ON MODELS LCS-B AND LCS-C.
4. TWO NO. 6-32 TAPPED HOLES FOR MOUNTING OVERVOLTAGE PROTECTOR.
5. CUSTOMERS MOUNTING SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN 9/64", 1/4" FOR LCS-C.
6. THIS MOUNTING HOLE NOT USED ON LXS-A SERIES MODELS.





TERMINAL STRIP SCREW SIZE IS 2-56 X 3/16

MODEL	M	N	P	Q	R	S	T	U	V	W	X	Y	Z	J	K	L
LXS-A SERIES	—	—	7/16	1 37/64	2 27/32	3 25/32	—	—	6 7/16	5 9/16	2 27/32	5 9/16	37/64	3 5/32	2 3/8	25/64
LCS-A SERIES	1 9/32	1 13/32	7/16	1 37/64	2 27/32	3 25/32	—	—	6 1/2	5 9/16	2 27/32	5 9/16	37/64	3 1/64	2 3/8	25/64
LCS-B SERIES	—	—	27/64	2 1/64	4 1/32	4 29/32	1 3/16	2 1/8	6 1/2	5 9/16	3 3/4	5 9/16	9/16	3 1/64	2 15/64	31/64
LCS-C SERIES	—	—	27/64	2 1/64	4 1/32	4 29/32	1 3/16	2	9 3/8	6 27/64	3 3/4	6 57/64	9/16	3 1/64	2 15/64	39/64