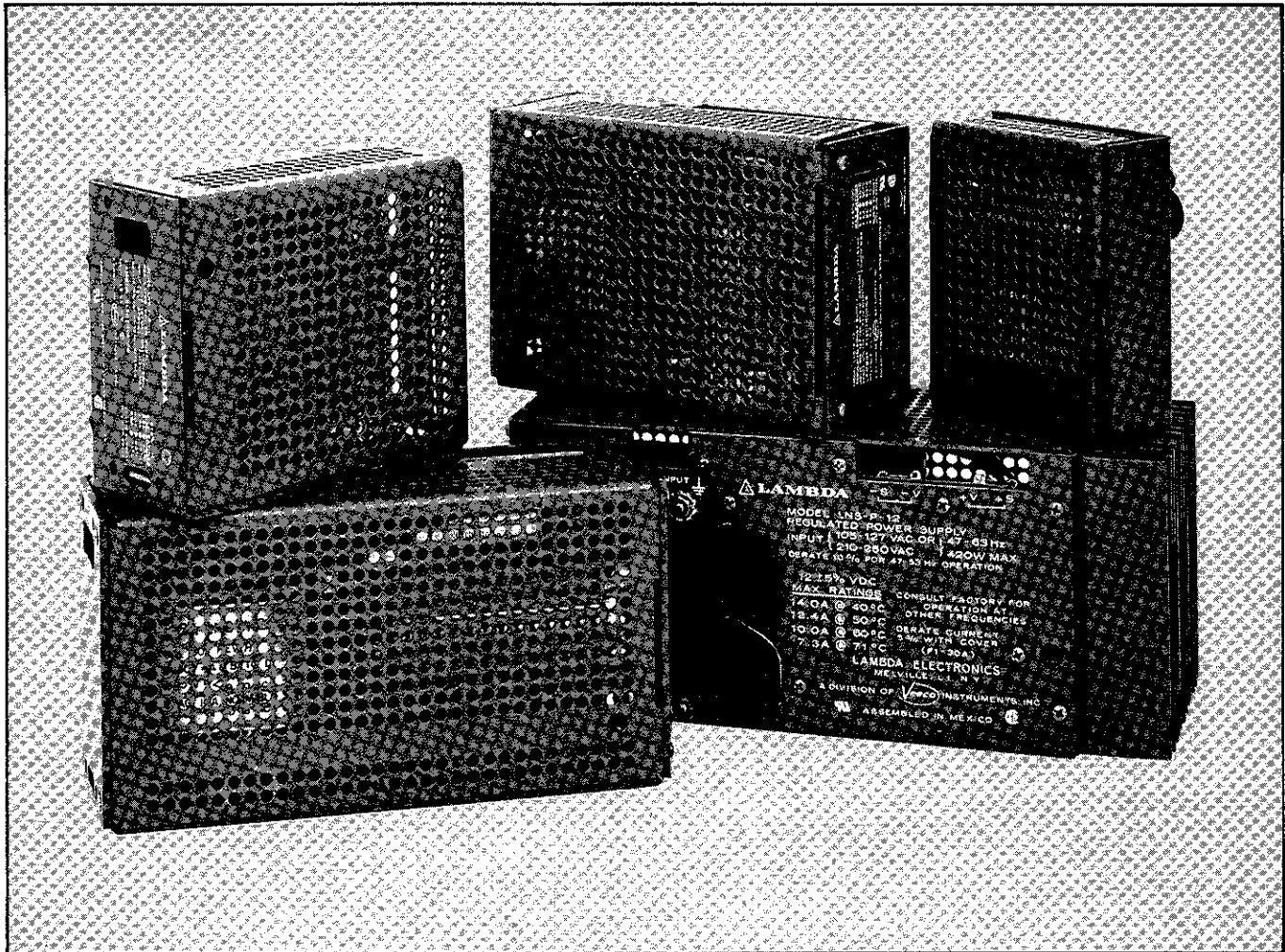


5 YEAR GUARANTEED LINEAR

Lambda LN series



Features—LN series

Low-cost 5-year guaranteed power supplies

5 package sizes up to 48 V up to 22 amps

Convection Cooled

Lambda Monolithic Overvoltage Protector L-6-OV or Lambda hybrid overvoltage protector

Lambda MIL-T-27C Grade 6 Transformer layer-wound with electrostatic shield, Class H 180° C, UL Approved

LN power supplies meet MIL-STD-810C and MIL-I-6181D specifications

Sprague 602D high temperature, premium computer grade hermetically sealed electrolytic capacitor

Lambda CC4®* Printed Circuit Board plated thru-holes fungus inert, flame retardant
*Licensee of Photo Circuits Inc.

MIL-R-26 type wire-wound resistors

MIL-W-16878 Wire UL approved

Thermostat— automatically resets when overtemperature condition is eliminated

Lambda LAS-1100 monolithic voltage regulator (TO-96)

Lambda Monolithic Full Wave Center-tap Rectifier PMR-27, PMR-31

Lambda PMD-10 K, 12 K, 16 K Series 200° C Darlington Transistor series pass transistors (TO-3)

Potentiometer fully enclosed cermet

MIL-R-22684 type film resistors

Lambda Perforated 1/16 inch Thick Steel Cover

Lambda Heavy Duty 1/8 inch thick Aluminum Sheet Metal

RU/CSA

Specifications—LN series

DC Output

Voltage range shown in tables.

REGULATED VOLTAGE

regulation, line 0.1% (0.15% for LN-Z)
 regulation, load 0.1% (0.15% for LN-Z)
 ripple and noise 1.5 mV RMS, 5 mV pk-pk (5 mV RMS,
 15 mV pk-pk for LNS-P-48) with
 either positive or negative terminal
 grounded.
 temperature
 coefficient 0.03%/°C
 remote programming
 resistance 200 ohms per volt nominal
 (LNS models only)
 remote programming
 voltage volt per volt (LNS models only)

AC Input

line 105-127 VAC, 210-254 VAC (by
 transformer tap change) 47-440 Hz.
 Consult factory for operation at
 frequencies other than 57-63 Hz.
 Efficiency (Typical) ... 30%-5 V and 6 V models, 42% 12 V and
 15 V models, 49%-20 V, 24 V, and 28 V
 models, 52% for 48 V model, 42% for
 LN duals except LND-MPU which
 are 34%.

Ambient Operating Temperature Range

Continuous duty from 0° to +71° C 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—automatically reset when overtemperature
 condition is eliminated.

Overshoot

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

Overvoltage Protection

Overvoltage protection module crowbars output when trip
 level is exceeded—standard on all 5 V models and both
 outputs of model LND-X-MPU.

Input and Output Connections

Heavy-duty screw terminals on printed circuit board.

DC Output Controls

Simple screwdriver adjustment over the entire voltage range.

Tracking Accuracy (Dual Tracking Models Only)

3% absolute voltage difference, 0.2% change for all conditions
 of line, load and temperature.

Remote Sensing

Provision is made for remote sensing to eliminate effect of
 power output lead resistance on DC regulation.

Mounting

Three mounting surfaces, three mounting positions. One
 mounting position for LN-P models.

Convection Cooled

No external heat sinking or forced air required.

Transformer

MIL-T-27C, Grade 6; Electrostatic shield; 4000 VAC input/
 output isolation.

Isolation Rating

Minimum, 10 Megohm isolation from DC to ground at
 750 VDC.

Fungus Proof

No fungi nutrient material used.

Military Specifications

The LN series has passed the following tests in accordance
 with MIL-STD-810C.

- 1) Low Pressure—Method 500.1, Procedure I.
- 2) High Temperature—Method 501.1, Procedure I & II.
- 3) Low Temperature—Method 502.1, Procedure I.
- 4) Temperature Shock—Method 503.1, Procedure I.
- 5) Temperature—Altitude—Method 504.1, Procedure I.
 Class 2 (0° C operating)
- 6) Humidity—Method 507.1, Procedure I & II.
- 7) Fungus—Method 508.1, Procedure I.
- 8) Vibration—Method 514.2, Procedures X & XI.
- 9) Shock—Method 516.2, Procedures I & III.

MIL-I-6181D—Conducted and radiated EMI with one output
 terminal grounded.

Physical Data

Package Model	Weight		Size Inches
	Lbs. Net	Lbs. Ship	
LN-Z	3	3-1/4	4-7/8 x 4 x 1-3/4 (w/cover) 4-7/8 x 4 x 1-5/8 (w/o cover)
LN-Y	5	5-1/2	5-5/8 x 4-7/8 x 2-5/8 (w/cover) 5-5/8 x 4-7/8 x 2-1/2 (w/o cover)
LN-X	7-3/4	8-1/4	7 x 4-7/8 x 2-7/8 (w/cover) 7 x 4-7/8 x 2-3/4 (w/o cover)
LN-W	9	9-1/2	9 x 4-7/8 x 2-7/8 (w/cover) 9 x 4-7/8 x 2-3/4 (w/o cover)
LNS-P	14	15-1/2	11 x 4-7/8 x 4-13/32 (w&w/o cover)
LND-P	15-1/2	17	11 x 4-7/8 x 4-13/32 (w&w/o cover)

Finish

Gray, Fed. Std. 595 No. 26081.

UL/CSA

UL Recognized
 CSA Certified

Accessories

Overvoltage protectors (standard on 5 V models and on
 LND-X-MPU). See pages 66-67.

POWER SUPPLY SERIES	OV SERIES
LNS-Z	L-6-OV
LNS-Y	L-6-OV
LNS-X	L-12-OV
LNS-W	L-20-OV
LNS-P	L-35-OV for 5 & 6V Models L-20-OV for others
LND (All Series)	L-12-OV

Guaranteed for 5 Years

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

5-year guaranteed linear selector guide

Single output fixed voltage
Models LD, LN, LC, LX and LM.

MODEL	REGULATION (line, load)	RIPPLE (RMS)	MAX AMPS AT AMBIENT OF				COMPLETE ELEC. SPEC. PG	PKG. SIZE	DIMENSIONS (inches)	COMPLETE MECH. SPEC. PG	PRICE
			40°C	50°C	60°C	71°C					
5 VOLTS ± 5% ADJ.											
LNS-Z-5-OV ⁽⁵⁾ (16)	0.15%, 0.15%	1.5 mV	3.0(2.7)	2.7(2.40)	2.3(2.1)	1.7(1.5)	37	Z	4-7/8 x 4 x 1-3/4	125	112
LNS-Y-5-OV ⁽⁵⁾ (16)	0.1%, 0.1%	1.5 mV	6.0(5.4)	5.1(4.6)	4.2(3.8)	3.1(2.8)	37	Y	5-5/8 x 4-7/8 x 2-5/8	125	162
LNS-X-5-OV ⁽⁵⁾ (16)	0.1%, 0.1%	1.5 mV	10.0(8.5)	8.9(7.6)	7.3(6.2)	5.3(4.5)	37	X	7 x 4-7/8 x 2-7/8	125	197
LNS-W-5-OV ⁽⁵⁾ (16)	0.1%, 0.1%	1.5 mV	14.0(11.9)	12.2(10.4)	10.0(8.5)	7.5(6.4)	37	W	9 x 5 x 2-7/8	125	247
LNS-P-5-OV ⁽⁵⁾ (16)	0.1%, 0.1%	1.5 mV	22.0(20.9)	19.5(18.5)	16.5(15.7)	13.0(12.4)	37	P	11 x 4-7/8 x 4-13/32	126	308

(2,3,4,5,11,14) See page 33. For other voltages or currents not listed see page 65 or consult your local Lambda Sales Engineer.

(6) Ratings in parenthesis for LD and LN series when cover is used.

5-year guaranteed linear selector guide

Single output fixed voltage
Models LD, LN, LC, LX and LM.

MODEL	REGULATION (line, load)	RIPPLE (RMS)	MAX AMPS AT AMBIENT OF				COMPLETE ELEC. SPEC. PG	PKG. SIZE	DIMENSIONS (inches)	COMPLETE MECH. SPEC. PG	PRICE
			40°C	50°C	60°C	71°C					
6 VOLTS ±5% ADJ.											
LNS-Z-6 ⁽¹⁶⁾	0.15%, 0.15%	1.5 mV	2.5(2.25)	2.2(2.0)	1.9(1.7)	1.4(1.3)	37	Z	4-7/8 x 4 x 1-3/4	125	\$106
LNS-P-6 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	20.5(19.5)	18.1(17.2)	15.3(14.5)	12.0(11.4)	35	P	11 x 4-7/8 x 4-13/32	126	281
12 VOLTS ±5% ADJ.											
LNS-Z-12 ⁽¹⁶⁾	0.15%, 0.15%	1.5 mV	1.7(1.55)	1.6(1.45)	1.5(1.4)	1.3(1.2)	37	Z	4-7/8 x 4 x 1-3/4	125	106
LNS-Y-12 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	4.0(3.6)	3.5(3.15)	2.9(2.6)	2.2(2.0)	37	Y	5-5/8 x 4-7/8 x 2-5/8	125	154
LNS-X-12 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	6.5(5.5)	5.5(4.7)	4.5(3.8)	3.3 ⁽²⁾⁽¹⁾	37	X	7 x 4-7/8 x 2-7/8	125	183
LNS-W-12 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	8.5(7.2)	7.2(6.1)	5.9(5.0)	4.2(3.6)	37	W	9 x 5 x 2-7/8	125	231
LNS-P-12 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	14.0(13.3)	12.4(11.8)	10.0(9.5)	7.3(6.94)	37	P	11 x 4-7/8 x 4-13/32	126	281

⁽¹⁵⁾ See page 33. For other voltages or currents not listed see page 65 or consult your local Lambda Sales Engineer.

⁽¹⁶⁾ Ratings in parenthesis for LD and LN series when cover is used.

5-year guaranteed linear selector guide

Single output fixed voltage
Models LD, LN, LC, LX and LM.

MODEL	REGULATION (line, load)	RIPPLE (RMS)	MAX AMPS AT AMBIENT OF				COMPLETE ELEC. SPEC. PG	PKG. SIZE	DIMENSIONS (inches)	COMPLETE MECH. SPEC. PG	PRICE
			40°C	50°C	60°C	71°C					
15 VOLTS ± 5% ADJ.											
LNS-Z-15 ¹⁶	0.15%, 0.15%	1.5 mV	1.4(1.3)	1.3(1.2)	1.2(1.1)	1.0(0.9)	37	Z	4-7/8 x 4 x 1-3/4	125	\$106
LNS-Y-15¹⁶											
LNS-Y-15 ¹⁶	0.1%, 0.1%	1.5 mV	3.4(3.1)	3.1(2.8)	2.6(2.35)	2.0(1.8)	37	Y	5-5/8 x 4-7/8 x 2-5/8	125	154
LNS-X-15¹⁶											
LNS-X-15 ¹⁶	0.1%, 0.1%	1.5 mV	5.5(4.7)	4.8(4.1)	3.9(3.35)	2.8(2.4)	37	X	7 x 4-7/8 x 2-7/8	125	183
LNS-W-15¹⁶											
LNS-W-15 ¹⁶	0.1%, 0.1%	1.5 mV	7.7(6.55)	6.7(5.7)	5.5(4.7)	3.8(3.15)	37	W	9 x 5 x 2-7/8	125	231
LNS-P-15¹⁶											
LNS-P-15 ¹⁶	0.1%, 0.1%	1.5 mV	12.0(11.4)	10.6(10.1)	8.5(8.1)	6.3(6.0)	37	P	11 x 4-7/8 x 4-13/32	126	281
20 VOLTS ± 5% ADJ.											
LNS-Z-20 ¹⁶	0.15%, 0.15%	1.5 mV	1.0(.9)	0.85(.77)	0.65(.59)	0.45(.41)	37	Z	4-7/8 x 4 x 1-3/4	125	106
LNS-Y-20¹⁶											
LNS-Y-20 ¹⁶	0.1%, 0.1%	1.5 mV	2.7(2.45)	2.5(2.25)	2.0(1.8)	1.3(1.2)	37	Y	5-5/8 x 4-7/8 x 2-5/8	125	154
LNS-X-20¹⁶											
LNS-X-20 ¹⁶	0.1%, 0.1%	1.5 mV	4.4(3.75)	3.6(3.1)	2.6(2.2)	1.6(1.4)	37	X	7 x 4-7/8 x 2-7/8	125	183
LNS-P-20¹⁶											
LNS-P-20 ¹⁶	0.01%, 0.1%	1.5 mV	10.0	8.9	7.5	5.5	39	P	4-7/8 x 4-13/16 x 11	126	281

^(2,4,11,13) See page 33. For other voltages or currents not listed see page 65 or consult your local Lambda Sales Engineer.

⁽¹⁶⁾ Ratings in parenthesis for LD and LN series when cover is used

5-year guaranteed linear selector guide

Single output fixed voltage
Models LD, LN, LC, LX and LM.

MODEL	REGULATION (line, load)	RIPPLE (RMS)	MAX AMPS AT AMBIENT OF				COMPLETE ELEC. SPEC. PG	PKG. SIZE	DIMENSIONS (inches)	COMPLETE MECH. SPEC. PG	PRICE
			40°C	50°C	60°C	71°C					
24 VOLTS ±5% ADJ.											
LNS-Z-24 ⁽¹⁶⁾	0.15%, 0.15%	1.5 mV	0.9(0.81)	0.75(0.68)	0.6(0.55)	0.4(0.36)	37	Z	4-7/8 x 4 x 1-3/4	125	\$106
LNS-Y-24⁽¹⁶⁾											
LNS-Y-24 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	2.3(2.1)	2.1(1.9)	1.7(1.5)	1.7(1.0)	37	Y	5-5/8 x 4-7/8 x 2-5/8	125	154
LNS-X-24⁽¹⁶⁾											
LNS-X-24 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	3.8(3.25)	3.2(2.75)	2.4(2.0)	1.4(1.2)	37	X	7 x 4-7/8 x 2-7/8	125	183
LNS-W-24⁽¹⁶⁾											
LNS-W-24 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	5.4(4.6)	4.6(3.9)	3.7(3.1)	2.5(2.1)	37	W	9 x 5 x 2-7/8	125	231
LNS-P-24⁽¹⁶⁾											
LNS-P-24 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	9.0(8.6)	8.0(7.6)	6.7(6.4)	5.0(4.8)	37	P	11 x 4-7/8 x 4-13/32	126	281
28 VOLTS ±5% ADJ.											
LNS-Z-28 ⁽¹⁶⁾	0.15%, 0.15%	1.5 mV	0.8(0.75)	0.65(0.60)	0.5(0.45)	0.35(0.32)	37	Z	4-7/8 x 4 x 1-3/4	125	106
LNS-Y-28⁽¹⁶⁾											
LNS-Y-28 ⁽¹⁶⁾	0.1%, 0.1%	1.5 mV	2.0(1.8)	1.8(1.65)	1.5(1.35)	1.0(0.9)	37	Y	5-5/8 x 4-7/8 x 2-5/8	125	154

28 Volts ±5% continued next page.

⁽¹⁶⁾ See page 33. For other voltages or currents not listed see page 65 or consult your local Lambda Sales Engineer

⁽¹⁶⁾ Ratings in parenthesis for LD and LN series when cover is used.

5-year guaranteed linear selector guide

Single output fixed voltage Models LD, LN, LC, LX and LM

MODEL	REGULATION (line, load)	RIPPLE (RMS)	MAX AMPS AT AMBIENT OF				COMPLETE ELEC. SPEC. PG	PKG. SIZE	DIMENSIONS (inches)	COMPLETE MECH. SPEC. PG	PRICE
			40°C	50°C	60°C	71°C					
28 VOLTS ± 5% ADJ. (Cont'd)											
LNS-X-28 ¹⁶	0.1%, 0.1%	1.5 mV	3.4(2.9)	2.9(2.5)	2.2(1.5)	1.2(1.0)	37	X	7 x 4-7/8 x 2-7/8	125	183
LNS-W-28 ¹⁶	0.1%, 0.1%	1.5 mV	4.7(4.0)	4.0(3.4)	3.2(2.75)	2.2(1.9)	37	W	9 x 5 x 2-7/8	125	231
LNS-P-28 ¹⁶	0.1%, 0.1%	1.5 mV	8.0(7.6)	7.1(6.75)	6.0(5.7)	4.5(4.3)	37	P	11 x 4-7/8 x 4-13/32	126	281
48 VOLTS ± 5% ADJ.											
LNS-P-48 ¹⁶	0.1%, 0.1%	1.5 mV	4.5(4.28)	4.0(3.8)	3.4(3.2)	2.5(2.38)	37	P	4-13/32 x 4-7/8 x 11	126	440

^(2,3,7,13) See page 33. For other voltages or currents not listed see page 65 or consult your local Lambda Sales Engineer.
¹⁶ Ratings in parenthesis for LN series when cover is used.

5-year guaranteed linear selector guide

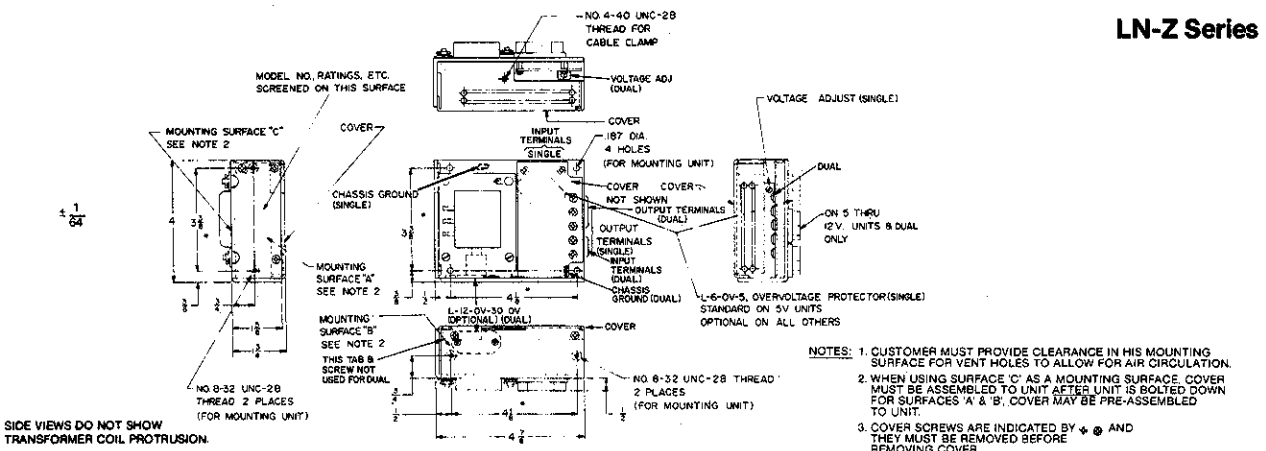
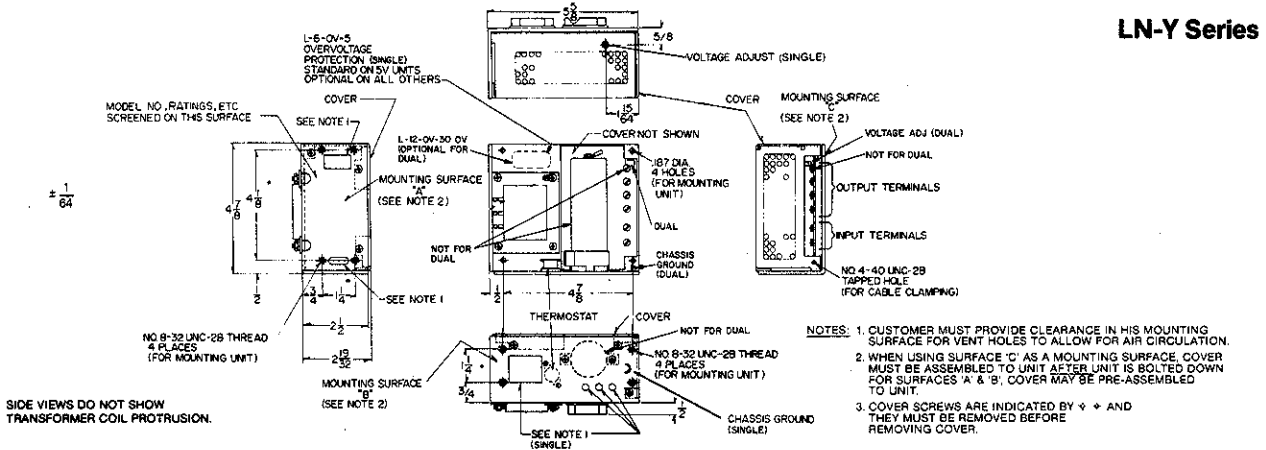
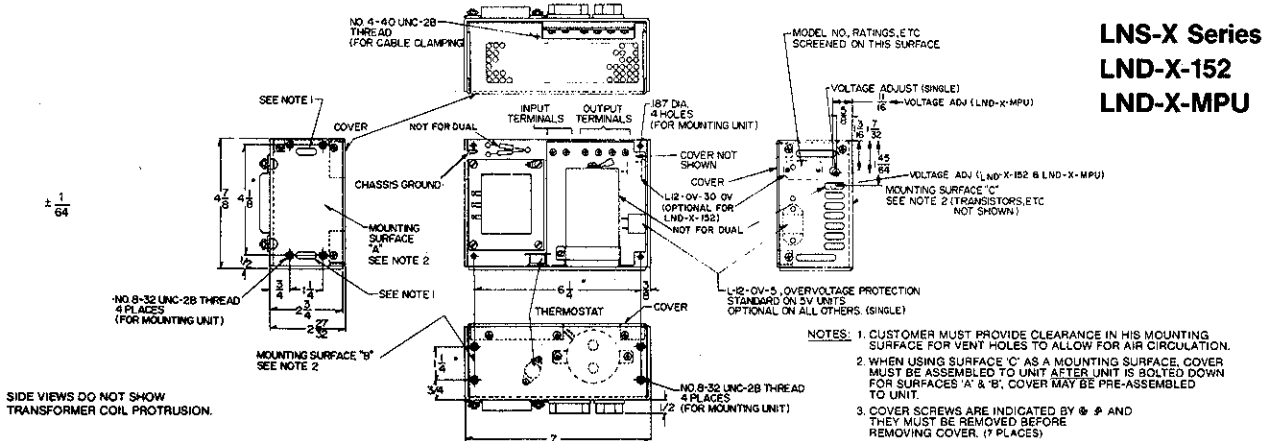
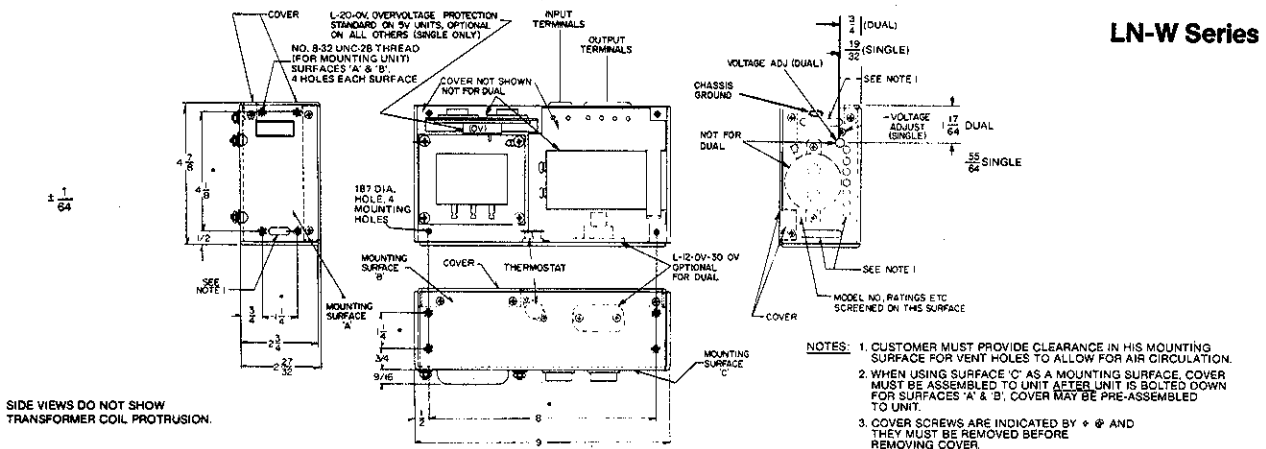
Dual tracking, Dual and triple output Models LN, LC and LX.

MODEL	REGULATION (line load)	RIPPLE (mV RMS)	ADJ. VOLT. RANGE VDC	MAX AMPS AT AMBIENT OF				COMPLETE ELEC. SPEC. PG	PKG. SIZE	DIMENSIONS (inches)	COMPLETE MECH. SPEC. PG	PRICE
				40°C	50°C	60°C	71°C					
5 VOLTS ±5% ADJ., 9V-12V ADJ.												
LND-X-MPU ¹¹⁸⁾	0.1%, 0.1%	1.5	5 ± 5% 9 to 12	7.0(6.0) 1.2(1.0)	8.0(5.1) 1.1(1.0)	4.7(4.0) 1.0(0.8)	3.2(2.7) 0.8(0.7)	37	X	7 x 4-7/8 x 2-7/8	125	\$241*
± 15 VOLTS TO ± 12 VOLTS ADJ. (Dual Tracking) (also used as 24 to 30 VDC)												
LND-Z-152 ¹¹⁹⁾ (15)	0.15%, 0.15%	1.5	± 15 to ± 12	0.8(0.5) 0.6(0.5)	0.55(0.5) 0.55(0.5)	0.45(0.4) 0.45(0.4)	0.3(0.3) 0.3(0.3)	37	Z	4-7/8 x 4 x 1-3/4	125	120
LND-Y-152 ¹¹⁹⁾ (15)	0.1%, 0.1%	1.5	± 15 to ± 12	1.4(1.2) 1.2(1.0)	1.2(1.0) 1.1(0.9)	0.9(0.8) 0.8(0.7)	0.6(0.5) 0.5(0.4)	37	Y	5-5/8 x 4-7/8 x 2-5/8	125	169
LND-X-152 ¹¹⁹⁾ (15)	0.1%, 0.1%	1.5	± 15 to ± 12	2.5(2.1) 2.3(2.0)	2.1(1.8) 1.9(1.6)	1.6(1.4) 1.4(1.2)	1.1(0.9) 0.9(0.8)	37	X	7 x 4-7/8 x 2-7/8	125	210
LND-W-152 ¹¹⁹⁾ (15)	0.1%, 0.1%	1.5	± 15 to ± 12	3.3(3.0) 3.1(2.8)	3.1(2.8) 2.8(2.5)	2.6(2.3) 2.3(2.1)	2.0(1.8) 1.6(1.4)	37	W	9 x 5 x 2-7/8	125	238
LND-P-152 ¹¹⁹⁾ (15)	0.1%, 0.1%	1.5	± 15 to ± 12	5.3(5.0) 4.6(4.4)	4.7(4.5) 4.0(3.8)	3.9(3.7) 3.3(3.1)	2.9(2.7) 2.5(2.4)	37	P	11 x 4-7/8 x 4-13/32	125	337

NOTES TO VOLTAGE AND CURRENT RATING TABLES

- ¹¹⁸⁾ Built-in continuously adjustable overvoltage protection that crowbars output when trip level is exceeded is included on this model.
- ¹¹⁹⁾ The LM-F-M & LM-G-M fixed voltage models have meters included in the price. For non-metered models, delete suffix-M.
- ¹²⁰⁾ ¹²¹⁾ Includes fixed overvoltage protection.
- ¹²²⁾ All LX series models have fungus proofing standard and is included in model notation and price.
- ¹²³⁾ The LXS-G series models have included in the price and notation built-in continuously adjustable overvoltage protector, voltage and current meters, fungus proofing.
- ¹²⁴⁾ ± 15 to ± 12 Volts and ± 6 to ± 3 Volts are each dual tracking outputs.
- ¹²⁵⁾ Ratings in parenthesis for LD and LN series when cover is used.
- ¹²⁶⁾ Current rating is from zero to I_{max}. With exception of LXD Series, current rating applies over entire output voltage range.
- ¹²⁷⁾ LD, LC, LM and LX Series power modules are available for operation at 360-440 Hz. Consult factory for ratings and specifications. For 50 Hz operation, derate LC Series by 10%; for LM Series delete 40°C rating; for LX Series delete 40°C rating.
- ¹²⁸⁾ 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 IV—DIMENSIONAL DRAWINGS MODULAR SUPPLIES PACKAGE SIZES W, X, Y AND Z



PART IV—DIMENSIONAL DRAWINGS PACKAGE SIZES P, 4 AND 2

LN-P Series

TABLE OF WEIGHTS		
MODEL	NET WT. (LBS)	SHIPPING WT. (LBS)
LNS-P	14	15 1/2
LND-P	15 1/2	17

- NOTES:
- CUSTOMER MOUNTING SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN 1/8"
 - COVER SCREWS ARE INDICATED BY CROSS HATCHING AND MUST BE REMOVED BEFORE COVER IS REMOVED, IF PLACES

SIDE VIEWS DO NOT SHOW TRANSFORMER COIL PROTRUSION

