

SL POWER COMMERCIAL / MEDICAL LINEARS



Commercial

Medical

Advanced Energy's SL Power linear series power supplies comprises one to three outputs. The models feature commercial or medical safety approvals and accept a universal input of 100 to 240 VAC. These linear power supplies feature very little output ripple with 3 mV, and low regulation with 0.05% of the output voltages. The power supplies have optional overvoltage protection and short-circuit protection on all models.

AT A GLANCE

Total Power

3 to 288 Watts

Input Voltage

100 to 240 VAC

of Outputs

Single, Dual, Triple

SPECIAL FEATURES

- World-wide AC input ranges
- Industry standard packages
- Capacitors with highest CV & ripple current ratings
- Medical leakage current $\leq 10 \mu\text{A}$
- All electrolytic caps rated at 105°C
- Transformer insulation meets Class F (155°C)
- Exceed FCC and CISPR22, Class B conducted emissions
- Burn-in with cycling; 3-year warranty
- RoHS compliant (G suffix models)

SAFETY

- Commercial:
EN/CSA/IEC/UL 62368-13
- Medical:
UL2601-1, IEC 60601-1, CSA601.1
- CE Mark to LVD



ELECTRICAL SPECIFICATIONS

Input	
AC input voltage and tolerance	100, 120, 240 VAC: -13% to +10% 215 VAC: -11% to +12% 230 VAC: -10% to +15%
Input frequency	47 to 63 Hz Derate output current 10% for 50 Hz operation
Medical leakage current	≤ 10 μ A
Efficiency	5 V units: 45%; 12 and 15 V units: 55%; 20 and 24 V units: 60%
Output	
Output voltage	See "Ordering Information" Adjustment range $\pm 5\%$ minimum except HA series.
Line regulation	$\pm 0.05\%$ for a 10% change
Load regulation	$\pm 0.05\%$ for a 50% change
Output ripple	3 mV +0.05% of output voltage, peak to peak maximum All "3-terminal regulator" outputs: 3 mV +0.2% peak to peak maximum.
Transient response	<50 μ s typ. for 50% load change
Remote sensing	Provided on all models; open sense lead protection built-in (except HA series)
Logic inhibit and current-share	F & G models
Stability	$\pm 0.05\%$ for 24 hours after warmup.
Temperature coefficient	$\pm 0.01\%/^{\circ}\text{C}$ maximum
Reliability	
MTBF	200,000+ hours per Mil Handbk 217D (most units)
Protection	
Short circuit protection	Automatic current limit/foldback
Overvoltage protection	Built-in on all 5 V models, set at 6.2 V ± 0.4 V. Other models use optional overvoltage protection.
Enviromental	
Operating temperature	0 to 50°C full rated, derated linearly to 40% at 70°C
Storage temperature	-40 to 85°C
Medical Shock and Vibration	Per Mil-Std-810D, Method 514.3, Category 1, Procedure 1 Per Mil-Std-810D, Method 516.3, Procedure III

ORDERING INFORMATION

Single Output Models				
Commercial Model	Medical Model	Voltage	Current	Case
HA2-1.5-A+G	-	2 V	1.5 A	B
HB2-3-A+G	-	2 V	3 A	B
HC2-6-A+G	-	2 V	6 A	C
HN2-9-A+G	-	2 V	9 A	N
HD2-12-A+G	-	2 V	12 A	D
HE2-18-A+G*	-	2 V	18 A	E
-	ML5-1-OV-A	5 V	1 A	L
HA5-1.5-OV-A+G	-	5 V	1.5 A	B
HB5-3-OV-A+G	MB5-3-OV-A	5 V	3 A	B
HC5-6-OV-A+G	MC5-6-OV-A	5 V	6 A	C
HN5-9-OV-A+G	-	5 V	9 A	N
HD5-12-OV-A+G	MD5-12-OV-A	5 V	12 A	D
HE5-18-OV-A+G*	-	5 V	18 A	E
F5-25-OV-A+*	-	5 V	25 A	F
G5-35-OV-A+*	-	5 V	35 A	G
CP197-A+G*	-	5 V	50 A	G
-	ML12-0.5-A	12 V	0.5 A	L
HA15-0.9-A+ (12 V) G	-	12 V	0.9 A	B
HB12-1.7-A+G	MB12-1.7-A	12 V	1.7 A	B
HC12-3.4-A+G	MC12-3.4-A	12 V	3.4 A	C
HN12-5.1-A+G	-	12 V	5.1 A	N
HD12-6.8-A+G	MD12-6.8-A	12 V	6.8 A	D
HE12-10-2-A+G*	-	12 V	10.2 A	E
F15-15-A+ (12V) G*	-	12 V	16 A	F
-	ML15-0.4-A	15 V	0.4 A	L
HA15-0.9-A+G	-	15 V	0.9 A	B
HB15-1.5-A+G	MB15-1.5-A	15 V	1.5 A	B
HC15-3-A+G	MC15-3-A	15 V	3 A	C
HN15-4.5-A+G	-	15 V	4.5 A	N
HD15-6-A+G	MD15-6-A	15 V	6 A	D
HE15-9-A+G*	-	15 V	9 A	E
F15-15-A+G*	-	15 V	15 A	F
-	ML24-0.28-A	24 V	0.28 A	L
HA24-0.5-A+G	-	24 V	0.5 A	B
HB24-1.2-A+G	MB24-1.2-A	24 V	1.2 A	B
HC24-2.4-A+G	MC24-2.4-A	24 V	2.4 A	C
HN24-3.6-A+G	-	24 V	3.6 A	N
HD24-4.8-A+G	MD24-4.8-A	24 V	4.8 A	D
HE24-7.2-A+G*	-	24 V	7.2 A	E
F24-12-A+G*	-	24 V	12 A	F

ORDERING INFORMATION

Single Output Models				
Commercial Model	Medical Model	Voltage	Current	Case
HA24-0.5-A+ (28V) G	-	28 V	0.5 A	B
HB28-1-A+G	MB28-1-A	28 V	1 A	B
HC28-2-A+G	MC28-2-A	28 V	2 A	C
HN28-3-A+G	-	28 V	3 A	N
HD28-4-A+G	MD28-4-A	28 V	4 A	D
HE28-6-A+G*	-	28 V	6 A	E
F24-12-A+* (28V) G	-	28 V	10 A	F
HB48-0.5-A+G	-	48 V	0.5 A	B
HC48-1-A+G	-	48 V	1 A	C
HD48-3-A+G**	-	48 V	3 A	D
HE48-4-A+G*	-	48 V	4 A	E
F48-6-A+G*	-	48 V	6 A	F
Dual Output Models				
Commercial Model	Medical Model	Output 1	Output 2	Case
HAA5-1.5-OV-A+G	-	5 V @ 1.5 A	5 V @ 1.5 A	AA
HBB5-3-OV-A+G	-	5 V @ 3 A	5 V @ 3 A	BB
HCC5-6-OV-A+G	-	5 V @ 6 A	5 V @ 6 A	CC
HAA512-A+G	MAA512-A	5 V @ 2 A	9 to 15 V @ 0.5 A	AA
HBB512-A+G	MBB512-A	5 V @ 3 A	9 to 15 V @ 1.2 A	BB
HCC512-A+G**	MCC512-A	5 V @ 6 A	9 to 15 V @ 2.5 A	CC
HAA524-A+G**	MAA524-A	5 V @ 2 A	18 to 24 V @ 0.3 A	AA
HBB524-A+G	MBB524-A	5 V @ 3 A	18 to 24 V @ 0.8 A	BB
HCC524-A+G	MCC524-A	5 V @ 6 A	18 to 24 V @ 2 A	CC
HAD12-0.4-A+G	-	+12 V @ 0.4 A	-12 V @ 0.4 A	B
-	MLL12-0.25-A	+12 V @ 0.25 A	-12 V @ 0.25 A	L
-	MLL15-0.2-A	+/-15 V @ 0.2 A	-15 V @ 0.02 A	L
HAD15-0.4-A+G	-	+15 V @ 0.4 A	-15 V @ 0.4 A	B
HAA15-0.8-A+G	MAA15-0.8-A	+12 to 15 V @ 1/0.8 A	-12 to -15 V @ 1/0.8 A	AA
HBB15-1.5-A+G	MBB15-1.5-A	+12 to 15 V @ 1.7/1.5 A	-12 to -15 V @ 1.7/1.5 A	BB
HCC15-3-A+G	MCC15-3-A+	+12 to 15 V @ 3.4/3 A	-12 to -15 V @ 3.4/3 A	CC
HDD15-5-A+G*	-	+12 to 15 V @ 5 A	-12 to -15 V @ 5 A	E
HAA24-0.6-A+G	-	+18 to 24 V @ 0.4/0.6 A	-18 to -24 V @ 0.4/0.6 A	AA
CP323-A+G	-	5 V @ 2 A	12 V @ 4 A	BB

Notes:

*Requires fan cooling.

**May require fan cooling.

All single output models have isolated outputs.

Models followed by suffix G indicate compliance to RoHS.

All outputs without + or - sign are isolated outputs and may be referenced as either a positive or negative output.

ORDERING INFORMATION

Triple Output Models					
Commercial Model	Medical Model	Output 1	Output 2	Output 3	Case
-	MTLL-5W-A	5 V @ 0.5 A	+12 to 15 V @ 0.1 A	-12 to -15 V @ 0.1 A***	L
HTAA-16W-A+G	MTAA-16W-A	5 V @ 2 A	+12 to 15 V @ 0.4/0.4 A	-12 to -15 V @ 0.4/0.4 A***	AA
HBAA40W-A+G	MBAA-40W-A	5 V @ 3 A	+12 to 15 V @ 1/0.8 A	-12 to -15 V @ 1/0.8 A***	BAA
HCBB105W-A+G**	-	5 V @ 3 A	+12 to 15 V @ 3.4/3 A	-12 to -15 V @ 3.4/3 A***	CBB
HCAA60W-A+G	MCAA60W-A	5 V @ 6 A	+12 to 15 V @ 1/0.8 A	-12 to -15 V @ 1/0.8 A***	D
HCBB75-W-A+G	MCBB75W-A	5 V @ 6 A	+12 to 15 V @ 1.7/1.5 A	-12 to -15 V @ 1.7/1.5 A***	CBB
CP131-A+G	-	5 V @ 8 A	+12 to 15 V @ 1.7/1.5 A	-12 to -15 V @ 1.7/1.5 A***	NBB
CP206-A+G	-	24 V @ 3/3.5 A PK	5 V @ 3 A	5 V @ 1 A	CBB
HDBB105W-A+G*	-	5 V @ 12 A	+12 to 15 V @ 1.7/1.5 A	-12 to -15 V @ 1.7/1.5 A***	DBB
HDCC150W-A+G*	-	5 V @ 12 A	+12 to 15 V @ 3.4/3 A	-12 to -15 V @ 3.4/3 A***	DCC

Notes:

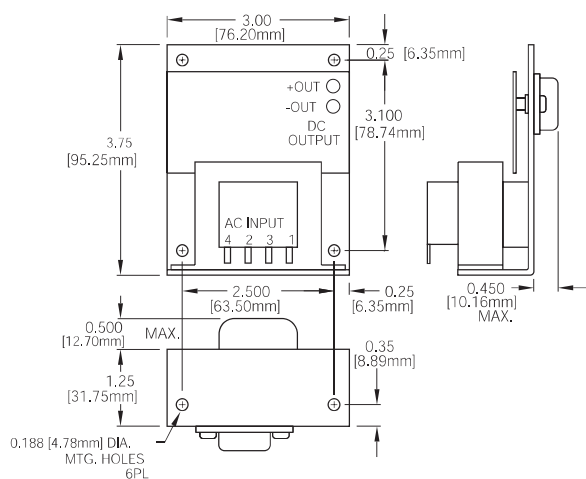
***No. 3 output usable at -5V, rate at 1/2 of 15V current rating.

Fixed Disk Series					
Commercial Model	Medical Model	Output 1	Output 2	Output 3	Case
CP379-A+G	-	+5 V @ 6 A	+24 V @ 3.5/6 A PK	-5 or -12 V @ 1.2 A	NBB
CP498-A+G	-	+5 V @ 6 A	+12 V @ 5/10 A PK	-12 V @ 0.5 A	NBB

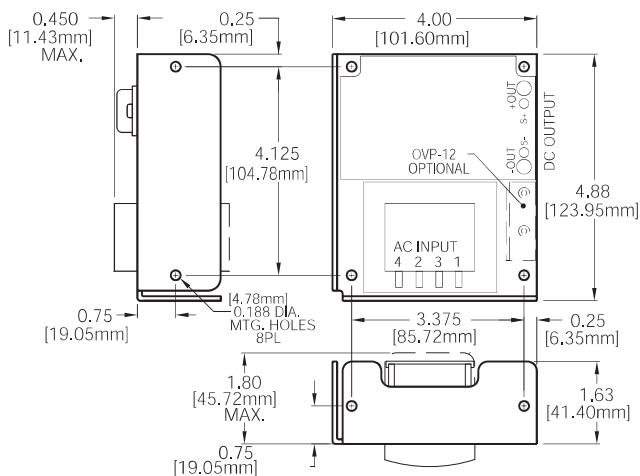
Notes:

***No. 3 output usable at -5V, rate at 1/2 of 15V current rating.

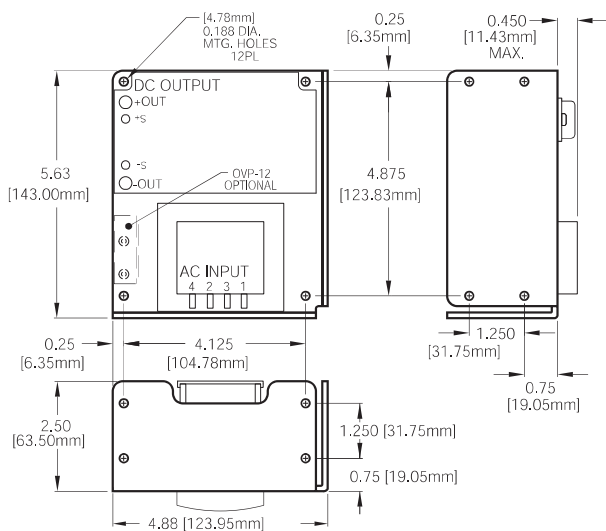
MECHANICAL DRAWING



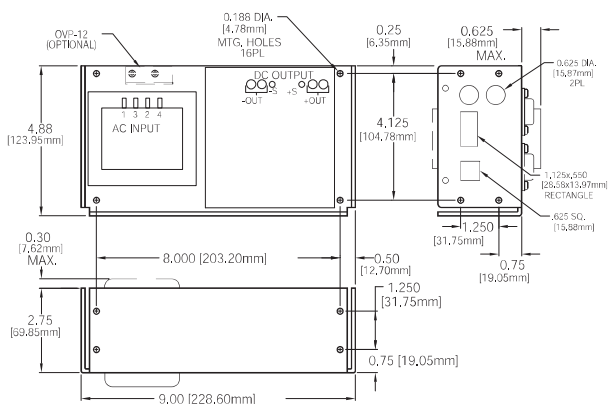
A CASE (WT. 1 LB.)



B CASE (WT. 2 LB.)

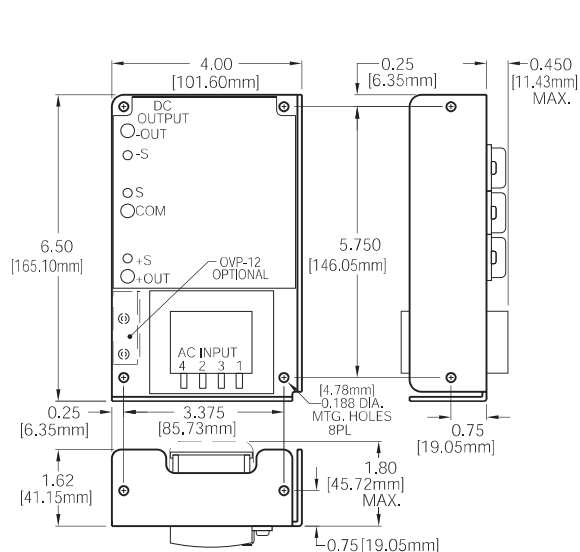


C CASE (WT. 4 LB.)

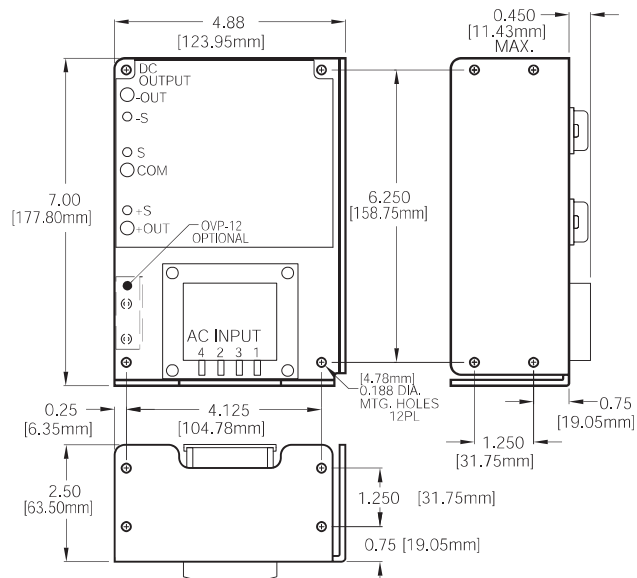


D CASE (WT. 7.5 LB.)

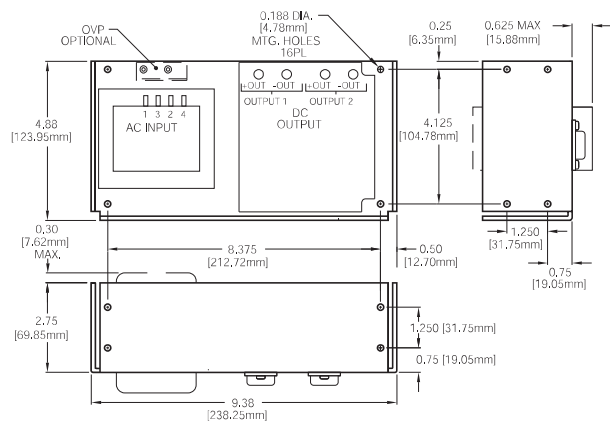
MECHANICAL DRAWING



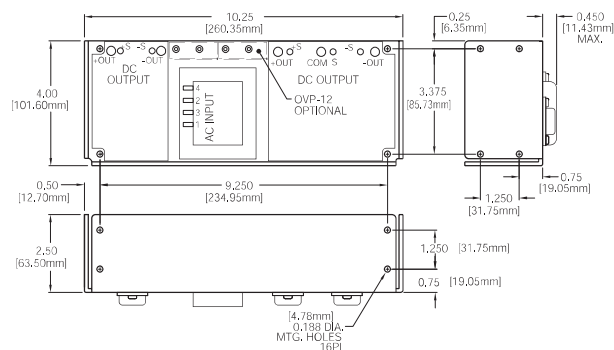
AA CASE (WT. 2 LB.)



BB CASE (WT. 4 LB.)

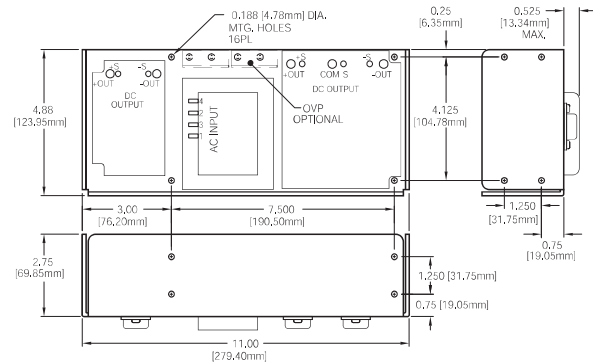


CC CASE (WT. 7 LB.)

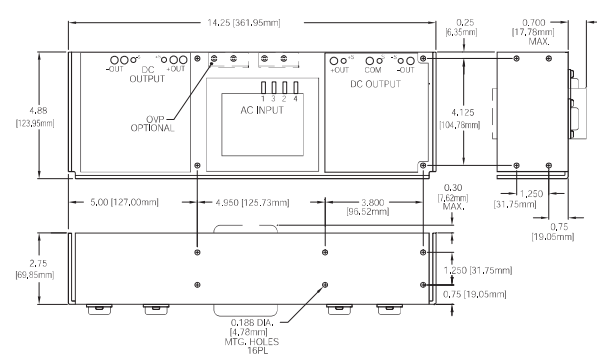


BAA CASE (WT. 5 LB.)

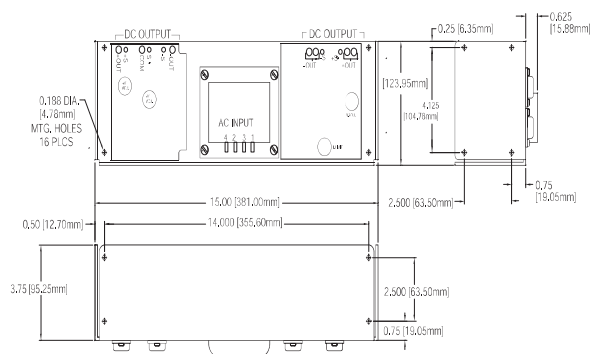
MECHANICAL DRAWING



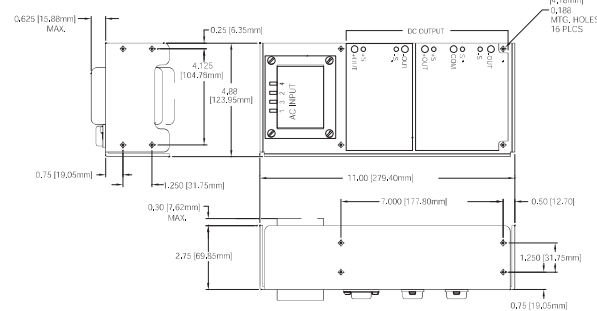
CBB CASE (WT. 8 LBS.)



DBB CASE (WT. 11 LBS.)



DCC CASE (WT. 12 LBS.)



NBB CASE (WT. 12 LBS.)



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ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

PRECISION | POWER | PERFORMANCE | TRUST

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[HC24-2.4-A+G](#) [HA5-1.5-OV-A+G](#) [HD5-12-OV-A+G](#) [MCBB-75W-A](#) [HBB512-A+G](#) [HB48-0.5-A+G](#) [HCBB105W-A+G](#)
[HCC15-3-A+G](#) [HA15-0.9-A+G](#) [HD15-6-A+G](#) [HAD12-0.4-A+G](#) [HAA524-A+G](#) [HB24-1.2-A+G](#) [HA24-0.5-A+G](#)
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[HDBB105W-A+G](#) [HN15-4.5-A+G](#) [HE28-6-A+G](#) [HCC524-A+G](#) [HD12-6.8-A+G](#) [HBB524-A+G](#) [HE5-18-OV-A+G](#)
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