

INTERNATIONAL SERIES LINEARS

- Worldwide AC Input Capabilities:
100/120/220/230/240 VAC
- Meets Domestic and Foreign Safety Standards:
UL, CSA, IEC, VDE, BPO, ECMA, CEE
- $\pm 0.05\%$ Regulation Low Output Ripple

AC Input:

100/120/220/240 VAC $\pm 10\%$, -13% . 47-63 Hz.
Tolerance for 230 VAC operation is $\pm 15\%$, -10% .
Derate output current 10% for 50 Hz operation.
Factory wired for 120V operation.

DC Output:

See Voltage/Current Rating Charts.
Adjustment range $\pm 5\%$ minimum.
Voltage nonadjustable on "3 terminal regulator" outputs of models HAD12 and HAD15.

Line Regulation:

$\pm 0.05\%$ for a 10% line change.
Exceptions: $\pm 0.01\%$ for F, G case models and CP197-A.
 $\pm 1\%$ for HAD12 and HAD15.
 $\pm 0.5\%$ for outputs using adjustable "3 terminal regulators."

Load Regulation:

$\pm 0.05\%$ for a 50% load change.
Exceptions: $\pm 0.02\%$ for F, G case models and CP197-A.
 $\pm 1\%$ for HAD12 and HAD15.
 $\pm 0.5\%$ for outputs using adjustable "3 terminal regulators."

Output Ripple:

5V through 15V models: 5.0 mV PK-PK maximum.
(3.0 mV PK-PK maximum for F, G case models and CP197-A).
24V through 250V models: 3.0 mV PK-PK plus .02% of output voltage, maximum.
All "3 terminal regulator" outputs: 0.2% PK-PK maximum.

Transient Response:

Less than 50 μ sec for a 50% load change.

Short Circuit and Overload Protection:

Automatic current limit/foldback.

- UL Recognized: 1950
- CSA Certified: C22.2 #950 TUV Certified: EN 60950
- Industry Standard Packages
- 2 Hour Burn-in, 2 Year Warranty

Overvoltage Protection:

Provided on 5V outputs where indicated. Set at 6.2V ± 0.4 V.
Other outputs use optional overvoltage protectors of OVP12 and OVP24.

Remote Sensing:

See Voltage/Current Rating Charts.
Provided on outputs where indicated.

Stability:

$\pm 0.3\%$ for 24 hours after warm-up.

Temperature Ratings:

Operating: 0°C to 50°C full rated, derated linearly to 40% at 70°C.
Storage: -40°C to 85°C.

Temperature Coefficient:

.01%/°C typical, .03%/°C maximum.

Efficiency (typical):

5V outputs:45%
12V and 15V outputs:55%
24V through 250V outputs:60%

Master/Slave Operation:

Provided on F and G models only.
For parallel operation of up to 6 units.

Vibration:

Random vibration from 10 Hz to 2 KHz, 6.15 grms (3 axis).

Shock:

Operating 20G peak acceleration.

EMI/RFI:

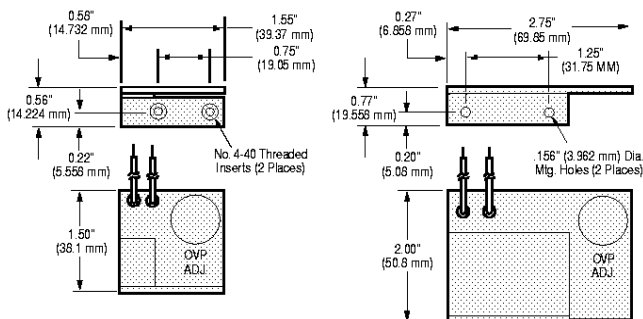
These linear power supplies have inherently low conducted and radiated noise levels. For most system applications they will meet the requirements of (FCC) 47CFR15J and EN55022.

Safety Agency Certifications:

UL: 1950 TUV certified to meet EN60950
CSA: C22.2 #950

OVERVOLTAGE PROTECTION OPTIONS

These optional overvoltage protection modules are offered for use with Power-One's International Series Linear power supplies. Each is user adjustable from 6.4V to 34V.



OVP SELECTION GUIDE

MODEL	CASE SIZE	OVP MODULES REQUIRED
SINGLE OUTPUT	B,C,N,D	(1) OVP-12
	E,F	(1) OVP-24
DUAL OUTPUT	AA,B,BB,CC	(1) OVP-12 protects both outputs
	E	(1) OVP-24 protects both outputs
TRIPLE OUTPUT	AA,BAA,D	(1) OVP-12 protects both 12V through 15V outputs
	CBB, 131	
	DBB,DCC	
PEAK CURRENT MODELS	N,BAA,CBB 131, CP340-A CP510-A	(1) OVP-12 protects any output not provided with built-in OVP

NOTE: Outputs with factory built-in OVP are indicated in the Voltage/Current Rating Chart for each model. OVP is not available for 48V through 250V models.

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VOLTAGE	MODEL	VOLTAGE/ CURRENT	CASE SIZE
5V	HA5-1.5/OVP-A*	5V @ 1.5A	B
	HB5-3/OVP-A*	5V @ 3A†	B
	HC5-6/OVP-A*	5V @ 6A†	C
	HN5-9/OVP-A*	5V @ 9A†	N
	HD5-12/OVP-A*	5V @ 12A†	D
	HE5-18/OVP-A*	5V @ 18A†	E
	FS-25/OVP-A*	5V @ 25A†	F
	GS-35/OVP-A*	5V @ 35A†	F
	CP137-A*	5V @ 50A†	F
12V	HA12-0.9-A**	12V @ 0.9A	B
	HB12-1.7A	12V @ 1.7A†	B
	HC12-3.4-A	12V @ 3.4A†	C
	HN12-5.1A	12V @ 5.1A†	N
	HD12-6.8-A	12V @ 6.8A†	D
	HE12-10.2A	12V @ 10.2A†	E
	F12-15-A**	12V @ 16A†	F
	15V	HA15-0.9A**	15V @ 0.9A
HB15-1.5-A		15V @ 1.5A†	B
HC15-3-A		15V @ 3A†	C
HN15-4.5A		15V @ 4.5A†	N
HD15-6-A		15V @ 6A†	D
HE15-9-A		15V @ 9A†	E
F15-15-A**		15V @ 15A†	F

* Overvoltage protection provided. Set at 6.2V $\pm$ 0.4V.

Adjustable outputs:
F15-15-A: 12-15V
F24-12-A: 24-28V
HA15-0.9-A: 12-15V
HA24-0.5-A: 24-28V

VOLTAGE	MODEL	VOLTAGE/ CURRENT	CASE SIZE
24V	HA24-0.5-A**	24V @ 0.5A	B
	HB24-1.2A	24V @ 1.2A†	B
	HC24-2.4A	24V @ 2.4A†	C
	HD24-3.6A	24V @ 3.6A†	N
	HE24-4.8A	24V @ 4.8A†	D
	HE24-7.2A	24V @ 7.2A†	E
	F24-12-A**	24V @ 12A†	F
28V	HA24-0.5-A**	28V @ 0.5A	B
	HB28-1-A	28V @ 1A†	B
	HC28-2-A	28V @ 2A†	C
	HD28-3-A	28V @ 3A†	N
	HE28-4-A	28V @ 4A†	D
	HE28-6-A	28V @ 6A†	E
	F24-12-A**	28V @ 10A†	F
48V	HB48-0.5-A	48V @ 0.5A	B
	HC48-1-A	48V @ 1A	C
	HD48-3-A	48V @ 3A†	D
	HE48-4-A	48V @ 4A†	E
120V	HB120-0.2A	120V @ 0.2A	B
175- 210V	HB200-0.12A	175-210V @ 0.12A	B
250V	HB250-0.1A	250V @ 0.1A	B

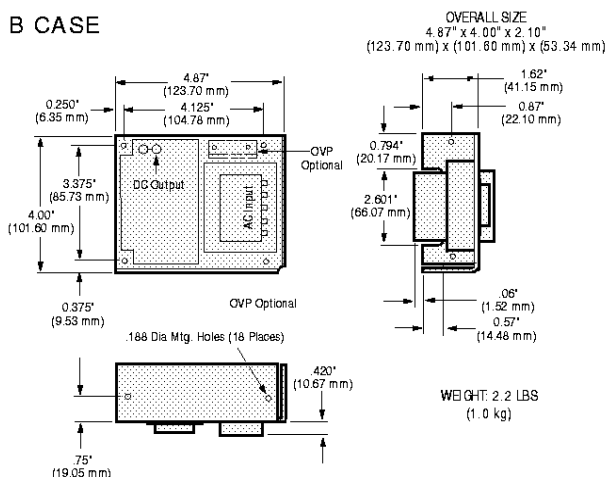
§ Nonadjustable 3 terminal regulator.

X Isolated outputs, can be referenced as + or -

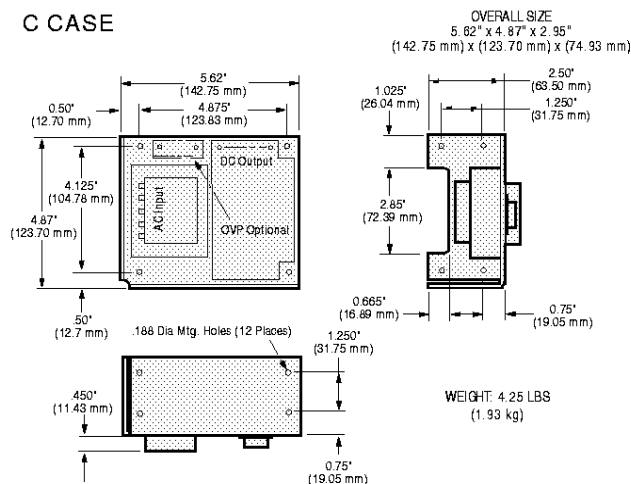
† Remote sense provided.

MECHANICAL DIMENSIONS SINGLE OUTPUT

B CASE



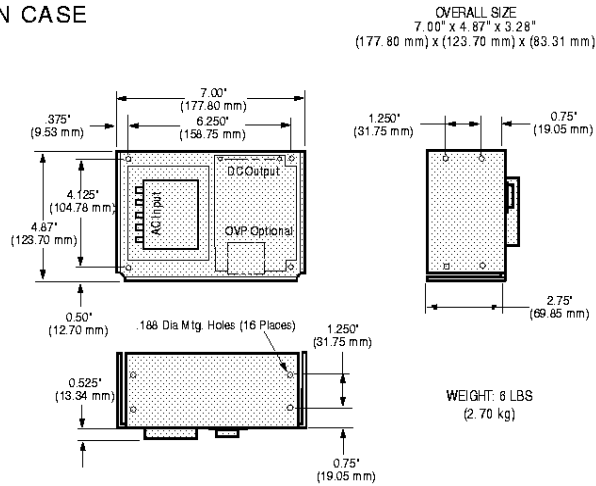
C CASE



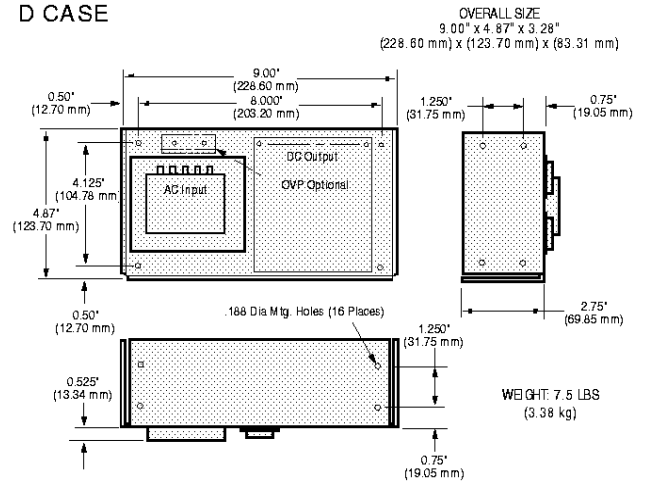
INTERNATIONAL SERIES LINEARS SINGLE OUTPUT MODELS

MECHANICAL DIMENSIONS SINGLE OUTPUT (CONT.)

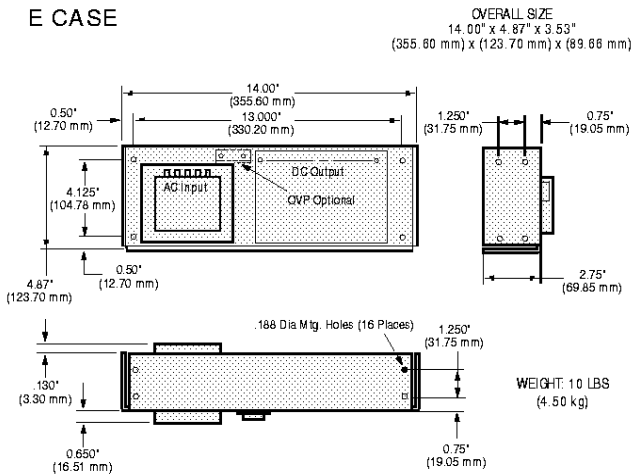
N CASE



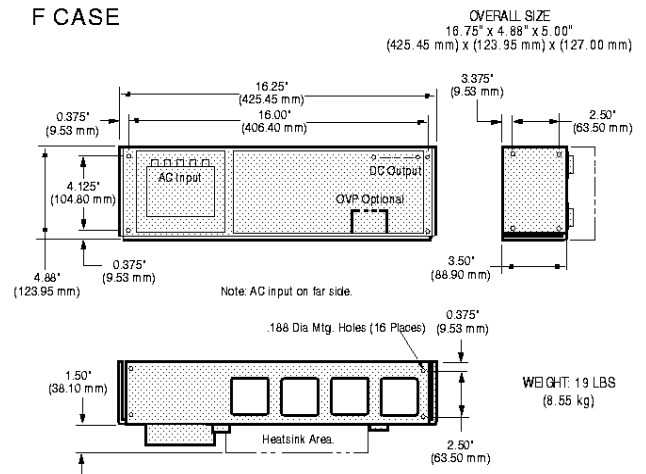
D CASE



E CASE



F CASE



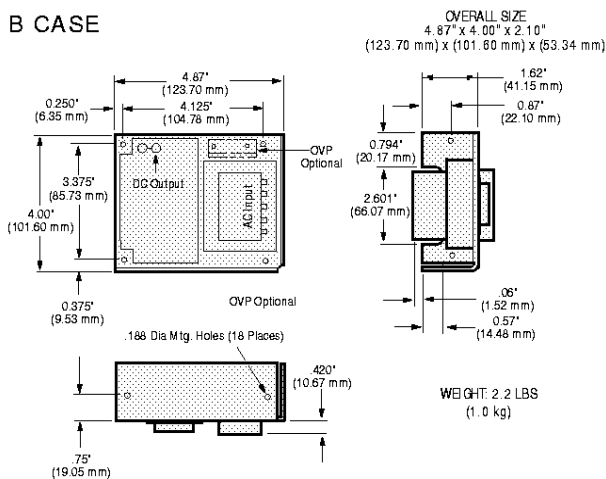
INTERNATIONAL SERIES LINEARS

DUAL OUTPUTS

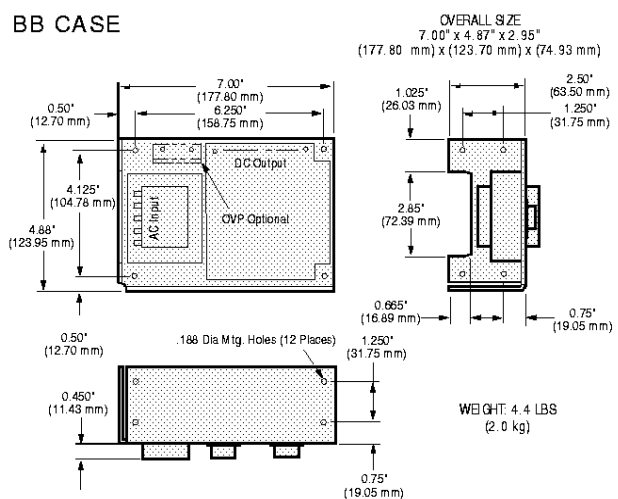
VOLTAGE	MODEL	OUTPUT # 1	OUTPUT # 2	CASE SIZE
±5V	HAA5-1.6/OVP-A	+ 5V @ 1.5A*	- 5V @ 1.5A*	AA
	HBB5-3/OVP-A	+ 5V @ 3A*	- 5V @ 3A*	BB
	HCC5-6/OVP-A	+ 5V @ 6A*†	- 5V @ 6A*†	CC
± 12V	HAD12-0.4-A	+ 12V @ 0.4A§	- 12V @ 0.4A§	B
± 15V	HAD15-0.4-A	+ 15V @ 0.4A	- 15V @ 0.4A§	B
±12V to ±15V	HAA15-0.8-A	+ 12V @ 1A or + 15V @ 0.8A	- 12V @ 1A or - 15V @ 0.8 or - 5V @ 0.4A†	AA
	HBB15-1.6-A	+ 12V @ 1.7A or + 15V @ 1.5A†	- 12V @ 1.7A or - 15V @ 1.5A or - 5V @ 0.7A†	BB
	HCC15-3-A	+ 12V @ 3.4A or + 15V @ 3A†	- 12V @ 3.4A or - 15V @ 3A†	CC
	HDD15-6-A	+ 12V or 15V @ 5A†	(-)12V or 15V @ 5A	E
±18V to ±24V	HAA24-0.6-A	+ 18-20V @ 0.4A or + 24V @ 0.6A	(-)18-20V @ 0.4A or - 24V @ 0.6A	AA
	HBB24-1.2-A	+ 18-20V @ 0.9A or + 24V @ 1.2A	(-)18-20V @ 0.9A or - 24V @ 1.2A	BB
	HCC24-2.4-A	+ 18-20V @ 1.8A or + 24V @ 2.4A†	(-)18-20V @ 1.8A or - 24V @ 2.4A†	CC
5V and 12V-15V	HAA512-A	5V @ 2A* X	12-15V @ 0.5A	AA
	HBB512-A	5V @ 3A*†X	12-15V @ 1.25A†	BB
	HCC512-A	5V @ 6A*†X	12-15V @ 2.5A†	CC

MECHANICAL DIMENSIONS DUAL OUTPUT

B CASE



BB CASE

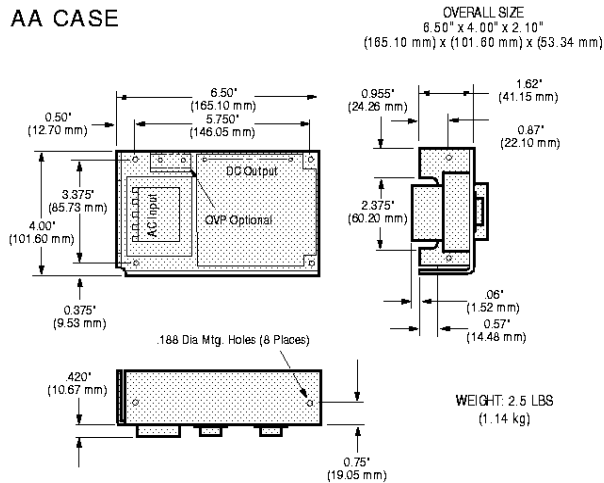


INTERNATIONAL SERIES LINEARS

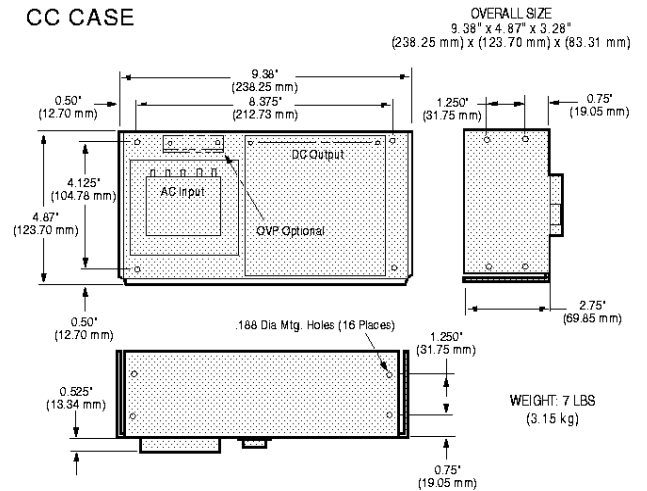
DATA FORMS

MECHANICAL DIMENSIONS DUAL OUTPUT (CONT.)

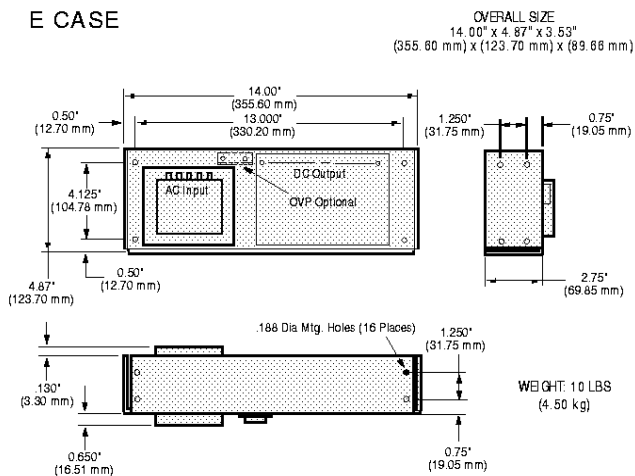
AA CASE



CC CASE



E CASE



INTERNATIONAL SERIALS REFERENCES

MODEL	OUTPUT # 1	OUTPUT # 2	OUTPUT # 3	CASE SIZE
HTAA-18W-A	5V @ 2A* x	+ 12 TO 15V @ 0.4A	(-)12 to 15V @ 0.4A or - 5V @ 0.4A	AA
HBAA-40W-A	5V @ 3A* †x	+ 12V @ 1A or + 15V @ 0.8A†	- 12V @ 1A or - 15V @ 0.8A or - 5V @ 0.4A†	BAA
HCAA-60W-A	+ 5V @ 6A* †	+ 12 to 15V @ 1A	(-)12 to 15V @ 1A or - 5V @ 0.4A	D
HCB8-75W-A	5V @ 6A* †x	+ 12V @ 1.7A or + 15V @ 1.5A†	- 12V @ 1.7A or - 15V @ 1.5A or - 5V @ 0.7A†	CBB
CP131-A	5V @ 8A* †x	+ 12V @ 1.7A or + 15V @ 1.5A†	- 12V @ 1.7A or - 15V @ 1.5A or - 5V @ 0.7A†	131
HCB6-105W-A	5V @ 12A* †x	+ 12V @ 1.5A or + 15V @ 1.5A†	-12V @ 1.7A or - 15V @ 1.5A or - 5V 0.7A†	DBB
HDCC-150W-A	5V @ 12A* †x	+ 12V @ 3.4A or + 15V @ 3A†	- 12V @ 3.4A or - 15V @ 3A	DCC

* Overvoltage protection provided. Set at 6.2V $\pm$ 0.4V

† Remote sense provided.

X Isolated outputs, can be referenced as + or -

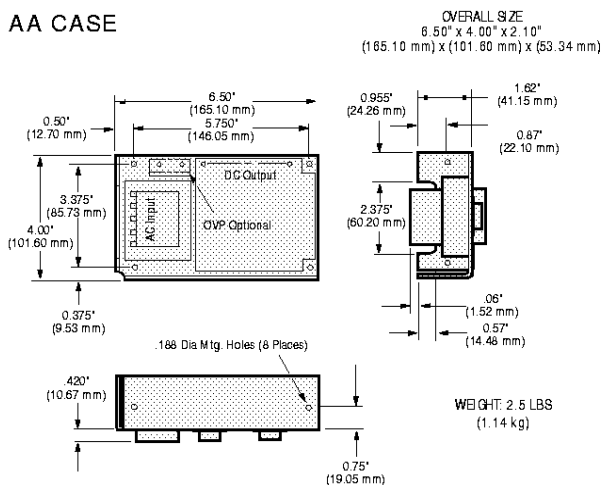
§ Nonadjustable 3 terminal regulator.

Adjustable 3 terminal regulator.

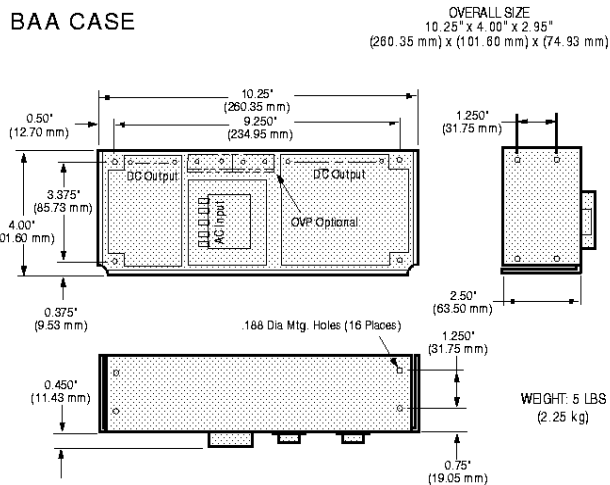
- Can be made into an isolated output by removing jumper W1.

MECHANICAL DIMENSIONS TRIPLE OUTPUT

AA CASE



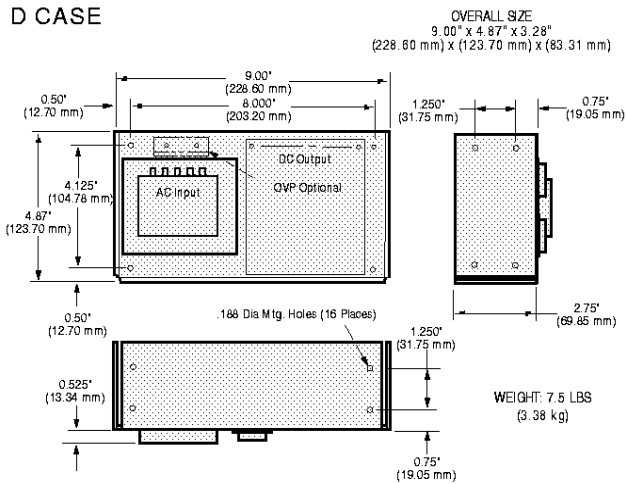
BAA CASE



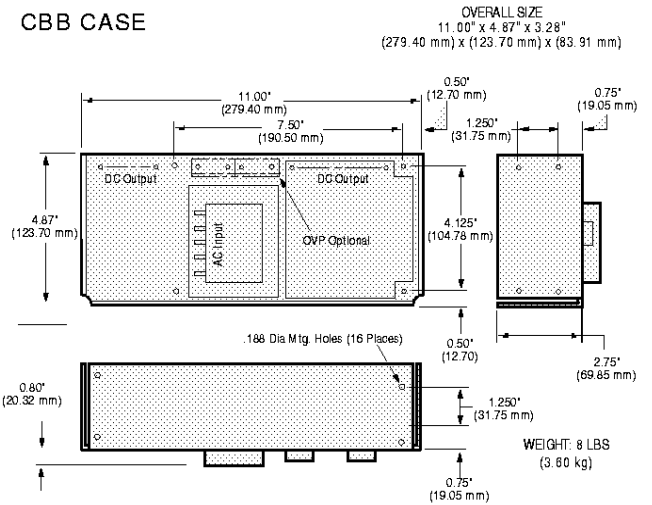
INTERNATIONAL SERIES LINEARS THREE PHASES

MECHANICAL DIMENSIONS TRIPLE OUTPUT (CONT.)

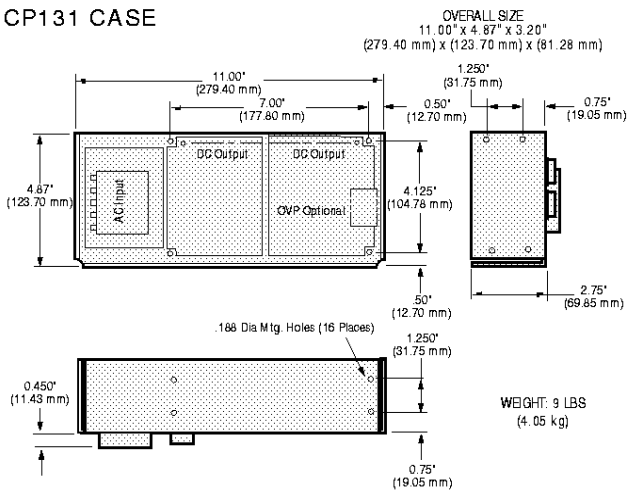
D CASE



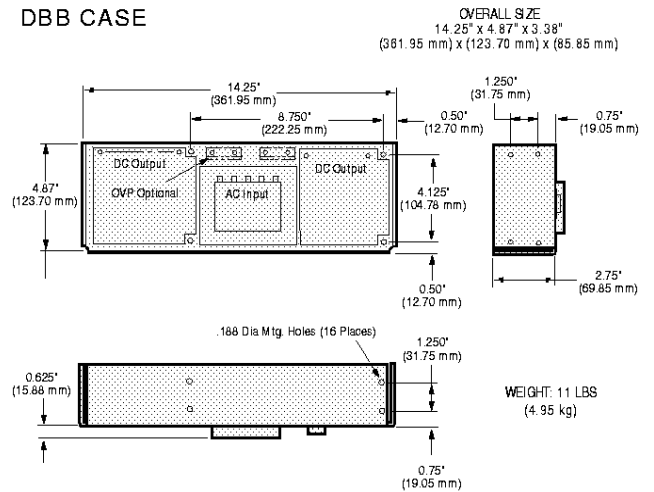
CBB CASE



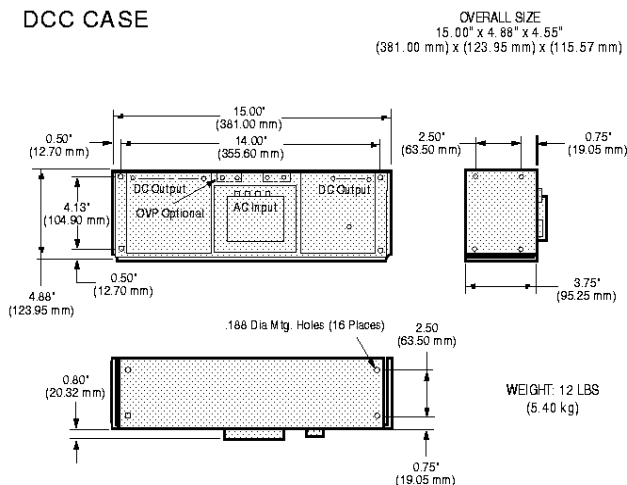
CP131 CASE



DBB CASE



DCC CASE



INTERNATIONAL SERIES LINEARS

HIGH PEAK MODELS

MODEL	OUTPUT # 1	OUTPUT # 2	OUTPUT # 3	OUTPUT # 4	CASE SIZE
CP323-A	+ 5V @ 2A*	+ 12 TO 15V @ 4A			N
CP305-A	+ 5V @ 1A*	- 5V @ 0.5A*	24V @ 1.5A/ or 1.7A @ PKx		BAA
CP162-A	+ 5V @ 3A* †	- 5V @ 0.6A*	24V @ 5A/ or 6APK†x		CP131
CP510-A	+ 5V @ 6A*	+ 12V @ 2.5A/ 7.5APK			CP510-A
CP379-A	+ 5V @ 6A* †•	- 5V @ 1.2A or - 12V @ 1.2A	24V @ 3.5A/ 8A PK†x		CP131
CP489-A	+ 5V @ 12A* †x	+ 12V @ 1.5A or + 15V @ 1.5A†	- 15V @ 1.5A or - 5V 0.7A†		CP131
CP503-A	+ 5V @ 6A*	+ 12V @ 1A	- 12V @ 1A or - 5V @ 0.5A	+24V @ 2.4A/ 4A PK	CP131

* Overvoltage protection provided. Set at 6.2V ±0.4V.

§ Nonadjustable 3 terminal regulator.

† Remote sense provided.

Adjustable 3 terminal regulator.

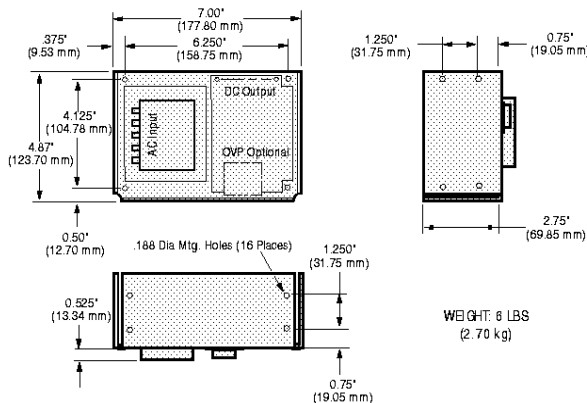
X Isolated outputs, can be referenced as + or -.

• Can be made into an isolated output by removing jumper W1.

MECHANICAL DIMENSIONS HIGH PEAK CURRENT MODELS

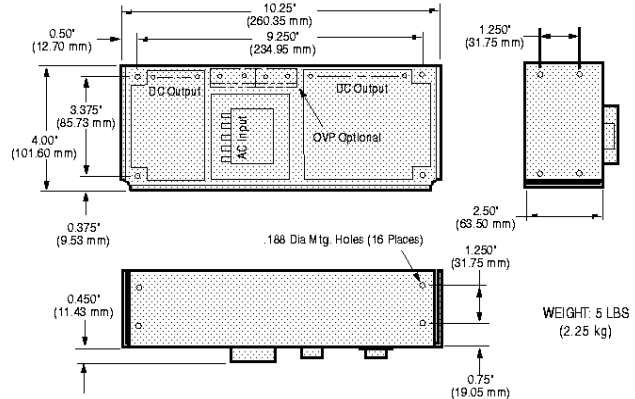
N CASE

OVERALL SIZE
7.00" x 4.87" x 3.28"
(177.80 mm) x (123.70 mm) x (83.31 mm)



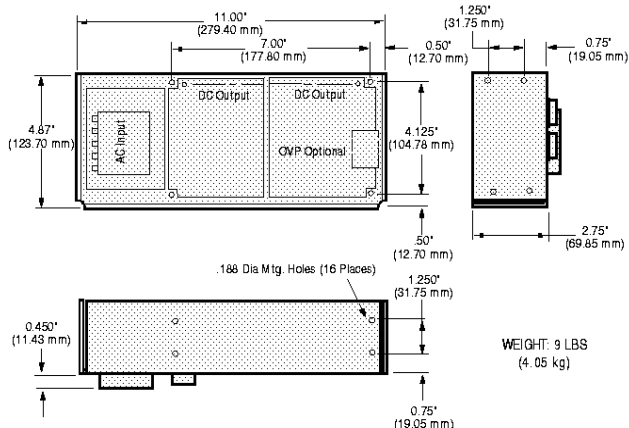
BAA CASE

OVERALL SIZE
10.25" x 4.00" x 2.95"
(260.35 mm) x (101.60 mm) x (74.93 mm)



CP131 CASE

OVERALL SIZE
11.00" x 4.87" x 3.20"
(279.40 mm) x (123.70 mm) x (81.28 mm)



CP510-A CASE

OVERALL SIZE
8.25" x 4.87" x 3.28"
(209.55 mm) x (123.70 mm) x (83.31 mm)

