

International + Linears

Summary:

- World-wide ac input ranges and safety standards
- Industry standard packages
- Commercial UL/CSA TUV/IEC approved—models to UL/CSA 60950; EN/IEC60950-1
- Burn-in with cycling; 3-year warranty
- Capacitors have highest CV & ripple current ratings
- Medical Approved to UL2601-1/60601-1, IEC60601-1 and CSA601.1
- Medical leakage 10 μ A
- MTBF 200,000+ hours per MIL-HDBK-217D (most units)
- All electrolytic caps rated at 105°C
- Transformer insulation meets Class F (155°C)
- Exceed FCC and CISPR22, Class B conducted emissions
- RoHS Compliant models available (G suffix)
- $\text{C}\epsilon$ marked to LVD



SPECIFICATIONS

Ac Input 100, 120 and 240 Vac: +10%, -13%; 215 Vac: +12%, -11%; 47 to 63Hz. Tolerance for 230 Vac operation is +15%, -10%. Derate output current 10% for 50 Hz operation.
Dc Output See voltage rating chart. 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% load 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 microseconds for 50% load change.
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 over-voltage protection.

Remote Sensing Provided on all models; open sense lead protection built-in (except HA & HTAA series).
Stability $\pm 0.05\%$ for 24 hours after warmup.
Temperature Rating 0 to 50°C full rated, derated linearly to 40% at 70°C.
Temperature Coefficient $\pm 0.01\%/^{\circ}\text{C}$ maximum.
Efficiency 5 V units: 45%; 12 and 15 V units: 55%; 20 and 24 V units: 60%.
Logic Inhibit and Current-Share F & G models.
Medical Shock and Vibration Per Mil-Std-810D, Method 514.3, Category 1, Procedure 1. Per Mil-Std-810D, Method 516.3, Procedure III.
Storage -40 to +85 $^{\circ}\text{C}$.

All specifications are typical at nominal input, full load at 25°C unless otherwise stated

Commercial Model (Single)	Medical Model	Voltage	Current	Case
HB2-3-A+G		2 V	3 A	B
HC2-6-A+G		2 V	6 A	C
HE2-18-A+G		2 V	18 A	E
	ML5-1-OV-A	5 V	1.0 A	L
HA5-1.5-OV-A+G		5 V	1.5 A	B
HB5-3-OV-A+G		5 V	3 A	B
HC5-6-OV-A+G		5 V	6 A	C
HN5-9-OV-A+G		5 V	9 A	N
HD5-12-OV-A+G		5 V	12 A	D
HE5-18-OV-A+G		5 V	18 A	E
F5-25-OV-A+*G		5 V	25 A	F
G5-35-OV-A+ *(1)		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 VG		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
	ML15-0.4-A	15 V	.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
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
HA24-0.5-A+ (24 V)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+* (28 V)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

Notes:

1. All single output models have isolated outputs.
2. Model G5-50-OV-A+ not RoHS compliant

Commercial Model (Dual)	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 (adj) @ 0.5 A	AA
HBB512-A+G	MBB512-A	5 V @ 3 A	9 to 15 V (adj) @ 1.2 A	BB
HCC512-A+G **	MCC512-A	5 V @ 6 A	9 to 15 V (adj) @ 2.5 A	CC
HAA524-A+G **	MAA524-A	5 V @ 2 A	18 to 24 V (adj) @ 0.3 A	AA
HBB524-A+G	MBB524-A	5 V @ 3 A	18 to 24 V (adj) @ 0.8 A	BB
HCC524-A+G	MCC524-A	5 V @ 6 A	18 to 24 V (adj) @ 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 @ 0.2 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	+15 V @ 0.8 A	-15 V @ 0.8 A	AA
HBB15-1.5-A+G	MBB15-1.5-A	+15 V @ 1.5 A	-15 V @ 1.5 A	BB
HCC15-3-A+G	MCC15-3-A	+15 V @ 3 A	-15 V @ 3 A	CC
HDD15-5-A+G		+15 V @ 5 A	-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

** May require fan cooling

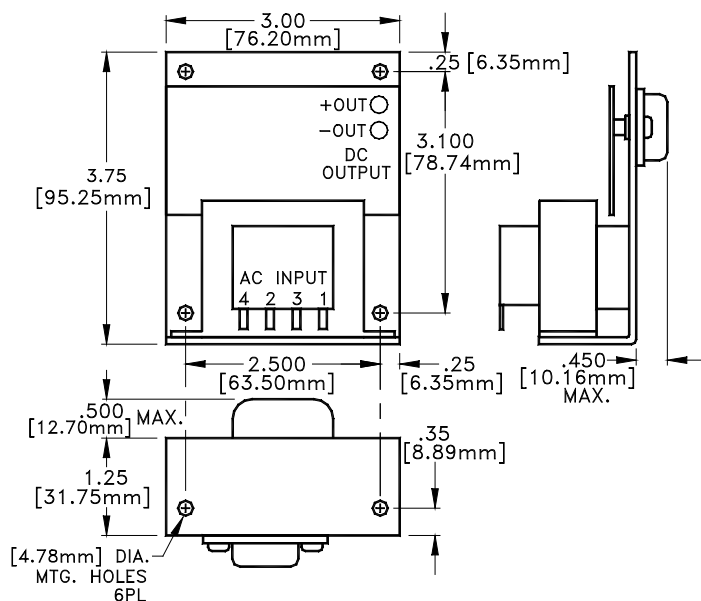
Commercial Model (Triple)	Medical Model	Output 1	Output 2	Output 3	Case
	MTLL-5W-A	5 V @ 0.5 A	+12 to 15 V @ 0.1 A	-12 to 15 V @ 0.1 A***	L
HTAA-16W-A+G	MTAA-16W-A	5 V @ 2 A	+12 to 15 V @ 0.4/0.4 A	-12 to 15 V @ 0.4/0.4 A***	AA
HBAA40W-A+G	MBAA40W-A	5 V @ 3 A	+12 to 15 V @ 1/0.8 A	-12 to 15 V @ 1/0.8 A***	BAA
HCB8105W-A+G **		5 V @ 3 A	+12 to 15 V @ 3.4/3.0 A	-12 to 15 V @ 3.4/3.0 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
HCB875W-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
HDB8105W-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

*Requires fan cooling
 ** May require fan cooling
 ***No. 3 output usable at -5 V, rate at 1/2 of 15 V current rating.
 Outputs rated at 9 to 15V, 12 to 15V, or 18 to 24V are user adjustable outputs.
 All outputs without + or - sign are isolated outputs and may be referenced as either a positive or negative output.

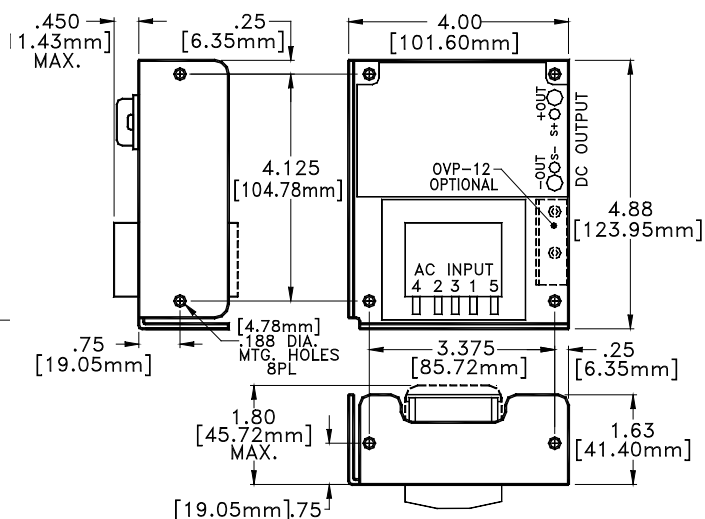
FIXED DISK SERIES

Both models without UL, CSA or TUV

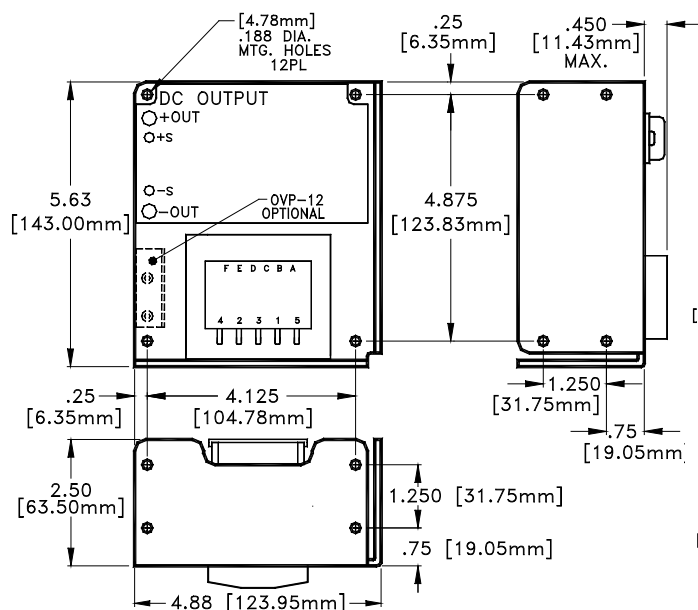
Commercial Model (Dual)	Output 1	Output 2	Output 3	Case
CP379-A+G	+5 V @ 6 A	+ 24 V @ 3.5/6 A PK	-5 or -12 @ 1.2 A	NBB
CP498-A+G	+5 V @ 6 A	+ 12 V @ 5/10 A PK	-12 V @ 0.5 A	NBB



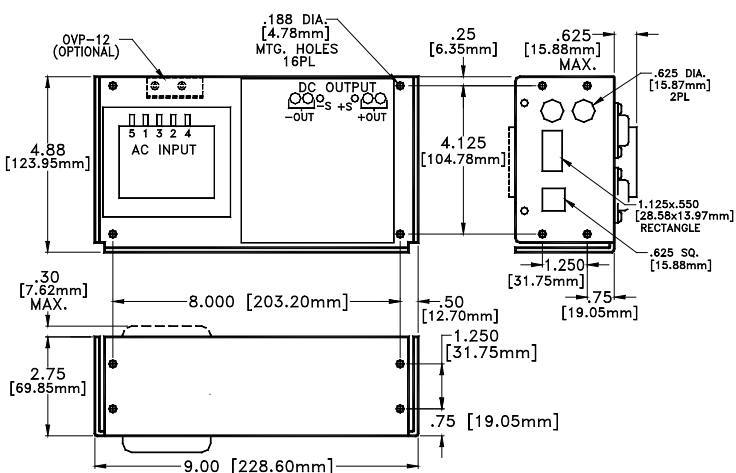
A CASE (WT. 1 LB.)



B CASE (WT. 2 LB.)

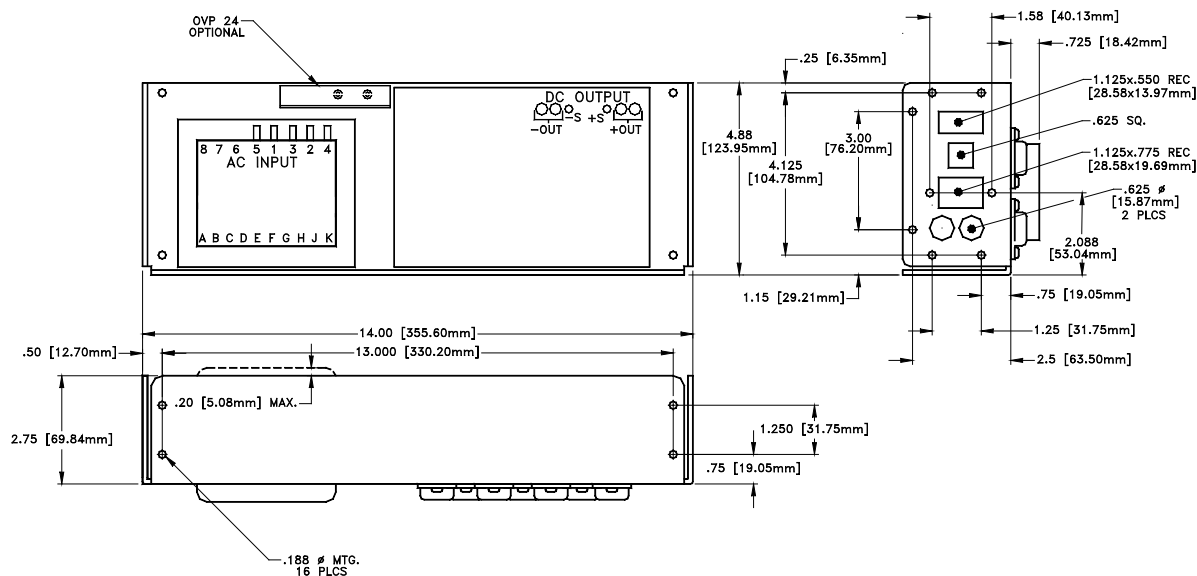


C CASE (WT. 4 LB.)



D CASE (WT. 7.5 LB.)

INTERNATIONAL + LINEAR MECHANICAL SPECIFICATIONS

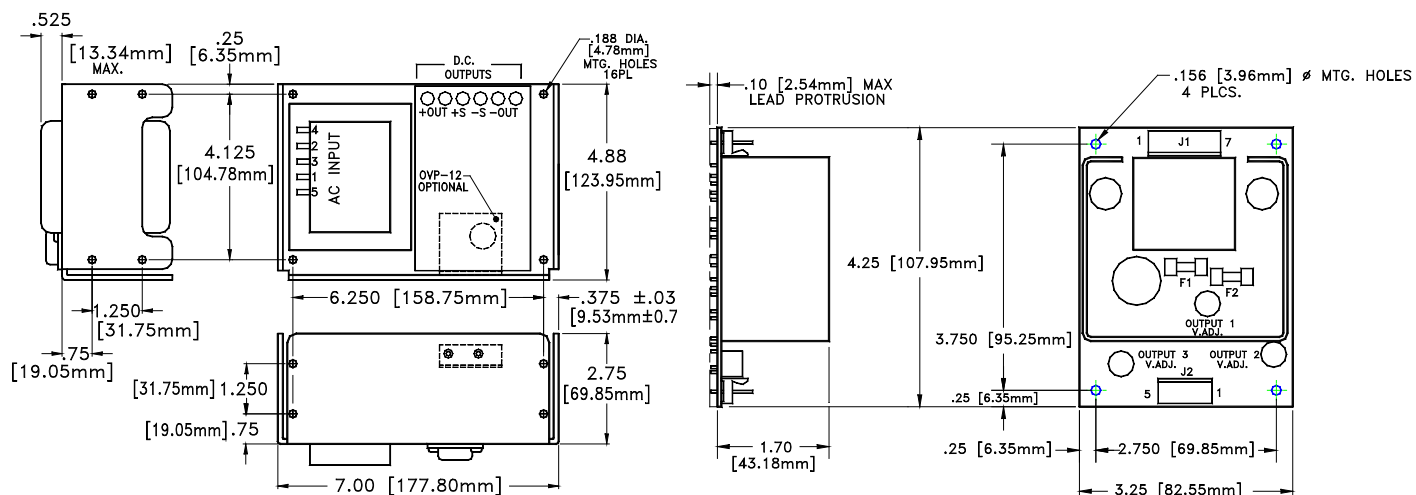
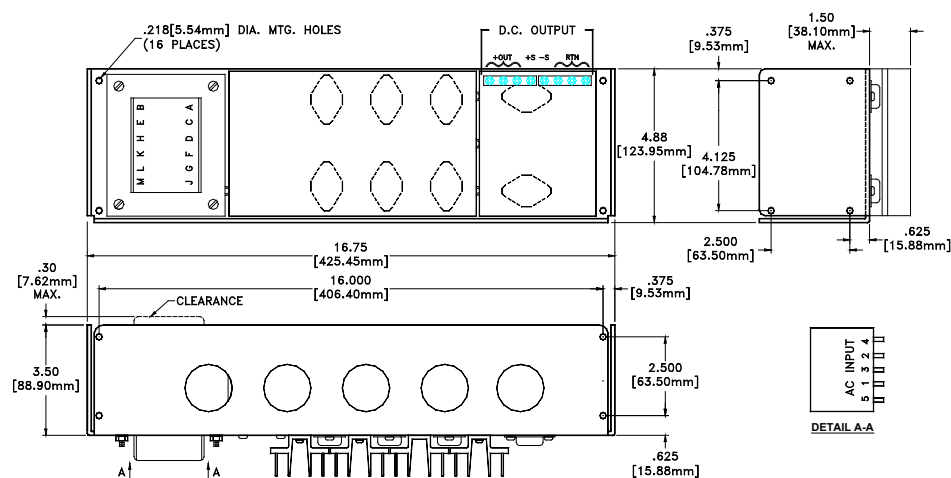


E CASE (WT. 10 LB.)

F CASE

(WT. F5: 14 LB.; F15, 24: 18 LB.)

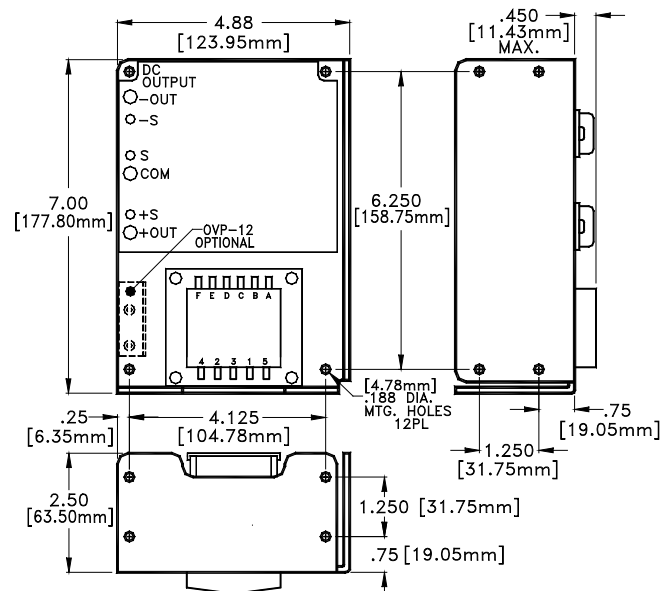
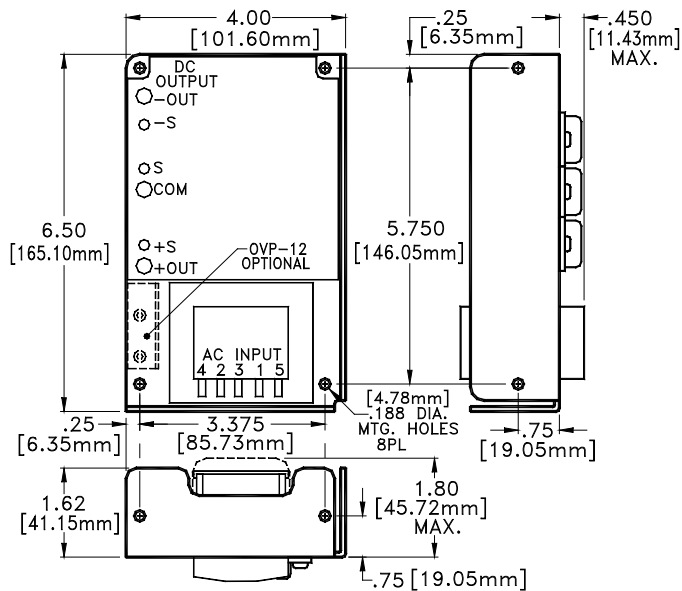
G CASE (WT. G5: 19 LB.)



N CASE (WT. 7 LB.)

L CASE (WT. 1 LB.)

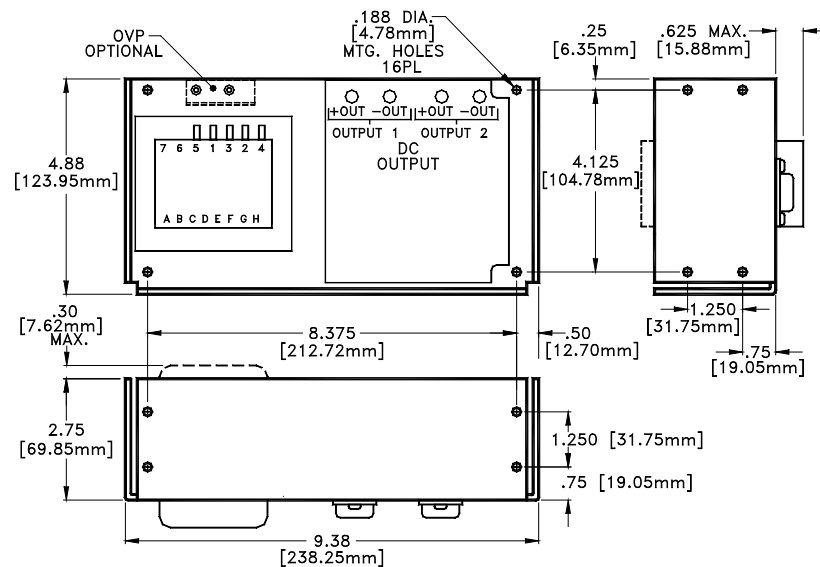
INTERNATIONAL + LINEAR MECHANICAL SPECIFICATIONS



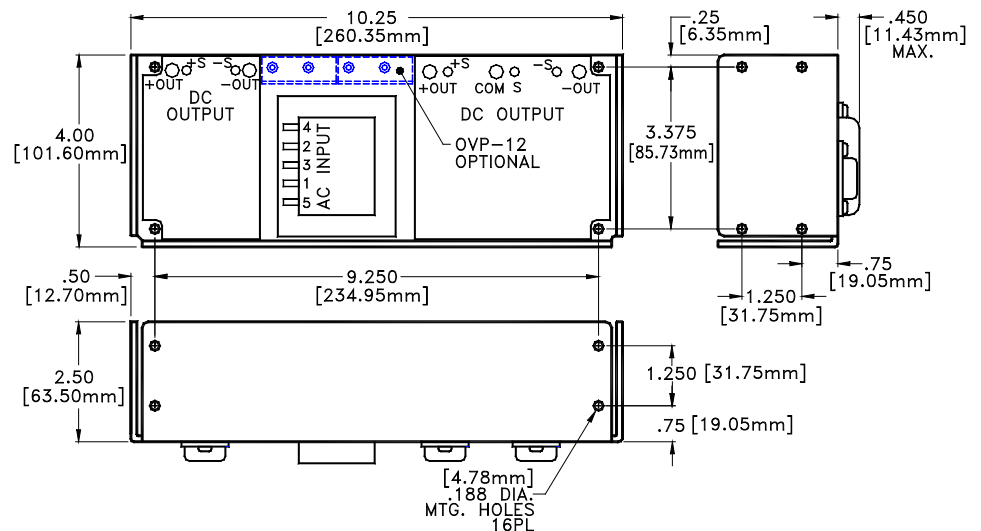
AA CASE (WT. 2 LB.)

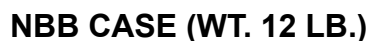
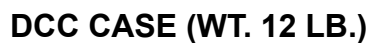
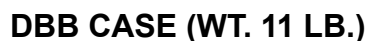
BB CASE (WT. 4 LB.)

CC CASE (WT. 7 LB.)



BAA CASE (WT. 5 LB.)





**ML SERIES
INSTALLATION INSTRUCTIONS****RATINGS:**

Input: 100-120/220-240 V ac, 0.2/0.1 A, 50/60 Hz

Derate output current 10% for operation at frequencies below 58 Hz.

Output:

MODEL	OUTPUT	Secondary Fuse Values
ML5-1/OVP-A	5V 1.0A	F1 = 2.0A SB
ML12-0.5-A	12V 0.5A	F1 = 1.0A SB
ML15-0.4-A	15V 0.4A	F1 = 0.75A SB
ML24-0.28-A	24V 0.28A	F1 = 0.5A SB
MLL12-0.25-A	±12V 0.25A	F1, F3 = 0.5A SB
MLL15-0.2-A	±15V 0.2A	F1, F3 = 0.5A SB
MTLL-5W-A	+5V 0.5A	F1 = 1.0A SB
	±12V or ±15V 0.1A	F3 = 0.5A SB

- Notes:
1. Maximum ambient temperature for continuous output specified in the table is 50°C.
 2. Maximum Operating Relative Humidity 96%, no condensation.
 3. Maximum output short circuit current is 150% of rated output current.

CERTIFICATION: All models are Certified to be in compliance with the applicable requirements of UL 2601-1, 1st Ed; CSA 22.2 No. 234 (level 3); EN 60601-1:1988.

CLASSIFICATION: (5.1) Protection against electric shock = Class II
(In accordance with sub-clause 5 of IEC 601-1) (5.2) Degree of protection against electric shock = Not acceptable for applied part without additional isolation (contact factory for details)
(5.3) Protection against harmful ingress of water = Ordinary (no protection)
(5.5) Have not been evaluated for use in the presence of a flammable anaesthetic mixture with air, oxygen, or nitrous oxide. This evaluation is to be made on the end equipment by the OEM.
(5.6) Mode of operation = Continuous

ISOLATION: The creepage distance between primary and secondary circuits is 8 mm minimum. The required creepage and clearance distances from primary circuits to ground and secondary circuits must be maintained after installation to preserve the intended safety.

OUTPUTS: All output commons should be connected to Protective Earth in the end application. The output(s) are intended for Protectively Earthed Signal Output and Intermediate Circuits only. The output(s) have not been investigated for patient connection. All DC outputs are SELV under normal and single fault conditions.

OVERVOLTAGE PROTECTION: The output is monitored for an overvoltage condition. In some applications where an overvoltage condition could result in a hazard as defined in applicable safety standards, redundant or additional overvoltage protection may be required. Consult factory for details.




TEMPERATURES: The maximum operating temperatures of certain safety components, as defined in the applicable safety standards, must not be exceeded after installation to preserve the intended safety. The output power, ambient air temperature and the availability, amount, direction and/or restriction of airflow influence the temperatures of these components.

ML SERIES INSTALLATION INSTRUCTIONS

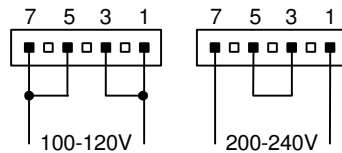
OVERCURRENT PROTECTION: EN 60601-1 requires that both supply leads (phase and neutral) be protected against overcurrent. Complete overcurrent protection must be provided in the host equipment. Fuse ratings must not exceed 0.25 A for 120 V or 0.125 A for 240 V, must meet the requirements of EN 60601-1 and be acceptable for the country in which the host equipment is to be installed.

WARNING! RISK OF FIRE! A blown fuse is an indication of catastrophic failure of circuit component(s). Repair must be performed by Condor authorized personnel. Refer to fuse markings above or on unit for rating.

WARNING! SHOCK HAZARD! Dangerous voltages are present on some components, printed wiring traces and heatsinks.

EXPLANATION OF SYMBOLS	
	Alternating Current
	Direct Current
	Attention, Consult Accompanying Documents

AC INPUT CONNECTIONS



Mating Connector, Housing: Amp P/N 640250-7 or equiv.

Mating Connector, Contact: Amp P/N 640706-1 or equiv.

DC OUTPUT CONNECTIONS

Pin	Single Output	Dual Output	Triple Output
1	N/C	+ Output #1	+ Output #2
2	Common	Common	Common
3	+ Output	N/C	+ Output #1
4	Common	Common	Common
5	N/C	- Output #2	- Output #3

Mating Connector, Housing: Amp P/N 640250-5 or equiv.

Mating Connector, Contact: Amp P/N 640706-1 or equiv.

Condor DC Power Supplies Inc. will not be liable for the safety, reliability or performance of these power supplies if a) any changes, modifications or repairs are carried out by other than authorized agents of Condor DC Power Supplies Inc., or b) the installation of the supply is not in accordance with these installation instructions and the applicable UL, CSA, and EN/IEC safety standards.