



SINGLE AND MULTIPLE OUTPUT LINEAR POWER SUPPLIES



File No. E140527



File No. LR69809



File No.s 3206,3208, 3210,
3216, 3218, 3257, 3212,
3214,3257, 3259, 3261

SPECIFICATIONS

AC INPUT

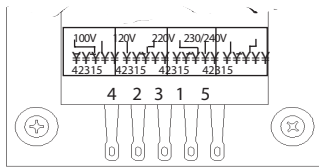
User-selectable for 100/120/220/230-240 VAC, 47-63 Hz. Factory set at 120 VAC. Tolerances are: +10% and -13% for 100, 120, 220 and 240 VAC input; +15% and -10% for 230 VAC input. Derate output current 10% for 50 Hz operation. Input must be fused. See fuse rating and jumper information table

AC INPUT FUSE RATINGS

Case Size	100 VAC	120 VAC	220 VAC	240 VAC
B	0.63A	0.5A	0.35A	0.25A
OLS-24B	1.0A	0.8A	0.5A	0.35A
C	1.6A	1.0A	0.8A	0.5A
N	2.0A	2.0A	1.0A	1.0A
D	2.5A	2.0A	1.25A	1.0A
131	3.0A	3.0A	1.6A	1.6A
AA	0.63A	0.5A	0.35A	0.25A
OLD-24AA	1.0A	0.8A	0.5A	0.35A
OLT-522AA	1.0A	0.8A	0.5A	0.35A
BB	1.6A	1.0A	0.8A	0.5A
CC	2.5A	2.0A	1.25A	1.0A

AC INPUT JUMPER INFORMATION

AC Input For use at	100 VAC	120 VAC	220 VAC	230/240 VAC
Jumper	1 & 3 2 & 4	1 & 3 2 & 4	1 & 3 2 & 3	1 & 3 2 & 3
Apply AC	1 & 5	4 & 1	1 & 5	4 & 1



DC OUTPUT

See power output ratings for specific models. Adjustable range $\pm 5\%$ minimum. See voltage adjust specifications.

VOLTAGE ADJUST

Adjustable range $\pm 5\%$ minimum on fixed output models. Voltage adjustable over range indicated ($\pm 5\%$) for wide range models. Voltage non-adjustable on models OLD-122B and OLD-15B. Models OLD-24AA, OLD-24BB and OLD-24CC are factory set at 24V. Adding jumper allows 18 to 20V adjustable output.

EMI/RFI

Inherently low conducted and radiated noise levels.

LINE REGULATION

$\pm 0.05\%$ for a 10% line change. $\pm 1.0\%$ for models OLD-12B and OLD-15B.

LOAD REGULATION

$\pm 0.05\%$ for a 50% load change. $\pm 1.0\%$ for models OLD-12B and OLD-15B.

TRANSIENT RESPONSE

Less than 50 μ sec for a 50% load change at $\pm 2\%$ of nominal output voltage.

SHORT CIRCUIT & OVERLOAD PROTECTION

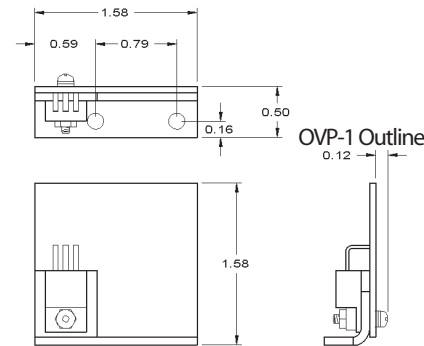
Automatic current limit/foldback. Output recovers upon removal of fault condition.

OVERVOLTAGE PROTECTION

Built-in on all main 5V outputs. Factory set at 6.2V ± 0.4 V. Other outputs use optional overvoltage protection module, OVP-1.

OPTIONAL OVERVOLTAGE PROTECTION

OVP module, model OVP-1, may be used with any output not supplied with factory built-in OVP. Adjustable range, 6.4 to 34V. Maximum current rating 8.0A. Module may be used to protect dual outputs (± 12 or ± 15). Recommended trip point is 15 to 133% of output voltage.



NOISE AND RIPPLE

5V through 15V models: 5.0 mV p-p max. OLD-12B and OLD-15B: 0.2% of output voltage p-p max. 24V models: 3 mV p-p plus 0.2% of output voltage max.

REMOTE SENSING

Provided on most outputs. Open sense lead protection built-in. Exceptions are noted with an asterisk. See output power rating table for specific model.

STABILITY

$\pm 0.3\%$ for 24-hour period after 1-hour warm-up.

MTBF

Per MIL-HDBK-217D at 100% load, 120 VAC line and 25°C ambient temperature.

CASE SIZE MTBF RATINGS

Case	# Outputs	MTBF hrs
B	1	300,000
B	2	460,000
C	1	300,000
N	1	260,000
N	2	150,000
D	1	250,000
D	3	120,000
AA	2	175,000
AA	3	140,000
BB	2	160,000
CC	2	155,000
131	3	120,000

TEMPERATURE RATINGS

Operating: 0°C to +50°C full-rated load.
Derate to 40% at 70°C.
Storage: -40°C to +85°C.

TEMPERATURE COEFFICIENT

$\pm 0.03\%/^{\circ}\text{C}$ maximum.

EFFICIENCY

Typical efficiency: 5V output, 45%; 12 and 15V output, 55%; 24V to 250V outputs: 60%.

VIBRATION

Per MIL-STD-810C, Method 514, Procedure XCA T. G-1.

SHOCK

Per MIL-STD-810C, Method 516, Procedure V.

DIMENSIONS AND WEIGHT

See dimensional drawings.

SAFETY

Compliance to international safety regulations for power supply specs. UL recognized, file #E102103. CSA certified, cert. #LR69809. VDE registered: OLS-B, file #3212; OLS-C, #3208; OLS-N, #3210; OLS-D, #3214; OLD-B, #3218; OLT-F, #3206; OLD-24AA & 24BB, #3216; OLD-5AA, 512AA, 12/15AA & OLT-522A, #3257; OLD-5BB, 12/15BB & 512BB, #3259; OLD-5CC, 24CC, 12/15CC & 512CC, #3261.

OUTPUT TAP AND PCB VOLTAGE CHANGES

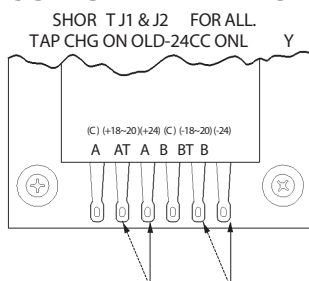


Fig. 1 Models OLD-24AA, 24BB, 24CC

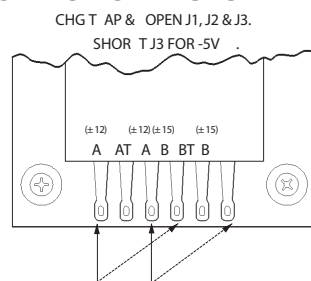


Fig. 2 Models OLD-12/15AA, 12/15BB

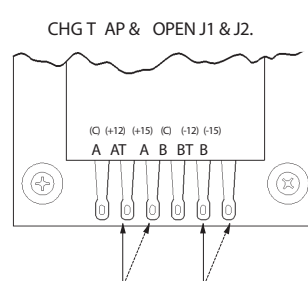


Fig. 3 Models OLD-12/15CC

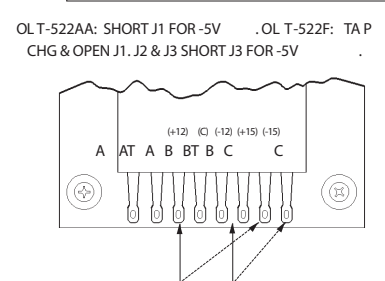


Fig. 4 Models OLT-522AA, 522F

For more detailed information and individual product specification sheets visit

www.tamuracorp.com

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TAMURA

Tamura has set reliability standards through component upgrade design. Critical specs such as temperature, voltage and current have been derated so that, for example, 105 $\text{\AA}$ C instead of 85 $\text{\AA}$ C electrolytic caps are used. The result is the highest available MTBF as calculated by MIL-HDBK-217D at full load, 120VAC and 25 $\text{\AA}$ C



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UL544 for MEDICAL & DENTAL



DUAL OUTPUT MODELS

MODEL NO. ¹	POWER-ONE TYPE	VOLTAGE, CURRENT ^{2,3} OUTPUT 1	OUTPUT 2	CASE SIZE
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5VOLT S

OLD-5AA V	HAA5-1.5/OVP-A	5V,1.5A*	-5V,1.5A*	AA
OLD-5BBV	HB85-3/OVP-A	5V,3.0A*	-5V,3.0A*	BB
OLD-5CCV	HCC5-6/OVP-A	5V,6.0A	-5V,6.0A	CC

12V or 15 VOLT S

OLD-12B	HAD12-0.4-A	12V, 0.4A*	-12V, 0.4A*	B
OLD-15B	HAD15-0.4-A	15V, 0.4A*	-15V, 0.4A*	B

12/15 VOLT S

OLD-12/15AA	HAA15-0.8-A	12V, 1.0A jumper chg: 15V, 0.8A	-12V, 1.0A -15V, 0.8A or -5V, 0.4A	AA
OLD-12/15BB	HB815-1.5-A	12V, 1.7A jumper chg: 15V, 1.5A	-12V, 1.7A -15V, 1.5A or -5V, 0.7A	BB
OLD-12/15CC	HCC15-3-A	12V, 3.4A jumper chg: 15V, 3.0A	-12V, 3.4A -15V, 3.0A	CC

24V or 18 to 20 VOLT S

OLD-24AA	HAA24-0.6-A	24V, 0.6A* jumper chg: 1820V , 0.4A	-24V, 0.6A* -1820V , 0.4A	AA
OLD-24BB	HB824-1.2-A	24V, 1.2A* jumper chg: 1820, 0.9A	-24V, 1.2A* -1820V , 0.9A	BB
OLD-24CC	HCC24-2.4-A	24V, 2.4A jumper chg: 1820V , 1.8A	-24V, 2.4A -1820V , 1.8A	CC

5 & 12 to 15 VOLT S

OLD-512AA	HAA512-A	5V, 2.0A*	+1215V , 0.5A*	AA
OLD-512BB	HB8512-A	5V, 3.0A	+1215V , 1.25A	BB
OLD-512CC	HCC512-A	5V, 6.0A	+1215V , 2.5A	CC

TRIPLE OUTPUT MODELS

MODEL NO. ¹	POWER-ONE TYPE	VOLTAGE CURRENT ^{2,3} OUTPUT 1	OUTPUT 2	OUTPUT 3	CASE SIZE
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5 & 12 to 15 VOLT S

OLT-522AA	HTAA-16W -A	5V, 2.0A* jumper chg: 5V, 8.0A	1215V , 0.4A*	-1215V , 0.4A* -5V, 0.4A ⁴	AA
OLT-522F	CP131-A	5V, 8.0A jumper chg: 15V, 1.5A	12V, 1.7A 15V, 1.5A	-12V, 1.7A -15V, 1.5A or -5V, 0.7A	131

Note 1: OVP built-in on main 5V output of multiple output units. Use OVP-1 module (up to 34V combined for other outputs).

Note 2: Other industry standard output voltages available on a special order.

Note 3: * indicates remote sense not provided.

Note 4: Indicates OLT-522AA short J1 for -5V.

Features

- MTBF to 460,000 Hrs.
- UL 1950, UL544, CSA 1402C,
- VDE 0805, EN60 950.
- 100/120/220/230/240VAC inputs.
- Remote Sensing.
- 2 Year Warranty.
- 5V OVP Built-in.
- Optional OVP Module.
- Short Circuit Protection.
- Overload Protection
- Burn-in.
- Voltage Adjust: $\pm 5\%$ min.
- Line/Load Reg: $\pm 0.05\%$ typ.
- Noise/Ripple: 5.0mVp-p typ.
- Transient Response: 50 sec (50% load chg.)
- Stability: $\pm 0.3\%$ for 24 hours.
- 50 $\text{\AA}$ C Rated Full Load.
- Temp coef: $\pm 0.3\%/^{\circ}\text{C}$ max.
- Vibration: MIL-STD-810C.
- Shock: MIL-STD-810C.

SINGLE OUTPUT MODELS

MODEL NO.	POWER-ONE TYPE	VOLTAGE, ² CURRENT	CASE SIZE
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5 VOLT S

OLS-5BV	HB5-3/OVP-A	5V, 3.0A	B
OLS-5CV	HC5-6/OVP-A	5V, 6.0A	C
OLS-5NV	HN5-9/OVP-A	5V, 9.0A	N
OLS-5DV	HD5-12/OVP-A	5V, 12.0A	D

12 VOLT S

OLS-12B	HB12-1.7-A	12V, 1.7A	B
OLS-12C	HC12-3.4-A	12V, 3.4A	C
OLS-12N	HN12-5.1-A	12V, 5.1A	N
OLS-12D	HD12-6.8-A	12V, 6.8A	D

15 VOLT S

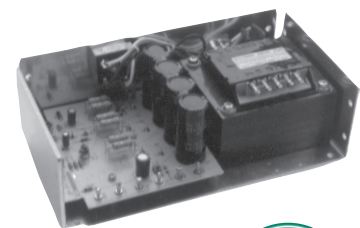
OLS-15B	HB15-1.5-A	15V, 1.5A	B
OLS-15C	HC15-3-A	15V, 3.0A	C
OLS-15N	HN15-4.5-A	15V, 4.5A	N
OLS-15D	HD15-6-A	15V, 6.0A	D

24 VOLT S

OLS-24B	HB24-1.2-A	24V, 1.2A	B
OLS-24C	HC24-2.4-A	24V, 2.4A	C
OLS-24N	HN24-3.6-A	24V, 3.6A	N
OLS-24D	HD24-4.8-A	24V, 4.8A	D

OVP MODULE

OVP-1	OVP-12	6.4V34V	OVP
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MECHANICAL DIMENSIONS

CASE SIZE	DIMENSIONS (L" xW"xH")	WT (LBS)
B	4.87X4.00X2.07	2
C	5.62X4.87X2.95	4
D	9.00X4.87X3.28	7.5
N	7.00X4.87X3.20	6
AA	6.50X4.00X2.07	2
BB	7.00X4.78X2.95	4
CC	9.38X4.87X3.28	7
131	11.0X4.87X2.75	9
OVP-1	1.58X1.58X0.50	

For more detailed information and individual product specification sheets visit

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