

PART II—DC-TO-DC CONVERTERS

LAMBDA'S INDUSTRIAL LW SERIES



UP TO 60VDC, UP TO 60W FOR LOW POWER APPLICATIONS

Lambda's LW Series DC-to-DC Converters are convection cooled. The addition of a heatsink is not necessary to achieve reliable operation at full output power. Wide range DC voltage operation is a feature of most of the LW modules allowing use in a variety of industrial applications where input voltage specifications might differ.

- ☐ Available with inputs and outputs to 60VDC, with up to 60W of output power in single wide range output packages. This wide choice allows the design engineer to choose the product that best meets his low power DC-to-DC applications.
- ☐ All models are thoroughly regulated and are designed with the necessary PI input filtering. This allows the user to maintain the required voltages at specific loads, regardless of the quality of the input source.
- ☐ Grade 3 design.
- ☐ All models provide an isolation rating of 500VDC. 48VDC nominal input modules feature an industry recognized isolation rating of 1500VDC, ideal for the telecommunications industry. This ensures the user of isolation from the power source to the load.
- ☐ Available for one day delivery from stock so that the manufacturing or design engineer may obtain product at a moments notice. This gives flexibility to the manufacturing process and to small breadboard designs.

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DC OUTPUT

Voltage range shown in tables.

REGULATED VOLTAGE

regulation, line 0.1% from minimum to maximum and from maximum to minimum.

regulation, load 0.4% for load variations from no load to full load and full load to no load.

ripple and noise
(20MHz Bandwidth) 20mV RMS, 100mV pk-pk for 5V models of LWS-193, 194, 195, 294, 295, 394, 395.

efficiency LWS-194, LWS-294, LWS-394, and LWS-193:
50% minimum
LWS-296, 397: 75% minimum.

temp. coeff 0.03%/°C.

OPERATING TEMPERATURE RANGE

Continuous duty 0 to +60°C with suitable derating above 40°C.

OVERLOAD PROTECTION

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.

STORAGE TEMPERATURE RANGE

-55°C to +85°C.

OVERSHOOT

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

COOLING

All units are convection cooled. No fans or blowers needed.

MOUNTING

PC board mountable.

OUTPUT VOLTAGE ADJUST

LWS-193, 194, 195, 294, 295, 296, 394, 395, 397

Output voltage can be set to desired value within the entire range by inserting a resistor between +V and RP terminals. Resistor can be selected as per equations supplied in instruction manual.

INPUT/OUTPUT CONNECTIONS

DC input and outputs are via pin type connections.

ISOLATION RATING

1500VDC on LWS-394, 395, 397.

500VDC on all other models.

PHYSICAL DATA

Package Model	Lbs. Net	Lbs. Ship	Size Inches
LWS-193	.65	.90	2.50 × 3.50 × 1.25
LWS-194, 294, 394	.65	.90	2.50 × 3.50 × 1.25
LWS-195, 295, 395	.75	1.00	2.50 × 4.50 × 1.50
LWS-296	.75	1.00	2.50 × 4.50 × 1.50
LWS-397	.75	1.00	2.50 × 4.50 × 1.50

GUARANTEE

90 day guarantee includes labor as well as parts.

SAFETY AGENCY APPROVALS

The LWS-394, 395 and 397 are UL recognized and CSA certified. The LWS-193, 194, 195, 294, 295 and 296 are UL recognized.

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INDUSTRIAL CONVERTER SELECTOR GUIDE

LW Series. 4.5 to 10.0VDC Wide Range Input. Wide Range Single Output. Convection Cooled. PC Mount.

MAX CURRENT IN AMPS (MAX POWER IN WATTS)			COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	QTY. 1	QTY. 10	PRICE QTY. 25	QTY. 100	QTY. 250	MODEL
40°C	50°C	60°C									
4.75 to 16V ADJ.											
2.0(10)	1.7(8.5)	1.5(7.5)	115	185	1.25 × 3.5 × 2.5	\$115	\$110	\$106	\$ 90	\$ 79	LWS-193-5
3.0(15)	2.6(12)	2.3(11.5)	115	185	1.25 × 3.5 × 2.5	154	147	140	119	106	LWS-194-5
15 to 30V ADJ.											
0.65(10)	0.57(8.5)	0.50(7.5)	115	185	1.25 × 3.5 × 2.5	115	110	106	90	79	LWS-193-24
1.00(15)	0.90(13)	0.75(11.5)	115	185	1.25 × 3.5 × 2.5	154	147	140	119	106	LWS-194-24

LW Series. 10.0 to 20.0VDC Wide Range Input. Wide Range Single Output. Convection Cooled. PC Mount.

MAX CURRENT IN AMPS (MAX POWER IN WATTS)			COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	QTY. 1	QTY. 10	PRICE QTY. 25	QTY. 100	QTY. 250	MODEL
40°C	50°C	60°C									
4.75 to 16V ADJ.											
5.0(25)	4.3(21.5)	3.6(18)	115	185	2.5 × 4.5 × 1.5	\$194	\$185	\$177	\$149	\$133	LWS-195-5
15 to 30V ADJ.											
1.65(25)	1.4(21.5)	1.2(18)	115	185	2.5 × 4.5 × 1.5	194	185	177	149	133	LWS-195-24

LW Series. 10.0 to 30.0VDC Wide Range Input. Wide Range Single Output. Convection Cooled. PC Mount.

MAX CURRENT IN AMPS (MAX POWER IN WATTS)			COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	QTY. 1	QTY. 10	PRICE QTY. 25	QTY. 100	QTY. 250	MODEL
40°C	50°C	60°C									
4.75 to 16V ADJ.											
3.0(15)	2.6(13)	2.3(11.5)	115	185	1.25 × 3.5 × 2.5	\$154	\$147	\$140	\$119	\$106	LWS-294-5
15 to 30V ADJ.											
1.0(15)	0.9(13)	0.75(11.5)	115	185	1.25 × 3.5 × 2.5	154	147	140	109	106	LWS-294-24

LW Series. 20.0 to 40.0VDC Wide Range Input. Wide Range Single Output. Convection Cooled. PC Mount.

MAX CURRENT IN AMPS (MAX POWER IN WATTS)			COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	QTY. 1	QTY. 10	PRICE QTY. 25	QTY. 100	QTY. 250	MODEL
40°C	50°C	60°C									
4.75 to 16V ADJ.											
5.0(25)	4.3(21.5)	3.6(18)	115	185	2.5 × 4.5 × 1.5	\$194	\$185	\$177	\$149	\$133	LWS-295-5
15 to 30V ADJ.											
1.65(25)	1.4(25)	1.2(18)	115	185	2.5 × 4.5 × 1.5	194	185	177	149	133	LWS-295-24
20 to 40V ADJ.											
2.5(50)	2.1(42)	1.8(36)	115	185	2.5 × 4.5 × 1.5	257	246	236	200	175	LWS-296-28
30 to 60V ADJ.											
1.67(50)	1.42(42)	1.2(36)	115	185	2.5 × 4.5 × 1.5	257	246	236	200	175	LWS-296-48

LW Series. 20.0 to 60.0VDC Wide Range Input. Wide Range Single Output. Convection Cooled. PC Mount.

MAX CURRENT IN AMPS (MAX POWER IN WATTS)			COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	QTY. 1	QTY. 10	PRICE QTY. 25	QTY. 100	QTY. 250	MODEL
40°C	50°C	60°C									
4.75 to 16V ADJ.											
3.0(15)	2.6(12)	2.3(11.5)	115	185	1.25 × 3.5 × 2.5	\$154	\$147	\$140	\$119	\$106	LWS-394-5
15 to 30V ADJ.											
1.0(15)	0.9(13)	0.75(11.5)	115	185	1.25 × 3.5 × 2.5	154	147	140	119	106	LWS-394-24

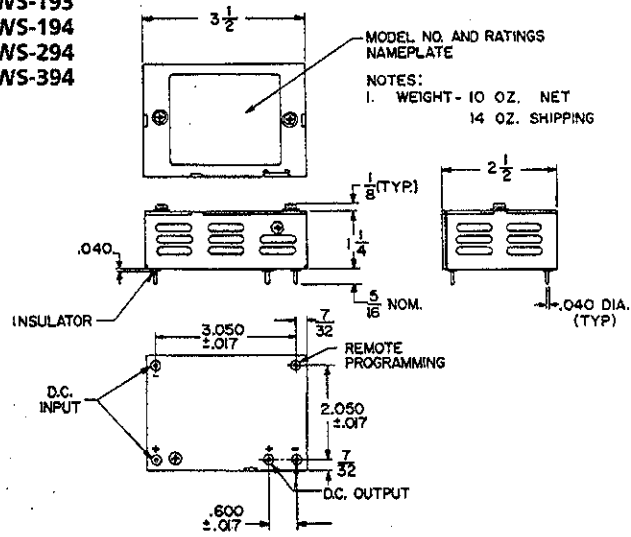
LW Series. 30.0 to 60.0VDC Wide Range Input. Wide Range Single Output. Convection Cooled. PC Mount.

MAX CURRENT IN AMPS (MAX POWER IN WATTS)			COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	QTY. 1	QTY. 10	PRICE QTY. 25	QTY. 100	QTY. 250	MODEL
40°C	50°C	60°C									
4.75 to 16V ADJ.											
5.0(25)	4.3(21.5)	3.6(18)	115	185	2.5 × 4.5 × 1.5	\$194	\$185	\$177	\$149	\$133	LWS-395-5
15 to 30V ADJ.											
1.65(25)	1.4(21.5)	1.2(18)	115	185	2.5 × 4.5 × 1.5	194	185	177	149	133	LWS-395-24
20 to 40V ADJ.											
3.0(60)	2.5(50)	2.1(42)	115	185	2.5 × 4.5 × 1.5	257	246	236	200	175	LWS-397-28
30 to 60V ADJ.											
2.0(60)	1.67(50)	1.4(42)	115	185	2.5 × 4.5 × 1.5	257	246	236	200	175	LWS-397-48

PART V—MECHANICAL DRAWINGS

LW SERIES AND AD SERIES

LWS-193
LWS-194
LWS-294
LWS-394



LWS-195
LWS-295
LWS-395
LWS-296
LWS-397

