

PART II—DC-TO-DC CONVERTERS

LAMBDA'S INDUSTRIAL UHD SERIES



IDEAL FOR DISTRIBUTED POWER APPLICATIONS

Lambda's new UHD Series conduction cooled DC-to-DC converters are designed for off-line switching and distributed power applications. This is becoming popular in telecommunications, industrial test equipment and computer related applications. They have the highest density and smallest footprint of any converter on the market today. Lambda's UHD Series provides current sharing in simple parallel or redundant modes as a standard feature—with a minimum of external components.

- New, hot pluggable redundant racking system.
- Fixed frequency operation minimizes filtering requirements.
- Two UHD units can mount on a VME card for quick rack mounting (3U height).
- 38–72VDC or 200–370VDC wide range input models available.
- Requires a minimum of external components for $N + 1$ current sharing redundant configurations.
- New accessories.
- Remote ON/OFF terminal provided.
- Thermal overload protection.
- Overvoltage protection on all outputs.
- Designed to meet UL/CSA and SELV for TUV/IEC and BABT safety agency approvals.
- Available for one day delivery from stock.
- Grade 2 design.

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DC OUTPUT

Voltage range shown in tables.

REGULATED VOLTAGE

regulation, line	0.2% for line variations from 200 to 370VDC. From 38 to 72VDC for UHD-48.
regulation, load	0.2% from no load to full load.
ripple and noise (20MHz Bandwidth)	15mV RMS, 100mV pk-pk for 5V model. 25mV RMS, 150mV pk-pk for 12V-28V models. Output ripple may not meet specifications below 10% of rated load.
temp. coeff.	0.03%/°C.
remote programming resistance	1000Ω/volt nominal.
remote programming voltage	volt per volt.

DC INPUT

line	200VDC to 370VDC for UHD-300. 38 to 72VDC for UHD-48.
current	1.35 Amps maximum. 6.15A for UHD-48.
power	210 watts maximum for UHD-150-5-300. 214 watts maximum for UHD-150-5-48. 233 watts maximum for 12V-28V models of UHD-48. 270 watts maximum for 12V-28V models of UHD-300.
efficiency	70% minimum for UHD-150-5-48. 75% minimum for UHD-150-5-300, UHD-150-12-48 and UHD-150-15-48. 78% minimum for UHD-150-12-300, UHD-150-15-300, UHD-150-24-48 and UHD-150-28-48. 80% minimum for UHD-150-24-300 and UHD-150-28-300.

OVERSHOOT

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

OPERATING TEMPERATURE

0°C to +85°C base plate. Consult factory and/or request our detailed application note on the proper thermal operation of the UHD Series.

STORAGE TEMPERATURE RANGE

-10°C to +125°C.

OVERLOAD PROTECTION ELECTRICAL

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.

FUSING

External 3A Slow Blow Fuse is recommended for the UHD-300. A 10A Slow Blow Fuse is recommended for the UHD-48.

THERMAL

Electronic overtemperature shutdown, self-resetting.

OVERVOLTAGE PROTECTION

Overvoltage protection is standard on all models. If output voltage increases above a preset level, inverter drive is removed.

COOLING

Conduction cooled via the baseplate. A 1.0°C/W heat sink is required for maximum output at 25°C ambient temperature for the 24V and 28V models of the UHD-48 and the UHD-150-5-300; 0.78°C/W for the UHD-150-5-48; 0.7°C/W for 12V through 28V models of the UHD-300; 0.86°C/W for the 12V and 15V models of the UHD-48. External fan cooling will reduce the required size of the heat sink. Consult factory.

OUTPUT POWER

Baseplate Temperature	Output Power			
	5V Models		12-28V Models	
	UHD-48	UHD-300	UHD-48	UHD-300
75°C	150W	150W	175W	200W
85°C	110W	150W	110W	175W

POWER FACTOR AND HARMONIC CORRECTION

0.995 power factor and IEC 555-2 compliance on AC line for UHD-300 models, when used in conjunction with the PFHC-2600. See pages 30-31.

DC OUTPUT CONTROLS

External user-supplied voltage adjust potentiometer is required for output adjustment.

MOUNTING

One mounting surface. Multiple mounting positions.

INPUT AND OUTPUT TERMINATIONS

All connections are made on the opposite side of the baseplate.

DC input	(2) pin terminals: (+), (-)
Ground	connection to mounting screw (≡)
DC output	(2) pin connections: (+), (-) (2) pin connections: (+S), (-S)
Remote on/off	(1) pin terminal: (R)
Current share	(1) pin terminal: (PO)
Voltage adjust	(1) pin terminal: (Adj)

VOLTAGE ADJUSTMENT

Connecting an external potentiometer between +V and Adj terminals will provide ±5% adjustability (4.75VDC to 6VDC on 5 volt output). Connecting ±V to ±S without an external potentiometer will result in an output voltage ±3% of nominal.

REMOTE TURN-ON/TURN-OFF

Remote on/off is accomplished by applying a voltage of 0.7V or less from the remote On/Off terminal to the (-) input terminal.

REMOTE SENSING

Provision is made for remote sensing to eliminate the effects of power output lead resistance on DC regulation.

CURRENT SHARING

All UHD models have internal circuitry that allows units operated in parallel to share load current. A single additional connection must be run between the supplies. Units must be connected to same input rail voltage.

ISOLATION RATING

	UHD-300	UHD-48
Input to output	3000VRMS	2000VRMS
Input to ground	1500VRMS	1000VRMS
Output to ground	500VRMS	500VRMS

PHYSICAL DATA

Package Model	Lbs. Net	Lbs. Ship	Size Inches
150	0.63	0.82	3.8 × 2.4 × 0.62

SAFETY AGENCY APPROVALS

Under evaluation for UL, CSA, VDE, and BABT.

GUARANTEE

One year guarantee for converters used within published specifications and recommended application data.

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INDUSTRIAL CONVERTER SELECTOR GUIDE

UHD-48 Series. 48VDC Input. Single Output. Conduction Cooled. PC Mount.

MAX CURRENT (AMPS) ² BASEPLATE TEMPERATURE		MAX POWER (WATTS) BASEPLATE TEMPERATURE		INPUT VOLTAGE RANGE (VDC)	COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (Inches)	PRICE					MODEL
75°C	85°C	75°C	85°C					QTY. 1	QTY. 10	QTY. 25	QTY. 100	QTY. 250	
4.75 – 6.0²													
30.0	22.0	150.0	110.0	38-72	109	186	3.8 × 2.4 × 0.62	\$230	\$219	\$208	\$160	\$139	UHD-150-5-48
12V ± 5%²													
14.6	9.2	175.0	110.0	38-72	109	186	3.8 × 2.4 × 0.62	230	219	208	160	139	UHD-150-12-48
15V ± 5%²													
11.7	7.3	175.0	110.0	38-72	109	186	3.8 × 2.4 × 0.62	230	219	208	160	139	UHD-150-15-48
24V ± 5%²													
7.3	4.6	175.0	110.0	38-72	109	186	3.8 × 2.4 × 0.62	230	219	208	160	139	UHD-150-24-48
28V ± 5%²													
6.3	3.9	175.0	110.0	38-72	109	186	3.8 × 2.4 × 0.62	230	219	208	160	139	UHD-150-28-48

UHD-300 Series. 200 to 370VDC Input. Single Output. Conduction Cooled. PC Mount.

MAX CURRENT (AMPS) ¹ BASEPLATE TEMPERATURE		MAX POWER (WATTS) BASEPLATE TEMPERATURE		INPUT VOLTAGE RANGE (VDC)	COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (Inches)	PRICE					MODEL
75°C	85°C	75°C	85°C					QTY. 1	QTY. 10	QTY. 25	QTY. 100	QTY. 250	
4.75 – 6.0V²													
30.0	30.0	150.0	150.0	200-370	109	186	3.8 × 2.4 × 0.62	\$230	\$219	\$208	\$160	\$139	UHD-150-5-300
12V ± 5%²													
16.7	14.	200.0	175.0	200-370	109	186	3.8 × 2.4 × 0.62	230	219	208	160	139	UHD-150-12-300
15V ± 5%²													
13.3	11.6	200.0	175.0	200-370	109	186	3.8 × 2.4 × 0.62	230	219	208	160	139	UHD-150-15-300
24V ± 5%													
8.3	7.3	200.0	175.0	200-370	109	186	3.8 × 2.4 × 0.62	230	219	208	160	139	UHD-150-24-300
28V ± 5%²													
7.2	6.3	200.0	175.0	200-370	109	186	3.8 × 2.4 × 0.62	230	219	208	160	139	UHD-150-28-300

- NOTES: 1. Current range must be chosen to suit the appropriate maximum baseplate temperature. Current ratings apply for the entire voltage range.
 2. An external, user-supplied voltage adjust pot is required for continuous voltage over this range. The output voltage is factory set to be V_o nominal $\pm 3\%$.
 3. Contact factory for detailed application notes.

PART V—MECHANICAL DRAWINGS

UHD SERIES AND AS SERIES

UHD-150

