



# ULTRA LEVEL TECH CO., LTD.

www.ultralevel.com.tw Tel:+886-2-29180118 Fax:+886-2-29181465

We Supply the Power Customers Need ISO9001

## 200W ~ 400W AC-DC PFC MEDICAL & ITE APPROVED POWER SUPPLY RL0402D DUAL OUTPUT SERIES



RL0402DU Series (U-Chassis Type): 8(L) x 5(W) x 1.6(H) inches.  
RL0402DE Series (Enclosed Type): 9(L) x 5(W) x 1.6(H) inches.

### PRODUCT SPECIFICATIONS:

**Input Voltage:** 90 ~ 264Vac full range, 47 ~ 63Hz.  
**Input Current:** 6.35A at 90VAC full load.  
**Inrush Current:** 70A Max @ 230VAC with full load and cold start.  
**Power Factor Correction:** 0.98 @ Vin: 230Vac full load.  
**Fan Drive:** 12VDC/400mA is available to drive an external fan.  
**Transient Response:** Returns to within 1% in less than 2.5mS for a 50% load change and the peak transient does not exceed 5%.  
**Overshoot:** Turn-on/off not exceed 5% over nominal voltage.  
**Efficiency:** 752% ~ 85% depends on model.  
**Turn On Delay:** 1 second maximum at 230 VAC.  
**Hold Up Time:** 20mS min. at 80% of full load.  
**Adjustability:** Output user adjustable +/-5% minimum.  
**Remote Sense (for under 12V models):**  
 Designated **RS+** and **RS-** on the CN3.  
**Remote On-Off:** Designated as **RSW** on the CN3, requires a low signal to inhibit output.  
**Power Supply On:** Green LED designated as **LED 1** on the PCB.  
**LED display:** Bi-color green **LED** in front panel (RL0402DE only); Any protection occurred or RSW applied low signal will emit orange.  
**Power Good:** **PG** on CN3 goes high 100-500mS after DC regulation and low at least 1mS before loss of regulation (Open collector).  
**Input Circuit Protection (primary):** Two T8A/250V fuses inserted.  
**Input Voltage Protection:** Power shut down under 80 +/-5Vac, and recovered over 86Vac.  
**Over-Power Protection:** 110~140% of I-Max and auto-recovery.  
**Over-Voltage Protection:** Latching down will occur when output voltage exceed 130% and recycle AC input to reset.  
**Over Temp. Protection:** Protected at ambient 85C; Auto-recovery.

### FEATURES:

- ◆ Safety Approvals to IEC/EN/UL60601-1 3<sup>rd</sup> Edition
- ◆ High Quality & Reliable Component Usage
- ◆ Variable Fan Speed & Low Acoustical Noise
- ◆ 5/ 12/ 24V Dual Output Optional Combinations
- ◆ U-Chassis Type drive max 250W under air convection
- ◆ Active Power Factor Corrected to EN61000-3-2 class D
- ◆ U-Chassis & Enclosed with built-in fan Mechanical Options



**Short Circuit Protection:** Trip without damage and auto-recovery.  
**Operating Temperature:** 0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.  
**Switching Frequency:** 30KHZ fixed frequency.  
**Storage Temperature:** -20 to +85 degrees C.  
**Operating Humidity:** 5% to 90% RH, Non-condensing.  
**Storage Humidity:** 5% to 95% RH, Non-condensing.  
**Vibration:** Frequency 5 to 50 Hz, acceleration +/-7.35 M/(SxS) on X,Y and Z Axis.  
**EMC: EMC:** EN60601-1-2/EN61204-3 Class B conducted / radiated; EN61000-3-2,3; IEC61000-4-2, 3, 4, 5, 6, 8, 11.  
**Safety:** EN/ IEC/ UL60601-1 3<sup>rd</sup> edition; EN / IEC / UL62368-1.  
**Leakage Current:** Medical degree < 200uA; ITE degree < 1.5mA.  
**HI-POT Test:** 1500 VAC between input line and chassis (2mA DC cut off current); 4000VAC between primary and secondary windings; Primary to core 1500VAC. All for 3 sec.  
**Grounding Test:** Apply 40 A from ground pin to the earthed connection point. Maximum allowable resistance is 0.1ohm.  
**Warranty:** 2 years.  
**MTBF:** 100000 Hrs (according to MIL-HBK-217F) at 30°C.  
**Cooling:** :RL0402DU Series: U-Chassis @400W max. with 23CFM airflow or 250W max. under convection cooling.  
 RL0402DE Series: Enclosed with side built-in fan @400W max.  
**Burn in:** 45 +/- 5 degree C for 1 hour @230Vac with full load.  
**Enclosure:** RL0402DU Series: 8(L) x 5(W) x 1.6(H) inches.  
 RL0402DE Series: 9(L) x 5(W) x 1.6(H) inches.  
**Weight:** RL0402DU Series: 1.3KG; RL0402DE Series: 1.6KG.



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## OUTPUT VOLTAGE / CURRENT RATING CHART: Measured at output power connector.

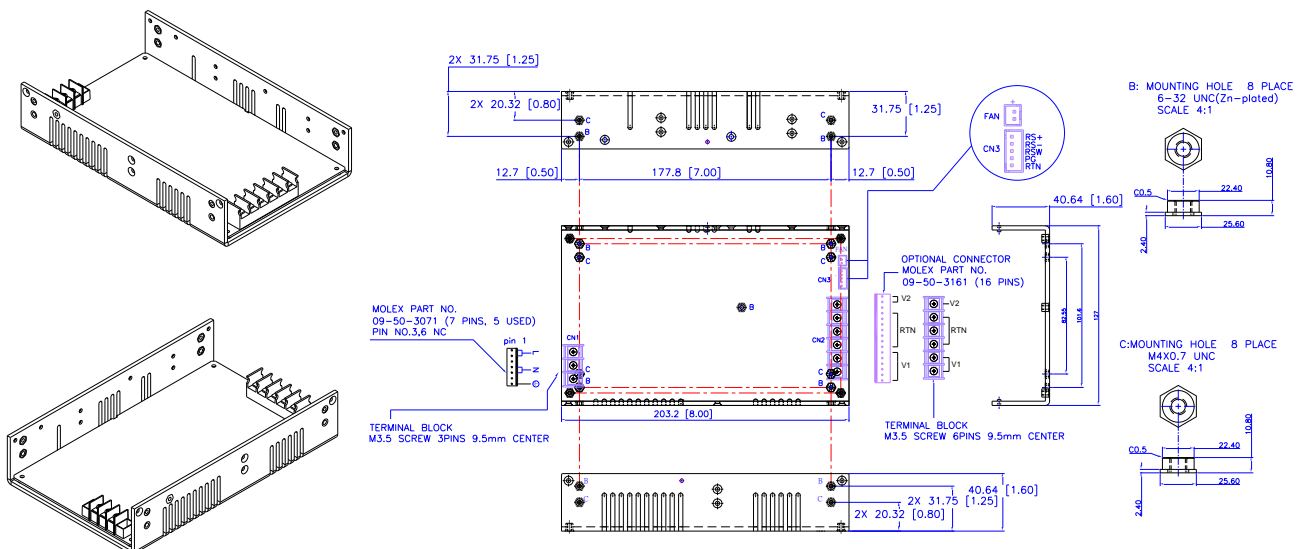
Model Number	Output Voltage	Max. Output Current		Total Regulation	Ripple & Noise
		Convection	22.95CFM		
RL0402Dx0512	V1: +5V	30A	40A	+/- 5%	+/-1%
	V2: +12V	16.7A	25A	+/- 5%	+/-1%
RL0402Dx0524	V1: +5V	30A	40A	+/- 5%	+/-1%
	V2: +24V	8.34A	12.5A	+/- 5%	+/-1%
RL0402Dx1224	V1: +12V	16.7A	25A	+/- 5%	+/-1%
	V2: +24V	8.33A	12.5A	+/- 5%	+/-1%

### NOTE:

- \* RL0402Dxy Series where x = **E** (Enclosed with built-in Fan Type) or **U** (U-Chassis Type), y = **0512, 0524 and 1224**.
- \* 10% minimum load is required for all outputs to maintain the ripple and regulation. Output is fully isolated.
- \* Total combined power of V1 and V2:  
 400W Max. with 22.95 CFM forced air and 250W convection cooling for RL0402DU1224; 400W for RL0402DE1224 by self-cooling.  
 300W Max. with 22.95 CFM forced air and 200W convection cooling for other RL0402DUy; 300W for other RL0402DEy by self-cooling.

## OUTLINE DRAWING:

RL0402DU Series (U-Chassis Type): 8(L) x 5(W) x 1.6(H)inches; Weight: 1.3kg



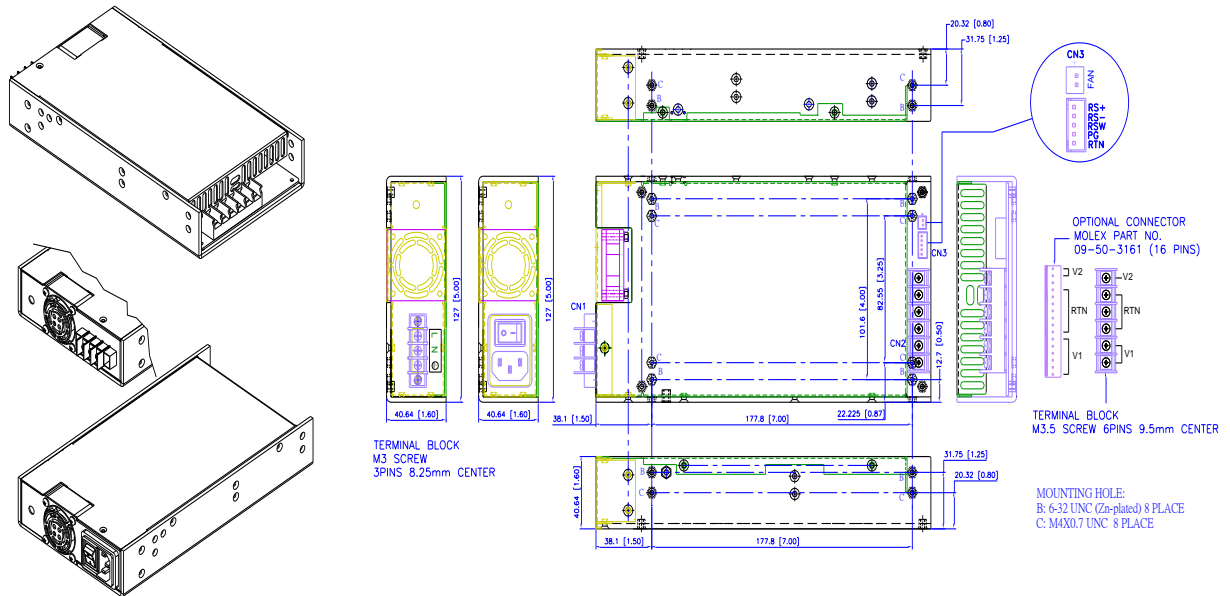


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**RL0402DE Series (Enclosed with built-in Fan Type): 9(L) x 5(W) x 1.6(H)inches; Weight: 1.6kg.**



## I/O Connector pin assignment:

### AC Input Connector(CN1):

RL0402DU Series: Mating Molex Part No. 09-50-3071 or equivalent (7 pin, 5 used) or Howder Terminal block (HD-121-3P).

RL0402DE Series: IEC320 or equivalent Snap-in mounting type or ECE Terminal block (ETB51 / screw torque 4.5 lb-in).

**Output Connector (CN2):** Mating Molex Part No. 09-50-3161 (16 pins), or Howder (HD-121-6P / screw torque 15.7 lb-in) M3.5, 8 pins terminal block, 9.5MM Center.

**Output Pin Assignment: (See below table).**

### Logic signal connectors (CN3):

Mating JST XHP-5 or equivalent (CHYAO SHIUNN JS-2001-05).

Mating Pins: JST SXH-002T-P0.6 FOR AWG 30 to 26.

**Mounting Inserts:** 6-32 (screw torque 21 lb-in) , M4 (screw torque 13 lb-in) 4 Places individually with maximum penetration 0.15 inches on bottom side and 0.25 inch on both side.

	V1	V2	RTN
MOLEX	PINS 1-6	PINS 14-16	PINS 7-13
HOWDER	PINS 1-2	PINS 6	PINS 3-5