175 Watts

RCL175 Series



- 200 W Peak Rating
- Up to 120 W Convection-cooled
- Low Leakage Current
- Industrial and Medical Approvals
- Class I & Class II Applications
- Flexible Design for Modified Standards
- Connector & Mechanical Options

Specification

Input

Input Voltage	• 85-264 VAC (120-370 VDC) See note 3
Input Frequency	• 47-63 Hz
Input Current	• 2.1 A max at 115 VAC 0.9 A max at 230 VAC
Inrush Current	• 17 A max at 115 VAC, 35 A max at 230 VAC, cold start at 25 °C
Power Factor	• Complies with EN61000-3-2 for Class A equipment
Earth Leakage Current	• 120 µA max at 115 VAC 200 µA max at 230 VAC
Input Protection	• 3.15 A line and neutral fused

Output

Output Voltage	• See models and ratings table
Output Voltage Trim	• ±10% output 1 via pot, outputs 2-4 track by same percentage
Initial Set Accuracy	• ±2% of nominal at 50% load
Minimum Load	• See models and ratings table
Start Up Delay	• <2 s
Start Up Rise Time	• <100 ms
Hold Up Time	• 20 ms min at nominal low line and maximum power
Drift	• <±0.2% after 20 mins warm up
Line Regulation	• ±0.5% of nominal over full input range
Load Regulation	• PQ41, 42 & 43: V1 & V2 ±3%, V3 & V4 ±5% of nominal, all other models: V1 ±1%, V2, V3 & V4 ±5% of nominal
Transient Response	• <4% deviation with a 25% load change at 1 A/µs. Output returns to within 1% in less than 500 µs
Ripple & Noise	• 50 mV (Vo=<5V), 120mV (Vo=12,15V), 200 mV (Vo=24,48V). Measured pk-pk with a 20 MHz bandwidth
Overvoltage Protection	• 115-140% - V1 only. Cycle mains to reset
Overtemperature Protection	• Fitted with auto restart
Overload Protection	• 110-125% - Primary side power limiting with auto recovery. Constant current limit for single output models and foldback current limit for multi output models. V3 & V4 PTC resetting fuses
Temperature Coefficient	• 0.02%/ °C

General

Efficiency	• 80-90% depending on model
Isolation	• 4000 VAC Input to Output 1500 VAC Input to Ground 1500 VAC Output to Ground open frame (For BF applications, consult sales office) 500 VAC Output to Ground U channel and covered
Switching Frequency	• PFC 75 kHz typical, PWM 60 kHz typical
Signals	• Power fail - open collector output referenced to 0 V sense
Remote Sense	• See Application Notes
Remote On/Off	• See Application Notes
MTBF	• 100 kHrs at 25 °C per MIL-HDBK-217F

Environmental

Operating Temperature	• -10 °C to 50 °C at full power, derate to half power at 70 °C (see Derating Curve)
Operating Humidity	• 5% to 95% RH, non-condensing
Storage Temperature	• -20 °C to 85 °C
Operating Altitude	• 3000m
Shock	• 30 G peak, half sine, 6 axis
Vibration	• 2 G rms, 5 Hz to 500 Hz, 3 axis

EMC & Safety

Emissions	• EN55011/22 class B conducted, class A radiated
Harmonic Currents	• EN61000-3-2 for class A equipment
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, Level 3 Perf Criteria A
Radiated Immunity	• EN61000-4-6, 10 V rms 80% mod, Perf Criteria A
EFT/Burst	• EN61000-4-4, Level 3 Perf Criteria B
Surge	• EN61000-4-5, Level 3 Perf Criteria B
Conducted Immunity	• EN61000-4-6, Level 3 Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B
Safety Approvals	• EN60601-1-1, EN60950-1:2001, EN61010 UL/cUL60950:2003, CSA60601.1, UL60601-1:2003

Models and Ratings

Total Power			Output 1				Output 2[6]				Output 3[6,8]			Output 4[6,8]			Model Number
Max[7]	Peak	Conv.[4,5]	V	Min	Max	Peak[1]	V	Min	Max	Peak[1]	V	Min	Max	V	Min	Max	
99 W	N/A	80 W	3.3 V	0.0 A	30.0 A	-											RCL175PS03
150 W	N/A	100 W	5.0 V	0.0 A	30.0 A	-											RCL175PS05
175 W	204 W	120 W	12.0 V	0.0 A	14.5 A	17.0 A											RCL175PS12
175 W	195 W	120 W	15.0 V	0.0 A	11.6 A	13.0 A											RCL175PS15
175 W	200 W	120 W	24.0 V	0.0 A	7.2 A	8.3 A											RCL175PS24
175 W	200 W	120 W	28.0 V	0.0 A	6.2 A	7.1 A											RCL175PS28
175 W	202 W	120 W	48.0 V	0.0 A	3.6 A	4.2 A											RCL175PS48
175 W	200 W	110 W	5.0 V	1.5 A	15.0 A	-	12.0 V	0.0 A	8.3 A	10.4 A							RCL175PD22[4]
175 W	200 W	110 W	5.0 V	1.5 A	15.0 A	-	24.0 V	0.0 A	4.2 A	5.2 A							RCL175PD23[4]
175 W	200 W	110 W	5.0 V	1.5 A	15.0 A	-	12.0 V	0.0 A	6.3 A	8.4 A				F 12 V	0.0 A	2.0 A	RCL175PT31[4]
175 W	200 W	110 W	5.0 V	1.5 A	15.0 A	-	15.0 V	0.0 A	4.6 A	6.6 A				F 15 V	0.0 A	2.0 A	RCL175PT32[4]
175 W	200 W	90 W	5.0 V	1.5 A	15.0 A	-	3.3 V	0.0 A	15.0 A	-	F 12 V	0.0 A	2.0 A	F 12 V	0.0 A	2.0 A	RCL175PQ42[5]
175 W	200 W	90 W	5.0 V	1.5 A	15.0 A	-	3.3 V	0.0 A	15.0 A	-	F 15 V	0.0 A	2.0 A	F 15 V	0.0 A	2.0 A	RCL175PQ43[5]
175 W	200 W	90 W	5.0 V	1.5 A	15.0 A	-	12.0 V	0.0 A	5.5 A	7.6 A	F 12 V	0.0 A	2.0 A	F 5 V	0.0 A	2.0 A	RCL175PQ44
175 W	200 W	90 W	5.0 V	1.5 A	15.0 A	-	15.0 V	0.0 A	4.0 A	6.0 A	F 5 V	0.0 A	2.0 A	F 15 V	0.0 A	2.0 A	RCL175PQ45[4]
175 W	200 W	90 W	5.0 V	1.5 A	15.0 A	-	24.0 V	0.0 A	3.2 A	5.0 A	F 12 V	0.0 A	2.0 A	F 12 V	0.0 A	2.0 A	RCL175PQ46[4]
175 W	200 W	90 W	5.0 V	1.5 A	15.0 A	-	24.0 V	0.0 A	3.0 A	5.0 A	F 15 V	0.0 A	2.0 A	F 15 V	0.0 A	2.0 A	RCL175PQ47[4]
175 W	200 W	90 W	5.0 V	1.5 A	15.0 A	-	12.0 V	0.0 A	6.3 A	8.4 A	F 12 V	0.0 A	2.0 A	F 12 V	0.0 A	2.0 A	RCL175PQ48

Notes

1. *Peak rating can be taken for 5 seconds in every minute.*
2. *There is a user-accessible fan supply rated at 12 V at 350 mA (not available on fan-cooled units).*
3. *For operation at 85 VAC output power is derated to 95%.*
4. *OP1 10 A max convection-cooled.*
5. *20 A max from output 1 and 2 combined convection-cooled.*
6. *A minimum load of 100 mA is required on output 2, 3 and 4 to maintain the regulation figures.*
7. *12 CFM airflow required for maximum power.*
8. *Outputs 3 & 4 are floating, they can be connected externally for positive or negative output*

Pin Connectors

INPUT CONNECTOR - P1	
Pin	Function
1	Live
2	N/C
3	Neutral

P1 is a 3-way 0.156" pitch square pin header Molex housing 09-91-0300 pins 08-50-0106 (24-18awg) 08-50-0108 (28-22awg)

OUTPUT CONNECTOR - P2	
Pin	Function
1	+Output 1
2	+Output 1
3	+Output 1
4	0 V
5	0 V
6	0 V
7	0 V
8	0 V
9	0 V
10	+Output 2
11	+Output 2
12	+Output 2
13	-Output 3
14	+Output 3
15	-Output 4
16	+Output 4

SIGNALS CONNECTOR - P3	
Pin	Function
1	Remote On/Off
2	+Sense
3	-Sense
4	PF signal
5	0 V fan supply
6	+12 V fan supply

P3 is a 6-way 0.1" pitch square pin header Molex housing 22-01-2035 pins 08-50-0032

Application Notes

Remote Sense - V1 only, compensates for 0.5 V or 10% whichever is lower.

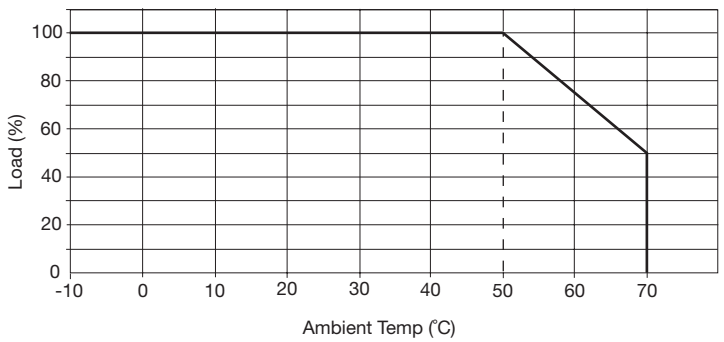
Power Fail - Open collector output refers to 0 V sense (when using the power fail signal, -Sense must be connected to 0 V).

Remote On/Off - Connect pin 1 (P3) to 0 V to disable unit (optional enable specify suffix '-E' with the model number).

Options

- For the U-channel version, add suffix '-U' to the model number.
- For the U-channel version with cover kit, add suffix '-C' to the model number.
- For the U-channel version with fan cover kit, add suffix '-F' to the model number.
- For screw terminals, add suffix '-S' to the model number.
- For conformally coated versions, add suffix '-T' to the model number.
- For versions with remote enable, add suffix '-E' to the model number.
- For foldback current limit on single output models, add suffix '-D' to the model number.
- For constant current limit (output 1 & 2) on multi output models, add suffix '-P' to the model number.

Derating Curve

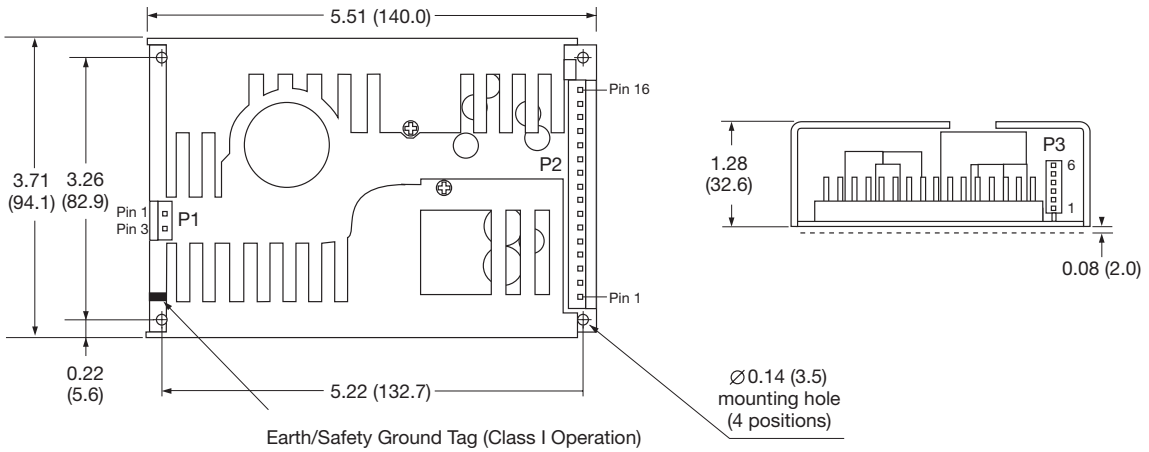


Mechanical Details

All dimensions are in inches (mm)

Open Frame

Weight: 1.10 lbs (500 g) approx.

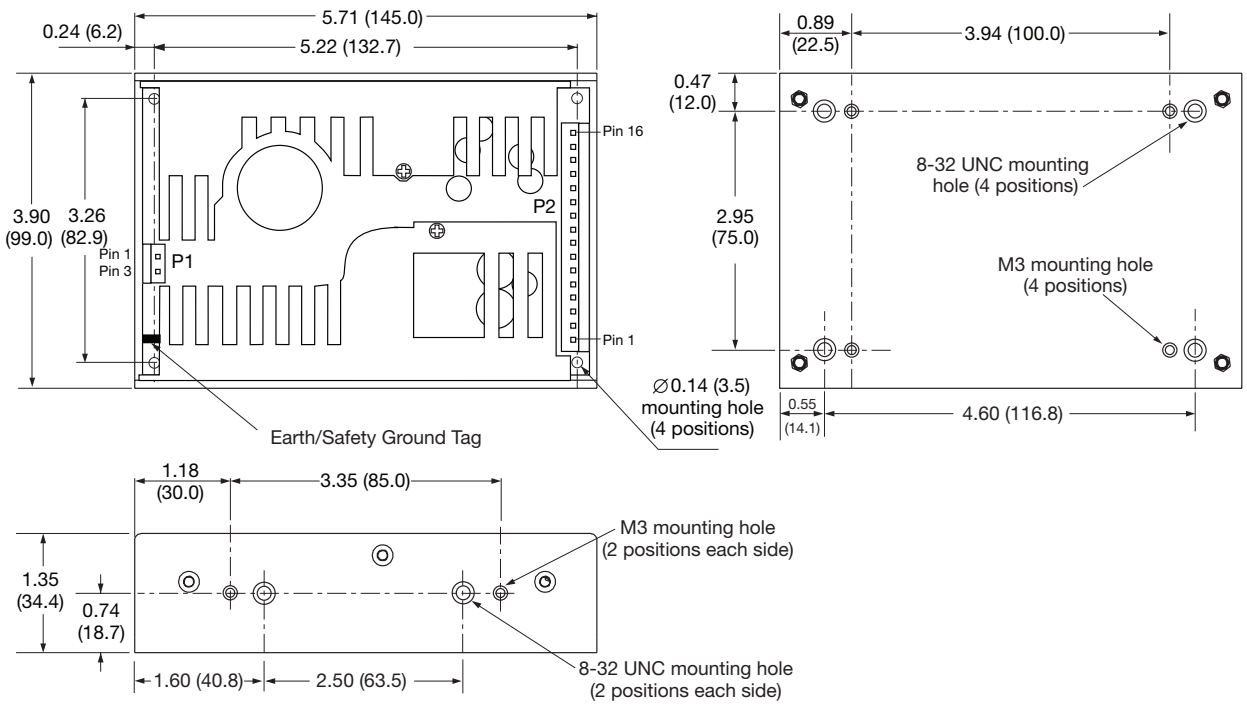


Note:

1. Suitable for class I and class II operation, for class II applications contact sales.
2. Overall height: 1.36 (34.6).
3. For all formats, output connector P2 as follows:
   Single O/P: 6-way 0.156" pitch square pin header Molex housing 09-91-0600 pins 08-50-0106 (24-18awg) 08-50-0108 (28-22awg).
   Dual O/P: 12-way 0.156" pitch square pin header Molex housing 09-91-1200 pins 08-50-0106 (24-18awg) 08-50-0108 (28-22awg).
   Triple O/P: 14-way 0.156" pitch square pin header Molex housing 09-91-1400 pins 08-50-0106 (24-18awg) 08-50-0108 (28-22awg).
   Quad O/P: 16-way 0.156" pitch square pin header Molex housing 09-91-1600 pins 08-50-0106 (24-18awg) 08-50-0108 (28-22awg)

U-channel

Weight: 1.54 lbs (700 g) approx.



Note:

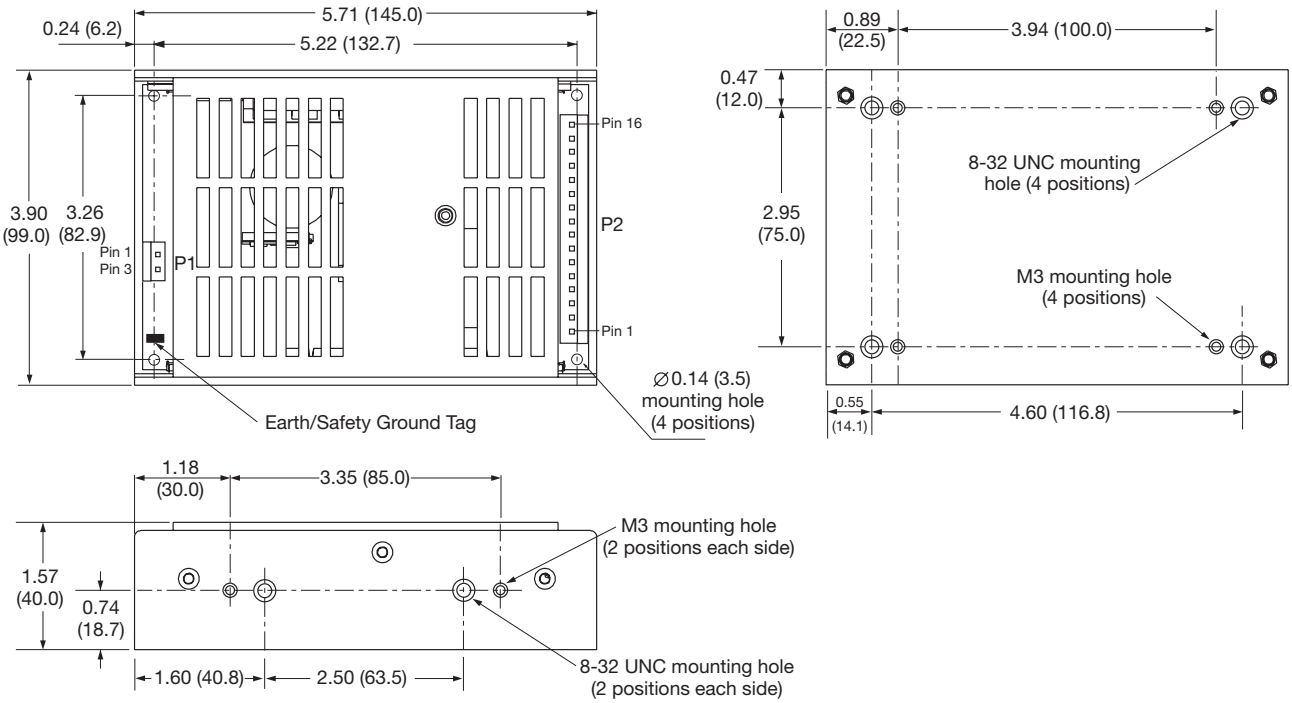
1. Suitable for class I operation only.

Mechanical Details

All dimensions are in inches (mm)

U-channel & Cover

Weight: 1.76 lbs (800 g) approx.

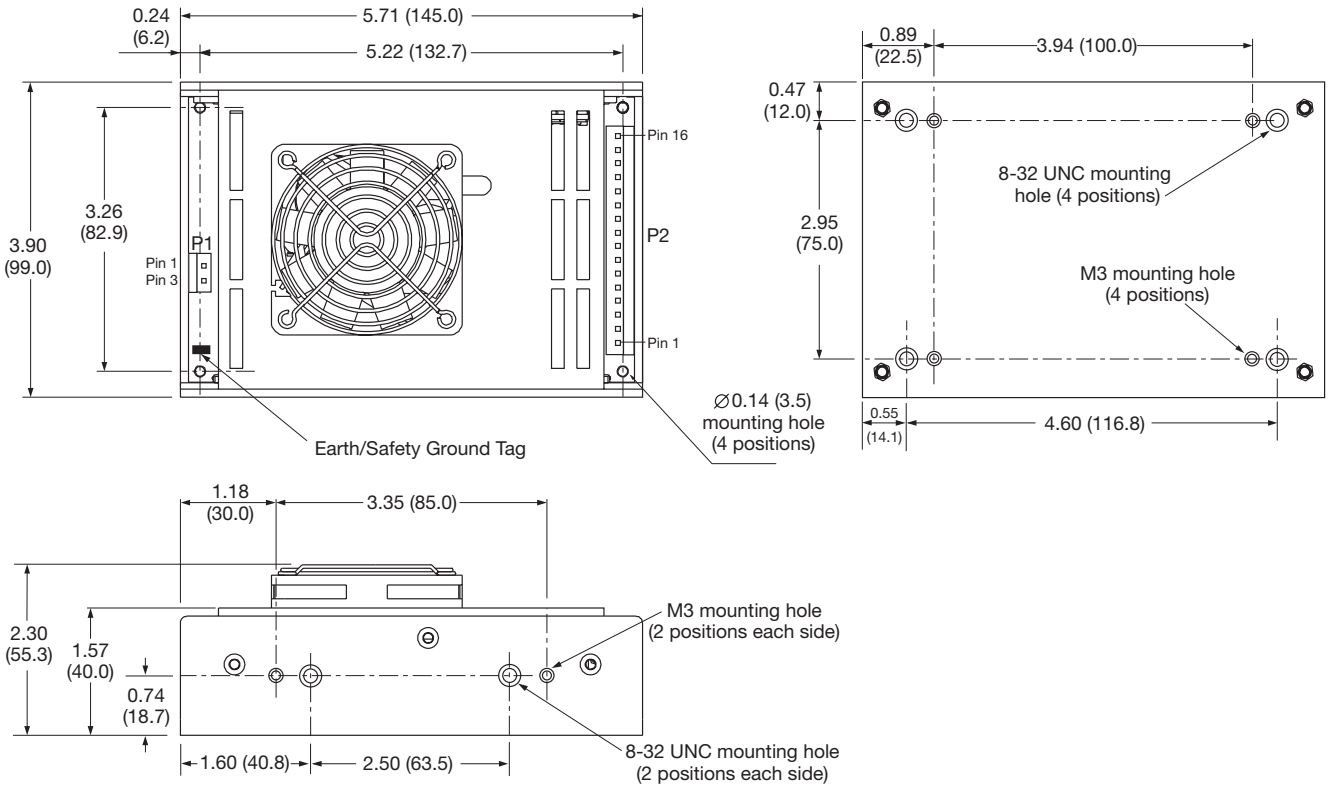


Note:

1. Suitable for class I operation only.

U-channel & Fan Cover

Weight: 1.98 lbs (900 g) approx.



Note:

1. Suitable for class I operation only.