

# 150-500 Watts

## LCL Series



- Single Output Industrial Supplies
- High Efficiency
- Low Cost
- 150 W Convection Cooled
- 300 W & 500 W with Internal Fans
- Outputs from 12 V to 48 V
- 3 Year Warranty

## Specification

### Input

|                       |  |
|-----------------------|--|
| Input Voltage         | • 85-264 VAC (127-370 VDC) (see note 1)  |
| Input Frequency       | • 47-63 Hz   |
| Input Current         | • 2.1 A max for LCL150, 4.5 A max for LCL300, 6.6 A max for LCL500                             |
| Inrush Current        | • 40 A max for LCL150, 60 A max for LCL300 & 500 cold start at 25 °C, 230 VAC                  |
| Power Factor          | • >0.9   |
| Earth Leakage Current | • <2 mA at 264 VAC, 60 Hz  |
| Input Protection      | • LCL150: T3.15 A/250 V, LCL300: T6.3A/250 V, LCL500: T10A/250 V, internal fuse fitted in line |

### Output

|                            |   |
|----------------------------|---|
| Output Voltage             | • See tables  |
| Output Voltage Trim        | • See tables  |
| Initial Set Accuracy       | • ±100 mV at 50% load   |
| Minimum Load               | • None required   |
| Start Up Delay             | • 2 s max for LCL150, 1.5 s max for LCL300, 0.8 s max for LCL500              |
| Start Up Rise Time         | • 50 ms max for LCL150, 35 ms max for LCL300 & LCL500                         |
| Hold Up Time               | • 10 ms min at 115 VAC and full load  |
| Line Regulation            | • ±0.5% max for LCL150, ±0.3% for LCL300 & LCL500                             |
| Load Regulation            | • ±1% max   |
| Transient Response         | • 4% max deviation recovery to within 1% in 500 µs for a 50% load change      |
| Ripple & Noise             | • See tables  |
| Overvoltage Protection     | • 110-140%, recycle input to reset  |
| Overtemperature Protection | • Output turns off when OTP triggered, measured internally, auto recovery     |
| Overload Protection        | • 110-150% of rated output power. Delayed by 1 s min to allow for peak loads. |
| Short Circuit Protection   | • Trip and restart (hiccup mode), auto recovery                               |
| Remote Sense               | • Fitted to LCL500 only, compensates for 0.25 V max each line                 |
| Remote On/Off              | • Fitted on LCL500 only, On = logic low or open circuit, Off = logic high     |

### General

|                     |   |
|---------------------|---|
| Efficiency          | • 88% typical at full load & 230 VAC  |
| Isolation           | • 3000 VAC Input to Output<br>1500 VAC Input to Ground<br>500 VAC Output to Ground                                  |
| Switching Frequency | • 90-110 kHz main converter & 45-190 kHz PFC for LCL150, 80-190 kHz main converter & 62-65 kHz PFC for LCL300 & 500 |
| Power Density       | • 2.7 W/in <sup>3</sup> LCL150, 4.4 W/in <sup>3</sup> LCL300, 4.9 W/in <sup>3</sup> LCL500                          |
| MTBF                | • LCL150: >489 kHrs,<br>LCL300: >235 kHrs,<br>LCL500: >211 kHrs to MIL-HBK-217F at 25 °C, GB                        |

### Environmental

|                       |   |
|-----------------------|---|
| Operating Temperature | • -10 °C to +70 °C, derate from 100% load at 50 °C to 50% load at 70 °C |
| Cooling               | • LCL150 convection cooled, LCL300 & LCL500 have internal fans          |
| Operating Humidity    | • 5% to 90% non condensing  |
| Storage Temperature   | • -40 °C to +85 °C  |
| Operating Altitude    | • 3000 m  |
| Vibration             | • 10-500 Hz, 2 g, 10 mins per cycle on 3 axes                           |

### EMC & Safety

|                      |  |
|----------------------|--|
| Emissions            | • EN55022 level B conducted, level A radiated  |
| Harmonic Currents    | • EN61000-3-2 class A<br>LCL150: EN61000-3-2 class C for loads ≥40%<br>LCL300 & LCL500: EN61000-3-2 class C for loads ≥20% |
| Voltage Flicker      | • EN61000-3-3  |
| ESD Immunity         | • EN61000-4-2, ±4 kV contact, ±8 kV air discharge, Performance Criteria A  |
| Radiated Immunity    | • EN61000-4-3, level 2 Perf Criteria A   |
| EFT/Burst            | • EN61000-4-4, level 2 Perf Criteria A   |
| Surge                | • EN61000-4-5, installation class 3, Perf Criteria A   |
| Conducted Immunity   | • EN61000-4-6, level 2 Perf Criteria A   |
| Magnetic Field       | • EN61000-4-8, 1 A/m Perf Criteria A   |
| Dips & Interruptions | • EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B   |
| Safety Approvals     | • EN60950-1, UL60950-1, CSA60950 No 22.2   |

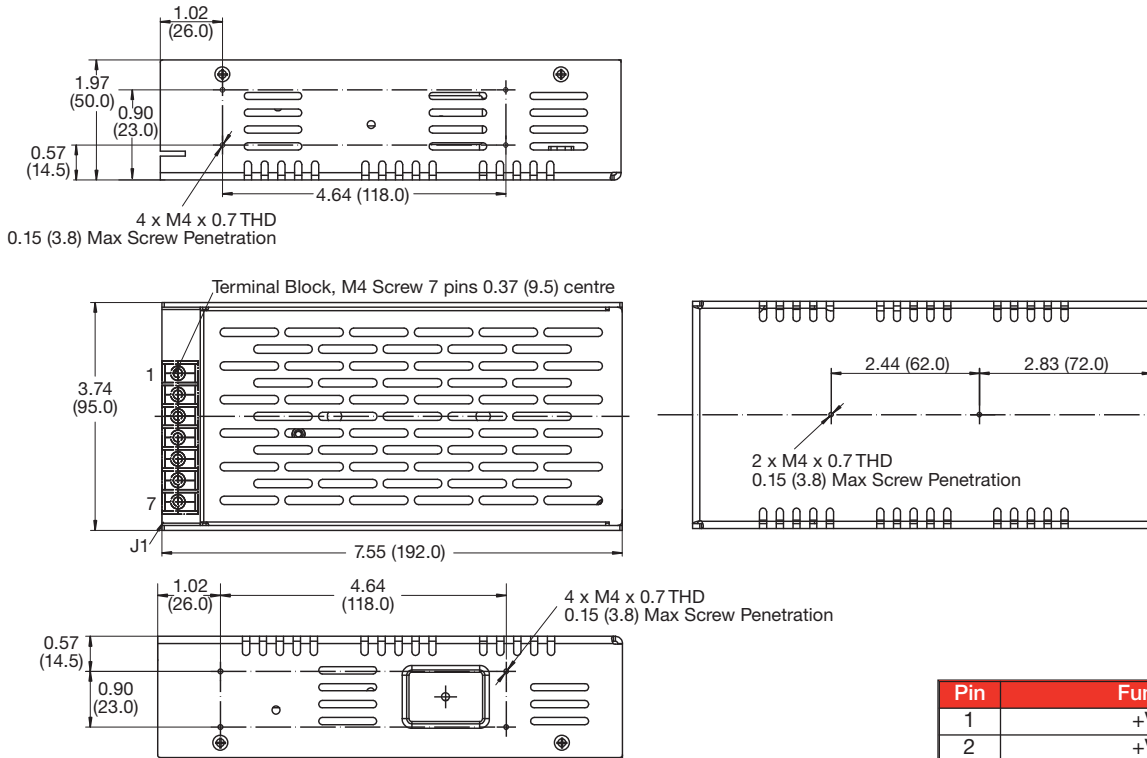
**Model and Ratings**

| Output Power <sup>(1)</sup> | Output Voltage | Trim Range  | Output Current | Ripple & Noise <sup>(2)</sup> | Model Number |
|-----------------------------|----------------|-------------|----------------|-------------------------------|--------------|
| 150 W                       | 12.0 V         | 11.0-13.0 V | 12.5 A         | 100 mV pk-pk                  | LCL150PS12   |
|                             | 13.5 V         | 12.5-14.5 V | 11.1 A         | 100 mV pk-pk                  | LCL150PS13   |
|                             | 15.0 V         | 14.0-16.0 V | 10.0 A         | 100 mV pk-pk                  | LCL150PS15   |
|                             | 24.0 V         | 23.0-25.0 V | 6.3 A          | 150 mV pk-pk                  | LCL150PS24   |
|                             | 27.0 V         | 26.0-28.0 V | 5.6 A          | 150 mV pk-pk                  | LCL150PS27   |
|                             | 48.0 V         | 47.0-49.0 V | 3.1 A          | 250 mV pk-pk                  | LCL150PS48   |

**Notes**

1. Output power derates linearly from 100% at 90 VAC to 90% at 85 VAC.
2. Measured with 20 MHz bandwidth.

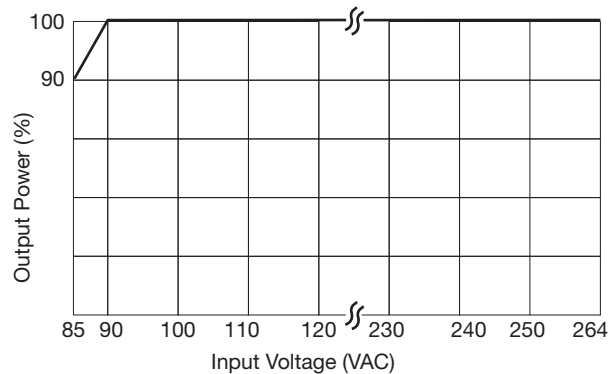
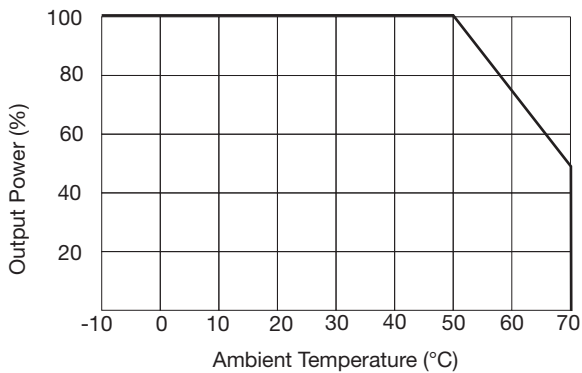
**Mechanical Details**



| Pin | Function |
|-----|----------|
| 1   | +Vout    |
| 2   | +Vout    |
| 3   | -Vout    |
| 4   | -Vout    |
| 5   | Ground   |
| 6   | Neutral  |
| 7   | Line     |

**Notes**

1. All dimensions shown in inches (mm).
2. Weight: 1.39 lbs (630 g) approx.
3. Tolerance is  $\pm 0.05$  ( $\pm 0.2$ ) maximum.



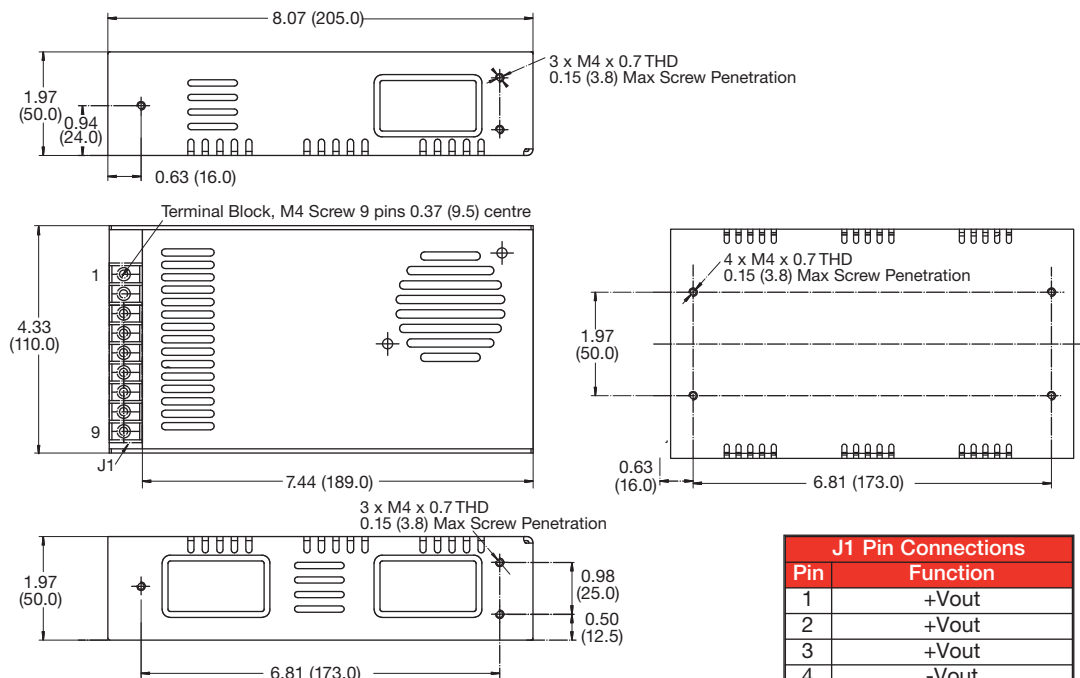
## Model and Ratings

| Output Power <sup>(1)</sup> | Output Voltage | Trim Range  | Output Current | Ripple & Noise <sup>(2)</sup> | Model Number |
|-----------------------------|----------------|-------------|----------------|-------------------------------|--------------|
| 300 W                       | 12.0 V         | 11.0-13.0 V | 25.0 A         | 150 mV pk-pk                  | LCL300PS12   |
|                             | 13.5 V         | 12.5-14.5 V | 22.0 A         | 150 mV pk-pk                  | LCL300PS13   |
|                             | 15.0 V         | 14.0-16.0 V | 20.0 A         | 150 mV pk-pk                  | LCL300PS15   |
| 310 W                       | 24.0 V         | 23.0-25.0 V | 13.0 A         | 150 mV pk-pk                  | LCL300PS24   |
| 315 W                       | 27.0 V         | 26.0-28.0 V | 11.7 A         | 200 mV pk-pk                  | LCL300PS27   |
| 320 W                       | 48.0 V         | 47.0-49.0 V | 6.70 A         | 240 mV pk-pk                  | LCL300PS48   |

### Notes

1. Output power derates linearly from 100% at 90 VAC to 90% at 85 VAC.
2. Measured with 20 MHz bandwidth.

## Mechanical Details

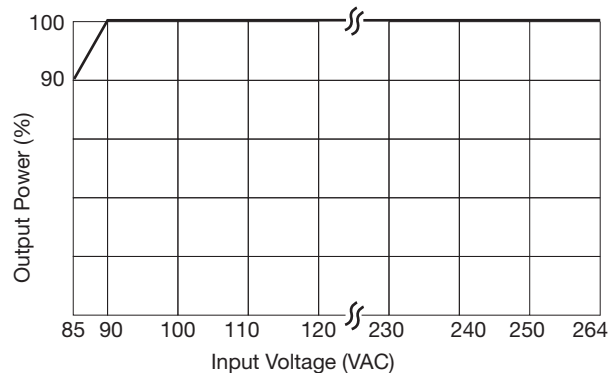
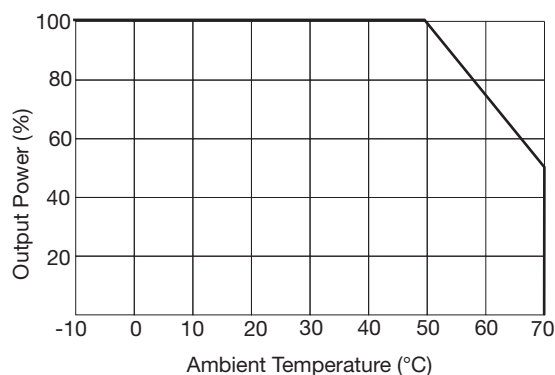


| J1 Pin Connections |          |
|--------------------|----------|
| Pin                | Function |
| 1                  | +Vout    |
| 2                  | +Vout    |
| 3                  | +Vout    |
| 4                  | -Vout    |
| 5                  | -Vout    |
| 6                  | -Vout    |
| 7                  | Ground   |
| 8                  | Neutral  |
| 9                  | Line     |

### Notes

1. All dimensions shown in inches (mm)
2. Weight: 1.94 lbs (880 g) approx.
3. Tolerance is  $\pm 0.05$  ( $\pm 0.2$ ) maximum.
4. Airflow direction is out of the unit at fan.

## Derating Curves



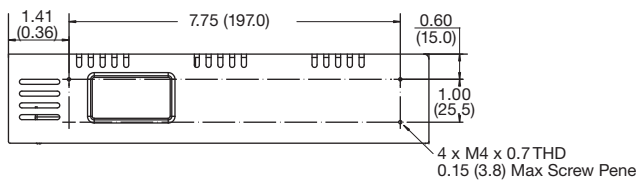
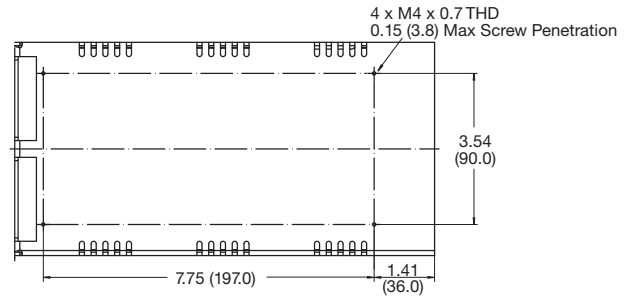
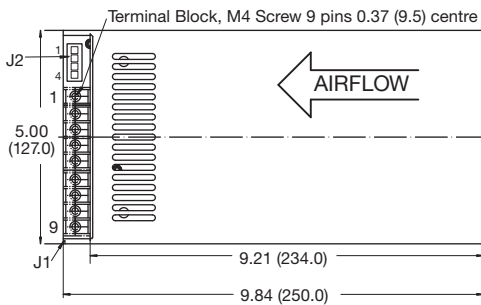
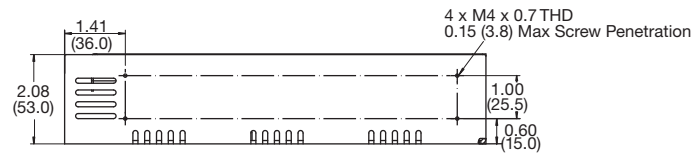
## Model and Ratings

| Output Power <sup>(1)</sup> | Output Voltage | Trim Range  | Output Current | Ripple & Noise <sup>(2)</sup> | Model Number |
|-----------------------------|----------------|-------------|----------------|-------------------------------|--------------|
| 500 W                       | 12.0 V         | 11.0-13.0 V | 42.0 A         | 120 mV pk-pk                  | LCL500PS12   |
|                             | 13.5 V         | 12.5-14.5 V | 37.0 A         | 150 mV pk-pk                  | LCL500PS13   |
|                             | 15.0 V         | 14.0-16.0 V | 34.0 A         | 150 mV pk-pk                  | LCL500PS15   |
|                             | 24.0 V         | 23.0-25.0 V | 21.0 A         | 150 mV pk-pk                  | LCL500PS24   |
|                             | 27.0 V         | 26.0-28.0 V | 18.5 A         | 150 mV pk-pk                  | LCL500PS27   |
|                             | 48.0 V         | 47.0-49.0 V | 10.5 A         | 240 mV pk-pk                  | LCL500PS48†  |

### Notes

- Output power derates linearly from 100% at 90 VAC to 90% at 85 VAC.
- Measured with 20 MHz bandwidth.

## Mechanical Details



| J1 Pin Connections |          |
|--------------------|----------|
| Pin                | Function |
| 1                  | +Vout    |
| 2                  | +Vout    |
| 3                  | +Vout    |
| 4                  | -Vout    |
| 5                  | -Vout    |
| 6                  | -Vout    |
| 7                  | Ground   |
| 8                  | Neutral  |
| 9                  | Line     |

| J2 Pin Connections |                 |
|--------------------|-----------------|
| Pin                | Function        |
| 1                  | Remote On/Off - |
| 2                  | Remote On/Off + |
| 3                  | Sense -         |
| 4                  | Sense +         |

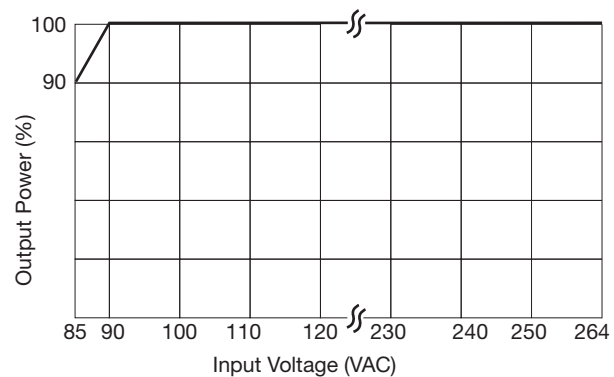
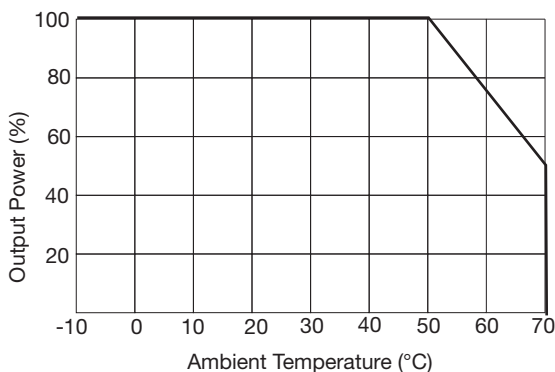
Applying >4.5 V to Pin 2 with respect to Pin 1 turns output off.  
Applying <0.8 V to Pin 2 with respect to Pin 1 or open circuit turns output on.

Mating Connectors (J2):  
WST P4-I25002 housing  
WST I25002BS contacts

### Notes

- Dimensions shown in inches (mm).
- Weight: 3.2 lbs (1.45 kg) approx.
- Tolerance is ±0.05 (±0.2) maximum.

## Derating Curves



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