## 



## 200W CONVECTION COOLED

The LCW series of regulated output convection cooled AC-DC power supplies are designed to provide a cost effective solution for industrial electronics and technology applications. Features include wide range AC input from 85-305VAC, active PFC, output voltage adjustment, low stand-by power consumption, output short circuit protection, over current and over voltage protection. Applications include auxiliary power sources, security installations, lighting control, smart home or office control systems, ticketing and vending applications.

### **Features**

- 200W convection cooled
- Active PFC
- Integrated connector cover
- ITE & industrial approvals
- Class B conducted & radiated emissions
- Input voltage range 85-305VAC
- Regulated single outputs from 5.0V to 48VDC
- Output voltage trim
- Efficiency to 90%
- Short circuit, overvoltage & overload protection
- Conformal coating option
- -30°C to +70°C operating temperature
- 3 year warranty

#### AC-DC POWER SUPPLIES



### **Applications**





Instrumentation





Industrial Electronics

tronics

Robotics

Technology

### **Dimensions**

LCW200PS05: 8.46" x 4.53" x 1.18" (215.0 x 115.0 x 30.0mm) All other models: 7.05" x 3.89" x 1.18" (179.0 x 99.0 x 30.0mm)

### **Models & Ratings**

Model Number(3)	Outp	ut Voltage	Output Current	Ripple & Noise	Efficiency <sup>(2)</sup>	Maximum Capacitive Load	Power
Model Mulliber	Nominal	Adjustment Range <sup>(4)</sup>	Output Current	pk to pk <sup>(1)</sup>	Efficiency		
LCW200PS05	5.0V	4.5 - 5.5V	40.0A	150mV	85%	3000µF	200W
LCW200PS12	12.0V	11.4 - 12.6V	16.7A	150mV	88%	4000µF	200W
LCW200PS15	15.0V	14.3 - 15.7V	13.4A	150mV	88%	3300µF	200W
LCW200PS24	24.0V	22.8 - 25.2V	8.4A	150mV	90%	1500µF	200W
LCW200PS48	48.0V	45.6 - 50.4V	4.2A	240mV	89%	470µF	200W

#### Notes:

- $1. \ Ripple \ \& \ noise \ measured \ with \ 20 MHz \ bandwidth \ and \ 47 \mu F \ electrolytic \ capacitor \ in \ parallel \ with \ 0.1 \mu F \ ceramic \ capacitor.$
- 2. Typical efficiencies measured at 230VAC full load.
- 3. Add suffix -E to model number to specify conformal coating option, MOQ applies, please contact sales.
- 4. Output power rating must not be exceeded.

# **Comparison** ← LCW200 Series

## Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
	85	115/230	305	VAC	Derate output power linearly from 100% at 100VAC to 80% at 85VAC. LCW200PS05 derate output power linearly from 100% at 115VAC to 60% at 85VAC
Input Voltage - Operating	120		430	VDC	Alternative input. Not to be used in addition to AC input. DC input not included in safety approvals, external DC rated fuse required. Derate output power linearly from 100% at 120VDC to 80% at 100VDC. LCW200PS05 derate output power linearly from 100% at 160VDC to 50% at 120VDC
Input Frequency	47	50/60	63	Hz	
Power Factor		0.98			115VAC at full load
Power Factor		0.95			230VAC at full load
Input Current - Full Load		2.5	3.0	Α	115VAC
input Gurrent - Full Load		1.3	2.0	A	230VAC
No Load Input Power			0.5	W	
Inrush Current		35		Α	115VAC cold start at 25°C ambient
illusii Curreiit		65		А	230VAC cold start at 25°C ambient
Earth Leakage Current			2.0	mA	277VAC/50Hz (Typ)
Input Protection	T6.3A/300VAC Internal fuse fitted in line				

## Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions	
Output Voltage	4.5		50.4	VDC	See Models & Ratings table	
Initial Cat Assume		±2		0/	LCW200PS05, full	lload
Initial Set Accuracy		±1		%	All other models, f	full load
Voltage Adjustment			±10	0/	LCW200PS05 max value	
			±5	%	All other models	
Minimum Load	0			А	No minimum load	required
Start Up Delay	250		400	ms	115/230VAC full lo	ad
Hold Up Time		8			LCW200PS05	115/230VAC
Hold Up Time		12		ms	All other models	113/230VAC
Line Regulation			±0.5	%	100-264VAC, full load	
			±1	%	LCW200PS05	
Load Regulation			±0.5		All other models	0-100% load
Transient Response			10	%	Recovery within 1% in less than 5ms for a 50-75% and 75-50% los step	
Ripple & Noise				mV pk-pk	See Models & Ratings table	
Over/Undershoot			10	%	Full load 5ms recovery	
			7.0		LCW200PS05	
			16.2		LCW200PS12	
Overvoltage Protection			21.8	VDC	LCW200PS15	Auto recovery, hiccup mode
			32.4		LCW200PS24	
			60.0		LCW200PS48	
	105		150		LCW200PS05	Nominal output current, auto recovery hiccup
Overload Protection	105		200	%	All other models	mode
Temperature Coefficient		±0.03		%/°C		
Short Circuit Protection	Continuous	. hiccup with	auto recovery			

# **Comparison** ← LCW200 Series

## General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions			
Efficiency		88		%	230VAC Full load (see Models & Ratings table)			
Isolation: Input to Output	4000			VAC				
Input to Ground	2000			VAC	Class I construction, 60s test with leakage current <10mA			
Output to Ground	500			VAC				
Switching Frequency		65		kHz				
Dawer Daneitre			4.42	W/in³	LCW200PS05			
Power Density			6.16	VV/III	All other models			
Mean Time Between Failure	250			khrs	MIL-HDBK-217F, 25°C GB			
\\/-:-L		1.65 (750)		U= ( = )	LCW200PS05			
Weight		1.04 (475.0)		lb(g) All other models				
Case Material	Aluminium chassis with vented galvanized steel cover							
Conformal Coating Option	Acrylic resin, UL94V-0 rated, certified (UL No. E351072), minimum 30µm coating thickness. Add suffix -E to part number							

## **Environmental**

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions			
Operating Temperature	-30		+70	°C	See derating curve			
Overtemperature Protection	n Hiccup mode with auto recovery, temperature measured internally							
Storage Temperature	-40		+85	°C				
Cooling	Natural con	Natural convection						
Humidity	5		90	%RH	Non-condensing			
Operating Altitude			5000	m	Derate output linearly from 2000m to 85% at 5000m			
Shock and Vibration	Vibration Tested according to EN60068-2-27, 10 - 500Hz, 5g (1H) for each X,Y and Z plane							
Overtemperature Protection	ature Protection Hiccup mode, auto recovery							

## **EMC: Emissions**

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032	Class B	
Radiated	EN55032	Class B	
Harmonic Current	EN61000-3-2	Class A	
Voltage Flicker	EN61000-3-3		

# **Comparison** ← LCW200 Series

## **EMC: Immunity**

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions	
ESD Immunity	SD Immunity EN61000-4-2		Α	Contact ±6kV/Air ±8kV	
Radiated Immunity	EN61000-4-3	3	Α	10V/m	
EFT	EN61000-4-4	3		LCW200PS05	±2kV
EFI	EINO 1000-4-4	4	Α	All other models	±4kV
•	EN61000-4-5	Installation class 3	Α	LCW200PS05	Line to line ±1kV, line to ground ±2kV
Surge	EN61000-4-5	Installation class 4	A	All other models	Line to line ±2kV, line to ground ±4kV
Conducted	EN61000-4-6	3	Α	10Vrms	
		Dip. 100% (0VAC), 10ms	Α		
	EN61000-4-11	Dip. 100% (0VAC), 20ms	В		
Dips		Dip. 60% (88VAC), 200ms	Α		
		Dip. 30% (154VAC), 500ms	Α		
		Dip. 20% (176VAC), 5000ms	Α		
Interruptions		Int. 100% (0VAC), 5000ms	В		

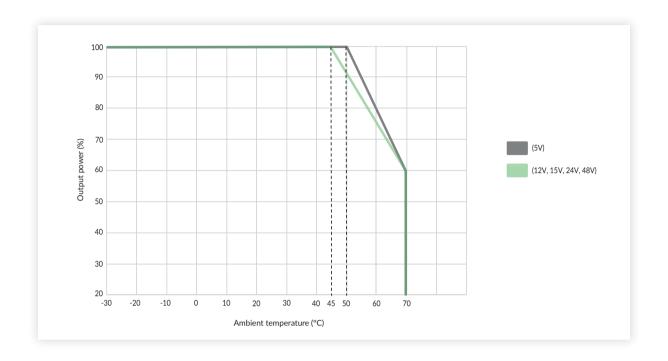
## Safety Approvals

Certification	Standard	Notes & Conditions
UL	UL62368-1	Information Technology
EN	EN62368-1	Information Technology
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

# 

## **Application Notes**

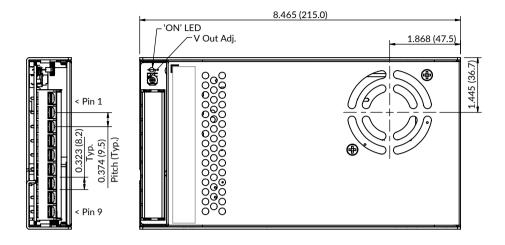
### **Temperature Derating**

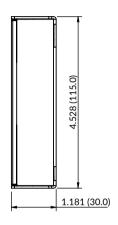


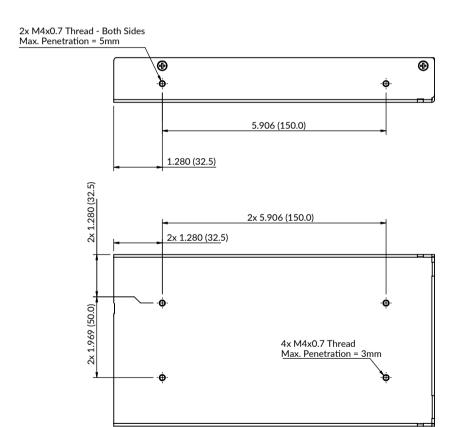
## **─ LCW200 Series**

### **Mechanical Details**

#### LCW200PS05







Pin-Out					
Pin	Function				
1	+Vo				
2	+Vo				
3	+Vo				
4	-Vo				
5	-Vo				
6	-Vo				
7	GND				
8	AC(N)				
9	AC(L)				

Connector torque: M3.5, 0.8Nm

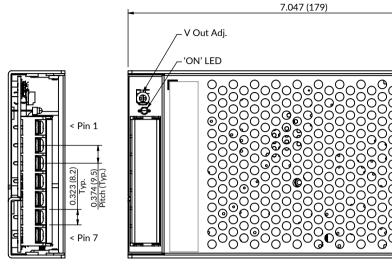
### Notes:

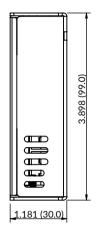
- 1. All dimensions are in inches (mm).
- 2. Tightening torque: M4 fixings, 0.9Nm. M3.5 connectors, 0.8Nm.
- 3. General tolerances: ±0.039 (±1.00).
- 4. Chassis must be connected to protective earth.
- 5. Use 22-14 AWG wire range for connector.

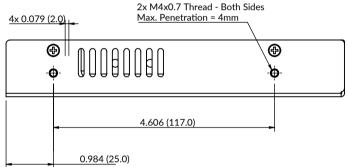
## 

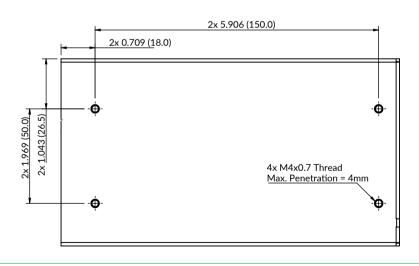
### **Mechanical Details**

#### All other models









F	Pin-Out						
Pin	Function						
1	+Vo						
2	+Vo						
3	-Vo						
4	-Vo						
5	GND						
6	AC(N)/DC(-)						
7	AC(L)/DC(+)						

Connector torque: M3.5, 0.8Nm

#### Notes:

- 1. All dimensions are in inches (mm).
- 2. Tightening torque: M4 fixings, 0.9Nm. M3.5 connectors, 0.8Nm.
- 3. General tolerances: ±0.039 (±1.00).
- 4. Chassis must be connected to protective earth.
- 5. Use 22-14 AWG wire range for connector.