

## 320W FAN COOLED

### AC-DC POWER SUPPLIES

The LCW series of regulated output fan 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, a power 'ON' LED, 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

- 320W fan 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 89%
- Short circuit, overvoltage & overload protection
- Conformal coating option
- -30°C to +70°C operating temperature
- 3 year warranty

### Applications



Industrial  
Electronics



Instrumentation



Robotics



Technology

### Dimensions

8.46" x 4.53" x 1.18" (215.0 x 115.0 x 30.0mm)

### Models & Ratings

Model Number <sup>(3)</sup>	Output Voltage		Output Current	Ripple & Noise pk to pk <sup>(1)</sup>	Efficiency <sup>(2)</sup>	Maximum Capacitive Load	Power
	Nominal	Adjustment Range <sup>(4)</sup>					
LCW320PS05	5.0V	4.5 - 5.5V	60.0A	150mV	84%	5000μF	300W
LCW320PS12	12.0V	10.8 - 13.2V	26.7A	150mV	86%	5000μF	320W
LCW320PS15	15.0V	13.5 - 16.5V	21.4A	150mV	89%	5000μF	320W
LCW320PS24	24.0V	21.6 - 26.4V	13.4A	150mV	88%	5000μF	320W
LCW320PS48	48.0V	43.2 - 56.0V	6.7A	200mV	89%	3000μF	320W

#### Notes:

1. Ripple & noise measured with 20MHz bandwidth and 47μF electrolytic capacitor in parallel with 0.1μF 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.

## Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage - Operating	85	115/230	305	VAC	Derate output power linearly from 100% at 100VAC to 80% at 85VAC
	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 140VDC to 80% at 120VDC
Input Frequency	47	50/60	63	Hz	
Power Factor		0.98			115VAC at full load
		0.95			230VAC at full load
Input Current - Full Load		4.0		A	115VAC
		2.0			230VAC
No Load Input Power			0.3	W	
Inrush Current		35		A	115VAC cold start at 25°C ambient
		65			230VAC cold start at 25°C ambient
Earth Leakage Current			2.0	mA	305VAC
Input Protection	T6.3A/300VAC Internal fuse fitted in line				

## Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	4.5		56	VDC	See Models & Ratings table
Initial Set Accuracy		±2		%	Full load
		±1			LCW320PS05 All other models
Voltage Adjustment		±10		%	
Minimum Load	0			A	No minimum load required
Start Up Delay	0.3		1.4	s	115/230VAC full load
Hold Up Time	12			ms	115/230VAC
Drift			±0.03	%	After 20 minutes warm up, 230VAC, 0°C to 50°C
Line Regulation		±0.5		%	Full load
		±0.3			LCW320PS05 LCW320PS12/15
		±0.2			LCW320PS24/48
Load Regulation			±1	%	0-100% load
			±0.5		LCW320PS05 All other models
Transient Response			10	%	Recovery within 1% in less than 5ms for a 50-75% and 75-50% load step
Ripple & Noise				mV pk-pk	See Models & Ratings table
Over/Undershoot			10	%	Full load
Overvoltage Protection			7.0	VDC	LCW320PS05
			16.2		LCW320PS12
			21.8		LCW320PS15
			32.4		LCW320PS24
			60.0		LCW320PS48
Overload Protection	105		150	%	Nominal output current, hiccup with auto recovery
Temperature Coefficient		±0.03		%/°C	
Short Circuit Protection	Continuous hiccup with auto recovery				

## General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		88		%	230VAC Full load (see Models & Ratings table)
Isolation: Input to Output	4000			VAC	Class I construction
Input to Ground	2000			VAC	
Output to Ground	500			VAC	
Switching Frequency		65		kHz	
Power Density			7.07	W/in <sup>3</sup>	
Mean Time Between Failure	250			khrs	MIL-HDBK-217F, Notice 2 25°C GB
Weight		1.65 (750)		lb(g)	
Case Material	Aluminium chassis with vented galvanized steel cover (AL1100 and SGCC)				
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	Hiccup mode with auto recovery, temperature measured internally				
Storage Temperature	-40		+85	°C	
Cooling	Fan cooled, automatic operation				
Humidity	5		90	%RH	Non-condensing
Operating Altitude			5000	m	Derate output linearly from 2000m to 85% at 5000m
Shock and Vibration	Tested according to EN60068-2-27, 10 - 500Hz, 5g (1H) for each X, Y and Z plane				

## 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		

## EMC: Immunity

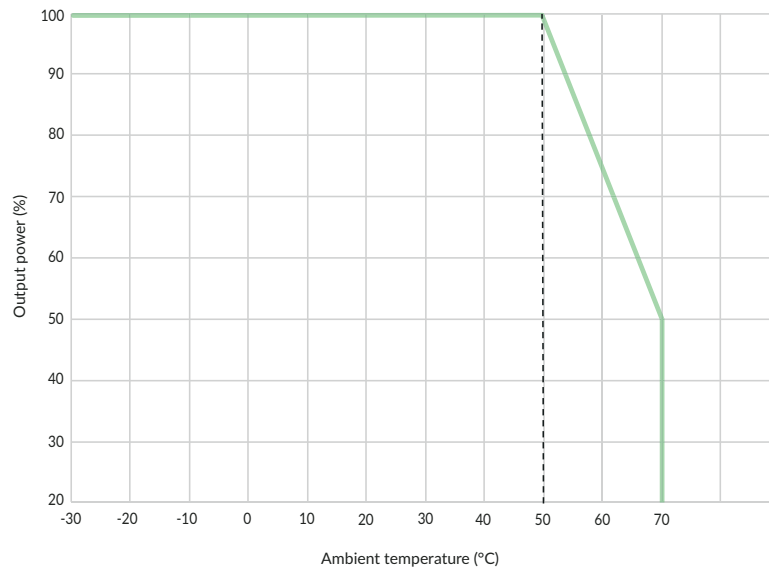
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	3	A	Contact $\pm 6\text{kV}$ / Air $\pm 8\text{kV}$
Radiated Immunity	EN61000-4-3	3	A	10V/m
EFT	EN61000-4-4	3	A	$\pm 2\text{kV}$
Surge	EN61000-4-5	Installation class 3	A	Line to line $\pm 1\text{kV}$ , line to ground $\pm 2\text{kV}$
Conducted	EN61000-4-6	3	A	10Vrms
Dips	EN61000-4-11	Dip. 100% (0VAC), 10ms	A	
		Dip. 100% (0VAC), 20ms	B	
		Dip. 60% (88VAC), 200ms	A	
		Dip. 30% (154VAC), 500ms	A	
		Dip. 20% (176VAC), 5000ms	A	
Interruptions		Int. 100% (0VAC), 5000ms	B	

## Safety Approvals

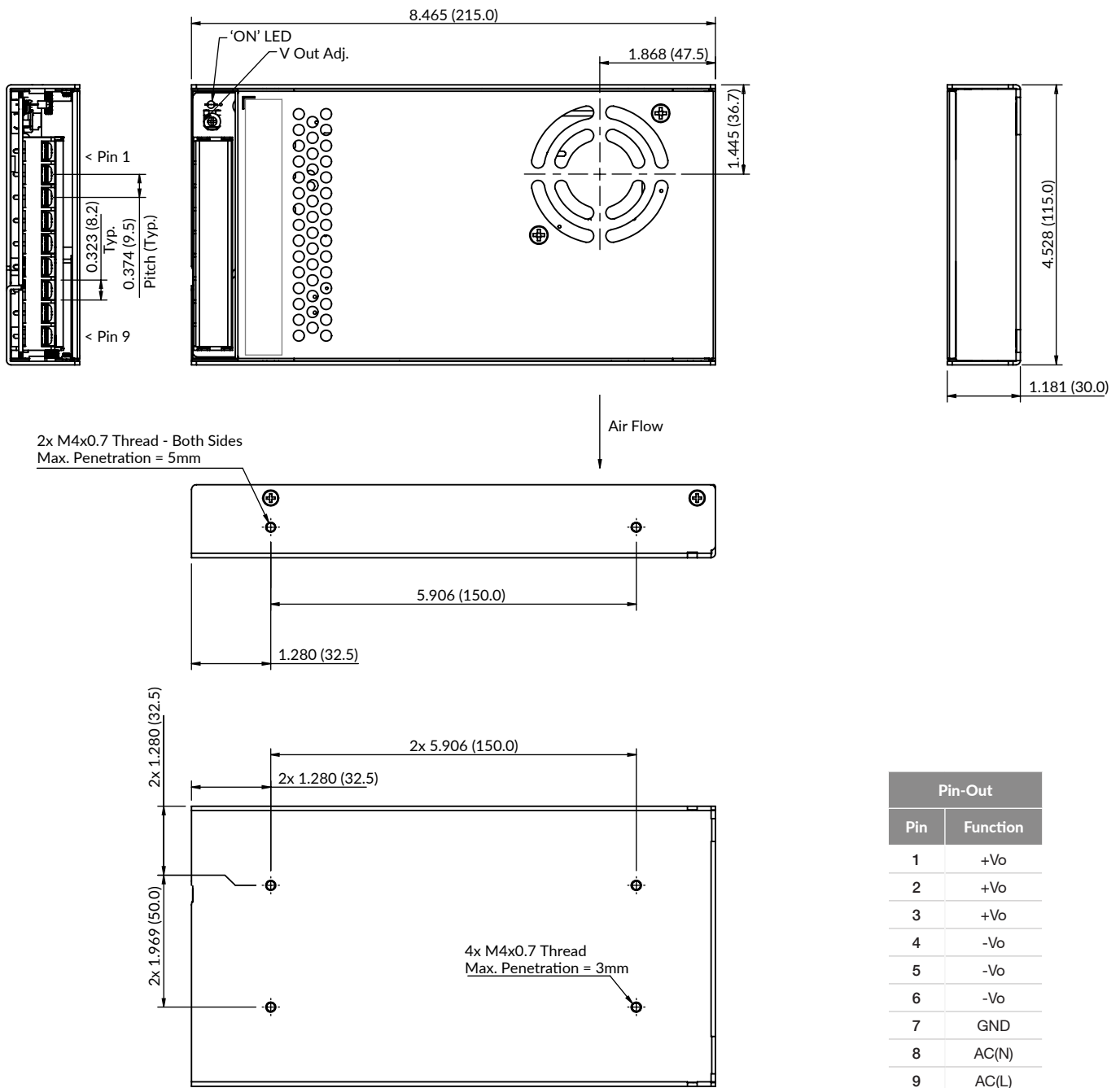
Certification	Standard	Notes & Conditions
UL	UL62368-1	Information Technology
TUV	EN62368-1	Information Technology
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

## Application Notes

### Temperature Derating



## Mechanical Details



Connector torque: M3.5, 0.8Nm

### Notes:

1. All dimensions are in inches (mm).
2. Tightening torque: M4 fixing, 0.9Nm. M3.5 connectors 0.8Nm
3. General tolerances:  $\pm 0.039$  ( $\pm 1.00$ )
4. Chassis must be connected to protective earth.

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