

# LCW50 Series

50W CONVECTION COOLED

AC-DC POWER SUPPLIES

The LCW series of regulated output convection cooled AC-DC power supplies are designed to provide a cost effective solution for industrial electronics, technology and household applications. Features include wide range AC input from 85-305VAC, 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

- 50W convection cooled
- Integrated connector cover
- ITE, industrial & household approvals
- Class B conducted & radiated emissions
- Input voltage range 85-305VAC
- Regulated single outputs from 5.0V to 48VDC
- Output voltage trim  $\pm 10\%$
- Efficiency to 90%
- Short circuit, overvoltage & overload protection
- Conformal coating option
- $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  operating temperature
- 3 year warranty

## Applications



Household Appliances



Industrial Electronics



Instrumentation



Robotics



Technology

## Dimensions

99.0 x 82.0 x 30.0mm (3.898" x 3.228" x 1.181")

## 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>					
LCW50US05	5.0V	4.5 - 5.5V	10.0A	80mV	83%	8000 $\mu\text{F}$	50W
LCW50US12	12.0V	10.8 - 13.2V	4.2A	120mV	86%	2000 $\mu\text{F}$	50W
LCW50US15	15.0V	13.5 - 16.5V	3.4A	120mV	87%	1500 $\mu\text{F}$	50W
LCW50US24	24.0V	21.6 - 26.4V	2.2A	150mV	88%	1000 $\mu\text{F}$	50W
LCW50US36	36.0V	32.4 - 39.6V	1.45A	240mV	89%	220 $\mu\text{F}$	50W
LCW50US48	48.0V	43.2 - 52.8V	1.1A	240mV	90%	470 $\mu\text{F}$	50W

### Notes:

1. Ripple & noise measured with 20MHz bandwidth and 47 $\mu\text{F}$  electrolytic capacitor in parallel with 0.1 $\mu\text{F}$  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.

POWERING THE WORLD'S CRITICAL SYSTEMS

## 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	
Input Current - Full Load			1.2	A	115VAC
			0.8		230VAC
No Load Input Power			0.5	W	
Inrush Current		30		A	115VAC cold start at 25°C ambient
		60			230VAC cold start at 25°C ambient
Earth Leakage Current			0.75	mA	277VAC/50Hz (Typ)
Input Protection	T3.15A/300VAC Internal fuse fitted in line				

## Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions	
Output Voltage	4.5		52.8	VDC	See Models & Ratings table	
					%	Full load
Voltage Adjustment		±2 ±1		%		
Minimum Load	0			A	No minimum load required	
Start Up Delay	58		130	ms	115VAC full load	
	60		138		230VAC full load	
Hold Up Time		8		ms	115VAC	
		30			230VAC	
Drift			±0.03	%	After 20 minutes warm up, 230VAC, 0°C to 50°C	
Line Regulation		±0.5		%	100-264VAC, full load	
Load Regulation			±1.0	%	0-100% load	LCW50US05
			±0.5			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 5ms recovery	
Overvoltage Protection			6.3	%	LCW50US05	Hiccup mode, auto recovery
			16.2		LCW50US12	
			21.75		LCW50US15	
			33.6		LCW50US24	
			49.0		LCW50US36	
			60.0		LCW50US48	
Overload Protection	110		200	%	Nominal output current, auto recovery	
Temperature Coefficient		±0.03	5	%/°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	1250			VAC	
Switching Frequency		65		kHz	
Power Density			9.14	W/cm <sup>3</sup>	
Mean Time Between Failure	300			khrs	MIL-HDBK-217F, Notice 2 25°C GB
Weight		190.0 (0.418)		g (lb)	
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
Storage Temperature	-40		+85	°C	
Cooling	Natural convection				
Humidity	5		90	%RH	Non-condensing
Operating Altitude			5000	m	
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	

## EMC: Immunity

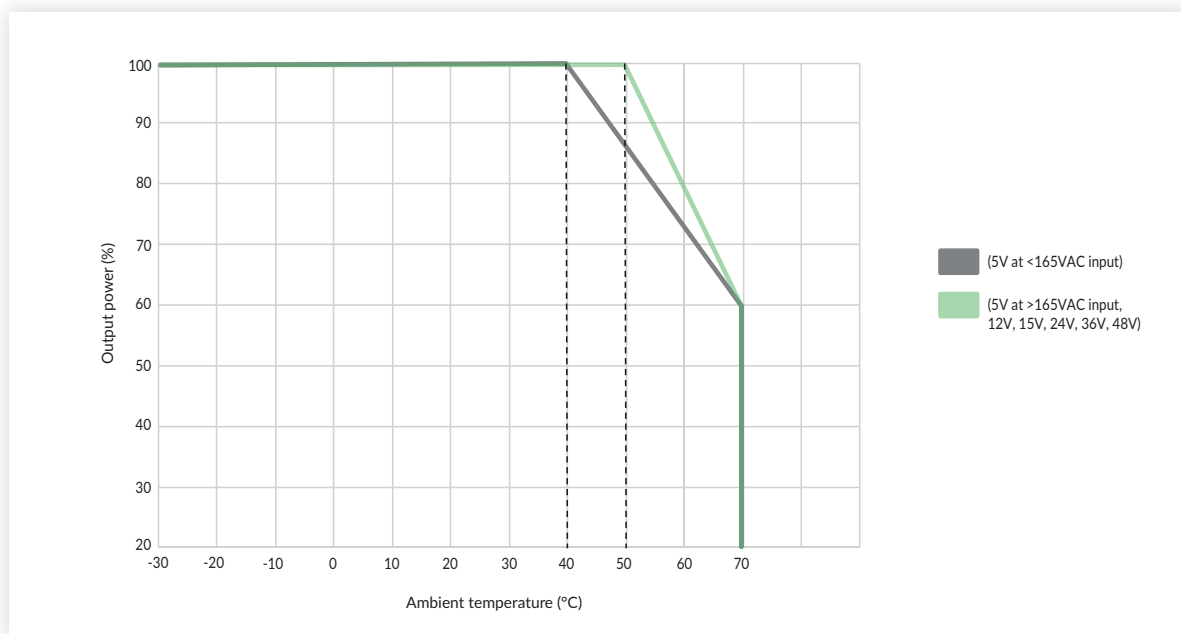
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	3	A	Contact ±6kV/Air ±8kV
Radiated Immunity	EN61000-4-3	3	A	10V/m
EFT	EN61000-4-4	3	A	±2kV
Surge	EN61000-4-5	Installation class 4	A	Line to line ±2kV, line to ground ±4kV
Conducted	EN61000-4-6	3	A	10Vrms
Dips	EN61000-4-11	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

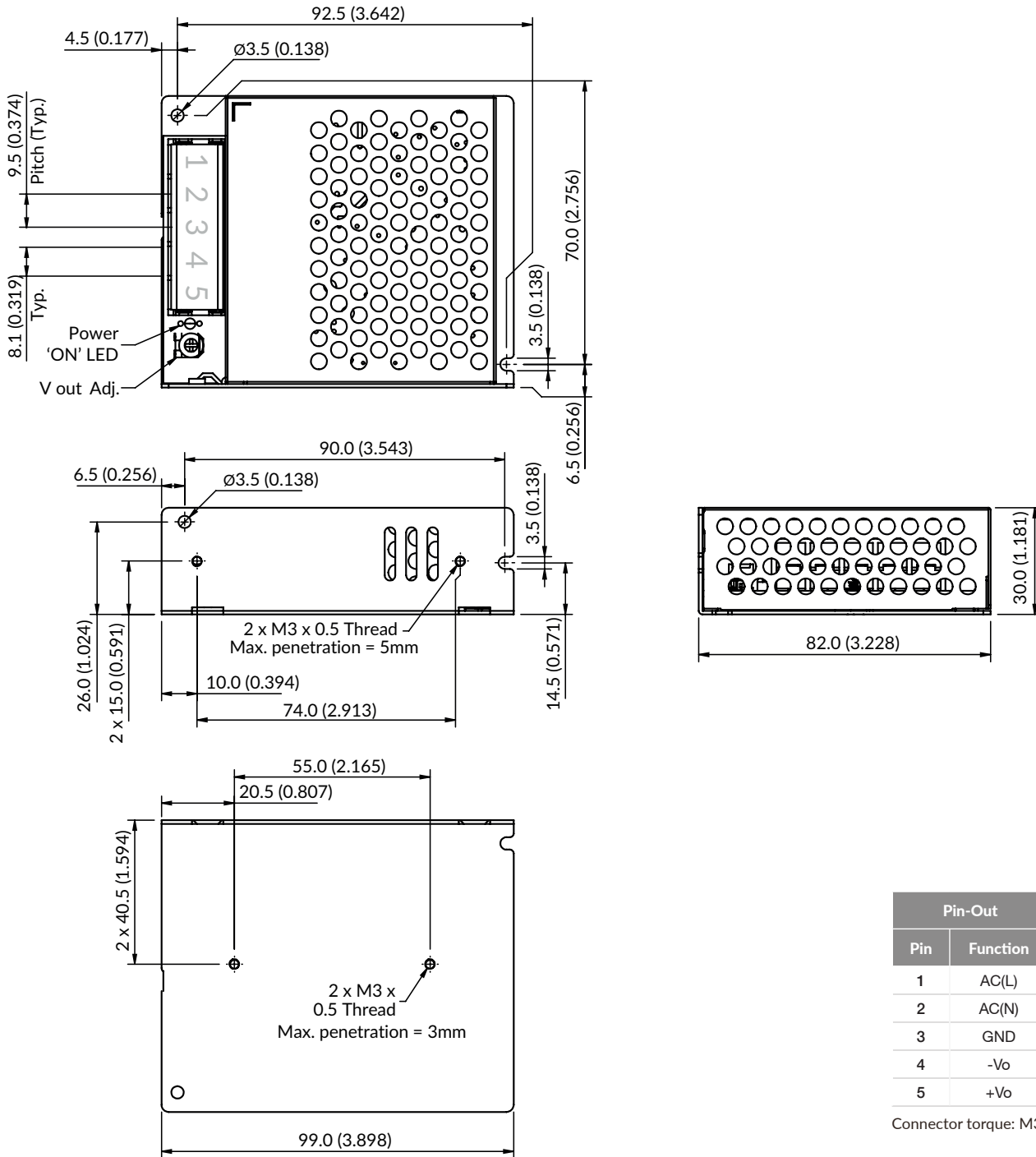
Certification	Standard	Notes & Conditions
UL	UL62368-1	Information Technology
EN	EN62368-1, EN60335, EN61558	Information Technology and Household
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

## Application Notes

### Temperature Derating



## Mechanical Details



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

Connector torque: M3.5, 0.4Nm

### Notes:

1. All dimensions are in mm (inches).
2. Tightening torque: M3.5, 0.4Nm fixings
3. General tolerances:  $\pm 1.00$  ( $\pm 0.039$ )
4. Chassis must be connected to protective earth.
5. Use 22-14 AWG wire range for connector