

## 25W 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 and technology 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

- 25W convection cooled
- Integrated connector cover
- ITE & industrial approvals
- Class B conducted & radiated emissions
- Input voltage range 85-305VAC
- Regulated single outputs from 3.3V to 48VDC
- Output voltage trim  $\pm 10\%$
- Efficiency to 88%
- Short circuit, overvoltage & overload protection
- Conformal coating option
- $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  operating temperature
- 3 year warranty

### Applications



Industrial Electronics



Instrumentation



Technology

### Dimensions

3.15" x 2.16" x 0.98" (80.0 x 55.0 x 25.0mm)

### 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>					
LCW25US03	3.3V	2.9 - 3.6V	6.0A	100mV	78%	5000 $\mu\text{F}$	20W
LCW25US05	5.0V	4.5 - 5.5V	5.0A	100mV	81%	4000 $\mu\text{F}$	25W
LCW25US12	12.0V	10.8 - 13.2V	2.1A	100mV	85%	3000 $\mu\text{F}$	25W
LCW25US15	15.0V	13.5 - 16.5V	1.7A	100mV	86%	2000 $\mu\text{F}$	25W
LCW25US24	24.0V	21.6 - 26.4V	1.1A	100mV	87%	1000 $\mu\text{F}$	25W
LCW25US48	48.0V	43.2 - 52.8V	0.57A	120mV	88%	500 $\mu\text{F}$	25W

#### 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.

## 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
	100		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
Input Frequency	47	50/60	63	Hz	
Input Current - Full Load			0.6	A	115VAC
			0.34		230VAC
No Load Input Power			0.5	W	
Inrush Current		20		A	115VAC cold start at 25°C ambient
		40			230VAC cold start at 25°C ambient
Earth Leakage Current			0.5	mA	277VAC/50Hz (Typ)
Input Protection	T2.0A/300VAC Internal fuse fitted in line				

## Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions	
Output Voltage	2.9		52.8	VDC	See Models & Ratings table	
Initial Set Accuracy		±3		%	Full load	LCW25US03
		±2				LCW25US05
		±1				All other models
Voltage Adjustment		±10		%		
Minimum Load	0			A	No minimum load required	
Start Up Delay	55		140	ms	115/230VAC full load	
Hold Up Time		8		ms	115VAC	
		60			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	LCW25US03/05
		±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			6.75	VDC	Hiccup mode, auto recovery	LCW15US03
			7.75			LCW15US05
			16.2			LCW15US12
			20.25			LCW15US15
			32.4			LCW15US24
			60.0			LCW15US48
Overload Protection	110		300	%	Nominal output current, auto recovery	
Temperature Coefficient		±0.03	5	%/°C		
Short Circuit Protection	Continuous, hiccup auto recovery					

## General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		86		%	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			3.72	W/in <sup>3</sup>	
Mean Time Between Failure	450			khrs	MIL-HDBK-217F, Notice 2 25°C GB
Weight		0.253 (115.0)		lb(g)	
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

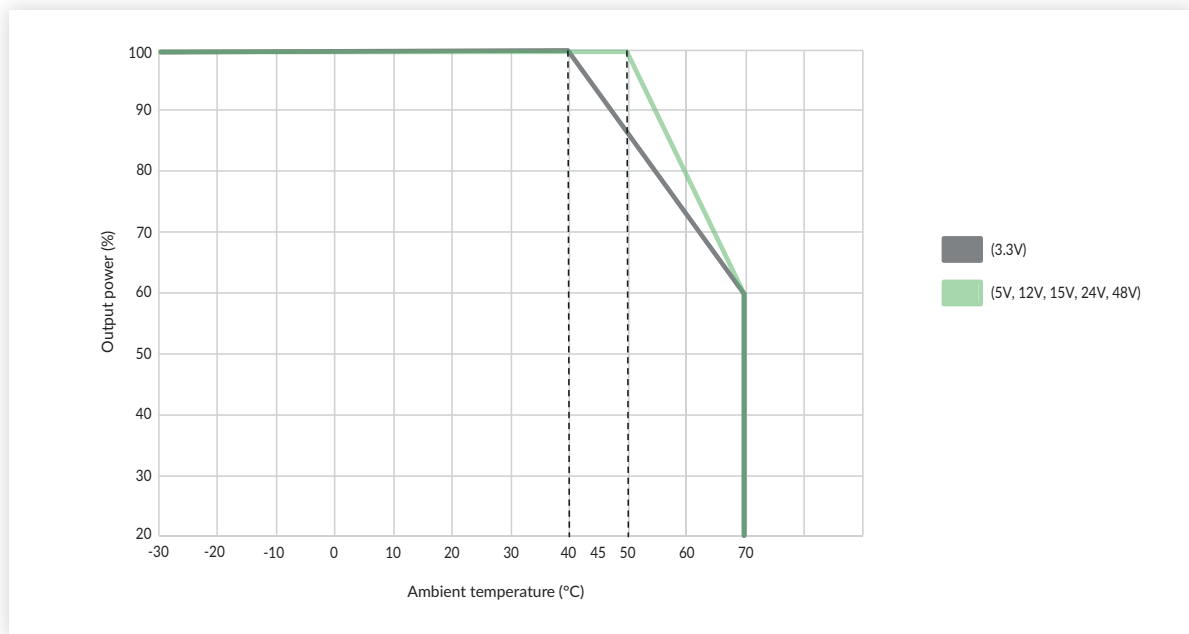
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	3	A	Contact ±6kV/Air ±8kV
Radiated Immunity	EN61000-4-3	3	A	10V/m
EFT	EN61000-4-4	3	A	±2kV
Surge	EN61000-4-5	Installation class 4	A	Line to line ±1kV, line to ground ±2kV
Conducted	EN61000-4-6	3	A	10Vrms
Dips	EN61000-4-11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

## 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	

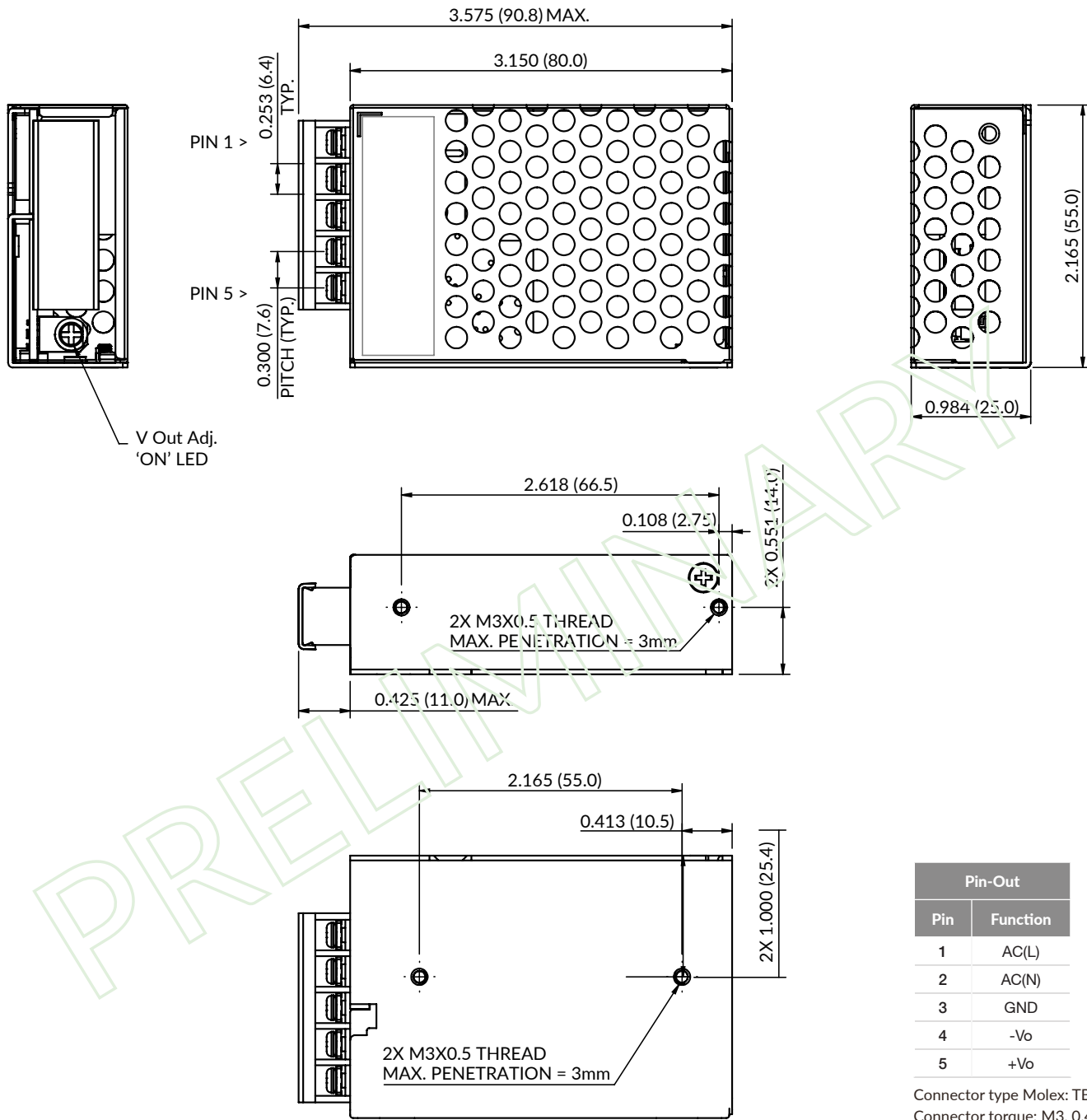
## Application Notes

### Temperature Derating



PRELIMINARY

## Mechanical Details



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

Connector type Molex: TBA  
Connector torque: M3, 0.4Nm

### Notes:

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