

## 35W 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

- 35W 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 24VDC
- 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



Household Appliances



Industrial Electronics



Instrumentation



Technology

### Dimensions

3.898" x 3.228" x 1.181" (99.0 x 82.0 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>					
LCW35US05	5.0V	4.5 - 5.5V	7.0A	80mV	86%	8000 $\mu\text{F}$	35W
LCW35US12	12.0V	10.8 - 13.2V	3.0A	120mV	88%	1500 $\mu\text{F}$	35W
LCW35US15	15.0V	13.5 - 16.5V	2.4A	120mV	86%	1000 $\mu\text{F}$	35W
LCW35US24	24.0V	21.6 - 26.4V	1.5A	150mV	87%	750 $\mu\text{F}$	35W

#### 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 and from 100% at 277VAC to 80% at 305VAC
	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 and from 100% at 390VDC to 80% at 430VDC
Input Frequency	47	50/60	63	Hz	
Input Current - Full Load			0.8	A	115VAC
			0.6		230VAC
No Load Input Power			0.3	W	
Inrush Current		30		A	115VAC cold start at 25°C ambient
		50			230VAC cold start at 25°C ambient
Earth Leakage Current			0.75	mA	277VAC/50Hz (Typ)
Input Protection	T2.0A/300VAC Internal fuse fitted in line				

## Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	4.5		26.4	VDC	See Models & Ratings table
Initial Set Accuracy		±2		%	Full load
		±1			LCW35US05 All other models
Voltage Adjustment		±10		%	
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
			±0.5		LCW35US05 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		LCW35US05
			16.2		LCW35US12
			21.7		LCW35US15
			33.6		LCW35US24
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		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	1250			VAC	
Switching Frequency		65		kHz	
Power Density			2.52	W/in <sup>3</sup>	
Mean Time Between Failure	300			khrs	MIL-HDBK-217F, Notice 2 25°C GB
Weight		0.374 (170)		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

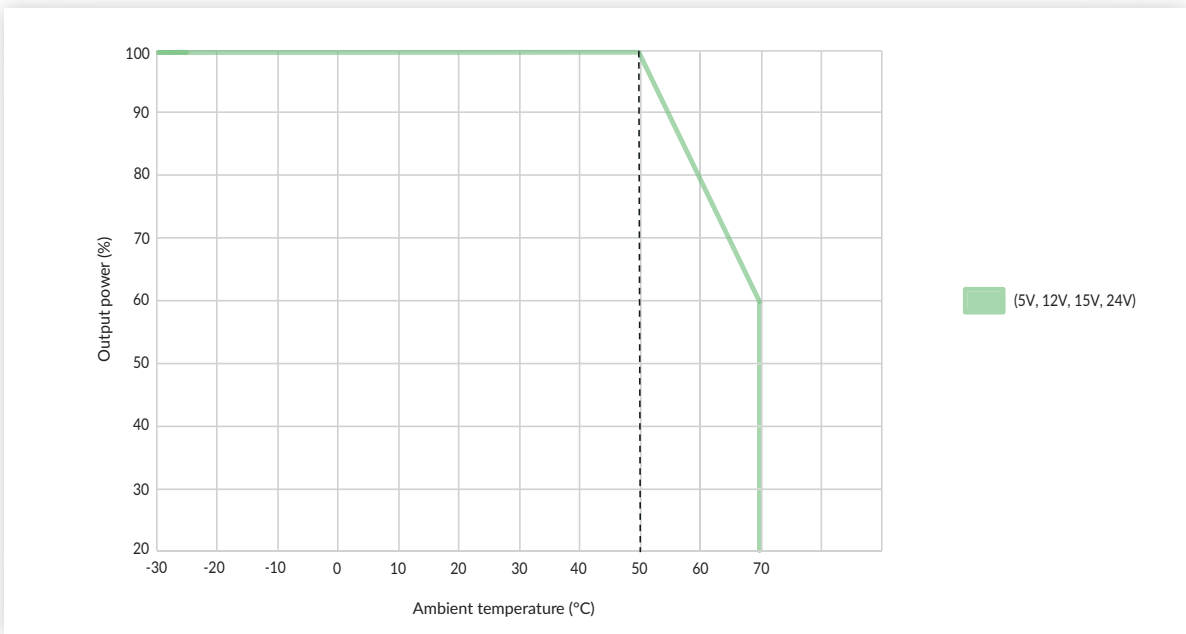
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	3	A	Contact ±6kV/Air ±8kV
Radiated Immunity	EN61000-4-3	3	A	10V/m
EFT	EN61000-4-4	3	A	±2kV
Surge	EN61000-4-5	Installation class 4	A	Line to line ±2kV, line to ground ±4kV
Conducted	EN61000-4-6	3	A	10Vrms
Dips	EN61000-4-11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

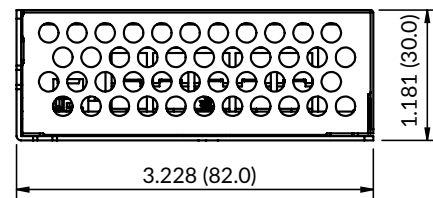
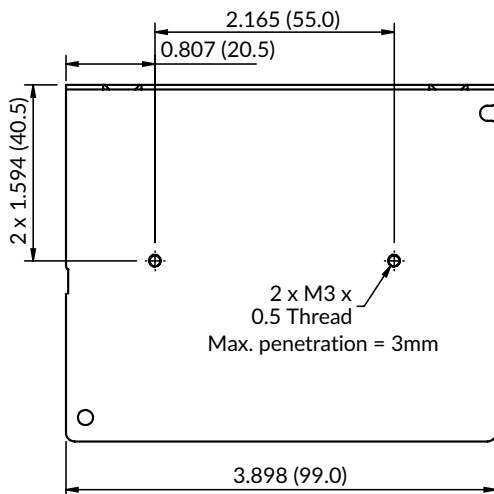
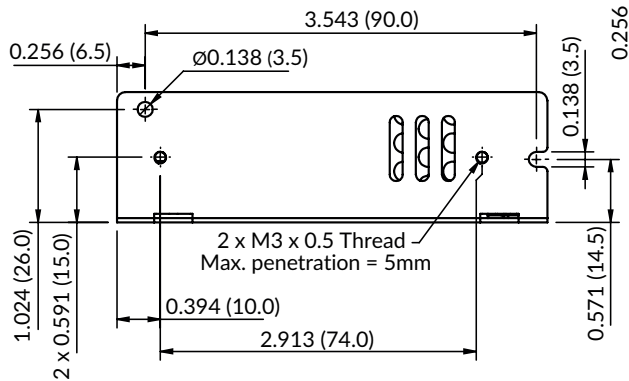
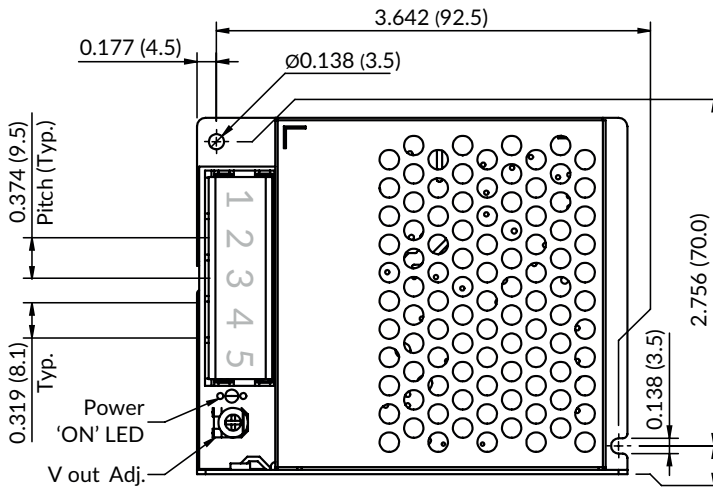
Certification	Standard	Notes & Conditions
UL	UL62368-1	Information Technology
EN	EN62368-1, EN60335, EN61558	Information Technology and Household
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

## 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, 0.8Nm

### Notes:

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