



# THE DATASHEET OF LCS150US12



## 150W CONVECTION COOLED

AC-DC POWER SUPPLIES

The LCS 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 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

- 150W convection cooled
- ITE, industrial and household approvals
- Integrated connector cover
- Class B conducted and radiated emissions
- Input voltage range 85 to 264VAC
- 300VAC withstand voltage for 5s
- Output voltages from 12V to 48VDC
- Output voltage trim  $\pm 10\%$
- Efficiency to 89%
- Short circuit, overvoltage and overload protection
- Conformal coating option
- $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  operating temperature
- 3 year warranty

### Applications



### Dimensions

6.26" x 3.82" x 1.18" (159.0 x 97.0 x 30.0 mm)

### 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>					
LCS150US12	12.0V	10.8 - 13.2V	12.5A	150mV	86%	10000 $\mu\text{F}$	150W
LCS150US15	15.0V	13.5 - 16.5V	10.0A	150mV	87%	6000 $\mu\text{F}$	150W
LCS150US24	24.0V	21.6 - 26.4V	6.5A	150mV	88%	2400 $\mu\text{F}$	155W
LCS150US36	36.0V	32.4 - 39.6V	4.3A	200mV	88%	1200 $\mu\text{F}$	155W
LCS150US48	48.0V	43.2 - 52.8V	3.3A	200mV	89%	600 $\mu\text{F}$	158W

#### 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	264	VAC	Derate output power linearly from 100% at 100VAC to 80% at 85VAC
	120		370	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	
Surge Withstand	300VAC for maximum 5s				
Input Current - Full Load			4.0	A	115VAC
			2.0		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	230VAC/50Hz
Input Protection	T6.3A/250VAC Internal fuse fitted in line				

## Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	10.8		52.8	VDC	See Models & Ratings table
Initial Set Accuracy		±1		%	Full load
Voltage Adjustment		±10		%	
Minimum Load	0			A	No minimum load required
Start Up Delay			200	ms	Full load
Hold Up Time		8		ms	115VAC
		16			230VAC
Line Regulation			±0.5	%	100-264VAC, full load
Load Regulation			±0.5	%	0-100% load
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			16.2	VDC	LCS150US12
			21.7		LCS150US15
			33.6		LCS150US24
			48.6		LCS150US36
			60.0		LCS150US48
Overload Protection	110		150	%	Nominal output current, auto recovery
Temperature Coefficient		±0.03		%/°C	
Short Circuit Protection	Continuous, hiccup with auto recovery				
Low Temperature Start-up Derating	At low input voltage and low temperature the output must be derated for correct start-up, please see Low Temperature Start-up Derating graph on page 5. Full load can be applied 2s after start-up				

## 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			5.5	W/in <sup>3</sup>	
Mean Time Between Failure	300			khrs	MIL-HDBK-217F, Notice 2 +25°C GB
Weight		410 (0.9)		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
Overtemperature Protection	Output disabled, auto recovery. Temperature measured internally				
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	
Harmonic Current	EN61000-3-2	Class A	Less than 50% load

## EMC: Immunity

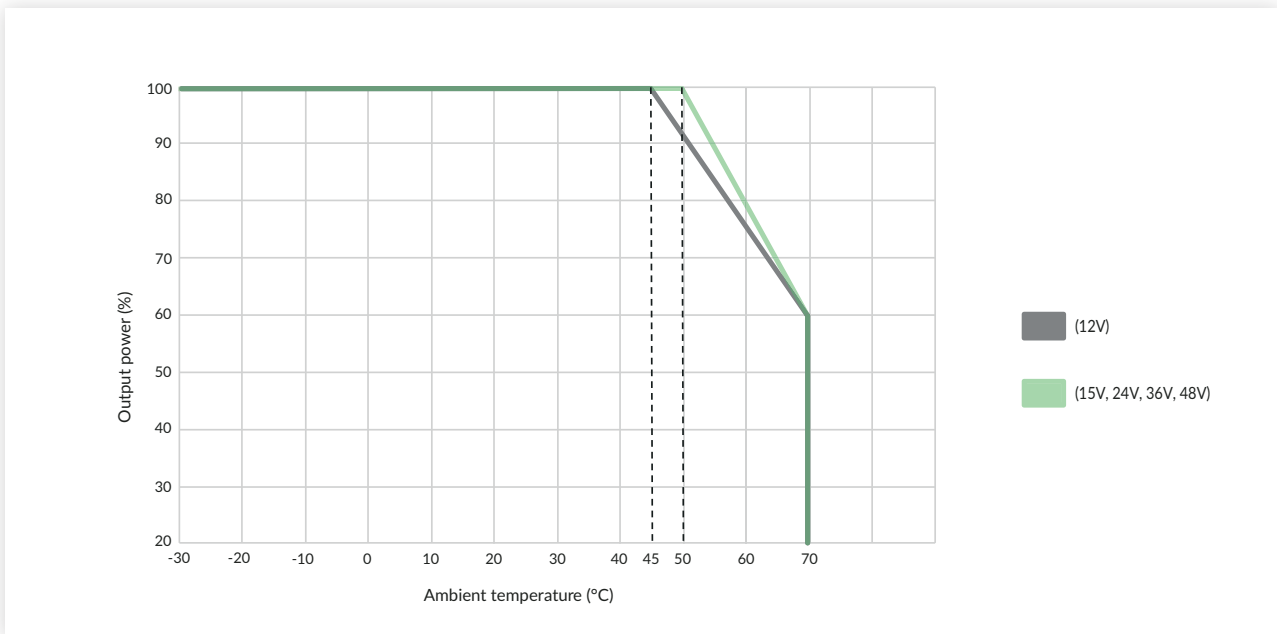
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	3	A	Contact $\pm 6\text{kV}$ / Air $\pm 8\text{kV}$
Radiated Immunity	EN61000-4-3	3	A	10V/m
EFT	EN61000-4-4	4	A	$\pm 4\text{kV}$
Surge	EN61000-4-5	Installation class 4	A	Line to line $\pm 2\text{kV}$ , line to ground $\pm 4\text{kV}$
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	
Interruptions		Int. 100% (0VAC), 5000ms	B	

## Safety Approvals

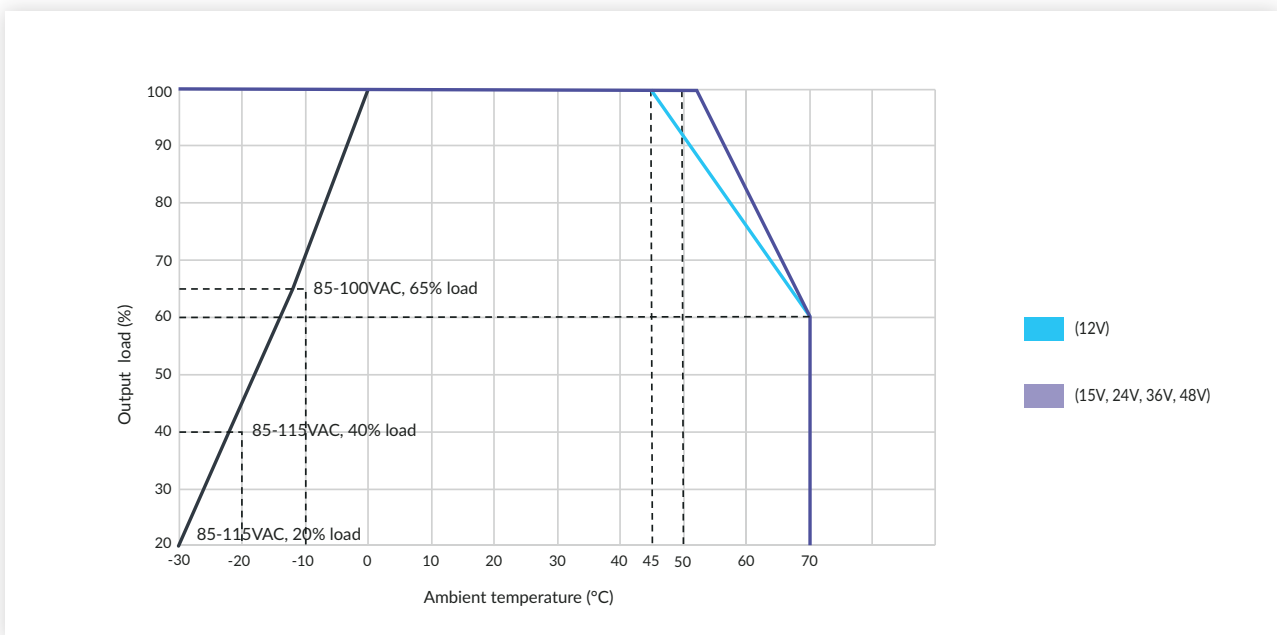
Certification	Standard	Notes & Conditions
UL	UL62368-1	Information Technology
EN	EN62368-1, EN60335, EN61558	Information Technology and Household
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Application Notes

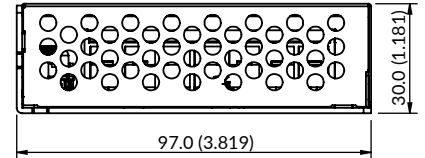
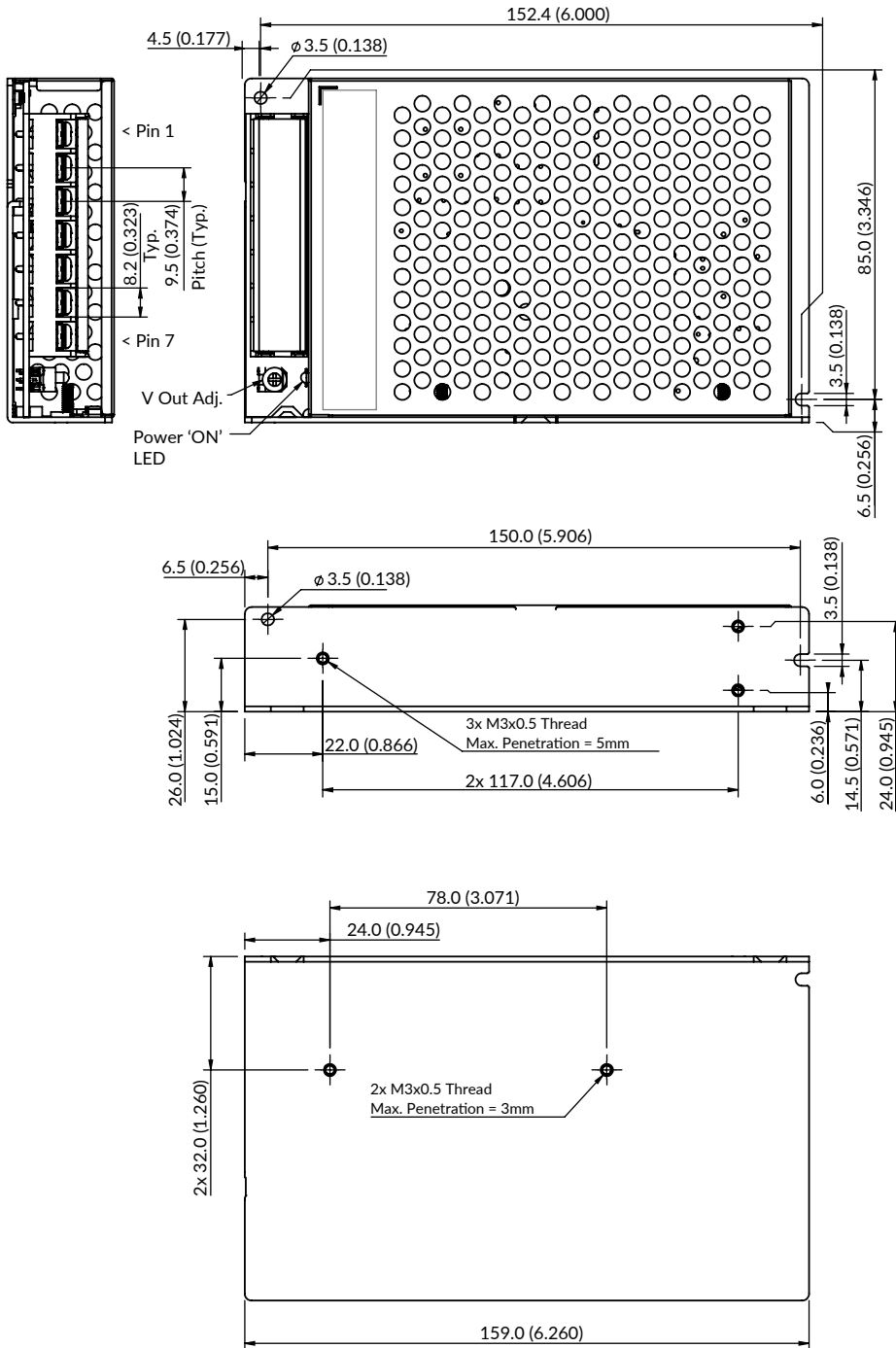
Temperature Derating



Low Temperature Start-up Derating



Mechanical Details



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

Connector torque:  
M4, 0.9Nm

Notes:

1. All dimensions are in mm (inches).
2. Tightening torque: M3, 0.4Nm fixings.
3. General tolerances:  $\pm 1.00$  ( $\pm 0.039$ ).
4. Chassis must be connected to protective earth.







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