LCS35 SERIES

AC/DC Power Supplies: 35 watts

HELIOS POWER SOLUTIONS

35W CONVECTION COOLED

The LCS 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 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

- 35W convection cooled
- ITE & industrial approvals
- Integrated connector cover
- Class B conducted & radiated emissions
- Input voltage range 85-264VAC
- 300VAC withstand voltage for 5s
- Output voltages from 5V to 24VDC
- Efficiency to 88%
- Short circuit, overvoltage & overload protection
- Overvoltage category III
- Conformal coating option
- -30°C to +70°C operating temperature
- 3 year warranty

Applications

Industrial Electronics

Technology

Dimensions

3.89" x 3.23" x 1.18" (99.0 x 82.0 x 30.0 mm)

Models & Ratings

Model Number[3]	Output Voltage		Output Current	Ripple & Noise pk to pk[1]	Efficiency[2]	Maximum Capacitive Load	Power
	Nominal	Adjustment Range[4]					
LCS35US05	5.0V	4.5 - 5.5V	7.0A	80mV	82%	8000µF	35W
LCS35US12	12.0V	10.2 - 13.8V	3.0A	120mV	86%	1500µF	36W
LCS35US15	15.0V	13.5 - 18.0V	2.4A	120mV	88%	1000µF	36W
LCS35US24	24.0V	21.6 - 28.8V	1.5A	180mV	88%	750µF	36W

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.

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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		373	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		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	230VAC/50Hz (Typ)
Input Protection	T2A / 250VAC Internal fuse fitted in line				
Overvoltage Category	Category III, designed to meet EN61558				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	5		24	VDC	See Models & Ratings table
Initial Set Accuracy		±2		%	Full load: LCS35US05
		±1			Full load: LCS35US12, LCS35US15, LCS35US24
Voltage Adjustment			±10	%	
Minimum Load	0			A	No minimum load required
Start Up Delay			300	ms	115/230VAC 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	%	0-100% load: LCS35US05
			±0.5		0-100% load: LCS35US12, LCS35US15, LCS35US24
Transient Response			10	%	Recovery within 1% in less than 3ms for a 50-75% and 75-50% load step
Ripple & Noise		80		mV pk-pk	LCS35US05: 20MHz bandwidth and 47µF electrolytic capacitor in parallel with 0.1µF ceramic capacitor
		120			LCS35US12
		120			LCS35US15
		180			LCS35US24
Over/Undershoot			10	%	Full load
Overvoltage Protection			6.3	VDC	LCS35US05: Auto recovery
			16.2		LCS35US12
			21.75		LCS35US15
			33.6		LCS35US24
Overload Protection	110		200	%	Nominal output current, auto recovery
Temperature Coefficient		±0.03		%/°C	
Short Circuit Protection			5	s	Trip and restart, auto recovery

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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			2.36	W/in^3	
Mean Time Between Failure	300			khrs	MIL-HDBK-217F, Notice 2 +25°C GB
Weight		0.396 (180)		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	
Harmonic Current	EN61000-3-2	Class A	

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 Dip. 100% (0VAC), 20ms Dip. 60% (88VAC), 200ms Dip. 30% (154VAC), 500ms Dip. 20% (176VAC), 5000ms	A	
Interrupt		Int. 100% (0VAC), 5000ms	B	

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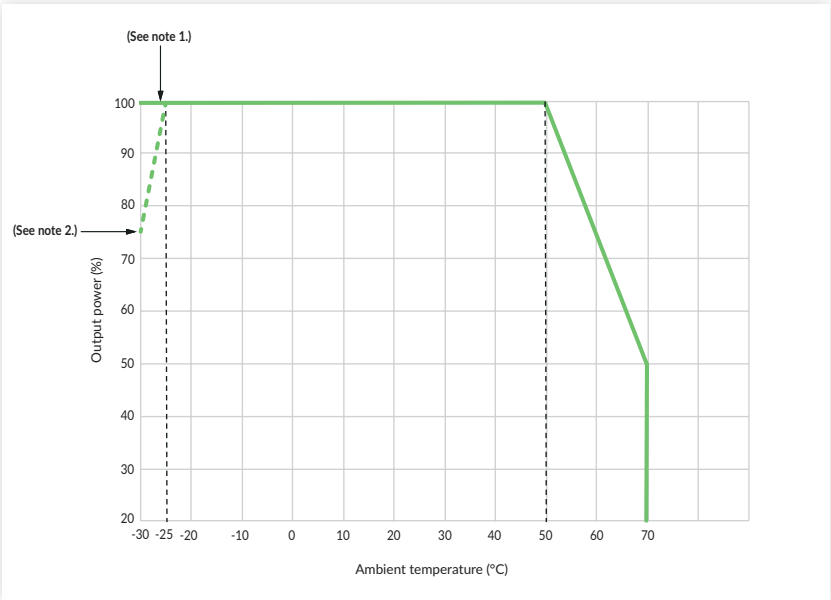
Safety Approvals

Safety Agency	Standard	Notes & Conditions
UL	UL62368-1	Information Technology
TUV	EN62368-1	Information Technology
CE	LVD	

Application Notes

Temperature Derating



Notes:

1. With 230VAC or 140VDC input no derating below -25°C
2. With input at 100VAC or 120VDC derate output power to 75%

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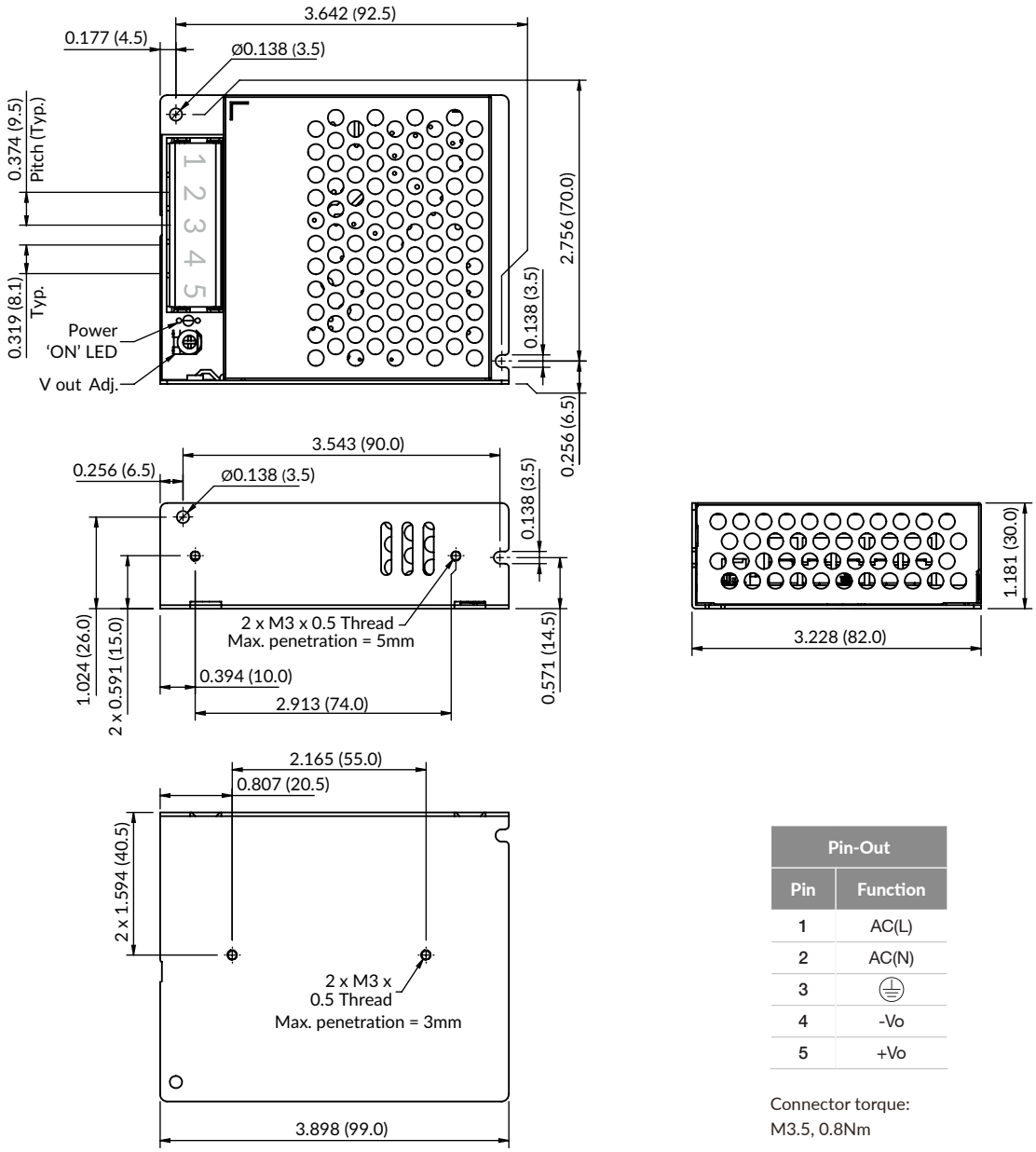
Mechanical Details



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

Connector torque:
M3.5, 0.8Nm

Notes:

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