

35W CONVECTION COOLED

AC-DC POWER SUPPLIES

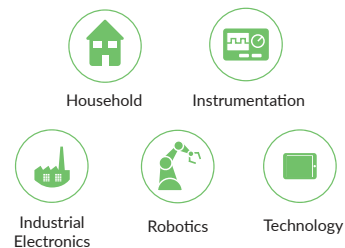
The LCS series of regulated output convection cooled AC-DC power supplies are designed to provide a cost effective solution for industrial electronics, technology and household applications. Features include output voltage adjustment, a power 'ON' LED, low stand-by power consumption, output short circuit 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

- 35W convection cooled
- ITE, industrial and household 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
- Conformal coating option
- -30°C to +70°C operating temperature
- 3 year warranty

Applications



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.

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 | | | | |

Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|--------------------------|---------|---------|---------|----------|-----------------------------------------------------------------------|
| Output Voltage | 5 | | 24 | VDC | See Models & Ratings table |
| Initial Set Accuracy | | ±2 | | % | Full load LCS35US05 LCS35US12, LCS35US15, LCS35US24 |
| | | ±1 | | | |
| 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 LCS35US12, LCS35US15, LCS35US24 |
| | | | ±0.5 | | |
| Transient Response | | | 10 | % | Recovery within 1% in less than 3ms for a 50-75% and 75-50% load step |
| Ripple & Noise | | | | mV pk-pk | See Models and Ratings table |
| Over/Undershoot | | | 10 | % | Full load |
| Overvoltage Protection | | | 6.3 | VDC | Auto recovery |
| | | | 16.2 | | |
| | | | 21.75 | | |
| | | | 33.6 | | |
| Overload Protection | 110 | | 200 | % | Nominal output current, auto recovery |
| Temperature Coefficient | | ±0.03 | | %/°C | |
| Short Circuit Protection | | | 5 | s | Trip and restart, 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 | | | 2.36 | 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

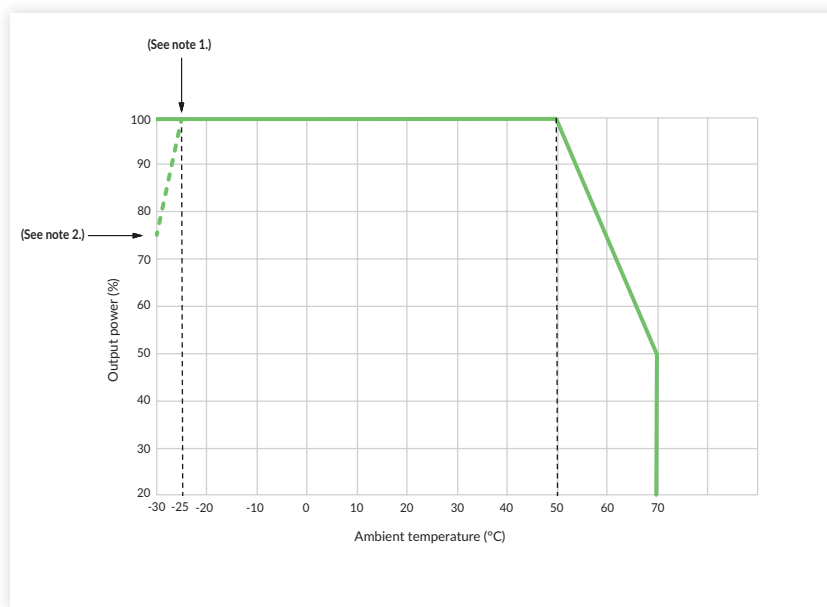
| Phenomenon | Standard | Test Level | Criteria | Notes & Conditions |
|-------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------|
| ESD 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 | |

Safety Approvals

| Safety Agency | Standard | Notes & Conditions |
|---------------|----------------------------------|--------------------------------------|
| UL | UL62368-1 | Information Technology |
| TUV | EN62368-1, EN60335, EN61558 | Information Technology and Household |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

Application Notes

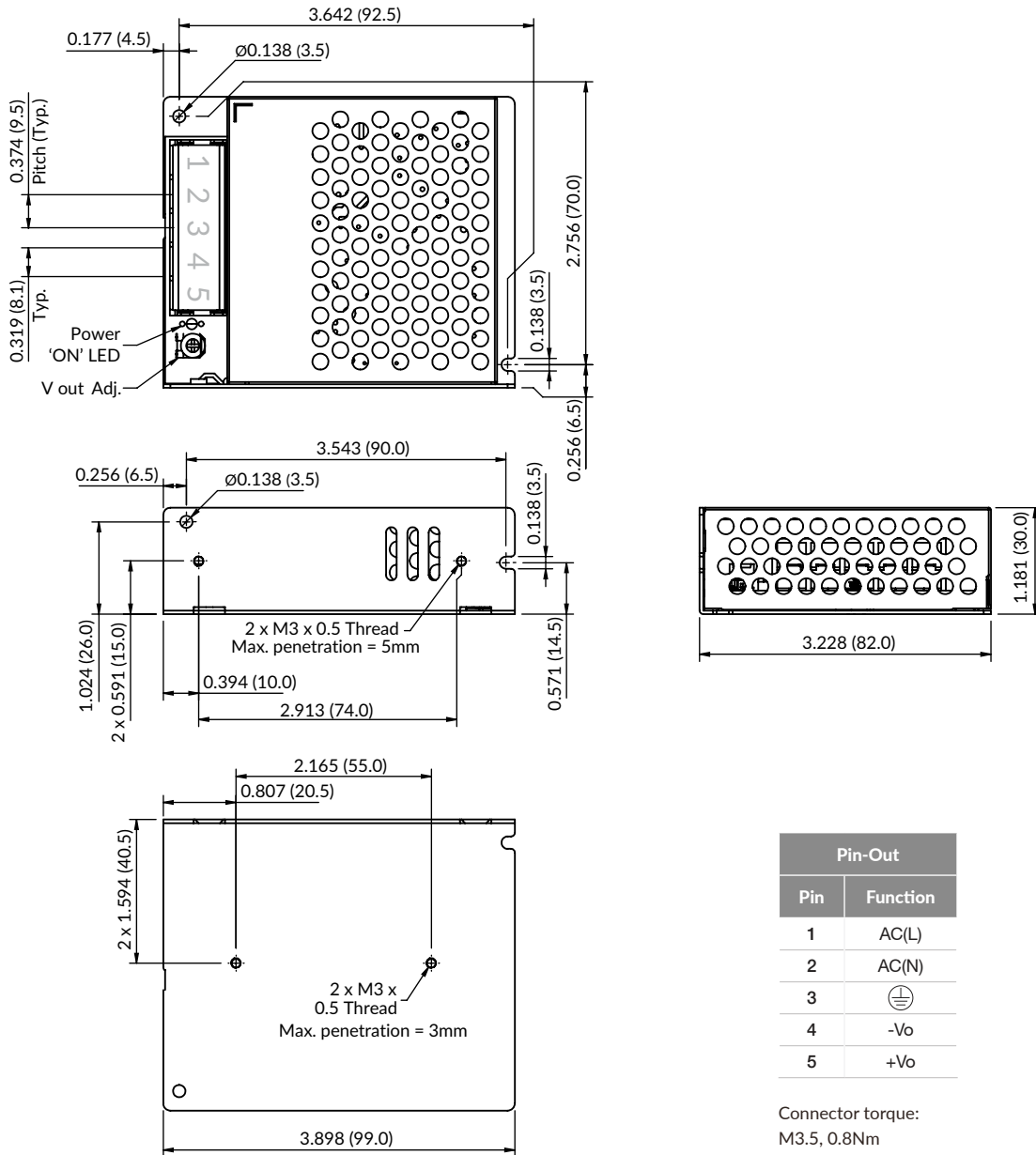
Temperature Derating



Notes:

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

Mechanical Details



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.