

# LCW200 Series

## 200W CONVECTION COOLED

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, active PFC, 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

- 200W convection cooled
- Active PFC
- Integrated connector cover
- ITE & industrial approvals
- Class B conducted & radiated emissions
- Input voltage range 85-305VAC
- Regulated single outputs from 5.0V to 48VDC
- Output voltage trim
- Efficiency to 90%
- Short circuit, overvoltage & overload protection
- Conformal coating option
- -30°C to +70°C operating temperature
- 3 year warranty

### Models & Ratings

| Model Number <sup>(3)</sup> | Output Voltage |                                 | Output Current | Ripple & Noise<br>pk to pk <sup>(1)</sup> | Efficiency <sup>(2)</sup> | Maximum<br>Capacitive Load | Power |
|-----------------------------|----------------|---------------------------------|----------------|-------------------------------------------|---------------------------|----------------------------|-------|
|                             | Nominal        | Adjustment Range <sup>(4)</sup> |                |                                           |                           |                            |       |
| LCW200PS05                  | 5.0V           | 4.5 - 5.5V                      | 40.0A          | 150mV                                     | 85%                       | 3000µF                     | 200W  |
| LCW200PS12                  | 12.0V          | 11.4 - 12.6V                    | 16.7A          | 150mV                                     | 88%                       | 4000µF                     | 200W  |
| LCW200PS15                  | 15.0V          | 14.3 - 15.7V                    | 13.4A          | 150mV                                     | 88%                       | 3300µF                     | 200W  |
| LCW200PS24                  | 24.0V          | 22.8 - 25.2V                    | 8.4A           | 150mV                                     | 90%                       | 1500µF                     | 200W  |
| LCW200PS48                  | 48.0V          | 45.6 - 50.4V                    | 4.2A           | 240mV                                     | 89%                       | 470µF                      | 200W  |

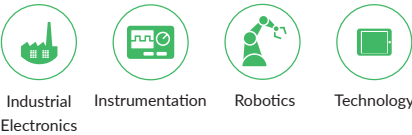
#### Notes:

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.

### AC-DC POWER SUPPLIES



### Applications



### Dimensions

LCW200PS05: 215.0 x 115.0 x 30.0mm (8.46" x 4.53" x 1.18")  
All other models: 179.0 x 99.0 x 30.0mm (7.05" x 3.89" x 1.18")

## 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. LCW200PS05 derate output power linearly from 100% at 115VAC to 60% at 85VAC                                                                                                                                          |
|                           | 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. LCW200PS05 derate output power linearly from 100% at 160VDC to 50% at 120VDC |
| Input Frequency           | 47                                        | 50/60   | 63      | Hz    |                                                                                                                                                                                                                                                                                        |
| Power Factor              |                                           | 0.98    |         |       | 115VAC at full load                                                                                                                                                                                                                                                                    |
|                           |                                           | 0.95    |         |       | 230VAC at full load                                                                                                                                                                                                                                                                    |
| Input Current - Full Load |                                           | 2.5     | 3.0     | A     | 115VAC                                                                                                                                                                                                                                                                                 |
|                           |                                           | 1.3     | 2.0     |       | 230VAC                                                                                                                                                                                                                                                                                 |
| No Load Input Power       |                                           |         | 0.5     | W     |                                                                                                                                                                                                                                                                                        |
| Inrush Current            |                                           | 35      |         | A     | 115VAC cold start at 25°C ambient                                                                                                                                                                                                                                                      |
|                           |                                           | 65      |         |       | 230VAC cold start at 25°C ambient                                                                                                                                                                                                                                                      |
| Earth Leakage Current     |                                           |         | 2.0     | mA    | 277VAC/50Hz                                                                                                                                                                                                                                                                            |
| Input Protection          | T6.3A/300VAC Internal fuse fitted in line |         |         |       |                                                                                                                                                                                                                                                                                        |

## Output

| Characteristic           | Minimum                               | Typical | Maximum | Units    | Notes & Conditions                                                    |
|--------------------------|---------------------------------------|---------|---------|----------|-----------------------------------------------------------------------|
| Output Voltage           | 4.5                                   |         | 50.4    | VDC      | See Models & Ratings table                                            |
| Initial Set Accuracy     |                                       | ±2      |         | %        | LCW200PS05, full load                                                 |
|                          |                                       | ±1      |         |          | All other models, full load                                           |
| Voltage Adjustment       |                                       |         | ±10     | %        | LCW200PS05 max value                                                  |
|                          |                                       |         | ±5      |          | All other models                                                      |
| Minimum Load             | 0                                     |         |         | A        | No minimum load required                                              |
| Start Up Delay           | 250                                   |         | 400     | ms       | 115/230VAC full load                                                  |
| Hold Up Time             |                                       | 8       |         | ms       | LCW200PS05                                                            |
|                          |                                       | 12      |         |          | All other models                                                      |
| Line Regulation          |                                       |         | ±0.5    | %        | 100-264VAC, full load                                                 |
| Load Regulation          |                                       |         | ±1      | %        | LCW200PS05                                                            |
|                          |                                       |         | ±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   |                                       |         | 7.0     | VDC      | LCW200PS05                                                            |
|                          |                                       |         | 16.2    |          | LCW200PS12                                                            |
|                          |                                       |         | 21.8    |          | LCW200PS15                                                            |
|                          |                                       |         | 32.4    |          | LCW200PS24                                                            |
|                          |                                       |         | 60.0    |          | LCW200PS48                                                            |
| Overload Protection      | 105                                   |         | 150     | %        | LCW200PS05                                                            |
|                          | 105                                   |         | 200     |          | All other models                                                      |
| Temperature Coefficient  |                                       | ±0.03   |         | %/°C     |                                                                       |
| Short Circuit Protection | Continuous, hiccup with auto recovery |         |         |          |                                                                       |

## 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, 60s test with leakage current <10mA |
| Input to Ground            | 2000                                                                                                                   |              |         | VAC    |                                                           |
| Output to Ground           | 500                                                                                                                    |              |         | VAC    |                                                           |
| Switching Frequency        |                                                                                                                        | 65           |         | kHz    |                                                           |
| Power Density              |                                                                                                                        |              | 11.22   | W/cm³  | LCW200PS05                                                |
|                            |                                                                                                                        |              | 15.64   |        | All other models                                          |
| Mean Time Between Failure  | 250                                                                                                                    |              |         | khrs   | MIL-HDBK-217F, 25°C GB                                    |
| Weight                     |                                                                                                                        | 750 (1.65)   |         | g (lb) | LCW200PS05                                                |
|                            |                                                                                                                        | 475.0 (1.04) |         |        | All other models                                          |
| 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 | Hiccup mode with auto recovery, temperature measured internally                 |         |         |       |                                                   |
| Storage Temperature        | -40                                                                             |         | +85     | °C    |                                                   |
| Cooling                    | Natural convection                                                              |         |         |       |                                                   |
| Humidity                   | 5                                                                               |         | 90      | %RH   | Non-condensing                                    |
| Operating Altitude         |                                                                                 |         | 5000    | m     | Derate output linearly from 2000m to 85% at 5000m |
| Shock and Vibration        | Tested according to EN60068-2-27, 10 - 500Hz, 5g (1H) for each X, Y and Z plane |         |         |       |                                                   |
| Overtemperature Protection | Hiccup mode, auto recovery                                                      |         |         |       |                                                   |

## EMC: Emissions

| Phenomenon       | Standard    | Test Level | Notes & Conditions |
|------------------|-------------|------------|--------------------|
| Conducted        | EN55032     | Class B    |                    |
| Radiated         | EN55032     | Class B    |                    |
| Harmonic Current | EN61000-3-2 | Class A    |                    |
| Voltage Flicker  | EN61000-3-3 |            |                    |

## EMC: Immunity

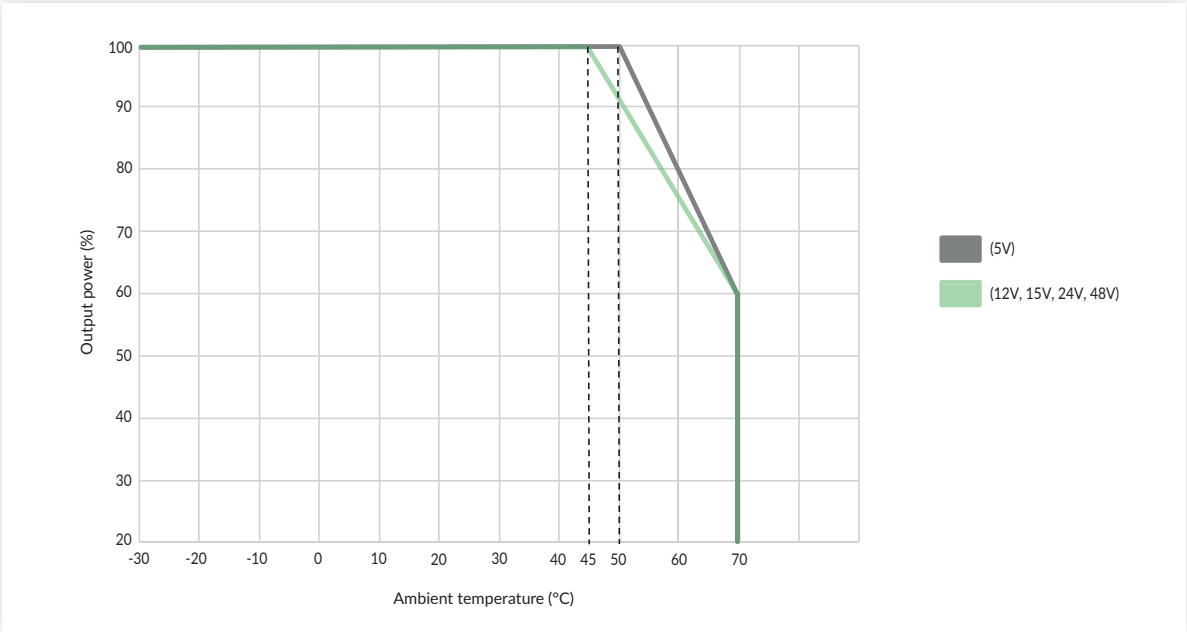
| Phenomenon        | Standard     | Test Level                | Criteria | Notes & Conditions                             |                                                                 |
|-------------------|--------------|---------------------------|----------|------------------------------------------------|-----------------------------------------------------------------|
| 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  | 3                         | A        | LCW200PS05                                     | $\pm 2\text{kV}$                                                |
|                   |              | 4                         |          | All other models                               | $\pm 4\text{kV}$                                                |
| Surge             | EN61000-4-5  | Installation class 3      | A        | LCW200PS05                                     | Line to line $\pm 1\text{kV}$ , line to ground $\pm 2\text{kV}$ |
|                   |              | Installation class 4      |          | All other models                               | 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    | 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                        | Information Technology |
| CE            | Meets all applicable directives  |                        |
| UKCA          | Meets all applicable legislation |                        |

Application Notes

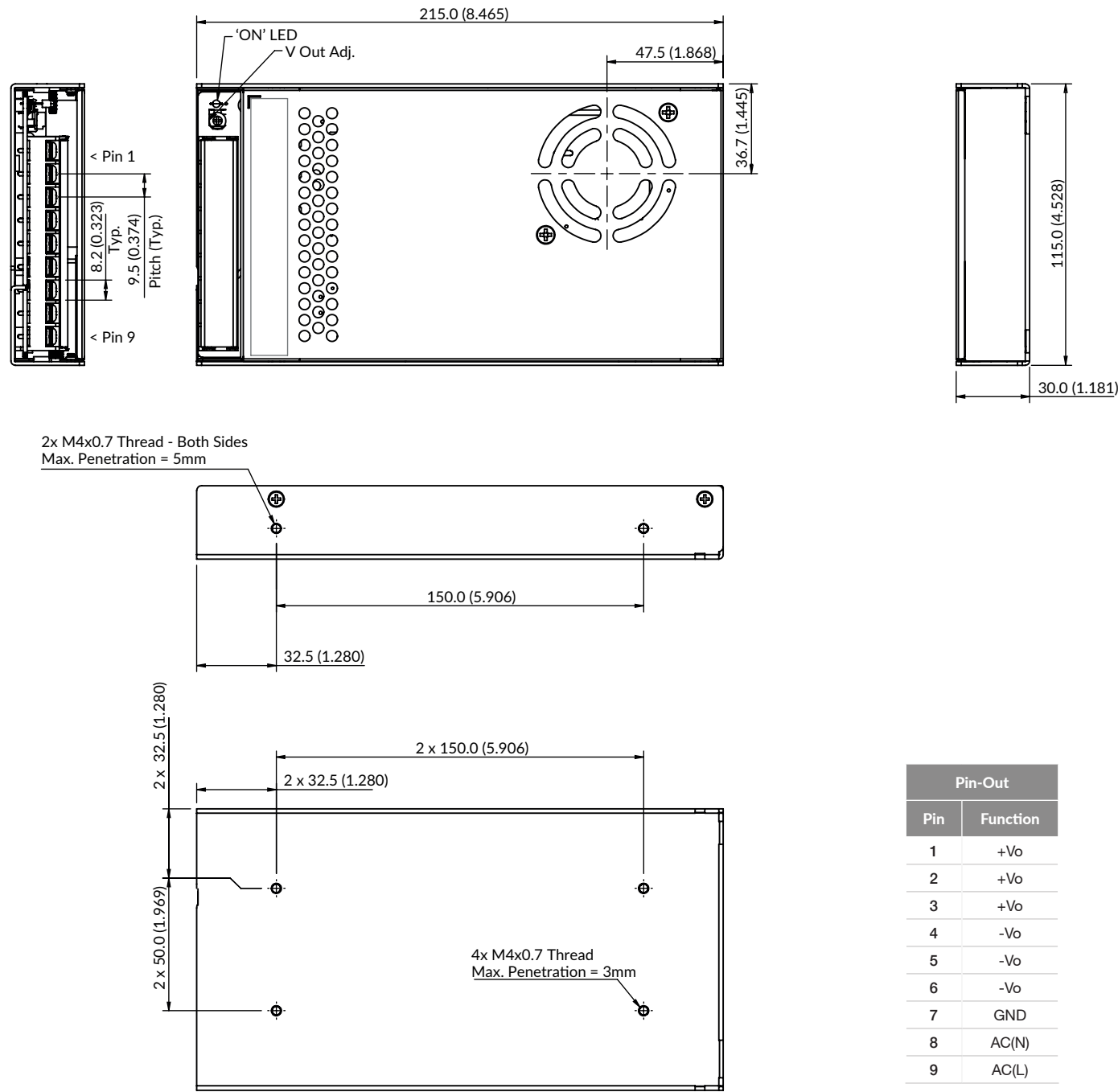
Temperature Derating



# LCW200 Series

## Mechanical Details

LCW200PS05



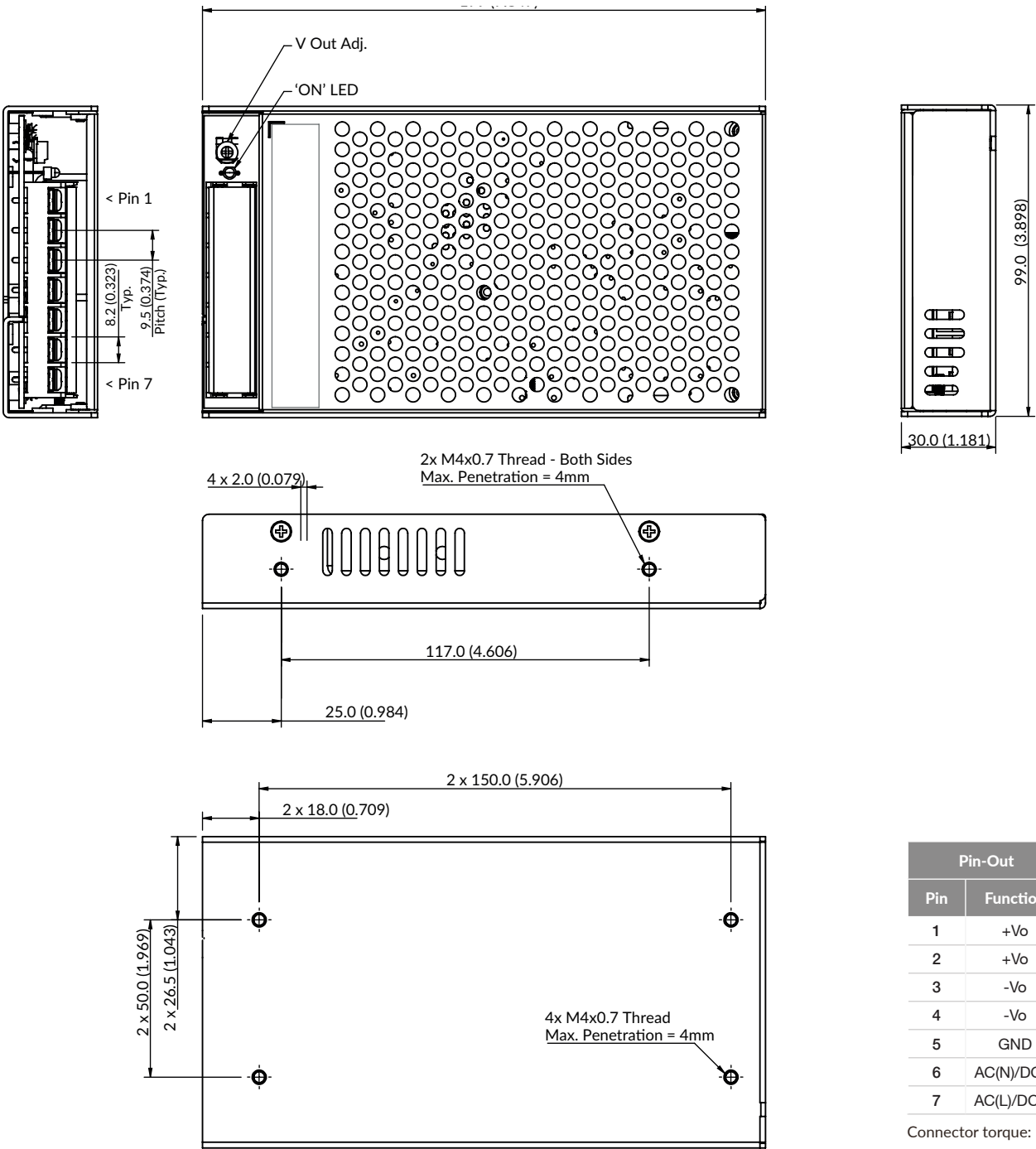
Connector torque: M3.5, 0.8Nm

- Notes:**
1. All dimensions are in mm (inches).
  2. Tightening torque: M4 fixings, 0.9Nm. M3.5 connectors, 0.8Nm.
  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.

# LCW200 Series

## Mechanical Details

All other models



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

Connector torque: M3.5, 0.8Nm

- Notes:
1. All dimensions are in mm (inches).
  2. Tightening torque: M4 fixings, 0.9Nm. M3.5 connectors, 0.8Nm.
  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.