

5W

AC-DC power supplies

The ECL05 series is a range of single output AC-DC power supplies that delivers 5W of power and offers output voltages ranging from 3.3V to 48V. The ECL05 series can be supplied as PCB mount open frame (suffix -P), PCB mount encapsulated device (suffix -E), or as open frame chassis mount (suffix -T) requiring JST PHR-2 & PHR-3 mating connectors & crimps. The ECL05 has IEC Class II construction and a no-load input power less than 0.3W.

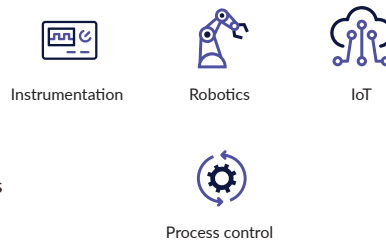
The ECL05 series, with worldwide ITE safety approvals, Class B conducted and radiated emissions, IEC Class II insulation, and 3kVAC isolation, is ideal for a wide range of industrial and analytical instrumentation applications including test and measurement, process control, factory automation, communications and other ITE applications.



Features

- ▶ Single voltage outputs from 3.3V to 48VDC
- ▶ Universal input range 85-264VAC
- ▶ 3kVAC input to output isolation
- ▶ <0.3W no load input power
- ▶ EN55032 Class B conducted and radiated emissions
- ▶ IEC62368-1 ITE safety agency approvals
- ▶ IEC Class II insulation rating
- ▶ Overvoltage, overload, and short circuit protection
- ▶ -20°C to +70°C operating temperature
- ▶ 3 year warranty

Applications



Dimensions

ECL05-P

49.5 x 25.4 x 26.8mm (1.95" x 1.00" x 1.05")

ECL05-E

52.3 x 21.2 x 33.0mm (2.06" x 1.07" x 1.30")

ECL05-T

65.0 x 25.4 x 21.6mm (2.56" x 1.00" x 0.85")

More resources

Click the link or scan the code

→ xppower.com



Models & ratings

| Model number ⁽²⁾ | Output voltage | Output current | | Efficiency | Output power |
|-----------------------------|----------------|----------------|---------------------|------------|--------------|
| | | Nominal | Peak ⁽¹⁾ | | |
| ECL05US03 | 3.3VDC | 1.30A | 1.69A | 72% | 4.3W |
| ECL05US05 | 5.0VDC | 1.00A | 1.30A | 75% | 5.0W |
| ECL05US09 | 9.0VDC | 0.55A | 0.71A | 78% | 5.0W |
| ECL05US12 | 12.0VDC | 0.41A | 0.54A | 78% | 5.0W |
| ECL05US15 | 15.0VDC | 0.33A | 0.44A | 80% | 5.0W |
| ECL05US24 | 24.0VDC | 0.21A | 0.27A | 82% | 5.0W |
| ECL05US48 | 48.0VDC | 0.10A | 0.13A | 82% | 5.0W |

Notes:

1. Peak load lasting <30s with a maximum duty cycle of 10%, average output power not to exceed nominal.
2. Add suffix to model number to define type: add '-P' for PCB mount, add '-T' for chassis mount, add '-E' for encapsulated.

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|-----------------------|--------------------------------|---------|---------|-------|-------------------------------|
| Input voltage range | 85 | | 264 | VAC | |
| | 120 | | 370 | VDC | |
| Input frequency | 47 | | 63 | Hz | |
| Input current | | 0.1 | | A rms | At 230VAC |
| No load input power | | | 0.3 | W | |
| Inrush current | | | 20 | A | At 115VAC, cold start at 25°C |
| | | | 40 | A | At 230VAC, cold start at 25°C |
| Earth leakage current | Class II construction no earth | | | | |
| Input protection | Internal T1A/250 VAC fuse | | | | |
| Power factor | EN61000-3-2 Class A | | | | |

Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|--------------------------|------------------------------|---------|---------|----------|--|
| Output voltage | 3.3 | | 48 | VDC | |
| Output voltage trim | | ±5% | | | |
| Initial set accuracy | | | ±1 | % | |
| Minimum load | 0 | | | A | No minimum load required for single output versions |
| Line regulation | | | ±0.5 | % | |
| Load regulation | | | ±1 | | |
| Start up delay | | | 3 | s | |
| Start up rise time | | | 14 | ms | |
| Hold up time | | 16 | | ms | At full load and 115VAC |
| Transient response | | | 4 | % | Deviation, recovery within 1% in less than 500µs for a 25% load change |
| Ripple & noise | | | 50 | mV pk-pk | 3.3-5V versions |
| | | | 120 | | 12-15V versions |
| | | | 200 | | 24-48V versions |
| Overvoltage protection | 115 | | 140 | % Vnom | |
| | 195 | | 216 | | 3.3V |
| Overload protection | 120 | | 150 | % | |
| Short circuit protection | Trip & restart (hiccup mode) | | | | |
| Temperature coefficient | | | 0.05 | %/°C | |

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|----------------------------|---------|------------|---------|-------------------|-------------------------|
| Efficiency | 72 | | 82 | % | See models & ratings |
| Isolation: input to output | 3000 | | | VAC | |
| Switching frequency | | 70 | | kHz | |
| Power density | | | 5.7 | W/cm ³ | PCB mount version |
| Mean time between failure | >450 | | | khrs | MIL-HDBK-217F, +25°C GB |
| Weight | | 0.057 (26) | | lb (g) | ECL05-P |
| | | 0.057 (26) | | | ECL05-T |
| | | 0.130 (60) | | | ECL05-E |

Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|-----------------------|--|---------|-------------|--------|--|
| Operating temperature | -20 | | +70 | °C | Derate linearly from 100% at +50°C to 50% at +70°C |
| Storage temperature | -40 | | +85 | °C | |
| Cooling | Convection-cooled | | | | |
| Humidity | | | 95 | %RH | Non-condensing |
| Operating altitude | | | 3000 (9842) | m (ft) | |
| Vibration | 2g, 10Hz to 500Hz, 10 mins/cycle, 60 mins each cycle | | | | |

Emissions - EMC

| 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 | | |

Emissions - Immunity

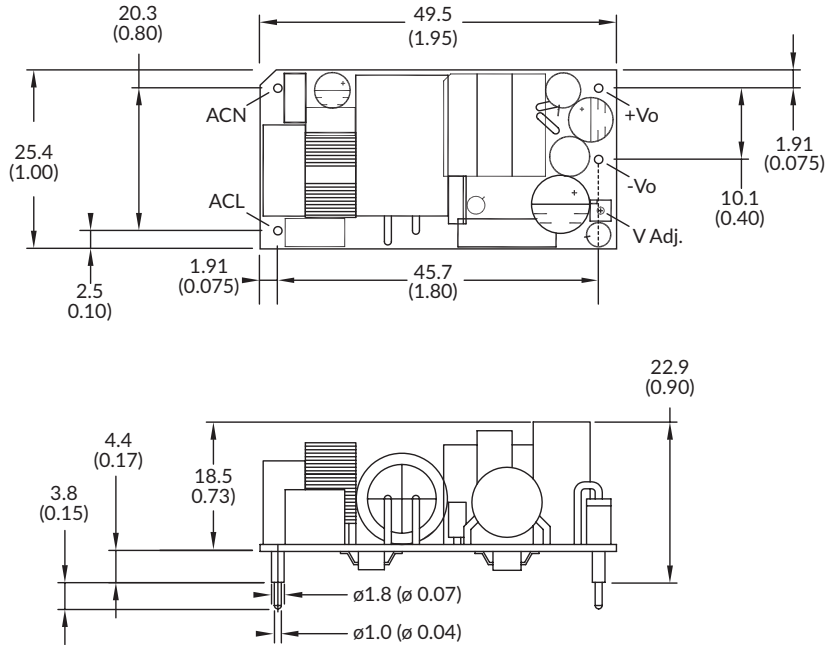
| Phenomenon | Standard | Test level | Criteria | Notes & conditions |
|------------------------|--------------|-----------------|----------|--------------------|
| ESD immunity | EN61000-4-2 | 3 | A | |
| Radiated immunity | EN61000-4-3 | 10 V/m, 80% | A | |
| EFT/burst | EN61000-4-4 | 3 | A | |
| Surge | EN61000-4-5 | 3 | A | |
| Conducted | EN61000-4-6 | 10Vrms | A | |
| Magnetic fields | EN61000-4-8 | 10A/m | A | |
| Dips and interruptions | EN61000-4-11 | 30% for 10ms | A | |
| | | 60% for 100ms | B | |
| | | 100% for 5000ms | B | |

Safety approvals

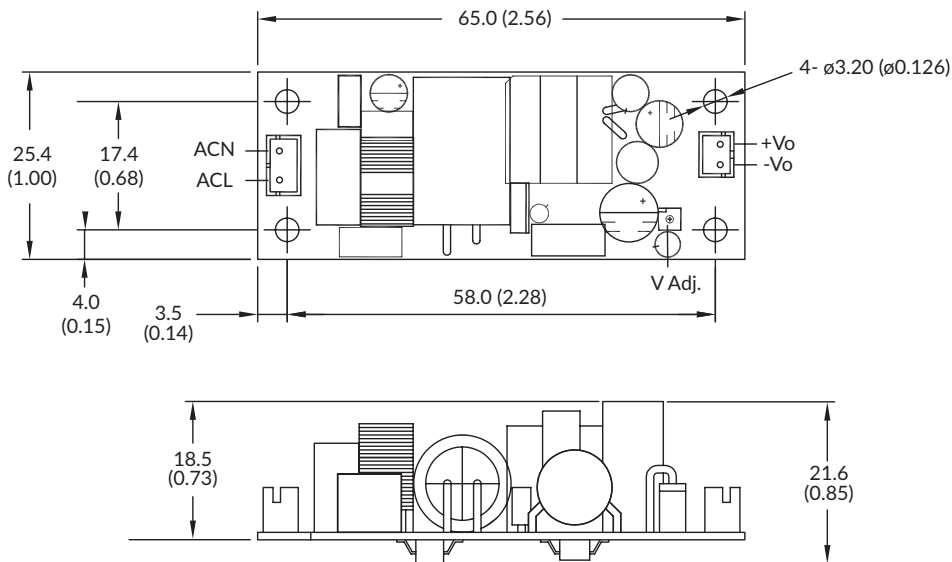
| Certification | Standard | Notes & conditions |
|---------------|---|--------------------|
| CB | IEC60950-1:2005 Ed 2 / IEC62368-1:2014 | |
| UL | UL62368-1 & CAN/CSA C22.2 No. 62368- 1-14 | |
| EN | EN62368-1 | |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

Mechanical details

Open frame - PCB mount (-P)



Open frame - chassis mount (-T)



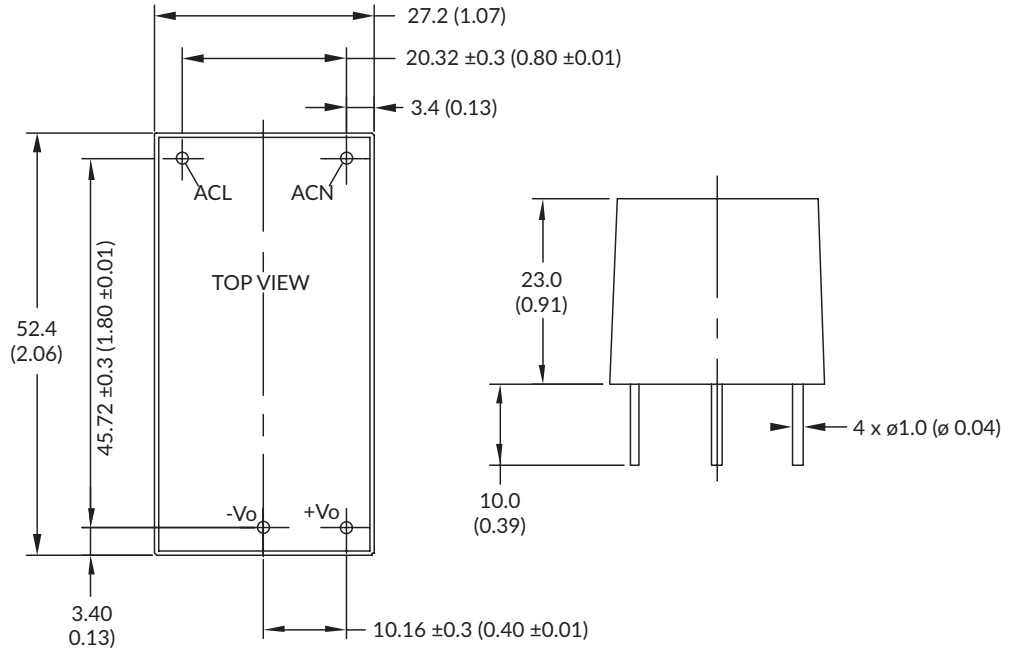
Notes:

1. All dimensions in mm (inches).
2. Weight: ECL05 -P Version: 26g (0.057lb); ECL05 -T Version: 26g (0.057lb);
3. Tolerances: x.xx (x.x) = ± 0.5 (± 0.02), x.xxx (x.xx) = ± 0.25 (± 0.01)

Mating connectors (-T version only)
 Input connector: JST PHR-3
 Output connector: JST PHR-2
 Crimps: SPH-002T-P0.5S
 Cable harness with 300mm wire available, order part no. ECL05 LOOM KIT

Mechanical details

Encapsulated (-E)



Notes:

1. All dimensions in mm (inches).
2. Weight: ECL05 E Version: 60g (0.13lb)
3. Tolerances: x.xx (x.x) = ± 0.5 (± 0.02), x.xxx (x.xx) = ± 0.25 (± 0.01)