

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.

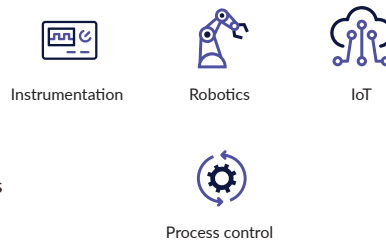
The ECL05 series, with worldwide ITE safety approvals, Class B conducted and radiated emissions, IEC Class II insulation, and 3kVAC isolation, is ideal for a wide range of industrial and analytical instrumentation applications including test and measurement, process control, factory automation, communications 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 27.2 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")

### Models & ratings

Model number <sup>(2)</sup>	Output voltage	Output current		Efficiency	Output power
		Nominal	Peak <sup>(1)</sup>		
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
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	3.3-5VDC versions, 20MHz bandwidth
			90		9V versions, 20MHz bandwidth
			120		12-15VDC versions, 20MHz bandwidth
			200		24-48VDC versions, 20MHz bandwidth
Overvoltage protection	115		140	% Vnom	
	195		216		3.3V
Overload protection	120		150	%	
Short circuit protection	Trip & restart (hiccup mode)				

## General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	See models & ratings				
Isolation: input to output	3000			VAC	
Switching frequency		70		kHz	
Power density			36.8 (2.25)	W/cm <sup>3</sup> (W/in <sup>3</sup> )	PCB mount version
Mean time between failure	>450			khrs	MIL-HDBK-217F, +25°C GB
Weight		26 (0.057)		g (lb)	ECL05-P
		26 (0.057)			ECL05-T
		60 (0.130)			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

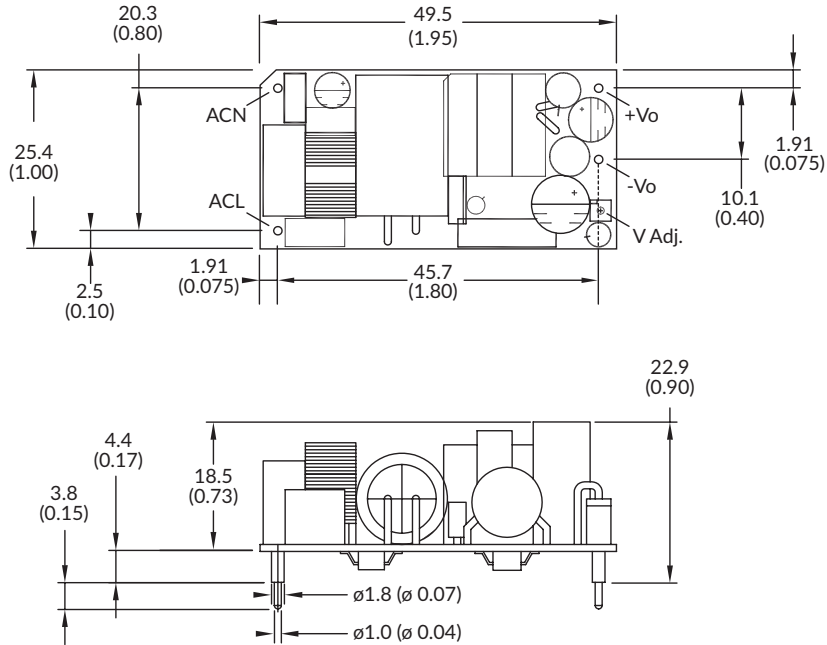
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	3	A	
Radiated immunity	EN61000-4-3	10 V/m, 80%	A	
EFT/burst	EN61000-4-4	3	A	
Surge	EN61000-4-5	3	A	
Conducted	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	10A/m	A	
Dips and interruptions	EN61000-4-11	30% for 10ms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

## Safety approvals

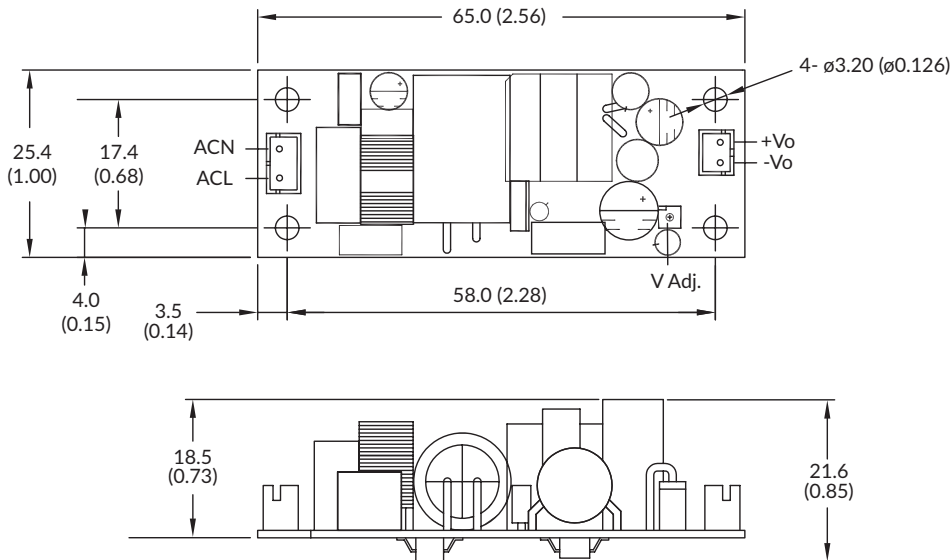
Certification	Standard	Notes & conditions
CB	IEC60950-1:2005 Ed 2 / IEC62368-1:2014	
UL	UL62368-1 & CAN/CSA C22.2 No. 62368- 1-14	
EN	EN62368-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

## Mechanical details

### Open frame - PCB mount (-P)



### Open frame - chassis mount (-T)



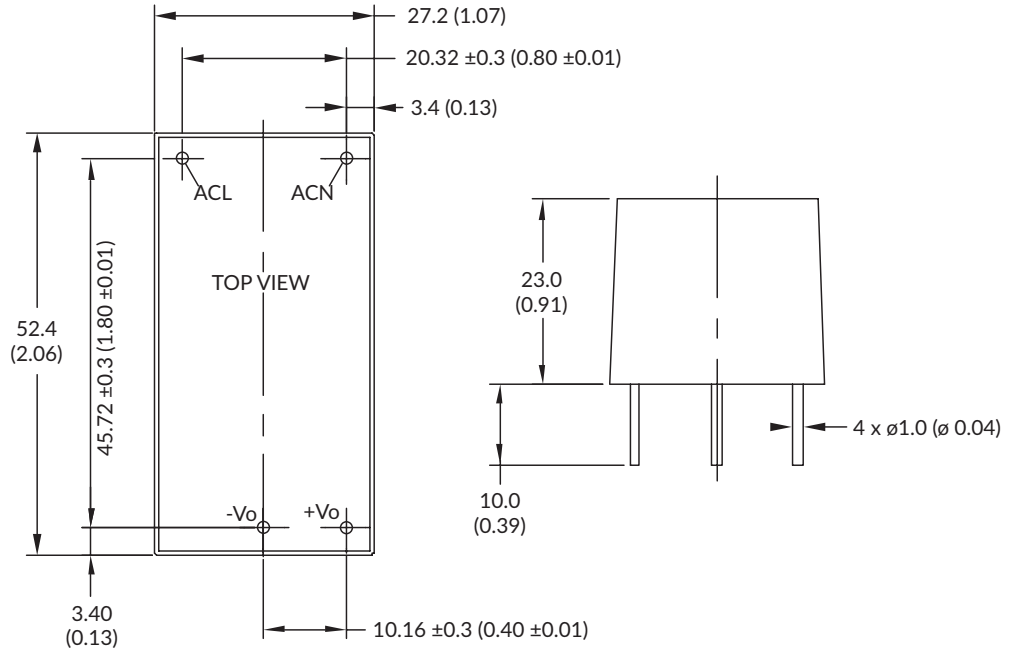
#### Notes:

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

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. ECL10 LOOM KIT

## Mechanical details

Encapsulated (-E)



### Notes:

1. All dimensions in mm (inches).
  2. Weight: ECL05 -E Version: 60g (0.130lb)
  3. Tolerances: x.x (x.xx) =  $\pm 0.5$  ( $\pm 0.02$ ). x.xx (x.xxx) =  $\pm 0.25$  ( $\pm 0.01$ )
- Cable harness with 300mm wire available, order part no. ECL10 LOOM KIT

Specifications subject to change without notice.