

10W

AC-DC
power supplies

The ECL10 series is a range of single output AC-DC power supplies that delivers 10W of power and offers output voltages ranging from 3.3V to 48V. The ECL10 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 ECL10 has IEC Class II construction and a no-load input power less than 0.3W.

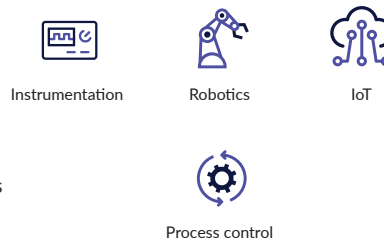
The ECL10 series, with worldwide ITE safety approvals, Class B conducted and radiated emissions, IEC Class II insulation, and 3kVAC isolation, is ideal for a wide range of industrial and analytical instrumentation applications including test and measurement, process control, factory automation, communications 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

- ECL10-P**
49.5 x 25.4 x 26.8mm (1.95" x 1.00" x 1.05")
- ECL10-E**
52.3 x 27.2 x 33.0mm (2.06" x 1.07" x 1.30")
- ECL10-T**
65.0 x 25.4 x 21.6mm (2.56" x 1.00" x 0.85")

Models & ratings

Model number ⁽²⁾	Output voltage	Output current		Efficiency	Output power
		Nominal	Peak ⁽¹⁾		
ECL10US03	3.3VDC	2.60A	3.38A	72%	8.6W
ECL10US05	5.0VDC	2.00A	2.60A	75%	10.0W
ECL10US09	9.0VDC	1.10A	1.43A	78%	10.0W
ECL10US12	12.0VDC	0.83A	1.08A	78%	10.0W
ECL10US15	15.0VDC	0.67A	0.87A	80%	10.0W
ECL10US24	24.0VDC	0.42A	0.55A	82%	10.0W
ECL10US48	48.0VDC	0.21A	0.27A	82%	10.0W

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		0.2		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	3.3-5V versions, 20MHz bandwidth
			90		9V versions, 20 MHz bandwidth
			120		12-15V versions, 20MHz bandwidth
			200		24-48V versions, 20MHz bandwidth
Overvoltage protection	115		140	% Vnom	3.3V
	195		216		
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	See models & ratings				
Isolation: input to output	3000			VAC	
Switching frequency		70		kHz	
Power density			90.12 (5.5)	W/cm ³ (W/in ³)	PCB mount version
Mean time between failure	>450			khrs	MIL-HDBK-217F, +25°C GB
Weight		26 (0.057)		g (lb)	ECL10-P
		26 (0.057)			ECL10-T
		60 (0.130)			ECL10-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

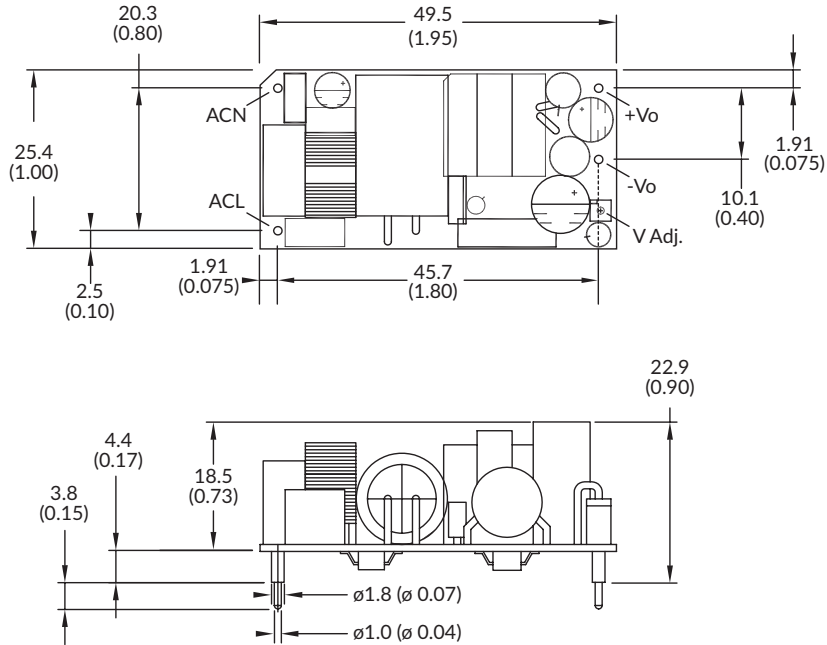
Phenomenon	Standard	Test Level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	3	A	
Radiated immunity	EN61000-4-3	10 V/m, 80%	A	
EFT/burst	EN61000-4-4	3	A	
Surge	EN61000-4-5	3	A	
Conducted	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	10A/m	A	
Dips and interruptions	EN61000-4-11	30% for 10ms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

Safety approvals

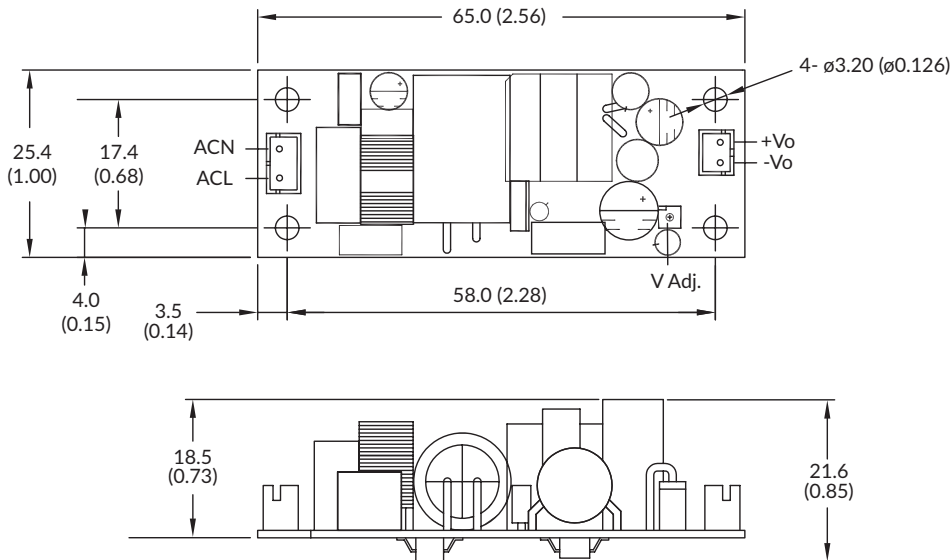
Certification	Standard	Notes & conditions
CB	IEC60950-1:2005 Ed 2 / IEC62368-1:2014	
UL	UL62368-1 & CAN/CSA C22.2 No. 62368- 1-14	
EN	EN62368-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Mechanical details

Open frame - PCB mount (-P)



Open frame - chassis mount (-T)



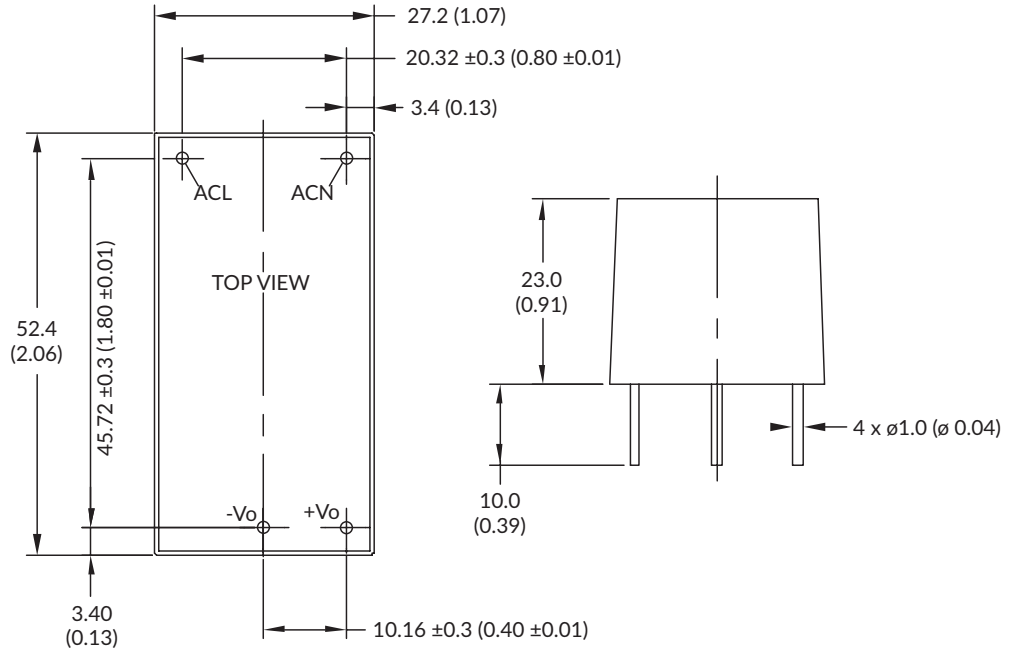
Notes:

1. All dimensions in mm (inches).
2. Weight: ECL10 P Version: 26g (0.057lb); ECL10 T Version: 26g (0.057lb);
3. Tolerances: x.x (x.xx) = ± 0.5 (± 0.02), x.xx (x.xxx) = ± 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. ECL10 LOOM KIT

Mechanical details

Encapsulated (-E)



Notes:

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

Specifications subject to change without notice.