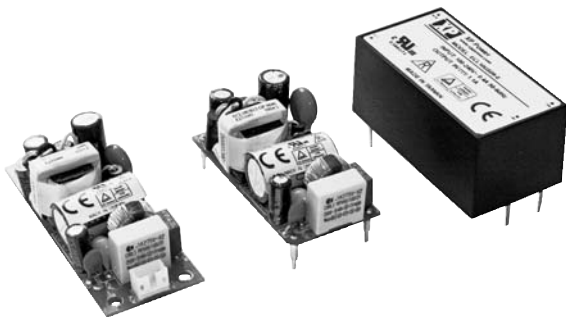


## ECL10 Series



- Ultra Compact Size
- Low Cost
- Single Outputs from 3.3 to 48 V
- PCB Mount & Open Frame
- Encapsulated PCB Mount
- Class II
- Peak Load Capability

## Specification

## Input

Input Voltage	• 85-264 VAC (120-370 VDC)
Input Frequency	• 47-63 Hz
Input Current	• 0.20 A rms at 230 VAC
Inrush Current	• 20 A at 115 VAC, 40 A at 230 VAC,
Earth Leakage Current	• Class II construction no earth
Input Protection	• Internal 1 A fuse

## Output

Output Voltage	• See tables
Output Voltage Trim	• $\pm 5\%$ (not encapsulated units)
Initial Set Accuracy	• $\pm 1\%$
Minimum Load	• No minimum load required
Start Up Delay	• 2 s max
Start Up Rise Time	• 14 ms max
Hold Up Time	• 16 ms typical at full load & 115 VAC
Line Regulation	• $\pm 0.5\%$ max
Load Regulation	• $\pm 1\%$ max
Transient Response	• 4% max deviation, recovery to within 1% in 500 $\mu$ s for a 25% load change
Ripple & Noise	• 3.3-5 V versions: 50 mV pk-pk, 12-15 V versions: 120 mV pk-pk, 24-48 V versions: 200 mV pk-pk, 20 MHz BW
Overvoltage Protection	• 115-135% Vnom, recycle input to reset
Overload Protection	• 120-150%
Short Circuit Protection	• Trip and restart (Hiccup mode)
Temperature Coefficient	• 0.05%/ $^{\circ}$ C

## General

Efficiency	• See tables
Isolation	• 3000 VAC Input to Output
Switching Frequency	• 70 kHz typical
Power Density	• 5.5 W/In <sup>3</sup> (PCB mount version)
MTBF	• >450 kHrs per MIL-HDBK-217F

## Environmental

Operating Temperature	• -20 $^{\circ}$ C to +70 $^{\circ}$ C, derate linearly from 100% at +50 $^{\circ}$ C to 50% at +70 $^{\circ}$ C
Cooling	• Convection-cooled
Operating Humidity	• 95% RH, non-condensing
Storage Temperature	• -40 $^{\circ}$ C to +85 $^{\circ}$ C
Operating Altitude	• 3000 m
Vibration	• 2 g, 10 Hz to 500 kHz, 10 mins/cycle, 60 mins each cycle

## EMC &amp; Safety

Emissions	• EN55022, level B conducted & radiated
Harmonic Currents	• EN61000-3-2, EN61000-3-3
ESD Immunity	• EN61000-4-2, level 3 Perf Criteria A
Radiated Immunity	• EN61000-4-3, 10 V/m 80% mod Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, 10 Vrms Perf Criteria A
Magnetic Fields	• EN61000-4-8, 10 A/m Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 70% U <sub>r</sub> for 10 ms, 40% U <sub>r</sub> for 100 ms, <5% U <sub>r</sub> for 5000 ms Perf Criteria A, B, B
Safety Approvals	• EN60950, UL60950, CSA22.2 No. 234 per cUL

**Models and Ratings**

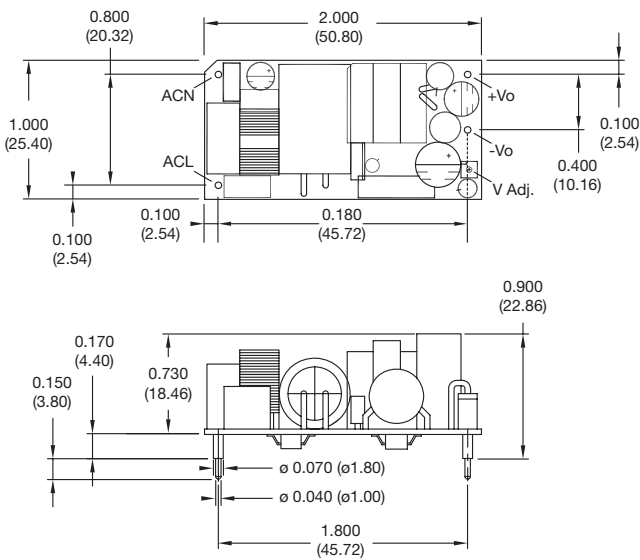
Output Power	Output Voltage	Output Current		Efficiency	Model Number <sup>(2)</sup>
		Nominal	Peak <sup>(1)</sup>		
8.6 W	3.3 VDC	2.60 A	3.38 A	72%	ECL10US03 <sup>^†</sup>
10 W	5.0 VDC	2.00 A	2.60 A	75%	ECL10US05 <sup>^†</sup>
10 W	9.0 VDC	1.10 A	1.43 A	78%	ECL10US09 <sup>^†</sup>
10 W	12.0 VDC	0.83 A	1.08 A	78%	ECL10US12 <sup>^†</sup>
10 W	15.0 VDC	0.67 A	0.87 A	80%	ECL10US15 <sup>^†</sup>
10 W	24.0 VDC	0.42 A	0.55 A	82%	ECL10US24 <sup>^†</sup>
10 W	48.0 VDC	0.21 A	0.27 A	82%	ECL10US48 <sup>^†</sup>

**Notes**

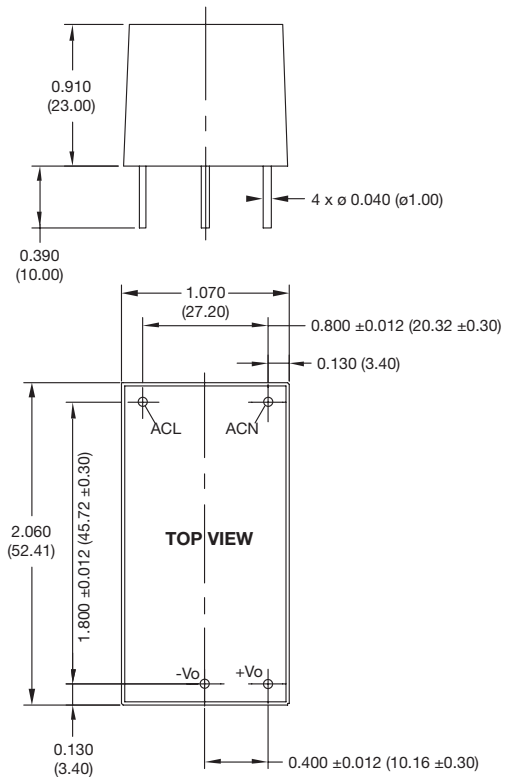
1. Peak load lasting <30 s with a maximum duty cycle of 10%, average output power not to exceed nominal.
  2. Add suffix to model number to define type: add '-P' for PCB mount, add '-T' for chassis mount, add '-E' for encapsulated.
- † Available from Farnell. See pages 204-206.      ^ Available from Newark. See pages 207-208.

**Mechanical Details**

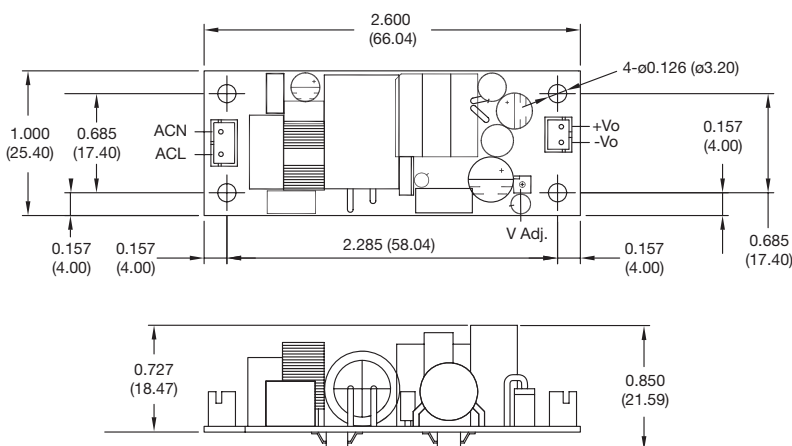
**Open Frame - PCB Mount (-P)**



**Encapsulated (-E)**



**Open Frame - Chassis Mount (-T)**



**Notes**

1. Dimensions in inches (mm).
2. Tolerances: .xxx ± 0.2 (.xx ± 0.5).

**Mating Connectors (Chassis mount only)**

Input Connector: JST PHR-3  
 Output Connector: JST PHR-2  
 Crimps: SPH-002T-P0.5S  
 Cable harness with 300 mm wire available, order part no. ECL10 LOOM KIT