

# **TE240** Family





AULT



CE RoHS

### Industrial Meets DoE efficiency level VI requirements No load input power

- Average efficiency
- Up to 240W of AC-DC power
- Universal input 90-264VAC input range

FEATURES AND BENEFITS

IP22 rated enclosure

Meets "Heavy Industrial" levels of EN61000 EMC requirements

Meets EN55011/CISPR11, FCC Part 15.109
Class B conducted & radiated emissions, with
6db margin

Approved to EN/IEC/UL62368-1

E-cap life of >7 years

3 years warranty

Optional AC input on/off switch

### **MODEL SELECTION**

Model Number <sup>4</sup>	Volts	Output Current	Output Power	Ripple & Noise <sup>1</sup>	Line Regulation	Load Regulation	Output Cable & Connector	Input Configuration
TE240A1251F01	12.0V	16.6A	200W	120mV pk-pk	±1%	±5%	6 pin Molex type, p/n 39-01-2060 or	Class I Desktop, IEC60320 C14 receptacle
TE240A1551F01	15.0V	13.3A	200W	150mV pk-pk	±1%	±5%		
TE240A1851F01	18.0V	11.1A	200W	180mV pk-pk	±1%	±5%	equivalent	
TE240A2451F01	24.0V	10.0A	240W	240mV pk-pk	±1%	±5%	See outline drawing for pinout information	
TE240A2851F01	28.0V	8.60A	240W	280mV pk-pk	±1%	±5%		
TE240A4851F01	48.0V	5.00A	240W	480mV pk-pk	±1%	±5%		

Notes: 1. Measured at the output connector, with noise probe directly across output and load, terminated with 0.1µF ceramic and 47µF low ESR capacitors.

2. The DC output is floating. For Input Class I models, AC GND is connected to output common (-), on models with the letter "B" inserted in the model number where the "A" is located: (TE240B1251F01). 3. All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

4. Consult factory for availability of 28V output model.

INPUT			
AC Input	100-240VAC, ±10%, 47-63Hz, 1Ø		
Input Current	115VAC: 2.4A, 230VAC: 1.2A		
Inrush Current	264VAC, Cold start: will not exceed 60A		
Input Fuses	F1, F2: 3.15A, 250VAC fuses (line & neutral lines) provided on all models		
Earth Leakage Current	Input-GND: <500µA @ 264VAC, 60Hz, NC Output-GND: <4mA @ 264VAC, 60Hz, NC		
Efficiency	Meets US DoE efficiency level VI average efficiency levels		
No Load Input Power	<0.210W per DoE efficiency level VI requirements		

# OUTPUT Hold-Up Time 20ms at full load, 100VAC input Turn On Time Less than 1 sec @115VAC, Full load Output Power 240W continuous - See models chart for specific voltage model ratings Output Voltage See models chart on pg 1 Ripple and Noise See models chart on pg 1

500μs response time for return to within 0.5% of final value for any 50% load step over the range of 5% to 100% of rated load, Δi/Δt< 0.2A/μs Max voltage deviation is +/-3.5%

Notes : All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

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**Transient Response** 



# **TE240** Family

### 240W Single Output External Power Industrial Grade

EN/CSA/IEC/UL62368-1

6 shocks total

Notes : All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

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Operating: Half-sine, 20gpk, 10ms, 3 axes,

Non-operating: Half-sine waveform, impact acceleration of 50G, Pulse duration of 6 ms, Number of shocks: 3 for each of the three axis

>250,000 hours, Full load, 110 & 220VAC input,

115VAC/60Hz & 230VAC/50Hz, ambient 25°C at

24 hrs per day, 365 days/year, 6 power up cycles

per day. (80% load on 12V model at 115VAC)

25°C amb, per Telcordia 332 Issue 6

>7 years life based on calculations at

**SAFETY** 

Shock

Safety Standards

RELIABILITY

MTBF

E-Cap Life



### **PROTECTION**

Overtemperature Protection	Will shutdown upon an over-temperature condition, Auto-recovery
Overload Protection	115 to 160% of rating, Hiccup mode
Short Circuit Protection	Hiccup mode, Auto recovery
Overvoltage Protection	110 to 130% of output voltage (max 60V on 48V model), Hiccup mode
Safety Drop Test	1.4m from table top to wooden platform, 6 faces

Notes : All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

### DNS

out: 4,000VAC Input-Ground: 1,500VAC Isolation Output-Ground: 500VAC

Notes : All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

ENVIRONMENT	

Operating Temperature	-20°C to +70°C. Derate above 40°C. Start Up at -30°C, Full load, (warmup period before all parameters are within published specifications)
Temperature Derating	See derating curves
Vibration	Operating: 0.003g/Hz, 1.5grms overall, 3 axes, 10 min/axis, 1-500Hz. Non-operating: Random waveform, 3 minutes per axis, 3 axes and Sine waveform, Vib Frequency/Acceleration: 10-500Hz/1g, sweep rate of 1 octave/minutes, Vibration time of 10 sweeps/axes, 3 axes
Case Temperature	Case temperatures are within regulatory guidelines. Care should be taken to avoid prolonged contact with skin or other heat sensitive surfaces
Altitude	Operating: to 5,000m (derate to TBD temp. above 3,000m) Non-operating: -500 to 40,000 ft
Relative Humidity	5% to 95%, Non-condensing
Storage Temperature	-40°C to +85°C
Weight	700g
Dimensions	W: 2.65" x L: 8.3" x H: 1.7" W: 67.4mm x L: 212.4mm x H: 45mm

Notes : All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

<b>ISOLATION SPE</b>	CIFICATIO
	Input-Outpu





### **EMI/EMC COMPLIANCE**

Conducted Emissions	EN55011/CISPR22 Class B, FCC Part 15.107, Class B: 6db margin typ at 115 and 230VAC
Radiated Emissions	EN55022/CISPR22 Class B, FCC Part 15.109, Class B: 3db margin typ at 115 and 230VAC
Common Mode Noise	High frequency (100kHz-20MHz): <20mA pk-pk Low frequency (50-120Hz): <5Vrms
Electro-Static Discharge (ESD) Immunity on Power Ports	EN55024/IEC61000-4-2, Level 4: +/- 8kV contact, +/- 15kV air, Criteria A
Radiated RF EM Fields Susceptibility	EN55022/EN61000-4-3, 10V/m, 80MHz-2.7GHz, 80% AM at 1kHz
Electrical Fast Transients (EFT)/Bursts	EN55024/IEC61000-4-4, Level 4, +/- 4kV, 100KHz rep rate, 40A, Criteria A
Surges, Line to Line (Diff Mode) and Line to GND (CMN Mode)	EN55024/IEC61000-4-5, Level 4, +/-2kV DM, +/-4kV CM, Criteria A
Conducted Disturbances Induced by RF Fields	EN55022/IEC61000-4-6, 10Vrms – Level 3, in ISM and amateur radio bands between 0.15MHz and 80MHz, 80% AM at 1kHz
Rated Power Frequency Magnetic Fields	EN55024/IEC1000-4-8, Level 4: 30A/m, 50/60 Hz
Voltage Interruptions, Dips, Sags & Surges	EN55024/IEC61000-4-11: 100% dip for 20ms, Criteria A 100% dip for 5000ms (250/300 cycles), Criteria B 60% dip for 100ms, Criteria B 30% dip for 500ms, Criteria A
Harmonic Current Emissions	EN55011/EN61000-3-2, Class A
Flicker Test	EN61000-3-3

Notes : Performance criteria are based on EN55024. According to the standards, performance criteria are defined as following:

A – Normal performance during and after the test

B – Temporary degradation, self-recoverable

C - Temporary degradation, operator intervention required to recover the operation

D – Permanent damage

## CONNECTOR INFORMATION

Check with SL Power for suitability of specific connectors with certain models. Other connector options or different pinouts will require a modified model.

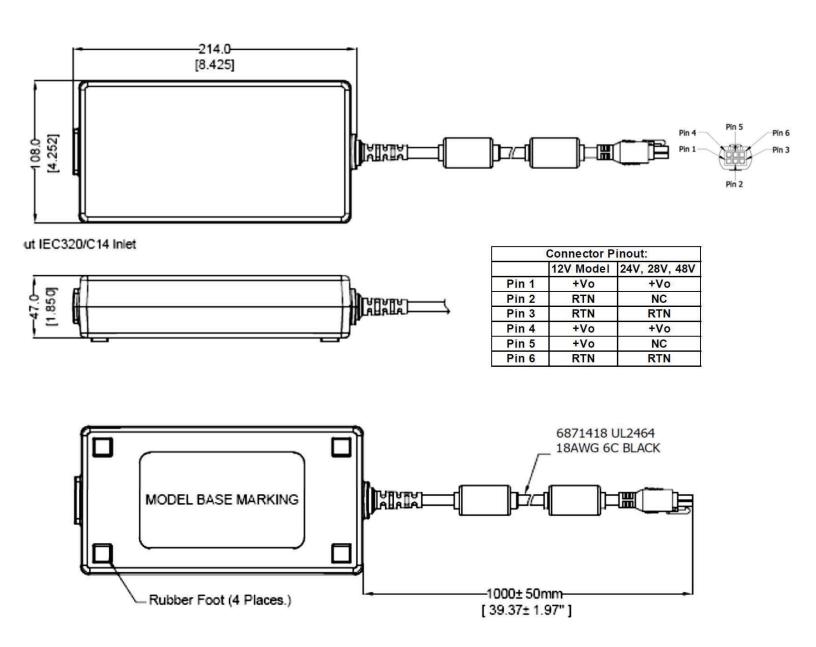
Connector No.	Description	Connector No.	Description	
12	5 pin DIN-180 male connector (Pins 3, 5 = (+), pins 1, 2, 4 = (-))	49	4 pin snap n lock, Kycon kpp-4P or equivalent (Pin 1, 3 = (+), pin 2, 4 = (-))	
22	6 pin DIN male connector (Pins 1, 2 = (+), pins 4, 5 = (-))	51	6 pin Minifit-Molex 39-01-2060 or equivalent	
23	8 pin DIN male connector (Pins 3, 7 = (+), pins 1, 4, 6, 8 = (-), shell = FG)	65	Stripped and Tinned Leads	
48	3 pin snap n lock, Kycon kpp-3P or equivalent (Pin 1=(+), pin 2 = (-))			





### **MECHANICAL DRAWING**

**TE240** Family



Notes: 1. The DC output is floating (ungrounded). For grounded output option (DC Return (-) to AC GND), change the letter "A" to "B" in the model number – TE240B1251F01. Class I input models only.

2. All dimensions in mm.

3. The unit should not be covered or enclosed to protect against excessive case temperature rise.





## **INPUT CONFIGURATIONS**

# AC Input Receptacle Options



IEC320 - C14 Class I Grounded (F)





IEC320 - C8 Class II "Shaver" (N)

Check with SL Power for availability of class II input models.

### EFFICIENCY LEVEL VI INFORMATION:

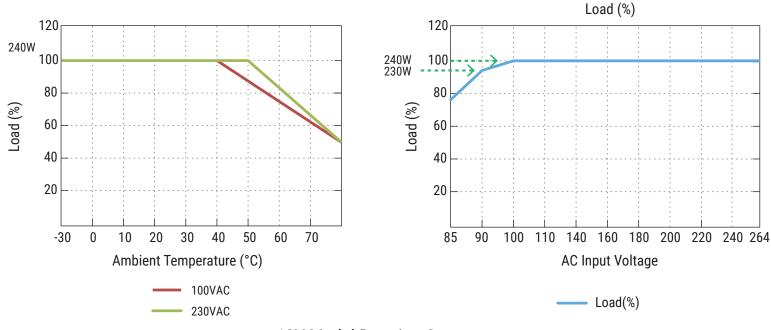
	Single-Voltage External AC-DC Power Supply, Basic-Voltage				
	Nameplate Output Power (P <sub>out</sub> )	Minimum Average Efficiency in Active Mode (expressed as a decimal)	Maximum Power in No-Load Mode [W]		
	$P_{out} \le 1 W$	≥ 0.5 x P <sub>out</sub> + 0.16	≤ 0.100		
	$1 \text{ W} < \text{P}_{\text{out}} \le 49 \text{ W}$	$\ge 0.071 \text{ x In}(P_{out})$ 0.0014 x P <sub>out</sub> + 0.67	≤ 0.100		
TE240 Series	49 W < $P_{out} \le 250$ W	≥ 0.880	≤ 0.210		
	$P_{out} > 250 \text{ W} \ge 0.875$		≤ 0.500		
	Single-Voltage External AC-DC Power Supply, Low-Voltage				
	Nameplate Output Power (P <sub>out</sub> )	Minimum Average Efficiency in Active Mode (expressed as a decimal)	Maximum Power in No-Load Mode [W]		
	$P_{out} \le 1 W$	≥ 0.517 x P <sub>out</sub> + 0.087	≤ 0.100		
	$1 \text{ W} < \text{P}_{\text{out}} \le 49 \text{ W}$	$\geq$ 0.0834 x In(P <sub>out</sub> ) 0.0014 x P <sub>out</sub> + 0.609	≤ 0.100		
	49 W < $P_{out} \le 250$ W	≥ 0.870	≤ 0.210		
	P <sub>out</sub> > 250 W	≥ 0.875	≤ 0.500		

In addition, TE150 Series will meet the EU Code of Conduct, Version 5,, Tier 2requirements. (<0.150W no load input power)



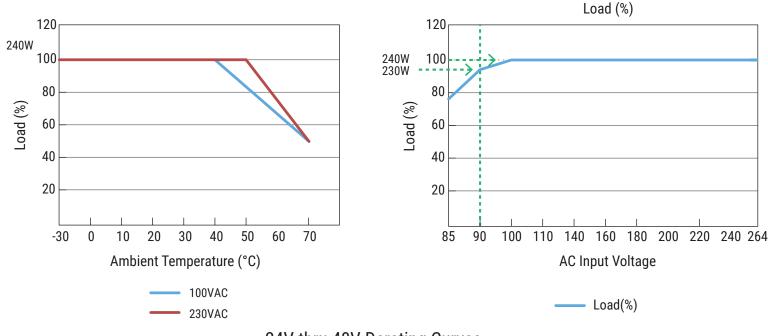


### **PERFORMANCE CURVES**



**TE240** Family





### 24V thru 48V Derating Curves

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