



TRE25R SERIES

25 WATT I.T.E

INTERCHANGEABLE PLUG ADAPTER

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 88%
- Interchangeable AC Plugs
- Class II
- No Load Input Power Consumption < 75mW
- Approval IEC/EN/UL 62368-1 Ed 3.0
- Approval EN 55032 and CISPR/FCC Class B
- Operating Altitude 3000m
- Continuous Short Circuit Protection
- Over Voltage Protection
- Meets CoC Tier 2 and DOE Level VI



AC Plug Sold Separately



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE NOTE1	VOLTAGE ACCURACY NOTE2	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
TRE25R050	5 V	4.0 A	50 mV	±2%	±1%	±6%	84%
TRE25R090	9 V	2.5 A	90 mV	±2%	±1%	±5%	87%
TRE25R120	12 V	2.1 A	120 mV	±2%	±1%	±5%	87%
TRE25R150	15 V	1.67 A	150 mV	±2%	±1%	±3%	88%
TRE25R180	18 V	1.4 A	180 mV	±2%	±1%	±2%	88%
TRE25R240	24 V	1.05 A	240 mV	±2%	±1%	±2%	88%

Note:

1. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple & noise measuring @20MHz BW.
2. Voltage accuracy is set at 60% full load.
3. Line regulation is measured from 100V_{ac} to 240V_{ac} with full load.
4. Load regulation measured from 60% to 100% full load and from 60% to 20% full load (60%±40% full load).
5. Typical efficiency at 230V_{ac} and 75% full load at 25°C.

PART NUMBER

Series	Output Voltage	AC Plug Type	DC Plug Type	Cable Type	Cable Length
TRE25R	XXX	-XXXX	-XX	X	XX
25W I.T.E Adapter	050 : 5V 090 : 9V 120 : 12V 150 : 15V 180 : 18V 240 : 24V	Blank : Sold Separately ASUE : Include 4 Type	See Page 6	G : UL1571 with OVP	01 : 720mm 02 : 1220mm 03 : 1800mm 11 : 720mm with Ferrite Core 12 : 1220mm with Ferrite Core 13 : 1800mm with Ferrite Core See page 6 for restrictions

Part Number Example:

TRE25R120-11G13 12V_{dc} Output, DC Jack Type, Cable Length 1800mm

TRE25R120-ASUE-11G03 12V_{dc} Output, include 4 Type AC Plug, DC Jack Type, Cable Length 1800mm



TRE25R Series

TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25°C unless otherwise noted.)

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage		All	90		264	V_{ac}
			120		370	V_{dc}
Operating Temperature	See Derating Curve	All	-20		60	°C
Storage Temperature		All	-20		85	°C
Input/Output Isolation Voltage	1 minute	All			3000	V_{ac}
Operating Altitude		All			3000	m

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range		All	100		240	V_{ac}
Input Frequency Range		All	47		63	Hz
Maximum Input Current	100% Load, $V_{in}=100V_{ac}$	All			0.7	A
Leakage Current		All			250	μA
Under Voltage Protection		All	60	68	75	V_{ac}
Inrush Current	$V_{in}=240V_{ac}$, Cold start at 25°C	All			60	A

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	$V_{in}=115V_{ac}$ and $230V_{ac}$, $I_o=60\%$ Full load $T_c=25^\circ C$	TRE25R050	4.9	5	5.1	V_{dc}
		TRE25R090	8.82	9	9.18	
		TRE25R120	11.76	12	12.24	
		TRE25R150	14.7	15	15.3	
		TRE25R180	17.64	18	18.36	
		TRE25R240	23.52	24	24.48	
Operating Output Current Range	$V_{in}=115V_{ac}$ and $230V_{ac}$, $T_c=25^\circ C$	TRE25R050	0		4	A
		TRE25R090	0		2.5	
		TRE25R120	0		2.1	
		TRE25R150	0		1.67	
		TRE25R180	0		1.4	
		TRE25R240	0		1.05	
Holdup Time	$V_{in}=115V_{ac}$	All		10		ms
Output Voltage Regulation						
Load Regulation	60% $\pm$ 40% Full load change	TRE25R050			± 6.0	%
		TRE25R090			± 5.0	
		TRE25R120			± 5.0	
		TRE25R150			± 3.0	
		TRE25R180			± 2.0	
		TRE25R240			± 2.0	
Line Regulation	V_{in} =High line to low line, full load	All			± 1.0	%
Over Voltage Protection	IC Component to clamp (auto recovery)	TRE25R050		7.44		V_{dc}
		TRE25R090		13.6		
		TRE25R120		16.2		
		TRE25R150		18.9		
		TRE25R180		23.5		
		TRE25R240		28.8		
Over Current Protection	Auto recovery	All	110		140	%



TRE25R Series

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Short Circuit Protection	Auto recovery	All				
Output Ripple and Noise	1. Add a 0.1uF ceramic capacitor and a 10uF aluminum electrolytic capacitor to output 2. Oscilloscope is 20MHz band width 3. Ambient temperature=25°C	TRE25R050 TRE25R090 TRE25R120 TRE25R150 TRE25R180 TRE25R240			50 90 120 150 180 240	mV
Load Capacitance	1. $V_{in}=115V_{ac}$ and $230V_{ac}$ 2. Output is max. load 3. Ambient temperature=25°C	TRE25R050 TRE25R090 TRE25R120 TRE25R150 TRE25R180 TRE25R240			4000 2500 2100 1670 1400 1050	uF
Efficiency	1. $V_{in}=230V_{ac}$ 2. Output is 75% full load 3. Ambient temperature=25°C	TRE25R050 TRE25R090 TRE25R120 TRE25R150 TRE25R180 TRE25R240		84% 87% 87% 88% 88% 88%		%

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 Minute (without dielectric breakdown)	All			3000	V_{ac}
Isolation Resistance	Input to output	All	100			MΩ

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency		All		65		kHz

GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	$I_o=100\%$; $T_a=25^\circ\text{C}$ per MIL-HDBK-217F $I_o=100\%$; $T_a=25^\circ\text{C}$ Telcordia SR332	All	530 4030			k hours
Life Time	@75% Load, 40°C	All	26			k hours
Humidity	Non-condensing	All			93	% RH
Shock	MIL-STD-810F Table 516.5, TABLE 516.5-I 10ms, each axis 3 times($\pm X$ 、 $\pm Y$ 、 $\pm Z$ axis)	All		75		g
Vibration	MIL-STD-810F Table 514.5C-VIII, 15~2000Hz, X、Y、Z axis, 1 hour(each axis),. total 3 hrs.	All		4		g
Weight		All		140		grams
Dimension		All	2.795x2.220x1.299 inches (71.00x56.40x33.00 mm)			
Safety	Class II, IEC 62368-1:2018 EN 62368-1: 2020+A11:2020 UL 62368-1:2019, 3rd Edition					Ed 3.0
EMC Emission	EN55032:2015+A11:2020, EN61000-3-2:2019, EN6100-3-3:2013+A1:2019, 47 CFR FCC Part 15					
Conducted Disturbance	EN55032:2015+A11:2020					Class B
Radiated Disturbance	EN55032:2015+A11:2020					Class B
Harmonic Current Emissions	EN 61000-3-2:2019					Class A
Voltage Fluctuations & Flicker	EN 61000-3-3: 2013+A1:2019					Criterion A
EMC Immunity	EN 55035:2017+A11:2020, EN 61204-3, EN 61000-6-1,3, EN 61000-3-2:2019 EN 61000-3-3:2013+A1:2019					Criterion A



TRE25R Series

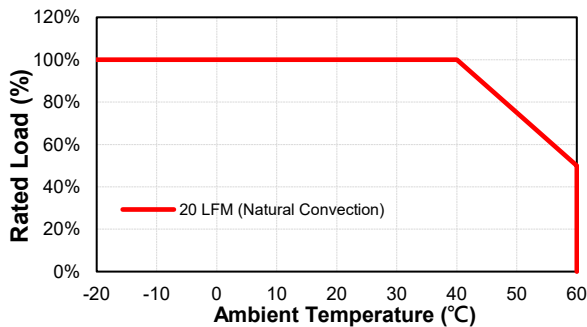
GENERAL SPECIFICATIONS

Electrostatic Discharge (ESD)	IEC 61000-4-2:2008, Air Discharge: $\pm 8\text{kV}$, Contact Discharge: $\pm 4\text{kV}$	Criterion A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3: 2020	Criterion A
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, $\pm 1\text{kV}$	Criterion A
Surge	IEC 61000-4-5 2014+A1:2017, L-N $\pm 0.5\text{kV}$, $\pm 1\text{kV}$	Criterion A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6:2013+COR1:2015	Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8:2009	Criterion A
Voltage Dips	IEC 61000-4-11:2020, Dips:30% reduction, Dips: >95% Reduction	Criterion A
Voltage Interruptions	IEC 61000-4-11:2020,>95% Reduction	Criterion B
Application Note Link		TRE25R Series App Notes

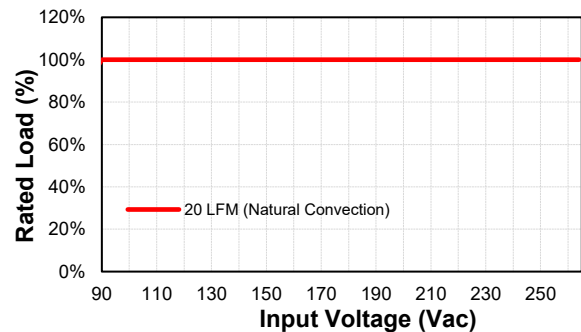
CHARACTERISTIC CURVE

Power Derating Curve

TRE25R Derating Curve

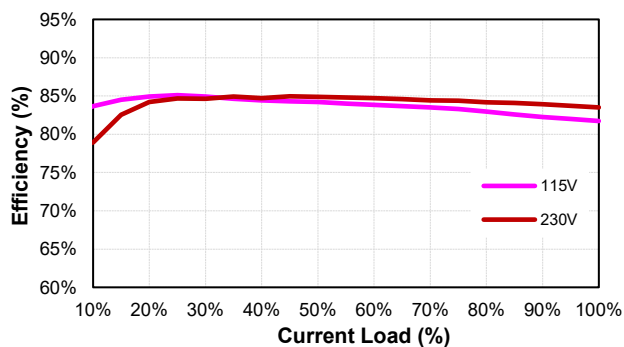


TRE25R Input Voltage Derating Curve

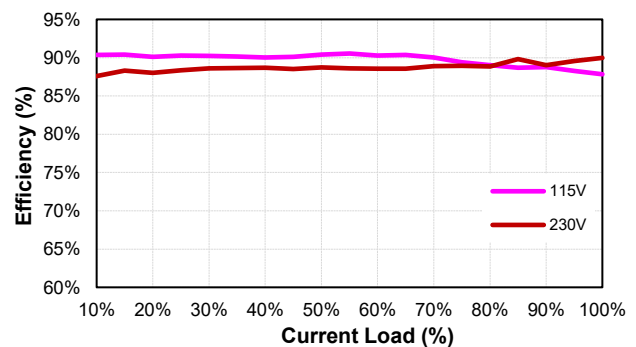


Performance Data

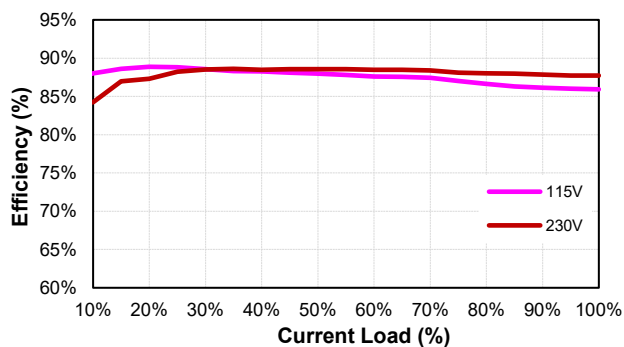
TRE25R050 (Eff Vs Io)



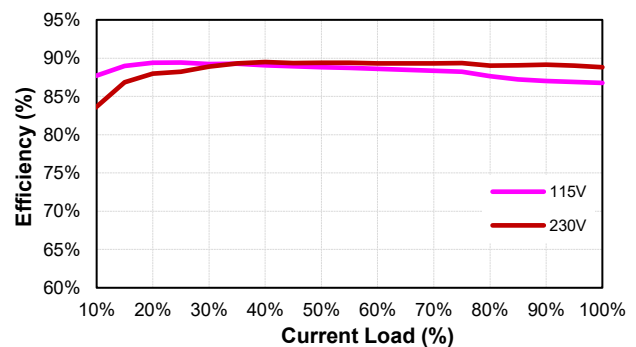
TRE25R090 (Eff Vs Io)



TRE25R120 (Eff Vs Io)



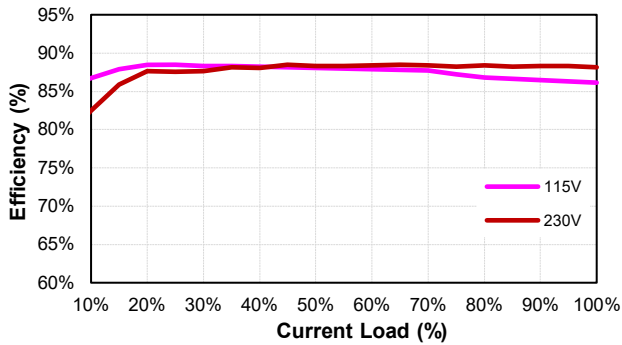
TRE25R150 (Eff Vs Io)



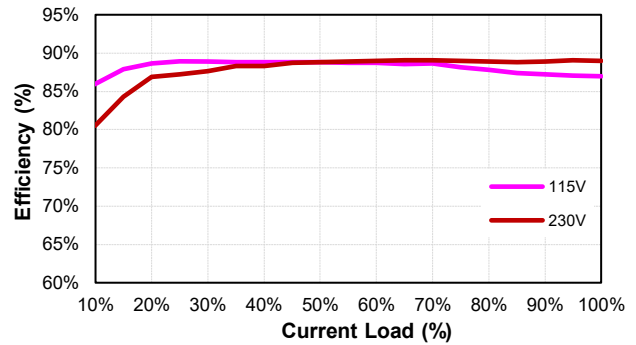


TRE25R Series

TRE25R180 (Eff Vs Io)

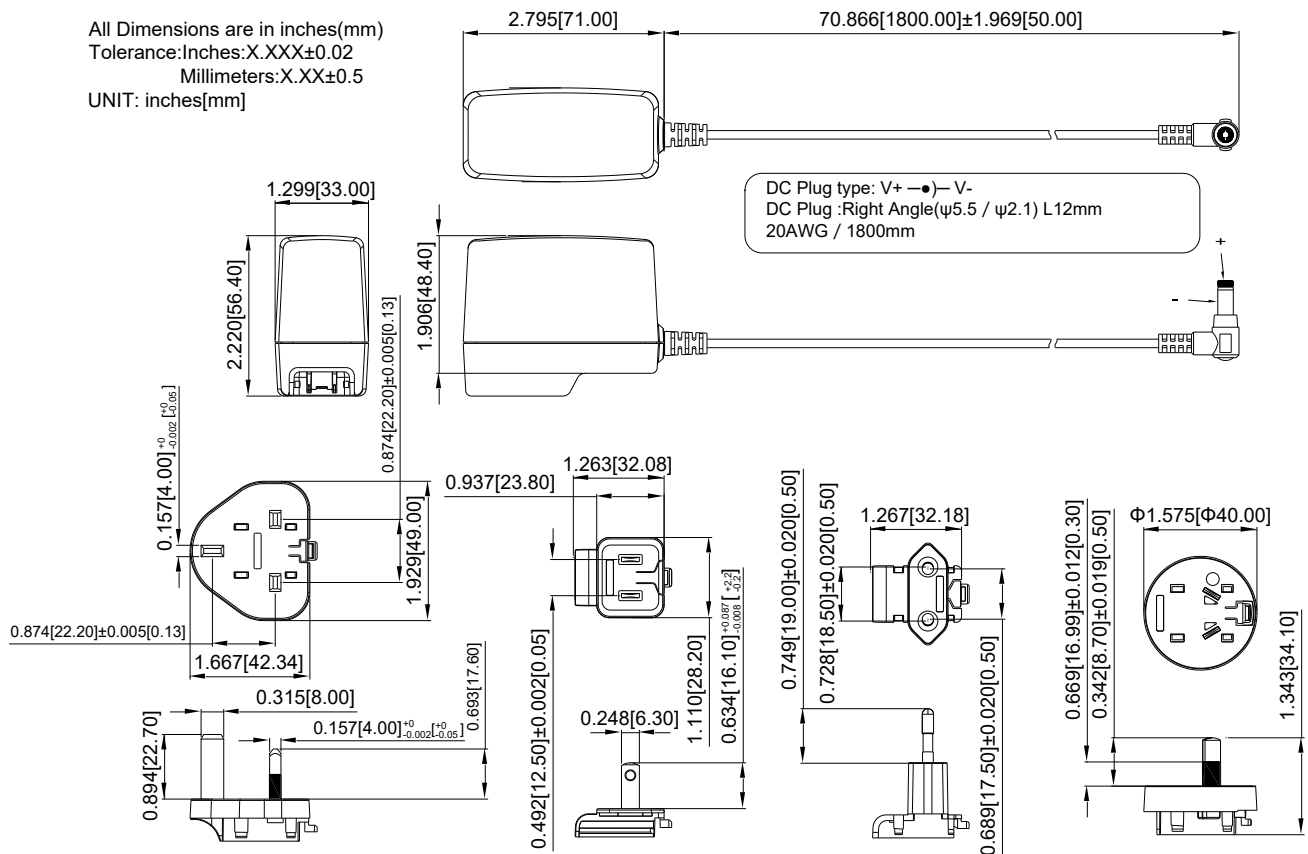


TRE25R240 (Eff Vs Io)

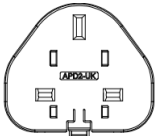
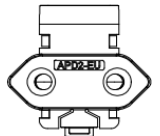


MECHANICAL SPECIFICATION

All Dimensions are in inches(mm)
Tolerance: Inches: X.XXX±0.02
Millimeters: X.XX±0.5
UNIT: inches[mm]



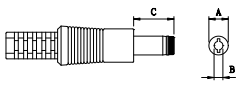
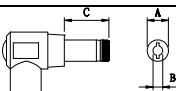
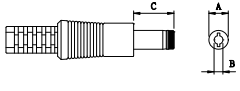
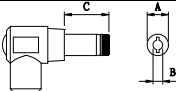
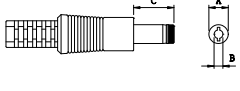
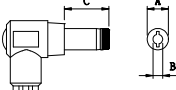
INTERCHANGEABLE AC PLUG SPECIFICALLY for TRE25R (SOLD SEPARATELY)

TYPE				
	U.K type (U)	American type (A)	European type (E)	Australian type (S)
ORDER NO.	AC PLUG RE-U	AC PLUG RE-A	AC PLUG RE-E	AC PLUG RE-S



TRE25R Series

STANDARD OUTPUT DC PLUG

DC Plug Type	Cable Number-XXXXX	A	B	C	Cable Type	Cable Length	Cable AWG
		OD (mm)	ID (mm)	L (mm)			
 Straight/Inner+Outer- + — ● — —	11G03	Φ5.5	Φ2.1	12	UL1571	1800mm without Core	20AWG for 12V, 15V, 18V, 24V
	12G03	Φ5.5	Φ2.5	12			
	23G03	Φ5.5	Φ2.1	9.5			
	26G03	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + — ● — —	01G03	Φ5.5	Φ2.1	12			
	02G03	Φ5.5	Φ2.5	12			
	21G03	Φ5.5	Φ2.5	9.5			
	24G03	Φ5.5	Φ2.1	9.5			
 Straight/Inner+Outer- + — ● — —	11G03	Φ5.5	Φ2.1	12	UL1571	1800mm without Core	18AWG for 9V
	12G03	Φ5.5	Φ2.5	12			
	23G03	Φ5.5	Φ2.1	9.5			
	26G03	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + — ● — —	01G03	Φ5.5	Φ2.1	12			
	02G03	Φ5.5	Φ2.5	12			
	21G03	Φ5.5	Φ2.5	9.5			
	24G03	Φ5.5	Φ2.1	9.5			
 Straight/Inner+Outer- + — ● — —	11G02	Φ5.5	Φ2.1	12	UL1571	1220mm without Core	16AWG for 5V
	12G02	Φ5.5	Φ2.5	12			
	23G02	Φ5.5	Φ2.1	9.5			
	26G02	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + — ● — —	01G02	Φ5.5	Φ2.1	12			
	02G02	Φ5.5	Φ2.5	12			
	21G02	Φ5.5	Φ2.5	9.5			
	24G02	Φ5.5	Φ2.1	9.5			

※Other DC Plug Type please refer to the link: <https://www.cincon.com/productdownload/TRE25R-cable-DC-plug.pdf>

CINCON Electronics Co. Ltd.
 Add: 14F, No. 306, Sec.4, Hsin Yi Rd., Taipei, Taiwan
 Tel: 886-2-27086210
 Fax: 886-2-27029852
 E-mail: sales@cincon.com.tw
 Web: www.cincon.com