TRE15RD SERIES
15 WATT AC-DC I.T.E
INTERCHANGEABLE PLUG ADAPTER

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 86%
- Interchangeable AC Plugs
- Class II
- No Load Power Consumption < 75mW
- Approved IEC/EN/UL 62368-1
- Meets EN55032 Class B and CISPR/FCC Class B
- Operating Altitude 5000m
- Over Voltage Protection
- Continuous Short Circuit Protection
- Meets CoC Tier 2 & DoE Level VI



AC Plug Sold Separately

MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	VOLTAGE ACCURACY NOTE1	RIPPLE& NOISE NOTE2	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
TRE15RD050	5 V	2 A	±2%	50 mV	±1%	±4%	79%
TRE15RD090	9 V	1.4 A	±2%	90 mV	±1%	±2%	84%
TRE15RD120	12 V	1 A	±2%	100 mV	±1%	±2%	83%
TRE15RD150	15 V	1 A	±2%	100 mV	±1%	±2%	85%
TRE15RD240	24 V	0.63 A	±2%	100 mV	±1%	±2%	86%

Note:

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

PART NUMBER

Series	Output Voltage	AC Plug Type	DC Plug Type	Cable Type	Cable Length	Case Color
TRE15RD	XXX	-XXXX	-XX	X	XX	-XX-BK
15W I.T.E Adapter	050：5V 090：9V 120：12V 150：15V 240：24V	Blank：Sold Separately ASUE：Include 4 Type AC Plug	See Page 5	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 5 for restrictions	BE-BK: Blue-Black BK-BK: Black-Black RD-BK: Red-Black

Part Number Example:

TRE15RD120-01G03-BE-BK, 12V_{dc} Output, DC Jack Type, Cable Length 1800mm, Case Color Blue-Black

TRE15RD120-ASUE-01G03-BE-BK, 12V_{dc} Output, Include 4 Type AC Plug, DC Jack Type, Cable Length 1800mm, Case Color Blue -Black

TECHNICAL SPECIFICATIONS

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

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage		All	90		264	V_{ac}
Operating Case Temperature	See Derating Curve	All	-20		60	℃
Storage Temperature		All	-20		85	℃
Operating Altitude		All			5000	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% Full load, V_{in}=100V_{ac}	All			0.5	A
Leakage Current		All			250	uA
Inrush Current	V_{in}=240V_{ac}, Cold start at 25℃	All			50	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℃	TRE15RD050	4.9	5	5.1	V_{dc}
		TRE15RD090	8.82	9	9.18	
		TRE15RD120	11.76	12	12.24	
		TRE15RD150	14.7	15	15.30	
		TRE15RD240	23.52	24	24.48	
Operating Output Current Range	V_{in}=115V_{ac} and 230V_{ac}, T_c=25℃	TRE15RD050			2	A
		TRE15RD090			1.4	
		TRE15RD120			1	
		TRE15RD150			1	
		TRE15RD240			0.63	
Holdup Time	V_{in}=115V_{ac}	All		10		ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TRE15RD050			±4.0	%
		TRE15RD090			±2.0	
		TRE15RD120			±2.0	
		TRE15RD150			±2.0	
		TRE15RD240			±2.0	
Line Regulation	V_{in}=100V_{ac} to 240V_{ac}	All			±1.0	%
Over Voltage Protection	IC component to clamp (auto recovery)	TRE15RD050			7.14	V_{dc}
		TRE15RD090			12.1	
		TRE15RD120			15.8	
		TRE15RD150			19.5	
		TRE15RD240			28.4	
Over Current Protection	Auto recovery	All	110		160	%
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℃	TRE15RD050			50	mV
		TRE15RD090			90	
		TRE15RD120			100	
		TRE15RD150			100	
		TRE15RD240			100	

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Load Capacitance	1. V_{in}=115V_{ac} and 230V_{ac} 2. Output is max. load 3. Ambient temperature=25℃	TRE15RD050			2000	uF
		TRE15RD090			1500	
		TRE15RD120			1000	
		TRE15RD150			1000	
		TRE15RD240			660	
Efficiency	1. V_{in}=230V_{ac} 2. Output is 75% full load 3. Ambient temperature=25℃	TRE15RD050		79		%
		TRE15RD090		84		
		TRE15RD120		83		
		TRE15RD150		85		
		TRE15RD240		86		

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 minute	All			3000	V_{ac}
Isolation Resistance	Input to output	All	100			MΩ

FEATURE CHARACTERISTICS

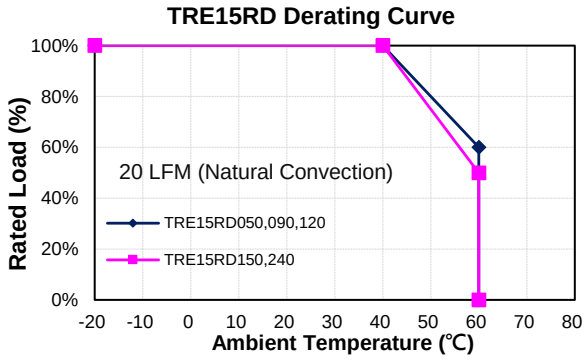
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Vin=115Vac, Io=100%	All		85		kHz
	Vin=230Vac, Io=100%			65		

GENERAL SPECIFICATIONS

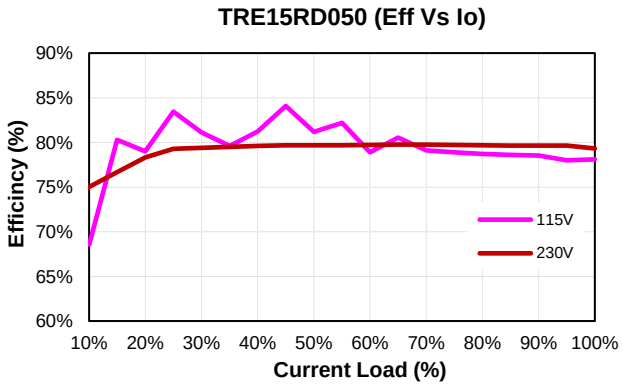
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100%; T_a=25℃ per MIL-HDBK-217F	All	330			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5,Table 516.5-I 10ms, each axis 3 times(±X、±Y、±Z axis)	All		75		g
Vibration	Meet MIL-STD-810F Table 514.5C-VIII,15~2000Hz, X、Y、Z axis, 1 hour (each axis),. Total 3 hrs.	All		4		g
Weight		All		100		g
Dimensions		All	2.835x2.244x1.299 inches (72.00x57.00x33.00 mm)			
Safety	Class II, IEC/EN/UL 62368-1/60950-1					Ed.2.0
EMC Emission	EN 55032: 2015/AC: 2016, EN 61000-3-2:2014 EN 61000-3-3:2013, FCC CFR Title 47 Part 15 Subpart B: 2016 Class B					
Conducted Disturbance	EN 55032:2015/AC:2016, EN 61000-6-3, EN 61204-3 FCC CFR Title 47 Part 15 Subpart B: 2016 Class B					Class B
Radiated Disturbance	EN 55032:2015/AC:2016, EN 61000-6-3, EN 61204-3 FCC CFR Title 47 Part 15 Subpart B: 2016 Class B					Class B
Power Harmonics	EN 61000-3-2: 2014					
Voltage Fluctuations	EN 61000-3-3: 2013					
EMC Immunity	EN 61204-3: 2000, EN 55024:2010+A1:2015, EN 61000-6-1, 3, IEC 61000-4-2, 3, 4, 5, 6, 8, 11					
Electrostatic Discharge (ESD)	IEC 61000-4-2 Ed. 2.0: 2008, Air Discharge: ±8kV, Contact Discharge: ±4kV					Criteria A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3 Ed. 3.2: 2010					Criteria A
Electrical Fast Transient (EFT)	IEC 61000-4-4 Ed. 3.0: 2012, ±1kV					Criteria A
Surge	IEC 61000-4-5 Ed. 3.0: 2014, L-N: ±1kV					Criteria A
Conducted disturbances, induced by RF fields	IEC 61000-4-6 Ed. 4.0: 2013					Criteria A
Power frequency magnetic field	IEC 61000-4-8 Ed. 2.0: 2009					Criteria A
Voltage dips	IEC 61000-4-11 Ed. 2.0: 2004, Dips: 30% Reduction, Dips: >95% Reduction					Criteria A
Voltage interruptions	IEC 61000-4-11 Ed. 2.0: 2004, >95% reduction					Criteria B
Application Note Link	TRE15RD Series App Notes					

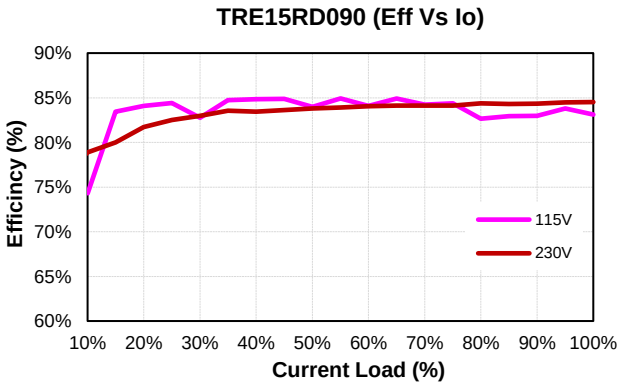
CHARACTERISTIC CURVE

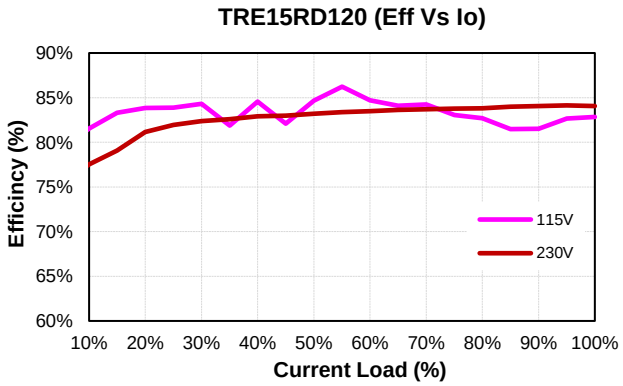
Power Derating Curve

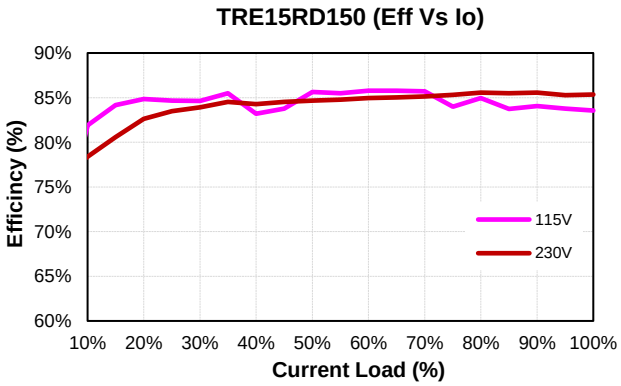


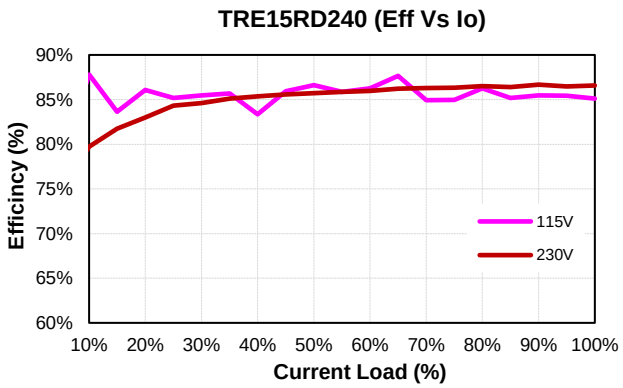
Performance Data



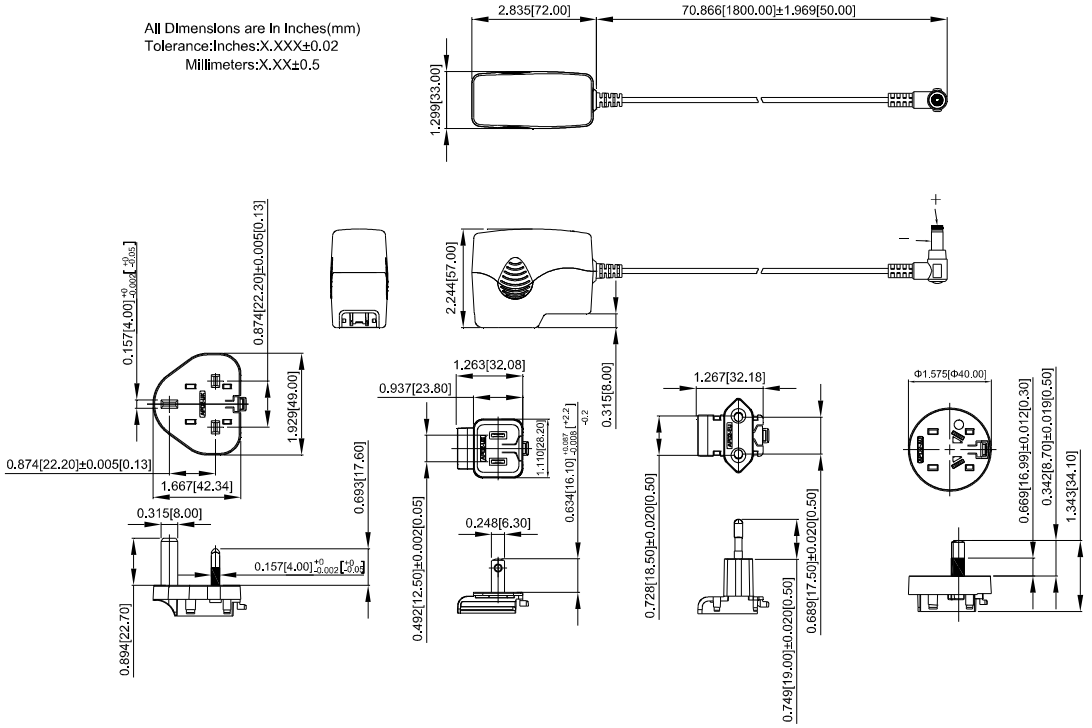




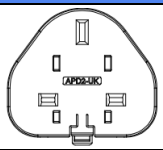
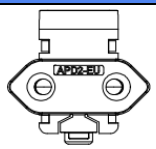
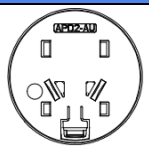




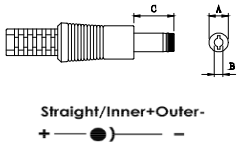
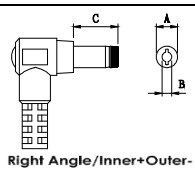
MECHANICAL SPECIFICATION



INTERCHANGEABLE AC PLUG SPECIFICALLY FOR TRE15RD (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

STANDARD OUTPUT PLUG

DC Plug Type	Cable Number -XXXXX	A OD (mm)	B ID (mm)	C L (mm)	Cable Type	Cable Length	Cable AWG
 Straight/Inner+Outer-	11G03	Φ5.5	Φ2.1	12	UL1571	1800mm without Core	20AWG for Vo: 5V 18AWG for Vo: 9V 24AWG for Vo: 12V, 15V, 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			

※Other DC Plug Type please refer to the link:https://www.cincon.com/productdownload/TRE15RD-cable-DC-Plug.pdf

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