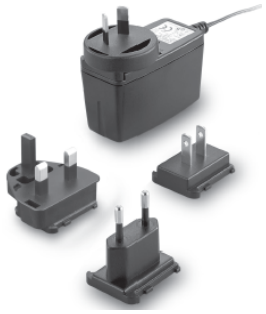
TRG10R SERIES
10 WATT AC-DC I.T.E
INTERCHANGEABLE PLUG ADAPTER

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 84%
- 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 2000m
- 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
TRG10R050	5 V	1600 mA	±2%	50 mV	±1%	±4%	77%
TRG10R059	5.9 V	1500 mA	±2%	60 mV	±1%	±3%	80%
TRG10R060	6 V	1500 mA	±2%	60 mV	±1%	±3%	82%
TRG10R075	7.5 V	1200 mA	±2%	75 mV	±1%	±3%	82%
TRG10R090	9 V	1100 mA	±2%	90 mV	±1%	±2%	84%
TRG10R120	12 V	850 mA	±2%	120 mV	±1%	±2%	82%
TRG10R136	13.6 V	750 mA	±2%	136 mV	±1%	±2%	83%
TRG10R150	15 V	700 mA	±2%	150 mV	±1%	±2%	83%
TRG10R180	18 V	550 mA	±2%	180 mV	±1%	±2%	83%
TRG10R240	24 V	400 mA	±2%	240 mV	±1%	±2%	83%

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
TRG10R	XXX	-X	-XX	X	XX
10W I.T.E Adapter	050 : 5V 059 : 5.9V 060 : 6V 075 : 7.5V 090 : 9V 120 : 12V 136 : 13.6V 150 : 15V 180 : 18V 240 : 24V	Blank: Sold Separately ASUE: Include 4 Type AC Plug	See Page 7	E： UL1185 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 7 for restrictions

Part Number Example:

TRG10R120-01E03, 12V_{dc} Output, DC Jack Type, Cable Length 1800mm

TRG10R120-ASUE-01E03, 12V_{dc} Output, Include 4 Type AC Plug, DC Jack Type, Cable Length 1800mm

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	90 120		264 370	V_{ac} V_{dc}
Operating Case Temperature	See Derating Curve	All	-20		60	℃
Storage Temperature		All	-20		85	℃
Operating Altitude		All			2000	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			0.4	A
Leakage Current		All			250	uA
Inrush Current	V_{in}=240V_{ac}, Cold start at 25℃	All			40	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℃	TRG10R050	4.9	5	5.1	V_{dc}
		TRG10R059	5.78	5.9	6.02	
		TRG10R060	5.88	6	6.12	
		TRG10R075	7.35	7.5	7.65	
		TRG10R090	8.82	9	9.18	
		TRG10R120	11.76	12	12.24	
		TRG10R136	13.328	13.6	13.872	
		TRG10R150	14.7	15	15.3	
		TRG10R180	17.64	18	18.36	
		TRG10R240	23.52	24	24.48	
Operating Output Current Range	V_{in}=115V_{ac} and 230V_{ac}, T_c=25℃	TRG10R050			1.6	A
		TRG10R059			1.5	
		TRG10R060			1.5	
		TRG10R075			1.2	
		TRG10R090			1.1	
		TRG10R120			0.85	
		TRG10R136			0.75	
		TRG10R150			0.7	
		TRG10R180			0.55	
		TRG10R240			0.4	
Holdup Time	V_{in}=115V_{ac}	All		10		ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TRG10R050			±4.0	%
		TRG10R059			±3.0	
		TRG10R060			±3.0	
		TRG10R075			±3.0	
		TRG10R090			±2.0	
		TRG10R120			±2.0	

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Load Regulation	60%±40% Full load change	TRG10R136			±2.0	%
		TRG10R150			±2.0	
		TRG10R180			±2.0	
		TRG10R240			±2.0	
Line Regulation	V_{in}=100V_{ac} to 240V_{ac}	All			±1.0	%
Over Voltage Protection	TVS Component to clamp	TRG10R050			7.54	V_{dc}
		TRG10R059			8.28	
		TRG10R060			8.28	
		TRG10R075			12	
		TRG10R090			13	
		TRG10R120			16.2	
		TRG10R136			16.2	
		TRG10R150			19.3	
		TRG10R180			23.5	
		TRG10R240			28.8	
Over Current Protection	Auto recovery	All	110		180	%
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℃	TRG10R050			50	mV
		TRG10R059			60	
		TRG10R060			60	
		TRG10R075			75	
		TRG10R090			90	
		TRG10R120			120	
		TRG10R136			136	
		TRG10R150			150	
		TRG10R180			180	
		TRG10R240			240	
Load Capacitance	1. V_{in}=115V_{ac} and 230V_{ac} 2. Output is max. load 3. Ambient temperature=25℃	TRG10R050			1600	uF
		TRG10R059			1500	
		TRG10R060			1500	
		TRG10R075			1200	
		TRG10R090			1100	
		TRG10R120			850	
		TRG10R136			750	
		TRG10R150			700	
		TRG10R180			550	
		TRG10R240			400	
Efficiency	1. V_{in}=230V_{ac} 2. Output is 75% full load 3. Ambient temperature=25℃	TRG10R050		77%		%
		TRG10R059		80%		
		TRG10R060		82%		
		TRG10R075		82%		
		TRG10R090		84%		
		TRG10R120		82%		
		TRG10R136		83%		
		TRG10R150		83%		
		TRG10R180		83%		
		TRG10R240		83%		

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

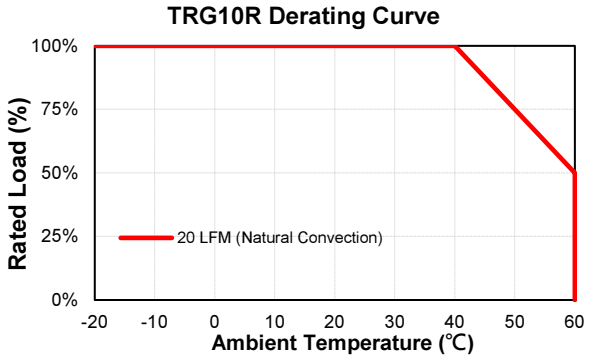
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Pout=max. rated power	All		67		kHz

GENERAL SPECIFICATIONS

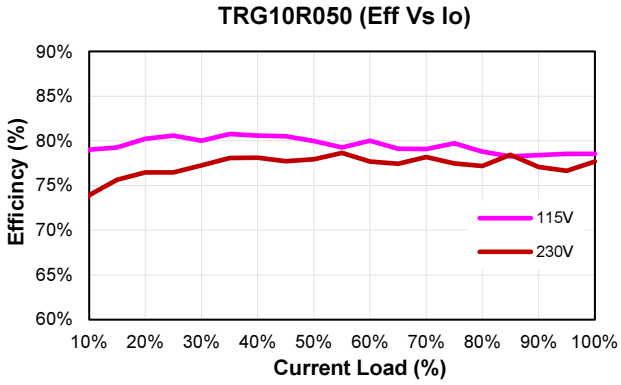
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100%; T_a=25℃ per MIL-HDBK-217F	All	200			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5,Table 516.5-I 10ms, each axis 3 times(±X、±Y、±Z axis)	All		75		g
Vibration	Meet MIL-STD-810F Table 514.5C-VIII,15~2000Hz, X、Y、Z axis, 1 hour (each axis),. Total 3 hrs.	All		4		g
Weight		All		130		g
Dimensions		All	2.858x1.823x1.402 inches (72.6x46.3x35.6 mm)			
Safety	Class II, IEC/EN/UL 62368-1/60950-1					Ed.2.0
EMC Emission	EN 55032:2012 +AC:2013, EN 61000-3-2:2014 and EN 61000-3-3:2013 FCC 47 CFR Part 15 Subpart B/Sep. 2007 and CISPR 22/1997 (Class B Limit)					
Conducted Disturbance	EN 55032:2012 +AC:2013					Class B
Radiated Disturbance	EN 55032:2012 +AC:2013					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, EN 61000-6-1, 3 IEC 61000-4-2, 3, 4, 5, 6, 8, 11					
Electrostatic Discharge (ESD)	IEC 61000-4-2/2001, Air Discharge: ±8kV, Contact Discharge: ±4kV					Criteria A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3/2006					Criteria A
Electrical Fast Transient (EFT)	IEC 61000-4-4/2004 +Corr.1:2006 +Corr.2:2007					Criteria A
Surge	IEC 61000-4-5/5005					Criteria A
Conducted disturbances, induced by RF fields	IEC 61000-4-6/2006					Criteria A
Power frequency magnetic field	IEC 61000-4-8/2001					Criteria A
Voltage dips	IEC 61000-4-11/2004, Dips: 30% Reduction, Dips: >95% Reduction					Criteria A
Voltage interruptions	IEC 61000-4-11/2004, >95% reduction					Criteria B
Application Note Link	TRG10R Series App Notes					

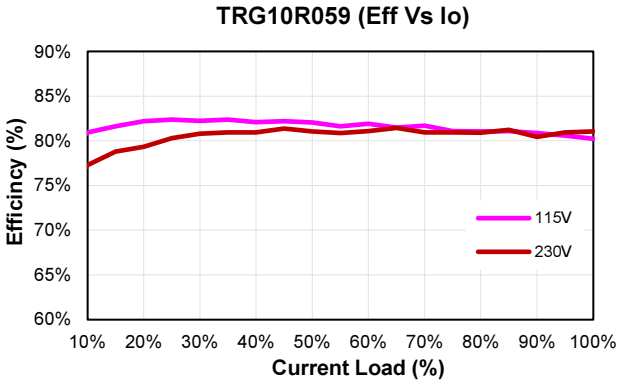
CHARACTERISTIC CURVE

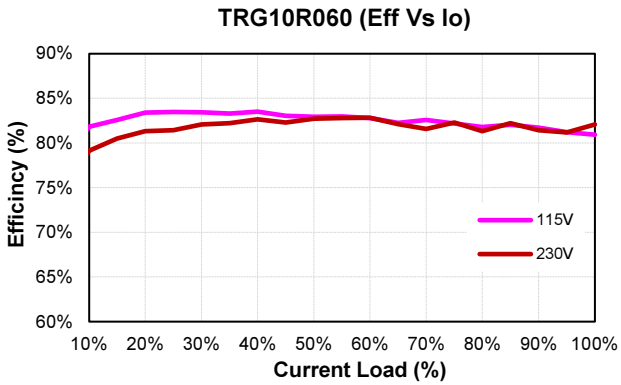
Power Derating Curve

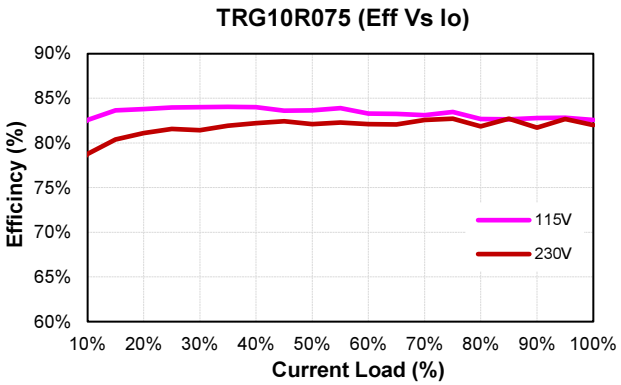


Performance Data

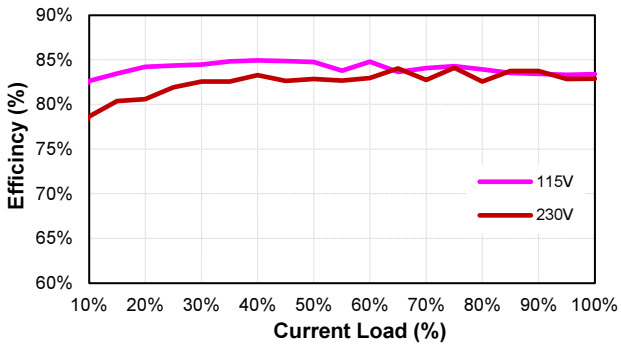




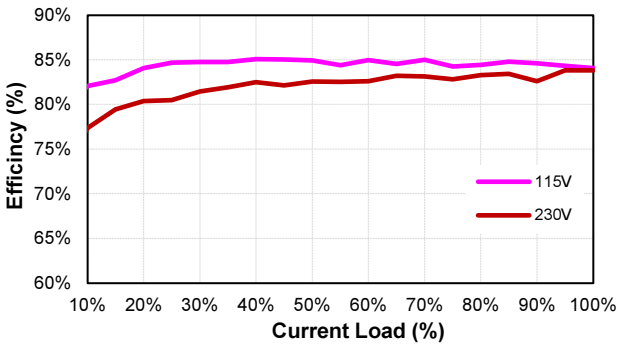




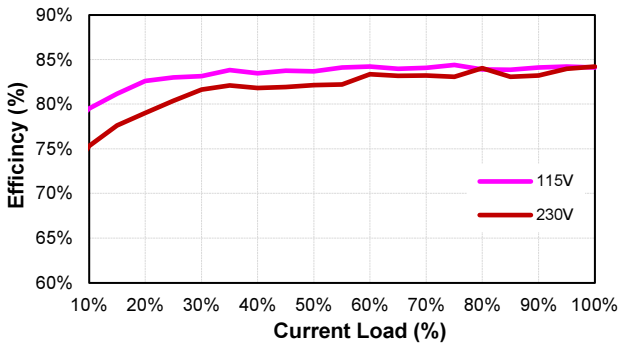
TRG10R090 (Eff Vs Io)



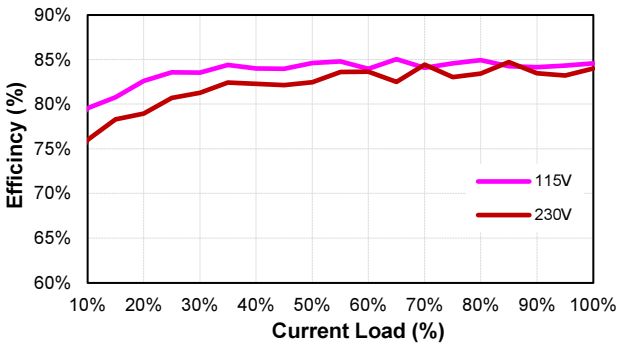
TRG10R120 (Eff Vs Io)



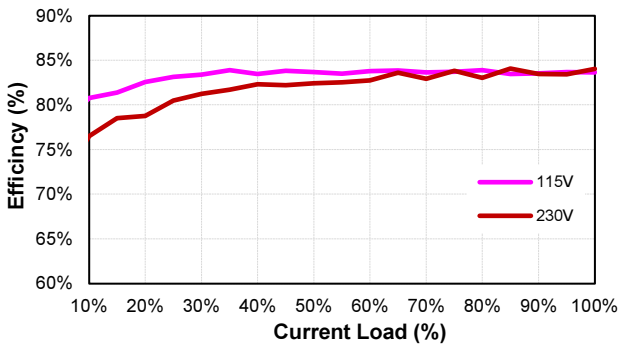
TRG10R136 (Eff Vs Io)



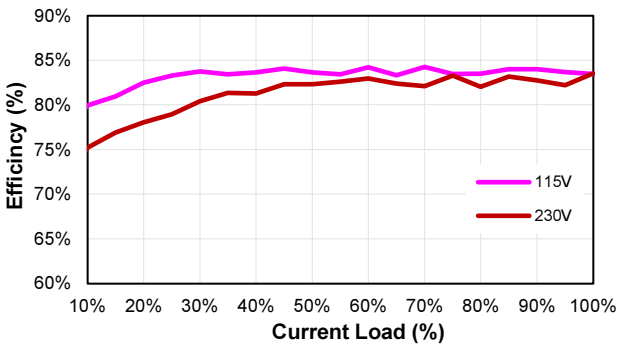
TRG10R150 (Eff Vs Io)



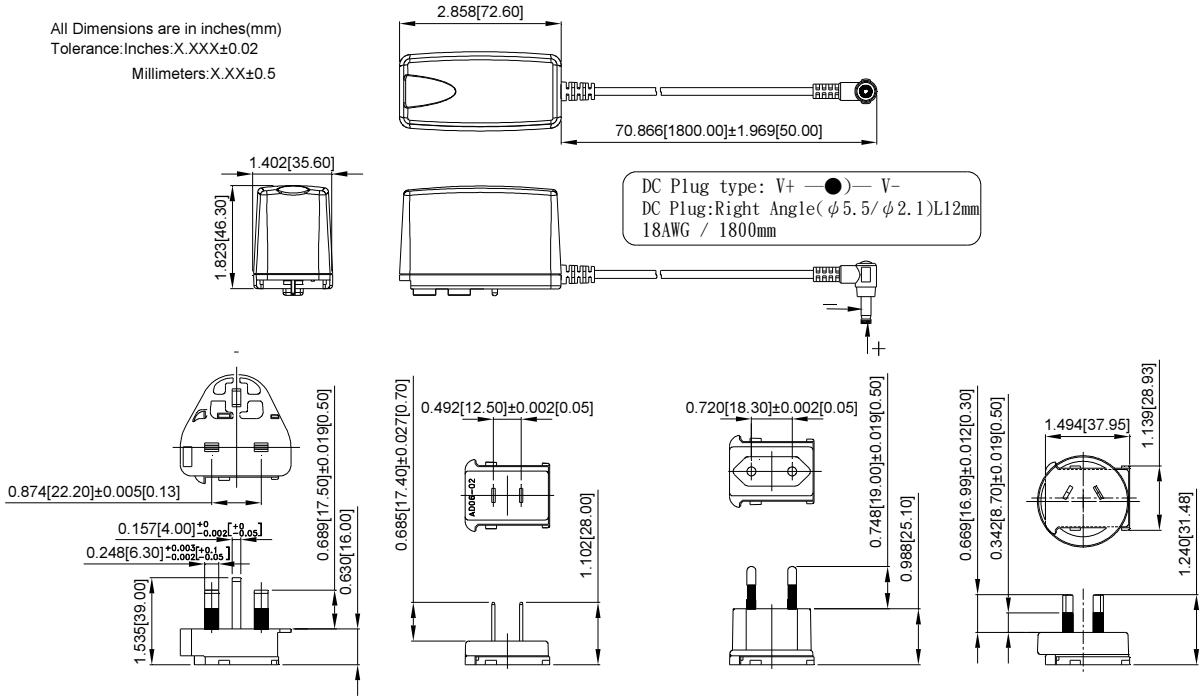
TRG10R180 (Eff Vs Io)



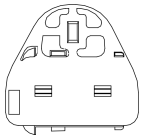
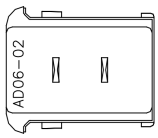
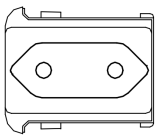
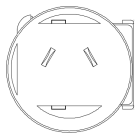
TRG10R240 (Eff Vs Io)



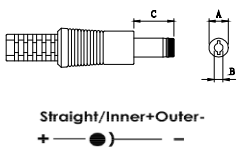
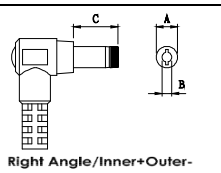
MECHANICAL SPECIFICATION



INTERCHANGEABLE AC PLUG SPECIFICALLY FOR TRG10R (SOLD SEPARATELY)

TYPE				
	U.K type (U)	American type (A)	European type (E)	Australian type (S)
ORDER NO.	AC PLUG R1-U	AC PLUG R1-A	AC PLUG R1-E	AC PLUG R1-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-	11E03	Φ5.5	Φ2.1	12	UL1185	1800mm without Core	18AWG for Vo: 5V, 5.9V, 6V, 7.5V, 9V 20AWG for Vo: 12V, 13.6V 22AWG for Vo: 15V, 18V 24AWG for Vo: 24V
	12E03	Φ5.5	Φ2.5	12			
	23E03	Φ5.5	Φ2.1	9.5			
	26E03	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer-	01E03	Φ5.5	Φ2.1	12			
	02E03	Φ5.5	Φ2.5	12			
	21E03	Φ5.5	Φ2.5	9.5			
	24E03	Φ5.5	Φ2.1	9.5			

※Other DC Plug Type please refer to the link:https://www.cincon.com/productdownload/TRG10R-cable-DC-Plug.pdf

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