TR30RDM SERIES
30 WATT AC-DC MEDICAL INTERCHANGEABLE PLUG ADAPTER

Features

- Universal Input Range 80~264Vac
- High Efficiency up to 88%
- Interchangeable AC Plugs
- Leakage Current < 50uA
- Class II
- No Load Power Consumption < 75mW
- Approval IEC/EN/UL 60601-1 2 MOPP
- Approval EN 60601-1-11 for Home Healthcare Applications
- Approval EN 55011, FCC 47 CFR Part 18 Class B
- Approval IP22
- Meets IEC/EN 60335-1
- Operating Altitude 5000m
- Over Voltage Protection
- Continuous Short Circuit Protection
- PD(5V, 20V) Meets CoC Tier 2 & DoE Level V
  Others 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
TR30RDM050	5 V	5 A	±2%	100 mV	±1%	±6%	84%
TR30RDM090	9 V	3.3 A	±2%	100 mV	±1%	±3%	88%
TR30RDM120	12 V	2.5 A	±2%	120 mV	±1%	±2%	88%
TR30RDM150	15 V	2.0 A	±2%	120 mV	±1%	±2%	88%
TR30RDM180	18 V	1.67 A	±2%	120 mV	±1%	±2%	88%
TR30RDM240	24 V	1.25 A	±2%	120 mV	±1%	±2%	88%

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
TR30RDM	XXX	-XXXX	-XX	X	XX	-XX-BK
30W Medical Adapter	050：5V 090：9V 120：12V 150：15V 180：18V 240：24V	Blank: Sold Separately ASUE: Include 4 Type AC Plug	See Page 7 **-PD (24V only)**	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 7 for restrictions	BK-BK：Black-Black BE-BK：Blue-Black

Part Number Example:

TR30RDM120-11G13-BK-BK, $12V_{dc}$ Output, DC Jack Type, Cable Length 1800mm with Ferrite Core, Case Color Black-Black

TR30RDM120-ASUE-11G03-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	See Derating Curve	All	80		264	V_{ac}
Operating Case Temperature	See Derating Curve	All	-25		70	℃
Storage Temperature		All	-25		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			0.8	A
Leakage Current		All			50	uA
Inrush Current	V_{in}=240V_{ac}, Cold start at 25℃	All		85		A
No Load Power	No load, V_{in}=240V_{ac}	Others TR30RDM240-PD			75 150	mW

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℃	TR30RDM050	4.90	5	5.10	V_{dc}
		TR30RDM090	8.82	9	9.18	
		TR30RDM120	11.76	12	12.24	
		TR30RDM150	14.70	15	15.30	
		TR30RDM180	17.64	18	18.36	
		TR30RDM240	23.52	24	24.48	
Operating Output Current Range	V_{in}=115V_{ac} and 230V_{ac},T_c=25℃	TR30RDM050			5	A
		TR30RDM090			3.3	
		TR30RDM120			2.5	
		TR30RDM150			2.0	
		TR30RDM180			1.67	
		TR30RDM240			1.25	
Holdup Time	V_{in}=115V_{ac}	All		10		ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TR30RDM050			±6.0	%
		TR30RDM090			±3.0	
		TR30RDM120			±2.0	
		TR30RDM150			±2.0	
		TR30RDM180			±2.0	
		TR30RDM240			±2.0	
Line Regulation	V_{in}=100V_{ac} to 240V_{ac}	All			±1.0	%
Over Voltage Protection	Latch off	TR30RDM050		7.44		V_{dc}
		TR30RDM090		12.60		
		TR30RDM120		15.50		
		TR30RDM150		19.50		
		TR30RDM180		23.50		
		TR30RDM240		31.50		
Over Current Protection	Auto recovery	All	110		160	%
Short Circuit Protection	Auto recovery	All				

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
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℃	TR30RDM050			100	mV
		TR30RDM090			100	
		TR30RDM120			120	
		TR30RDM150			120	
		TR30RDM180			120	
		TR30RDM240			120	
Load Capacitance	1. V_{in}=115V_{ac} and 230V_{ac} 2. Output is max. load 3. Ambient temperature=25℃	TR30RDM050			5000	uF
		TR30RDM090			3300	
		TR30RDM120			2500	
		TR30RDM150			2000	
		TR30RDM180			1670	
		TR30RDM240			1250	
Efficiency	1. V_{in}=230V_{ac} 2. Output is 75% full load 3. Ambient temperature=25℃	TR30RDM050		84		%
		TR30RDM090		88		
		TR30RDM120		88		
		TR30RDM150		88		
		TR30RDM180		88		
		TR30RDM240		88		

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 Minute	All			4000	V_{ac}
Isolation Resistance	Input to output	All	100			MΩ

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	P_{out}=max. rated power	All		65		kHz

GENERAL SPECIFICATIONS

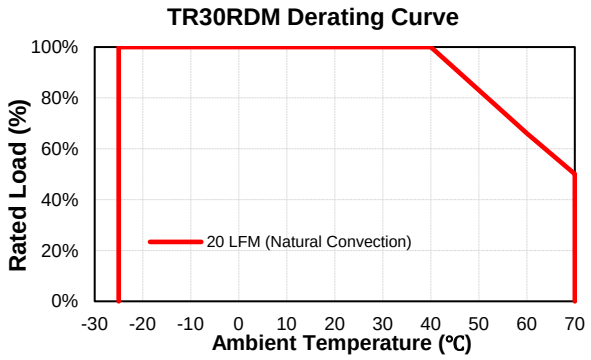
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100%; T_a=25℃ per MIL-HDBK-217F	All	556			k hours
	I o=100%; Ta=25℃ Telcordia SR332	All	4113			
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5,Table 516.5-I 10ms, each axis 3 times(±X、±Y、±Z axis)	All		75		g
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		170		g
Dimensions		All	3.807x2.283x1.703 inches (96.70x58.00x43.25 mm)			
PD Charging Protocol	TR30RDM240-PD can be paired with components to achieve PD function, The product needs to detect the protocol before the output is normal	QC2.0; QC3.0; QC4.0+; PD2.0; PD3.0; PPS; Samsung 2.0A; APPLE 2.4A; FCP; SCP. 5V/3A, 9V/3A, 12V/2.5A, 15V/2A, 20V/1.5A				
Safety	Class II, IEC 60601-1:2005+AMD1:2012+AMD2:2020 EN 60601-1:2006+A1+A12+A2 ANSI/AAMI ES 60601-1:2005& A1:2012 & A2:2021 IEC/EN 60601-1-11:2015 +A1 for Home Healthcare Applications					Ed.3.2
EMC Emission	EN 55011:2009+A1:2010, CISPR 11:2009+A1:2010, Class B, EN 61003-3:2013, FCC 47 CFR Part 18					
Conducted Disturbance	EN 55011:2009+A1:2010, CISPR 11:2009+A1:2010, FCC 47 CFR Part 18					Class B
Radiated Disturbance	EN 55011:2009+A1:2010, CISPR 11:2009+A1:2010, FCC 47 CFR Part 18					Class B
Voltage Fluctuations & Flicker	EN 61000-3-3:2013					
EMC Immunity	EN 60601-1-2:2015, EN 60601-1-2:2015+A1:2021, IEC 61000-4-2, 3, 4, 5, 6, 8, 11					Ed.4.1

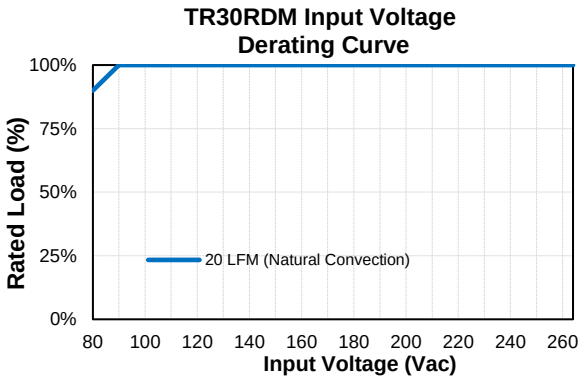
GENERAL SPECIFICATIONS

Electrostatic Discharge (ESD)	IEC 61000-4-2:2008, Air Discharge: ±15kV, Contact Discharge: ±8kV	Criteria A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2020	Criteria A
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, ±2kV	Criteria A
Surge	IEC 61000-4-5:2014+A1:2017, L-N: ±0.5kV, ±1kV	Criteria A
Conducted disturbances, induced by RF fields	IEC 61000-4-6:2013+COR1:2015	Criteria A
Power frequency magnetic field	IEC 61000-4-8:2009	Criteria A
Voltage dips	IEC 61000-4-11:2020, Dips: 30% Reduction, Dips: >95% Reduction	Criteria A
Voltage interruptions	IEC 61000-4-11:2020, >95% reduction	Criteria B
Application Note Link	TR30RDM Series App Notes	

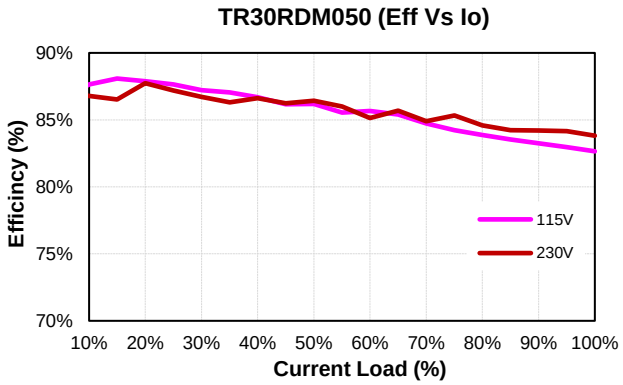
CHARACTERISTIC CURVE

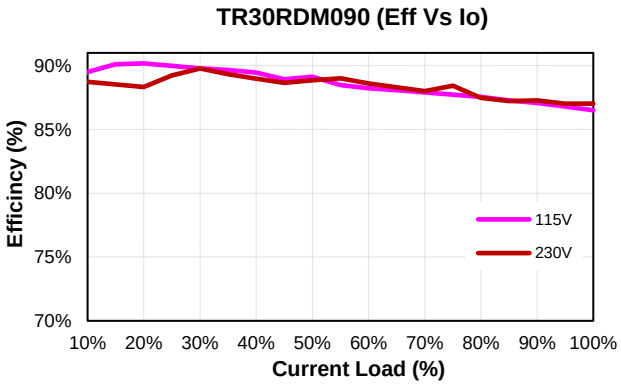
Power Derating Curve



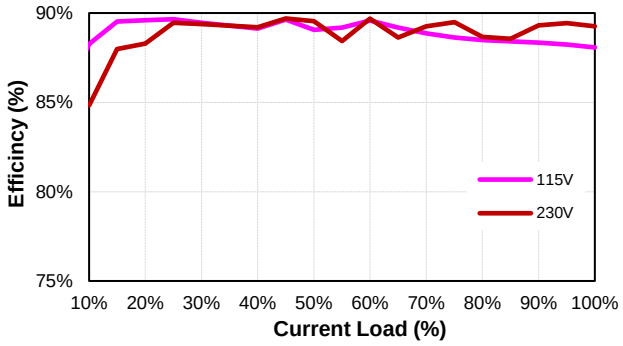


Performance Data

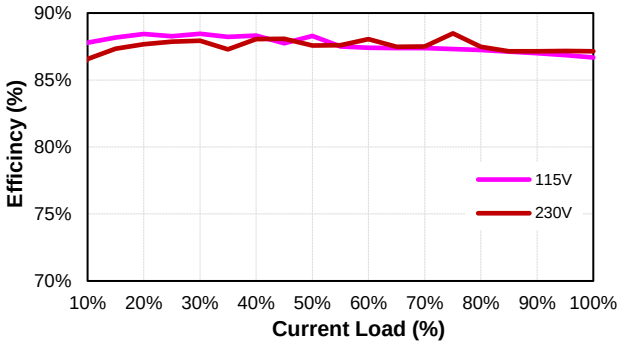




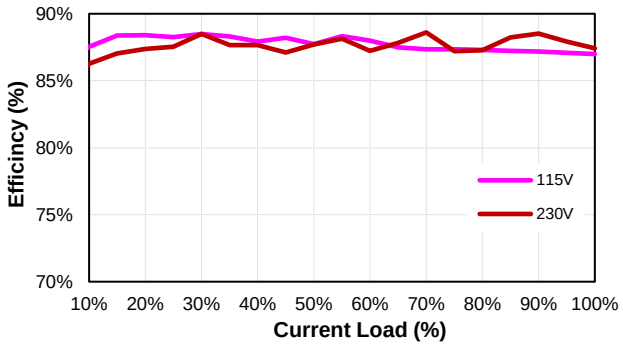
TR30RDM120 (Eff Vs Io)



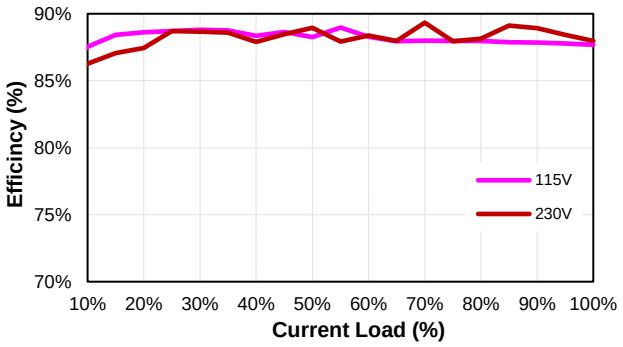
TR30RDM150 (Eff Vs Io)



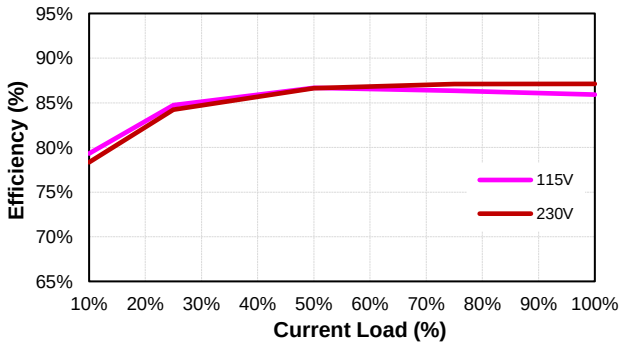
TR30RDM180 (Eff Vs Io)



TR30RDM240 (Eff Vs Io)

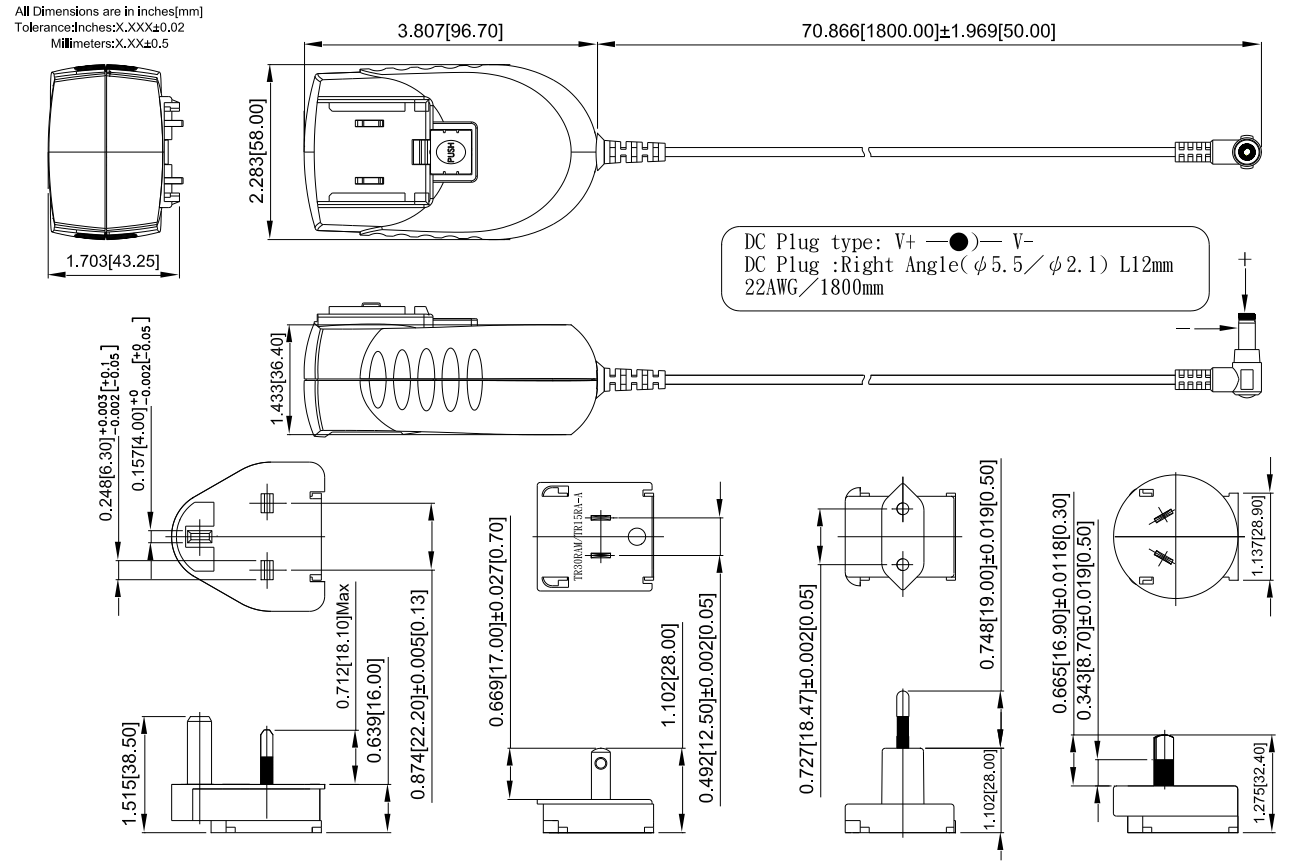


TR30RDM240-PD (20V Eff Vs Io)

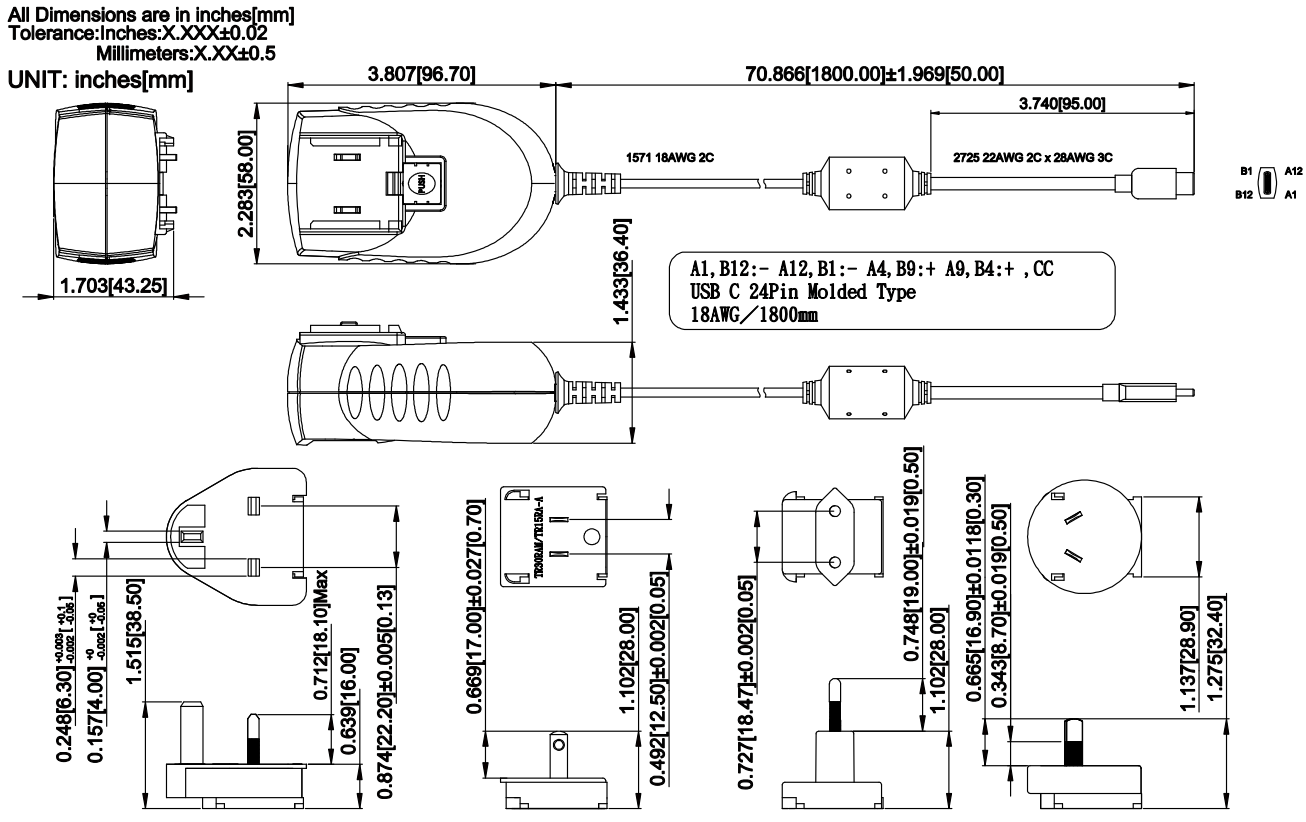


MECHANICAL SPECIFICATION

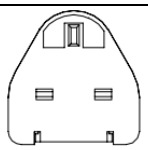
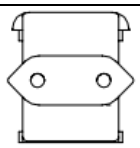
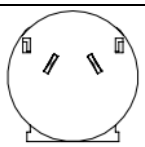
Standard Products



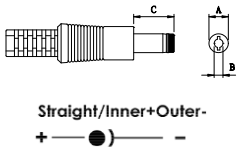
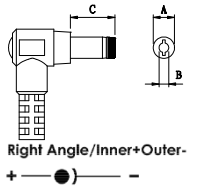
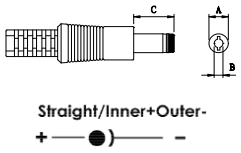
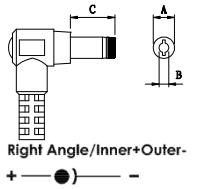
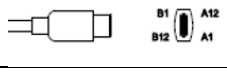
PD



INTERCHANGEABLE AC PLUG SPECIFICALLY for TR30RDM (SOLD SEPARATELY)

TYPE				
	U.K type (U)	American type (A)	European type (E)	Australian type (S)
ORDER NO.	AC PLUG RA-U	AC PLUG RA-A	AC PLUG RA-E	AC PLUG RA-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
	11G02	Φ5.5	Φ2.1	12	UL1571	1220mm without Core	16AWG for Vo: 5V
	12G02	Φ5.5	Φ2.5	12			
	23G02	Φ5.5	Φ2.1	9.5			
	26G02	Φ5.5	Φ2.5	9.5			
	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			
	11G03	Φ5.5	Φ2.1	12	UL1571	1800mm without Core	16AWG for Vo: 9V 18AWG for Vo: 12V, 15V 22AWG for Vo: 18V, 24V
	12G03	Φ5.5	Φ2.5	12			
	23G03	Φ5.5	Φ2.1	9.5			
	26G03	Φ5.5	Φ2.5	9.5			
	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			
	PDG475 (TR30RDM240 only)	Type C			UL1571	1800mm	18AWG for Vo: 5V~20V

※Other DC Plug Type please refer to the link: https://www.cincon.com/productdownload/TR30RDM-cable-DC-Plug.pdf

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