

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 EN55011, FCC47 CFR Part 18 Class B
- Approval IP22
- Meets IEC/EN 60335-1
- Operating Altitude 5000m
- Over Voltage Protection
- Continuous Short Circuit Protection
- PD 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 100Vac to 240Vac 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 Vac and 75% full load at 25°C.

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°C 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	°C
Storage Temperature		All	-25		85	°C
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°C	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°C	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°C	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				

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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°C	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°C	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°C	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

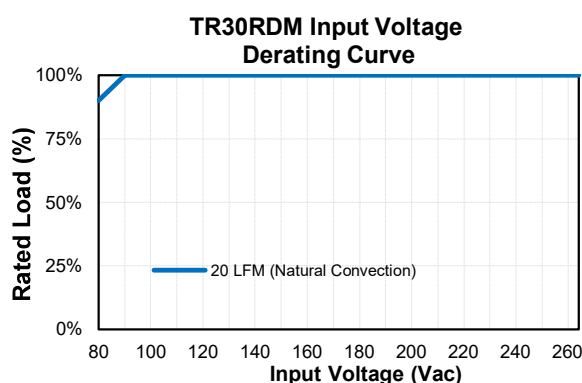
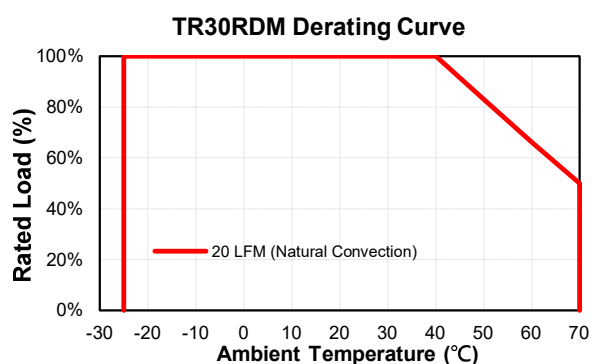
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I _o =100%; T _a =25°C per MIL-HDBK-217F	All	556			k hours
	I _o =100%; T _a =25°C Telcordia SR332	All	4113			
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5, Table 516.5-I 10ms, each axis 3 times(±X 、 ±Y 、 ±Z 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
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008, Air Discharge: ±15kV, Contact Discharge: ±8kV					Criteria A

GENERAL SPECIFICATIONS

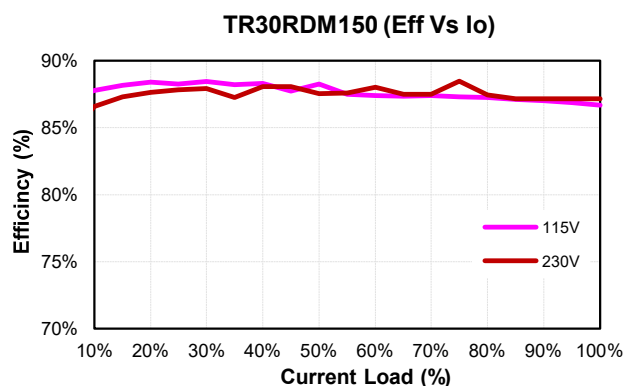
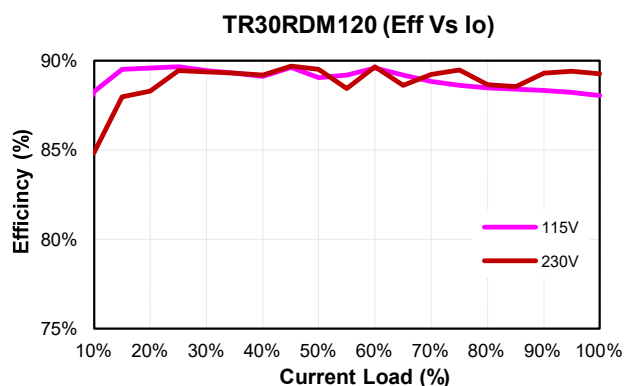
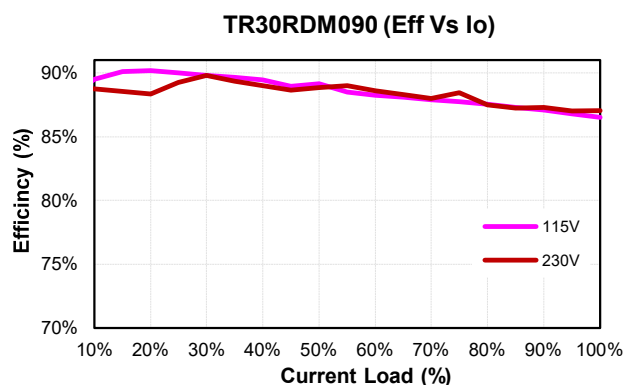
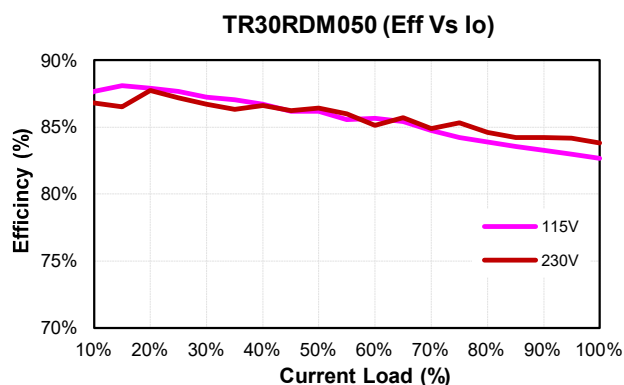
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2020	Criteria A
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, $\pm 2\text{kV}$	Criteria A
Surge	IEC 61000-4-5:2014+A1:2017, L-N: $\pm 0.5\text{kV}$, $\pm 1\text{kV}$	Criteria A
Conducted disturbances, induced by RF fields	IEC 61000-4-6:2013+COR1:2015	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

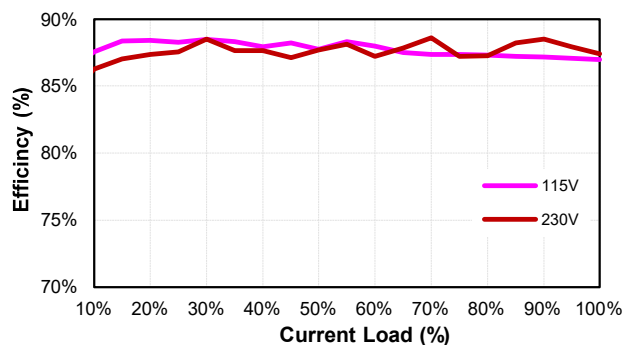


Performance Data

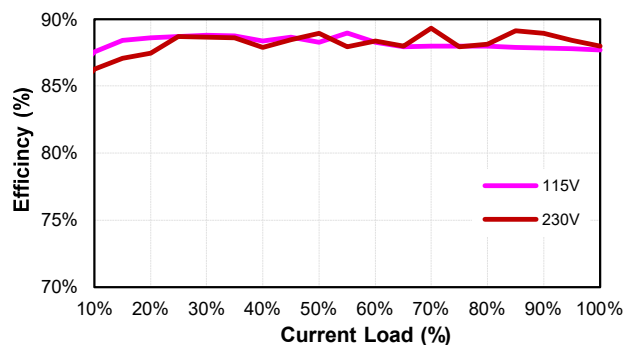


TR30RDM Series

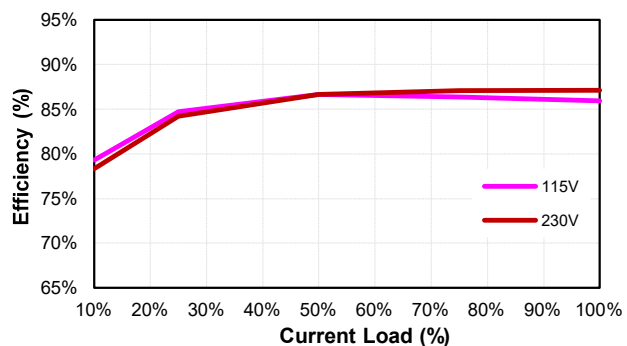
TR30RDM180 (Eff Vs Io)



TR30RDM240 (Eff Vs Io)



TR30RDM240-PD (20V Eff Vs Io)

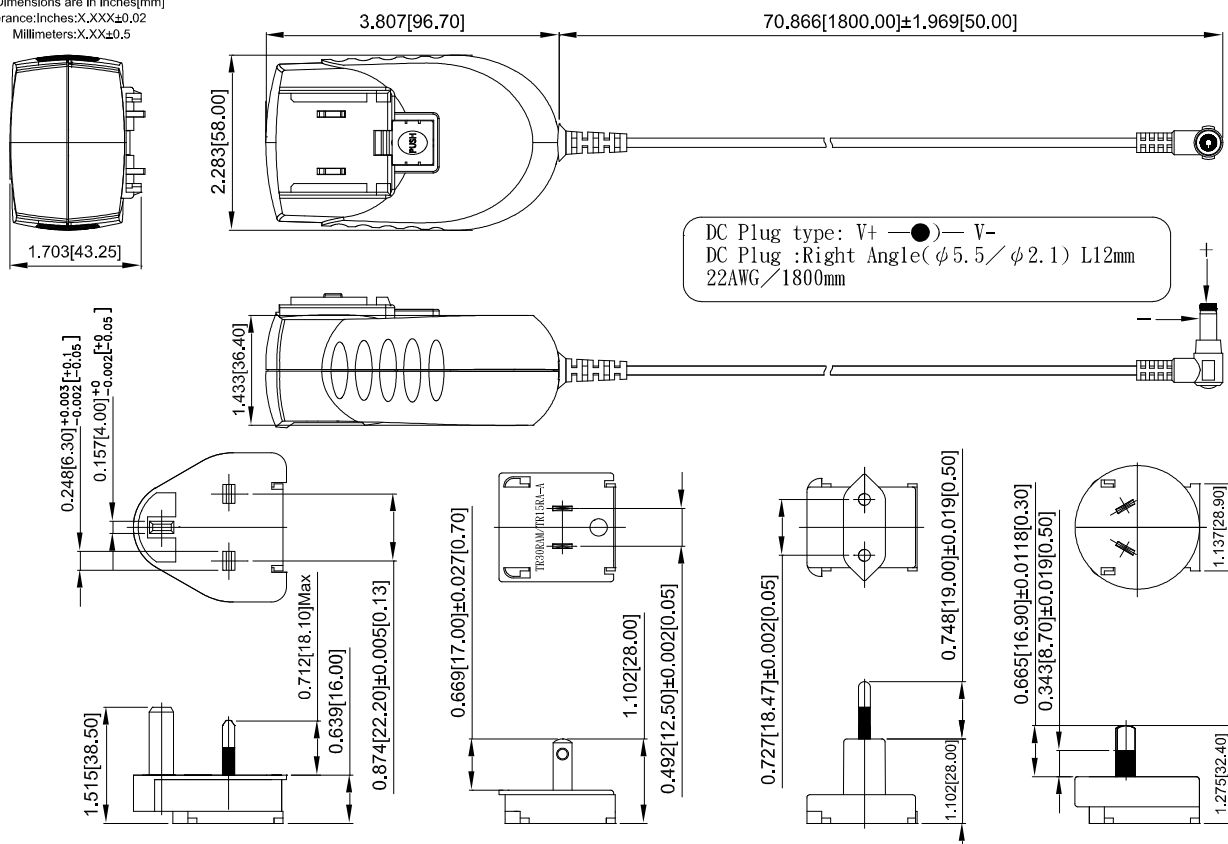




MECHANICAL SPECIFICATION

Standard Products

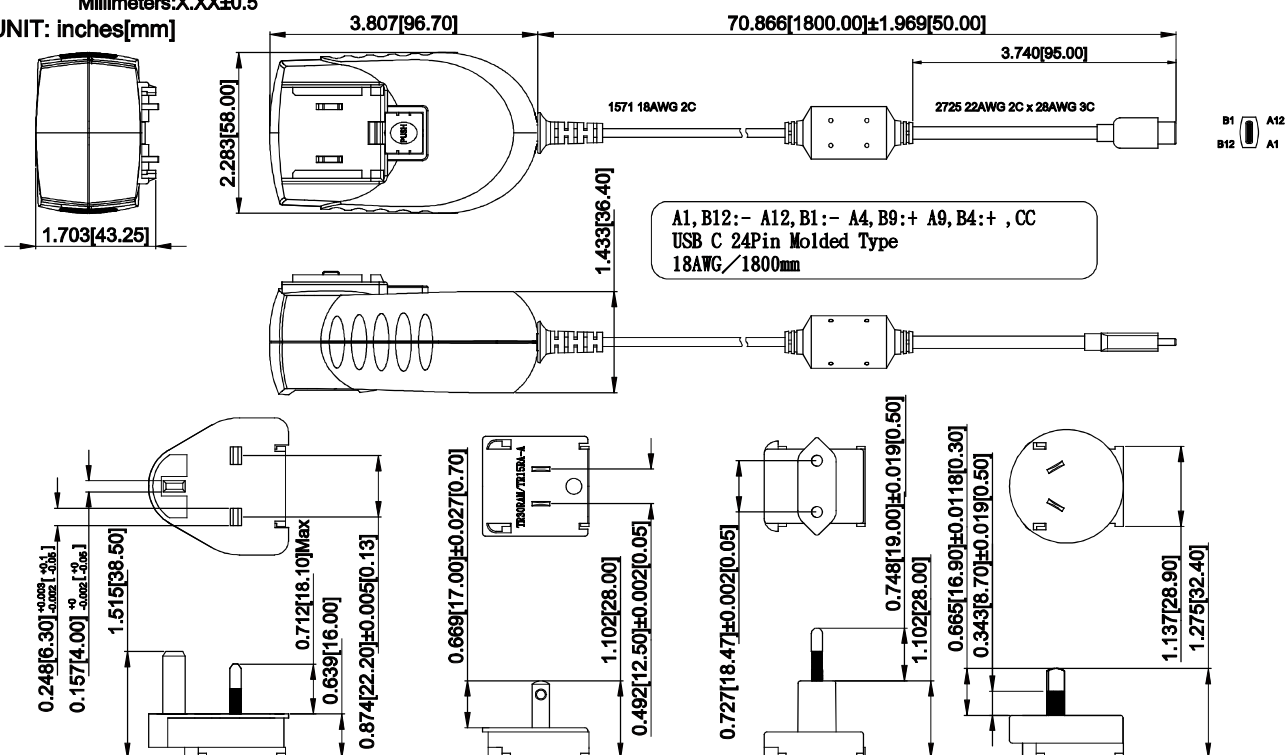
All Dimensions are in inches[mm]
Tolerance:Inches:X.XXX $\pm$ 0.02
Millimeters:X.XX $\pm$ 0.5



PD

All Dimensions are in inches[mm]
Tolerance:Inches:X.XXX $\pm$ 0.02
Millimeters:X.XX $\pm$ 0.5

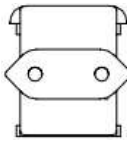
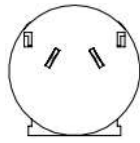
UNIT: inches[mm]



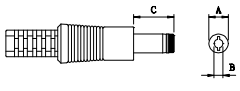
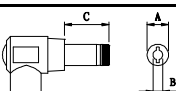
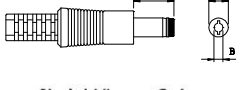
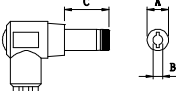
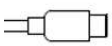


TR30RDM Series

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	B	C	Cable Type	Cable Length	Cable AWG
		OD (mm)	ID (mm)	L (mm)			
 Straight/Inner+Outer- + — ● — —	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			
 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			
 Straight/Inner+Outer- + — ● — —	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			
 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			
 	PDG475 (TR30RDM240 only)	Type C			UL1571	1800mm	18AWG for Vo: 5V~20V