



# TRG36 SERIES 36W SWITCHING ADAPTER

## Features

- Universal Input Range 90~264Vac
- High Efficiency up to 89%
- Class II
- No Load Input Power Consumption < 75mW
- Approval IEC/EN/UL62368-1
- Approval EN55032 and CISPR/FCC Class B
- Operating Altitude 2000m
- Continuous Short Circuit Protection
- Over Voltage Protection
- Meets CoC Tier 2 and DoE Level VI



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE NOTE1	VOLTAGE ACCURACY NOTE2	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.)
TRG36A05	5 V	4.0 A	50mV	±2%	±1%	±6%	84%
TRG36A09	9 V	3.0 A	90mV	±2%	±1%	±5%	87%
TRG36A12	12 V	2.5 A	120mV	±2%	±1%	±5%	87%
TRG36A13	13.5 V	2.4 A	135mV	±2%	±1%	±5%	87%
TRG36A15	15 V	2.4 A	150mV	±2%	±1%	±3%	87%
TRG36A18	18 V	2.0 A	180mV	±2%	±1%	±2%	88%
TRG36A24	24 V	1.5 A	240mV	±2%	±1%	±2%	88%
TRG36A48	48 V	0.75 A	480mV	±2%	±1%	±2%	89%

**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<sub>ac</sub> to 240V<sub>ac</sub> with full load.
4. Load regulation measured from 60% to 100% full load and from 60% to 20% load (60% ±40% full load).
5. Typical efficiency at 230V<sub>ac</sub> and 75% full load at 25°C

## PART NUMBER

Series	Output Voltage	DC Plug Type	Cable Type	Cable Length		
TRG36A	XX	-XX	E	XX		
36W I.T.E Adapter	05 : 5V	See Page 6	5V UL2464 with OVP E : 9V~48V UL1185 with OVP	01 : 720mm		
	09 : 9V			02 : 1220mm		
	12 : 12V			03 : 1800mm		
	13 : 13.5V			11 : 720mm with Ferrite Core		
	15 : 15V			12 : 1220mm with Ferrite Core		
	18 : 18V			13 : 1800mm with Ferrite Core		
	24 : 24V					
	48 : 48V					
						<a href="#">See page 6 for restrictions</a>

Part Number Example:

**TRG36A12-01E03**, 36W, Class II, 12V<sub>dc</sub> Output, DC Jack Type, Cable Length 1800mm

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# TRG36A 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 <sub>ac</sub>
Operating Temperature	See Derating Curve	All	-20		60	°C
Storage Temperature		All	-20		85	°C
Input/Output Isolation Voltage	1 minute	All			3000	V <sub>ac</sub>
Operating Altitude		All			2000	m

### INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range		All	100		240	V <sub>ac</sub>
Input Frequency Range		All	47		63	Hz
Maximum Input Current	100% Load, V <sub>in</sub> =100V <sub>ac</sub>	All			1.0	A
Leakage Current		All			250	uA
Inrush Current	V <sub>in</sub> =240V <sub>ac</sub> , Cold start at 25°C	All			60	A

### OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	V <sub>in</sub> =115V <sub>ac</sub> and 230V <sub>ac</sub> , I <sub>o</sub> =60% Full load T <sub>c</sub> =25°C	TRG36A05	4.9	5	5.1	V <sub>dc</sub>
		TRG36A09	8.82	9	9.18	
		TRG36A12	11.76	12	12.24	
		TRG36A13	13.23	13.5	13.77	
		TRG36A15	14.7	15	15.3	
		TRG36A18	17.64	18	18.36	
		TRG36A24	23.52	24	24.48	
Operating Output Current Range	V <sub>in</sub> =115V <sub>ac</sub> and 230V <sub>ac</sub> , T <sub>c</sub> =25°C	TRG36A05	0		4	A
		TRG36A09	0		3	
		TRG36A12	0		2.5	
		TRG36A13	0		2.4	
		TRG36A15	0		2.4	
		TRG36A18	0		2	
		TRG36A24	0		1.5	
TRG36A48	0		0.75			
Holdup Time	V <sub>in</sub> =115V <sub>ac</sub>	All		8		ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TRG36A05			±6.0	%
		TRG36A09			±5.0	
		TRG36A12			±5.0	
		TRG36A13			±5.0	
		TRG36A15			±3.0	
		TRG36A18			±2.0	
		TRG36A24			±2.0	
TRG36A48			±2.0			
Line Regulation	V <sub>in</sub> =High line to low line	All			±1.0	%



# TRG36A Series

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Over Voltage Protection	TVS Component to clamp	TRG36A05	6.45		7.14	V <sub>dc</sub>
		TRG36A09	10.5		12	
		TRG36A12	14.3		15.8	
		TRG36A13	14.3		15.8	
		TRG36A15	17.1		18.9	
		TRG36A18	20.9		23.5	
		TRG36A24	28.5		31.5	
		TRG36A48	53.2		58.8	
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	TRG36A05			50	mV
		TRG36A09			90	
		TRG36A12			120	
		TRG36A13			135	
		TRG36A15			150	
		TRG36A18			180	
		TRG36A24			240	
		TRG36A48			480	
Over Current Protection	Auto recovery	All	120		150	%
Short Circuit Protection	Auto recovery	All				
Load Capacitance	1. V <sub>in</sub> =115V <sub>ac</sub> and 230V <sub>ac</sub> 2. Output is max. load 3. Ambient temperature=25°C	TRG36A05			4000	uF
		TRG36A09			3000	
		TRG36A12			2500	
		TRG36A13			2400	
		TRG36A15			2400	
		TRG36A18			2000	
		TRG36A24			1500	
		TRG36A48			780	
Efficiency	1. V <sub>in</sub> =230V <sub>ac</sub> 2. Output is 75% full load 3. Ambient temperature=25°C	TRG36A05		84%		%
		TRG36A09		87%		
		TRG36A12		87%		
		TRG36A13		87%		
		TRG36A15		87%		
		TRG36A18		88%		
		TRG36A24		88%		
		TRG36A48		89%		

## ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 minute (without dielectric breakdown)	All			3000	V <sub>ac</sub>
Isolation Resistance		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	V <sub>in</sub> =115V <sub>ac</sub> , I <sub>o</sub> =100%; T <sub>a</sub> =25°C per MIL-HDBK-217F	All	200			k hours
Humidity	Non-condensing	All			93	% RH
Shock	MIL-STD-810F Table 516.5, TABLE 516.5-1 10ms, each axis 3 times(±X、±Y、±Z axis)	All		75		g



# TRG36A Series

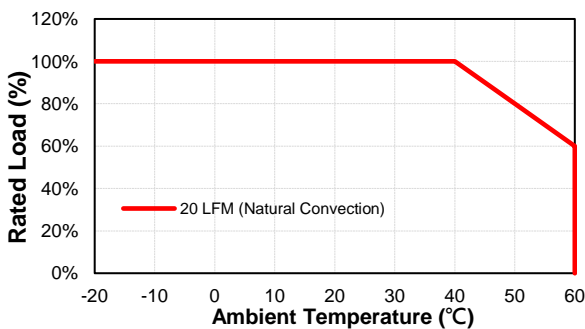
## GENERAL SPECIFICATIONS

Vibration	MIL-STD-810F Table 514.5C-VIII, 15~2000Hz, X · Y · Z axis, 1 hour(each axis),. total 3 hours.	All	4	g
Weight		All	190	grams
Dimension		All	4.370x2.008x0.886 inches (111.00x51.00x22.50 mm)	
<b>Safety</b>	Class II IEC 62368-1: 2014, EN62368-1: 2014+A11, UL 62368-1, 2nd Edition			Ed 2.0
<b>EMC Emission</b>	EN55032: 2015, EN61000-3-2: 2014, EN6100-3-3: 2013, FCC CFR 47 Part 15			
Conducted Disturbance	EN55032: 2015, FCC CFR 47 Part 15			Class B
Radiated Disturbance	EN55032: 2015, FCC CFR 47 Part 15			Class B
Harmonic Current Emissions	EN 61000-3-2: 2014			Class A
Voltage Fluctuations & Flicker	EN 61000-3-3: 2013			Criterion A
<b>EMC Immunity</b>	EN55024:2010, EN61000-6-1:2007, EN61204-3:2000, IEC61000-4-2,3,4,5,6,8,11,			
Electrostatic Discharge (ESD)	IEC 61000-4-2: 2008 Air Discharge: ±8kV Contact Discharge: ±4kV			Criterion A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3: 2010			Criterion A
Electrical Fast Transient (EFT)	IEC61000-4-4: 2012, ±1kV			Criterion A
Surge	IEC61000-4-5: 2014, L-N: ±1kV			Criterion A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6: 2013			Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8: 2009			Criterion A
Voltage Dips	IEC 61000-4-11: 2004, Dips:30% reduction, Dips: >95% Reduction			Criterion A
Voltage Interruptions	IEC 61000-4-11: 2004, >95% Reduction			Criterion B
Application Note Link				<a href="#">TRG36A Series App Notes</a>

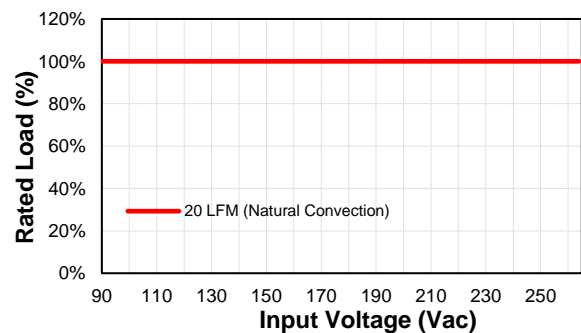
## CHARACTERISTIC CURVE

### Power Derating Curve

TRG36A Derating Curve

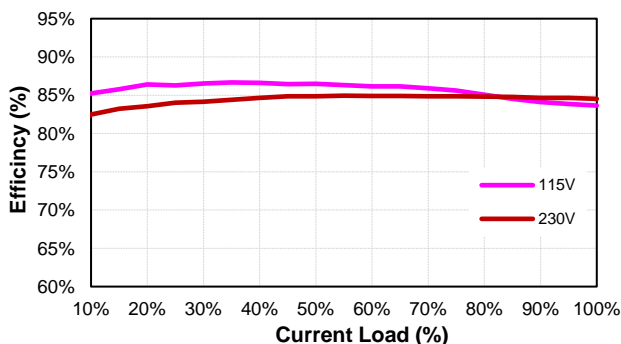


TRG36A Input Voltage Derating Curve

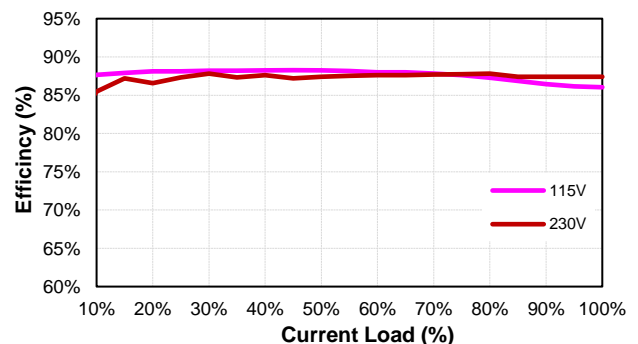


### Performance Data

TRG36A05 (Eff Vs Io)



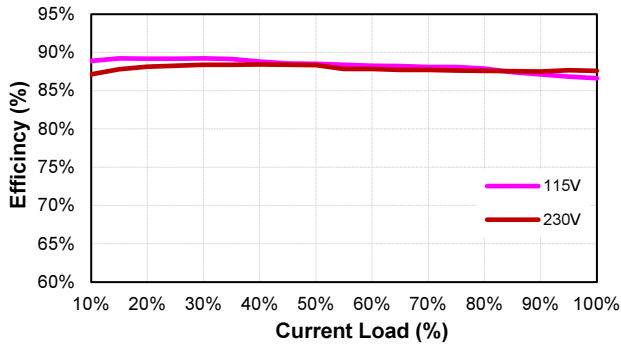
TRG36A09 (Eff Vs Io)



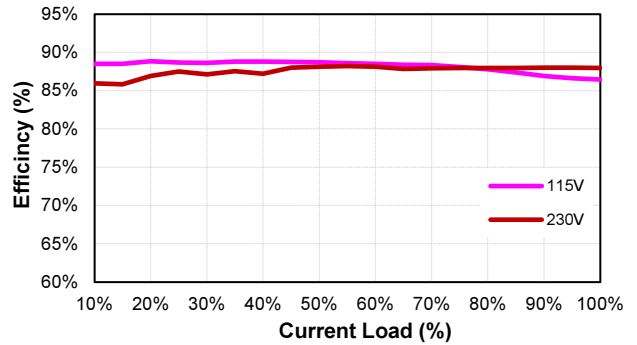


# TRG36A Series

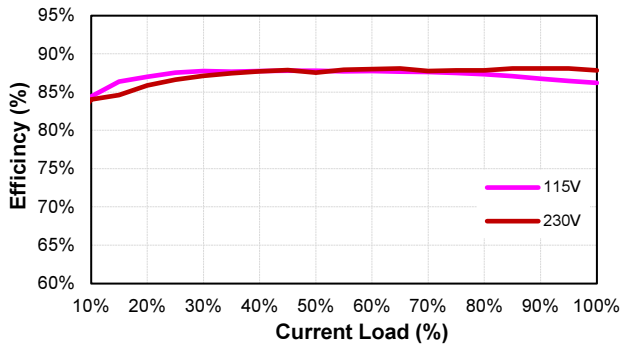
TRG36A12 (Eff Vs Io)



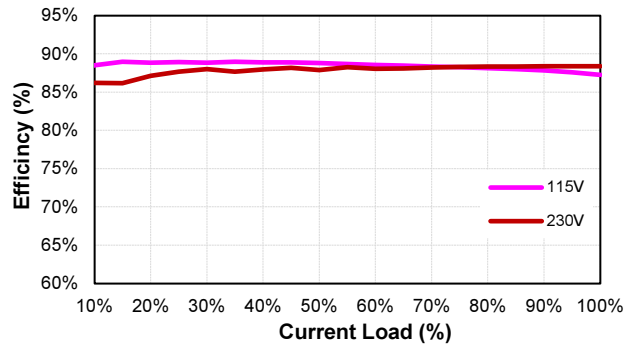
TRG36A13 (Eff Vs Io)



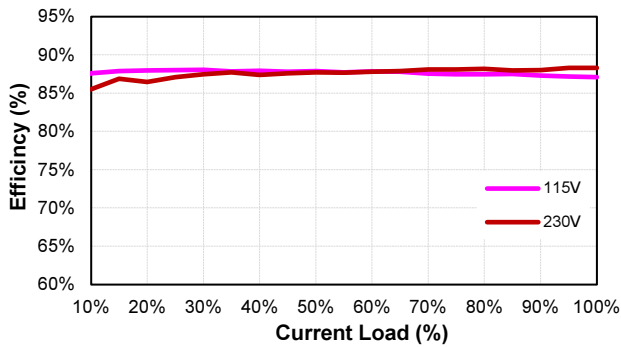
TRG36A15 (Eff Vs Io)



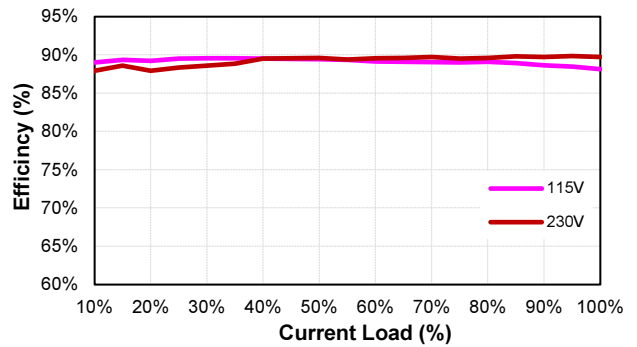
TRG36A18 (Eff Vs Io)



TRG36A24 (Eff Vs Io)

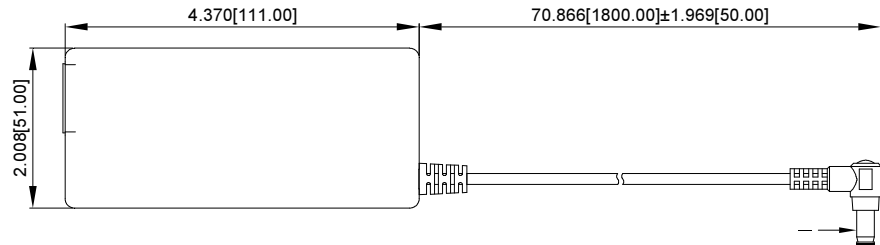


TRG36A48 (Eff Vs Io)



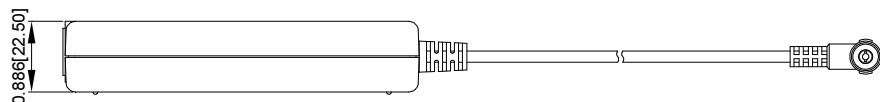
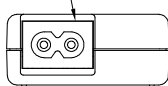
## MECHANICAL SPECIFICATION

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



DC Plug type: V+ —●— V-  
DC Plug: Right Angle (φ 5.5 / φ 2.5) L12mm  
18AWG / 1800mm

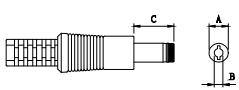
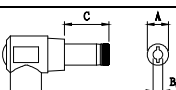
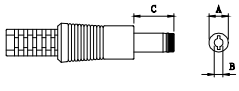
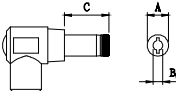
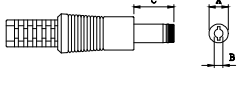
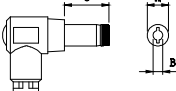
IEC320/C8





# TRG36A 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- + ● - -	11E01	Φ5.5	Φ2.1	12	UL2464	720mm without Core	18AWG for Vo: 5V
	12E01	Φ5.5	Φ2.5	12			
	23E01	Φ5.5	Φ2.1	9.5			
	26E01	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + ● - -	01E01	Φ5.5	Φ2.1	12			
	02E01	Φ5.5	Φ2.5	12			
	21E01	Φ5.5	Φ2.5	9.5			
	24E01	Φ5.5	Φ2.1	9.5			
 Straight/Inner+Outer- + ● - -	11E02	Φ5.5	Φ2.1	12	UL1185	1220mm without Core	18AWG for Vo: 9V
	12E02	Φ5.5	Φ2.5	12			
	23E02	Φ5.5	Φ2.1	9.5			
	26E02	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + ● - -	01E02	Φ5.5	Φ2.1	12			
	02E02	Φ5.5	Φ2.5	12			
	21E02	Φ5.5	Φ2.5	9.5			
	24E02	Φ5.5	Φ2.1	9.5			
 Straight/Inner+Outer- + ● - -	11E03	Φ5.5	Φ2.1	12	UL1185	1800mm without Core	18AWG for Vo: 12V, 13.5V, 15V, 18V, 24V, 48V
	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/TRG36-cable--DC-Plug.pdf>

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