G-ENERGY

Non-Isolated DC/DC Converter Specification

RW-1117-36-12V-120W

Input voltage	Output voltage	Output current	Output power	Efficiency	Size
36-90V DC	12V	10 Amps	120 Watts	93%	74*74*29.5mm

The RW-1117-36-12V-120W is a Non-isolated DC-DC converter that uses a synchronous rectification technology, and features high efficiency and power density. It has the dimensions of 74*74*29.5mm (2.91 in. x 2.91 in. x 1.16 in in) and provides the rated output voltage of 12 V and the maximum output current of 10A.

Features

- Design meeting RoHS / CE
- High efficiency: 93% (@ 72Vin, 25℃)
- Isolated between input and output
- Imported components, high reliability
- 100% full load burn-in test
- Short circuit, Over load, Over temperature, reverse protections
- Waterproof level IP67
- 2 month warranty

Applications

- Industrial
- Alternative Energy
- Golf Cart
- Forklift
- Electromotor
- Telecommunications
- Boat & Yacht
- Medical
- LED Marketplaces and so on.

Model naming method

RW-1117-36-12V-120W

RW-1117: SKU NAME
36V Input voltage
12V : Output voltage
120W: Output Power

Electrical Specifications

Conditions: TA = 25 °C (77°F), Airflow = 1 m/s (200LFM), Vin =72V, Vout =12V, unless otherwise specified

Parameter	Min.	Typ	Max.	Units	Remarks
Absolute maximum ratings					
Operating ambient temperature	-40	-	+55	°C	
Shell ambient temperature	-40	-	80	°C	
Storage temperature	-55	-	100	°C	
Operating humidity	5	-	95	%	Non-condensing
Atmospheric pressure	62	-	106	Kpa	
Altitude	-	-	2000	m	
Cooling way	-	-	-		Natural cooling

Input characteristics

Input voltage	30	72	90	V	-
Max. input voltage	-	-	100	V	Continuous
Undervoltage shutdown	30	34.5	36	V	Automatic recovery
Undervoltage recovery	31	35.5	36	V	Automatic recovery
Max. input current	-	-	5	A	Vin = 36V; Iout = 10A
No load current	-	15	30	mA	Vin =72V

Positive electrode cable	18	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter
Negative electrode cable	18	-	-	AWG	
Enable PIN cable	-	-	-	AWG	If the product has this feature
Fuse	-	10	-	A	

Output characteristics

Efficiency	-	93	-	%	Vin = 72V; Vout = 10A
Output voltage	11.85	12	12.25	V	Vin = 72V; Vout = 10A
Regulator accuracy	-	±2	±3	%	
Voltage regulation	-	±2	±3	%	
Load Regulation	-	±1	±2	%	
Overvoltage protection	-	-	21	V	Hiccup mode (output)
Output current	0	-	10	A	
Overcurrent protection	12	13	15	A	
External capacitance	-	-	-	μF	Don't need
Output ripple and noise	-	22	250	mVp-p	Vin = 36–90V; Oscilloscope bandwidth: 20 MHz;
Output voltage rise time	-	3	50	mS	
Boot delay time	-	-	300	mS	
Out voltage overshoot	-	-	5	%	
Over temperature protection	-	-	90	°C	Shell temperature, @ 70°C Restore working
Short circuit protection	-	YES	-	-	Long-term (4 hours) short circuit is not damaged, Hiccup mode
Positive electrode cable	16	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter
Negative electrode cable	16	-	-	AWG	

Feature Description

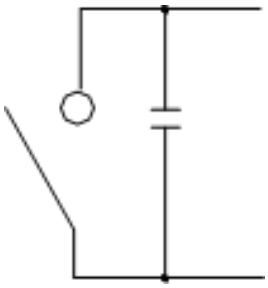
Remote On/Off (EN) (Optional)

Logic Enable	Low level (0 - 36Vdc)	High level (36-90Vdc)	Left open
Positive logic	Off	On	Off

Input Undervoltage Protection

The converter will shut down after the input voltage drops below the under-voltage protection threshold for shutdown. The converter will start to work again after the input voltage reaches the input under voltage protection threshold for startup. For the Hysteresis, see

Various circuitsfor driving the CNT



Output Overcurrent Protection

The converter equipped with current limiting circuitry can provide protection from an output overload or short circuit condition. If the output current exceeds the output overcurrent protection set point, the converter enters hiccup mode. When the fault condition is removed, the converter will automatically restart.

Reverse Protection

Reverse voltage protection circuits prevent damage to power supplies and electronic circuits in the event of a reverse voltage applied at the input terminals. The protection ensures that the components are not damaged by accidental swap of the power supply connections.

Over temperature Protection

A temperature sensor on the converter senses the average temperature of the module. It protects the converter from being damaged at high temperatures. When the temperature exceeds the over temperature protection threshold, the output will shut down. It will allow the converter to turn on again when the temperature of the sensed location falls by the value of Over temperature Protection Hysteresis

Safety and EMC features

Anti-electric Strength	Input to Output	≥1500	V	Leakage current ≤ 1mA, 1min, no breakdown, no arcing
	Input to Shell	≥1500	V	
	Output to Shell	≥500	V	
Insulation resistance	Input to Output	≥10	MΩ	Test voltage = 500V
	Input to Shell			
	Output to Shell			

Other characteristics

Weight	≤ 290	g	
Package	White box		
MTBF	≥200,000	H	Vin= 72V; Iout= 10A
Switching frequency	130±10	KHz	

Characteristic Curves

Conditions: TA = 25°C (77°F), Vin = 72 V, Vout = 12 V , unless otherwise specified.

Figure 1, Efficiency

Figure 2, Power dissipation

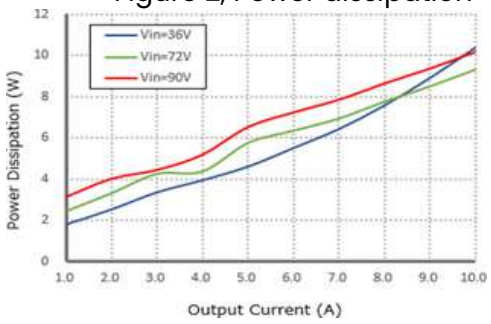
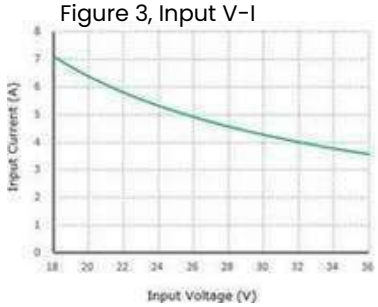


Figure 3, Input V-I



Typical Waveforms

Conditions: TA = 25°C (77°F), Vin = 72V, unless otherwise specified..

Figure 4, 25% - 50% load dynamic

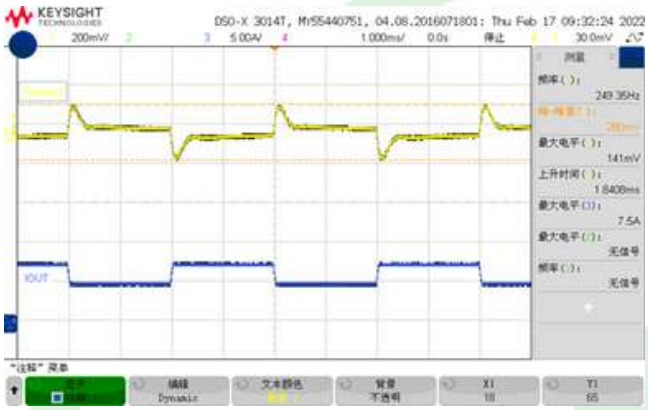


Figure 5, Output voltage established (Iout = 10A)

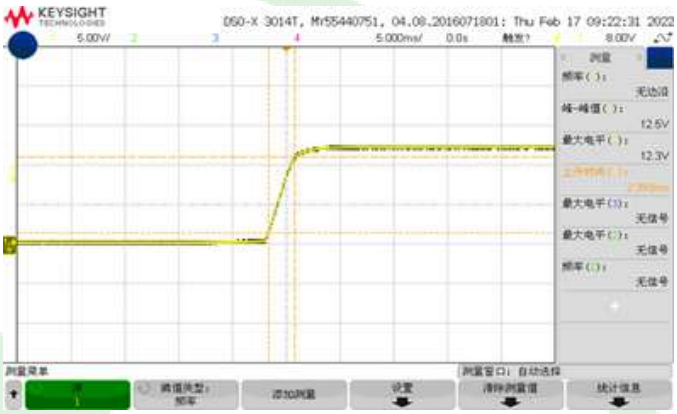


Figure 7, Output ripple & noise (Iout = 10A)

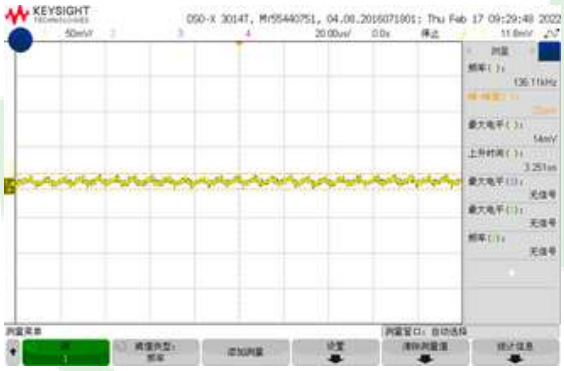


Figure 7, Boot delay time

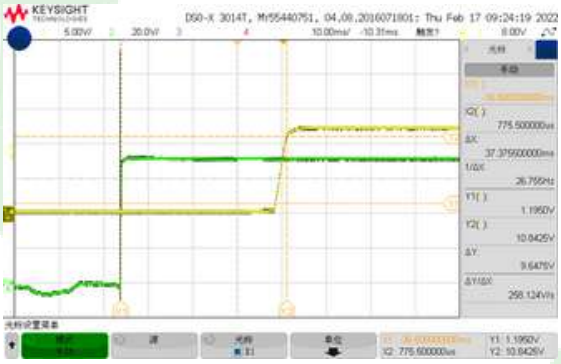
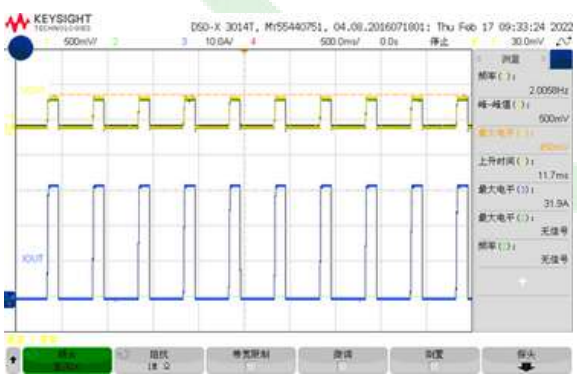


Figure 8, Short circuit & Output voltage



Thermal Consideration

Sufficient airflow should be provided to help ensure reliable operating of the RW-1117-36-12V-120W Therefore, thermal components are mounted on the top surface of the RW-1117-36-12V-120W to dissipate heat to the surrounding environment by conduction, convection, and radiation. Proper airflow can be verified by measuring the temperature at the middle of the base plate.