

Typical Features

- ◆ Wide input voltage range 2:1
- ◆ High efficiency up to 91%
- ◆ Low no-load power consumption
- ◆ Operating Temperature from -40°C to +85°C
- ◆ High isolation voltage 1500VDC(input-output)
- ◆ Protections - Input under voltage, output over voltage, short circuit, over current, over temp
- ◆ Standard 1/8 brick size

Conform to CE

ZDD120-48S24 is a high-performance power supply, rated input voltage 48VDC, output 24V/120W, no minimum load, wide input 36-75VDC, regulated single output, with input under-voltage protection, output over-current, over-voltage, over-temperature and short-circuit protections, input remote control, output distal end compensation, output Trim and other functions, etc.

Typical Product List

Part no	Input voltage range (VDC)	Output power (W)	Output voltage (VDC)	Output current (A)	Ripple & Noise (mVp-p)	Full load efficiency (%) Min/Typ.	Remarks
ZDD120-48S24C	36-75	120	24	5	240	89/91	Standard positive logic
ZDD120-48S24N							Standard negative logic
ZDD120-48S24C-H							Heatsink positive logic
ZDD120-48S24N-H							Heatsink negative logic

Input Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
Max input current	36V input voltage, full load output	--	--	4.5	A
No load input current	Rated input voltage	--	--	20	mA
Input inrush voltage (1sec. max)	The unit could be permanently damaged over this voltage	-0.7	--	100	VDC
Start-up voltage		--	--	36	
Input under voltage protection	No-load test (the over-current protection could start in advance at full load)	--	--	34	
Control (CNT)	Positive logic - CNT no connection or connects to 3.5-15V to turn on, connects to 0-1.2V to shut off Negative logic: CNT no connection or connects to 3.5-15V to shut off, connects to 0-1.2V to turn on				Reference voltage-Vin

Output Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Rated input voltage, 0%-100% load	--	±0.5	±1.0	%
Line Regulation	Full load, input voltage from low to high	--	±0.2	±0.5	
Load Regulation	Rated input voltage, 10%-100% load	--	±0.2	±0.5	
Transient recovery time	25% load step change (step rate 1A/50uS)	--	200	250	uS
Transient Response Deviation		-5	--	5	%
Temperature Drift Coefficient	Full load	-0.02	--	+0.02	%/°C

Ripple & Noise	20M bandwidth, external capacitor above 220uF	--	150	240	mVp-p
Output voltage adjustment (TRIM)		-20	--	+10	%
Output voltage distal-end compensation (Sense)		--	--	5	%
Over temp protection	Measurement of resistance temperature inside the product	105	115	125	°C
Output overcurrent protection		5.5	--	7.5	A
Output short circuit protection		Hiccup, continuous, self-recovery			

General Specifications

Item	Operating conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	I/P-O/P	Test 1min, leakage current < 3mA	--	--	1500	VDC
	I/P-Case	Test 1min, leakage current < 3mA	--	--	1500	VDC
	O/P-Case	Test 1min, leakage current < 3mA	--	--	500	VDC
Insulation resistance	I/P-O/P	@ 500VDC	--	--	100	MΩ
Switching frequency			--	250	--	KHz
MTBF			150	--	--	K hours

Environmental characteristics

Item	Operating conditions	Min.	Typ.	Max.	Unit
Operating Temperature	Refer to the temperature derating curve	-40	--	+105	°C
Storage Humidity	No condensing	5	--	95	%RH
Storage Temperature		-40	--	+125	°C
Soldering Temperature	1.5mm from the shell, soldering time< 1.5S	--	--	+350	
Cooling requirements		EN60068-2-1			
Dry heat requirement		EN60068-2-2			
Damp heat requirement		EN60068-2-30			
Shock and vibration		IEC/EN 61373 C1/Body Mounted Class B			

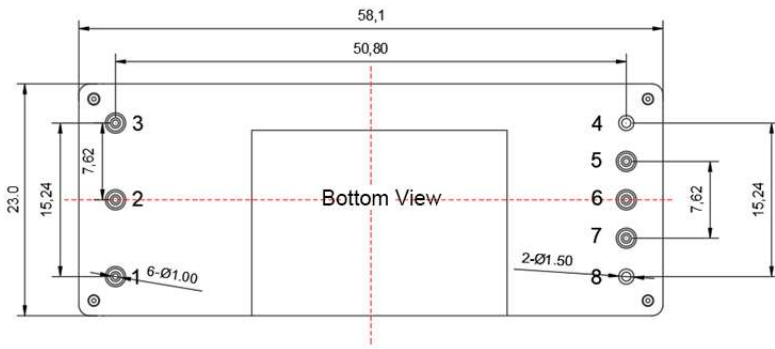
EMC Performances (EN55032)

EMI	CE	CISPR32/EN55032	CLASS A		
	RE	CISPR32/EN55032	CLASS A		
EMS	ESD	IEC/EN61000-4-2	Contact ±6kV/Air ±8KV		perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m		perf. Criteria B
	EFT	IEC/EN61000-4-4	±2kV 100kHz		perf. Criteria B
	Surge	IEC/EN61000-4-5	Line to line ±2kV		perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s		perf. Criteria B

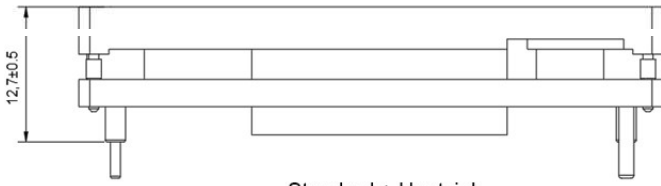
Physical Characteristics

Case Material	Aluminum alloy, anodized black
Product Weight	Standard 50g
Cooling method	Conduction cooling or forced air cooling

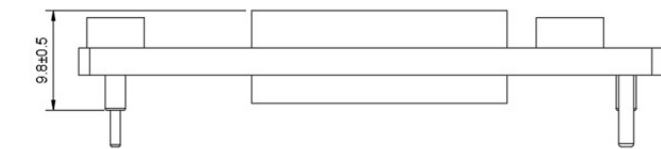
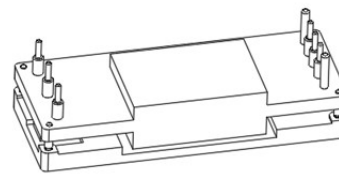
Dimensions and Pin-Out



Recommended PCB Slot Size



Standard + Heatsink
58.1mm*23.0mm*12.7mm

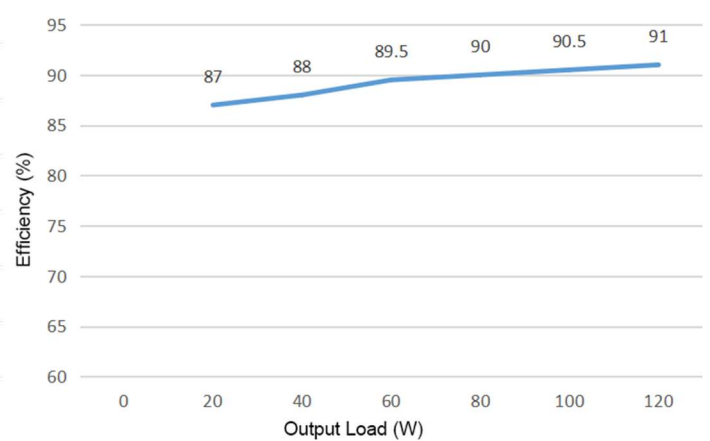
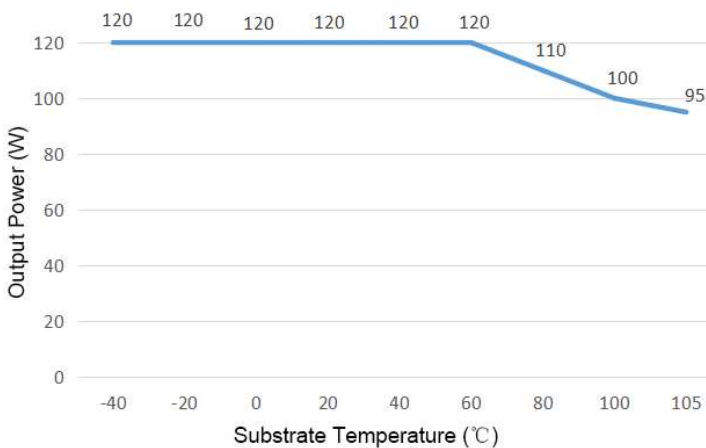


Standard
58.1mm*23.0mm*9.8mm

Note:
Unit: mm
Pin 1,2,3,5,6,7 diameter: 1.00
Pin 4,8 diameter: 1.50
Unmarked tolerance: x.xx±0.1

	1	2	3	4	5	6	7	8
Pin-out	Vin+	CNT	Vin-	Vout-	-S	TRIM	+S	Vout+

Product Performance Curve

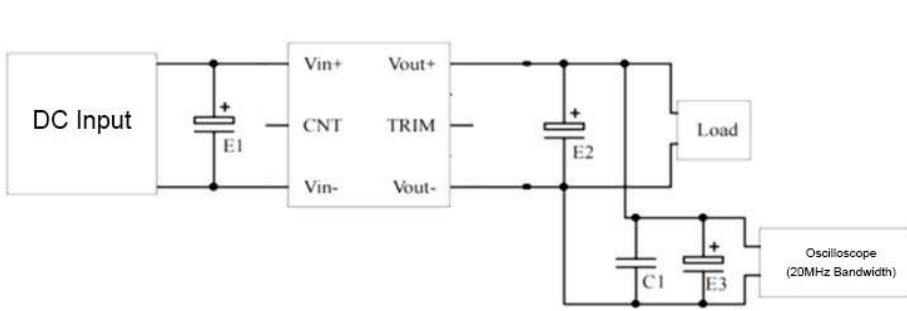


Note:
1. Both the temperature derating curve and the efficiency curve are tested with typical values.
2. The temperature derating curve is tested at Aipu laboratory test conditions. It is recommended to keep the temperature of the case not more than 100 °C while the converter operates at the rated load range for customer application.

Recommended circuits for application

1. Ripple & Noise

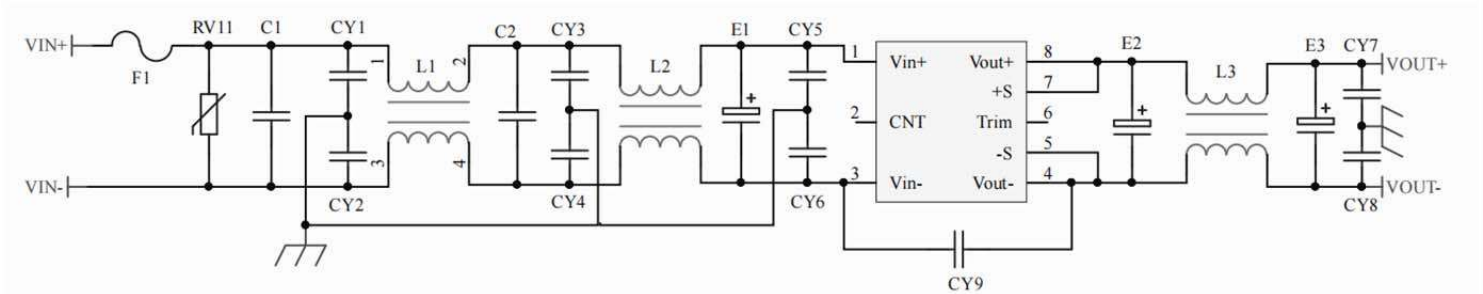
All DC/DC converters of this series will be tested according to this circuit below before shipping.



capacitor value	E1 (μF)	E2 (μF)	C1 (μF)	E3 (μF)
Output voltage				
3.3VDC	100	1000	1	10
5VDC		680		
12VDC		220		
.....				
48VDC				
.....				
110VDC	68	68		

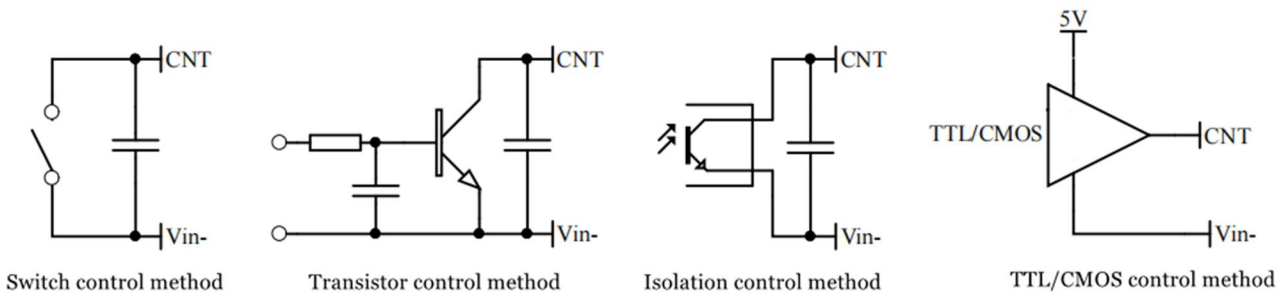
2. Typical application circuit

If this circuit recommended is not adopted, please connect an electrolytic capacitor $\geq 100 \mu\text{F}$ in parallel at the input to suppress the possible surge voltage at the input.



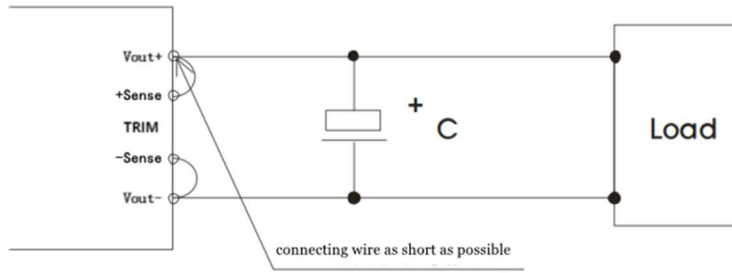
F1	T10A/250V fusing
RV1	14D 100V Varistor
C1,C2	105/250V Polyester Film Capacitor
CY1,CY2,CY3,CY4,CY5,CY6	102/250Vac safety Y2 capacitor
CY7,CY8	103/2KV Ceramic Capacitor
CY9	471/250Vac safety Y2 capacitor
E1	100μF/100V Electrolytic Capacitor
E2, E3	470μf/35V Low ESR Capacitor
L1,L2	>5mH, the temperature rise is less than 25°@4.5A
L3	>220uH, the temperature rise is less than 25°@5A

3. Remote control (CNT) application



4. Application for Sense

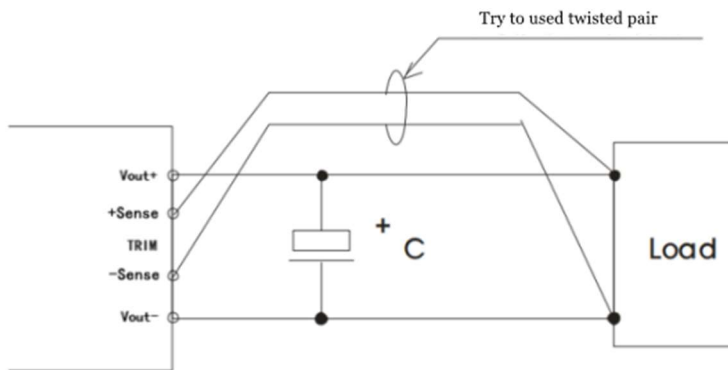
1) With NO distal end compensation



Notes:

1. Vout+ & Sense+, Vout- & Sense- should be shorted when distal compensation is not needed
2. The lead wire between Vout+ and Sense+, Vout- and Sense- should be as short as possible, and close to the pins, or else the output may be unstable.

2) With distal end compensation



Notes:

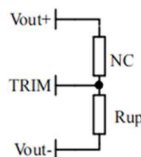
1. The output voltage may be unstable if the compensation cables are too long.
2. Twisted pair or shielded cables are recommended, the cable length should be as short as possible.
3. Wide copper path on PCB or thick lead wires between the power supply and the load should be used to achieve the line voltage drop <0.3V. The target is to keep output voltage within the specified range.
4. The leads wire resistance may create the output voltage oscillation or larger ripples. Please verify it before to use.

5. TRIM and calculation of TRIM resistance

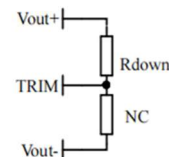
The calculation of ΔU and R_{up} & R_{down} :

$$R_{up} = 70 / \Delta U - 5.1 \text{ (K}\Omega\text{)}$$

$$R_{down} = 28 * (21.5 - \Delta U) / \Delta U - 5.1 \text{ (K}\Omega\text{)}$$



Voltage-up: Add R_{up} between Trim and Vout-



Voltage-down: Add R_{down} between Trim and Vout+

6. This product is not available for connection in parallel to increase the output power. Please contact Aipu technician for this kind of requirement.

Others

1. The product warranty period is two years. The failed product can be repaired/replaced free of charge if it operates at normal condition. A paid service shall be also provided if the product failed after operating under wrong or unreasonable conditions.
2. Aipupower can provide customization design and filter modules for matching, please contact our technician for details.

Guangzhou Aipu Electron Technology Co., Ltd

Address: Building 4, HEDY Park, No.63, Punan Road, Huangpu Dist, Guangzhou, China.

Tel: 86-20-84206763 Fax: 86-20-84206762 HOTLINE: 400-889-8821

E-mail: sales@aipu-elec.com Website: https://www.aipupower.com