DC/DC Converter 1/8 Brick
ZDD150-48S28 Series

Conform to CE

Typical Features

- ◆Wide input voltage range 2:1
- ◆Efficiency up to 92%
- ◆Low no-load power consumption
- ◆Operating Temperature from -40℃ to +105℃
- ◆High isolation voltage 1500VDC(input-output)
- ◆Input under voltage protection, output over current, over temperature and short circuit protections
- ◆Standard 1/8 brick size

ZDD150-48S28 is a high-reliability DC-DC converter with the rated input voltage 48VDC (full range from 36V to 75VDC), regulated single output 28V/150W without minimum load limit. It has the advantages of input under-voltage protection, output over-current, over-temperature and short circuit protections, input remote control, output voltage distal end compensation and output Trim 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
ZDD150-48S28C	36 - 75	150	28	5.3	280	90/92	Standard Positive logic
ZDD150-48S28N							Standard Negative logic
ZDD150-48S28C-H							Heatsink Positive logic
ZDD150-48S28N-H							Heatsink Negative logic

Input Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
Max input current	Input voltage 36V, full load output	--	--	5.5	A
No load input current	Rated input voltage	--	--	20	mA
Input Inrush voltage (1sec. max.)	The unit could be permanently damaged by input over this Voltage	-0.7	--	100	VDC
Start-up voltage		36	--	--	
Input under voltage protection	With No-load (over current protection will work in advance at full load)	--	--	35	
Remote Control (CNT)	Positive logic - CNT no connection or connect to 3.5-15V to turn on, connect to 0-1.2V to shut off				Reference voltage - Vin
	Negative logic - CNT no connection or connect to 3.5-15V to shut off, connect to 0-1.2V to turn on				

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	%/℃
Ripple & Noise	20M bandwidth, external capacitor above 220uF	--	150	280	mVp-p
Output voltage adjustment（TRIM）		-20	--	+10	%
Output voltage distal end compensation (Sense)		--	--	+5	%
Over temp protection	Internal temperature detecting resistor	105	115	125	℃
Over current protection		5.6	--	7.5	A
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			--	230	--	KHz
MTBF			150	--	--	K hours

Environmental characteristics

Item	Operating conditions	Min.	Typ.	Max.	Unit
Operating Temperature	Refer to the temperature derating curve	-40	--	+105	℃
Storage Humidity	No condensing	5	--	95	%RH
Storage Temperature		-40	--	+125	℃
Pin Soldering temperature	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			

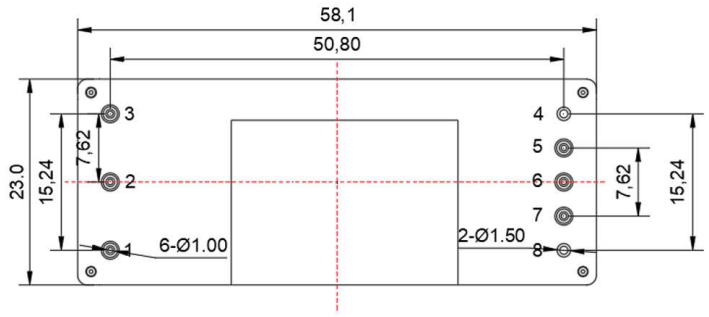
EMC Performances

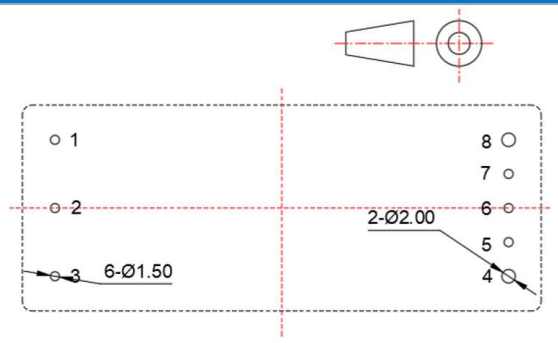
EMI	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
EMS	ESD	IEC/EN61000-4-2	Contact ±6kV/Air ±8KV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria B
	EFT	IEC/EN61000-4-4	±2kV 100kHz	perf. Criteria B
	Surge	IEC/EN61000-4-5	Line to line ±2kV	perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s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

Physical Characteristics

Metal base Material	Aluminum, anodized black
Cooling method	Conduction cooling or forced fan cooling
Product Weight	Standard 50g

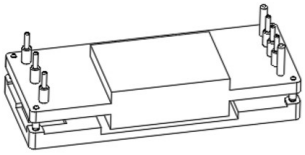
Mechanical Dimensions

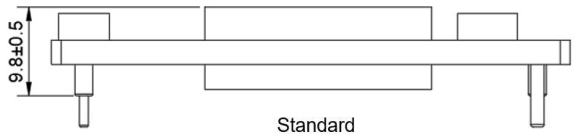




Recommended holes size for PCB layout

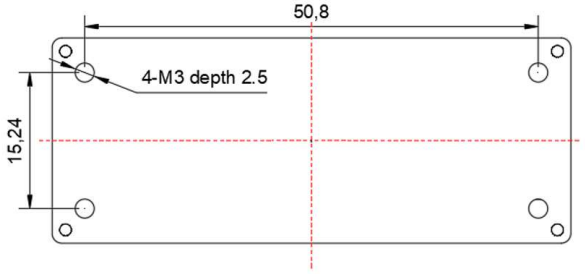
Standard + Heat sink
58.1mmX23.0mmX12.7mm

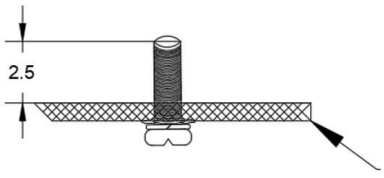




Standard
58.1mmX23.0mmX9.8mm

Note
Unit: mm
Pin 1,2,3,5,6,7 diameter: 1.00
Pin 4,8 diameter: 1.50
General tolerance: X.X±0.5, X.XX ±0.1

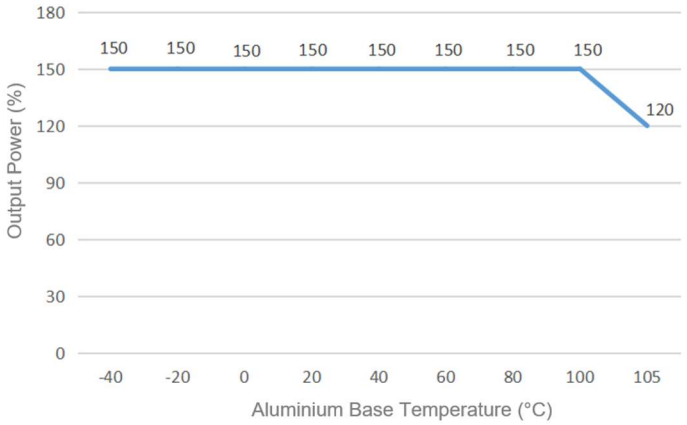


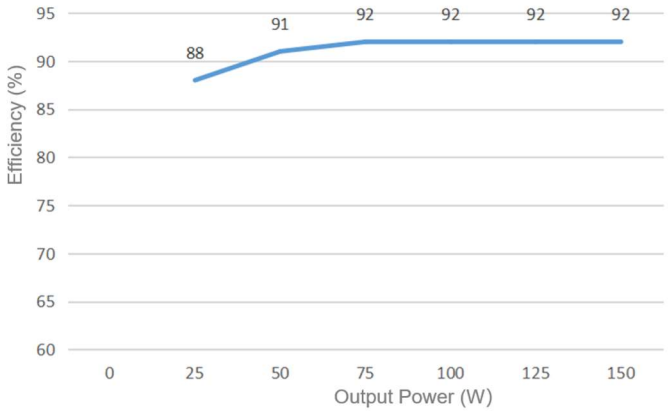


The screwing depth
2.5mm Max inside of
the heat sink

No.	1	2	3	4	5	6	7	8
Pin-out	Vin+	CNT	Vin-	Vout-	-Sense	TRIM	+Sense	Vout+
Description	Input V+	Remote Control	Input V-	Output V-	Output distal end compensation S-	Output Voltage Trim	Output distal end compensation S+	Output V+

Product Performance Curves



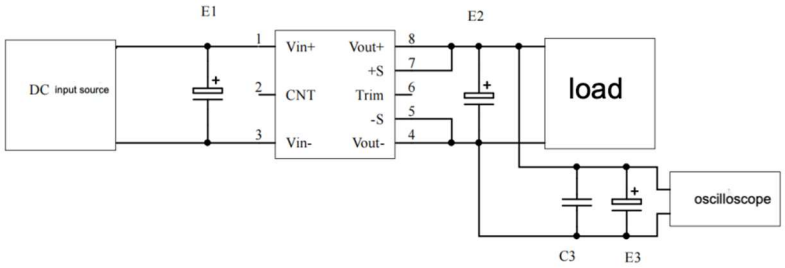


Note:
1. The output power and the efficiency in the curves had been tested with typical values.
2. The data in temperature curve had been tested at Aipu laboratory test conditions. It is recommended to keep the temperature of the Aluminium Base not more than 100 °C while the converter operates at the rated load for the customer application.

Recommended circuits for application

1. Ripple and Noise

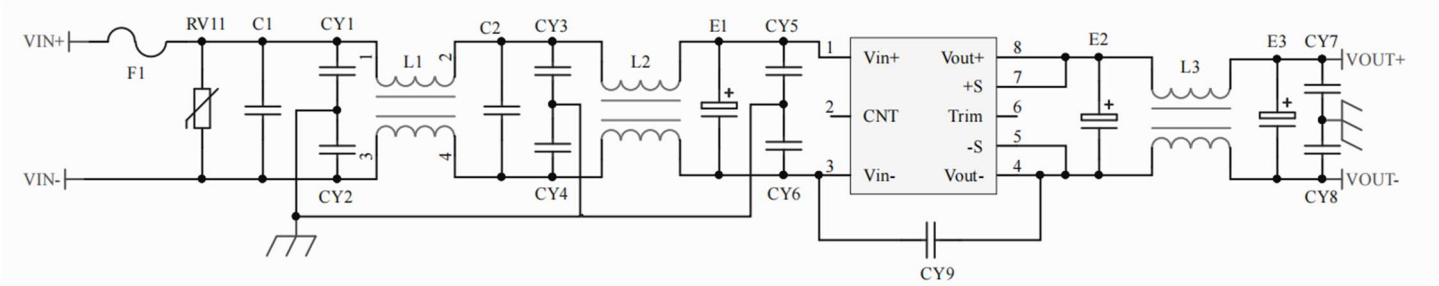
All this series of converters will be tested according to the circuit below before shipping.



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

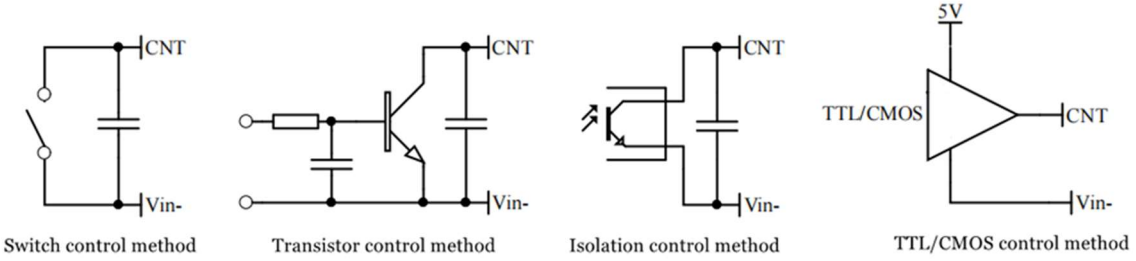
2. Typical application circuit

If this circuit recommended is not adopted, please connect an electrolytic capacitor ≥100 μF in parallel at the input to suppress the possible surge voltage.



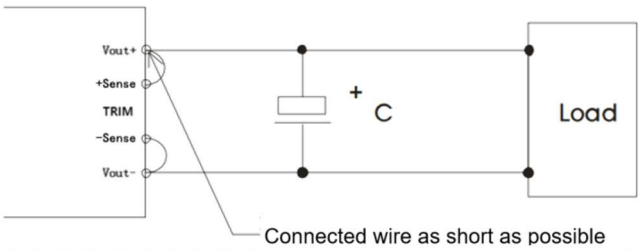
F1	T10A/250V Time-delay fuse
RV11	14D 100V Varistor
C1,C2	105/250V Polyester Film Capacitor
CY1,CY2,CY3,CY4,CY5,CY6	102/250Vac Y2 capacitor
CY7,CY8	103/2KV Ceramic Capacitor
CY9	471/250Vac Y2 capacitor
E1	100μF/100V Electrolytic Capacitor
E2，E3	470μF/35V Electrolytic Capacitor
L1,L2	>5mH, temperature rise less than 25°@5.5A
L3	>100uH, temperature rise less than 25°@6.3A

3. Remote control (CNT) application



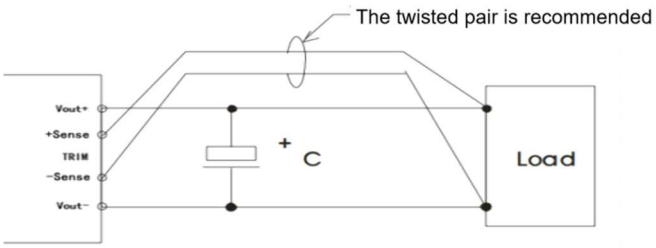
4. Application for Sense

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**



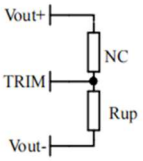
Notes:
1. The output voltage may be unstable if the compensation cables are too long.
2. The Twisted pair or shielded cables are recommended, the cable length should be as short as possible.
3. Wide copper path on PCB or thick lead wires between the power supply and the load should be used to achieve 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 & TRIM resistance calculation

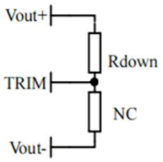
The calculation of △U and Rup & Rdown:

Rup=75/△U-5.1(KΩ)

Rdown=30*(25.5-△U)/△U – 5.1 (KΩ)



Voltage-up: Add Rup between Trim and Vout-



Voltage-down: Add Rdown between Trim and Vout+

6. This converter is not available for connecting in parallel to increase the output power. Please contact Aipu technician for this kind of application 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.

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