

FEATURES

1. Wide input voltage range 4:1
2. Efficiency 90% (Typ.)
3. Low standby power consumption
4. Operating Temperature from -40°C to +85°C
5. High isolation voltage 2250VDC
6. Input under voltage protection, output over current, over voltage, over temp. & short circuit protections
7. Standard 1/16 brick size



3 years
Warranty

Selection Guide

Part No.(1)	Input voltage range(VDC)	Output Power (W)(2)	Output Voltage (VDC)	Output Current (A)	Ripple & Noise (mVp-p)Max(3)	Full load Efficiency(%) Min/Typ.	Input Current (A) Max.@9VDC Full load
ZYF2412SBO-75WR3	9-36	75	12	6.25	120	86/88	6.5
ZYF2448SBO-75WR3	9-36	75	48	1.56	480	88/90	6.5

Note:

(1)Use "-F" suffix for added aluminum baseplate option. Use "-D" means added baseplate with case option. "-N" means with Remote ON/OFF negative control

(2)9-18V input, the output power derates linearly;9V input,max output power is 40W.

(3) Ripple and noise is tested under 20M bandwidth, with external capacitor $\geq 220\mu\text{F}$

Input Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
No-load current	Rated input voltage	--	--	30	mA
Input inrush voltage (1sec.max.)	Unit could be permanently broken over this voltage	-0.7	--	50	VDC
Start-up voltage		--	--	9	
Under-voltage protection	With No-load(over current protection should start in advance at full load)	--	--	8.5	
ON/OFF Control(CNT)	Positive logic:CNT with no connection or connected to 3.5-15V to turn ON, connected to 0-1.2V to turn OFF the converter.				Reference voltage -Vin
	Negative logic:CNT with no connection or connected to 3.5-15V to turn OFF, connected to 0-1.2V to turn ON the converter.				

Output Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Nominal 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	Nominal 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
Output voltage adjustment (TRIM)		-20	--	+10	%
Distal end compensation (Sense)		--	--	5	%
Over temperature protection	Maximum temperature of the Metal Base	105	115	125	°C
Output over current protection	Nominal rated voltage	1.62	--	2.4	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 <10mA	2250	--	--	VDC
Insulation resistance	I/P-O/P	@ 500VDC	50	--	--	MΩ
Switching frequency			--	220	--	KHz
MTBF	MIL-HDBK-217F@25°C		150	--	--	K hours

Environmental characteristics

Item	Operating conditions	Min.	Typ.	Max.	Unit
Operating Temperature	Refer to the temperature derating graph	-40	--	+85	°C
Storage Humidity	No condensing	5	--	95	%RH
Storage Temperature	1.5mm from the case, <1.5S	-40	--	+125	°C
Pin Soldering temperature		--	--	+350	
Cooling requirement		EN60068-2-1			
Dry and heat requirement		EN60068-2-2			
Moisture and heat requirement		EN60068-2-30			
Shock and vibration		IEC/EN 61373 C1/Body Mounted Class B			

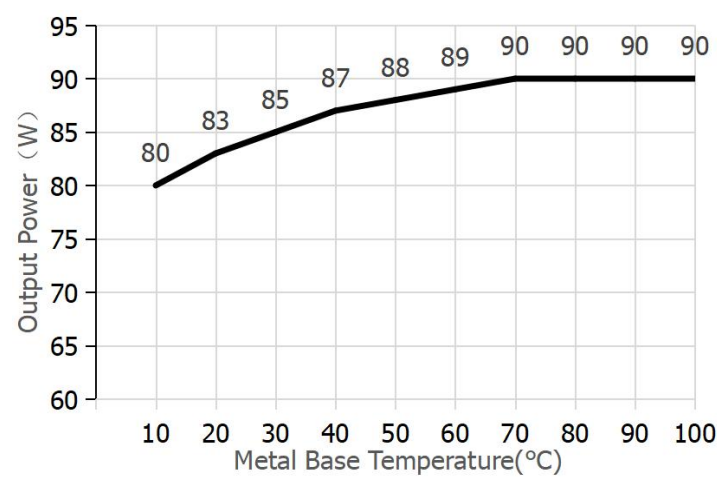
Mechanical Specifications

Case Materials	Metal base + Plastic case in black, flame class UL94-V0				
Cooling Method	Conduction cooling or forced air cooling with fan				
Weight	Standard		15g		
	With baseplate		27g		
	With baseplate and case		31g		
Dimension	Standard		34.3*24.1*9.5mm		
	With baseplate		34.3*24.1*11.7mm		
	With baseplate and case		36.7*26.5*12.7mm		

Electromagnetic compatibility (EMC)

EMI	CE	EN50121-3-2	150kHz-500kHz 79dBuV	
		EN55016-2-1	500kHz-30MHz 73dBuV	
	RE	EN50121-3-2	30MHz-230MHz 40dBuV/m at 10m	
		EN55016-2-1	230MHz-1GHz 47dBuV/m at 10m	
EMS	ESD	IEC/EN61000-4-2/GB/T 17626.2-2006	Contact ±6KV/Air ±8KV	perf. Criteria A
	RS	IEC/EN61000-4-3/GB/T 17626.3-2006	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4/GB/T 17626.4-2008	±2kV 5/50ns 5kHz	perf. Criteria A
	Surge	IEC/EN61000-4-5/GB/T 17626.5-2008	line to line ± 1KV (42Ω, 0.5μF)	perf. Criteria A
	CS	IEC/EN61000-4-6/GB/T 17626.6-2008	0.15MHz-80MHz 10 Vr.m.s	perf. Criteria A

Typical Characteristic Curves



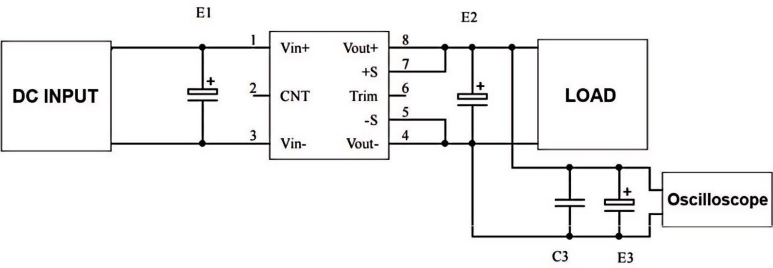
Note:

- 1. Both the output power and efficiency in the graphs have been tested with typical values.
- 2. The data in the temperature derating graph have been tested at laboratory test conditions. It is recommended to keep the temperature of the Metal base not more than 105 °C when the converter operates at the rated load for the application.

Recommended circuits for application

1. Ripple & Noise

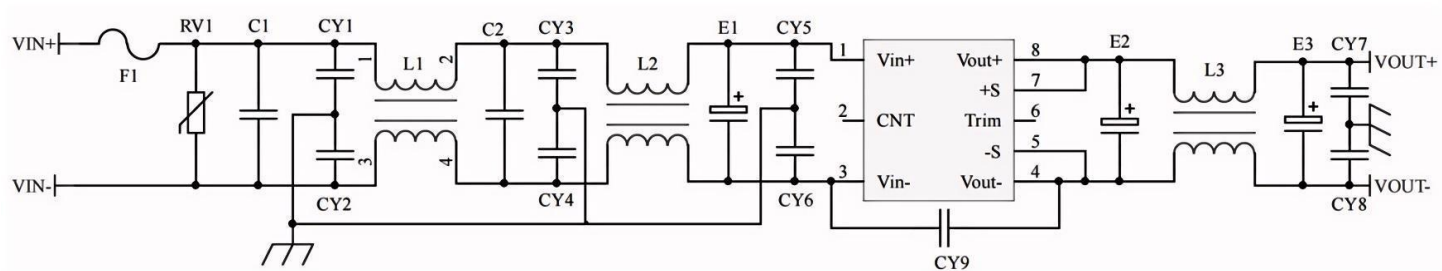
All this series of products will be tested according to this circuit diagram below before shipping.



Capacitance Output Volt.	E1(μF)	E2(μF)	C3(μF)	E3(μF)
3.3VDC	100	1000	1	10
5VDC		680		
12VDC		220		
.....				
48VDC	68	68		
.....				
110VDC				

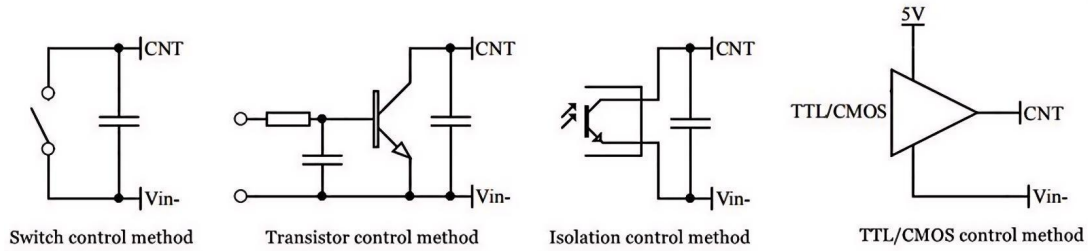
2. Recommended circuit for application

If this circuit diagram recommended below is not adopted, an electrolytic capacitor ≥100 μF should be connected at the input to suppress the possible surge voltage.



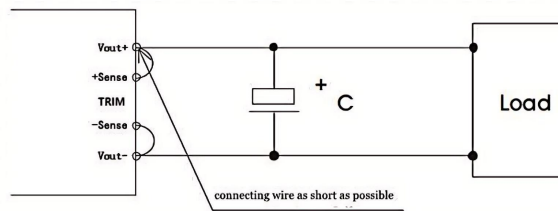
F1	T10A/100V FUSE
RV1	7D 62V Varistor
C1, C2	105/63V Polyester film capacitor
CY1, CY2, CY3, CY4, CY5, CY6	102/250Vac Y2 capacitor
CY7, CY8	103/2KV Ceramic capacitor
CY9	471/250Vac Y2capacitor
E1	100μF/63V Electrolytic capacitor
E2, E3	220μF/16V Electrolytic capacitor
L1, L2	>2mH, Temperature rise less than 25°@6.5A
L3	>220uH, Temperature rise less than 25°@1.56A

3. Recommended circuits for the ON/OFF Control (CNT)



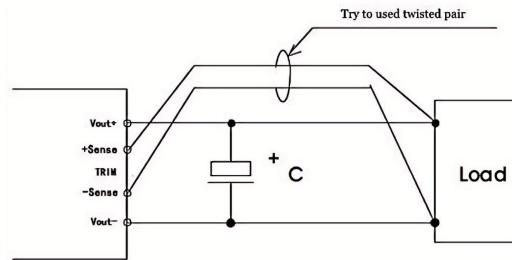
4. Application for Sense

1) With NO distal end compensation



- Note:
1. Vout+ & Sense+, Vout- & Sense- should be shorted when distal end 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



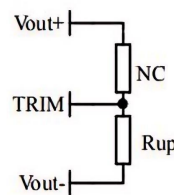
- Notes:
1. The output voltage may be unstable if the compensation cables are too long.
 2. The twisted pair or shielded cables are recommended, the cable length should be as short as possible.
 3. Wide copper path on PCB or thick lead wires between the power supply and the load should be used to achieve the line voltage drop <0.3V. The target is to keep output voltage within the specified range.
 1. 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

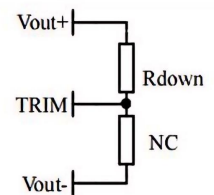
The calculation of ΔU and R_{up} & R_{down} :

$$R_{up} = 140 / (\Delta U - 5.1) \text{ (K}\Omega\text{)}$$

$$R_{down} = 56 * (48 - 2.5 - \Delta U) / (\Delta U - 5.1) \text{ (K}\Omega\text{)}$$



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

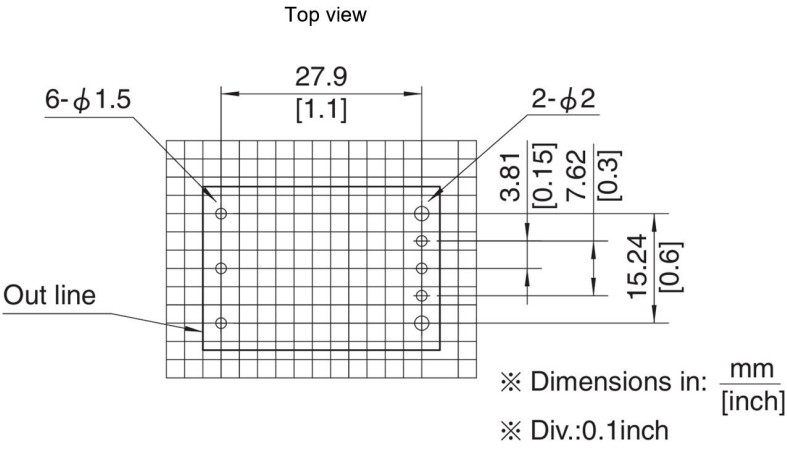
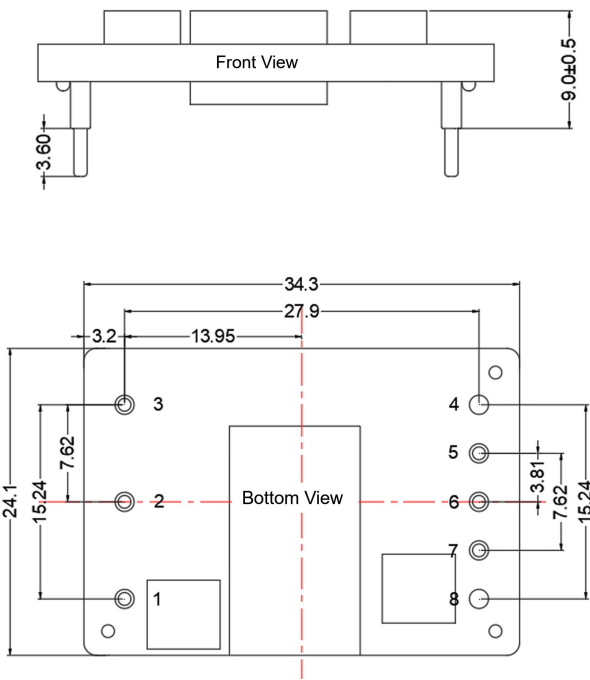


Voltage-down: Add R_{down} between Trim and Vout+

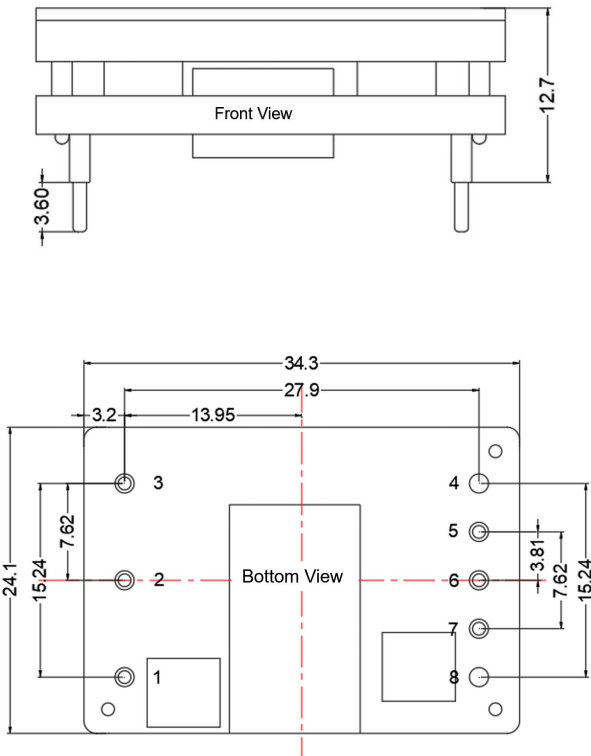
6. This product is not available for connecting in parallel to increase the output power.

Dimensions and Pin Layout

1. Standard



2. With baseplate

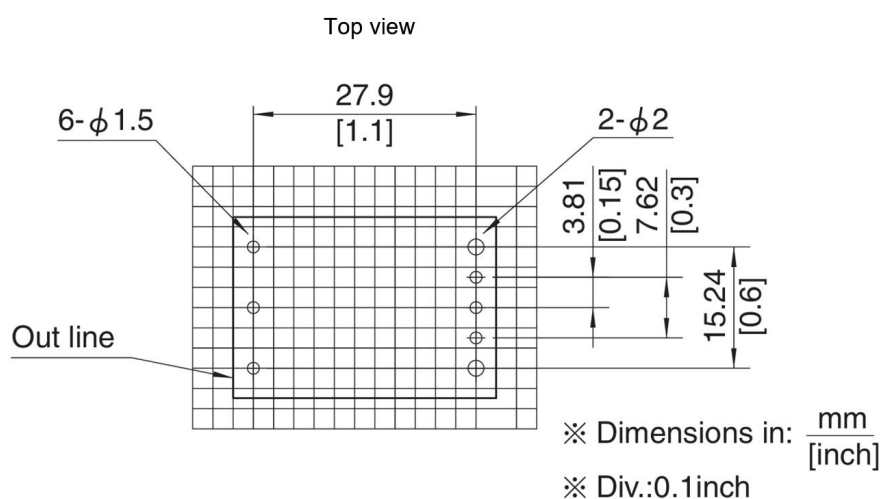
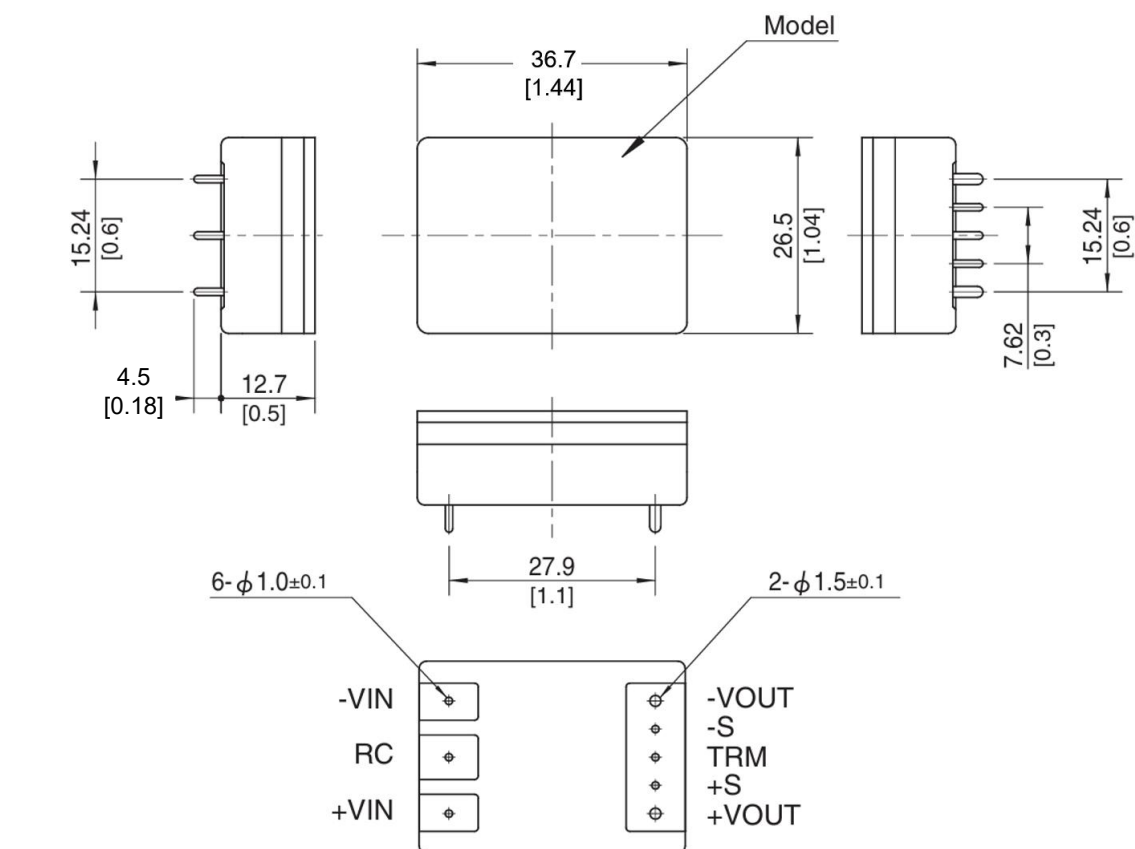


Recommended size for processing PCB

Pin No.	Function
1	+Vin
2	CNT
3	-Vin
4	-Vout
5	-Sense
6	TRIM
7	+Sense
8	+Vout

Note:Unit: mm
Pin 1,2,3,5,6,7 diameter: 1.00
Pin 4,8 diameter: 1.50
Tolerance: X.X±0.50mm, X.XX ±0.10mm
Screwing torque: 0.4N.m Max

3. With baseplate and case



Recommended size for processing PCB

Pin No.	Function
1	+Vin
2	CNT
3	-Vin
4	-Vout
5	-Sense
6	TRIM
7	+Sense
8	+Vout

Note: Unit: mm
 Pin 1,2,3,5,6,7 diameter: 1.00
 Pin 4,8 diameter: 1.50
 Tolerance: X.X $\pm$ 0.50mm, X.XX $\pm$ 0.10mm
 Screwing torque: 0.4N.m Max

Notes & Instructions

1. If the product works under the minimum required load, it cannot guarantee that the performance of the product complies with all the performance indicators in this manual;
2. The maximum capacitive load is tested under the input voltage range and full load condition;
3. Unless otherwise stated, all indexes in this manual are measured at $T_a=25^{\circ}\text{C}$, humidity $<75\%\text{RH}$, nominal input voltage and rated output load;
4. All index testing methods in this manual are based on the enterprise standards of the company;
5. Our company can provide product customization, specific needs can directly contact our technical staff;

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Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at www.norpas-power.com

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