FEATURES

1. Wide input voltage range 3:1
2. Efficiency 92% (Typ.)
3. Low standby power consumption
4. Operating Temperature from -40℃ to +105℃
5. High isolation voltage 2500VAC(input-output) & 2100VAC(input-case)
6. Input under voltage protection, output over current, over voltage, over temp. & short circuit protections
7. Standard full brick size

RoHS CE 3 years Warranty

Selection Guide

Part No.	Input voltage range(VAC)	Output Power (W)(1)	Output Voltage (VDC)	Output Current (A)	Ripple & Noise (mVp-p)(2)	Full load Efficiency(%) Min/Typ.
NQ700-12FB	90-286	700	12	58	120	89/91
NQ700-15FB	90-286	700	15	46.7	150	89/91
NQ700-24FB	90-286	700	24	29	240	88/90
NQ700-28FB	90-286	700	28	25	280	89.5/91.5
NQ700-30FB	90-286	700	30	23.3	300	89.5/91.5
NQ700-48FB	90-286	700	48	14.5	480	90/92

Note:
(1)When the input voltage is below 154VAC and 200VDC, the output load capacity is linearly reduced. When the input voltage is 90VAC and 140VDC, the stable output power is 500W.
(2)Ripple and noise is tested under 20M bandwidth, with external capacitor ≥680uF

Input Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
AC input starting working voltage		--	--	90	VAC
AC input under voltage protection		--	--	80	
AC input over voltage protection		290	--	310	
Input impulse voltage (1sec.max.)	Input beyond this range may cause permanent damage	-0.7	--	315	
DC input starting working voltage		--	--	145	VDC
DC input under voltage protection		--	--	135	
DC input over voltage protection		425	--	435	
Input maximum impulse current	Input line in series 5.6R, 20mm diameter thermal sensitive, 220Vac input	--	--	40	A
Input voltage frequency		47	--	63	Hz
Start-up time		--	--	5	S
Standby power consumption	220Vac input	--	10	20	W
PF value	220Vac input, full load output	95	--	--	%

Output Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Nominal input voltage, 0-100% load	--	±0.2	±1.0	%
Line Regulation	Full load, input voltage from low to high	--	±0.1	±0.2	
Load Regulation	Nominal input voltage, 10%-100% load	--	±0.1	±0.2	
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	%/℃
Output voltage adjustment (TRIM)		38.4	--	52.8	%
Distal end compensation (Sense)		--	--	5	%
Over temperature protection	Maximum temperature of the Metal Base	105	115	125	℃
Output over voltage protection		125	--	150	%
Output over current protection		15.2	--	18.8	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	--	--	2500	VAC
	I/P-Case	Test 1min, leakage current <3mA	--	--	2100	VAC
	O/P-Case	Test 1min, leakage current <3mA	--	--	500	VAC
Insulation resistance	I/P-O/P	@ 500VDC	100	--	--	MΩ
MTBF	MIL-HDBK-217F@25℃		150	--	--	K hours

Environmental characteristics

Item	Operating conditions	Min.	Typ.	Max.	Unit
Operating Temperature	Refer to the temperature derating graph	-40	--	+105	℃
Storage Humidity	No condensing	5	--	95	%RH
Storage Temperature		-40	--	+125	℃
Pin Soldering temperature	1.5mm from the case, <1.5S	--	--	+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			

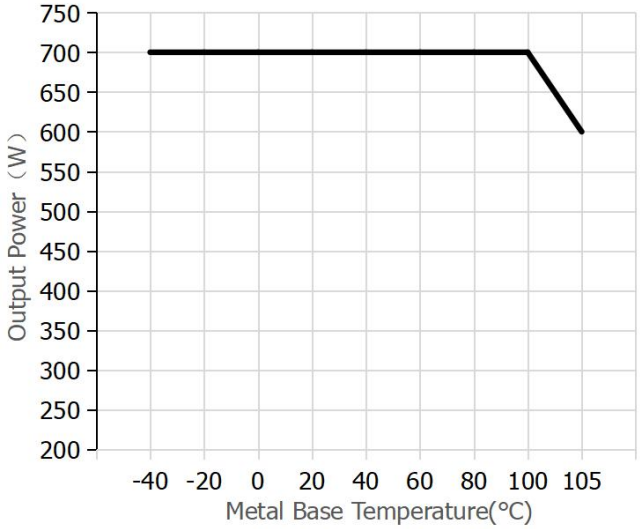
Mechanical Specifications

Case Materials	Metal base + Plastic case in black, flame class UL94-V0	
Cooling Method	Conduction cooling or forced air cooling with fan	
Weight	Standard	250g
	With heatsink	402g
Size	Standard	116.8*61*12.7mm
	With heatsink	116.8*61*32.7mm

Electromagnetic compatibility (EMC EN55032)

EMI	CE	EN55032-3-2	150kHz-500kHz 66dBuV	
		EN55032-2-1	500kHz-30MHz 60dBuV	
	RE	EN55032-3-2	30MHz-230MHz 50dBuV/m at 3m	
		EN55032-2-1	230MHz-1GHz 57dBuV/m at 3m	
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±2kV 5/50ns 5kHz	perf. Criteria A
	Surge	IEC/EN61000-4-5	line to line ± 2KV	perf. Criteria B
	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A

Typical Characteristic Curves



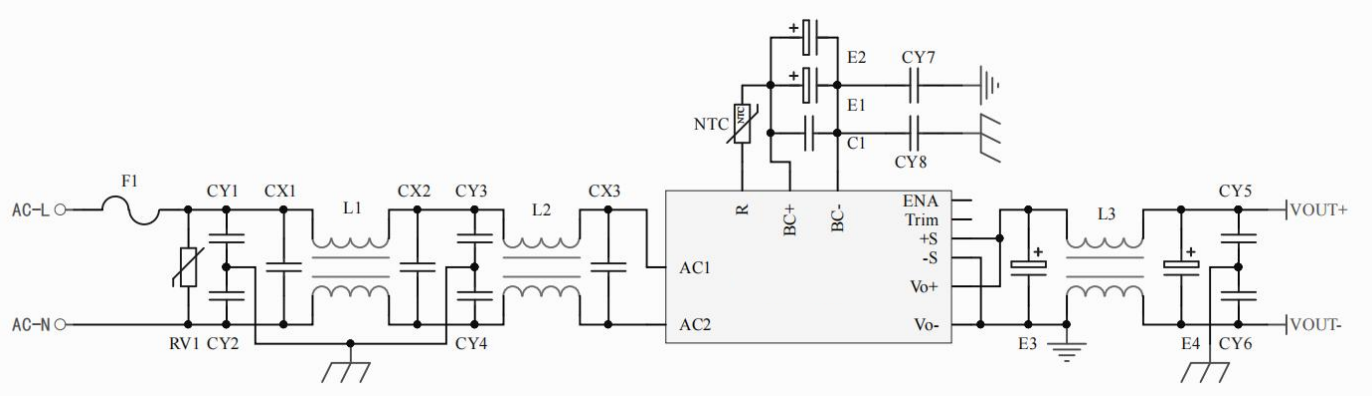
Note:

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 ℃ when the converter operates at the rated load for the application.

Recommended circuits for application

1. Recommended application circuit.

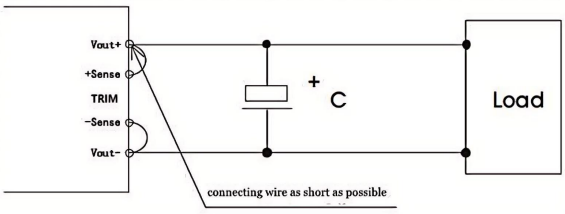


F1	AC250V 10A fuse
RV1	14D 620V varistor
CX1,CX2,CX3	250Vac 1uF X2 capacitor
CY1,CY2,CY3,CY4,CY8	1000pF 250VAC Y2 capacitor
CY7	470pF 250VAC Y1 capacitor
L1,L2	6.0mH common mode inductor, rated current not less than 7.5A
E1,E2	450V 330uF electrolytic capacitor
C1	1 uF 630V polypropylene capacitor
NTC	5.6 Ω 20mm thermistor
E3, E4	680uF 35V electrolytic capacitor
CY5,CY6	10nF 2KV ceramic chip capacitor
L3	50uH common mode inductor, rated current not less than 25A

Note: There are limited requirements for the selection of capacitors CX3, C1, E1, and E2 in the recommended circuits above; CX3 and C1 must ≥ 1 uF capacitance; The capacity after E1 and E2 are connected in parallel must ≥ 440 uF; the NTC resistor must be installed; if this restriction is not followed, the power supply may be damaged.

2. Application for Sense

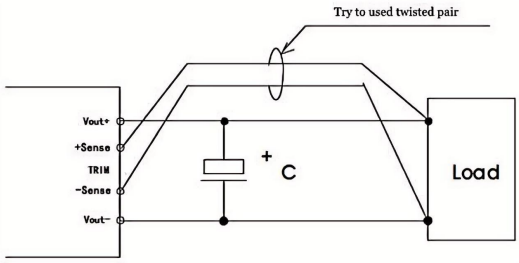
1) With NO distal end compensation



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.

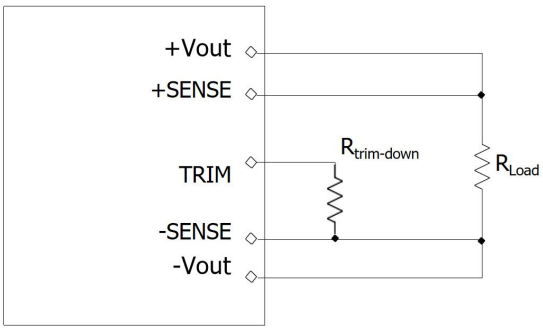
2) With distal end compensation

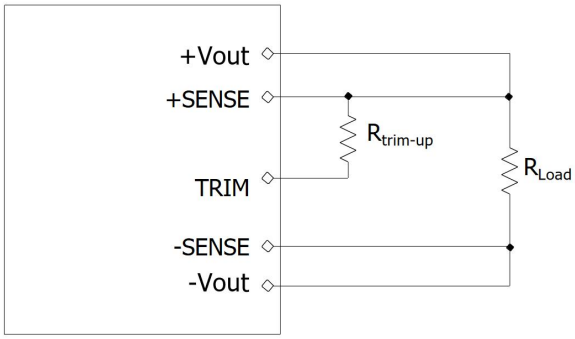


Notes:

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.

3. Use of TRIM and calculation of TRIM resistance





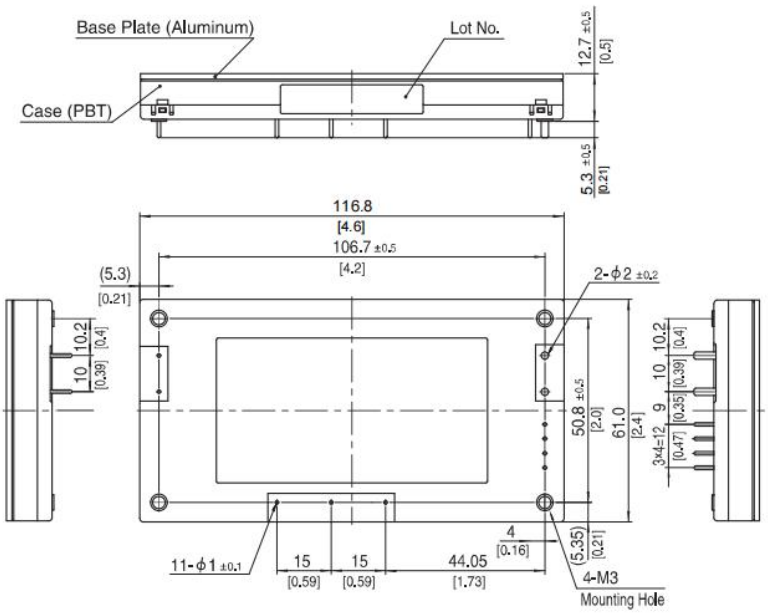
The external resistance is applied between the TRIM terminal and the ± SENSE terminal, which can increase or decrease the output voltage within the range of 66.6% -107% Vout. When a resistor is applied between the TRIM terminal and the+SENSE terminal, the output voltage increases; The resistor is applied between the TRIM and - SENSE terminals, resulting in a decrease in output voltage. During adjustment, adjust the resistance as close as possible to the lead of the module power supply. When this function is not needed, the TRIM end is suspended.

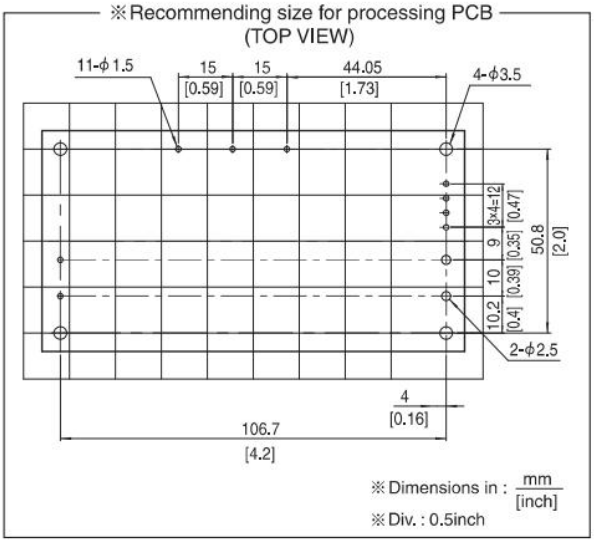
Rtrim-up=(5.1*Δ*Vo-12.75)/(2.5*Δ-2.5)-10.2 (KΩ)
Rtrim-down=(10.2*Δ-5.1)/(1-Δ) (KΩ)

For example, it is necessary to increase the output voltage to 30.8V, Vo=28V; Δ= 30.8/28=1.1. Bring into formula.
Rtrim up=(5.1 * 1.1 * 28-12.75)/(2.5 * 1.1-2.5) -10.2=577.32

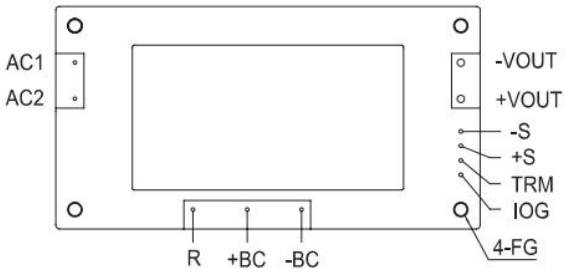
It is necessary to lower the output voltage to 25.2V, Δ= 25.2/28=0.9. Bring in formula
Rtrim down=(10.2 * 0.9-5.1)/(1-0.9)=40.8

Dimensions





※Tolerance : ±0.5 [± 0.019]
※Dimensions in mm, [ ]=inches
※Mounting hole screwing torque : 0.4 N · m



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 Ta=25℃, humidity <75%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;

NORPAS-POWER TECHNOLOGY CO., LTD.

www.norpas-power.com Mail: info@norpas-power.com

REV:07/2025