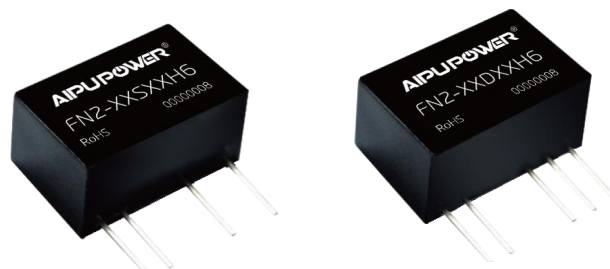


Typical Features

- ◆ Fixed input voltage, isolated & unregulated, output power 2W
- ◆ Efficiency up to 84% (Typ.)
- ◆ Mini SIP package
- ◆ Isolation Voltage 6000VDC
- ◆ Operating Temperature from -40°C to +105°C
- ◆ Plastic case, flame class UL94 V-0



Test Condition: Unless otherwise specified, all parameter values had been tested at nominal input voltage, pure resistive rated load, and at room temperature 25°C.

Application Field

This series of products can be widely used in the fields of instrument, communication, pure digital circuit, general low frequency analog circuit, relay drive circuit, data exchange circuit, etc.

Typical Product List

Certificate	Part No.	Input Voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Input Current (mA) Typ. Nominal Volt.		Max. Capacitive Load	Ripple & Noise① (20MHz) (mVp-p)	Efficiency (%) @full load/nom. voltage	
		Nom.	Range	Vo (VDC)	Io(mA) Max/Min	Full load	No Load	(uF)	Max/Typ.	Min	Typ.
-	FN2-05S05H6	5	4.5 - 5.5	5	400	474	22	1000	150/100	79	81
-	FN2-05S09H6			9	222	470	25	470	150/100	81	83
-	FN2-05S12H6			12	167	519	50	470	150/100	75	77
-	FN2-05S15H6			15	133	519	50	470	150/100	75	77
-	FN2-05S24H6			24	83	506	50	470	150/100	77	79
-	FN2-12S05H6	12	10.8	5	400	200	11	1000	150/100	80	82
-	FN2-12S12H6		-	12	167	189	13	1000	150/100	86	88
-	FN2-12S15H6		13.2	15	133	193	17	1000	150/100	84	86
-	FN2-15S05H6	15	13.5	5	400	168	12	1000	150/100	79	81
-	FN2-15S15H6		16.5	15	133	186	12	470	150/100	80	82
-	FN2-24S05H6	24	21.6 - 26.4	5	400	102	8	1000	150/100	79	81
-	FN2-24S12H6			12	167	96	5	680	150/100	84	86
-	FN2-24S15H6			15	133	105	15	470	150/100	80	82
-	FN2-24S24H6			24	83	98	11	680	150/100	83	85
-	FN2-05D05H6	5	4.5	±5	±200	481	28	680	150/100	74	76
-	FN2-05D12H6		-	±12	±83	425	31	680	150/100	79	81
-	FN2-05D15H6		5.5	±15	±67	519	80	220	150/100	76	78

-	FN2-12D05H6	12	10.8 - 13.2	±5	±200	202	12	680	150/100	81	83
-	FN2-12D09H6			±9	±110	214	35	470	150/100	76	78
-	FN2-12D12H6			±12	±83	208	35	220	150/100	76	78
-	FN2-12D15H6			±15	±67	190	14	1000	150/100	84	86
-	FN2-24D05H6	24	21.6 - 26.4	±5	±200	111	15	470	150/100	75	77
-	FN2-24D12H6			±12	±83	104	15	220	150/100	78	80
-	FN2-24D15H6			±15	±67	98	10	1000	150/100	84	86

Note ①, The ripple and noise are tested by the twisted pair method.

Input Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
Input inrush voltage (1Second.max.)	5Vdc Input	-0.7	--	9	VDC
	12Vdc Input	-0.7	--	18	
	15Vdc Input	-0.7	--	21	
	24Vdc Input	-0.7	--	30	
Input Filter	Capacitor Filter				
Hot Plug	Unavailable				

Output Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
Output Power		0.2	--	2	W
Output Voltage Accuracy	Please refer to the output voltage deviation graph (Figure 1)				
Load Regulation	10% - 100% load	--	10	15	%
Line Voltage Regulation	Input Voltage Change ±1%	--	--	1.2	--
Temperature Drift Coefficient	100% Load	--	--	±0.03	%/°C
Short Circuit Protection	Continuous, self-recovery				

General Specifications

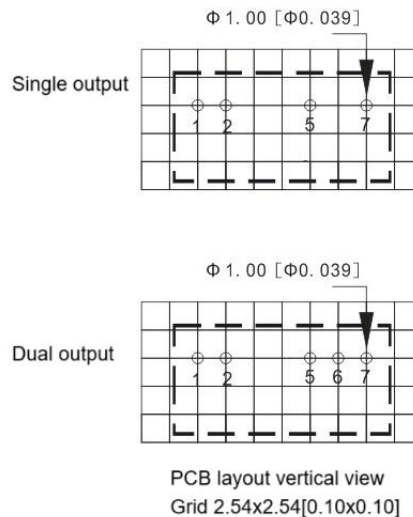
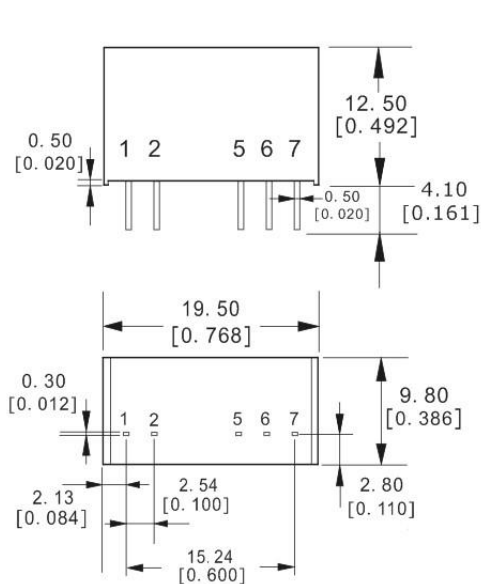
Item	Operating conditions	Min.	Typ.	Max.	Unit
Switching Frequency	Nominal input voltage, full load	--	240	--	KHz
Operating Temperature	Please refer to the temperature derating graph (Figure 2)	-40	--	+105	°C
Storage Temperature		-55	--	+125	
Case temperature rise	Operating at Ta =25°C	--	30°	--	
Pin Soldering Temperature	1.5mm from the case, 10S	--	--	300	
Relative humidity	No condensation	5	--	95	%RH
Isolation Voltage	I/P-O/P, test 1min, leakage current <1mA	6000	--	--	VDC
Insulation Resistance	Input-Output @ 500VDC	1000	--	--	MΩ
Isolation Capacitor	Input/Output, 100KHz/0.1V	--	20	--	pF

Vibration		10-150Hz, 5G, 30 Min. along X, Y and Z			
MTBF	MIL-HDBK-217F@25℃	3500	--	--	K hours
Transformer CL distance		5	--	--	mm
Transformer CR distance		5	--	--	
PCB CL & CR distances		5.5	--	--	
Case Material	Plastic in Black, flame class UL94 V-0				
Unit Weight	2.5 g (Typ.)				
Cooling Method	Natural air				
Packing	Tube size (525*18*10mm)		25PCS/Tube		
	Carton size (542*110*155mm)		2000PCS/Carton (Total 80 Tubes)		
Unit dimensions	L x W x H	19.50× 9.80 × 12.50 mm		0.768 × 0.386 × 0.492 inch	

EMC Performance

EMI	CE	EN60601-1-2/CISPR 11 GROUP1 CLASS B (with the Recommended EMC circuit)
	RE	EN60601-1-2/CISPR 11 GROUP1 CLASS B (with the Recommended EMC circuit)
EMS	ESD	EN60601-1-2 (IEC/EN61000-4-2 Contact ±6KV perf.Criteria B)

Mechanical Dimensions



Unit: mm[inch]
 Pin section tolerance: $\pm 0.10 [\pm 0.004]$
 General tolerance: $\pm 0.50 [\pm 0.020]$

Pin Function Definition

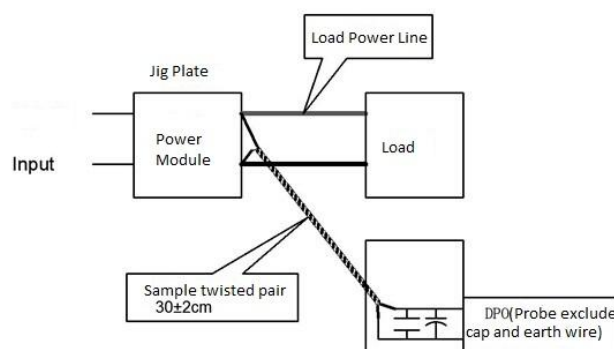
Pin No.	1	2	3, 4	5	6	7
Single output (S)	+Vin	GND	No Pin	-Vo	No Pin	+Vo
Dual outputs (D)	+Vin	GND	No Pin	-Vo	COM	+Vo

Note: Please take the pin definition on the product label as the right one if there is any difference between the data sheet and the one printed on the product label.

Ripple & Noise Test Instructions (Twisted Pair Method, 20MHz Bandwidth)

1) The Ripple & noise test need 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitors are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set at the Sample Mode.

2) The test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location is as close as possible to the output pins or terminals. The test can be start after input power on.



Product Characteristics Graphs

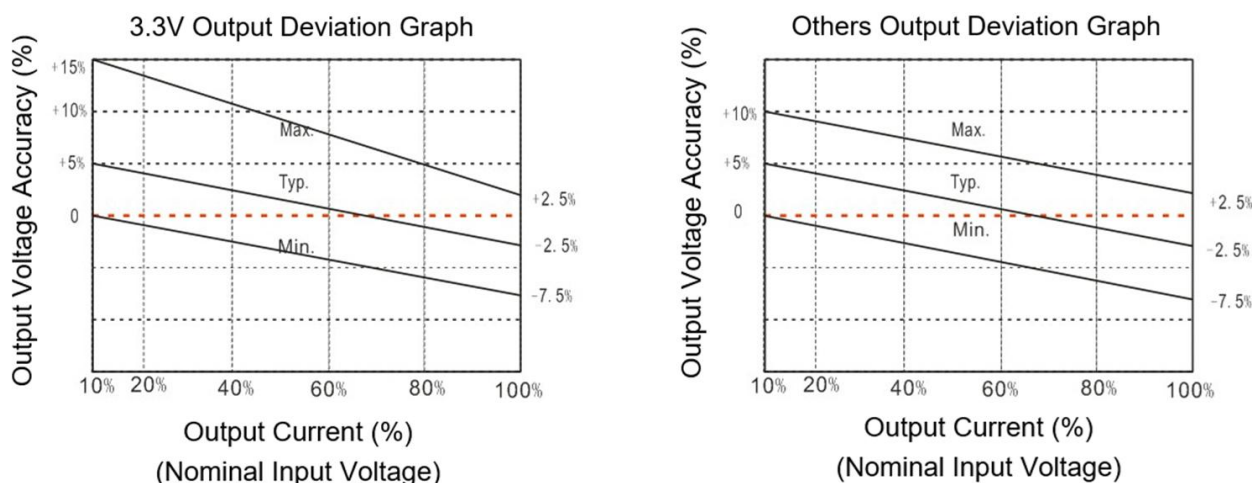


Figure 1

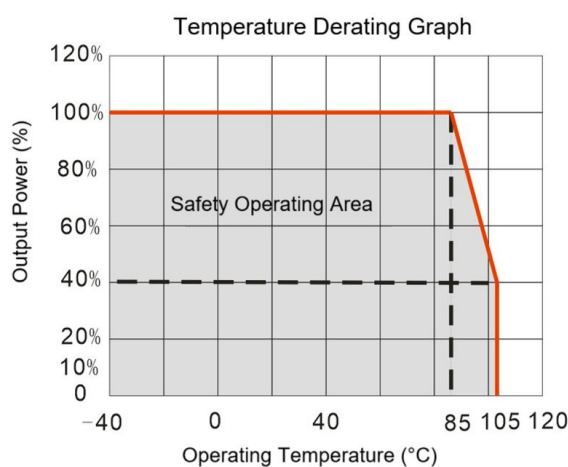


Figure 2

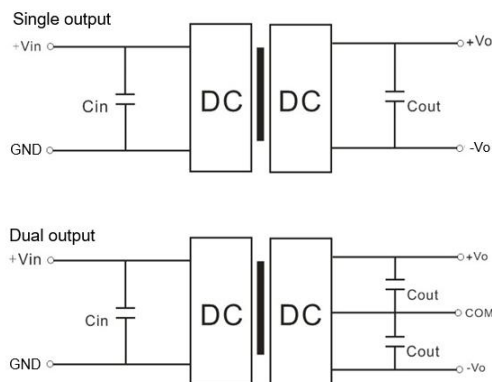
Recommended Circuits Diagrams for Application

1. Requirement for Output load

The maximum capacitive load was tested at the rated full load. The converter may not start or be damaged if the output capacitors exceed this value.

2. Typical application circuit

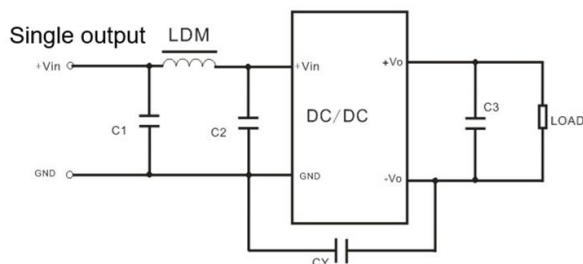
To ensure effectively decrease the input and output ripple and noise, a capacitor filter can be connected at the input and output, the application circuit is shown in the figure below. The suitable filter capacitors should be chosen as the recommended capacitive load values in Table 1. The converter could not start if the capacitance is too big.



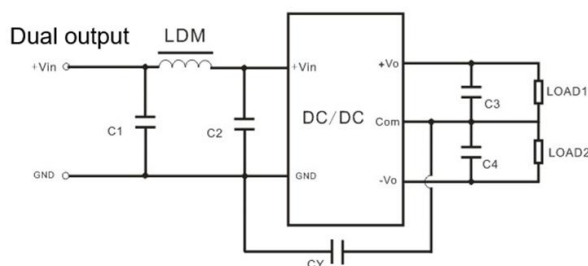
Recommended Capacitive Load Value Table (Table 1)

Vin (Vdc)	Cin	Single Vout (Vdc)	Cout (μF)	Dual Vout (Vdc)	Cout (μF)
5	10 μF/16V	3.3	10 μF/16V	±3.3	4.7 μF/16V
12	2.2 μF/25V	5	10 μF/16V	±5	4.7 μF/16V
15	2.2 μF/25V	9	2.2 μF/25V	±9	2.2 μF/25V
24	1 μF/50V	12	2.2 μF/25V	±12	1 μF/25V
---	---	15	1 μF/25V	±15	1 μF/16V
---	---	24	1 μF/50V	±24	0.47 μF/50V

3. Recommended EMC Circuit Diagrams



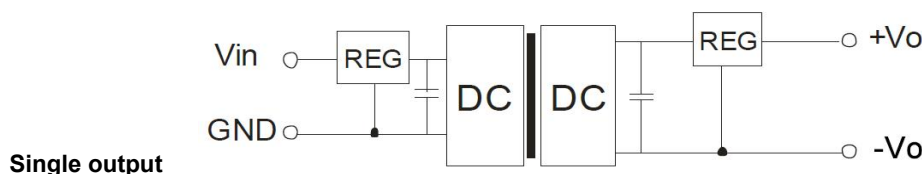
Input voltage		5VDC	12/15/24VDC
EMI	C1/C2	4.7 μF/16V	4.7 μF/50V
	CY	270 pF	270 pF
	C3	Refer to Cout in Table 1	
	LDM	6.8 μH	6.8 μH

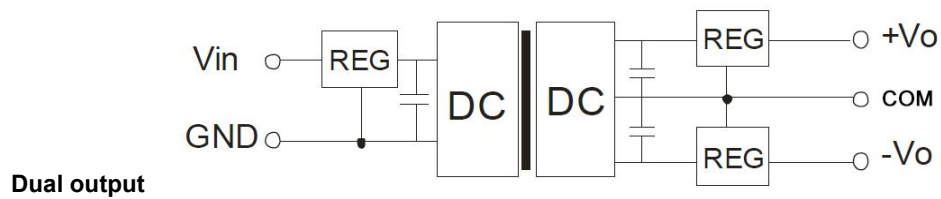


Input voltage		5VDC	12/15/24VDC
EMI	C1/C2	4.7 μF/16V	4.7 μF/50V
	CY	270 pF	270 pF
	C3/C4	Refer to Cout in Table 1	
	LDM	6.8 μH	6.8 μH

4. Output voltage regulation and overvoltage protection

The simple solution to achieve the output regulated voltage, over voltage and over current protections is to connect a linear regulator with overheat protection at input or output, and a capacitor filter connected in parallel as below circuit. Filter capacitive value recommended see table 1, Linear regulator should be chosen according to the actual voltage & current for operating. Or Aipu NW series products are recommended instead.





Application Notice

- 1.This series of converters should not be used in parallel, and they do not support hot-plugging.
- 2.The product performance in this datasheet cannot be guaranteed if it works at a lower load than the minimum load condition.
3. All values or indicators in this datasheet had been tested based on Aipupower test specifications.

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>