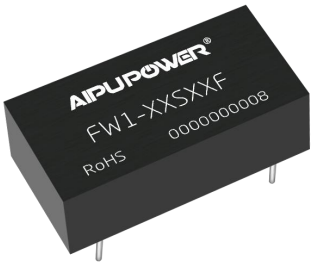
Typical Features

- Fixed input voltage, isolated & regulated output power 1W
- Efficiency up to 76% (Typ.)
- Mini size DIP package
- Isolation voltage 1500VDC
- Continuous short circuit protection, self-recovery
- Operating temperature from -40℃ to +85℃
- Plastic case, flame class UL94-V0



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		Output Voltage/ Current (Vo/Io)		Input Current (mA) Typ. @nominal volt.		Max Capacitive Load	Efficiency (%) @full load, nominal volt.	
		Nominal (VDC)	Range (VDC)	Vo (VDC)	Io(mA) Max/Min	Full load	No Load	uF	Min	Typ.
-	FW1-05S05F	5	4.75 - 5.25	5	200/20	279	30	2400	68	70
-	FW1-05S12F			12	83/8	256	18	1000	74	76
-	FW1-05S15F			15	67/7	256	25	560	73	75
-	FW1-12S05F	12	11.4 - 12.6	5	200/20	109	8	2400	74	76
-	FW1-12S12F			12	83/8	101	12	1000	75	77
-	FW1-12S15F			15	67/7	103	12	560	72	74
-	FW1-24S05F	24	22.8 - 25.2	5	200/20	57	8	2400	72	74
-	FW1-24S12F			12	83/8	54	8	1000	72	74
-	FW1-24S15F			15	67/7	53	8	560	73	75

Note 1: The maximum capacitive load is the capacitance allowed to be used when the power supply starts up at full load. The converter may not start if the capacitor exceeds this value.

Note 2: The efficiency is tested at the nominal input voltage and the rated load.

Note 3: Please contact Aipu sales for other output voltages requirements of this series but not listed in this table.

Input Specifications

Item	Test conditions	Min.	Typ.	Max.	Unit
Input inrush voltage (1Sec. Max)	5VDC input	-0.7	--	9	VDC
	12VDC input	-0.7	--	18	
	24VDC input	-0.7	--	30	
Input filter	Capacitor filter				
Hot-plug	Unavailable				

Output Specifications

Item	Test conditions	Min.	Typ.	Max.	Unit
Output power		0.1	--	1	W
Output voltage accuracy	Nominal input voltage, full load	--	±2	±3	%
Load regulation	10% - 100% load	--	--	±3	
Line regulation	Input voltage change ±1%	--	--	±0.25	%
Temperature drift coefficient		--	--	±0.03	%/℃
Ripple & Noise	10%-100% load, 20MHz bandwidth	--	50	100	mVp-p
Short circuit protection	Continuous protection, self-recovery				
Note: The Ripple & Noise is tested by the Twisted Pair Method, please refer to the following test instruction.					

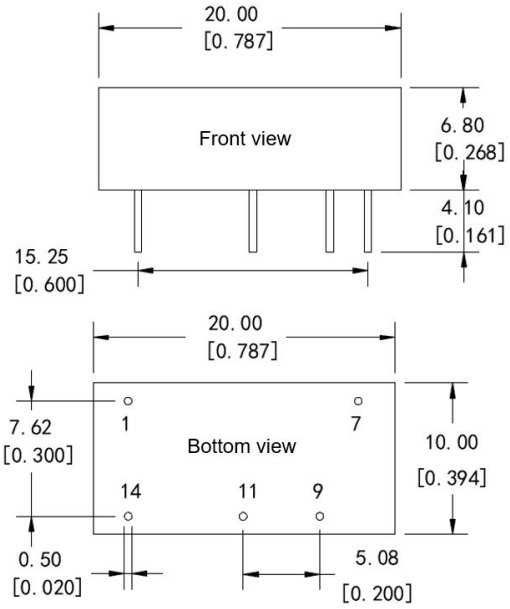
General Specifications

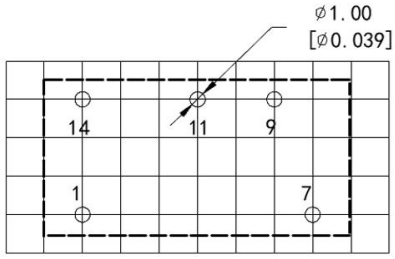
Item	Test conditions	Min.	Typ.	Max.	Unit
Switching frequency	Nominal input voltage, full load	--	100	--	KHz
Operating temperature	Please refer to the temperature derating graph	-40	--	+85	℃
Storage temperature		-55	--	+125	
Case temperature rise	Within the operating derating range	--	30°	--	
Pin soldering temperature	1.5mm from the case, soldering time 10S	--	--	300	
Relative humidity	No condensation	5	--	95	%RH
Isolation voltage	I/P – O/P, test 1min, leakage current <1mA	1500	--	--	VDC
Insulation resistance	I/P – O/P, @ 500VDC	1000	--	--	MΩ
Isolation capacitance	I/P – O/P,100KHz/0.1V	--	20	--	pF
Vibration		10-150Hz, 5G, 30 Min. along X, Y and Z			
MTBF	MIL-HDBK-217F@25℃	3500	--	--	K hours
Case material	Plastic in Black, flame class UL94-V0				
Unit weight	2.5g (Typ.)				
Cooling method	Natural air				
Packing	Tube size (220x12x15 mm)	10PCS/Tube			
	Carton size (542x110x155 mm)	1440PCS (Total 144 Tubes)			
Unit dimensions	L x W x H	20.00×10.00×6.80 mm		0.787×0.394×0.268 inch	

EMC Performance

EMI	CE	CISPR32/EN55032	CLASS B (With the recommended EMC circuit)
	RE	CISPR32/EN55032	CLASS B (With the recommended EMC circuit)
EMS	ESD	IEC/EN61000-4-2	Contact ±4KV, Air ±8kV perf. Criteria B

Mechanical Dimensions





PCB layout vertical view
Grid 2.54x2.54[0.10x0.10]

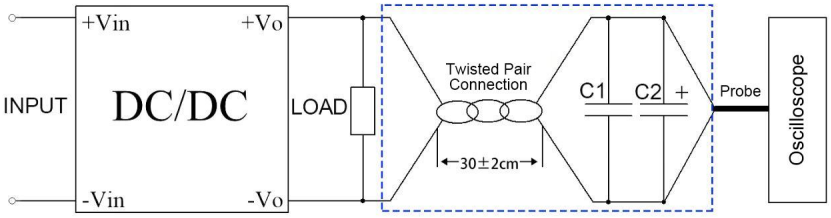
Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

Pin-out Function Description

Pin No.	1	7	9	11	14
Single (S)	GND	No Connection	+Vo	-Vo	+Vin

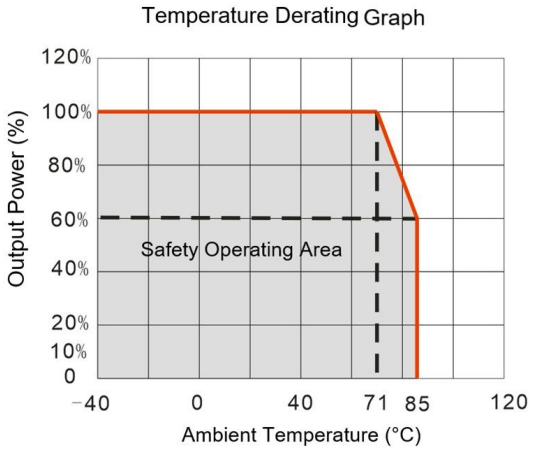
Note: Please take the pin function definition on the product label as the right one if it is different than the data sheet description.

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



1. The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which should be set at the Sample Mode, bandwidth 20MHz. 100M bandwidth probe with cap and ground removed. C1(0.1uF) polypropylene capacitor and C2(10uF) high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes and one side of the twisted pair.
2. Refer to the test diagram, 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 other side of the twisted pair (length 30cm±2 cm) should be connected in parallel with the load. The test can start after the input power on.
3. It is recommended to use a ≥10% load or a high-frequency low resistance electrolytic capacitor (≥100uF) load at the output to avoid the output ripple increasing.

Product Characteristics Graph



Recommended Circuits for Application

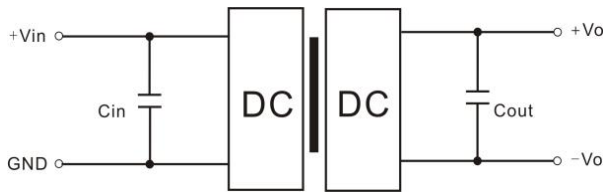
1. Requirement for Output load

a. To ensure the converter operating efficiently and reliably, its minimum load should not be less than 10% of the rated load. It is recommended to connect a resistor in parallel to the output when the real load is less than 10% (the sum of the power consumed should be bigger than or equal to 10% of the rated power).

b. The maximum capacitive load is tested at the full load. The converter may not start or be damaged at the capacitive over-load.

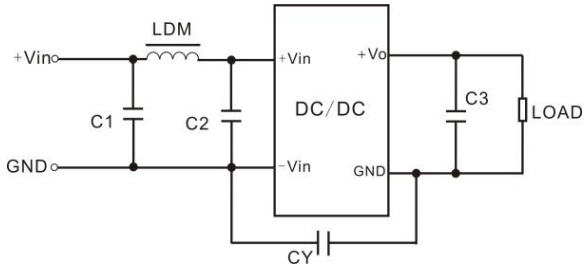
2. Typical application circuit diagram

To effectively decrease the input and output ripple and noise, a capacitor filter net can be connected at the input and output as the application circuit diagram below. Suitable filtering 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 values (Table 1)			
Vin (Vdc)	Cin	Vout (Vdc)	Cout
5	4.7uF/16V	5	10uF/16V
12	2.2uF/25V	12	2.2uF/25V
24	1uF/50V	15	1uF/25V

3. Recommended EMC circuit diagram



Input voltage		5Vdc	12 & 24Vdc
EMI	C1/C2	4.7uF/16V	4.7uF/50V
	CY	270pF/2KVdc	270pF/2KVdc
	C3	Refer to Table 1 Cout	
	LDM	6.8uH	6.8uH

Application Notice

1.This series of products cannot be used in parallel, and do not support hot-plug.

2.The product should be used according to the specifications, otherwise it could be permanently damaged.

3. The product performance cannot be guaranteed if it works at a lower load than the minimum load defined.

4. The product performance cannot be guaranteed if it works under the over-load condition.

5. Unless otherwise specified, all values or indicators on this datasheet are tested at Ta=25℃, humidity<75%RH, nominal input voltage and rated load (pure resistance load).

6. All values or indicators on this datasheet have been tested based on Aipupower test specifications.

7.The specifications are specially for the parts listed on this datasheet, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirements.

8. Aipupower can provide customization service.

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