AC/DC Converter
UA40-220S05

Typical Features

- ◆ Wide input voltage range 85-265VAC/120-380VDC
- ◆ No load power consumption ≤ 0.5W
- ◆ Efficiency 80% (Typ.)
- ◆ Operating temperature from -25℃ to +65℃
- ◆ Switching frequency 65KHz
- ◆ Output short circuit, over current & over temperature protections, self-recovery
- ◆ Isolation Voltage 3000Vac
- ◆ Altitude during operating 4000m Max
- ◆ PCB DIP mounting
- ◆ Metal case

Application Field

UA40-220S05 ----- *A compact size & high efficiency AC-DC power supply with global adapted input voltage range (both AC and DC available), low ripple, low temperature rise, low standby power consumption, high efficiency & reliability, safety isolated and good EMC performance. This product can be used in the fields of Industry, office devices and household appliances, etc. The additional circuit for EMC is recommended in this data sheet for the application with higher EMC requirement.*

Typical Product List

Certificate	Part No.	Output Specification			Max Capacitive Load	Ripple & Noise 20MHz (Max)	Efficiency @full load/220Vac (Typ.)
		Power	Voltage	Current			
		(W)	Vo (V)	Io (mA)	u F	mVp-p	%
-	UA40-220S05	40	+5	8000	2000	80	80

Note 1 - The typical value of efficiency is based on the product tested after half an hour burn-in at full load.

Note 2 - The full load efficiency should be in ±2% of the typical value in this table. The efficiency is calculated by the way that the full output power is divided by the input power.

Note 3 - Please contact Aipu sales for other output voltages requirement in this series but not listed in this table.

Input Specifications

Items	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	220	265	VAC
	DC input	120	310	380	VDC
Input Frequency Range	-	47	-	63	Hz
Input Current	110VAC	-	-	1.00	A
	220VAC	-	-	0.45	
Surge Current	110VAC	-	-	16	
	220VAC	-	-	30	
No-load Power Consumption	115VAC input	-	-	0.5	W
	230VAC input	-	-		
Leakage Current	-	0.5mA TYP/230VAC/50Hz			

Recommended External Fuse	-	3.15A-250VAC Time-delay fuse
Hot Plug	-	Unavailable
Remote Control	-	Unavailable

Output Specifications

Items		Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy		Full input voltage range, any load	-	±1.0	±2.0	%
Line Regulation		Rated load	-	-	±0.2	%
Load Regulation		Nominal input voltage, 20%~100% load	-	-	±0.5	%
Minimum Load		Single Output	0	-	-	%
Turn-on Delay Time		Input 115VAC (full load)	-	100	-	mS
		Input 220VAC (full load)	-		-	
Power-off Hold up Time		Input 115VAC (full load)	-	60	-	mS
		Input 220VAC (full load)	-		-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%	-5.0	-	+5.0	%
	Recovery time		-5.0	-	+5.0	mS
Output Overshoot		Full input voltage range	≤10%Vo			%
Short-Circuit Protection			Continuous, self-recovery			Hiccup
Drift Coefficient		-	-	±0.02%	-	%/℃
Over-current Protection		Input 100-265VAC	≥110% Io, self-recovery			Hiccup
Over-voltage Protection		5VDC output	≤6.5			VDC
Ripple & Noise		-	-	50	80	mV

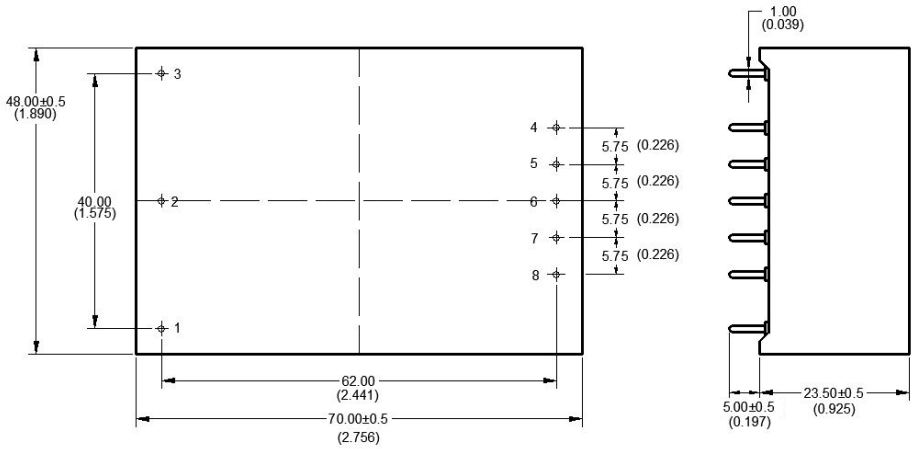
General Specifications

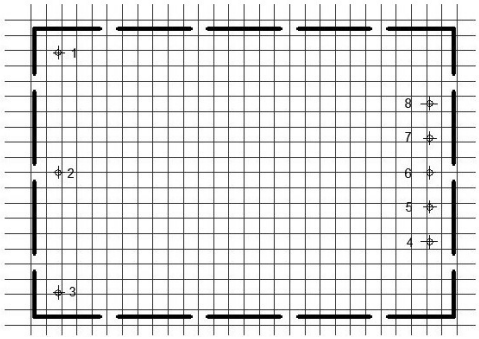
Items		Operating Conditions	Min.	Typ.	Max.	Unit
Switching Frequency		-	-	65	-	KHz
Operating Temperature		Refer to the temperature derating curve	-25	-	+65	℃
Storage Temperature		-	-40	-	+105	
Soldering Temperature		Wave soldering	260±4℃, timing 5-10S			
		Manual soldering	360±8℃, timing 4-7S			
Relative Humidity		-	10	-	90	%RH
Isolation Voltage	I/P - O/P	Test 1min, leakage current ≤1.5mA	3000	-	-	VAC
	I/P - Case	Test 1min, leakage current ≤1.5mA	1500	-	-	
Insulation Resistance	I/P - O/P	@DC500V	100	-	-	MΩ
Safety Standard		-	EN62368、IEC62368			
Vibration		-	10-55Hz,10G, 30 Min, along X,Y,Z			
Safety Class		-	CLASS Ⅱ			
Flame Class of Case		-	UL94V-0			
MTBF		-	MIL-HDBK-217F@25℃＞300,000H			
Unit Weight		-	125g (Typ.)			

EMC Performance

Total Items		Sub Items	Standard	Performance/Class
EMC	EMI	CE	CISPR32/EN55032	CLASS A (CLASS B with Recommended Circuit 3)
		RE	CISPR32/EN55032	CLASS A
	EMS	RS	IEC/EN61000-4-3	10V/m
		CS	IEC/EN61000-4-8	10Vr.m.s
		ESD	IEC/EN61000-4-2	Contact ±4KV
		Surge	IEC/EN61000-4-5	±2KV/±4KV
				±4KV/±4KV (with Recommended Circuit 3)
		EFT	IEC/EN61000-4-4	±2KV ±4KV (with Recommended Circuit 3)
		Voltage dips & interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Mechanical Dimensions





PCB layout vertical view

Pin No.	Function
1	FG
2	AC(N)
3	AC(L)
4	+Vo
5	No Pin
6	TRIM
7	No Pin
8	GND

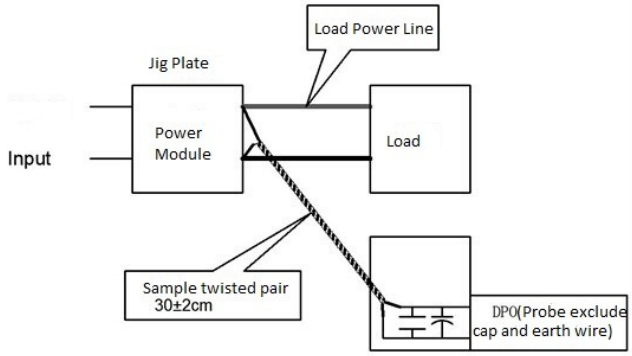
Note:
Unit: mm (inch)
Grid 2.54x2.54(0.10x0.10)
Pin diameter tolerance: ±0.10 (±0.004)
General tolerance: ±0.50 (±0.020)

Packaging Code	Dimensions L x W x H	
H1	70.0 x 48.0 x 23.5 mm	2.756 × 1. 890 × 0.925 inch

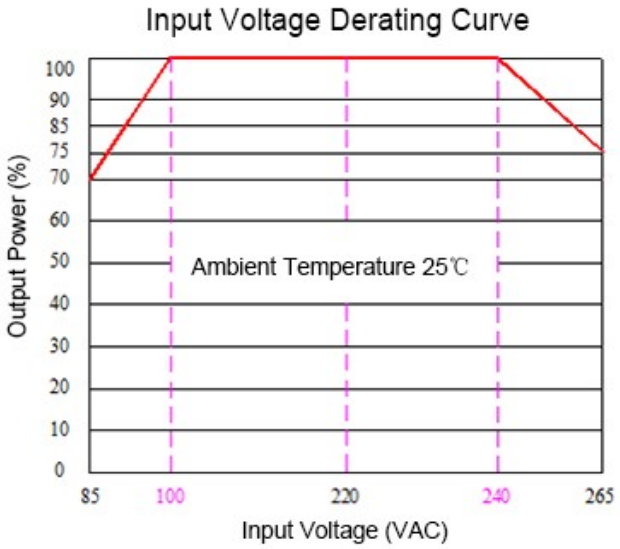
Ripple & Noise Test Instructions (Twisted Pair Method, 20MHz Bandwidth)

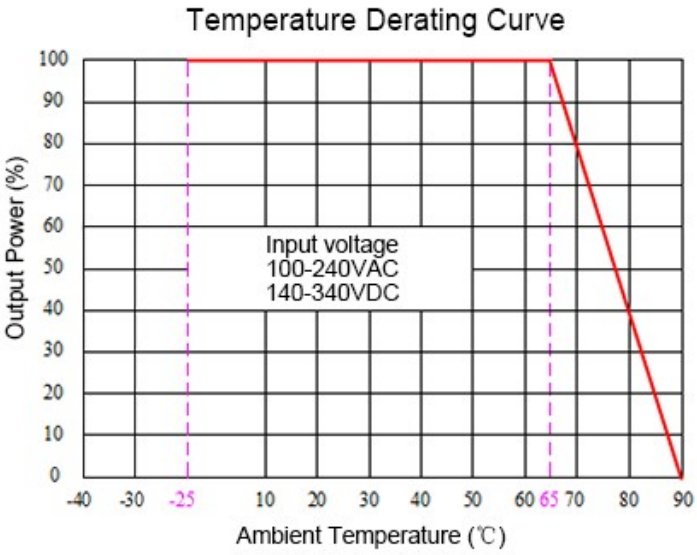
1) The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set at the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

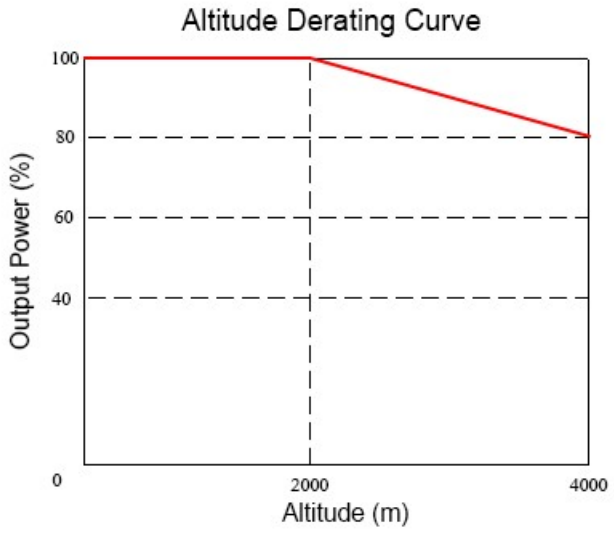
2) The test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location is as close as possible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



Product Performance Curves



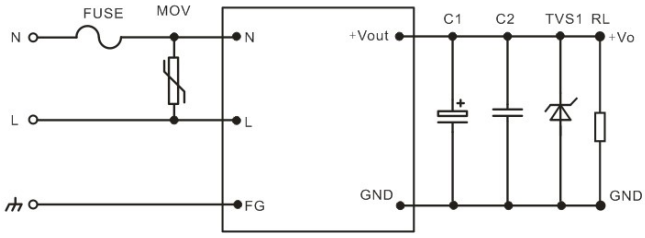




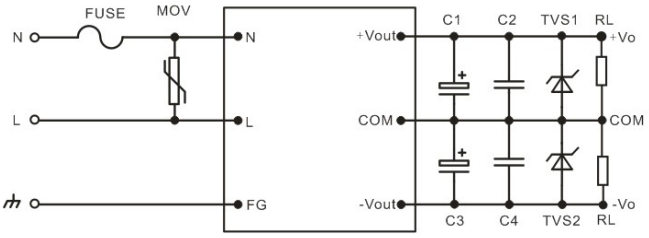
Note 1 - The output power should be derated based on the input voltage derating curve at 85~100VAC/240~265VAC/120~140VDC/340~380VDC.

Note 2 - This product should operate at a natural air condition, please contact us if it need be used at a closed space.

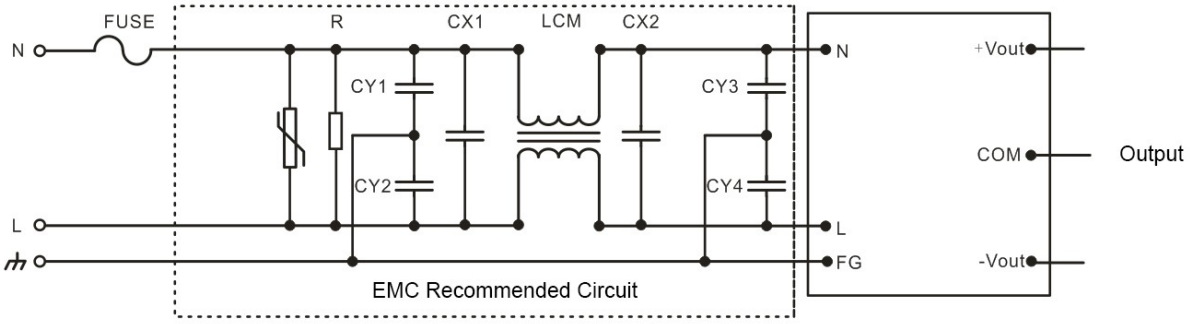
Typical Circuits for Application



Circuit 1



Circuit 2



Circuit 3

Note:

1. 100uF/16V high-frequency low ESR electrolytic capacitors are recommended for C1 & C3.
2. 1μF/50V SMD capacitors are recommended for C2 & C4 which can suppress the high-frequency noise.
3. 600W TVS (SMBJ7.0A) is recommended for 5V output to protect the output circuit under abnormal condition. (SMBJ12.0A for 9V output, SMBJ20A for 12V & 15V output, SMBJ30.0A for 24V output, SMBJ64A for 48V output)
4. 5D-11 NTC is recommended to protect the converter against the Lightning surge.
5. MOV (14D471K/4500A) is recommended to protect the converter against the Lightning surge.
6. The Recommended Circuit 3 is for higher EMC requirement (refer to the EMC performance table)
   a. R - 510KΩ/3W glass glaze resistor
   b. CY1, CY2, CY3, CY4 - Y1/102M/400VAC
   c. CX1, CX2 - X2/224K/275VAC
   d. LCM - 10mH-30mH/1.2A
      FUSE - 3.15A/250V time-delay fuse, necessary.

Application Notice

1.The products should be used according to the specifications in this datasheet, otherwise it could be permanently damaged.
2. A fuse should be connected at input.
3. The product performance in this datasheet cannot be guaranteed if it works at a lower load than the minimum load defined.
4. The product performance in this datasheet cannot be guaranteed if it works under over-load condition.
5. Unless otherwise specified, all values or indicators in this datasheet are tested at Ta=25℃, humidity<75%RH, rated input voltage and rated load (pure resistance load).
6. All values or indicators in this datasheet had been tested based on Aipupower test specifications.
7.The specifications are specially for the parts listed in 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.

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