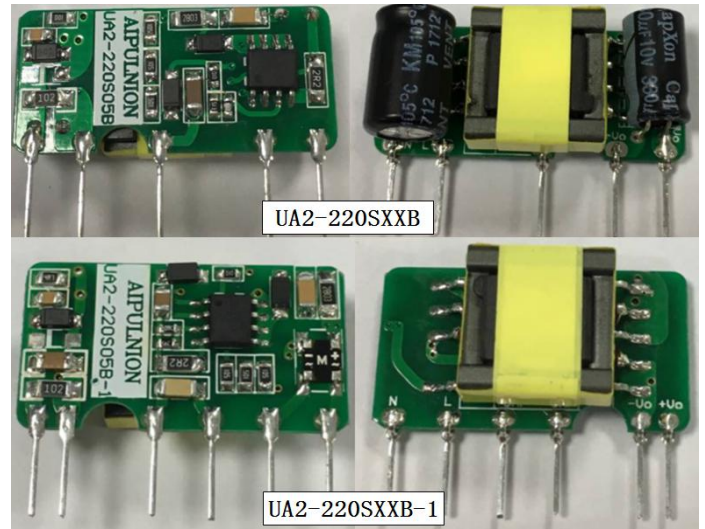


Typical Features

- ◆ Wide input voltage range: 85-265VAC/90-380VDC
- ◆ No load power consumption $\leq 0.15W$
- ◆ Transfer efficiency (typ. 78%)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: short circuit, over-current, over-voltage
- ◆ Isolation voltage: 2500Vac
- ◆ Conform to IEC60950/UL60950/EN60950
- ◆ Meet CE, RoHS
- ◆ Ultra small bare board, industrial level design
- ◆ PCB mounting



Application Field

UA2-220SXXB Series----- a compact size, high efficient, meet CE standard power module offered by Aipu.

It features universal input voltage range, DC and AC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation. with good EMC performance, meet international EN55032, IEC/EN61000 standard.

This series have very important application for power, industrial, instrument, smart home field.

The application circuit in the datasheet is strongly recommended for harsh EMC environment.

Typical Product List

Item No	Output Specifications					Max. Capacitive Load	Ripple & Noise 20MHz (Max)	Efficiency@ Full Load , 220Vac (Typical)
	Power	Voltage1	Current1	Voltage2	Current2			
	(W)	Vo1(V)	Io1(mA)	Vo2(V)	Io2(mA)			
UA2-220S03B	2	3.3	600	-	-	820	50	66
UA2-220S03B-1								
UA2-220S05B	2.5	5	500	-	-	680	50	72
UA2-220S05B-1								
UA2-220S12B	2.5	12	208	-	-	470	80	75
UA2-220S12B-1								
UA2-220S15B	2.5	15	167	-	-	330	100	76
UA2-220S15B-1								
* UA2-220S24B	2.5	24	104	-	-	100	120	78
* UA2-220S24B-1								

Note 1: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.

Note 2: "*" is model being developing.

Note 3: The typical value of output efficiency is based on full load and burn-in after half an hour.

Note 4: The fluctuation range of full load efficiency at table(%, TYP) is $\pm 2\%$, full load efficiency = total output power/module's input power.

Input Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Input Voltage Range	AC input	85	220	265	VAC



	DC input	90	310	380	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	/	/	0.12	A
	220VAC	/	/	0.06	
Surge Current	115VAC	/	/	11	
	220VAC	/	/	21	
Leakage Current	-	0.25mA TYP/230VAC/50Hz			
External Fuse Recommended Value	-	1A-2A/250VAC slow-fusing			
Hot-plug	-	unavailable			
Remote Control Terminal	-	unavailable			

Output Specifications

Item	Operating Condition		Min	Typ.	Max	Unit
Voltage Accuracy	Full input voltage range, any load	Vo1	<5V	±10	±5.0	%
			≥5V	±3	±6	%
Line Regulation	Nominal load	Vo1	-	-	±5.0	%
Load Regulation	Nominal input voltage, 20%~100% load	Vo1	-	-	±10	%
No Load Power Consumption	Input 115VAC		-	-	0.15	W
	Input 220VAC		-	-		
Minimum Load	Single Output		5	-	-	%
	Dual output Common Ground		-	-	-	%
	Dual output Isolated		-	-	-	
Start-up Delay Time	Nominal input voltage (full load)		-	100	-	mS
Power-off Holding Time	Input 115VAC (full load)		-	10	-	mS
	Input 220VAC (full load)		-	60	-	
Dynamic Response	25%~50%~25%		Overshoot range(%): ≤±5.0			%
	50%~75%~50%		Recovery time(mS): ≤5.0			mS
Output Overshoot	Full input voltage range		≤10%Vo			%



Short Circuit Protection		Continuous, Self-recovery			Hiccup
Temperature Coefficient	-	-	±0.03%	-	%/°C
Over Current Protection	Full input voltage range	≥150% Io self-recovery			Hiccup
Over Voltage Protection	Output 5.0VDC	≤7.5			VDC
	Output 12VDC	≤18			
	Output 15VDC	≤20			
	Output 24VDC	≤30			
Ripple & Noise	-	-	80	120	mV
	Note: Ripple & Noise is tested by twisted pair method, for details please see(Ripple& Noise Test) at back.				

General Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+85	°C
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260±4°C, timing 5-10S			
	Manual-soldering	360±8°C, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output Test 1min, leakage current≤5mA	2500	-	-	VAC
Insulation Resistor	Input-Output@DC500V	100	-	-	MΩ
Safety Standard	-	EN60950, IEC60950			
Vibration	-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Class	-	CLASS II			
Class of Case Material	-	UL94V-0			
MTBF	-	MIL-HDBK-217F@25°C > 300,000H			

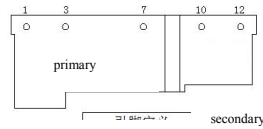
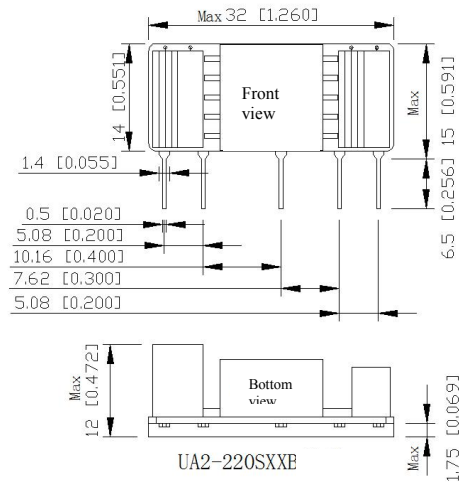
EMC Characteristics

Total Item		Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B(recommend circuit see photo2)
		RE	CISPR22/EN55032	CLASS B(recommend circuit see photo2)



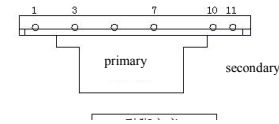
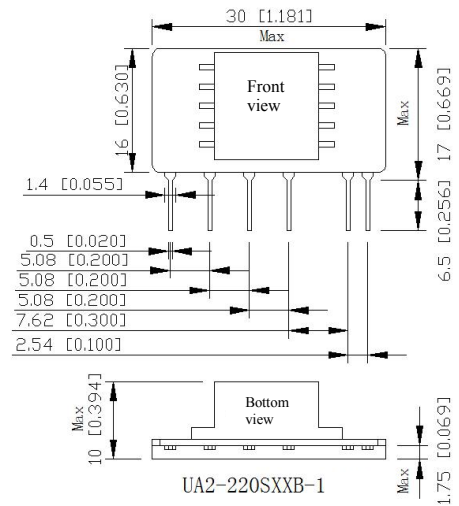
EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B(recommend circuit see photo1)
	CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B(recommend circuit see photo1)
	ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
	Surge	IEC/EN61000-4-5	±1KV Perf.Criteria B
	EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Dimension



Note:
 Unit: mm[inch]
 Pin section tolerance: ±0.10[±0.004]
 General tolerance: ±0.50[±0.0020]
 This layout is for reference, please refer to actual products.

Pin-Out	
Pin	Function
1	AC(N)
3	AC(L)
5	NC
7	GND
10	-Vo
12	+Vo



Note:
 Unit: mm[inch]
 Pin section tolerance: ±0.10[±0.004]
 General tolerance: ±0.50[±0.0020]
 This layout is for reference, please refer to actual products.

Pin-Out	
Pin	Function
1	AC(N)
3	AC(L)
5	+V(cap)
7	-V(cap)
10	-Vo
11	+Vo

Packing Code	L x W x H	
B	32 x 15 x 12 mm	1.378 × 0.709 × 0.433inch
B-1	30 x 17 x 10 mm	1.378 × 0.709 × 0.433inch

Pin Definition

UA2-220SXXB						
Pin-Out	1	3	5	7	10	12
Single(S)	AC(N)	AC(L)	NC	GND	-Vo	+Vo
UA2-220SXXB-1						
Pin-Out	1	3	5	7	10	11
Single(S)	AC(N)	AC(L)	+Cap	-Cap	-Vo	+Vo

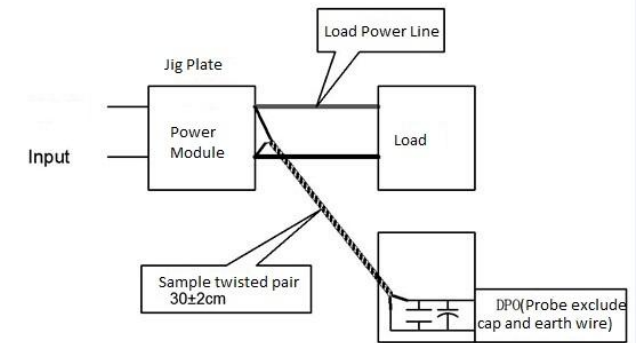
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

Ripple & Noise Test: (Twisted Pair Method 20MHZ bandwidth)

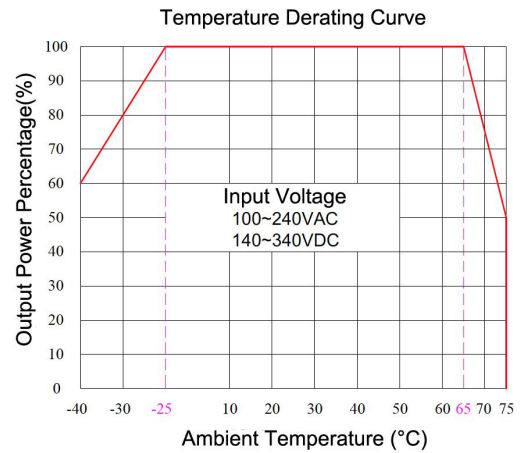
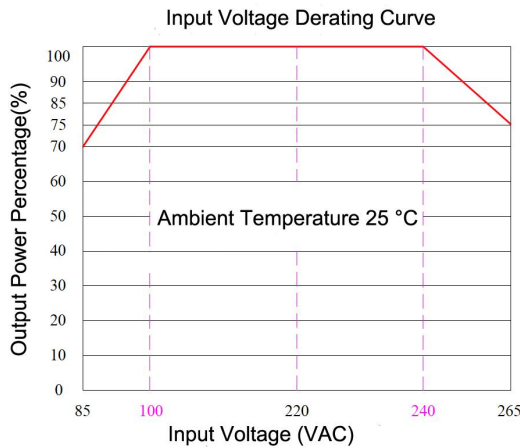
Test Method:

(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(2) Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.

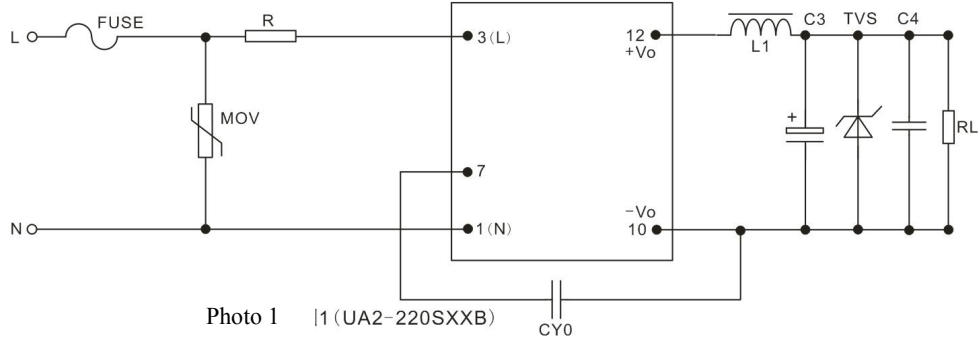


Product Characteristic Curve

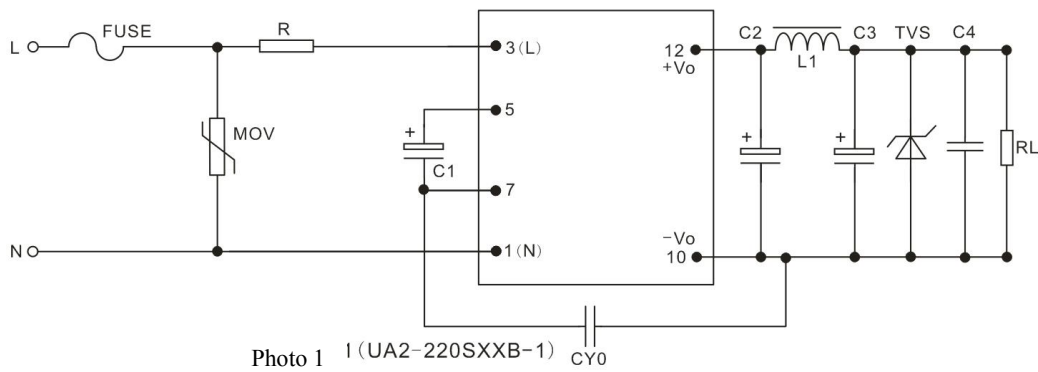


Typical EMC Application Circuit and Recommended Circuit

1. Typical Application Circuit



Model	L1	C3 (necessary)	C4	MOV	R	CY0	FUSE (necessary)	TVS tube
UA2-220S03B	4.7uH	200uF/16V	0.1uF/50V	10D511K	12Ω/1W	1nF/ 400VAC	1A/300V	SMBJ7.0A
UA2-220S05B								SMBJ12A
UA2-220S12B		SMBJ20A						
UA2-220S15B		SMBJ20A						
UA2-220S24B		SMBJ30A						
		100uF/35V						



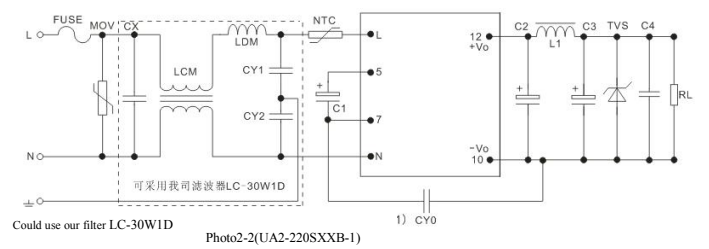
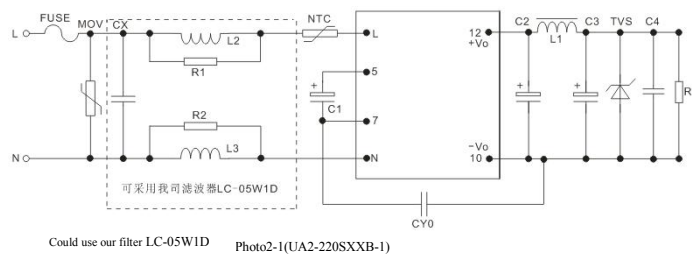
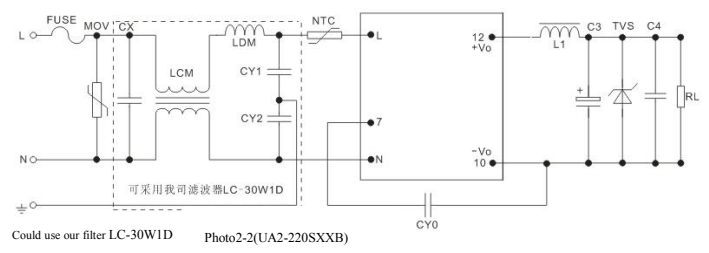
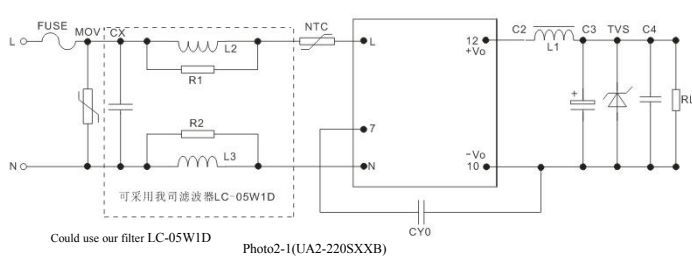
Model	C1 (necessary)	C2 (necessary)	L1	C3 (necessary)	C4	MOV	R	CY0	FUSE (necessary)	TVS tube
UA2-220S03B-1	10uF/400V or 10uF/450V	680uF/16V	4.7uH	220uF/16V	0.1uF/50V	10D511K	12Ω/1W	1nF/ 400VAC	1A/300V	SMBJ7.0A
UA2-220S05B-1										SMBJ12A
UA2-220S12B-1		SMBJ20A								
UA2-220S15B-1		SMBJ20A								
UA2-220S24B-1		SMBJ30A								
		150uF/35V		100uF/35V						

Note:

- C1 : AC input, C1 is input filter electrolytic capacitor(which is required), recommend value 10uF/400V or 10uF/450V.
DC input, C1 is a big filtering capacitor in EMC filter(which is required), recommend value 10uF/400V or 10uF/450V.
- R1 : current-limit resistor, recommended 12Ω/1W.
- MOV1 is voltage dependent resistor, recommended 10D511K.



2. EMC recommended circuit(under high EMC request)



FUSE	Recommended 1A, 300Vac (necessary)	NTC	13D-5	R1,R2	Resistance above 2.2K,1/8W
MOV	10D511K	CY1,CY2	1nF/400VAC		
CX	0.1uF/275Vac	LDM	330uH		
LCM	10mH	L2,L3	Color ring inductor 1mH,1W		

Note:

- The product should be used within the specification range, or it will cause permanent damage to it;
- The input terminal should connect to fuse;
- If the product is operated under the minimum requested load, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^\circ\text{C}$, humidity<75% with nominal input voltage and rated output load(pure resistance load);
- All index testing methods in this datasheet are based on our Company's corporate standards;
- The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, please directly contact our technician for specific information;
- We can provide product customization service,
- Specifications are subject to change without prior notice, please follow our website for newest manual.