

### Typical Features

- ◆ Wide Input Voltage Range
- ◆ Typical Efficiency (Typ. 85%)
- ◆ Switching Frequency: 65KHz typ.
- ◆ Over Current, Short circuit, over temperature protection, self-recovery
- ◆ Input and Output highly isolated
- ◆ PCB Mounting
- ◆ Metal Case L1



### Application Field

**WA75-WA100/NA150-220XXXL1 Series**-a high efficient compact converter offered by Aipu, It features universal input voltage range, AC and DC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation. The series widely used for industry, office and civil application. The application circuit in the datasheet is strongly recommended for harsh EMC environment.

### Typical Product List

Part no.	Input voltage range	Output voltage / current				Max. Capacitive Load u F	Ripple & Noise 20MHz mVp-p	Efficiency@ Full Load, Nominal Input Voltage (Typical)
		Vo1(V)	Io1(m A)	Vo2(V)	Io2(m A)			%
*WA75-220S05L1	100Vac-265Vac 140Vdc-380Vdc	+5.0	15000	-	-	2000	120	82
WA75-220S12L1		+12.0	6250	-	-	1000	120	85
WA75-220S24L1		+24.0	3125	-	-	470	120	86
WA100-220S12L1		+12.0	8333	-	-	1000	120	85
WA100-220S24L1		+24.0	4166	-	-	470	120	86
NA150-220S12L1	165Vac-265Vac 200Vdc-380Vdc	+12.0	12500	-	-	1000	120	84
NA150-220S24L1		+24.0	6250	-	-	470	120	85
NA150-220S28L1		+28.0	5357	-	-	1000	100	86
NA150-220S36L1		+36.0	4166	-	-	1000	100	85

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 the table(% , TYP) is ±2%, full load efficiency = total output power / module's input power.

### Technical Parameters

Test Condition: Unless otherwise specified, data in the datasheet should be tested under the conditions of inputting nominal voltage, pure resistance rated load and Ta=25°C

Input	Min (Vac)	Nom(Vac)	Max(Vac)	Notes
Input voltage(Vac)	100(140Vdc)	220	265(380Vdc)	W
	165(200Vdc)	220	265(380Vdc)	N
Input frequency range(Hz)	47		63	HZ
Standby power consumption	3.0 W(Max)			
Short-circuit power consumption	20.0W(Max)			
Input current	2.20A (Max) @Vin=100Vac		1.10A (Max) @Vin=220Vac	
Surge curren	16A (Max) @Vin=110Vac		30A (Max) @Vin=220Vac	

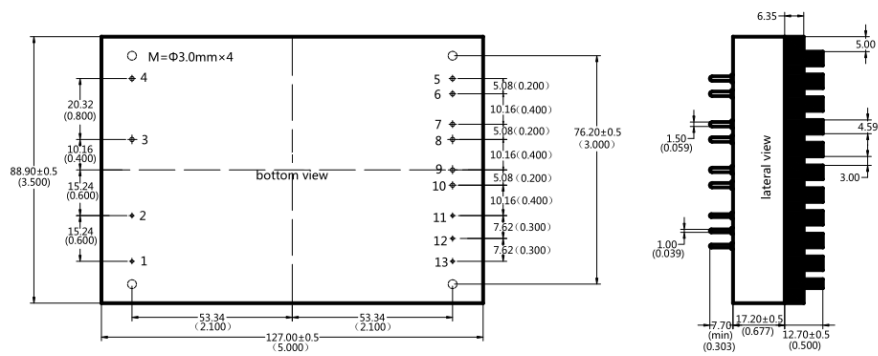
## Output Specifications

Output voltage accuracy	±2.0%			
Line regulation	Nominal Load, full voltage range	Vo1	±0.2%	
Load regulation	20% ~ 100% nominal load	Vo1	±0.5%	
Minimum load	Single output		0%Load	
Ripple and noise	20MHz BM full load , Vo≤5.0V, ≤80mVp-p, Other≤120 mVp-p			
Turn-on delay time	Nominal input voltage, full load	≤2000mS		
Power off holding time	Nominal input voltage, full load	60ms(typ.)		
Startup output overshoot		≤10%Vo		
Output Dynamic characteristics	25%-50%-25%, 50%-75%-50%	Overshoot range(%):≤±5%; Recovery time (mS) ≤5.0Ms;		
Output short circuit protection	Continuous, Self-recovery	Output Switched-off	Hiccup	

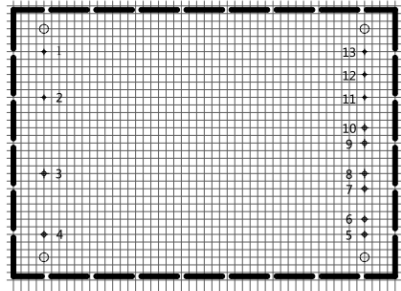
## General Specifications

Switching frequency			60KHz (TYP.)	
Operating temperature			-25°C ~ +65°C	
Temperature drift			0.02%/°C (Main circuit)	
Storage temperature			-40°C ~ +105°C	
Max case temperature			+95°C	
Relative humidity			10%~90%	
Case material			Plastic/ Metal case	
Isolation Voltage	Input-output 2.500KVac ≤ 3.0mA/1min;			
MTBF	>300,000H @25°C			

## Dimension



Note : 3, 4, 5, 6, 7, 8, 9, 10pin  $\Phi$ 1.5mm , others 1mm



Unit:mm  
 Printed board vertical view  
 Grid:2.54mm(0.1inch)  
 General tolerance: $\pm$ 0.25mm  
 Pin tolerance: $\pm$ 0.10mm

Packing Code	L x W x H	
L1	127.00X 88.90 X17.20mm	5.000X3.500X0.677inch

### Pin Definition

Single(S)	1	2	3	4	5:6
	NC	FG	AC(N)	AC(L)	+Vo
	7:8	9:10	11	12	13
	NP	GND	+S	TRIM	-S

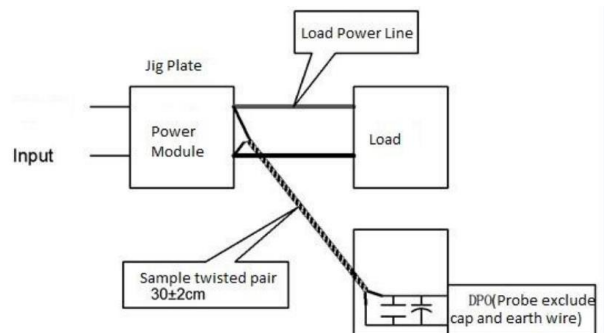
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

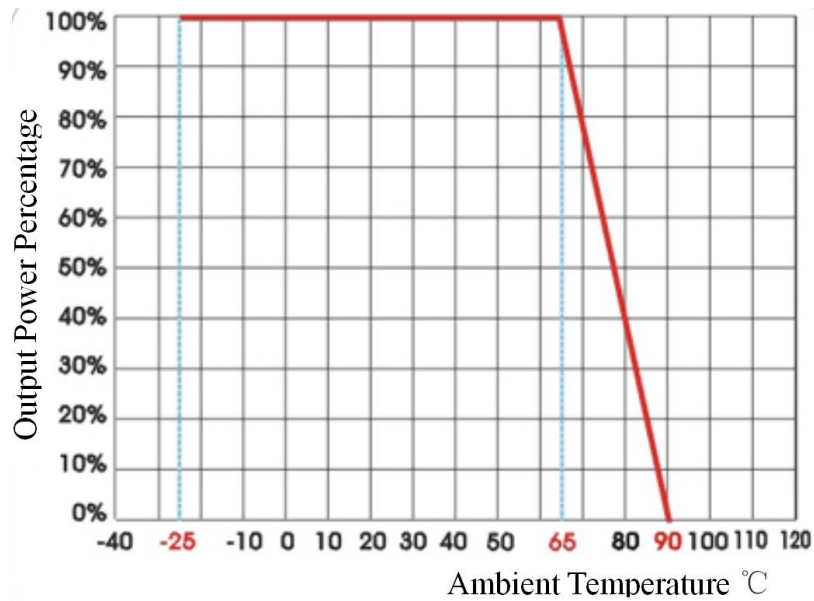
Test Method:

(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHZ, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 47uF 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 $\pm$ 2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



## Operating Temperature VS Load Curve



## Typical Application Circuit

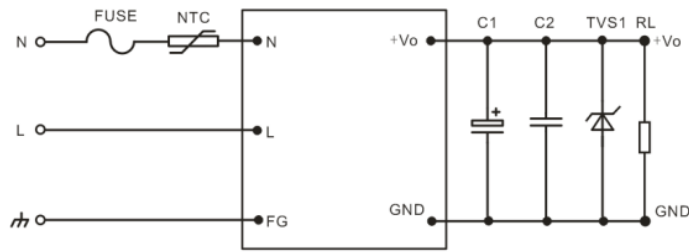
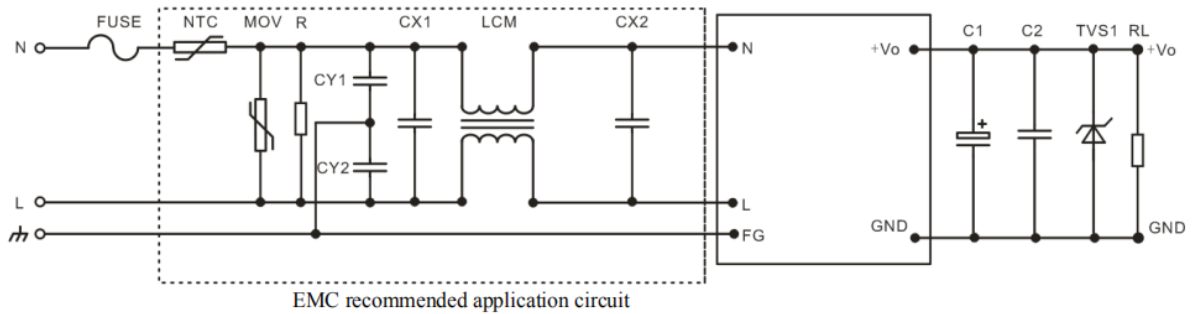


Photo 1



EMC recommended application circuit

Photo 2

### Note:

1. Output filtering capacitor C1 is electrolytic capacitor, recommended to use high frequency low resistance ones, capacitance as 100uF/1A output current. Capacitance withstand voltage derating should be 80% or above;
2. Output filtering capacitor C2 filter high frequency noise, recommend 1uF ceramic capacitor, capacitance withstand voltage derating >80%;
3. TVS is a recommended component to protect post-circuits (if converter fails), recommend 600W model.  
5V output recommend: SMBJ7.0A, 9V output recommend: SMBJ12.0A, 12V output recommend: SMBJ20A, 15V output recommend: SMBJ20.0A, 24V output recommend: SMBJ30.0A, 48V output recommend: SMBJ64A
4. NTC is thermistors, recommended model: 2.5D-14, to protect converter from the large current damage when starting up moment. (not necessary).
5. MOV is voltage dependent resistor, recommended model: 14D-471K, to protect converter from lightning surge damage
6. Photo 1 circuit recommended for customer with normal application request, if have higher request for EMC, please use Photo 2 recommended circuit. Below are the recommended value for Photo 2:

- 1)MOV: voltage dependent resistor, recommend model:14D-471K, to protect converter from lightning surge damage.
- 2)R: 510K $\Omega$ /3W, metal film resistor;
- 3)CY1,CY2,CY3,CY4:1000pF/400VAC;
- 4)CX:0.47 $\mu$ F/275VAC;
- 5)LCM:10mH-30mH;
- 6). FUSE: necessary, recommended specification as 6.25A/250V, slow fusing.
7. Above parameters are only for recommendation, need to adjust according to actual environment.