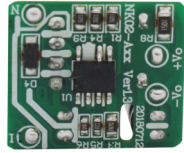
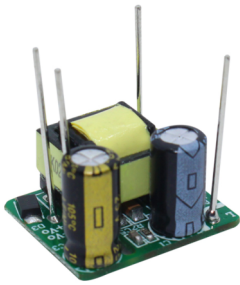
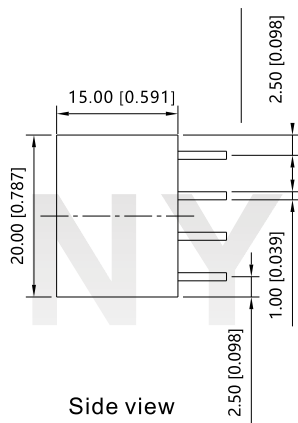
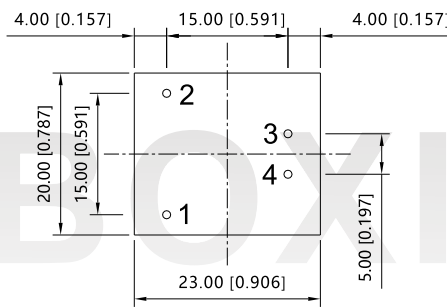


**2W AC/DC SMPS**
**DESCRIPTION**


- ★ Wide input AC85~264V & DC100~375V
- ★ Output short circuit, over-current protection
- ★ Compact size, high power density
- ★ I/O isolation test voltage 1.5k VAC
- ★ Low ripple & noise
- ★ RoHS Compliant
- ★ Industrial grade, high reliability

NK02-AxxN series is one of Nyboxing's highly efficient green power AC-DC Converter series. They feature ultra-wide wide input range accepting either AC or DC voltage, high efficiency, low power consumption and Class II reinforced insulation.

**Dimensions**

**Side view**

**Bottom view**

PIN	Function
1	N
2	L
3	-Vo
4	+Vo

**Note:**

Unit:mm[inch]

Pin diameter tolerances:±0.20[±0.008]

General tolerances:±0.50[±0.020]

**Selection Guide**

Part No.	Output Power	Nominal Output Voltage and Current	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.	Dimensions (L×W×H)
NK02-A05N	2W	5V/400mA	66%	470μF	23.0×20.0×15.0mm
NK02-A12N		12V/166mA	69%	220μF	
NK02-A24N		24V/83mA	72%	100μF	

**Input Specifications**

Item	Operating Conditions	Min	Typ	Max
Input Voltage Range	AC input	85VAC	--	264VAC
	DC input	100VDC	--	375VDC
Input Frequency		47Hz	--	63Hz
Stand-by Power Consumption		--	0.1W	--
Input Current	115VAC	--	60mA	--
	230VAC	--	30mA	--

### Output Specifications

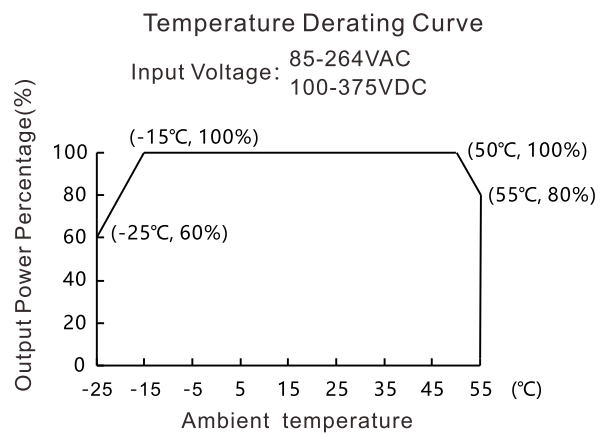
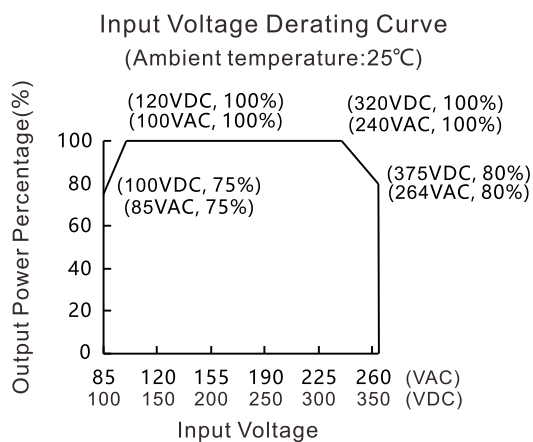
Item	Operating Conditions	Min	Typ	Max	
Output Voltage Accuracy		--	±3%	--	
Line Regulation	Full load	--	±3%	--	
Load Regulation	10%~100% Load	--	±3%	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V Output	--	240mV	--
		12V Output	--	150mV	--
		24V Output	--	100mV	--
Short Circuit Protection	Hiccup, continuous, self-recovery				
Over-current Protection	≥110%Io				
Minimum Load		0	--	--	
Start delay time		--	800ms	--	
Hold-up Time		--	10ms	--	

Note: \* The "parallel cable" method is used for Ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.

### General Specifications

Item	Operating Conditions	Min	Typ	Max
Isolation	Input-Output, Test for 1min	--	1500VAC	--
Operating Temperature		-25℃	--	+55℃
Storage Temperature		-40℃		+105℃
Storage Humidity		--	--	95%RH
Working frequency		--	65KHz	--
MTBF	MIL-HDBK-217F, 25℃		215,000h	

### Product Characteristic Curve



## Design Reference

### 1 Typical application

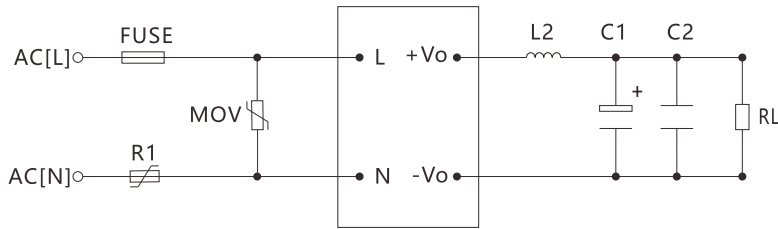


Fig. 1: Typical circuit diagram

#### Note

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C1 (refer to manufacturer's datasheet). Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C2 is a ceramic capacitor used for filtering high-frequency noise.

### 2 EMC compliance recommended circuit

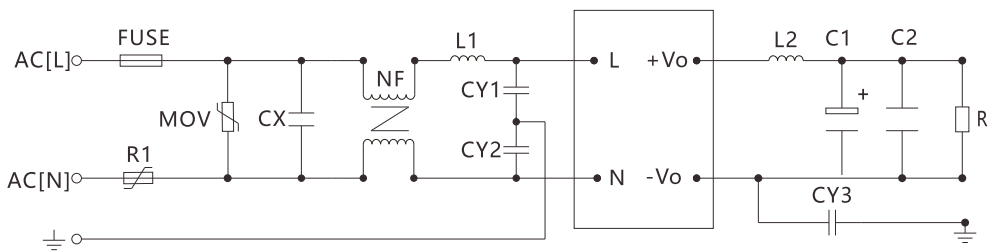


Fig 2: EMC application circuit with higher requirements

### 3 Input part: parameter recommendation

Component	Recommended value
FUSE	1.0A/250VAC,slow blow required
R1	10Ω/1W Safety Resistance
MOV	471KD10
CX	0.1μF/275VAC
L1	470μH
NF	10mH-30mH
CY1,CY2,CY3	1000pF/250V

### 4 Output part: parameter recommendation

Output Voltage	5V	12V	24V
C1	100μF/10V	68μF/25V	33μF/35V
C2	1μF/50V		
L2	6.8μH		

## Safety precautions

- 1.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;
2. 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;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. For more product information, please visit our official website ( [www.gzny-boxing.com](http://www.gzny-boxing.com) ) or email us ( [sales@gzny-boxing.com](mailto:sales@gzny-boxing.com) ).