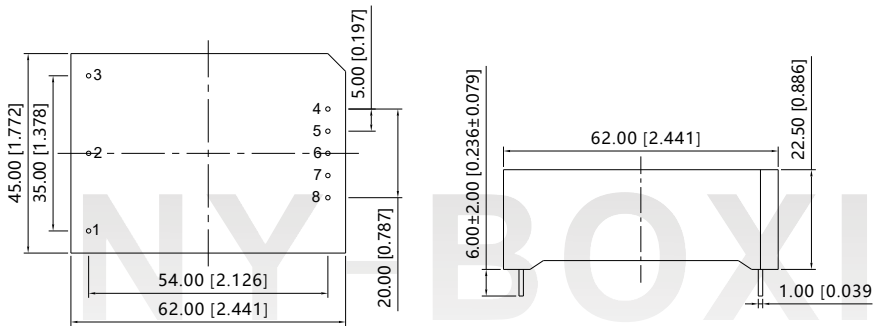


20W AC/DC SMPS
FEATURES


- ★ Wide input AC85~264V & DC100~375V
- ★ Output short circuit, over-current protection
- ★ Compact size, high power density
- ★ I/O isolation test voltage 3k VAC
- ★ Low ripple & noise
- ★ RoHS Compliant
- ★ Industrial grade, high reliability

NRQ20-Axx 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

Bottom view
Side view

PIN	Function	
	AC IN	DC IN
1	FG	FG
2	N	DC
3	L	DC
4	+Vo	+Vo
5	NP	NP
6	NP	NP
7	NP	NP
8	-Vo	-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)
NRQ20-A03	12W	3.3V/3600mA	70%	2000μF	62.0x45.0x22.5mm
NRQ20-A05	18W	5V/3600mA	75%	2000μF	
NRQ20-A09	20W	9V/2220mA	77%	1500μF	
NRQ20-A12		12V/1670mA	79%	1000μF	
NRQ20-A15		15V/1330mA	80%	820μF	
NRQ20-A24		24V/830mA	82%	820μF	

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		--	0.2W	--
Input Current	115VAC	--	330mA	--
	230VAC	--	165mA	--

Output Specifications

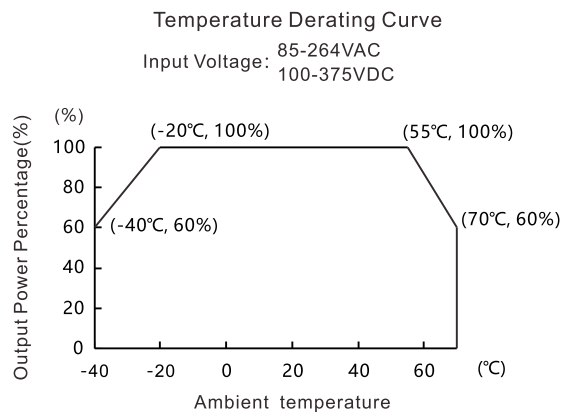
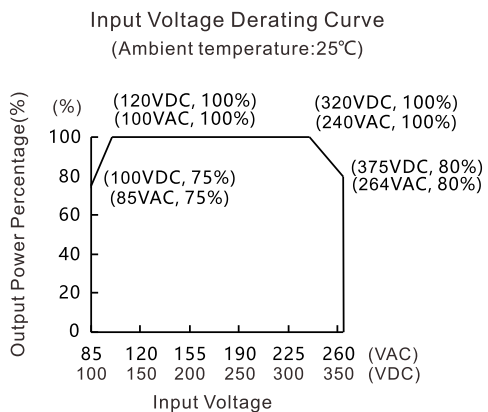
Item	Operating Conditions	Min	Typ	Max
Output Voltage Accuracy	3.3V Output	--	±2%	--
	Other Output	--	±1%	--
Line Regulation	Full load	--	±1.5%	--
Load Regulation	10%~100% Load	--	±2.5%	--
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	100mV	--
Minimum Load		0	--	--
Start delay time		--	50ms	--
Hold-up Time		--	20ms	--

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		3000VAC	--
Operating Temperature		-40°C	--	+70°C
Storage Temperature		-40°C		+105°C
Storage Humidity		--	--	95%RH
Working frequency		--	65KHz	--
MTBF	MIL-HDBK-217F, 25°C		215,000h	
Casing Material	Black flame-retardant and heat-resistant plastic (UL94-V0)			

Product Characteristic Curve



Design Reference

1 Typical application

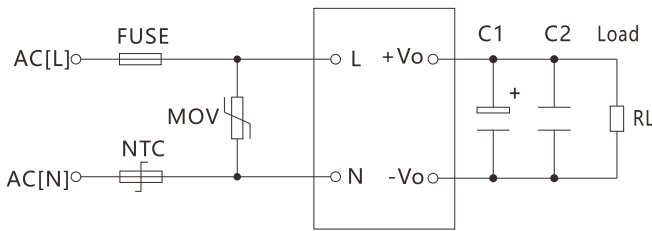


Fig. 1: Typical circuit diagram

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

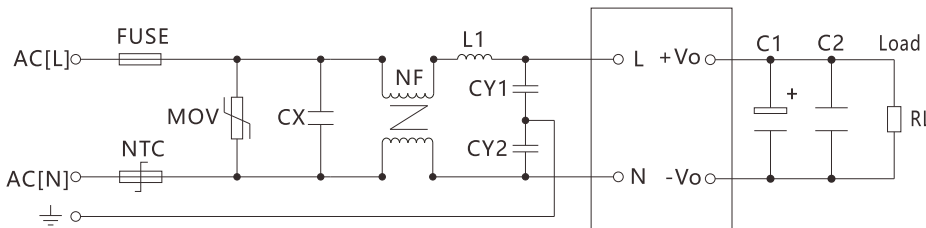


Fig 2: EMC application circuit with higher requirements

3 Input part: parameter recommendation

Component	Recommended value
FUSE	2.0A/250VAC,slow-blow required
NTC	5D-9
MOV	471KD10
CX	0.33 μ F/275VAC
L1	330 μ H
NF	10mH-30mH
CY1,CY2	1000pF/250V

4 Output part: parameter recommendation

Output Voltage	3.3V	5V	9V	12V	15V	24V
C1	470 μ F/10V		330 μ F/25V			220 μ F/35V
C2	1 μ F/50V					

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 Ta=25°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) or email us (sales@gzny-boxing.com).