



Key features

- Universal input :85-264vac 50/60 Hz
- EMC reaches level 4 (EN61000-6-2, grade A heavy industry standard)
- Low ripple and low noise
- Output overload and short circuit protection
- High efficiency, high power density, minimum size
- Lower power, RoHS , no-load loss < 0.1w
- 100% test and work
- 3 years product warranty



HP20 series --- a high stability、super small size modular switching power supply offered by Zhongyiguang. It features minute extension 、high reliability、high isolation voltage 、higher cost performance etc.And it is mainly used in heavy industry environment instruments and other related equipment , such as applied to a relatively harsh environment electromagnetic compatibility must refer to the application circuit.

Electrical specifications

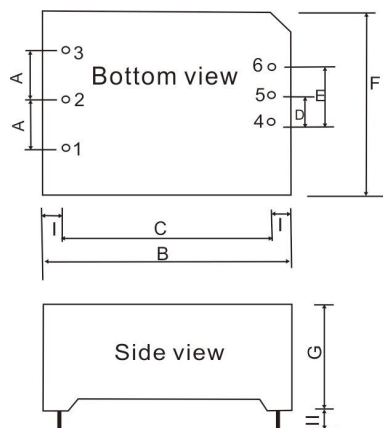
Model	Output voltage(V)	Output current(A)	Output power(W)	Efficiency(%)	Ripple (mv)
HP20-S03	3.3	4	13.2	74	50
HP20-S05	5	4	20	79	50
HP20-S09	9	2.2	20	81	50
HP20-S12	12	1.66	20	84	50
HP20-S15	15	1.33	20	85	100
HP20-S24	24	0.83	20	87	50

General features

Output	Output voltage accuracy	±2.0%	
	Source effect	±1.0%	
	Load effect	±1.0%	
	Starting time (TYP)	20ms/230VAC	50ms/115VAC at full load
	Output hold time (TYP)	40ms/230VAC	15ms/115VAC at full load
Input	Input voltage range	85 ~ 264VAC	70 ~ 370VDC
	Input frequency	47 ~ 440Hz	
	Input current (TYP)	340mA / 115VAC	210m A / 230VAC
	Inrush current (TYP)	cold boot 20 A / 115 VAC	40 A / 230 VAC
	Recommended values for External Fuses	T3.15A / 250Vac (disconnected slowly)	
	Leakage current (TYP)	< 0.3mA at 230VAC/50Hz	
Protection	Over-current and short circuit protection, automatic recovery after troubleshooting		
	Operating Temperature	—40 ~ +70 °C (≥50°C,According to 0.35W/°C derating)	

Work environment	Humidity	85% .RH max
	Storage Temperature	-40 ~ +85, 10 ~ 95% RH
	Temperature coefficient	0.03%/ (0~ 50°C)
	Vibration coefficient	10~500Hz,2G10min./1cycle, 60min.each along X,Y,Z axes
Safety and EMC (Note:3)	Safety Standard	Conform to UL1012,EN60950,UL60950
	I/O-Isolation voltage	I/P-O/P:3.0KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC
	Isolation resistance	I/P-O/P,I/P-FG,O/P-FG:>100M Ohms/500VDC 25°C 70% RH
	EMI / RFI conducted	EN55011, EN55022 (CISPR22)
	ESD	IEC/EN 61000-4-2 level 4 8kV/15kV (Note: See the application circuit for details)
	RF	IEC/EN 61000-4-3 (Note: See the application circuit for details)
	EFT	IEC/EN 61000-4-4 level 4 4kV (Note: See the application circuit for details)
	Surge	IEC/EN 61000-4-5 level 4 2kV/4kV (Note: See the application circuit for details)
Others	MTBF	200K hrs min. MIL-HDBK-217F(25)
	Dimensions	55*45*21mm (L*W*H)
	Weight	70g/piece, 8.67kg/case
	Pack	112piece
	The size of the packing box	360*300*250mm
Notes	1. All parameters NOT specially mentioned are measured at 25 of ambient temperature ,humidity<75%, 230VAC input and rated load test.	
	2. Ripple & noise are measured at 20MHz of bandwidth by using a 300mm twisted pair-wire terminated with a 0.1uf & 100uf electrolytic capacitor.	
	3. The power supply is considered a component which will be installed into a final equipment.The final equipment must be re-confirmed that it still meets EMC directives .	

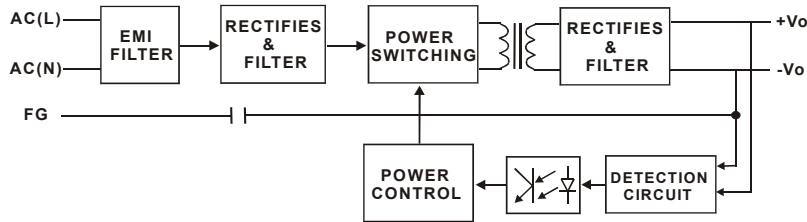
Dimension



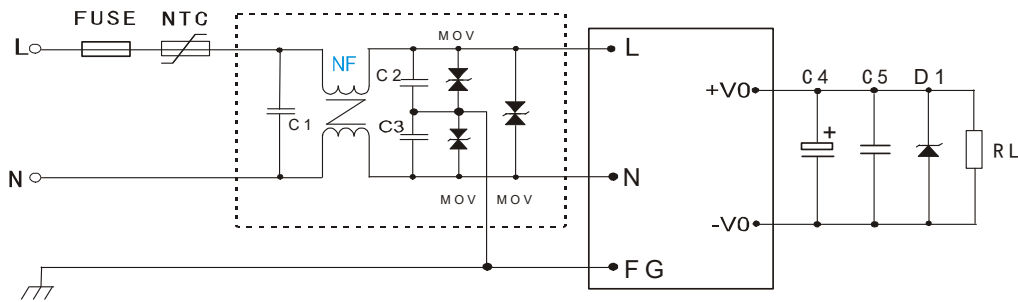
	Shell size	Pin	Pin function
A	17.5	1	FG
B	55.0	2	AC(N)
C	47.0	3	AC(L)
D	10.0		
E	20.0	4	-Vo
F	45.0	5	No Pin
G	21.0	6	+Vo
I	≥4.0		

Remark: unit of measurement:mm
Size of terminal section:1.00mm
Terminal to larence: ± 0.1mm
No to larence:± 0.5mm
Module weight:70g(typical value)

Block diagram



Typical application diagram



Remark:

- 1.The output filter capacitance C4 is the electrolytic capacitor. It is recommended to use the high frequency low resistance electrolytic capacitance, the capacity and the current of the flow please refer to the technical specifications provided by each manufacturer.Capacitance pressure reduction is greater than 80%. C5 is to remove high frequency noise. D1 is recommended for the TVS tube to protect the rear circuit (when the module is abnormal)
- 2.In the dotted line is the EMC filter to meet the higher EMC requirements, such as the general application, which can be omitted.

Typical values for external circuit components

component Model	FUSE	NTC	NF	MOV	C1	C2, C3	C4	C5	D1
HP20-S03	T2A/250V	Recomm ended external NTC thermistor, model:10D-9	NF is a common mode inductance, the inductance value is 3-10mH, current: 0.2A-0.5A.	MOV is a piezoelectric resistor, recommended value is 14D471K	C1 is the safety X capacitor, 334K/275 Vac	C2, C3 is the safety Y capacitor, 102K/400 Vac	470uF/16V	C5 is ceramic capacitor 104K/50V	P6KE6.8A
HP20-S05							470uF/16V		P6KE6.8A
HP20-S09							150uF/16V		P6KE16A
HP20-S12							120uF/16V		P6KE16A
HP20-S15							120uF/25V		P6KE20A
HP20-S24							100uF/35V		P6KE33A



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AC-DC Module Power Supply 20W HP20 series



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