20ACB1W_4 series

20W - AC-DC converter

AC-DC Converter 20 Watt

- Wide input voltage range: 90-528VAC/100-745VDC
- No-load power consumption ≤0.5W
- Transfer efficiency 84%
- Switching frequency: 65kHz
- Output short circuit, over current, over voltage protection
- Isolation voltage: 4000VAC
- Conform to CISPR32/EN55032 CLASS B
- RoHS conform
- Plastic case, meets flammability UL94 V-0
- PCB mounting, chassis mounting, DIN-rail mounting available

Introducing our advanced power supply 20ACB1W_4 series, designed to deliver exceptional performance across a wide range of applications. With a wide input voltage range of 90-528VAC or 100-745VDC, it supports an impressive transfer efficiency of 84%. This power supply features no-load power consumption of ≤0.5W and operates at a switching frequency of 65kHz for optimal performance.

Safety and reliability are prioritized with protections against output short circuit, over current, and over voltage. The isolation voltage is rated at 4000VAC, ensuring robust performance and durability. Additionally, it conforms to CISPR32/EN55032 CLASS B standards, making it a reliable choice for your power needs.

SHORT CIRCUIT PROTECTED

100% RoHS compliant

c UL us
UL62368 - E347551
Pending

Common specifications

Short circuit protection	Full input voltage range - Continuous, Self-recovery Hiccup
Over current protection	Input 230VAC - ≥130% Io, Self-recovery (Hiccup)
Over voltage protection	5VDC Output ≤7.5 VDC 12VDC Output ≤20 VDC 15VDC Output ≤20 VDC 24VDC Output ≤30 VDC
Switching frequency	65 KHz (typ.)
Operating temperature	-40°C - +70°C derating based on temperature derating Curve, see "Product Characteristic Curve" at back.
Storage temperature	-40°C - +85°C
Soldering temperature	Wave soldering 260°C (±4°C), time 5-10S Manual soldering 360°C (±8°C), time 4-7S
Relative humidity	10~90% RH
Hot plug	Unavailable
Remote control terminal	Unavailable
Safety standard	IEC62368/EN62368/UL62368
Vibration	10-55Hz, 10G, 30Min, along X, Y, Z
Safety class	CLASS I
MTBF (MIL-HDBK-217F@25°C)	>300,000 Hours
Case material	UL94 V-0

Input specifications

Item	Operating condition	Min	Typ	Max	Units
Input voltage range	AC input DC input	90 100	230 325	528 745	VAC VDC
Input frequency range		47	50	63	Hz
Input current	115VAC 230VAC			0.6 0.3	A
Surge current	115VAC 230VAC			35 60	A
No load power consumption	Input 115VAC Input 230VAC			0.5	W
External fuse	2.5-3.15A/500VAC slow-fusing, necessary				
Leakage current	230VAC/50Hz - 0.5mA RMS TYP				

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Voltage accuracy	Full input voltage range, any load			±2.0	%
Line Regulation	Nominal Load			±0.5	%
Load regulation	Nominal input voltage 20%~100% load			±1.0	%
Minimum load	Single Output	0			%
Turn-on delay time	INPUT 230VAC INPUT 400VAC		2000		mS
Power-off holding time	Input 230VAC Input 400VAC		35 100		mS
Dynamic response	Overshoot range 25%~50%~25% Recovery time 50%~75%~50%	Overshoot range (%): ≤±10.0 Recovery time (mS): ≤5.0			
Output overshoot	Full input voltage range		≤10%Vo		%
Drift coefficient			±0.02%		%/°C

Isolation specifications

Item	Operating Conditions	Min	Typ	Max	Units
Isolation voltage	I/P-O/P test 1min, leakage current ≤5mA @DC500V test 1min			4000 100	VAC VDC

Example:
20ACB1W_05S4
20 = 20Watt; AC = AC-DC; B1 = Series; W = Wide input (2:1);
05 = 5Vout; S = Single output; 4 = 4 kVAC isolation

1. The product should be used under the specification range, otherwise it will cause permanent damage to it.
2. Product's input terminal should connect to fuse;
3. If the product is not worked under the load range (below the minimum load or beyond the load range), we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
4. Unless otherwise specified, data in this datasheet are tested under conditions of Ta = 25°C, humidity <75% when inputting nominal voltage and outputting rated load (pure resistance load);
5. All index testing methods in this datasheet are based on our company's corporate standards
6. 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 con-tact our technician for specific information;
7. We can provide customized product service;
8. The product specification may be changed at any time without prior notice.

EMC specifications					
EMC	EMI	CE	CISPR22/EN55032	CLASS B	
EMC	EMI	RE	CISPR22/EN55032	CLASS B	
EMC	EMS	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria A
EMC	EMS	CS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria A
EMC	EMS	ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV	Perf.Criteria B
EMC	EMS	Surge	IEC/EN61000-4-5	Line to line ±2KV Line to line ±4KV	Perf.Criteria B Perf.Criteria B (see recommended circuit Photo 2,3)
EMC	EMS	EFT	IEC/EN61000-4-4	±2KV ±4KV	Perf.Criteria B Perf.Criteria B (see recommended circuit Photo 2,3)
EMC	EMS	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%~70%	Perf.Criteria B

Product Selection Guide

Approval	Model	Output Power (W)	Output Voltage (V)	Output Current (mA)	Max. Capacitive Load (uF)	Ripple & Noise 20MHz (Max) mVp-p	Efficiency Full Load, 230VAC Typ. (%)
	20ACB1W_05S4	20	5	4000	7000	90	78
	20ACB1W_12S4	20	12	1660	5000	120	83
	20ACB1W_15S4	20	15	1330	3000	120	84
	20ACB1W_24S4	20	24	833	1000	150	84

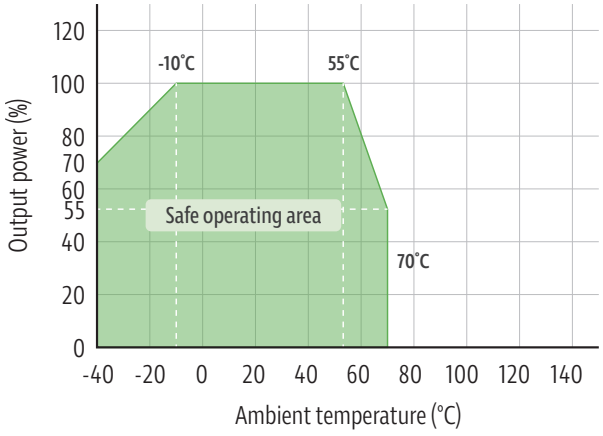
Note:

1. Please use suffix /CM for chassis mounting, Please use suffix /DR for DIN rail mounting, rail width 35mm. Example: 20ACB1W_24S4/CM/DR
2. The typical output efficiency is based on that product is full loaded and burned-in after half an hour.
3. Fluctuation range of full load efficiency (%,typ) is ±2%, full load output efficiency = total output power/module's input power.
4. Ripple and noise is tested by twisted pair method, please refer to "ripple & noise test" at back of datasheet.

Product characteristic curve

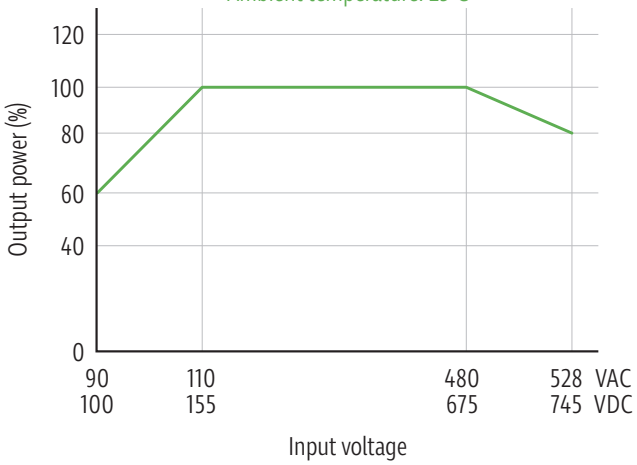
Temperature derating graph

Input voltage 90 - 528VAC / 100 - 745VDC



Input voltage derating curve

Ambient temperature: 25°C



Note

1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 90~110VAC /480~528VAC /100~155VDC/675~745VDC.
2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

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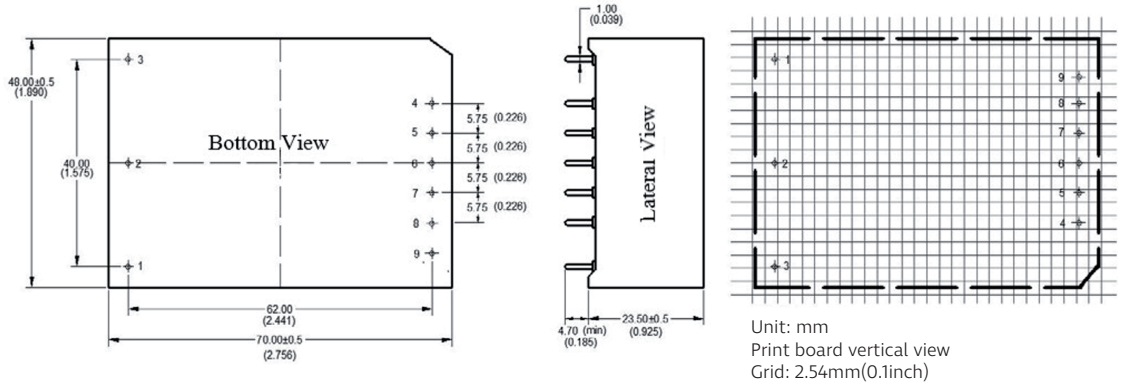
Standard packing dimensions

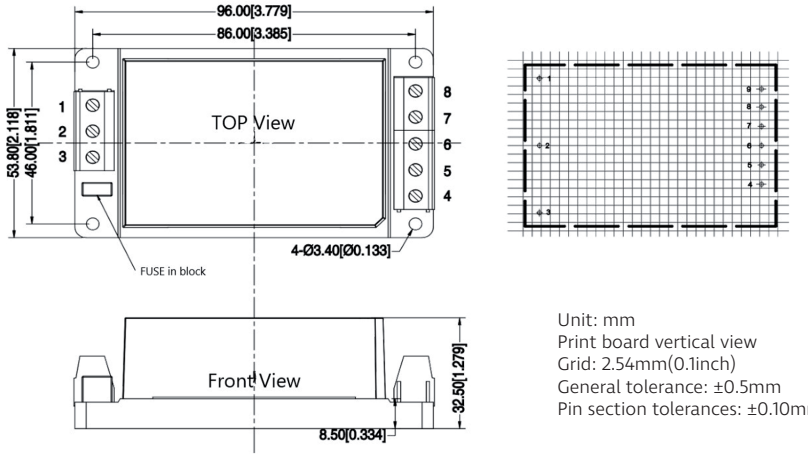


Unit: mm
Print board vertical view
Grid: 2.54mm(0.1inch)
General tolerance: ±0.25mm
Pin section tolerances: ±0.10mm

Pin-out	1	2	3	4	5	6	7	8
Standard	FG	AC(N)	AC(L)	+Vo	NP	NP	NP	-Vo
Chassis mounting	FG	AC(N)	AC(L)	+Vo	NC	NC	NC	-Vo
DIN rail mounting	FG	AC(N)	AC(L)	+Vo	NC	NC	NC	-Vo

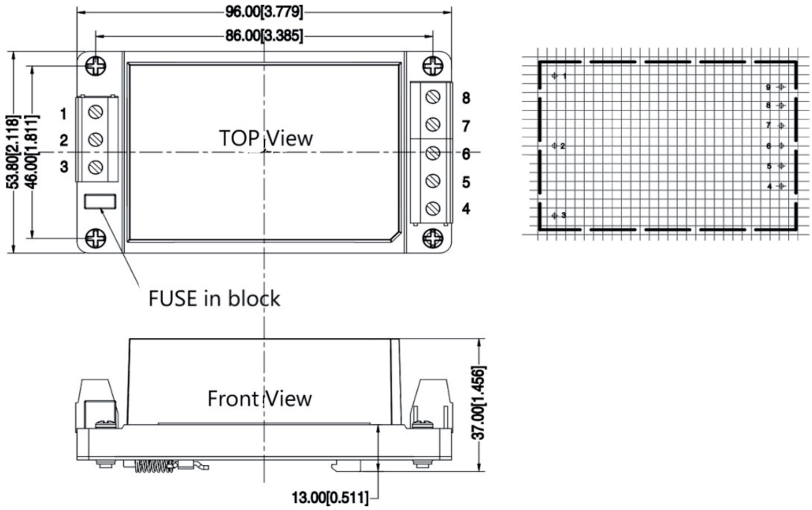
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

Chassis mounting packing dimensions

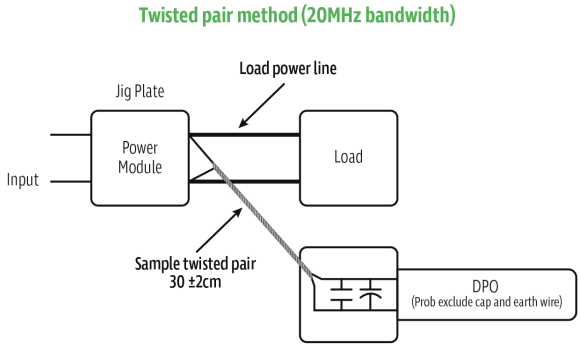


Unit: mm
Print board vertical view
Grid: 2.54mm(0.1inch)
General tolerance: ±0.5mm
Pin section tolerances: ±0.10mm

DIN rail mounting packing dimensions



Ripple & noise test: (twisted pair method 20MHz bandwidth)



Test Method:

1. Connect the twisted pair, set the oscilloscope bandwidth to 20MHz, use a 100M bandwidth probe, and terminate with a 0.1uF polypropylene capacitor and a 10uF high-frequency low-resistance electrolytic capacitor in parallel. Configure the oscilloscope to sample mode.

2. Connect the input terminal to the power supply and the output terminal to the electronic load using a jig plate. Use a 30cm (±2 cm) sampling line, and select the power line from appropriately insulated wires of the corresponding diameter according to the output current flow.

Typical application circuit

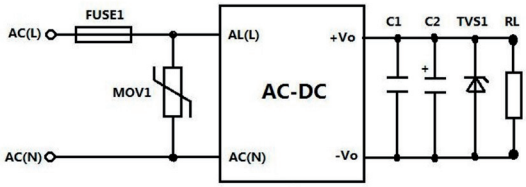


Photo 1

Model	FUSE	MOV	C1(uF)	C2(uF)	TVS1
20ACB1W_05S4	2.5A/500VAC Slow fusing, necessary	20D102K	1	330uF	SMBJ7.0A
20ACB1W_12S4	2.5A/500VAC Slow fusing, necessary	20D102K	1	220uF	SMBJ20A
20ACB1W_15S4	2.5A/500VAC Slow fusing, necessary	20D102K	1	220uF	SMBJ30A
20ACB1W_24S4	2.5A/500VAC Slow fusing, necessary	20D102K	1	220uF	SMBJ30A

Note:

Output filter capacitor C2 is electrical capacitor, recommend to use high frequency low resistance one, capacitance and output current please refer to the technical specifications provided by the manufacturers; C2 capacitor withstand voltage derating be 80% or above; capacitor C1 is ceramic capacitor, to remove the high frequency noise. TVS1 is a recommended component to protect post-circuits (if converter fails);

ECM recommended circuit

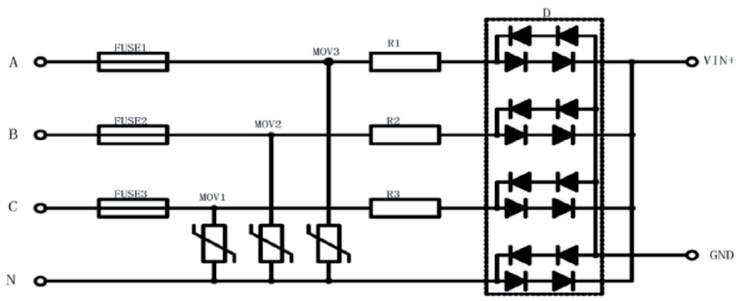


Photo 2: 4kVAC Differential Mode Surge High Requirements Recommended External Circuit - **Full Wave Rectification**

ECM recommended circuit

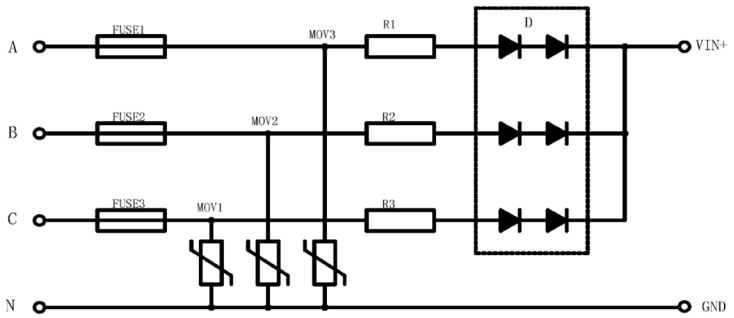


Photo 2: 4kVAC Differential Mode Surge High Requirements Recommended External Circuit - **Half Wave Rectification**

Recommended values for application circuits with higher EMC requirements	
Components	Recommended Value
MOV1, MOV2, MOV3	20D821K
D	2A/1000V
R1, R2, R3	10Ω/5W
FUSE1, FUSE2, FUSE3	2.5A/500VAC, slow fusing, necessary