

ACE20W-xxVRC



FEATURES

- Universal AC Input/ Full Range
- No load power consumption < 0.1W
- Wide operating temperature range -30°C To +85°C
- High efficiency up to 87%
- Protections: Short circuit/Over load/Over voltage
- Isolation Class II
- 3 years warranty

ACE20W-xxVRC series is adopting the full range: 100-277VAC input. The series has extremely low no-load power consumption. High efficiency to reduce power loss. The series cost-effective, high reliability, operates from -30°C ~85°C. A variety of appearance sizes are available for easy installation and use. These converters offer excellent EMC performance and meet international standards, they are widely used in areas of industrial design, household appliances, communications, testing instruments.

MODEL NUMBERING

ACE20W-xxVRC

Series Name Model Type
 Rated Wattage Output Voltage

SELECTION GUIDE

Product model	DC Voltage (Vdc)	Rated Current (mA)	Rated Power (W)	Max.Capacitive Load (uF)
ACE20W-03VRC	3.3	4500	14.85	8000
ACE20W-05VRC	5	4000	20	8000
ACE20W-09VRC	9	2200	19.8	5400
ACE20W-12VRC	12	1670	20.04	4000
ACE20W-15VRC	15	1330	19.95	3000
ACE20W-24VRC	24	830	19.92	1000

INPUT

Parameter	Units	Model
VOLTAGE RANGE	85-305VAC	
FREQUENCY RANGE	50/60Hz	
AVERAGE EFFICIENCY(TYP.)	83%	ACE20W-03VRC
	85%	ACE20W-05VRC
	85%	ACE20W-09VRC
	86%	ACE20W-12VRC
	87%	ACE20W-15VRC
	87%	ACE20W-24VRC
AC CURRENT(TYP.)	0.5A/115VAC	
	0.35A/230VAC	
	0.2A/277VAC	
INRUSH CURRENT(TYP.)	COLD START 45A AT 230VAC 50HZ	
	COLD START 20A AT 115VAC 50HZ	
LEAKAGE CURRENT	<0.1mA/277VAC	

OUTPUT

Parameter	Units
RIPPLE & NOISE (MAX.)	150mVp-p
VOLTAGE TOLERANCE	±2.5%
LINE REGULATION	±0.5%
LOAD REGULATION	±2.0%
SETUP,RISE,HOLD UP TIME	1.5s,50ms,50ms/230VAC(at full load)
	1.5s,50ms,8ms/115VAC(at full load)

PROTECTION

Parameter	Units
OVER LOAD	110~260%
	Hiccup mode, recovers automatically after fault condition is removed
SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed.
OVER VOLTAGE	3.3V : 3.8 ~ 9V
	5V : 5.5 ~ 9V
	9V : 10 ~ 16V
	12V : 13 ~ 16.5V
	15V : 17 ~ 24V
	24V : 26 ~ 34V
	Hiccup Mode, shut off o/p voltage, clamping by zener diode.

ENVIRONMENT

Parameter	Units
WORKING TEMP.	-30°C ~ +85°C (Refer to "Derating Curve".)
WORKING HUMIDITY	20 ~ 90% RH Non-condensing
STORAGE TEMP. HUMIDITY	-40°C ~ +85°C, 10 ~ 95% RH Non-condensing
TEMP. COEFFICIENT	±0.03%/°C (0 ~ 40°C)
VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, period for 60min.
	each along X, Y, Z axes
SOLDERING TEMPERATURE	Wave soldering: 265°C, 10s(max.); Manual soldering: 390°C, 5s(max.)
OVER VOLTAGE CATEGORY	OVC III; According to EN61558-1; altitude up to 2000 meter

SAFETY & EMC

Parameter	Units		
SAFETY STANDARDS	IEC62368-1, EN60335-1, EN61558-2-16 approved		
WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/1min		
ISOLATION RESISTANCE	I/P-O/P: 100M Ohms / 500VDC / 25°C / 70% RH		
EMC EMISSION	Parameter	Standard	Test Level/Note
	Conducted	EN IEC55014-1	CLASS B
	Radiated	EN IEC55014-1	CLASS B
	Harmonic Current/Note5	EN61000-3-2	CLASS A
	Voltage Flicker	EN61000-3-3	
EMC IMMUNITY	EN IEC55014-2		
	Parameter	Standard	Test Level/Note
	ESD	EN61000-4-2	Level 3, 8KV air, Level 2, 4KV contact criteria A
	Radiated Susceptibility	EN61000-4-3	10V/m, criteria A
	EFT/Burst	EN61000-4-4	±2KV, criteria A
			±4KV, criteria A (consider figure 2 or figure 3)
	Surge	EN61000-4-5	±1KV/L-L, criteria A
			±2KV/L-L, criteria A (consider figure 2 or figure 3)
	Conducted	EN61000-4-6	10Vr.m.s, criteria A
	Magnetic Field	EN61000-4-8	10A/m, criteria A
	Voltage Dips and interruptions	EN61000-4-11	> 95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods

DIMENSION & PACKING

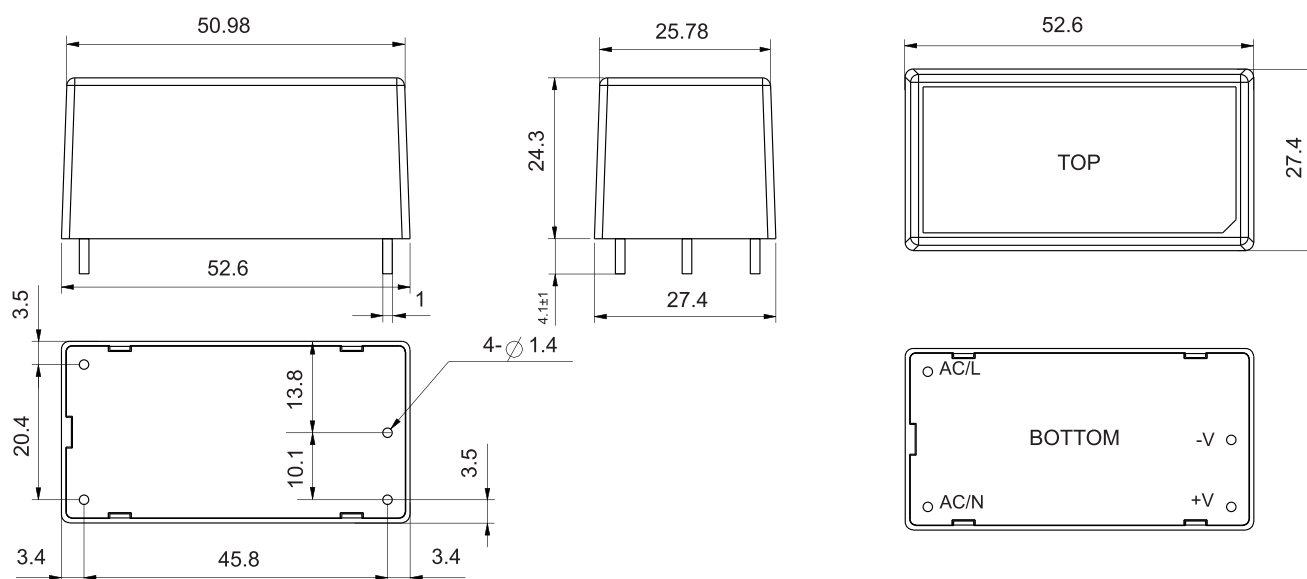
Parameter	Units
Packing	55g/pcs; 30 × 20 × 15.5 cm; 100pcs/carton
Dimension (LxWxH)	52.6 × 27.4 × 24.3 mm
MTBF	1589.7Khrs min. MIL-HDBK-217F(25°C)

NOTE

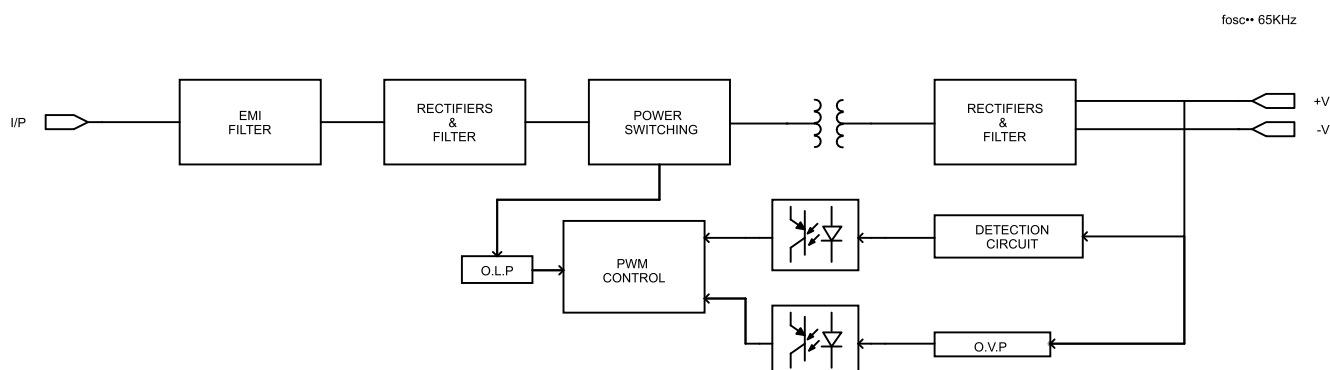
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μF & 47μF parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. The ambient temperature derating of 3.5°C/1000m with fan less models and of 5 °C/1000m with fan models for operating altitude higher than 2000m (6500ft).
5. The power supply is considered as an independent unit ,but the final equipment still need to re-confirm that the whole system complies with the EMC directives.

DIMENSIONS AND INSTALLATION

(Unit: mm , tolerance: ±0.5mm)

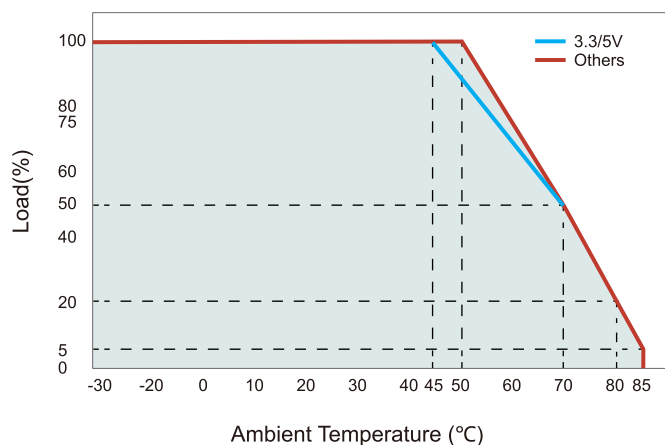


BLOCK DIAGRAM

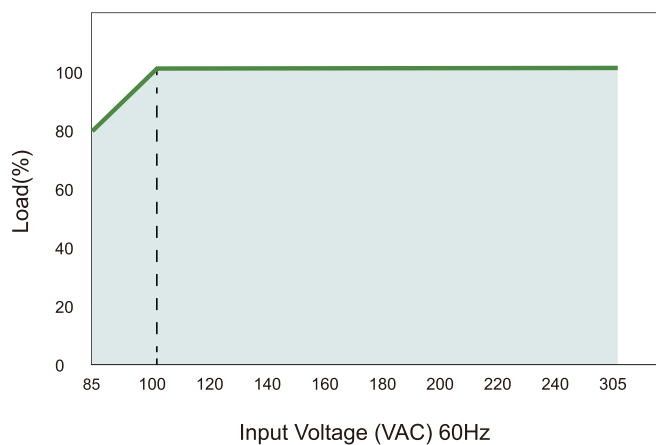


ENGINEERING DATA

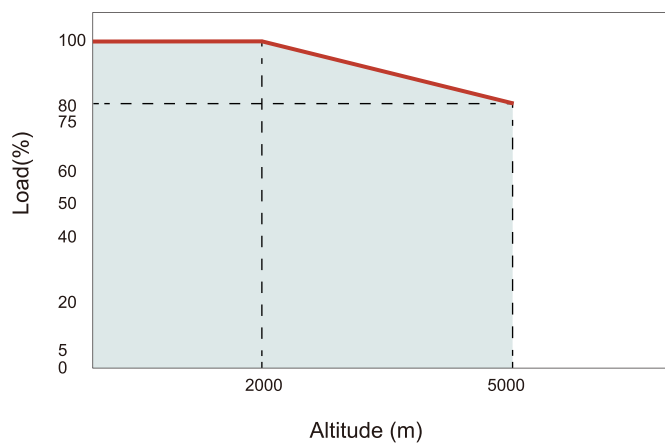
Derating Curve



Static Characteristics



Altitude Derating Curve



DESIGN REFERENCE

1. Typical application

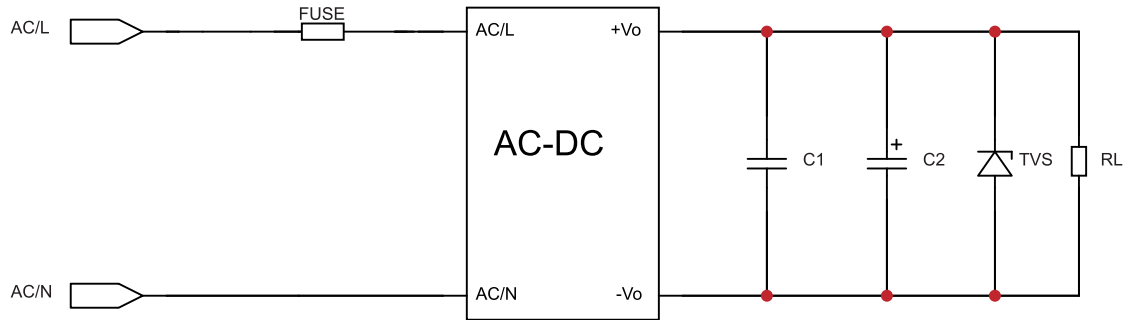


Fig.1: Typical circuit diagram

Product model	FUSE	C1	C2	TVS
ACE20W-03VRC	3.15A/300V, slow fuse must be connected	1uF/50V	10uF/16V	SMBJ7.0A
ACE20W-05VRC			10uF/16V	SMBJ7.0A
ACE20W-09VRC			10uF/25V	SMBJ12A
ACE20W-12VRC			10uF/25V	SMBJ20A
ACE20W-15VRC			10uF/25V	SMBJ20A
ACE20W-24VRC			10uF/35V	SMBJ30A

Output Filter Components:

C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

2. EMC Solution - Recommended circuit

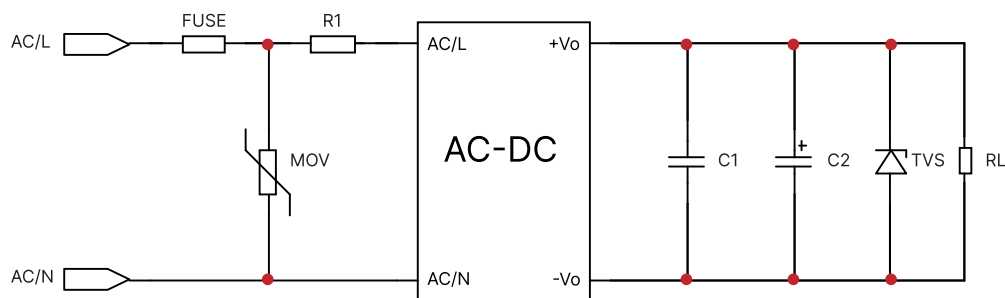


Figure 2: EMC application circuit with higher requirements

Component Type	Recommended Value
FUSE	3.15A/300V Slow fuse, must be connected
MOV	14D561K
R1	12Ω/5W (Wire wound resistor must be connected)

3.EMC Solution - Recommended circuit

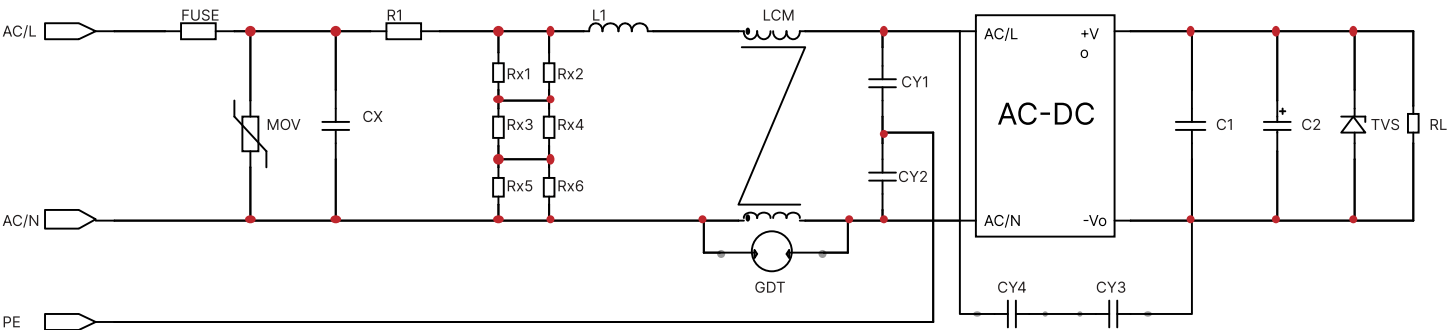


Figure 3 : category I device recommendation circuit

(Recommended when the output end of the product needs to be connected to PE or connected to PE through a Y capacitor)

Component Type	Recommended Value
FUSE	3.15A/300V Slow fuse, must be connected
MOV	14D561K
CX	104K/305VAC
R1	12Ω/5W(Winding resistor ,must be connected)
L1	4.7uH/2A
CY1/CY2/CY3/CY4	1nF/400VAC
GDT	300V/1KA
LCM	10mH

Note:Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleed resistance of CX, the recommended resistance value is 1.5MΩ/150VDC