

AcBel Product Specification

Acbel Part No.	DC9010-000G
Model Name	A2DM500W-28V
Description	Ac-DC Converter 85~265Vac Input, 28Vdc Output, 500W Output Power,
Revision	Draft Rev 3.2
Date Issued	04/12/2011

DC9010-000G A2DM500W-28V
Module: 85Vac to 265Vac Input,
28Vdc Output, Maximum Output Power 500W.

World's Most Advanced Ultra High Power Density AC-DC Converters.



DESCRIPTION:

AC to DC Converter A2DM500W-28V modules are high power density and high efficiency AC-DC converters designed for uses in telecom and other centralized modular and distributed power applications. All use metal baseplates, planar transformers, and surface mount construction to produce up to 500W maximum.

FEATURES:

- Miniature Size: 116.8mmx61mmx12.7mm (4.59in. x 2.40in. x 0.50in.)
- High Power Density: Up to 90.78W/in.³
- High Efficiency: 86.5% at 110Vac, **88.5%** at 230Vac
- Low Output Noise
- Industry-Standard Size
- Metal Baseplate
- Thermal Protection
- Over Voltage Protection
- Current Limit/Short Circuit Protection
- Adjustable Output Voltage: 60% to 120% of Vo,set
- Remote Sense
- Power On Signal (ENA) Open Collector (10mA sink current). Low (ON) when output is present.

SPECIFICATIONS:
ABSOLUTE MAXIMUM RATINGS

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Input Voltage AC(L) to AC(N)	85		265	Vac	
Input Power With No Damage			300	Vac	
Power Factor Correction	0.95				Vin=85~265Vac@ Full Load
Storage Temperature	-55		+125	°C	
Storage Humidity	10		95	%	
Operating Temperature	-40		+100	°C	Temperature measure shall be taken from the baseplate (Tb). Refer to Fig.2 for location definition
Operating Humidity	20		95	%	

INPUT SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Operation Input Voltage (Vi)	85		265	Vac	
Input Frequency	47		63	Hz	
Maximum Input Current (Ii,max)			6.2	A	Vi=100Vac, Io =Io,max
Inrush Current			40	A	Vi=265Vac Turn On, External components are needed for operation. Refer to Fig.3 for application circuit.

OUTPUT SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Output Voltage Accuracy (28V)	27.44	28.0	28.56	V	Io,max
Output Voltage Adjustment Range	16.8	28.0	33.6	V	Vo>=28V, Po=504W. Vo<=28V, Output current should be <=18A.
Line Regulation		56		mV	Vi= Vi,min to Vi,max.
Load Regulation		56		mV	Io= Io,min to Io,max.
Output Ripple and Noise Voltage Peak to Peak			280	mVp-p	Bandwidth 5Hz to 20MHz and with filter 4.7 nF MLCC series 50 ohm Min. Output Capacitor: 470uF *2, Tc>= -20°C 470uF *4, Tc<= -20°C
Output Current (Io,max)			18	A	At Vo<=28V, if Vo>28V Output Power (Po) should be <=504W
Output Current limit	105		140	%Io,max	Current limit inception point Vo=90% of Vo,set @Tb=25°C; Automatic recovery method.
Output Over Voltage Protection	125		145	%Vo,set	Io=0.5A; Converter output clamp method.

OUTPUT SPECIFICATIONS (CONTINUED):

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Efficiency		86.5 88.5		% %	Vi=110Vac, Vi=230Vac, Vo=28V, Io= 100%Io,max @Tb=25°C
Dynamic Response: Peak Deviation Settling Time		3	300	%Vo,set us	25% - 50% -75% load, 0.1A/us; With Cap. 940uF/35V Tb=25 °C, Vi=200Vac

CONTROL SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Turn-On Time			3	Sec	Io= Io,max, Vo with 90% Vo,set
Output Voltage Adjustment Output Voltage Trim Range	60		120	%Vo,set	With Cap. 940uF/35V, @Tb=25 °C
Over Temperature Protection Shutdown Recovery	90	110		°C °C	Auto. Recovery

ISOLATION SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Input to Output		3000		Vac	60 seconds
Input to Case		2500		Vac	60 seconds
Output to Case		1500		Vdc	60 seconds
Input to Output Capacitance		2000		pF	
Isolation Resistance	100			Mohm	at Tb=25°C and 70%RH, Output to Baseplate - 500VDC

STRUCTURAL DYNAMICS:

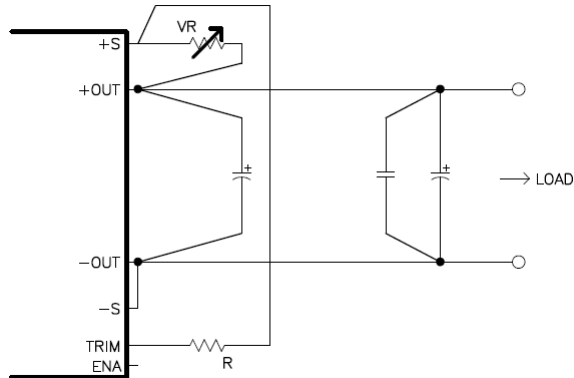
PARAMETER	CONDITIONS
Vibration	Sine Wave, 10-55Hz (Sweep for 1 min.), Amplitude 0.825mm Constant (Maximum 0.5g) X,Y,Z 1 Hour each, At No Operating,
Shock	196.1m/S ²

GENERAL SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
MTBF		1.47		Mhrs	Tb=40 °C, Io=80% Io,max, Vi=230V
Weight		200		g	
Size (WxHxD)		116.8x12.7x61		mm	

TRIM CIRCUIT:

Output Voltage Adjusted by using external resistor and/or variable resistor:



Assign $R=35.7K\Omega$,

$$VR = 2.709 \left(\frac{Vo_{trim}}{2.469} - 1 \right) - 15.692 \text{ (UNIT: } K\Omega \text{)}$$

Fig1 The schematic of output voltage adjusted by using external resistor and/or variable resistor.

BASEPLATE MEASURE POINT:

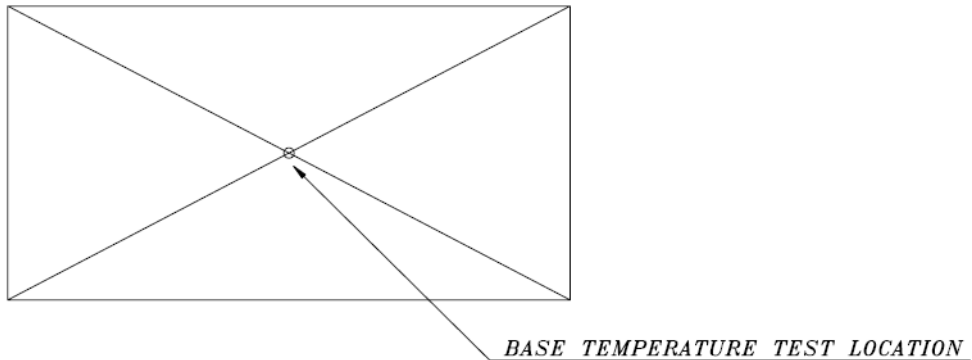


Fig2 Baseplate Temperature Measure Point.

APPLICATION CIRCUIT:

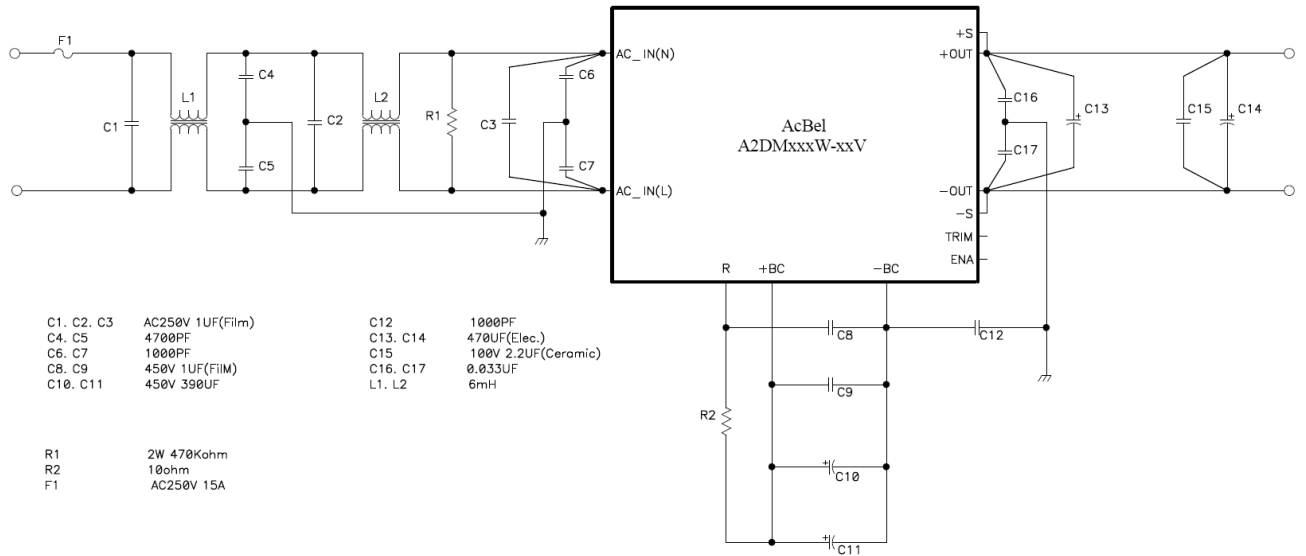


Fig. 3 Application Circuit.

EFFICIENCY CURVE:

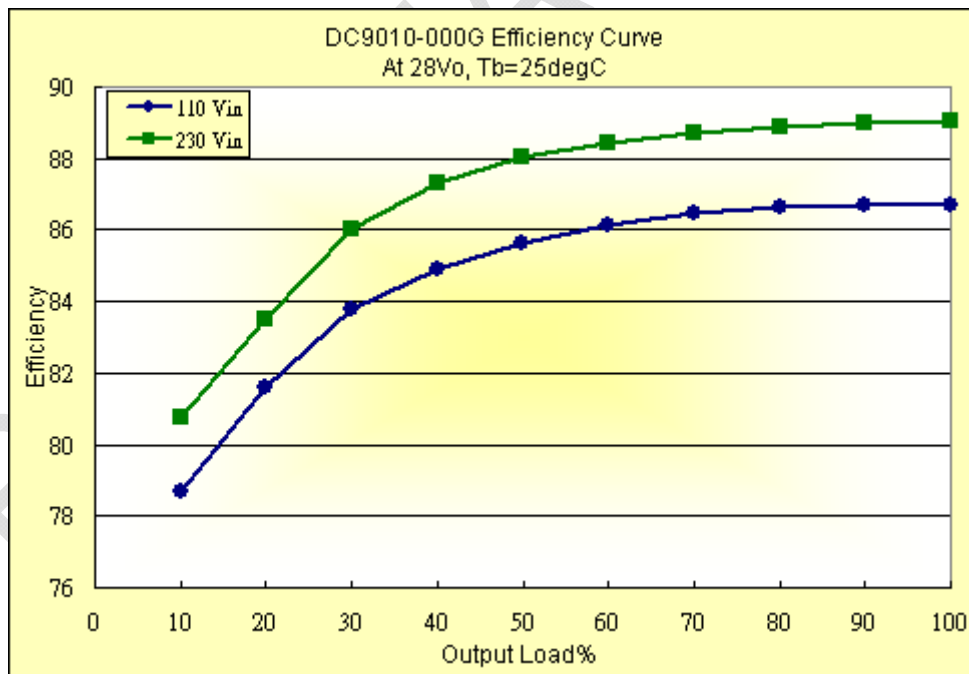


Fig. 4 Efficiency curve.

OUTLINE DRAWING:

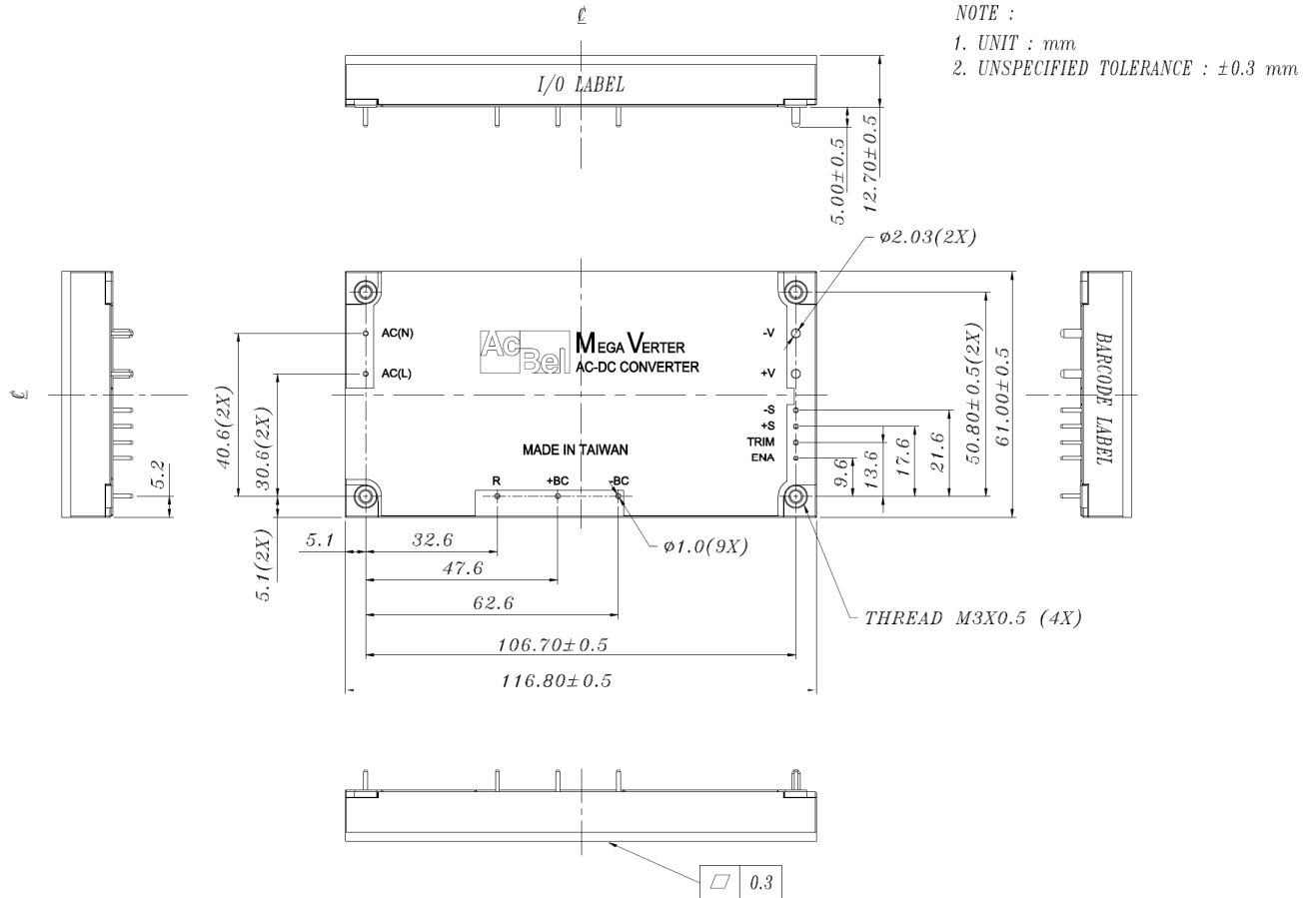


Fig. 5 Outline drawing.