AIF500-ACDC SERIES

504 W ACDC Converter



Advanced Energy's AIF500 family of wide range AC input, high efficiency and standard form factor full brick is an enormously flexible product with an extensive feature set. The low-profile unit which is designed specifically for contact-cooled designs is ideally suited to many different applications. Although it has been designed very much with remote-radio-head RF power supply requirements in mind for 5G telecommunication applications, they are equally at home in industrial applications. The unit features an internal inrush limiting function that is matched to the hold-up function of the module which makes designing applications much easier for the user.

SPECIAL FEATURES

- Fully encapsulated, baseplate cooled full brick
- Wide AC input range
- Fully regulated output
- High efficiency - up to 93%
- I/O isolation of 4000 VDC
- Ambient temperature range of -40 to +85°C
- Protection features: UVLO, OVP, OCP
- No minimum load requirement
- Remote enable
- Power-Good status
- Active current share
- PMBus communication
- Auxiliary output
- Internal inrush limiter

SAFETY

- EN, UL/cUL/IEC/EN 62368-1 safety approved
- CE mark

WARRANTY

- 2 Years (Consult factory for extended terms)

Notes: HVDC output cannot be connected for parallel application

AT A GLANCE

Total Power

504 W

Input voltage

90 to 264 VAC

# of outputs

Single O/P

PMBus® Power Management. Defined.

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ELECTRICAL SPECIFICATIONS

Input				
Input Range (AC nominal)	100 to 240 VAC			
Input Surge (100 ms)	300 VAC			
Input Frequency	50/60 Hz			
Total Harmonic Distortion	Less than 10%			
Power Factor	0.99 typ (> 300 W)			
Standby Input Power	5 W (PSU enable off)			
Output	**AIF42BAC**	**AIF21HAC**	**AIF18RAC**	**AIF11WAC**
Output Voltage Set-point	12 VDC	24 VDC	28 VDC	48 VDC
Output Current	42 A	21 A	18 A	10.5 A
Output Voltage Adjust Range	+/-10% Vout (10.8 to 13.2 VDC)	-10% to +12% Vout (21.6 to 26.88 VDC)	-5% to +18% Vout (26.6 to 33.04 VDC)	-8.3% to +17.9% Vout (44 to 56.6 VDC)
HVDC Output	393 VDC (450 VDC capacitor) at 12 VDC	393 VDC (450 VDC capacitor) at 24 VDC	375 VDC (450 VDC capacitor) at 28 VDC	395 VDC (450 VDC capacitor) at 48 VDC
Ripple/noise	120 mV pk-pk	240 mV pk-pk	280 mV pk-pk	480 mV pk-pk
Start-up Time	3.5 second			
Line Regulation	+/- 0.2% Vout			
Load Regulation	+/- 4% Vout			
Aux O/P	8 to 11 VDC (250 mA)			
Minimum Load	No minimum load requirement			
Control and Protection				
Current Share Accuracy	Better than 10% rated Iout			
Overvoltage Protection	125% Vout (latched protection)	125% Vout (latched protection)	125% Vout (latched protection)	127.5% Vout (latched protection)
Over Load Protection	106% to 125% rated Iout			
Over Load Protection Type	Constant current with voltage droop 1.33 V/A when exceeds 46.2 A, then hiccup when current exceeds 51 A, latching after 5x hiccup	Constant current with voltage droop 2.5 V/A when exceeds 23.1 A or 554 W +/- 12 W, then hiccup when current exceeds 25.2 A	Constant current, with voltage droop 3.45 V/A when exceeds 19.8 A or 554 W +/- 12 W, then hiccup when current exceeds 21.6 A	Constant current with voltage droop 7.33 V/A when exceeds 11.55 A or 554 W +/- 12 W, then hiccup when current exceeds 12.6 A
PSU-Good	Status signal			
PSU Enable	TTL compatible			
Digital Control	PMBus protocol			

ORDERING INFORMATION TABLE

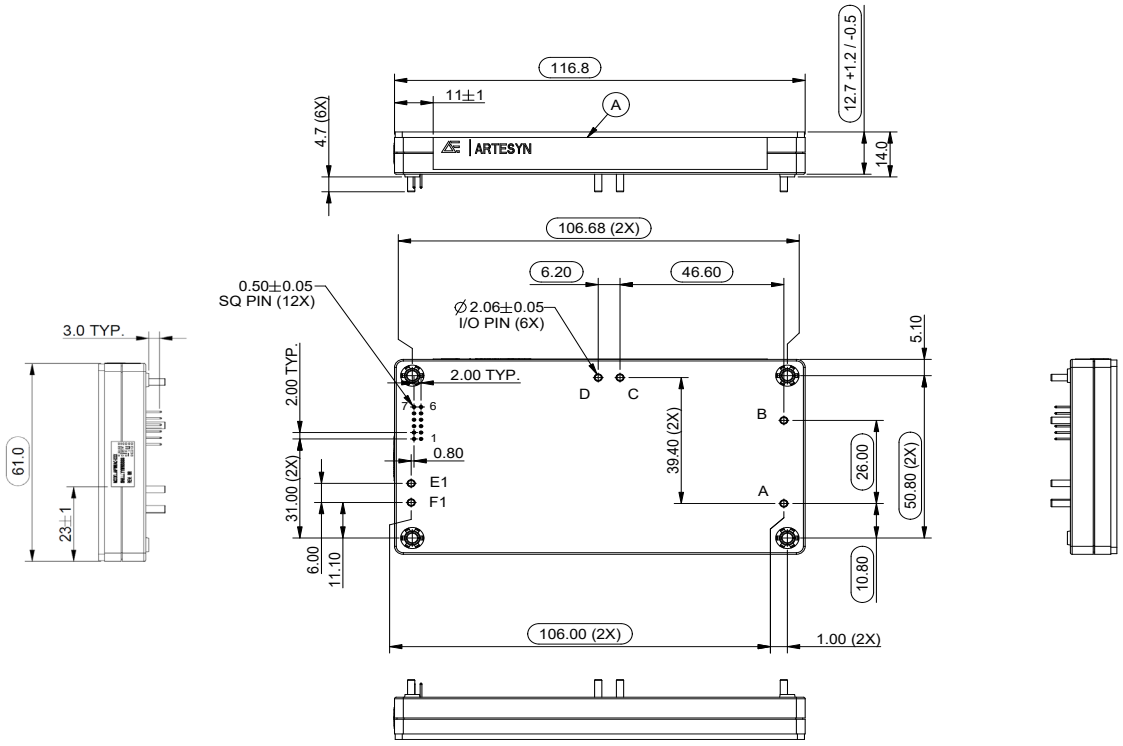
Model	Nominal Input voltage	Output	Maximum Power
AIF42BAC-01NT	100 to 240 VAC	12 VDC at 42 A	504 W
AIF21HAC-01NT	100 to 240 VAC	24 VDC at 21 A	504 W
AIF18RAC-01NT	100 to 240 VAC	28 VDC at 18 A	504 W
AIF11WAC-01NT	100 to 240 VAC	48 VDC at 10.5 A	504 W

AIF	XX	X	AC	-01	X	X
Brick Size	Output Current	Output Voltage	Input Voltage		Enable Logic	Mounting Type
AIF: full brick	42: 42 A	B: 12 VDC	AC: AC input		N: negative enable Blank: positive enable	T: non-thread insert Blank: thread insert
AIF: full brick	21: 21 A	H: 24 VDC	AC: AC input			
AIF: full brick	18: 18 A	R: 28 VDC	AC: AC input			
AIF: full brick	11: 10.5 A	W: 48 VDC	AC: AC input			

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40 to +85°C 100°C baseplate
Storage Temperature	-40 to +105°C
Humidity (non-condensing)	95% rel. Humidity
Calculated MTBF	>1Mil Hrs Telcordia

MECHANICAL DRAWING



Note:
1. PARTS MUST BE COMPLETELY ASSEMBLED.
2. LISTED PART NUMBERS ARE GIVEN FOR REFERENCE ONLY. REFER TO BOM FOR UPDATED PART NUMBERS.
3. DIMENSIONS MARKED WITH OBROUND NEED TO BE INSPECTED.
3. FOR BARCODE LABEL PRINTING DETAILS, REFER TO LBLD1.
4. SURFACE FLATNESS :
   CONCAVE INWARDS : 0.2 MM MAX.
   CONVEX OUTWARDS : 0.38 MM MAX.
5. UNLESS OTHERWISE SPECIFIED
   TOLERANCE AS BELOW
   WHOLE NO ANGLE
   ±1 ±0.5
   DECIMAL
   .X ±0.5
   .XX ±0.25

PHYSICAL CHARACTERISTICS

Isolation Voltage	
Input to output	4000 VDC
Input to baseplate	2500 VDC
Output to baseplate	100 VDC
Weight	260 g typ.
Size	4.6” x 2.4” x 0.55” (116.84 x 60.96 x 13.95 mm)

PIN ASSIGNMENTS

Pin Number	Signal Name
1	SENSE +VE
2	SDA
3	SCL
4	I2C ADDRESS
5	SYNC START
6	SIGNAL GND
7	AUX O/P
8	PSU-GOOD (STATUS)
9	C-SHARE
10	PSU ENABLE
11	O/P V-ADJ
12	SENSE -VE
A	AC-IN L1
B	AC-IN L2
C	HVDC -VE
D	HVDC +VE
E1	O/P -VE
F1	O/P +VE

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than four decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

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