

# AC20W-48V

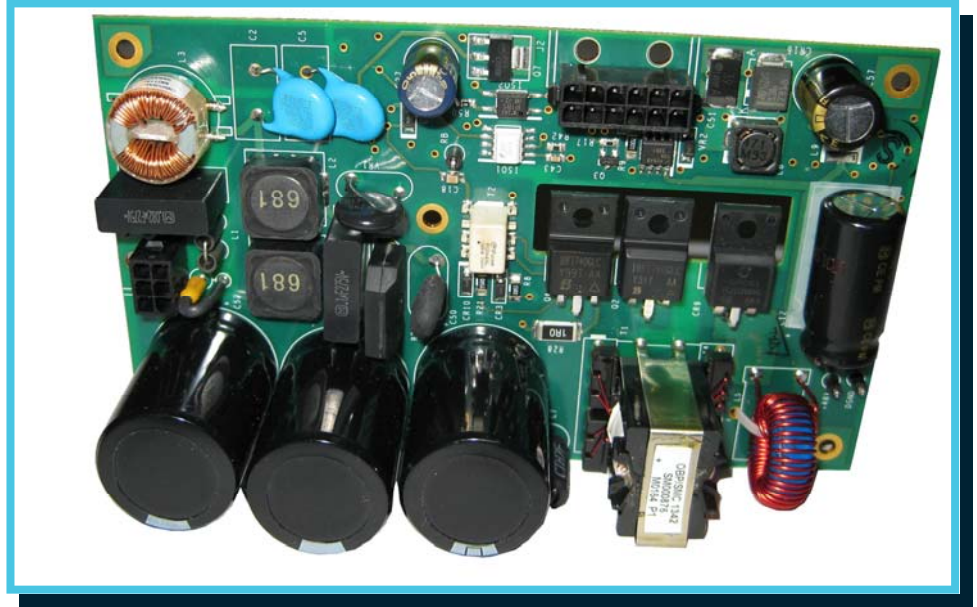
20W/48Vdc, 5Vdc DUAL OUTPUT

115Vac INPUT POWER SUPPLY



Providing two isolated output voltages and up to 20W continuous output power, the **AC20W-48V** is optimized for 115Vac/ 47-800Hz single phase RTCA/DO-160G airborne applications. The **AC20W-48V** is capable of providing up to 20W output during momentary input AC interrupt conditions for greater than 200mSec.

Weighing less than 6 ounces, the **AC20W-48V** is constructed on a multi-layer PWB occupying ~15in<sup>2</sup>. Component height is less than 0.70" except for the area of the supply containing hold-up capacitors; in this area maximum height is less than 1.26". Interconnection is accomplished using two right angle Molex connectors. The **AC20W-48V** is designed and manufactured to stand-up to the harsh operating environments encountered in today's aircraft installations.



## FEATURES

	Efficiency: 75% typical at full rated output load
	Wide input range: 97 – 134Vac, 47-800Hz
	Inrush current limiting: < 3.7Apk
	Size: 5" x 3"; Weight: less than 6 ounces
	Two isolated DC outputs: +48V (switched), +5Vstby (unswitched)
	Independent over-current and over-voltage protection on each output
	Output DC valid status line (TTL)
	Over-temperature fault signal (TTL)
	MTBF: 1,040,000 Hours, RIAC 217Plus, Aic category, 50°C case temperature, 65%DC, 2190 Cycles/ year

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## STANDARD OUTPUTS

PARAMETER	OUTPUT VOLTAGE	
	+48V	+5Vstby
Voltage Regulation	48V $\pm$ 1V	5.05V $\pm$ 3%
Output Current	400mA	100mA
Maximum Load	19.2W	500mW
Minimum Load	10mA	0A
Pk-pk Ripple + Noise (20MHz)	< 120mVpp	< 50mVpp
Overcurrent Trip-point	730mA	500mA

## SPECIFICATIONS

	RTCA/DO-160G, section 4, altitude/ temperature (operating) to 15,000 feet, category A1 equipment
	RTCA/DO-160G, section 6, humidity (operating) category A
	RTCA/DO-160G, section 7, shock (operating) category S, curve C
	RTCA/DO-160G, section 8, vibration (operating) category S, curve C
	RTCA/DO-160G, section 15, magnetic effect, category B
	RTCA/DO-160G, section 16, power input requirements for AC input, cat A(WF) equip, excludes harmonic distortion
	RTCA/DO-160G, section 17, voltage spike, category B equipment
	RTCA/DO-160G, section 18, conducted susceptibility, category Z equipment
	RTCA/DO-160G, section 19, induced signal susceptibility, category Z equipment
	RTCA/DO-160G, section 20, conducted and radiated susceptibility, category T equipment
	RTCA/DO-160G, section 21, conducted and radiated emissions, category M equipment, with external power line EMI
	Operating temperature: -25°C to +70°C, no forced air required
	Storage temperature: -55°C to +85°C

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## INTERCONNECTION

### SUPPLY SIDE CONNECTORS AND PIN-OUTS

Connector	J1	J2
Pin #	Molex 43045-0600	Molex 43045-1200
1	n/c	n/c
2	Chassis Gnd	DCRTN
3	n/c	DCRTN
4	Line	DCRTN
5	n/c	+48Vout
6	Neutral	DCGOOD-L
7	--	n/c
8	--	OUTPUTEN-L
9	--	DCRTN
10	--	OVERTEMP-L
11	--	+48Vout
12	--	+5Vstby



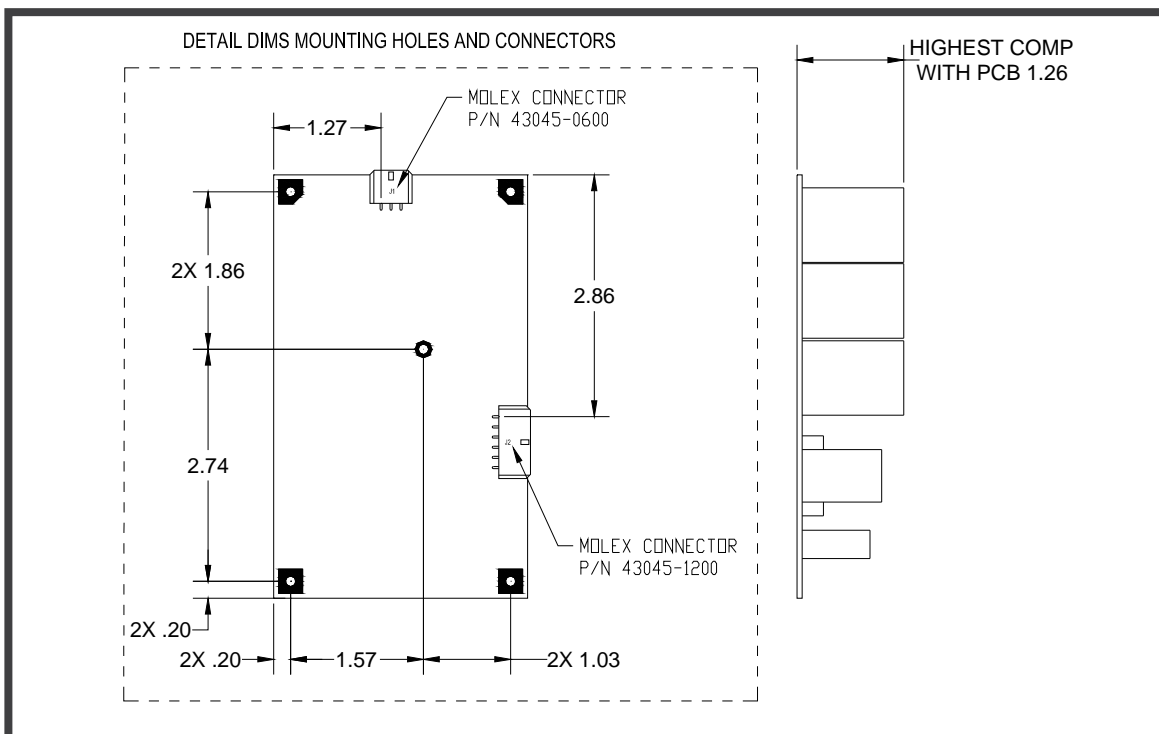
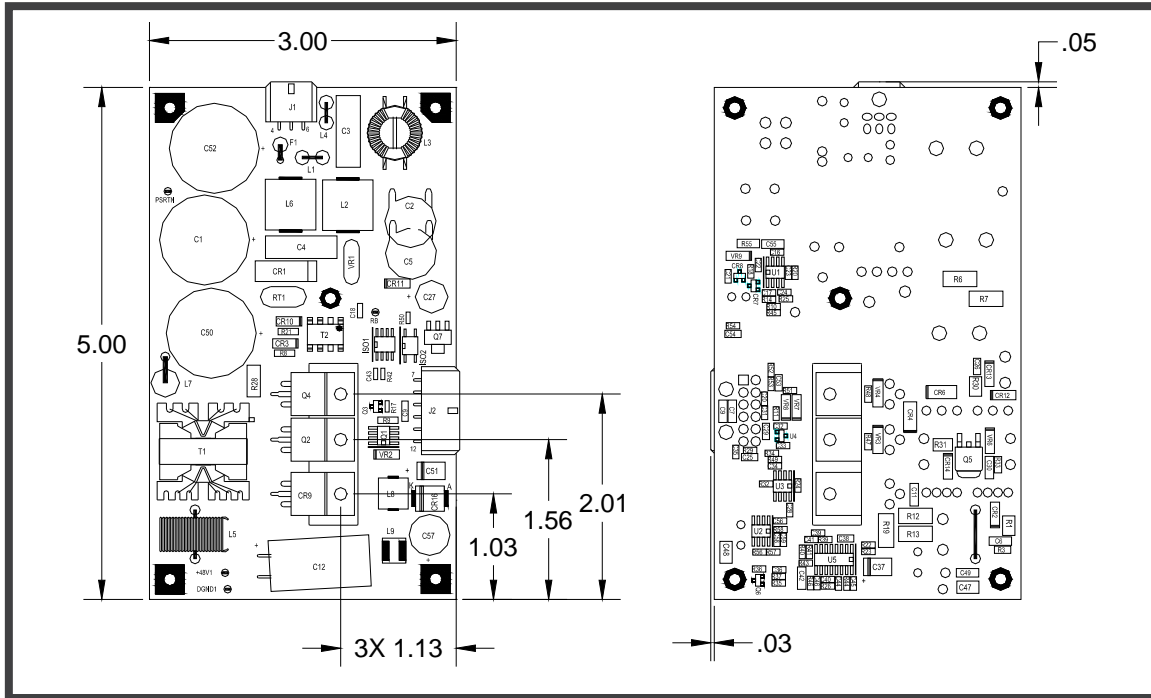
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## MECHANICAL DIAGRAMS



OUTLINE OR DETAILED SOLIDWORKS DRAWING FURNISHED UPON REQUEST



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## ELECTRICAL SPECIFICATIONS

UNLESS OTHERWISE SPECIFIED THE FOLLOWING TEST CONDITIONS APPLY: Ta = 25°C. CONSTANT ACTIVE LOADS APPLIED TO OUTPUTS, Vin = 115Vrms/ 400Hz.

## INPUT CHARACTERISTICS

PARAMETER	AC20W-48V	REMARKS	NOTES
INPUT VOLTAGE RANGE	97 – 134Vrms	Complies with normal/ abnormal input voltages for AC operation per RTCA/DO-160G, Section 16, Category A	2
EFFICIENCY (FULL LOAD)	75% typical	Full rated output load (20W)	2
EFFICIENCY (50% LOAD)	68% typical	Half rated output load (10W)	2
INPUT CURRENT	250mArms at 115Vrms	Full rated output load (20W)	1
INRUSH CURRENT	<3.7Apk	Cold Start	2
START-UP TIME	<750mSec	Outputs within regulation	2
CONDUCTED EMISSIONS	RTCA/DO-160G, Section 21	Category M equipment, Requires external power line filter (such as Schaffner p/n FN2030-1-06)	1
QUIESCENT POWER	2.5W typical	Pout = 0W	2
STORAGE TEMPERATURE RANGE	-55°C TO +100°C	Non operational	1
OPERATING TEMPERATURE RANGE	-25°C TO +70°C	Q2, Q4, CR9 mounted to external surface; no external airflow required	1
OUTPUTEN-L	Pull to <2Vdc with respect to DCRTN in order to enable the +48V output	Internally pulled high to 5Vstby through 5.1k pull-up resistor. Pull to <2Vdc with respect to DCRTN in order to enable +48V output. 5Vstby output is unaffected by this signal	1

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## OUTPUT CHARACTERISTICS

PARAMETER	AC20W-48V	REMARKS	NOTES
RATED OUTPUT POWER	20W	Continuous	2
OUTPUT VOLTAGE TOLERANCE	+48V $\pm$ 1V +5.05V $\pm$ 3%	See "STANDARD OUTPUTS" table	2
TEMPERATURE STABILITY COEFFICIENT	0.01% / $^{\circ}$ C	Maximum output voltage drift with temperature	1
OUTPUT RIPPLE + NOISE (pk-pk)	<120mVpp: +48Voutput <50mVpp: +5Vstby output	20MHz Bandwidth	2
MINIMUM OUTPUT LOAD	+48V output/ 10mA	Supply requires a small minimum load in order to regulate the 48V output properly. No damage or overvoltage will occur within the supply if minimum load is not provided	2
LINE REGULATION	<0.5%	Individual output deviation for $\pm$ 20% step change in input voltage	1
LOAD REGULATION (TRANSIENT LOAD RECOVERY)	Outputs remain within regulation limits	50% to 100% step change in individual output load currents	1
HOLD-UP TIME	200mSec @ Pout = 20W	Uninterrupted ride through for momentary power interrupt	2
ISOLATION VOLTAGE INPUT TO OUTPUT	1500Vac	No arcing or damage for 60 second test duration	1
ISOLATION VOLTAGE INPUT TO CHASSIS	1500Vac	No arcing or damage for 60 second test duration	1
DC OUTPUT STATUS "DCGOOD-L"	Transitions to TTL high (4V min) upon detection of +48V output outside of 2% regulation window	Secondary side referenced (w/ respect to DCRTN), 10mSec delay time, TTL level, 1mA max source current; 16mA max sink current	2
OUTPUT OVERVOLTAGE PROTECTION (non-latching)	+48V output is limited to 115% of nominal set point	Pulse-by-pulse protection, 4mSec fault to activation delay, auto-restart	1
OUTPUT OVERVOLTAGE PROTECTION (latching)	+48V set point = 60V +5Vstby set point = 6.2V	Supply will shutdown and remain disabled until input AC power is recycled if OVP set points are detected internally	1
OVERTEMP-L STATUS SIGNAL	Transitions to 0.5V max level upon detecting an internal operating temperature of +100 $^{\circ}$ C +/- 7 $^{\circ}$ C	Supply provides status signal OVERTEMP-L that asserts low when supply PWB temperature is sensed at 100 $^{\circ}$ C, with ~2 $^{\circ}$ C hysteresis. OVERTEMP-L signal is secondary side referenced w/ respect to DCRTN), capable of sinking 16mA	1

### Notes:

1. Ensured by design, not 100% tested in production.
2. 100% tested for specification compliance in production.

