ABC450 Series AC-DC Open Frame Power Supplies



The ABC450 Series of open-frame power supplies, with its wide universal 90-264 VAC input range and high power density, is available at 450 W of output power and a variety of single and multiple output voltages.

The high efficiency and high power density of the ABC family ensures minimal power loss in end-use equipment, thereby facilitating higher reliability, easier thermal management and meets regulatory approvals for environmentally-friendly end products.

These power supplies are ideal for telecom, datacom, industrial equipment and other applications.

Key Features & Benefits

- 450 W (with airflow), 300 W (without airflow)
- 4.0 x 6.5 x 1.6 inch (101.6 x 165.0 x 41.0 mm)
- Universal AC Input
- 5 V s/b and 12 V Fan Outputs Standard
- Side Fan or Top Fan Mounting Option Product
- (–S or –T to be added to model number)
- Current Sharing Option Product
- (–I to be added to model number)
- Conducted EMI EN 55022-B, FCC Part 15 Level B
- ITE Safety Agency Approvals
- RoHS Compliant
- CE Marked LVD

Applications

- Instrumentation
- Lighting
- Industrial Applications
- Test and Measurement
- Robotics
- Renewable Energy
- Data Comm.
- Applied Computing
- Process Control
- Wireless

North America
+1-866.513.2839

Asia-Pacific
+86.755.29885888

Europe, Middle East
+353 61 225 977

tech.support@psbel.com
belpowersolutions.com

bel POWER SOLUTIONS & PROTECTION
a bel group

© 2015 Bel Power Solutions, Inc.

ABC450 Series

Model Selection

MODEL	OUTPUT VOLTAGE (VDC)	MAX LOAD CONVECTION [1,2,5]	MAX LOAD 300 LFM [1,2,5]	MINIMUM LOAD (A)	RIPPLE & NOISE [4]	TOTAL REGULATION
ABC450-1T05G	5	31.0 A	55.0 A	0	2%	± 3.5%
ABC450-1T12G	12	20.83 A	37.5 A	0	2%	± 3.5%
ABC450-1T15G	15	16.66 A	30.0 A	0	2%	± 3.5%
ABC450-1T24G	24	12.30 A	18.75 A	0	2%	± 3.5%
ABC450-1T30G	30	10.0 A	15.0 A	0	2%	± 3.5%
ABC450-1T48G	48	6.25 A	9.37 A	0	2%	± 3.5%
Vfan (all models) [3]	**12**	**0.5 A**	**0.5 A**	**0**	**10%**	**± 30%**
V s/b (all models) [6]	**5**	**1.5 A**	**2.0 A**	**0**	**5%**	**± 5%**

Warranty 2 years.

NOTES:

1. Peak current rating on V1 is 120% of max, lasting < 30 Sec with max of 10% duty cycle.
2. Combined output power of V1 plus fan supply and standby supply should not exceed max, power rating.
3. Fan supply output voltage tolerance including set point accuracy, line and load regulation is +/-30% and needs min. 1% load on V1 output to be within regulation band. Ripple and noise is less than 10%.
4. Ripple is peak to peak with 20MHz bandwidth and 10uF (Tantalum capacitor) in parallel with a 0.1uF ceramic capacitor at rated line voltage and load ranges.
5. Derate output power linearly to 80% from 90 Vac to 80 Vac input.
6. Standby output voltage tolerance including set point

+1.866.513.2839
tech.support@psbel.com
belpowersolutions.com

© 2015 Bel Power Solutions, Inc.

ABC450 Series

TECHNICAL PARAMETERS

Specifications are for nominal input voltage, 25°C and max load unless otherwise stated.

Input Specifications

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATIONS
Input Voltage	Universal	90-264 VAC / 120-390 VDC
Input Frequency		47 to 63 Hz
Input Current	120 VAC: 230 VAC:	4.5 A max. 2.3 A max.
No Load Power	120 VAC: 230 VAC:	0.4 W 0.8 W
Inrush Current	120 VAC: 230 VAC:	40 A max. 75 A max.
Input Protection	Dual fusing, in AC Line and AC Neutral	T8A / 250 V
Power Factor	120 VAC 230 VAC	0.98 0.95
Switching Frequency	PFC converter: Variable Resonant converter: Variable	45-160 kHz typical 35-250 kHz, 90 kHz typical

Output Specifications

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATIONS
Output Power	475W for 24V, 30V & 500 W for 48 V model only for 5 seconds max.	155 to 450 W
Efficiency (Full Load)	120 VAC 24 V, 48 V, 30 V 12 V, 15 V 5 V 230 VAC 24 V, 48 V, 30 V	88% 86% typical 83% 90%
Hold Up Time	120 VAC / 230 VAC	10 ms
Line Regulation		+/-0.5%
Load Regulation		+/-3%
Transient Response	<10%, 50% to 100% load change, 50 Hz, 50% duty cycle, 0.1 A/µs	Recovery time < 5 ms
Rise Time		< 100 ms
Set Point Tolerance		+/-1%
Voltage Adjustment	V1	± 3 %
Over Voltage Protection	Latch Type	>114%
Over Current Protection	Hic-Up type	120 to 150%
Short Circuit Protection	Short term, auto recovery	
Over Temperature Protection	Automatic recovery	130°C primary heat sink
Current Share	Up to 2 supplies connected in parallel (optional)	

+1.866.513.2839
tech.support@psbel.com
belpowersolutions.com

© 2015 Bel Power Solutions, Inc.

ABC450 Series

Environmental Specifications

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATIONS
Operating Temperature	Refer to derating curve Start-up is guaranteed	0 to +70°C -20 to 0°C
Storage Temperature		-40 to 85° C
Cooling	5 V model 12 V & 15 V models 24 V, 30 V & 48 V models	Convection: 155 W 420 LFM: 275 W Convection: 250 W 420 LFM: 450 W Convection: 300 W 420 LFM: 450 W
Humidity	Non Condensing	95% HR
Altitude	Operating: Non-Operating:	10,000 ft. 40,000 ft.
Reliability	MTBF according to Telcordia -SR332-Issue 3	1.28 million hours

EMC Specifications

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATIONS
Conducted Emissions:	EN55022-B, CISPR22-B, FCC PART15-B	
Radiated Emissions	EN55022-B, CISPR22-B, FCC PART15-B	To be controlled in end system
Static Discharge	EN61000-4-2	Level 3
RF Field Susceptibility	EN61000-4-3	Level 3
Fast Transients/Bursts	EN61000-4-4	Level 3
Surge Susceptibility	EN61000-4-5	Level 3
Harmonic Current	EN61000-3-2	Class D

Safety Specifications

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATIONS
Isolation Voltage	Input to Output Input to Earth	4242 VDC 2121 VDC
Safety Standards	Approved to the latest edition of the following standards: CSA/UL60950-1, EN60950-1 and IEC60950-1; Class1 SELV	
Agency Approvals	Nemko, UL, C-UL	
CE mark	Complies with LVD Directive	

Signals

PARAMETER	DESCRIPTION / CONDITION
Power Good Signal	TTL signal goes high after main output is within regulation band, delay is 0.1 to 0.3 s
Remote Sense	Compensates for 200 mV drop
Remote on/off	To turn on PSU short remote pin to ground

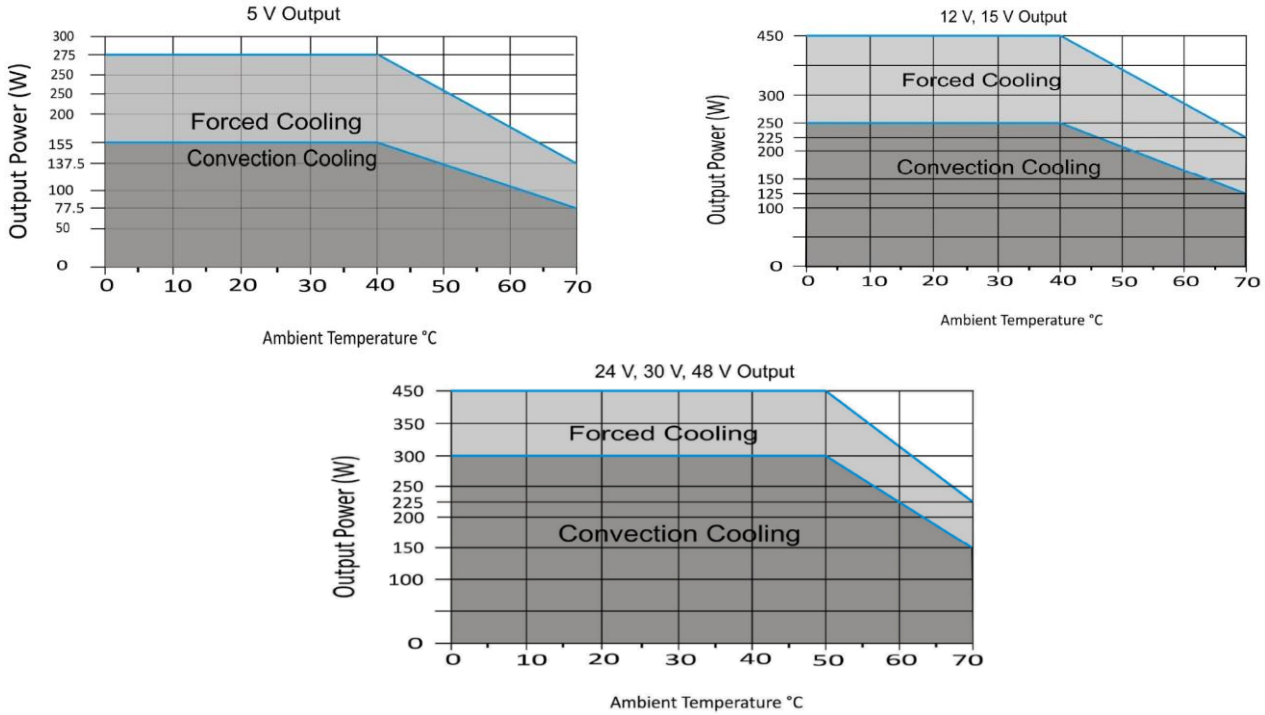
+1.866.513.2839
tech.support@psbel.com
belpowersolutions.com

bel POWER SOLUTIONS & PROTECTION
a bel group

© 2015 Bel Power Solutions, Inc.

ABC450 Series

Figure 1 - Output Power vs. Temperature



Connector & Pin Description

CONNECTOR	PIN	DESCRIPTION / CONDITION	MANUFACTURER / PN
AC Input Connector*	J1	Pin 1 AC Line Pin 3 AC Neutral Pin 5 Earth	Tyco: 1-1123724-3 Mating: 1-1123722-5
DC Output Connector	J2	Lug 1 +V1 Lug 2 RTN	6-32 inches Screw Pan HD Mating: 16 AWG wire crimped to Ring Tongue Terminal AMP: 8-31886-1
Signals	J3	Pin 1 NC Pin 2 Power Fail Pin 3 Power Good Pin 4 DC Return Pin 5 +5Vstby Pin 6 +VE Remote Sense Pin 7 -VE Remote Sense Pin 8 CS Pin 9 DC Return Pin 10 Remote On/Off	Molex: 22-23-2081 Mating: 22-01-2087; Pins: 08-50-0113
Fan	J4	Pin 1 +VE Pin 2 -VE	Mating Connector: Molex 22-01-2025 Pins = 08-50-0113
Earth	J5		Molex: 19705-4301 Mating: 190030001

* 5 position connector with pins 2 and 4 removed.

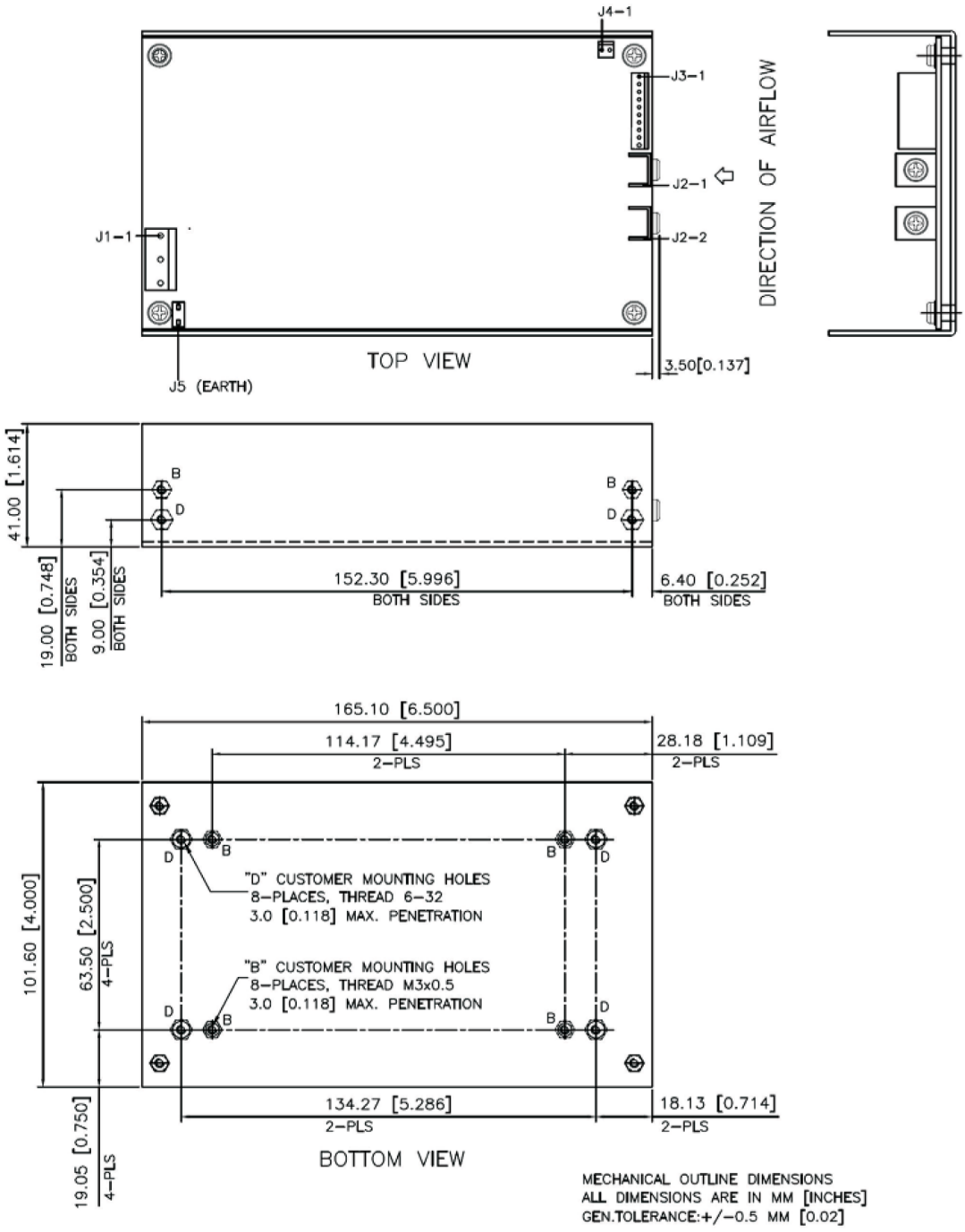
Mechanical Specifications

PARAMETER	DESCRIPTION / CONDITION
Weight	900 g (1.98 lbs)
Dimensions	101.6 x 165.0 x 41.0 mm (4.0 x 6.5 x 1.6 inch)

+1.866.513.2839
tech.support@psbel.com
belpowersolutions.com

© 2015 Bel Power Solutions, Inc.

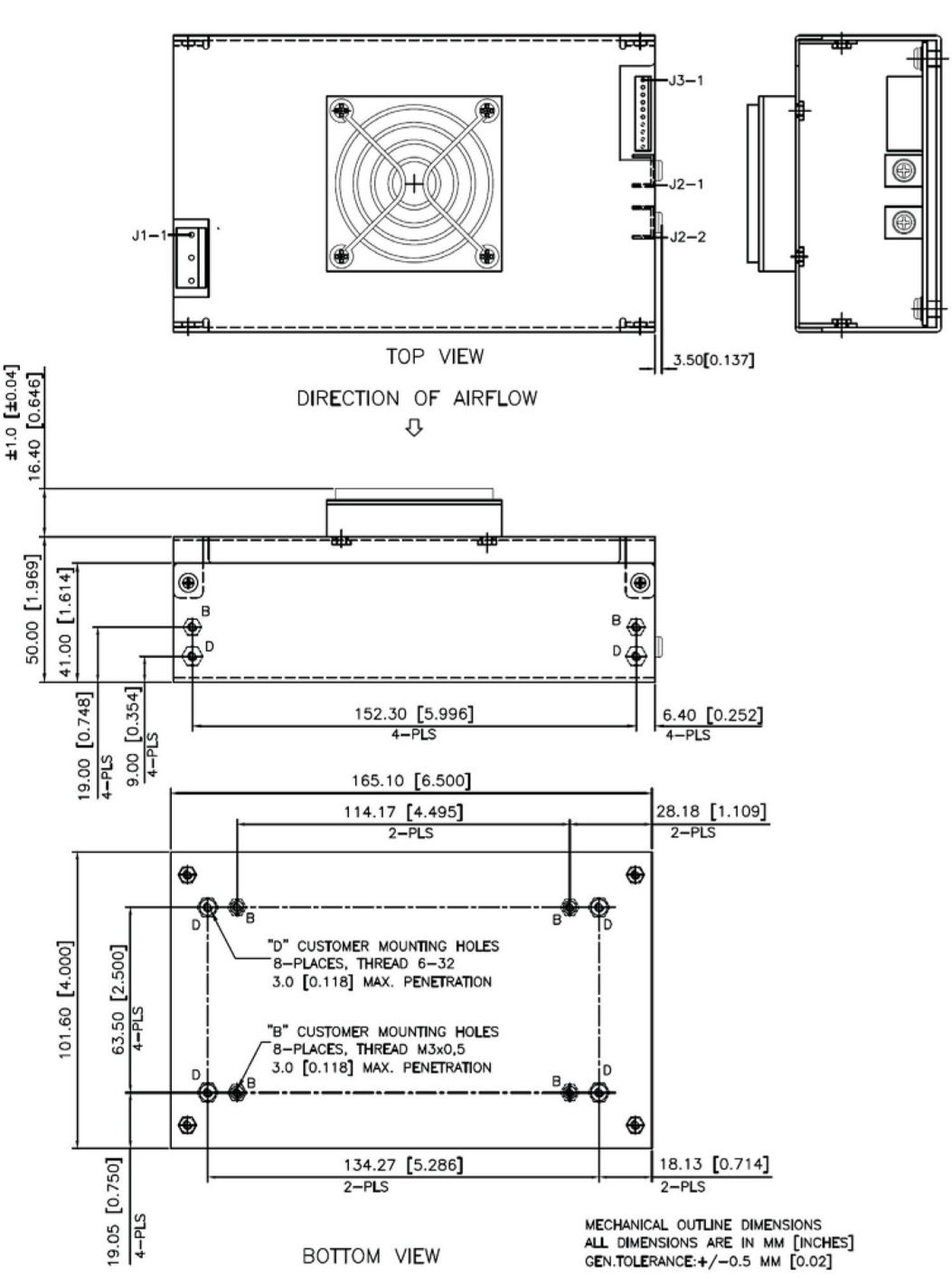
Figure 2 - Mechanical Drawing (Without Fan Mounting)



+1.866.513.2839
tech.support@psbel.com
belpowersolutions.com

© 2015 Bel Power Solutions, Inc.

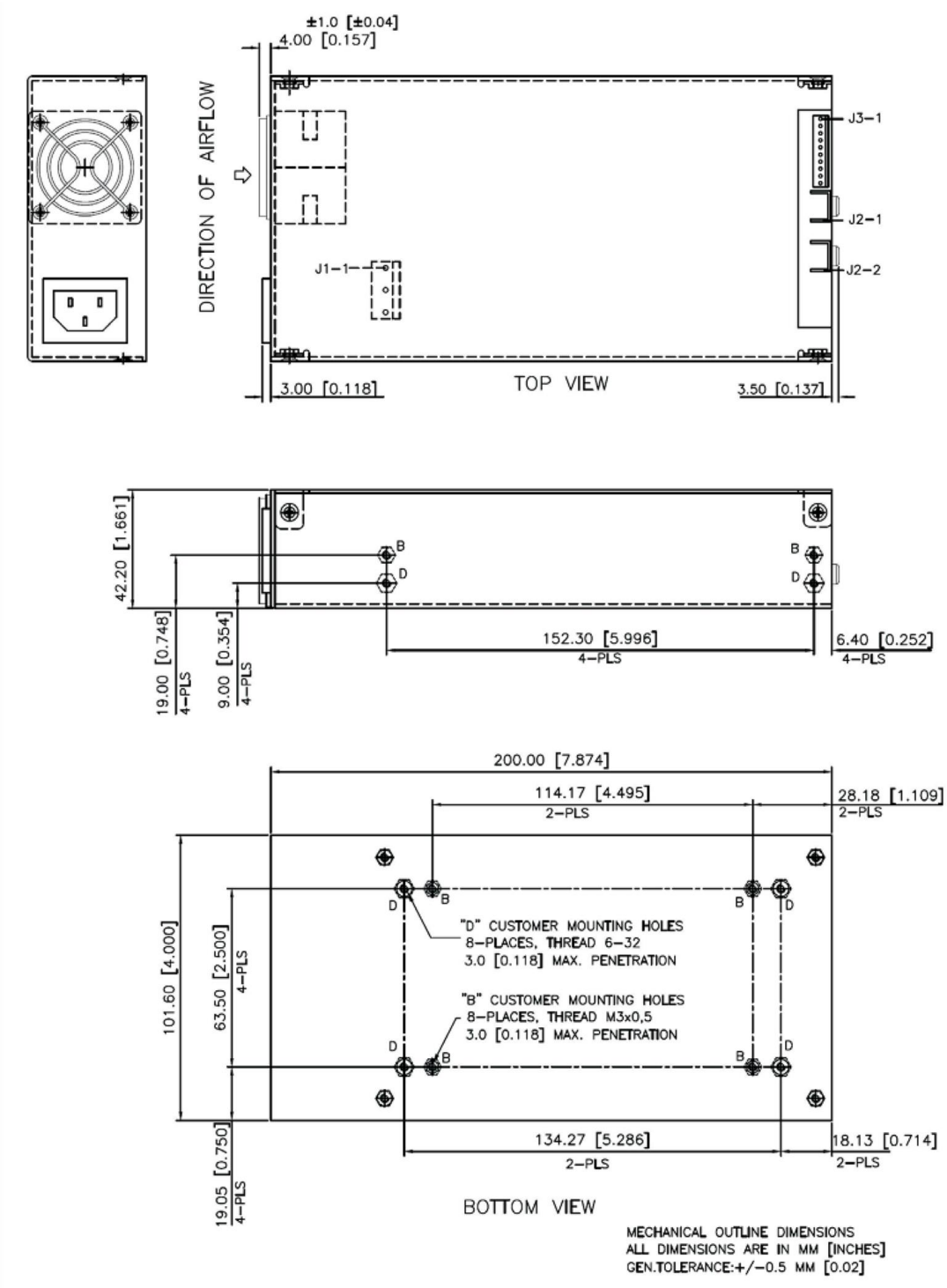
Figure 3 - Mechanical Drawing (With Top Fan Mounting)



+1.866.513.2839
tech.support@psbel.com
belpowersolutions.com

© 2015 Bel Power Solutions, Inc.

Figure 4 - Mechanical Drawing (With Side Fan Mounting)



NOTE: Air flow over long edge (either direction) required for air flow rating.

+1.866.513.2839
tech.support@psbel.com
belpowersolutions.com

© 2015 Bel Power Solutions, Inc.

ABC450 Series

Installation Instruction for Current Sharing

During the installation and setup of parallel supplies in a system it is important that a single remote sense point be used for all the supplies.

The remote sense voltage between the supplies must be adjusted to within 2% to ensure the supplies are inside the 3% capture window.

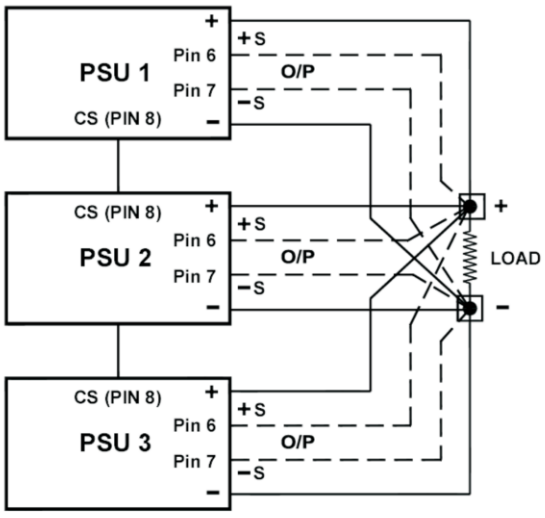
If the supplies are not initially adjusted inside the capture window the supplies will not current share.

NOTE:
"CURRENT SHARING " facility is inclusive with the unit only with ordering of the " CURRENT SHARING " option unit i.e. ABC450-1XXX-I or MBC450-1XXX-I.

Set-Up Procedure:

1. Connect load cables to the outputs of each supply.
2. Connect the remote sense lines to the load in twisted style. (A common remote sense point must be used for all the supplies in parallel).
3. Connect all the "current share" pins on the J3 connector between the supplies.
4. Adjust remote sense voltage of each supply to within 1% of rated output voltage or readjust to required set point. (Adjustment to be done with all other parallel supplies off).
5. Current sharing between the supplies can be verified by monitoring the output current of each supply with a hall effect DC current probe. The supplies should share to within 10% of the total load current.

CURRENT SHARING BLOCK DIAGRAM



For more information on these products consult: tech.support@psbel.com

NUCLEAR AND MEDICAL APPLICATIONS - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.
TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

+1.866.513.2839
tech.support@psbel.com
belpowersolutions.com

© 2015 Bel Power Solutions, Inc.