ORBIT POWER GROUP
Behlman Electronics

DCS2000S-1-(28,54)
P/N 94107

FEATURES

- **Wide Input Range: 85 - 265VAC Single Phase**
- **Power Factor Correction**
- **High Power DC Output: +28V/54A**
- **Low Noise & Ripple**
- **Input-Output Isolation**
- **Excellent Line & Load Regulation**
- **Efficiency of 78% Typical**
- **Remote Error Sensing**
- **High Power Density**
- **Conduction Cooled to Baseplate**
- **Conformal Coating on PCBs**
- **Designed to Meet MIL-STD-461F**
  CE-102, CS-101, CS-114, CS-115
  CS-116, RS-103, and RE-102 at System Level
- **Overcurrent, Overvoltage, Overtemperature Protection**
- **0-95% RH Non-Condensing**
- **Designed to Meet MIL-STD-810F Vibration and Shock**

OVERVIEW

The Behlman DCS2000S-1-(28,54) COTS AC to DC power supply is a rugged, highly reliable, conduction cooled, switch mode unit built for high-end industrial and military applications. This baseplate mounted power supply delivers 1512 Watts of 28VDC power from 115 VAC, single-phase Type 1 source power IAW MIL-STD-1399 Section 300B.

The DCS2000S-1-(28,54) power supply has no minimum load requirement and has overvoltage and short circuit protection as well as overcurrent and thermal protection. The power supply is designed to support the rigors of mission critical shipboard applications.

ABSOLUTE MAXIMUM RATINGS

(Stresses above those listed below may cause permanent damage to the unit)

Parameter	Notes	Min	Max	Units
Input Voltage	Continuous Operation	85	265	VAC
Input Frequency	Continuous Operation	47	440	Hz
Output Power	Continuous Operation, 80°C Baseplate		1512	W
Operating Temperature	Baseplate	-20	85	°C
Storage Temperature	Ambient	-40	100	°C
Isolation Voltage	Input to Output		1000	V
Isolation Voltage	Input to Case		1000	V
Isolation Voltage	Output to Case		500	V

PERFORMANCE CHARACTERISTICS

All performance parameters apply over the full range of input voltage, output load currents and rail temperatures unless otherwise specified.

Input Characteristics

Parameter	Notes	Min	Typical	Max	Units
Input Voltage	Normal Steady State Limits	85	115	265	VAC
Turn-On Threshold		79	86.0	88.0	VAC
Turn-Off Threshold		57	60.3	62	VAC
Input No Load Current			0.79		A
Inrush Current	Vin = 123 VAC [ref. Figure 1]		15	40	A pk

Output Characteristics

Parameter	Notes	Min	Typical	Max	Units
Voltage Set Point		27.72	28.00	28.28	V
Line Regulation	85 - 265VAC Input		0.08	0.2	%
Load Regulation	0–100% Output Load		0.09	0.2	%
Ripple/Noise (pk-pk)	10–100% Output Load [ref. Figure 2, Note 1]		250	500	mVp-p
Output Current Range		0		54.0	A
Ext. Load Capacitance				8000	µF
Remote Sense Range	Combined voltage drop compensation			0.6	V
Overvoltage Protection		31.5		33.9	V
Overcurrent Protection		58	67	78	A
Transient Response	[ref. Figure 3]				

General Characteristics

Parameter	Notes	Min	Typical	Max	Units
Efficiency	20–100% Output Load [ref. Figure 4]	70	73.3		%
Power Factor	20-100% Output Load [ref. Figure 6]	0.80	0.99		
Turn-on Delay			2.20	4.0	sec
Overtemperature Protection Shutdown	Baseplate Temperature [ref. Note 2]		101		°C
Insulation Resistance	Input to Case	10	>1000		MΩ
Humidity	RH, non-condensing MIL-STD-810F, Method 507.4	0		95	%
Vibration	MIL-STD-167, Type 1, f_{max} = 22Hz				
Shock	MIL-S-901D, Grade A, Type A, Class 1				
Fungus	MIL-STD 810F, Method 508.5				
EMI/EMC	[ref. Note 3]				

Indicators:

Indicator Name	Description
Temperature Warning	Isolated SPST contacts, normally closed, open for baseplate above 85°C

Note 1: Ripple and noise measured at the output connector, across parallel combination of a 0.1uF ceramic capacitor and a 10uF tantalum capacitor; results obtained using a 20MHz BW oscilloscope.
Note 2: Recovery from overtemperature shutdown requires that source power be cycled OFF for at least 120 seconds.
Note 3: Applicable Surface Ship requirements; RE102 requirements apply when installed in shielded enclosure.

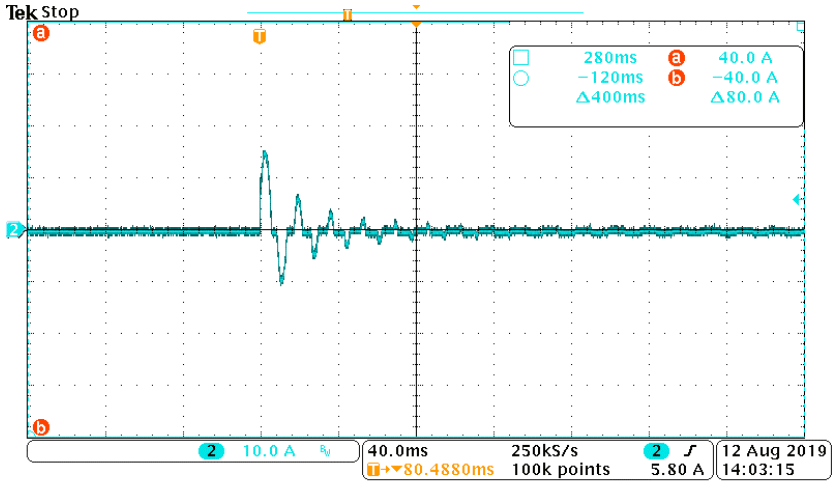

Figure 1: Inrush Current Waveform

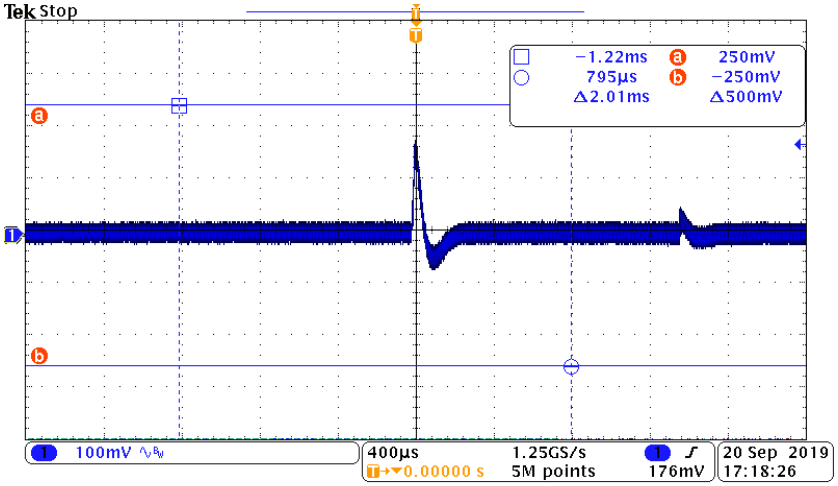

Figure 2: Output Ripple

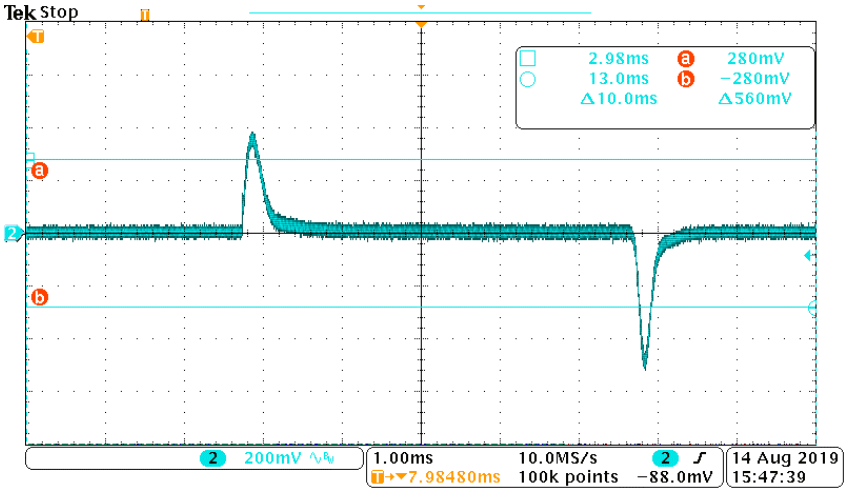

Figure 3: Output Transient Response

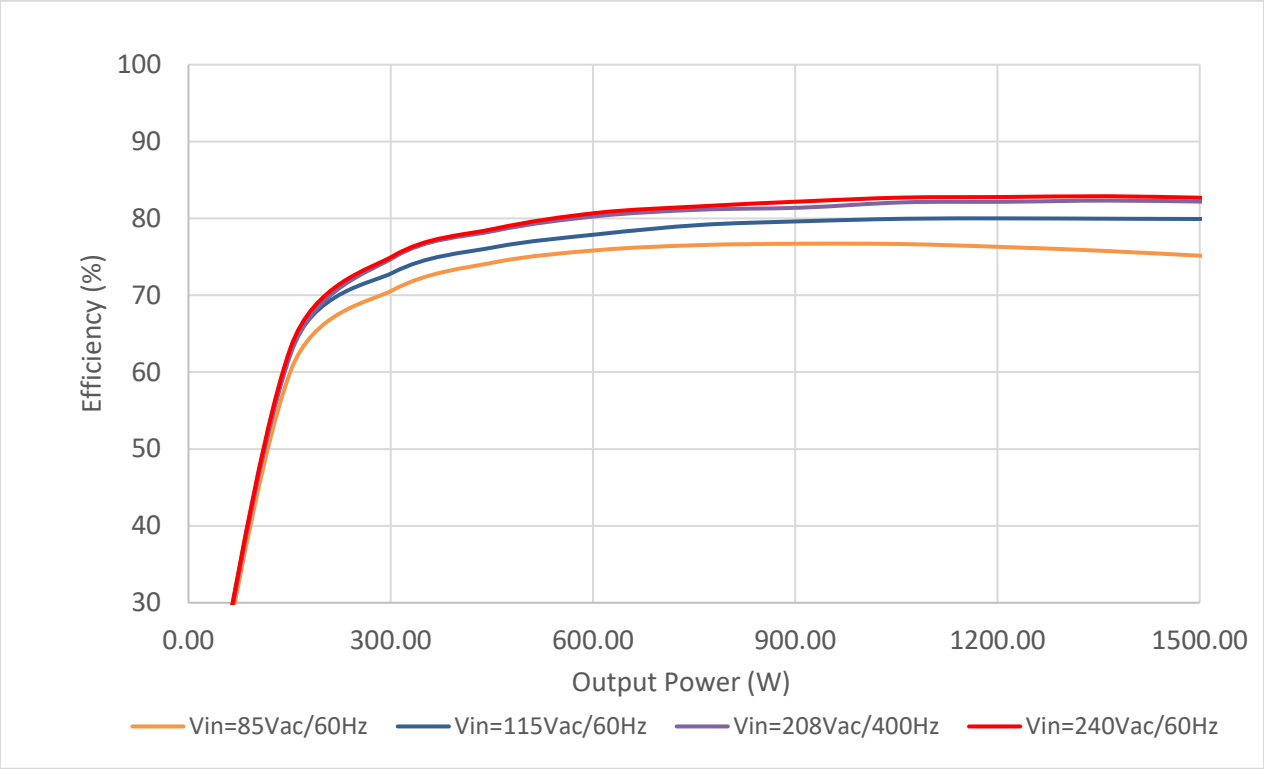

Figure 4: Efficiency vs. Load Current

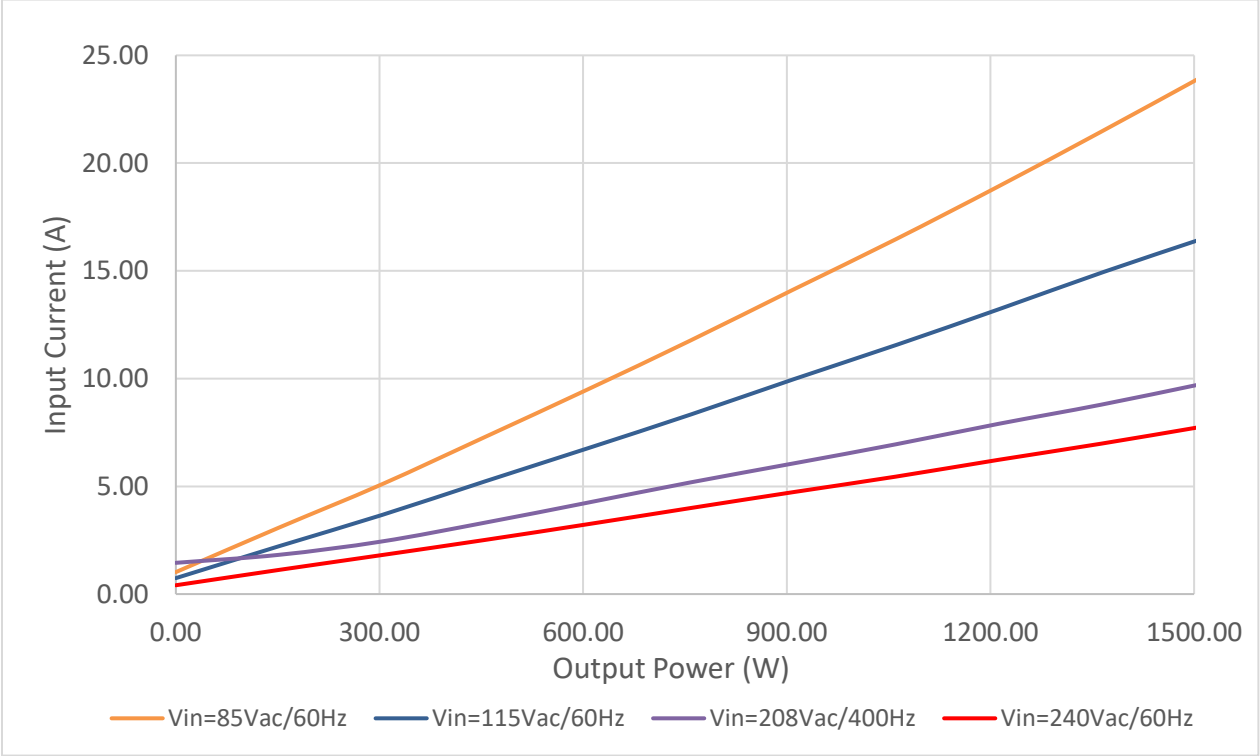

Figure 5: Input Current vs. Output Power

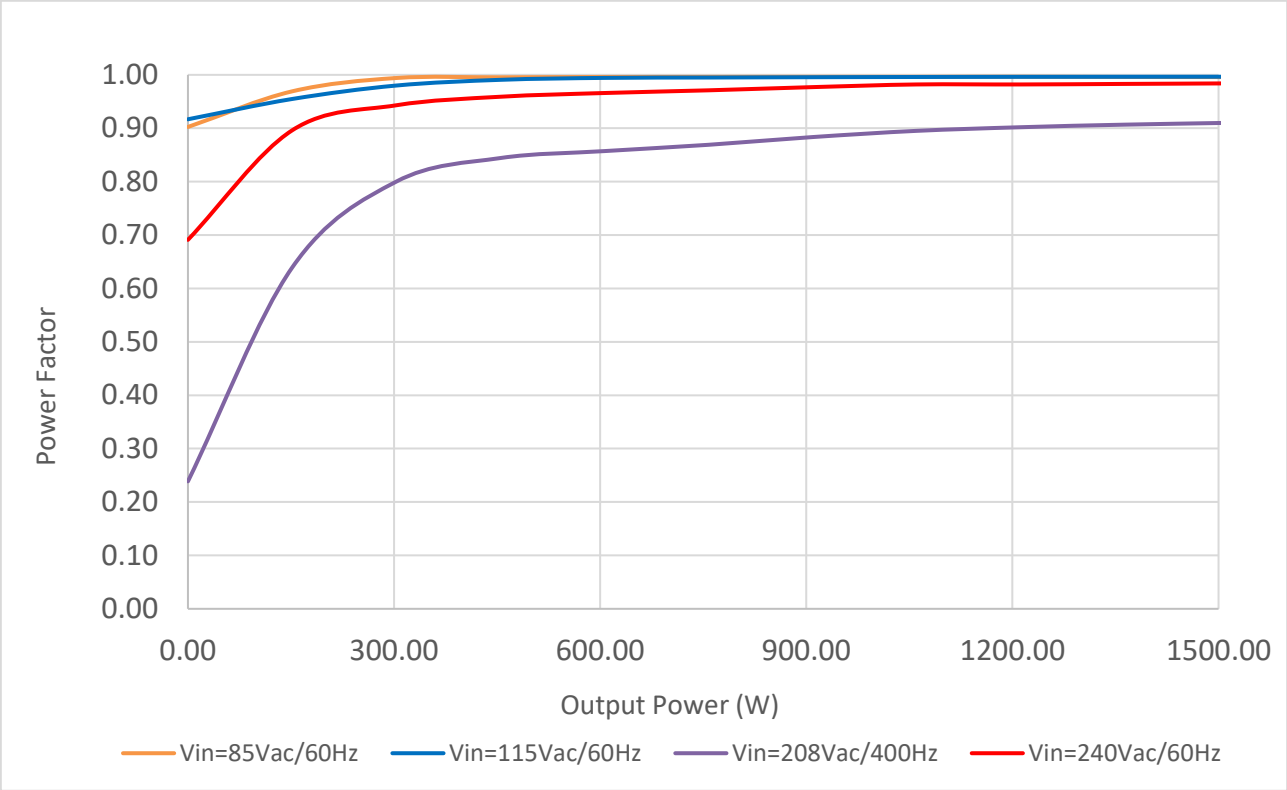

Figure 6: Power Factor vs. Output Power

MECHANICAL CHARACTERISTICS

Connector Pin Assignments

Input Power Connector - J1		
PS Connector: 3007W2PCT56N40X Mating Connector: Behlman P/N 82144		
Pin Number	**Rated Current**	**Pin Name**
A1	20A	LINE
A2	20A	NEUTRAL
1	7.5A	N/C
2	7.5A	N/C
3	7.5A	N/C
4	7.5A	N/C
5	7.5A	N/C

Output Power Connector - J2		
PS Connector: 3008W8SXX58N40X Mating Connector: Behlman P/N 82142		
Pin Number	**Rated Current**	**Pin Name**
A1	20A	+28V
A2	20A	+28V
A3	20A	+28V
A4	20A	+28V
A5	20A	+28V Return
A6	20A	+28V Return
A7	20A	+28V Return
A8	20A	+28V Return

Output Signal Connector - J3		
PS Connector: 182-009-213R531 Mating Connector: Behlman P/N 82143		
Pin Number	**Rated Current**	**Pin Name**
1	5A	N/C
2	5A	OT Warning
3	5A	OT Warning
4	5A	+28V SENSE RETURN
5	5A	+28V SENSE
6	5A	N/C
7	5A	N/C
8	5A	N/C
9	5A	N/C

Outline Dimensions

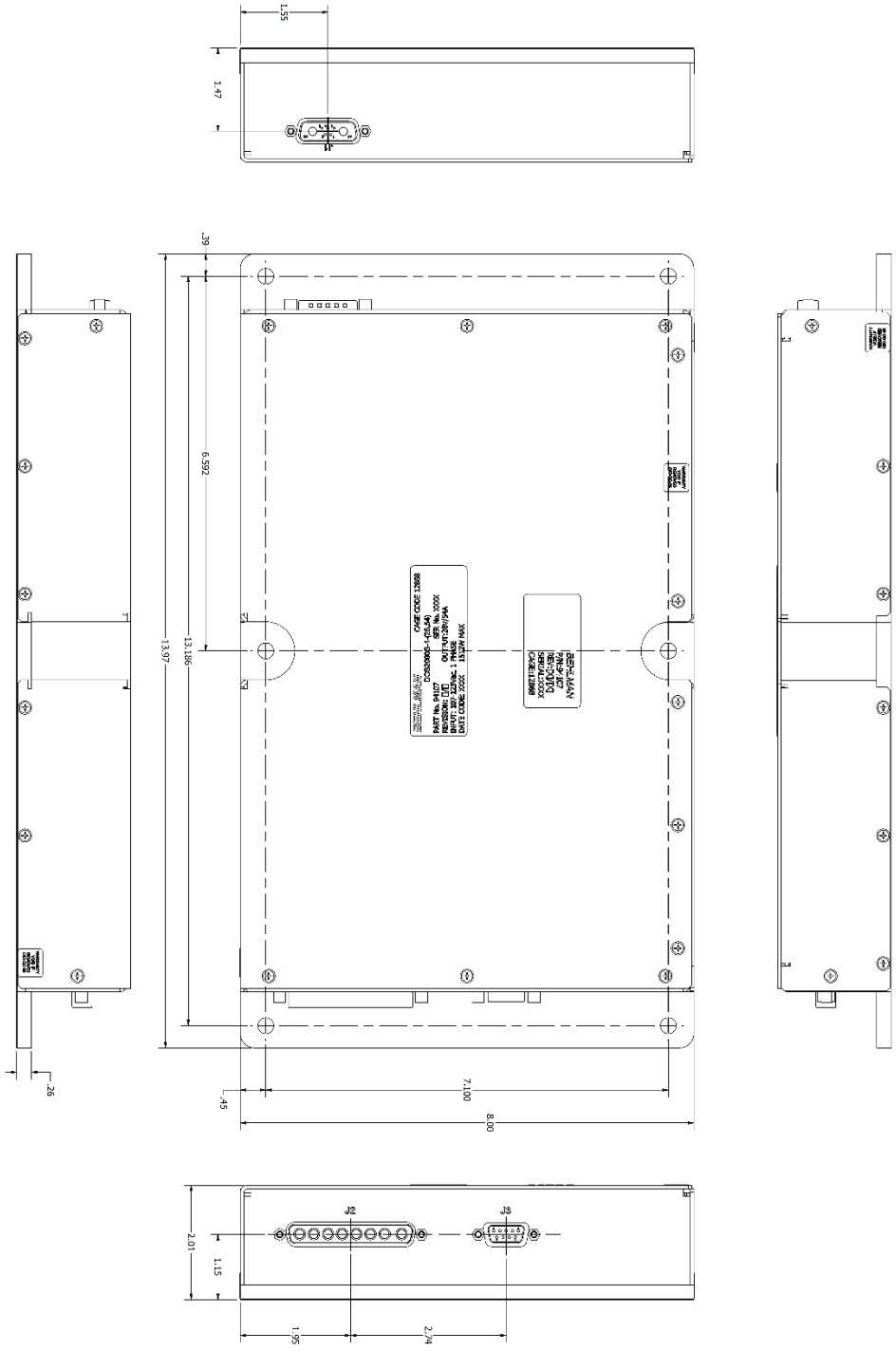

Figure 7: Mechanical Dimensions

Net Weight: 10 lbs. maximum

Refer to OC94107 for additional details

VITA Member

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