

# DCR2U-4000D-6-(48,83.3)-(24,16.7) Data Sheet

## P/N 94094-1

### FEATURES

- Wide Input Range: 103.5-126.5VAC, L-N, 3-Phase
- Input Transient Protection
- Two High Power DC Outputs:  
+48V/83.3A, +24V/16.7A
- Low Noise & Ripple
- Input-Output Isolation
- Excellent Load Regulation
- Overcurrent, Overvoltage, Over Temperature Protection
- Efficiency of 85% Typical
- High Power Density
- Air Cooled Front to Rear
- 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
- 0-95% RH Non-Condensing
- Designed to Meet MIL-STD-810F Vibe and Shock
- Input OK, Output OK and Fault LED Indications



### OVERVIEW

The Behlman DCR2U-4000D-6-(48,83.3)-(24,16.7) series COTS AC to DC power supply is a rugged, highly reliable, air cooled, switch mode unit built for high-end industrial and military applications. The DCR2U-6 is a 2U rack mount power supply that delivers 4400 Watts of DC power via two outputs. The DCR2U-6 accepts 115/200 VAC input, 3-Phase, IAW MIL-STD-704F.

The DCR2U-6 power supply has no minimum load requirement and has overvoltage and short circuit protection as well as over current and thermal protection. The power supply is designed to support the rigors of mission critical airborne, shipboard, vehicle and mobile applications.

### Absolute Maximum Ratings:

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

Parameter	Notes	Min	Max	Units
Input Voltage	Line to Neutral	103.5	126.5	VAC
Input Current	Circuit Breaker Rating		20	A
Operating Temperature	Ambient Air	-15	55	°C
Storage Temperature	Ambient Air	-40	100	°C
Isolation Voltage	Input to Output		1000	V
Isolation Voltage	Input to Case		1000	V
Isolation Voltage	Output to Case		500	V

**Note 1:** All measurements are performed at Nominal Input (115VAC L-N) and at ambient temperature of 25°C, unless otherwise specified.

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### Input Characteristics:

Parameter	Notes	Min	Typical	Max	Units
Operating Input Voltage Range	Line to Neutral	103.5	115	126.5	VAC
Turn-On Threshold		83.8	84.1	84.4	VAC
Turn-Off Threshold		72.9	73.2	73.5	VAC
Input No Load Current	Reactive Current (Circuit Breaker Off)	2.2	2.4	2.5	A
Input Full load Current	115VAC Input Operating Voltage		16.6		A
Input Full load Current	103.5VAC Input Operating Voltage		19.5		A
Inrush Current	See Figure 1		10	15	A pk

### Output Characteristics

#### Output 1: +48V/83.3A

Parameter	Notes	Min	Typical	Max	Units
Output Voltage Set Point		47.85	48.00	48.15	V
Line Regulation	(103.5-126.5VAC input range, 100% Output Load)		0.01	0.3	%
Load Regulation	(115VAC input)		0.06	0.3	%
Output Ripple/Noise Peak to Peak	See Note 2		30	100	mVp-p
Output Current Range		0		83.3	A
Output Overvoltage Protection		53.7	55.7	57.7	V
Output Overcurrent Protection		85.6	101.8	120.8	A
Remote Sense Compensation	250mV Per Lead			500	mV

### Output Characteristics

#### Output 2: +24V /16.7A

Parameter	Notes	Min	Typical	Max	Units
Output Voltage Set Point		23.93	24.00	24.07	V
Line Regulation	(103.5-126.5VAC input range, 100% Output Load)		0.01	0.3	%
Load Regulation	(115VAC input)		0.04	0.3	%
Output Ripple/Noise Peak to Peak	See Note 2		25	100	mVp-p
Output Current Range		0		16.7	A
Output Overvoltage Protection		27.1	28.1	29.1	V
Output Overcurrent Protection		17.0	20.1	22.6	A
Remote Sense Compensation	250mV Per Lead			500	mV

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### General Characteristics:

Parameter	Notes	Min	Typical	Max	Units
Power		0		4400	W
Power Factor	100% Load (4400W), see Figure 3	.90	.93		
Efficiency	100% Load(4400W), see Figure 2	83	84		%
Turn-On Delay	From application of input power (Circuit Breaker Enabled). See Figure 1		1.65		s
Weight				40	lbs

### Indicators:

Indicator	Description
Input OK	Green LED located on the front panel of the unit, illuminated when the 3-Phase AC input is present and within specified limits.
Output OK	Green LED located on the front panel of the unit, illuminated when all the DC outputs are present and within specified limits.
Fault	Red LED located on the front panel of the unit, illuminated during any output DC fault, output power fault, over temperature fault, and/or fan fault.

**Note 2:** Ripple and noise measured at output connector, across parallel connection of 0.1uF ceramic capacitor, 20MHz Bandwidth

### Inrush Current Waveform:

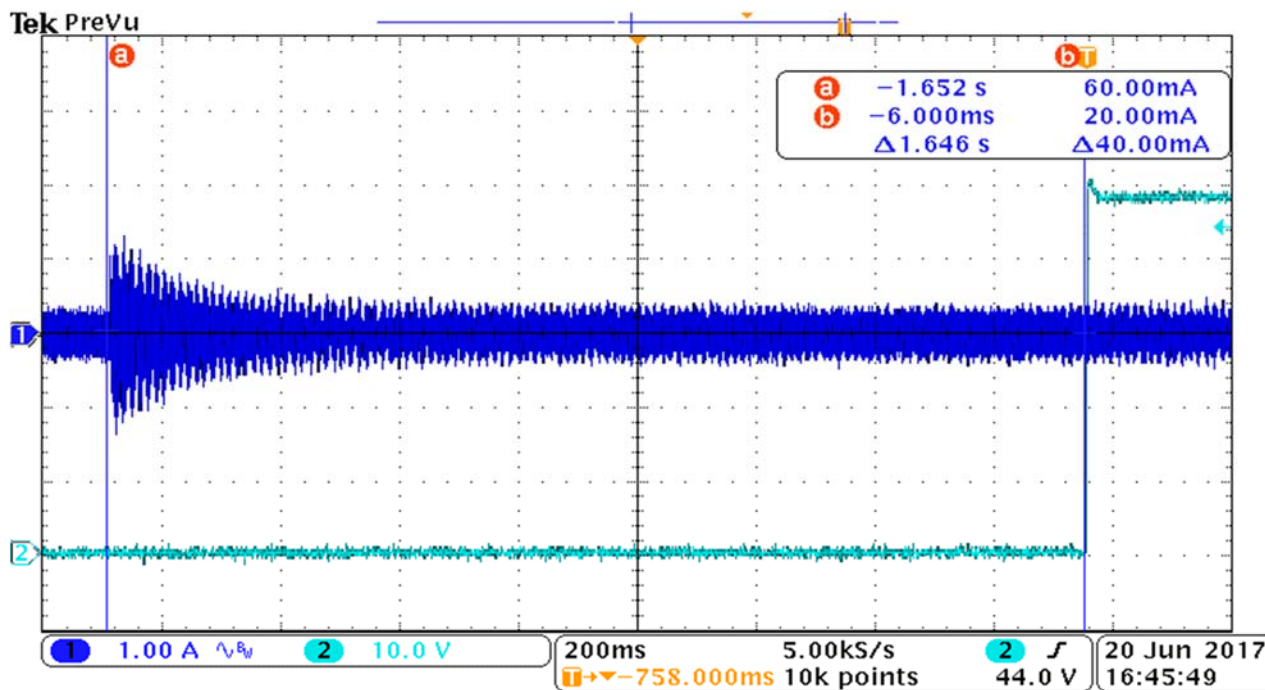
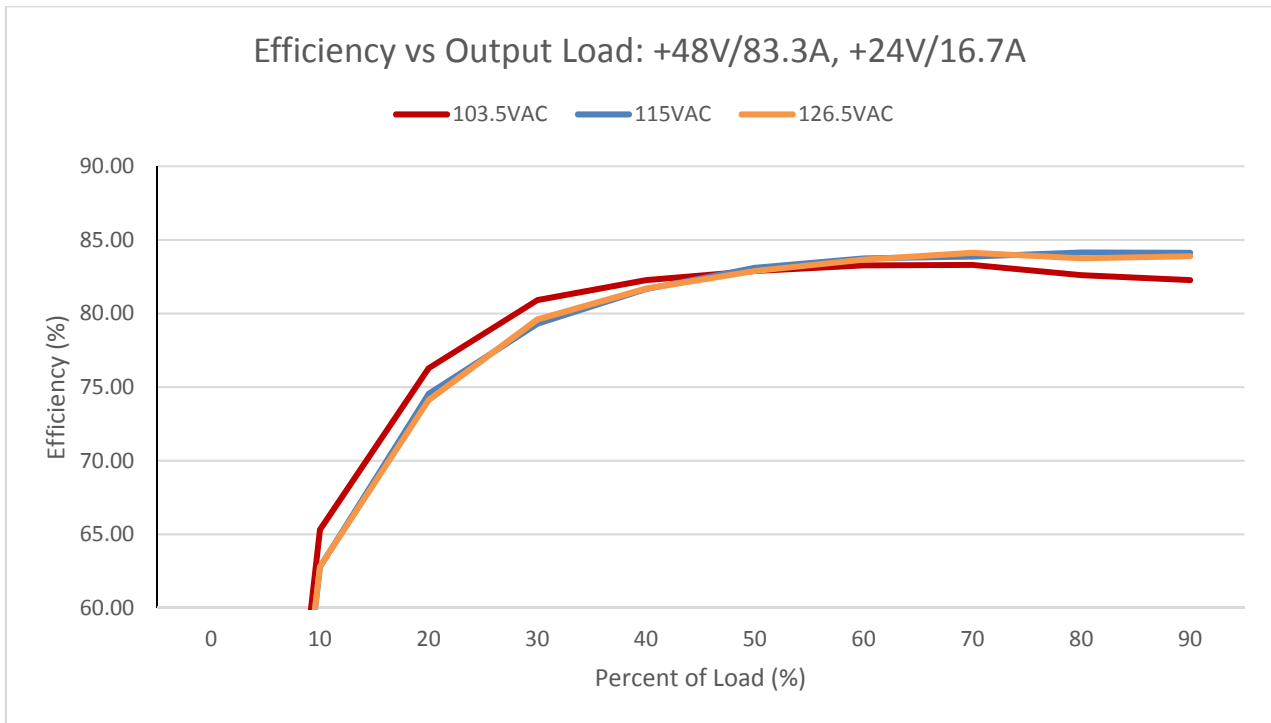


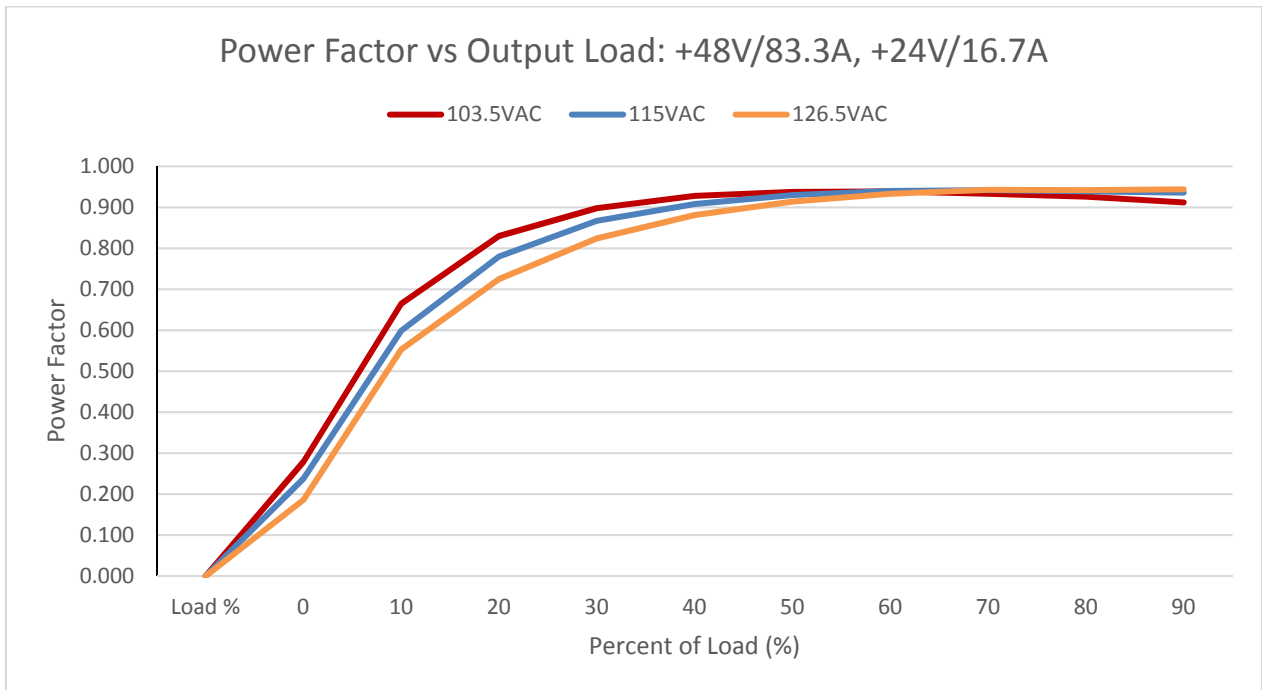
Figure 1: +28V start up delay and inrush current waveform

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Efficiency and Power Factor Graphs:



**Figure 2: Efficiency vs. Load for Min, Nominal, and Max input Voltage**

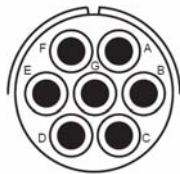


**Figure 3: Power Factor vs. Load for Min, Nominal, and Max input Voltage**

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## Connector Pin Out and Descriptions:

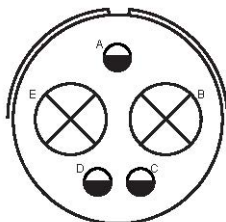
Input J1 Connector Pin Assignment		
PS Connector: MS3452L24-10P		
Mating Connector: MS3456L24-10S		
Pin Number	Rated Current (A)	Pin Name
A	46A	N/C
B	46A	Phase A
C	46A	Phase B
D	46A	Phase C
E	46A	Neutral (N/C)
F	46A	Earth GND (Chassis)
G	46A	N/C



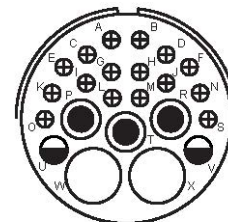
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Output J2 Connector Pin Assignment		
PS Connector: MS3452L32-6S		
Mating Connector: MS3456L32-6P		
Pin Number	Rated Current (A)	Pin Name
A	13A	N/C
B	13A	N/C
C	13A	N/C
D	13A	N/C
E	13A	N/C
F	13A	N/C
G	13A	N/C
H	13A	N/C
I	13A	N/C
J	13A	N/C
K	13A	N/C
L	13A	+24V Sense
M	13A	+24V Sense Return
N	13A	N/C
O	13A	N/C
P	46A	+24V Out
R	46A	+24V Return
S	13A	N/C
T	46A	N/C
U	23A	N/C
V	23A	N/C
W	80A	N/C
X	80A	N/C

Output J3 Connector Pin Assignment		
PS Connector: MS3452L32-1S		
Mating Connector: MS3456L32-1P		
Pin Number	Rated Current (A)	Pin Name
A	23A	N/C
B	150A	+48V Out
C	23A	+48V Sense
D	23A	+48V Sense Return
E	150A	+48V Out Return



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**Mechanical Dimensions:**

Reference O&C Drawing: 24182-1

