

MPO-500S Series

Single Output, 500W Power Factor Corrected, AC/DC Power Supplies



Key Features:

- 500W Power W/30 CFM
- Universal 90-264 AC Input
- >0.95 Active PFC
- EN 60950 Approved
- Standby 5V Output
- Three Single Output Models
- Meets EN 55022 B
- >160 kHour MTBF
- Only 5.0" x 3.0" x 1.4"



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Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	Universal	90		264	VAC
		120		370	VDC
Input Frequency		47		63	Hz
Input Current	See Model Selection Guide				
Inrush Current	Cold Start, 115 VAC			35.0	A Pk
	Cold Start, 230 VAC			70.0	
Safety Ground Leakage Current				0.50	mA
Power Factor Correction, See Note 1		0.95			

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Max Output Power	500W (with 30 CFM), 240W (230 VAC), 230W (115 VAC)				
Output Voltage Accuracy			±2.0		%
Line Regulation	V _{IN} = 115 to 264 VAC		±1.0		%
Load Regulation, See Note 2	12 V _{OUT}		±1.2		%
	24 and 48 V _{OUT}		±1.0		%
	12 VDC Output		150		mV P - P
Ripple & Noise (20 MHz), See Note 3	24 VDC Output		240		
	48 VDC Output		480		
Hold-Up Time	115 VAC, 90% V _{OUT}	8			mSec
Temperature Coefficient	0°C - 50°C		±0.03		%/°C
	-30°C - 0°C		±0.06		
Over Temperature Protection	Autorecovery		120		°C
Over Voltage Protection	See Model Selection Guide				
Overload Protection		120		170	%
Short Circuit Protection, See Note 4	Continuous (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Input to Output	3,000			VAC
		4,242			VDC
	Input to Ground	1,500			VAC
Switching Frequency	Output to Ground	500			
		58		75	kHz

EMI Characteristics

Parameter	Standard	Criteria	Level
Radiated Emissions	EN 55022		A
Conducted Emissions	EN 55022		B
Noise Immunity (EMS)	EN 55024		
Surge	EN 61000-4-4		±1 kV (L-N), ±2 kV (L-G)

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-30	+25	+70	°C
Storage Temperature Range		-30		+85	°C
Cooling	Free Air Convection (See Derating Curve)/30 CFM				
Humidity	RH, Non-condensing			95	%

Physical

Size	See Mechanical Drawing (Page 4)				
Weight	16.22 Oz (0.460 kg)				

Reliability Specifications

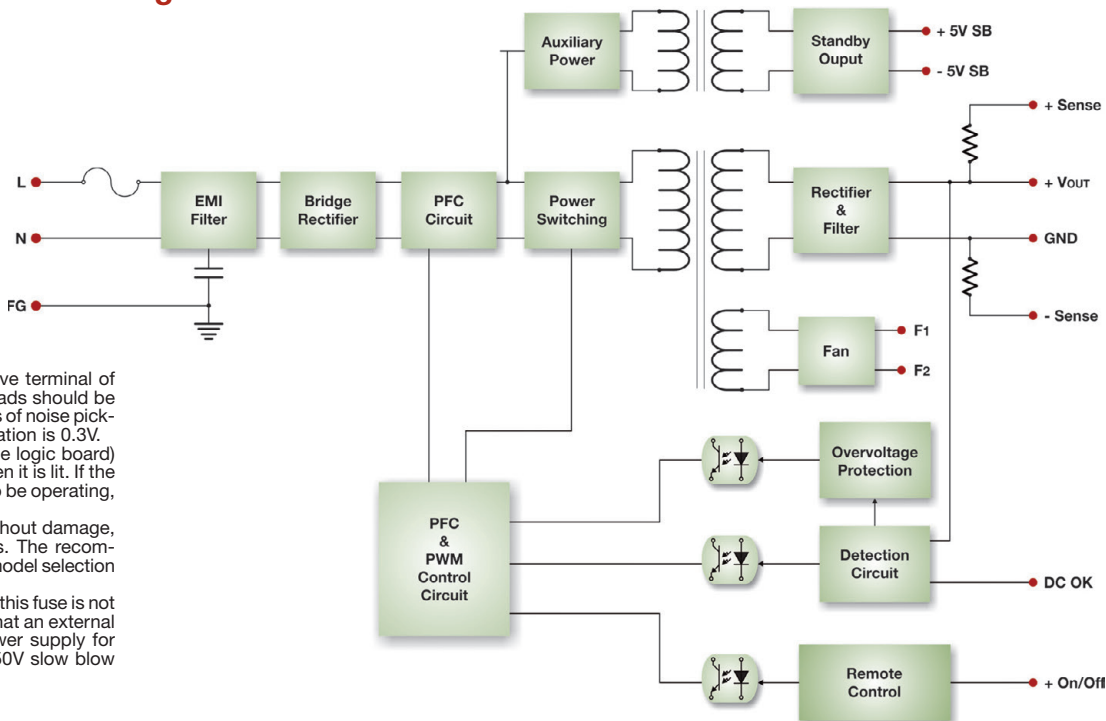
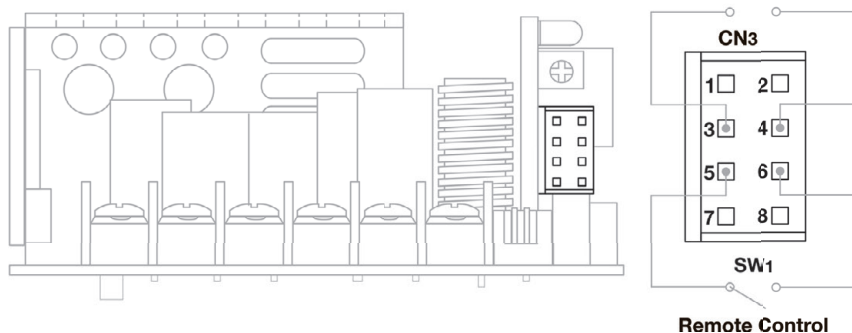
Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	160			kHours
Safety Standards	UL 1950, EN 60950				
Vibration	10~500 Hz, 2G 10 min/1 Cycle. Period of 60 min each along X, Y & Z Axis				

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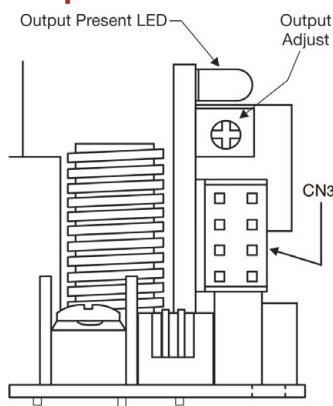
Model Number	Input		Output Voltage (VDC)	Output Voltage Adjust Range (VDC)	Output Current (A)			Minimum Load (%)	Capacitive Load (μF Max)	Over Voltage Protection (VDC Typ)	Efficiency (% Typ, 230 VAC)
	Current (A)				W/30 CFM	Free Air					
	115 VAC	230 VAC				115 VAC	230 VAC				
MPO-500S-12T	6.0	3.0	12.0	11.52 - 12.48	41.50	19.16	20.00	3.0	10,000	16.0	88
MPO-500S-24T	6.0	3.0	24.0	23.04 - 24.96	20.80	9.58	10.00	3.0	5,000	31.0	90
MPO-500S-48T	6.0	3.0	48.0	46.08 - 49.44	10.41	4.80	5.00	3.0	2,500	57.0	92

Notes:

1. PFC meets EN61000-3-2.
2. Load regulation is given for a load change of 10% to 100%.
3. Ripple & noise is measured at 20 MHz bandwidth using a ceramic 0.1 μ F and a low resistance electrolytic 47 μ F capacitor connected in parallel. The capacitors should be mounted as close to the power supply terminals as possible.
4. Output short circuit protection is provided by a "Hiccup" mode circuit.
5. The standby output voltage is 4.4 to 5.5 VDC at 0.4A max. It is accessible at pins 1 & 2 on the CN3 connector.
6. Positive and negative sensing is available at the connector CN3. If used, the positive (+S at pin 8) sense should be connected to the positive terminal of the load, and the negative (-S at pin 7) should be connected to the negative terminal of the load. The positive and negative leads should be twisted together to minimize the effects of noise pick-up. The maximum line drop compensation is 0.3V.
7. The Green LED (just above CN3 on the logic board) indicates the DC output is present when it is lit. If the LED is off when the unit is supposed to be operating, it would indicate a fault condition.
8. These units will operate at no load without damage, but they may not meet specifications. The recommended minimum load is given in the model selection chart above.
9. Each unit includes an input fuse. Since this fuse is not field replaceable, it is recommended that an external fuse be used on the input of the power supply for protection. For these units, a 8-9A/250V slow blow fuse is recommended.

Block Diagram**CN3 Connections**

No.	Function	Description
1	-5 SB	Return for stand by voltage output. Connected to -Vout.
2	+5 SB	Standby voltage output. See note 5 above.
3	GND	Connected to -Vout. Return for DC OK & RC.
4	DC OK	A small DC output, referenced to pin 3 (see diagram at left).
5	-RC	Return for the remote control. Connected to -Vout.
6	+RC	Turns the output On/Off. See diagram below.
7	-S	-Sense connection. See note 6 above
8	+S	+Sense connection. See note 6 above

Output LED & Trim

Output LED: An LED lamp next to the output connector. The LED is on (Green) during normal operation. If the LED is not lit, it indicates a problem with the supply.

Output Adjust: The output voltage can be adjusted over the range given in the table below by using the trim pot located to the side (and just behind) of the output connector. Great care should be taken not to use excessive force when making any adjustment. Too much force may damage the wiper arm of the pot, rendering the power supply inoperable.

Model	Adjustment Range
MPO-500S-12T	11.52 - 12.48 VDC
MPO-500S-24T	23.04 - 24.98 VDC
MPO-500S-48T	46.08 - 49.44 VDC

Remote On/Off

Operation of the unit can be controlled remotely through the use of a switch or TTL signal. Contact the factory for more information.

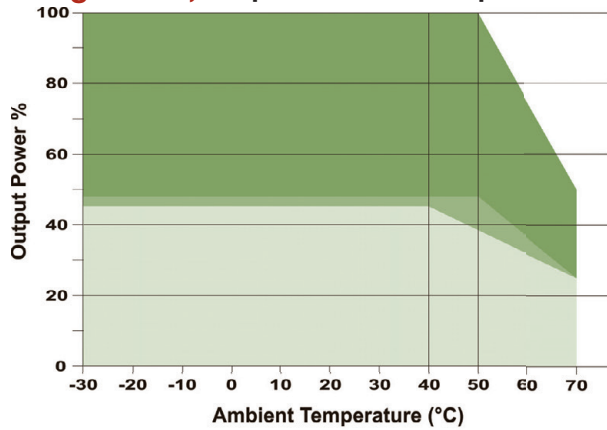
Between: +RC - -RC	Output Status
SW1 Closed	Off
SW1 Open	On

DC Okay Signal

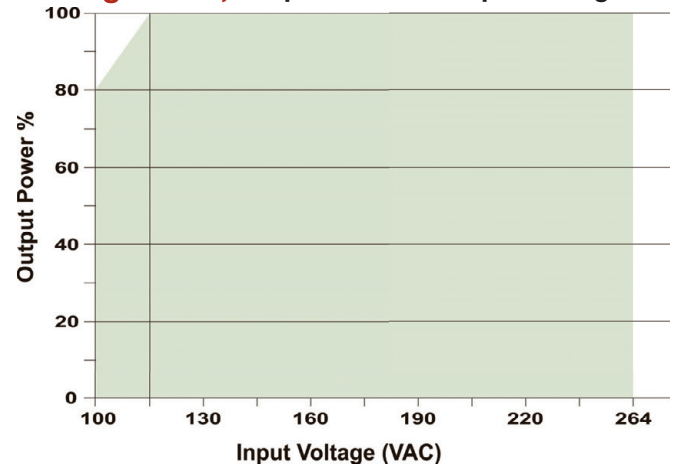
Between: DC OK - GND	Output Status
3.7 VDC - 6.0 VDC	On
0.0 VDC - 1.0 VDC	Off

When the unit is operating, a small, stable DC voltage is available at pin 3 on CN3 (referenced to -Vout). This voltage may be used for remote monitoring to insure the unit is operating. Contact the factory for more information.

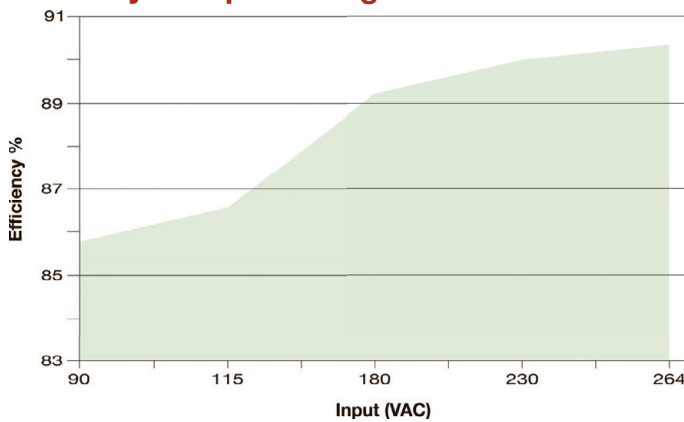
Derating Curve, Output Power vs Temperature



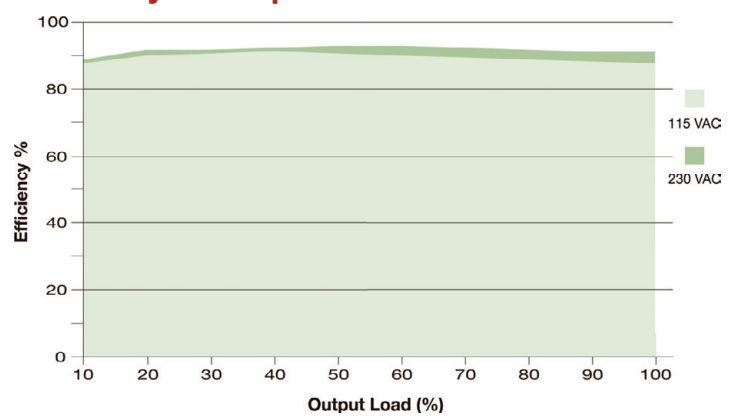
Derating Curve, Output Power vs Input Voltage



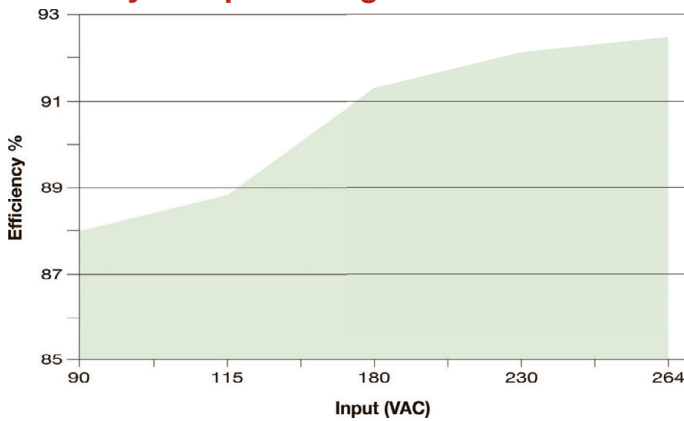
Efficiency vs Input Voltage MPO-500S -12



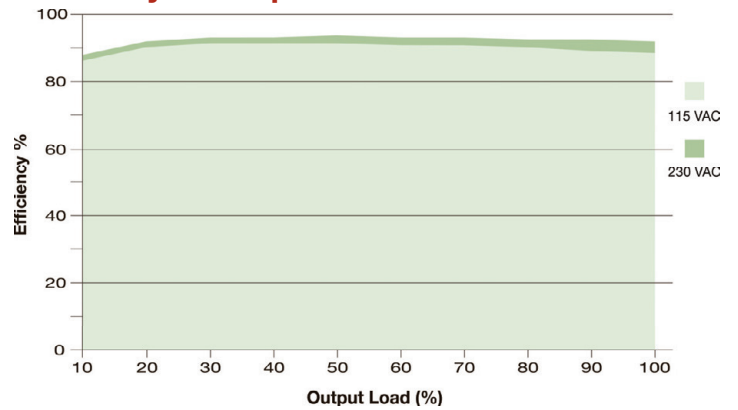
Efficiency vs Output Load MPO-500S -12



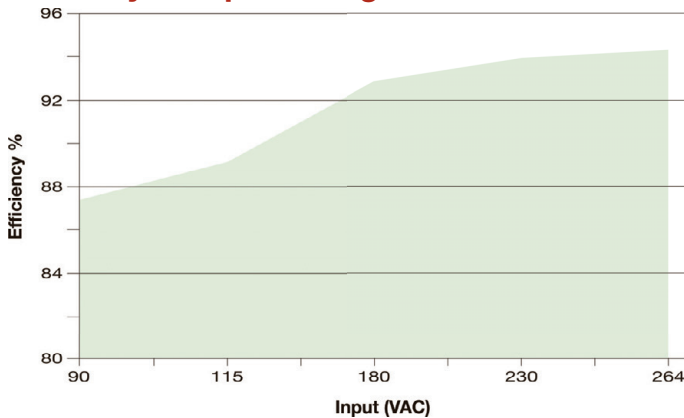
Efficiency vs Input Voltage MPO-500S -24



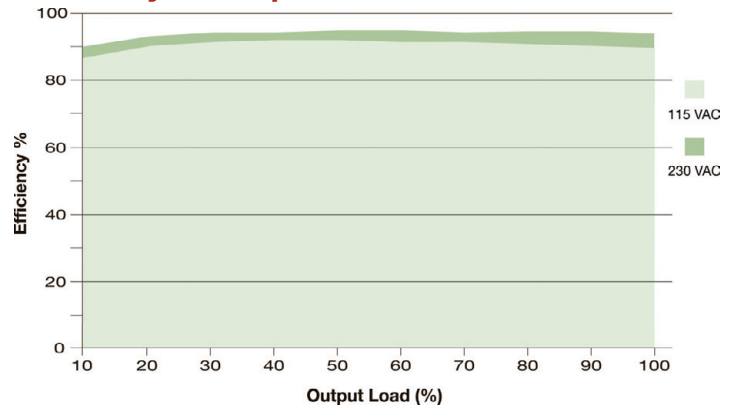
Efficiency vs Output Load MPO-500S -24



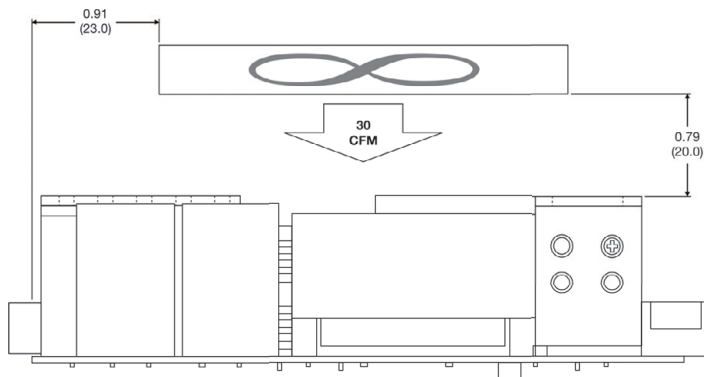
Efficiency vs Input Voltage MPO-500S -48



Efficiency vs Output Load MPO-500S -48



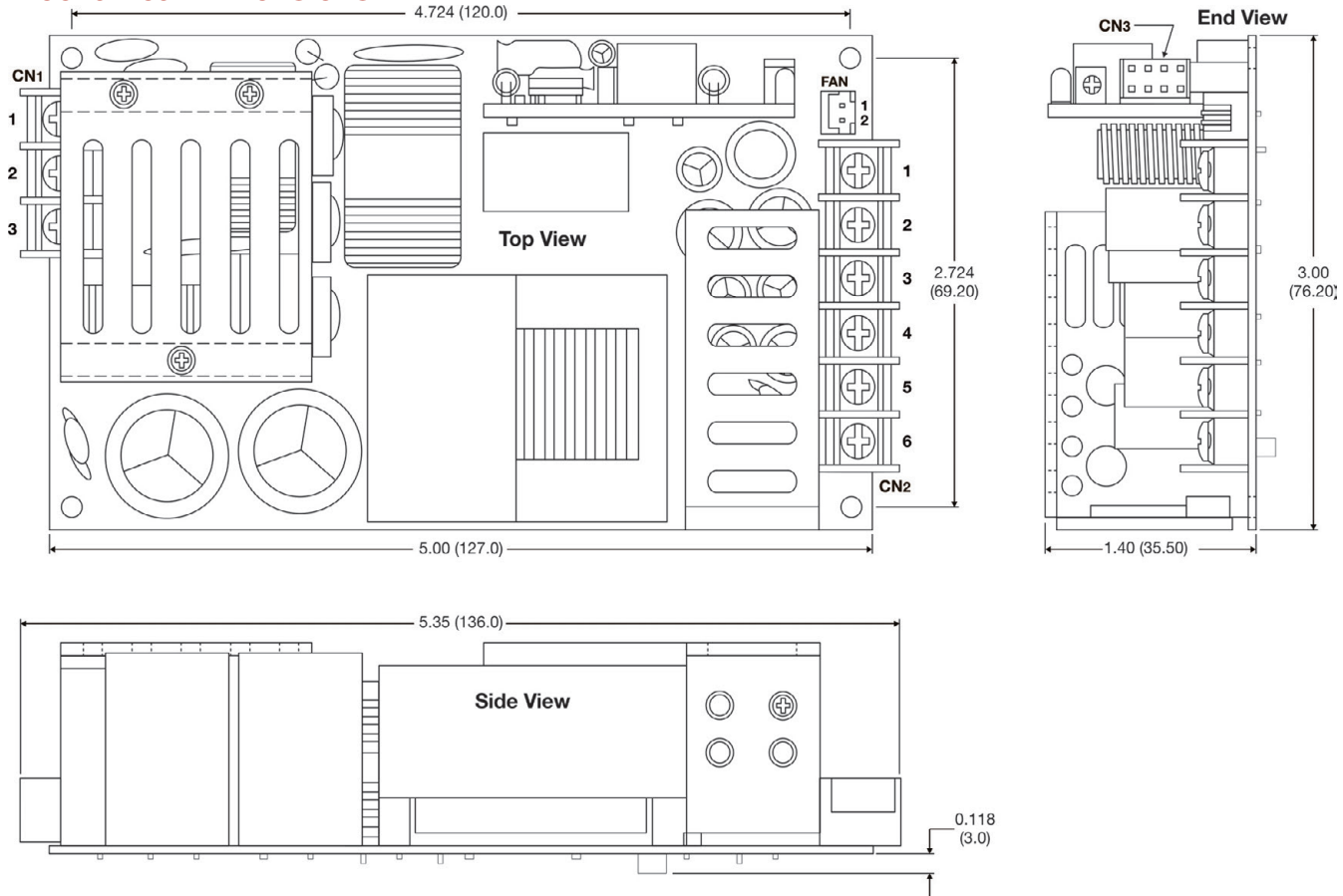
Air Flow



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To operate the unit with a load over 240W, air flow must be provided. The diagram at left shows the approximate area where the airflow should be directed.

Mechanical Dimensions



Connections

Input Connector (CN1):

- Terminal Block:
Dinkle DT-2C-B07W-03: M3 Screws
3 terminals, 7.62 mm Centers
Suitable Wire = 22 - 14 AWG

Pin	Function
1	Field Ground
2	AC-Neutral
3	AC-Line

Output Connector (CN2):

- Terminal Block:
Dinkle DT-2C-B07W-06: M3 Screws
6 terminals, 7.62 mm Centers
Suitable Wire = 22 - 14 AWG

Pin	Function
1	+V _{OUT}
2	+V _{OUT}
3	+V _{OUT}
4	-V _{OUT}
5	-V _{OUT}
6	-V _{OUT}

Logic Signal Connector (CN3):

- Mating Part No:
PHD-H20-2X04 or equivalent
(Cherg Weei Technology Corp)

Pin	Function
1	-5 SB
2	+5 SB
3	GND
4	DC OK
5	-RC
6	+RC
7	-S
8	+S

See page 2 for more information on the signals available from CN3

Fan Driver Connector (CN4):

- Mating Part No:
CX-H250-02 or equivalent
(Cherg Weei Technology Corp)

Pin	Function
1	+12V
2	GND



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