

(877),634-0982 www.digipwr.com

### HDM500 SERIES

# **AC-DC MEDICAL SWITCHING PSU - 500 WATT**



# **KEY FEATURES**

Digital Power's HDM500 Series are switching power supplies that produce superior output wattages with natural convection. The series include enclosed, open fame and U bracket format with output voltage options of 12V, 15V, 24V and 48V. Featured with compact, low profile footprint, and best-in-class performance, HDM500 Series are optimal for Medical Applications.

Designed with energy saving in mind, Digital Power's HDM500 Series boasts not only high operating efficiency up to 93%, but also high-power density with full input range of 90-264Vac.

HDM500 operates over wide temperature range from -30°C to +70°C with complete protections and certified to UL / IEC / EN 60601 3.1 Edition Safety Approvals.



# PRODUCT SPECIFICATION

Enclosed, U Bracket Switching Power Supply

- Remote ON/OFF Function
- 240 Watt with Free Air Convection
- 500 Watt with 30CFM FAN
- 4000VAC Input to Output 2MOPP Insulation
- Built-in 12V/0.3A Auxiliary Output
- Standby 5Ve1A with Fan, e0.4A without Fan
- High Efficiency up to 93%
- With P.F.C. Function >0.94
- Current Share Function for Option (except for 115)
- Ultra Compact Size:

HDM500O: 5.03 x 3.0 x 1.38 Inches

HDM500U: 5.5 x 3.25 x 1.6 Inches

HDM500E: 5.5 x 3.25 x 2.42 Inches



# **ELECTRICAL SPECIFICATION - HDM5000 SERIES**

Model No.			HDM3000-112	2   110/1/3000-113	HDM3000-122	+   HD/W3000-140	
Max Output V	Vattage (W)		500 W (30CF	M FAN)			
		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Others: 230 W (115 VAC) / 240 W (230 VAC)				
Max Output V	Vattage (W)		115: 210 W (115 VAC) / 220 W (230 VAC)				
	Voltage (Note 3)			or 127-370 VDC			
	Frequency (Hz)	47-63 Hz					
Input	Current (Full load)		< 6.3 A max. (	[115 VAC] / <3.15 A m	ax. (230 VAC)		
	Inrush Current (<2ms) (Clod St	art)		115 VAC) / < 80 A mo			
	Leakage Current			. (Input-Output)	10 3 77 12 1		
	Power Factor (at 230 VAC)		PF>0.94 at Fu	ıll Load			
	Voltage (V.DC.)		12V	15V	24V	48V	
	Voltage Accuracy		±2%		7,2,7		
	Voltage Adj. Range (V.DC)		±4% Output \	/oltage	11 2 11		
	Current (with 30CFM FAN) (A)	(max.)	41.5	33.3	20.8	10.41	
	Current(Free air Convection)	at 115 VAC	19.16	14	9.58	4.8	
	(A) max	at 230 VAC	20	14.66	10	5	
	Line Regulation (115-264 VAC)	ui 200 1710	±0.5%	11.00	10		
Output	Load Regulation (10-100%) (typ	1	±1%				
	Minimum Load	• ]	3%				
	Maximum Capacitive Load	5,000μF	3,750μF	2,500μF	1,250μF		
	Ripple & Noise (typ.)		160mV	160mV	240mV	480mV	
	Efficiency (at 230 VAC)	90.5%	90.5%	92%	93%		
	Hold-up Time (at 115 VAC)		8 ms min.				
	Over Power Protection		Auto recovery				
	Over Voltage Protection	11	Auto recovery				
	Overt Temperature Protection		Auto recovery				
Protection			Protection level 1 (nominal) : Continuous, Auto recovery				
	Short Circuit Protection		Protection level 2 (instantaneous high current): Latch				
	Input-Output (V.AC)		4000VAC or 5656VDC				
Isolation	Input-PE (V.AC)		2000V				
	Output-PE (V.AC)		1500V				
				34 77			
	Operating Temperature	Totalian single of the single		(with derating)			
	Storage Temperature		-35°C+85°C				
			±0.03%/°C (0~50°C)				
	Temperature Coefficient		±0.06%/°C ( -30~0°C )				
	Altitude During Operation		5000m				
Environment	Humidity Atmospheric Pressure		95% RH				
LIIVIIOIIIICIII	MTBF		56 kPa to 106 kPa				
	Vibration		>160,000 h @ 25°C (MIL-HDBK-217F) IEC60068-2-6 (10~500Hz, 2G 10min./lcycle, 60min. each along X, Y,				
		axes)					
	Shock	IEC60068-2-27					
Dhysiaal	Dimensions (L x W x H)		5.03 x 3.0 x 1.38 Inches ( 127.8 x 76.2 x 35.0 mm ) Tolerance 0.5 mm				
Physical	Weight		480 g Free convection / 30 CFM FAN				
	Cooling Method	11 1		EC / EN 60601 3.1rd E	dition & III / IEC	/ EN 60050 AM2	
Safety	Approval			IEC / EN 60601 3.1 <sup>rd</sup> E		/ LIN 00730 AMZ	
Carcij	Conducted and Radiated EMI						
EMC	EMS		EN55011 / conducted class B, Radiated Class A EN60601-1-2 4th edition				

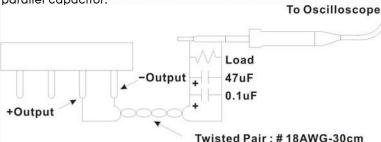
All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.



# **ELECTRICAL SPECIFICATION - HDM5000 SERIES**

### NOTE

 Ripple & Noise are measured at 20MHz of bandwidth with ceramic 0.1uF & chemi-con KY 47uF parallel capacitor.



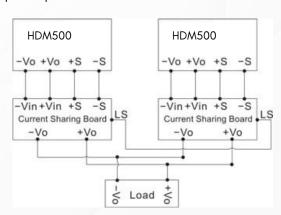
A 30cm twisted pair of no.18 AWG copper wire is connected to a 47uF and 0.1uF capacitor of proper polarity and voltage rating. The oscilloscope probe ground led should connect right to the ground ring of the probe and be as short as possible. The oscilloscope bandwidth should be at 20MHz and connected to AC ground.

- 2. Hold-up Time measured at 90% Vout.
- 3. Please check the derating curve for more details.
- 4. Main Vout >3% Load, 12V (Aux) / 0.3A., 12V (Aux) need 0.1A Minimum Load, Auxiliary voltage output ground 10.2~13.3V
- 5. Strongly recommend to conduct this test with DC Voltage. If customer wishes to test with AC Voltage, please disconnect all Y-Capacitors from Digital Power power supply.
- 6. Current Share Board (Optional):
  - (a.)The output voltage difference of each parallel single element should be less than 0.2V.
  - (b.)Output power at parallel operation = rated power per unit x number of unit x 90%
  - (c.)Connect in parallel no more than 2 units.

Please contact Digital Power for advice if more than 2 is needed.

- (d.)Minimum Load Should be 15%.
- 7. CAUTION: Double pole, neutral fusing.

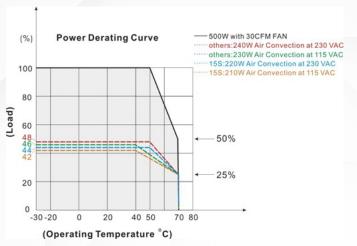
Disconnect mains before servicing.

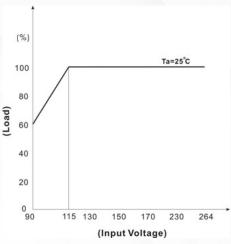




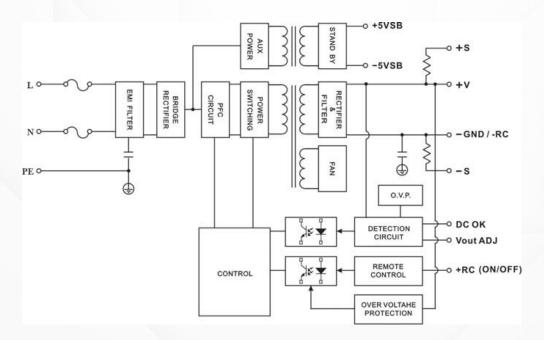
# **ELECTRICAL SPECIFICATION - HDM5000 SERIES**

### **DERATING**

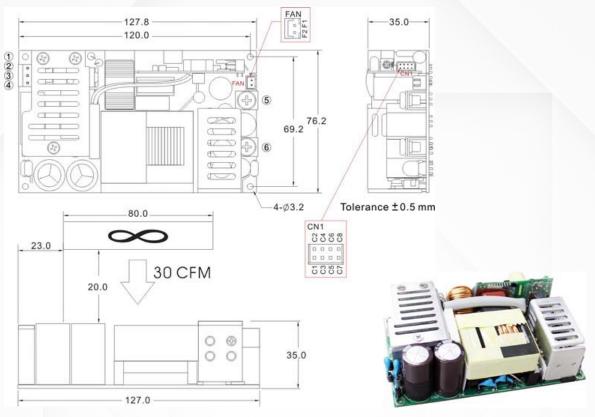




### **BLOCK DIAGRAM**







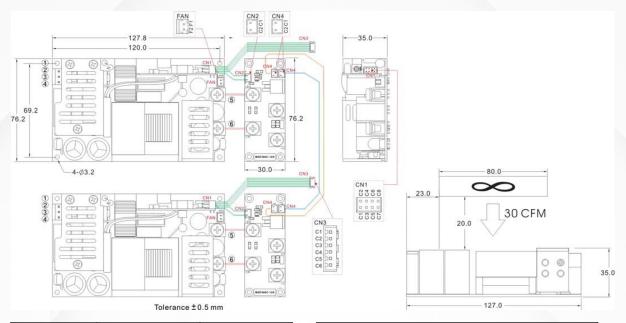
Bro	Brands		Alex		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal	
1	PE	ı	1	<del>-</del>	_	
2	AC IN (N)		1,27			
3	NO PIN	9396-3	96T series	VHR-3N	SVH-41T- Pl.1	
4	AC IN (L)				F 1.1	
5	+DC OUT	Terminal : M5 Pan HD screw in 2 positions.				
6	-DC OUT	Torque to 8 lbs-in(90cNm) max				

Connector Pin (FAN)							
Brands		Alex		JST			
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal		
F1	+12V	CX-	0)/ 70501	VIID	SXH- 002T-		
F2	GND	H250-02	CX-T2501	XHP-2	P0.6		

Conn	ector Pin (	CN1)	/		
E	Brands	Cherng	Weei	J	ST
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
C1	-5V SB				
C2	+5V SB				
C3	GND				
C4	DC-OK	PHD-H20-	PHD-T20	PHDR-	SPHD-
C5	-RC	2X4P		08VS	001T- P0.5
C6	+RC		111		
C7	-S				
C8	+S	. 4			



### **HDM5000** with Current Share Function



Brands		Alex		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
1	PE	1	_	-	10 kg .
2	AC IN (N)				a
3	NO PIN	9396-3	96T series	VHR-3N	SVH-41T- P1.1
4	AC IN (L)				F 1.1
5	+DC OUT	Terminal : M5 Pan HD screw in 2 positions.			
6	-DC OUT	Torque to 8 lbs-in(90cNm) max			

Connector Pin (FAN)							
Brands		Alex		JST			
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal		
F1	+12V	CX-	OV TO 501	VIID 0	SXH- 002T-		
F2	GND	H250-02	CX-T2501	XHP-2	P0.6		

Connector Pin (CN1)						
Brands		Cherng Weei		JST		
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal	
C1	-5V SB					
C2	+5V SB					
C3	GND					
C4	DC-OK	PHD-H20-	PHD-T20	PHDR-	SPHD-	
C5	-RC	2X4P	- 10	08VS	001T- P0.5	
C6	+RC			0.7		
C7	-S					
C8	+S					

Connector Pin (CN2)						
Bra	inds	Cherng Weei		JST		
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal	
C1	-S					
C2	+S	CP- H20-02	CP- T20B	PHR-2	SPH- 002T- P0.5L	



Mating Housing Pin (CN3)					
Brands		Cherng Weei	JST		
PIN#	Single	Connector	Connector		
C1	-5V SB				
C2	+5V SB				
C3	GND				
C4	DC-OK	CP-W20-06	B6B-PH-K-S		
C5	-RC				
C6	+RC				

Connector Pin (CN4)							
Brands		Cherng Weei		JST			
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal		
C1	LS	CP- H20-02	CP- T20B	PHR-2	SPH-		
C2	LS				002T- P0.5L		

### FUNCTION DESCRIPITON of CN1 and CN3 (CN3 without C7 and C8 pin)

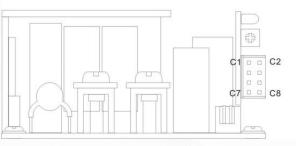
Pin No.	Function	Description
C1	-5VSB	This pin connects to the negative terminal(-V). Return for DC-OK and -RC signal output.
C2	+5VSB	Stand by voltage output ground 4.2~5.5V, referenced to pin C1(-5VSB). The maximum load current is 1A with Fan, 0.4A without Fan
C3	GND	This pin connects to the negative terminal(-V). Return for DC-OK and -RC signal output.
C4	DC OK	DC-OK Signal is a DC output, referenced to pin C3(DC-OK GND).
C5	-RC	This pin connects to the negative terminal(-V). Return for DC-OK and -RC signal output.
C6	+RC	Turns the output on and off by electrical or dry contact between pin C5 (-RC), Short: Power OFF, Open: Power ON. The input voltage must be less than IV in order to disable VOUT and greater than 3.5V (up to 5V) to enable it.
C7	-S	Negative sensing. The -S signal should be connected to the negative terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect.
C8	+S	Positive sensing. The +S signal should be connected to the positive terminal of the load. The +S and -S leads should be twisted in pair to minimize noise pick-up effect.



### **FUNCTION MANUAL & APPLICATION NOTE**

### 1. DC-OK Signal

Between DC-OK and GND	Output Status
3.7~6V	ON
0~1V	OFF

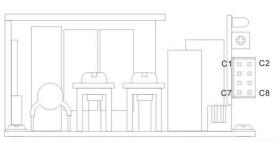


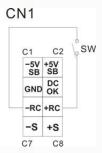
# CN1 C1 C2 -5V +5V SB SB GND DC OK -RC +RC -S +S C7 C8

### 2. Remote Control

It can be turned ON/OFF by using the "Remote Control" function.

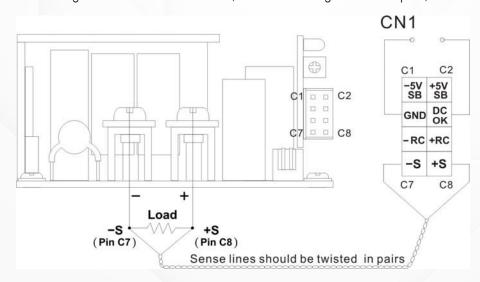
Between +RC and -RC	Output Status
SW ON (Short)	OFF
SW OFF (Open)	ON





### 3. +S and -S Sense

Shorter wiring to each unit is recommended, as well as twisting +S and -S in pairs, as shown below





# **ELECTRICAL SPECIFICATION - HDM500U SERIES**

Model No. HDM500U-112CS HDM500U-115 HDM500U- 124CS				HDM500U- 148CS			
Max Output V	Vattage (W)		500 W (30CFM F	AN)			
No. of the last of			Others: 190 W (115 VAC) / 200 W (230 VAC)				
Max Output V	Vattage (W)		115: 170 W (115 VAC) / 180 W (230 VAC)				
Voltage (Note 3) Frequency (Hz)		90-264 VAC or 1					
		47-63 Hz	2, 0,0 ,20				
	Current (Full load)		< 6.3 A max. (115	\/AC\	(OZO \/AC\		
Input	Inrush Current (<2ms) (Clod Sta	(+t)	< 40 A max. (115)				
	Leakage Current	iri)	< 0.1 mA max. (In		ix. (230 VAC)		
	Power Factor (at 230 VAC)		PF>0.94 at Full La				
	Voltage (V.DC.)		12V	15V	24V	48V	
	Voltage Accuracy		±2%	13 V	Z4 V	401	
	Voltage Adj. Range (V.DC)		±4% Output Volt	~~~			
	Current (with 30CFM FAN) (A) n	227	41.5	33.3	20.8	10.41	
	Current (Free air Convection)	at 115 VAC	15.83	11.33	7.91	3.96	
	(A) max	at 230 VAC	16.6	12	8.33	4.17	
	1	d1 250 VAC		12	0.55	4.1/	
	Line Regulation (115–264 VAC)		±0.5%			1 1 1 1 1 1 1 1 1	
Output	Load Regulation (10–100%) (typ.	)	±1%				
	Minimum Load		3%			1	
	Maximum Capacitive Load		5,000μF	3,750μF	2,500μF	1,250μF	
	Ripple & Noise (typ.)		160mV	160mV	240mV	480mV	
	Efficiency (at 230 VAC)	9	90.5%	90.5%	92%	93%	
	Hold-up Time (at 115 VAC)		8 ms min.				
	Over Power Protection		Auto recovery				
	Over Voltage Protection	11	Auto recovery				
Protection	Overt Temperature Protection		Auto recovery				
Tiolection			Protection level 1 (nominal): Continuous, Auto recovery				
	Short Circuit Protection	0.70	Protection level 2 (instantaneous high current): Latch				
	Input-Output (V.AC)		4000VAC or 5656VDC				
Isolation	Input-PE (V.AC)		2000V				
	Output-PE (V.AC)		1500V				
	Operating Temperature		-30°C+70°C (wi	th deratina)			
	Storage Temperature		-35°C+85°C				
			±0.03%/°C (0~50°C)				
	Temperature Coefficient		±0.06%/°C (-30~0°C)				
	Altitude During Operation		5000m				
	Humidity		95% RH				
Environment	Atmospheric Pressure	No. 1	56 kPa to 106 kPa				
	MTBF		>160,000 h @ 25°C (MIL-HDBK-217F)				
	Vibration		IEC60068-2-6 (10~500Hz, 2G 10min./lcycle, 60min. each along X, Y axes)				
	Shock		IEC60068-2-27				
	Dimension s(L x W x H)		5.5 x 3.25 x 1.6 Inches ( 139.7 x 82.55 x 40.6 mm ) Tolerance 0.5 mm				
Physical	Weight		580 g		,		
,	Cooling Method		Free convection / 30 CFM FAN				
Ser , I I					dition & UL / IEC	/ EN 60950 AM2	
Safety	Approval	11 29		/ EN 60601 3.1 <sup>rd</sup> E			
4-4,1	Conducted and Radiated EMI		EN55011 / conducted class B, Radiated Class A				
EMC	EMS		EN60601-1-2 4th				

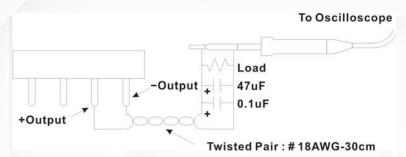
All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.



## **ELECTRICAL SPECIFICATION - HDM500U SERIES**

### NOTE

1. Ripple & Noise are measured at 20MHz of bandwidth with ceramic 0.1uF & chemi-con KY 47uF parallel capacitor.

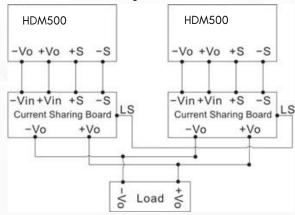


A 30cm twisted pair of no.18 AWG copper wire is connected to a 47uF and 0.1uF capacitor of proper polarity and voltage rating. The oscilloscope probe ground led should connect right to the ground ring of the probe and be as short as possible. The oscilloscope bandwidth should be at 20MHz and connected to AC ground.

- 2. Hold-up Time measured at 90% Vout.
- 3. Please check the derating curve for more details.
- Main Vout >3% Load, 12V (Aux) / 0.3A., 12V (Aux) need 0.1A Minimum Load, Auxiliary voltage output ground 10.2~13.3V
- 5. Strongly recommend to conduct this test with DC Voltage. If customer wishes to test with AC Voltage, please disconnect all Y-Capacitors from Digital Power power supply.
- 6. Current Share Board (Optional):
  - (a.)The output voltage difference of each parallel single element should be less than 0.2V.
  - (b.)Output power at parallel operation = rated power per unit x number of unit x 90%
  - (c.)Connect in parallel no more than 2 units. Please contact Digital Power for advice if more

than 2 is needed.

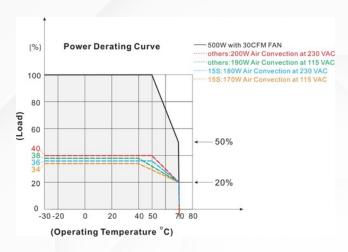
- (d.)Minimum Load Should be 15%.
- 7. CAUTION: Double pole, neutral fusing. Disconnect mains before servicing.

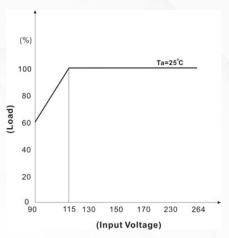




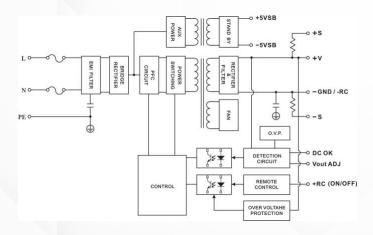
# **ELECTRICAL SPECIFICATION - HDM500U SERIES**

### **DERATING**

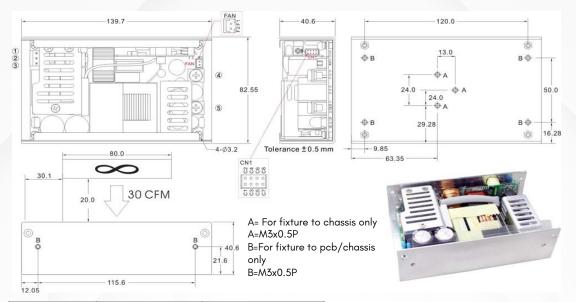




### **BLOCK DIAGRAM**

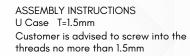


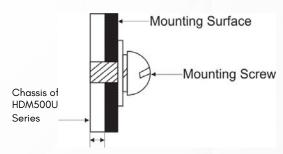




Br	Brands		Alex		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal	
A.B	PE	_		_	_	
1	AC IN (N)					
2	NO PIN	9396-3	96T series	VHR-3N	SVH-41T-P1.1	
3	AC IN (L)					
4	+DC OUT	Terminal : M5 Pan HD screw in 2 positions.				
5	-DC OUT	Torque to 8 lbs-in(90cNm) max				

Conn	ector Pin (	CN1)		Yes and	
E	Brands	Cherng Weei		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
C1	-5V SB	2.19			
C2	+5V SB				
C3	GND		77		a _ 11 <del>_</del> 4 ar
C4	DC-OK	PHD-H20-	PHD-T20	PHDR-	SPHD-
C5	-RC	2X4P		08VS	001T- P0.5
C6	+RC				1 1/4 2 4 1
C7	-S				
C8	+S				

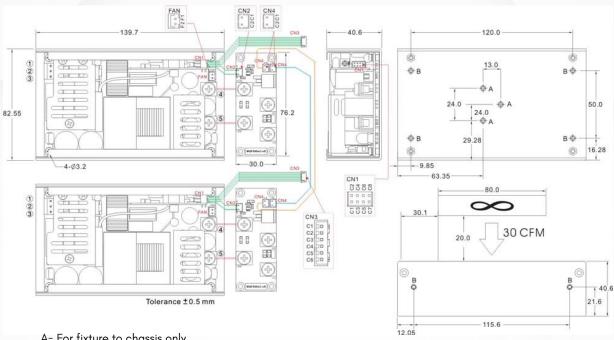




T=1.5mm

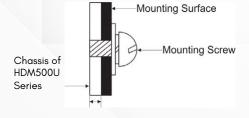
Connector Pin (FAN)						
Brands		Alex		JST		
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal	
F1	+12V	CX-	OV TO 501	VIID 0	SXH-	
F2	GND	CX- H250-02	CX-T2501	XHP-2	002T- P0.6	

### **HDM500U** with Current Share Function



A= For fixture to chassis only A=M3x0.5P B=For fixture to pcb/chassis only B=M3x0.5P

ASSEMBLY INSTRUCTIONS U Case T=1.5mm Customer is advised to screw into the threads no more than 1.5mm



T=1.5mm

Brands		Alex		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
A.B	PE		_	-	<u> </u>
1	AC IN (N)			ii ii	
2	NO PIN	9396-3	96T series	VHR-3N	SVH-41T-P1.1
3	AC IN (L)		7		
4	+DC OUT	Terminal : M5 Pan HD screw in 2 positions. Torque to 8 lbs-in(90cNm) max			
5	-DC OUT				

Connector Pin (FAN)						
Brands		Alex		JST		
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal	
F1	+12V	OV 11050	OV T0501	VIID 0	SXH-002T-	
F2	GND	CX- H250- 02	CX- T2501	XHP-2	P0.6	



Conn	Connector Pin (CN1)						
E	Brands	Cherng Weei		JST			
PIN#	Single	Single Mating Housing		Mating Housing			
C1	-5V SB						
C2	+5V SB						
C3	GND						
C4	DC-OK	PHD-H20-	PHD-T20	PHDR-	SPHD-		
C5	-RC	2X4P	P	08VS	001T- P0.5		
C6	+RC						
C7	-S				W. W.		
C8	+S						

Matina F	Mating Housing Pin (CN3)							
Maning I	Mulling Housing Fill (CNS)							
Br	ands	Cherng Weei	JST					
PIN#	Single	Connector	Connector					
C1	-5V SB							
C2	+5V SB							
C3	GND	CP-W20-06	B6B-PH-K-S					
C4	DC-OK							
C5	-RC	100 mm						
C6	+RC							

Connecto	or Pin (CN2)				
Brands		Cherng Weei		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
C1	-S			-	
C2	+S	CP- H20-02	CP- T20B	PHR-2	SPH- 002T- P0.5L

Connector Pin (CN4)							
Brands		Cherng Weei		JST			
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal		
C1	LS				SPH-		
C2	LS	CP- H20-02	CP- T20B	PHR-2	002T- P0.5L		

### FUNCTION DESCRIPITON of CN1 and CN3 (CN3 without C7 and C8 pin)

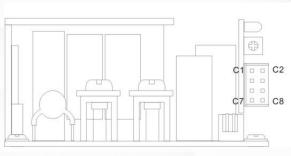
Pin No.	Function	Description
Cl	-5VSB	This pin connects to the negative terminal(-V). Return for DC-OK and -RC signal output.
C2	+5VSB	Stand by voltage output ground 4.2~5.5V, referenced to pin C1(-5VSB). The maximum load current is 1A with Fan, 0.4A without Fan
C3	GND	This pin connects to the negative terminal(-V). Return for DC-OK and -RC signal output.
C4	DC OK	DC-OK Signal is a DC output, referenced to pin C3(DC-OK GND).
C5	-RC	This pin connects to the negative terminal(-V). Return for DC-OK and -RC signal output.
C6	+RC	Turns the output on and off by electrical or dry contact between pin C5 (-RC), Short: Power OFF, Open: Power ON. The input voltage must be less than 1V in order to disable VOUT and greater than 3.3V (up to 5V) to enable it.
C7	-S	Negative sensing. The -S signal should be connected to the negative terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect.
C8	+S	Positive sensing. The +S signal should be connected to the positive terminal of the load. The +S and -S leads should be twisted in pair to minimize noise pick-up effect.



### **FUNCTION MANUAL & APPLICATION NOTE**

### 1. DC-OK Signal

Between DC-OK and GND	Output Status
3.7~6V	ON
0~1V	OFF

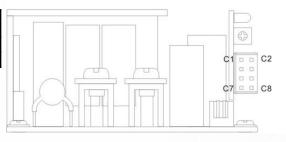


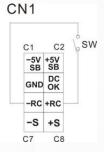
# CN1 C1 C2 -5V +5V SB SB GND OK -RC +RC -S +S C7 C8

### 2. Remote Control

It can be turned ON/OFF by using the "Remote Control" function.

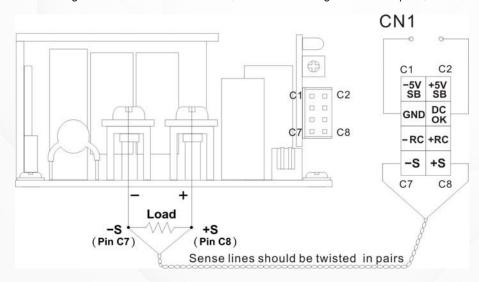
Between +RC and -RC	Output Status
SW ON (Short)	OFF
SW OFF (Open)	ON





### 3. +S and -S Sense

Shorter wiring to each unit is recommended, as well as twisting +S and -S in pairs, as shown below





# **ELECTRICAL SPECIFICATION - HDM500E SERIES**

Model No.		HDM500E-112C	S   HDM500E-1	15 HDM500E-124	1CS   HDM500E-148CS		
Max Output Wo	attage (W)	500 W	, in the				
	Voltage (Note 3)	90-264 VAC or	· 127-370 VDC				
	Frequency (Hz)	47-63 Hz		1 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
	Current (Full load)	< 6.3 A max. (115 VAC) / <3.15 A max. (230 VAC)					
Input	Inrush Current (<2ms) (Clod Start)	< 40 A max. (115 VAC) / < 80 A max. (230 VAC)					
	Leakage Current	< 0.1 mA max. (Input-Output)					
	Power Factor (at 230 VAC)	PF>0.94 at Full Load					
	Voltage (V.DC.)	12V	15V	24V	48V		
	Voltage Accuracy	±2%					
	Voltage Adj. Range (V.DC)	±4% Output Vo	ltage				
	Current (A) (max.)	41.5	33.3	20.8	10.41		
	Line Regulation (115-264 VAC)	±0.5%		-			
	Load Regulation (10-100%) (typ.)	±1%					
Output	Minimum Load	3%			4 1 4 W 1 4 W 2 W 2 W		
	Maximum Capacitive Load	5,000μF	3,750μF	2,500μF	1,250μF		
	Ripple & Noise (typ.)	160mV	160mV	240mV	480mV		
	Efficiency (at 230 VAC)	89%	89%	91%	92%		
	Hold-up Time (at 115 VAC)	8 ms min.					
	Over Power Protection	Auto recovery					
	Over Voltage Protection	Auto recovery					
<b>D</b>	Overt Temperature Protection	Auto recovery					
Protection		Protection leve	l 1 (nominal) : Co	ntinuous, Auto rec	covery		
	Short Circuit Protection	Protection leve	l 2 (instantaneou	s high current): L	atch		
	Input-Output (V.AC)	4000VAC or 56	S56VDC				
Isolation	Input-PE (V.AC)	2000V	r r	4 4			
	Output-PE (V.AC)	1500V					
	Operating Temperature	-30°C+70°C (	with derating)				
	Storage Temperature	-35°C+85°C					
		±0.03%/°C(0	50°C)		y		
	Temperature Coefficient	±0.06%/°C(-3	60~0°C)		and the second		
	Altitude During Operation	5000m					
	Humidity	95% RH			12.11		
Environment	Atmospheric Pressure	56 kPa to 106 kF	Pa	14 A7 L			
	MTBF		5°C (MIL-HDBK-2				
	Vibration	IEC60068-2-6	(10~500Hz, 2G 10	min./1cycle, 60mi	n. each along X, Y, Z axes)		
	Shock	IEC60068-2-27					
	Dimensions (L x W x H)		12 Inches ( 139.7	x 82.55 x 61.4 mm	) Tolerance 0.5 mm		
Physical	Weight	690 g	1200				
		Others: III / IE	↑ / EN 40401 ₹ 1r	d Edition & III / IE	C / EN 60950 AM2		
Safety	Approval		C / EN 60601 3.1		O / LIN 00730 PAVIZ		
Jaiery	Conducted and Radiated EMI		lucted class B, R				
EMC	FMS	FN60601-1-2 4t		adiated Class A			

EN60601-1-2 4th edition

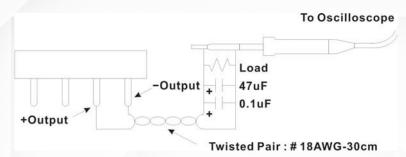
All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.



## **ELECTRICAL SPECIFICATION - HDM500E SERIES**

### NOTE

1. Ripple & Noise are measured at 20MHz of bandwidth with ceramic 0.1uF & chemi-con KY 47uF parallel capacitor.

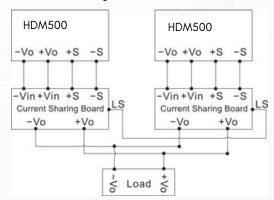


A 30cm twisted pair of no.18 AWG copper wire is connected to a 47uF and 0.1uF capacitor of proper polarity and voltage rating. The oscilloscope probe ground led should connect right to the ground ring of the probe and be as short as possible. The oscilloscope bandwidth should be at 20MHz and connected to AC ground.

- 2. Hold-up Time measured at 90% Vout.
- 3. Please check the derating curve for more details.
- Main Vout >3% Load, 12V (Aux) / 0.3A., 12V (Aux) need 0.1A Minimum Load, Auxiliary voltage output ground 10.2~13.3V
- 5. Strongly recommend to conduct this test with DC Voltage. If customer wishes to test with AC Voltage, please disconnect all Y-Capacitors from Digital Power power supply.
- 6. Current Share Board (Optional):
  - (a.)The output voltage difference of each parallel single element should be less than 0.2V.
  - (b.)Output power at parallel operation = rated power per unit x number of unit x 90%
  - (c.)Connect in parallel no more than 2 units. Please contact Digital Power for advice if more

than 2 is needed.

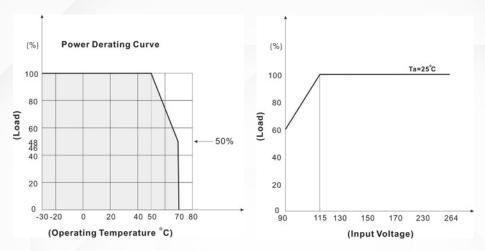
- (d.)Minimum Load Should be 15%.
- 7. CAUTION: Double pole, neutral fusing. Disconnect mains before servicing.



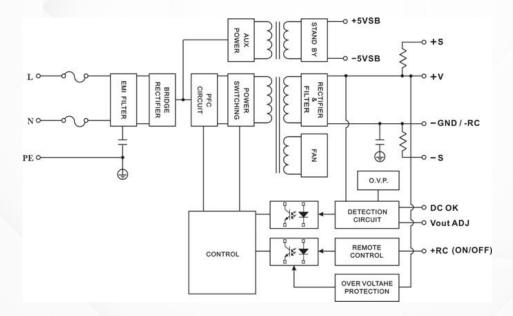


# **ELECTRICAL SPECIFICATION - HDM500E SERIES**

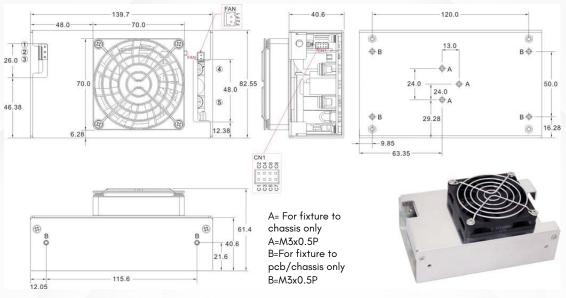
### **DERATING**



### **BLOCK DIAGRAM**

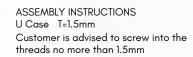


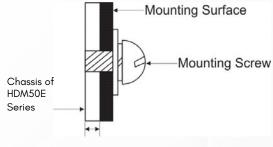




Br	ands	Alex		JST			
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal		
A.B	PE	_	_	-	_		
1	AC IN (N)	1					
2	NO PIN	9396-3	96T series	VHR-3N	SVH-41T-P1.1		
3	AC IN (L)			17.7			
4	+DC OUT	Terminal : M5 Pan HD screw in 2 positions.					
5	-DC OUT	Torque to 8 lbs-in(90cNm) max					

Connector Pin (CN1)								
	Bra	nds	Cherno	g Weei	؛ر	ST		
PIN#		Single	Mating Housing	Terminal	Mating Housing	Terminal		
C1		-5V SB	ste.					
C2		+5V SB						
C3		GND						
C4		DC-OK	PHXD-H20-	PHD-T20	PHDR-	SPHD-001T		
C5		-RC	2X4P	PHD-120	08VS	P0.5		
C6		+RC			1 7/2			
C7		-S						
C8		+S						



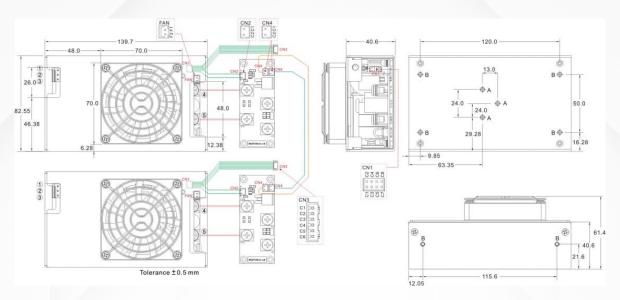


T=1.5mm

Connector Pin (FAN)								
Brands Alex JST								
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal			
F1	+12V	CX-	CX-	VIID 0	SXH- 002T-			
F2	GND	H250-02	T2501	XHP-2	P0.6			

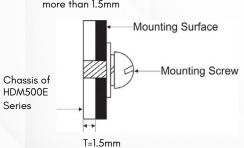


### **HDM500E** with Current Share Function



A= For fixture to chassis only A=M3x0.5P B=For fixture to pcb/chassis only B=M3x0.5P





Br	ands	Alex		JST		
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal	
A.B	PE	1		_		
1	AC IN (N)					
2	NO PIN	9396-3	96T series	VHR-3N	SVH-41T-P1.1	
3	AC IN (L)			2 7		
4	+DC OUT	Terminal : M5 Pan HD screw in 2 positions.				
5		Torque to 8 lbs-in(90cNm) max				

Connector Pin (FAN)							
Bro	ınds	Cherng Weei		JST			
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal		
F1	+12V	CX-	CX-	XHP-2	SXH- 002T-		
F2	GND	H250-02	T2501	XHP-2	P0.6		



		.,							
Conn	Connector Pin (CN1)								
E	Brands	Cherng Weei		JST					
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal				
C1	-5V SB								
C2	+5V SB								
C3	GND								
C4	DC-OK	PHD-H20-	PHD-T20	PHDR-	SPHD-				
C5	-RC	2X4P		08VS	001T- P0.5				
C6	+RC								
C7	-S	Ŷ.							
C8	+S								

Mating Housing Pin (CN3)					
Br	ands	Cherng Weei	JST		
PIN#	Single	Connector	Connector		
C1	-5V SB				
C2	+5V SB				
C3	GND	OD WOO O	DVD DIL K C		
C4	DC-OK	CP-W20-06	B6B-PH-K-S		
C5	-RC				
C6	+RC				

Connecto	r Pin (CN2)				
Bra	nds	Cher	Cherng Weei		JST
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
C1	-S				
C2	+S	CP- H20-02	CP- T20B	PHR-2	SPH- 002T- P0.5L

Connector Pin (CN4)								
Brands		Cherng Weei		JST				
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal			
C1	LS			13	SPH-			
C2	LS	CP- H20-02	CP- T20B	PHR-2	002T- P0.5L			

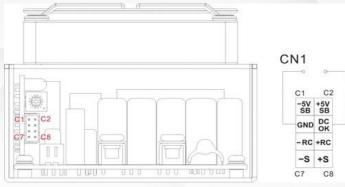
### FUNCTION DESCRIPITON of CN1 and CN3 (CN3 without C7 and C8 pin)

Pin No.	Function	Description
C1	-5VSB	This pin connects to the negative terminal(-V). Return for DC-OK and -RC signal output.
C2	+5VSB	Stand by voltage output ground 4.2~5.5V, referenced to pin C1(-5VSB). The maximum load current is 1A with Fan, 0.4A without Fan
C3	GND	This pin connects to the negative terminal(-V). Return for DC-OK and -RC signal output.
C4	DC OK	DC-OK Signal is a DC output, referenced to pin C3(DC-OK GND).
C5	-RC	This pin connects to the negative terminal(-V). Return for DC-OK and -RC signal output.
C6	+RC	Turns the output on and off by electrical or dry contact between pin C5 (-RC), Short: Power OFF, Open: Power ON. The input voltage must be less than IV in order to disable VOUT and greater than 3.3V (up to 5V) to enable it.
C7	-S	Negative sensing. The -S signal should be connected to the negative terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect.
C8	+S	Positive sensing. The +S signal should be connected to the positive terminal of the load. The +S and -S leads should be twisted in pair to minimize noise pick-up effect.

### **FUNCTION MANUAL & APPLICATION NOTE**

1. DC-OK Signal

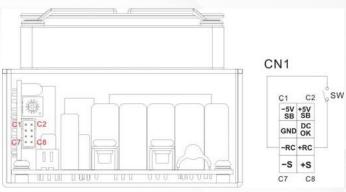
Between	Output			
DC-OK and GND	Status			
3.7~6V	ON			
0~1V	OFF			



2. Remote Control

It can be turned ON/OFF by using the "Remote Control" function.

Between	Output
+RC and -RC	Status
SW ON (Short)	OFF
SW OFF (Open)	ON



3. +S and -S Sense Shorter wiring to each unit is recommended, as well as twisting +S and -S in pairs, as shown below



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Digital Power Corporation designs and manufactures full custom, value added and standard comprehensive power solutions for the most demanding applications in the defense, healthcare, telecom, and industrial markets.

