

**Professionally approved products.**

## Datasheet

**RS 504W Isolated DC-DC Converter, Vin 72 → 144 V dc, Vout 48V dc, I/O isolation 2000V ac**

RS Stock number 678-3663



### ■ Features :

- DC input active surge current limiting
- Wide 4:1~2:1 DC input range (24V: 19~72VDC, 96V:72~144VDC)
- Protections: Short circuit / Overload / Over voltage / Over temperature / Input polarity(by fuse)
- 2000VAC I/O Isolation
- Forced air cooling by built-in DC fan with fan speed control function
- Output OK Signal
- Built-in remote ON-OFF control
- Built-in remote sense function

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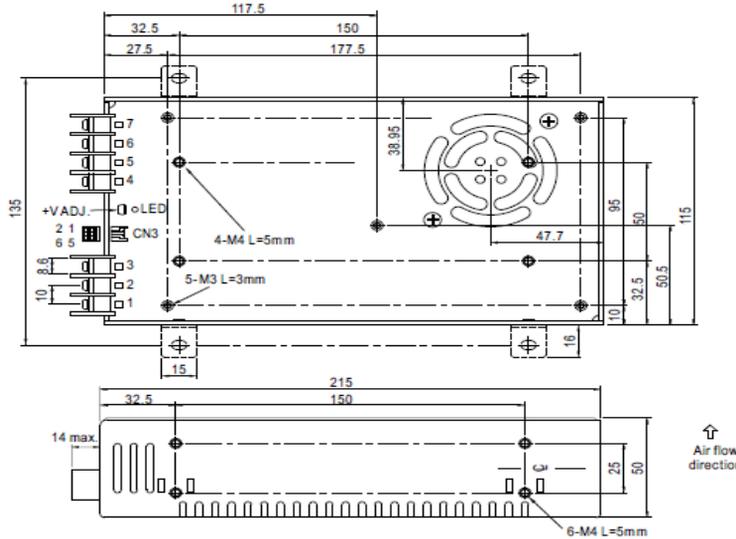
# Datasheet

MODEL		SD-500L-12	SD-500L-24	SD-500L-48	SD-500H-12	SD-500H-24	SD-500H-48	
OUTPUT	DC VOLTAGE	12V	24V	48V	12V	24V	48V	
	RATED CURRENT	40A	21A	10.5A	40A	21A	10.5A	
	CURRENT RANGE	0 ~ 40A	0 ~ 21A	0 ~ 10.5A	0 ~ 40A	0 ~ 21A	0 ~ 10.5A	
	RATED POWER	480W	504W	504W	480W	504W	504W	
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	
	VOLTAGE ADJ. RANGE	11 ~ 15V	23 ~ 30V	46 ~ 60V	11 ~ 15V	23 ~ 30V	46 ~ 60V	
	VOLTAGE TOLERANCE Note.3	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	LOAD REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	SETUP, RISE TIME	500ms, 50ms at full load						
INPUT	VOLTAGE RANGE Note.5	19 ~ 72VDC			72 ~ 144VDC			
	EFFICIENCY (Typ.)	86%	88%	89%	87%	89%	90%	
	DC CURRENT (Typ.)	24.2A/19VDC	24.8A/24VDC	12A/48VDC	8A/72VDC	6A/96VDC		
	CURRENT (AT NO LOAD)	Max. 0.2A/48VDC			Max. 0.1A/96VDC			
	INRUSH CURRENT (Typ.)	60A/48VDC			60A/96VDC			
PROTECTION	OVERLOAD	105 ~ 125% rated output power Protection type : Constant current limiting, shut down o/p voltage after about 5 sec., re-power on to recover						
	OVER VOLTAGE	16 ~ 19V	30.8 ~ 35.2V	62 ~ 68V	16 ~ 19V	30.8 ~ 35.2V	62 ~ 68V	
	OVER TEMPERATURE	80°C ±5°C (TSW1) detect on heatsink of power transistor 80°C ±5°C (L-48V, H-24V, H-48V), 85°C ±5°C (L-24V), 90°C ±5°C (L-12V), 95°C ±5°C (H-12V) (TSW2 : detect on heatsink of o/p diode) Protection type : Shut down o/p voltage, recovers automatically after temperature goes down						
FUNCTION	REMOTE ON/OFF CONTROL	Please refer to function manual						
	OUTPUT OK SIGNAL	Open collector signal low when PSU turns on, max. sink current : 10mA						
ENVIRONMENT	WORKING TEMP.	-20 ~ +60°C (Refer to output load derating curve)						
	WORKING HUMIDITY	20 ~ 90% RH non-condensing						
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH						
	TEMP. COEFFICIENT	±0.02%/°C (0 ~ 50°C)						
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes						
SAFETY & EMC (Note 4)	SAFETY STANDARDS	IEC60950-1 CB approved by TUV						
	WITHSTAND VOLTAGE	I/P-O/P:2KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC						
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC 25°C 70%RH						
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B						
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,6,8; ENV50204, light industry level, criteria A						
OTHERS	MTBF	196.3K hrs min. MIL-HDBK-217F (25°C)						
	DIMENSION	215*115*50mm (L*W*H)						
	PACKING	1.15Kg; 12pcs/14.8Kg/0.92CUFT						
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 48, 96VDC input, rated load and 25°C of ambient temperature.</li> <li>Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor.</li> <li>Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.</li> <li>Derating may be needed under low input voltages. Please check the derating curve for more details.</li> </ol>							

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## Mechanical Specification

Case No. 912A Unit:mm



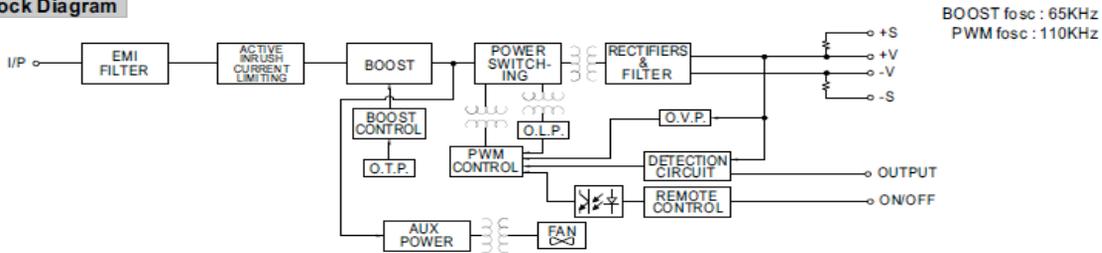
DC Input Terminal Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment
1	DC INPUT V+	4,5	-V
2	DC INPUT V-	6,7	+V
3	FG $\perp$		

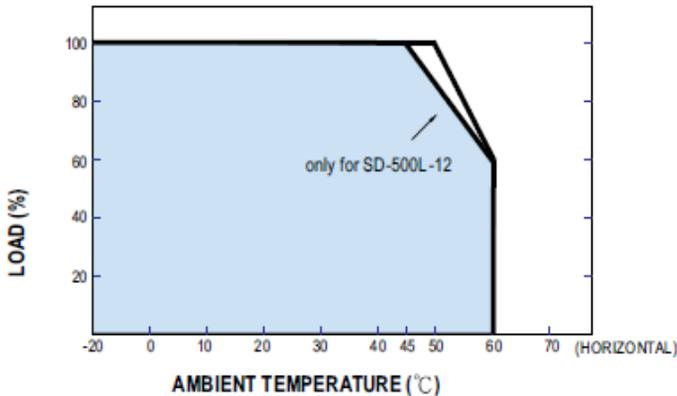
Control Pin No. Assignment (CN3) : JST B6B-PHDSS or equivalent

Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	+S	4	GND	JST PHDR-06VS or equivalent	JST SPHD-002T-P0.5 or equivalent
2	-S	5	RC		
3	OUTPUT OK	6	RCG		

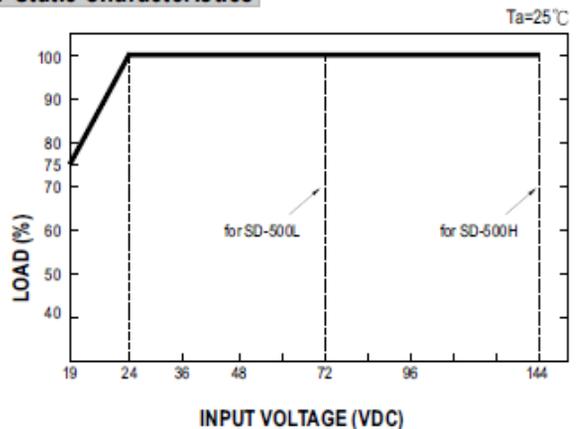
## Block Diagram



## Derating Curve



## Static Characteristics



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### Function Description of CN3

Pin No.	Function	Description
1	+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. The maximum line drop compensation is 0.5V.
2	-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. The maximum line drop compensation is 0.5V.
3	O/P OK	Open collector signal, reference to pin4(GND). Low when PSU turns on. The maximum sink current is 10mA and the maximum external voltage is 13V.
4	GND	These pins connect to the negative terminal (-V).
5	RC	Remote ON/OFF
6	RCG	Remote ON/OFF ground

### Function Manual

#### 1. Remote ON/OFF

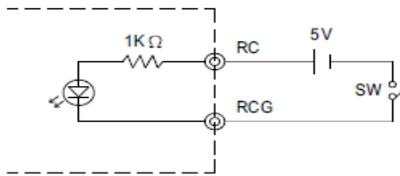
- (1) Remote ON/OFF control becomes available by applying voltage in CN3
- (2) Table 1.1 shows the specification of Remote ON/OFF function
- (3) Fig.1.2 shows the example to connect Remote ON/OFF control function

Table 1.1 Specification of Remote ON/OFF

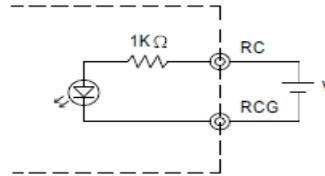
Connection Method	Fig. 1.2(A)	Fig. 1.2(B)
Output on	SW Open	V=0~0.8Vdc
Output off	SW Close	V=4~10Vdc

Fig.1.2 Examples of connecting remote ON/OFF

(A) Using external voltage source



(B) Using external voltage source



#### 2. Output OK signal

\*Output OK\* is an open collector signal.

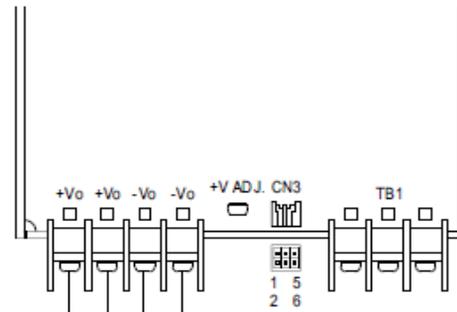
It indicates the output status of the PSU. It can operate in two ways : One is sinking current from external signal ; the other is sending out a voltage signal.

##### 2-1 Sink current :

The maximum sink current is 10mA and the maximum external voltage is 13V.

##### 2-2 Voltage signal :

Between O/P OK(pin3) and GND(pin4)	Output Status
0 ~ 0.5V	ON
12 ~ 13V	OFF

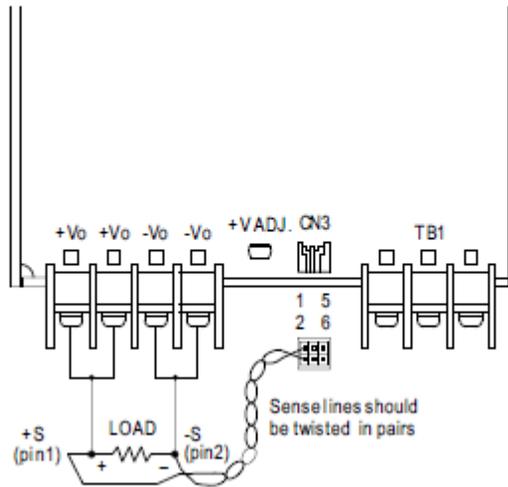


1	CN3	5
+S	O/P OK	RC
-S	GND	RCG
2		6

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## 3.Remote Sense

The remote sensing compensates voltage drop on the load wiring up to 0.5V.



1	CN3	5
+S	Q/P OK	RC
-S	GND	RCG
2		6