



## 500ACMUP\_S4 Series

500W - Open Frame Type Switching Power Supply - Universal Input - Isolated & Regulated

### AC-DC Converter

**500 Watt**

- ⊕ Universal input: 90~264VAC
- ⊕ High efficiency: >83% typical
- ⊕ Short circuit protection (SCP)
- ⊕ Over load protection (OLP)
- ⊕ Over voltage protection (OVP)
- ⊕ RoHS compliant
- ⊕ Medical 60601-1 3<sup>rd</sup> Edition approved
- ⊕ U-Channel, End fan and Top fan types available

The 500ACMUP\_S4 series is a compact size power converter offered by Gaptec. It features universal input voltage, taking AC input voltage, low power consumption, high efficiency, high reliability, safer isolation. It offers good EMC performance, meets IEC/EN60601-1, UL60601-1 and EN60601-1-2 standards, and is widely used in medical instrumentation and critical applications in commercial and industrial electronic equipment.



Approval	Model <sup>1)</sup>	Power [W]	Output voltage [V]	max. <sup>2)</sup>	Load [A] max. convection <sup>3)</sup>	Ripple & Noise [mV, V <sub>I</sub> ]	O/P regulation <sup>4)</sup> [%]	Efficiency <sup>5)</sup> [230VAC, %, typ]
UL/CE	500ACMUP_12S4	500	12	30	41.67	120	±1	>83
UL/CE	500ACMUP_24S4	500	24	15	20.84	240	±1	>83
UL/CE	500ACMUP_30S4	500	30	12	16.67	300	±1	>83
UL/CE	500ACMUP_36S4	500	36	10	13.89	360	±1	>83
UL/CE	500ACMUP_48S4	500	48	7.5	10.42	480	±1	>83
UL/CE	500ACMUP_54S4	500	54	6.67	9.26	540	±1	>83
UL/CE	500ACMUP_57S4	500	57	6.32	8.78	570	±1	>83

1. U= U-channel; Suffix S for End fan, suffix T for Fan on top

2. max output 500W force air 30CFM cooling, Option S and T: max output 500W, +50°C ambient max.

3. max output 270W @ +40°C ambient max.

4. At 25°C including initial tolerance, line voltage, load currents and output voltages adjusted to factory settings

5. Ripple and noise are measured at oscilloscope 20MHz bandwidth by a 10uF electrolytic capacitor and a 0.1uF ceramic capacitor in parallel at output connector.

Input specifications		
Input voltage range	90-264 VAC	
Input frequency	47~63Hz	
Power factor	115VAC • 0.95(max)	230VAC • 0.90 (max)
Input current	115VAC • 6A (max)	230VAC • 3A (max)
Inrush current (cold start @25°C)	115VAC • <25A peak	230VAC • <50A peak
Leakage current	< 300μA/264VAC	

Protection specifications	
Short circuit protection	Protection type: Auto-recovery
Over-voltage protection	Protection type: 130% max. above nominal output, shutdown and latch off
Over-load protection	Protection type: 110% to 150% maximum rating, auto-recovery

#### Example:

**500ACMUP\_12S4**

**500= 500Watt; AC= AC-DC; MUP= series; 12Vout; S= Single Output; 4= 4kVAC**

Output specifications						
Item	Test conditions	Min	Typ	Max	Units	
Maximum power	with 30CFM forced air cooling (U-channel type)			500	W	
Output voltage accuracy	Full load		±2		%	
Hold-up time	@full load, 115VAC		20		ms	
Current share (single wire)	Up to 4 units can be paralleled [Optional] within 10% accuracy at full load					
DC fan output	+12V/1A					

#### Note:

- This product is not designed for use in critical life support systems, equipment used in hazardous environment, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other than the ones listed in this datasheet.**
- Output connector options:  
Z=T ( Terminal block type, pitch 8.25mm): Suitable for all voltages  
Z=C ( Connector type, pitch=3.96mm ): Suitable for 24V up
- All models are equipped with 5Vsb & 12V fan outputs.
- All models have total power 250W Max. convection or 360W Max. forced air cooling.
- Ripple and noise are measured at oscilloscope 20MHz bandwidth by a 10uF electrolytic capacitor and a 0.1uF ceramic capacitor in parallel at output connector.

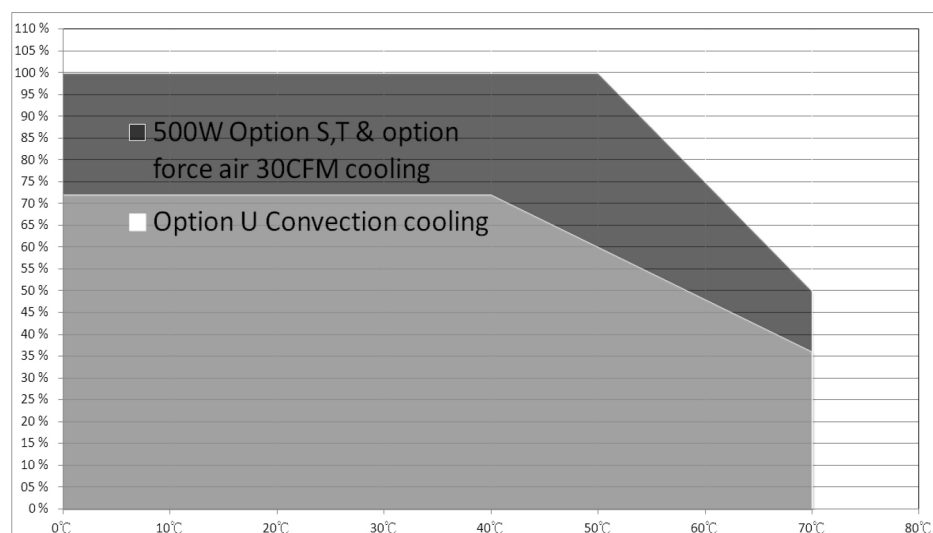
## 500ACMUP\_S4 Series

500W - Open Frame Type Switching Power Supply - Universal Input - Isolated & Regulated

Common specifications			
Operating temperature range	0°C ~ +70°C (with derating)		
Storage temperature range	-20°C ~ +85°C		
Humidity (non-condensing)	0-90% MAX		
Cooling	+5VSB/0.25A convection cooling, 1.0A forced air cooling		
Temperature coefficient	±0.05%/°C		
I/O-isolation voltage	4000VAC		
Remote control	(Inhibit) function		
EMC / EMI / Conducted and radiated EMI	EN55011 class B (Radiation Class A for 500ACMUP_S4 series)		
EMC / EMS / ESD	IEC/EN 61000-4-2	Contact ±8KV / Air ±15KV	perf. Criteria B
EMC / EMS / Radiated Immunity	IEC/EN 61000-4-3	3V/m	perf. Criteria A
EMC / EMS / Fast Transient	IEC/EN 61000-4-4	±2kV	perf. Criteria B
EMC / EMS / Surge	IEC/EN 61000-4-5	Line to Line: ±2KV Line to PE: ±4KV	perf. Criteria B
EMC / EMS / Conducted immunity	IEC/EN 61000-4-6	10Vr.m.s	perf. Criteria A
EMC / EMS / PFMF	IEC/EN 61000-4-8	30A/m	perf. Criteria A
EMC / EMS / Dips	IEC/EN 61000-4-11	30% / 500ms	perf. Criteria B
EMC / EMS / Interruption	EN61000-4-11	>95% 5000ms	
Safety standards	UL60601-1 3 <sup>rd</sup> Edition CSA-C22.2 No.60601-1 3 <sup>rd</sup> Edition EN60601-1 3 <sup>rd</sup> Edition EN60601-1 3 <sup>rd</sup> Edition		
EMC standards	EN60601-1-2 EN 55011 Class B FCC Part 18 Class B CE		
MTBF	100,000 h @25°C ambient temperature, full load		
Package	L203.2 × W118.5 × H42.0 mm / End fan type: L229.4 × W118.5 × H43.0 mm / Top fan type: L203.2 × W118.5 × H66 mm		
Weight	860g / End fan type: 980g / Top fan type: 990g		

## Typical characteristics

Derating curve



## Mechanical specifications

### MATCHING CONNECTORS

#### CN1: Input Connector

3-Pole Terminal block pitch: 8.25mm rate 20A/300V

Pin #	Signal
1	AC Neutral
2	AC Line
3	F.G.

#### CN2: +5VSB Output Connector

JST B2B-XH-A pitch: 2.5mm or equivalent, mates with female housing JST XHP-2 or equivalent

Pin #	Signal
1	+5VSB
2	GND

#### CN3: Remote Sense Connector

JST B6B-XH-A pitch: 2.5mm or equivalent, mates with female housing JST XHP-6 or equivalent

Pin #	Signal
1	Sense +
2	Sense -
3	+5VSB
4	GND
5	INHIBIT (Remote control)
6	Current Share

#### CN5: Fan control & Power Good Signal Connector

JST RF-H062TD-1130 pitch: 2.54mm or equivalent, mates with female housing JST RF-06 or equivalent

Pin #	Signal
1	FAN FAULT
2, 3	FAN FULL SPEED
4	POWER GOOD
5	GND
6	GND

#### FAN1: Fan Output Connector

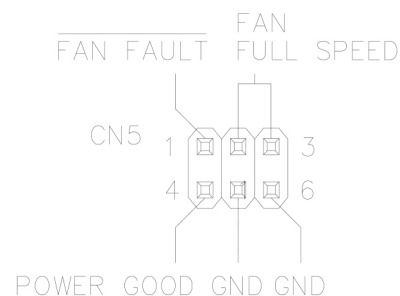
JST S2B-XH-A pitch: 2.5mm or equivalent, mates with female housing JST XHP-2 or equivalent

Pin #	Signal
1	+12VDC FAN+
2	+12VDC FAN-

#### FAN2: Fan Output Connector

JST B2B-XH-A pitch: 2.5mm or equivalent, mates with female housing JST XHP-2 or equivalent

Pin #	Signal
1	+12VDC FAN+
2	+12VDC FAN-



FAN FAULT: Fan status indication, Fan Good: Logic level HIGH(+5V), Fan Fault: Logic level LOW(0V)

FAN FULL SPEED: Short these 2 pins ( #2 and #3 ) with mini-jumper to get highest fan speed

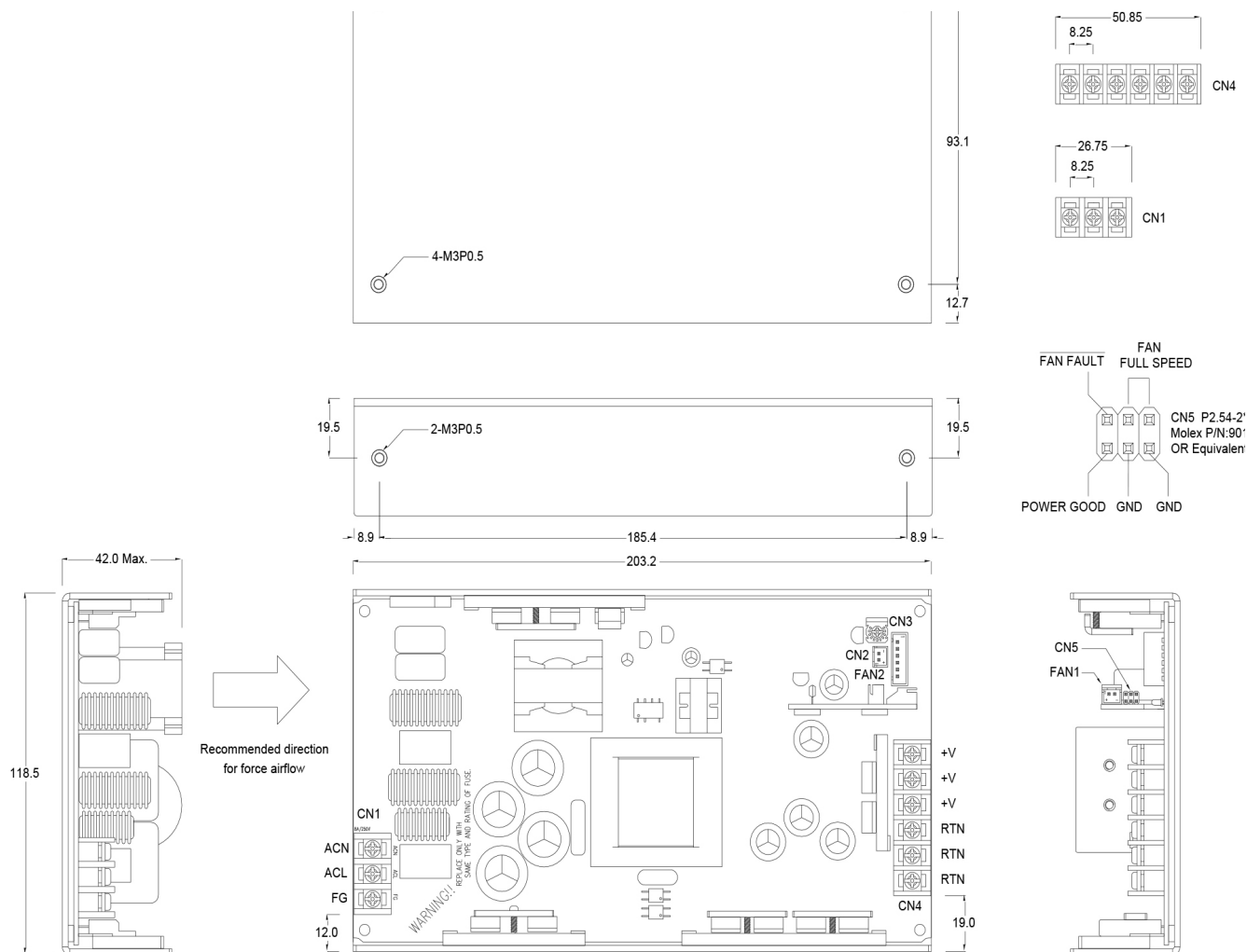
POWER GOOD: Power Good: Logic level HIGH(+5V), Power Fault: Logic LOW(0V)

## 500ACMUP\_S4 Series

500W - Open Frame Type Switching Power Supply - Universal Input - Isolated & Regulated

### Mechanical dimensions

U channel

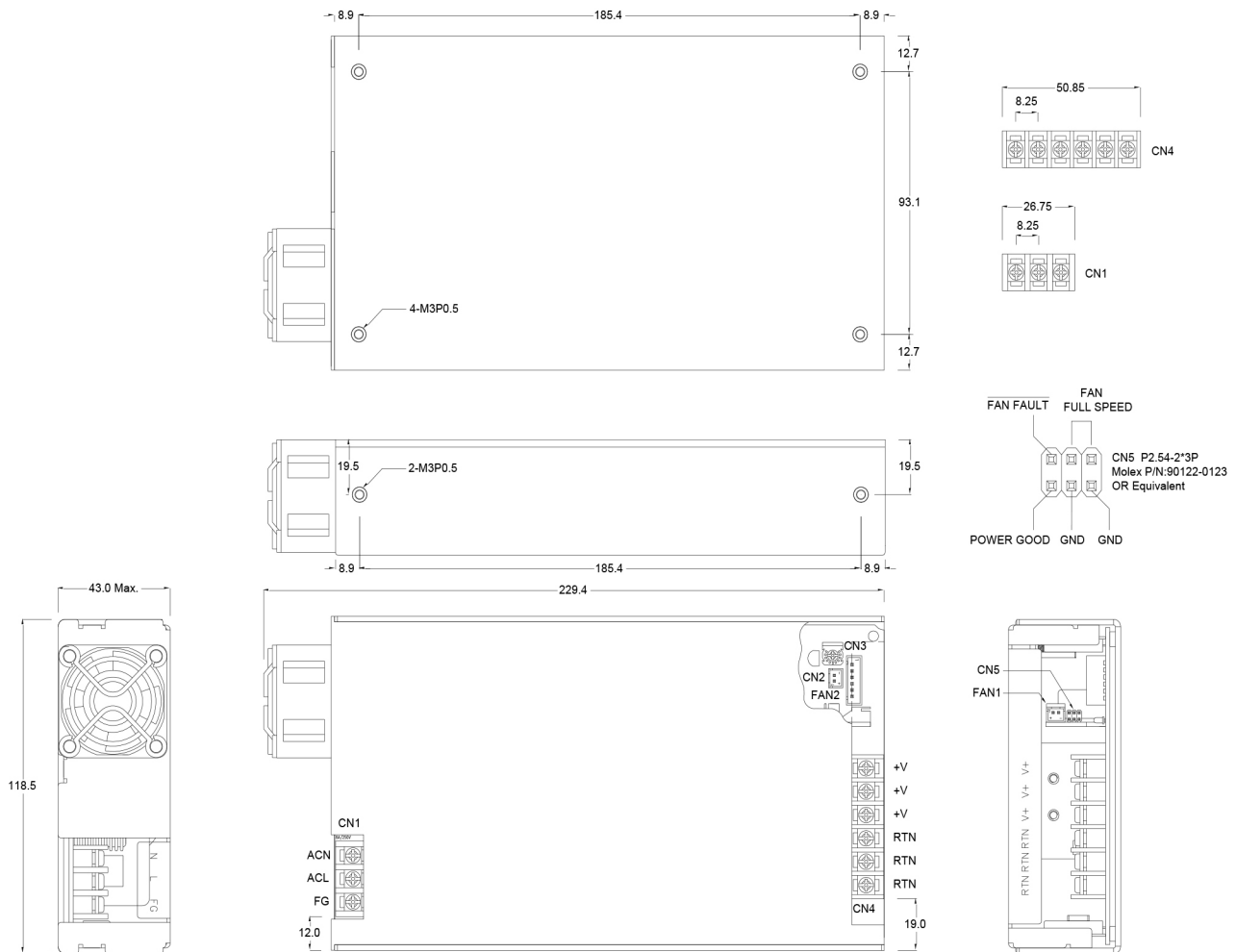


## 500ACMUP\_S4 Series

500W - Open Frame Type Switching Power Supply - Universal Input - Isolated & Regulated

### Mechanical dimensions

End fan type



## 500ACMUP\_S4 Series

500W - Open Frame Type Switching Power Supply - Universal Input - Isolated & Regulated

### Mechanical dimensions

Top fan type

