

Users Manual

ZM400 / 500 - LE



Two Forward Switching Power Supply

※To ensure safe and easy installation, please read the following precautions.

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1. Warnings and Safety Precautions



Neglecting the following may cause serious injury or death.

- ▶ Opening the cover of the product while the power cord is plugged into an outlet may cause electrocution or critical damage to the product.
- ▶ Handling the power cord with wet hands may cause electrocution.
- ▶ Inserting fingers or metallic objects into the cooling fan may cause injury or electrocution.



Neglecting the following may cause minor injuries, degrade product conditions or cause malfunction.

- ▶ Operating the product in an extremely cold or hot environment can degrade product performance and lifespan.
- ▶ Exposure to liquids may cause malfunction.
- ▶ Operation in a humid or non-ventilated environment may reduce product lifespan.
- ▶ Plugging the main power connector P1 into the motherboard while the product is connected to the AC power source may cause damage to the motherboard.
- ▶ Make sure that the connectors are connected to their designated locations, and that the connectors are not oriented in the wrong direction when connecting the DC output connectors.
- ▶ Please use gloves to prevent injuries during installation.
- ▶ Product designs and specifications may be revised without prior notification to improve quality and performance.

Disclaimer) Zalman Tech Co., Ltd. is not responsible for any damages due to external causes, including but not limited to, improper use, problems with electrical power, accident, neglect, alteration, repair, improper installation, or improper testing.

2. Components



Power Supply



Four Screw



Five Cable Ties



AC Power Cord



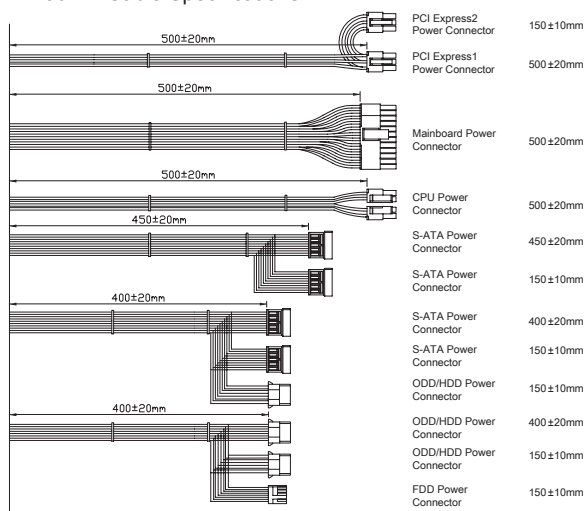
User's Manual

3. Specifications

1) ZM400-LE Electrical & Physical Specifications

AC Input Range	Voltage	220 or 230VAC		Vout	Output Load Rating			Combined Power	
	Frequency	47Hz ~ 63Hz			I _{min}	I _{max}	I _{base}		
AC Input Current	220VAC	4.5A		+3.3V	0.1A	16A		120W	400W
	230VAC			+5V	0.2A	15A			
PFC Type	None PFC			+12V1	0.1A	17A		300W	
Power Factor Correction	Max 50%			+12V2	0.5A	14A	18A		
Inrush Current Limit (@ Cold Start at 25°C)	220VAC	Max 100A		-12V	0.0A	0.3A		3.6W	
	230VAC			+5VSB	0.0A	2.0A	3.0A		
Efficiency	Max 81% @230VAC, Typical load			Ambient Temperature					
DC Output Voltage Regulation	Vout	Typical load		Operation	0 ~ +40°C				
	+3.3VDC	±5%	+3.14 ~ +3.47V	Stored	-40 ~ +70°C				
	+5VDC	±5%	+4.75 ~ +5.25V	Ambient Humidity					
	+12V1DC	±5%	+11.4 ~ +12.6V	Operation	5% ~ 85% RH				
	+12V2DC	±5%	+11.4 ~ +12.6V	Stored	5% ~ 95% RH				
	-12VDC	±10%	-10.8 ~ -13.0V	Product Dimensions					
DC Output Ripple & Noise	+5VSB	±5%	+4.75 ~ +5.25V	140 (L) × 150 (W) × 86 (H) mm					
	Vout	Standard Range		Product Weight					
	+3.3VDC	50mV		1.7 kg (Full Package)					
	+5VDC	50mV		Protection Functions					
	+12V1DC	120mV		Over-Voltage Protection (OVP)					
	+12V2DC	120mV		Under-Voltage Protection (UVP)					
-12VDC	120mV		Short-Circuit Protection (SCP)						
+5VSB	50mV		Over-Power Protection (OPP)						

2) ZM400-LE Cable Specifications



3. Specifications

3) ZM500-LE Electrical & Physical Specifications

AC Input Range	Voltage	220 or 230VAC		Vout	Output Load Rating			Combined Power	
	Frequency	47Hz ~ 63Hz			I _{min}	I _{max}	I _{base}		
AC Input Current	220VAC	4.5A		+3.3V	0.1A	18A		120W	500W
	230VAC			+5V	0.2A	15A			
PFC Type	None PFC			+12V1	0.1A	20A		444W	
Power Factor Correction	Max 50%			+12V2	0.5A	20A	22A		
Inrush Current Limit (@ Cold Start at 25°C)	220VAC	Max 100A		-12V	0.0A	0.3A		3.6W	
	230VAC			+5VSB	0.0A	2.0A	3.0A		
Efficiency	Max 81% @ 230VAC, Typical load			Ambient Temperature					
DC Output Voltage Regulation	Vout	Stable Range		Operation	0°C ~ +40°C				
	+3.3VDC	±5%	+3.14 ~ +3.47V	Stored	-40°C ~ +70°C				
	+5VDC	±5%	+4.75 ~ +5.25V	Ambient Humidity					
	+12V1DC	±5%	+11.4 ~ +12.6V	Operation	5% ~ 85% RH				
	+12V2DC	±5%	+11.4 ~ +12.6V	Stored	5% ~ 95% RH				
	-12VDC	±10%	-10.8 ~ -13.0V	Product Dimensions					
DC Output Ripple & Noise	+5VSB	±5%	+4.75 ~ +5.25V	140 (L) × 150 (W) × 86 (H) mm					
	Vout	Standard Range		Product Weight					
	+3.3VDC	50mV		1.8 kg (Full Package)					
	+5VDC	50mV		Protection Functions					
	+12V1DC	120mV		Over-Voltage Protection (OVP)					
	+12V2DC	120mV		Under-Voltage Protection (UVP)					
-12VDC	120mV		Short-Circuit Protection (SCP)						
+5VSB	50mV		Over-Power Protection (OPP)						

4) ZM500-LE Cable Specifications

	PCI Express2 Power Connector	150±10mm
	PCI Express1 Power Connector	500±20mm
	Mainboard Power Connector	500±20mm
	CPU Power Connector	500±20mm
	S-ATA Power Connector	450±20mm
	S-ATA Power Connector	150±10mm
	S-ATA Power Connector	150±10mm
	S-ATA Power Connector	400±20mm
	S-ATA Power Connector	150±10mm
	ODD/HDD Power Connector	150±10mm
	S-ATA Power Connector	400±20mm
	ODD/HDD Power Connector	150±10mm
	ODD/HDD Power Connector	150±10mm
	FDD Power Connector	150±10mm

4. Certifications

CB



RoHS

