

# Thunder Shield Series



TS650B

TS1250B

**TS400 / TS500 / TS500B / TS650 / TS650B / TS1000 / TS1000B / TS1250 / TS1250B / TS1700 / TS1700B / TS2250 / TS2250B**

Voltage and frequency fluctuations, surges, sags and power cuts are likely to seriously damage your sensitive equipment. These problems occur every day all over the world and are more frequent in areas with overloaded power grid systems.

The TS Series are the ideal solution to protect your small office and home office systems (SOHO), as well as other electronic devices, which are needed for daily use. Not only is TS a great value for your money but also is the UPS that is extremely easy to handle. TS fulfills the requirements of many types of users.

With their built-in batteries, most UPS products can do their jobs. However, the batteries would soon deteriorate if used often. This is where the OPTI-UPS TS Series rise above the others. With their wide range AVR, battery usage is limited to very extreme conditions while normal voltage fluctuations are easily controlled by the UPS. When things get tough on the utility source, the TS Series product line is there to give the right amount of battery backup.

The TS Series product line is your insurance to continuous performance and peace of mind!

## Features

- Line interactive design
- Boost and buck AVR (Auto Voltage Regulation)
- Fully digitized microprocessor control
- Energy saving function (UPS green mode)
- 50 / 60 Hz frequency auto sensing and selection
- Cold start function (DC power on)
- Short circuit and overload protection
- RS232 communication port
- Tel / Modem / LAN surge protection
- History record of power failure events
- Smart power management software
- Scheduled shutdown & reboot
- Generator compatible (Features of TSB models only)



For Mac OS support please purchase the RS232 to USB cable.

# Thunder Shield Series

PC & WORKSTATION

TS400 / TS500 / TS500B / TS650 / TS650B / TS1000 / TS1000B / TS1250 / TS1250B / TS1700 / TS1700B / TS2250 / TS2250B

HOME & WORKSTATION

NETWORK & SERVER

DATA CENTER & FACILITY

SOFTWARE

HOME & OFFICE APPLIANCES

FACTORY & AUTOMATION EQUIPMENT

## Front Panel

TS400 / TS500 / TS500B / TS650 / TS650B / TS1000 / TS1000B / TS1250 / TS1250B / TS1700 / TS1700B / TS2250 / TS2250B



- 1 Audible Alarm
  - Mains fault
  - Battery low
  - Overload
  - Battery fault
- 2 LED
  - AC mode (LED is on)
  - Battery mode (LED flashes slowly)
  - Battery fault (LED flashes rapidly)
  - Overload (LED flashes rapidly)
- 3 ON/OFF/Test/Mute button

## Rear Panel

TS2250B US



110V  
120V

- A Input
- B UPS Output
- C Communication Port
- D Data Line Protection
- E Circuit Breaker

## Rear Panel

TS400 / TS500 / TS650 / TS1000



110V  
120V



220V  
230V  
240V

TS500B / TS650B / TS1000B



110V  
120V



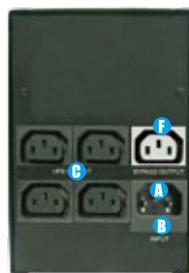
220V  
230V  
240V

- A Input
- B Fuse
- C UPS Output
- D Communication Port
- E Data Line Protection

TS1250



110V  
120V



220V  
230V  
240V

TS1250B



110V  
120V



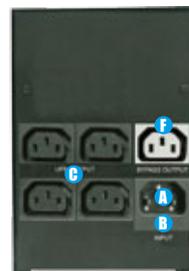
220V  
230V  
240V

- A Input
- B Fuse
- C UPS Output
- D Communication Port
- E Data Line Protection
- F Bypass Output
- G Circuit Breaker

TS1700 / TS2250



110V  
120V



220V  
230V  
240V

TS1700B / TS2250B IEC



110V  
120V



220V  
230V  
240V

- A Input
- B Fuse
- C UPS Output
- D Communication Port
- E Data Line Protection
- F Bypass Output (UPS Output for TS2250 / TS2250B)
- G Circuit Breaker

# Thunder Shield Series

## TS400 / TS500 / TS500B / TS650 / TS650B

### Specifications

Model Name	TS400	TS500	TS500B	TS650	TS650B
Topology	Line-Interactive, Low Frequency				
On-battery Output Waveform	Simulated Sine Wave				
Maximum Capacity (VA / W)	400VA / 240W	500VA / 300W		600VA / 360W	
<b>INPUT</b>					
Nominal Input Voltage	110 / 120Vac or 220 / 230 / 240Vac <sup>(1)</sup>				
Nominal Input Frequency	50Hz / 60Hz Auto Sensing				
Input Voltage Range	Rated Voltage $\pm$ 25%				
<b>OUTPUT</b>					
Nominal Output Voltage	110 / 120Vac or 220 / 230 / 240Vac <sup>(1)</sup>				
Output Voltage Regulation	Rated Voltage $\pm$ 5% (on battery)				
Transfer Time(Typical)	2~4 ms				
Start on Battery	Yes				
Auto Restart	Yes				
Automatic Voltage Regulation (AVR)	AVR increases the output voltage by 15% while the input voltage decreases by 9 % to 25 % AVR decreases the output voltage by 13% while the input voltage increases by 9 % to 25 %				
Number of Outlets	2 Battery backup outlets (IEC 10A) 2 Battery backup outlets (NEMA 15A)				
<b>PROTECTION</b>					
Data Line Surge Protection	None	RJ11 / RJ45 <sup>*1</sup>			
Surge Energy Rating	460 Joules(IEC models), 265 Joules(NEMA models)				
Overload Protection	UPS shuts down at 110% load after 60 secs or 130% load after 3 secs				
Over Current Protection	Fuse				
Discharge Protection	Keylock				
<b>BATTERY</b>					
Configuration	12V (12V 4.5AHx1)	12V (12V 7.2AHx1)			
Typical Backup Time**	15 min	19 min		17 min	
Recharge Time to 90% (Typical)	< 4 Hours				
<b>ADVANCED WARNINGS / DIAGNOSTICS</b>					
Front Panel	AC Mode / Battery Mode / Battery Fault / Overload				
Audible Alarms	Battery Mode / Battery Low / Overload				
<b>COMMUNICATION INTERFACE</b>					
Communication Port	None	RS232 <sup>*2</sup>			
<b>ENVIRONMENTAL</b>					
Operation Temperature	0~40°C / 32~104°F				
Storage Temperature	-20~60°C / -4~140°F				
Relative Humidity	0~95% Non condensing				
Audible Noise	< 40 dBA				
<b>PHYSICAL</b>					
Dimensions	Physical / Packing (in)	10.2x3.8x5.3 / 11.8x5.5x8.6	12.5x3.8x5.3 / 14.3x5.5x8.7		
	LxWxH (mm)	260x97x135 / 299x139x218	320x97x135 / 364x139x220		
Weight (Net / Gross)	(lbs)	9.2 / 10.1	13.9 / 15.0		14.3 / 15.4
	(kg)	4.2 / 4.6	6.3 / 6.8		6.5 / 7.0
<b>CONFORMANCE</b>					
Approvals	UL / cUL, CE, GOST-R				

Specifications are subject to change without notice.

\*1 TS-B models only.

\*2 TS-B models only. You can purchase RS232 to USB cable.

<sup>(1)</sup> Models of these nominal voltages are available, however each model is preset to a certain nominal voltage, which is not user-changeable. E.g. a model with the factory setting for 230Vac can only work in the countries with 230Vac power and won't work in the countries with 110Vac power, and 110Vac model can only work in the countries with 110Vac power, not in the countries with 230Vac power.

\*\* Typical backup time represents backup time for load equivalent to one PC and one 15" LCD monitor. Values here are for reference only.



For Mac OS support please purchase the RS232 to USB cable.

# Thunder Shield Series

TS1000 / TS1000B / TS1250 / TS1250B / TS1700 / TS1700B / TS2250 / TS2250B

## Specifications

Model Name	TS1000	TS1000B	TS1250	TS1250B	TS1700	TS1700B	TS2250	TS2250B
<b>Topology</b>	Line-Interactive, Low Frequency							
<b>On-battery Output Waveform</b>	Simulated Sine Wave							
<b>Maximum Capacity (VA / W)</b>	800VA / 480W		1000VA / 600W		1500VA / 900W		2000VA / 1200W	
<b>INPUT</b>								
<b>Nominal Input Voltage</b>	110 / 120 or 220 / 230 / 240Vac <sup>(1)</sup>							
<b>Nominal Input Frequency</b>	50Hz / 60Hz Auto Sensing							
<b>Input Voltage Range</b>	Rated Voltage $\pm$ 25%							
<b>OUTPUT</b>								
<b>Nominal Output Voltage</b>	110 / 120 or 220 / 230 / 240Vac <sup>(1)</sup>							
<b>Output Voltage Regulation</b>	Rated Voltage $\pm$ 5% (on battery)							
<b>Transfer Time(Typical)</b>	4 ms							
<b>Start on Battery</b>	Yes							
<b>Auto Restart</b>	Yes							
<b>Automatic Voltage Regulation (AVR)</b>	AVR increases the output voltage by 15% while the input voltage decreases by 9 % to 25 % AVR decreases the output voltage by 13% while the input voltage increases by 9 % to 25 %							
<b>Number of Outlets</b>	2 Battery backup + 1 Bypass (IEC 10A) 2 Battery backup + 1 Bypass (NEMA 15A)		4 Battery backup + 1 Bypass (IEC 10A) 4 Battery backup + 1 Bypass (NEMA 15A)		4 Battery backup + 1 Bypass (IEC 10A) 5 Battery backup (NEMA 15A)		5 Battery backup (IEC 10A) 5 Battery backup (NEMA 15A)	
<b>PROTECTION</b>								
<b>Data Line Surge Protection</b>	RJ11 / RJ45 <sup>†1</sup>							
<b>Surge Energy Rating</b>	220 / 230 / 240Vac 460 Joules(IEC models), 110 / 120 Vac TS1000 / TS1000B 265 Joules (NEMA models) TS1250 / TS1250B, TS1700 / TS1700B, TS2250 / TS2250B 1185 Joules (NEMA modules)							
<b>Overload Protection</b>	UPS shuts down at 110% load after 60 secs or 130% load after 3 secs							
<b>Over Current Protection</b>	Fuse (Circuit breakers for TS1250 / 1700 models with NEMA outlets)							
<b>Discharge Protection</b>	Keylock							
<b>BATTERY</b>								
<b>Configuration</b>	12V (12V 34W $\times$ 1)		24V (12V 7.2AH $\times$ 2)			24V (12V 34W $\times$ 2)		
<b>Typical Backup Time**</b>	33 min		42 min			45 min		
<b>Recharge Time to 90% (Typical)</b>	< 4 Hours							
<b>ADVANCED WARNINGS / DIAGNOSTICS</b>								
<b>Front Panel LEDs</b>	AC Mode / Battery Mode / Battery Fault / Overload							
<b>Audible Alarms</b>	Battery Mode / Battery Low / Overload							
<b>COMMUNICATION INTERFACE</b>								
<b>Communication Port</b>	RS232 <sup>†2</sup>						RS232 <sup>†2</sup> for 220 / 230 / 240V models USB <sup>†1</sup> for 110 / 120V models	
<b>ENVIRONMENTAL</b>								
<b>Operation Temperature</b>	0~40°C / 32~104°F							
<b>Storage Temperature</b>	-20~60°C / -4~140°F							
<b>Relative Humidity</b>	0~95% Non condensing							
<b>Audible Noise</b>	< 40 dBA							
<b>PHYSICAL</b>								
<b>Dimensions</b>	<b>Physical / Packing (in)</b>	12.5 $\times$ 3.8 $\times$ 5.3 / 14.3 $\times$ 5.5 $\times$ 8.7		15 $\times$ 5.1 $\times$ 7.5 / 19.1 $\times$ 9.6 $\times$ 12.2				
	<b>L<math>\times</math>W<math>\times</math>H (mm)</b>	320 $\times$ 97 $\times$ 135 / 364 $\times$ 139 $\times$ 220		382 $\times$ 130 $\times$ 192 / 485 $\times$ 244 $\times$ 310				
<b>Weight (Net / Gross)</b>	<b>lbs</b>	14.7 / 15.9		28.6 / 32.6		35.0 / 38.0		
	<b>kg</b>	6.7 / 7.2		13.4 / 14.8		15.9 / 17.3		
<b>CONFORMANCE</b>								
<b>Approvals</b>	UL / cUL, CE							

Specifications are subject to change without notice.

<sup>†1</sup> TS-B models only.

<sup>†2</sup> TS-B models only. You can purchase RS232 to USB cable.

(1!) Models of these nominal voltages are available, however each model is preset to a certain nominal voltage, which is not user-changeable. E.g. a model with the factory setting for 230Vac can only work in the countries with 230Vac power and won't work in the countries with 110Vac power, and 110Vac model can only work in the countries with 110Vac power, not in the countries with 230Vac power.

\*\* Typical backup time represents backup time for load equivalent to one PC and one 15" LCD monitor. Values here are for reference only.



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