

Toughpower™ QFan

CableManagement **500W**

Patented Design

ATX 12V 2.2 & EPS 12V



Tt® Thermaltake
COOL ALL YOUR LIFE

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UL
E161451



CB

FC

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CE



~Toughpower with QFan Technology~

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1. Introduction

1.1 Statement

We live up to the promise of Thermaltake logo in our unending quest for excellence. Shall you have any suggestion or comments, please access our website:

Http://www.thermaltake.com

or e-mail to:

thermaltake@thermaltake.com

We appreciate your kindly feedback and you will receive the prompt response from our customer service team. Please take the time in familiarizing yourself with the power supply, its connectors and the contents of this manual before proceeding with the installation of the power unit. You will need a Philips crosshead screwdriver, perhaps your PC case manual and most certainly your motherboard manual.

Should you have any questions regarding the content of the manual, please contact Thermaltake directly. Failure to follow the proper procedures may cause severe bodily harm or PC component damage.

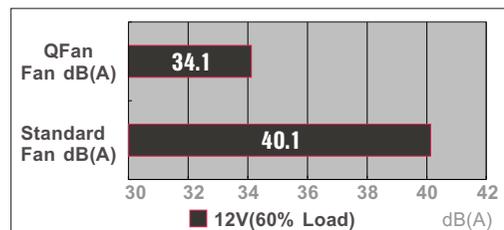
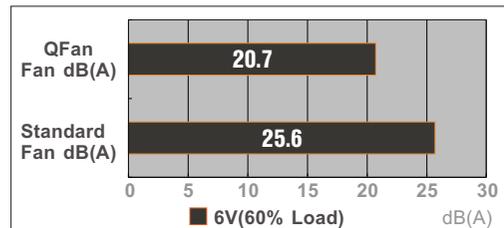
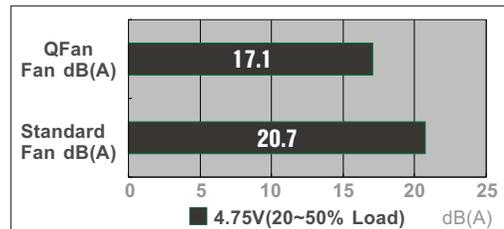
1.2 Warnings and Cautions

- 1.2.1** Do not unplug the AC power cord when the power supply is in use. Doing so may cause damages to your components.
- 1.2.2** Do not place the power supply in a high humidity and temperature environment.
- 1.2.3** When using Toughpower QFan Cable Management 500W power supply under testing conditions where the power supply unit is not installed in a PC with its components, please follow the steps below:
 - 1) Please take a paper clip and untwist it.
 - 2) Make sure the power supply unit is in the "OFF" position.
 - 3) Locate the 20+4 pin motherboard connector from the power supply unit.
 - 4) Plug one side of the paper clip into the green wire hole.
 - 5) Plug the other side of the paper clip into any of the black wire holes.
 - 6) Turn on the PSU to see if the power supply fan(s) turn(s) on.
- 1.2.4** High voltages exist in the power supply. Do not open the power supply case unless you are an authorized service technician or electrician.
- 1.2.5** All warranties and guarantees will be voided, if failure to comply with any of the warnings and cautions covered in this manual.

2. Product Features

2.1 Special non-frame QFan Technology: decreases 17% noise level compare with regular 140mm fan

Toughpower QFan 500W/650W power supplies come with our latest special design 140mm ball-bearing fan. This fan has outstanding acoustic performance that will not drive you crazy with high noise level.



2.2 Excellent Efficiency (up to 85%)

Toughpower QFan 500W / 650W provide excellent efficiency and hence reducing energy consumption. The higher the Efficiency the more you will save on your energy bill.

2.3 Extremely good voltage regulation ($\pm 3\%$)

This feature allows tighter load regulation ($\pm 3\%$) than other power supplies ($\pm 5\%$) and increase system voltage stability.

2.4 MTBF > 120,000 hours (Highly reliable)

120,000 hours of MTBF (Mean Time between Failures) goes above and beyond all ATX specifications.

2.5 Independent +12V rails

Toughpower QFan 500W & 650W built in independent +12V rails are provided to support the high-end graphic card and PC system.

2.6 Cable Management

Cable Management enables users to remove unused cables and significantly improves the airflow in the chassis.

2.7 Industrial grade components (capacitor, transformer, etc)

All components are specially designed for industrial environment and extreme conditions.

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2.8 Hi-Tech Black Coating

With special Hi-Tech Black coating, Toughpower QFan Cable Management 500W PSUs looks professional, elegant and unique.

2.9 High +5VSB Output

Built-in higher +5VSB (from 3A to 3.5A(Peak Current)) supports up to 12 USB devices. Also, even the system is power off, USB devices can still be charged by the 3A sustained output.

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3. Components Check

1 One Toughpower QFan 500W power supply unit(w/one 20+4pin main power connector)



2 Two sets of wire w/ 6pin PCI-E connector



3 Two sets of wires w/ 5pin SATA connector



4 Two sets of wire w/ 4pin peripheral connector



5 One AC Input power cord



6 4 mounting screws



7 User manual

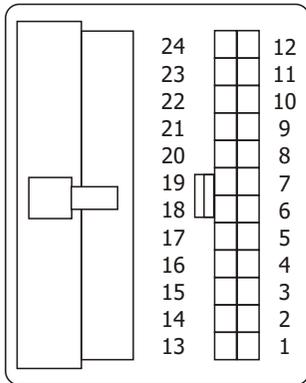


4. Connectors & Cables

4.1 Connectors

4.1.1 Main Power Connector (20+4 pin)

Support the latest ATX 12V 2.2 system motherboard

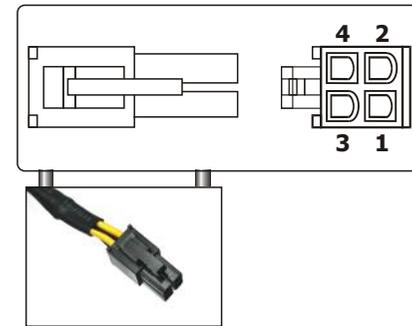


Voltage	Color	PIN	PIN	Color	Voltage
+3.3V	Orange	1	13	Orange	+3.3 V
+3.3V	Orange	2	14	Blue	-12 V
GND	Black	3	15	Black	GND
+5V	Red	4	16	Green	PS_ON
GND	Black	5	17	Black	GND
+5V	Red	6	18	Black	GND
GND	Black	7	19	Black	GND
PG	Gray	8	20	N/C	N/C
+5Vsb	Purple	9	21	Red	+5 V
+12V3	Yellow	10	22	Red	+5 V
+12V3	Yellow	11	23	Red	+5 V
+3.3 V	Orange	12	24	Black	GND



4.1.2 CPU Connector (4 pin)

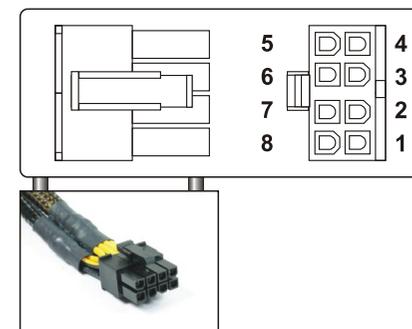
Support both dual core CPU and single core CPU systems motherboard



Color	Signal	Pin
Black	GND	1
Black	GND	2
Yellow	+12V1	3
Yellow	+12V1	4

4.1.3 CPU Connector (8 pin)

Support the 8-pin EPS 12V system motherboard



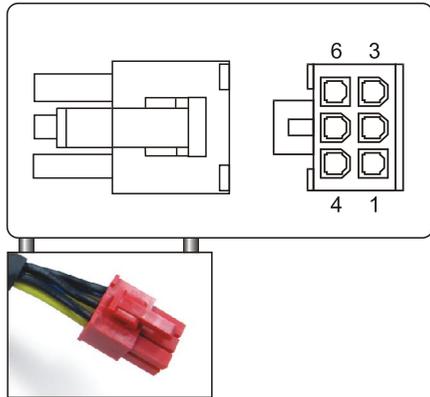
Color	Signal	Pin
Black	GND	1
Black	GND	2
Black	GND	3
Black	GND	4
Yellow	+12V1	5
Yellow	+12V1	6
Yellow	+12V1	7
Yellow	+12V1	8

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4.1.4 PCI-E Connector (6 pin)

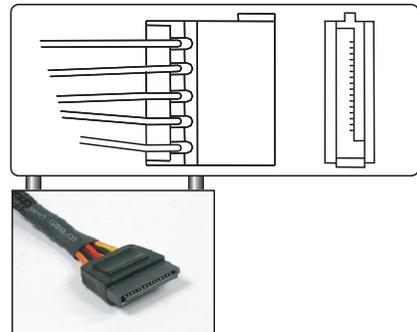
Support the latest high-end graphic cards with 6 pin socket



Color	Signal	Pin
Yellow	12V2	1
Yellow	12V2	2
Yellow	12V2	3
Black	GND	4
Black	GND	5
Black	GND	6

4.1.5 SATA Connector (5 pin)

Support the new generation high-speed SATA devices



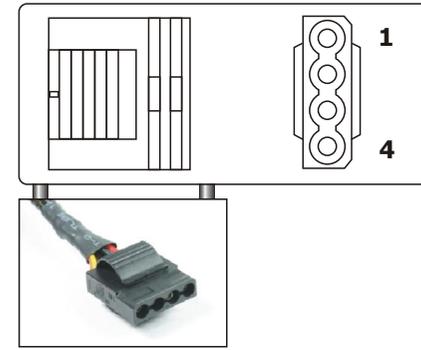
Color	Signal	Pin
Yellow	+12V3	1
Black	GND	2
Red	+5V	3
Black	GND	4
Orange	3.3V	5

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4.1.7 Peripheral Connector (4 pin)

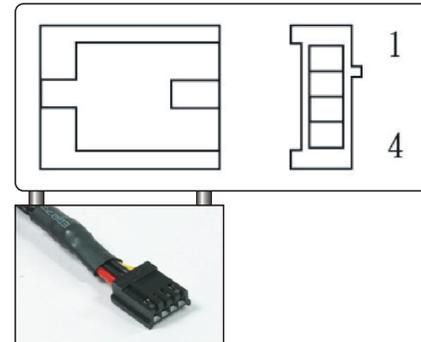
Support IDE/SCSI (HDD/CD/DVD..etc) devices



Color	Signal	Pin
Yellow	+12V3	1
Black	GND	2
Black	GND	3
Red	+5V	4

4.1.7 Floppy Disk Connector (4 pin)

Support Floppy Disk and some other additional devices



Color	Signal	Pin
Red	+5V	1
Black	GND	2
Black	GND	3
Yellow	+12V3	4

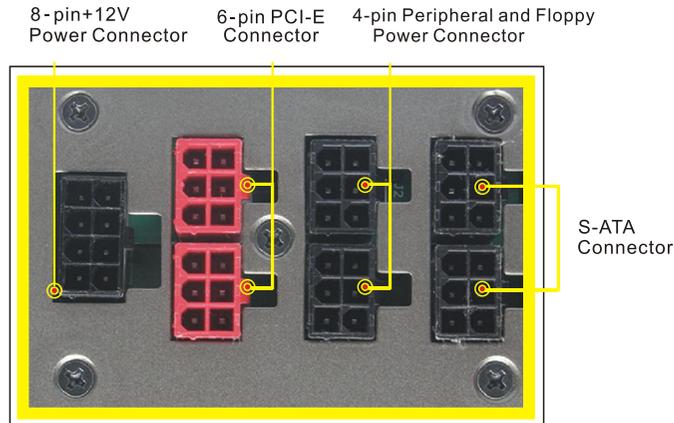
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4.2 Cables

Users can optimize the cables arrangement within the chassis by using only what users need. This feature increases the airflow and reduces the overall ambient temperature within the chassis, also improves the overall look and tidiness of the system.

Embedded Socket and Modularized Cable Management Design:



4.2.1 Toughpower QFan 500W unit: On the power supply, you will find sockets to connect with those cables. Users can choose which wire set they want to use for devices, graphic card, fans, etc. Inside the package, you will find the following wire set:

Connector	Description	Length
	1 x 24/20-pin motherboard connector	500mm
	1 x 8/4-pin EPS12V connector	500mm
	2 x 6-pin PCI-E connector	500mm
	2 x triple SATA power connectors	500mm+150mm+150mm
	1 x quad 4-pin IDE & single floppy power connectors	500mm+150mm+150mm+150mm+150mm
	1 x triple 4-pin IDE & single floppy power connectors	500mm+150mm+150mm+150mm

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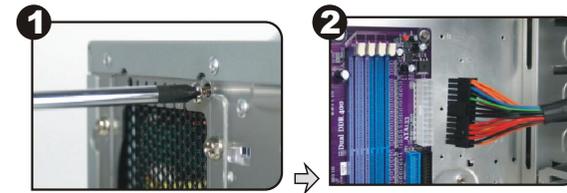
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5. Installation Steps

To prevent electrical shocks, please disconnect the power cord from your existing power supply unit. Toughpower QFan 500W Power Supply has automatic voltage selector which will automatically change to 100V-240V PSU.

Step 1

After install the power supply unit into the chassis and then connect the 20+4-pin main power cable to motherboard 20pin or 24 pin socket.



Step 2

Connect the 4-pin / 8-pin +12V power connector to motherboard (User can use either 4-pin or 8-pin to connect motherboard socket, please check your motherboard user manual for detail information)



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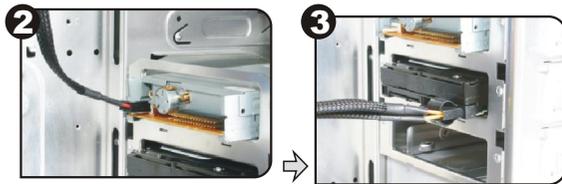
Step 3

Connect the 6-pin PCI-Express connector to your graphic card if needed.



Step 4

Connect the 4 pin power connector to peripheral devices such as DVD-Burner, hard drive, and etc. In addition, user can connect the 4-pin floppy power connector to connect the floppy drive.



If your devices are S-ATA interface, there are also S-ATA connectors available.



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6. +12V Rail Distribution

	W0151 500W	W0163 650W
24 pin +12V	12V3	12V3
4 pin +12V	12V1	12V1
8 pin +12V	12V1	12V1,12V2
Peripheral & Floppy	12V3	12V4
S-ATA	12V3	12V4
6 pin Modular PCI-E	12V2	12V2
6 pin Modular PCI-E	12V2	12V2
8 pin Native PCI-E	N/A	12V3

For the Toughpower QFan 650W model, please follow below connector' s operation instruction.

1. If you are using 8pin CPU +12V connector and only one graphic card w/ one PCI-E connector, please use native PCI-E connector to your card.
2. If you are using 4pin CPU +12V connector and only one graphic card w/ one PCI-E connector, please use modular PCI-E connector to your card.
3. If you are using 8pin CPU +12V connector and two graphic cards, please use one Modular PCI-E connector and one native PCI-E connector to your cards.

Note: If you are intend to buy the latest NVIDIA or AMD Graphic Card, please check our website to ensure the compatibility.

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7. SPEC Table

Model	W0151			
SPECIFICATION				
Power	500W			
Dimension	160mm(L)x150mm(W)x86mm(H)			
Switches	ATX Logic on-off additional power rocker switch			
PFC	Active PFC (PF > 0.9)			
Cooling System	3D Flow 140mm Fan, 1900RPM ± 10%			
Noise	17.1 dBA at 20%~50% Load			
P. G. Signal	100-500 ms			
Efficiency	up to 85%			
Hold-up Time	16ms			
INPUT				
Input Voltage	115VAC ~ 230VAC			
Input Frequency Range	47 ~ 63 Hz			
MTBF	> 120,000 hrs			
Input Current	115Vac/6A Max. 230Vac/3A Max.			
OUTPUT				
	Max/Min	Regulation ¹	Ripple & Noise ²	Output
+3.3V	30A/0.5A	+3,-3%	50mV	99W
+5V	28A/2.0A	+3,-3%	50mV	140W
+12V1	18A/1.0A	+3,-3%	120mV	432W
+12V2	18A/1.0A	+3,-3%	120mV	
+12V3	16A/1.0A	+3,-3%	120mV	
-12V	0.8A/0.0A	+9,-5%	120mV	9.6W
+5Vsb	3.0A/0.0A	+5,-3%	50mV	15W
Total Power	500W			
Peak Power	600W			
*1. With 5Vsb from 3A to 3.5A(Peak Current), Toughpower QFan 500W could support up to 10~12 USB devices.				
*2. USB devices can be charged even when the PC is power of.				
ENVIRONMENT				
Operating Temp.	10 °C to 50 °C			
Storage Temp.	-20 °C to 70 °C			
Operating Humidity	20% to 90%, non-condensing			
Storage Humidity	5% to 95%, non-condensing			
PROTECTION				
	DC rail	Trigger Point/Range		
Over Voltage Protection	+3.3V trip point	4.5 Vmax		
	+5.0V trip point	7.0 Vmax		
	+12.0V trip point	15.6 Vmax		
Over Current Protection	+3.3V	33A ~ 45A		
	+5.0V	33A ~ 45A		
	+12V1 & +12V2 & +12V3	19A ~ 25A		
Short Protection	All output to GND			

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8. Other Specification

8.1 Inrush Current:

55A max. when AC input 115Vac at 25°C cold start.
110A max. when AC input 230Vac at 25°C cold start.

8.2 Power Efficiency

80%(min.) at full load(typical)

8.3 CE Requirements

8.3.1 Conducted EMI

1. Meet FCC: Class B
2. Meet CISPR 22: Class B
3. Meet BSM I: Class B

8.3.2 Safety Standards

1. Meet CUL (U L 6095 0)
2. Meet TUV EN60950
3. Meet CB (IE C 950)
4. Meet CE

8.3.3 Harmonic

Meet IEC1000-3-2, Class D

9. Trouble Shooting

Condition 1:

No DC output. The fan or fans are motionless. Check:

- 1-1 Is the AC inlet plug firmly plugged into the PSU inlet socket?
- 1-2 Is the wall socket, extension power cord, power strip or surge protector in use, fully functional and wall power switch turned 'ON' ?
- 1-3 Is the Main Board socket (20+4 pin) plug fully and firmly inserted?

Condition 2:

The fan or fans began rotating and then stopped. The system hangs without proceeding any further. Check:

- 2-1 Are the peripheral connectors firmly plugged into accessory devices, such as the main hard drive, CD ROM, etc?
- 2-2 If a plug has been inadvertently connected in an off-set or reversed position, unplug the AC power source, reconnect the offending connectors and then wait for 30 seconds before replug in the AC power source and try again.

Note: If the power supply is still unable to power up after following the above instruction, please send the unit back to your dealer or retailer for after sales service.

10. Contact us

For further technical supports or general inquiries, please contact us at:

Thermaltake Technology USA

Toll Free: (800)988-1088

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NOTE:

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