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**TOUGHPOWER SERIES**  
POWER SUPPLY

**TOUGHPOWER GF1 650W**



# TOUGHPOWER GF1 650W

## DATASHEET



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**TOUGHPower SERIES**  
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**TOUGHPower GF1 650W**

**Ultra Quiet**

Hydraulic Bearing Fan

**Smart Zero Fan**

**Low Ripple Noise**

**Fully Modular**

Flat Cables

**100% Japanese**

Capacitors



**10 YEAR**  
Warranty



## Features

- 650W continuous output at 50°C/122°F operating environment.
- High efficiency Zero Cable Platform with premium build quality.
- 100% high quality Japanese 105°C/221°F capacitors.
- < 30mV low ripple noise design.
- Extremely strict voltage regulation <  $\pm 2\%$
- Fully modular low-profile flat black cables.
- Upgraded CPU/PCI-E main cables (16AWG wires) for high end enthusiasts' PCs
- Ultra Quiet 140mm Hydraulic Bearing Fan delivers excellent airflow.
- Smart Zero Fan: Minimizes undesired noise.
- High amperage single +12V rail design.
- Intel C6/C7 states & ErP ready
- Built-in industry grade protections: OCP, OVP, UVP, OPP, SCP, OTP
- Dimension: 150mm(W)x86mm(H)x160mm(D).
- Safety approvals: CE/CTUVus/TÜV/FCC/BSMI/EAC certifications.

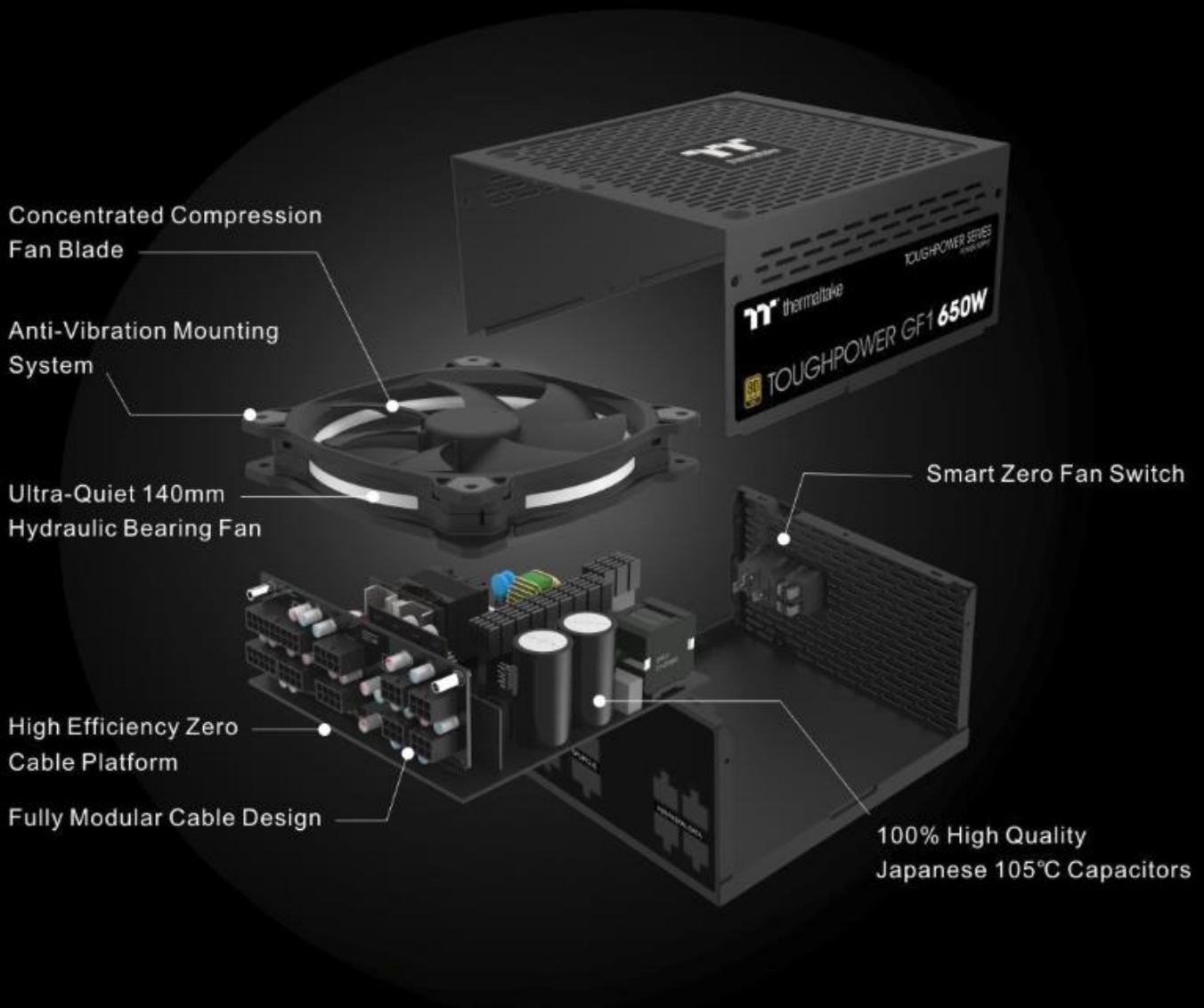


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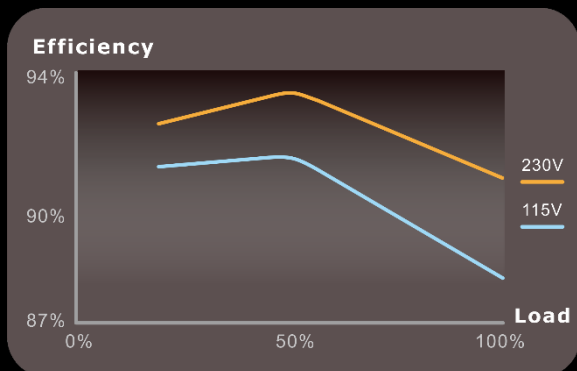
**TOUGHPower GF1 650W**

## Premium Build Quality

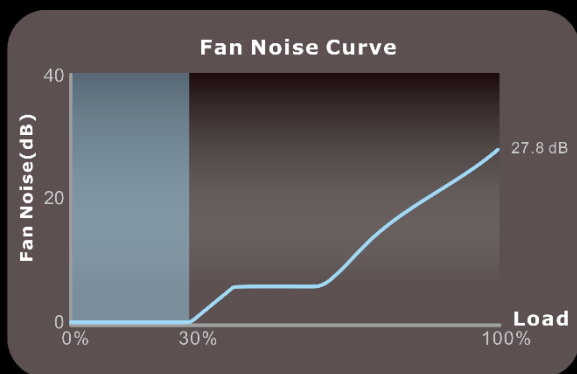




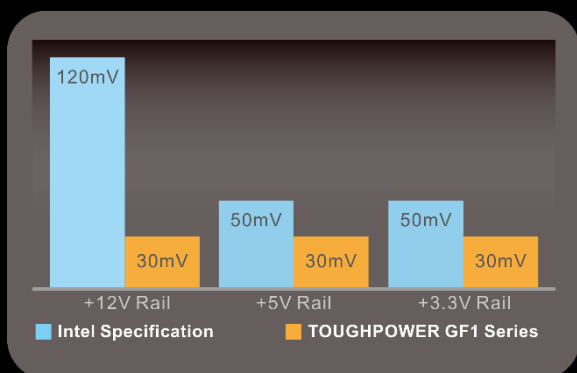
### Highlight Features



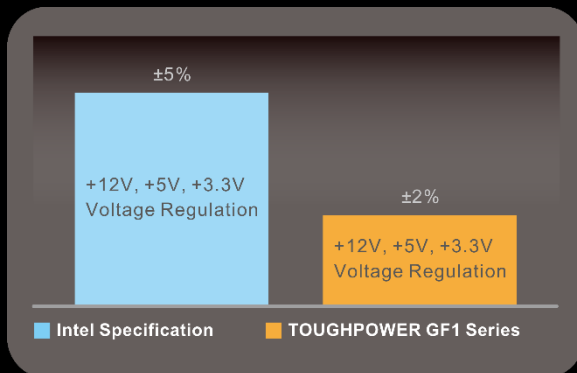
**80 PLUS Gold Certified Efficiency**  
Delivers top end efficiency under real world load conditions.



**Ultra Quiet Smart Zero Fan**  
Minimize undesired noise.



**< 30mV Low Ripple Noise Design**  
Top-end build quality with low ripple noise.



**Extremely Strict Voltage Regulation < ±2%**  
Provides steady clean power through exceptional voltage stability.



**TOUGHPower SERIES**  
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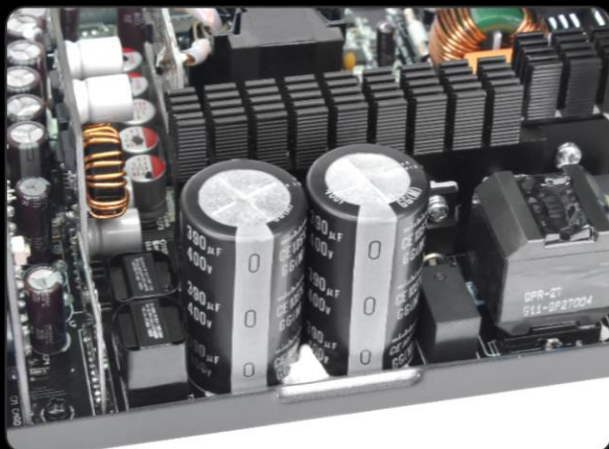
**TOUGHPower GF1 650W**

## Highlight Features



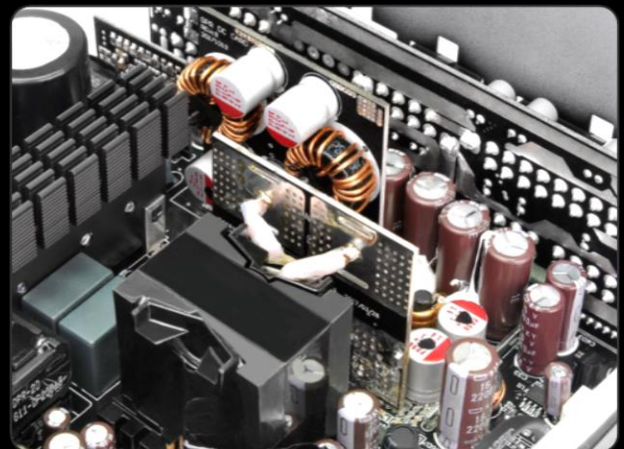
### Fully Modular Low-Profile Flat Black Cables

Makes cable management easier, reduces clutter and increases airflow inside the chassis.



### 100% High Quality Japanese 105°C/221°F Capacitors.

Improves the durability and offers the highest stability and reliability.



### High Amperage Single +12V Rail & DC to DC Design

Powerful single +12V rail and DC to DC design for the best compatibility.



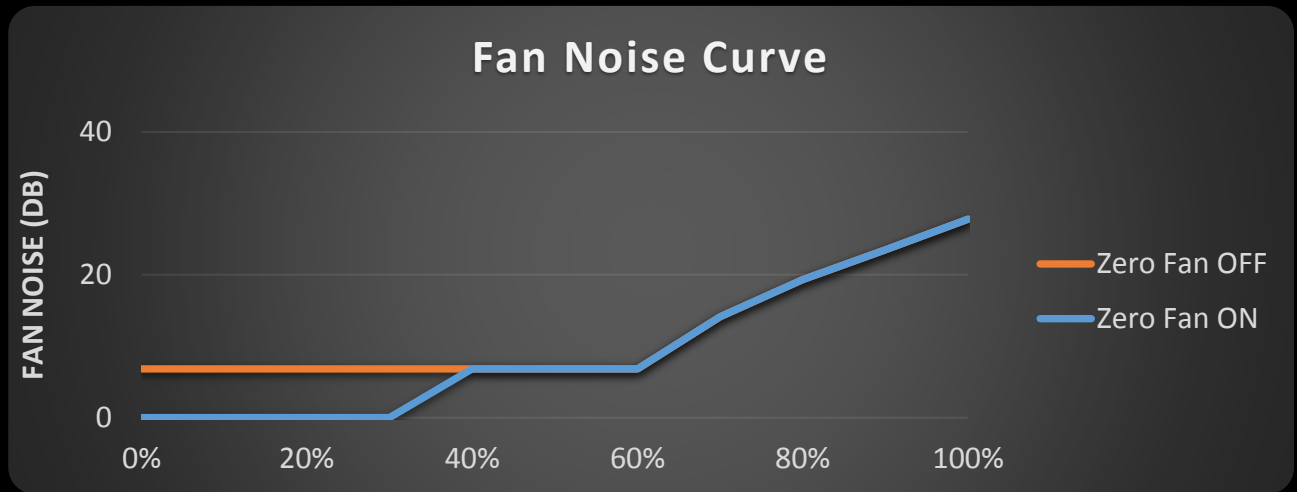


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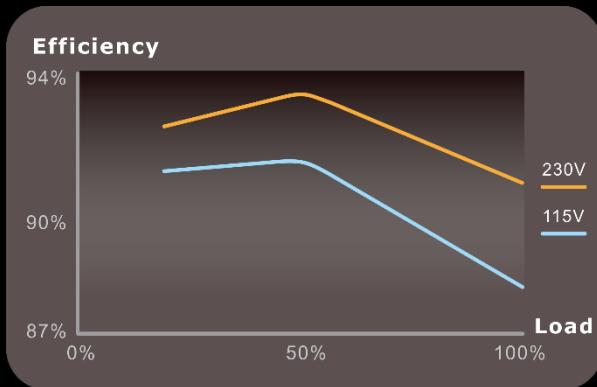
# TOUGHPOWER SERIES POWER SUPPLY

## TOUGHPOWER GF1 650W

### Fan Curve



### Eco Design



### 80 PLUS® Gold Certified Efficiency

Delivers top end efficiency under real world load conditions.

### Supports Energy Star 5.0\* energy standard

Toughpower GF1 series is suitable for use in Energy Star-compatible computers.

### Supports Intel Deep Power Down C6 Status

Helps your PC system operate more power efficiently.

### Corresponds to the EU directives on WEEE and RoHS

Thermaltake considers its full impact on the environment during manufacturing and maintains green facilities to ensure Toughpower GF1 series meets WEEE & RoHS requirements.



## Output Specification

<b>AC Input</b>	Input Voltage: 100V - 240V~ Input Current: 10A Frequency: 50Hz - 60Hz				
<b>DC Output</b>	+3.3V	+5V	+12V	-12V	+5VSB
<b>Max Output Current</b>	22A	22A	54.2A	0.3A	3A
<b>Max Output Power</b>	120W		650.4W	3.6W	15W
<b>Total Power</b>	650W				

## Connect Specification

Connector						
Wattage	Main Power Connector (24Pin)	ATX 12V (4+4Pin)	SATA (5Pin)	PCI-E (6+2Pin)	Peripheral (4Pin)	FDD Adapter
650W	1	1	9	4	4	1

Wattage	Connector Type	Connector Quantity & Cable Length
650W	Main Power (24pin)	1 x 24pin Main connector (600mm)
	ATX 12V (4+4pin)	1 x ATX 12V 4+4pin connector (650mm)
	PCI-E (6+2pin)	2 x PCI-E 6+2pin connectors (500mm + 150mm) 2 x PCI-E 6+2pin connectors (500mm + 150mm)
	SATA	3 x SATA connectors (500mm + 150mm + 150mm) 3 x SATA connectors (500mm + 150mm + 150mm) 3 x SATA connectors (500mm + 150mm + 150mm)
	Peripheral	4 x Peripheral connectors (500mm + 150mm + 150mm + 150mm)
	Floppy Adapter	1 x Peripheral to Floppy adapter cable (150mm)



<b>GENERAL INFO</b>	
P/N	PS-TPD-0650FNFAGx-1
Model	TTP-650AH3FCG
Max. Output Capacity	650W
Peak Output Capacity	780W
Color	Black
Dimension (W/H/D)	150mm(W) x 86mm(H) x 160mm(D)
PFC	Active PFC
Power Good Signal	100-500 msec
Hold-Up Time	> 16msec at 100% of full load
<b>AC INPUT</b>	
Input Current	10A
Input Frequency Range	50Hz - 60Hz
Input Voltage	100V – 240V~
<b>ENVIRONMENTAL</b>	
Operating Temperature	0°C to + 50°C
Operating Humidity	20% to 90%,non-condensing
Storage Temperature	-20°C to + 70°C
Storage Humidity	5% to 95%, non-condensing
Cooling System	14cm hydraulic bearing fan
<b>MISCELLANEOUS</b>	
Efficiency	Meet 80 PLUS®Gold at 115Vac input.
MTBF	120,000 hrs minimum
Safety Approval	CE/cTUVus/TÜV/FCC/BSMI/EAC
<b>PCI-E CONNECTOR</b>	
PCI-E 6+2pin	4





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## Total Protection

Voltage Source	Over Voltage Protection	Under Voltage Protection	Over Current Protection
	Protection Point		
+3.3V	4.5Vmax	Not lower than 2.2~2.4V	180% max.
+5V	7Vmax	Not lower than 3.3~3.7V	180% max.
+12V	14.5Vmax	Not lower than 8.5~9.5V	150% max.
<b>Over Power Protection</b>	Protection at 120%~150% over peak load.		
<b>Over Temperature Protection</b>	Protection temperature is 70°C at 115V and full load.		
<b>Short Circuit Protection</b>	Activated when any DC rails short circuited.		