



TOUGHPower GRAND SERIES
POWER SUPPLY

TOUGHPower GRAND RGB 650W GOLD (RGB SYNC EDITION)



RGB Sync Edition



TOUGHPower GRAND RGB 650W

DATASHEET



Smart Zero Fan



Low Ripple Noise



Fully Modular
Flat Cables



100% Japanese
Capacitors



❖ Features

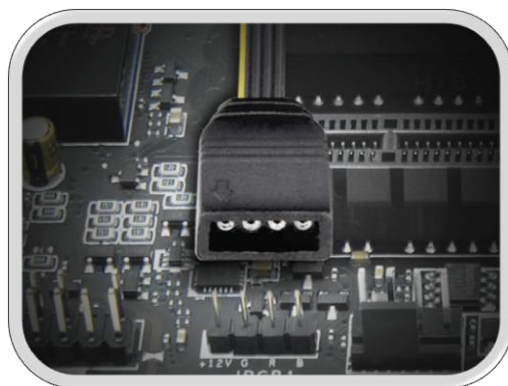
- Patented 256 colors Riing 14 RGB fan with five lighting modes, built-in memory and RGB sync function.
- Smart Zero Fan: Minimizes undesired noise.
- <30mV low ripple noise design.
- Extremely strict voltage regulation < $\pm 2\%$
- Fully modular low-profile flat black cables.
- 100% high quality Japanese 105°C/221°F capacitors.
- 80 PLUS® Gold certified up to 90% efficiency.
- 10 year warranty
- 650W continuous output at 50°C/122°F operating environment.
- 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 SÜD/FCC/CCC/BSMI/EAC certifications.
- Compatible with the latest Intel ATX 12V 2.4 & SSI EPS 12V 2.92 standards.



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TOUGHPower GRAND **RGB** 650W GOLD (RGB SYNC EDITION)

❖ Highlight Features



Synchronizing all RGB lighting devices
on your system with the +12V RGB header.
(+5V RGB header is not supported by this model)



Sync All Your RGB

Compatible with: ASUS AURA SYNC, msi MYSTIC LIGHT, GIGABYTE RGB FUSION, BIOSTAR VIVID LED DJ and ASRock RGB LED ready motherboards.



TOUGHPower GRAND SERIES POWER SUPPLY

TOUGHPower GRAND RGB 650W GOLD (RGB SYNC EDITION)

❖ Highlight Features



RGB options available at
your fingertips for easy use.



Patented 256 Colors Riing 14 RGB Fan

TOUGHPower GRAND RGB GOLD series features a patented 256 colors Riing 14 RGB fan with five lighting modes, LEDs off mode and built-in memory.

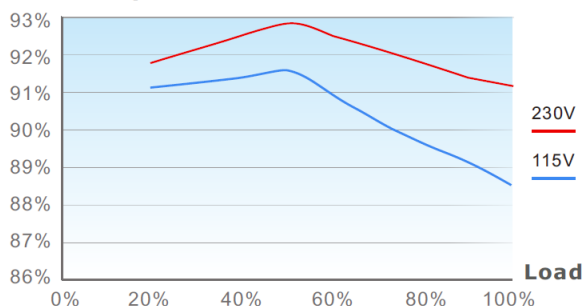


TOUGHPower GRAND SERIES POWER SUPPLY

TOUGHPower GRAND RGB 650W GOLD (RGB SYNC EDITION)

❖ Highlight Features

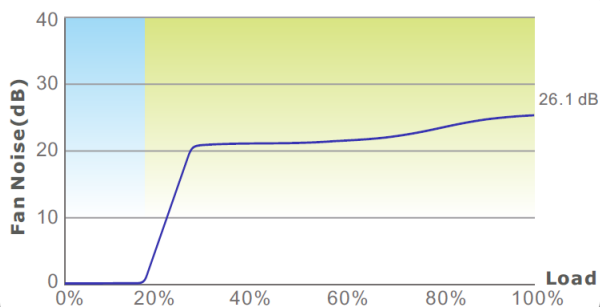
Efficiency



80 PLUS Gold Certified Efficiency

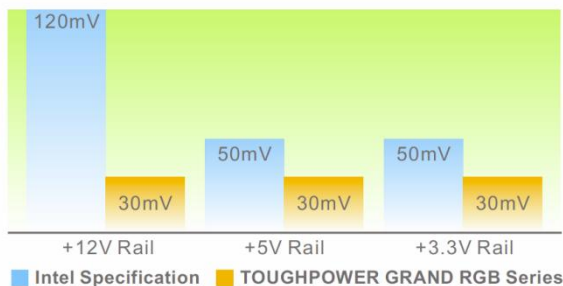
Delivers top end efficiency under real world load conditions.

Fan Noise Curve



Ultra Quiet Smart Zero Fan

Minimize undesired noise.



<30mV Low Ripple Noise Design

Top-end build quality with low ripple noise.

±5%

+12V, +5V, +3.3V
Voltage Regulation

±2%

+12V, +5V, +3.3V
Voltage Regulation

Extremely Strict Voltage Regulation < ±2%

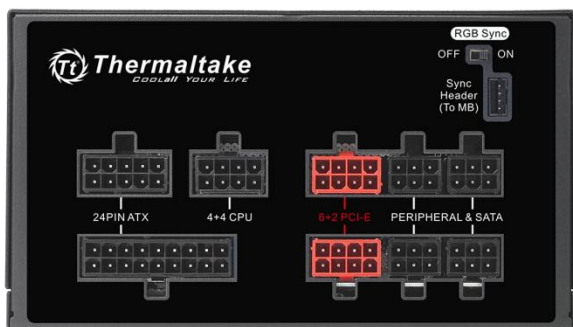
Provides steady clean power through exceptional voltage stability.



TOUGHPower GRAND SERIES POWER SUPPLY

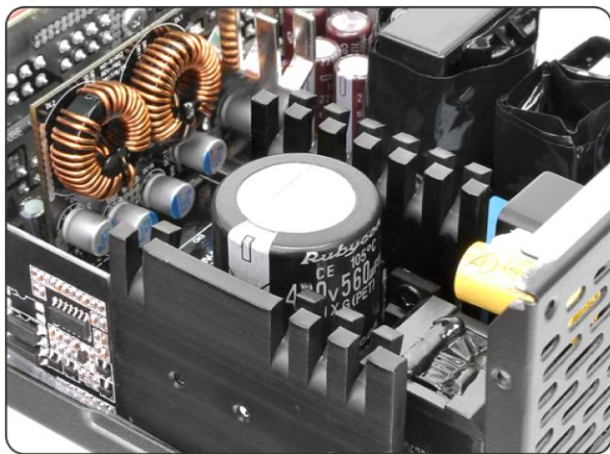
TOUGHPower GRAND **RGB** 650W GOLD (RGB SYNC EDITION)

❖ Highlight Features



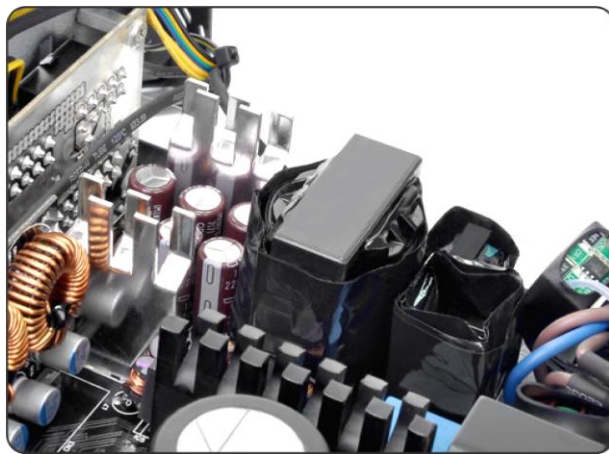
Fully Modular Low-Profile Flat Black Cables

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

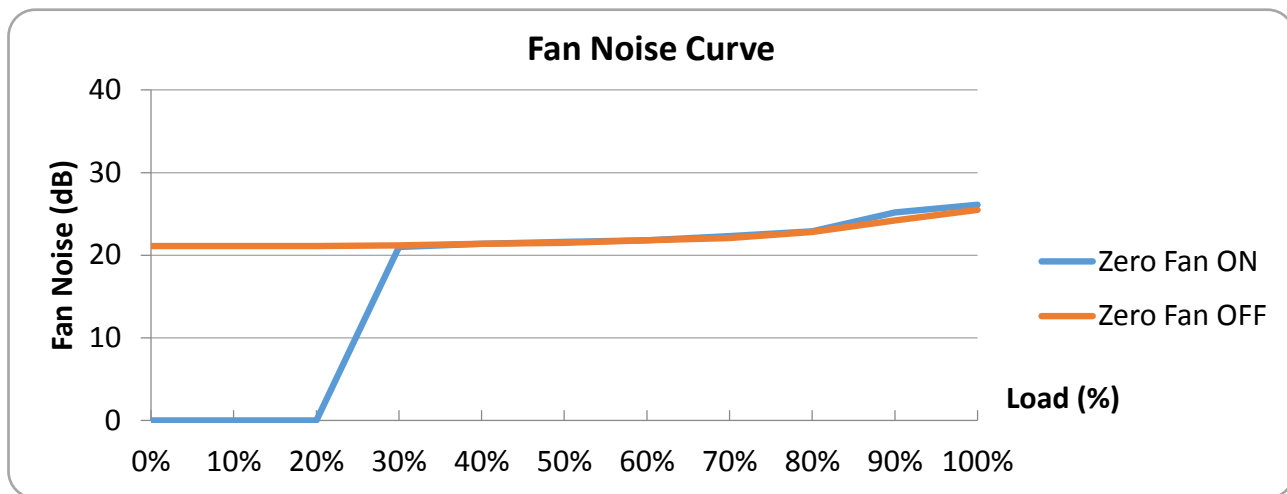
Powerful single +12V rail and DC to DC design for the best compatibility.



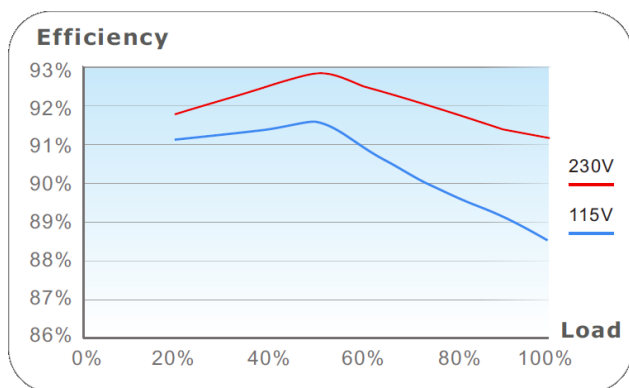
TOUGHPower GRAND SERIES POWER SUPPLY

TOUGHPower GRAND RGB 650W GOLD (RGB SYNC EDITION)

❖ Fan Noise



❖ ECO Design



80 PLUS® Gold Certified Efficiency

Delivers top end efficiency under real world load conditions.

Supports Energy Star 5.0* energy standard

Toughpower Grand RGB Gold 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 Grand RGB Gold series meets WEEE & RoHS requirements.

❖ Output Specification

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

❖ Total Output Connector

Connector							
Wattage	Main Power Connector (24Pin)	ATX 12V (4+4Pin)	SATA (5Pin)	PCI-E (6+2Pin)	Peripheral (4Pin)	FDD Adapter	RGB Sync Cable
650W	1	1	9	4	4	1	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)
	FDD Adapter	1 x Peripheral to FDD adapter cable (150mm)
	RGB Sync Cable	1 x RGB Sync connector + 1 x RGB Sync header (570mm + 80mm)



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GENERAL INFO	
P/N	PS-TPG-0650FPCGxx-S
Model	TPG-650AH3FSGR
Type	ATX 12V v2.4 and EPS v2.92
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
AC INPUT	
Input Current	10A
Input Frequency Range	50Hz - 60Hz
Input Voltage	100V – 240V~
ENVIRONMENTAL	
Operating Temperature	0°C to + 50°C
Operating Humidity	20% to 90%,non-condensing
Storage Temperature	-40°C to + 70°C
Storage Humidity	20% to 95%, non-condensing
Cooling System	14cm hydraulic bearing fan
MISCELLANEOUS	
Efficiency	Meet 80 PLUS® Gold at 115Vac input.
MTBF	120,000 hrs minimum
Safety Approval	CE/cTUVus/TÜV SÜD/FCC/CCC/BSMI/EAC
PCI-E CONNECTOR	
PCI-E 6+2pin	4



❖ Total Protection

Voltage Source	Over Voltage Protection	Under Voltage Protection	Over Current Protection
	Protection Point		
+3.3V	4.3Vmax	Not lower than 2.0~2.4V	24.2A min.; 35.2A max.
+5V	6.5Vmax	Not lower than 3.3~3.7V	24.2A min.; 35.2A max.
+12V	15.5Vmax	Not lower than 8.5~9.5V	59.62A min.; 86.72A max.
Over Power Protection	Protection at 110%~160% over peak load.		
Over Temperature Protection	Triggered by heating up TH3 thermistor to 85°C/185°F		
Short Circuit Protection	Activated when any DC rails short circuited.		