

Antec
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TRUEPOWER NEW 650-WATT POWER SUPPLY

USER'S MANUAL

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TRUEPOWER NEW SERIES

TP-650 POWER SUPPLY

THE ADVANCED PSU SOLUTION

The TruePower New series is Antec's full featured line of high-quality, reliable power supply units (PSUs). Combining cutting-edge technology and an efficient design, the TruePower New series is the ideal solution for elite system builders and quality-minded enthusiasts alike. With +12V rails that are regulated to $\pm 3\%$, the TruePower New series delivers full rated power and tight voltage regulation.

STANDARDS AND FEATURES

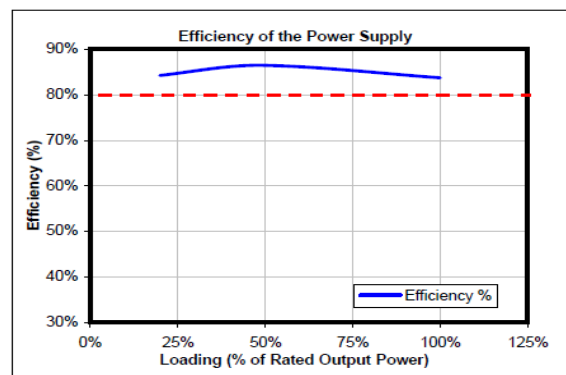
The TP-650 PSU is compatible with ATX12V v2.3 and EPS12V v2.91 specifications. The TP-650 features Universal Input, which automatically senses when you connect the power supply to any AC power source between 100~240V without having to worry about setting a voltage switch. This power supply also features Active Power Factor Correction (Active PFC), which improves the power factor value of the power supply by altering the input current wave shape, which helps power transmission across the grid.

SYSTEM PROTECTION

A variety of industrial-grade safety circuitry will help protect your computer: OVP (Over Voltage Protection), SCP (Short Circuit Protection), and OCP (Over Current Protection). Sometimes the PSU will "latch" into a protected shutdown state. This means that you will need to power off the PSU and clear the fault before it will function again. There are no user-replaceable fuses in your TP-650.

80 PLUS® BRONZE CERTIFICATION

80 PLUS® certification is the most widely recognized independent standard in power supply efficiency. An 80 PLUS® certified power supply uses less energy and generates less heat to stay cooler, run quieter and last longer. The TP-650 PSU earns the rare 80 PLUS® Bronze level of efficiency, meaning that it has been certified to be at least 82% efficient at a wide range of operating loads; this will lower your operating costs and help protect the environment.



NVIDIA™ SLI™-READY CERTIFICATION

Antec's TruePower New power supplies are NVIDIA™ SLI™-Ready certified for use with pairs of high-end graphics cards for superior parallel graphics processing.

ADVANCED HYBRID CABLE MANAGEMENT SYSTEM

The TP-650 uses Advanced Hybrid Cable Management. Cables that are important or mandatory are connected directly to the PSU. There are also modular connectors on the back of the PSU to add additional cables as needed. Using only the power cables you need will reduce clutter and improve airflow inside your case. For the list of connected and optional cables, see Table 1.

DC TO DC CONVERSION

Antec's TruePower New series uses DC to DC conversion for the 5V and 3.3V rails. The DC to DC voltage regulation module is the most advanced design, usually found on high-end motherboards, to step down DC voltage. This module operates at 85% efficiency, as opposed to traditional magnetic amplifiers that operate at only 75% efficiency. Another benefit is that transient response time is almost 100 times faster, providing remarkably stable power output in response to changing loads.

PULSE WIDTH MODULATION (PWM) FAN

Pulse Width Modulation technology allows the TruePower New series to finely control the speed of the power supply's fan. By using this method instead of the traditional voltage controlled fans, this PSU's fan can run up to 50% quieter than standard fans. A PWM fan can run as slow as 10-15% of the fan's rated top speed, whereas a voltage regulated fan can only go as low as 40%.






DOUBLE LAYER PCB

Designed with a double layered printed circuit board, the TruePower New series utilizes a low-density component layout to provide better airflow throughout the casing. In addition, double layer PCBs allow for heavy-duty components and larger traces, reducing electrical interference and resistance. This ensures greater reliability for the power supply and components connected to it.

HIGH QUALITY JAPANESE BRAND CAPACITORS

The TruePower New series features high-quality Japanese brand capacitors. These capacitors enhance stability and increase the unit's MTBF, ensuring greater reliability.

TABLE 1

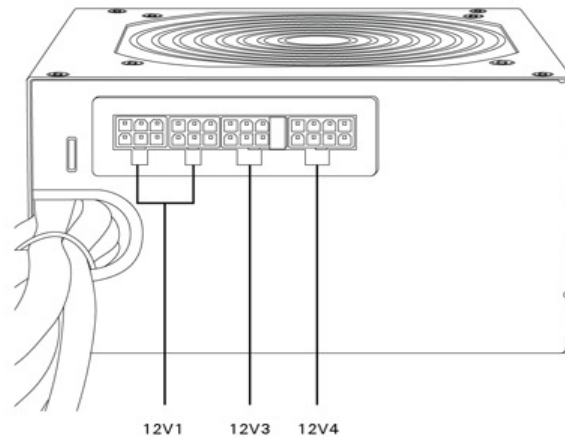
Cable Quantity	Power Connectors	Part Name	Description
N/A		Power supply direct cabling	24-pin (20+4) main connector 8-pin EPS12V 4-pin ATX12V 8-pin (6+2) PCI-E 6-pin PCI-E 3 x Molex + 1 x Floppy 3 x SATA
2	 x 3	Molex connectors w/ cable	Includes three Molex connectors
2	 x 3	Serial ATA connectors w/ cable	Includes three Serial ATA connectors
1	 X 1  X 1	PCI Express connectors w/ cable	Includes 8-pin (6+2) PCI-E connector and 6-pin PCI-E connector

+12 VOLT RAIL DISTRIBUTION

The TP-650 power supply uses four separate +12 volt power rails. Just as you have separate circuits in your house, the PSU has separate circuits to aid in the distribution of power between devices in your computer. The engineers have allocated the rails to different connectors to prevent voltage sags in one device due to sudden demands for power by another device.

TABLE 2

Direct Cabling Connectors	Rail
(20+4) main connector	1
4-pin ATX12V	2
8-pin EPS12V	2
PCI-E w/ blue stripe	3
PCI-E w/ green stripe (modular)	4
Molex cable from PSU	1
SATA cable from PSU	1



POWER OUTPUT

The TP-650 distributes a maximum number of amps on each rail. To see the output capacity and regulation for each different voltage, see Table 3.

TABLE 3

Voltage	Min. Load	Max. Load	Regulation	Ripple & Noise
+3.3V	0A	25A	±5%	<50 mV
+5V	0A	25A	±5%	<50 mV
+12V1	0A	22A	±3%	<120 mV
+12V2	0A	22A	±3%	<120 mV
+12V3	0A	25A	±3%	<120 mV
+12V4	0A	25A	±3%	<120 mV
-12V	0A	0.8A	±10%	<120 mV
+5VSB	0A	3A	±5%	<50 mV

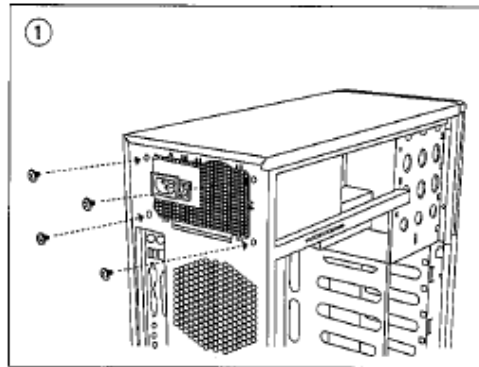
The continuous maximum total output power shall not exceed 650W.

+12V1, +12V2, +12V3 and +12V4 DC maximum output power shall not exceed 648W (54A).

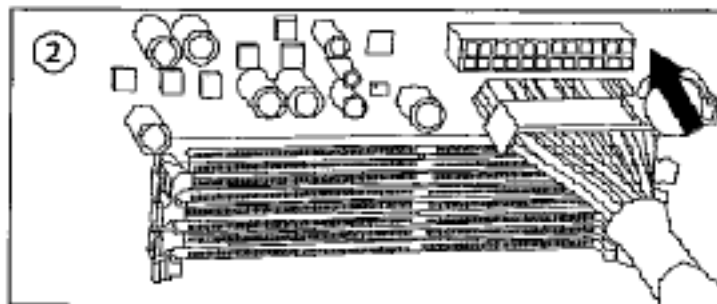
+3.3V and +5V DC maximum combined output power shall not exceed 170W.

INSTALLATION:

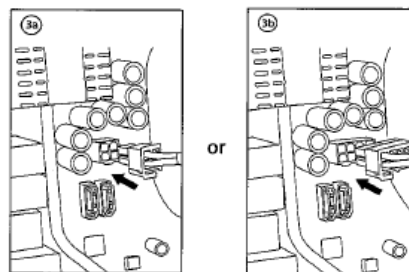
1. Install the TP-650 PSU into your case with the four screws provided.



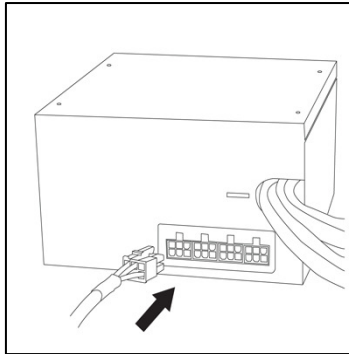
2. Connect the 24-pin main power connector to your motherboard. If your motherboard uses a 20-pin connector, detach the 4-pin attachment on the 24-pin connector.
Note: The detachable 4-pin section cannot be used in place of a 4-pin +12V connector.



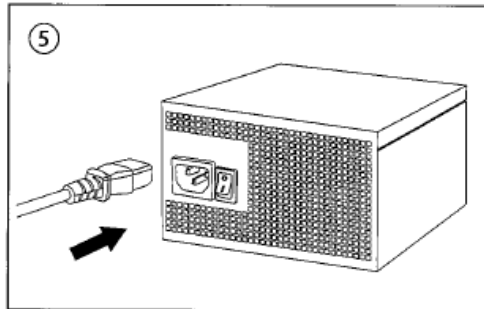
3. Connect the 8-pin or 4-pin ATX12V connector for the CPU to the appropriate connector on your motherboard. If your motherboard has an 8-pin socket with a cover on some of the openings, we recommend that you remove the cover and use the 8-pin connector.
Note: Please also refer to your motherboard user's manual for any special instructions.



4. Connect the cables from the cable pack to the socket on the power supply as needed. If you are going to plug the additional PCI-E cable into the PSU, it should go into the red socket. If the red socket is not being used for PCI-E, then it can be used for another cable from the pack that accompanied the PSU.



5. Connect the AC power cord to the power supply AC inlet. Please be sure to use the heavy-duty cord supplied with your TP-650. Turn the switch to the “|” position after you have connected all the devices and are ready to turn on your computer.



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