User Manual

Product Type: Switching Power Supply
Model Name: HG2, HP2, PSM, PSL

June 18, 2003

Version 1.0

P/N ???

Table of Contents

Safety and Warnings

IMPORTANT INFORMATION ON
SAFETY AND PROPER OPERATION OF THE POWER SUPPLY.

<< Read the information carefully before using it. >>

1. Do not attempt to take apart the power supply. There are hazardous voltages inside.
2. Do not add or remove any components from the power supply. Warranty void by doing so.
3. Only authorized technician or service center is allowed to open the power supply for product services.
4. Never alter the power supply cord or plug. Improper modification can result in severe electrical shock.
5. Do not expose power supply to high moisture, very dusty or extreme temperature environment.
6. Connect power supply only to designated power sources. Do not place any other materials into the inlet of the power supply other than the power cord.
7. Do not plug or unplug the power cord with wet hands.
8. To avoid power cord damage, remove the power cord from the wall outlet by grabbing the plug instead of the cord.
9. Make sure the power cord is properly routed so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
10. To avoid electrical shock, unplug the unit from the power source before attempting any cleaning.

Note1: For safety purposes, power cord must comply with the requirements of the National Safety Code.
Note2: All relevant registered trademarks are strictly the property of their respective companies.
Note3: No further notice will be given for any revision of the product, either modification or a newer version.

Product and Accessories

Please contact your local dealers if any of the following product or accessory is missing from the package.

1. Power Supply Unit. (Refer to the Figure)

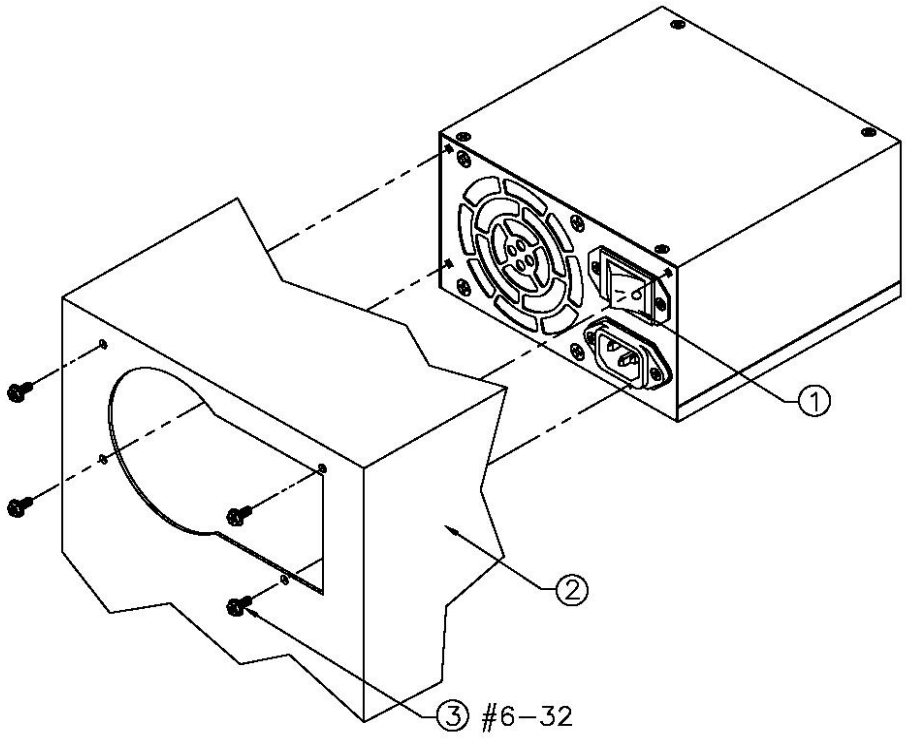
2. Screws x 4.
   - To prevent missing screws during shipment, screws were installed on the power supply. When install power supply into computer, remove those four screws first, please do not remove fan or case screws. All four screws should be installed and fasten.

3. ATE (Auto Testing Equipment) report.

4. User manual.

5. **Optional item** – AC power cord.

Remark: All items listed above have been tested and approved; unauthorized accessories should not be used on this product.



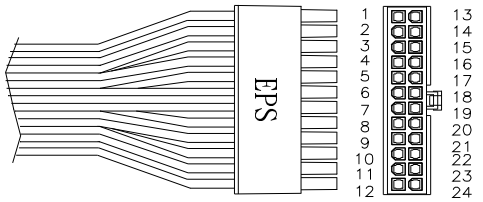
Note: The above figure is just a sample; please refer to the actual product.

Remark:

1. I/O switch on rear panel is only available for HG2 model.
2. The computer case shown above is not part of the power supply.
3. Screws and its specifications.

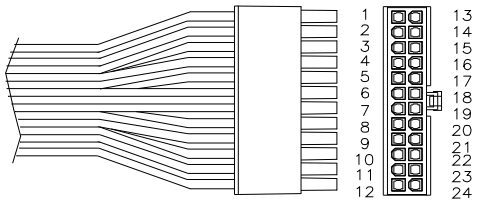
Pin Assignment

Always check the socket and pin assignment (for devices such as motherboard, Hard Disk etc.) before connecting the two heads.



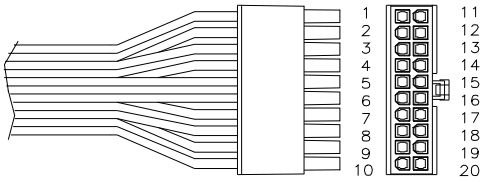
PIN NO.	COLOR	OUTPUT VOLTAGE	PIN NO.	COLOR	OUTPUT VOLTAGE
1	ORANGE	+3.3V	13	ORANGE	+3.3V
2	ORANGE	+3.3V	14	BLUE	-12V
3	BLACK	GND	15	BLACK	GND
4	RED	+5V	16	GREEN	PS-ON
5	BLACK	GND	17	BLACK	GND
6	RED	+5V	18	BLACK	GND
7	BLACK	GND	19	BLACK	GND
8	GREY	PWR-OK	20	WHITE	-5V
9	PURPLE	+5VSB	21	RED	+5V
10	YELLOW	+12V	22	RED	+5V
11	YELLOW	+12V	23	RED	+5V
12	ORANGE	+3.3V	24	BLACK	GND

24PINS (EPS12V)



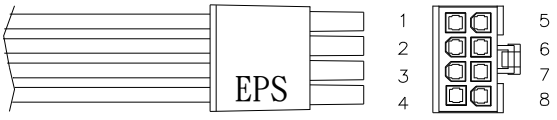
PIN NO.	COLOR	OUTPUT VOLTAGE	PIN NO.	COLOR	OUTPUT VOLTAGE
1	RED	+5V	13	RED	+5V
2	RED	+5V	14	RED	+5V
3	BLACK	GND	15	BLACK	GND
4	BLACK	GND	16	PURPLE	+5VSB
5	GREEN	PS-ON	17	BLUE	-12V
6	BLACK	GND	18	BLACK	GND
7	ORANGE	+3.3V	19	ORANGE	+3.3V
8	ORANGE	+3.3V	20	ORANGE	+3.3V
9	BLACK	GND	21	ORANGE	+3.3V
10	BLACK	GND	22	BLACK	GND
11	YELLOW	+12V	23	BLACK	GND
12	YELLOW	+12V	24	YELLOW	+12V

24PINS (AMD,ATX-GES)



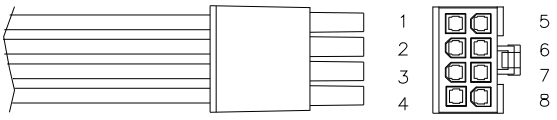
PIN NO.	COLOR	OUTPUT VOLTAGE	PIN NO.	COLOR	OUTPUT VOLTAGE
1	ORANGE	+3.3V	11	ORANGE	+3.3V
2	ORANGE	+3.3V	12	BLUE	-12V
3	BLACK	GND	13	BLACK	GND
4	RED	+5V	14	GREEN	PS-ON
5	BLACK	GND	15	BLACK	GND
6	RED	+5V	16	BLACK	GND
7	BLACK	GND	17	BLACK	GND
8	GREY	PWR-OK	18	WHITE	-5V
9	PURPLE	+5VSB	19	RED	+5V
10	YELLOW	+12V	20	RED	+5V

20PINS (ATX12V)



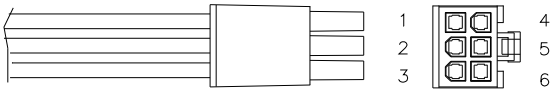
PIN NO.	COLOR	OUTPUT VOLTAGE	PIN NO.	COLOR	OUTPUT VOLTAGE
1	BLACK	GND	5	YELLOW	+12V
2	BLACK	GND	6	YELLOW	+12V
3	BLACK	GND	7	YELLOW	+12V
4	BLACK	GND	8	YELLOW	+12V

8PINS (EPS12V)



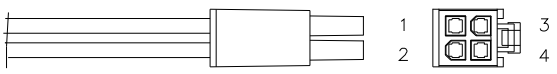
PIN NO.	COLOR	OUTPUT VOLTAGE	PIN NO.	COLOR	OUTPUT VOLTAGE
1	RED	+5V	5	BLACK	GND
2	GREY	PWR-OK	6	YELLOW	+12V
3	BLACK	GND	7	YELLOW	+12V
4	BLACK	GND	8	YELLOW	+12V

8PINS (AMD, ATX-GES)



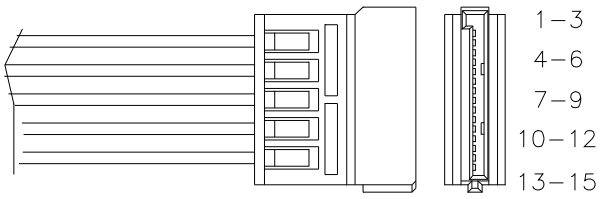
PIN NO.	COLOR	OUTPUT VOLTAGE	PIN NO.	COLOR	OUTPUT VOLTAGE
1	ORANGE	+3.3V	4	BLACK	GND
2	ORANGE	+3.3V	5	BLACK	GND
3	YELLOW	+12V	6	YELLOW	+12V

6PINS (EPS12V, OPTION)



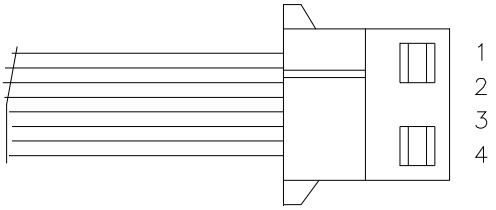
PIN NO.	COLOR	OUTPUT VOLTAGE	PIN NO.	COLOR	OUTPUT VOLTAGE
1	BLACK	GND	3	YELLOW	+12V
2	BLACK	GND	4	YELLOW	+12V

4PINS (ATX12V, FOR P4)



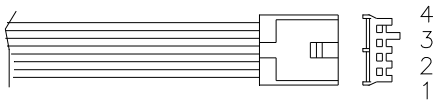
PIN NO.	COLOR	OUTPUT VOLTAGE
1~3	ORANGE	+3.3V
4~6	BLACK	GND
7~9	RED	+5V
10~12	BLACK	GND
13~15	YELLOW	+12V

15PINS (SERIAL ATA HD)



PIN NO.	COLOR	OUTPUT VOLTAGE	PIN NO.	COLOR	OUTPUT VOLTAGE
1	YELLOW	+12V	3	BLACK	GND
2	BLACK	GND	4	RED	+5V

4PINS (HD／CD-ROM/RW)



PIN NO.	COLOR	OUTPUT VOLTAGE	PIN NO.	COLOR	OUTPUT VOLTAGE
1	YELLOW	+12V	3	BLACK	GND
2	BLACK	GND	4	RED	+5V

4PINS (FLOPPY DISK)

Specifications

Please refer to the specifications according to the actual product purchased.
Note: The new feature, "Prolonged Cooling" after power supply is remote-off only available on model HG2. Under normal conditions, when power supply is at "Remote-off" mode, cooling fan will remain in operation for the secondary heat dissipation, and will come to stop at a much lower temperature. This will prolong the life of the power supply.

INPUT CHARACTERISTICS: **HG2-6300/6350/6400P**

- VOLTAGE: 90 ~ 240 VAC FULL RANGE.
- FREQUENCY: 47 ~ 63 HZ.
- INPUT CURRENT: 6/7/8.0 A (RMS) FOR 115VAC, 3/3.5/4.0 A (RMS) FOR 230VAC.
- INRUSH CURRENT: 65A MAX. FOR 115 VAC, 125A MAX. FOR 230 VAC.

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT(A)			REGULATION		OUTPUT
	MIN.	MAX.	PEAK	LOAD	LINE	RIPPLE & NOISE MAX. [P-P]
5V	3	35		± 5%	± 1%	50mV
12V	2	**22/26/30**		+7%/-5%	± 1%	120mV
-5V	0	0.8		±5%	± 1%	150mV
-12V	0	1.0		±5%	± 1%	150mV
3.3V	1	25		± 5%	± 1%	50mV
+5VSB	0.1	2		± 5%	± 1%	50mV

REMARK: THE OUTPUT CURRENT OF 5V & 3.3V SHOULD NOT EXCEED 45A.

SPECIFICATION:

- TEMPERATURE RANGE: OPERATING 0℃ --- 40℃.
- HOLD UP TIME: 16 ms MINIMUM AT FULL LOAD & NORMAL INPUT VOLTAGE.
- DIELECTRIC WITHSTAND: INPUT / OUTPUT 1500 VAC FOR 1 SECOND.
  INPUT TO FRAME GROUND 1500 VAC FOR 1 SECOND.
- EFFICIENCY: 68% TYPICAL.
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms.
- OVER LOAD PROTECTION: 130 +/- 20%.
  OVER VOLTAGE PROTECTION:
  +5V → 5.7V ~ 6.5V, 3.3V → 3.9 ~ 4.3V, 12V → 13.6 ~ 15V.
- SHORT CIRCUIT PROTECTION: +5V, -5V, +12V, -12V, +3.3V.
- EMI NOISE FILTER: FCC CLASS B, CISPR22 CLASS B.
- SAFETY: UL 1950, CSA 22.2 NO/ 950, TÜV IEC 950.
- REMOTE ON / OFF CONTROL.
  THE UNIT SHALL ACCEPT A LOGIC OPEN COLLECTOR LEVEL WHICH WILL DISABLE / ENABLE ALL OUTPUT VOLTAGES (EXCLUDE +5V STANDBY),
  AS LOGIC LEVEL IS LOW, OUTPUTS VOLTAGE WERE ENABLE,
  AS LOGIC LEVEL IS HIGH, OUTPUTS VOLTAGE WAS DISABLE.
- 3.3V / 5V REMOTE SENSING.
- COOLING: ONE 80mm BALL BEARING DC FAN.
- DIMENSION: 140 (D) x150 (W) x 86 (H) mm (PS/2).
- ACTIVE POWER FACTOR CORRECTION MEET IEC-1000-3-2 CLASS D.
- ADVANCE THERMAL & ACOUSTICS CONTROL FEATURES.

Specifications

Please refer to the specifications according to the actual product purchased.

INPUT CHARACTERISTICS: HP2-6460P/6500P

- VOLTAGE: 90 ~ 264 VAC FULL RANGE.
- FREQUENCY: 47 ~ 63 Hz.
- INPUT CURRENT: 8.0 A FOR 115 VAC, 4.0 A FOR 230 VAC.
- INRUSH CURRENT: 65 A MAX. FOR 115 VAC, 125 A MAX. FOR 230 VAC.

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT		REGULATION		OUTPUT
	MIN.[A]	MAX.[A]	LOAD	LINE	RIPPLE & NOISE MAX. [P-P]
5V	2.5	40	± 5%	± 1%	60mV
12V	1.0	27~32	± 5%	± 1%	100mV
-5V	0	0.8	± 5%	± 1%	100mV
-12V	0	1.0	± 5%	± 1%	100mV
3.3V	1.0	30	+5, -5%	± 1%	60mV
+5VSB	0.1	2	± 5%	± 1%	60mV

REMARK: TOTAL OUTPUT SHOULD NOT EXCEED 460W/500W FOR HP2-6460P/6500P.

*** WHEN PERFORMING CROSS REGULATION TEST, IT IS REQUESTED TO SET THE HIGHER OUTPUT CHANNEL AT 90% MAXIMUM AND THE LOWER OUTPUT CHANNELS AT 20% MININUM OF RATED SPEC.

- TEMPERATURE RANGE: OPERATING 0^0C --- 40^0C, STORAGE –20^0C --- 70^0C.
- HUMIDITY: 10 ~ 90 % RH.
- HOLD UP TIME: 16 ms MINIMUM AT FULL LOAD & 90 VAC INPUT VOLTAGE.
- DIELECTRIC WITHSTAND: INPUT / OUTPUT 1500 VAC FOR 1 MINUTE,
  INPUT TO FRAME GROUND 1500 VAC FOR 1 MINUTE.
- EFFICIENCY: 71% TYPICAL, AT FULL LOAD, 115VAC.
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms
- OVER LOAD PROTECTION: 110 ~ 150% MAX.
- OVER CURRENT PROTECTION:
  +5V → 44 A ~ 60 A, + 3.3V → 33 A ~ 45 A, 12V → 35.2 A ~ 48.0 A.
- OVER VOLTAGE PROTECTION:
  +5V → 5.7V ~ 6.5V, 3.3V → 3.9 ~ 4.3V, 12V → 13.6 ~ 15V.
- EMI: MEET FCC CLASS B, CISPR22 CLASS B.
- SAFETY: UL 1950, CSA 22.2 NO/ 950, TÜV IEC 950.
- REMOTE ON / OFF CONTROL.
- SHORT CIRCUIT PROTECTION: SHUTDOWN AND LATCH.
- BUILT-IN ACTIVE POWER FACTOR CORRECTOR.
- DIMENSION: 86(H) X 150(W) X 140 (D) mm (PS/2).
- COOLING: ONE 80 mm BALL BEARING DC FAN.

Specifications

Please refer to the specifications according to the actual product purchased.

INPUT CHARACTERISTICS: PSM-6550P/6600P

- VOLTAGE: 90 ~ 264 VAC FULL RANGE.
- FREQUENCY: 47 ~ 63 Hz.
- INPUT CURRENT: 10.0 A FOR 115 VAC, 5.0 A FOR 230 VAC.
- INRUSH CURRENT: 65 A MAX. FOR 115 VAC, 125 A MAX. FOR 230 VAC.

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT		REGULATION		OUTPUT
	MIN.[A]	MAX.[A]	LOAD	LINE	RIPPLE & NOISE MAX. [P-P]
5V	0.5	30	± 5%	± 1%	60mV
12V1	1.5	26	± 5%	± 1%	100mV
12V2	0	20	± 5%	± 1%	100mV
-12V	0	0.8	± 5%	± 1%	100mV
3.3V	0.5	30	+5, -5%	± 1%	60mV
+5VSB	0	2	± 5%	± 1%	60mV

REMARK: 12V TOTAL OUTPUT 40A MAX.

REMARK: TOTAL OUTPUT SHOULD NOT EXCEED 550W/600W FOR PSM-6550P/6600P.

*** WHEN PERFORMING CROSS REGULATION TEST, IT IS REQUESTED TO SET THE HIGHER OUTPUT CHANNEL AT 90% MAXIMUM AND THE LOWER OUTPUT CHANNELS AT 20% MININUM OF RATED SPEC.

- TEMPERATURE RANGE: OPERATING 0^0C --- 40^0C, STORAGE –20^0C --- 70^0C.
- HUMIDITY: 10 ~ 90 % RH.
- HOLD UP TIME: 16 ms MINIMUM AT FULL LOAD & 90 VAC INPUT VOLTAGE.
- DIELECTRIC WITHSTAND: INPUT / OUTPUT 1500 VAC FOR 1 MINUTE,
  INPUT TO FRAME GROUND 1500 VAC FOR 1 MINUTE.
- EFFICIENCY: 70% TYPICAL, AT FULL LOAD, 115VAC.
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms.
- OVER LOAD PROTECTION: 110 ~ 150% MAX.
- OVER CURRENT PROTECTION:
  +5V → 33 A ~ 45 A, + 3.3V → 33 A ~ 45 A, 12V1 → 19.8 A ~ 25.2 A
  12V2 → 19.8 A ~ 25.2 A.
- OVER VOLTAGE PROTECTION:
  +5V → 5.7V ~ 6.5V, 3.3V → 3.9 ~ 4.3V, 12V1 → 13.6 ~ 15V
  12V2 → 13.6 ~ 15V.
- EMI: MEET FCC CLASS B, CISPR22 CLASS B.
- SAFETY: UL 1950, CSA 22.2 NO/ 950, TÜV IEC 950.
- REMOTE ON / OFF CONTROL.
- SHORT CIRCUIT PROTECTION: SHUTDOWN AND LATCH.
- BUILT-IN ACTIVE POWER FACTOR CORRECTOR.
- DIMENSION: 86(H) X 150(W) X 160 (D) mm (STRETCH PS/2, EPS12V).
- COOLING: ONE 80 BALL BEARING mm DC FAN.

Specifications

Please refer to the specifications according to the actual product purchased.

INPUT CHARACTERISTICS: **PSL-6701P**

- VOLTAGE: 90 ~ 264 VAC FULL RANGE.
- FREQUENCY: 47 ~ 63 Hz.
- INPUT CURRENT: 10.0 / 11.0 / 12 A FOR 115 VAC, 5.0 / 5.5 / 6.0 A FOR 230 VAC.
- INRUSH CURRENT: 65 A MAX. FOR 115 VAC, 125 A MAX. FOR 230 VAC.

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT		REGULATION		OUTPUT
	MIN.[A]	MAX.[A]	LOAD	LINE	RIPPLE & NOISE MAX. [P-P]
5V	2.5	35	± 4%	± 1%	60mV
12V	1.0	45	± 5%	± 1%	100mV
-5V	0	0.8	± 5%	± 1%	100mV
-12V	0	1.0	± 5%	± 1%	100mV
3.3V	1.0	30	+5, -5%	± 1%	60mV
+5VSB	0.1	2	± 5%	± 1%	60mV

REMARK: **TOTAL OUTPUT POWER SHOULD NOT EXCEED 700W for PSL-6701P.**

*** WHEN PERFORMING CROSS REGULATION TEST, IT IS REQUESTED TO SET THE HIGHER OUTPUT CHANNEL AT 90% MAXIMUM AND THE LOWER OUTPUT CHANNELS AT 20% MININUM OF RATED SPEC.

- TEMPERATURE RANGE: OPERATING 0^0C --- 40^0C, STORAGE –20^0C --- 70^0C.
- HUMIDITY: 10 ~ 90 % RH.
- HOLD UP TIME: 16 ms MINIMUM AT FULL LOAD & 90 VAC INPUT VOLTAGE.
- DIELECTRIC WITHSTAND: INPUT / OUTPUT 1500 VAC FOR 1 MINUTE, INPUT TO FRAME GROUND 1500 VAC FOR 1 MINUTE.
- EFFICIENCY: 70% TYPICAL, AT FULL LOAD.
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms.
- OVER LOAD PROTECTION: 110 ~ 160% MAX.
- OVER VOLTAGE PROTECTION: **+5V → 5.7V ~ 6.5V, 3.3V → 3.9 ~ 4.3V, 12V → 13.6 ~ 15V.**
- EMI: MEET FCC CLASS B, CISPR22 CLASS B.
- SAFETY: MEET UL 1950, CSA 22.2 NO/ 950, TÜV IEC 950.
- REMOTE ON / OFF CONTROL.
- SHORT CIRCUIT PROTECTION: SHUTDOWN AND LATCH.
- REMOTE SENSING ON 3.3 V DESIGN.
- MEET IEC-1000-3-2 CLASS D (ACTIVE PFC).
- DIMENSION: 86(H) X 150(W) X 220 (D) mm (STRETCH PS/2).
- COOLING: ONE 80 mm BALL BEARING DC FAN.
- I^2C FEATURES (OPTIONAL).

INPUT CHARACTERISTICS: PSL-6720P/6800P/6850P

- VOLTAGE: 90 ~ 264 VAC FULL RANGE.
- FREQUENCY: 47 ~ 63 Hz.
- INPUT CURRENT: 5A (RMS) FOR 220 VAC
  12A (RMS) FOR 110 VAC
- INRUSH CURRENT: 75A MAX. FOR 110 VAC
  150A MAX. FOR 220 VAC

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT(A)			REGULATION		OUTPUT RIPPLE & NOISE MAX. [P-P]
	MIN.	MAX.	PEAK	LOAD	LINE	
+5V	0.5	45		± 5%	±1%	60mV
+12V	2	52/60/60		± 5%	±1%	120mV
-5V	0	0.8		±5%	±1%	120mV
-12V	0	0.8		±5%	±2%	120mV
+3.3V	0.5	30		±5%	±2%	60mV
+5VSB	0	3.5		±5%	±1%	60mV

REMARK: 1. TOTAL OUTPUT OF +5V AND +3.3V NOT EXCEED 230W

2. TOTAL MAX.OUTPUT 720W / 800W / 850W

SPECIFICATION:

- TEMPERATURE RANGE: OPERATING 0^0C --- 50^0C
- HOLD UP TIME: 17mS MINIMUM AT FULL LOAD & NOMINAL INPUT VOLTAGE
- EFFICIENCY: 71% TYPICAL AT FULL LOAD
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms
- OVER POWER PROTECTION
- OVER VOLTAGE PROTECTION
- OVER CIRCUIT PROTECTION
- SHORT CIRCUIT PROTECTOIN
- EMI NOISE FILTER: FCC CLASS B, CISPR22 CLASS B
- COOLING: 8 0mm DC FANS
- DIMENSION: 220 (D) x 150 (W) x 86 (H) mm

INPUT CHARACTERISTICS: PSL-6A00V

- VOLTAGE: 90 ~ 264 VAC FULL RANGE.
- FREQUENCY: 47 ~ 63 Hz.
- STEADY-STATE CURRENT: 14/7A AT ANY LOW/HIGH RANGE INPUT VOLTAGE
- INRUSH CURRENT: 20A MAX. FOR 110 VAC , 40A MAX. FOR 220 VAC (AT 25 DEGREE C AMBIENT COLD START)
- PFC: UP TO THE TARGET OF 95% @230V, FULL LOAD

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT (A)		REGULATION		OUTPUT RIPPLE & NOISE MAX. [P-P]
	MIN.	MAX.	LOAD	LINE	
+5V	1	25	± 250mV	±1%	60mV
+12V1	1	50	± 600mV	±1%	120mV
+12V2	1	50	± 600mV	±1%	120mV
-12V	0	0.8	± 600mV	±1%	120mV
+3.3V	1	25	± 165mV	±1%	60mV
+5VSB	0.1	3.5	± 250mV	±1%	60mV

REMARKS:

1. +5V AND +3.3V TOTAL MAX. POWER: 170W

2. +3.3V AND +5V AND +12V2 TOTAL MAX. POWER: 600W

3. TOTAL MAX. POWER: 1000W

SPECIFICATION:

- TEMPERATURE RANGE: OPERATING 0℃ -- 40℃; STORAGE TEMPERATURE: -20℃ – 80℃
- HOLD UP TIME: 18mS MINIMUM AT 90V FULL LOAD & NOMINAL INPUT VOLTAGE
- EFFICIENCY: 81%-86% TYPICAL AT 115V, FULL LOAD
- LEAKAGE CURRENT: 3.5 mA. MAX. AT NOMINAL VOLTAGE 264VAC
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms
- OVER POWER PROTECTION: 110%~160%
- OVER VOLTAGE PROTECTION: +3.3V→3.6~4.3V, +5V→5.5~6.5V, +12V1→13.2~15.6V, +12V2→ 13.2~15.6V
- OVER CURRENT PROTECTION: +3.3V→27.5~37.5A, +5V→ 27.5~37.5A, +12V1→55~75A, +12V2→55~75
- SHORT CIRCUIT PROTECTION: +3.3V, +5V, +12V1, +12V2, -12V
- SAFETY: TUV, CB, CCC, RFI/EMI STANDARDS
- EMI NOISE FILTER: FCC CLASS B, CISPR22 CLASS B
- COOLING: 8 0mm DC FANS
- I2C FEATURES (OPTIONAL)
- DIMENSION: 220 (D) x 150 (W) x 86 (H) mm

INPUT CHARACTERISTICS: PSL-6C00V

- VOLTAGE: 90 ~ 264 VAC FULL RANGE.
- FREQUENCY: 47 ~ 63 Hz.
- STEADY-STATE CURRENT: 15/7.5A AT ANY LOW/HIGH RANGE INPUT VOLTAGE
- INRUSH CURRENT: 20A MAX. FOR 110 VAC , 40A MAX. FOR 220 VAC (AT 25 DEGREE C AMBIENT COLD START)
- PFC: UP TO THE TARGET OF 95% @230V, FULL LOAD

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT (A)		REGULATION		OUTPUT RIPPLE & NOISE MAX. [P-P]
	MIN.	MAX.	LOAD	LINE	
+5V	1	25	± 250mV	±1%	60mV
+12V1	1	50	± 600mV	±1%	120mV
+12V2	1	50	± 600mV	±1%	120mV
-12V	0	0.8	± 600mV	±1%	120mV
+3.3V	1	25	± 165mV	±1%	60mV
+5VSB	0.1	3.5	± 250mV	±1%	60mV

REMARKS:

1. +5V AND +3.3V TOTAL MAX. POWER: 170W

2. +3.3V AND +5V AND +12V2 TOTAL MAX. POWER: 600W

3. TOTAL MAX. POWER: 1200W

SPECIFICATION:

- TEMPERATURE RANGE: OPERATING 0℃ -- 40℃; STORAGE TEMPERATURE: -20℃ – 80℃
- HOLD UP TIME: 18mS MINIMUM AT 90V FULL LOAD & NOMINAL INPUT VOLTAGE
- EFFICIENCY: 81%-86% TYPICAL AT 115V, FULL LOAD
- LEAKAGE CURRENT: 3.5 mA. MAX. AT NOMINAL VOLTAGE 264VAC
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms
- OVER POWER PROTECTION: 110%~160%
- OVER VOLTAGE PROTECTION: +3.3V→3.6~4.3V, +5V→5.5~6.5V, +12V1→13.2~15.6V, +12V2→ 13.2~15.6V
- OVER CURRENT PROTECTION: +3.3V→27.5~37.5A, +5V→ 27.5~37.5A, +12V1→55~75A, +12V2→55~75
- SHORT CIRCUIT PROTECTION: +3.3V, +5V, +12V1, +12V2, -12V
- SAFETY: TUV, CB, CCC, RFI/EMI STANDARDS
- EMI NOISE FILTER: FCC CLASS B, CISPR22 CLASS B
- COOLING: 8 0mm DC FANS
- I2C FEATURES (OPTIONAL)
- DIMENSION: 220 (D) x 150 (W) x 86 (H) mm

Operational Procedure

1. When removing four attached screws to install this product, please make sure not removing fan or case screws by mistake.

2. Tighten four screws onto the computer case and double check for stability. (Please refer to the figure on page 4).

3. Before connecting the units, make sure you verify connector and pin assignment for devices such as motherboard, hard disk etc. For example, the pin assignments of 24-pin and 8-pin connector on AMD Athlon MP Motherboard are totally different than Intel Xeon motherboard. Severe damages may occur by wrong connection.

4. Check product specifications and calculate actual current requirements of each DC voltage. Make sure these requirements fall within the minimum and maximum range of power supply. If the current requirements are below the minimum load spec., the power supply may not start up. If the current requirements are over the maximum load spec., our over protection circuitry will latch and shutdown the power supply.

5. Plug in power cord to the inlet of power supply.
    - Only HG2 models have line power I/O rocker switch. Please set the switch to “I” or “ON” to turn on line power. For other models, just plug the power cord into the electrical outlet directly.
    - Active Power Factor Correction (PFC) function is available for all power supply models listed in this manual. The PFC function ensures maximum efficiency of power usage to preserve energy and lower your electrical bills. It also automatically adapts to a very wide range of AC line voltage: 100V to 240V AC. (There are no manual switches for you to select AC input). This unique design ensures you can use our power supplies anywhere in the world.

6. You can start up the power supply remotely by using “Remote on”.

Troubleshooting & Maintenance

SYMPTOM	COUNTERMEASURE
No power?	● After plug main connector, such as 24-pin or 20-pin and aux. connectors if needed, to motherboard socket, make sure AC power cord gets AC line source that is on wall outlet, to this product power supply. If AC power cord gets AC line source through power bar or UPS, turn on these devices first. ● If product model is HG2, set I/O switch of power supply panel to "I" or "ON". Other models HP2, PSM and PSL don't have line power I/O rocker switch. ● Boot system from computer case I/O. ● Check product specifications and calculate actual current requirements of each DC voltage. Make sure these requirements fall within the minimum and maximum range of power supply. (i) If the current requirements are below the minimum load spec., the power supply may not start up. Increase load. (ii) If the current requirements are over the maximum load spec., our over protection circuitry will latch and shutdown the power supply. Reduce load or use larger capacity power supply. ● There may be a system incompatibility or wrong connector pin out or connection, when power supply its fan has spin for while then shutdown. For example, (i) Use wrong pin assignments of 24-pin and 8-pin connectors e.g. For AMD Athlon MP Motherboard connectors are totally different than Intel Xeon motherboard. Severe damages may occur by plugging wrong connection. (ii) Plug wrong pin position on small 4-pin floppy drive connector to cause connection displacement. **[Action]** Remove all connectors at all first, then one-by-one to plug in one connector at a time and verify the operation of each device and system function. When no problem, proceed next device. ● The power supply could be latched by self-protection function (e.g. "over voltage", "over current", "overload"). Remove the power cord, wait for 20 seconds or more to discharge its electricity, then plug in the power cord again, try to restart the computer.
Power is on, but no monitor display?	● Check if video card is seated properly; check the video cable connection. ● Verify system and motherboard requirements. For example, some motherboards require RAM in pairs to work properly, such as Tyan #S2665.

Technical Support

To best serve our customers, there are several services available to suite your needs:

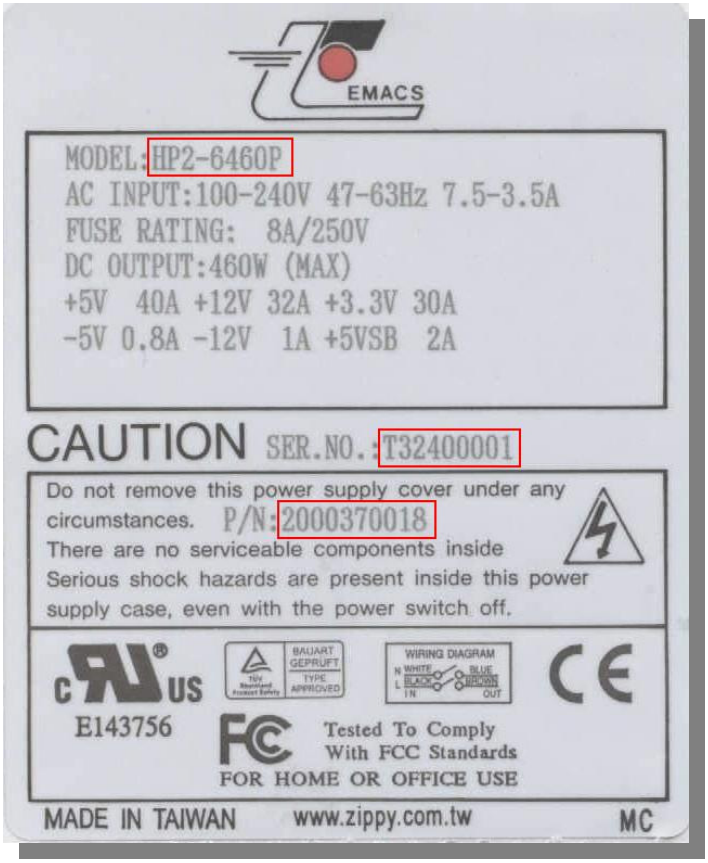
1. For detailed products specification: please visit **www.zippy.com**

2. For technical enquiries: please send e-mail to **powersales@zippy.com**

3. For RMA service: please prepare following items before calling RMA department,
   - Proof of purchase (original dated receipt)
   - Product serial number (SER. NO.) (Refer to the label on product and diagram below)
   - Product part number (P/N)
   - Product model
   - Detailed description of problems

   Note:
   Different distributors or resellers have their specific RMA terms and conditions; please contact them for detailed information.

   Locations of relevant information:
   e.g. （1）Model **HP2-6460P**, （2）S/N **T3240001**, （3）P/N **2000370018**.
   Actual contents may not be the same for different models.



4. Please feel free to contact us via e-mail should you encounter any technical problems beyond the scope of this user manual.

5. We carry more than 120 standing high quality power supply models and over six hundred various sub-models. Please visit **www.zippy.com** for more detailed information.