



全漢企業股份有限公司

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Approval Sheet

Model Number : FSP460-60PFN(S201)

SPI P/N : 9PA4600131

Apply Rev : 1.00-a

Item	Contents
01	Specification
02	Mechanical Drawing
03	Safety Certificate

Apply Rev: X.YY-Z (X=PCB, YY=Modify, Z=Documents)



全漢企業股份有限公司

電氣規格書

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 附件版本 : 08
 研發部門 : RD2
 作者 : 陳婉立/winnie
 Model No/Type :
 機密 : N
 發行日期 : 2004/6/25-16:31:35
 備註 :
 升版理由 : 1.取消 PT-6550NV(P052)>>9PA4600128 之關聯



單位	姓名	單位	姓名	單位	姓名
安規 1	Mike 林茂寬	研發 1	Karl 吳聲鴻	主管	Tj 莊同榮

相關料號：

9PA4600100

,FSP460-60PFN,IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,INTEL,FULL RANGE,RD2

9PA4600101

,FSP460-60PFN,(S031),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,SPI,W/PFC(A),9L1S,INTEL,FULL RANGE,RD2

9PA4600104

,FSP460-60PFN,(F062),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP(F/S),W/PFC(P),7L2S,INTEL,FULL RANGE,RD2

9PA4600106

,FSP460-60PFN,(F042),IPC,ATX,B,W/NK,W/IO,WO/O,WO/SS,FSP(F/S),W/PFC(A),5L1S,INTEL,FULL RANGE,RD2

9PA4600107

,FSP460-60PFN,(W031),IPC,ATX,B,W/NK,W/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,INTEL,FULL RANGE,RD2

9PA4600108 KEEP

20040224,FSP460-60PFN,(C151),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,SPI,W/PFC(A),7L2S,INTEL,FULL RANGE,RD2

9PA4600109

,FSP460-60PFN,(S033),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,SPI,W/PFC(A),8L1S,INTEL,FULL RANGE,RD2

9PA4600110

,FSP460-60PFN,(A271),IPC,ATX,B,W/NK,W/IO,WO/O,WO/SS,AOPEN,W/PFC(A),9L1S,INTEL 規格,FULL RANGE,RD2

9PA4600111

,FSP460-60PFN,(F221),IPC,ATX,B,W/NK,W/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,INTEL,FULL RANGE,RD2

9PA4600113

,FSP460-60PFN,(W071),IPC,ATX,B,W/NK,W/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,OEM,INTEL,FULL RANGE,RD2

9PA4600114

,FSP460-60PFN,(A272),IPC,ATX,B,W/NK,W/IO,WO/O,WO/SS,AOPEN,W/PFC(A),9L1S,INTEL,FULL RANGE,RD2

9PA4600115

,FSP460-60PFN,(M061),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,INTEL,FULL RANGE,9PA4600100,RD2

9PA4600118

,FSP460-60PFN,(D181),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,INTEL,FULL RANGE,9PA4600100,RD2

台灣 桃園市建國東路 22 號

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9PA4600119
,FSP460-60PFN,(C152),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,SPI,W/PFC(A),8L1S,INTE
L,FULL RANGE,9PA4600108,RD2

9PA4600121
,FSP460-60PFN,(F063),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(P),8L2S,INTE
L,FULL RANGE,9PA4600104,RD2

9PA4600122
,FSP460-60PFN,(M311),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,INT
EL,FULL RANGE,9PA4600100,RD2

9PA4600123
,FSP460-60PFN,(C241),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,INTE
L,RULL RANGE,9PA4600100,RD2

9PA4600124
,FSP460-60PFN,(P051),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,P/T,W/PFC(A),7L1S,OEM,
INTEL,FULL RANGE,9PA4600100,RD2

9PA4600125
,FSP460-60PFN,(C111),IPC,ATX,B,W/NK,W/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,INTEL,
FULL RANGE,9PA4600100,RD2

9PA4600126
,FSP460-60PFN,(C242),PC,ATX,B,W/NK,W/IO,WO/O,WO/SS,FSP,W/PFC(P),5L1S,INTEL,
FULL RANGE,9PA4600106,RD2

9PA4600127
,FSP460-60PFN,(F064),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(A),8L1S,INTE
L,FULL RANGE,9PA4600100,RD2

9PA4600130
,FSP460-60PFN,(S371),PC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(A),9L1S,INTE
L,FULL RANGE,9PA4600100,RD2

9PA4600131
FSP460-60PFN,(S201),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(A),7L1S,INTE
L,FULL RANGE



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SPECIFICATION

FSP460-60PFN

9PA4600100

**Main Feature:
Active PFC Circuit
Full Range Input**

February 24,2004

REV:08



全漢企業股份有限公司

SDI Electronic Co., Ltd.

MODEL: FSP460-60PFN

Revision History

<u>Rev</u>	<u>Description</u>	<u>Date</u>	<u>Author</u>
5	1.Revise 3.2 CONNECTOR SPECIFICATIONS --- (Page 4) 2.Delete 10 SAFETY REQUIREMENTS--- (Page 11)	2003.08.07	Karl
6	1.Revise 2.2 SAFETY --- (Page 3)	2003.11.05	Joyhare
7	1.Revise 6.1 LEAKAGE CURRENT--- (Page10)	2004.02.19	Joyhare
8	1.Revise 2.2 SAFETY --- (Page 3)	2004.02.24	Joyhare

1. GENERAL DESCRIPTION AND SCOPE

This is the specification of Model FSP460-60PFN; AC-line powered switching power supply with active PFC (Power Factor Correction) circuit, meet EN61000-3-2 and with Full Range Input features. Designed and manufactured by FSP GROUP.

The specification below is intended to describe as detailedly as possible the functions and performance of the subject power supply. Any comment or additional requirements to this specification from our customers will be highly appreciated and treated as a new target for us to approach.

2. REFERENCE DOCUMENTS

The subject power supply will meet the EMI requirements and obtain main safety approvals as following:

2.1 EMI REGULATORY

- FCC Part 15 Subpart J, Class 'B' 115 Vac operation.
- CISPR 22 Class 'B' 230 Vac operation.

2.2 SAFETY

- NEMKO EN 60950
- TUV EN60950 OR VDE EN60950
- CSA-C22.2 NO. 950-95
- IEC 60950
- UL 1950
- CE :

EN 55022:1998+A1: 2000, Class B	EN 55024: 1998+A1: 2001
EN 61000-3-2: 2000	IEC 61000-4-2: 2001
EN 61000-3-3: 1995+A1: 2001	IEC 61000-4-3: 2002
	IEC 61000-4-4:1995
	+A1:2000+A2: 2001
CISPR22: 1997+A1: 2000, Class B	IEC 61000-4-5: 2001
AS/NZS CISPR 22: 2002, Class B	IEC 61000-4-6: 2001
	IEC 61000-4-8: 2001

3. PHYSICAL REQUIREMENTS

3.1 MECHANICAL SPECIFICATIONS

The mechanical drawing of the subject power supply, which indicate the form factor, location of the mounting holes, location, the length of the connectors, and other physical specifications of the subject power supply. Please refer to the attachment drawing.

3.2 CONNECTOR SPECIFICATIONS

The power supply connectors are:

- AC Inlet : Standard inlet socket 10A/250V, UL/CSA/VDE approved.
- P1 : The equivalent of MOLEX 39-01-2240, 24 pin connector
- P2 : The equivalent of MOLEX 39-01-2080, 8 pin connector
- P4 - P7,P9 - P13 : The equivalent of AMP 1-480424-0, 4 pin connector
- P8 :The equivalent of AMP 171822-4, 4 pin connector

3.3 CONNECTOR PIN DESIGNATIONS

The pin designations and color codes are defined as follows:

	P1 SYSTEM BOARD		P2 DISK DRIVER		P4-P7, P9 – P13 DISK DRIVER		P8 DISK DRIVER	
PIN1	+3.3V	ORANGE	COM	BLACK	+12V	YELLOW	+12V	YELLOW
PIN2	+3.3V	ORANGE	COM	BLACK	COM	BLACK	COM	BLACK
PIN3	COM	BLACK	COM	BLACK	COM	BLACK	COM	BLACK
PIN4	+5V	RED	COM	BLACK	+5V	RED	+5V	RED
PIN5	COM	BLACK	+12V	YELLOW/ BLACK				
PIN6	+5V	RED	+12V	YELLOW/ BLACK				
PIN7	COM	BLACK	+12V	YELLOW/ BLACK				
PIN8	PWR-OK	GRAY	+12V	YELLOW/ BLACK				
PIN9	+5VSB	PURPLE						
PIN10	+12V	YELLOW						
PIN11	+12V	YELLOW						
PIN12	+3.3V	ORANGE						
PIN13	+3.3V	ORANGE						
PIN14	-12V	BLUE						
PIN15	COM	BLACK						
PIN16	PS_ON	GREEN						
PIN17	COM	BLACK						
PIN18	COM	BLACK						
PIN19	COM	BLACK						
PIN20	-5V	WHITE (OPTION)						
PIN21	+5V	RED						
PIN22	+5V	RED						
PIN23	+5V	RED						
PIN24	COM	BLACK						

4. ELECTRICAL REQUIREMENTS

4.1 OUTPUT ELECTRICAL REQUIREMENTS

The subject power supply will meet all electrical specifications below, over the full operation temperature range and dynamic load regulation.

4.1.1. OUTPUT RATING

Output	Nominal	Regulation	Ripple/Noise	Min	Max	Notes
1	+3.3V	+5% - 4%	50mV	0.4A	27.0 A	
2	+5V	+5% - 4%	50mV	3.0A	29.0 A	
3	-5V	±10%	120mV	0 A	0.3A	
4	+12V CPU	+5% - 4%	120mV	1.0A	16.5 A	Found on connector P2
5	+12V I/O	+5% - 4%	120mV	1.0A	15.0 A	Found on connector P1
6	-12V	+9% - 5%	120mV	0 A	0.8 A	
7	+5VSB	+5% - 4%	50mV	0 A	2.0A	

The +3.3V and +5V total output shall not exceed 200watts, the +3.3V, +5V and +12V total output power shall not exceed 440W and the total output for this subject power supply is 460 watts. Ripple and noise measurements shall be made under all specified load conditions through a single pole low pass filter with 20MHz cutoff frequency. Outputs shall bypassed at the connector with a 0.1uF ceramic disk capacitor and a 10uF electrolytic capacitor to simulate system loading.

4.1.2. LOAD CAPACITY SPECIFICATIONS

The cross regulation defined as follows, the voltage regulation limits DC include DC Output ripple & noise.

LOAD	STM.	+3.3V	+5V	-5V	+12V CPU	+12V I/O	-12V
ALL MAX	HHHHHH	20.0A	26.8A	0.3A	10.0A	10.0A	0.8A
+5V MAX other MIN	LHLLLL	0.4 A	29.0 A	0.0A	1.0A	1.0A	0A
+3.3V MAX other MIN	HLLLLL	27.0 A	3.0 A	0.0 A	1.0A	1.0A	0A
+12V CPU MAX other MIN	LLLHLL	0.4 A	3.0 A	0.0 A	16.5A	1.0A	0A
+12V I/O MAX other MIN	LLLLHL	0.4 A	3.0 A	0.0 A	1.0A	15.0A	0A
ALL MIN	LLLLLL	0.4 A	3.0 A	0.0 A	1.0A	1.0A	0A

4.1.3. HOLD-UP TIME (@FULL LOAD)

115V / 60Hz : 18 mSec. Minimum.

230V / 50Hz : 18 mSec. Minimum.

The output voltage will remain within specification, in the event that the input power is removed or interrupted, for the duration of one cycle of the input frequency. The interruption may occur at any point in the AC voltage cycle. The power good signal shall remain high during this test.

4.1.4.OUTPUT RISE TIME

(10% TO 90% OF FINAL OUTPUT VALUE, @FULL LOAD)

115V-rms or 230V-rms + 5Vdc : 50ms Maximum

4.1.5.OVER VOLTAGE PROTECTION

Voltage Source	Protection Point
+3.3V	3.8V-4.5V
+5V	5.6V-6.5V
+12V	13.0-14.5V

4.1.6.SHORT CIRCUIT PROTECTION

Output short circuit is defined to be a short circuit load of less than 0.1 ohm.

In the event of an output short circuit condition on +3.3V, +5V or +12V output, the power supply will shutdown and latch off without damage to the power supply. The power supply shall return to normal operation after the short circuit has been removed and the power switch has been turned off for no more than 2 seconds.

In the event of an output short circuit condition on -12V output, the power supply will not be damaged. The power supply shall return to normal operation as soon as the short circuit has been removed. and the power switch has been turned off for no more than 2 seconds.

4.1.7.OVERLOAD PROTECTION

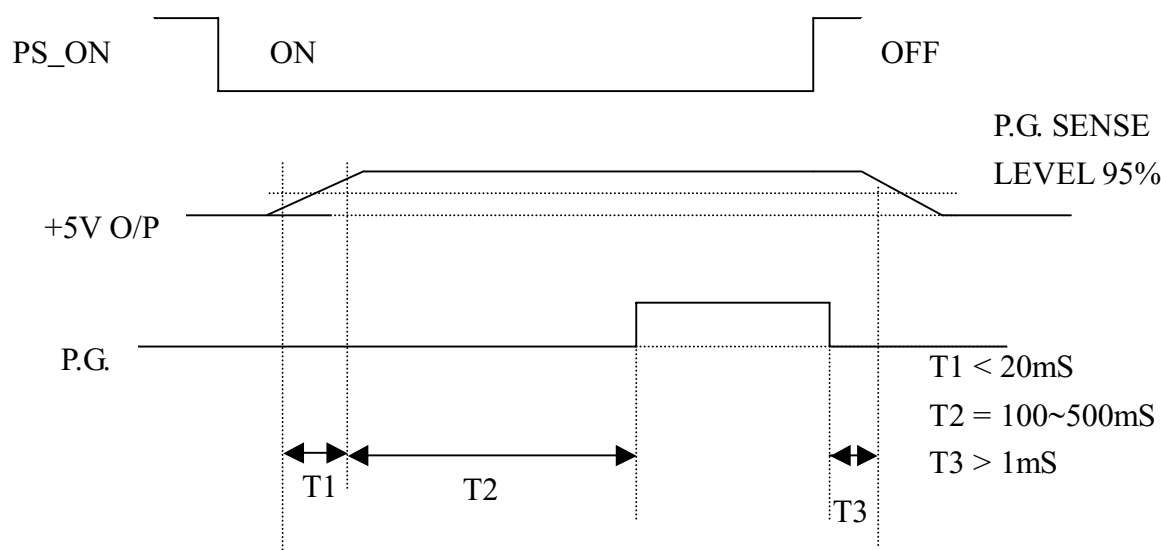
OUTPUT VOLTAGE	Max. overcurrent limit
+3.3V	45A
+5V	45A
+12V CPU	19.5A
+12V I/O	19.5A

4.1.8.POWER GOOD SIGNAL

The power good signal is a TTL compatible signal for the purpose of initiating an orderly star-up procedure under normal input operating conditions. This signal is asserted (low) until +5Vdc has reached 4.75 volts during power up. Characteristics:

- TTL signal asserted (low state) : less than 0.5V while sinking 10mA.
- TTL signal asserted (high state): greater than 4.75V while sourcing 500uA.
- High state output impedance: less or equal to 1Kohm from output to common.

POWER GOOD @ 115/230V,FULL LOAD	100 –500mSec.
POWER FAIL @115/230V, FULL LOAD	1 mSec. minimum



4.2. OUTPUT TRANSIENT LOAD RESPONSE

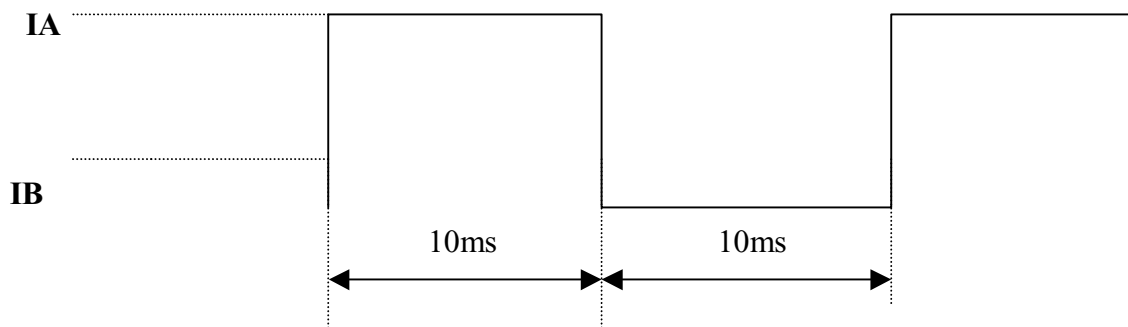
+5V and +12V must be within specification for a step change in current as specified below. The outputs will be tested one section at a time with all other sections at maximum load. The test transition will be from IA to IB and IB to IA. The step current will have a nominal transition time of 0.5 amp per microsecond for +5V and 0.1 amp per microsecond for +12V.

+5Vdc:

IA: 26.8amps
 IB: 20.1amps
 Volts variation: 400 mV max (p-p)
 Setting time: 10 ms max

+12Vdc:

IA: 10.0 amps
 IB: 7.5 amps
 Volts variation: 450 mV max (p-p)
 Setting time: 10 ms max



4.3. INPUT ELECTRICAL SPECIFICATIONS

4.3.1. AC INPUT

Parameter	Min.	Nom. ⁽¹⁾	Max.	Unit
V _{in} (115VAC)	90	115	135	VAC _{rms}
V _{in} (230VAC)	180	230	265	VAC _{rms}
V _{in} Frequency	47	--	63	HZ

◆ Nominal voltages for test purposes are considered to be within ±1.0V of nominal.

4.3.2. INRUSH CURRENT

(Cold start – 25 deg. C)

115V	80 Amps - peak
230V	120 Amps - peak

4.3.3. INPUT LINE CURRENT

115V	9.0 Amps – rms maximum
230V	5.0 Amps – rms maximum

4.4. EFFICIENCY

115 VAC @Full Load	65% minimum
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4.5. PS_ON#

PS_ON# is an active-low, TTL-compatible signal that allows a motherboard to remotely control the power supply in conjunction with features such as soft on/off, Wake on LAN+, or wake-on-modem. When PS_ON# is pulled to TTL low, the power supply should turn on the five main DC output rails: +12VDC,+5VDC,+3.3VDC,-5VDC,and -12VDC. When PS_ON# is pulled to TTL high or open-circuited, the DC output rails should not deliver current and should be held at zero potential with respect to ground. PS_ON# has no effect on the +5VSB output, which is always enabled whenever the AC power is present. Table 15 lists PS_ON# signal characteristics.

The power supply shall provide an internal pull-up to TTL high. The power supply shall also provide debounce circuitry on PS_ON# to prevent it from oscillating on/off at startup when activated by a mechanical switch. The DC output enable circuitry must be SELV-compliant.

PS_ON# Signal Characteristics

	Min.	Max.
VIL, Input Low Voltage	0.0V	0.8V
IIL, Input Low Current (Vin = 0.4V)		-1.6mA
VIH, Input High Voltage (Iin = -200 μA)	2.0V	
VIH OPEN circuit, Iin = 0		5.25V

5. ENVIRONMENTAL REQUIREMENTS

The power supply will be compliant with each item in this specification for the following Environmental conditions.

5.1. TEMPERATURE RANGE

Operating	0 to +50 deg. C
Storage	-20 to +80 deg. C

5.2. HUMIDITY

Operating	5 –95% RH, Non-condensing
Storage	5 –95% RH, Non-condensing

5.3. VIBRATION

The subject power supply will withstand the following imposed conditions without experiencing non-recoverable failure or deviation from specified output characteristics.

Vibration Operating – Sine wave excited, 0.25 G maximum acceleration, 10-250 Hz swept at one octave / min. Fifteen minute dwell at all resonant points, where resonance is defined as those exciting frequencies at which the device under test experiences excursions two times large than non-resonant excursions.

Plane of vibration to be along three mutually perpendicular axes.

5.4. SHOCK

The subject power supply will withstand the following imposed conditions without experiencing non-recoverable failure or deviation from specified output characteristics.

Storage –40G, 11 mSec. half-sine wave pulse in both directions on three mutually perpendicular axes.

Operating -10G, 11mSec. half-sine wave pulse in both directions on three mutually Perpendicular axes.

5.5 COOLING SPECIFICATIONS

5.5.1. The subject power supply is cooled by a self-contained, 80mm, 12VDC fan.

6. SAFETY

6.1. LEAKAGE CURRENT

The leakage current from AC to safety ground will not exceed 3.5 mA-rms at 264Vac, 50 Hz.

7. ELECTROMAGNETIC COMPATIBILITY

7.1 LINE CONDUCTED EMI

The subject power supply will meet FCC and VFG class B requirements under full load conditions.

7.2. RADIATED EMI

The subject power supply will meet FCC and CISPR 22 requirements under normal load conditions.

8. LABELLING

Label marking will be permanent, legible and complied with all agency requirements.

8.1. MODEL NUMBER LABEL

Labels will be affixed to the sides of the power supply showing the following:

- Manufacturer's name and logo.
- Model no., serial no., revision level, location of manufacturer.
- The total power output and the maximum load for each output.
- AC input rating.

8.2 DC OUTPUT IDENTIFICATION

Each output connector will be labeled.

9. RELIABILITY

9.1. MTBF

The power supply have a minimum predicted MTBF(MIL-HDBK-217) of 100,000 hours of continuous operation at 25°C, maximum-output load, and nominal AC input voltage.



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外觀圖

料號 : 9PA4600131(FSP460-60PFN,(S201),IPC,ATX,B,W/NK,WO/IO,WO/O,WO/SS,FSP,W/PFC(A),7L1S,INTEL,FULL RANGE,9PA4600100,RD2)

版次 : 1

文件編號 : OAD04018666

附件版本 : 01

研發部門 : RD2

作者 : 陳佩華/kelly

Model No/Type : FSP460-60PFN(S201)

機密 : N

表單編號 : 7000P-0111

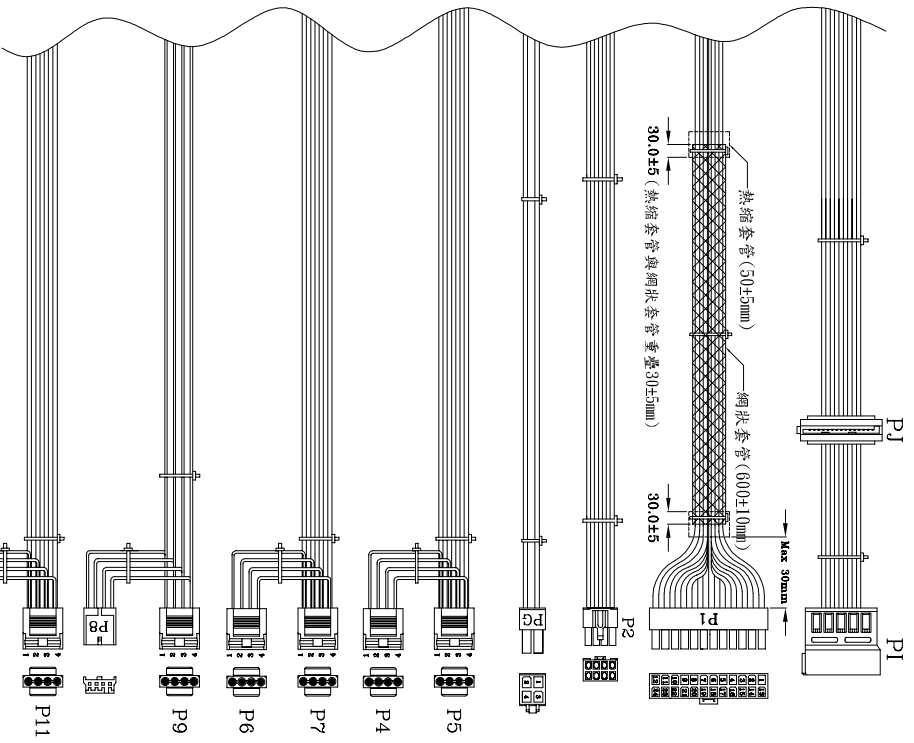
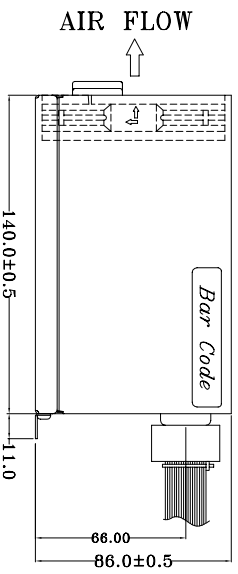
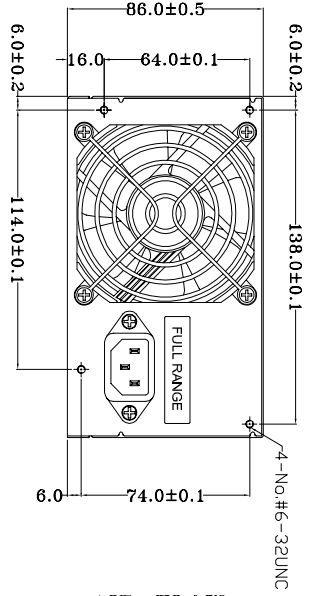
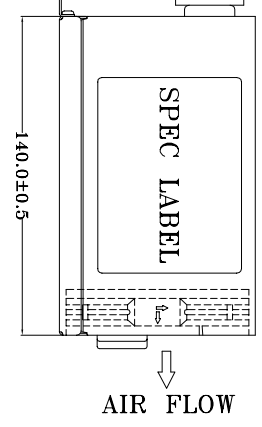
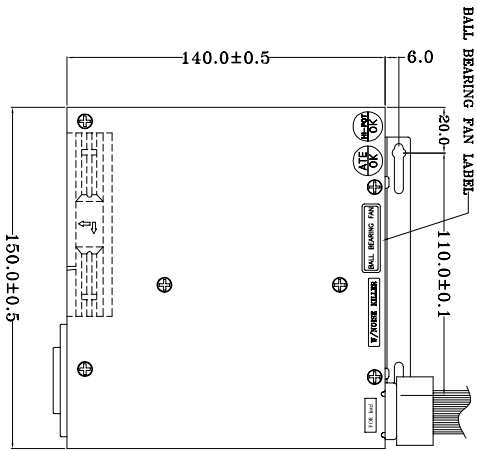
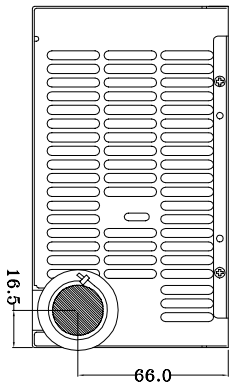
發行日期 : 2004/6/30-18:33:57

備註 :



單位	姓名	單位	姓名	單位	姓名
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機構工程	angus 樂家龍	主管	Tj 莊同榮		

REF. NO.	FIN. GROUP	WIRE COLOR	WIRE GAUGE	CONNECTION TYPE	CABLE LENGTH
P1	1	+3.3VDC	ORANGE	MOLEX 39-01-29-01 or 8QUIV	700±15mm
	2	COM	BLACK		
	3	+5VDC	RED		
	4	COM	BLACK		
	5	+5VDC	RED		
	6	COM	BLACK		
	7	+5VDC	RED		
	8	COM	BLACK		
	9	+5VDC	RED		
	10	+12VDC	YELLOW		
	11	+12VDC	YELLOW		
	12	+3.3VDC	ORANGE		
	13	+3.3VDC	ORANGE		
	14	+3.3VDC	BROWN		
	15	COM	BLACK		
	16	PS-ON	GREEN		
	17	COM	BLACK		
	18	COM	BLACK		
	19	COM	BLACK		
	20	5VDC	WHITE		
	21	+5VDC	RED		
	22	+5VDC	RED		
	23	+5VDC	RED		
	24	COM	BLACK		
P2	1	COM	BLACK	MOLEX 39-01-29-01 or 8QUIV	700±15mm
	2	COM	BLACK		
	3	+5V	RED		
	4	+5V	RED		
P4	1	+12V	YELLOW/BLACK	玉石廠商: P01001	155±10mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P5	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P6	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P7	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P8	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P9	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P10	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P11	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P12	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P13	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P14	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P15	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P16	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P17	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P18	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P19	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P20	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P21	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P22	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P23	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		
P24	1	+12V	YELLOW	玉石廠商: P01001	500±15mm
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5V	RED		



NOTE:

1. ALL THE LENGTH OF OUTPUT WIRES EXCLUDE HOUSING.
2. 產地標籤依業務指示加貼.

UNIT:mm

MODEL NO. : FSP460-60PFN(S201)	TITLE: ASSY	SHEET: 1 OF 1	REV:01
R&D	PE	DRAWN	DATE
INTERIOR COUNTERSIGN:			Jun.29.2004
			樂家龍

P/N.:9PA4600131

IEC SYSTEM FOR CONFORMITY TESTING TO
STANDARDS FOR SAFETY OF ELECTRICAL
EQUIPMENT (IECEE)
CB SCHEME

SYSTEME CEI D'ESSAIS DE CONFORMITE AUX
NORMES DE SECURITE DE L'EQUIPEMENT
ELECTRIQUE (IECEE)
METHODE OC

CB TEST CERTIFICATE CERTIFICATE D'ESSAI OC

Product
Produit

Name and address of the applicant
Nom et adresse du demandeur

Name and address of the manufacturer
Nom et adresse du fabricant

Name and address of the factory
Nom et adresse de l'usine

Rating and principal characteristics
Valeurs nominales et caractéristiques principales

Trade mark (if any)
Marque de fabrique (si elle existe)

Model/type Ref.
Ref. de type

Additional information (if necessary)
Information complémentaire (si nécessaire)

A sample of the product was tested and found
to be in conformity with
*Un échantillon de ce produit a été essayé et a été
considéré conforme à la*

as shown in the Test Report Ref. No.
which forms part of this certificate
*comme indiqué dans le Rapport d'essais numéro
de référence*
qui constitue une partie de ce certificat

Power Supply for building-in

FSP Group Inc.
No. 22, Jianguo E. Rd.
Taoyuan City, TAIWAN R.O.C.

FSP Group Inc.
No. 22, Jianguo E. Rd.
Taoyuan City, TAIWAN R.O.C.

Refer to page 2

10A 100-240V 50-60Hz
Cl. I

BRAND NAME: Aopen

FSP460-60PFN.

AC-output optional: 2A 100-240V
DC-output: 27.0A +3.3V, 29.0A +5V, 15.0A +12.0V I/O,
16.5A +12V CPU, 2.0A +5Vsb, 0.3A -5V, 0.8A -12V
Max. output power is 460W. +3.3V & 5V output is 200W max.
The dots in model name can be A to Z, 0 to 9 or blank, for
marketing purpose only.

IEC 60950 2nd Edition, 1991 + Amd. 1, 1992 + Amd. 2, 1993 +
Amd. 3, 1995 + Amd. 4, 1996.

200228134

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Ce Certificat d'essai OC est établi par l'Organisme National de Certification



P.O. BOX 73, BLINDERN
N-0314 OSLO, NORWAY

Date 11 July 2002

Signature: 
Principal Engineer

CB TEST CERTIFICATE

Ref. No. NO 16310

NAME AND ADDRESS OF PRODUCTION-SITES (FACTORIES):

Fortron/Source(China) Corp.
Building #25, Zone 37, Baoan District
Shenzhen, Guangdong, P.R. China

Wellex Technology Co., Ltd.
Zhenlian Building, County 74, Baoan
Shenzhen Guangdong P.R. China

Shenzhen Hulli Electronics Co., Ltd.
Blk. C. Bldg, 7, County 73, Baoan
Shenzhen Guangdong, P.R. China

Fortron/Source(China) Corp.
F2, the 2nd industrial Area of Mabu
Xixiang, Baoan, Shenzhen, P.R. China

Zhonghan Electronics (Shenzhen) Co., Ltd.
Juyuan Industrial Zone, Tangwei Village, Fuyong Town
Baoan District, Shenzhen City, China

Oslo, 11 July 2002

Issued by



Lars Hjerpsøth
for **Lars Hjerpsøth**
Principal Engineer

IEC SYSTEM FOR CONFORMITY TESTING TO
STANDARDS FOR SAFETY OF ELECTRICAL
EQUIPMENT (IECEE)
CB SCHEME

SYSTEME CEI D'ESSAIS DE CONFORMITE AUX
NORMES DE SECURITE DE L'EQUIPEMENT
ELECTRIQUE (IECEE)
METHODE OC

CB TEST CERTIFICATE CERTIFICATE D'ESSAI OC

Product

Produit

Name and address of the applicant

Nom et adresse du demandeur

Name and address of the manufacturer

Nom et adresse du fabricant

Name and address of the factory

Nom et adresse de l'usine

Rating and principal characteristics

Valeurs nominales et caractéristiques principales

Trade mark (if any)

Marque de fabrique (si elle existe)

Model/type Ref.

Ref. de type

Additional information (if necessary)

Information complémentaire (si nécessaire)

A sample of the product was tested and found
to be in conformity with

*Un échantillon de ce produit a été essayé et a été
considéré conforme à la*

as shown in the Test Report Ref. No.
which forms part of this certificate
*comme indiqué dans le Rapport d'essais numéro
de référence*

qui constitue une partie de ce certificat

Power Supply for building-in

FSP Group Inc.
No. 22, JIanguo E. Rd.
Taoyuan City
TAIWAN R.O.C.

FSP Group Inc.
No. 22, JIanguo E. Rd.
Taoyuan City
TAIWAN R.O.C.

See page 2

10A, 100-240V, 50-60Hz

Cl. I DC-output optional: 2A, 100-240V, DC-output: 27.0A +3.3V,
29.0A +5V, 15.0A +12.0V I/O, 16.5A +12V GPU, 2.0A +5Vsb, 0.3A
+5V, 0.8A +12V. Max output power is 460W, +3.3V & +5V output
is 200W max.

FSP

FSP460-60PFN.

The dots in model name can be A to Z, 0 to 9 or blank for
marketing purpose only.

IEC 60950 2nd Edition, 1991 + Amd. 1, 1992 + Amd. 2, 1993 +
Amd. 3, 1995 + Amd. 4, 1996.

200216151

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P.O. BOX 73, BLINDERN
N-0314 OSLO, NORWAY

Date 26 April 2002

Signature 
Lars Hjerpaeth
Principal Engineer

CB TEST CERTIFICATE

Ref. No. NO 15454

Factories:

Fortron/Source(China) Corp.
Building #25, Zone 37, Baoan District
Shenzhen, Guangdong, P.R. China

Wellex Technology Co., Ltd.
Zhenlian Building, County 74, Baoan
Shenzhen Guangdong P.R. China

Shenzhen Huli Electronics Co., Ltd.
Bik. C. Bldg, 7, County 73, Baoan
Shenzhen Guangdong, P.R. China

Fortron/Source(China) Corp.
F2, the 2nd Industrial Area of Mabu
Xixiang, Baoan, Shenzhen, P.R. China

Zhonghan Electronics (Shenzhen) Co., Ltd.
Juyuan Industrial Zone, Tangwei Village, Fuyong Town,
Baoan District, Shenzhen City, China

Oslo, 26 April 2002

Issued by



Lars Hjerpseth
Principal Engineer

**IEC SYSTEM FOR CONFORMITY TESTING TO
STANDARDS FOR SAFETY OF ELECTRICAL
EQUIPMENT (IECEE)
CB SCHEME**

**SYSTEME CEI D'ESSAIS DE CONFORMITE AUX
NORMES DE SECURITE DE L'EQUIPMENT
ELECTRIQUE (IECEE)
METHODE OC**

CB TEST CERTIFICATE CERTIFICATE D'ESSAI OC

Product
Produit

Name and address of the applicant
Nom et adresse du demandeur

Name and address of the manufacturer
Nom et adresse du fabricant

Name and address of the factory
Nom et adresse de l'usine

Rating and principal characteristics
Valeurs nominales et caractéristiques principales

Trade mark (if any)
Marque de fabrique (si elle existe)

Model/type Ref.
Ref. de type

Additional information (if necessary)
Information complémentaire (si nécessaire)

**A sample of the product was tested and found
to be in conformity with**
*Un échantillon de ce produit a été essayé et a été
considéré conforme à la*

**as shown in the Test Report Ref. No.
which forms part of this certificate**
*comme indiqué dans le Rapport d'essais numéro
de référence*

qui constitue un partie de ce certificat

Power Supply for building-in

**FSP Group Inc.
No. 22, JIanguo E. Rd.
Taoyuan City
TAIWAN R.O.C.**

**FSP Group Inc.
No. 22, JIanguo E. Rd.
Taoyuan City
TAIWAN R.O.C.**

See page 2

**10A, 100-240V, 50-60Hz
Cl. I, DC-output optional 2A, 100-240V. DC-output: 27.0A +3.3V,
29.0A +5V, 15.0A +12.0V I/O, 16.5A +12V CPU, 2.0A +5Vsb, 0.3A
-5V, 0.8A -12V. Max output power is 460W, +3.3V & +5V output
is 200W max**

BRAND NAME: SPI

FSP460-60PFN

**The dots in model name can be A to Z, 0 to 9 or blank, for
marketing purpose only.**

**IEC 60950 2nd Edition, 1991 + Amd. 1, 1992 + Amd. 2, 1993 +
Amd. 3, 1995 + Amd. 4, 1996**

200216151

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**P.O. BOX 78, BLINDERN
N-0314 OSLO, NORWAY**

Date 26 April 2002

Signature 
Lars Hjerpseth
Principal Engineer

CB TEST CERTIFICATE

Ref. No. NO 15455

Factories:

Fortron/Source(China) Corp.
Building #25, Zone 37, Baoan District
Shenzhen, Guangdong, P.R. China

Wellex Technology Co., Ltd.
Zhenlian Building, County 74, Baoan
Shenzhen Guangdong P.R. China

Shenzhen Huili Electronics Co., Ltd.
Blk. C. Bldg, 7, County 73, Baoan
Shenzhen Guangdong, P.R. China

Fortron/Source(China) Corp.
F2, the 2nd Industrial Area of Mabu
Xixiang, Baoan, Shenzhen, P.R. China

Zhonghan Electronics (Shenzhen) Co., Ltd.
Juyuan Industrial Zone, Tangwei Village, Fuyong Town,
Baoan District, Shenzhen City, China

Oslo, 26 April 2002

Issued by



Lars Hjerpseth
Principal Engineer