



全漢企業股份有限公司  
FSP TECHNOLOGY INC.

台灣桃園市建國東路22號  
No. 22, Jianguo East Road., Taoyuan City, Taiwan, R.O.C.  
TEL:+886-3-375-9888  
FAX:+886-3-375-6966

統一編號：84239055  
Website : www.FSP-group.com  
Email : sales@fsp-group.com.tw

# SPECIFICATION



Released Date:2009/7/20-13:6:18



SPI Electronic Co. Ltd.

台灣 桃園市建國東路 22 號

No.22, Jianguo E, Rd., Taoyuan City, Taiwan, R.O.C.

TEL:+886-3-375-9888 FAX:+886-3-375-6966

# SPECIFICATION

228W AC power supply

FSP228-3F01

P.E	R/D	APPROVED	REV.
Larry Chang	Anson Liao	LJ Wei	00

表單編號：7000P-0105



全漢企業股份有限公司  
SPI Electronic Co., Ltd.

# Electrical Specification

## History

REV.	Description	Date	Drawn	Mechanical	Electrical	Approved
<u>00</u>	SPEC. ISSUE	Oct.30 '05	Gigi Yu	Grant Lu	Anson Liao	LJ Wei

MODEL NO. **FSP228-3F01**

SHEET 1 OF 6



全漢企業股份有限公司  
SPI Electronic Co., Ltd.

# Electrical Specification

## Electrical Requirements

### 1. Input Characteristics:

※Measured the output voltage at the PCB

ITEM	CONDITION	SPECIFICATION
1.1 Rated Input Voltage		100V / 240V
1.2 Input Voltage Range	Continuously	90VAC to 264VAC
1.3 Input Frequency Range	Continuously	47Hz to 63Hz
1.4 Input Current	100Vac, 240Vac / full load	≤ 3.0A
1.5 Efficiency:	110Vac / full load (warm up after 10 minutes ) 230Vac / full load (warm up after 10 minutes )	≥ 82% ≥ 86%
1.6 Power Consumption (Power saving)	It must be measured in PWR_ON signal is low condition at rated AC input	≤1W

MODEL NO. **FSP228-3F01**

SHEET 2 OF 6



全漢企業股份有限公司  
SPI Electronic Co., Ltd.

# Electrical Specification

## 2. Output Characteristics:

※Measured the output voltage at the PCB

ITEM		CONDITION					SPECIFICATION
2.1 Output Rated Voltage :							
a. PWR_ON signal is L							
No.	Symbol	Output Current	Ripple & Noise	Min.(V)	Typ. (V)	Max.(V)	Remark
1	5Vsb	0A ~1.0A	150mV	4.75	5.0	5.25	
b. PWR_ON signal is H (measured at steady state)							
No.	Symbol	Output Current	Ripple & Noise	Min.(V)	Typ. (V)	Max.(V)	Remark
1	5Vsb	100mA ~ 4.0A	150mV	4.75	5.0	5.25	
2	12V	0 A ~ 5.3A	250mV	11.0	12.0	13.0	
3	24V	0A ~ 6.0A	350mV	22.8	24	25.2	
Note: Output Voltage Ripple and Noise: (0.1uF Ceramic Cap. and 35V/47uF Aluminum Cap. Paralleled between the end of output cable, BW=20M Hz)			1. 100Vac / 240Vac 2. Minimum load and maximum load				
2.2 +5Vs Turn-On Delay Time:			Applied the AC input voltage is 100Vac and output load is Full load, output voltage shall remain regulation.			≤ 1Sec.	
2.3 Power ON/OFF signal ( PWR_ON: CNS1 pin 1)			PWR_ON signal is L (<0.7V)  PWR_ON signal is H (3.3V~5.0V)			Only 5Vsb output  5Vsb, 12V and 24V output	
2.4 Dynamic Load Limitation (measured at PWR_ON signal is H):			A sinusoidal dynamic load with a peak-to-peak value equal to 20% of the applied static load such that static load plus dynamic load does not exceed any of the maximums or minimums of item2.1(b). This dynamic load change shall be applied to a single output at any frequency up to 1KHz. S/R=0.1A/us, 50% duty. Output voltage within			5Vsb : 5.0V+/-5% 12V : 12V+/-5% 24V : 24V +/-5%	
2.5 LED Indication:			No definition				
2.6 Hold Up time:			Applied the AC input voltage is 100Vac or 240Vac and output load is 5Vsb/2.8A, 12V/1.4A, 24V/4A, output voltage shall remain regulation.			≥ 48mS	

MODEL NO. **FSP228-3F01**

SHEET 3 OF 6



全漢企業股份有限公司  
SPI Electronic Co., Ltd.

# Electrical Specification

## 3. Protection Characteristics:

ITEM	CONDITION	SPECIFICATION
3.1 Short Circuit Protection:	When an internal fault occurs, or an external fault is applied to the power supply, such that an overload or short circuit is applied to the output, the power supply shall shut down and enter auto-recovery or latch mode.	Shutdown and no damage
3.2 Over-Voltage Protection	The output voltage will enter into shut down that means no output on output, while over voltage happened at output terminal that caused by internal fault.	Shutdown and no damage
3.3 Over Temperature Protection:	The AC power supply will enter into shut down while the abnormal thermal rise occurs. It will enter into normal condition if the fault condition is removed	No broken, no smoke.
3.4 Over Current Protection:	When an internal fault occurs, or an external fault is applied to the power supply, such that an overload or short circuit is applied to the output, the power supply shall shut down and enter auto-recovery or latch mode.	Shutdown and no damage

MODEL NO. **FSP228-3F01**

SHEET 4 OF 6



全漢企業股份有限公司  
SPI Electronic Co., Ltd.

# Electrical Specification

## 4. Environmental Characteristics:

ITEM	CONDITION	SPECIFICATION
4.1 Electric Fast Transients: Refer to EN61000-4-4	Impulse: $\pm 1\text{KV}$ applied to AC line, pulse duration 50ns period 5 min.	Normal operation shall be continued.
4.2 Lightning Surge: Refer to EN61000-4-5	$\pm 2\text{KV}$ applied between L, N and PE, pulse rise time 1.2us and duty time 50uS	Normal operation shall be continued.
4.3 Electron Static Discharge: (Refer to IEC1000-4-2 Energy Storage Capacitor 150pF; Discharge Resistor 330 $\Omega$ )	Air Discharge: $\pm 8\text{KV}$ . Contact Discharge: $\pm 6\text{KV}$ . (Note: combine with customer's system.)	Normal operation shall be continued.
4.4 Cooling	Natural air cooling	
4.5 EMI: AC power supply comply with the following national standards: EMI Conducted Emission EMI Radiated Emission	The AC power supply internal filter to meet, combine with customer's system.	FCC CLASS B CISPR 22 CLASS B
4.6 Safety conforming:	Regulated by customer	
4.7 Leakage Current	240Vac / 50Hz 100Vac / 60Hz	$\leq 0.5\text{mA}$
4.8 Harmonics	230Vac / 50Hz (Note: Combine with customer's system)	EN61000-3-2
4.9 Dielectric Strength: (Hi-Pot)	Between AC input and secondary applied AC 1.5KV / test time 1 minute / cut off current shall be less than 10mA AC 1.5KV / test time 1 sec. for mass production	
4.10 Temperature:	Operating Storage	0 to 40°C -20 to +85°C
4.11 Humidity:	Operating Storage	20% ~ 90% 5% ~ 95%

MODEL NO. **FSP228-3F01**

SHEET 5 OF 6



全漢企業股份有限公司  
SPI Electronic Co., Ltd.

# Electrical Specification

## 5. Mechanical Characteristics:

ITEM	CONDITION	SPECIFICATION											
5.1 Dimension (Length x Width x Height)		180x130x31 mm											
5.2 Input AC socket Type		JWT A3963WV2-5P-A or equivalent											
5.3 Output DC connector													
<b>CNS1</b>													
<b>Pin assignment</b>													
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Signal Name	PWR_ON	+12V			GND			+5VS			Connect w/CNS2 P11	Connect w/CNS2 P12	
<b>CNS2</b>													
<b>Pin assignment</b>													
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	
Signal Name	+24V					GND					Connect w/CNS1 P12	Connect w/CNS1 P13	

MODEL NO. **FSP228-3F01**

SHEET 6 OF 6