



54V 2500W 1U Front End AC-DC POWER SUPPLY

Special Features

- ◆ Power Density 28w/in3 in 1U Form Factor
- ◆ Hot Swap
- ◆ Active Current Sharing (Single Wire)
- ◆ I²C Serial Bus and PSMI Compliant
- ◆ LED Indicator on Front Panel (AC OK, DC OK, Fail)
- ◆ Over Voltage, Over current and Under Voltage Protection
- ◆ Over Temperature Protection
- ◆ Remote Sense
- ◆ Power Factor & Harmonic Corrected
- ◆ UL60950-1 2nd, CSA60950-1 2nd, IEC60950-1 2nd and EN60950-1 2nd
- ◆ 6-RoHS Compliant



Input Specifications

Specification	Notes	Min.	Typ.	Max.	Units
Operating Voltage Range 1200 W operation 2500W Operation		90		132	VAC
		180		264	VAC
Input Frequency		47	50/60	63	Hz
Wave Distortion				10	%
Instantaneous Variation	Rated 100VAC@500ms	-20		15	%
Inrush current limitation	Cold-start inrush current measured at 200Vac, 60Hz input line with the output fully loaded except inrush current to X capacitor .			35	ApK
Input current	@100Vac, full load			15	A
	@200Vac, full load			14	A
Power Factor	@230Vac, full load.		98		%
Harmonic Standards	EN61000-3-2				
Leakage Current	@240Vac, 60Hz			0.75	mA
Hold-up Time	Single Unit Operation, at 67% Load	20			ms
Efficiency at 230VAC (80 Plus Platinum)				90% @ 20% Load	
				94% @ 50% Load	
				91% @ 100% Load	
Input Protection	Single fused (Line) 20A/250Vac				

Output Specifications

Specification	Notes	Min.	Typ.	Max.	Units
Output Voltage Set Point	Factory Set		54		Vdc
Voltage Regulation	AC Line, Load , temperature	-3		+3	%
Output Current	100VAC to 120VAC	0.4		23	A
	200VAC to 240VAC	Ta : 35°	0.4	46	A
		Ta : 50°	0.4	40.3	A
Output Current	100VAC to 120VAC			1200	W
	200VAC to 240VAC	Ta : 35°		2500	W
		Ta : 50°		2200	W
Transient Response	Overshoot & Undershoot@Hot-Swap, Turn On/Off			5	%
	Dynamic Characteristics ; Change in output voltage within 4ms after a 75% <=>100% load step change			3	%
Load Sharing	@ full load	-5		+5	%
Ripple / Noise	With load capacitance , 0.1uF of Ceramic Cap. & 100uF of Electrolytic Cap			480	mVp-p
Remote sense	Line drop compensation			1	V



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Auxiliary Output

Specification	Notes	Min.	Typ.	Max.	Units
Stand-by output Voltage	Factory Set		12.5		Vdc
Voltage Regulation	AC Line, Load , temperature	-5	-	+5	%
Stand-by output Current		0		2	A
Ripple & Noise	With load capacitance , 0.1uF of Ceramic Cap. & 100uF of Electrolytic Cap.	-	-	240	mVp-p

Protections

Specification	Circuits	Notes	Min.	Typ.	Max.	Units
Over Voltage *1	54VDC		56		63	Vdc
	12VSTB	Eliminator Voltage ; Less than 15V	-		-	%
Over Current *2	54VDC	Shutdown	110		150	%
	12VSTB	Droop	100		150	%
Under Voltage	54VDC	Shutdown	14.4		38.4	Vdc
	12VSTB	Droop	0		7.0	Vdc
Over Temperature		Shutdown	120		150	°C

- *1 The PSU will shutdown in a latch off mode after an over voltage condition.
The latch is cleared by AC or PS_ON signal interruption of greater than 1.5S.
- *2 The PSU will shutdown in a latch off mode after an over current condition.
The latch is cleared by AC or PS_ON signal interruption of greater than 1.5S.
Short circuits will apply the over current protection process described above.

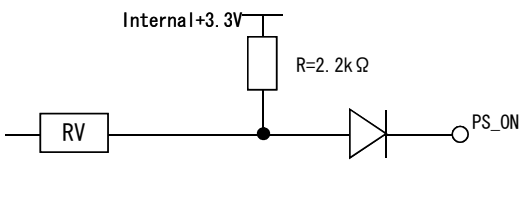
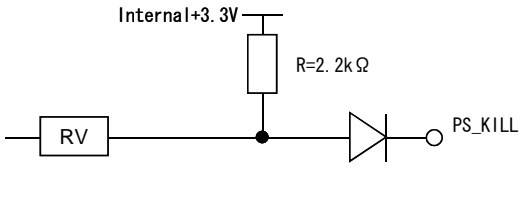
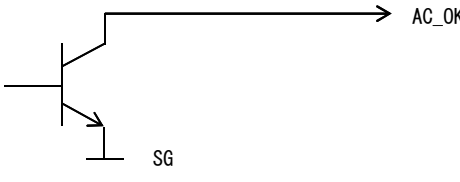

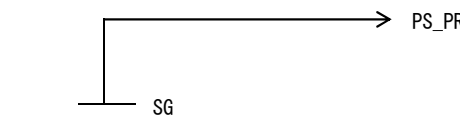
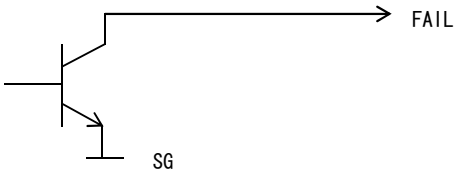
Power Supply Condition / LED Indicators

● ● : ON

Items	Power Supply Condition	LED Indicators					Output Signal	
		+54V	+12V	PWR (Green)	PRFL (Amber)	FAIL (Amber)	P-GOOD	FAIL
1	No AC Power to all PSU	OFF	OFF	OFF	OFF	OFF	Low	Low
2	No AC power to this ON,Other PSU's in on AC	OFF	OFF	OFF	OFF	●	Low	High
3	AC present / Standby Output ON	OFF	ON	Blinking	OFF	OFF	Low	Low
4	12VSB Overcurrent at Standby condition	OFF	Droop	Blinking	OFF	Blinking	Low	Low
5	12VSB Under Voltage at Standby condition	OFF	ON	Blinking	OFF	Blinking or OFF	Low	High
6	12VSB Over Temperature at Standby Condition	OFF	OFF	OFF	OFF	●	Low	High
7	Reduced Internal FAN spin at Standby condition	OFF	ON	OFF	Blinking	OFF	Low	Low
8	FAN stop at Standby condition	OFF	ON	OFF	OFF	●	Low	High
9	54V output ON	ON	ON	●	OFF	OFF	High	Low
10	54V Overcurrent w/PS_ON	ON	ON	●	OFF	Blinking	Low	Low
13	54V Fail w/PS_ON	OFF	ON	OFF	OFF	●	Low	High
16	54V Over Temperature w/PS_ON	OFF	ON	OFF	OFF	●	Low	High
11	12V Over current w/PS_ON	ON	Droop	●	OFF	Blinking	Low	Low
12	12V Under Voltage w/PS_ON	OFF	ON	Blinking	OFF	Blinking or OFF	Low	High
14	Reduced Internal FAN spin w / PS_ON	ON	ON	OFF	Blinking	OFF	High	Low
15	FAN stop w /PS_ON	OFF	ON	OFF	OFF	●	Low	High

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Signal Condition

#	Signal Type	Circuit Condition	Electrical Condition
1	*PS_ON Input Signal		54VDC turn ON/OFF signal Low active (Sink current : over 2mA) High turn OFF
2	PS_KILL Input Signal		Power supply force shut off signal for hotswapping Low (below 1V) : Power on High (above 2V) : Power off
3	AC_OK Output Signal		Input voltage monitor signal "Low" active (below 0.4V at 4mA,max 20mA) "High" shows AC input loss
4	P_GOOD Output Signal		Output status signal "High" active "Low" shows abnormal output (below 0.4V at 4mA,max 20mA)
5	*PS_PRES Output Signal		Power supply present signal Low = Present (below 0.4V at 4mA,max 20mA) High = Not - present
6	FAIL Output Signal		Power supply failure signal "High" active "Low" (below 0.4V at 4mA,max 20mA) shows normal



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Signal Condition

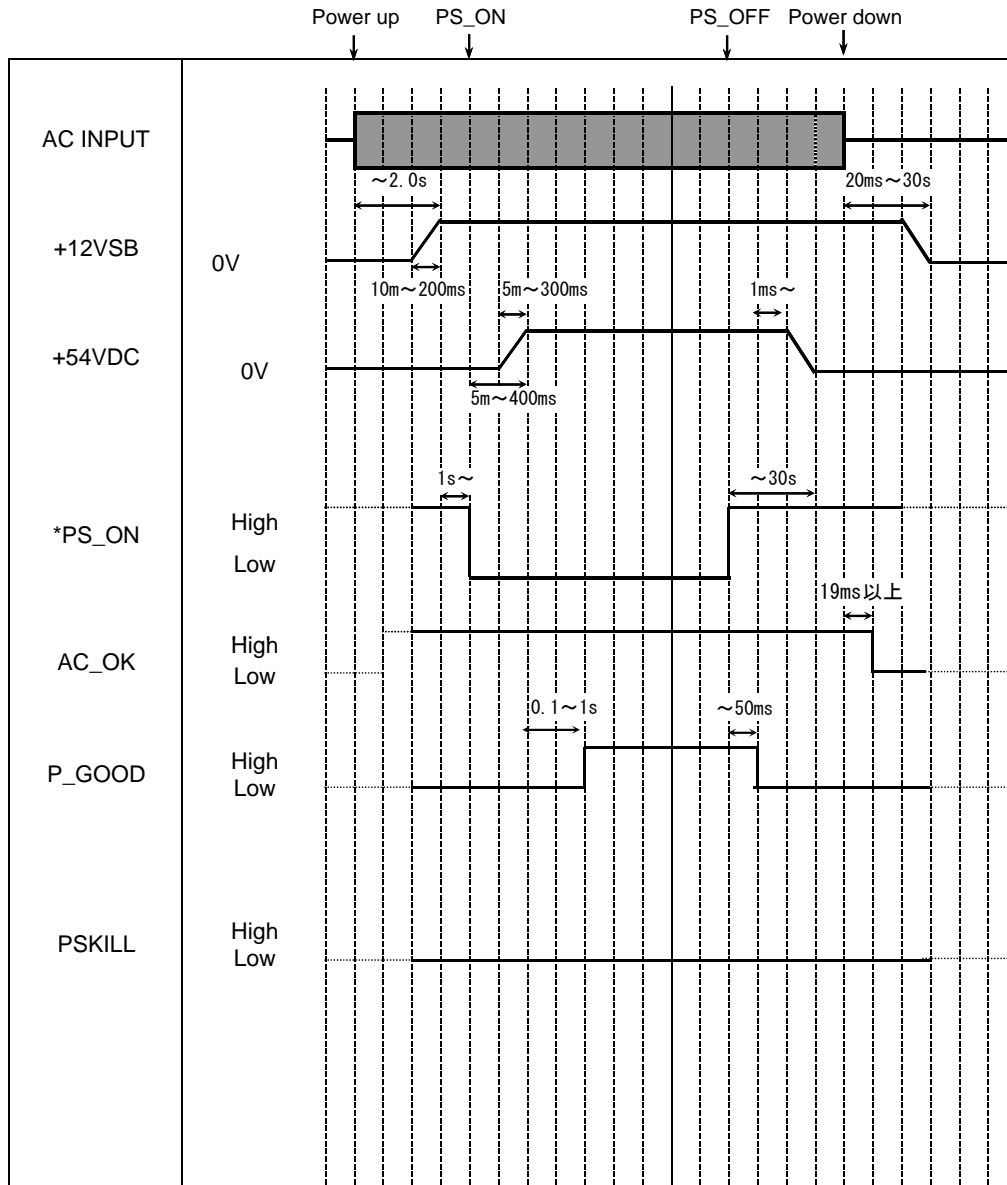
#	Signal Type	Circuit Condition	Electrical Condition
7	ISHARE Analog Signal		54VDC current balance signal
8	Serial Communication • I2C_CLOCK • I2C_DATA		Refer to PSMI spec for details Physical condition _Depends on the I2C bus condition
9	Address Signal • I2C_ADR0 • I2C_ADR1 • I2C_ADR2 Input Signal		Refer to PSMI spec for details Physical condition _Depends on the I2C bus condition
10	Remote SENSE+ SENSE- Input Signal		Remote Sense (54V Output)
11	*AC_FAIL Output Signal		Input voltage monitor signal "Low" active (below 0.4V at 4mA,max 20mA) "High" shows AC input loss



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Timing Chart

(1) Turn ON/OFF

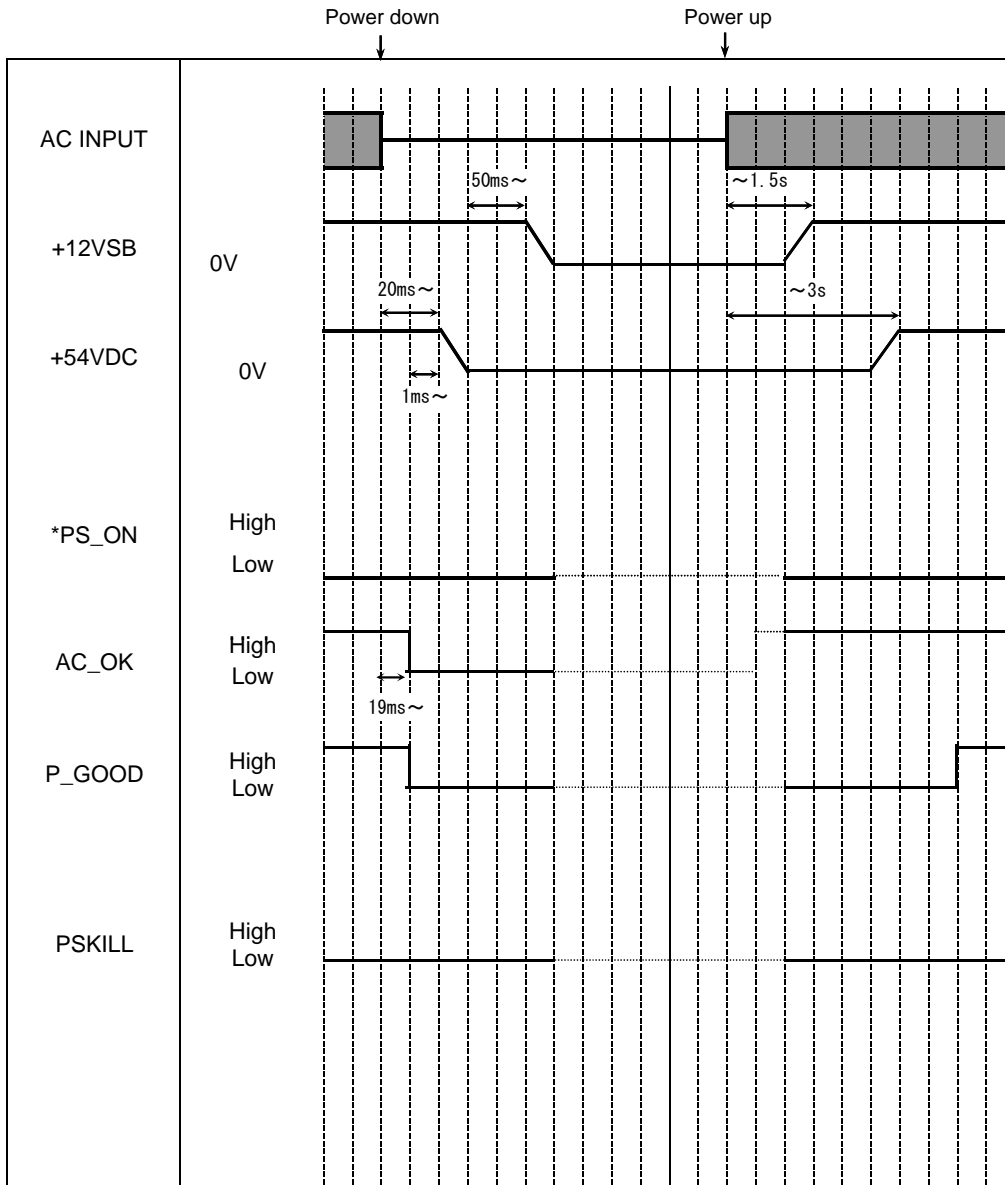




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Timing Chart

(2) AC Input Loss





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LED Indicators

Power Supply Condition	Power Supply LED	
	POWER	FAIL
Power Supply Condition	POWER	FAIL
LED Color	Green	Amber
No AC power to all PSU	OFF	OFF
No AC power to this PSU but provided to other units	OFF	OFF
AC present, PS_ON Off, Standby Output ON	Blinking	OFF
Power supply DC outputs ON and Okay	ON	OFF
Power supply failure (48VDC output failure, Fan failure)	OFF	ON
Power supply failure (12VSB output)	OFF	Blinking

Environmental & Reliability Specifications

Specification	Notes	Min.	Typ.	Max.	Units
Operating Temperature	54V @ 2500W	0		+35	°C
	54V @ 2200W	0		+50	
Storage Temperature		-40	-	+70	°C
Humidity	Relative humidity Non Condensing	+20	-	+95	% RH
Altitude	For operation above 8000; maximum temperature is derated 2 degree per 1000	-200	-	+8000	Ft
Acoustic Noise		-	-	60	dBA
MTBF	Calculated @ 25°C ambient temperature.	500K	-	-	Hours

General Requirements

Specification	Notes	Min.	Typ.	Max.	Units
Shock	Non-Operating and no-packaging : Three times shock on each of the 6 faces , 2 inch drop				
Vibration	Operating : 0.5G , 5-400Hz, along three orthogonal axes , 30min.				
Electrostatic Discharge	Conditions: Contact and Air No components being damaged and work normally	10	-	-	KV
Input Line Surges	Line to Ground	-	-	2	KV
	Line to Line	-	-	1	KV
Fast Transient / Bursts	IEC61000-4-4 Level 3	-	-	2	KV
Conductive Emissions	EN55022 & FCC Class A 6dB margin				
Radiated EMI	EN55022 & FCC Class A (with the System)				

Safety Specifications

Specification	Notes and Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Isolation Voltage Input to Output	-	3000	-	Vac
	Isolation Voltage Input to Chassis	-	1500	-	Vac
Safety Agency Approvals	CSA, C-US, TUV-EN60950				
Safety Standards	EN60950-1 2nd				
	UL60950-1 2nd				
	CSA60950-1 2nd				



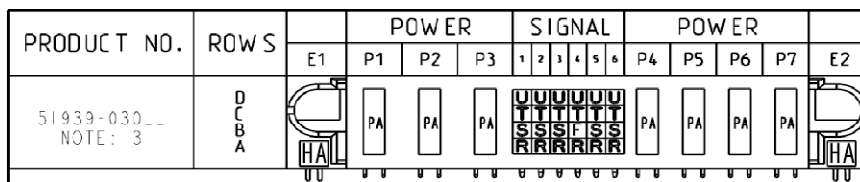
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Serial Communications

Communications	Signal
Signals	SENSE+/SENSE- PS_KILL AC-OK I-SHARE FAIL I2C_ADR0,1,2 PS_ON I2C_DATA PS_PRES I2C_CLOCK P_GOOD AC_FAIL
I2C Communication BUS	Based on Fujii Standard Design

Connectors

- ◆ Connector Type :Power Blade (FCI) 51939-030LF or equivalent



- ◆ Power Pin Assignment

P1	P2	P3	Signal	P4	P5	P6	P7
L	N	FG	Refer to the below	+54VDC	+54VDC	+54VDC RTN	+54VDC RTN

- ◆ Signal Pin Assignment

	1	2	3	4	5	6
D	NC	NC	*PS_ON	P_GOOD	AC_OK	*AC_FAIL
C	ISHARE	NC	NC	I2C_ADR0	I2C_ADR1	I2C_ADR2
B	FAIL	NC	*PS_PRES	PS_KILL(*1)	I2C_DATA	I2C_CLOCK
A	+12VSB	SG	SG	NC	SENSE+	SENSE-

*1 : Pin B4 is a short pin

I2C Communication

PSMI Compliant

1. Input Voltage / Current / Power
2. Output Voltage / Current / Power
3. Fan Speed Monitoring
4. Temperature Monitoring

Monitor Regulation : +10% / -10%

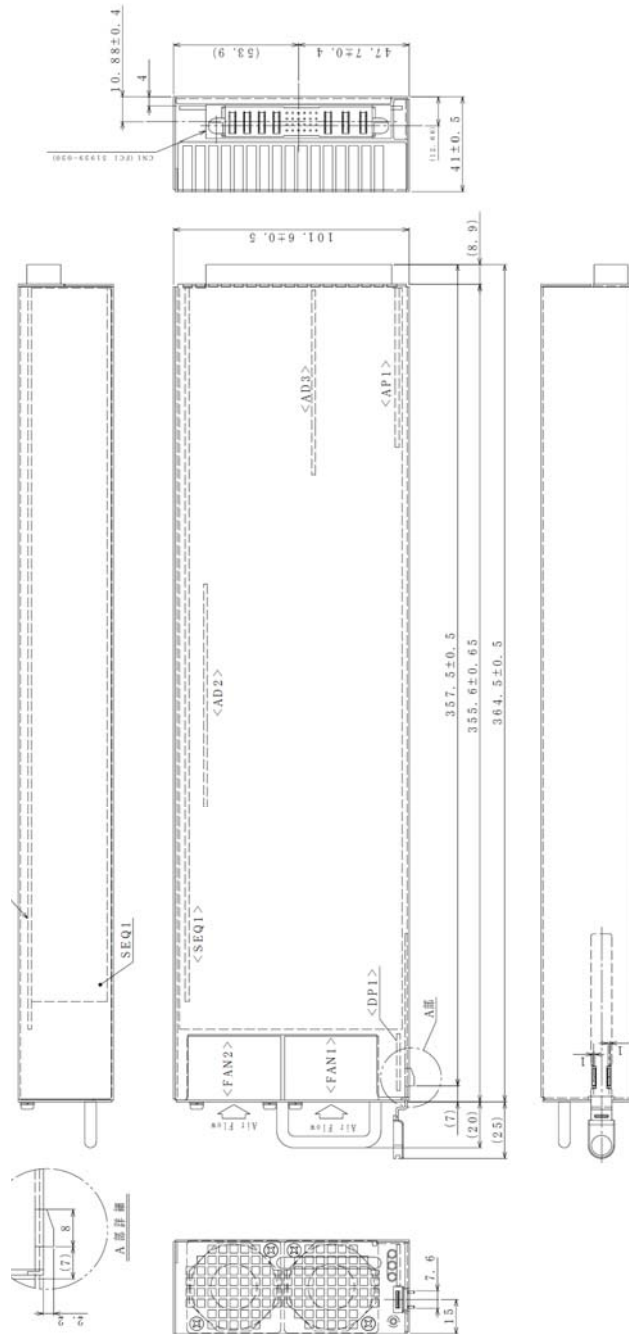


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Physical Specification

- Depth : 101.6 mm (4.00")
- Width : 355.6 mm (14.00")
- High : 41.0 mm (1.61")
- Weight : 3.5kg (7.7lbs) less or equal

Dimensional Drawings





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Parts Derating

	Voltages	Amperes	Temperature
Capacitors			
Aluminum	97.5%	90%	90%
Ceramic,Multi Purpose	90%	90%	90%
Ceramic,Layer	90%	90%	90%
Film	90%	80%	80%
Semiconductors			
Diode, General Purpose	90%	90%	90%
Diode, Switching, <0.1A	90%	90%	90%
Diode, Power, Fast Recovery	90%	90%	90%
Diode, Power, Schottky	90%	90%	90%
Diode, Zener	90%	90%	90%
Diode, LED	90%	90%	90%
Diode, Optical Coupler	90%	90%	90%
Transistor, Bipolar	90%	90%	90%
Transistor, MOSFET	90% (100% : if it uses avalanche voltage)	90%	90%
Magnetics			
Inductor	NA	NA	refer to IEC60950
Transformer	NA	NA	refer to IEC60950

Cooling

Fan Operation

Operation mode	FAN operation
Standby (12VSB on)	Low speed
Normal operation	Normal speed *8

*8 Fan Speed : Based on load, ambient temperature, and internal PSU temperature, Fan speed changes

Airflow direction

Standard Airflow

-From Fan side to I/O Power Blade connector .

Others

Warranty

1 year warranty from manufactured date