SPECIFICATION

350W ATX PFC

2U 1+1 Redundant Power Supply

Industrial Grade

Model No.: R6350P 2FRV

Specification subject to change without prior notice
unless we have a written agreement.

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1.0 General

This specification describes the physical, functional and electrical characteristics of a 2U 350W 6-output ATX, fan-cooled 1+1 redundant switching power supply.

1.1 Parameter Specification

Unless specified otherwise, all parameters must meet over the limits of temperature, load and input voltage.

2.0 Input Characteristics

Normal	Minimum	Maximum
100-240Vac	90Vac	264Vac

With Active Power Factor 90% Min.

2.1 Input Voltage:

* 90~264VAC

2.2 Input Waveform

The unit is capable of operating with 10% distorted sine-wave input. It is measured by a distortion analyzer. Its flat-topping clipped 10% from the peak value of standard sine-wave.

2.3 Input Frequency

47 – 63Hz

2.4 Input current

7.0A/3.5A (One Power Supply)

2.5 In-Rush Current

CONDITION	LIMITS
132/264Vac, Full load. Turn off 1 sec; turn on at peak of input voltage cycle. 25℃ Air Ambient cold start.	No damage shall occur or components over stressed, Input Fuse shall not blow.

2.6 Line Regulation

CONDTION	LIMITS
Full Load	
90-264Vac input	1%

2.7 Input Leakage Current

Input leakage current from line to frame ground will be less than 3.5mA rms. For each power module. Condition: 264Vac/60Hz

2.8 Dielectric Withstand Voltage

Primary to Secondary : 1800V ac / 50Hz for 1 Minute.

Primary to Safety Ground: 1800V ac / 50Hz for 1 Minute.

2.9 Insulation Resistance

Primary to Safety Ground : 500Vdc, 50Mohms Minimum.

3.0 Output Characteristics

3.1 DC Output Characteristics

To be met under all combinations of loading.

Output voltage	V1 +5V	V2 +3.3V	V3 +12V	V4 –5V	V5 –12V	Vsb +5V
Max Load	30A	28A	20A	1A	1A	1.5A
Min Load	2A	0.3A	0.5A	0A	0A	0A
Load Reg. %	+/-5%	+/-5%	+/-5%	+/-10%	+/-10%	+/-5%
Cross Reg. %	+/-5%	+/-5%	+/-5%	+/-10%	+/-10%	+/-5%
Line Reg. %	+/-1%	+/-1%	+/-1%	+/-1%	+/-1%	+/-1%
Ripple Reg. mV	50mV	50 mV	120 mV	100 mV	200 mV	100 mV
Noise Reg. mV	100mV	70mV	150mV	200mV	200mV	100mV

Note 1: Noise bandwidth is from DC to 20MHz. Add 0.1uF/10uF capacitor at output connector terminals for ripple and noise measurement.

Note 2: Regulation tolerance shall include temperature change, warm up drift, and dynamic load.
Note 3: Combined total power from +3.3v and +5v rails shall not exceed 160W.
Note 4: Total output power shall not exceed 350W.

3.2 Overshoot

Any output overshoots at TURN-ON shall not exceed 10% (+5V/+12V output) and 10% (-5V/-12V output) of nominal voltage value.

3.3 Efficiency

58% min. at full load test.

4.0 Time Sequence

4.1 Hold-Up Time

Unit shall continue to supply regulated DC outputs and power good signal for at least 16 Milliseconds at 115/230Vac full load after a loss of AC input voltage which shall be represented by a short circuit at the AC input. See Fifure2.

4.2 Power Good Signal

When the power supply is turned off a minimum of 1.0 second and turned on, the power-good signal as described below will be generated.
The power supply shall provide a power-good signal to indicate proper operation of the power supply. This signal shall be a TTL compatible high level for normal operation; low level for fault conditions.
Power-good shall go to low level at least 1 ms before the +5V output voltage falls below the regulation limits described in 3.1 DC output Characteristics.
The operation point used as a reference for measuring the 1ms shall be minimum line voltage and maximum load.
All waveform transitions shall be smooth and monotonous, i.e. no oscillations.
The power-good signal shall stay low (during POWER-ON) until all output voltages are delay greater than 100ms but less than 500ms. See Figure 2.

4.2.1 Fan out

Power Good output circuit shall consist of an active pull down component and a passive pull up resistor.

Power-Good output voltage to be met under recommended loading conditions.

CONDITION	LIMITS
I_{OH}=-140uA Min.	V_{OH}=2.7V Min.
I_{OL}=2.8mA Min.	V_{OL}=0.4V Min.

4.3 +5V Volt and Power Good Output Rise Time

4.3.1 + 5 Volt Output Rise Time

The +5V output shall have a turn-on rise time of less than 100ms under all load conditions. Rise time is measured between 0.0 and 4.75V.

The +5V output shall not vary from a smooth curve by more than $0.5V_{p-p}$ during turn-on and turn-off.

4.3.2. Power Good Output Rise

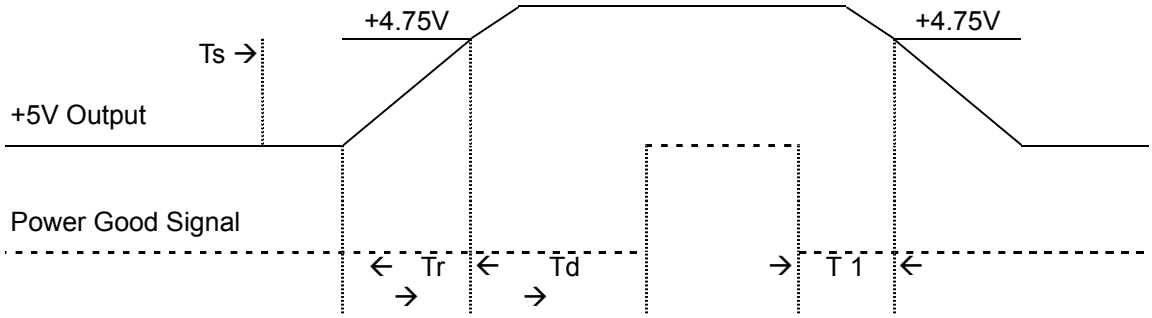


Fig. 1

Note: Tr ≤ 100 ms, T1 ≥ 1 ms, Td = 100 - 500 ms.

4.4 Start-Up timing

All output shall be stable and in regulation in less than 2.0 second under all load and line conditions. Start-up time is measured between the AC turn-on and 4.75V on +5V. See Figure 1.

4.5 Dynamic Load Response Time

Transient response is measured by switching the output load from 80 to 100 to 80 percent of its full value at a frequency of 100Hz and 50% duty cycle, step load change is 0.5A/us, The magnitude Vr is less than +/-5% of +5V and +12V output, the recovery time Tr is less than 1mS.

5.0 Protection

5.1 Over Power Protection

This power supply shut down all DC output when outputs are overloaded to the limit. The power supply logic shall latch into the off state requiring a power on cycle to be performed by the operator. The power supply will turn-off within 20ms of the occurrence of the overload.

CONDITION	LIMITS
Nominal input	When output power is over to 110% ~ 150%

5.2 Over Voltage Protection

The power supply shall latch off if the +5VDC or +12VDC or +3.3VDC maximum voltage exceeds the limits shown. The AC must be recycled to restart.

5.2.1 + 5VDC

CONDITION	LIMITS
All operating	Max.6.8Vdc

5.2.2 +3.3VDC

CONDITION	LIMITS
All operating	Max.4.50Vdc

5.2.3 +12VDC

CONDITION	LIMITS
All operating	Max.15Vdc

5.3 Short Circuit Protection

A short circuit placed on any output shall cause no damage to this unit. The power supply shall be shut down.

5.4 No Load Operation

When primary power is applied, with no load on any output voltage, no damage or hazardous condition shall occur. In such a case, the power supply shall power up and stabilize.

6.0 System Interface Signal

6.1 Power System Fault Signal

The Hot-Swap Redundant Power Supply shall give fault signal (an open collector) that will indicate the status of the power supply operation.
If one of the power supply unit shut down, the power fault signal could be generated. This signal shall be high level for normal operation; Low level for fault conditions.

6.2 Alarm Beeping Sound

The alarm system monitors the power supply failure and provides alarm to indicate the status of the power supply. By checking the LED on the power supply, end users will be able to locate the defective power unit. The alarm system will give a beeping sound to indicate the power supply failure until that particular power unit is replaced.
Beeping sound could be suspended before the failure power supply unit replaced.

7.0 Regulatory Agency Certification

7.1 RFI/EMI Standards

The power supply, When installed in system, shall comply with the following Radiated and conducted emissions standards:

(1) FCC part 15, Subpart B, Class A computing device.

(2) CISPR22 (EN55022) Class A.

(3) Harmonic Requirement ---IEC10000-3-2 & IEC10000-3-3 Class " D ".

These limits shall be met with a margin of at less 6dB at all applicable frequencies. The units shall comply with the above limits when tested under all normal working conditions and with all interface cables connected.

7.2 Safety Standard

The power supply shall be certified with the following safety standards,

(1) UL 1950 (Information Processing / Business equipment).

(2) cUL

(3) TUV Certification to IEC950 1 edition with Amendment#1, #2, and EN60950

(4) CE Certificate & Test Report.

(5) Harmonics: Comply with EN61000-3-2.

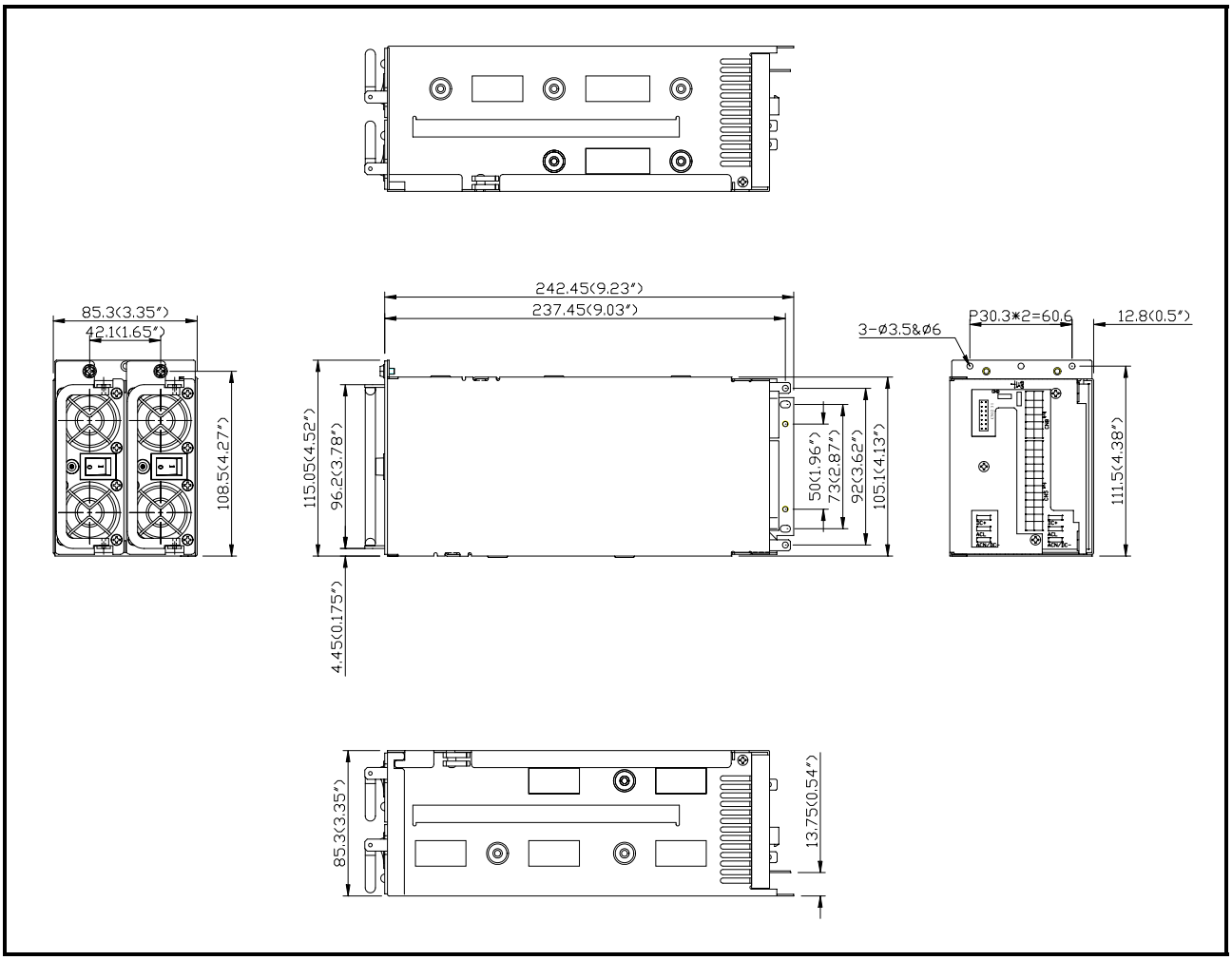
8.0 Reliability

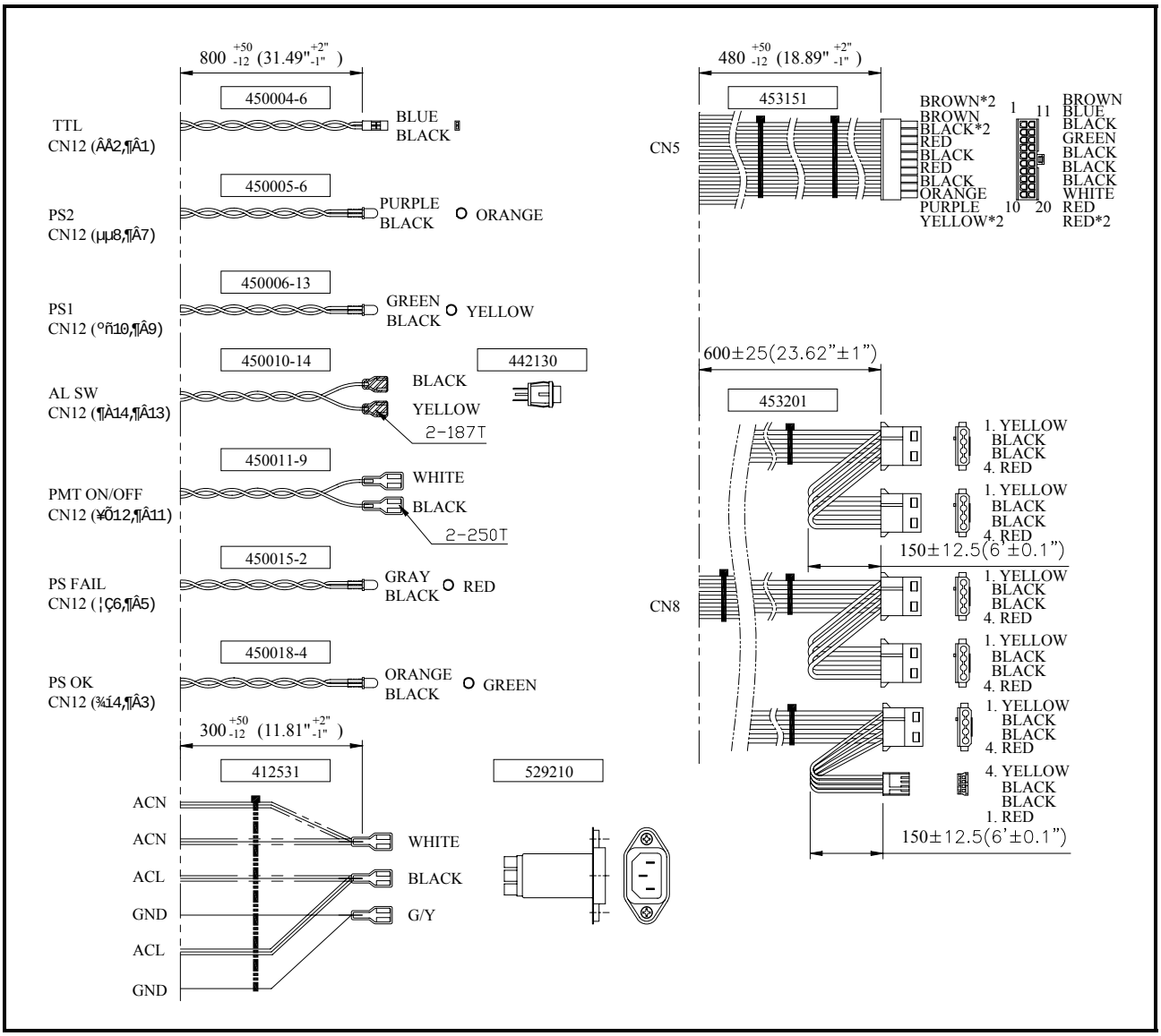
8.1 Mean Time Between Failure(MTBF)

Using MIL 217E the calculated MTBF=100,000 hours at 25℃ 75% loading.

8.2 Warranty

Two (2) years manufacturer's warranty.


85.3(3.35")
42.1(1.65")
108.5(4.27")
242.45(9.23")
237.45(9.03")
115.05(4.52")
96.2(3.78")
4.45(0.175")
50(1.96")
73(2.87")
92(3.62")
105.14(4.13")
3-ø3.5&ø6
P30.3*2=60.6
12.8(0.5")
111.5(4.38")
85.3(3.35")
13.75(0.54")


800 +50 -12 (31.49" +2" -1")
450004-6
TTL
CN12 (ÂÅ2,¶Â1)
BLUE
BLACK
450005-6
PS2
CN12 (µµ8,¶Â7)
PURPLE
BLACK
ORANGE
450006-13
PS1
CN12 (°ñ10,¶Â9)
GREEN
BLACK
YELLOW
450010-14
442130
AL SW
CN12 (¶À14,¶Â13)
BLACK
YELLOW
2-187T
450011-9
PMT ON/OFF
CN12 (¥Õ12,¶Â11)
WHITE
BLACK
2-250T
450015-2
PS FAIL
CN12 (¦Ç6,¶Â5)
GRAY
BLACK
RED
450018-4
PS OK
CN12 (¾í4,¶Â3)
ORANGE
BLACK
GREEN
300 +50 -12 (11.81" +2" -1")
412531
529210
ACN
ACN
ACL
GND
ACL
GND
WHITE
BLACK
G/Y
480 +50 -12 (18.89" +2" -1")
453151
CN5
BROWN*2
BROWN
BLACK*2
RED
BLACK
RED
BLACK
ORANGE
PURPLE
YELLOW*2
1
11
10
20
BROWN
BLUE
BLACK
GREEN
BLACK
BLACK
BLACK
WHITE
RED
RED*2
600±25(23.62"±1")
453201
CN8
1. YELLOW
BLACK
BLACK
4. RED
150±12.5(6'±0.1")
4. YELLOW
BLACK
BLACK
1. RED