ACBEL POLYTECH INC.

R1C Series 800W

Power Module Specification

Model Number: R1CA2801A-P00A
AcBel PN: FSE052-00AG

80Plus Platinum Compliant

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REVISION LOG

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1. GENERAL SCOPE

This specification describes the performance characteristic of an **800W** hot swappable AC-DC switching power supply module with a +12V main DC output and a +12Vsb auxiliary output. The power supply shall be able to operate as a single supply or in an N+1 parallel hot-plug able operation with active load sharing in an N+1 redundant configuration.

2. ELETRICAL PERFORMANCE

This Chapter describes the electrical requirements and performance compliances of ***R1CA2801A-P*** power supply.

2.1 POWER INPUT SPECIFICATION

2.1.1 AC Input Voltage

The power supply must operate within all specified limits over the following input voltage range. Harmonic distortion of up to 10% THD must not cause the power supply to go out of specified limits. The power supply shall recover to proper operation at **$VIN_{RECOVER}$ = 85VAC +/- 4VAC** input voltage.

PARAMETER	MIN	RATED	MAX
Voltage (110)	$90V_{rms}$	$100\text{-}127V_{rms}$	$140V_{rms}$
Voltage (220)	$180V_{rms}$	$200\text{-}240V_{rms}$	$264V_{rms}$
Frequency	47Hz		63Hz

2.1.1.1 HVDC Input Voltage

The power supply supports High Voltage Direct Current (HVDC) input over the C14 Inlet. Allowed HVDC input range as shown in below table and operate maximum no longer than two (2) hours. The power supply shall operate within all specified limits, when HVDC input meet requirements defined in this chapter.

PARAMETER	MIN	RATED	MAX
HVDC (240)	$180V_{DC}$	$240V_{DC}$	$300V_{DC}$

2.1.2 Inrush Current

The power supply must meet inrush requirements for any rated AC voltage; during turn on at any phase of AC voltage, during a single cycle AC dropout condition, during repetitive ON/OFF cycling of AC, and over the specified temperature range (T_{op}). The peak inrush current shall be less than the ratings of its critical components (including input fuse, bulk rectifiers, and surge limiting device), but shall not exceed 35A in general.

2.1.3 Input Current

The maximum input current defines the maximum possible input current to ensure the proper function of the power supply to meet all defined specifications.

AC Input	Max Current
110Vac – 127Vac	10A
200Vac – 240Vac	5A

2.1.4 Input Power Factor Correction

The input Power Factor shall be greater than values defined in below table at power supply's rated output, and meet Energy Star® requirements.

Output power	10% load	20% load	50% load	100% load
Power factor	>0.65	>0.80	>0.95	>0.95

Tested at 230VAC, 50Hz and 115VAC, 60Hz.

2.1.5 Harmonic

The harmonic input current defined in below table with various loading conditions which tested at 25 deg. C ambient condition. The input voltages are 115VAC/50Hz and 230VAC/60Hz.

Load Condition	10%	20%	50%	100%
115VAC	10%	10%	5%	5%
230VAC	15%	10%	10%	5%

2.1.6 AC line dropout

An Input line dropout is a transient condition defined as the line input to the power supply drops to 0 VAC at any phase of the AC line or DC line, for any length of time. During an Input dropout the power supply must meet dynamic voltage regulations requirements. An Input line dropout of any duration shall not cause dripping of the control signals and protection circuits. If the Input dropout lasts longer than the holdup time, the power supply should recover when VIN meets $VIN_{recover}$ and meet all turn on requirements.
An Input dropout of any length shall not cause any damage to the power supply.

Holdup time until Power output goes out of regulations

Loading	Main output	Standby output
100%	12mS	25mS

2.1.7 Efficiency

The efficiency should be measured at 230VAC for AC input power modules only according to Climate Saver / 80Plus efficiency measurement specifications (CSCI-09-10). FAN power loss shall be excluded and need to be deducted from power input.

Efficiency Std.	10% load	20% load	50% load	100% load
Platinum	82%	90%	94%	91%

2.1.8 AC Line Transient Specification

AC line transient conditions shall be defined as “sag” and “surge” conditions.
“Sag” conditions are also commonly referred to as “brownout”, these conditions will be defined as the AC line voltage dropping below nominal voltage conditions.
“Surge” will be defined to refer to conditions when the AC line voltage rises above nominal voltage.
The power supply shall meet the requirements under the following AC line sag and surge conditions.

AC Line SAG and SURGE transient performance.

AC Line Sag and Surge (10sec interval between each sagging and surging)

Duration	Sag	Operating AC voltage	Line frequency	Performance criteria
0 to 1/2 AC cycle	95%	Nominal AC Voltage ranges	50/60Hz	No loss of function or performance
>1 AC cycle	>30%	Nominal AC Voltage ranges	50/60Hz	Loss of function acceptable, self-recoverable
Continues	10%	Nominal AC Voltages	50/60Hz	No loss of function or performance
0 to 1/2 AC cycle	30%	Mid-point of nominal AC Voltages	50/60Hz	No loss of function or performance

2.1.9 Power Recovery

The power supply shall recover automatically (auto recover) after an Input power failure. Input power failure is defined to be any loss of Input power that exceeds the dropout criteria.

2.1.10 Input Line Leakage Current

The maximum leakage current to ground for power supply system shall not exceed 3.5mA when tested at 230VAC Input voltages.

2.1.11 Surge Immunity

The power supply shall be tested with the system for immunity to AC Unidirectional wave; 2kV line to ground and 1kV line to line, per EN 55024: 1998/A1: 2001/A2: 2003, EN 6100-4-5: Edition 1.1: 2001-04.

The pass criteria include: No unsafe operation is allowed under any condition all power supply output voltage levels to stay within proper spec levels; No change in operating state or loss of data during and after the test profile No component damage under any condition.

2.2 BROWNOUT

Power supply shall contain protection circuitry such that the application of an input voltage below the minimum specified in section 2.1.3 shall not cause damage to the power supply unit nor cause failure of the input fuse and overstress to any other component. In the event of shutdown due to extended brownout, the power supply shall automatically restart after the AC input is within specified limits. The voltage level between shutdown and recovery shall have a minimum of 5 VAC of voltage hysteresis, so that the power supply will not oscillate on and off due to voltage change condition. The power supply shall meet dynamic voltage regulations (Section 2.3.2) and all turn on requirements or turn off requirements while shutdown or recovery.

2.2.1 AC Turn off Requirements

Power supply shall go to power off state after a slow brownout condition. The brownout condition shall be tested with all valid redundant power system configurations using the system. While the power system is operating at full rated DC load, the AC line voltage shall be reduced from 90VAC/60Hz to 0VAC at a constant rate over a period of 30 minutes. Power supply shall shutdown at the AC voltage 80VAC±5VAC.

2.2.2 AC Turn on Requirements

Power supply shall return to normal power up state after a slow recovery condition. The recovery shall be tested in all valid redundant power system configurations. With the test loads configured for maximum system DC output in resistive mode, the AC line voltage shall be increased from 0VAC to 90VAC/60Hz at a constant rate over a period of 30 minutes. Power supply shall turn up at the AC voltage 85VAC±4VAC

2.3 POWER OUTPUT SPECIFICATION

2.3.1 Output Power/Currents

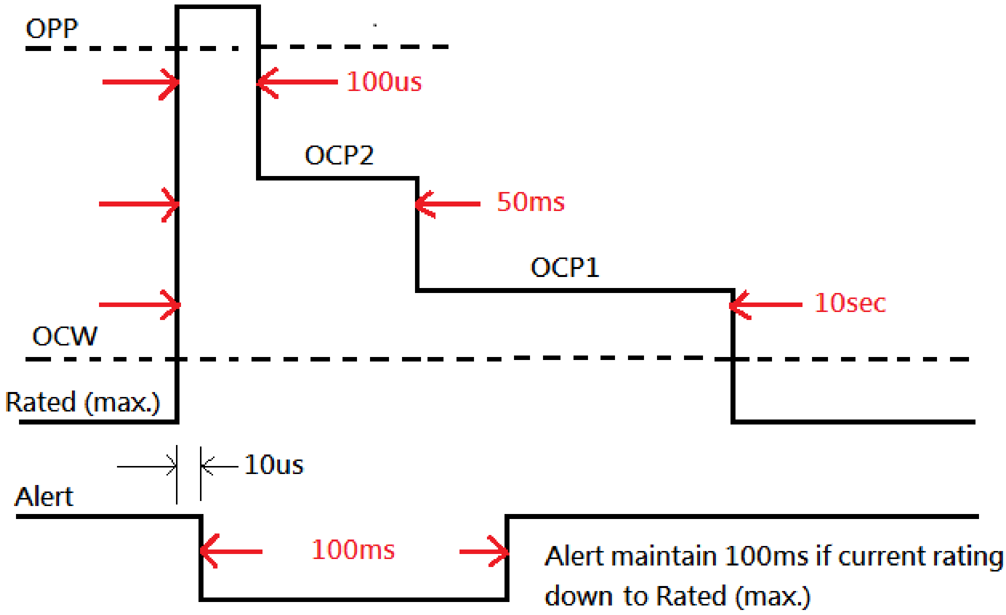
The following table defines the power and current rating of the **800W** power supply.

Voltage	VAC	Mini	Max	Peak
+12V main	100-240	0.5A	66.7A	86.7A
+12Vsb		0.1A	3A	3.9A

1. Maximum continuous total DC output power should not exceed 800W.
2. Maximum peak total DC output power should not exceed 1120W.

2.3.2 Peak Power Condition

The power supply shall meet the following peak power conditions.



Parameter	MIN	NOM	MAX	Condition
OPP	140%	145%	150%	Keep 100uS at least
OCP2	125%	133%	140%	Keep 50mS at least
OCP1	115%	120%	125%	Keep 10Sec at least
OCW	105%	110%	115%	Continue
Rated	0%		100%	Continue

1. Peak power condition shall be following the peak power table as specify from the above. After exceeding the max. peak power threshold of T_{OFF_PEAK}, the power supply will shut down in a OPP state, and according warning and failures will be reported.
2. The warning signal (OCW) will send to system during 105% - 115% of maximum load, and shuts down after follow by the specified condition.

2.3.3 Voltage Regulation

The power supply shall stay within the following voltage limits when operating at steady state and dynamic loading conditions. These limits include the peak-peak ripple/noise conditions specified in paragraph 2.2.5. All outputs are measured with reference to the return remote sense (ReturnS) signal.

Parameter	MIN	NOM	MAX	Units	Tolerance
+12V	+11.40	+12.00	+12.60	V_{rms}	+/-5%
+12Vsb	+11.40	+12.00	+12.60	V_{rms}	+/-5%

2.3.4 Dynamic Loading

The power supply shall operate within specified limits and meet regulation requirements for step loading and capacitive loading specified below.
The load transient repetition rate shall be tested between 50Hz to 5kHz at duty cycles ranging from 10%-90%. The load transient repetition rate is only a test specification. The Δ step load may occur anywhere within the MIN load and the MAX load.

Output	△Step Load Size	Load Slew Rate	Capacitive Load
+12V	60% of max load	2.0 A/µs	2200 µF
+12Vsb	1.0A	1.0 A/µs	20 µF

Note: For dynamic condition +12V min loading is 1A.

2.3.5 Capacitive Loading

The power supply shall meet all requirements with the following capacitive loading ranges.

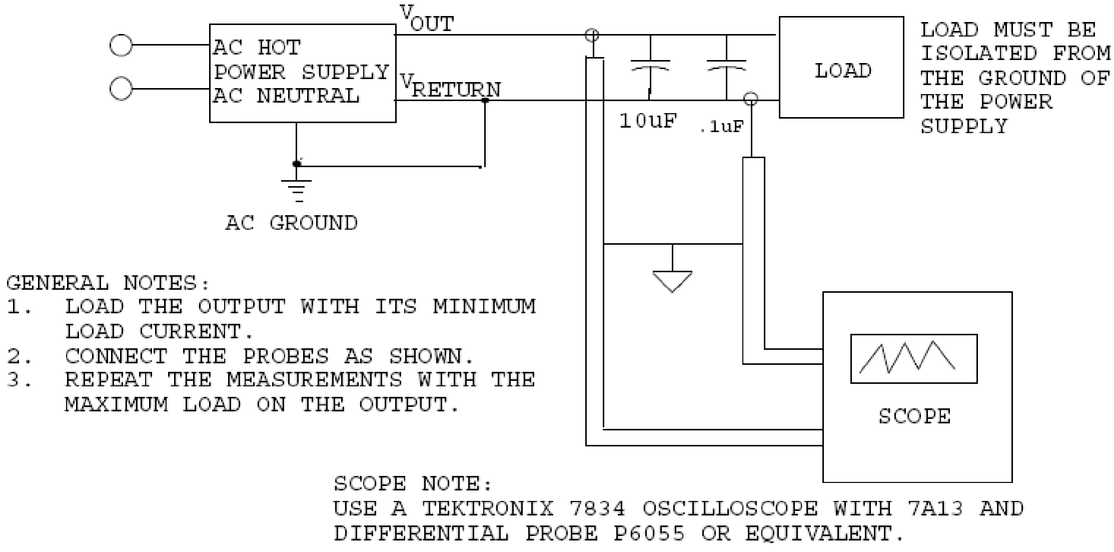
Output	MIN	MAX	Units
+12V	500	36,000	µF
+12Vsb	20	3,100	µF

2.3.6 Ripple and Noise

Ripple and Noise shall be measured over a Bandwidth of 20MHz at the power supply output connector, with minimum capacitive load as specified within paragraph 2.2.4 in parallel with a 10µF tantalum capacitor (minimum 100mΩ ESR) and with a 0.1µF ceramic capacitor placed at the point of measurement. Maximum allowed ripple/noise output of the power supply is defined in table below.

+12V	+12Vsb
120 mVp-p	120 mVp-p

The test set-up shall be as shown below:

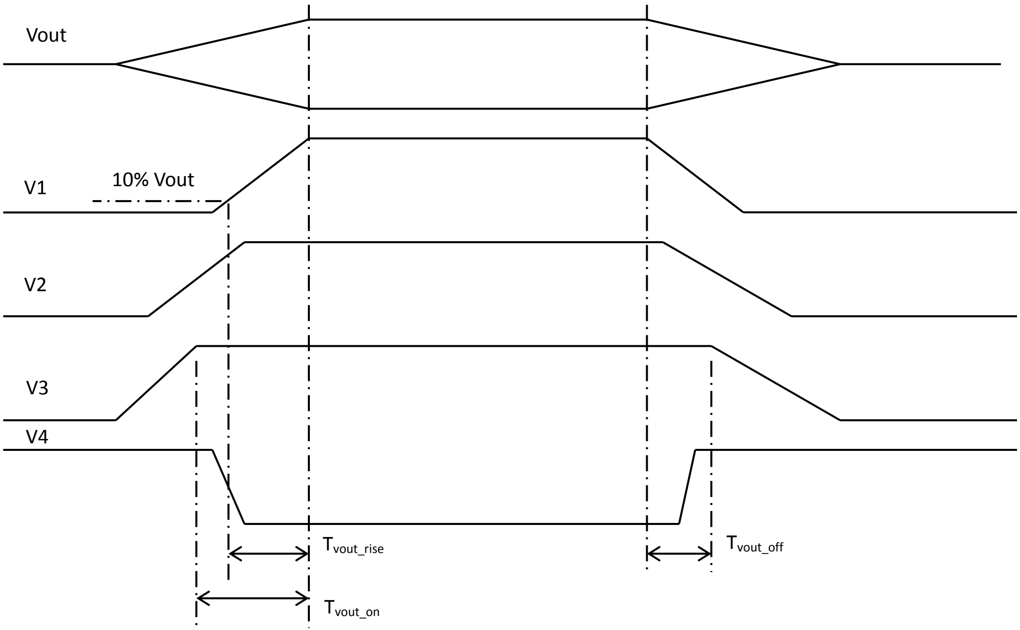


3. TIMING REQUIREMENTS

These are the timing requirements for the power supply operation. The output voltages must rise from 10% to within regulation limits (Tvout_rise) within 5 to 70ms, and 1 to 25ms for 12Vsb. All main outputs must rise monotonically. Table below shows the timing requirements for the power supply begin turned n and off via the AC input, with PSON held low and the PSON signal, with the AC input applied.

Item	Description	MIN	MAX	Units
$T_{vout\ rise}$	Output voltage rise time for 12V main output	5	70	ms
	Output voltage rise time for 12Vsb output	1	25	ms

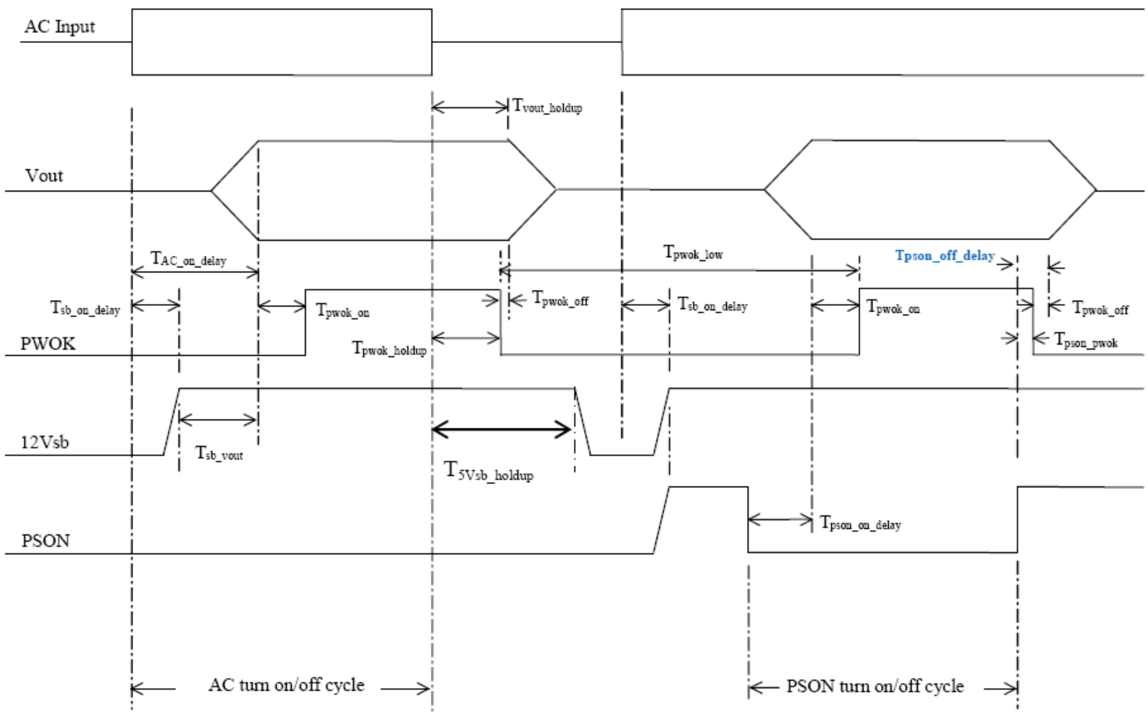
Output Voltage Timing



Turn On/Off Timing

Item	Description	MIN	MAX	UNITS
T sb_on_delay	Delay from ac begin applied to 12Vsb begin within regulation.		1500	ms
T ac_on_delay	Delay from AC begin applied to all output voltage begin within regulation.		3000	ms
T out_holdup	Time all output voltages stay within regulation after loss of AC.	13		ms
T pwok_holdup	Delay from loss of AC to de-assertion of PWOK.	12		ms
T pson_off_delay	Delay from PSON# de-asserted to power supply turning off		5	ms
T pson_on_delay	Delay from PSON# active to output voltages within regulation limits.	5	400	ms
T pson_pwok	Delay from PSON# de-active to PWOK begins de-asserted.		5	ms
T pwok_on	Delay from output voltages within regulation limits to PWOK asserted at turn on.	100	500	ms
T pwok_off	Delay from PWOK de-asserted to 12V output voltage dropping out of regulation limits.	1		ms
T psok_low	Duration of PWOK begin in the de-asserted state during an off/on cycle using AC or the PSON# signal.	100		ms
T sb_vout	Delay from 12Vsb begin in regulation to O/Ps begin in regulation at AC turn on.	50	1000	ms
T 12VSB_holdup	Time the 12VSB output voltage stays within regulation after loss of AC.	70		ms

Turn On/Off Timing (single Power supply)



4. CONTROL AND INDICATOR FUNCTIONS

The following section defines the input and output signals from the power supply. Signals that can be defined as low true use the following convention:
Signal# = low true.

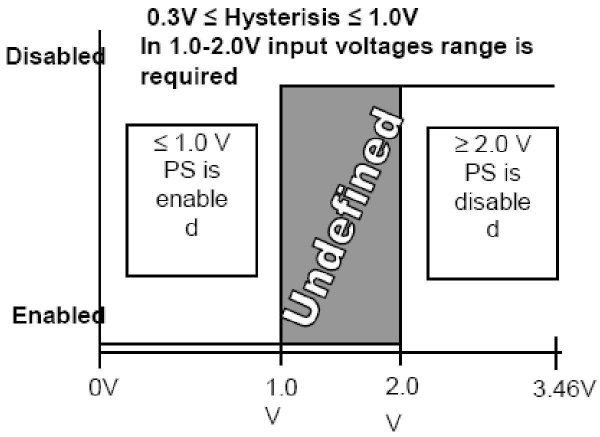
4.1 PSON# INPUT SIGNAL (POWER SUPPLY ENABLE)

The PSON# signal is required to remotely turn on/off the main output of the power supply. PSON# is an active low signal that turns on the main output power rail. When this signal is not pulled low by the system or left open, the outputs (except the Standby output) turn off. PSON# is pulled to a standby voltage by a pull-up resistor internal to the power supply.

PSON# Signal Characteristic

Signal Type	Accepts an open collector/drain input from the system. Pull-up to VSB located in power supply	
PSON# = Low	ON	
PSON# = High or Open	OFF	
	MIN	**MAX**
Logic level low (power supply ON)	0V	1.0V
Logic level high (power supply OFF)	2.0V	3.46V
Source current, V_{pson} = low		4mA
Power off delay: $T_{pson\_off\_delay}$		5msec
Power up delay: $T_{pson\_on\_delay}$	5ms	400msec
PWOK delay: T_{pson_pwok}		50msec

PSON# Signal Characteristic

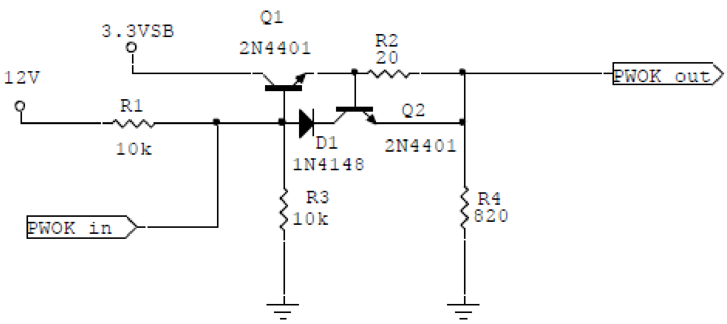


4.2 POWER OK (PWOK OR PG) BUS

PWOK is a power good signal and shall be pulled HIGH by the power supply to indicate that all outputs are within regulation limits. When any output voltage falls below regulation limits, an internal failure or when AC power has been removed for a time sufficiently long, so that power supply operation is no longer guaranteed, PWOK will be de-asserted to a LOW state. The start of the PWOK delay time shall inhibited as long as any power supply output is in current limit.

PWOK / PG Signal Characteristics

Signal Type	Open collector/drain output from power supply. Pull-up VSB located in the power supply	
PWOK = High	Power OK	
PWOK = Low	Power Not OK	
	MIN	**MAX**
Logic level low voltage, I_{sink} = 4µA	0V	0.4V
Logic level high voltage, I_{source} = 200µA	2.4V	3.46V
Sink current, PWOK = low		400µA
Source current, PWOK = high		2mA
PWOK delay: T_{pwok_on}	100ms	1000ms
PWOK rise and fall time		100µsec
Power down delay: T_{pwok_off}	1ms	200ms



Note: The Power Ok circuits should be compatible with 5V pull up resistor (>10K) and 3.3V pull up resistor (>6.8k)

4.3 SMBAlert# Signal

This signal indicates that the power supply is experiencing a problem that the user should investigate. This shall be asserted due to Critical events or Warning events. The signal shall activate in the case of critical component temperature reached a warning threshold, general failure, over-current, over-voltage, under-voltage, failed fan. This signal may also indicate the power supply is reaching its end of life or is operating in an environment exceeding the specified limits.

This signal is to be asserted in parallel with LED turning solid Amber or blink Amber.

SMBAlert# Signal Characteristics

Signal Type (Active Low)	Open collector / drain output from power supply. Pull-up to VSB located in system.	
Alert# = High	**OK**	
Alert# = Low	**Power Alert to system**	
	MIN	MAX
Logic level low voltage, Isink=4 mA	**0 V**	**0.4 V**
Logic level high voltage, Isink=50 μA		**3.46 V**
Sink current, Alert# = low		**4 mA**
Sink current, Alert# = high		**50 μA**
Alert# rise and fall time		**100 μs**

4.4 Cold Redundant_Bus (CR_BUS) Signal

This signal is used for power supply to power supply communication in front of an interrupt. This interrupt is by default low impedance low. For all power supplies connected to this bus shall have an open collector and a pull high circuitry, which can provide at least 4mA.

This function shall be PMBus controlled and allows the system, to set the power module into four different modes:

1. MASTER – Load dependent function
2. SLAVE – Load dependent function
3. MASTER – HVDC Input dependent function
4. SLAVE – Master dependent function

SLAVE’s in CR Standby shall provide PG and LED should be solid GREEN.

CR_BUS# Signal Characteristics

Signal Type (Active HIGH)	Open collector / drain output from power supply. Pull-up to VSB located in system.	
CR_BUS# = High	**CR Standby Allowed**	
CR_BUS# = Low	**SLAVEs need to be Active ON**	
	MIN	MAX
Logic level low voltage, Isink=4 mA	**0 V**	**0.4 V**
Logic level high voltage, Isource=4 mA		**3.46 V**
Sink current, CR_BUS# = low		**4 mA**
Sink current, CR_BUS# = high		**4 mA**
CR_BUS# rise and fall time		**100 μs**

5. PROTECTION CIRCUITS

Protection circuits shall cause only the power supply's main outputs to shutdown (latch off). If the power supply latches off due to a protection circuit tripping, an AC cycle OFF for 15 second or a PSON# cycle HIGH for 1 second must be able to reset the power supply.
The auxiliary output shall not be affected by any protection circuit, unless the auxiliary output itself is affected.

5.1 CURRENT LIMIT

The power supply shall prevent the main and auxiliary outputs from exceeding the values shown in below Table. If the main current limits are exceeded the power supply will shut down and latch off. The latch will be cleared by toggling the PSON# signal or by an AC power interruption. The power supply shall not be damage from repeated power cycling in this condition. *The auxiliary output shall be auto recover **(Vsb_{AR})** after the OCP/SCP had been removed.*

Over Current Protection

Voltage	**Over Current Limit (Iout limit)**
+12V	110% minimum, 150% maximum
+12Vsb ***(Auxiliary)AR***	110% minimum, 150% maximum

5.2 FAST OUTPUT CURRENT SENSING

The power supply shall have a circuit to quickly assert the SMBAlert signal when the output current exceeds the $I_{throttle}$ threshold. A current sense resistor on the output side of the PSUs output capacitors shall be used to quickly sense current exceeding the $I_{throttle}$ threshold. The SMBAlert# signal shall assert within Tfast_smbalert time. The PSU shall hold the SMBAlert# signal asserted for Tsmbalert_latch duration then release it.

Key characteristics of the fast output current sensing requirements

- Ithrottle < minimum OPP level (SMBAlert must assert before current/power hits the OPP threshold)
- Tfast_smbalert < 10uSec
- Tsmbalert_latch = 100mSec (+/-50mSec)

5.3 OVER VOLTAGE PROTECTION

The power supply shall shutdown and latch off after an over voltage condition occurs. This latch will be cleared by toggling the PSON# signal or by an AC power interruption.

A shutdown caused by an over-voltage in one power supply will not cause the other (redundant) power supply to shuts down.

The over-voltage threshold is defined in table below.

Over Voltage Limits

Output Voltage	MIN (V)	MAX (V)
+12V	13.8	14.5
+12Vsb ***(Auxiliary)AR***	13.3	14.5

5.3 OVER TEMPERATURE PROTECTION

The power supply shall be protected against over temperature conditions caused by loss of fan cooling or excessive ambient temperature which could cause internal part failures. In an over temperature condition the power supply shall shutdown, then recover after while the temperature back in normal condition. The 12VSB shall not shutdown during an OTP condition on the main outputs.

The temperature warning setting point is showing on below table:

Condition	Warning in °C	Critical in°C	Timing for SMBAlert#/LED
T_{READ}	55	65	1msec

$T_{READ:}$ Environment Temperature

6. LED IDENTIFICATION

There is one indicator LED located on the front faceplate.
Status showing on below:

Power Supply Condition	LED State
Output ON and OK	GREEN
AC present / only 12Vsb on (PS off) or PSU in Cold redundant state	1Hz Blink GREEN
AC cord unplugged or AC power lost; with a second power supply in parallel still with AC input power	AMBER
Power supply warning events where the power supply continues to operate high temp, high power, high current, slow FAN.	1Hz Blink AMBER
Power supply critical event causing a shutdown; failure, OCP, OVP, FAN fail.	AMBER

7. POWER SUPPLY MANAGEMENT

7.1 HARD WARE LAYER

The serial bus communication devices for Power Supply Management Controller (PSMC) and Field Replacement Unit (FRU) in the power supply shall be compatible with both SMBus 2.0 “high power” and I^2C Vdd based power and drive specification.
This bus shall operate at 3.3V but be tolerant to 5V pull-ups. The power supply should not have any internal pull-ups on the SMBus, pull-ups shall be located on system side.
Two pins are allocated on the power supply. One pin is the serial clock (SCL). The second pin is used for serial data (SDA). Both pins are bi-directional and are used to form a serial bus.
The device(s) in the power supply shall be located at an address(s) determined by addressing pins A0 and A1 on the power supply module. The circuits inside the power supply shall derive their 3.3V power from the 12VSB bus through a buffer. Device(s) shall be powered from the system side of the 12VSB or’ing device. No pull-up resistors shall be on SCL or SDA inside the power supply. The pull-up resistors should be located external to the power supply on system/application side.

7.1.1 Capacitance for SMBus

The recommended Capacitance per pin on SDA and SCL shall be 10pF, and is not allowed to exceed 40pF per pin. In an N+1 configuration of up to four (4) power modules with additional PDB, the total Capacitance of each Bus pin shall not exceed 400pF.

7.1.2 I^2C Bus Noise Requirement

The power supplies I^2C Bus’ SDA and SCL line shall be clean from noise, which might affect the proper function when utilized with other devices.
The maximum allowed line noise on SDA or SCL is 200mV.

7.2 POWER SUPPLY MANAGEMENT CONTROLLER *(PSMC)*

The PSMC device on the PDB shall derive its power of the 12Vsb output on the system side of the O'ring device and shall be grounded to return. It shall be compatible with SMBus specification 2.0 and PMBus™ Power System Management Protocol Specification Part I and Part II in Revision 1.2 or later

It shall be located at the address set by the A0 and A1 pins.

Refer to the specification posted on www.ssiforum.org and www.pmbus.org website for details on the power supply monitoring interface requirements and refer to followed section of supported features. The below table reflect the power module addresses complying with the position in the housing.

PDB position and PSMC address	PM1 B0h/B1h	PM2 B2h/B3h
Pin A0/A1	0/0	1/0

7.3 Sensor Accuracy

The sensor of the PSMC shall meet below accuracy requirements for sensor readings. The accuracy shall be met at the specified environmental condition and the full range of rated input voltage.

Sensor Accuracy Table

Sensor	10% - 20% load	> 20% - 50% load	> 50% - 100% Load
Current	± 5%	± 5%	± 5%
Voltage	± 5%	± 5%	± 5%
Temperature	± 5°C with Δ5%		
FAN	Provided by the power module		
Input Power	± 5%	± 5%	± 5%
	Provided by the power module		

***** PMBus compliance please refer to firmware specification *****

8. ENVIRONMENTAL

8.1 TEMPERATURE REQUIREMENTS

The power supply shall operate within all specified limits over the Top temperature range.

The average air temperature difference (△T_{ps}) from the inlet to the outlet of the power supply shall not exceed the values shown below Table. All airflow shall pass through the power supply and not over the exterior surfaces of the power supply

ITEM	DESCRIPTION	MIN	MAX	UNITS
T_{op}	Operating temperature range.	0	50	°C
$T_{non\text{-}op}$	Non-operating temperature range.	-40	70	°C

8.2 HUMIDITY

Operating: 10% to 95% relative humidity, non-condensing.

Storage: 10% to 95% relative humidity, non-condensing.

8.3 ALTITUDE

Operating: to 5,000m

Non-operating: to 15,200m

8.4 VIBRATION

Operating: 0.01G2/Hz at 10Hz, 0.02G2/Hz at 20Hz.

Non-Operating: 0.02G2/Hz form 20Hz to 1000Hz.

8.5 MECHANICAL SHOCK

Operating: 5G, no malfunction.

Non-operating: 50G, no damage. Trapezoidal Wave, Velocity change = 4.3m/sec. Three drops in each of six directions are applied to each of the samples.

8.6 EMI/EMC REQUIREMENTS

The power supply shall comply with FCC part 15, CRISP 22 and EN55-22; Class A for both conducted and radiated emissions with a 3dB margin. Test shall be conducted using a shielded DC output cable to a shielded load. The load shall be adjusted to 100% load. Tests will be performed full load on each output power at 120VAC, 60Hz, and 230VAC, 50Hz.

9. REGULATORY REQUIREMENTS

9.1 PRODUCT SAFETY COMPLIANCE

The power supply will have the following safety approvals with most current editions:

A) UL 60950-1/CSA 60950-1 Edition 2 (USA/Canada)
B) TUV EN60950-1 Edition 2 (Europe)
C) IEC60950-1 Edition 2 (International)
D) CB Certificate & Report, IEC60950-1 Edition 2
E) CE – Low Voltage Directive 2006/95/EC (Europe)
F) BSMI (Taiwan)
G) GB4943-2011 Certification (China)
H) KCC (Korea)

9.2 ELECTROSTATIC DISCHARGE

The objective of ESD test is to determine the susceptibility and immunity of products to electrostatic discharge to which the products may be exposed, when operating under all potential environmental conditions. The test conditions and setup shall conform to that outlined in CISPR24-2 and IEC 801-2 (EN55101-2).
Air discharge: 8KV not allow error.
Contact discharge: 4KV not allow error.
Note: The above test discharge time is 1 time/sec and repeats each test 10 times.

9.3 HI-POT

The power supply module in the system shall be test at 1800Vac, with a trigger limit of 30mA.

10. RELIABILITY

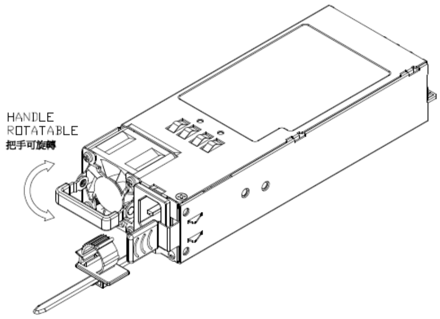
The MTBF of the power supply can be calculated with the Part-Stress Analysis method of Bell Core SR332 of the quality factors. A calculated MTBF of the power supply shall be at least 100,000 hours at 50°C ambient with 230VAC and in full load condition.

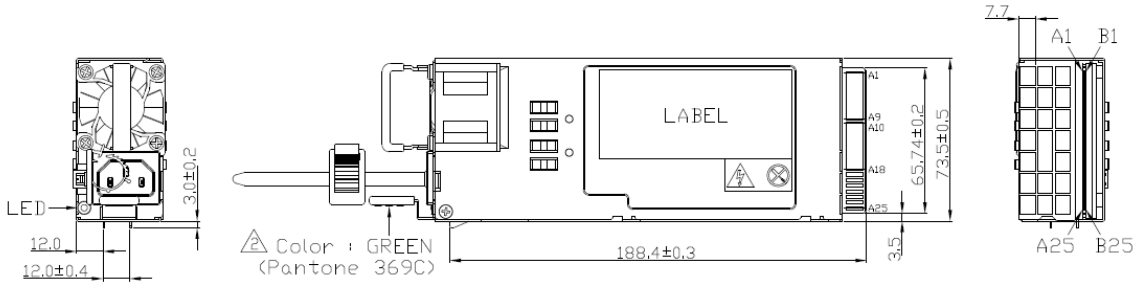
11. RoHS COMPLIANCE

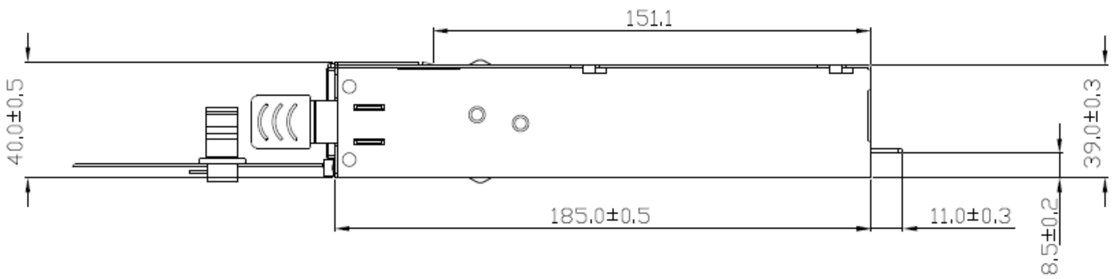
The directive 2002/95/EC of the European Parliament and of the Council of the 27th January 2003, on the restriction of the use of certain hazardous substances in electrical and electronic equipment, requires the reduction of the substances Lead, Mercury, Cadmium, Hexavalent Chromium, Polybrominated Biphenyls (PBB), and Polybrominated Biphenyl ethers (PBDE) in electronic products by July 1, 2006. Unless otherwise noted, all materials used will be compliant with this directive and any subsequent revisions or amendments.

12. MECHANICAL DIMENSIONS

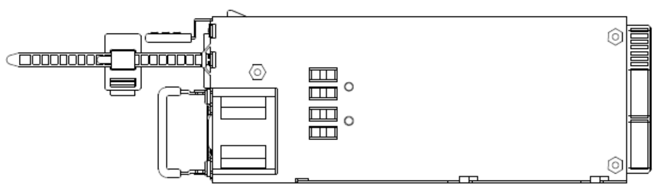
Dimension (L x W x H): 185 x 73.5 x 40mm / 7.28 x 2.89 x 1.57inch

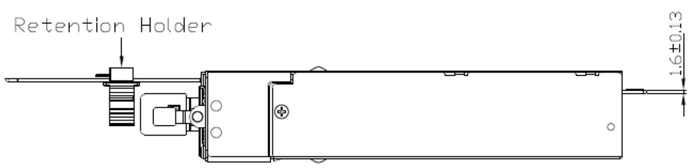




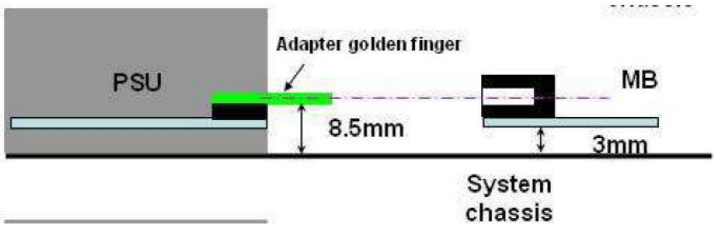


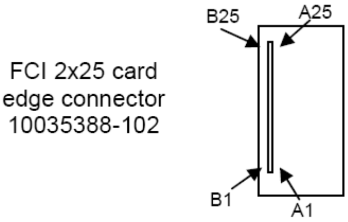
NOTE: Above drawing is for reference only, detail dimension should refer to independent mechanical drawing.





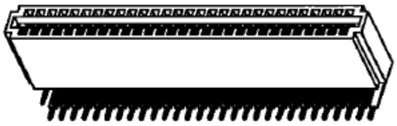
The height of adapter gold finger to the bottom is 8.5mm

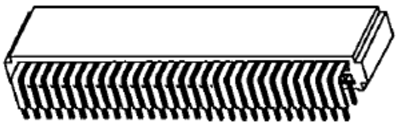


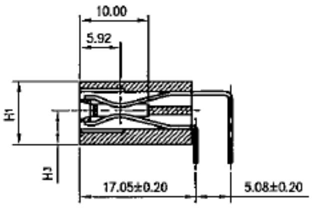


12.1 DC Output connector

The power supply shall use a card edge output connection for power and signal that is compatible with a 2x25 Power Card Edge connector (equivalent to 2x25 pin configuration of the FCI power card connector 10035388-102LF or ALLTOP C21009-102H3-Y).







Gold finger pin assignment

OUTPUT PIN ASSIGNMENT

PIN	SIGNAL_NAME	PIN	SIGNAL_NAME
A1	GND	B1	GND
A2	GND	B2	GND
A3	GND	B3	GND
A4	GND	B4	GND
A5	GND	B5	GND
A6	GND	B6	GND
A7	GND	B7	GND
A8	GND	B8	GND
A9	GND	B9	GND
A10	+12V	B10	+12V
A11	+12V	B11	+12V
A12	+12V	B12	+12V
A13	+12V	B13	+12V
A14	+12V	B14	+12V
A15	+12V	B15	+12V
A16	+12V	B16	+12V
A17	+12V	B17	+12V
A18	+12V	B18	+12V
A19	PMBus SDA	B19	A0 (SMBus address)
A20	PMBus SCL	B20	A1 (SMBus address)
A21	PSON	B21	12VSB
A22	SMBAlert#	B22	CR_BUS#
A23	Return Sense	B23	12V load share Bus
A24	+12V Remote Sense	B24	No Connect
A25	PWOK	B25	NC