Product Specifications

Product name: AC-DC Power Supply

Product No.: PWR-150-ACB

Version:V0.4

SHANGHAI BAUD DATA COMMUNICATION CO.,LTD.				DESCRIPTION: **SPECIFICATION**	
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Audit	Wang yanbiao	Date	2021.06.02
Approval	Shen tingwang	Date	2021.06.03

Change the reason：

1.Lightning 6KV has been updated to common mode 4KV and differential mode 2KV

2.The original standard of conduction and radiation Class B 3dB allowance is updated to Class A 6dB allowance

3.Update the status of LED indicator

4.Update the definition of PIN of output signal

5.Update the Output Terminal GND description

6.Added Present signal description on the output side

1.0 Input:

1.1 Input Voltage

Input	Minimum	Nominal	Maximum	Units
AC	90	100~240	264	**Vrms**
Frequency	47	50/60	63	**Hz**
DC	180	240	340	**Vrms**

1.2Input Current

4Amax at 100~127Vacand 2A max at 200~240Vac or 240Vdc input.

1.3 AC Line Fuse

The power supply has a 4A/250V fuse in the live line wire of the input. The line fusing shall be acceptable for all safety agency requirements. The input fuse shall be a slow blow type. The input inrush current shall not cause the AC line fuse to blow under any conditions. All protection circuits in the power supply shall not cause the AC fuse to blow unless a component in the power supply has failed.

1.4AC Line Inrush Current

Item	Technical requirement	Unit	Remark
Inrush Current	≤50	A	Vin=110Vac, cold load
	≤100	A	Vin=230Vac,cold load

The power supply must meet the inrush requirements for any rated AC voltage, during cold start at any phase of AC voltage and under 25℃ ambient temperature.

1.5Power Factor

The power supply must meet the power factor requirements stated in the Energy Star. These requirements are stated as below table . Test PF value 0.94 at 230 VAC 50Hz or 115 VAC 60Hz 100% load.

1.6 AC Line Sag and Surge Requirement

AC line transient conditions are defined as “sag” and “surge”. “Sag” is defined as the AC line voltage drops below nominal voltage. “Surge” is defined as the AC line voltage rises above nominal voltage. The power supply should meet below AC line sag an surge conditions.

AC Line Sag Transient Performance

Duration	Sag	Operating AC Voltage	Frequency	Requirement
0.5 AC cycle	95%	100~240VAC	50/60Hz	Full load and no loss of function and performance
>1.0 AC cycle	>30%	100~240VAC	50/60Hz	Loss of function acceptable, self-recoverable.

AC Line Surge Transient Performance

Duration	Surge	Operating AC Voltage	Frequency	Requirement
Continuous	10%	100~240VAC	50/60Hz	No loss of function and performance
0 to 0.5 AC cycle	30%	100~240VAC	50/60Hz	

1.7 AC Line Dropout

An AC line dropout is defined to be when the AC input drops to 0VAC at any phase of the AC line for any length of time. During an AC dropout the power supply must meet . voltage regulation requirements. An AC line dropout of any duration shall not cause tripping of control signals or protection circuits. If the AC dropout lasts longer than the holdup time, the power supply should recover and meet all turn on requirements. The power supply shall meet the AC dropout requirement over rated AC voltages and frequencies. A dropout of the AC line for any duration shall not cause damage to the power supply.

AC Power Holdup Requirement	Loading	PWOK Holdup time(ms)
	Full Load	10.0

1.8 Leakage Current

The RMS AC leakage current, measured per applicable safety standards test methods.

And should meet1.75mA max at 264Vac/50Hz input.

2.0 Output:

2.1 Output Rating Table

Input Range	**Input:** 90-264Vac/180-340Vdc
Output	+12V
Max load	12.5A
Min load	1A
Regulation	±3%(11.64V~12.36V)
Ripple & Noise	120mV Max

＊The max continuous output power is 150W for 90-264Vac/180-340Vdc input.

＊The ripple & noise is measured over a bandwidth of 10Hz to 20MHz at the power supply output connectors. A 10μF electrical capacitor in parallel with a 0.1μF ceramic capacitor is placed at the point of measurement.

2.2 Power Efficiency

Below table provides minimum efficiency requirement at various loading conditions.

	Input voltage	**Load**	**Requirement**
25℃ Ambient Temperature	**115VAC**	**Full Load**	≥85%
	230VAC	**Full Load**	≥88%

＊Add external +12Vcc for fan and the fan power is included in efficiency calculation.

2.3 Turn on Overshoot

The turn-on overshoot due to application of AC input or remote enable shall be < 5% of the nominal output voltage for any application of input voltage within the specified range.

Overshoot/undershoot on turn on or restart must meet under all loading conditions, including minimum output capacitance on all output voltages.

2.4No Load Condition

The power supply shall not be damaged nor cause abnormal operation at any load conditions including no load. The power supply shall be able to turn on and off under no load condition. The on and off waveforms shall be monotonic. The input power is less than8wat 230Vac input and no load.

2.5Output Regulation

All outputs shall remain within the tolerances in section 2.1table under all allowable load and temperature conditions during load variations on the other output voltage, any combination of the following conditions. The outputs will be measured at the output terminals,

- Input operating rated range
- Specified load range
- Cross regulation on dual or multiple outputs units
- Specified environmental conditions

2.6 Capacitive Loading

The power supply shall be stable and meet all requirements with following capacitive loading conditions, including start up with full load.

Output	**+12V**
Capacitor	5000uF

2.7 Dynamic Loading

The output voltages should remain within ±5% of rated voltages for the step loading with capacitive load specified in the below stable.The output voltages should remain within ±10% of rated voltages for the step loading without capacitive load specified in the below stable.The load transient repetition is tested between 50Hz and 5kHz at 50% duty cycles. And +12V's min load is 1A when do dynamic loading test.

Output	**Δ Step Load Size**	**Load Slew Rate**	**Frequency**	**Test Capacitive Load**
+12V	60% of Max Load	1.0A/us	50Hz~5kHz	2200uF

2.8Current Sharing

All outputs shall be capable of operating in a redundant current share mode. A maximum (two) of power supplies may be operated in parallel. All outputs shall incorporate an isolation diode for fault isolation. The +12V current sharing shall be a single wire type. Connecting the load share bus pins of each power supply together shall enable the current share feature. With the current share pins tied together, the +12V output load current shall be balanced to within 10% when output less than 20% full load and within5% when output at over 50% full load. For example 1+1 redundant mode the current sharing precision calculating formula is ｜Iout1-Iout2｜/(Iout1+Iout2).Shorting or opening of a current share pin shall not cause the output voltage to go out of steady state regulation. For 12.5A load

the LS voltage shall be 6.25 V for a single power supply. The LS pin's voltage VS load requirements are as below table and curve when single power supply:

Item	Description	Min	Nominal	Max	Unit
VLS	Max Load(12.5A)	5.94	6.25	6.56	Volt
VLS	No Load(0A)	0.0	0.125	0.175	Volt

2.9 Hot Swap Requirement

Hot swapping is the process of inserting and extracting a power supply from an operating power system. During this process the output voltage shall remain within the limits. The hot swap test must be conducted when the system is operating under static. dynamic and no loading conditions. The power supply shall use a latching mechanism to prevent insertion and extraction of the power supply when the AC power cord is inserted into the power supply. The power supplies must be able to operate in a hot-swap/redundant configuration.

2.10 Grounding

The output ground of the pins of the power supply provides the output power return path. The output connector ground pins connected to the safety ground (power supply enclosure) by Y capacitance. This grounding should be well designed to ensure passing the max allowed common mode noise levels. The power supply shall be provided with a reliable protective earth ground.

2.11Output hold time

The retention time between AC input voltage turn-off and output voltage drop to 90% should be greater than 10ms.

2.12 Rise Time

The +12V must rise from 10% to 95% within regulation limits within 1 to 50 ms.

2.13Tac-on Delay Time

The Tac-on delay time for +12V should be ≤3s at rated input when full load.

3.0 Protection:

When the input UVP .unit's OTP or high ambient temperature protection is triggered, the power supply will shut down and self -recovery when the fault condition removed.

3.1 Input UVP Voltage Protection

The input UVP is less than 60Vac or 60Vdc, and the recovery point is 78Vac±5Vac or 100Vdc±10Vdc

3.2OutputOverCurrent Protection

The power supply should have over current protection to prevent the outputs from exceeding limits. If the+12V's OCP occurred, the power supply should shut down and self -recovery after the

over current condition removed.

+12V OCP range: 13~16.5A for 90~264Vac input and 180~340Vdc Input.

+12V Main output	High Input	LED
Over current warning	13~16A	Red
Over current protection	15~16.5A	The LED is not bright
Over current recovery	12.5~16A	Red

3.3Output Short Circuit Protection

The power supply shall be protected from damage due to faults between output+12V and GND. Short circuit of the power supply outputs shall not result in fire hazard, shock hazard, or damage to the power supply. Components shall not be damaged during the short circuit conditions. If the +12V shorted to GND, the power supply will shut down and self-recovery after the short circuit condition removed.

3.4 Output Over and Under Voltage Protection

The power supply should have over voltage protection to prevent the outputs from exceeding limits or abnormal operation. If the +12V's OVP occurred. The power supply will be continuously output within the over voltage protection range.

+12V OVP range:13.3~14.5Vdc;

3.5 Over Temperature Protection

The power supply will be protected against over temperature conditions caused by loss of fan cooling or excessive ambient temperature. In over temperature protection (OTP) condition the PSU will shutdown. When the power supply temperature drops to within specified limits, the power supply shall restore power automatically.

There are two temp sensors in the power supply, The first is on the main board to sense the synchronous rectifier mosfets copper temperature, it will trigger primary OTP and self-recovery when the synchronous rectifier mosfets temperature return to a safe point. The second is in the PCB small card. Over temperature protection is triggered when the detected ambient temperature reaches the protection point .Recover yourself after landing at the recovery point.

The temp sensors	Over temperature warning	Over temperature protection	Self-recovery temperature
Third (Component)	95±10℃	105±10℃	95±10℃
Fourth (Ambient)	63±5℃	68±5℃	63±5℃

4.0 Reliability Requirement:

4.1 Environment Limits:

Item	Unit	Min	Nominal	Max	Notes
Operating Temperature	℃	-10	35	55	The power supply should start up at -40℃, But no electrical property requirement
Storage Temperature	℃	-40	25	70	Non-operating, maximum rate of change of 20℃/hour.
Relative Humidity	%	10		90	Operating. non-condensing
		5		95	Non-operating, non-condensing
Operating Altitude	m	0		5000	The power supply's max operating ambient temperature is defined at sea level. The max operating ambient temperature should drops at a slew of 0.33℃/100m altitude raised.
Storage Altitude	m	0		15000	
Mechanical Shock	50G trapezoidal wave, velocity change =170in./sec				Non-operating. Three drops in each of six directions are applied to each of the samples

4.2Random Vibration

Non-operating:

Sine sweep: 5~500Hz @0.5gRMS at 0.5 octave/min; dwell 15 min at each of 3 resonant points;

Random profile: 5Hz @0.01g^2/Hz (slope up); 20~500Hz @0.02g^2/Hz (flat);

Input acceleration = 3.13gRMS; 10min.per axis for 3 axis on all samples.

4.3Thermal Shock (Shipping)

Non-operating: -40~70℃, 50 cycles, 30℃/min≧transition time ≧15℃/min, duration of exposure to temperature extremes for each half cycle shall be 30 minutes.

4.4MTBF and Life

The power supply shall have a reliability requirement as below table when under full load and 100Vac/60Hz or 230Vac/50Hz input:

Item	Requirement	Notes
Life Time	≧5 years at 35℃ ambient	Should ≧7 years at 25℃ ambient when mating with customer's system.
CMTBF(Calculated MTBF)	≧250,000 hours, at 35℃ ambient temperature and full load.	Telcrdia Technologies SR-332 (Method I Case 3)
Electrolytic capacitor calculated life	≧5 years	35℃ ambient and full load using capacitors supplier's equation
Fan L10 Life	≧5years	35℃ ambient and full load

Fan Noise	50dB (220Vac input)	25℃ ambient and full load
Annual Return Rate	≦0.1%	

5.0 HI-POT and Grounding:

5.1 Primary to Secondary

10mA max 1500Vac,50/60Hzor 0.5mA max2121Vdcfor 60seconds for power supply.

10mA max 3000Vac, 50/60Hzor 0.5mA max4242Vdcfor 60seconds when PCBA.

5.2 Primary to Earth

10mA max 1500Vac. 50/60Hzor 0.5mA max2121Vdc for 60seconds.

5.3 Secondary to Earth

10mA max 500Vac. 50/60Hzor 0.5mA max.

Grounding Resistance

Earth ground to ground 32A 60 seconds, 100 mΩ max.

6.0 Safety and EMC Requirement:

6.1 Safety Compliance

1. UL-CUL 2.CE 3.FCC 4. CCC

6.2 EMI and EMS Requirement

EMI(Electromagnetic Interference) Requirements Table

Item	Description and Requirement	Criterion	Notes
Radiated Emissions	Frequency：30MHz～1GHz Class A with 6dB Margin	EN 55022	230V/50Hz input
		FCC Part 15	120V/60Hz input
		VCCI V-3	100V/50Hz input
Conducted Emissions	Frequency：150KHz～30MHz Class A with 6dB Margin	EN 55022	230V/50Hz input
		FCC Part 15	120V/60Hz input
		VCCI V-3	100V/50Hz input
Harmonic	EN 61000-3-2 Class A	EN 61000-3-2	230V/50Hz input
Voltage Flicker	Pst≦1.0 and Plt≦0.65 Voltage change ≦3.3% Relative Voltage change ≦4% The voltage changed over 3.3% duration time should ≦500ms	EN 61000-3-3	230V/50Hz input

EMS(Electromagnetic Susceptibility) Requirements Table

Item	Description and Requirement	Level	Criterion
Surge	Different Mode：±2KV， Common Mode：±4KV	A	EN61000-4-5 EN 55024
Electrical Fast Transient Group (EFT)	±2KV	A	EN61000-4-4 EN 55024 YD/T 1082
Electrical Staticisharge (ESD)	Touch：±8KV Air：±15KV	A	EN61000-4-2 EN 55024
Radiated Susceptibility(RS)	80M～800MHz 3V/m 800M～960MHz 10V/m 960M～1GHz 3V/m 1.4G～2GHz 10V/m 2G～2.7GHz 3V/m80% AM	A	EN 61000-4-3
Conducted Susceptibility(CS)	150KHz～80MHz 3V, 80% AM	A	EN 61000-4-6 EN 55024
Voltage Dips and Interruptions	0% Ut : 10ms 70% Ut : 500ms 0% Ut : 5000ms	B C C	EN 61000-4-11 EN 61000-4-29 EN 55024 / 60601

Performance criterion of the voltage fluctuation immunity test:

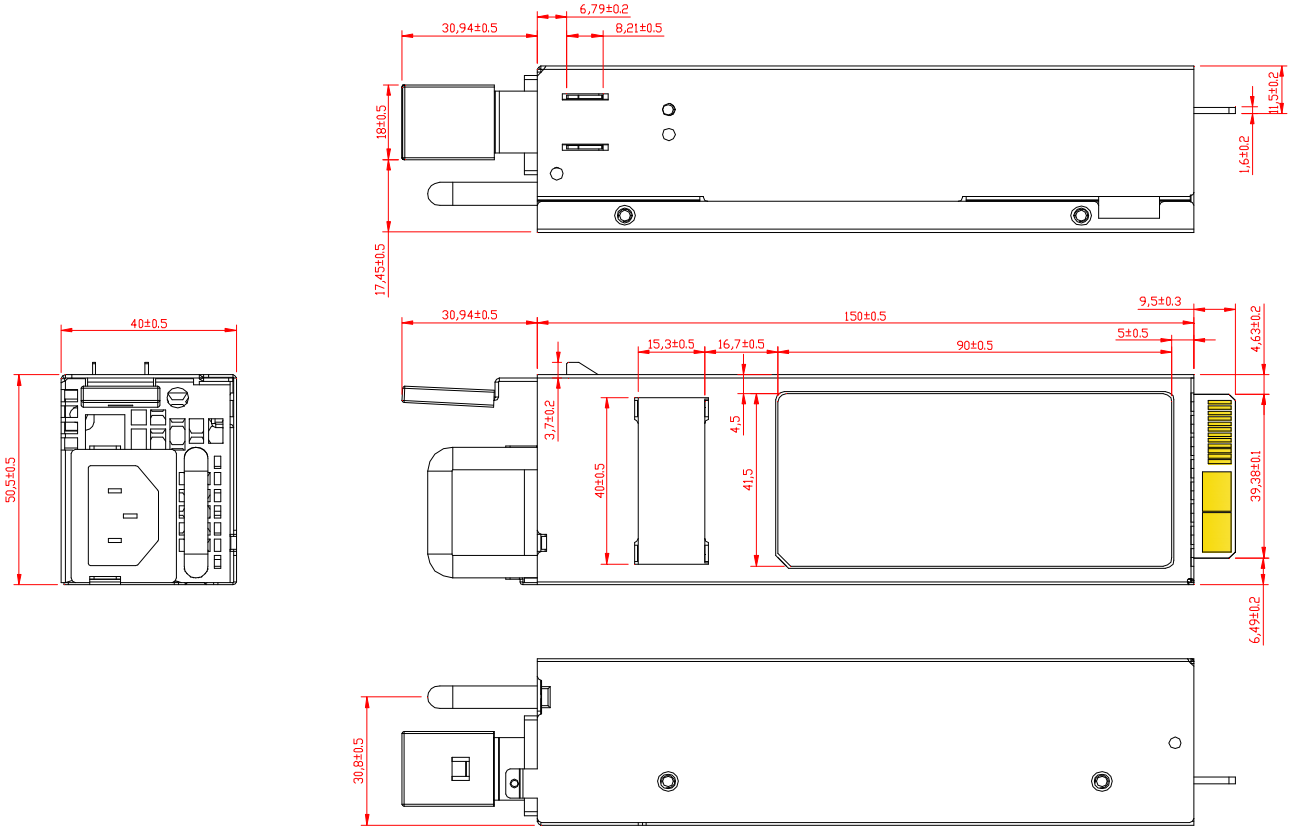
A: The power supply should have no loss of function or degradation of performance according to its specification during the test.

B: Temporary loss of function or degradation of performance is acceptable, but all the outputs should be in an acceptable range and should can recover to normally after the test. The power supply shouldn’t loss any of outputs, reset or any abnormal warning when doing the test with H3C system.

C: Temporary loss of function or shut down is acceptable, but the power supply should can restart with an operator intervention or auto-restart to normally after the test

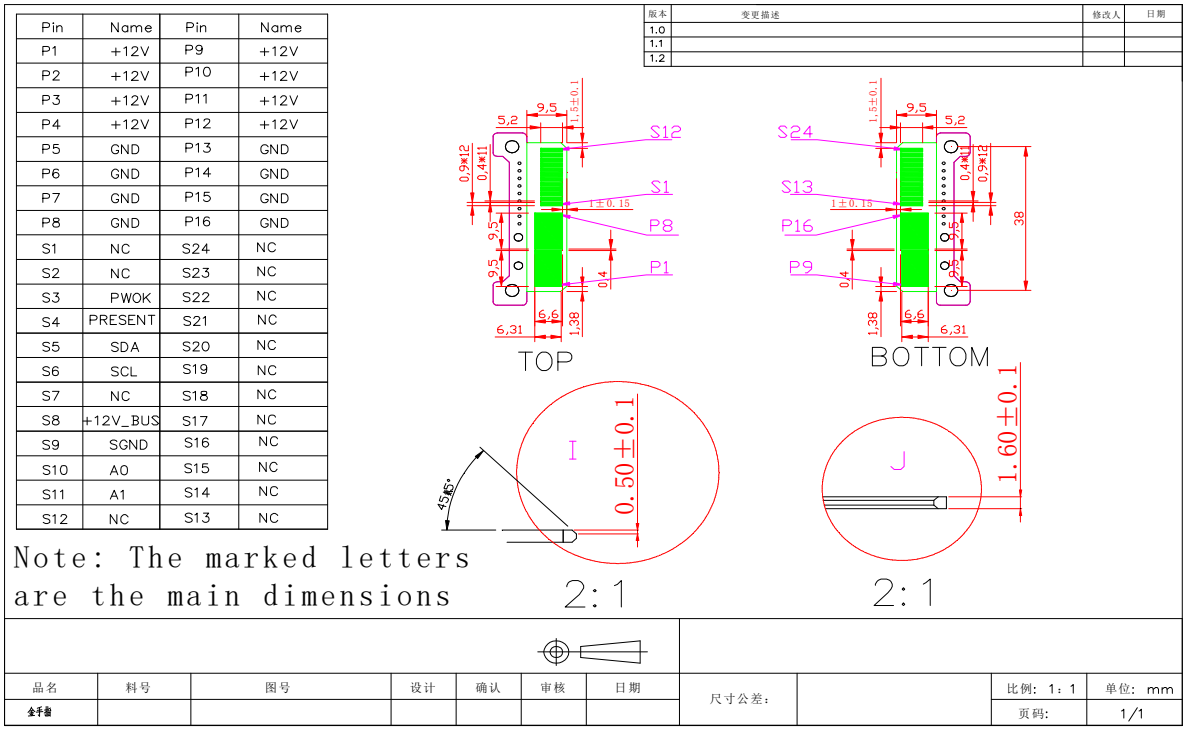
7.0 Dimensions and Output Terminals:

7.1 Outline:150mm*50.5mm*40mm



7.2 Output connector

Pin	Name	Pin	Name
P1	+12V	P9	+12V
P2	+12V	P10	+12V
P3	+12V	P11	+12V
P4	+12V	P12	+12V
P5	GND	P13	GND
P6	GND	P14	GND
P7	GND	P15	GND
P8	GND	P16	GND
S1	NC	S24	NC
S2	NC	S23	NC
S3	PWOK	S22	NC
S4	PRESENT	S21	NC
S5	SDA	S20	NC
S6	SCL	S19	NC
S7	NC	S18	NC
S8	+12V_BUS	S17	NC
S9	SGND	S16	NC
S10	A0	S15	NC
S11	A1	S14	NC
S12	NC	S13	NC



7.3 Output Terminal Description

Output Terminals

Signal	Description
GND	Outputs' return
+12V	The main output voltage.
SDA	I2C Data bus.
SCL	I2C Clock bus,100kHzMax.
A0/A1(PM Bus address)	Address set Pin.
+12Vbus	+12V output load sharing bus.
PWOK	Power supply work OK signal.
SGND	Signal ground.
Present	The power online signal, connected to GND in the power supply.

8.0 Control and Indicator Function

8.1Control and Status Signals

All control signals shall be TTL compatible with respect to the output return and shall be isolated from the primary circuit and be SELV(safety extra-low voltage circuit) rated.

8.2 PWOK(Power OK) Output Signal

PWOK is a power OK signal and will be pulled high when the power supply to indicate that all the outputs are within the regulation limits of the power supply. When any output voltage falls below regulation limits 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. This signal is open collector/drain output and a0.24KΩ resistor pull-up to +3.3Vs in power supply.

PWOK Signal Characteristic

Signal Type	Power State	Logic Level (Min)	Logic Level (Max)
PWOK=Low	Power Not OK	0V	0.4V
PWOK=High	Power OK	2.4V	3.46V
Sink Current (Low)	/		0.4mA
Source Current (High)	/		2mA
PWOK Rise and Fail Time	/		0.1ms

8.3SDA and SCL Signal

SDA and SCL pins (for I2C bus) is designed to operate at 3.3 volts. The pull-up resistors are 10KΩ to +3.3Vs in power supply.

8.4A0 A1 Signal

PSU module address line0 and line1. This signal line is provided for determining the address for the specific PSU FRU and PM Bus address. One 10KΩ resistor pull-up to +3.3Vs located in the PSU. The address line should be either float or pull low with equal to or less than 100ohm in them other board design.

8.5FRU (Field Replacement Unit) Signal

Five pins will be allocated for the FRU information on the power supply connector. One pin is the serial clock (SCL). The seconds pin is used for serial data (SDA). Three pins are for address lines

A0-A1 to indicate to the power supply's which position the power supply is located in the system. The SCL and SDA signals are pulled up by system, the address lines are pulled up in power supply.

FRU Signals

A0	A1	MCU Address	PSU
0	0	B0	1
0	1	B2	2
1	0	B4	3
1	1	B6	4

8.6 LED Indicators

There will bea dual color LED lamp on the case's front panel. the color is green and red to indicate the power supply status. There will be a(slow) blinking green to indicate that AC is applied to the PSU and the standby voltage is available. It shall go steady to indicate that all the power outputs are available. This same LED will (slowly) blink or be solid ON red to indicate that the power supply has failed or reached a warning status and therefore a replacement of the unit is/maybe necessary. The LED operation is defined as below table.

The LED shall be visible on the power supply's exterior face. The LED locations shall meet ESD requirements, The LED shall be securely mounted in such a way that incidental pressure on the LED will not cause it to become displaced.

LED State Requirement

Power Supply Status	LED Status
Output ON and OK	Green
No AC power to all power supplies.	OFF
Power supply warning events when the power supply continuous to operate: high temperature,	Red
Power supply critical event causing a shutdown： UVP, OVP, OCP, OTP.	Red to OFF

9.0 Firmware：

9.1 Data's precision requirement

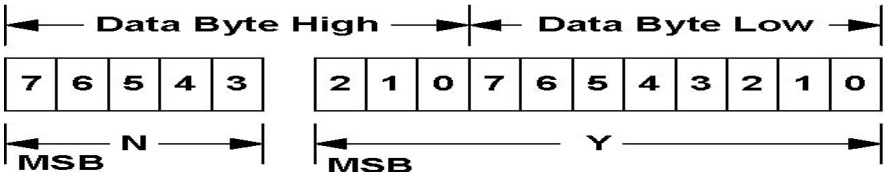
Some data read from power supply should have a precision requirement as below table:

Required Accuracy(90~264Vac or 180~340Vdc)			
Output load condition	**<10%**	**10%-20%**	**20%-100%**
Read Vout(8Bh)	±2%	±2%	±2%

Read Iout(8Ch)	±1A	±0.3A	±0.3A
Read Pout(96h)	±5w	±5%	±5%
Read_ Temperature(8Eh)	±5° C	±5° C	±5° C

Linear Data Formats

The Linear Data Format is a two byte value with: An 11 bit, two's complement mantissa and A 5 bit, two's complement exponent (scaling factor).The format of the two data bytes is illustrated in below figure:



The relation between Y, N and the "real world" value is: $X = Y \cdot 2^{N}$

Where, as described above:

X is the "real world" value being communicated

Y is an 11 bit, two's complement integer; and

N is a 5 bit, two's complement integer.

Devices that use the Linear format must accept and be able to process any value of N.

9.2 PMBUS Command Supported

STATUS_WORD Command

Byte	Bit No.	Status Bit Name	Meaning	Support
Low	7	BUSY	A fault was declared because the device was busy and unable to respond.	No
	6	OFF	This bit is asserted if the unit is not providing power to the output, regardless of the reason, including simply not being enabled.	Yes
	5	VOUT_OV	An output over voltage fault has occurred	Yes
	4	IOUT_OC	An output over current fault has occurred	Yes
	3	VIN_UV	An input under voltage fault has occurred	No
	2	TEMPERATURE	A temperature fault or warning has occurred	Yes
	1	CML	A communications, memory or logic fault has occurred	No
	0	NONE OF THE ABOVE	A fault or warning not listed in bits [7:1] of this byte has occurred	No
High	7	VOUT	An output voltage fault or warning has occurred	Yes
	6	IOUT/POUT	An output current or output power fault or warning has occurred	Yes

	5	INPUT	An input voltage, input current, or input power fault or warning has occurred	No
	4	MFR	A manufacturer specific fault or warning has occurred	No
	3	POWER_ GOOD#	The POWER_GOOD signal, if present, is negated	Yes
	2	FANS	A fan or airflow fault or warning has occurred	No
	1	OTHER	A bit in STATUS_OTHER is set	No
	0	UNKNOWN	A fault type not given in bits [15:1] of the SATUS_WORD has been detected	No

STATUS_VOUT Command

Bit	Meaning	Support
7	VOUT Over voltage Fault	NO
6	VOUT Over voltage Warning	No
5	VOUT Under voltage Warning	No
4	VOUT Under voltage Fault	NO
3	VOUT_MAX Warning (An attempt has been made to set the output voltage to value higher than allowed by the VOUT_MAX command)	No
2	TON_MAX_FAULT	No
1	TOFF_MAX Warning	No
0	VOUT Tracking Error	No

STATUS_IOUT Command

Bit	Meaning	Support
7	IOUT Over current Fault	Yes
6	IOUT Over current And Low Voltage Shutdown Fault	No
5	IOUT Over current Warning	Yes
4	IOUT Undercurrent Fault	No
3	Current Share Fault	No
2	Power Limiting	No
1	POUT Overpower Fault	Yes
0	POUT Overpower Warning	Yes

STATUS_INPUT Command

Bit	Meaning	Support
7	VIN Over voltage Fault	No

6	VIN Over voltage Warning	No
5	VIN Under voltage Warning	No
4	VIN Under voltage Fault	Yes
3	Unit Off For Insufficient Input Voltage	No
2	IIN Over current Fault	No
1	IIN Over current Warning	No
0	PIN Overpower Warning	No

STATUS_TEMPERATURE Command

Bit	Meaning	Support
7	Over temperature Fault	Yes
6	Over temperature Warning	Yes
5	Under temperature Warnings	No
4	Under temperature Fault	No
3	Reserved	No
2	Reserved	
1	Reserved	
0	Reserved	

STATUS_FAN_1_2 Command

Bit	Meaning	Support
7	Fan 1 Fault	No
6	Fan 2 Fault	No
5	Fan 1 Warning	No
4	Fan 2 Warning	No
3	Fan 1 Speed Overridden	No
2	Fan 2 Speed Overridden	No
1	Airflow Fault	No
0	Airflow Warning	No

STATUS _OTHER Command

Bit	Meaning	Support
7	Transformer primary and secondary communication failures(Mfr. Defined)	No

6	PFC voltage ok check(Mfr. Defined)	No
5	Input A Fuse Or Circuit Breaker Fault	No
4	Input B Fuse Or Circuit Breaker Fault	No
3	Input A OR -ing Device Fault	No
2	Input B OR-ing Device Fault	No
1	Output OR-ing Device Fault	No
0	Reserved	No

Supported Command Summary

CMD Code	Name	Type	Bytes	Conditions
03h	CLEAR_FAULTS	Send Byte	0	
19h	CAPABILITY	Read Byte	1	
1Ah	QUERY	Block Read	1	
30h	COEFFICIENT	Block Write Block Read Process Call	5	
78h	STATUS_BYTE	Read Byte	1	
79h	STATUS_WORD	Read Word	2	
7Ah	STATUS_VOUT	Read Byte	1	
7Bh	STATUS_IOUT	Read Byte	1	
7Ch	STATUS _INPUT	Read Byte	1	
7Dh	STATUS_TEMPERATURE	Read Byte	1	
7Fh	STATUS _OTHER	Read Byte	1	
80h	READ_VIN_TYPE	Read Byte	1	
81h	STATUS_FANS_1_2	Read Byte	1	
84h	READ_Vsb_OUT(Mfr. Defined)	Read Word	2	
85h	READ_Isb_OUT(Mfr. Defined)	Read Word	2	
86h	READ_EIN	Block Read	6	
87h	READ_EOUT	Block Read	6	
88h	READ_VIN	Read Word	2	
89h	READ_IIN	Read Word	2	
8Bh	READ_VOUT	Read Word	2	
8Ch	READ_IOUT	Read Word	2	
8Eh	READ_TEMPERATURE_2	Read Word	2	
90h	READ_FAN_SPEED_1	Read Word	2	
96h	READ_POUT	Read Word	2	
97h	READ_PIN	Read Word	2	
98h	PMBUS_REVISION	Read Byte	1	V1.2
99h	MFR_ID	Read Block	14	See MFR Data table
9Ah	MFR_MODEL	Read Block	14	See MFR Data table

A0h	MFR_VIN_MIN	Read Word	2	See MFR Data table
A1h	MFR_VIN_MAX	Read Word	2	See MFR Data table
A4h	MFR_VOUT_MIN	Read Word	2	See MFR Data table
A5h	MFR_VOUT_MAX	Read Word	2	See MFR Data table
A6h	MFR_IOUT_MAX	Read Word	2	See MFR Data table
A7h	MFR_POUT_MAX	Read Word	2	See MFR Data table
A8h	MFR_TAMBIENT_MAX	Read Word	2	See MFR Data table
A9h	MFR_TAMBIENT_MIN	Read Word	2	See MFR Data table
D0h	SMART_ON_CONFIG	Write Byte Read Byte	1	
D1h	MFR_SECOND_REVISION	Read Block	16	See MFR Data table
D8h	MFR_PRIMARY_REVISION	Read Block	16	See MFR Data table

MFR Data table

CMD Code	Name	Conditions
99h	MFR_ID	BDCOM
9Ah	MFR_MODEL	PWR-150-ACB
A0h	MFR_VIN_MIN	90
A1h	MFR_VIN_MAX	264
A4h	MFR_VOUT_MIN	11.4
A5h	MFR_VOUT_MAX	12.6
A6h	MFR_IOUT_MAX	12.5
A7h	MFR_POUT_MAX	150
A8h	MFR_TAMBIENT_MAX	55
A9h	MFR_TAMBIENT_MIN	-10

■Statement

Class A statement

Warning

This is A class a product, which may cause radio interference in living environment.

In this case, it may be necessary for users to take practical measures against their interference.