

## SPECIFICATION FOR REFERENCE

CUSTOMER: \_\_\_\_\_

CUSTOMER P.N.: \_\_\_\_\_

MODEL NO.:                     P30-V3000R200-060H0-DE                    

PRODUCT NO.:                     SCXXX-V0/XXXXXX                    

SAMPLE DATE:                     2023-06-20                    

CUSTOMER AUTHORIZED SIGNATURE		

Please return to us one copy of "SPECIFICATION FOR APPROVAL"  
with you approved signature.

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## 1. SCOPE

The document detail the electrical, mechanical and environmental specifications of a Fast Charger, the Fast Charger provide 60 W continuous output power.

The Fast Charger shall meet the HSF requirement.

### 1.1.Description

- |   |   |
|---|---|
| <input type="checkbox"/> SMPS Adaptor(Wall mount)           | <input type="checkbox"/> SMPS Adaptor(Desk-top) |
| <input type="checkbox"/> Open Frame                         | <input type="checkbox"/> SMPS Unit (With Case)  |
| <input checked="" type="checkbox"/> PD ADAPTER (Wall mount) | <input type="checkbox"/> Others                 |

### 1.2.Supports fast charge protocol

PD3.1

## 2. Input Characteristics

### 2.1.Input Voltage & Frequency

The range of input voltage is from 180Vac to 264Vac single phase.

	Minimum	Nominal	Maximum
Input Voltage	180Vac	200Vac~240Vac	264Vac
Input Frequency	47Hz	50Hz/60Hz	63Hz

### 2.2.Input AC Current

1.0A max. @ 200-240Vac input & Full load

### 2.3.Inrush Current (cold start)

Peak inrush current shall be limited to 100A for a cold start at Cold start at 230Vac/50Hz and full load. Under cold and warm start conditions there is no immediate damage and the long-term reliability is not affected.

### 2.4.Brownout and Brown in

The supply is subjected to the following tests while under maximum rated load no component damage is permitted.

#### 2.4.1 Brown out

180Vac to 0Vac @ 50Hz in 1 volt decrements in 30 Sec.

#### 2.4.2 Brown in

0Vac to 180Vac @ 50Hz in 1 volt increments in 30 Sec.

### 2.5.Averaged Efficiency

5V3A: 81.39% min. @230Vac input (@25%, 50%, 75% and 100% of max load)

9V3A:86.62% min. @230Vac input (@25%, 50%, 75% and 100% of max load)

12V3A:87.40% min. @230Vac input (@25%, 50%, 75% and 100% of max load)

15V3A:87.73% min. @230Vac input (@25%, 50%, 75% and 100% of max load)

20V3A:88.00% min. @230Vac input (@25%, 50%, 75% and 100% of max load)

### 2.6.Energy Consumption

Input Voltage 230Vac/50Hz Energy Consumption  $\leq$  0.21W.

### 3. Output Characteristics

#### 3.1. Static Output Characteristics <Vo & R+N>

Output Rate	Rated Load		Output Range	R+N	Remark
	Min. Load	Max. Load			
5.00V	0.0A	3.0A	4.75-5.25V	120mVp-p	
9.00V	0.0A	3.0A	8.55-9.45V	120mVp-p	
12.00V	0.0A	3.0A	11.4V-12.6V	150mVp-p	
15.00V	0.0A	3.0A	14.25-15.75V	150mVp-p	
20.00V	0.0A	3.0A	19-21V	200mVp-p	

Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output paralleled a 0.1uF ceramic capacitor and a 47uF electrolysis capacitor. (test under the condition of rated input and rated output)

#### 3.2.Line/ Load Regulation

Output Rate	Load Condition		Line Regulation	Load Regulation	Remark
	Min. Load	Max. Load			
5.00V	0.0A	3.0A	± 3%	± 5%	
9.00V	0.0A	3.0A	± 3%	± 5%	
12.00V	0.0A	3.0A	± 3%	± 5%	
15.00V	0.0A	3.0A	± 3%	± 5%	
20.00V	0.0A	3.0A	± 3%	± 5%	

#### 3.3.Turn - on Delay Time

3S max. @ 200Vac to 240Vac input & Full load

#### 3.4.Hold-up Time

20mS min. @ Full load &230Vac/50Hz input turn off at worst case

#### 3.5.Rise Time

50mS max. @ Rated load

#### 3.6.Fall Time

50mS max. @ Full load

#### 3.7.Output Overshoot / Undershoot

10% max. When the power on or off, when it is the full input voltage and full load

#### 3.8.Dynamic load change response

The output voltage shall stay within +/-10% of the nominal output voltage (4.5-5.5V for 5V mode、 8.1-9.9V for 9V mode、 11.04V-12.96V for 12V、 13.5V-16.5V for 15V mode and 18V-22V for 20V mode) while the output load is stepped from 25% to 75% of the rated load. The nominal voltage must be recover in 10ms after overshoot.

#### 3.9.Capacitive Load

Output current step 20% to 60% of maximum. Full AC input and DC output ranges. With and without 2,200, 4,700 or 6,800µF capacitors in parallel with the load.

## 4. Protection Requirements

### 4.1.Over Current Protection

Output Rate	Rated Load		Over Current	Input Voltage	Remark
	Min. Load	Max. Load			
5.00V	0.0A	3.0A	4.5A Max	200-240VAC	
9.00V	0.0A	3.0A	4.5A Max	200-240VAC	
12.00V	0.0A	3.0A	4.5A Max	200-240VAC	
15.00V	0.0A	3.0A	4.5A Max	200-240VAC	
20.00V	0.0A	3.0A	4.5A Max	200-240VAC	

The output shall hiccup when the over currents applied to the output rail, and shall be self-recovery when the fault condition is removed.

### 4.2.Short Circuit Protection

The input power shall decrease when the output rail short, the power supply shall no damage, and shall be self-recovery when the fault condition is removed

### 4.3.Over Voltage Protection

The power supply has to be protected against over voltage conditions. No damage allowed. The power supply must come back to nominal working without on/off powering after removal of the over voltage condition.

### 4.4.Over temperature protection

The adapter shall contain circuitry to protect the adapter in the case that the internal housing temperature becomes excessive with auto-recovery mode.

## 5. Environment Requirements

### 5.1.Operating Temperature and Relative Humidity

0°C to +45°C

10%RH to 90%RH

### 5.2.Storage Temperature and Relative Humidity

-40°C to +85°C

5%RH to 95%RH

### 5.3.Vibration

10 to 300Hz sweep at a constant acceleration of 1.0G(Breadth: 3.5mm) for 1Hour for each of the perpendicular axes X, Y, Z

### 5.4.Drop in

Height: 1m; the product should be fell off on the hardwood with the thickness of 20mm, and the hardwood should be put on the base of the cement or on the ground without flexibility. Apply one times on all surfaces, total 6 times. The electric performance and Hi-Pot test must be OK after the drop tests.

### 5.5.Audible Noise

Acoustic Limit	Distance	Test Conditions
≤20dBA	600mm	All directions around the adapter and all input/output conditions.

## 6. Reliability Requirements

### 6.1.Burn-in

The power supply shall be burn-in for 4 Hours under normal input and 100% rated load at 40°C ± 5°C

### 6.2.MTBF Qualification

The MTBF shall be at least > 50 years at 25°C , 230Vac input.

MTBF calculation done according to MIL HBDK 217 standard and Bellcore SR 332 (both methods required).

### 6.3.E-cap Lifetime

The life estimation of capacitor must be over 3 years at 25°C @ 230Vac input.

## 7. EMI/EMS Standards

### 7.1.EMI Standards

EN55032 EN55035

### 7.2.EMS Standards

7-2-1 EN 61000-4-2,electrostatic discharge(ESD) requirement

Discharge characteristic	Test level	Test criteria
Air discharge	+/-8KV	B
Contact discharge	+/-4KV	B

7-2-2 EN 61000-4-3, radiated electromagnetic field susceptibility(rs)

Test level	Test criteria
3V/m (r.m.s)	A
80-1000MHz,80%AM(1KHz) sine-wave	

7-2-3 EN 61000-4-4,electric fast transients(burst) immunity requirement

Coupling	Test level	Test criteria
AC-input	0.5KV	A
AC-input	1KV	A

7-2-4 EN 61000-4-5,surge capability requirement

Surge voltage	Test criteria
Common mode +/-2KV	A
Differential mode +/-1KV	

7-2-5 EN 61000-4-6, Induced radio frequency fields conducted disturbances  
Immunity requirement

Test level	Test criteria
3V	A
0.15-80 MHz,80%AM(1KHz)	

7-2-6 Assessment criteria

Acceptance criteria	Performance
A	Agreed operational behavior within the specified limits
B	Time limited functional diminishment or malfunction during the tests is permitted. The function is self-reactivated by the unit following completion of the tests.
C	Malfunction is permitted .The function can be reactivated either by reconnection to the mains or by operator intervention.

## 8. Safety Standards

### 8.1.Dielectric Strength(Hi-pot)

Primary to Secondary: 3000Vac / 10mA Max / 60 second

Primary to Secondary: 3300Vac / 5mA Max /3S (when production).

### 8.2.Leakage Current

0.25mA max. at 264Vac / 60Hz

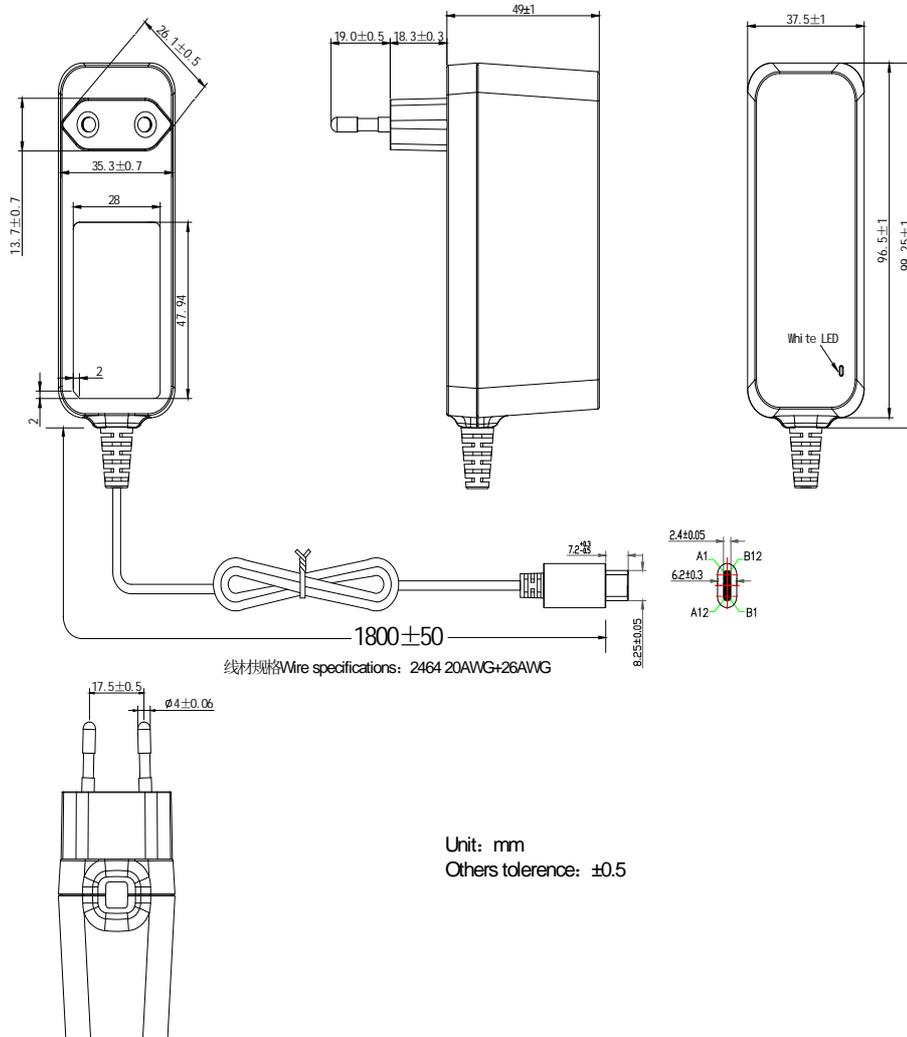
### 8.3. Insulation Resistance

100MΩ min. at primary to secondary add 500Vdc test voltage

### 8.4.Regulatory Standards

Type	Country	Standard	Statue	Mark
CE	Europe	EN62368-1	MEET	

## 9. Mechanical Outline Drawing



Case material:  PC temperature resistance: 125°C

PC+ABS temperature resistance: 95°C

Remark: 1) PC material compliances with ball pressure testing requirement.  
2) The color of the casing and DC cable is White(RAL9003).

### 10. I/O Marking Drawing



#### Remark:

- 1.Above label is laser engraved.
- 2.The dimension of double insulation mark can NOT less than 5mm.
- 3.The dimension of garbage bin mark can NOT less than 7mm.