

1、 Electrical Specification/电气特性

1.1、 SCOPE/概述

The document details the electrical, mechanical and environmental specifications of a SMPS, the power supply provides 45 W continuous output power.

资料详细描述了一款 45W(连续输出功率)开关电源的电气性,结构性及环境等要求.

The power supply shall meet the **RoHS** requirements.

此款电源符合 **RoHS** 要求.

Description/描述:

- SMPS Adaptor(Wall mount)/插墙式适配器
 SMPS Adaptor(Desk-top)/桌面型适配器
 Open Frame/开放式结构
 SMPS Unit (With Case)/带铁壳型
 Others/其他

1.2、 Input Characteristics/输入特性

1.2.1. Input Voltage & Frequency/输入电压与频率

The range of input voltage is from 90Vac to 264Vac with a single phase.

输入电压范围: 从 90Vac 到 264Vac, 单相输入.

	Minimum/最小	Rating/额定值	Maximum/最大
Input Voltage/输入电压	90Vac	100Vac~240Vac	264Vac
Input Frequency/输入频率	47Hz	60Hz/50Hz	63Hz

1.2.2. Input AC Current/输入交流电流

1.2Amax. @ 90Vac input & Full load/在 90Vac 输入和满载条件下最大 1.2A

1.3.3. Inrush Current (cold start)/浪涌电流(冷启动)

Power supply inrush current shall be less than the ratings of its critical components (including bulk rectifiers, fuses, and surge limiting device) under all conditions of line voltage of Section 2.1.

在 2.1 中所有输入条件下, 浪涌电流应小于关键器件的额定值(包括保险丝、桥整等浪涌限制元件)。

1.2.4. Average Efficiency /平均效率

Test condition after heat-up 30minutes/测试条件产品预热 30 分钟后

Input Voltage Range	Output Voltage	Average Efficiency	Load Condition
115VAC and 230VAC	5V	81.84	25%,50%,75%,100%
	9V	87.30	25%,50%,75%,100%
	12V	88.30	25%,50%,75%,100%
	15V	88.85	25%,50%,75%,100%
	20V	88.85	25%,50%,75%,100%

1.2.5. No-Load Input Power Dissipation/输入空载功率损耗

Test condition after heat-up 30minutes/测试条件产品预热 30 分钟后

While input at the 115Vac and 230Vac, output voltage is 5V and no load, the input power loss must be less than 0.075W.

在输入 115V 和 230Vac 时, 输出为 5V 时, 空载功耗小于 0.075W.

1.3、Output Characteristics/输出特性

1.3.1.Static Output Characteristics <Vo & R+N>/静态输出特性<输出&纹波+噪音>

Output Rating	Rated Load/额定负载		Output Range 输出电压范围	R+N 纹波与噪声	Remark 备注
	Min. Load	Max. Load			
+5V	0A	3.0A	4.75V ~ 5.25V	150mVp-p	
+9V	0A	3.0A	8.55V~9.45V	200mVp-p	
+12V	0A	3.0A	11.4V~12.6V	200mVp-p	
+15V	0A	3.0A	14.25V~15.75V	200mVp-p	
+20V	0A	2.25A	19V ~ 21V	200mVp-p	

Ripple & Noise: Tested by a oscilloscope using 20MHz bandwidth and the output is paralleled a 0.1uF ceramic capacitor and a 10uF electrolysis capacitor. (Under the input Voltage 100~240Vac)

纹波与噪声: 量测时示波器选用 20MHz 带宽限制,输出端要并联一颗 0.1uF 的陶瓷电容和一颗 10uF 的电解电容(输入电压 100~240Vac)

1.3.2.Line/ Load Regulation/线性/负载调整率

Output Voltage	Load Condition/负载条件		Line Regulation 线性调整率	Load Regulation 负载调整率	Remark 备注
	Min. Load	Max. Load			
+5V	0A	3A	± 5%	± 5%	
+9V	0A	3A	± 5%	± 5%	
+12V	0A	3A	± 5%	± 5%	
+15V	0A	3A	± 5%	± 5%	
+20V	0A	2.25A	± 5%	± 5%	

1.3.3.Turn - on Delay Time/开机延迟时间

3S max. @90Vac input & Full load/在 90Vac 输入和满载条件下最大 3S

1.3.4. Hold-up Time/关机维持时间

10mS min. @ Full load & 115Vac/60Hz input turn off at worst case
在 115Vac/60Hz 输入,满载同时最差情况下关机, 最小 10mS

1.3.5.Rise Time/上升时间

30mS max. @ Full load/在满载条件下最大 30mS

1.3.6.Fall Time/下降时间

20mS max. @ Full load/在满载条件下最大 20mS

1.3.7.Output Overshoot / Undershoot/输出过冲/欠冲

10% max. When the power on or off/当电源开, 关机时最大 10%

1.3.8.Output Load Transient Response/输出负载瞬态响应

+5V Output voltage is within 4.5~5.5V while the load step is from 25% to 50% to 25% of max load or 50% to 75% to 50% of max load, R/S: 0.2A/uS, periods: 4mS, the maximum

of comeback time is 200uS. Output Overshoot is less than $\pm 5\%$.

5V 输出电压在 **4.5-5.5V** 之间,负载变化: 从最大载的 25%到 50%再到 25%或从最大载的 50%到 75%再到 50%,斜率: 0.2A/uS,周期: 4mS, 恢复时间最大为 200uS。输出过冲应小于 $\pm 5\%$ 。

+9V Output voltage is within **8.55V~9.45V** while the load step is from 25% to 50% to 25% of max load or 50% to 75% to 50% of max load, R/S: 0.2A/uS, periods: 4mS, the maximum of comeback time is 200uS. Output Overshoot is less than $\pm 5\%$.

9V 输出电压在 **8.55V~9.45V** 之间,负载变化: 从最大载的 25%到 50%再到 25%或从最大载的 50%到 75%再到 50%,斜率: 0.2A/uS,周期: 4mS, 恢复时间最大为 200uS。输出过冲应小于 $\pm 5\%$ 。

+12V Output voltage is within **11.4V~12.6V** while the load step is from 25% to 50% to 25% of max load or 50% to 75% to 50% of max load, R/S: 0.2A/uS, periods: 4mS, the maximum of comeback time is 200uS. Output Overshoot is less than $\pm 5\%$.

12V 输出电压在 **11.4V~12.6V** 之间,负载变化: 从最大载的 25%到 50%再到 25%或从最大载的 50%到 75%再到 50%,斜率: 0.2A/uS,周期: 4mS, 恢复时间最大为 200uS。输出过冲应小于 $\pm 5\%$ 。

+15V Output voltage is within **14.25V~15.75V** while the load step is from 25% to 50% to 25% of max load or 50% to 75% to 50% of max load, R/S: 0.2A/uS, periods: 4mS, the maximum of comeback time is 200uS. Output Overshoot is less than $\pm 5\%$.

15V 输出电压在 **14.25V~15.75V** 之间,负载变化: 从最大载的 25%到 50%再到 25%或从最大载的 50%到 75%再到 50%,斜率: 0.2A/uS,周期: 4mS, 恢复时间最大为 200uS。输出过冲应小于 $\pm 5\%$ 。

+20V Output voltage is within **19V~21V** while the load step is from 25% to 50% to 25% of max load or 50% to 75% to 50% of max load, R/S: 0.2A/uS, periods: 4mS, the maximum of comeback time is 200uS. Output Overshoot is less than $\pm 5\%$.

20V 输出电压在 **19V~21V** 之间,负载变化: 从最大载的 25%到 50%再到 25%或从最大载的 50%到 75%再到 50%,斜率: 0.2A/uS,周期: 4mS, 恢复时间最大为 200uS。输出过冲应小于 $\pm 5\%$ 。

1.3.9. Capacitance Load/容性负载

While input 115Vac/230Vac & full load, and the output is paralleled a 2000uF electrolysis capacitor, the output voltage shall be single assurgent

在输入 115Vac/230Vac、满载并在输出端并联一个 2000uF 的电解电容负载条件下,适配器的输出为单调上升

1.4. Protection Requirements/保护要求

1.4.1. Over Current Protection/过流保护

OCP Point Limited: not more than **130%** of MAX. load. 保护限制点: 小于各自最大负载的 **130%**

The output shall hiccup when the over current applied to the output, and shall be Self-recovery when the fault condition is removed

当过电流时,输出将进入打嗝模式,当过流情况解除后,产品将会自动恢复正常

1.4.2.Short Circuit Protection/短路保护

The input power shall decrease when the output is short to GND; the power supply shall not damage, and shall be self-recovery when the fault condition is removed

当输出对地短路时, 产品输入功率降低且不会损伤, 当短路情况解除后, 产品将会自动恢复正常

1.4.3.Over Voltage Protection/过压保护

5V output-OVP Point Limited: Maximum 7.5V。 5V 输出保护限制点: 小于 7.5V

9V output-OVP Point Limited: Maximum 13V。 9V 输出保护限制点: 小于 13V

12V output-OVP Point Limited: Maximum 16V。 9V 输出保护限制点: 小于 16V

15V output-OVP Point Limited: Maximum 20V。 15V 输出保护限制点: 小于 20V

20V output-OVP Point Limited: Maximum 26V。 20V 输出保护限制点: 小于 26V

The power supply shall be Latch off mode, when the output is over voltage, and the power supply shall not be damaged.

当输出过压时, 电源进入将闭锁保护模式产品不会损伤。

2、Environment Requirements/环境要求

2.1、Operating Temperature and Relative Humidity/操作温度和湿度要求

0°C to +40°C

5%RH to 95%RH

Sea level shall below 5,000 meter /在海拔低于 5000M 下能正常工作

2.2、Storage Temperature and Relative Humidity/存储温度和湿度要求

-20°C to +70°C

5%RH to 95%RH (non-condensing) @ Sea level shall below 5,000 meter

在海拔低于 5,000 米的条件下, 低温存储下限为-20°C (无结冰环境); 高温存储上限为 +70°C, 相对湿度为 5%RH to 95%RH。

3、Reliability Requirements/可靠性要求

3.1.Vibration/振动

5 to 500Hz sweep at a shift gears for 20 minute for each of the perpendicular axes X, Y, Z thereinto :acceleration frequency for 10 m2/s3 at 5~10HZ; acceleration frequency for 3 m2/s3 at 10~200HZ; acceleration frequency for 1 m2/s3 at 200~500HZ

扫描频率: 5 to 500Hz 随机振动, X, Y, Z 三垂直坐标轴向各振动 20 分钟, 其中: 5~10HZ 频率范围的加速度频率为 10 m2/s3 , 10~200HZ 频率范围的加速度频率为 3 m2/s3, 200~500HZ 频率范围的加速度频率为 1 m2/s3

3.2.Drop in/跌落

6 Surfaces each once, Height: 80cm, on the wood floor

6 面各一次, 跌落高度: 80 厘米, 跌落到木地板上。

3.3.MTBF Qualification/平均间隔故障时间估算

The MTBF shall be at least 50,000hours at 25°C, Full load and normal input condition

平均间隔故障时间: 至少 50,000 小时, 25°C 环境及额定输入与满载条件下

3.4.The lifetime electrolyte capacitor/电解电容寿命

The lifetime of electrolyte capacitor shall be at least 26280hours at 30°C of full load and 115Vac/230Vac input condition

电解电容寿命至少 26280 小时,30°C 环境及 115Vac/230Vac 输入与满载条件下

4、EMI/EMS Standards/EMI/EMS 标准

4.1.EMI Standards/EMI 标准

EN 55032: 2015
EN 61000-3-2:2014
EN 61000-3-3:2013
满足最新标准

4.2.EMS Standards/EMS 标准

EN 61000-4-2:2009	Electrostatic Discharge(ESD): 15kV air discharge, 8kV contact discharge
EN61000-4-3 : 2006+ A1 : 2008 + A2: 2010	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN61000-4-4: 2012	Electrical Fast Transient/Burst-EFT ±2kV
EN 61000-4-5:2014	Surge Immunity Test: Differential mode ±2kV,Common mode ±4kV
EN61000-4-6: 2014	Conducted Radio Frequency Disturbances Test-CS
EN61000-4-8: 2010	Power Frequency Magnetic Field Test
EN61000-4-11:2004	Voltage Dips

5、Safety Standards/安规标准

5.1.Dielectric Strength(Hi-pot)/介电耐压强度(高压)

Primary to Secondary: 3000Vac / 3.5mA / 60 seconds
Or 4242Vdc / 3.5mA / 60 seconds

初级对次级: 3000Vac / 3.5mA / 60 秒
或 4242Vdc / 3.5mA / 60 秒

5.2.Leakage Current/漏电流

0.25mAmax. at 264Vac / 50Hz input/在输入 264Vac/50Hz 的条件下最大 0.25mA

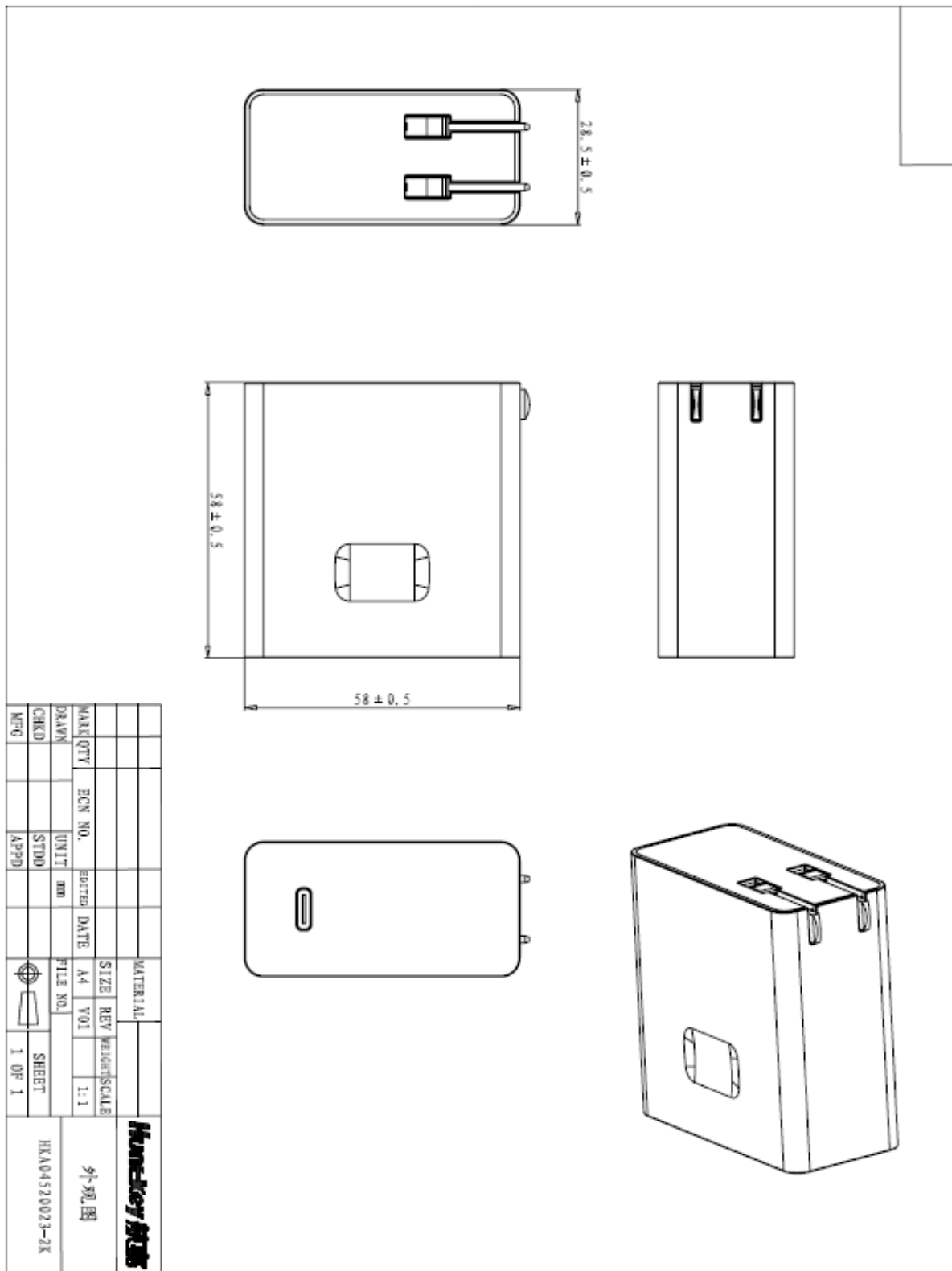
5.3. Insulation Resistance/绝缘阻抗

100MΩ min. @ primary to secondary add a 500Vdc test voltage
在初级与次级间加 500Vdc 进行测试,最小 100MΩ

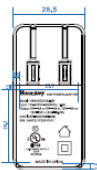
5.4.Regulatory Standards/安规标准

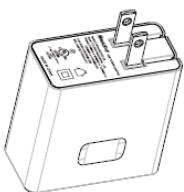
Type	Country	Standard	Type	Country	Standard
<input checked="" type="checkbox"/> UL/CUL	USA	UL60950-1	<input type="checkbox"/> PSB	Singapore	IEC60950-1
<input type="checkbox"/> TUV	Europe	EN60950-1	<input type="checkbox"/> PSE	Japan	J60950
<input checked="" type="checkbox"/> CCC	China	GB4943	<input type="checkbox"/> NOM	Mexico	NOM-001
<input type="checkbox"/> CE	Europe	EN60950-1	<input type="checkbox"/> GOST	Russia	MEK60950

6、Mach. Outline Drawing/外观图

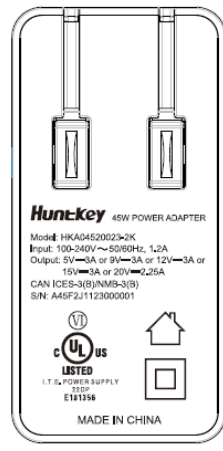


7、Label Drawing/标贴图





整体镭雕效果图



3:1

技术要求：

- 1、下盖，内容为镭雕，颜色以封样为准；
- 2、字体清晰、颜色均匀、无毛边。
- 3、可靠性测试：用50g砝码耐酒精擦拭50次无不良；
- 4、安规LOGO大小比例不允许变动
- 5、镭雕位置尺寸：+/-0.5
- 6、编码规则：日期以供应商送货日为准（即航嘉产品的出货日）
字体为Arial Unicode Ms

S/N: A45F2J1123000001

a. 供应商代码

b. 机种名称

c. 客户代码

d. 制造年月日

e. 产品流水号
(99999-000001)

a、 供应商代码,用S-Z其中的一个字母表示，具体由航嘉标贴供应商根据航嘉制定的编码规则打印。

b、 机种名称：45代表45W系列，F代表成品料号。

c、 客户代码：按航嘉现有客户编码,不变。

d、 制造年月日：11代表2011年,12代表2012年,以此类推；
2表示月份,C代表12月，B代表11月，A代表10月，1-9月用自然数字表示；
3代表日,1=1,2=2,3=3,4=4,5=5,6=6,7=7,8=8,9=9,
A=10,B=11,C=12,D=13,E=14,F=15,G=16,H=17,J=18,K=19,L=20,M=21,
N=22,P=23,R=24,S=25,T=26,V=27,W=28,X=29,Y=30,Z=31。

e、 产品流水号：依生产顺序编码,日期变,流水号从头开始。

						MATERIAL		Huntkey 航嘉	
						SIZE	REV	WEIGHT	SCALE
MARK	QTY	ECN NO.	EDITED	DATE	A2	V01		1:1	下盖镭雕
DRAWN	郑伟娜	UNIT	mm	FILE NO.	试产				HKA04520023-2K
CHKD	刘宪利	STDD		SHEET					
MFG		APPD	夏洪斌	1 OF 1					

FORMATII

8、Package Drawing/包装示意图（净重）

9、Circuit Schematic Drawing/电路图（可选）

10、PCB Drawing/PCB 图（可选）

11、Bill Of Material (BOM)/产品物料清单（可选）

12、Product Picture/产品图（可选）

13、Bill Of Material (BOM)/产品物料清单(可选)

SHENZHEN, China, August 30, 2019 – Huntkey, a leading global provider of power solutions, has recently released its 45W charger to global markets. The charger is integrated with a USB-C port, and features PD3.0 charging abilities that can charge electronic devices with a faster charging speed than a conventional charger.

Universal Compatibility

Laptops & Tablets



MacBook Pro/Air 2018



Google Chromebook Pixel

" data-bbox="560 225 650 295"/>

iPad Pro 11"/12.9" New



Nintendo Switch

Phones & Others



S10+/S9+/8+



S10/S9/8



Pixel 3XL/3



Nexus 6P



LG G5/G6

other USB-C devices



The charger is universally compatible with PD3.0 technologies, which makes it suitable for a wide range of devices that are equipped with a USB-C interface such as smart phones, tablets, notebooks. The double-chip inside the 45W charger can properly adapt a worldwide voltage input from 100V to 240V. It means you can use it in any country as long as the charger can plug into the local socket.

Besides the wide voltage feature, the 45W Huntkey USB-C charger can intelligently control the charging rates and match a proper rate for smart phones or tablets, keep the battery durable all the time. The 45W charger is accredited with UL, and also is equipped with all-round protections including Over Charge Protection (OCP), Over Heat Protection (OHP) and Short Circuit Protection (SCP).

High Speed Charging



Before launching the charger to the market, Huntkey conducted an experimental test to demonstrate its superior charging speed. It can charge any common mobile phones from 1% of the mobile battery to 50% of the mobile battery within 30 minutes.

About Huntkey

Huntkey, founded in 1995 and headquartered in Shenzhen, is a member of The International Power Supply Manufacturer's Association (PSMA) and a member of The China Power Supply Society (CPSS). With branch companies in the USA, Japan and other areas, and cooperating factories in Brazil, Argentina, India and other countries, Huntkey has specialized in the development, design, and manufacturing of PC power supplies, industrial power supplies, surge protectors, adapters and chargers for many years. With its own technologies and manufacturing strength, Huntkey has served Lenovo, Huawei, Haier, DELL, ZTE, Bestbuy and many other large enterprises for years, and has received unanimous recognition and trust from most of its customers.

SHENZHEN, China, November 16, 2019 – Huntkey, a global leading provider of power solutions, has recently released its new product – the 45W USB-C charger, which is compatible with multiple devices including smart phones, tablets and notebook.



In order to keep pace with the trend that USB-C is slowly replacing the previous USB types, Huntkey has been consistently investing on and developing USB-C products to meet the increasing market demands. As one of the key products of Huntkey, the 45W USB-C charger is durable and reliable, and designed with pocket-sized that easy for carry and convenient use.

The 45W USB-C charger is able to output 5V, 9V, 12V, 15V and 20V power to different devices. It is equipped with a USB-C port that allows the users to connect it to the electronic devices in either way, which kills off the irritating problem of connection. Its intelligent charging allows the users to charge multiple devices. In the package, it is paired with a 1.8m USB-C cable.

It is built with all-round protections including SCP (Short Circuit Protection), OVP (Over Voltage Protection) and OCP (Over Current Protection). Not only will it protect itself, but also keep the charging devices safe under any circumstances.