



深圳市荣电创新技术有限公司
Shenzhen Rong Electric Technology Co.,Ltd

产品承认书

SPECIFICATION FOR APPROVAL

Customer: _____

Issued Date: _____

Model No.: TVB200SH4.2H

Description: 显示屏超薄电源

荣电创新			客户	
PREPARED BY 编写	CHECKED BY 审核	APPROVED BY 批准	CHECKED BY 审核	APPROVED BY 批准
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TVB200SH4.2H

--LED display screen power supply products

TVB200SH4.2H is an efficient output power supply (4.2V/40A), This power supply is a special power supply designed for LED display screen and has the following characteristics:

TVB200SH4.2H 是一款高效输出电源(4.2V/40A)，该电源是为 LED 显示屏设计的专用电源，具有以下特点：

- **Small size: L150mm*W50mm*H19mm**
尺寸小：长 150mm*宽 50mm*高 19mm
- **Light weight: ≤214g**
重量轻：≤214g
- **High efficiency: ≥87% (see figure 4.3)**
高效率：≥87%（参见图 4.3）
- **Small Leakage current: ≤1.0mA (Vin=242Vac)**
漏电流小：≤1.0mA (Vin=242Vac)
- **Output voltage range: 4.11—4.28Vdc**
输出电压范围：4.11—4.28Vdc
- **Wide operating temp. range: -30—70℃ (+50℃—+70℃ linear de-rated, See Figure 4.2.)**
宽工作温度范围:-30—70℃(+50℃—+70℃线性降额，见图 4.2。)
- **Input voltage range: 190Vac—264Vac**
输入电压范围：190Vac—264Vac
- **Cooling mode: Ventilation cooling**
冷却模式：自然冷却
- **Protection Features: Output over-current protection、short-circuit protection.**
保护功能：输出过流保护、短路保护

Product Picture 产品图片





一、Environmental conditions 环境条件:

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	Remarks 备注
1.1	Permanent operating temperature 工作温度	-30—70 (详情见 4.2 Operate temperature derating guideline. 温度降额曲线)	°C 度	Need to add aluminum substrate for heat dissipation; See 6.5 for details. 需要加铝基板散热; 详情见 6.5
1.2	Storage temperature 存贮温度	-40—80	°C 度	
1.3	Work Relative Humidity 工作相对湿度	10—90(无凝露)	%	Note 1
1.4	Storage Relative Humidity 存贮相对湿度	10—90	%	
1.5	Cooling mode 散热方式	Ventilation cooling 自冷		
1.6	Atmospheric pressure 大气压力	80—106	Kpa 帕斯卡	
1.7	Altitude 海拔高度	-60—5000	M 米	(Above 3000 meters, the ambient temperature drops by 1°C for every 200 meters increase. 3000 米以上, 每升高 200 米, 环境温度降额 1°C)
1.8	Vibration 振动耐受	10-55Hz 19.6m/S ² (2G),20 minutes each along X,Y and Z axis.		
1.9	Shock 冲击耐受	49m/S ² (5G),20 once each X,Y and Z axis.		

Note 1: Please add the new requirement when the power supply will be used for high humidity condition. 当电源将被用于高湿度的环境下, 在下订单时请增加这新的要求。



二、Electrical Characteristics 电气特性:

2.1. Input Electrical characteristics 输入特性:

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	Remarks 备注
2.1.1	Rated input voltage 额定输入电压	200-240	Vac	Note 2
2.1.2	Input voltage range 输入电压范围	190-264	Vac	
2.1.3	Input frequency range 输入频率	47—63	Hz	
2.1.4	Cooling efficiency 冷机效率	≥ 87 (Vin=220Vac)	%	Full load (room temperature) Note 3
2.1.5	Maximum input current 最大输入电流	≤ 3.0	A	
2.1.6	Inrush current 输入浪涌电流	≤ 60	A	220Vac

Note 2: Meanings of rated input voltage and the input voltage range: the rated input voltage is the international general appellation, the highest voltage of rated input voltage float upwards 10%, is the input voltage upper limit, the maximum value, the minimum voltage of rated input voltage float downward 10%, is the input voltage lower limit, the minimum value. Rated input voltage range of 200-240 is corresponding to 180-264. The two terms are not contradictor, essence is consistent, uniform, only two different terms. 额定输入电压与输入电压范围的含义: 额定输入电压是国际通用的称谓, 额定输入电压的最高电压向上浮动 10%, 就是输入电压的上限, 即最大值, 额定输入电压的最低电压向下浮动 10% 就是输入电压的下限, 即最小值。额定输入电压 200-240 对应的输入电压范围为 180-264. 这两者不是相互矛盾的, 实质是一致的, 统一的。

Note 3: Efficiency: Terminal output voltage multiplied by the output current, and then divided by the AC input voltage, divided by the AC input current, divided by the power factor: efficiency = terminal output voltage X output current / (the AC input voltage X AC input current X power factor). 电源效率: 端子口输出电压乘以输出电流, 然后除以交流输入电压, 除以交流输入电流, 除以电源功率因数; 效率 = 端子口输出电压 X 输出电流 / (交流输入电压 X 交流输入电流 X 功率因数)。

**2.2. Output Electrical Characteristics 输出特性:**

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	Remarks 备注
2.2.1	Output rating voltage 输出额定电压	4.2	Vdc	
2.2.2	Output current range 输出电流	0—40	A	
2.2.3	Peak output pulse current 峰值输出脉冲电流	44	Vdc	Average current $\leq 40A$ 平均电流 $\leq 40A$
2.2.4	Derating output current 降额输出电流	32	A	Unaided heat dissipation 无辅助散热
2.2.5	Output voltage range 输出电压范围	4.11—4.28	Vdc	
2.2.6	Voltage regulation accuracy 电压调整率	$\pm 1\%$	V_0	
2.2.7	Load regulation accuracy 负载调整率	$\pm 1\%$	V_0	
2.2.8	Regulation accuracy 稳压精度	$\pm 2\%$	V_0	
2.2.9	Ripple and noise 纹波及噪声	≤ 150	mVp-p	Full load;20MHz, 104+10uF NOTE 4
2.2.10	Power output delay 开机延迟时间	≤ 2500	ms	NOTE 5
2.2.11	Hold up time 输出保持时间	≥ 10	ms	$V_{in}=220Vac$ NOTE 6
2.2.12	Output voltage rise time 输出电压上升时间	≤ 100	ms	NOTE 7
2.2.13	Off overshoot 输出过冲	$\pm 10\%$	V_0	
2.2.14	Output dynamic 输出动态响应	Voltage changes less than $\pm 5\% V_0$; dynamic response time $\leq 250\mu S$ 输出电压变化小于 $\pm 5\%$;动态响应时间 $\leq 250\mu S$		LOAD 25%-50%, 50%-75% Slew Rate:1A/uS
2.2.15	Start-up with Capacitive load 容性负载	≤ 10000	μF	Full load

Note 4: Ripple & noise test: Ripple & noise bandwidth is set to 20MHz, use a 0.10uF ceramic capacitor in parallel with a 10.0uF electrolytic capacitor at output connector for ripple & noise measurements. 纹波和噪声的测试:纹波和噪声的测试带宽为 20 兆赫兹,在输出端口并联一个 0.10 微法的瓷片电容和一个 10.0 微法的电解电容。

Note 5: The power delay time measured is when AC power on to 90% of specified output voltage observed on the channel.开机延迟时间为 AC 输入上电到输出电压上升到 90%间的时间。

Note 6: The hold-up time measured is when AC power off to 90% of specified output voltage observed on the channel. 输出保持时间为从输入 AC 掉电到输出电压下掉到输出电压的 90%间的时间。



Note 7: The rise time measured is when the output voltage rise from 10% to 90% of specified output Vout observed on the channel wave form. 输出上升时间为输出电压从 10%上升到 90%间的时间。

2.3. Protection Features 保护特性:

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	Remarks 备注
2.3.1	Output current limit protection point 输出过流保护	44—60	A	Hiccup Model, Auto-recovery 打嗝, 自恢复
2.3.2	Output short circuit protection 输出短路保护	Can protect 可保护	A	

2.4. Other features 其它特性:

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	Remarks 备注
2.4.1	MTBF	$\geq 100,000$	H	25°C, MIL-217 Method 2 Components Stress Method
2.4.2	Expected Cap Life Time 电解电容寿命	≥ 2	Years 年	220Vac, 100% load @40°C

三、Safety features 安全特性:

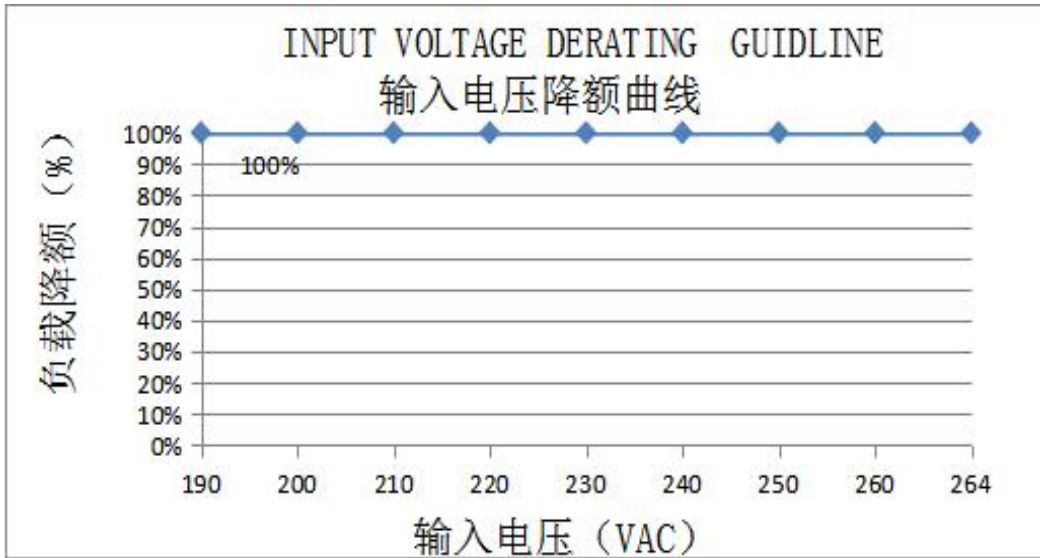
NO. 序号	ITEM 项目	Test conditions 测试条件	Standard/SPEC 标准、技术要求
3.1	Isolation voltage 绝缘耐压 Note8	Input-Output 输入对输出	3000Vac/10mA/1min
		Input-PE 输入对大地	1500Vac/10mA/1min
		Output-PE 输出对大地	500Vac/10mA/1min
3.2	Insulation Resistance 绝缘阻抗	Input-Output 输入对输出	DC500V
		Input-PE 输入对大地	DC500V
		Output-PE 输出对大地	DC500V
3.3	Leakage current 输入泄漏电流	$< 1.0\text{mA}$ ($V_{in}=242\text{Vac}$)	GB8898-2001 9.1.1

Note: Input line (all L&N) should be shorted; and all output should be shorted.
所有输入线 (包括 L 线和 N 线) 要短路和所有输出包括正负端要短路。

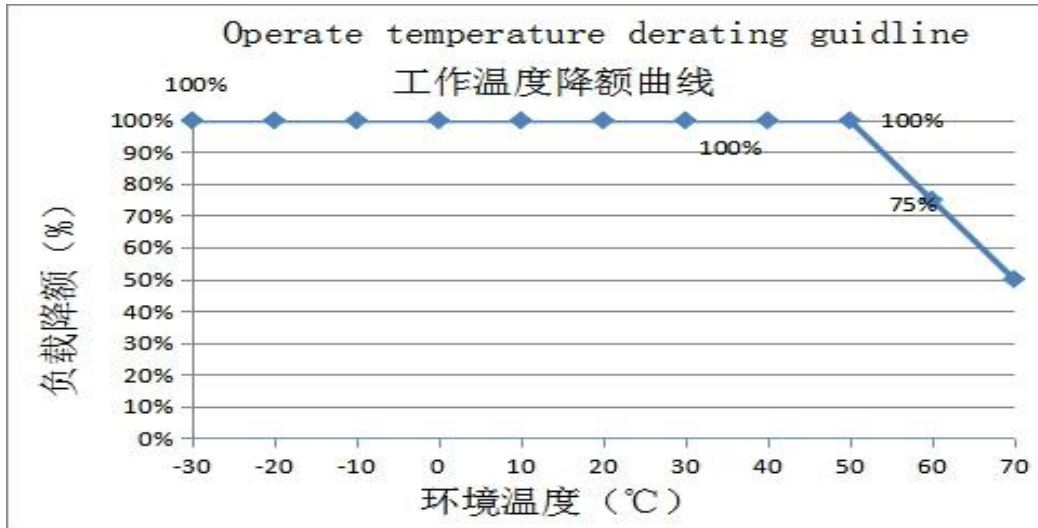


四、Derating guideline:降额曲线:

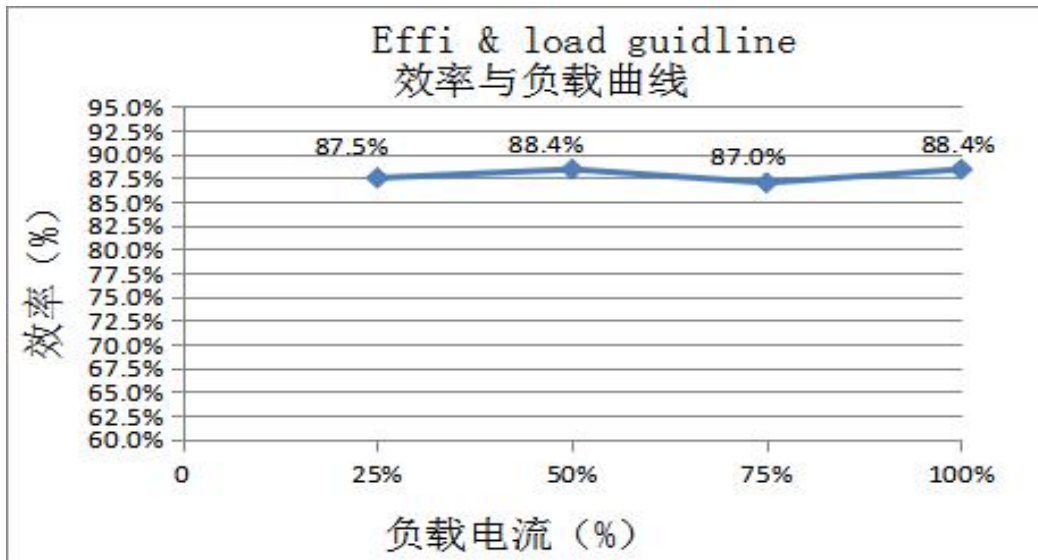
4.1 Input voltage derating guideline.输入电压降额曲线:



4.2 Operate temperature derating guideline.温度降额曲线:



4.3 Effi & load guideline: 效率与负载曲线: (220Vac)





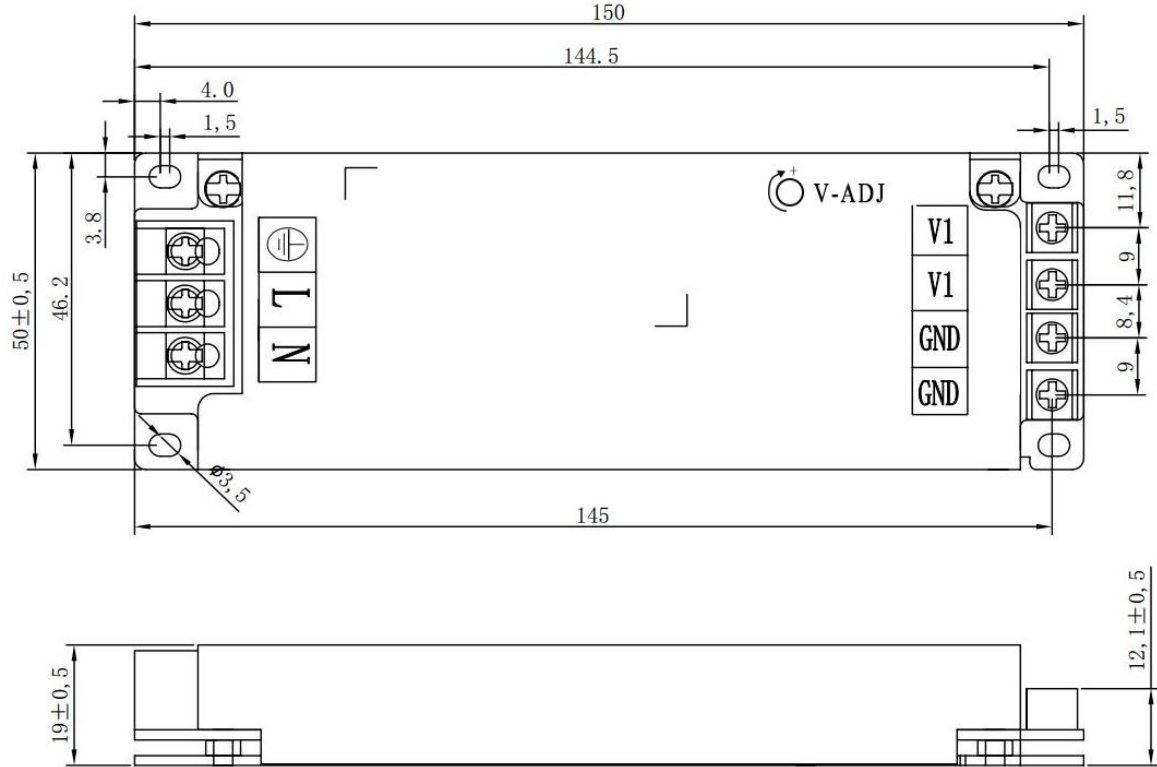
五、The definition of mechanical properties and connectors (Units: mm) 机械特性及接插件定义 (单位: 毫米)

5.1. Dimensions 尺寸:

L150 x W50 x H19 电源尺寸为: 长 150 宽 50 高 19, 单位毫米。

产品尺寸误差±1.0mm

5.2. Installation hole size: 安装孔位尺寸:



5.3. Pin connection. 连接器脚位定义:

5.3.1 Input connection CON1 : 3PIN 9.5mm 间距输入连接器 CON1

Input connection model: 300V 20A

NO. 序号	NO. 序号	Define. 定义
1	PIN1	EARTH
2	PIN2	LINE
3	PIN3	NEUTRAL

5.3.2 output connection CON2 CON3 CON4 CON5 : M4 铜端子*4PIN

Output connection model: 300V 20A

NO. 序号	NO. 序号	Define. 定义
1	PIN1	GND
2	PIN2	GND
3	PIN3	V1
4	PIN4	V1



六、Weight, packaging, transport and storage. 重量，包装，运输和储存:

6.1. Weight. 重量:

6.1.1. Everyone weight is about 214G. 单个电源的重量约为 214 克。

6.1.2. One box have 36units, total weight is about 8.3 KG. the dimensions of the box :LXWXH (units :mm) : 一个箱子装 36 台，总重量约为 8.3 千克; 箱子尺寸为: L455 x W375 x H90mm

6.2 Packing 包装:

Box has the product name, model number, manufacturer ID, the manufacturers certificate of quality inspection department, manufacturing date; the box with an attachment list. 包装箱上有产品名称、型号、厂家标识、厂家质量部门的检验合格证、制造日期等; 包装箱内有附件清单。

6.3 Transportation 运输:

Suitable for cars, boats, aircraft transport, transport should be awnings, sun protection, loading and unloading of civilization. 适应于车、船、飞机运输，运输中应遮蓬、防晒、文明装卸。

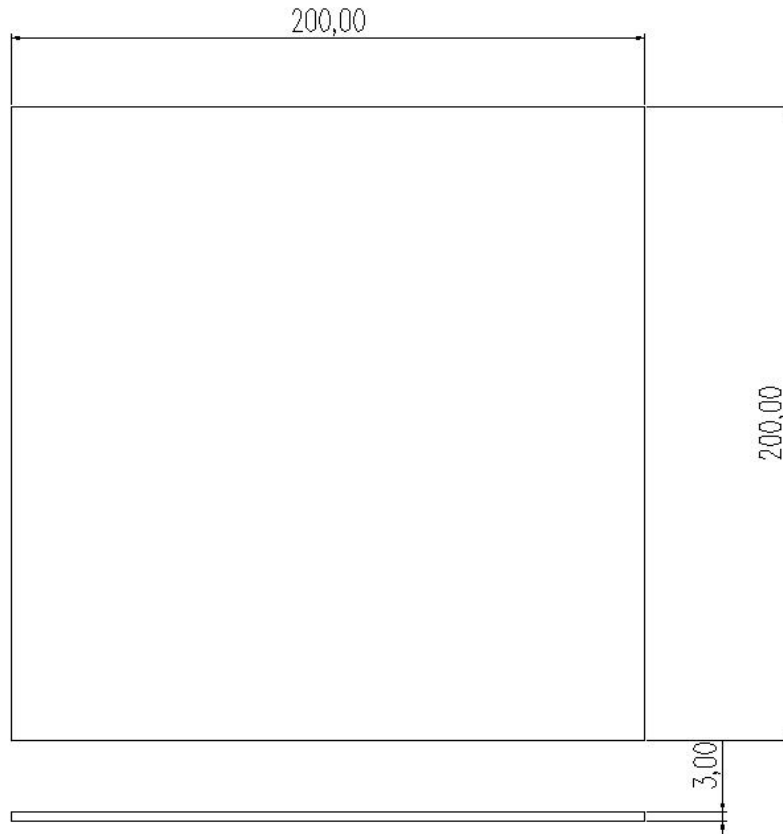
6.4 storage 储存:

Product is not used which should be stored in the box, warehouse temperature -20°C — $+80^{\circ}\text{C}$, relative humidity of 10% -90%, the warehouse does not allow any harmful gases, flammable, explosive and corrosive products of chemicals, and strong mechanical vibration, shock and strong magnetic field, package box should be at least 20cm high from the ground, away from the wall, heat, window or air intake at least 40cm, under specified conditions in the storage period is generally one year, more than one year should be re-tested. 产品未使用时应存放在包装箱内，仓库环境温度为 -20°C — $+80^{\circ}\text{C}$ ，相对湿度为 10%—90%，仓库内不允许有有害气体，易燃，易爆的产品及有腐蚀性的化学物品，并且无强烈的机械振动，冲击和强磁场作用，包装箱应垫离地至少 20cm 高，距离墙壁、热源、窗口或空气入口至少 40cm，在本规定条件下的贮存期一般为 1 年，超过 1 年后应重新进行检验。



6.5 Requirements for Burning in Test. 老化测试要求

We recommend that the Power Supply should be mounted tightly with the heatsink described as the following heatsink drawing while the products burn in at 50°C and 220Vac input. 在环境温度50°C以下，不加湿，电源输入220V，带满负载，机壳底面紧贴散热板（建议散热板尺寸见图1所示，单位mm），加电老化。



引用标准:

- 1、GB4943/EN60950: 由电网供电的或由电池供电的信息技术设备（含商业电子设备）的安全标准
- 2、GB2324: 电工电子产品 基本环境试验规程
- 3、EN55032: 信息技术设备 无线电干扰特性 限制和测量方法
- 4、IEC61000-4 系列: 电磁兼容性（EMC）试验和测量技术
- 5、IEC61000-6-1: 居住、商业、轻工业环境使用产品 电磁抗扰度 标准与测量
- 6、IEC61000-6-2: 工业环境使用产品 电磁抗扰度标准与测量
- 7、GB17625.1-1998: 低压电气及电子设备发出的谐波电流限值（设备每相输入电流≤16A）
- 8、GB/T 17626: 电磁兼容 试验和测量技术
- 9、GB/T14714: 微小型计算机系统设备用开关电源通用技术条件