SPECIFICATION

产品规格书

Model产品型号：BTP-LC-QMV01

Version版本型号：V1.1

Content(目录)

Revision History

VERSION	DESCRIPTION	DATE
V1.0	First issued 首次发行	2017.07.26
V1.1	Update Heat Sink 更新散热片	2024.07.02

1.General Description(概述)

BTP-LC-QMV01 is a motherboard with LCD driver.

This motherboard is suitable for LCD panels with dedicated EDP interfaces. It is compatible with most 4LANE EDP/8LANE EDP OR V-BY-ONE screens and can be connected by FFC. The resolution can be up to 4096X2160@60Hz.

The motherboard supports HDMI*2, DP* 1 input, HDMI supports 2.0 standard (HDCP2.2), and DP supports DP1.2 standard.

BTP-LC-QMV01 是一款液晶显示器驱动主板。

该主板适用于 EDP 专用接口的液晶面板，兼容了大部分 4LANE EDP/8LANE EDP;V-BY-ONE 屏，可以用 FFC 来连接，分辨率最高支持到带宽 4096X2160@60Hz。

主板支持 HDMI*2,DP* 1 输入，HDMI 支持 2.0 标准（HDCP2.2），DP 支持 DP1.2 标准。

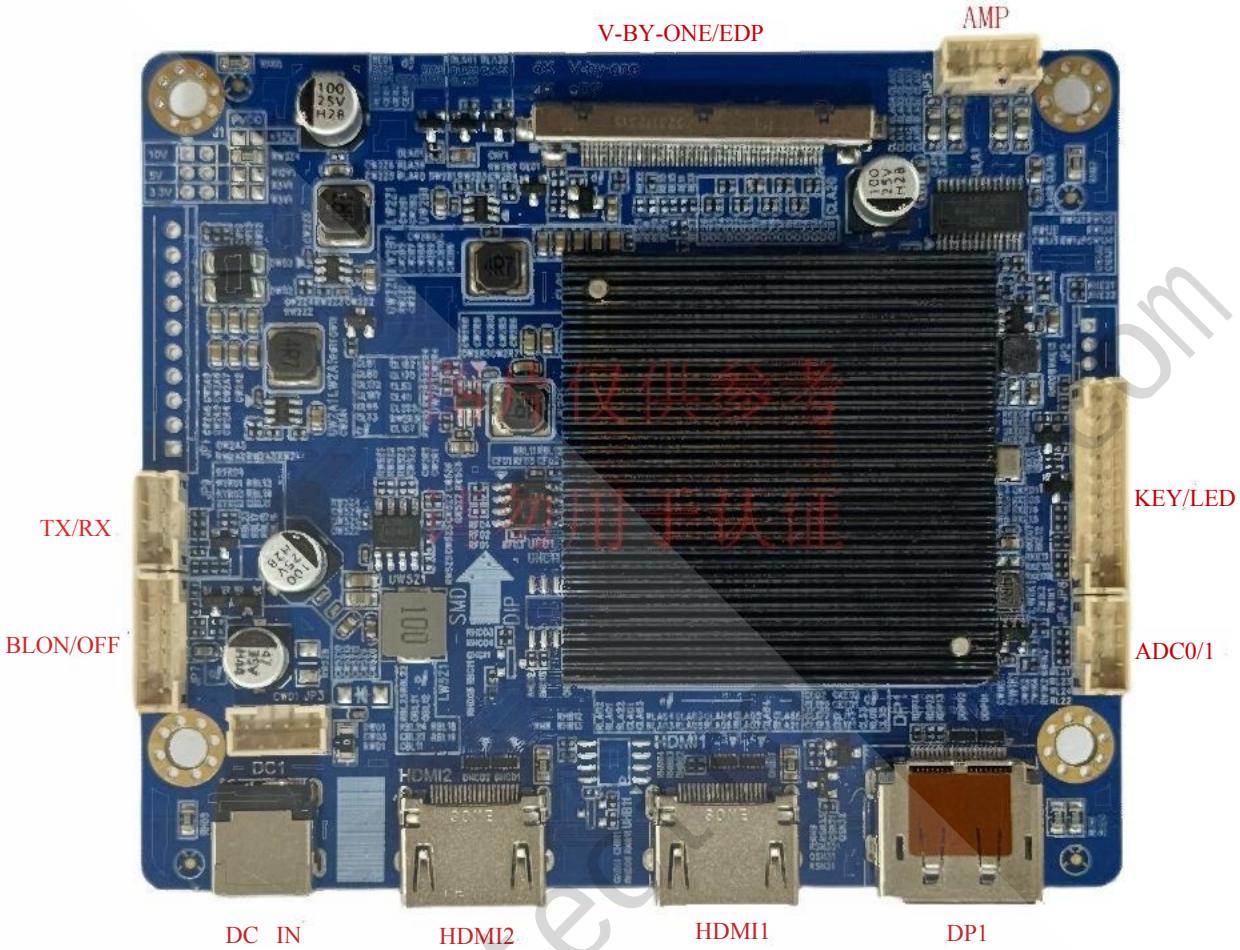
2.Configuration & General Precautions(使用注意事项)

- For safety issue, please keep the board 6.0mm away from metal parts of the TV at least.
- 基于安全考虑，请在安装时确保板卡与其他金属材料保持6.0mm 以上的距离。
- Protect the board from static electrostatic in care of damage to the IC.
- 请使板卡远离静电以免损坏IC。
- Keep the board away from conductor when it is working.
- 确保板卡工作时远离导体。
- Don't press, distort or disassemble the board.
- 请勿强压、扭曲或拆解板卡。
- Clean the board with soft dry cloth when it's dirty.
- 若板卡有污渍，请用干布擦拭。
- Don't switch on the power supply before panel is correctly connected.
- 正确连接好屏线前请勿通电。
- Relative humidity: ≤80%.
- 相对湿度：≤80%。
- Storage temperature: -40 ~ 60℃.
- 储存温度：-40~ 60℃。
- Operation temperature: -10 ~ 40℃.
- 工作温度：-10 ~ 40℃
- The brightness of panel is influenced greatly by temperature, you should measure it after power on 10~30 minutes.
- 因屏的亮度易受温度影响，请在开机10~30 分钟后再测量。
- Keep the board surface clean. Check the appearance of the board if there has any defective parts, such as damaged, weighty nick, etc.
- 保持产品表面整洁。检查产品外观是否有明显品质不良存在，如：破损，严重划痕等。

3. Main features (主要特性)

Master Chip 芯片	RTD27XXT-CG		
Signal 信号	HDMI 高清接口	HDMI2 Up To 4096*2160@30Hz HDMI1.4 version（3GHz） MHL2.1(3GHz) HDCP (1.4)	
	DP DP 接口	Up To 4096*2160@60Hz Display Port1.2(5.4Ghz,HBR2)	
	Panel Interface 屏接口	V-By-One/eDP	8LANE VByOne/8LANE eDP/4LANE eDP 8LANE V-BY-ONE,8LANE EDP,4LANE EDP 屏
Audio 音频	Frequency Response 频率响应	100Hz~15K Hz @±3dB(1KHz 0dB Reference Signal) (参考信号频率为 0dB，1KHZ)	
	Max Output Power 最大输出功率	2×10W(8Ω) THD+N<10%@1KHz (Supply Voltage: 12V, Audio Input: 0.5V_{RMS}) (供电电压：12V，音频输入：0.5V_{RMS})	
Power 电 源	Power Supply 输入电源	Support 12V OR 24V DC 支持 12V 或24V 直流输入	
	Drive screen 驱屏电压	Support 12V, 10V,5V,3.3V；Default 10V. 支持 12V, 10,5V,3.3V 可选；默认 10V。	
	Working mode 工作模式	Normal working mode，Low power operating mode 正常工作模式，低功耗工作模式	
	Standby Power 待机功耗	＜0.25W，小于0.25W	
Key 按 键	OSD Menu OSD 菜单	Brightnee,Contrsat ratio,Automatic calibration,Phase,Clock,Venue location,Function settings,Reset:亮度，对比度，自动校正，相位，时钟，行场位置，功能设置，复位等	
	OSD Language OSD 语言	Chinese,English,French,German,Italian,Spanish,Russian,Korean,Japanese:中文，英语，法语，德语，意大利语，西班牙语，俄语，韩语，日语等	
	Key Functions 按键功能	POWER、MENU、UP、DOWN、SOURCE、LEFT、RIGHT 电源，菜单，上，下，信号源，左，右	

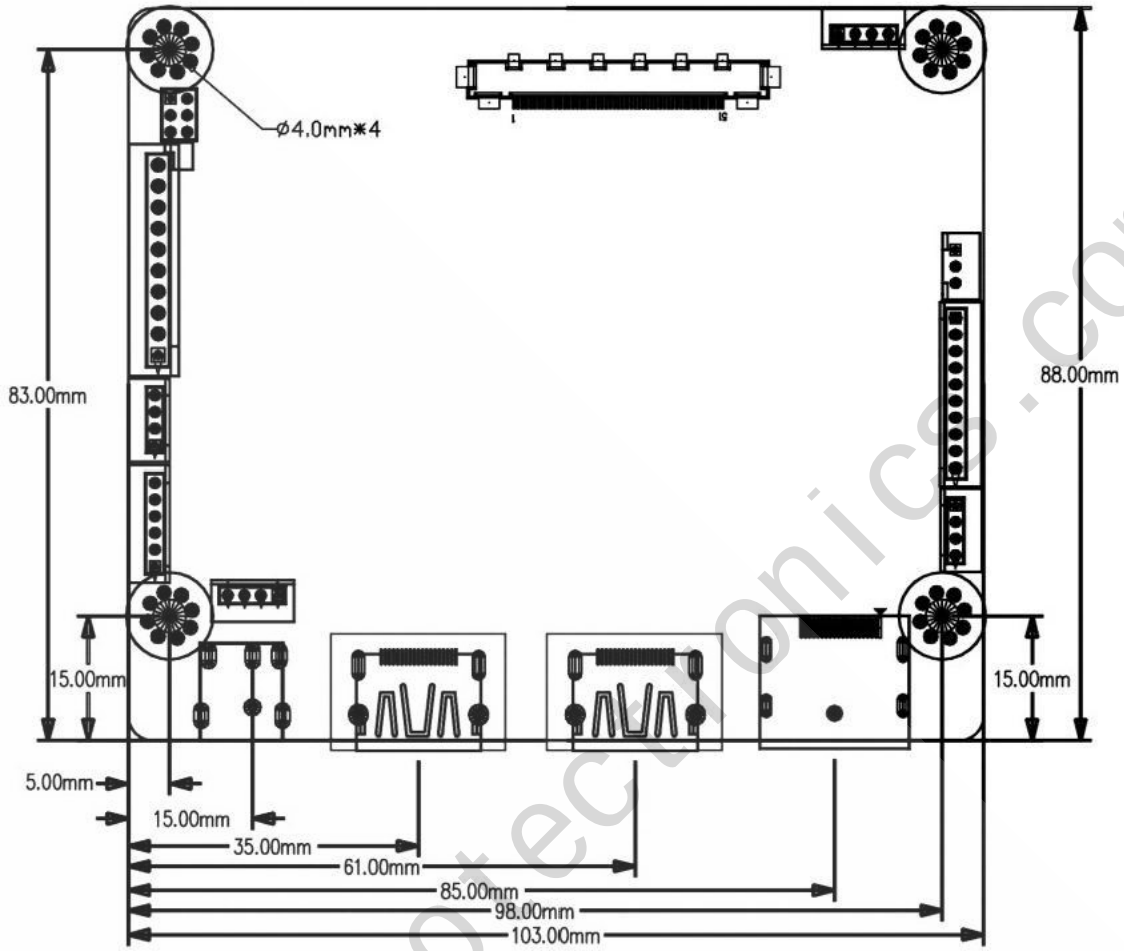
4.BOARD PICTURE(板卡外观图)

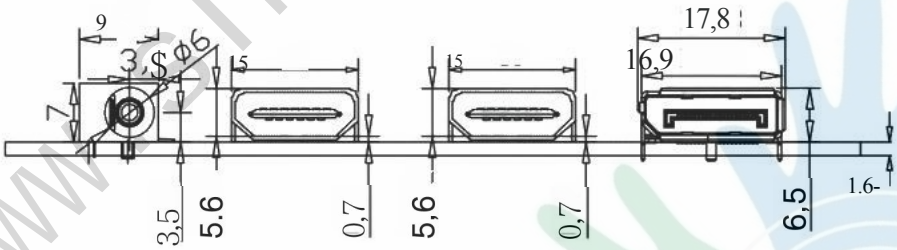


Pictures are for reference only,specific to prevail in kind

图片仅供参考，请以实物为准。

5.PCB Dimension(结构尺寸图)





unit:mm(单位：mm)

控制板PCB 相关尺寸及规格

1、PCB 厚度+最高零件的高度≤16mm

2、PCB 长度=103mm

3、PCB 宽度=88mm

4、PCB 板厚=1.6 mm

螺丝孔规格：直径4.0mm 螺丝孔，孔位大小及坐标见结构图

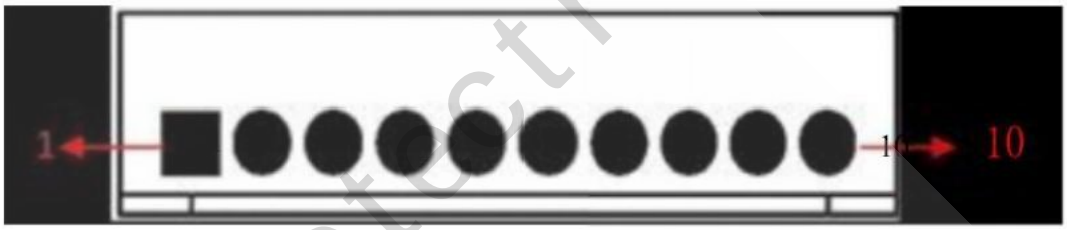
6.Schematics Of IR Board &Key Board(遥控&按键的原理图)

The following schematic is for reference only:

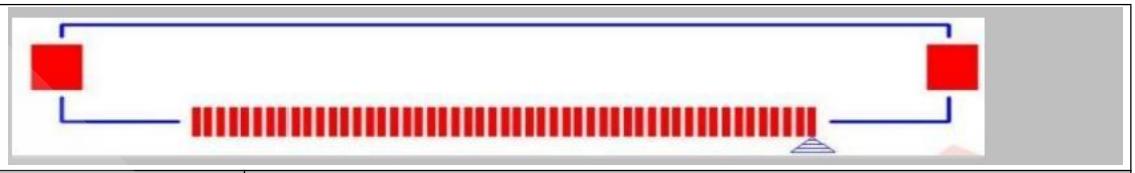
下列原理图仅供参考：

7.Interface Definition(接口定义)

7.1 JP8(10PIN/2.0):IR &KEY BOARD CONNECTOR(按键控制接口)



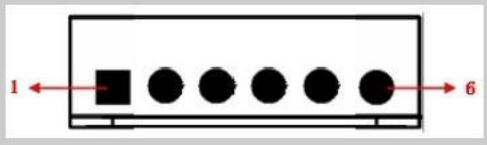
NO.(引脚)	Symbol(定义)	Description(描述
1	POWER	Power(电源开关)
2	LED_R	Red LED(红色LED)
3	LED_G	Green LED(绿色LED)
4	GND	Ground(地)
5	K1	按键信号输入
6	K2	按键信号输入
7	K3	按键信号输入
8	K4	按键信号输入
9	K5	按键信号输入
10	K6	按键信号输入



NO.(引脚	Symbol(定义)	Description(描述)
1	VSEL	Power Supply for Panel
2	VSEL	
3	VSEL	
4	VSEL	
5	VSEL	
6	VSEL	
7	VSEL	
8	VSEL	
9	NC	NC
10	GND	Ground(地)
11	GND	
12	GND	
13	GND	
14	GND	
15	TX1_AUX_N_1	eDP Aux 1 Channel-
16	TX1_AUX_P_	eDP Aux 1 Channel+
17	2D/3D_EN	2D/3D_EN
18	I2C0_SDA#	I2C Data signal
19	I2C0 SCL#	I2C Clock signal
20	NC	NC
21	NC	NC
22	NC	NC
23	TX1_AUX_P_2	eDP Aux 2 Channel+
24	TX1_AUX_N_2	eDP Aux 2 Channel-
25	EDPTX1 HPD_1	VBY Hot plug detect /eDP Hot plug detect(1 channel)
26	LOCKN#	VBY Lock detect input/eDP Hot plug detect(2 channel)
27	GND	Ground(地)
28	VTX-TX0P	VBY output data lane0-/eDP data lane0-/eDP HBR2 lane0-(1 channel)
29	VTX-TX0N	VBY output data lane0+/eDP data lane0+/eDP HBR2 lane0+(1 channel)

30	GND	Ground(地)
31	VTX-TX1P	VBY output data lane0-/eDP data lane1-/eDP HBR2 lane1-(1 channel)
32	VTX-TX1N	VBY output data lane0+/ eDP data lane1+/eDP HBR2 lane1+(1 channel)
33	GND	Ground(地)
34	VTX-TX2P	VBY output data lane0-/eDP data lane2-/eDP HBR2 lane2-(1 channel)
35	VTX-TX2N	VBY output data lane0+/ eDP data lane2+/eDP HBR2 lane2+(1 channel)
36	GND	Ground(地)
37	VTX-TX3P	VBY output data lane0-/eDP data lane3-/eDP HBR2 lane3-(1 channel)
38	VTX-TX3N	VBY output data lane0+/ eDP data lane3+/eDP HBR2 lane3+(1 channel)
39	GND	Ground(地)
40	VTX-TX4P	VBY output data lane0-/eDP data lane4-/eDP HBR2 lane4-(1 channel)
41	VTX-TX4N	VBY output data lane0+/ eDP data lane4+/eDP HBR2 lane4+(1 channel)
42	GND	Ground(地)
43	VTX-TX5P	VBY output data lane0-/eDP data lane5-/eDP HBR2 lane5-(1 channel)
44	VTX-TX5N	VBY output data lane0+/ eDP data lane5+/eDP HBR2 lane5+(1 channel)
45	GND	Ground(地)
46	VTX-TX6P	VBY output data lane0-/eDP data lane6-/eDP HBR2 lane6-(1 channel)
47	VTX-TX6N	VBY output data lane0+/ eDP data lane6+/eDP HBR2 lane6+(1 channel)
48	GND	Ground(地)
49	VTX-TX7P	VBY output data lane0-/eDP data lane7-/eDP HBR2 lane7-(1 channel)
50	VTX-TX7N	VBY output data lane0+/ eDP data lane7+/eDP HBR2 lane7+(1 channel)
51	GND	Ground(地)

7.3 JP7(6PIN/2.0):INVERTER CONNECTOR(背光接口)

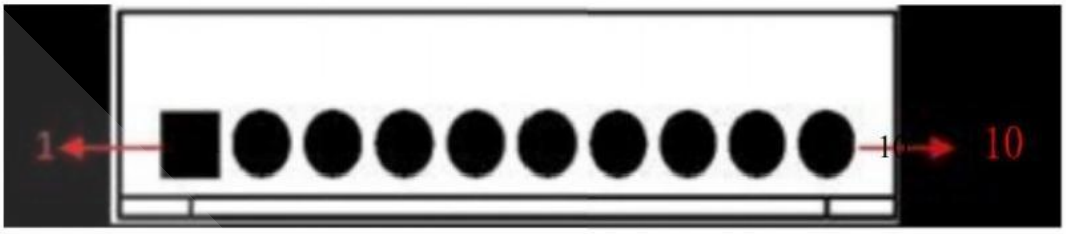


NO.	SYMBOL	DESCRIPTION
	12V	+12V DCPowerSupply
2	12V	+12V DCPowerSupply
3	ON/OFF	Back Light ON/OFF
4	ADJ	Back Light Adjust
5	GND	Ground
6	GND	Ground

7.4 JP5(4PIN/2.0):SPEAKER(喇叭接口)

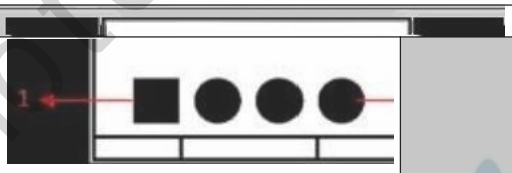
NO.(引脚)	Symbol(定义)	Description(描述)
1	LOUTP	Left Channel Output+(左声道输出+)
2	LOUTN	Left Channel Output-(左声道输出)
3	ROUTN	Right Channel Output-(右声道输出-)
4	ROUTP	Right Channel Output+(右声道输出+)

7.5 JP1(10PIN/2.54)External Power Input Definition(供电接口)



NO.(引脚)	Symbol(定义)	Description(描述)
1	STB	STB
2	GND	Ground(地)
3	GND	Ground(地)
4	STB-5V	STB-5V
5	+5V	NOR-5V
6	+5V	NOR-5V
7	GND	Ground(地)
8	GND	Ground(地)
9	12V	+12VDCPowerSupply
10	12V	+12VDCPowerSupply

7.6 JP9 (4PIN/2.0):UART(串口接口)



NO.(引脚)	Symbol(定义)	Description(描述)
1	+5V	+5V DCPowerSupply
2	RX	UART-RX
3	TX	UART-TX
4	GND	Ground(地)

8.Packaging method(包装方式)

防静电袋(如下图)尺

寸：130mm×160mm

数量：每包1PCS

环境实验报告

Environment Test Report

目　录

1. 测试仪器 / Test Equipment

序号 / No	功用名称 / Function Name	型号 /Model
1	直流耦合电流探头/ DC Split Core Current Oscilloscope	Tektronix TCP202
2	无源电压探头/ Passive Voltage Probe	Tektronix NC600
3	高压差分探头/ Passive High Voltage Probe	Tektronix HP9258
4	交流源/ AC Source	EXTECH 6600
5	功率计/ Power Meter	Zentech 2100 Chroma6630
6	数字示波器/ Digital Oscilloscope	Tektronix TDS3012B
7	直流电子负载/ DC Electronic Load	JARTUL JT6315A
8	数字万用表/ Digital Multimeter	Fluke 101
9	数据采集仪/ Data Acquisition	Fluke 45
10	可程式恒湿恒温实验机/ Programmable Temperature Humidit	GZ-ESPEC MPC-2000A

2. 测试目录 / List of Test Items

序号 / No.	项目 / Items	结果 / Result	备注 /Remark
1	低温启动/ Low Temperature Startup	PASS	
2	低温贮存/ Low Temperature Store	PASS	
3	高温高湿贮存/ High Temperature High Humidity Store	PASS	
4	高低温冲击实验/ High Low Temperature Pressure Impact Test	PASS	
5	低温工作测试/ Low Temperature Operating Test	PASS	
6	高温高湿工作测试/ High Temperature High Humidity Operating Test	PASS	
7	高低温循环测试/ High Low Temperature Cycling	PASS	

负载表/Load Table

	Remark
Full Load	模拟整机正常播放 Simulate the Monitor to play normally
Min Load	/

3.环境测试/Test of Environmental

3.1. 低温启动/Low Temperature Startup

测试条件/Test Condition:

环境温度 /Ambient Temperature	时间 /Time	输入电压 /Input Voltage	负载 /Load
-15℃	2h	DC 24V	Full Load

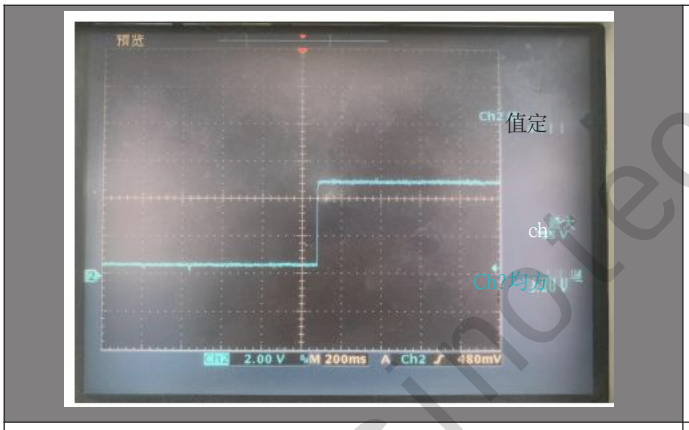
测试规格/Test Spec.

产品在低温下能够正常启动并稳定工作，主要性能和功能指标要满足规格书要求

The product can start normally and work stably at low temperatures,and the main performance and functional indicators must meet the requirements of the specification

测试数据/Test Data.

环境温度 Ambient Temperature	时间/Time	输入电压 /Input Voltage	启动状况 /Status of the Start up	图号/Fig No.	结果/Result
-15℃	2h	DC 24V	启动正常 start normally	3.1-1	PASS



DC 24V 3.1-1

3.2. 低温贮存/Low Temperature Store

测试条件/Test Condition:

环境温度 /Ambient Temperature	持续时间 Duration	输入电压 /Input Voltage	负载 /Load
-40℃ ± 3℃	16h	DC 24V	Full Load

测试规格/Test Spec.

产品在低温贮存后，恢复常温下静置1-2小时后，主要性能和功能指标要满足规格书要求

After the product is stored at low temperature,after returning to normal temperature and letting it stand for 1-2 hours,the main performance and functional indicators shall meet the requirements of the specification

测试数据/Test Data.

环境温度 / Ambient Temperature	持续时间 / Duration	结果 /Result
-40℃	16h	PASS

3.3. 高温高湿贮存 / High Temperature High Humidity Store

测试条件/Test Condition:

环境温度 /Ambient Temperature	相对湿度 / Relative Humidity	持续时间 / Duration	输入电压 / Input Voltage	负载 / Load
80℃	95%	16h	DC 24V	Full Load

测试规格/Test Spec.

产品在高温高湿贮存后，恢复常温下静置1-2 小时后,主要性能和功能指标要满足规格书要求

After the product is stored in high temperature and high humidity, after returning to normal temperature and letting it stand for 1-2 hours, the main performance and functional indicators shall meet the requirements of the specification

测试数据/Test Data.

环境温度 / Ambient Temperature	相对湿度 / Relative Humidity	持续时间 /Duration	结果 /Result
80℃	95%	16h	PASS

3.4. 高低温冲击实验 / High Low Temperature Pressure Impact Test

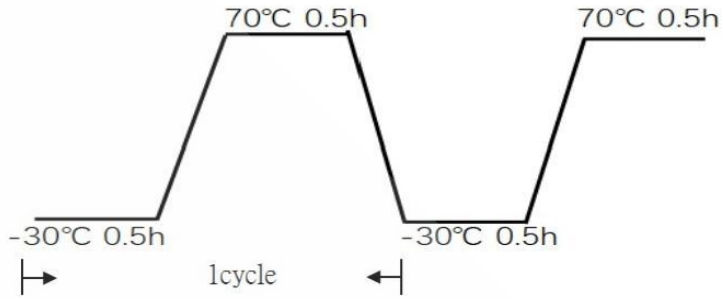
测试条件/Test Condition:

环境温度 / Ambient Temperature	相对湿度 / Relative Humidity	温度变化速率 /Temperature Change Speed	时间 / Time	次数 /cycling
70℃	-	40℃-45℃/min	0.5h	50
-30℃	-		0.5h	

测试规格/Test Spec.

产品在上下限温度切换贮存后，恢复常温下静置1-2 小时后，主要性能和功能指标要满足规格书要求

After the product is stored at the upper and lower limit temperature, after returning to normal temperature and letting it stand for 1-2 hours, the main performance and functional indicators shall meet the requirements of the specification



……50cycles

测试数据/Test Data.

环境温度 /Ambient Temperature	时间 /Time	次数 /cycling	结果 /Result
-30℃&70℃	50h	50	PASS

3.5 低温工作测试/Low Temperature Operating Test

测试条件/Test Condition:

输入电压 /Input Voltage	负载 /Load	环境温度 /Ambient Temperature	时间 /Time
DC 24V	Full Load	-15℃	8h

测试规格/Test Spec

测试产品在低温工作时，主要性能和功能指标要满足规格书要求

When the test product is working at low temperature,the main performance and functional indicators must meet the requirements of the specification

测试数据/Test Data.

输入电压 /Input Voltage	负载 /Load	环境温度 /Ambient Temperature	时间 /Time	结果 /Result
DC 24V	Full Load	-15℃	8h	PASS

输出短路保护/0utput short circuit protection

输入电压 /Input Voltage	负载 /Load	Short Channel			结果 /Result
		/			
/	/	自动恢复Automatic recovery			/

3.6 高温高湿工作测试 / High Temperature High Humidity Operating Test

测试条件/Test Condition:

输入电压 /Input Voltage	负载 / Load	环境温度 / Ambient Temperature	相对湿度 / Relative Humidity	时间 / Time
DC 24V	Full Load	45℃	90%	8h

测试规格/Test Spec.

When the test product is working at high temperature and high humidity, the main performance and functional indicators must meet the requirements of the specification

测试数据/Test Data.

输入电压 /Input Voltage	负载 / Load	环境温度 /Ambient Temperature	相对湿度 / Relative Humidity	时间 / Time	结果 /Result
DC 24V	Full Load	45℃	90%	8h	PASS

输出短路保护/ Output short circuit protection

输入电压 /Input Voltage	负载 / Load	Short Channel			结果 /Result
		12V	\	\	
DC 24V	Full Load	自动恢复	\	\	PASS

3.7 高低温循环工作测试 / High Low Temperature Cycling Operating Test

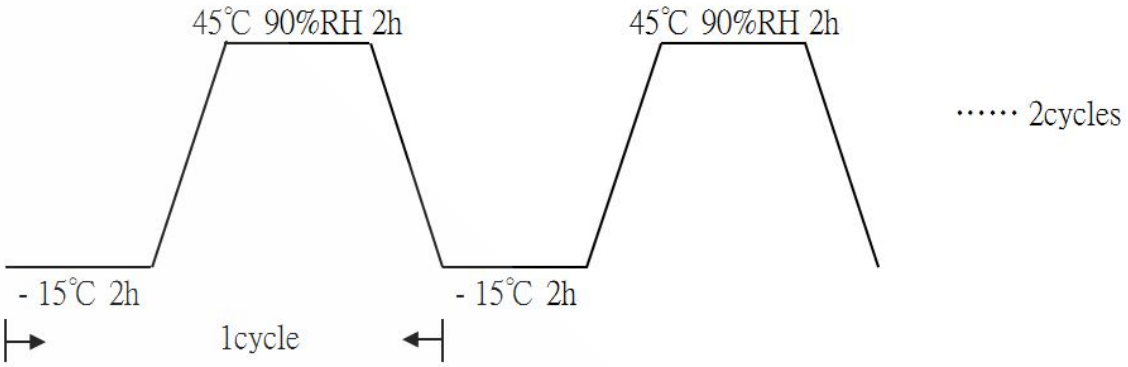
测试条件/Test Condition:

环境温度 / Ambient Temperature	相对湿度 / Relative Humidity	温度变化速率 /Temperature Change Speed	次数 /cycling	时间 / Time	输入电压 / Input Voltage	负载 / Load
45℃	90%	1℃-5℃/min	2	2h	DC 24V	Full Load
-15℃	-			2h		

测试规格/Test Spec.

产品在上下限温度切换工作时，主要性能和功能指标要满足规格书要求

When the product is switched between the upper and lower temperature limits, the main performance and functional indicators must meet the requirements of the specification



测试数据/Test Data.

输入电压 /Input Voltage	环境温度 /Ambient Temperature	时间 /Time	结果 /Result
DC 24V	-15℃&45℃	8h	PASS

END.