

# O-LEADING

PCB, PCB, PCB, EMS, 1, HDI PCB, PCB, PCB, WE, PCB, Quick Turn Prototype

O-LEADING, PCB, PCBA

[pRaspberry Pi 4 Abs](#) [rofessional](#) [PCB](#)

**O-LEADING**  
To Be Reliable, To Be Valuable

WE ALWAYS PROVIDE YOU

**BEST HIGH DENSITY INTERCONNECT PCB**

WE ALWAYS PROVIDE YOU

**BEST RIGID-FLEXIBLE CIRCUIT**

□□□□

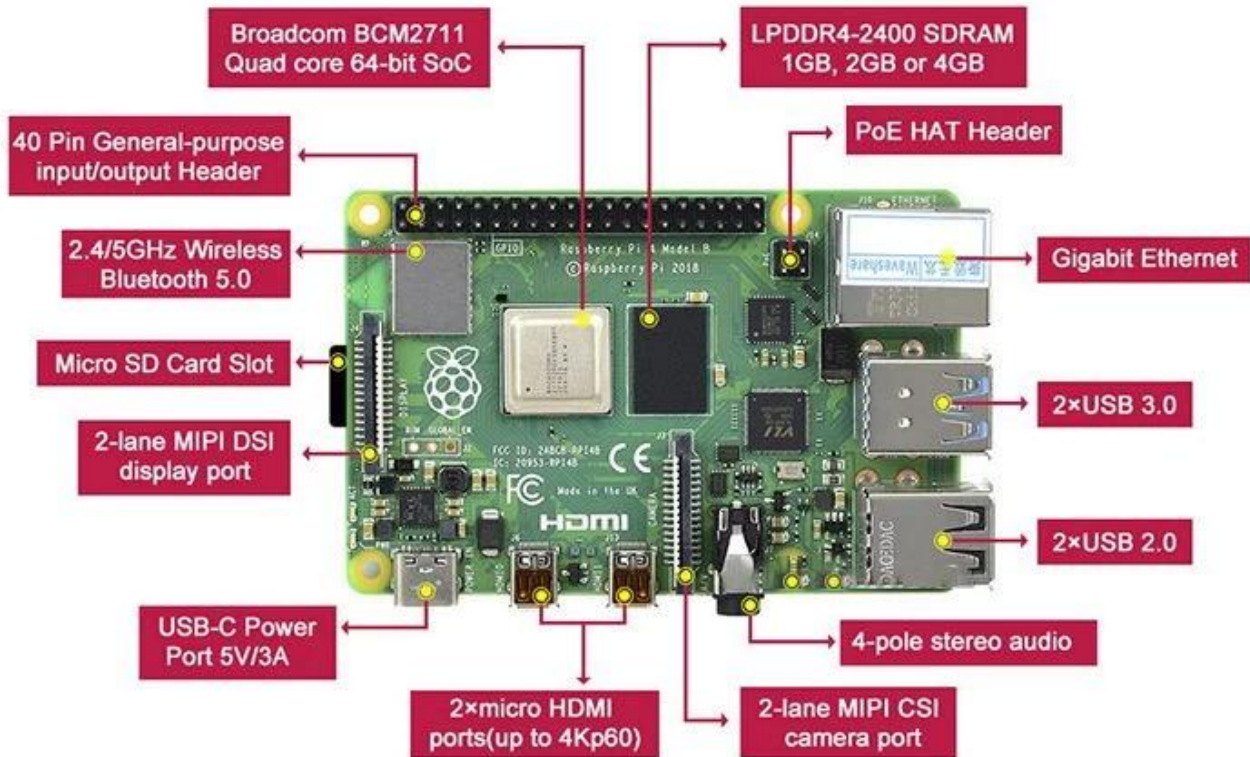
Alphabot2, PI4B-4GB, PI 4



\* The Raspberry Pi 4 is optional, up to your choice.

# Raspberry Pi 4 Completely Upgraded

More Powerful Processor, Richer Multi-Media Capability, Faster Networking



## BCM2711B0

64-bit 1.5GHz Quad-core Processor

## Choice Of RAM

2GB / 4GB / 8GB

## 4K Dual HDMI

4K High Resolution Dual Displays

## Faster Networking

Gigabit ETH, Bluetooth 5.0, Dual-band WiFi

## New USB3.0

2xUSB3.0 + 2xUSB2.0

## USB-C Power

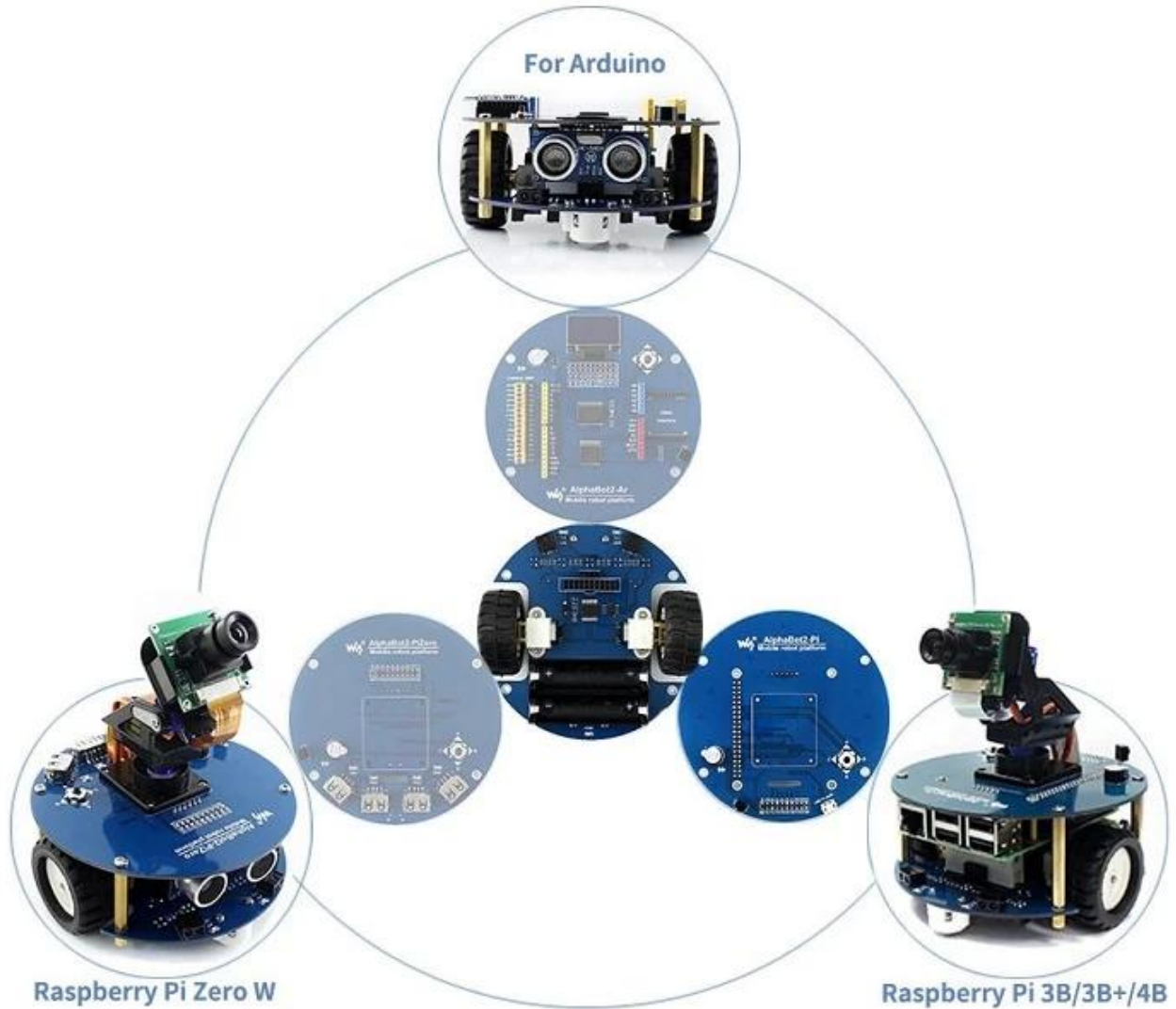
Upgraded Power Supply, More Powerful



# Versatile AlphaBot2 Chassis

Compatible With Multi Controllers Via Related Adapter Boards (Purchased Separately)

Easily Turn It Into A Pi Zero / Arduino Robot



# Modular Design, No More Messy Wiring

Highly Integrated AlphaBot2-Pi Adapter Board:

IR Obstacle Avoidance, 5-Ch Detector LI Tracking, Battery Charging Circuit, High Quality N20 Motor, Rubber Wheels, And Colorful RGB LED



# Raspberry Pi 5MP HD Camera, 1080P

The Leading Role For Vision Applications, Like Mjpg-Streamer Video Monitoring, And OpenCV Intelligent Recognition Driving



# Full Functionality, Common Examples

For More Possibilities, Refer To Example Code And Manual

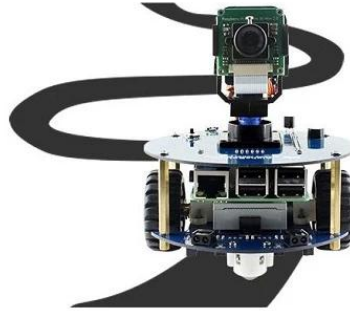


## Obstacle Avoidance

The module sends IR beam and detects objects by receiving the reflected IR beam, to easily avoid obstacles in the way.

## Auto Line Tracking

Features 5-ch IR detector for sensing and analysing the black line, combined with PID algorithm for adjusting robot movement, high sensitivity, stable tracking.



## Bluetooth Control

Provides mobile APP to control the robot movement and peripherals, such as RGB LED color, onboard buzzer, etc.

## Infrared Control

With the IR receiver onboard, it is allowed to control the robot via IR remote controller, make it move forward or change direction...



Web control (Mobile/Tablet/PC)    Qt software control (PC)    APP control (Android phone)



## WiFi Control

Supports WiFi remote control, real time video monitoring via webpage / APP / PC, also features routing function by creating WiFi hotspot.

## 2-DOF Pan-Tilt

2-DOF pan and tilt + hardware PWM controlled servo, smoothly rotates the camera to capture omnibearing images.







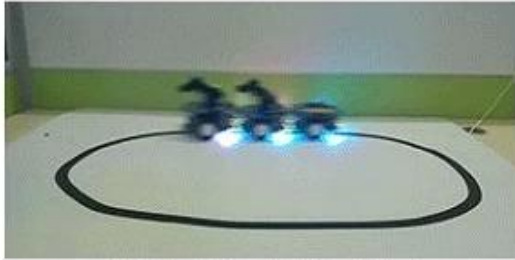
AlphaBot2-Pi robot RGB LED control



AlphaBot2-Pi robot video monitoring



AlphaBot2-Pi robot Bluetooth control



multi AlphaBot2 robots line following



AlphaBot2-Pi robot obstacle avoiding



# Kits Selection Guide

Various Raspberry Pi 4 Kits Are Available, Find Your Favorite One

## Starter Kit

The very essential parts to get started, guaranteed compatibility and stability.

- 16GB Class10 high speed micro SD card
- 5V 3A Type-C power supply
- Cool brass heat sink
- Extra free micro SD card reader



## Display Kit

Build your own all-in-one computer powered by Raspberry Pi 4, much more funny.

- 7inch wide viewing angle HD touch screen
- High quality black/white acrylic protective case
- HDMI to micro HDMI cable
- 16GB micro SD card, power supply...

## Sensor Kit Pi x Arduino

Sensors are important parts of IoT, while the Arduino is a massive ecosystem, this kit provides a way for the Pi to make use of these powerful things.

1 + 1 > 2

- Pi to Arduino adapter board
- 13x popular sensors
- 16GB micro SD card, power supply...



## Robot Kit AlphaBot

Make a Raspberry Pi smart mobile robot, easily use it for obstacle avoidance, line tracking, Bluetooth / IR / WiFi remote control, or video monitoring. Arduino compatible.

- AlphaBot driver board
- AlphaBot chassis
- Modules: Camera / Line tracking / Speed measuring...
- Raspberry Pi 4 is NOT included

## Robot Kit AlphaBot2

Make a Raspberry Pi smart mobile robot, easily use it for obstacle avoidance, line tracking, Bluetooth / IR / WiFi remote control, or video monitoring. A smaller and more flexible one.

- AlphaBot2-Pi (adapter board)
- AlphaBot2-Base (base chassis)
- Modules: Camera...



## Robot Arm Kit

Flexible and stable 4-DOF metal robot arm, allows to be controlled by smart phone through Bluetooth or WiFi connection.

"Just grab it"

- Servo driver board
- Metal mechanical arm structure
- 4x servos, power supply...
- Raspberry Pi 4 is NOT included





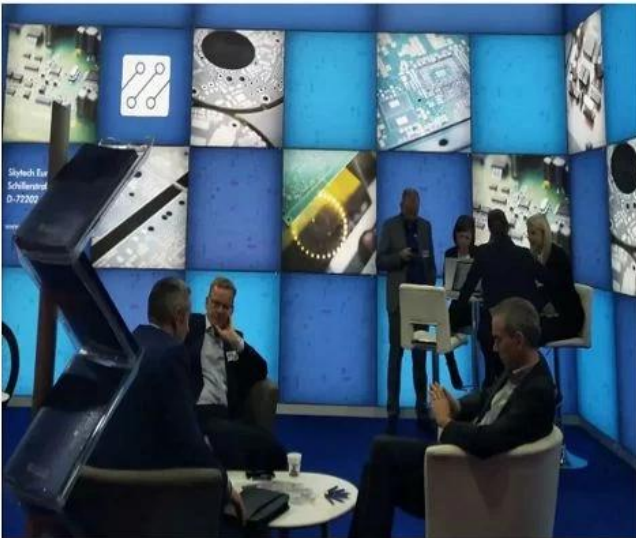
## O-LEADING *CUSTOMER*

To be *RELIABLE*

- Quality first ,
- Customer supreme ,
- Scientifically management ,
- Striving for famous brand



# THE CUSTOMER IS *KING*



To be *VALUABLE*

- Science and technology keeps head ,
- Put people first,
- Be precise and practical,
- contribute sincerely

---

Factory PCB

---



Automatic vacuum press machine



Drilling Machine



Pattern Plating Machine



Scrubbing Machine



Developing Machine



Routing Machine



High-speed flying probe machine



E-test Machine

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Factory SMT

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# HOW O-LEADING MAKE A PROJECT FOR YOU

Hardware Dispenser Application Not

## Automatic Dispenser Application Not

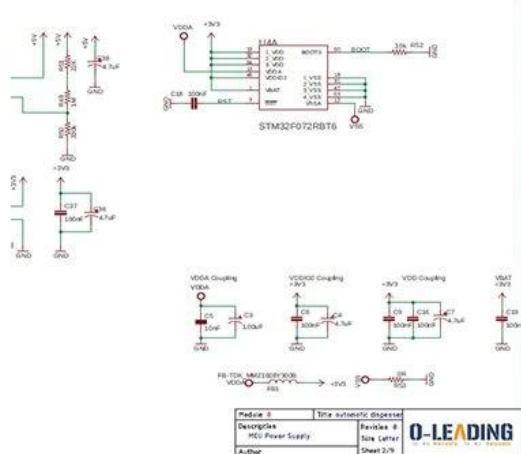
Voltage Table

Volt Pin Number	Description
VDD	Battery voltage
+3V3	+3.3V
+5V	+5V
USB +5V	USB 5V input
+5V/2	Isolated +5V
+12V	12V DC Drive

STM32F072 PINOUT table

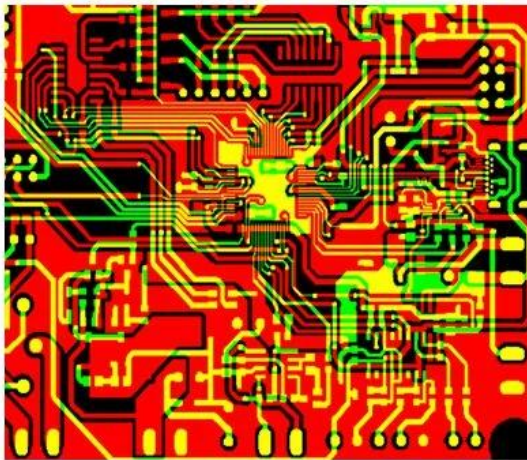
Wire Name	Description	DIO	Mode	Note
SMTN_TOF	Shutdown Time of flight sensor	Output	Logic '0' to shutdown	
I2C_SCL_TOF	I2C communication with time of flight sensor	I2C1_SCL		
I2C_SDA_TOF	I2C communication with thermopile sensor	I2C1_SDA		
I2C_SCL_IR	I2C communication with thermopile sensor	I2C2_SCL		
I2C_SDA_IR	I2C communication with thermopile sensor	I2C2_SDA		
RATE_LC	Load cell control pins	Output		
DOUT_LC	Load cell control pins	Output		

**O-LEADING**  
TO BE RELIABLE, TO BE AVAILABLE

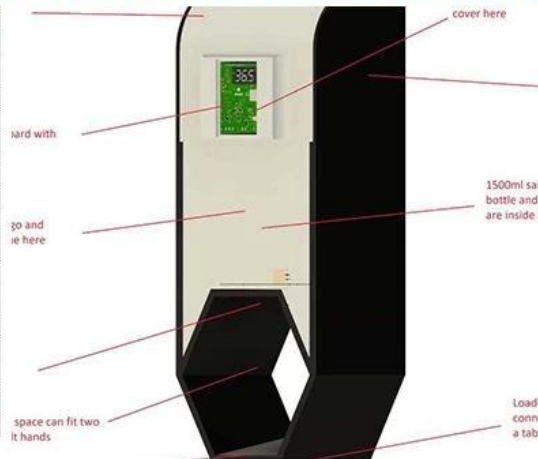
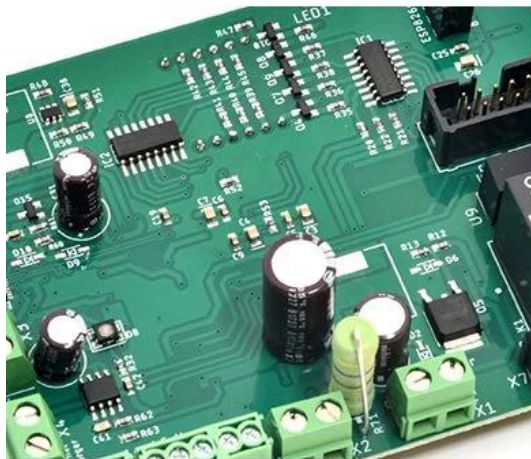


## HARDWARE schematics

## PCB PRODUCTION COMPONENTS SOURCING



Qty	Value	Device	Parts	Description
4	AK500/2	AK500/2	X1, X2	CONNECTOR
1	AK500/3	AK500/3	X7	CONNECTOR
1	1241148	MA04-2	SV2	
1	PPPC04	MA04-2	SV1	8 POS, 4*2 FEMALE PIN HEAD
1	ML10	ML10	SV4	HARTING
1	8MHZ	XTALL_CSTCE8M	X5	STCE8M00G52-R0 RESONATOR
1	0R	R-0603	R53	Thick Film Resistors - SMD 0603
2	10R	R-0603	R12, R5	Thick Film Resistors - SMD 0603
8	100R	R-0603	R1, R2	Thick Film Resistors - SMD 0603
1	270R	R-0805	R15	Thick Film Resistors - SMD 0605
1	330R	R-0603	R11	Thick Film Resistors - SMD 0603
9	680R	R-0603	R20, R3	Thick Film Resistors - SMD 0603
17	1k	R-0603	R9, R10	Thick Film Resistors - SMD 0603
2	4.7k	R-0603	R17, R6	Thick Film Resistors - SMD 0603
2	5.1k	R-0603	R18, R1	Thick Film Resistors - SMD 0603
9	10k	R-0603	R16, R3	Thick Film Resistors - SMD 0603



## PCB Assembly MECHANICAL DESIGN

Skyworth 创维

**HET** 和而泰  
HET INTELLIGENT CONTROL

dongweikeji  
东威科技

美的 Midea

STAR-NET  
星网锐捷

FORYOU  
ADAYO 华阳集团

**EDIFIER**<sup>®</sup>

Cultraview 金锐显

3nod 三诺

**T&W**

**TCL**

AcBel 康舒科技  
ACBEL POLYTECH INC.

**Honeywell**

Schneider  
Electric

**ZTE** 中兴

**EMERSON**

**BYD**

**PHILIPS**

**TE**  
connectivity

**VIDEOTON**

CUSTOMER VOICE IS **EXTREMELY IMPORTANT** TO US

<p>订单编号: 49335463501024670</p> <p>供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)</p> <p><b>High quality usb power pcb , pcba manufacturer</b> ★★★★★ Fancy has done an excellent job, whenever we write, she answered us within 1 second, O-leading is very perfect with fast delivery, fast logistics, the most important thing is good quality, good packaging, thank you!</p> <p><a href="#">回复该评论</a></p> <p><b>oem customized rohs pcb drawing schematic s...</b> ★★★★★ We received the boards, the quality is very good, the price is very reasonable, Fancy is very nice &amp; smart &amp; experienced, the logistics is super fast, I will come to see more in the future.</p> <p><a href="#">回复该评论</a></p>	<p>订单编号: 49922411001024670</p> <p>供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)</p> <p><b>High TG180 FR-4 Circuit HDI PCB 94V0 Board...</b> ★★★★★ This is a very difficult PCB design, but we are lucky to find O-leading to support the PCB for us very good to a PCB supplier.</p> <p><b>universal FR4 Multilayer PCB washing machine...</b> ★★★★★ Fancy gives us very excellent service, very professional and experienced, O-leading is the best one of our suppliers, very happy to work with them.</p>
<p>订单编号: 49298271001024670</p> <p>供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)</p> <p><b>High TG180 FR-4 Circuit HDI PCB 94V0 Board ...</b> ★★★★★ perfect product, perfect PCB supplier!</p> <p><a href="#">回复该评论</a></p> <p><b>oem customized rohs pcb drawing schematic s...</b> ★★★★★ Very good and professional PCB product as usual!</p> <p><a href="#">回复该评论</a></p> <p><b>Strip LED Aluminum FR-4 lighting PCB board 9...</b> ★★★★★ High quality, fast delivery, good service, competitive price, lucky and happy to purchase from O-leading!</p> <p><a href="#">回复该评论</a></p>	<p>订单编号: 49024962001024670</p> <p>United States 供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)</p> <p><b>High quality Keyboard pcb &amp; pcba Factory SMT...</b> ★★★★★ Top quality, it's the right choice to choose O-leading to make the PCB &amp; PCBA</p> <p><a href="#">回复该评论</a></p>
	<p>订单编号: 499862201024670</p> <p>供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)</p> <p><b>Professional Printed Circuit Board Manufactur...</b> ★★★★★ Very high quality PCB products, O-leading is the best PCB supplier that we have ever worked with.</p>
	<p>订单编号: 44068794501034670</p> <p>供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)</p> <p><b>High TG180 FR-4 Circuit HDI PCB 94V0 Board ...</b> ★★★★★ We bought two batches, one by DHL, the other one by air, good quality and fast delivery!</p>

LISTEN TO **CUSTOMER VOICE**

<p>订单编号: 40903347501024670</p> <p>供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)</p> <p><b>Strip LED Aluminum FR-4 lighting PCB board 9...</b> ★★★★★ Very fast delivery! Fantastic, good job!!</p> <p><b>Professional Printed Circuit Board Manufactur...</b> ★★★★★ Very happy to great support from O-leading, they are not only professional on the PCB, but also provide good PCB products, very good supplier!</p>	<p>订单编号: 36919647001024670</p> <p>供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)</p> <p><b>AML-S802 Quad-core Android embedded boar...</b> ★★★★★ Good products</p> <p><b>Fast delivery low cost pcb fabrication O-leadin...</b> ★★★★★ Good supplier</p>
<p><b>hot sale rigid-flexible PCB with 0.2mm BGA an...</b> ★★★★★ very professional supplier</p> <p><b>High Quality custom FPCB/Flex PCB/FPC/Flexi...</b> ★★★★★ Good product</p> <p><b>OEM ODM PCBA Bluetooth Wireless Marking G...</b> ★★★★★ high soldering quality</p> <p><b>Electronic parts haptic pcba Circuit Board asse...</b> ★★★★★ Very Good product</p>	<p><b>Lidar IR Sensor board pcba(H08R6x)</b> ★★★★★ perfect product</p> <p><b>Customized PCBA design PCB design</b> ★★★★★ perfect</p> <p><b>Audio Speaker and Headphone Jack (H07R3x)</b> ★★★★★ High quality, good</p>
<p>订单编号: 37378603001024670</p> <p>供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)</p> <p><b>Raspberry pi 0 Zero Raspberry Pi Zero PI W ver...</b> ★★★★★ Fantastic products!!</p> <p><b>double layer pcb with red S/M and LF-HASL su...</b> ★★★★★ Good!</p>	<p><b>half hole pcb, half hole pcb module, half hole m...</b> ★★★★★ Top half hole pcb supplier, very perfect goods</p> <p><b>High Quality custom FPCB/Flex PCB/FPC/Flexi...</b> ★★★★★ this rigid-flexible pcb quality is perfect!</p> <p><b>Electronic parts haptic pcba Circuit Board asse...</b> ★★★★★ Very satisfied with O-leading products and quality, especially their on-time delivery, fantastic!</p>

Be kind to your client, because he has many choices, but he chooses you instead.





## O-LEADING TRAINING



### Keep *LEARNING*

There's a phrase in Buddhism, 'Beginner's mind.'

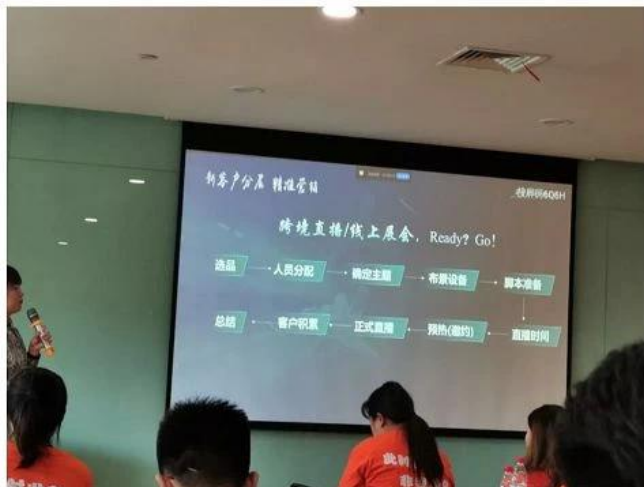
It's wonderful to have a beginner's mind

## WE HAVE A *DREAM*

### Keep *RUNNING*

I would like to live to study, and not study to live.

----Bacon







**Test Report** No. SZXEC1900530401 Date: 30 Mar 2019 Page 1 of 6

O-LEADING SUPPLY CHAIN (HK) CO., LIMITED  
1313.FLOOR 13, FORTUNE BUILDING, DANSHUI TOWN, HUIYANG DISTRICT, HUIZHOU, GUANGDONG, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : OSP

SGS Job No. : RP19-005089 - SZ  
Date of Sample Received : 22 Mar 2019  
Testing Period : 22 Mar 2019 - 30 Mar 2019  
Test Requested : Selected test(s) as requested by client.  
Test Method : Please refer to next page(s).  
Test Results : Please refer to next page(s).

Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP), and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of  
SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

*Tina*  
Tina Fan  
Approved Signatory



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**Test Report** No. SZXEC1900530401 Date: 30 Mar 2019 Page 2 of 6

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	SZX19-005304.001	Green"PCB"

- Remarks :
- (1) 1 mg/kg = 1 ppm = 0.0001%
  - (2) MDL = Method Detection Limit
  - (3) ND = Not Detected (< MDL)
  - (4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC62321-7-2:2017, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit	MDL	0/1
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	8
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1,000	mg/kg	8	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND



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## ZPMV2.E490354 - WIRING, PRINTED - COMPONENT

## Wiring, Printed - Component

See General Information for Wiring, Printed - Component

**O-LEADING SUPPLY CHAIN (HK) CO LTD**

E490354

ROOM 1205, 12/F  
TAI SANG BANK BLDG  
130-132 DES VOEUS ROAD  
CENTRAL, HONG KONG

Type	Cond Width		Cond Thk	SS/ DS/ DSO	Max Area Diam	Max Solder Limits		Max Oper Temp		Meets UL796	C
	Min	Edge				C	sec	C	Class		
	mm(in)	mm(in)	mic(mil)		mm(in)	C	sec	C	Class	DSR	I
<b>Multilayer (mass laminate) printed wiring boards.</b>											
<b>O-LEADING-401</b>	0.1 (0.004)	0.3 (0.012)	34 (1.34)	DS	12.7 (0.5)	260	10	130	V-0	-	-
<b>O-LEADING-407</b>	0.08 (0.003)	0.2 (0.008)	17 (0.67)	DS	9.7 (0.4)	260	10	130	V-0	All	-
<b>Multilayer printed wiring boards.</b>											
<b>O-LEADING-408</b>	0.125 (0.005)	0.125 (0.005)	12 (0.47) Int:136	DS	50.8 (2.0)	280	20	130	V-0	All	*
<b>Single layer printed wiring boards.</b>											
<b>O-LEADING-002</b>	0.38 (0.015)	1.14 (0.045)	34 (1.34)	SS	19.1 (0.8)	260	10	105	V-0	All	-
<b>O-LEADING-003</b>	0.38 (0.015)	1.14 (0.045)	34 (1.34)	SS	19.1 (0.8)	260	10	130	V-0	▲	-
<b>O-LEADING-033</b>	0.15 (0.006)	0.3 (0.012)	34 (1.34)	SS	25.4 (1.0)	260	10	120	V-0	All	-
<b>O-LEADING-205</b>	0.1 (0.004)	0.3 (0.012)	34 (1.34)	DS	69.6 (2.7)	260	10	130	V-0	All	-
<b>O-LEADING-206</b>	0.15 (0.006)	0.33 (0.013)	17 (0.67)	DS	69.6 (2.7)	260	10	130	V-0	All	-
<b>O-LEADING-D01</b>	0.14 (0.006)	0.15 (0.006)	33 (1.30)	DS	25.4 (1.0)	260	10	130	V-0	All	*
<b>O-LEADING-S01</b>	0.25 (0.010)	0.25 (0.010)	17 (0.67)	SS	25.4 (1.0)	260	4	130	V-0	All	*

## WIRING, PRINTED - COMPONENT | UL Product iQ

<b>O-LEADING-S02</b>	0.2 (0.008)	0.2 (0.008)	17 (0.67)	SS	25.4 (1.0)	260	4	130	HB	▲	*
<b>O-LEADING-S03</b>	0.25 (0.010)	0.25 (0.010)	34 (1.34)	SS	25.4 (1.0)	260	4	130	V-0	All	*

\* - CTI marking is optional and may be marked on the printed wiring board.

Marking: Company name or file number and type designation. May be followed by a suffix to denote factory identification or burning test classification.

并不是所有出现在本数据库中的公司名称和产品都满足了UL跟踪检验服务的要求。只有带有UL标志的产品，才应该被视为经过UL认证，并满足UL跟踪检验服务的要求。注意查看产品上的标志。

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<b>PCB</b>	
Layer	1LAYER-32LAYER
Weight	1/3oz-12oz
Thickness	3.0mil / 3.0mil
Core Thickness	4.0mil / 4.0ml
Drill Size	10µ
Panel Size	0.2mm-5.0mm
Panel Dimensions	635 * 1500mm
Surface Finish	4mil
Surface Tolerance	+/- 3mil
Surface Treatment	OSP
VIA	Microvia
Material	FR-4 FR-4HIGH TG
Surface Treatment	HASL OSP ENIG HAL-LF LMM LMM

### SMT

PCB	FR-4 CEM-1 CEM-3 FPC
PCB Size	510x1500mm
PCB Size	50x50mm
PCB Thickness	0.5mm-4.5mm
Drill Size	0.5~4mm
Drill Size	0201.
Drill Size	0603
Drill Size	15mm
Drill Size	0.3mm
BGA	0.4mm
Drill Size	+/- 0.03mm



# Shipping service





Quick Turn Lead Time		
Layer Count:	Lead Tim	Special Requirement
1L/2L	2-3days	24 Hours,48 Hours
4L	3-4days	48 Hours
6L	4-5days	72 Hours
8L	5-6days	NA
10L	6-7days	NA
12L	7-8days	NA
14L	8-9days	NA

Standard Lead Time		
Layer Count:	Sample Lead Time	Volume order lead time
2L	4 days	10 days
4L	5 days	11 days
6L	6 days	12 days
8L	8 days	14 days
10L	10 days	16 days
12L	12 days	18 days
14L	14 days	20 days
16-32L	18 days	24 days



**1. 质量管理体系**

- 1.1 符合ISO 9001:2008 质量管理体系
- 1.2 符合ISO 14001 环境管理体系
- 1.3 符合IPC-A-6000 X-Ray AOI 检测标准及ICT 测试标准
- 1.4 符合IPC-6013 验收标准
- 1.5 符合ISO 9001 认证

**2. 生产与交付**

我们提供10天快速交货服务，2-3天样品交付，RMB 31元/天/板。我们提供O-2000 表面处理，符合IPC-6013 验收标准。我们提供符合IPC-6013 验收标准的PCB 生产服务。

**3. 材料选择**

我们提供FR4 和TG 材料，符合IPC-6013 验收标准/符合IPC-6013 验收标准。

**4. PCB/PCBA**

- 4.1 BOM
- 4.2 PCB Gerber
- 4.3 PCB/PCBA
- 4.4
- 4.5

**5. PCB**

→ AOI → PTH → E / T

**6. HDI**

VCP LDI LDI

**7. Surface Finish O-Lead**

ENIG OSP LF-HASL HDI OSP ENIG OSP + ENIG BGA 0.3 mm OSP OSP + ENIG

**8. FPC o-Source SMT**

O-LAIDE 8 FPC 2000mm \* 240mm "Flex Capability" SMT

**PCB**

; PCB; PCB

**10. PCB/PWB/FPC**

PCB PWB FPC

**11. PCB**

PCB TG CTE 250°C 50 PCB PCB

**12. o-Light Rigid-Flex PCB**

o-LAIDE RIGID-FLEX PCB FPC PCB

**13.**

SI6000 Polar Instruments CITS00S