

Bluetooth IOT Module

[BLE Multiple I/O Server]

使用手冊



HL-2541P-MIS



Bluetooth V4.0

Ver 4.1.1 2016-03

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Welcome

本方案是採Bluetooth v4.0 BLE低功耗晶片，利用創新技術突破藍牙一對七的限制，能達成一對1024的控制。本方案分為Server及Client兩端，Server下達指令控制Client的I/O狀態。

本方案可應用於：醫院藥房及智慧藥盒，能迅速找到配藥避免錯誤。倉庫或是打件廠(SMT line)庫房作為物料控管迅速找到所要的物料，其他應用於：物件查找/電子標籤/無線藍牙標籤等...

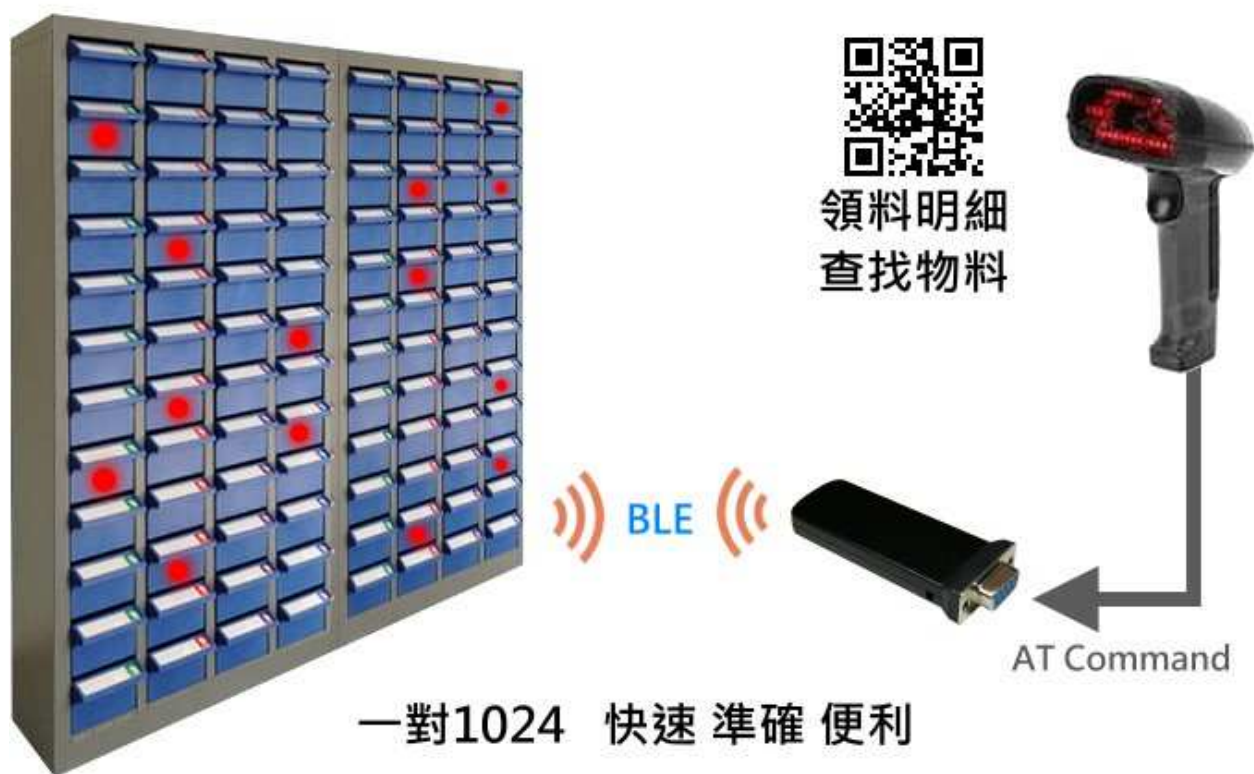
■ 功能簡介

- 採用Bluetooth v4.0 BLE 低功耗晶片
- 創新一對多技術 可達1對1024
- 1.5~2秒快速反應
- 支援AAA電池長期作業

■ 應用

- 醫院藥房：智慧藥盒 迅速找到配藥，避免錯誤。
- 打件廠 (SMT line)庫房： 物料控管，迅速找到所要的物料。
- 倉庫： 物件查找 / 電子標籤，迅速找到所要的無線藍牙標籤

■ 產品應用圖



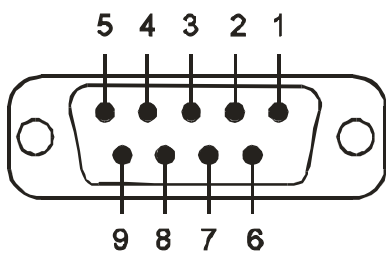
■ 產品規格

Model Name	HL-2541P-MIS
Bluetooth Chip	Bluetooth Smart (BLE 4.0) System-On-Chip (SOC).
Standard	Bluetooth specification version 4.0
Frequency	2.402GHz ~ 2.480GHz ISM band , in 2 Mhz steps
Number of Channels	40:37 data , 0,12,39 advertising
Modulation Method	1Mbps GFSK
Antenna	PCB Printed Antenna
Spread Spectrum	Frequency Hopping Spread Spectrum (FHSS)
Coverage	Up to 10~30 meter
Tx Power	-23 to 0 dBm (Class3)
Rx Sensitivity	-96/-90 dBm
Input Power	5 DC
VDD ripple	100 mV Max
Operating Temperature	0 ~ +60°C
Storage Temperature	-10 ~ +70°C
Dimensions	78 x 31 x 12.5mm

■ 尺寸圖 (Unit : mm)



■ 腳位配置圖



Pin	Signal	Direction	
2	TxD	Output	Transmitted data
3	RxD	Input	Received data
5	Gnd	N/A	Ground
7	CTS	Input	Clear to send
8	RTS	Output	Request to send
9	Vcc	Input	Power supply (+5V)

■ Server AT 指令集

預設鮑率 Baud rate 為 115200, 8, n, 1

藍色字體 是經由 Server 端 UART 介面送入, 控制 Client 端的指令

綠色字體 是指令的參數範圍

紅色字體 是下達指令後的回應訊息

➤ HELLO 指令

發送確認指令, 以確保模組已經能接受指令.

下達指令: **HELLO=""**;

指令說明: 查詢 Server MAC Address 及版本編號

回應訊息: **OK="HELLO",544A166FF789,Wifi_Locator,v1004;**

➤ 群發點亮 LED_ON

控制點亮範圍內所有或個別顏色的 LED 指令

下達指令: **LED_ON="ALL"**;

指令說明: **LED_ON="XXX"**;

XXX = ALL、RED、BLUE、YELLOW

範例:

LED_ON="ALL"; 點亮所有 LED

LED_ON="RED"; 點亮 Red LED

LED_ON="BLUE"; 點亮 Blue LED

LED_ON="YELLOW"; 點亮 Yellow LED

回應訊息: **OK="LED_ON",0;OK="LED_ON",1;**

➤ 群發熄滅 LED_OFF

控制熄滅範圍內所有或個別顏色的 LED 指令

下達指令: **LED_OFF="ALL"**;

指令說明: **LED_OFF="XXX"**;

XXX = ALL、RED、BLUE、YELLOW

範例:

LED_OFF="ALL"; 熄滅所有 LED

LED_OFF="RED"; 熄滅 Red LED

LED_OFF="BLUE"; 熄滅 Blue LED

LED_OFF="YELLOW"; 熄滅 Yellow LED

回應訊息: **OK="LED_OFF",0;OK="LED_OFF",1;**

➤ 指定點亮或熄滅 FIND

指定控制個別或同時多個 Client 端 LED 的點亮或熄滅

下達指令: **FIND="R,ON,6FF9C3";**

指令說明: **FIND="XXX,YYY,ZZZ";**

XXX = R or B or Y (R=Red, B=Blue, Y=Yellow)

YYY = ON or OFF /*點亮或熄滅某個 LED

ZZZ = Client 端 MAC 地址後六碼, 每次最多指定 15 個 Client

範例:

指定 MAC 號碼為 6FF9C3 的 Client 點亮 Red LED : **FIND="R,ON,6FF9C3";**

指定 MAC 號碼為 6FF9C3 的 Client 熄滅 Red LED : **FIND="R,OFF,6FF9C3";**

指定多個 MAC 號碼的 Client 點亮 Red LED :

FIND="R,ON,6FF9C3,6FFB9D,6FFB96,700267,6FDB56";

回應訊息: **OK="FIND",0;OK="FIND",1;**

➤ 設定 Client 端的掃描時間 SCAN_TIME

Client 端的掃描時間值越小反應時間越短, 相對也會較耗電

下達指令: **SCAN_TIME="300";**

指令說明: **SCAN_TIME="XXX";**

XXX =300~1200

回應訊息: **OK="SCAN_TIME",0;OK="SCAN_TIME",1;**

➤ 設定 LED 閃爍方式 LED_FLASH

Client 端 LED 的閃爍方式

下達指令: **LED_FLASH="1,100,1";**

指令說明: **SCAN_TIME="XXX,YYY,ZZZ";**

XXX = period in ms /*例如 1200, 是指一次閃爍的時間為 1.2s

YYY = Duty cycle (範圍 0~ 100) /*例如 45, 是指 45%時間是 On

ZZZ = count /*例如 20, 是指閃爍 20 次

範例:

保持恆亮 : **LED_FLASH="1,100,1";**

慢速閃爍 20 次 : **LED_FLASH="1500,50,20";**

中速閃爍 30 次 : **LED_FLASH="500,50,30";**

快速閃爍 100 次 : **LED_FLASH="100,50,100";**

回應訊息: **OK="LED_FLASH",0;OK="LED_FLASH",1;**

■ Warranty Policy

1. This device is guaranteed against manufacturing defects for one full year from the original date of purchase.
2. This warranty is valid at the time of purchase and is non-transferable.
3. This warranty must be presented to the service facility before any repair can be made.
4. Sales slip or other authentic evidence is required to validate warranty.
5. Damage caused by accident, misuse, abuse, improper storage, and/or uncertified repairs is not covered by this warranty.
6. All mail or transportation costs including insurance are at the expense of the owner.
7. Do not send any product to service center for warranty without a RMA (Return Merchandise Authorization) and proof of purchase. Ensure a trackable method of delivery is used (keep tracking number).
8. Warranty is valid only in the country of purchase.
9. We assume no liability that may result directly or indirectly from the use or misuse of these products.
10. **This warranty will be voided if the device is tampered with, improperly serviced, or the security seals are broken or removed".**