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SKU:TEL0092 WiFi Bee-ESP8266 Wirelss module

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(/wiki/index.php/File:TEL0092_frontpage.jpg) WiFi Bee-ESP8266 SKU:TEL0092

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Introduction

Wifi Bee-ESP8266 is a Serial-to-WIFI module using XBEE design in a compact size,

compatible with XBEE expansion base, applicable to a variety of 3.3V single-chip system. It can be used for Arduino, wireless data transfer, remote control. On-board switch can be used to easily select the Startup module or Upgrade firmware.

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ESP8266 has a powerful on-chip processing and storage capacity, built-in 32-bit processor, built-in Lwip protocol stack. Support AP+STA mode co-exist. And you could configure various parameters via AT commands.

Specifications

- 1. Wi-Fi Direct (P2P),soft-AP
- 2. Built-in TCP/IP protocol stack
- 3. Built-in low-power 32-bit CPU: can work as an application processor
- 4. Support WPA WPA2/WPA2-PSK encryption
- 5. Support UART interface
- 6. Support for TTL serial port to wireless application
- 7. Working voltage: 3.3V power <240Ma
- 8. Wireless standard: IEEE802.11b/g/n
- 9. Frequency: 2.4 GHz

Pin out



Tutorials

These stuffs are needed: **1 Software**

- 1. ESP_Flasher
- 2. Arduino IDE 1.0.6
- 3. CoolTerm
- 4. NetAssist

2 Hardware

- DFRduino UNO R3 (http://www.dfrobot.com/index.php? route=product/product&product_id=838&search=uno&description=true)
- Xbee USB adapter (FTDI ready) (http://www.dfrobot.com/index.php? route=product/product&product_id=72&search=USB&description=true&page=2)
- IO Expansion Shield for Arduino (V6) (http://www.dfrobot.com/index.php? route=product/product&product_id=1134&search=expansion&description=true)
- USB Cable A-B for Arduino (http://www.dfrobot.com/index.php? route=product/product&product_id=134&search=usb&description=true)
- 5. Mini USB cable (http://www.dfrobot.com/index.php? route=product/product&product_id=215&search=usb&description=true&page=2&description=true)

How to Use ?

1 Connect AP

1 Download the ESP8266 library

(http://www.dfrobot.com.cn/images/upload/File/TEL0092/2015050816413167nsek.rar), and unzip it to "C:\Users***\Documents\Arduino\libraries"

2 Insert the expansion shield on UNO, and plug ESP8266 in the socket on the expansion shield.

3 Note the switch: "RUN/Prog" at "Prog" side; "BOOT/UART" at "BOOT" side;

4 Wire adapter to the expansion shield: TX- PIN10, RX- PIN11, GND - GND;



5 Open the sketch "Connect AP", and modify the wifi AP ssid and password of yours;





6 Upload the sketch;

7 Trun the switch of the expansion shield "RUN/Prog" to "Run" side;

8 Use software "CoolTerm" to monitor if the AP connection is done.(Configure as the follow picture)

F ile Edit Co	onection View Window	CoolTerm_0 *	×
New Open	Save Connect Disce	nnect Clear Data Options View Hex	(1) Help
	of Co	nnection Options (CoolTerm_0) -	□ ×
	Serial Port	Serial Port Option 2	
	Terminal Receive	Port: COM6	~ ·
	Transmit	Baudrate: 115200	~
	while change out	Data Bits: 8	~
		Parity: none	~
		Stop Bits: 1	~
		Flow Control: CTS	
		DTR	
		XON	
		Initial Line States when Port opens 3	_
		O DTR On O DTR Off	
		ORTS On ORTS Off	
		Re-Scan Serial Ports	
		Cancel	OK 4
COM6 / 11			DTR ODCD
Disconnecte	0	U KA	UCIS UDSK UK
	(/wiki/index.ph	p/File:TEL0092_Connect_AP	_para.png)



*	CoolTe	erm_0 *		-	
File Edit Connection Vie	w Window Help				
New Open Save Con	nect Disconnect	Clear Data	Options	HEX View Hex	(Help
[] connected to AP					
COM6 / 115200 8-N-1 Connected 00:00:19		TX RX	CTS	OTR	DCD RI
(/wiki/index.	php/File:TEL00	92_ctmode_	_choo2as	d.jpg)	

2 TCP_Client_Single

1 Pull the switch"RUN/Prog" to "Prog";

2 Check the Ip address of your computer, we will use it as the Server Ip address;



¢		
æ	Network	
	THOUT OF A	
	Find device	s and content
	Find PCs, devices an printers and TVs. Tur	d content on this network and automatically connect to devices like rn this off for public networks to help keep your stuff safe.
	On	
	Properties	
	IPv4 address:	192.168.0.116
	IPv4 DNS Servers:	192.168.0.1
	Manufacturer:	Realtek
	Description:	Realtek PCIe GBE Family Controller
	Driver version:	8.38.115.2015
	Physical address:	6C-3B-E5-28-AE-BE
	Сору	
	(/wiki/index.php	<pre>D/File: LEUU92 I CP_Client_Single_checkIPpc.png)</pre>

3 Open sample sketch "TCP_Client_Single", write your wifi's ssid, password , Server Ip address, port;





4 Open the software"TCP/IP Net Assistant V3.8", configure as follow, and click **Connect** to monitor the PC doing as Server;



	TCP/IP Net Assistant (V3.8)	×
Receive to file Receive as hex Receive file Receive to file Receive to file Receive as hex Receive as hex	2 Data Receive	
Send cyclic	Peers: All Connections	
Interval 1000 ms Load Clear	http://www.omsoft.on QQ:10865600	Send
💓 Ready!	Send: 0 Recv: 0	Reset
(/wiki/index.	php/File:TEL0092TCP_Client_Single_assisP.p	ng)

5 Upload the modified sketch, and then pull the switch"RUN/Prog" to "RUN"; 6 Open **"CoolTerm"** and monitor the if the AP connection was good;



6	CoolTer	rm_0.stc			-	
ile Edit Connection View Wind	dow Help					
New Open Save	isconnect Clear Data	Options Vi	HEX ew Hex H	2) elp		
onnect ap sucessful !						
p8266 ip:192.168.11.158						
			A TY			
COM6 / 115200 9 NL1				O CTC	A DCP	O PI
COM6 / 115200 8-N-1 Connected 00:01:44			• RX	CIS	• Ush	1

7 Send a message from **"TCP/IP Net Assistant V3.8"**, you could see "New message" appear on **"CoolTerm"**.



	TCP/IP Net Assistant (V3.8)	×
Settings	Data Receive	1
(1) Protocol TCP Server 👻	[Receive from 192.168.0.168 : 34954]: top single connect	:
(2) Local host IP 192.168.0.116		
(3) Local host por 8081		
• Disconnect		
Recv Options		
TReceive to file		
☐ Show timestamp		
🔽 Receive as hex		
🔽 Receive pause		
<u>SaveClear</u>		
Send Options		
🔽 Data from file		
T Auto checksum		
🗌 Auto clear input		
🔽 Send as hex		
🔽 Send cyclic	Peers: All Connections	
Interval 1000 ms	top single connect	
Load Clear		Send
💓 Ready!	Send : 20 Reov : 20	Reset //
(/wiki/index	.php/File:TEL0092TCP_Client_Single_Send.png	g)



6	CoolTerm_0.stc	- 0 ×
ile Edit Connection View Windo	ow Help	
New Open Save	Clear Data Options View Hex	2 Help
onnect ap sucessful ! mnect to TCP server successfu g8266 ip:192.168.11.158	1 !	
w message!		
COM6 / 115200 8-N-1		

3 TCP_Client_multi

1 Pull the switch"RUN/Prog" to "Prog";

2 Open sample sketch "TCP_Client_multi", write your wifi's ssid, password , Server lp address, port;





3 Open another "TCP/IP Net Assistant V3.8", configure as follow, and click Connect;



	TCP/IP Net Assis	tant (V3.	. 8)		(- 🗆 ×
Settings	· · /	TCP/IP	Net	Assistant	(¥3.8)
(1) Protocol	Settings	Data Receive	e		
	(1) Protocol				
192.168, 0 .116	TCP Server				
(3) Local bost nor	(2) Local host IP				
8081	(192,168, 0 ,116				
	8082				
Disconnec					
Recy Options	🔵 Disconnect 🔪				
TReceive to file	Recy Options				
Show timestamp	TReceive to file				
Receive as hex	T Show timestamp				
Keceive pause	Receive as her				
Save Clear	Receive pause				
	Save Clear				
Seed On North					
Send Uptions					
Jata from file	Send Options			0 5	
(/wiki/index.p	hp/File:TEL0092TCP_	_Client_m	ulti_t	cpConfig.pn])

4 Upload the modified sketch, and then pull the switch"RUN/Prog" to "RUN"; 6 Watch**"CoolTerm"** to see if the AP connection was good;



			Cool	Term_0.stc		-	×
File Edit	Connection	View V	Vindow H	lelp			
New Op	en Save	Connect	Disconne	ct Clear Data	Options	HEX View Hex	(2) Help
connect a	p sucessfu o TCP Serv	1 ! er 1					
connect to	D TCP Serv	er 2					
COME	115200 9. 11 1			TV.	Ф ртс		DCD

7 Send a message from different **"TCP/IP Net Assistant V3.8"**, you could see New message appear on **"CoolTerm"** from different server .



🌆 • 🦯 🕘	TCP/IP Net Assistant (V3.8)	×
Settings	Data Receive	
(1) Protocol	[Receive from 192.168.0.168 : 4246] : top multi connect1	
ICP Server +	TCP/IP Not Accietant (V3 8)	
Sattings	Tory Ir net assistant (va. oy	C- 0 ^
(1) Protocol	[Receive from 192, 168, 0, 168 ; 28843] : top multi connect2	
TCP Server 👻		
(2) Local host IP		
192.168.0 .116		
(3) Local host por		
8082		
Disconnect		
Recy Ontions		
Receive to file		
Show timestamp		
T Receive as hex		
T Receive pause		
Save Clear		
Send Options		
🗆 Data from file		
T Auto checksum		
Auto clear input		
Send as hex		
Send cyclic	Peers: All Connections	\frown
Interval 1000 ms	top multi connect2	Greet
Load Clear		Sena
💣 Ready!	Send : 18 Recv : 18	Reset //
(/wiki/inde	x.php/File:TEL0092TCP_Client_moti_Send.png))



đ	CoolTe	rm_0.stc		-	×
File Edit Connection View	Window Help	þ			
New Open Save	Disconnect	Clear Data	Options	HEX View Hex	(2) Help
connect ap sucessful ! connect to TCP Server 1					
connect to TCP Server 2):tcp multi connect1					
l:tcp multi connect2					
COM6 / 115200 8-N-1 Connected 00:33:27		TX	RTS CTS	DTR	DCD RI

Note: ESP8266 can connect to 5 servers simultaneously.

4 TCP_Pure_Data_Mode

1 Pull the switch"RUN/Prog" to "Prog";

2 Open sample sketch "TCP_Pure_Data_Mode", write your wifi's ssid, password , Server Ip address, port;



D T	CP_Pure_Data_Mode	Arduino 1.0.6 -	
File Edit Sketch Tools	Help		
	2		ø
			-
TCP_Pure_Data_Mo	de§		×
*'1-1 " 0000 1"			
finclude espozoo, n tinclude "SoftwareSer	ial b"		- 1
Sorra eser	141.11		
tdefine ssid	"DFRobot_Guest"		
define password			
define serverIP	"192, 168, 0, 116"		- 1
define serverPort	"8081"		
0000 10			
Spozoo wiri; SeftwereSeriel muSeri	al(10 11); // BV TV		
orthat eberrar myberr	ar(10) 11),)) 100, 11		
oid setup() {			
delay(2000);		// it will be better	to delay
Serial. begin	(115200);		
mySerial.begi	n(115200);		
1011 1 /00	• • • • • • • • • •	1.00 1.00	
Jone uploading.			
inary sketch size: 1	4,282 bytes (of a 32,25	6 byte maximum)	
10		Arduino Uno	on COM5

3 Open the software"TCP/IP Net Assistant V3.8", configure as follow, and click **Connect** to monitor the PC doing as Server;



	TCP/IP Net Assistant (V3.8)	×
Settings (1) Protocol TCP Server (2) (2) Local host IP 192.168.0.116 (3) Local host por 8081 Disconnect Receive to file Show timestamp Receive as hex Receive pause Save Clear	Data Receive	
Send Options Data from file Auto checksum Auto clear input Send as hex Send cyclic Interval 1000 ms	Peers: All Connections	
Load Clear		Send
🝠 Ready!	Send : 40 Recv : 40	Reset
(/wiki/index.pl	np/File:TEL0092TCP_Pure_Data_ModeTCPCFI.	png)

4 Upload the modified sketch, and then pull the switch "RUN/Prog" to "RUN";

5 Open "CoolTerm" and monitor the if the AP connection was good;

ST.			CoolTe	erm_0.stc		-	×
File Edit	Connection	View V	Window He	lp			
New Op	en Save	Connect	Disconnect	Clear Data	Options	HEX View Hex	(2) Help
esp8266 i single co 192.168.1 connect T AT+CIPSEN	is online! s connecte nnect! 1.158 CCP server ID	d to AP! OK!					

6 Send a message from **"TCP/IP Net Assistant V3.8"**, you could see New message appear on **"CoolTerm"**.

Settings Data Receive (1) Protocol [Receive from 192.168.0.168 : 27759] : AT*CIPSEND (2) LocalhostIP >test esp8266 pure data mode 192.168.0 1116 (3) Localhostpor >test esp8266 pure data mode (4) Disconnect Receive as hex Receive pause Save Save Clear Peers: All Connections Auto checksum Auto clear input Auto clear input Send cyclic Interval 1000 ms Load Load Clear Send y! Send : 69		TCP/IP Net Assistant (V3.8)	×
Send Options Data from file Auto checksum Auto clear input Send as hex Send cyclic Interval 1000 ms Load Clear Years: Send : 69 Ready!	Settings (1) Protocol TCP Server (2) Local host IP 192.168.0.116 (3) Local host por 9031 Disconnect Recv Options Receive to file Show timestamp Receive as hex Receive pause Save Clear	Data Receive [Receive from 192.168.0.168 : 27759] : AT+CIPSEND >test esp8266 pure data mode	
	Send Options Data from file Auto checkrum Auto clear input Send as hex Send cyclic Interval 1000 ms Load Clear	Peers: All Connections test esp8266 pure data mode Send : 69 Recv : 367	Send
(/wiki/index.php/Eile:TEL0092TCP_Pure_Data_ModeSEN.png)	(/wiki/index	nhn/File:TEI 0092TCP Pure Data ModeSEN nn	a)



4		Coc	olTerm_0.	stc		-	□ ×
File Edit Connectio	on View	Window	Help				
New Open Save	Connect	Disconn	ect Clea	ar Data	Options	HEX View He	x Help
esp8266 is online sp8266 is connect	e! ed to AP	!					
ingle connect! 92.168.11.158							
connect TCP server	OK!						
T+CIPSEND							
est esp8266 pure	data mod	e					
		~					
			<				
COM6 / 115200 8-N	-1			TX	O RTS	O DTR	O DCD
Connected 00:50:43				KX	U CIS	USR	KI

Note: When the symbol">" appeared, it means ESP8266 entered into **Transparent Mode** which transfer data faster than normal mode.

5 Server mode

Note:Since now, the STA mode which support the Server mode is not stable , we are working on that you could refer to the ESP8266 manual book to t ry.

* Problem Shooting

If the monitor print"Connect failed!" Please try/check these steps:

- Unplug the USB cable from Arduino to power off, and plug it again to restart module.
- The wifi you are using is good, and the code **ssid and password** is correct.
- Whether the button on expansion shield was push to the left side"RUN" but not"PROG".
- Whether the botton on the ESP8266 is also on the left side"BOOT".
- It's might for the wrong wire.
- The wifiBee socket on expansion shield has a loose connection to the wifi Bee.

If everything is ok, but still failed connection. You may have a try "Update Firmware"

Update Firmware

Please download the Firmware and Tools

(https://github.com/Arduinolibrary/DFRobot_Wifi_Bee_ESP8266/blob/master/ESP8266Flasher_en.zip? raw=true) first. then Like in **AT mode**, but pull the swith of ESP8266 to "UART" side.Don't forget to pull it back to "BOOT" after updating firmware.

1 Open software "ESP_Flasher";

2 Choose Firmware;

ESP8266 FIRMW	• • •
Operation Config Advanced About Log	g
C:\Users\LeffWei\Desktop\Firmware_Tools\eagle.ar	💿 0x00000 🗠
C:\Users\LeffWei\Desktop\Firmware_Tools\eagle.ar	0x40000
2 Path of binary file	Offset
Path of binary file	🙆 Offset 🛛 👻
Path of binary file	🙆 Offset 🛛 👻
Path of binary file	🙆 Offset 🛛 👻
Path of binary file	🙆 Offset 🛛 👻
VOWSTAR Co. Ltd. <ray@vowstar.com></ray@vowstar.com>	Ready
(/wiki/index.php/File:TEL0092Firmware2en.p	ong)

	0	pen			-
🔄 🕘 - 🕇 🎴	+ firmware	v C	Search firmware	e	P
Organize 🔻 New	folder			E • 🔲	
🔆 Favorites	^ Name		Date modified	Туре	
E Desktop	eagle.app.v6.flash.bin		2015/1/5 15:56	BIN File	
Downloads Recent places	eagle.app.v6.irom0text.	bio	2015/1/5 15:56	BIN File	
☆ 快盘 ☆ ↓ ↓					
I 快盘 I Homegroup IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	v <				
 ● 快量 ● Homegroup ● This PC ● Desktop 	< ✓ < ile name: eagle.app.v6.flash.bin		Binaries		*
 ● 快盘 ● Homegroup ● This PC ● Desktop 	♥ < ile name: eagle.app.v6.flash.bin		Binaries Open	Cancel	*

0.0						
🔄 🕘 = 🕇 📕	i ⊧ firmwar	e	v C	Search firmwar	re	ρ
Organize 💌 N	ew folder				II • 🔟	
🔆 Favorites	^ N	ame		Date modified	Туре	
Desktop		eagle.app.v6.flash.bin		2015/1/5 15:56	BIN File	
🚺 Downloads		eagle.app.v6.irom0text.bin		2015/1/5 15:56	BIN File	
Secent place ③ 快盘 ● Homegroup	5					
 Recent place ● 快盘 ● Homegroup ● This PC ● Desktop 	s ~ <					
警 Recent place ② 快盘 ④ Homegroup 陳 This PC 隆 Desktop	s V < File name:	eagle.app.v6.irom0text.bin	_	Binaries		*
警 Recent place ② 快量 ④ Homegroup P This PC ● Desktop	s V < File name:	eagle.app.v6.irom0text.bin		Binaries Open	Cancel	~

3 Choose Serial Port of ESP8266, click Flash to burn firmware ;

	Device Manager	 ×
File Action View	w Help	
♦ ♦ 🖬 🖼	2 🖬 🥂 🖹 🖓 5	
A 🚔 LEFF_WEI		
> 4 Audio inp	outs and outputs	- 1
Compute	r	
Disk drive	5	
Display ad	Japters	
DVD/CD-	ROM drives	
B Human Ir	iterface Devices	
D Ca IDE ATA/	ATAPI controllers	
Imaging a	devices	
Keyboard	s	
Mice and	other pointing devices	
Monitors		
Network and a second	adapters	
a 🍲 Ports (CO	M & LPT)	
Trduin	no Leonardo (COM2)	
TO USB S	erial Port (COM6)	
Print que	Jes	
Printers		
Processor	s	
Software	devices	
Sound, vi	deo and game controllers	- 1
Storage c	ontrollers	
System de	evices	
	Corial Dur controllor	