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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)

🗲 File Edit Co	nnection View Windov	CoolTerm_0 *	
New Open		🛯 🗙 🔍 🖂 🛛	Help
	of Co	onnection Options (CoolTerm_0) -	
	Serial Port	Serial Port Option 2	
	Terminal Receive	Port: COM6 ~	•
	Transmit Miscellaneous	Baudrate: 115200 ~	
	winge engineeros	Data Bits: 8 🗸	
		Parity: none 🗸	
		Stop Bits: 1 🗸	
		Flow Control: CTS	
		DTR	
		XON	
		Initial Line States when Port opens 3	
		O DTR On OTR Off	
		ORTS On ORTS Off	
		Re-Scan Serial Ports	
		Cancel	o.4
COM6 / 11			DTR ODCD
Disconnecter		U KA	UCIS DSR ORI
	(/wiki/index.ph	p/File:TEL0092_Connect_AP_	para.png)



*	CoolTerm_0 *		×
File Edit Connection View	Window Help		
New Open Save Conn	ect Disconnect	a Options View Hex	2 Help
[] connected to AP			
COM6 / 115200 8-N-1 Connected 00:00:19	● T. ● R		DCD RI
(/wiki/index.p	hp/File:TEL0092_ctmod	de_choo2asd.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;



٥		
æ	Network	
	- Techorik	
	Find device	s and content
		d content on this network and automatically connect to devices like in 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.phr	p/File:TEL0092TCP_Client_Single_checkIPpc.png)

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;



f	CoolTerm	n_0.stc		-	
ile Edit Connection View Win	dow Help				
New Open Save	isconnect Clear Data	Options View Her	Help		
onnect ap sucessful ! nnect to TCP server successf					
p8266 ip:192.168.11.158	.01 :				
COM6 / 115200 8-N-1 Connected 00:01:44			TX OI		DCD RI

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 <u>Clear</u>		Send
💓 Ready!	Send : 20 Reov : 20	Reset //
(/wiki/index	.php/File:TEL0092TCP_Client_Single_Send.png	g)



•	CoolTerm_0.stc			-	□ ×
ile Edit Connection View Window Help	ы. 				
New Open Save	Clear Data Options View		P		
connect ap sucessful ! mnect to TCP server successful !					
p8266 ip:192.168.11.158 w message!					
COM6 / 115200 8-N-1 Connected 00:03:03		OTX RX	CTS	DTR	DCD

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;



<u>⊪</u> · ∕	TCP/IP Net Assista	int (V3.	8)		(- 🗆 ×
Settings		TCP/IP	Net	Assistant	(¥3.8)
(1) Protocol TCP Server	Settings	ata Receive	r		
(2) Local host IP	(1) Protocol				
192.168. 0 .116	TCP Server				
(3) Local host por	(2) Local host IP				
8081	192.168. 0 .116				
	(3) Local host por 8082				
Disconnec					
Recy Options	🖉 Disconnect 🔪				
TReceive to file	Recv Options				
T Show timestamp	Receive to file	`			
T Receive as hex	☐ Show timestamp				
TReceive pause	Ecceive as her				
Save Clear	T Receive pause				
	Save Clear				
0.10.1					
Send Options					
🗌 🗌 Data from file	being operous				
(/wiki/index.p	hp/File:TEL0092TCP_C	lient_mu	ulti_to	cpConfig.png	g)

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;



CoolTerm_0.stc	- 🗆 ×
Window Help	
Disconnect Clear Data	Options View Hex Help
TX RX	RTS DTR DCD CTS DSR RI
	Window Help Disconnect Clear Data

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)	2 ×
Settings	Data Receive	
(1) Protocol	[Receive from 192.168.0.168 : 4246] : top multi connect1	
	TCP/IP Net Assistant (V3.8)	×
Settings	Data Receive	
(1) Protocol	[Receive from 192.168.0.168 : 28843]: top multi connect2	
(2) Local host IP 192,168, 0,116		
(3) Local host por		
8082		
Disconnect		
Recy Options		
Receive to file		
Show timestamp		
Receive as hex		
T Receive pause		
Save Clear		
Send Options		
Data from file		
T Auto checksum		
T Auto clear input		
Send as hex	Peers: All Connections	
Send cyclic		\frown
Interval 1000 ms	top multi connect2	Send
Load Clear		
👉 Ready!	Send : 18 Recv : 18	Reset //.
(/wiki/inde	x.php/File:TEL0092TCP_Client_moti_Send.png))



		Coo	ITerm_0.stc		-	×
File Edit Connection	View W	indow	Help			
New Open Save	Connect	Disconne	ect Clear Data	Options	HEX View Hex	(2) Help
connect ap sucessfu connect to TCP Serv						
connect to TCP Serv):tcp multi connect						
1:tcp multi connect	2					
	1					
COM6 / 115200 8-N-1 Connected 00:33:27			TX RX	e RTS	DTR DSR	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§		×
#include ["] esp8266, h"			
finclude esp6266.n finclude "SoftwareSer	ial h"		- 1
Sincinde SoliwareSer	141.11		
tdefine ssid	"DFRobot_Guest"		
define password			
define serverIP	"192, 168, 0, 116"		- 1
define serverPort	"8081"		
0000 10			
(sp8266 wifi; SoftworoSorial mySori	al(10, 11); // RX, TX		
outhat eberrat myberr	ar(10) 11),)/ 10, 11		
oid setup() {			
delay(2000);		// it will be better	to delay
Serial. begin	(115200);		
mySerial.begi			
1011 1 /00	• • • • • • • • • • • • • • • • • • • •	1.04 1.4 1	>
Done uploading.			
inary sketch size: 1	4,282 bytes (of a 32,25	66 byte maximum)	
10		Arduino Uno	on COM5
		ure_Data_Modemodifiol	

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) Local host IP 192.168.0.116 (3) Local host por 0001 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;

*			CoolT	erm_0.stc		-	×
File Edit	Connection	View \	Window H	elp			
New Op	en Save	Connect	Disconnec	t Clear Data	Options	HEX View Hex	(2) Help
esp8266 i single co 192.168.1	1.158 CP server	d to AP!					

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

Setting: Data Receive (1) Protocol TCP Server (2) Localhost IP Person 192.168.0.116 Person (3) Localhost por Peers Solid Peers: Auto checkrum Auto checkrum Auto checkrum Test esp8266 pure data node Send Options Peers: Auto checkrum Auto checkrum Auto checkrum Test esp8266 pure data node Send options Peers: Auto checkrum Test esp8266 pure data node Send options Peers: Auto checkrum Test esp8266 pure data node Send oyolic Test esp8266 pure data node Interval 1000 ms Send : 69 Recv : 367 K* Ready! Send : 69 Recv : 367		TCP/IP Net Assistant (V3.8)	×
□ Data from file □ Auto checkrum □ Auto clear input □ Send as hex □ Send cyclic Interval 1000 ms Load Clear ☞ Ready!	(1) Protocol TCP Server (2) Local host IP 192.168.0 .116 (3) Local host por 9001 © Disconnect Receive to file Show timestamp Receive as hex Receive pause	[Receive from 192.168.0.168 : 27759] : AT+CIPSEND	
	Data from file Auto checkrum Auto clear input Send as hex Send cyclic Interval 1000 ms Load Clear	test esp8266 pure data node	\square
(/wiki/index.php/File:TEL0092TCP_Pure_Data_ModeSEN.png)		aba/Eila:TEL0002TCB Burg Data MadaSEN a	



	CoolTe	rm_0.stc		-	×
File Edit Connection View	Window Help	P			
New Open Save	ect Disconnect	Clear Data	Options	HEX View Hex	2 Help
esp8266 is online! esp8266 is connected to P	AP!				
ingle connect! 92.168.11.158					
connect TCP server OK!					
T+CIPSEND					
test esp8266 pure data mo	ode				
COM6 / 115200 8-N-1		TX	RTS	DTR	DCD
COM6 / 115200 8-N-1 Connected 00:50:43		● TX ● RX	RTSCTS	DTR DSR	OCD RI

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)

		Open				×
🖲 🦻 - 🕇 퉬	▶ firmwa	re	~ C	Search firmwa	re ,	ρ
Organize 👻 New	folder				E • 🔲 (8
🔆 Favorites	^ N	ame		Date modified	Туре	
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						
 ◇ 快盘 ↔ Homegroup ♥ This PC ● Desktop 	~ <					
🔣 Homegroup 🏴 This PC 🚂 Desktop		eagle.app.v6.flash.bin	\	Binaries		~
🔣 Homegroup 🏴 This PC 🚂 Desktop		eagle.app.v6.flash.bin		Binaries Open	Cancel	~

a.a				C		_
€ ⊕ - ↑ 🛯	i ► firmwar	e	~ C	Search firmwar	e	P
Organize 💌 N	ew folder				H • 🔟	
🔆 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	
 ☑ Recent place ☑ 快盘 砂 Homegroup ■ This DC 	5					
	s v «					
☑ 快盘 祕 Homegroup I및 This PC	~ <	eagle.app.v6.irom0text.bin		Binaries		*
☑ 快盘 祕 Homegroup I및 This PC	~ <	eagle.app.v6.irom0text.bin		Binaries Open	Cancel	

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

	Device Manager	 ×
File Action Vie	w Help	
♦ ● 📰 🗑	2 📅 🧟 🕼 🍕	
A 🚆 LEFF_WEI		
Audio ing	puts and outputs	- 1
> 📕 Compute	2r	
Disk drive	5	
Display a	dapters	
> 🔮 DVD/CD-	ROM drives	
B Human I	nterface Devices	
D Ca IDE ATA/	ATAPI controllers	
Imaging	devices	
Keyboard	is	
Mice and	other pointing devices	
Monitors		
Network	adapters	
a <table-cell> Ports (CC</table-cell>	DM & LPT)	
T Ardui	ino Leonardo (COM2)	
🐨 USB S	Serial Port (COM6)	
Print que	ues	
Printers		
Processo	rs	
Software	devices	
Sound, vi	ideo and game controllers	- 1
Storage of Storage	controllers	
System d		
E Universi	Carial Rue controllare	