Arduino WiFi Shield Quick Start



Tinyos Electronics @ 2012 Version 1.0

Here is a Tinyos WiFi Shield tutorial. In this tutorial we will show you how to use the software to set the configuration of your WiFi shield, and how to get basic serial communication up and running between your PC and the WiFi shield V2.1.

Software needed:

Setting configuration: WIZSmartScript.exe

- WIZSmartScript.exe
- Terminal interface like Putty
- Arduino IDE

Hardware needed:

- Arduino
- Tinyos WiFi shield
- Wireless Router
- USB-TTL module
- USB cable
- Jumper wire



Step1:Install CP2102 Driver

Run cp210x Drivers.exe will create a New folder named 'SiLabs' in disk C. Then plug your USB-TTL module in the computer USB port. Find the drivers in 'SiLabs' folder and install it.



Generate a new COM port



Step2:Connect USB-TTL module and WiFi shield



Step3:Configure the WiFi shield

Once all the hardware settings done, let's run the software "WIZSmartScript" to set the configuration of the Wifi module. You can download the software from the Wiznet website. Run "WIZSmartScript.exe", you should get an interface that looks like this:

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www.um	VUSSHU	0.0011

	2SmartScript - (c)2010 v	/IZnet, All	Rights Reserved.
	8:88:6		WizFi Demo Program
Model	WizFi210	-	
Group	A. Basic	B	
Script	1. Module Information	9 ⁷ 0	
	Start Script		
	Wizard		
-			
-			
-			
Ē	AT Command Mode		
сом	AT Command Mode		
COM Baud	AT Command Mode 51 SSID 115200 KEY		
COM Baud	AT Command Mode 51 - SSID 115200 - KEY		
COM Baud Gal	AT Command Mode 51 SSID 115200 KEY IP teway		
COM Baud Gal	AT Command Mode 51 - SSID 115200 - KEY IP teway ection		
COM Baud Gal	AT Command Mode		✓ Clear Console(When Script Start) ✓ Auto Scroll

Input the correct serial port number and the default baud rate "115200" in the bottom left and click on "Wizard" in the middle left. Then we come into this page to start setup:



WizFi Wizard	х
Step 1 : Find WizFi Select the following current serial option.	
СОМ <mark>51</mark> (1~) Baud 115200 💌	
Find WizFi and Set Command Mode	
1.1.0.0(W)	
To continue, click Next.	
	•
< Back Next > Cancel Apply Finish	

Click "Find WizFi and Set Command Mode" in the middle, and if the connection is ok, there will be the right information of the Wifi chip shown below the button. And click "Next".



WizFi Wizard						х
	Step 2 : AP Select the AP to ass	Scan :ociate.	AP S	can	1000 💌 ms	
	BSSID	SSID	Chan	RSSI	Security	
	00:1a:2a:bd:0a:5e	Tinyos3f	01	-56	WPA-PE	
	84:a8:e4:84:05:cd	ChinaNet-2sG9	01	-82	WPA2-PE	
	00:27:19:39:cb:60	tinyos	06	-84	WPA2-PE	
	3c:e5:a6:41:3a:30	ChinaNet-3A20	04	-88	WEP	
	4	1111				
	To continue, cli	ck Next.				
					-	
		1				
< Back	Next >	Cancel	Appl	y	Finish	
			· · · ·			

For this page, we click "AP Scan" to scan the available APs around, if your wireless router works fine, it will exist in the list below. As the picture shown above, our wireless device is the first. Click to choose it and then click "Next".



WizFi Wizard
Step 3 : WiFi Security Select the following WiFi security. WiFi General Configuration SSID Tinyos3f WiFi Mode Infrastructure
Authentication mode None WEP Key1 WEP Key2 WEP Key3 WEP Key4
WPA Passphrase 0000000000
User name Password To continue, click Next.
< Back Next > Cancel Apply Finish

This step is for the security. The name of your wireless device will shown in the form of SSID, and choose "infrastructure" for WiFi mode. And you also need to input the password in the form called WPA Passphrase to get your wireless router access. The password we set in our router is "0000000000". Click "Next."



WizFi Wizard	X
Step 4 : Wi Select the following	F i Network j WiFi network.
© DHCP Static IP IP Address Subnet Mask Gateway To continue, c	s 192.168.1.55 255.255.255.0 192.168.1.1
AT+WD AT+WAUT0=0,Tinyos3f AT+WWPA=000000000	▲
< Back Next >	Cancel Apply Finish

In this tutorial we tried the static IP connection, so we chose the static IP option and input the followings according to your router settings. Click "Next."



WizFi Wizard	×
Step 5 : Serial Port Select the following current serial option.	
 Don't need to change serial option Need to change serial option 	
Baud 115200	
To continue, click Next.	
AT+WD AT+WAUT0=0,Tinyos3f AT+WWPA=000000000 AT+NDHCP=0 AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1	
< Back Next > Cancel Apply Finish	•

If you do not want to change the baud rate of the serial communication for the WiFi module, just leave it alone and click "Next".



WizFi Wizard	х
Step 6 : S2W Channel Select the following Serial-to-WiFi channel.	
Protocol TCP OUDP Mode Server OClient	
Destination IP Port Local Port	
To continue, click Next.	
AT+WD AT+WAUT0=0,Tinyos3f AT+WWPA=0000000000 AT+NDHCP=0 AT+NSET=192.168.1.55,255.255.0,192.168.1.1	
	r
< Back Next > Cancel Apply Finish	

Choose TCP as the protocol and Server as the mode. And you need to input a port number like we input 4000. Click "Next."





We choose the second option to save the changes in configuration, since we want to use this configuration in our following projects. Then Click "Next."





All the settings and the corresponding commands will be shown in the list and if everything is ok, click "Finish".

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			OK
todel	WizFi210		
roup	A. Basic	- B	
pript	1. Module Information	s.	AT+WD [OK]
	Start Script		AT+WAUTO=0,Tinyos3f
	Wizard AT Command Mode		IOKJ AT+NDHCP=0 [OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK] AT+NAUTO=1,1,,4000 [OK] AT+XDUM=0 [OK] ATC1
юм	51 - SSID	3	OK] AT&W0
aud	115200 - KEY	*	
	IP	+	[OK]
Gat	eway	*	
£	ection	*	
onne			

All the settings and the corresponding commands will be there on the right side.

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🛠 WIZSmartScript - (c)2010 WIZne	et, A	ll Rights Reserved. – 😑 🗙
Model WizFi210		OK
Group D. Auto Connection	R	AT+WD
Scrip 1. WPA, Static IP, Raw Optio	Щ	[ок]
Start Script		AT+WAUTO=0,Tinyos3f fOK1
Wizard AT Command Mode		AT+WWPA=000000000 [OK] AT+NDHCP=0 [OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK] AT+NAUTO=1,1,,4000 [OK] AT+XDUM=0 [OK] ATC1 IOK]
COM 51 SSID Tinyos3f		AT&W0
Baud 115200 - KEY 000000000	1	[OK] AT&Y0
IP 192.168.1.55	*	[OK]
Gateway 192.168.1.1	÷	
Connection 1,1,192.168.1.55,400	Ŧ	
	-	🔽 Clear Console(When Script Start) 🛛 🔽 Auto Scroll
MAC		Clear History Clear Console Exit
	-	

It is time to connect the WiFi shield with the router. Choose "Auto Connection" in the "Group". Choose the first option for the Script.

Input the router's SSID, the password, IP address, gateway and Connection information into the corresponding forms.

Note:

The format of connection information is shown like this:

<Type>,<Protocol>,<Destination IP >,< Destination Port >.

Type(0: Client, 1: Server) Protocol(0: UDP, 1: TCP)

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	:88:8			Working
Model With	1210			
Group D AL	Ito Connection		Π.	Insert static in address into liserData1 and nateway into liserData2 (ey
Script 1. W	PA, Static IP, Raw Optio	1. A.		[insert raw nauto option into UserData3. (ex:0,1,192.168.3.101,5000)]
	Stop Script			<type>,<protocol>,<destination ip="">,<destination port=""></destination></destination></protocol></type>
			-	AT+WD
	Wizard			[OK]
				[0K]
				AT+NDHCP=0
				TO M
				[OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1
				[OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK]
	AT Command Mode			[OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK] AT+WAUTO=0,Tinyos3f,,0 [OK] AT+NAUTO=1,1,192.168.1.55,400
сом 51	AT Command Mode			[OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK] AT+WAUTO=0,Tinyos3f,,0 [OK] AT+NAUTO=1,1,192.168.1.55,400 [OK] ATA
COM 51 Baud 1152	AT Command Mode SSID Tinyos3f CO - KEY 00000000			[OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK] AT+WAUTO=0,Tinyos3f,,0 [OK] AT+NAUTO=1,1,192.168.1.55,400 [OK] ATA
СОМ <mark>51</mark> Ваид 11521 IP	AT Command Mode SSID Tinyos31 KEY 000000000 192,158.1.55			[OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK] AT+WAUTO=0,Tinyos3f,,0 [OK] AT+NAUTO=1,1,192.168.1.55,400 [OK] ATA
COM 51 Baud 1152 IP Gateway	AT Command Mode SSID Tinyos3f KEY 00000000 192,168,1,55 192,168,1,1			[OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK] AT+WAUTO=0,Tinyos3f,0 [OK] AT+NAUTO=1,1,192.168.1.55,400 [OK] ATA
COM 51 Baud 11521 IP Gateway Connection	AT Command Mode SSID Tinyos3f 00 - KEY 00000000 192,168,1,55 192,168,1,1 1,1,192,168,1,55,400	00		[OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK] AT+WAUTO=0,Tinyos3f,.0 [OK] AT+NAUTO=1,1,192.168.1.55,400 [OK] ATA
COM 51 Baud 11521 IP Gateway Connection	AT Command Mode SSID Tinyos31 KEY 000000000 192,158:1.55 192,158:1.1 1.1.192.158:1.55,400	90		[OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK] AT+WAUTO=0,Tinyos3f,0 [OK] AT+NAUTO=1,1,192.168.1.55,400 [OK] ATA

Click "Start Script", then the connecting page will be shown. After soon, if the process succeeds, the following page will come.

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	WizEi210		UK
Nodel	D. Auto Connection	в	
icript	1 WPA Static IP Baw Ontio	1	[Insert static ip address into UserData1 and gateway into UserData2 (ex
	Start Script		[Insert raw nauto option into UserData3. (ex:0,1,192.168.3.101,5000)] <type>,<protocol>,<destination ip="">,<destination port=""> Type(0:Client, 1:Server) Protocol(0:UDP, 1:TCP) AT+WD</destination></destination></protocol></type>
	Wizard		[OK] AT+WWPA=0000000000 [OK] AT+NDHCP=0 [OK] AT+NSET=192.168.1.55,255.255.255.0,192.168.1.1 [OK]
	AT Command Mode		AT+WAUTO=0,Tinyos31,0 [OK] AT+NAUTO=1,1,192.168.1.55,400
сом	AT Command Mode	-	AT+WAUTO=0,Tinyos31,0 [OK] AT+NAUTO=1,1,192.168.1.55,400 [OK] ATA
COM Baud	AT Command Mode 51 - SSID Tinyos3f 115200 - KEY 000000000	+	AT+WAUTO=0, Tinyos31, 0 [OK] AT+NAUTO=1,1,192.168.1.55,400 [OK] ATA IP SubNet Gateway 192.168.1.55: 255.255.255.0: 192.168.1.1
COM Baud	AT Command Mode 51 • SSID Tinyos3f 115200 • KEY 0000000000 IP 192.168.1.55	-	AT+WAUTO=0,Tinyos31,0 [OK] AT+NAUTO=1,1,192.168.1.55,400 [OK] ATA IP SubNet Gateway 192.168.1.55: 255.255.255.0: 192.168.1.1 [OK]
COM Baud Gat	AT Command Mode 51 - SSID Tinyos3f 115200 - KEY 000000000 IP 192.168.1.55 eway 192.168.1.1		AT+WAUTO=0, Tinyos31, 0 [OK] AT+NAUTO=1, 1, 192, 168, 1, 55, 400 [OK] ATA IP SubNet Gateway 192, 168, 1, 55: 255, 255, 255, 0: 192, 168, 1, 1 [OK]

Now check the LEDs marked as "STW" and "ASSOC" on the WiFi shield, they will be on:

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And there also will be a device connected shown on the main page of the router like this:

talus						
uick Setup	Wireles	ss Statistics				
285						
Natwork	Current Cor	spacial Wealare Stations numbers	9 Dotroch			
Wantesa	Current Col	and the second second managers.	1 remesn			
Wrelens Settings						
- Wireless Security	ID	MAC Address	Current Status	Received Packets	Sent Packets	
Winiless MAC Filtering	4	00-08-DC-17-AD-C1	WPA2-PSK	2	0	
- Wvoless Advanced						
a status factor and a status in the			- HT			

Step4:Stack your WiFi shield on Arduino





Now open a terminal. You can use PuTTy, or if you have a Windows XP machine you can use the Hyperterminal included. and connect to the WiFi shield's IP address. Don't forget to indicate the server port. In our example we are using port "4000".

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tegory:					
Session	Basic options for your PuTTY session Specify the destination you want to connect to				
Logging					
J Teminal	Host Name (or IP address) Port				
Rell	192.168.1.55 4000				
Features Window	Connection type: ⊙ RawO_Telnet_ ◯ Rlogin_ ◯ <u>S</u> SH Serial				
Behaviour Translation Selection Colours Connection Data Proxy Telnet	Load, save or delete a stored session Saved Sessions Default Settings Load Save Delete				
Rlogin 🕀 SSH Serial	Close window on exit: O Always O Never O Only on clean exit				

Settings to allow you to see what you are typing in PuTTY Once connected to the WiFi shield you should be able to send data to Arduino through WiFi. Just input data into Putty's input blank, and the serial monitor of arduino which connected with arduino will show the data arduino receives.

🗬 192. 168. 1. 55 - PuTTY	_ 🗆 🗙	🛃 COM4	
痧痧痧	~		Send
welcome to tinyos!			
		welcome to tinyos!	
		Autom 11 11-2:	115000 her 1
	30	Autoscroll No line end	ing V [115200 baud V