

WizFi360 Quickstart Guide

Configuration for MQTT



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3/6/2024

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Connecting to the Board

- 1.) Use a serial monitor application to connect to the board through USB. The default baud rate is 115200. The board also expects carriage returns and newlines at the end of inputs.
- 2.) To check the connection status type "AT" and wait for the "OK" message.
- 3.) Now, to connect to WiFi use the command AT+CWMODE_DEF to set the mode to station mode as shown in the WizFi documentation below.

AT+CWMODE_DEF=1

3.2.2 AT+CWMODE_DEF: Set the operation mode, Save to Flash

	Query command	Set Command
Commands	AT+CWMODE_DEF?	AT+CWMODE_DEF=<mode>
Response	+CWMODE_DEF:<mode> OK	OK
Parameter	<mode>: <ul style="list-style-type: none">• 1: Station mode• 2: SoftAP mode (factory default)• 3: Station + SoftAP mode	
Example	AT+CWMODE_DEF?	AT+CWMODE_DEF=1
	+CWMODE_DEF:1	OK
	OK	
Note	The configuration changes will be saved in the system parameter area in the flash.	

Figure 1: Setting Mode of Operation

Updating the Firmware

For the code to work correctly the firmware may need to be updated to AT version 1.1.2.0. Use the AT command **AT+GMR** to check the current version; if the AT firmware is not at least 1.1.2.0 it will have to be updated. You can download the firmware from the link below.

<https://github.com/wizfi/Release/tree/master/Binary/1.1.2.0>

Use the tutorial found at the link below to update the firmware.

https://wizfi.github.io/Document/docs/basic_guides/firmware_upgrade#:~:text=Update%20Firmware%20by%20communicating%20with%20Upgrade%20Tool%20through%20Wi%2DFi,is%20used%20UART0%20or%20UART1

Connecting Board to WiFi

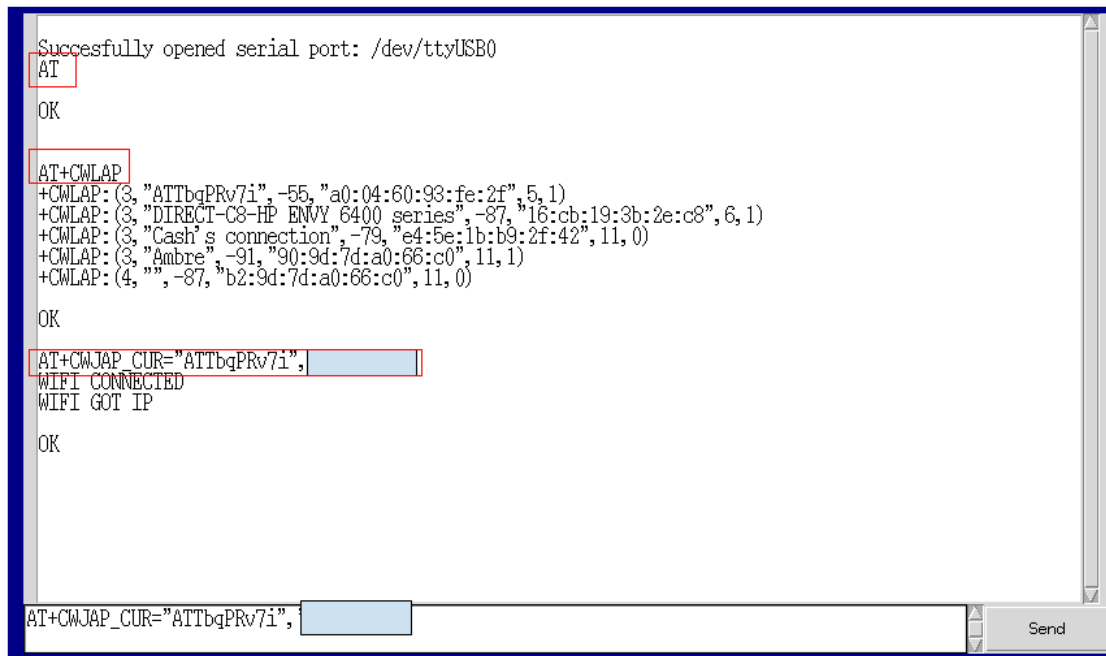
- 1.) Begin by polling the board for available networks using the command: AT+CWLAP
 - a.) This command may need to be run a few times to see every available network
- 2.) Now to connect to your network use the command AT+CWJAP_CUR according to the data sheet shown below in Figure 2.

3.2.3 AT+CWJAP_CUR: Connects to an AP; Configuration Not Saved in the Flash

	Query command	Set Command
Commands	AT+CWJAP_CUR?	AT+CWJAP_CUR=<ssid>,<pwd>[,<bssid>]
Function	To query the AP to which the WizFi360 Station is already connected.	To set the AP to which the WizFi360 Station needs to be connected.
Response	+CWJAP_CUR:<ssid>,<bssid>,<channel>,<rssi>	OK
	OK	+CWJAP_CUR:<error code>
		FAIL
Parameter	<ssid>: string parameter, the SSID of the target AP, MAX: 32 bytes. <pwd>: string parameter, the password of the target AP, MAX: 64-byte ASCII. [<bssid>]: string parameter, the MAC address of the target AP, used when multiple APs have the same SSID. <channel>: channel number <rssi>: signal strength. <error code>: (for reference only) <ul style="list-style-type: none">• 1: connection timeout.• 2: wrong password.• 3: cannot find the target AP.• 4: connection failed.	
Example	AT+CWJAP_CUR?	AT+CWJAP_CUR="ab\\c","12345678\\","00:08:DC:11:12:13" (SSID: ab\c Password: 12345678\)
	+CWJAP_CUR="WIZNETSZ","00:08:dc:9c:ef:b6",12,-75	OK
	OK	
Note	<ul style="list-style-type: none">• The configuration changes will NOT be saved in the flash.• This command is only available in Station mode and SoftAP+Station mode.• If the SSID or password contains any special characters such as " , \, you need an escape character	

Figure 2: Temporary AT Connection Configuration

Figure 3 shows an example of connecting to a WiFi network. The portion that is covered is where you put the password. The password should be in double quotes.



The screenshot shows a serial terminal window with a dark blue border. The text inside is as follows:

```
Successfully opened serial port: /dev/ttyUSB0
AT
OK
AT+CWJAP
+CWLAP: (3, "ATTbqPRv7i", -55, "a0:04:60:93:fe:2f", 5, 1)
+CWLAP: (3, "DIRECT-C8-HP ENVY 6400 series", -87, "16:cb:19:3b:2e:c8", 6, 1)
+CWLAP: (3, "Cash's connection", -79, "e4:5e:1b:b9:2f:42", 11, 0)
+CWLAP: (3, "Ambre", -91, "90:9d:7d:a0:66:c0", 11, 1)
+CWLAP: (4, "", -87, "b2:9d:7d:a0:66:c0", 11, 0)
OK
AT+CWJAP_CUR="ATTbqPRv7i",
WIFI CONNECTED
WIFI GOT IP
OK
AT+CWJAP_CUR="ATTbqPRv7i",
```

At the bottom of the window, there is a text input field containing the command `AT+CWJAP_CUR="ATTbqPRv7i",` followed by a blue rectangular box for the password. To the right of the input field is a button labeled "Send".

Figure 3: Connecting Board to WiFi Example

Here the network name and password are entered in double quotes separated by a comma.

- 3.) If the connection from step 2 was successful, the configuration can be saved into flash memory to persist through power cycles using the `AT+CWJAP_DEF`. The format of the command is the exact same as `AT+CWJAP_CUR`.
- 4.) To check the connection, remove power from the board and reconnect it. Then use the command `"AT+CWJAP_CUR?"` and or `"AT+CWJAP_DEF?"` to verify that the configuration has remained through power cycling.

Setting UART Speed

- 1.) The baud rate must be increased to match the expected baud rate in the code. To change the baud rate use the command `AT+UART_DEF` as shown below.

```
AT+UART_DEF=1500000,8,1,0,0
```

Note that after changing the baud rate, you must update the baud rate in your serial monitor program in order to communicate with the WizFi360.

Connecting to MQTT (Implemented in Code)

The initialization sequence used in the code uses three commands which are described below.

- 1.) Use the AT+MQTTSET command to configure the connection

3.3.29 AT+MQTTSET: Sets the Configuration of MQTT connection.

	Query command	Set Command
Commands	AT+MQTTSET?	AT+MQTTSET=<UserName>,<Password>,<ClientID>,<AliveTime>
Response	<UserName>,<Password>,<ClientID>,<AliveTime> OK	OK
Parameter	<UserName>: string parameter, User Name used in the broker authentication Max: 50byte <Password>: string parameter, Password used in the broker authentication. Max: 50byte <ClientID>: string parameter, Client ID connected to the broker. Max: 50byte <AliveTime>: keep-alive time setting with the broker within the range of 30s~300s.	
Example	AT+MQTTSET=?	AT+MQTTSET="wiznet","12345678","wiznet-01",60
	"wiznet","12345678","wiznet-01",60 OK	OK
Note	<ul style="list-style-type: none"> • This command should be set before connecting to a broker. 	

Figure 4: Set MQTT Configuration

2.) Use the AT+MQTTTOPIC command to set a topic to publish to and topics to subscribe to

3.3.30 AT+MQTTTOPIC: Sets the Topic of Publish and Subscribe

	Query command	Set Command
Commands	AT+MQTTTOPIC?	AT+MQTTTOPIC=<publish topic>,<subscribe topic1>[,<subscribe topic2>][,<subscribe topic3>]
Response	<publish topic>,<subscribe topic> OK	OK
Parameter	<publish topic>: string parameter, The topic published on the WizFi360 <subscribe topic1>: string parameter, The topic subscribed by the WizFi360 [<subscribe topic2>]: string parameter, The topic subscribed by the WizFi360 [<subscribe topic3>]: string parameter, The topic subscribed by the WizFi360	
Example1	AT+MQTTTOPIC?	AT+MQTTTOPIC="pubTopic","subTopic"



Example2	"pubTopic","subTopic"	OK
	OK	
	AT+MQTTTOPIC?	AT+MQTTTOPIC="pubTopic","subTopic1","SubTopic2","SubTopic3","SubTopic4","SubTopic5"
	"pubTopic","subTopic1","SubTopic2","SubTopic3","SubTopic4","SubTopic5"	OK
Note	<ul style="list-style-type: none"> • This command should be set before connecting to a broker, before firmware v1.1.1.8. • <subscribe topic2> and <subscribe topic3> are available after firmware v1.0.5.0. 	

Figure 5: Set Publish and Subscribe Topics

3.) Use the AT+MQTTCON command to connect to a broker

3.3.32 AT+MQTTCON: Connects to a Broker

	Single Connection (AT+CIPMUX=0)	Multiple Connection (AT+CIPMUX=1)
Commands	AT+MQTTCON=<enable>,<broker IP>,<broker port>	AT+MQTTCON=<linkID>,<enable>,<broker IP>,<broker port>
Response	CONNECT	
	OK	
	CONNECT FAIL	



	ERROR
Parameter	<p><link ID>: ID of network connection (0~4), used for multiple connections (AT+CIPMUX=1)</p> <p><enable>:</p> <ul style="list-style-type: none"> • 0: Connect to a broker without authentication • 1: Connect to a broker with authentication <p><broker IP>: string parameter indicating the broker IP address</p> <p><broker port>: the broker port number</p>
Message	<p>Whenever messages of subscribe topic is received, it will return as below</p> <p><subscribe topic> -> "subscribe data"</p> <p>AT+MQTTCON=0,0,"192.168.1.20",1883</p>
Example	<p>CONNECT</p> <p>OK</p>

Figure 6: Connect To MQTT

Use the AT+MQTTQOS command to set the quality of service of publishes (Rx is always QOS 0).