

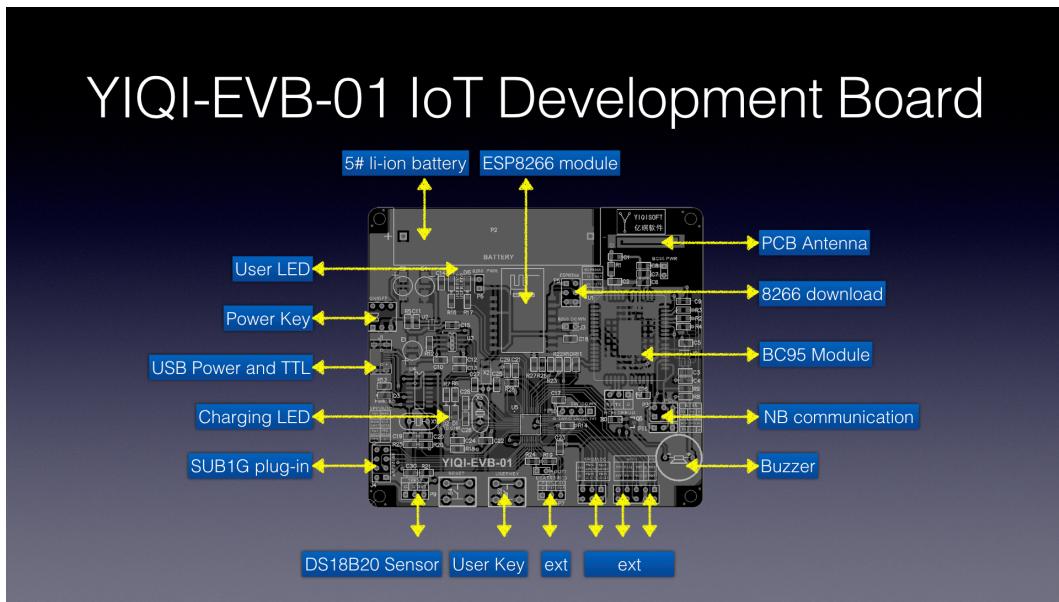
- [1. Overview](#)
- [2. Preview](#)
- [3. Resources](#)
 - [3.1 MCU](#)
 - [3.2 BC95 NB-IoT Module](#)
 - [3.3 ESP8266 WiFi Module](#)
 - [3.4 nRF24L01 SUB1G Module\(Optional\)](#)
 - [3.5 DS18B20 Temperature Sensor](#)
 - [3.6 Charging](#)
- [4、Hardware List](#)
- [5. Getting Start](#)

1. Overview

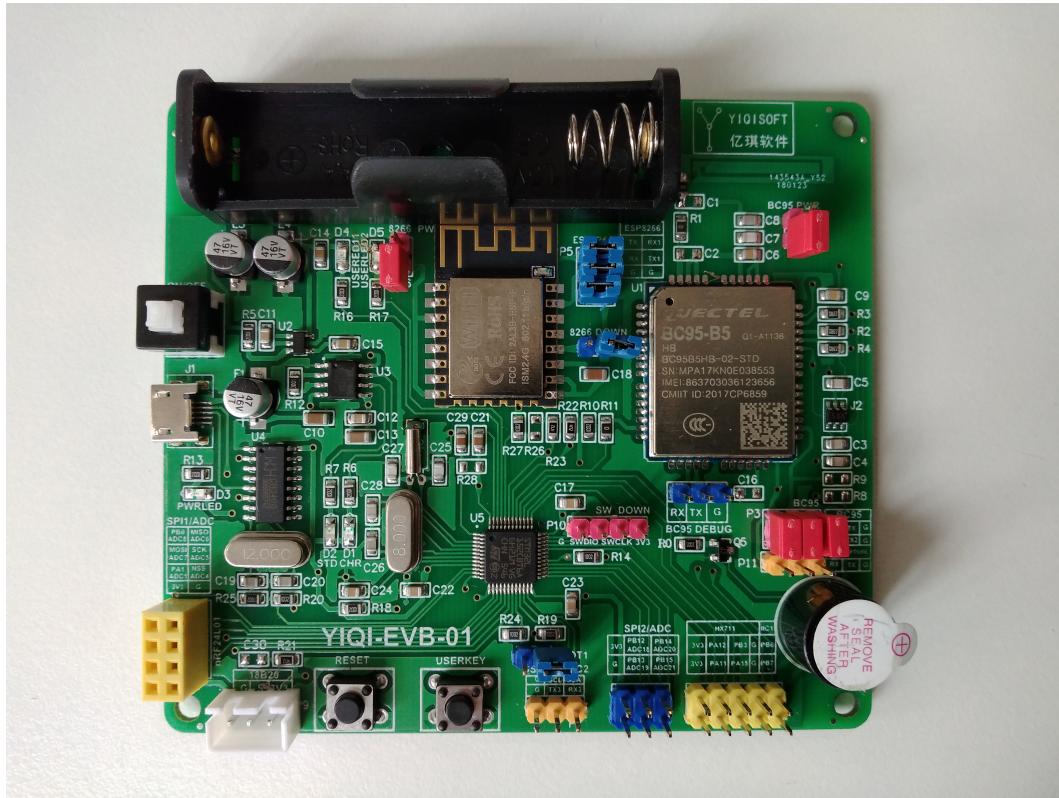
YIQI-EVB-01 is a NB-IoT evaluation board, with an ultra-low-power 32-bit MCU STM32L152CBT6-A. It uses the BC95 communication module from the remote, equipped with ESP8266 WiFi module, and nRF24L01 module, charging and USB-to-serial integrated design to charge the battery.

2. Preview

- IC Detail



- Physical



3. Resources

3.1 MCU

STM32L152CBT6-A, Ultra-low-power ARM Cortex-M3 MCU with 128 Kbytes Flash, 32 MHz CPU, LCD, USB.

3.2 BC95 NB-IoT Module

BC95 is a high-performance NB-IoT module with extremely low power consumption. The ultra-compact 23.6mm × 19.9mm × 2.2mm profile makes it a perfect choice for size sensitive applications. Designed to be compatible with Quectel GSM/GPRS M95 module in the compact and unified form factor, it provides a flexible and scalable platform for migrating from GSM/GPRS to NB-IoT networks.

3.3 ESP8266 WiFi Module

Low-power, highly-integrated Wi-Fi solution, a minimum of 7 external components, Wide temperature range: -40°C to +125°C, 8 Mbit flash embedded.

3.4 nRF24L01 SUB1G Module(Optional)

The nRF24L01+ is a highly integrated, ultra low power (ULP) 2Mbps RF transceiver IC for the 2.4GHz ISM (Industrial, Scientific and Medical) band. With peak RX/TX currents lower than 14mA, a sub μ A power down mode, advanced power management, and a 1.9 to 3.6V supply range.

3.5 DS18B20 Temperature Sensor

The DS18B20 digital thermometer provides 9-bit to 12-bit Celsius temperature measurements and has an alarm function with nonvolatile user-programmable upper and lower trigger points.

3.6 Charging

The TP4056 is a complete constant-current/constant-voltage linear charger for single cell lithium-ion batteries. Its SOP package and low external component

count make the TP4056 ideally suited for portable applications. Furthermore, the TP4056 can work within USB and wall adapter.

4、Hardware List

YIQI-EVB-01

Type	Parameter	Detail
Size	93mm*83mm	
MCU	STM32L152CBT6-A	Max 32MHz
Charge IC	TP4056	Max 1A
NB-IoT Module	Quectel BC95	BAND 1/3/5/8/20/28
WiFi	ESP8266	4MB flash
SUB1G	nRF24L01	8P plug-in
Temperature Sensor	DS18B20	3P XH2.54
Pressure Sensor	HX711	Max 5kg
User LED	Red * 1, Blue *1	
User Key	Key * 1	
Buzzer	* 1	
Extention IO	IIC * 2, SPI * 2, USART * 1	
Reset Key		
Power Switch		
USB-to-TTL	CH340	

5. Getting Start

- BC95 and ESP8266 use the same serial port (USART2), user have to

shutdown one of them's power, we disconnect ESP8266's power(P6: 8266 PWR) in this case;

- Connect BC95 and MCU USART2 at P3(TX-RX2,RX-TX2,G-G);
- Connect ESP8266 and MCU USART2 at P5(TX-RX2,RX-TX2,G-G), disconnect P6(8266 PWR);
- When download program to ESP8266, should connect J3(8266 DOWN), disconnect J3 after downloaded, re-power on it;
- When download program to MCU, use ST-LINK or JTAG connect to P10(SW DOWN, G-GND, SWDIO-SWDIO, SWCLK-SWCLK);
- Connect CH340 and P11(BC95 Capture) via dupont wire(G-G, TX-RX, RX-TX), it can monitoring MCU and BC95 communication.
- Plug the DS18B20 to the board(P9) before turn on the board, (RED-VCC, YELLOW-DATA, BLACK-GND);
- Micro USB is DC-5V, up to 500mA, it is a serial port(MCU USART1);
- **ATTENTION:** The 5# battery solt MUST be 3.7-4.2V, you should choose a "14500" li-ion battery.