

E103-W01-IPX\_Datasheet\_EN\_v1.1

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### **1. Introduction**

#### 1.1 Feature



E103-W01-IPX is 100mW (20dBm) UART-WiFi module with competitive price. It is small-size with both IPX and embedded PCB antenna, operating at 2.4~2.4835GHz, and very easy for user to operate.

Based on ESP8266EX from Espressif, E103-W01-IPX is developed by Cdebyte engineers. With transparent transmission available, it supports AT command, server AT command. User can enjoy easy access to Internet via UART. The module are widely used in wearable electronics, home automation, home security application, health care, accessories and remote controls, smart plugs and lights, industrial internet, etc.

E103-W01-IPX supports standard IEEE802.11b/g/n protocol and complete TCP / IP protocol stack, STA/AP/STA+AP mode, SmartConfig, transparent transmission, IO control, transparent transmission on power-up, PWM output, AD detection, etc. Network connection can be achieved after a simple configuration, which saves much time for users on operation and development.

Typical Application	Features
√Wireless meter reading	$\checkmark$ 210ms power-on transparent transmission, automatically
	connect when power-off
√Wireless sensing	√ Various baud rate
√Smart home	$\checkmark$ Support SmartConfig configuration
$\checkmark$ Industrial telecontrol and telemetering	√ Support TCPServer, TCPClient, UDP
√Intelligent building	Three operating mode: STATION, AP, STATION&AP
✓ Environmental engineering	$\checkmark$ Low power consumption: 14mA when receiving
√Highway	✓ UART transparent transmission
√High voltage line monitoring	$\checkmark$ Various encryption method
√Smart wearable device	√ UART AT Command
√Weather station	$\sqrt{4}$ x configurable PWM output
√Intelligent robot	√ Built-in watchdog, never crash
$\checkmark$ Automatic data collection	$\checkmark$ Parameter saving when power-down
√ street light control	√ 1x10-bit ADC

## 1.2 Basic usage

No.	Usage	Description
0	Communication between modules	Set module A to AP mode and build TCP or UDP server. Set module B to STATION mode and connect with module A. Then module B can communicate with module A via TCP or UDP Client.
1	Communication between module and Server	Wi-fi module connects to internet via wireless router, and communicate with server on the network (local area network or the Internet) via TCP client or UDP. If it needs to be connected with internet server, user need to configure the corresponding port mapping.
2	Communication between module and Client	Wi-fi module connects to internet via wireless router, and build TCP or UDP Server to listen to the connection signal. Client communicate with module by connect with its server.
		Please see more details in Chapter 5

## 1.3 Electrical parameter

No.	Item	<b>Parameter Details</b>	Notes
1	RF chip	ESP8266EX	Espressif
2	Size	16 * 24 * 3mm	With PCB and IPX antenna
3	РСВ	4-layer	Impedance debugging
4	Frequency Band	2.4~2.4835 GHz	-
5	Connector	2.00mm	SMD
6	Supply voltage	3.0 ~ 3.6V DC	Note: the voltage higher than 3.6V is forbidden
7	Operation Range	100m	Test condition : clear and open area & 20dBm, height:> 2m
8	Transmitting power	20dBm	100mW
9	AT support	Built-in intelligent processing	Can be read by AT command.
10	Wi-Fi version	802.11 b/g/n	-
11	Communication interface	UART	-
12	Antenna type	PCB & IPX	$50\Omega$ characteristic impedance, IPX by default
13	Operating temperature	-40 ~ +85℃	-
14	Operating humidity	10% ~ 90%	Relative humidity, no condensation
15	Storage temperature	-40 ~ +125℃	-

## 1.4 Electrical specification

	Parameters	Condition	Min	Typical	Max	Unit
Sto	orage Temperature Range		-40	Normal	125	°C
Maxir	num Soldering Temperature	IPC/JEDECJ- STD-020			260	°
	Working Voltage Value		3.0	3.3	3.6	V
	VIL/VIH		-0.3/0.75Vio	-	0.25Vio/3.6	V
I/O	Vol/Voн		N/0.8Vio	-	0.1Vio/N	v
	Імах		-	-	12	mA
Elec	ctrostatic Discharge (HBM)	TAMB=25°C	-	-	2	KV
Elec	trostatic Discharge (CDM)	TAMB=25°C	-	-	0.5	KV

# 2. Functional description

#### 2.1 Pin definitions



			Units: mm
	MIN	NOR	MAX
Α	15.8	16.0	16.2
В	23.8	24.0	24.2
С	3.65	3.75	3.85
D	2.05	2.15	2.25
Е	1.40	1.50	1.60
F	2.00	2.00	2.00
G	2.80	3.00	3.20

Pin	Name	Туре	Function
1	RST	I	External reset signal (Low voltage level: Active)
2	ADC	I	ADC input pin
3	CH_PD	I	Module enable, need be pulled up
4	GPIO16	I	module wake up(from deep sleep state), high level effectively
5	GPIO14	IO	PWM1/GPI014
6	GPIO12	Ю	PWM0/GPIO12

7	GPIO13	IO	GPIO13			
8	VCC	-	VDC:3.0V~3.6V	( above 300mA )		
9	GND	-	GND			
10	GPIO15	I	GPIO15	GPIO2★	GPIO0	Boot
11	GPIO2	I	0	1	1	Boot from FLASH
12	GPIO0	I	0	1	0	Download firmware via UART
13	GPIO4	IO	PWM2/GPIO4			•
14	GPIO5	IO	PWM3/GPIO5			
15	RXD	I	UART input pin,	support AT comm	and	
16	TXD	0	UART output pir	n, support AT com	mand	
	1					

 $\star$  GPIO2 is already been internal pulled up

 $\star$  In transparent-transmission on power-up mode, GPIO2 will indicate the status of module. The module has connected a led to this pin. Users can get the status of the module by observing LED. Besides, you may connect GPIO2 to the external MCU.

★ LED indication when module works in power-on transparent transmission mode :
 Intermittent double flash : cannot connect to AP access point.
 Intermittent single flash : connect to AP access point, but cannot connect to TCP server.
 Quench : connect to AP access point and TCP server.

Parameters	Min	Typical	Max	Unit
Tx802.11b,CCK11Mbps,POUT=+17dBm	-	170	-	mA
Tx802.11g,OFDM54Mbps,POUT=+15dBm	-	140	-	mA
Tx802.11n,MCS7,POUT=+13dBm	-	120	-	mA
Rx 802.11b, 1024 bytes packet length , -80dBm	-	20	-	mA
Rx 802.11g, 1024 bytes packet length, -70dBm	-	56	-	mA
Rx 802.11n, 1024 bytes packet length, -65dBm	-	56	-	mA
Modem-Sleep	-	15	-	mA
Light-Sleep	-	0.9	-	mA
Deep-Sleep	-	10	-	uA
Power Off	-	0.5	-	uA

#### 2.2 Power Consumption

#### 2.3 Schematic diagram



Notes : supply voltage is 3.0V~3.6V. 300mA LDO is recommended for steady operation of module.

## 3. Quick Start

This chapter is to introduce how to achieve a variety of configuration and communication under various modes by simple configuration.

Configuration software is designed for users to get a quick start of this wi-fi module. All the commands in the test are AT commands (Notes: a line break is required after each AT command ).

After getting familiar with AT command, users can use Accessport to transmit AT command instead of the configuration software. Or use external MCU to connect with UART module to do AT command transmitting instead of using this development board.

Hardware :	
1	E103-W01-IPX*1
2	E103-W01-IPX development board*1
3	PC with wi-fi *1
4	Router*1 ( Mobile wi-fi hotspots )
Software (down	load on www.cdebyte.com/en)
1	E103-W01 configuration software
2	TCP&UDP testing tool
3	Accessport 1.3

#### 3.1 Connected to TCP server as Client





[Module installation] : Substrates VCC short jumper, GPIO0 jumper disconnected. Plug E103-W01 into test baseboard. Plug the baseboard into PC by USB connector (Please download CP1202 driver if the PC cannot recognize baseboard). USB port number for testing : COM30. AP mode is the default mode for E103-W01, which is equivalent to Wi-Fi router. Cellphone or PC can search to the wi-fi name as EBT XXXXXX (XXXXXX is last three-byte for MAC address). If the MAC address for module is "1a:fe:34:ed:a6:68", then SSID is "EBT\_EDA668". No password for default. 4 🚔 9FDOJWF5ZUWJDMJ ▷ 🔮 DVD/CD-ROM 驱动器 ▷ 🥁 IDE ATA/ATAPI 控制器 👂 📑 Jungo ▷ □ 处理器 3 ▷ 👝 磁盘驱动器 > 🝃 电池 ▲ 響 端□ (COM 和 LPT) Silicon Labs CP210x USB to UART Bridge (COM30) 计算机 ▲ 监视器 ▷ - (二) 键盘 ▷ 🦏 人体学输入设备 ▷ 🖞 鼠标和其他指针设备 ▷ 🔓 通用串行总线控制器 > 🔚 图像设备 ▷ 🔮 网络适配器 ▷ 📕 系统设备 🕨 🖳 显示适配器 [STATION mode configuration] : Open Wi-Fi configuration software, select port number in the left corner, then the serial port open automatically. Serial port status changes to open now, click "STATION" button to enter configuration interface. 4 The test router name as Ebyte, password is e30e31e32. Click "enter Sta mode" to change the mode to STATION. Click "connect to router", and wait a few seconds to see the interface shown in the figure below, which means module is connected to the router successfully. Then user can click "IP information guery" to guery IP information.

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IP Ad	lress	Reboot	SmartC Close	]	Open DHCP	Close DHC
Send	WIFI GOT OK	IP			🗹 Wrap	Clear Soreen Send
assigne		ter).		r device which ip	address is 192.168.	.1.70(IP addre
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	Remote Port:	000	● TCP	Connect	
	Local Port:	6000	🔘 wer	Disconnect	
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	Net Stat	us MulCon O	lpen Enter Trans	sparent Mode	
	IP Statu	IS MulCon Cl	lose Exit Trans	parent Mode	
Receive	If you want to	o create a clier	nt please close the mu	ulti-connection fi	rst .
	OK				
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	server IP: 19	2. 168. 137. 169		PING IP	
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		ically, then connect
specified TCP server automat indicator goes out), then trans	ically. User only need to wait the completion mit data directly.	of TCP connection (
Click "transparent transmissi	on on power-up" and input corresponding v	vi-fi name and passw
then click "wi-fi", see below	Interface means configuration is down. V1.3 ——成都亿佰特电子科技有限公司——	×
		nu-un Ass
(((•)))	成都亿佰特电子科技有[	限公司
EBYTE	Chengdu Ebyte Electronic Technolog	gy Co.,Ltd.
AT Test AD CEG STA C	TEG Server CEG Client CEG Transmissi	n Perinberals
		on renpilerais
SSTD. CDEbyte	Server IP: 192.168.137.12	
SSID: CDEbyte	Server IP: 192.168.137.12	C
SSID: CDEbyte PASSWORD: 12345678	Server IF:         192, 168, 137, 12           Server Port         6000	Connect Status
SSID: CDEbyte PASSWORD: 12345678	Server IP: 192.168.137.12 Server Port 6000 Protocol: • TCP O VDP	Connect Status Reboot
SSID: CDEbyte PASSWORD: 12345676	Server IP:         192.168.137.12           Server Port         6000           Protocol:         Image: TCP O UDP	Connect Status Reboot
SSID: CDEbyte PASSWORD: 12345678 Enter STA PowerOn	Server IF: 192.168.137.12 Server Port Protocol: TCP UDP Set Exit PowerOn Set	Connect Status Reboot Exit
SSID: CDEbyte PASSWORD: 12345676 Enter STA PowerOn	Server IP: 192.168.137.12 Server Port 6000 Protocol:  TCP OUDP Set Exit PowerOn Set	Connect Status Reboot Exit
SSID: CDEbyte PASSWORD: 12345678 Enter STA PowerOn Receive AT+CWJAP_DEF="CDEby" WIFI DISCONNECT	Server IP: 192.168.137.12 Server Port Protocol: TCP UDP Exit PowerOn Set te", "12345678"	Connect Status Reboot Exit
SSID: CDEbyte PASSWORD: 12345678 Enter STA PowerOn Receive AT+CWJAP_DEF="CDEby: WIFI DISCONNECT WIFI CONNECTED	Server IF: 192.168.137.12 Server Port 6000 Protocol: O TCP O UDP Set Exit PowerOn Set te", "12345678"	Connect Status Reboot Exit Close
SSID: CDEbyte PASSWORD: 12345678 Enter STA PowerOn Receive AT+CWJAP_DEF="CDEby: WIFI DISCONNECT WIFI CONNECTED WIFI GOT IP	Server IP: 192.168.137.12 Server Port Protocol: O TCP O UDP Exit PowerOn Set te", "12345678"	Connect Status Reboot Exit Close Clear Screen
SSID: CDEbyte PASSWORD: 12345678 Enter STA PowerOn Receive AT+CWJAP_DEF="CDEby WIFI DISCONNECT WIFI CONNECTED WIFI GOT IP Send	Server IP: 192.168.137.12 Server Port Protocol: TCP UDP Exit PowerOn Set te", "12345678"	Connect Status Reboot Exit Close Clear Soreen
SSID: CDEbyte PASSWORD: 12345678 Enter STA PowerOn Receive AT+CWJAP_DEF="CDEby WIFI DISCONNECT WIFI CONNECTED WIFI GOT IP Send	Server IF: 192.168.137.12 Server Port Protocol: TCP UDP Exit PowerOn Set te", "12345678"	Connect Status Reboot Exit Close Clear Screen Vrap Send

SSID:       CDEbyte       Server IP:       192.168.137.12         PASSWORD:       12345678       Server Port 6000       Connect Sta         Protocol:       ① TCP ① UDP       Reboot         Enter STA       PowerOn Set       Exit       PowerOn Set         Exit       PowerOn Set       Exit         CCCCCCC       Clos       Clos         Stand       XXXXXXXXXXXX       Server Server         COM:       COM1       115200       Serial Port:       COM1         Open       After click "re-start" or re-power the module, it will connect to the router and address automa and the connection status can be judged by wi-fi indicator (GPIO2).       After the connection to TCP server, transmitting and receiving can be done. See below,         Image: Elog Changed Ebyte Electronic Technology Co.,Ltd.       EDYTE       DataClefte 电子科技有限公司         ((**))       DataClefte 电子科技有限公司       重接状态         Image: e30e31e32       Br为器端口:       6000       重接状态         Image: e30e31e32       Br为器端口:       EDYTE       DataClefte 电子科技有限公司         Image: e30e31e32       Br为器端口:       EDYTE       Extinue	AT_Test AP_CFG	STA_CFG S	Gerver_CFG	Client_CFG	Transmission	Peripherals
Enter STA     PowerOn Set     Exit     PowerOn Set     Exit       Receive     CCCCCCC     Clos     Clea       Send     XXXXXXXXXXXX     Seray     Send       COM :     COM1     115200     Serial Port :     COM1       After click     "re-start" or re-power the module, it will connect to the router and address automa and the connection status can be judged by wi-fi indicator (GPIO2).       After the connection to TCP server, transmitting and receiving can be done. See below,       Image: Elio3-W01     WIFI禮快配置软件-V1.2	SSID: CDEbyt PASSWORD: 123456	ie 178	Server IP: Server Port Protocol:	192. 168. 137. 12 6000		Connect Stat
Receive       CCCCCCC       Clos         Sand       XXXXXXXXXXXX       Image: Serial Port : COM1       Cles         Serial Port :       COM1       • 115200       • Serial Port : COM1       Open         After click "re-start" or re-power the module, it will connect to the router and address automa and the connection status can be judged by wi-fi indicator (GPIO2).       After the connection to TCP server, transmitting and receiving can be done. See below,         Image: Elio3-W01 WIFI模块配置软件-V1.2	Enter STA	PowerOn Set	Exit	PowerOr	1 Set	Exit
Send       XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Receive CCCCCCC					Close Clear Scree
COM: COM1 • 115200 •       Serial Port: COM1 Open         After click "re-start" or re-power the module, it will connect to the router and address autom: and the connection status can be judged by wi-fi indicator (GPIO2).         After the connection to TCP server, transmitting and receiving can be done. See below,         Image: El03-W01 WIFI模块配置软件-V1.2         Image: Click (Content or CP)         Image: El03-W01 WIFI模块配置软件-V1.2         Image: Click (Content or CP)         Image: El03-W01 WIFI模块配置软件-V1.2         Image: El03-W01 WIFI模块面置软件-V1.2         Image: El03-W01 WIFI模块面置 El03-W01 Content El03-W01 El03-W	Send XXXXXXXXXXXXXXXX	XXX				rap Send
COM: COMI • 115200 •       Serial Port: COMI • Open         After click "re-start" or re-power the module, it will connect to the router and address automa and the connection status can be judged by wi-fi indicator (GPIO2).         After the connection to TCP server, transmitting and receiving can be done. See below,            E103-W01 WIFI模块配置软件-V1.2 — 成都亿佰特电子科技有限公司             (())             EBYTE             Comgdu Ebyte Electronic Technology Co.,Ltd.             #口刻試             PUTER:            Kbration设置             R务器::: 192.168.1.50             IFT 密码: e30e31e32             HTT 密码: e30e31e32                    HTT 密码: e30e31e32                 Http://doi.org/light                   Http://doi.org/light                Http://doi.org/light	0011 0011	115200				
田川別試 AP设置 Station设置 Server设置 Client设置 并机选供     WIFI名称: Ebyte     服务器IP: 192.168.1.50     服务器端口: 6000     连接方式: ◎ TCP ◎ UDP     重新启动     道北) STA模式 표机WTFT 关词还在 표机还在	After click "re-start" and the connection a After the connection to E E103-W01 WIFI模	or re-power th status can be ju o TCP server, tra 块配置软件-V1.2	e module, it w udged by wi-fi ansmitting and 2 ——成都亿 部亿佰铢	ill connect to th indicator (GPIC d receiving can 佰特电子科技有 <b>主电子科</b>	he router and a D2). be done. See 限公司—— 技有限	address automa below,
WIFI名称:     Ebyte     服务器IP:     192.168.1.50       WIFI密码:     e30e31e32     服务器端口:     6000     连接状态            進後方式:          ● TCP     重新启动             進出) STA描示          エ40WTFT           至初述年年日          現代表書	After click "re-start" and the connection a After the connection to E E103-W01 WIFI模	or re-power th status can be ju o TCP server, tra 块配置软件-V1.2	e module, it w udged by wi-fi ansmitting and 2 ——成都亿 都亿佰铢	ill connect to th indicator (GPIC d receiving can 佰特电子科技有 <b>住电子科</b>	he router and a D2). be done. See 限公司—— 技有限 echnology C	address automa below,
WIFI密码:     e30e31e32     服务器端口:     6000     進援抗心       连接方式:     ● TCP     ● 町     重新启动	After click "re-start" and the connection a After the connection to E E103-W01 WIFI模	or re-power th status can be ju o TCP server, tra 块配置软件-V1.2	e module, it w udged by wi-fi ansmitting and 2 ——成都亿 都亿佰铢 agdu Ebyte f	ill connect to th indicator (GPIC d receiving can 佰特电子科技有 <b>住电子科</b> Electronic T Server设置	he router and a D2). be done. See 限公司—— 技有限 echnology C Client设置	address automa below, (一一一一一一一一一 (公司) (Co.,Ltd. 开机送传
	After click "re-start" and the connection to After the connection to EI E103-W01 WIFI模 EEYT 申口测试 WIFI名称: Ebyte	or re-power th status can be ju o TCP server, tra 块配置软件-V1.2	e module, it w udged by wi-fi ansmitting and 2 ——成都亿 Station设置 服务器IP:	ill connect to th indicator (GPIC d receiving can 佰特电子科技有 <b>日日日子科</b> <b>日日日子科</b> <b>日日日子科</b> <b>日日</b> <b>日</b> <b>日</b> <b>日</b> <b>日</b> <b>日</b> <b>日</b> <b>日</b> <b>日</b> <b></b>	he router and a D2). be done. See 限公司—— 技有限 echnology C Client设置	address automa below, 心司。 、,Ltd. 开机速传
	After click "re-start" and the connection a After the connection to E3 E103-W01 WIFI模 (((•)) EBY1 年口测试 WIFI名称: Ebyte WIFI名称: Ebyte WIFI密码: e30e31	or re-power th status can be ju o TCP server, tra 块配置软件-V1.2	e module, it w udged by wi-fi ansmitting and 2 ——成都亿 Station设置 服务器IP: 服务器端口:	ill connect to the indicator (GPIC d receiving can 佰特电子科技有 <b>日日日子科</b> <b>BELECTIONIC TO</b> Server设置 192. 168. 1. 50 6000	he router and a D2). be done. See 限公司—— <b>技有限(</b> echnology C Client设置	address automa below, (一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一
	After click "re-start" and the connection a After the connection to EI E103-W01 WIFI模 ((()) EBY1 年口测试 WIFI名称: Ebyte WIFI名称: Ebyte WIFI密码: e30e31 进入STA模式	or re-power th status can be ju o TCP server, tra 块配置软件-V1.2 ) EE Chen AP设置	e module, it w udged by wi-fi ansmitting and 2 ——成都亿 第七日年 Station设置 服务器IP: 服务器端口: 连接方式: 关闭透传	ill connect to the indicator (GPIC d receiving can 佰特电子科技有 <b>住住子科</b> Server设置 192. 168. 1.50 6000 ④ TCP ① 1 专 开机速	he router and a D2). be done. See 限公司—— <b>技有限</b> echnology C Client设置	address automa below, (一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一
接收 CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	After click "re-start" and the connection is After the connection to EI E103-W01 WIFI模 ((())) EBY1 #口测试 #UPI名称: Ebyte #IPI密码: e30e31 进入STA模式	or re-power th status can be ju o TCP server, tra 块配置软件-V1.2 ) TE Cher AP设置 Le32 开机WIFI	e module, it w udged by wi-fi ansmitting and 2 ——成都亿 第亿百年 Station设置 服务器证P: 服务器端口: 连接方式: 关闭透传	ill connect to the indicator (GPIC d receiving can 佰特电子科技有 <b>注电子科</b> <b>Electronic To</b> Server设置 192.168.1.50 6000 ④ TCP ① 1 专 开机透	he router and a D2). be done. See 限公司—— <b>技有限</b> echnology C Client设置	address automa below,
接收       CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	After click "re-start" and the connection is After the connection to EI E103-W01 WIFI模 《《》》 EBY1 年口测试 WIFI名称: Ebyte WIFI密码: e30e33 进入STA模式 卷收 CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	or re-power th status can be ju o TCP server, tra 块配置软件-V1.2 TE Chen AP设置 Le32 开机WIFI	e module, it w udged by wi-fi ansmitting and 2 ——成都亿 第亿百年 Station设置 服务器证: 连接方式: 关闭透传	ill connect to the indicator (GPIC d receiving can 佰特电子科技有 <b>自由子科</b> 技有 Server设置 192.168.1.50 6000 ④ TCP ① 1 专 开机速	he router and a D2). be done. See 限公司—— <b>技有限</b> echnology C Client设置	address automa below,





AT_Te	st AP_CFC	6 STA_CFG	Server_CFG Clie	nt_CFG Transmissi	on Peripherals
SSII PASS E	): CDEb WORD: 1234	yte 5678 PowerOn Set	Server IP: 192 Server Port 600 Protocol: () Exit	. 168. 137. 12 0 • TCP O UDP PowerOn Set	Connect Stat Reboot Exit
Receive	AT +SAVETRA OK	NSLINK=0			Close Clear Scree

#### 3.2 Build TCP SERVER to connect to PC as PA

No	Rem	arks
	In factory mode, module' s IP address is 192.168.4. Check network status of PC, see below information ok.	1 when act as AP. means the connection between PC and module is
	AI command can be used to restore the factory	state if user ever changed module's parameter. 网络连接详细信息 × 网络连接详细信息 · · · · · · · · · · · · · · · · · · ·
1	连接         IPv4 连接:       无 Internet 访问权限         IPv6 连接:       无网络访问权限         媒体状态:       已启用         SSID:       EBT_014ED6         持续时间:       01:30:12         速度:       54.0 Mbps         信号质量:       如此         详细信息(E)       无线属性(W)         活动       已发送 —       已发达 —       已接收         字节:       2,000       1,526         歐属性(P)       歐果用(D)       诊断(G)	属性     值       連接特定的 DNS 后缀        描述     Qualcomm Atheros AR9485 Wireless Ne       物理地址     6C-FD-B9-8D-44-EA       已扁用 DHCP     是       IPv4 地址     192.168.4.2       IPv4 子网撞码     255.255.255.0       获得租约的时间     2017年8月18日 17:00:02       租约过期的时间     2017年8月18日 19:00:01       IPv4 默认网关     192.168.4.1       IPv4 DHCP 服务器     192.168.4.1       IPv4 WINS 服务器     192.168.4.1       IPv4 WINS 服务器     192.168.4.1       IPv6 DNS 服务器     192.168.4.1       IPv6 DNS 服务器     Fe80:1898:23f0:4aa:7632%7       IPv6 取入网关     192.168.4.1
	关闭(C) 【 描 抽 建 议 T C D 服 冬 哭 】・	
2	Make sure PC is connected to the modules, then cli Click "open multiple connections" (exiting transp	ck "server settings" button. parent transmission mode is necessary) first, then

click "built server" to see below information.
103-W01 Configurator-V1.3 ——成都亿佰特电子科技有限公司—— — — X
((()) 成都亿佰特电子科技有限公司 EBYTE Chengdu Ebyte Electronic Technology Co.,Ltd.
AT_Test AP_CFG STA_CFG Server_CFG Client_CFG Transmission Peripherals
Server Port: 1001 Start Server Stop server If you want to create a server please open the multi-connection first . IP Status Net Status MulCon Close MulCon Open Receive AT+CIPSERVER=1, 1001 OK Close Clear Screen
Send Send
COM : COM1 • 115200 • Serial Port : COM1 Open
PC uses TCP&UDP test tool to build TCP server, target IP:192.168.4.1, port : 1001.         Click "connect" button, then the module should output as shown below: "0, CONNECT" (0 means connection ID), indicating that clients (up to 5) are connected to the module.         PC transmits data, module outputs "+IPD,0,15:XXXXXXX" (+IPD : command 0:connection ID 15 : data package length XXXXXX : data )         Specified connection ID is necessary during transmitting : AT+CIPSEND=0,10 means transmitting 10-byte data to connection 0.         Image: E103-W01 Configurator-V1.3
3 Server Port: 1001 If you want to oreate a server please open the multi-connection first . IP Status Net Status MulCon Close MulCon Open
Receive       OK       Close         OK, CONNECT        Clear         +IPD, 0, 5: Hello       Clear         Send       Wrap       Send
COM : COM1 • 115200 • Serial Port : COM1 Open

ZNE-200T全功能型	快速以太网转串口模块NETCOM-10S标准型以太网转串口设备
具有10/100M目达的 波特率高达1.15Mb	ZUX太网接口,単口通信最高 ps COM,Group組積,TCP Auto等多种工作模式
🗄 🚰 创建连接 😒 创建服务器 🛛 🕉 🛛	动服务器 送 🕢 😒 连接 🕱   🥸 全部断开   💥 删除 🎇   🔟   🛜 💡
属性栏 <b>平 ×</b>	<b>♦ 192.168.4.1:1001</b> 4
<ul> <li>□-■ 各户姨模式</li> <li>□-■ 192.168.4.1:1001</li> <li>□-■ 服务器模式</li> </ul>	目标IP:     发送区 「自劫发送: 间隔 100 ms 发送 停止       192.168.4.1     「按16进制 」发送文件 清空 选项       目标端口:     WEITO FOR Emassed
	1001     □       □     指定本机端口:       1001       类型:       TCP
	断开连接         接收区         暂停显示         清空         保存         选项         厂 技16进制           计数   <
	发送: AT+CIPSEND 32 接收: 10

## 3.3 Usage of Smart Config

No.		Rema	ırk		
	Smart Config enable user to use phon	e APP to cor	nfigure mod	dule and connected	with network with
	fast-speed.				
	When module works at STATION mode	, send "AT+0	CWSTARTSN	ART" to enter Sm	art Config mode ,
	then the configuration for module can	be done by c	ellphone.		
	User only need to start EspTouchAPP (	download fr	om Express	if systems ) on cell	phone, then input
	router password on the APP to make o	connection be	etween moc	lule and router.	
	E103-W01 Configurator-V1.3 —	——成都亿佰特	电子科技有限	段公司—— —	
	((…)) 成者	亿佰特	电子和	科技有限公	司
	EBYTE Cheng	du Ebyte E	lectronic	Technology Co.,	Ltd.
	AT_Test AP_CFG STA_CFG Set	rver_CFG 0	lient_CFG	Transmission Pe	eripherals
			80/17/50/88/18/18/18		
	SSID: CDEbyte dis	connect	тр∙	192.168.4.2	
	1224E679	oppost	Gateway:	192. 168. 4. 1	
	PassWord:	ALLEOL	MAC	5e:cf:7f:0f:af:ad	
			indice :		
	GetInfo Enter STA Smar	ctC Open	Get STA M	AC Set STA MAC	Set IP
	IP Adress Reboot Smar	tC Close		Open DHCP	Close DHCP
				-	
	Receive smartconfig type:ESPTOUCH				∧ Close
	Smart get wifi info ssid:CDEbyte			1	
	password:12345678 WIFI CONNECTED				Clear Screen
	Send AT ADOT				C1
	AI TASI			Vrap 🗹	Send
	COM : COM1 + 115200 +		Serial Port	: COM1	Open
	<u>.</u>				

Download & Install APP	2 One-key configuration	3 Internet connected
•500.6 •500.6 원 ⓒ 한 후 Tail Tail II 16:01	extra 🖸 💿 👘 🖏 📶 📶 🔟 1601	ৰ আৰু 🖸 💿 👘 🖏 🖬 🖬 16.01
	IOT_Espressif_EspTouch	IOT_Espressif_EspTouch
0	SSID:Ebyte	SSID:Ebyte
	Password: 1234567890	Password: 1234567890
	SSID is Hidden	SSID is Hidden
IOT_Espressif.	Ta Esptouch is configuring, please wait for a moment	Task result count 1
	Confirm	Confirm
	/0.3.4.3	v0.3.4.3
	~ < 0 🗆	× ⊲ O □

## 3.4 Usage of PWM

	Steps
E103-W	01 supports 4 channel PWM output, can be configured through the AT instruction to fast PWM cycle
(1~10m	s) and duty cycle,
Steps: er	nter "peripheral control option" to configure parameters:
1	Period range 1000~10000 corresponds to 1ms~10ms
2	Adjustment for duty cycle value Range of 0~222222 corresponding to 0ms~10ms (high level time≈
2	value*45ns)
	Channel number range 1~4 indicates the number of currently enabled PWM channels, increasing from
3	PWM0, for example channel number is equal to 2, then PWM0 and PWM1 are enabled(channel
	number cannot be changed after the first transmission)
	Notes
1	The actual duty cycle = adjustment value for duty cycle *45ns/ cycle
1	The following figure shows the cycle for opening four channel is 10ms, the duty cycle is 50% for PWM.
2	Calling PWM command once again to modify the duty cycle.
Click "F	WM output" after parameter-setting (AT+EBPWM=4, 10000, 111111, 111111, 111111, 111111).
( Please	refer to the AT chapter for AT command )
Click "F	'WM output" one more time after parameter-setting to modify PWM output.
But char	nel number cannot be changed after the first setting.
Channel	number after modifying other parameters must keep the same as the first set, otherwise the error is
returned	L.
Notes: P	WM channel cannot be closed after opening. It can be reset by reset command or re-power.

LA1010 🗐 🗒		言动 PWM1	PWM2 >		=
0-通道0 日日	s ,+20ms ,+30r	ms ,+40ms ,+50m	s ,+60ms ,+70ms	_,+80ms _,+90m <mark>▼ 测</mark> 量	4.999ms 10.0395ms
					49.7933% 99.61Hz ### ###
3-通道 3 🖸 🕅 🔤				[T1-T2 上升沿 ▼ 协び	: ### ### 解析器 <del>+</del> ·
		•	-	•	-
E103-W01 Config	gurator-V1.3	——成都亿位	<b>百特电子科技有</b> 限	昆公司——	
(((•))	) 5	***	<b>岐由了</b>	出坊有限。	公司
FRV	TE Ch	engdu Ebyt	Electronic	Technology C	in Ltd
LOT	- Ch	engua Ebyta	e Liectionic	recimology c	o.,tu.
T_Test AP_CFG	STA_CFG	Server_CFG	Client_CFG	Transmission	Peripherals
	10			Second Second Second	
Period:	10000	1000~10000 (	1ms~10ms)	PIN No: 13	✓ 4\5\12\13\
	111111	45ns everv s	tep	OVT: 🖲 1	00
			6		
PI014(PWM1):	111111			PIN_State_Get	PIN_State_Se
	111111	CHAN Count:	4	7	ADC Get
· · · ·				_	ADC VEL
PI005(PWM3):	111111	PWM Out	Channel cour	it must set the s	ame as first.
-					
eive AT+FRPUM-4	10000, 111111,	111111, 111111,	111111		Close
KI 'EDI MIL'4,					
PWM Start!					Clear
PWM Start!					Crear
FWM Start!					↓ Screen

# 3.5 Usage of GPIO

No.	Remark					
	E103-W01 provide 5 GPIO interfaces:GPIO4\GPIO5\GPIO12\GPIO13\GPIO14, and					
1	GPIO4\GPIO5\GPIO12\GPIO14 and PWM pin cannot use at the same time.					
	For example, when PWM pin is operating, the GPIO is inoperable.					
2	User can do pin's status-setting (AT+EBIOSET) and obtain pin's status (AT+EBIOGET) by using AT					
2	command.					
2	Click "PIN_State_Set" to set pin' s status;					
3	Click "PIN_State_Get" to get pin' s status.					

Period:	10000	1000~10000 (1	ms~10ms)	PIN No: 13	✓ 4\5\12\1
GPIO12(PWMD):	111111	45ns every st	ep	OVT: 🖲 1	0
GPI014(PWM1):	111111			PIN_State_Get	PIN_State_
GPI004(PWM2):	111111	CHAN Count:	1 ~	]	ADC Get
GPI005(PWM3):	111111	PWM Out	Channel coun	t must set the s	ame as first.

#### 3.6 Usage of ADC

No.	Remark		
1	E103-W01 provides one ADC with 10-byte precision, with which 0.0V ~ 1.0V voltage can be detected.		
2	User can get current ADC value by AT command (AT+EBADC), then obtain the real voltage by calculation.		
2 Input voltage=ADC value/1024			
3	For example ADC value is 45, so the really voltage is equal to45/1024=0.044V.		
	Image: E103-W01 Configurator-V1.3       — 成都亿佰特电子科技有限公司—       —       ×         ((•))       成都亿佰特电子科技有限公司       ×         EBYTE       Chengdu Ebyte Electronic Technology Co.,Ltd.		
	Period:         10000         1000 <sup>-1</sup> 10000 (1ms <sup>-1</sup> 0ms)         PIN No:         13         4\5\12\13\14           GPI012(PWMO):         111111         45ns every step         0UT:         0         0		
	GPI014(FWM1): 111111 FIN_State_Get PIN_State_Set		
	GPI004(PWM2):     111111     CHAN Count:     4     ADC Get       GPI005(PWM3):     111111     PWM Out     Channel count must set the same as first.		
	Receive AT +EBADC Close		
	OK Clear Soreen		
	Send 🔽 Wr ap Send		
	COM : COM1 - 115200 - Serial Port : COM1 Open		

#### 3.7 Modify UART baud rate

No.	Remark		
E103-W01 module supports 10 standar		T baud rate.	
1	The user must not set the baud rate out	of the effective range, or there will be an issue when	
debugging . If so, please reload the firmware or con		or contact us for help.	
2	User can modify UART baud rate by sending AT+UART command.		
2	For example: AT+UART=115200,8,1,0,0		
3	See below for more information;		
		9600	
		19200	
		38400	
		57600	
	Supporting baud rate	115200(default)	
		230400	
		256000	
		460800	
	921600		
		NONE (default)	
	Parity	EVEN	
		ODD	
		5-bit	
		6-bit	
Data length	7-bit		
		8-bit(default)	
	Ctop hit	1-bit(default)	
Stop bit		2-bit	

## 4. Specification for networking

#### 4.1 Wi-fi role

No.	Remark	
1	E103-W01 supports AP mode (router) and STATION mode (wi-fi equipment).	
1	At most 3 wi-fi devices can be supported when module works at AP mode.	
	E103-W01 including TCP Server、TCP Client and UDP as Socket.	
2	At most 5 sockets can be connected when module works at TCP Server mode.	
2	Based on TCP connection mechanism, if long time connection is needed, please use TCP	
	heartbeat bag.	

#### 4.2 Networking model

Module builds TCP Client to connect with remote server when works at STATION mode(classic)

Can be used for home LOT, meter-reading, real-time monitoring etc. Module can communicate with network server for real-time data.

User can operate module by real-time communication.





# 5. AT command

Only list some special AT command for your reference, more AT command please refer to the official datasheet.					
	AT+EBPWM-PWM configuration				
1	T+EBPWM= <channel_num>,<period>,<duty0>[, <duty1>][,<duty2>][,<duty3>]</duty3></duty2></duty1></duty0></period></channel_num>	Parameter specification : channel_num : channel number period : cycle(1000~10000 corresponding to 1~10ms) duty0~duty3 : PWM0~PWM3 Duty cycle setting ( high level time=duty*45ns ) Duty number should keep the same with channel number. Response : First transmission response : PWM Start! Non-first transmission response : OK			
	Error response : ERROR Example : Set PWM0 duty cycle to 25%, while set PWM1 duty cycle to 10ms AT+EBPWM=2,10000,55555,111111				
	Notes : PWM cannot be closed after booting, and channel number cannot be modified.				
	AT+EBIOGET to get IO input status				
2	AT+EBIOGET= <gpio_num></gpio_num>	Parameter specification : gpio_num : GPIO number, 4,5,12,13 and 14 are available. Response : 0 or 1 OK			
	Example : AT+EBIOGET=4				
	Notes : The pins which could been used to be the PWM output, is not suitable for this command.				
	AT+EBIOSET to configure IO output status				
3	AT+EBIOSET= <gpio_num> , <value></value></gpio_num>	Parameter specification : gpio_num : GPIO number, 4,5,12,13 and 14 are			

	I			
		available.		
		Value: Pin status can be configure to 0,1		
		Response : OK		
	Example : AT+EBIOSET=4 , 1			
	Notes : The pins which could been used to be the PWM output, is not suitable for this command.			
	AT+EBADC to get ADC value			
4	AT+EBADC	Parameter specification :		
		Range of input voltage : DC 0.0V~1.0V		
		Response :		
		45 ( real voltage=45/1024 )		
		ОК		
	Example : AT+EBADC			
	AT+EBSTATE register GPIO13 as Wi-Fi indicator			
		Parameter specification :		
	AT+EBSTATE= <en></en>	en:		
		Setting to 1 indicates set GPIO13 as wi-fi status		
_		indicator.		
5		Setting to 0 indicates cancel for set GPIO13 as		
		wi-fi status indicator.		
		Response : OK		
	Example : AT+EBSTATE=1			
	Notes : After setting GPIO13 as wi-fi indicator, the IO operation is forbidden.			

## 6. Customization

★Please contact us for customization.

 $\star$ Ebyte has established profound cooperation with various well-known enterprises.



# 7. About us



Chengdu Ebyte Electronic Technology Co., Ltd. (Ebyte) is specialized in wireless solutions and products.

- •We research and develop various products with diversified firmware;
- •Our catalogue covers WiFi, Bluetooth, Zigbee, PKE, wireless data transceivers & etc.;
- •With about one hundred staffs, we have won tens of thousands customers and sold millions of products;
- •Our products are being applied in over 30 countries and regions globally;
- •We have obtained ISO9001 QMS and ISO14001 EMS certifications;
- •We have obtained various of patents and software copyrights, and have acquired FCC, CE, RoHs & etc.