



Quick Start

Apr. 2017 Version 1.2

BLE-USB - USB to Bluetooth Low Energy Converter

Package Contents:

- 1. BLE-USB
- 2. Quick Start
- 3. CD

Note:

If any of these items are missed or damaged, contact the local distributors for more information. Save the shipping materials and cartons in case you want to ship in the future.

1. Installing Driver and Utility

i. Installing BLE_USB_driver at first.

CD: Bluetooth \Windows Driver\ Web:ftp://ftp.icpdas.com.tw/pub/cd/ble_cd/ble-usb/software/windows%20driver/

ii. Installing Utility

CD: Bluetooth\Utility Web: ftp://ftp.icpdas.com.tw/pub/cd/ble_cd/ble-usb/software/utility

iii. Insert the BLE-USB into your computer, and you can find out COM Port Number in the "Device Manager." Refer to the user manual for more details.

CD: Bluetooth\Document Web: ftp://ftp.icpdas.com.tw/pub/cd/ble_cd/ble-usb/document

2. Basic Concept Introduction

Broadcast mode

Broadcast mode is the new feature in the Bluetooth LE. The Broadcaster device broadcasts packets to every device around it. The Bluetooth LE Observer device can receive the information without connection. **Broadcast mode is one-way data communication.**

Connection mode

In the connection mode, the Slave only can connect to a Master, but the Master can connect to three Slaves. The Slave will not send broadcast packet after link has been established. The Master and Slave could send data after a link has been established.

3. LED Indication



LED Indicator	LED Color	Description
RF Link	Green	The connection status of Bluetooth LE
Status	Red	The module status of BLE-USB

The LED had different pattern in the connection and broadcast mode. Refer to user manual for more detail (chapter 2.2.1).

4. Testing Communications

The utility supports two types for the module test. The "connection Mode" is used to test module in the connection mode. The "Broadcast Mode" is used to test the module in the broadcast mode. Refer to user manual for more detail (chapter 4.3).

Connect both the BLE-USB and tBLE-720 to the Host PC via the USB and RS-232. You may need to use two serial port tools to simulate the data transmission.





i. Connection Mode

It needs two devices in the connection test. One is the Master; the others are slaves. Make sure the Group ID is same.

The BLE-USB needs setting before the test. Please follow the procedure below:

<u>Step1</u>: Open the tBLE-720/BLE-USB utility, open the "Basic Parameter Setting" page.

3 tBLE-720/BLE-USB Utility		—	~
Setting Test Firmware Upgrade Abo	out		
Basic Parameter Setting		Device Information	
Recovery Factory Setting			
COMPart COM	On un Daut	Firmware Version: -	
	Open Fort	Bluetooth LE Version: -	
D-1 D-1 - 115000	Class Bast	Model Name: -	
Baud Rate: 115200 V	Close Port	Device Address: -	

Figure 4-2 open the basic parameter setting page

Step2: Open the COM Port (the default baud rate is 115200), and click the "Next" button.



Figure 4-3 open the COM port

<u>Step3</u>: Skip the broadcast parameter setting. <u>You need one Master and one Slave in the test.</u> You also can change the "Group ID".



Figure 4-4 change the connection parameter

<u>Step4</u>: Enable or disable the Mater identify mechanism. The identify key must be same in the Master and slave. The concept of Mater identify mechanism can refer to the user manual (Chapter 1.6).

🌮 Basi	c Paramete	er Setting			—		Х	
Step 1	Step 2	Step 3	St	ep 4	Step 5	Step 6	5	
_Set Ma:	ster Identify	Mechanism	1					
Enable	e Master Ider	ntify mecha	unism:					
D		Identify	v Key:	ICPDA (6 Byte;	S ;0~9; A~	 Z; a~z)		
			P	revious		Next		2
Open COM	4 success							

Figure 4-5 Master identify mechanism setting

Step5: Change the "Send Mode" to the connection mode, and click "Upload Setting" button.

🎏 Basic Parameter Setting 🦳 🗌 🗙		🌃 Basic	Parameter	Setting		—		
Step 1 Step 2 Step 3 Step 4 Step 5 Step 6		Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	,
Other Parameter		Save Con	nfiguration					
Baudrate: 115200 🗸	K	Path:						
1 Send Mode: Connection mode 🧹		Se	elect a path to	store your	configuration	n		
RF Power level: 4	5/				Select Path	Co	Save onfiguration	3
Previous Next					previous		Upload Setting	
Open COM success		Open COM	success					

Figure 4-6 change to connection mode

<u>Step6</u>: open "Connection Mode" page.





Step7: open the COM port, and send the data to the peer device.

🖇 Test module - connection mode	0		-			- 🗆 X
Set COM Port		-End with the Strip	ng	Auto Send		Connection Parameter
COM Port: COM1 🧹 💭	Open Port	None	○ <cr><lf></lf></cr>	Period: 1000	ms	Connection Role:
		○ <cr>(0x0D)</cr>	○ «LF>«CR>	Send	Set	Peer Amount:
Baud Rate: 115200 🗸	Close Port	○ <lf>(0x0A)</lf>	O Other: 6162	~		Group ID:
L			eg: ab = 6162(ASCII)	Stop		Device Name:
Send					3	Device Address:
Send String:					Send	
						Connection List - Peer Device 1

Figure 4-8 open COM port and send data

Send data to peer device and receive Data

You can type data in the textbox and click the "Send" button. The data of textbox will send to the peer device. This data will also show print to the textbox.

Send String:	123456789ABCDEF	Send



Send: 123456789ABCDEF 123456789ABCDEF	Statistics-Send Length: 17 Byte: 34 Clear	Statistics-Send Length: 0 Byte: 0 Clear	Receive: 123456789ABCDEF 123456789ABCDEF	Clear Message
	Statistics-Receive Length: 0 Byte: 0 Clear	Statistics-Receive Length: 17 Byte: 34 Clear		~

Figure 4-10 print data in the textbox

Figure 4-11 Receive data from peer device

ii. Broadcast Mode

It needs two devices in the broadcast test. One is the Broadcaster; the others are Observers. Make sure the Group ID is same.

The BLE-USB needs setting before the test. Please follow the procedure below:

Step1: Open the tBLE-720/BLE-USB utility, open the "Basic Parameter Setting" page as shown in the Figure 4-2.

🌃 Basic Parameter Setting × Step 4 Step 2 Step 3 Step 5 Step 6 Step 1 Set COM Port-COM Port: ICOM1 Open Port Baud Rate: 115200 Close Port \sim Load Next Configuration

Step2: Open the COM Port (the default baud rate is 115200), and click the "Next" button.

Figure 4-12 open the COM port

<u>Step3</u>: <u>You need one Broadcaster(Advertiser) and one Scanner (Observer) in the test.</u> Skip the connection parameter setting. The broadcast channel and group ID must be same in the Advertiser and Observer.



Figure 4-13 change the connection parameter

Step4: Enable or disable the Mater identify mechanism (refer to **Figure 4-5**). The identify key must be same in the Master and slave. The concept of Mater identify mechanism can refer to the user manual (Chapter 1.6). *Step5*: Change the "Send Mode" to the *Broadcast mode*, and click "Upload Setting" button. The utility will upload the setting to the BLE-USB.



<u>Step6</u>: open "Broadcast Mode" page.

🗯 tBLE-720/BLE-USB Utility		×
Setting Test Firmware Upgrade About		
COM Por Broadcast Mode COM Port: COM1 ~ 🗘	Open Port Close Port Close Port	-

Figure 4-15 Testing broadcast mode on utility

<u>Step7</u>: open the COM port. Only the Broadcaster can send the packet to the Observer. The Observer only can receive the broadcast packet without connection.

🌮 Test module - Broadcast mode	2		- 🗆 X
Set COM Port		Set Advertising Packet	
COM Port: COM22 🧹 💭	Open Port	ADV Packet: +ADV: The adv packet of maxi	<cr></cr>
		···· · · · · · · · · · · · · · · · · ·	
Baud Rate: 115200 ~	Close Port	Resume Set Packet	Pause

Figure 4-16 Open the COM port

Broadcaster (Advertiser): set the broadcast packet, and click "Set Packet" button. The Advertiser will start to send the broadcast packet.



Figure 4-17 Set the broadcast packet

Observer (Scanner): When the Observer receives the data from the Advertiser, and it will show in the textbox.

🐝 Test module - Broadcast mode			-	- 🗆 X
Set COM Port COM Port: COM19	Open Port	–Set Advertising ADV Packet: 4 T	g Packet +ADV: The adv packet of maximum is	<cr> s 21 Byte</cr>
Baud Rate: 115200 🗸	Close Port	Resume	Set Packet	Pause
Scan Result			Broadcast Parameter	
Devices	Clea	r Message	Broadcast Role: Scar	mer
Receive: 15:13:30.9060273- 123456789ABCDEF 15:13:33.9273292- 123456789ABCDEF 15:13:34.9259489- 123456789ABCDEF 15:13:36.9270485- 123456789ABCDEF 15:13:37.9267417- 123456789ABCDEF 15:13:39.9369863- 123456789ABCDEF 15:13:40.9266257- 123456789ABCDEF 15:13:42.9260754- 123456789ABCDEF 15:13:46.9547716- 123456789ABCDEF 15:13:46.9547716- 123456789ABCDEF 15:13:50.9431600- 123456789ABCDEF 15:13:52.9556576- 123456789ABCDEF 15:13:52.9556576- 123456789ABCDEF 15:13:55.9693328- 123456789ABCDEF 15:13:59.9708027- 123456789ABCDEF 15:13:59.9708027- 123456789ABCDEF 15:14:00.9723800- 123456789ABCDEF		*	Broadcast Channel: 37,3 Broadcast Interval: 1000 Group ID: 0 Device Address: 0000 Statistics - Receive Length: 15 Byte: 270	8,39 D ms DE06D0001 Clear
Advertiser Information 1	Advertiser Informatio	n 2	Advertiser Informatio	3
RSSI:	RSSI: MAC Adress:		RSSI:	
open com port is succeeful.				Read Advertiser Information

Figure 4-18 Receive data and show in the textbox

5. Support

Please contact us if you have any questions about products.

ICP DAS website: http://www.icpdas.com Email: service@icpdas.com