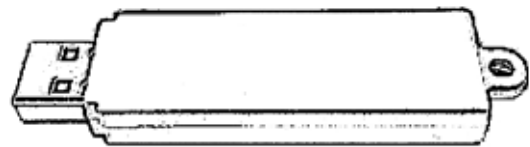


InBT-UART

Bluetooth Dongle with UART interface



Note;

* This user manual describes methods and functions for using InBT-UART.

* This product is a Bluetooth dongle using UART communication interface which shall be assembled into the InBody (Body composition analyzer) or BPBIO (Blood pressure monitor) manufactured by Biospace for supporting data communications between the InBody or BPBIO and a personal computer.

1. Overview

This product is a Bluetooth dongle using the UART communication interface. It can only be controlled through a processor supporting UART communication and cannot be used by directly connecting to a USB port of the InBody (Body composition analyzer) and BPBIO (Blood pressure monitor)

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2. Product Specifications

Bluetooth Version 2.1 + EDR, Class 1	
Internal antenna	
Frequency band	2.4GHz ISM band
Operation range	200-400m
Transmission strength	+13 dBm
Reception sensitivity	-86 dBm
Supported services	Serial Port Protocol(SPP), Dial-up Networking Profile(DUN), OBEX Object Push Profile(OPP), OBEX File Transfer Profile(FTP), Human Interface Device Profile(HID), Phone Book Access Profile(PBAP), Health Device Profile(HDP), Device Identification Profile(DI), Service Discovery Protocol(SDP)



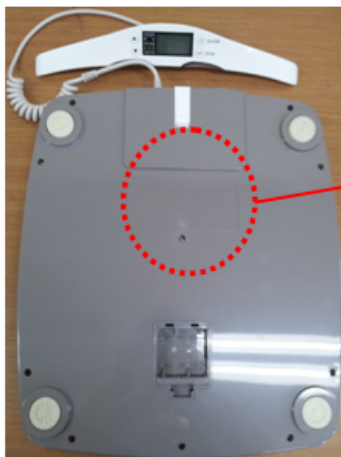
Bluetooth 2.1 supports AFH (Adaptive Frequency Hopping). AFH helps minimize Interference between WiFi and Bluetooth signals by automatically selecting communication channels not used by WiFi signals. Please keep in mind that AFH may not guarantee complete non-interference between WiFi and Bluetooth signals depending on the operating environment. This includes the number of devices used and the distances between them.

Performance may vary by operating environment.

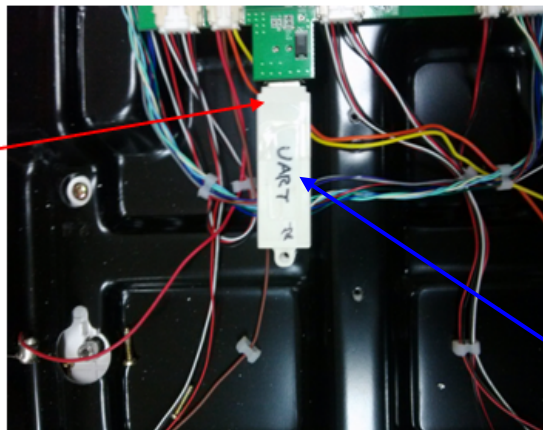
3. Usage of Bluetooth dongle using the UART communication interface.

※ The Bluetooth dongle using the UART communication interface, InBT-UART shall be assembled inside of InBody (Body composition analyzer) or BPBIO (Blood Pressure Monitor) as following picture and measured data will be transferred to a personal computer, or external device has Bluetooth function.

Ex) InBody120



<Bottom view>



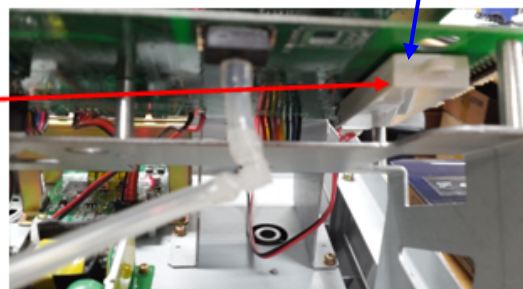
<Inside of bottom>

InBT-UART

Ex) BPBIO



<Back view>



<Inside of back>

(1) Hardware Pin Map

Please refer this pin map of InBT-UART for designing your hardware



1 : Vcc (requires supply of 3.3V or higher)

2 : RxD

3 : TxD

4 : GND

(2) UART settings

Please set asynchronous communication in your hardware controller for communication with InBT-UART.

* The following default UART settings are used for InBT-UART.

- Baud rate : 115200 bps
- Data bits : 8
- Stop bits : 1
- Parity bit : No parity
- HW flow control : Disable

(3) ASCII control commands

After UART setting, please control the InBT-UART using the ASCII commands below.



Provided below are instructions for using basic ASCII commands. For more information on the examples and instructions for using other commands, contact Biospace.

- AT command

This command is used for testing operation of the InBT-UART firmware. The command returns OK to indicate normal operation.

```
AT
OK
```

- SET command

This command is used for retrieving or modifying the InBT-UART settings.

- Retrieving settings

```
SET
SET BT BDADDR 00:07:80:ff:ff:f1
SET BT NAME WT32-A
SET BT CLASS 001f00
SET BT IDENT BT:47 f000 4.0.0 Bluegiga iWRAP
SET BT LAP 9e8b33
SET BT PAGEMODE 4 2000 1
SET BT POWER 0 0 0
SET BT ROLE 0 f 7d00
SET BT SNIFF 0 20 1 8
SET BT MTU 667
SET CONTROL BAUD 115200,8n1
SET CONTROL CD 00 0
SET CONTROL ECHO 7
SET CONTROL ESCAPE 43 00 1
SET CONTROL GAIN 8 8
SET CONTROL MSC DTE 00 00 00 00 00 00
SET CONTROL READY 00
SET PROFILE SPP Bluetooth Serial Port
SET
```

- Modifying settings

In the following example, the Bluetooth PIN code required for pairing is set to “0000.” The code is saved in the non-volatile memory and only needs to be set once.

```
SET BT AUTH * 0000
```

- INQUIRY command

This command is used for searching for other Bluetooth devices available for pairing within the operating range.

```
INQUIRY 5
INQUIRY_PARTIAL 00:21:86:35:c9:c8 02010c
INQUIRY_PARTIAL 00:07:80:93:d7:66 240408
INQUIRY_PARTIAL a8:7b:39:c3:ca:99 5a020c
INQUIRY 3
INQUIRY 00:21:86:35:c9:c8 02010c
INQUIRY 00:07:80:93:d7:66 240408
INQUIRY a8:7b:39:c3:ca:99 5a020c
```

- CALL command

The CALL command is used for establishing Bluetooth connections. The CALL event indicates that a connection is being attempted the CONNECT event indicates that a connection has been established.

```
CALL 00:07:80:93:d7:66 1101 RFCOMM
CALL 0
CONNECT 0 RFCOMM 1
```

- SET RESET command

This command is used for resetting the InBT-UART settings to factory defaults.

```
SET RESET
WRAP THOR AI (4.0.0 build 317)
Copyright (c) 2003-2010 Bluegiga Technologies Inc.
READY.
```

5. Troubleshooting

- (1) If connection is not good, try pairing the devices again.
- (2) Transferring data in large volumes may result in low performance depending on the device connected.
- (3) This product uses the same frequency bands as normal WiFi signals and is subject to ambient interferences.

FCC Information

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions :

- (1) This Device may not cause harmful interface, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna.
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

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Biospace Co., Ltd. [Head office]

518-10 Dogok 2- dong, Gangnam-gu, Seoul 135-854 KOREA

TEL : 82-2-501-3939 FAX : 82-2-501-3978

Homepage : <http://www.e-inbody.com>

E-mail : [info @inbody.com](mailto:info@inbody.com)

“CAUTION : This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. ”