Chen-Chang Fitness TECH. Ltd.

BlueTooth Module AD-05 Datasheet

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Module Name	AD-05	
UpDate	2014/07/15	
Version	V1.1	

GAME-BIKE 運動＋遊戲的完美結合

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1. Introduction

Part Name: AD-05 Bluetooth Module
Part Number: AD-05-xxxx

The Chen-Chang AD-05 Bluetooth Module is design for Bluetooth standard SPP/ BLE electronic accessories via Bluetooth connectivity.
It is available in the 2.4GHz ISM band Class 2 Radio, compatible with Bluetooth Core Specification Version 3.0/ 4.0 + EDR.
It narrows down the module size and minimizes its cost.
The optimized power design minimize power consumption to keep low battery

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1.1 Features

- Bluetooth 3.0/ 4.0+ EDR compliant
- Low power 1.8V RF operation
- RF transmitter output power Class 2
- RF receiver GFSK typical -90dBm, π/4 PSK typical -90dBm, 8DPSK typical -83dBm, BLE typical -92dBm
- Internal ROM and 4Mibts of flash
- 1 LED

1.2 Application

- GPS
- Printers
- Electric Scale
- Blood Pressure Monitors
- Bar code Scanner
- Industrial Applications (CNC, PLC, RFID)
- Embedded systems

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2. Product Specification

2.1 Interfaces
- Bluetooth RF interface
- Bluetooth Link Status Pin
- UART up to 921600 bps

2.2 Hardware Design Considerations
- Power：The module requires 5V.
- Serial Flash and Firmware Version：Firmware code is stored on chip internal flash.
- Radio Characteristics：Frequency Band: 2402 ~ 2480 GHz

Number of Channels:	
Bluetooth V3.0 + EDR	Low Energy
79 channels (1MHz)	40 channels (2MHz)

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Current Consumption (Class BR/ EDR)				
Operation Mode	Peak current	AVG current	Unit	Note
Peak current at TX mode	48.82		mA	
Peak current at RX mode	44.76		mA	
Deep power down mode		0.37	mA	
Connected + Sniff, Master (No data)		2.26	mA	No data was transmitted Sniff (40 20 4 0)
Connected + Sniff, Master (No data)		0.84	mA	No data was transmitted Sniff (500 20 4 0)
Connected + Sniff, Slave (No data)		0.82	mA	No data was transmitted Sniff(500 20 3 3) iPhone parameters
Data, Master		17.35	mA	Data transmitted at 115200bps
Data, Slave		20.04	mA	Data transmitted at 115200bps

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Current Consumption (Low Energy)

Operation Mode	AVG current	Unit	Note
Standby mode (Discoverable & connectable mode)	8.477	mA	fast adv interval = 20ms
Standby mode (Discoverable & connectable mode)	3.363	mA	adv interval = 160ms
Deep power down mode	0.371	mA	
Connected (No data)	0.696	mA	No data was transmitted connection interval = 500ms, (LE_Connection_Interval_Max = 0x0190)
Connected (No data)	1.55	mA	No data was transmitted connection interval = 20ms, (LE_Connection_Interval_Max = 0x0010)
Connected (transfer data)	12.688	mA	connection interval = 500ms, (LE_Connection_Interval_Max = 0x0190)
Connected (transfer data)	16.761	mA	connection interval = 20ms, (LE_Connection_Interval_Max = 0x0010)

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Baud Rate					
Desired baud rate	Clock	P	Div	Actual Baud rate	Error Rate %
921600	48000000	13	3.50641026	923077	0.16
460800	48000000	13	7.51282051	461538	0.16
230400	48000000	13	15.525641	230769	0.16
115200	16000000	13	10.1837607	111888	-2.87
57600	16000000	13	20.8675214	58608	1.75
38400	16000000	13	31.5512821	38462	0.16
28800	16000000	13	42.2350427	28623	-0.62
19200	16000000	13	63.6025641	19231	0.16
14400	16000000	13	84.9700855	14480	0.55
9600	16000000	13	127.705128	9615	0.16
4800	16000000	13	255.910256	4808	0.16
2400	16000000	13	512.320513	2399	-0.03

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3. Compatibility Requirements

The Chen-Chang AD-05 Bluetooth module shall pass the standard test plan,
which includes hardware compatibility and reliability, and software compatibility test.

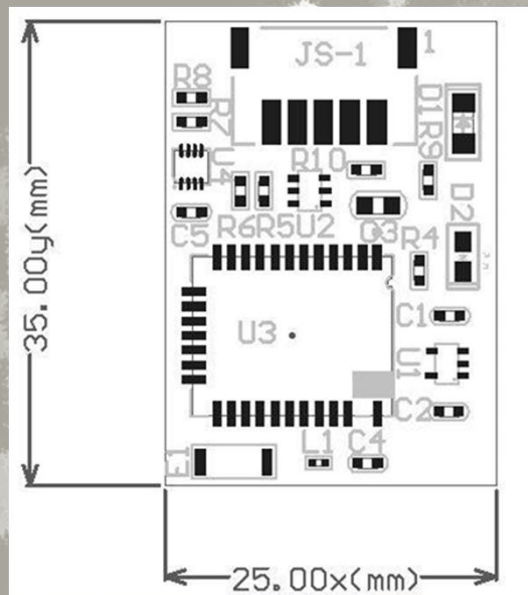## 4. Environmental Requirements
4.1 Temperature

Conditions	Operating Temperature	Non-Operating Temperature
Minimum	-10 °C	-40 °C
Maximum	+70 °C	+80 °C

4.2 Humidity

Conditions	Operating Temperature	Non-Operating Temperature
Minimum	10 %	5 %
Maximum	90 %	95 %

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Appendix A: Dimension

Appendix B: Product Image

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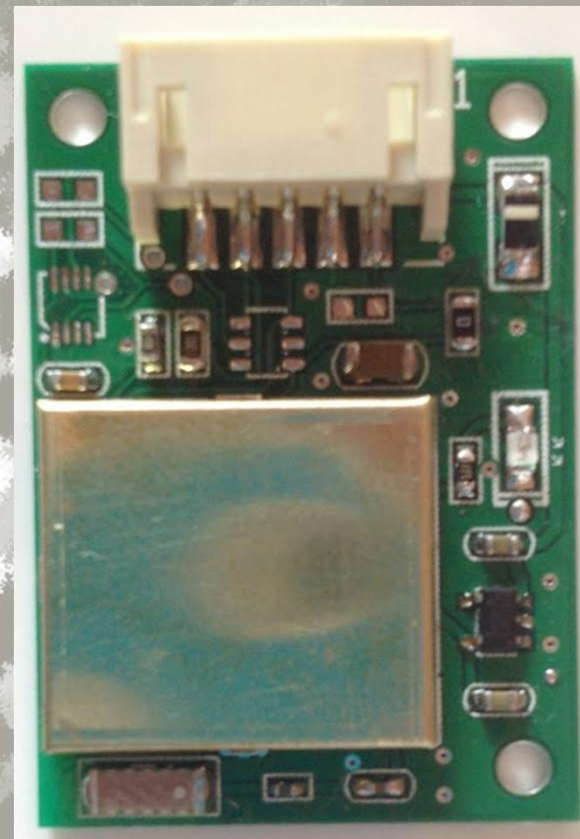
Appendix C: PIN Assignment

P/N	I/O	Name	Description
1	O/P	BT Link / GND	Bluetooth Link Status (with R9) / Ground (with R10)
2	P	GND	Ground
3	O	TX	UART_TX
4	I	RX	UART_RX

Considerations

注意事項：依NCC要求低功率電波輻射性電機管理辦法：
第12條：經形式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率，加大功率或是變更原設計之功能及特性。
第14條：低功率射頻電機之使用不得影響飛航安全及干擾合法通訊；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前項合法通信，指依電信法規定作業之無線電通訊。
低功率射頻電機需忍受合法通信或工業，科學及醫療用電波輻射性電機設備之干擾。

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FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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 to correct the interference by one or more of the following measures:
— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for he lp.

CAUTION:
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
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 interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.