

# MD8105-A06

## Bluetooth Low Energy Module

### Revision History

Rev.	History	Issue Date	Remark
0.1	Initial issue.	Feb. 25, 2014	Preliminary
0.2	Add module photo	Mar. 04, 2014	
0.3	Add 32K module part no.	Apr. 28, 2014	
0.4	Change Operation Temp	Sep. 27, 2014	
0.5	Add <b>industrial version</b> module	Oct. 7, 2014	
0.6	Add Application note	Nov. 7, 2014	

## 1. General Description

JESS Bluetooth module, MD8105-A06 is designed for a Bluetooth low energy (BLE) single mode with 6dBm (MAX) output power wireless applications. Using AMIC A8105 FSK/GFSK system-on-chip (SOC) wireless transceiver IC. MD8105-A06 integrates high speed pipeline 8051 MCU, 16KBytes In-system programmable flash memory, 2KB SRAM, various powerful functions and excellent performance of a leading BLE FSK/GFSK RF transceiver. It can be operated with wide voltage from 2.0V ~ 3.6V. MD8105-A06 has various operating modes, making it highly suited for systems where ultra-low power consumption is required. MD8105-A06 need to connect with external antenna.

## 2. General specification

Number	Item	Description
1	Chipset	A8105
2	Dimension	15.5*13.5*2.5mm
3	Frequency	2.40GHz~2.48GHz unlicensed ISM Band
4	Bluetooth Standard	V4.0
5	Voltage	2.0~3.6V
6	Temperature	<b>Commercial Version:</b> -20 °C ~ 70 °C <b>Industrial Version:</b> -40 °C ~ 85 °C
7	Storage Temperature	<b>Commercial Version:</b> -40 °C ~ 85 °C <b>Industrial Version:</b> -55 °C ~ 125 °C
8	Frequency Range	2403~2480MHz
9	RF Transmission Power	+6dBm to -10dBm
10	Receive Sensitivity	-92dBm at 1Mbps(data rate)

## 3. Electrical specification

Item	Specification	Remark
Supply voltage	2.0V-3.6V	Unit : Volt
Current consumption	0.8uA @Deep Sleep mode 3mA @ Stand-by mode 9.5mA @ PLL mode 18mA @ RX mode 21mA@TX mode (Pout=6 dBm)	Typical
Frequency	2402 – 2480 MHz	ISM band

Transmit output power	6 dBm @ room temperature	Typical <a href="#">Annotation1</a>
Rx sensitivity	-92 dBm @ 1Mbps mode	BER $\leq$ 1E-3
Modulation	GFSK	
Interface	19 pin PCB connector	
PCB Dimension	15.5(L) x 13.5(W) x 0.8(H)	Unit : mm
Operating temperature	<b>Commercial Version:</b> -20 °C ~ 70 °C <b>Industrial version:</b> -40 °C ~ 85 °C	

**Annotation1:**

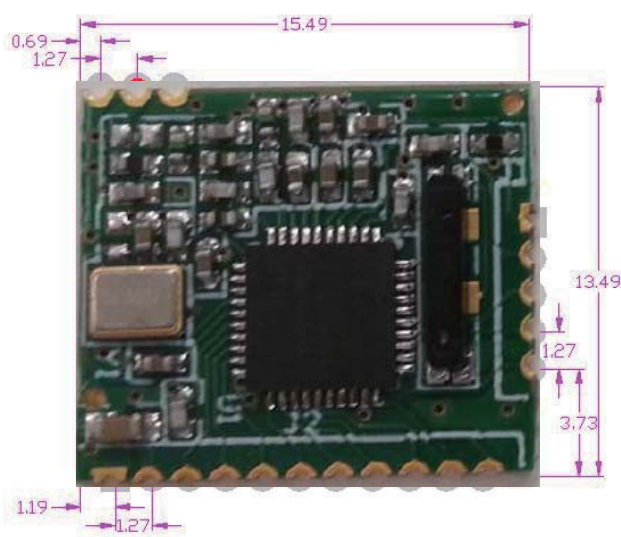
1. Tx output power = 6dBm,

Register: [082C] Tx test(TBG: 6, PAC: 3, TXCS: Low Current ) value:0X5E.

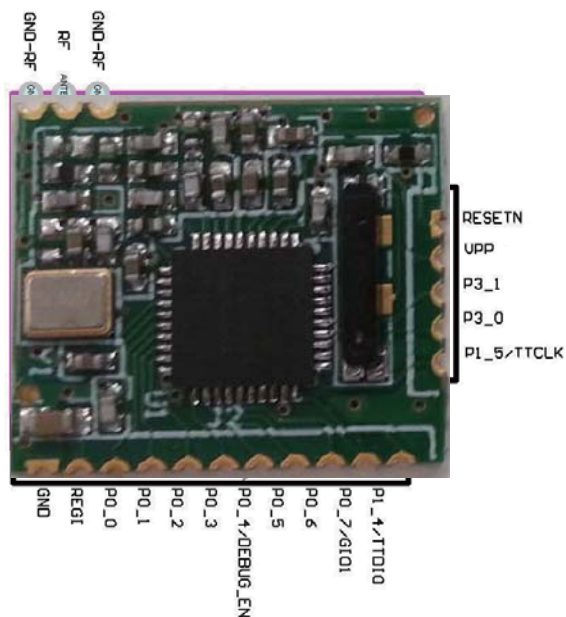
2. TX output power can be set by Register: [082C] Tx test.

**4. Dimension and Interface Pinout.**

**Dimension:**



PCB Size (Unit: mm)



PCB Pin Out

**Interface J1:**

Pin No.	Pin name	Description	Type
1	RESETN	RESETN	I
2	VPP	NC	NC
3	P3_1	DIO/UART0_TX/ADC7	I/O
4	P3_0	DIO/UART0_RX/ADC6	I/O
5	P1_5	DIO/TTCK (Program PIN)	O

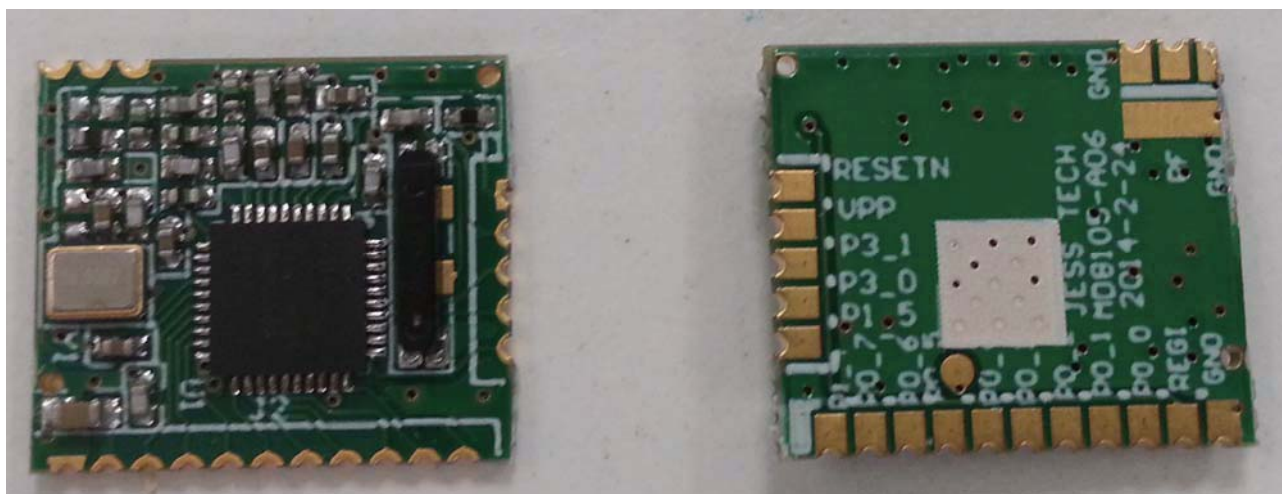
**Interface J2:**

Pin No.	Pin name	Description	Type
1	GND	Ground	PWR
2	REGI	RF module supply voltage input	PWR
3	P0_0	DIO/SPI_SCLK	I/O
4	P0_1	DIO/SPI_MOSI	I/O
5	P0_2	DIO/SPI_MISO	I/O
6	P0_3	DIO/SPI_SSEL	I/O
7	P0_4	GPIO/ICE mode (Program PIN)	I
8	P0_5	DIO/I2C_SCL	I/O
9	P0_6	DIO/I2C_SDA	I/O
10	P0_7	GIO1/INT2	I
11	P1_4	DIO/TTDIO (Program PIN)	I/O

#### Interface J3:

Pin No.	Pin name	Description	Type
1	GND-RF	RF Ground	RF GND
2	RF	RF input/output	RF
3	GND-RF	RF Ground	RF GND

#### 5. Module photograph



#### 6. Application Circuit



## 7. Ordering Information.

Part Number	Size(W*L*H)	Description	Marking
MD8105F4-A06	15.5*13.5*2.5mm	A8105 16K flash commercial version Module	F4
MD8105F5-A06	15.5*13.5*2.5mm	A8105 32K flash commercial version Module	F5
MD8105F4I-A06	15.5*13.5*2.5mm	A8105 16K flash industrial version Module	F4I
MD8105F5I-A06	15.5*13.5*2.5mm	A8105 32K flash industrial version Module	F5I

## 8. QDID and BQB Information.

QDID: [B022182](#)

### BQB search:

Open web site and search: AMIC:

<https://www.bluetooth.org/tpg/listings.cfm>

## 9. Application Note.

MD8105-A06 Module has no any antenna. Please add “F” type PCB or chip antenna when using it. Doing Demo, it can solder one wire (about 30mm, solder on Module’s RF Pin) to replace the external antenna.



Note: The module is limited to OEM installation ONLY; The OEM integrator is responsible for ensuring that the end-user has no manual instructions to remove or install module.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following:

“Contains Transmitter Module FCC ID: XXXXXXXX”

when the module is installed inside another device, the user manual of this device must contain below warning statements;

1、 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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

That separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.

This product is mounted inside of the end product only by professional installers OEM. They use this module with changing the power and control signal setting by software of end product within the scope of this application. End user can not change this setting.

The equipment complies with RF exposure limits. This module is limited to installation in mobile or fixed applications. The antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note: The Grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. such modifications could void the user's authority to operate the equipment.