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EZBee™

2.4GHz Zigbee Serial Module

User Manual: Evaluation Kit

Manual Version 1.21

EZ way to go wireless with ZigBee

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Revision History: User Manual of EZBee™

Version	*Document Number*	*Changed Contents*	*Date*
1.2	EZB_manual_0123	Commands Update by Firmware Upgrade	01/23/2006
1.1	EZB_manual_1201	Commands Addition by Firmware Updates	12/01/2005
Pre	EZB_manual_0927	Preliminary Version	09/26/2005

Module Version History

Part no.	Description	Version	Release Date
EZB-001	2.4GHz Zigbee Module Short Range	EZBEE.FI.0.9.5 EZBEE.RI.0.9.5	Jan. 2006
EZB-100	2.4GHz Zigbee Module Long Range	EZBEE.FI.0.9.5 EZBEE.RI.0.9.5	Jan. 2006
EZB-001EK	EZB-001 Evaluation Kit	EZBEE.FI.0.9.5	Jan. 2006

<EZB-001EK: EZBee™ Evaluation Kit>

Contents

1. About EZBee™ (Zigbee Module)

EZBee™ Evaluation Kit (part no.: EZB-001EK) is the evaluation kit of EZBee™, which is a compact Zigbee single-board module compliant to the 2.45GHz Zigbee specification v1.0 of IEEE 802.15.4. With EZBee™, users may enable Zigbee wireless network easily without a professional knowledge on Zigbee. EZBee™ is designed to be used as a serial RF module to a Host system.

Using AT commands provided, users may communicate with EZBee™. Full AT commands available can be found in the User manual of EZBee™ (doc# EZB_manual_1201)

EZBee modem provides two ways of transmitting messages between modules, ***Connectionless mode and Connection mode***.
Connectionless Mode: In this mode, users may send data (point-to-point or broadcast) to the other nodes in the connected Zigbee network by AT commands.
Connection Mode: In this mode, users may send data WITHOUT AT commands to other nodes in connected network.
Each modules has extended address, short address and unique ID. The unique ID is used in both connectionless & connection mode.

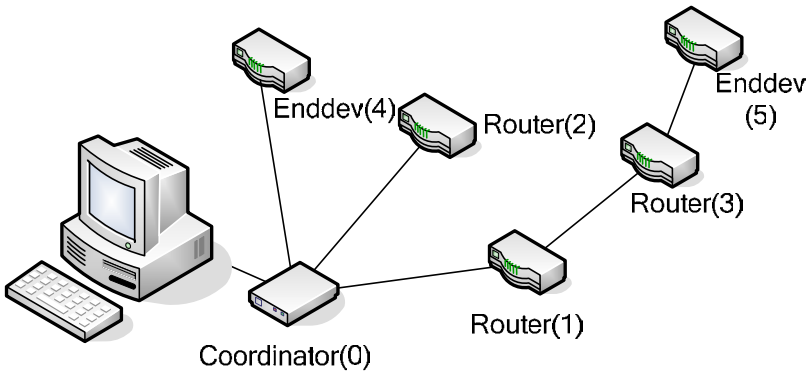


Figure 1.2 ZigBee Network With EZBee™

EZBee-EK includes:

Item	Number of articles
Test Board	2ea
EZB-001 modules (Short range)	2ea (1ea of Coordinator / 1ea of Router)
EZB-100 modules (Long range)	2ea (1ea of Coordinator / 1ea of Router)
Battery & Snap	2ea
Antennas	2ea
USB cables (for power supply / configuration / test)	2ea
CD	1ea

2. Evaluation Board

< EZBee-001 Evaluation board>

<EZBee-100 evaluation board>

***NOTE: External Memory:**

Users may add 64KB memory if needed using U4(K6X1008T2D, 128KB) and U6(74LVX573MTC) places. ***If a user expand the memory, the user needs to upgrade Firmware accordingly, so to have Firmware EZBEE.FX.0.9.5 or EZBEE.RX.0.9.5 for appropriate operation.***

1) **DC Power Jack**: Users may supply 5V DC power to this jack.

<DC plug polarity>

Via UPB Port – 5V PC power,
Via DC Power port: 4V ~ 10V DC Power

2) **USB interface**: Using this interface, users may supply power via USB cable, configure EZBee™ after installation of USB/Serial Driver provided via Virtual COM port.

3) **JTAG interface**: With JTAG interface, users may upgrade firmware of EZBee™.
4) **RS232 interface**: Users may communicate with EZbee™ via RS232 interface using 1:1 RS232 cable.

5) **Antenna Connector**: SMA right-threaded connector.
6) **LED operation**:

LED1 (Red)	Red LED blinks when transmitting data.
LED2 (Red)	Red LED blinks when receiving data.
LED3 (Green)	Coordinator: Green LED is ON as power is supplied. Router: When the Router joined the Zigbee Network, this LED3 will lit on.
LED4 (Yellow)	After the module is powered on, and when Micom operates properly, this LED4 will be ON.
LED5 (Green)	LED5 will be ON When evaluation board operates well after powered on.

7) **Switch**:

SW1	RESET SW
SW2	FACTORY RESET SW (Press SW1 while pressing SW2) *Factory Reset : Factory Reset will removed all of the information, except the MAC address stored in Flash Memory. Thus, to restart the NETWORK after factory reset, users need to configure AT+PID and AT+ID. #NOTE: If users do not use this Factory Reset Switch (SW2) in development, and do not want Factory Reset each time power is supplied, users need to make pin no. 38 to be HIGH by adding Pull-up resistor. **Pull-up: Adding Resistor between the Power and a Port to maintain HIGH status of the port. Module Port Number : 38번 Pin
SW3	POWER SW

	When powered by USB port, SW3 should be on the side of USB. When powered by DC port, SW3 should be on DC side.

PIN assignment of EZBee™

Pin Number		Description	Pin Number		Description
EZBee-001	EZBee-100		EZBee-001	EZBee-100	
1	1	GND	40	40	PB7(OC2)
2	2	VCC	39	39	PB4(OC0)
3	3	RXD	38	38	PE5(OC3C)
4	4	TXD	37	37	PE4(OC3B)
5	5	RTS	36	36	PE3(OC3A)
6	6	CTS	35	35	AREF
7	7	RESET	34	34	PF0(ADC0)
8	8	PG0(WR)	33	33	PF1(ADC1)
9	9	PG1(RD)	32	32	PF2(ADC2)
10	10	PC0(A8)	31	31	PF3(ADC3)
11	11	PC1(A9)	30	30	PF4(TCK)
12	12	PC2(A10)	29	29	PF5(TMS)
13	13	PC3(A11)	28	28	PF6(TDO)
14	14	PC4(A12)	27	27	PF7(TDI)
15	15	PC5(A13)	26	26	PA0(AD0)
16	16	PC6(A14)	25	25	PA1(AD1)
17	17	PC7(A15)	24	24	PA2(AD2)
18	18	PG2(ALE)	23	23	PA3(AD3)
19	19	PA7(AD7)	22	22	PA4(AD4)
20	20	PA6(AD6)	21	21	PA5(AD5)

41	GND
42	RF
43	GND

3. How To Start

Please follow the steps below to easily start to use Evaluation kit for your test.

1) Please install USB/Serial Driver to your PC. Drivers for both Windows and Linux can be found on the CD or website at www.widecastint.com

2) Please connect Evaluation Board to your PC using USB cable provided.

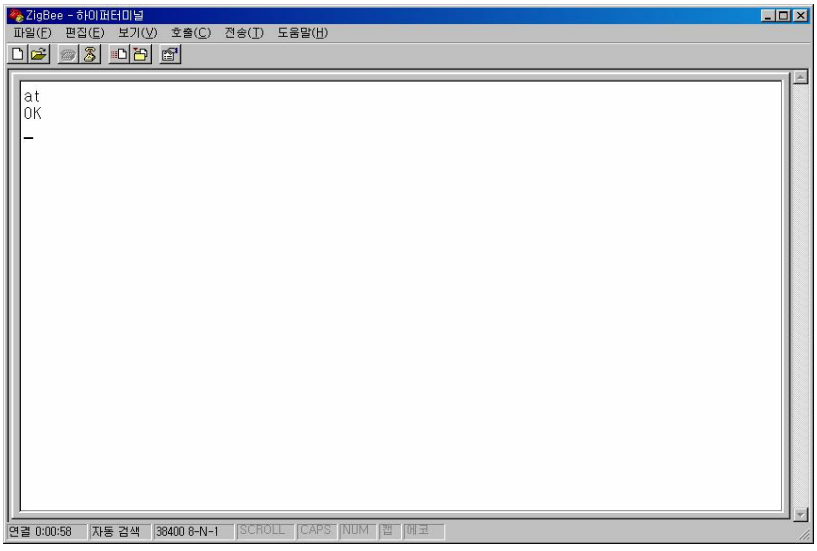
3) When you connect a board using USB cable, the board will get the power from PC via USB interface and LED4 will start to blink

4) Please open HyperTerminal in your PC, and access to EZBee™ via Virtual COM port, which was created by the driver at first stage.

   Default serial setting of EZBee™:
   38,400bps / 8 Data bit / 1 Stop bit / Non Parity / No hardware flow control

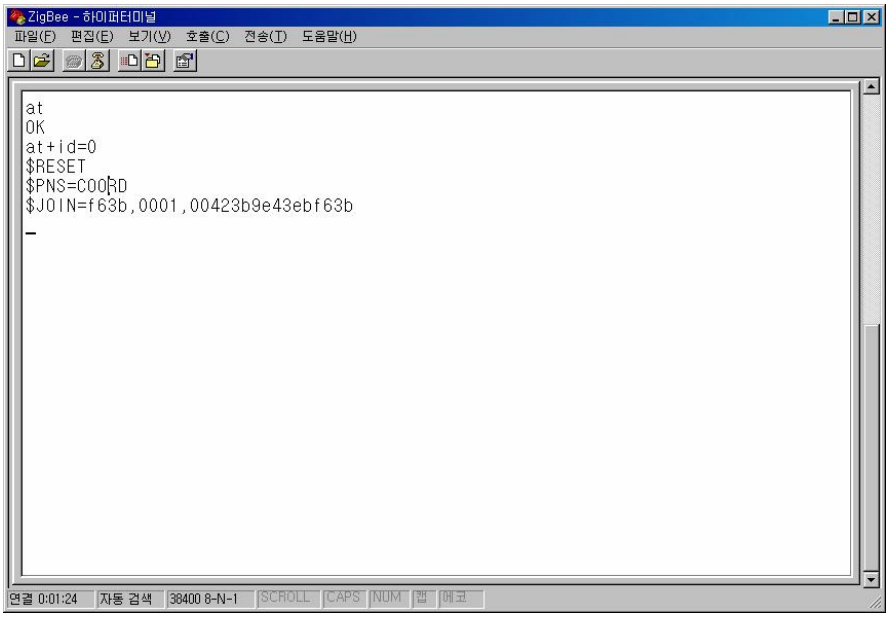
   Please make sure that you configured your HyperTeminal as above, to appropriately access the EZBee™.

5) When you type “AT”, you will get OK message from EZBee™.



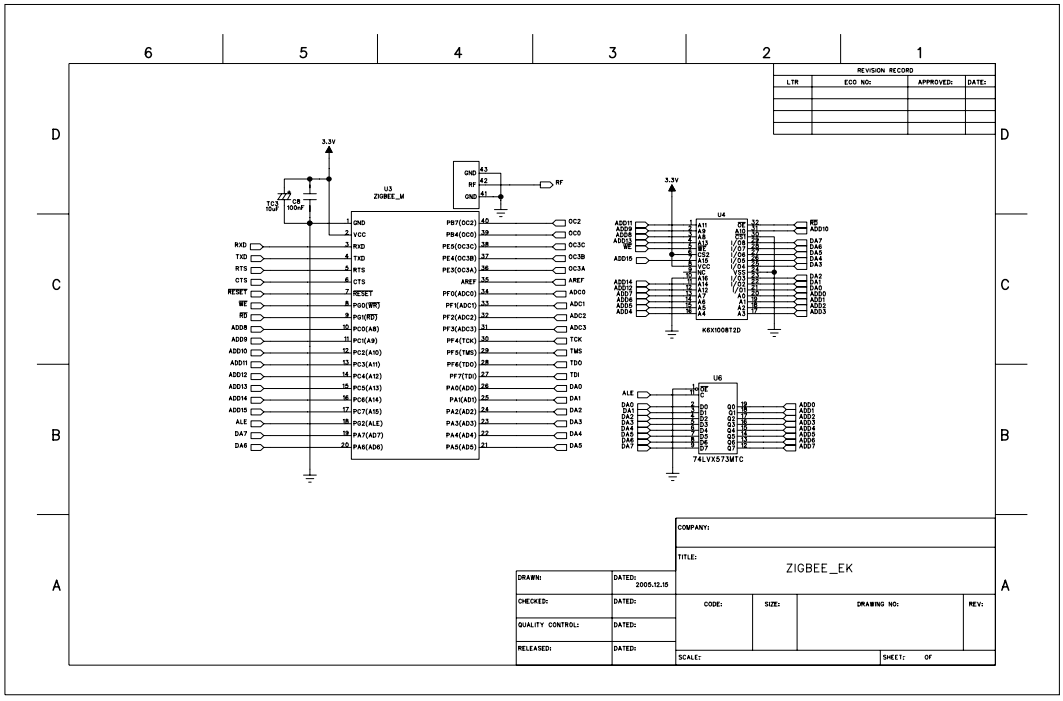
6) Make this board as “Coordinator” by “AT+ID=0” command. Once this command is applied, the board will start PAN operation automatically. Users may check this using LED3. LED3 will be lit when PAN started appropriately.

7) Do the same procedure (no. 3~no. 4) for the other evaluation board. When the other board is powered on, this board will join the PAN established by the Coordinator and LED3 will be ON. Users may check this status on the side of Coordinator.
For full test between two evaluation board, users may refer to the AT command manuals (EZBee User Manual ver.1.2)

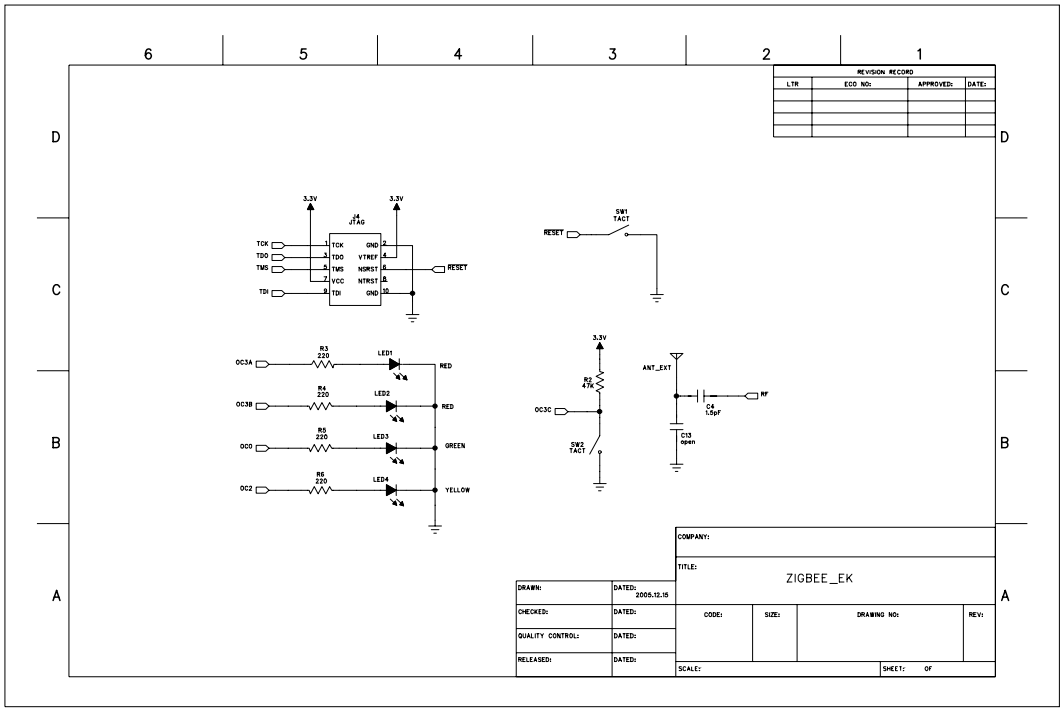


4. Circuit Diagram

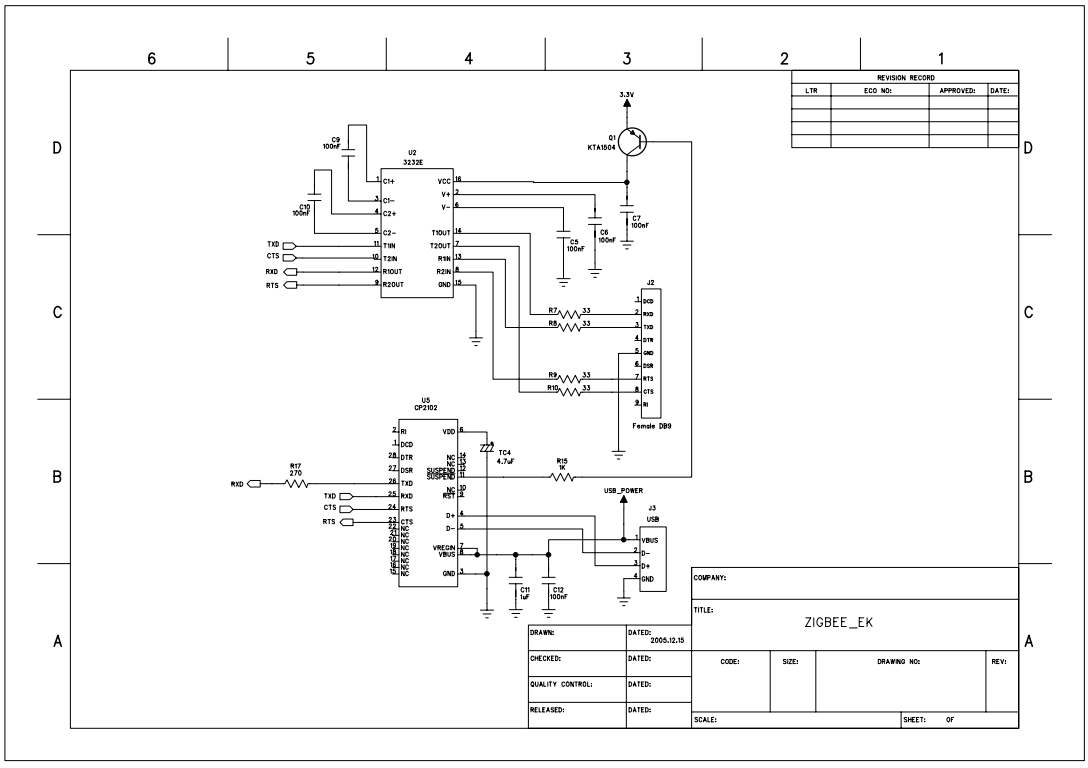
Below shows the circuit diagram of Evaluation board.



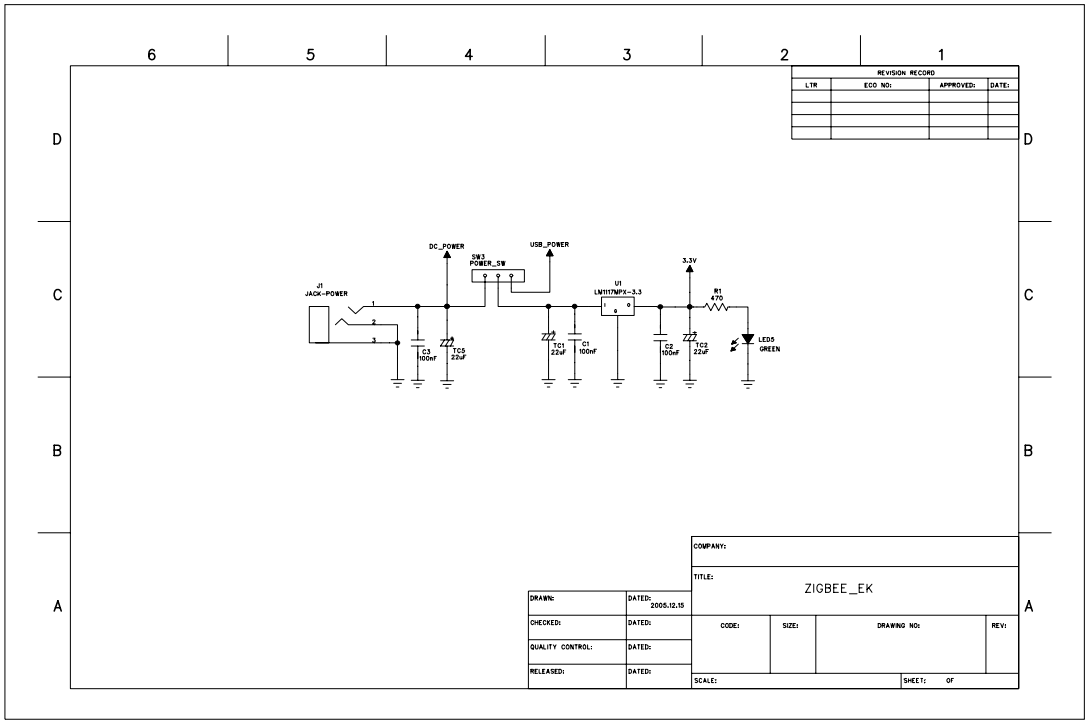
< Module & SRAM >



< JTAG & LED & SW >



< RS232 & USB >



< POWER >

5. Legal Notice & Contact

About this Document

This document provides introductory instructions on how to set up and manage EZBee™-DK001 within your networking environment. Should you require more information, please refer to website at www.widecastint.com .

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