ITEAD STUDIO
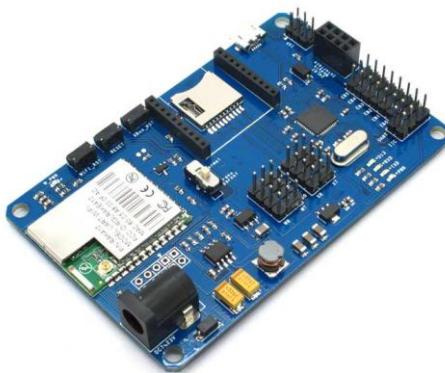make innovation easier

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WBoard EX

-WIFI Development Platform Based on Arduino

Overview

WBoard EX is a unique Arduino board with WIFI module, XBee socket, nRF24L01 + module interface, micro SD card interface, electronic brick interface and ATmega32U4 chip. WBoard EX boot procedure is based on Arduino Leonardo. With WIFI module, the board can achieve wireless communication with TCP / IP protocol. Via XBee and nRF24L01 + or WIFI can be used for wireless control with functions covering from smart home to remote control to meet various needs of different projects.

Specifications

PCB size	90.0mm X57.8mm X 1.6mm
Supply voltage	7~23V DC
Operating voltage	3.3V DC
Microprocessor	ATmega32u4
Indicator	W_PWR, PWR, TXD, RXD, D13
Communication interface	XBee, nRF24L01+,UART, IIC, ITDB02LCD, micro SD

Electrical characteristics

Parameters	Min.	Typical	Max.	Unit
Supply voltage	7	-	23	VDC
Input high voltage VH	3	3.3	3.6	V
Input low voltage	-0.3	0	0.5	V

Average current consumption	-	100	500	mA

Hardware
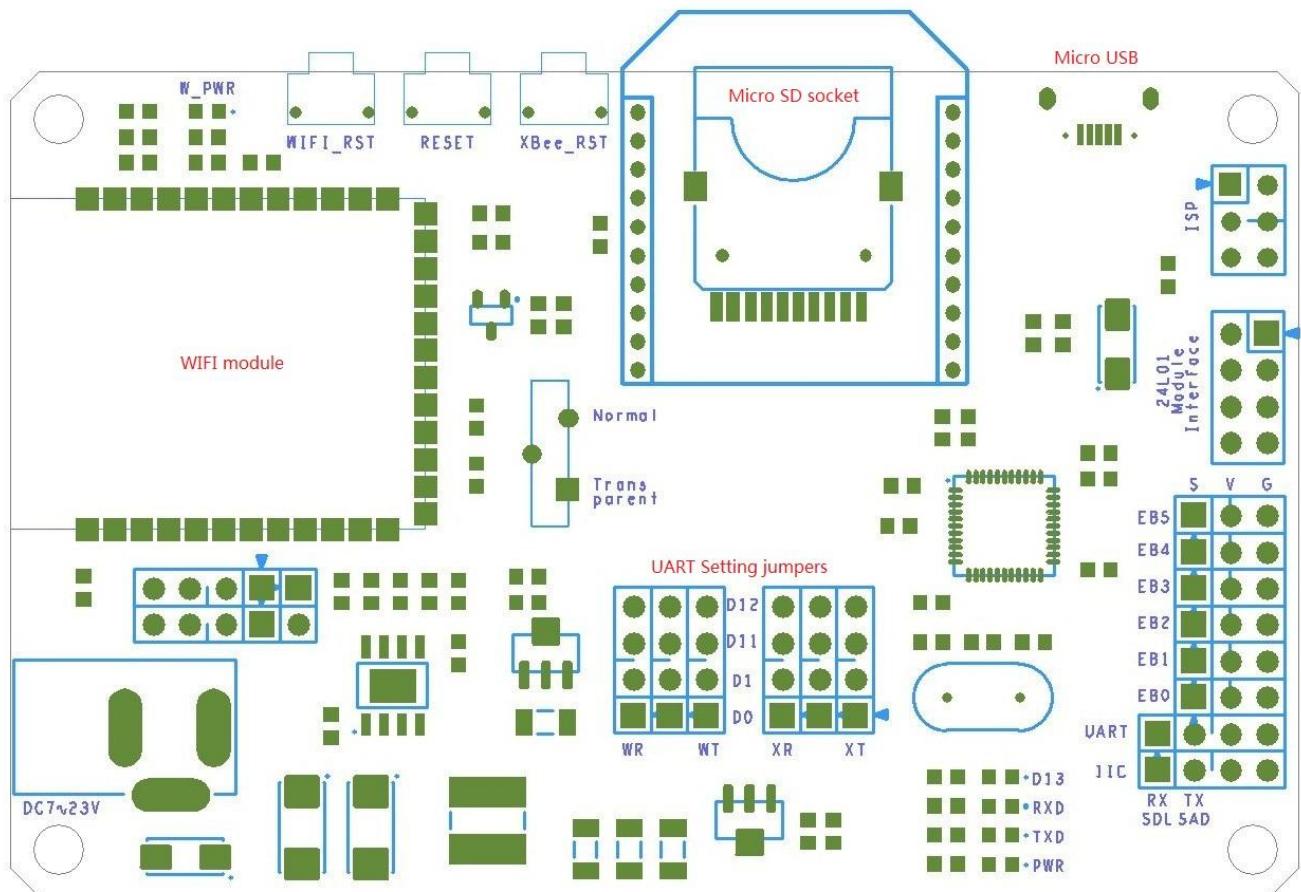
Pin map

ITDB02 EB Interface

Index of Interface	Name of Interface	Index of Arduino	Pin of Atmega32U4
1	EB0	A0	PF7
2	EB1	A1	PF6
3	EB2	A2	PF5
4	EB3	A3	PF4
5	EB4	A4	PF1
6	EB5	A5	PF0

nRF24L01+ Module Interface

Index of Interface	Name of Interface	Index of Arduino	Pin of Atmega32U4
1	GND	-	-
2	3V3	-	-

3	CE	D5	PC6
4	CS	D9	PB5
5	SCK	D15	PB1
6	MOSI	D16	PB2
7	MISO	D14	PB3
8	IRQ	D6	PD7

Micro SD Socket

Index of Interface	Name of Interface	Index of Arduino	Pin of Atmega32U4
1	SD_CS	D4	PD4
2	MOSI	D16	PB2
3	3V3	-	-
4	SCK	D15	PB1
5	GND	-	-
6	MISO	D14	PB3

WIFI module Interface

Index of Interface	Name of Interface	Index of Arduino	Pin of Atmega32U4
1	WIFI_RTS	D7	PE6
2	WIFI_CTS	D8	PB4
3	WIFI_RST	D10	PB6
Index of Interface	Name of Interface	Description	
1	D-RX	Upgrade firmware, UART input	
2	D-TX	Upgrade firmware, UART output	
3	ERROR	Indication for terrible errors in the module, high level is valid	
4	WPS	WPS function input, the descending portion is valid. By inputting VDD/2 in the pin when starting up, the module will enter WEB SERVER.	
5	BOOT	Used in boot program, high level is valid.	

UART setting jumpers

WIFI module and XBee module communicate with atmega32u4 via UART , as they cannot use the same serial port for communication, there are two sets of UART setting jumpers to configure UART communication as below :

UART Setting jumpers
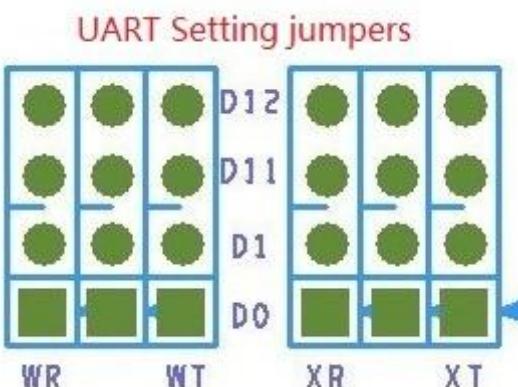
D0 and D1 are hardware UART serial ports for Arduino, and D11 and D12 are common IO interfaces. There are two ways to set UART communication.

Description	UART Setting Jumpers Connection	Figure
Hardware UART to WIFI, Software UART to XBee	WT – D0(Hardware Rx of Arduino) WR – D1(Hardware Tx of Arduino) XT – D11(Software Rx/Tx of Arduino) XR – D12(Software Rx/Tx of Arduino)	
Software UART to WIFI, Hardware UART to XBee	WT – D0(Hardware Rx of Arduino) WR – D1(Hardware Tx of Arduino) ST – D11(Software Rx/Tx of Arduino) SR – D12(Software Rx/Tx of Arduino)	
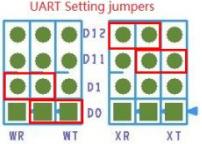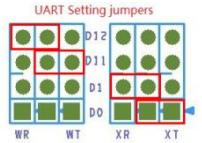
WT：TX pin of WIFI module
WR：RXpin of WIFI module
XT：TXpin of XBee module
XR：RXpin of XBee module

Indicator

1. PWR
   Power indicator: normally ON indicates normal power supply to WBoard EX.
2. W_PWR
   Power indicator: normally ON indicates normal power supply to WIFI module.
3. D13
   Test indicator: it will flash like a breathing light when resetting.
4. TXD
   USB serial port sending indicator: it will flash when there is data sending at USB serial port.
5. RXD
   USB serial port receiving light: it will flash when there is data receiving at USB serial port.

Button

1. Reset
   ATmega32u4 reset button: press the button to reset ATmega32u4.
2. WIFI_RST
   WIFI reset button: press the button to reset WIFI module.
3. XBee_RST
   XBee reset button: press the button to reset XBee module.

Switch

1. Transparent transmission selection switch

When the switch turns to 'Normal', module is powered on but will not enter transparent transmission mode; when the switch turns to 'Transparent', the module is powered on and will enter transparent transmission mode.

Revision record

Version	Description	Written by	Date
v1.0	Initial version	Stan Lee	25th, June, 2013

Switch