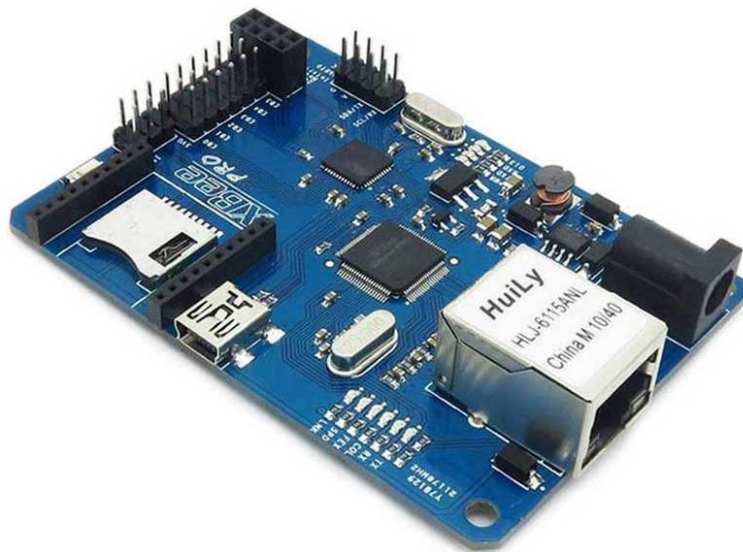ITead Studio
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# IBoard Ex

## -Ethernet Development Platform Based On Arduino

# Overview



The Iboard Ex is a unique Arduino board which features a WIZnet Ethernet port with POE, an XBee socket, nRF24L01+ module interface, Micro SD socket and an ATMEGA32U4. This board will add wireless XBee control as well as internet connectivity to your projects. And don't need any external programmer, just connect it with PC by a USB cable. It's great for anything from home automation to robot control. The possibilities are endless!
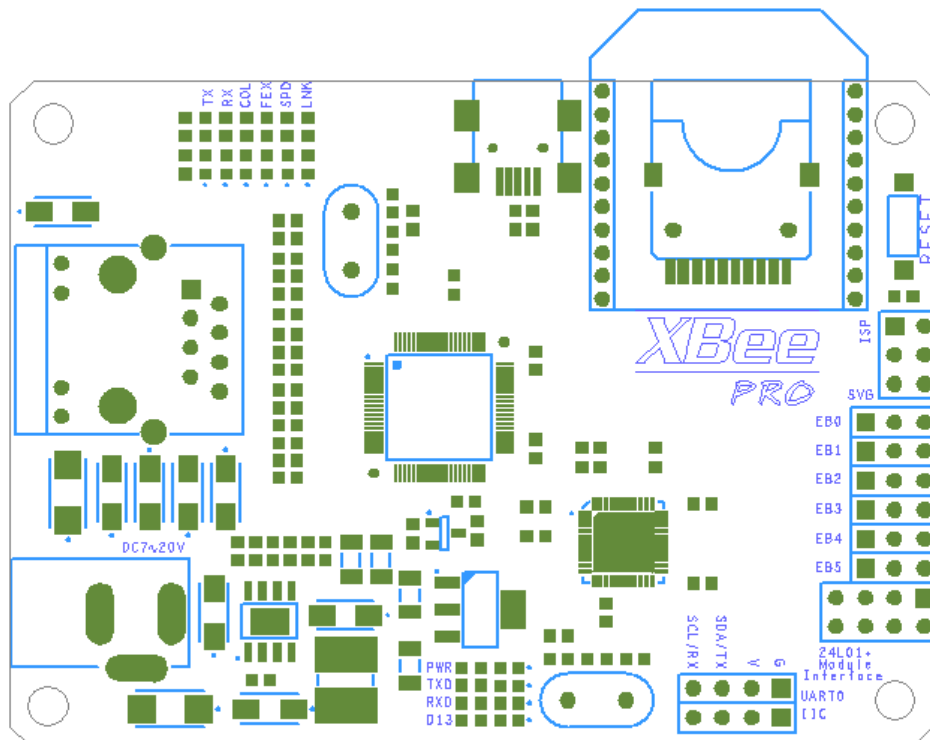
# Specifications

| PCB size | 80.77mm X 57.66mm X 1.6mm |
|---|---|
| Power supply | 7~23V DC |
| POE supply | 7~23V |
| Microprocessor | Atmega32u4 |
| Indicators | PWR, Tx, Rx, COL, FDX, SPD, LINK,TEST |
| Communication Interface | Ethernet RJ45,XBee,nRF24L01+,UART,IIC |
| RoHS | Yes |

# Electrical Characteristics

| Specification | | Min | Type | Max | Unit |
|---|---|---|---|---|---|
| Power Voltage | | 7 | – | 23 | VDC |
| Input Voltage VH | Target Voltage = 3.3V | 3 | 3.3 | 3.6 | V |
| Input Voltage VL: | | −0.3 | 0 | 0.5 | V |
| Current Consumption | | – | 100 | 500 | mA |

# Hardware



Top View Map

Ethernet RJ45 with POE, Micro-SD Socket, XBee interface, nRF24L01+ interface, analog/digital electronic brick interfaces and so on, many interfaces are designed and broke out for many projects as Ethernet communication, wireless communication, mass storage, digital control and signal sample.

# Pin Map

ITDB02 EB Interface

| Index of Interface | Name of Interface | Index of Arduino | Pin of Atmega32U4 |
|---|---|---|---|
| 1 | EB5 | A0 | PF7 |
| 2 | EB4 | A1 | PF6 |
| 3 | EB3 | A2 | PF5 |
| 4 | EB2 | A3 | PF4 |
| 5 | EB1 | A4 | PF1 |
| 6 | EB0 | 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 | D13 | PC7 |
| 6 | MOSI | D8 | PB4 |
| 7 | MISO | D7 | PE6 |
| 8 | IRQ | D6 | PD7 |

Micro SD Socket

| Index of Interface | Name of Interface | Index of Arduino | Pin of Atmega32U4 |
|---|---|---|---|
| 2 | SD_CS | D4 | PD4 |
| 3 | SD_MOSI | D16 | PB2 |
| 4 | 3V3 | – | – |
| 5 | SD_SCK | D15 | PB1 |
| 6 | GND | – | – |
| 7 | SD_MISO | D14 | PB3 |

W5100 Communication Interface

| Index of Interface | Name of Interface | Index of Arduino | Pin of Atmega32U4 |
|---|---|---|---|
| 1 | W5100_CS | D10 | PB6 |
| 2 | SD_MOSI | D16 | PB2 |
| 3 | SD_SCK | D15 | PB1 |
| 4 | SD_MISO | D14 | PB3 |
| 5 | W5100_RESET | D11 | PB7 |

W5100 Communication Interface

| Index of Interface | Name of Interface | Index of Arduino | Pin of Atmega32U4 |
|---|---|---|---|
| 1 | XBee_Reset | D12 | PD6 |
| 2 | RX | D0 | PD2 |
| 3 | TX | D1 | PD3 |

# Software

IBoard Ex is used the ATmega32U4, and compatible with Arduino Leonardo.

Now the SD and Ethernet library is not support well with Arduino Leonardo, so when you use the IBoard Ex with these libraries, you need to modify something to make the code work.

With embedded bootloader, IBoard Ex is easy to use by Arduino IDE through USD, and chooses the selection of the "Board" menu with "Arduino Leonardo". ISP of Atmega32U4 is broke out for download firmware easily.

# Revision History

| Rev. | Description | Release  date |
|------|-------------|---------------|
| v1.0 | Initial  version | 2012-09-03 |
|  |  |  |
|  |  |  |