

The **Xbee/Relay Shield v1.1** is designed to remotely control High Voltage devices. Home automation is becoming a trend for the electronic world and the Xbee/Relay Shield v1.1 is the gateway. Four (4) relays are available on board which can control up to 220V/3A devices.

#### PINOUT:

	<i>ACEduino 328</i>	<i>ACEduino MEGA 2560</i>
<b>Xbee Interface (MCU)</b>		
TX	D I/O 0	D I/O 0
RX	D I/O 1	D I/O 1
CS	D I/O 9	D I/O 9
<b>Xbee Interface (USB)</b>		
TX	D I/O 1	D I/O 1
RX	D I/O 0	D I/O 0
CS	D I/O 9	D I/O 9
<b>Relay (892-1CH-S 5V)</b>		
K1	D I/O 10	D I/O 10
K2	D I/O 11	D I/O 11
K3	D I/O 12	D I/O 12
K4	D I/O 13	D I/O 13
<b>Pushbutton (H)</b>		
RESET	Resets ACEduino board	

## • Xbee

The XBee/XBee-PRO ZB OEM RF Modules are designed to operate within the ZigBee protocol and support the unique needs of low-cost, low-power wireless sensor networks. The modules require minimal power and provide reliable delivery of data between remote devices.

#### Specifications:

Specification	XBee	XBee PRO
Performance		
Indoor/Urban Range	up to 133 ft. (40 m)	up to 300 ft. (100 m)
Outdoor RF line-of-sight Range	up to 400 ft. (120 m)	up to 1 mile (1.6 km)
Transmit Power Output	2mW (+3dBm), boost mode enabled 1.25mW (+1dBm), boost mode disabled	50mW (+17 dBm) 10mW (+10 dBm) for International variant
RF Data Rate	250,000 bps	250,000 bps
Serial Interface Data Rate (software selectable)	1200 - 230400 bps (non-standard baud rates also supported)	1200 - 230400 bps (non-standard baud rates also supported)
Receiver Sensitivity	-96 dBm, boost mode enabled -95 dBm, boost mode disabled	-102 dBm
Power Requirements		

The Xbee/Relay Shield v1.1 allows a “chip-select” circuit for the Xbee which is tied to Digital I/O 9 by default. A transistor circuit is used for this function. By using digitalWrite (9, LOW), user can deactivate the Xbee module to save power.

**NOTE:** The chip select circuit can be bypassed, meaning the Xbee will be “on” at all times by soldering the jumper J5. See illustration below for schematic and PCB layout of the circuit.



JUMPER (J5) for Chip Select Circuit

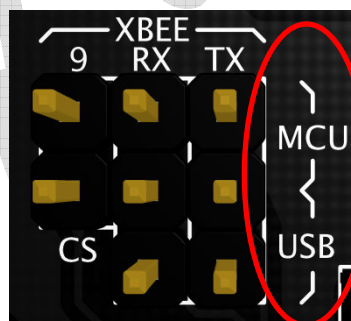
Shorted = Bypassed

Open = Activated

LED Indicators are also available for visual aids at the Xbee/Relay Shield v1.2 which can be found at the upper right corner of the board.

**XBEE\_ASS** = indicates transfer of data for Xbee  
**XBEE\_PWR** = indicates if Xbee module is turned on

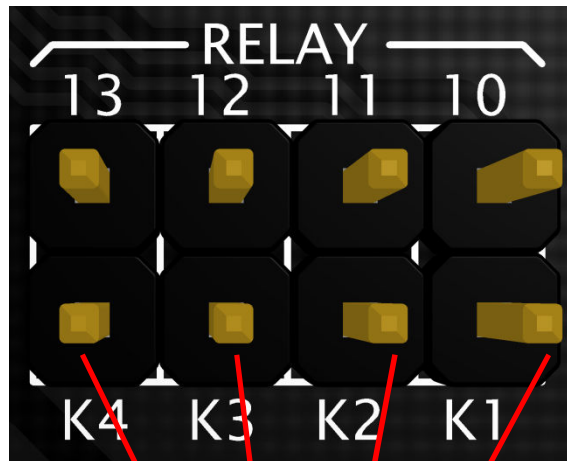
**UART communication** can be switched to either USB or MCU. When positioned at USB, the Xbee communicates directly with the onboard USB to UART converter chip FT232RL which allows you to read and display data from softwares. When positioned at MCU, the Xbee communicates with the MCU on the main board (ATMEGA328 for ACEduino 328 or ATMEGA2560 for ACEduino MEGA 2560) which allows you to display data through the Arduino Serial Port Monitor. See illustration below for reference.



Overlay indicator for Jumper Selector

- **892-1CH-S-5V (K1, K2, K3, K4)**

Onboard LED indicator (LD1-LD4) can be located on the middle of the board to help the user visualize which relay is activated or not. The Digital I/O pins that control the relay can be easily switched by removing the jumper selector and connecting the relay pins to the desired pin. See illustration below for reference.



Connect to other Digital I/O pin

**IMPT: The relays limit SHOULD NEVER be exceeded. See illustration below for reference.**

Type	892
Resistive load	NO / NC : 5A/3A 240VAC NO / NC : 7A/3A 120VAC
Max. switching current	NO / NC : 7A/3A
Max. switching voltage	277VAC
Max. switching capacity	NO / NC : 1200VA/720VA