



## Hub/RPI Board Manual

# Hub Board Parts



22pf Capacitor  
QTY: 2



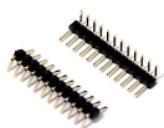
GREENLED3MM  
QTY: 1



1X4 Female Socket  
QTY: 2



NS-LS2 Level Shifter  
QTY: 1



1X4 Right Angle  
Header  
QTY: 2



16mhz Crystal  
QTY: 1



IC Socket DIP28  
QTY: 1



USB to UART  
QTY: 1



2X5 female socket  
QTY: 1



10k Resistor  
QTY: 1



Terminal Block 3 pos  
QTY: 3



1x4 Header Right  
Angle  
QTY: 1



POWER\_JACK  
QTY: 1



330 ohm Resistor  
QTY: 3



Terminal Block 2 pos  
QTY: 3



XBee S1 Radio  
QTY: 1



RED LED3MM  
QTY: 1



560 ohm Resistor  
QTY: 1

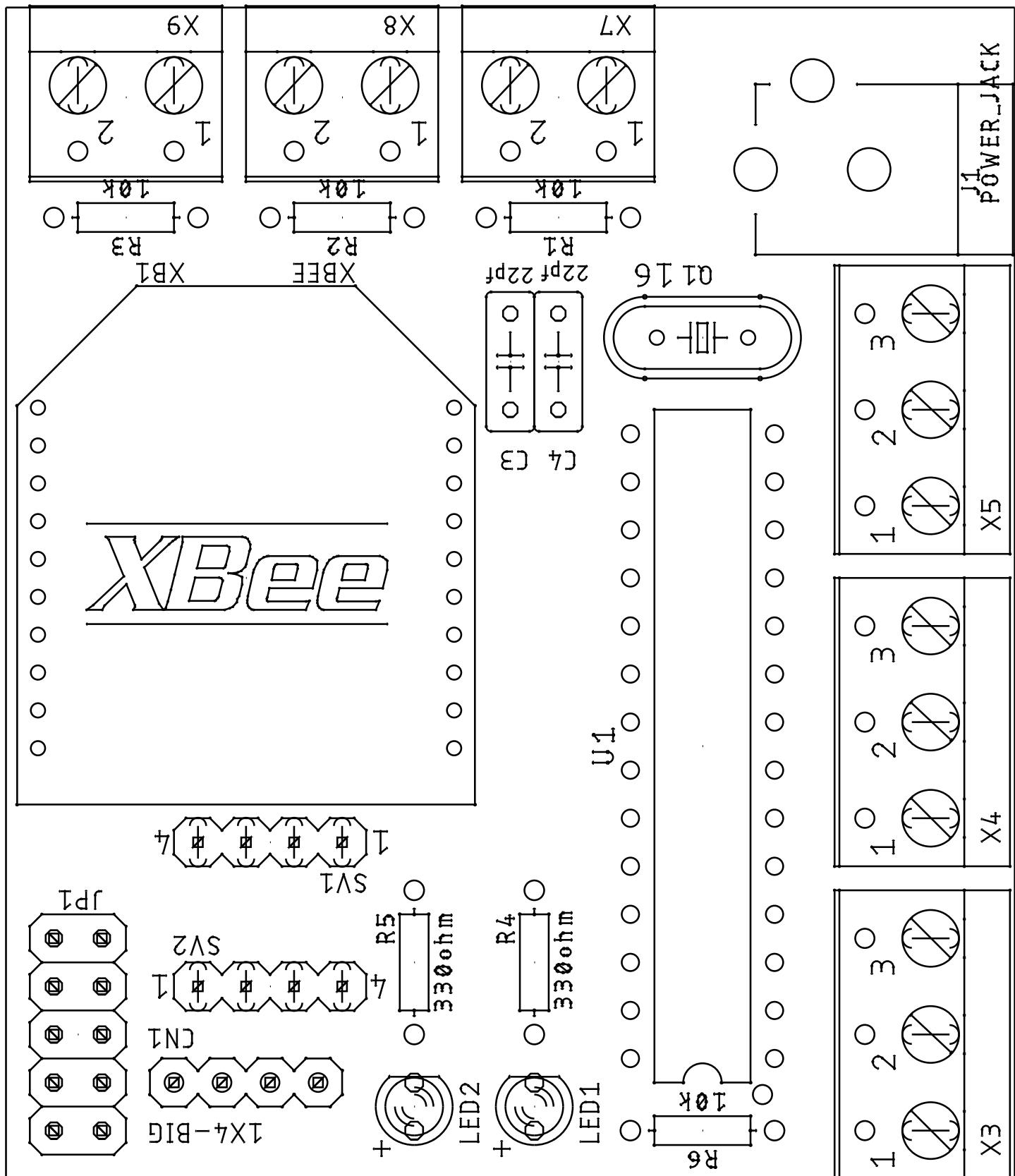


1X10 2mm female  
socket  
QTY: 2



USBA to USB MicroB  
QTY: 1  
**NOT INCLUDED**

# Hub Board



# Hub Partlist

Part	Value	
C3	22pf Capacitor	These parts have a letter/number designation. Match the designation in the list with the corresponding designation on the board diagram.
C4	22pf Capacitor	
CN1	1X4 Right Angle Header	Pay attention to the orientation of the components. Some need to be soldered/inserted in the proper orientation.
J1	POWER_JACK	
JP1	2X05 Female Header	R1 R2 and R3 are optional. Only if a switch is connected are they necessary
LED1	RED LED3MM - long leg in + hole	
LED2	Green LED3MM - long leg in + hole	
Q1	16mhz Crystal	
R1	10k Resistor (Brown, Black, Orange) Optional	
R2	10k Resistor (Brown, Black, Orange) Optional	
R3	10k Resistor (Brown, Black, Orange) Optional	
R4	330ohm Resistor (Orange, Orange, Brown)	
R5	330ohm Resistor (Orange, Orange, Brown)	
R6	10k Resistor (Brown, Black, Orange)	
SV1	1X4 Female Socket - For the level shifter	
SV2	1X4 Female Socket - For the level shifter	
U1	IC Socket DIP28	
X3	Terminal Block 3 pos	
X4	Terminal Block 3 pos	
X5	Terminal Block 3 pos	
X7	Terminal Block 2 pos	
X8	Terminal Block 2 pos	
X9	Terminal Block 2 pos	
XB1	1X10 2mm female socket 2 pcs	

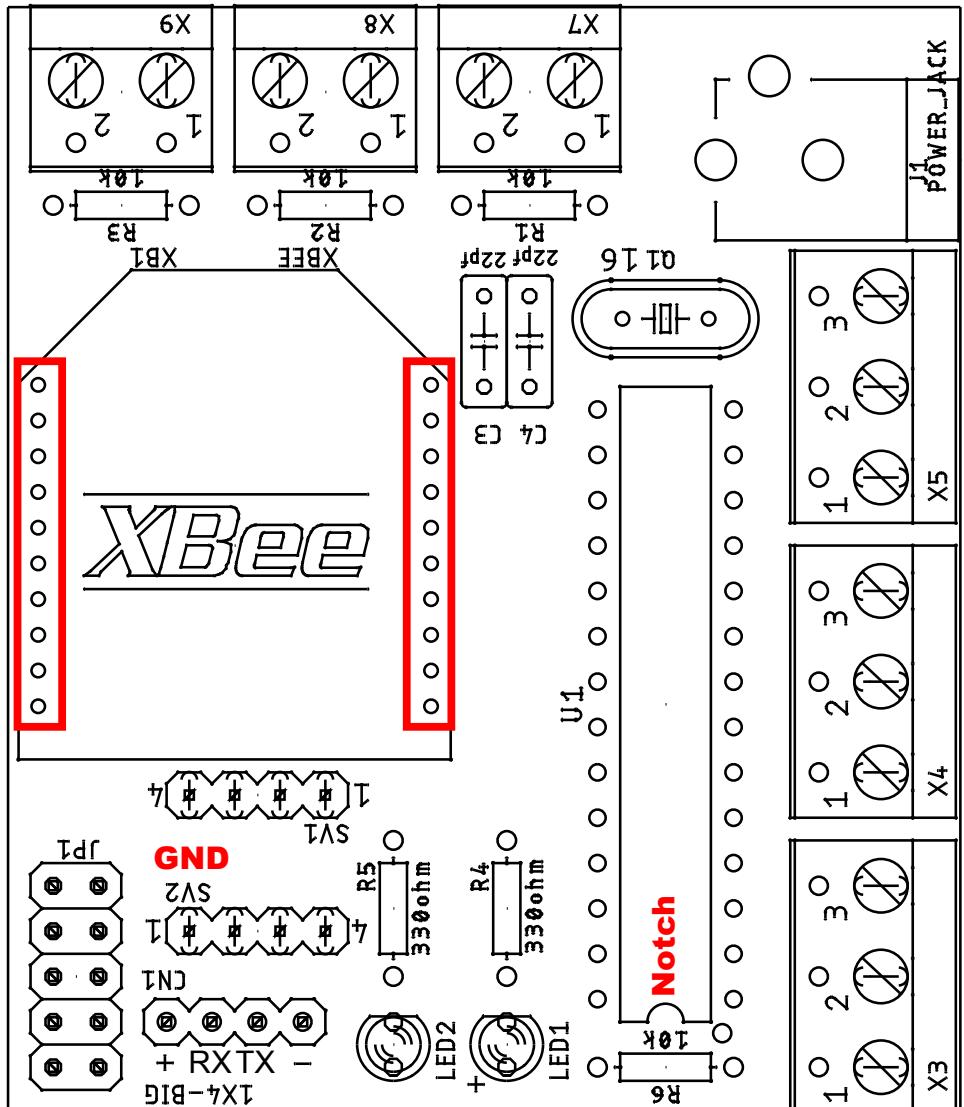
# Hub Board Notes

The 10k ohm resistors are optional. Only if a switch is connected are they necessary.

The XBee socket is not one part. It is 2 1x10 2mm female sockets

The level shifter has an end for ground(GND) and an end for power.

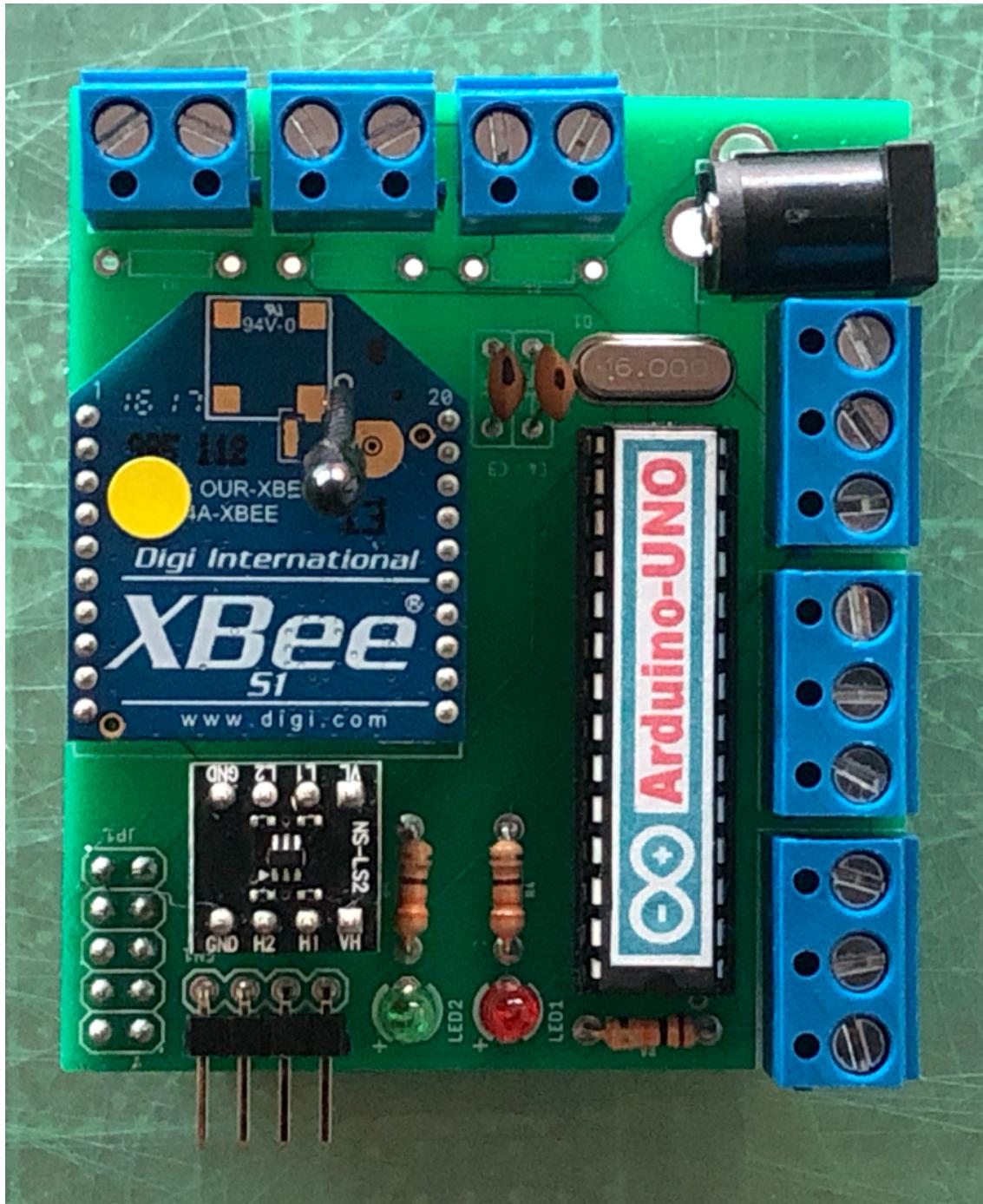
Insert the level shifter as indicated on this diagram.



If using the UART to USB, do not connect the + wire and use the 5v power jack at the same time. Use one or the other.

There is a correct orientation for the IC Socket DIP28. Find the notch on the chip. Match the notch on the chip with the notch on the board. Do the same when inserting the ATmega328 chip

# Completed Hub Board



# Hub Board/RPI Connection

To connect the RPI through the USB port. We used a USB to UART board. The USB to UART connects with 4 Female to Female hookup wires.

