# PICAXE I2C Explorer (AXE216)

Kit Contents:

- PCB   AXE216 I2C Explorer PCB
- R1   10k resistor (brown black orange gold)
- R2   22k resistor (red red orange gold)
- SCL/SDA   4k7 resistor (yellow violet red gold)**
- SCL/SDA   82k resistor (grey red orange gold)**
- C1   100nF capacitor
- C2   100uF capacitor
- CON1   3.5mm Download socket
- IC1   20 pin IC socket
- IC1-2   PICAXE-20X2
- IC2-3   8 pin IC socket
- J1-3   2 way Header *
- J1-3   Jumper Links
- BAT   Battery Clip
- X1   32kHz Watch crystal

supplied as a 10 pin header which can be snapped to length

**do not solder the SDA/SCL resistors until the appropriate mode of use has been selected!*
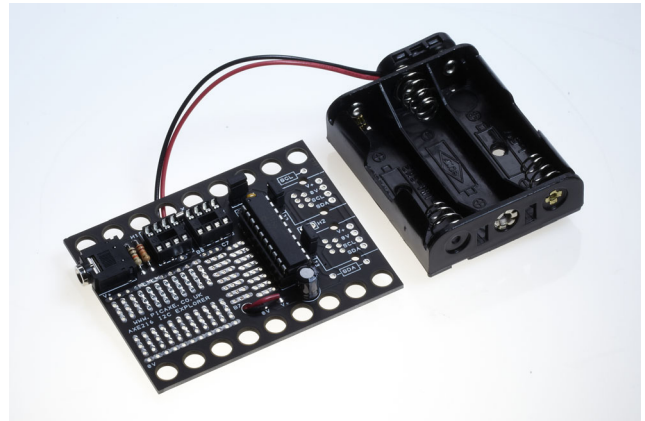
Optional, not supplied

- CON2-3   NXT Cable socket   part CON070
- IC2   24LC256 EEPROM   part MIC050
- IC3   DS1307   part MIC055
- H2   9V Battery clip   part BAT016 (for NXT Ultrasonic and IRSeeker)

Overview:

The AXE216 is designed for two main, separate, purposes:

1) as a general I2C experimentation board, to enable testing of I2C devices such as the DS1307 real time clock and 24LCxxx series memory EEPROMs. A general purpose prototyping area is also provided.

2) or as an I2C connection device for Lego NXT sensors (many of which also use I2C communication). The AXE216 PCB can act both as a master (controller to read Lego NXT sensors), or as a slave (virtual sensor for a Lego NXT controller brick). The row of holes down the side of the PCB allows simple mounting on Lego models. To connect to Lego NXT sensors the board requires 1 (or 2) CON070 NXT cable compatible connectors (not supplied, please purchase separately).

Please download the full datasheet from this web link:

www.picaxe.com/docs/axe216.pdf
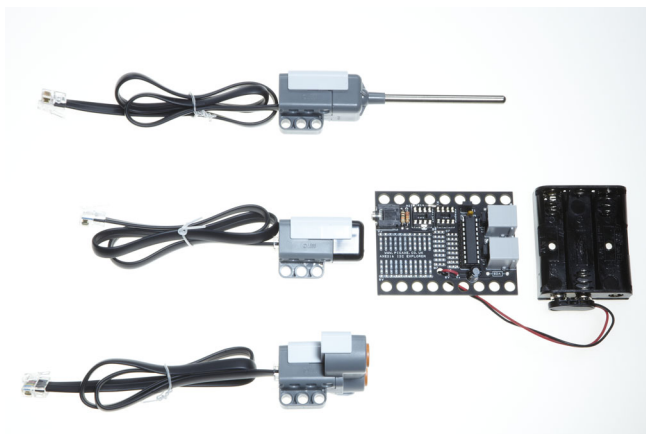
Assembly Instructions:

1. Solder the 10k and 22k resistors in position. DO NOT solder the SDA/SCL resistors yet, as they may not be required (see below).

2. Solder the watch crystal in position X1. If desired the can of the crystal may be carefully soldered to the top of the PCB to hold it in place. Take care not to overheat this small device whilst soldering.

3. Solder the three IC sockets and the download connector CON1 in position.

4. Solder the 100n capacitor C1 (not polarised) and 100uF C2 (polarised) in position.

5. Snap a 2 pin length off the header strip. Solder in position J1. Repeat for J2 and J3. Do not connect jumper links yet (see below).

6. Thread the battery clip through the PCB and solder in position, red wire to V+.

7. Insert the PICAXE-20X2 microcontroller into the 20 pin socket, ensuring correct orientation of pin 1 (towards C1).

When using as a general i2c explorer (EEPROM/DS1307 etc.):

8. Solder the 4k7resistors in positions SDA and SCL.

9. Place jumper links on headers J1, J2, J3

   Note that the DS1307 needs a 3V battery backup supply, connected via header H1. The black (ngeative, 0V) wire is connected to the pad next to the 'H1' label.

When using as a master controller for NXT sensors

8. Do not solder any resistors in positions SDA and SCL (as the pullup resistors are in the sensors). If resistors are already in position this is not a problem, as they can be disabled by removing jumper links J2 and J3.

9. Solder one or two CON070 NXT connectors (not supplied) in positions CON2 and CON3.

10. Place a jumper link on header J1. Links J2 and J3 are not required.

   Note that some, but not all, Lego sensors also require a separate 9V power supply. This is acheived by soldering a second battery clip to header H2 (between the two sockets), red wire next to the 'H2' label. These NXT sensors are Ultrasonic and IRSeeker2.

When using as a slave sensor for a NXT brick

8. Solder the 82k resistors in positions SDA and SCL.

9. Solder CON070 NXT connector (not supplied) in either position.

10. Place jumper links on headers J2, J3. Link J1 must be removed, as power is supplied by the NXT brick (not the battery pack).

Please download the full datasheet from this web link:

www.picaxe.com/docs/axe216.pdf