RTC for the BBC micro:bit

www.kitronik.co.uk/5635

Introduction: This RTC board adds battery-backed Real Time Clock (RTC) capability to the BBC micro:bit. This can be used to create clocks, or add time functionality to other micro:bit projects.

The board produces a regulated 3V supply that is fed into the edge connector to power the inserted BBC micro:bit, removing the need to power the BBC micro:bit directly. Voltage can be supplied via the terminal block or the board's micro USB connector. (Note: In this case, the USB connector is for power supply only and not used for data connections). This USB connector can provide more power to the board compared with powering through the BBC micro:bit, which is very useful when connecting additional ZIP LEDs to the expansion port on the board.

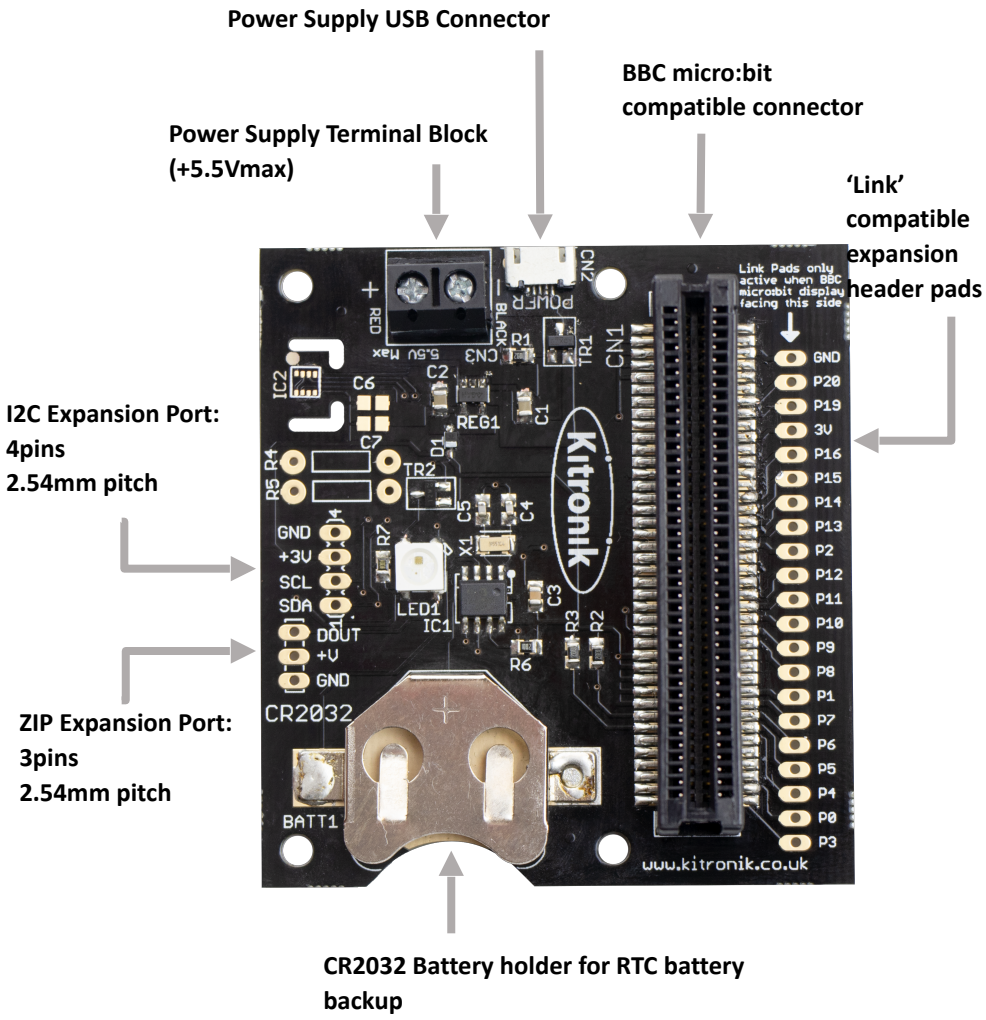
The coin cell holder allows a CR2032 battery to power the real time clock to continue keeping time whilst there is no mains power being supplied to the board and BBC micro:bit.

Other features: The micro:bit RTC also has an expansion port for adding additional I2C devices with a 3V supply (for example, an OLED display), and another for extra ZIP LEDs (for example, a ZIP Stick www.kitronik.co.uk/35129)

Inserting a BBC micro:bit: To use the RTC board, the BBC micro:bit should be inserted firmly into the connector as shown in the diagram to the left.

This board includes expansion pads which conform to the 'Link' standard and allow use with other 'Link' compatible boards.

Layout:



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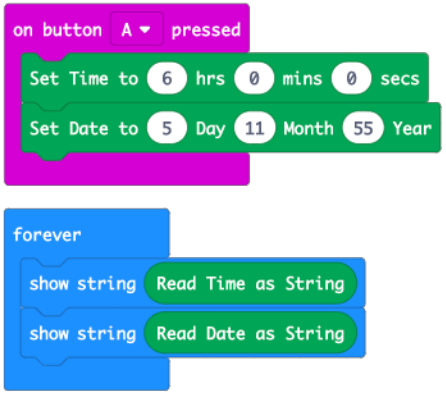
SPECIFCATION	
Operating Voltage	+3V - +5.5V
Typical Current draw	10mA
Battery Backup	CR2032 3V 200mAh
Typical backup battery life in stand-by mode	> 1 year
I2C Expansion port	4 pins 2.54mm pitch PINOUT Pin 1 – SDA (micro:bit Pin 20) Pin 2 – SCL (micro:bit Pin 19) Pin 3 – +3V (100mA max) Pin 4 – GND
ZIP Expansion Port	3 pins 2.54mm pitch PINOUT Pin 1 - DOUT Pin 2 - +V Pin 3 - GND

Software

Microsoft MakeCode Example Software: The code to the right shows how the RTC blocks can be used with the standard “show string” block for the BBC micro:bit.

The first requirement is to set the time and date (this could be done with the BBC micro:bit buttons to allow changes to be made when wanted). The “Read Time” and “Read Date” are string outputs which will scroll across the BBC micro:bit display.
Additional blocks can set and read all the parameters of the RTC with time and date.

(An example microPython use is available from KITRONIK GIT HUB https://github.com/KitronikLtd)



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Dimensions: