

Edge I/O Adapter (#32710) Compatible with BBC micro:bit



The Parallax Edge I/O Adapter is designed to interface the BBC micro:bit module to a breadboard, and provide a simple way to connect directly to the micro:bit power source for experiments that require higher current, such as servo motors.

This compact board breaks out all of the micro:bit I/O pins in sequential order, and includes power connections for the two most common types of breadboards.

Features

- 80-way card edge connector, compatible with the BBC micro:bit module
- Dual 2-pin, 0.1" headers connect power and ground to the breadboard's power rails
- 20-way 0.1" header connects every micro:bit I/O to the breadboard, along with a 3 V reference
- JST socket for connecting of the micro:bit standard battery pack
- Pass-through power from the Edge I/O Adapter JST socket to the micro:bit power input with reverse polarity and dual voltage source protection

Specifications

- Form factor: 80-pin, 1.27 mm card edge socket and male header pins with 0.1" pin spacing
- GPIO: All 19 micro:bit I/O pins accessible
- Power Input: 3 V via a 2-pin 2 mm JST-PH connector, or 3 to 3.3 V power source from the breadboard
- Operating temperature: -4 to +185 °F (-20 to +85 °C)
- Dimensions including edge connector: 1.49 x 2.28 in (37.8 x 58 mm)

Application Ideas

- Learning circuit-building and programming
- Building projects
- Designing prototype circuits

Resources and Downloads

For Parallax Edge I/O Adapter documentation, software, and example programs, see the product page: go to www.parallax.com and search #32710.

Board Revision for Rev B

- PCB color changed from Blue to Black
- 3V output pin renamed (was 3Vref) to reflect the high current output available from micro:bit v2.0 modules
- Power Rails [+ -] orientation reversed for alternative breadboard placement
- Cyber.org branding added
- Additional markings to help identify pins on the breakout header

Features & Descriptions

Edge Socket

The 80-way, 1.27-mm pitch edge socket is compatible with the BBC micro:bit module v 1 and 2. Plug the micro:bit module into the socket so that the micro:bit LED array is facing upward when the Edge I/O Adapter is plugged into the breadboard.

Power Socket

The 3V, 2-pin power socket is compatible with the BBC micro:bit battery holder included in the GO and CLUB bundles. The socket is mechanically designed to prevent reverse polarity connections, but pay attention to the orientation of the batteries in the battery holder.

CAUTION! DO NOT connect batteries to the Edge I/O Board Power Socket at the same time as providing power to the breadboard from a different supply (such as a PowerPAL).

If you are already using the Parallax PowerPal (#32133) to provide power directly to the breadboard's power rails, be sure to:

- Disconnect the battery pack from the Edge I/O Adapter power socket
- Set the Parallax PowerPal (#32133) to the 3.3V setting

Power Rail [+ -] Pins

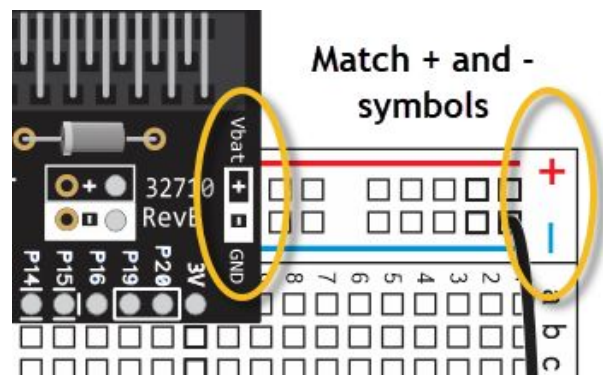
The Edge I/O adapter has pre-installed pins suitable for breadboards with offset power rails, such as this Parallax Breadboard Set (#700-32023).

If your breadboard uses in-line power rails, you may move the power header pins to the neighboring unpopulated pads.

NOTE: The [+] and [-] pin positions are different on blue Rev A boards and black Rev B boards. Changing the power header position is an unsupported customer option! Proceed at your own risk!

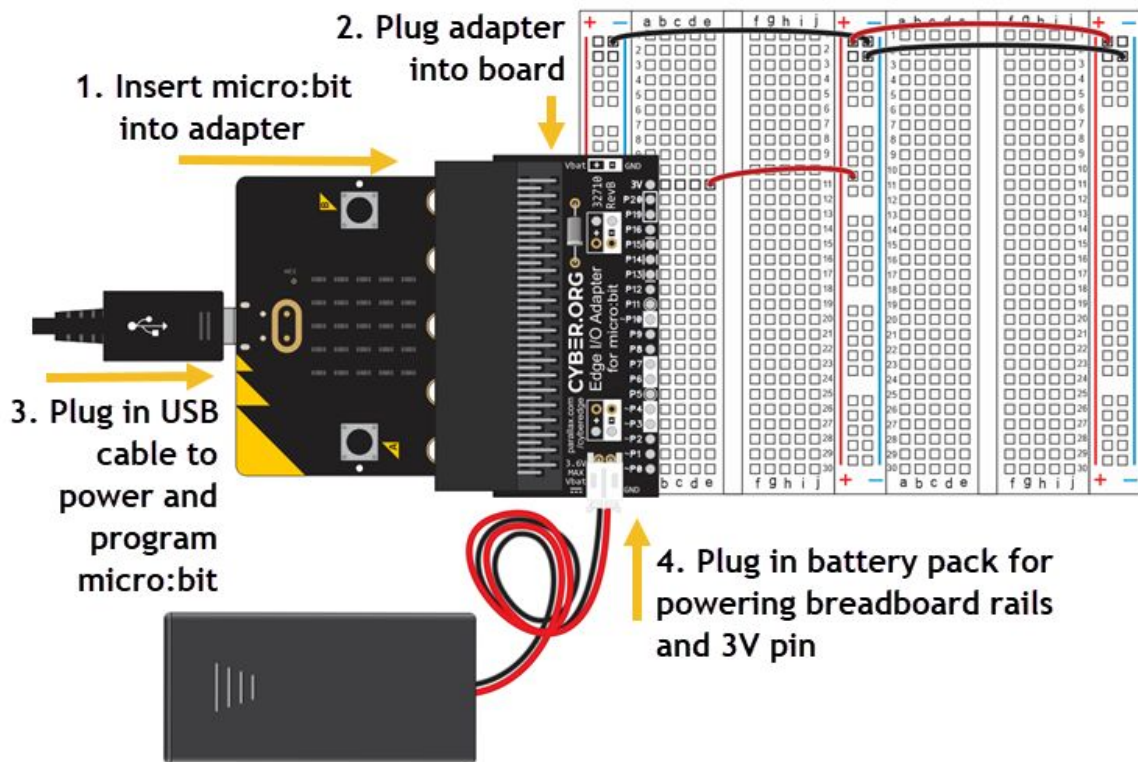
Getting Started

1. Insert your micro:bit module into Edge I/O Adapter socket, LED display side up.
2. Plug the adapter into a standard breadboard (Parallax #700-32023 shown) matching the [+ -] labels on the board and breadboard power rails.



REV B Board shown. Note: [+ -] labels are reversed on Rev A (blue) and Rev B (black) adapters. Match your board's symbols to your breadboard's power rail symbols.

3. Plug in the USB cable to power and program the micro:bit module.
4. Connect your micro:bit 3V battery pack to the 3V power socket on the Edge I/O Adapter.



The system can be powered from the battery pack through the edge's JST connector, through USB, or both at the same time.

Devices like servos that draw significant current should only be connected to Vbat. For this, use the Vbat (left terminal strip + column) with a battery pack connected to the edge adapter's JST battery connector. Without the battery pack, the left + column is NC.

All - columns are GND, and center and right terminal strip + columns are 3V. The 3V value is regulated by the micro:bit at about 3.3 V if USB is connected. If USB is disconnected and battery is connected, 3V is approx Vbat - 0.1 V.

If the USB is disconnected and the battery is instead connected to the micro:bit module's JST connector, 3V will be about the battery voltage, and Vbat will be NC.

Specifications

Symbol	Quantity	Minimum	Typical	Maximum	Units
VBATT	Supply Voltage at 3VDC battery socket	2.8	3	3.3	V
VIN	Alternative Supply Voltage at 2-pin +- header (when VBATT not connected)	2.8	3	3.3	V

Pin Definitions and Ratings

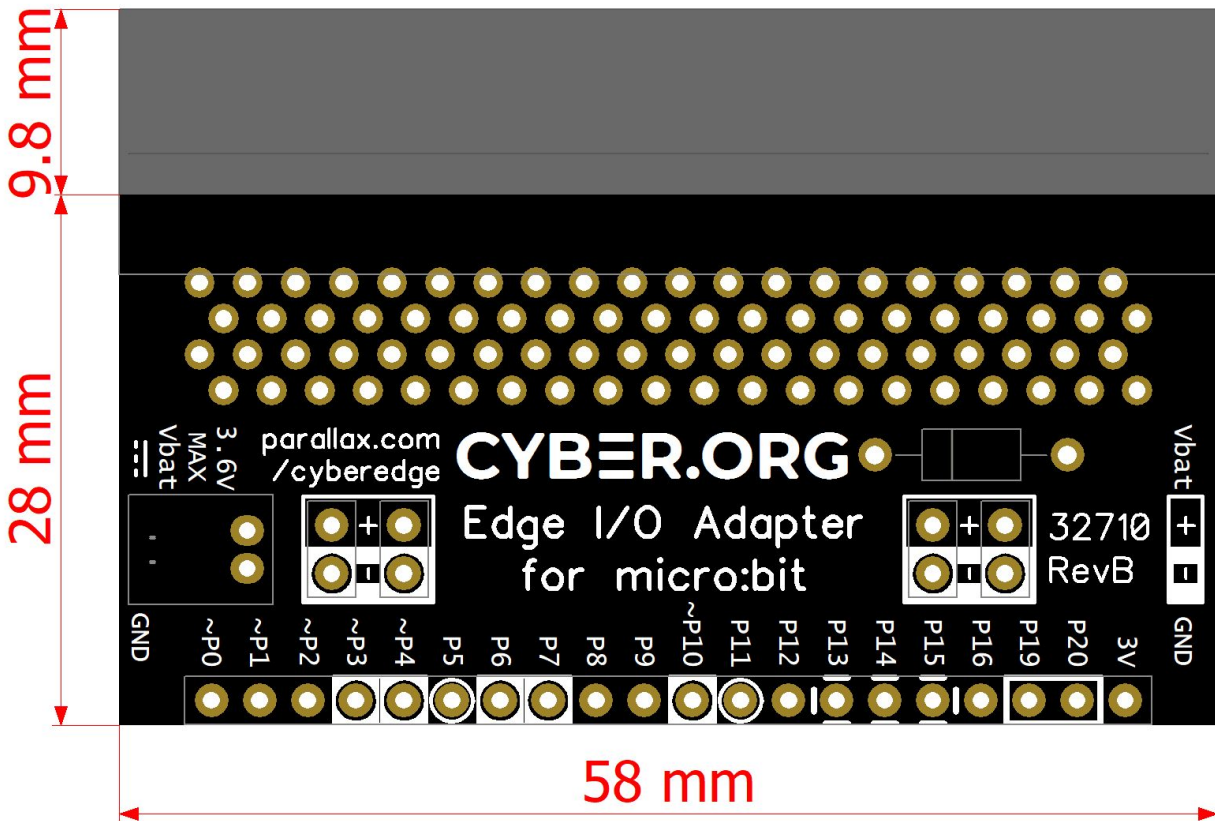
Label	Type	Function
P0	I/O	GPIO (general purpose digital input/output) with ADC (analog to digital converter)
P1	I/O	GPIO with ADC
P2	I/O	GPIO with ADC
P3	I/O	GPIO shared with LED Col 1 of the LED screen; can be used for ADC and digital I/O when the LED screen is turned off
P4	I/O	GPIO shared with LED Col 2 of the LED screen; can be used for ADC and digital I/O when the LED screen is turned off.
P5	I/O	GPIO shared with Button A, to trigger or detect a button "A" click externally. This pin has a pull-up resistor, which means that by default it is at voltage of 3V. To replace button A on the micro:bit with an external button, connect one end of the external button to pin 5 and the other end to GND. When the button is pressed, the voltage on pin 5 is pulled down to 0, which generates a button click event.
P6	I/O	GPIO shared with LED Col 9 of the LED screen; can be used for digital I/O when the LED screen is turned off.
P7	I/O	GPIO shared with LED Col 8 of the LED screen; can be used for digital I/O when the LED screen is turned off.
P8	I/O	Dedicated GPIO, for sending and sensing digital signals.
P9	I/O	GPIO shared with LED Col 7 of the LED screen; can be used for digital I/O when the LED screen is turned off.
P10	I/O	GPIO shared with LED Col 3 of the LED screen; can be used for ADC and digital I/O when the LED screen is turned off.
P11	I/O	GPIO shared with Button B, to trigger or detect a click externally.
P12	I/O	This GPIO pin has been reserved to provide support for accessibility.
P13	I/O	GPIO that is conventionally used for the serial clock (SCK) signal of the 3-wire Serial Peripheral Interface (SPI) bus.
P14	I/O	GPIO that is conventionally used for the Master In Slave Out (MISO) signal of the SPI bus.
P15	I/O	GPIO that is conventionally used for the Master Out Slave In (MOSI) signal of the SPI bus.
P16	I/O	Dedicated GPIO (also used for SPI 'Chip Select' function).
P19	I/O	Clock signal (SCL) of the I2C bus communication protocol
P20	I/O	Data line (SDA) of the I2C bus communication protocol
3V	Power	3V power output directly from micro:bit. Maximum 90mA with micro:bit v1, Maximum 200mA with micro:bit v2. Do not use to power servo motors or high current accessories! NO reverse current or overload protection !

Dimensions (Revs A and B)

PCB: 1.1 x 2.28 in (28 x 58 mm)

PCB and Edge Connector: 1.49 x 2.28 in (37.8 x 58mm)

Mounting hole diameter: 0.126 in (3.2 mm)



Revision History

Version 1.0: original release.

Version 1.1: updated for board Rev B release.