Sample Projects with EV8

Sample programs

Sample programs are available on our website. They are provided as it for demo purpose only and subject to change without notice. Additional project ideas are provided in some examples without code. http://www.kowatec.com/prod/inn/code/ev8_proj1.zip

Triggers

Depending on the application, the trigger key in the examples can be replaced with other triggers, such as button, CDR, IR, PIR, etc. Make sure the pins connected to the parts match the values set in the program code.

Parts

Some sample programs might not use all the parts shown in some circuits. Parts can be purchased on our website, by emails or by phone. Other substitute parts might or might not work with the sample code or circuit.

System Requirements

- Windows XP, vista, Windows 7 or Windows 8 32bits.
- InnoBasic Workshop

Experience

Basic programming is preferred. No hardware experience is needed.

Share your ideas

Share your code and projects with us on Facebook and Twitter

Contact us

For more information or technical support, contact us at 408-432-4826
Skype: Kowatec or Email: robots@kowatec.com

EV8 and E-Writer

Pin Layout

Eight general-purpose digital I/Os labeled P0 through P7 on the board.

Male Download Connector to connect to the EV-Writer. Do not connect anything to those pins.

RESET Button. To restart the program while the program is in execution. Note that it is prohibited to press this button during downloading, which will result in download failure.

Red LED will be lit when power is on.

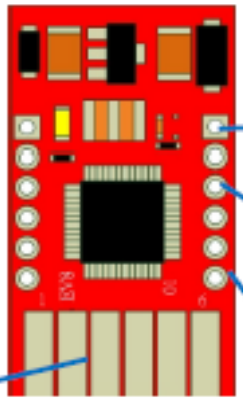


Fig. 1 EV8™ Module

VIN and GND for 6~12V power input.

N.C. pin has no connection.

Regulated 5V 200mA power output.

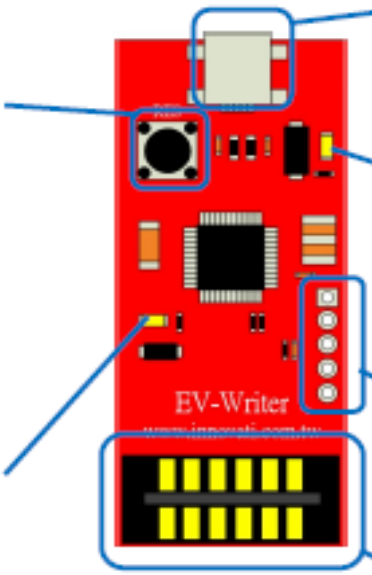


Fig. 2 EV-Writer™

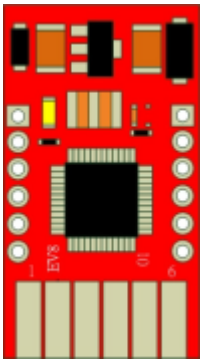
USB Connector for program downloading from a PC.

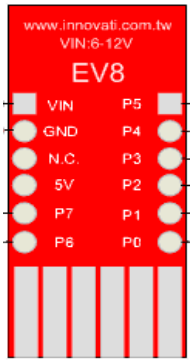
Green LED will be lit when USB is in communication.

Internal use only. Do not connect anything to those holes.

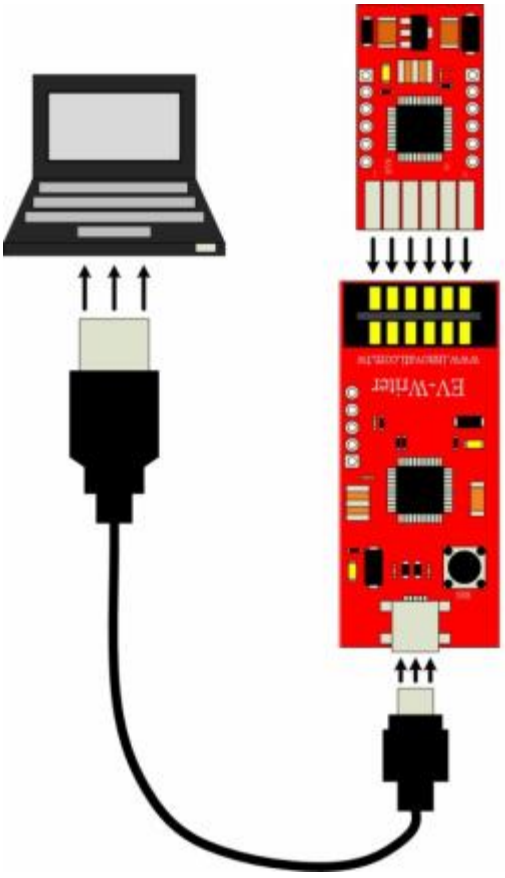
Female Download Connector for EV8™ insertion.

Connecting EV8 and E-Writer to PC

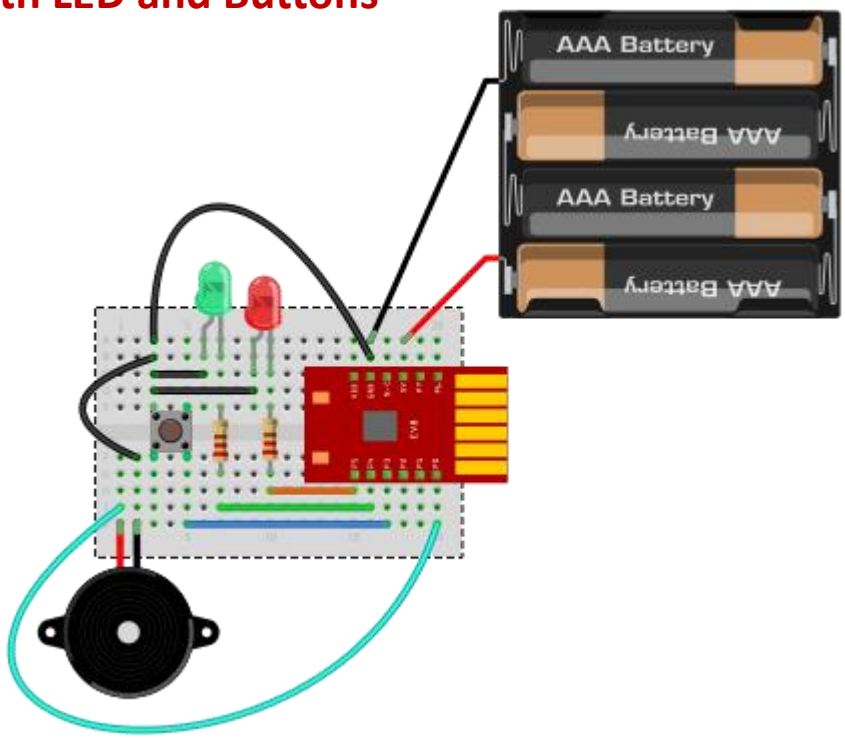




EV-Writer



EV8 with LED and Buttons



Qty	Part
1	EV8
2	LED
2	Resistor 220 ohm
1	Tact switch
1	Buzzer
1	Battery 6v

Pin	Part
5	Red LED
4	Green LED
3	Tact switch
0	Buzzer

Note:
The same circuit can be used for several projects

PROJECTS WITH BUZZER AND LED

The basic of the electronics components such as LED, resistors, tact switches, buzzer

LEDs (LED.inb)

1. Turn on and off the LED
2. Blink the LED

Program shows how to use:
- Main routine
- Local variable
- For-Loop
- **Commands:** Pause

Controlling LEDs (LED_btn.inb)

1. Turn on and off with a button
2. Blink for a period of time

Program shows how to use:
- Tact switch as trigger to activate another output component
- Determine if the tact switch has been pressed
- IF-else-Loop
- For-Loop
- Infinite Do-Loop
- **Commands:** In, Toggle

Siren (siren.inb)

1. Play the police or ambulance siren

Program shows how to:
- Global Variables
- Byte vs Word
- Subroutine
- **Commands:** Freq, Sound

MORE...

Play Songs (songs.inb)

Play any songs

Program shows how to:
- Subroutines call subroutines
- Select Case
- Array

Twinkle Twinkle Star (twinkle.inb)

1. Play the Twinkle Twinkle song
2. Add more LEDs to blink at the sound of the song

Program shows how to:
- Play some notes longer
- Subroutines call subroutines
- Select Case
- Array
- **Commands**: MOD

UFO (led_ufo.inb)

Play the theme from Close Encounter of the Third Kind, dim and blink the LED according to the tune.

Program shows how to:
- Const variables
- For-step
- **Commands:** Pulseout, PWM

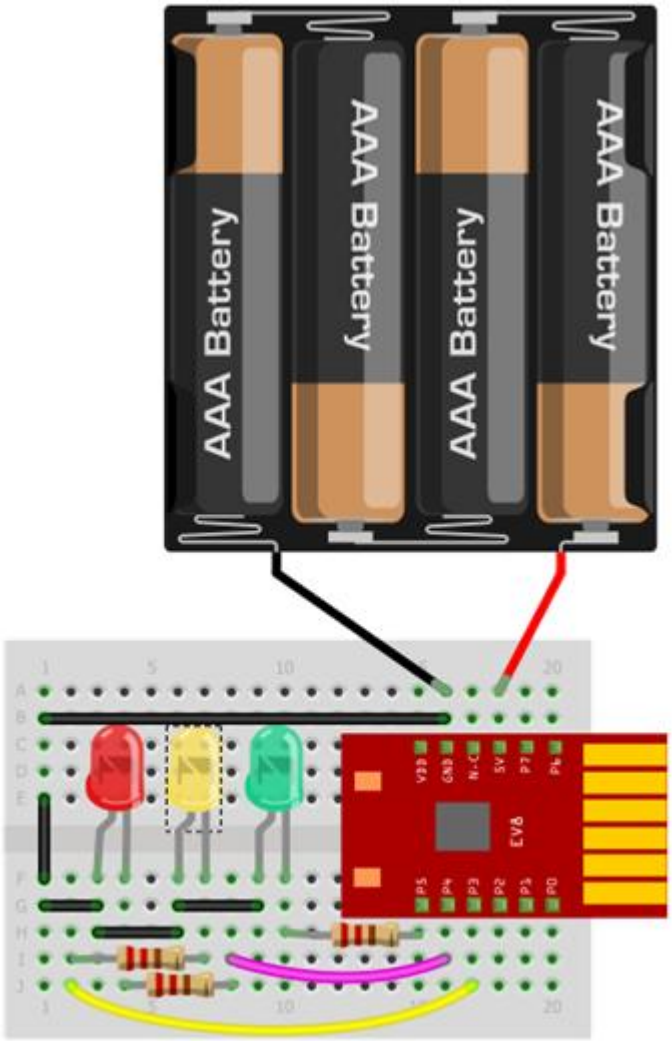
Lighthouse

Flash a white LED for 2.5 s or turn to red when danger and play a fog horn sound (44100 Hz).

Laser Gun

Add LED and make a sound like a laser gun or Star War's spade

EV8 with multiple LEDs



Qty	Part
1	EV8
3	LED
3	Resistor 220 ohm
1	Battery 6v

Pin	Part
5	Green LED
4	Yellow LED
3	Red LED

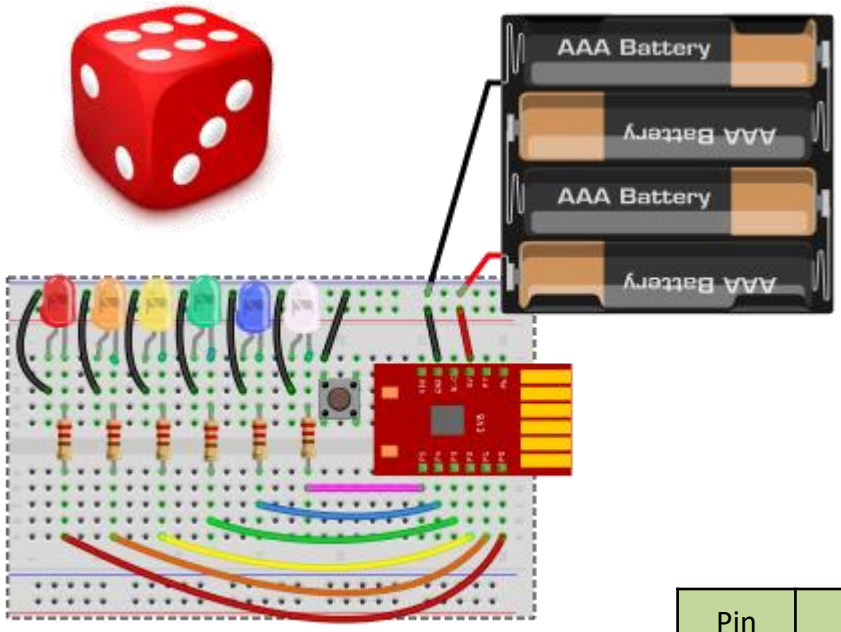
Stoplight (Led_stoplight.inb)

1. Blink the LEDs like a stoplight.

Optional:

1. Keep the green LED on for 1 min and change to yellow and then red.
2. Add a button to change the light to Green from Red. Then back from Green to Red again about 30s.
3. Add a buzzer to play the sound while light is Green.

EV8 with multiple LEDs and Button



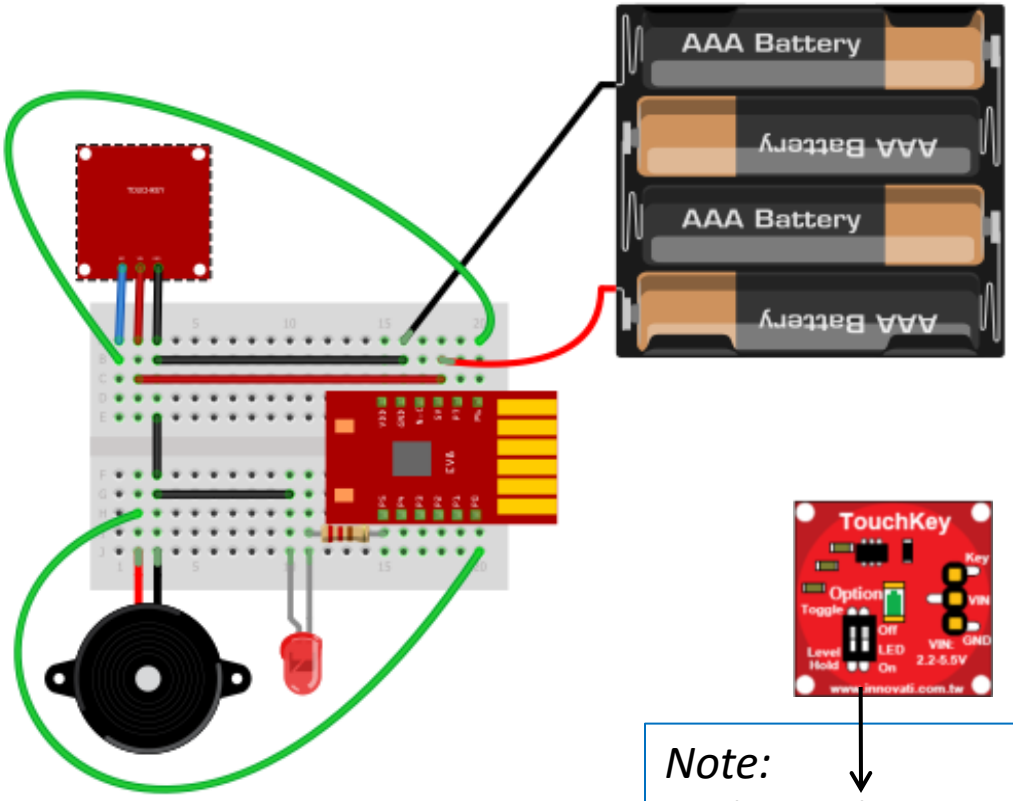
Qty	Part
1	EV8
6	LED
6	Resistor 220 ohm
1	Tact switch
1	Battery 6v

Pin	Part
0	Red LED
1	Orange LED
2	Yellow LED
3	Green LED
4	Blue LED
5	White LED
6	Tact switch

Dice

Press the button to randomly generate a number 1-6 and turn on the numbers of LEDs accordingly

EV8 with TouchKey



Note:
Set the switch to 11

Qty	Part
1	EV8
1	Touchkey
1	LED
1	Resistor 220 ohm
1	Buzzer
1	Battery 6v

Pin	Part
6	Touchkey
5	LED
0	Buzzer

PROJECTS WITH TOUCHKEY

Hi Low Game (hilo.inb)

Tap the Touchkey to guess a number that is randomly generated. Long beep once If the number is low, twice if it is too high and three if it is correct.

Program shows how to use:

- Do-until-Loop
- If-elseif
- **Commands**: Debug, Random

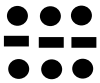
Heart Beat (led_heart.inb)

1. Touch the key to blink the LED and make a heart beat sound.
2. 2. Dim the LED if the heart beat is slow and brighter if it is fast.

Program shows how to:

- How to play sound and blink LED at the same time.
- Determine if Touchkey was pressed, or hold

Morse Code

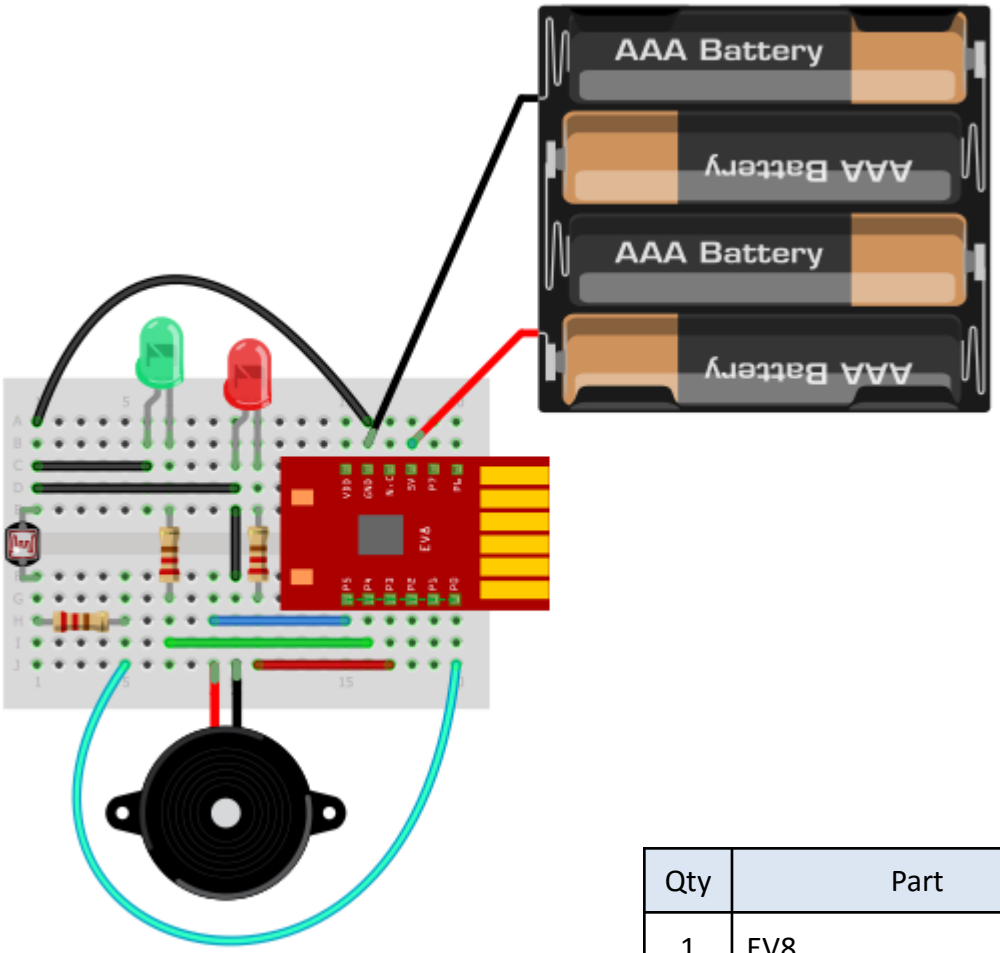


Tap the Touchkey to generate the Morse code.

Others

1. Mini piano using 7 Touchkeys
2. Tic Tao Toe using 3 Touchkeys

EV8 with CDR and LED



Pin	Item
0	CDR
3	Red LED
4	Green LED
5	Buzzer

Qty	Part
1	EV8
2	LED
3	Resistor 220 ohm
1	CDR
1	Buzzer
1	Battery 6v – 9v

PROJECTS WITH CDR AND LEDS

Dim Light (led_dim.inb)
Dim the LED light in different way.

Birthday gift (bday_cdr.inb)
Place the circuit in a box with gift. When the box is opened, it plays the birthday song and blink the LEDs.

Christmas lights (xmas_led.inb)
Play Christmas songs and blinks LEDs when it is dark.

Light detector (light_detect.inb)

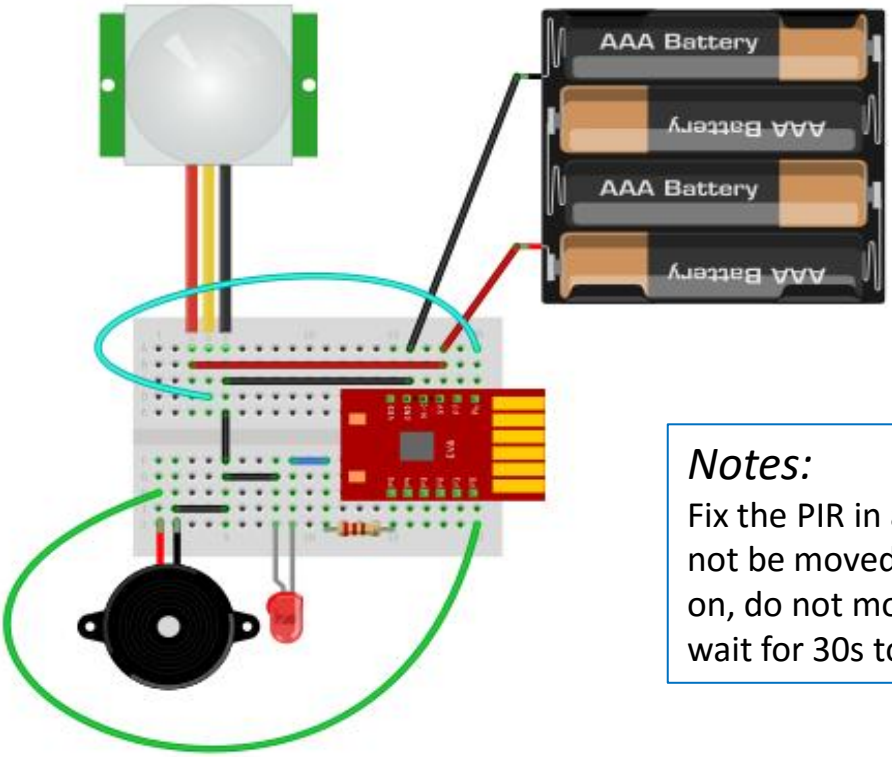
1. Place it in the garage where the light from the driveway lamp reaches the CDR. The garage door usually has a gap that let the light in. When CDR detects the driveway lamp is ON, the LED will turn on and it will play a siren.
2. Place it on the door. When somebody passes by, it triggers the siren or a welcome message.
3. Place it in any close enclosure to surprise a thief or intruder.

Paper Piano

1. Mark black and white strips on a paper.
2. Place the Light sensor facing the paper.
3. When the sensor detects the black area, it will play some sound.

Motion Detected Alarm

Turn on the LED and make sound when motion is detected



Notes:

Fix the PIR in a position that will not be moved. After power is on, do not move the PIR and wait for 30s to calibrate.

Qty	Part
1	EV8
1	PIR
1	LED
1	Resistor 470 ohm
1	Buzzer
1	Battery 6v

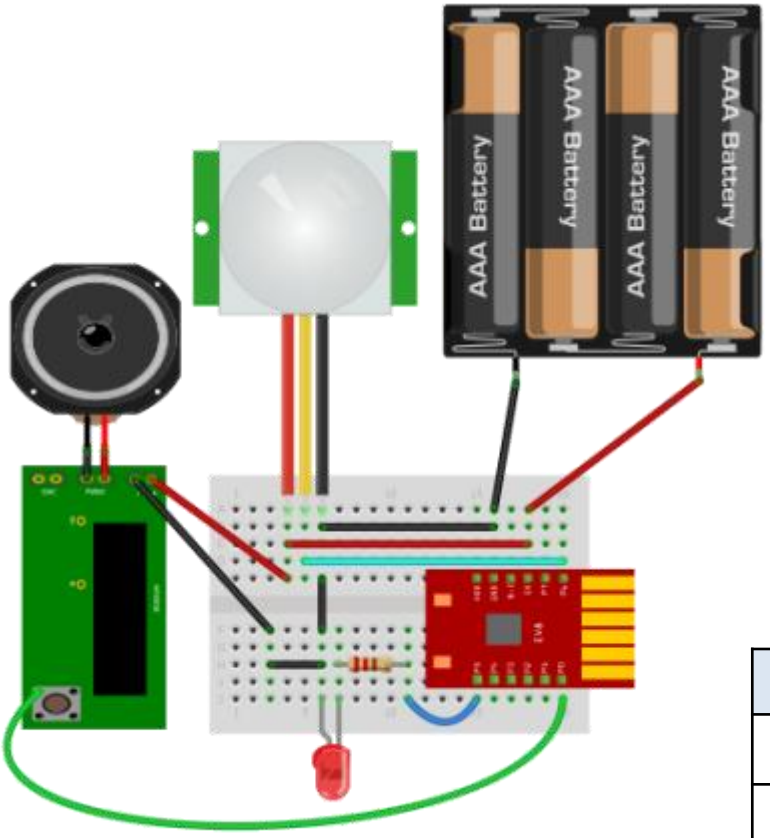
Pin	Part
6	PIR
5	LED
0	Buzzer

Motion Detected Alarm (pir_alarm.inb)

Trigger a siren when motion is detected.

Voice Alert

Trigger alert message or siren and blink LED when motion is detected.



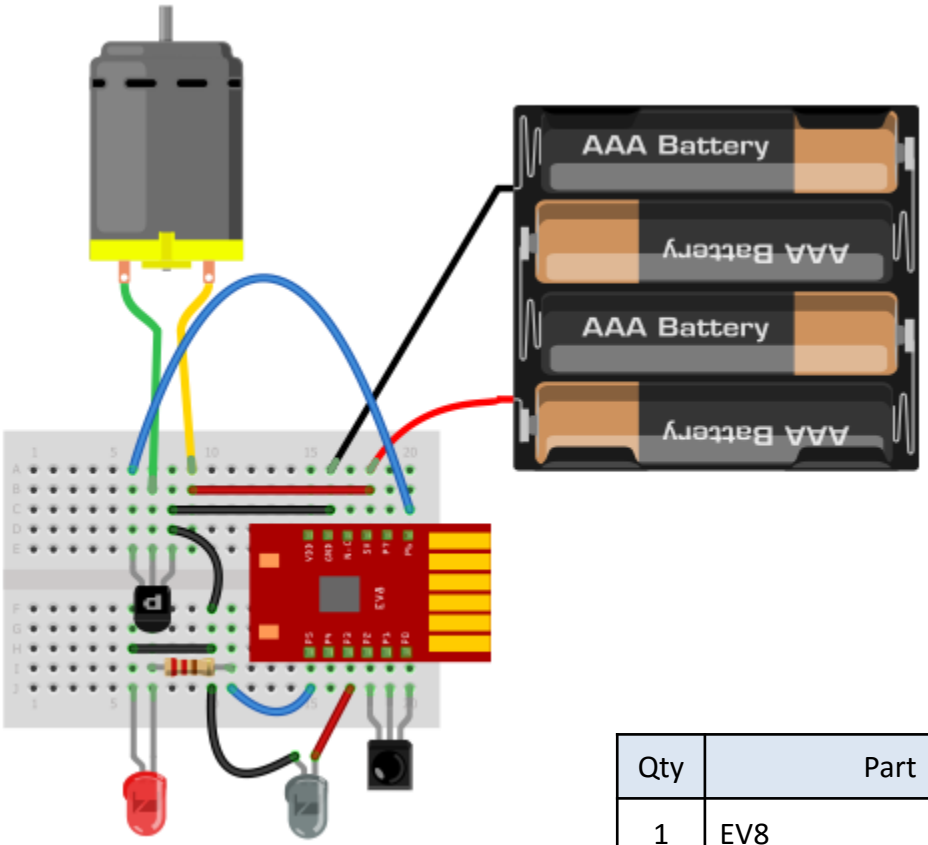
Pin	Item
6	PIR
5	LED
0	Tact switch

Qty	Part
1	EV8
1	PIR
1	LED
1	Resistor 220 ohm
1	AP89DBA Sound Module with pre-recorded sound
1	Speaker 8 ohm, 0.25w
1	Battery 6v

Voice Alarm (pir_voice.inb)

Trigger a short message, announcement, music or sound. Applications include guided tour, ads stands, alarm, guided instructions, etc.

EV8 with Motor



Pin	Item
1	Rx
3	Tx
5	LED
6	DC

Qty	Part
1	EV8
1	IR Receiver
1	Infrared LED
1	LED
1	Resistor 220 ohm
1	DC Motor
1	NPN Transistor
1	Battery 6v – 9v

PROJECTS WITH MOTOR

Spinner (ev8_spin.inb)

Spin a pinwheel or any object

Minibot

Control a mini bot with two motors using a remote control.

Light Follower

Use a CDR as the trigger and use a flashlight to control the bot.

Tug War

Tie a rope between 2 minibots and pull away from each other. More powerful motor and/or battery might be need to create more force.

Balloon Chasing

Tie a balloon on each minibot and chase after each other to try to poke it.

Waving Hands

1. Make hand waving left and right.
2. Add a buzzer and make some noise while waving, like cheer teams.

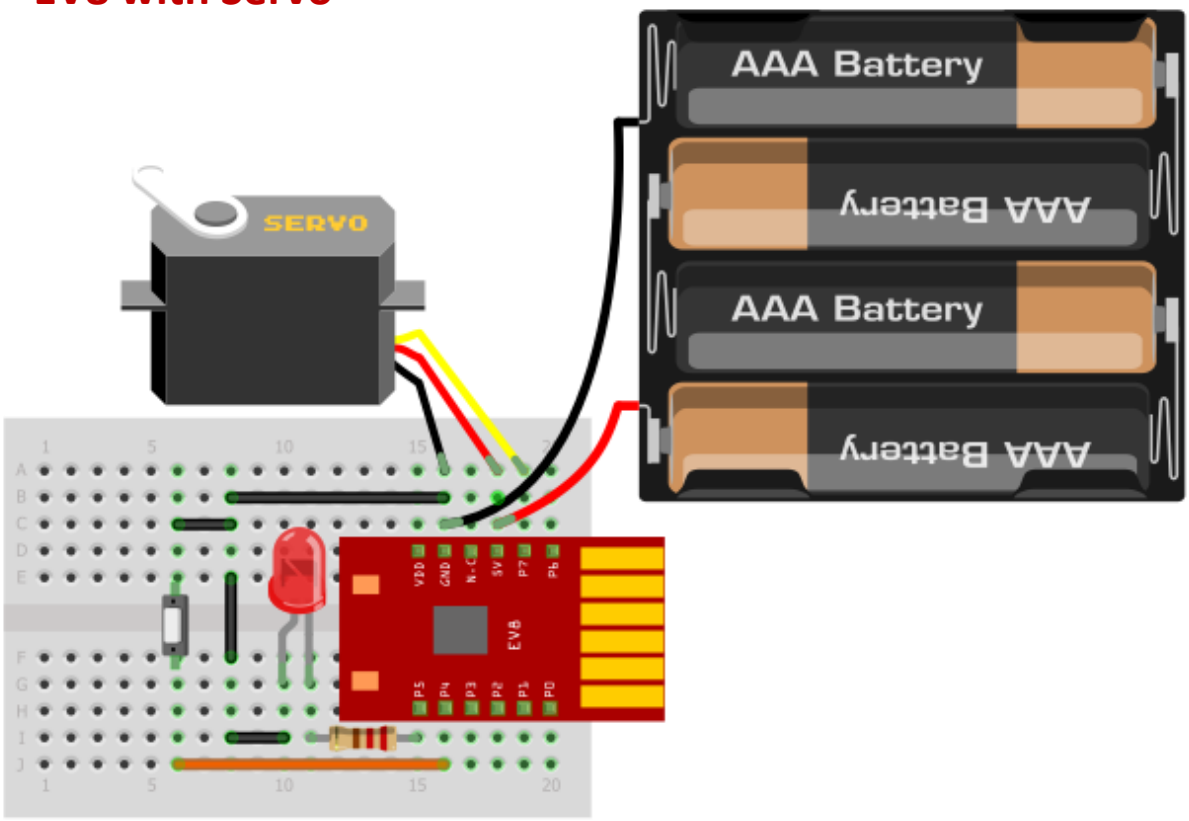
Music Box

Place a figure on the shaft of the motor. Play a song while spinning.

Flying Sauce

1. Place a fan on the shaft of the motor. Press the button to spin the motor. The fan will spin. Press button again to turn off the motor, the fan will lift as a flying sauce.
2. Add LED for more effects

EV8 with Servo



Pin	Item
7	Servo
5	Red LED
4	Push button

Qty	Part
1	EV8
2	LED
1	Resistor 220 ohm
1	Servo Motor
1	Push Button
1	Battery 6v – 9v

PROJECTS WITH SERVO

Wheel of fortune

1. Place the wheel of fortune on the shaft of the servo. When the button is pressed, spin the wheel for a few seconds and stop.
2. Turn on the LED to indicate it will stop soon.

Butterfly

Put one servo on each wing, and pull it up and down to mimic the movement of the wings.