REX8

SONICBOT
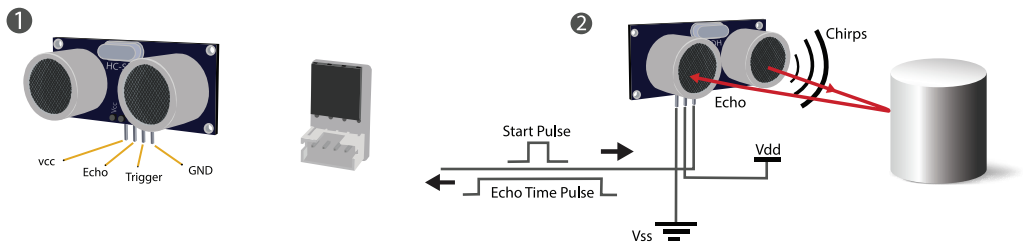## SETUP GUIDE
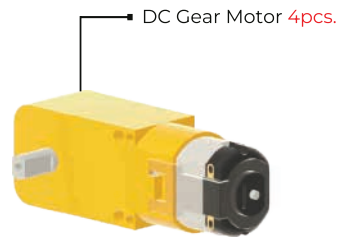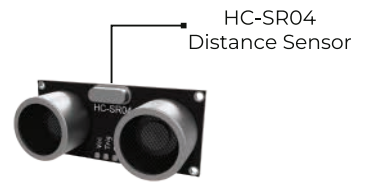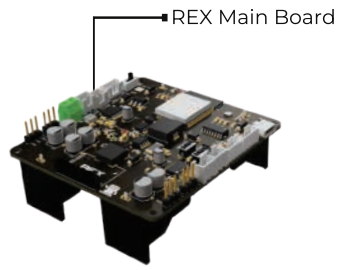
SONICBOT

SonicBot

SonicBot is a REX robot that detects objects in front of it by using the HCSR04 (Distance Sensor) and determines its next movements accordingly. By utilizing the HCSR04 distance sensor converter, you can effortlessly connect the HCSR04 distance sensor to the connector on the REX board using a single cable.

How Does SonicBot Detect The Objects In Front of It?

SonicBot detects objects in front of it thanks to the HCSR04 distance sensor located in its body. The HCSR04 distance sensor is an input sensor with 4 pin ports as GND, VCC, Trigger and Echo. The distance between the sensor and the object in front of it is measured by using the return time of the ultrasonic wave sent from the trigger pin to the echo pin.
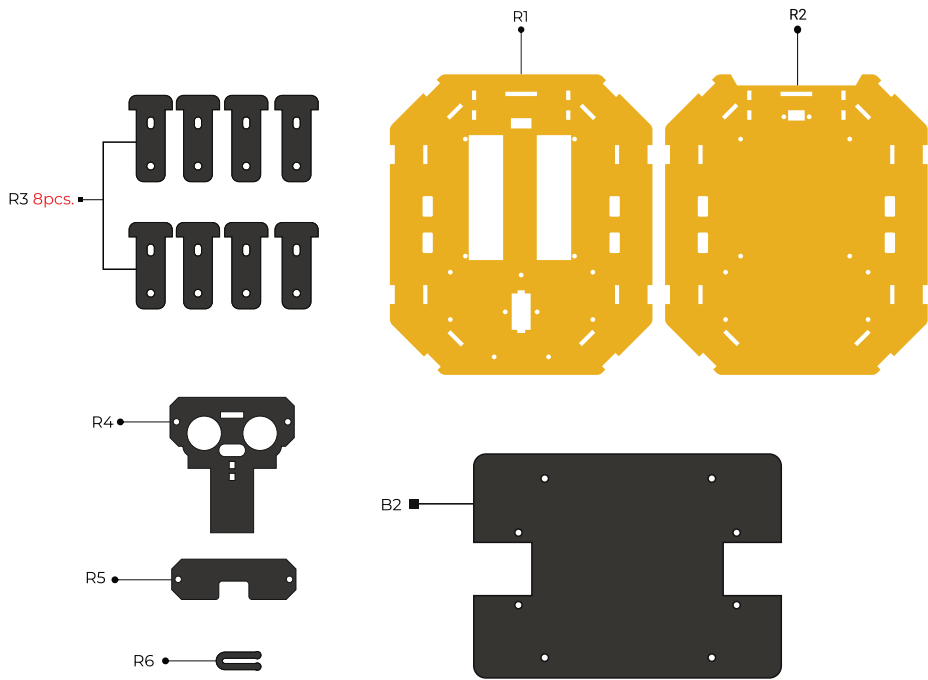
❶

VCC Echo Trigger GND

❷

Chirps
Echo
Start Pulse
Echo Time Pulse
Vdd
Vss

02

Components of SonicBot
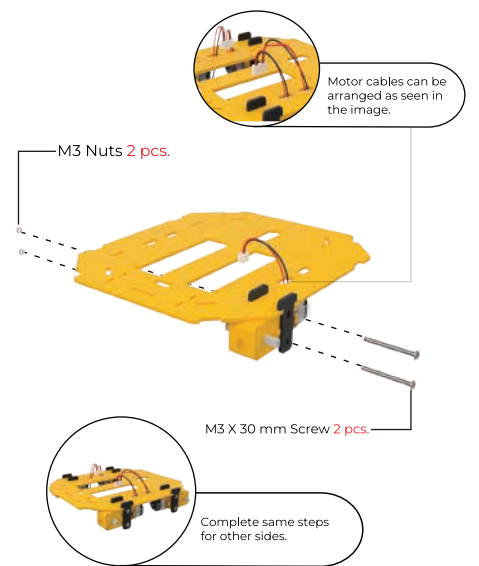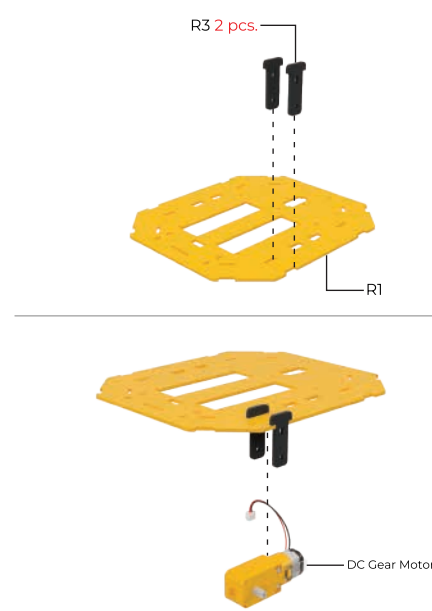
REX Main Board

HC-SR04
Distance Sensor

DC Gear Motor 4pcs.

M3 Nut 10 pcs.
M3 x 6 mm Screw 4 pcs. - (Plastic)
M3 x 8 mm Screw 8 pcs.
M3 x 12 mm Screw 2 pcs.
M3 x 30 mm Screw 8 pcs.
M3 x 6 mm M - F Spacer 4 pcs.
M3 x 25 mm Female Spacer 8 pcs.
M3 x 25 mm M - F Spacer 4 pcs.

03

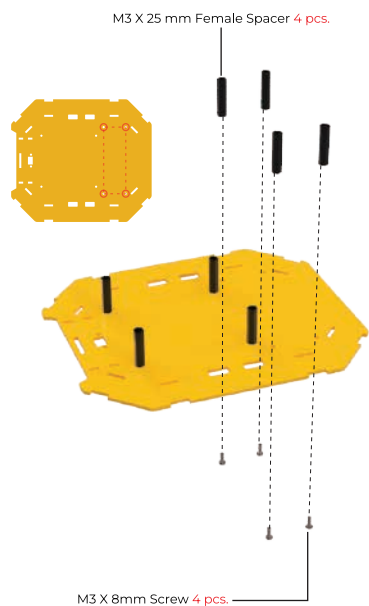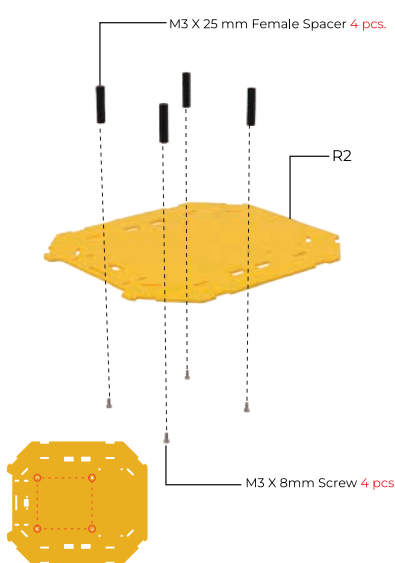
R1   R2

R3 8pcs.

R4
R5
R6

B2

04

R3 2 pcs.

R1

DC Gear Motor

Motor cables can be arranged as seen in the image.

M3 Nuts 2 pcs.

M3 X 30 mm Screw 2 pcs.

Complete same steps for other sides.

05

M3 X 25 mm Female Spacer 4 pcs.

M3 X 25 mm Female Spacer 4 pcs.

R2

M3 X 8mm Screw 4 pcs.

M3 X 8mm Screw 4 pcs.

06

M3 x 6 mm M - F Spacer 4 pcs.
(Plastic)

M3 x 6 mm Screw 4 pcs
(Plastic)

In order to prevent any short circuit related issues, please use plastic screws and spacers for electronic cards.

Rex 8in1 Main Board

07

M3 x 8 mm Screw 4 pcs.

B2

M3 x 25 mm M - F Spacer 4 pcs.

M3 x 15 mm Screw 2 pcs.

M3 Nut 2pcs.

HC - SR04

R4

R5

Gear Motor Wheel 4 pcs.

R6

Assembly is finished and you can move on with coding steps.
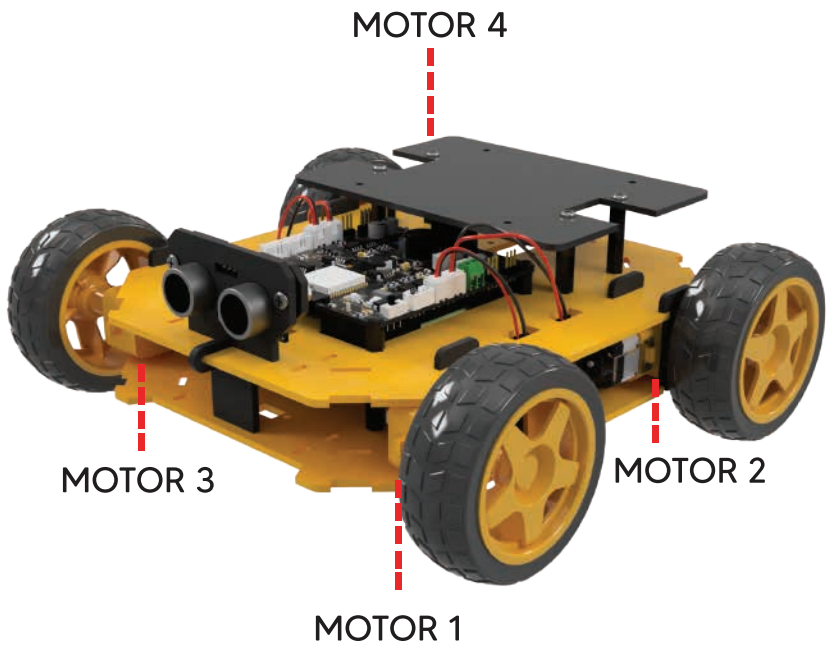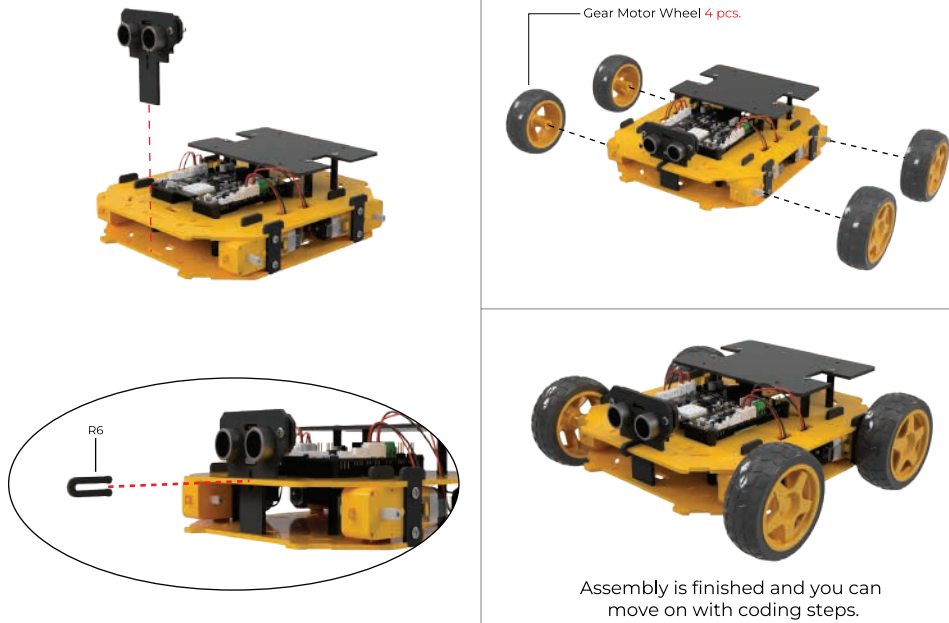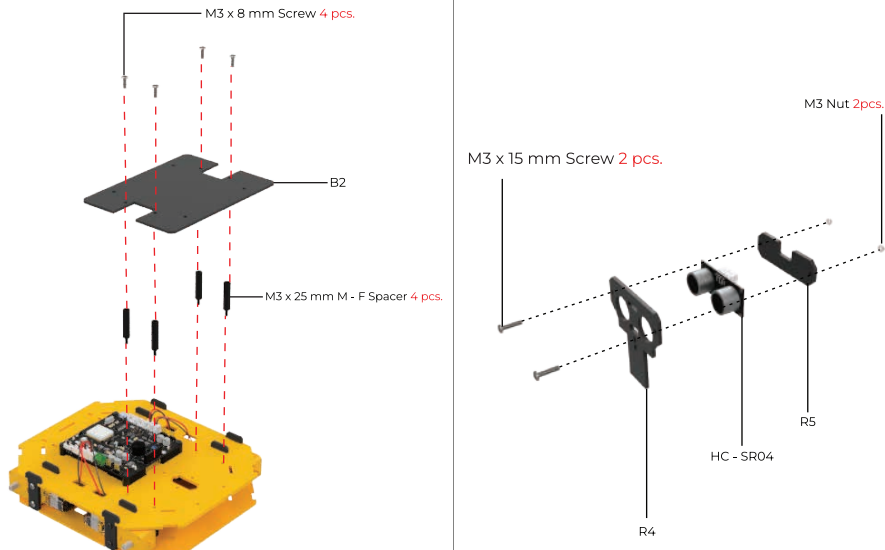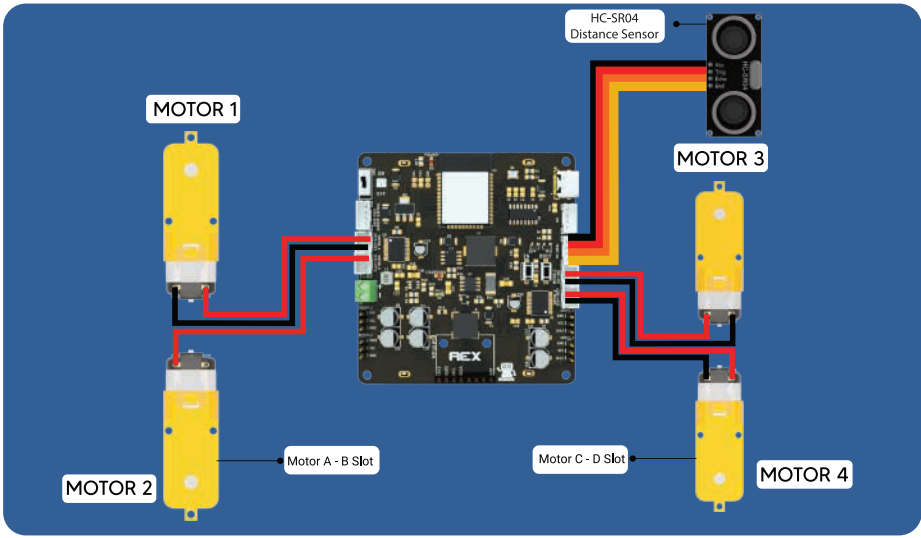
MOTOR 4

MOTOR 3

MOTOR 2

MOTOR 1

The Circuit Diagram

After assembling the acrylic pieces, you can proceed with circuit installation as shown in the diagram below.

HC-SR04 Distance Sensor

MOTOR 1

MOTOR 3

MOTOR 2

Motor A - B Slot

Motor C - D Slot

MOTOR 4

Arduino Code


```
SonicBot.ino
1  int trigPin = 4;  // Trigger
2  int echoPin = 5;  // Echo
3  long duration, cm;
4
5  #define slow 120
6  #define MID 100
7  #define FAST 110
8
9  #define MotorA1 15
10 #define MotorA2 23
11
12 #define MotorB1 32
13 #define MotorB2 33
14
15 #define MotorC1 17
16 #define MotorC2 16
17
18 #define MotorD1 27
19 #define MotorD2 14
20
21
22 int turns = 0;
23 void setup() {
24   //Serial Port begin
25   Serial.begin(115200);
26
27   //Define inputs and outputs
28
29   pinMode(trigPin, OUTPUT);
30   pinMode(echoPin, INPUT);
31
32
33   pinMode(MotorA1, OUTPUT);
34   pinMode(MotorA2, OUTPUT);
35
36   pinMode(MotorB1, OUTPUT);
37   pinMode(MotorB2, OUTPUT);
38
39   pinMode(MotorC1, OUTPUT);
40   pinMode(MotorC2, OUTPUT);
41
42   pinMode(MotorD1, OUTPUT);
43   pinMode(MotorD2, OUTPUT);
```

V4
rbt.ist/sonicbotcode

V5
rbt.ist/sonicbotV5

Scan the QR code to go to the whole code and the necessary libraries.