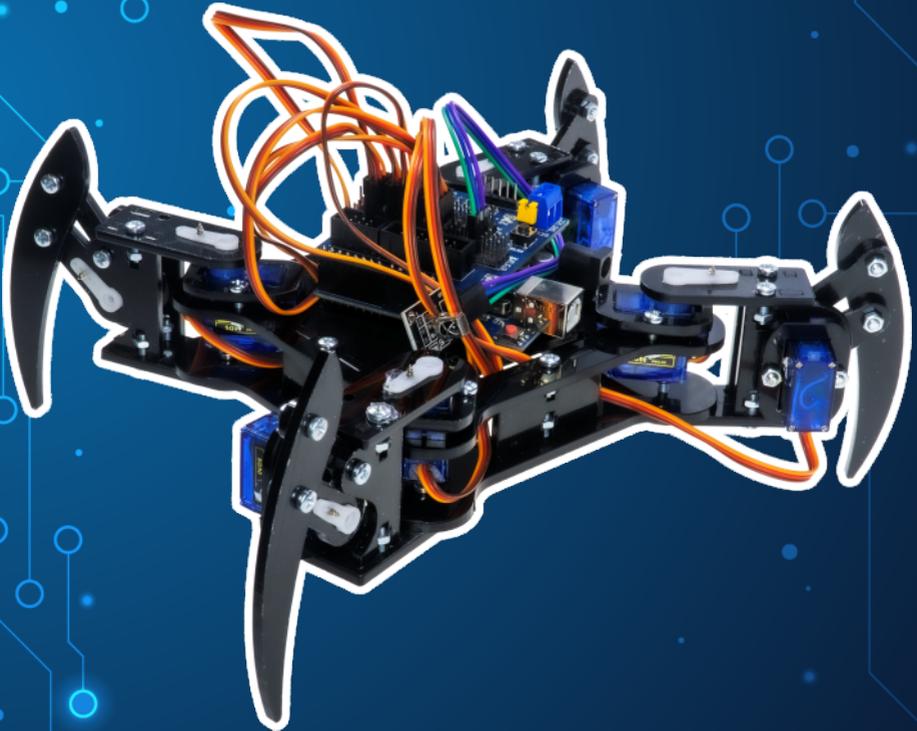
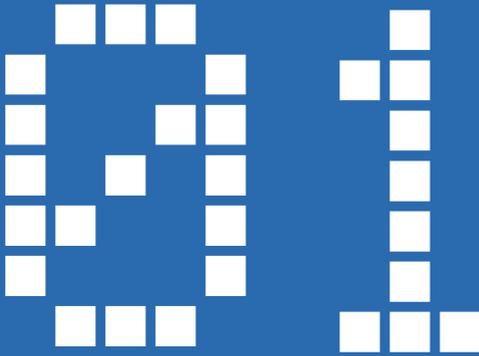


robotistan



Spider Robot Installation Guide





Spider Robot Installation



BLOG



maker.robotistan.com

FORUM



forum.robotistan.com



YouTube



youtube.com/robotistan

The list of bolts required to build the spider robot is available on the side.

The servo screws specified during the installation come with the servo motor. You do not need to provide additionally.

WARNING: Keep away from children under 3 years old as it contains small parts.

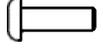
32 Adet - M3 fiberli Somun 24



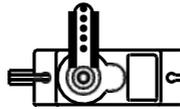
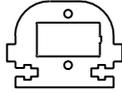
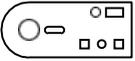
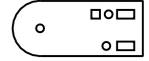
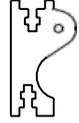
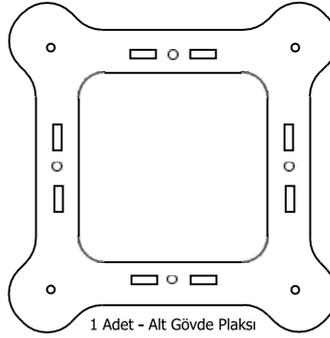
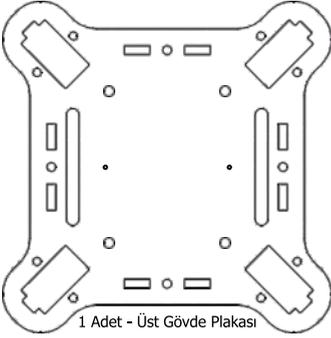
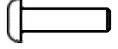
Adet - M3 Somun



40 Adet - M3 x 10mm Civata

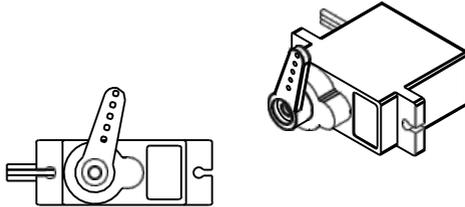


20 Adet - M3 x 12mm Civata

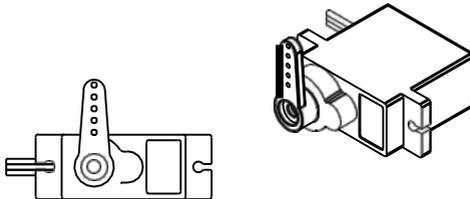


Adjusting Servo Motor Position

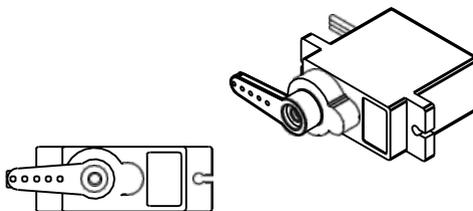
Before starting the assembly, we need to manually adjust the angle adjustment of the servo motors. Otherwise, your robot will not work properly.



Attach the Servo Arm to the servo, and then slowly turn the servo arm clockwise until the arm stops. It's okay if the servo arm doesn't stop at the same angle shown in the picture above. The important thing is that we find the end point of the servo.

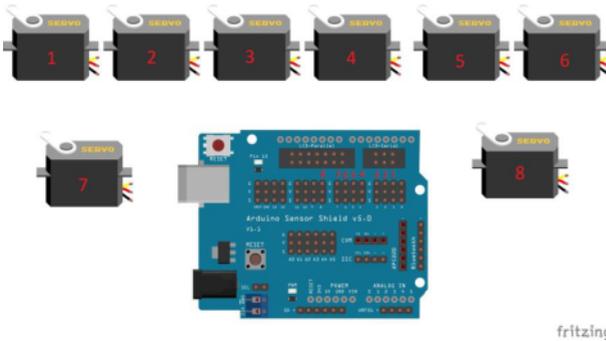


Remove the servo arm from the servo and reposition it so that it is perpendicular to the servo body.



Slowly turn the servo arm counterclockwise until it is parallel with the servo body as shown. This is the center position of the servo and it is important to center the 8 servos in the set before starting the assembly of the robot. After the servo arm is parallel to the servo body, remove the servo arm and set it aside for later assembly.

If your servo motors are 360 degree analog servos, you cannot do manual cabling. That's why you can calibrate your servo motors thanks to the code I shared with you at the bottom.



As in the circuit diagram on the side, turn your servo motors into 1.2.3.4.5.6.7.8. Install the code at the bottom to your arduino by attaching it to the pins. If you do not do this, your robot will not work stably.

```
servo_test_kod | Arduino 1.8.13
Doge Duzme Testi Anaglar Yanim

servo_test_kod

#include <Servo.h> // include servo library

// Define 8 Servos
Servo myServo1; // Front Left Pivot Servo
Servo myServo2; // Front Left Lift Servo
Servo myServo3; // Back Left Pivot Servo
Servo myServo4; // Back Left Lift Servo
Servo myServo5; // Back Right Pivot Servo
Servo myServo6; // Back Right Lift Servo
Servo myServo7; // Front Right Pivot Servo
Servo myServo8; // Front Right Lift Servo

void setup() {
  // put your setup code here, to run once:
  myServo1.attach(1);
  myServo2.attach(2);
  myServo3.attach(3);
  myServo4.attach(3);
  myServo5.attach(4);
  myServo6.attach(7);
  myServo7.attach(8);
  myServo8.attach(9);

  myServo1.write(90);
}
```

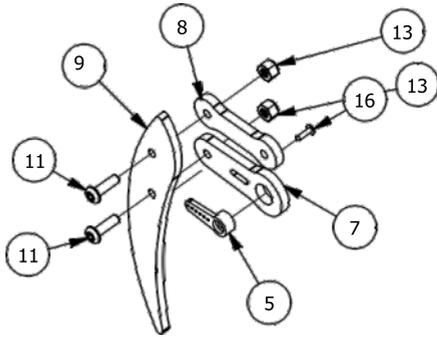
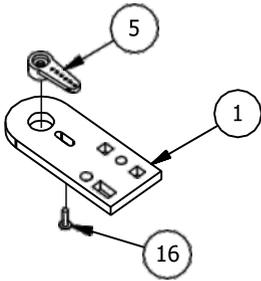
You can access the whole code with the link and QR code below.

<https://www.kisa.link/Orm4>



Leg assembly

Perform steps 1 to 9 4 times.

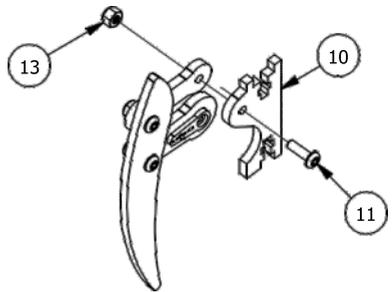
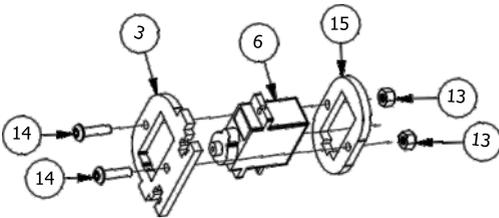


Step 1 - Place a servo single arm on the pedestal pivot plate and screw the servo mounting screw into the servo single arm from the rear of the leg up pivot plate.

Step 2 - Attach a servo single arm to the standing servo arm and attach a servo mounting screw to the servo. Screw on the servo single arm from the back of the leg servo arm.

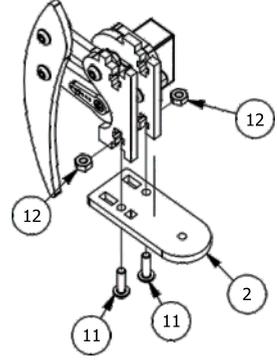
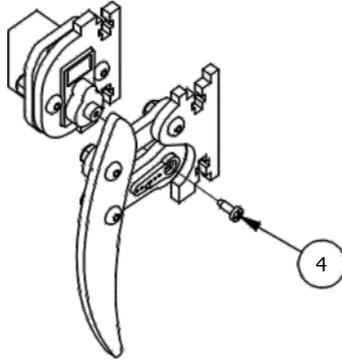
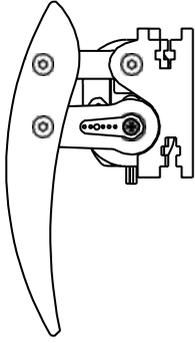
Step 3 - Attach a leg parallel joint to the leg piece using an M3x10mm screw and an M3 fiber nut.

Step 4 - Attach the leg piece to the leg servo arm using an M3x10mm screw and an M3 fiber nut.



Step 5: Insert a Servo into the Servo Holder.
Step 6: Insert the top end of the Servo into the Pedestal Servo slot.
Step 7: Attach the servo holder to the leg Servo socket using two M3 x 12mm screws and two M3 fiber nuts.

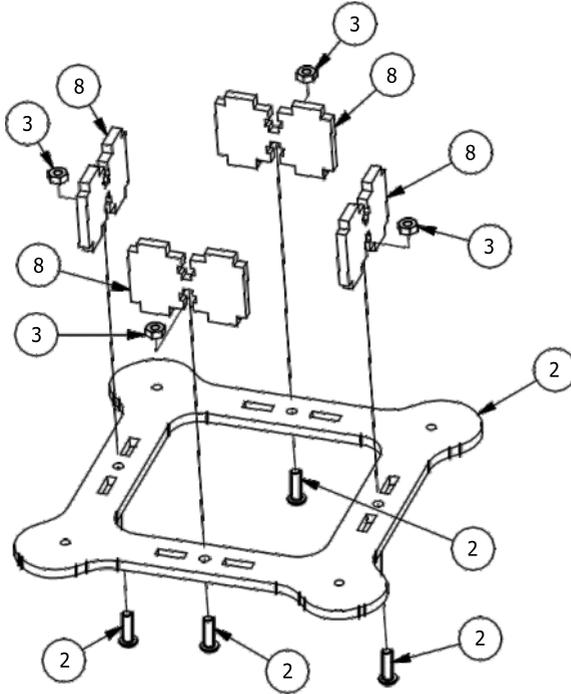
Step 8 - Attach a leg parallel plate to the other end of the leg using the M3X10MM screw and M3 fiber nut.



Step 9 - With the servo rotated to the center position and the leg parallel joint positioned horizontally, attach the leg servo arm to the servo using the servo arm screw supplied with the servo

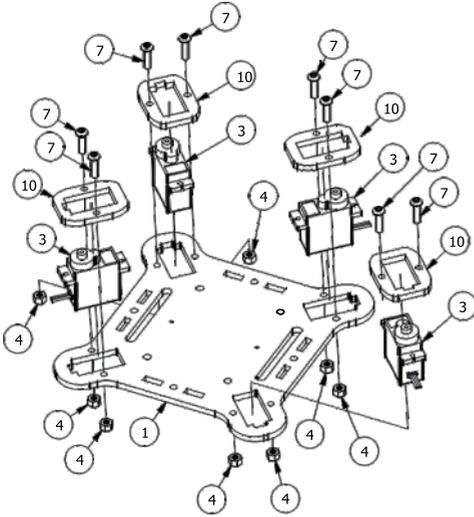
Step 10: Attach the Leg Assembly from the previous steps to the Leg Bottom Pivot Plate using two M3 x 10mm Screws and two M3 Nuts.

Body Assembly



PARÇA LİSTESİ	
PARÇA NUMRASI	
1	Gövde Üst Plakası
2	M3 x 10mm Screw
3	Servo Motor
4	M3 Somun
5	M3 fiberli Somun
7	M3 x 12mm Vida
8	Vücut Aralayıcı
10	Servo Tutucu

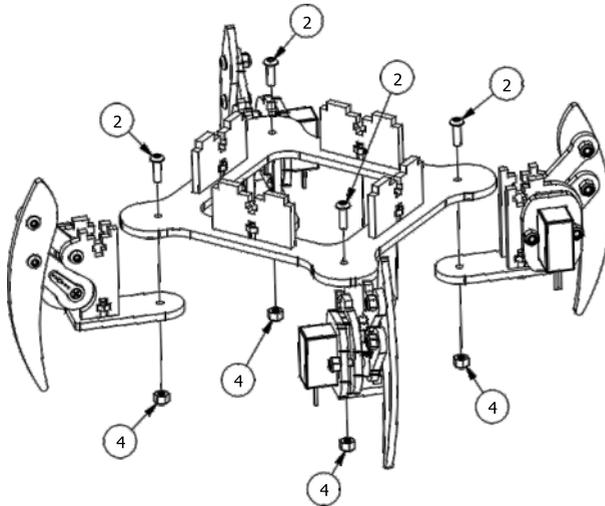
Step 11 - Attach the four stem spacers to the stem bottom plate using four M3x10mm screws and four M3 flat nuts.



Step 12 - Place four servos on the top of the chassis top plate.

Step 13 - Attach a servo holder to the top of each servo.

Step 14 - Attach each servo holder to the chassis top plate using M3x12mm screws and M3 fibers nuts.



PARÇA LİSTESİ	
ITEM	PARÇA NUMARASI
1	Servo Vidası
2	M3 x 10mm Civata
3	M3 Somun
4	M3 fiberli Somun

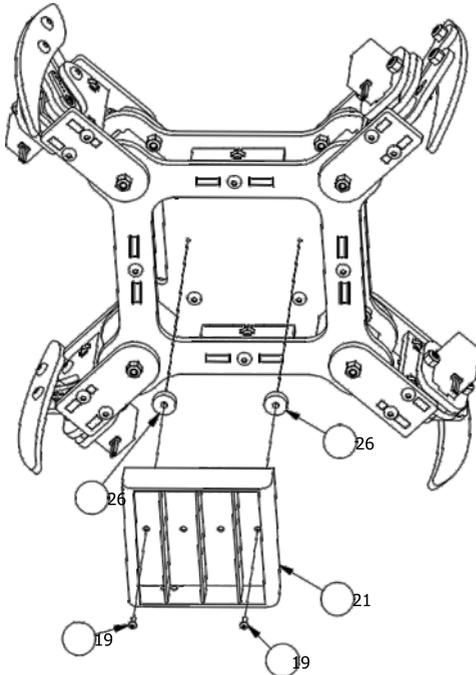
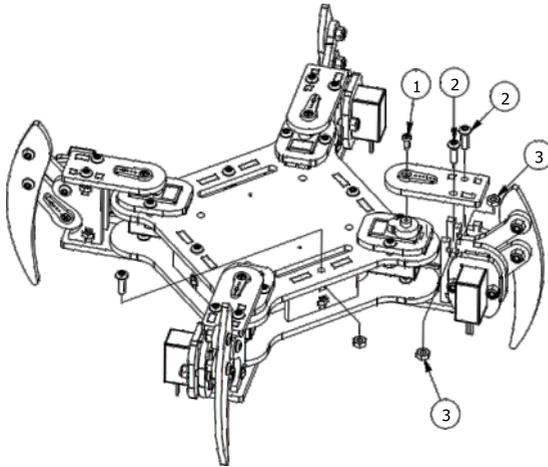
Step 15 - Attach each leg piece to the stem bottom plate using an M3x10mm screw and M3 fiber nut. Do not over tighten the screws, it may cause malfunction of the servos.

Step 16 - Attach the body bottom plate to the body top plate using four pieces, using M3x10mm screws and M3 nuts.

Step 17 - Rotate each leg so that it is oriented at a 45 degree angle as shown. Install the leg upper pivot plate. Mount to each pivot servo and leg using two M3x10mm screws and two M3 nuts.

Step 18 - Secure the servo single arm to the servo using a servo screw.

Finally, fix the battery holder to the lower part of the robot using the plexi risers.

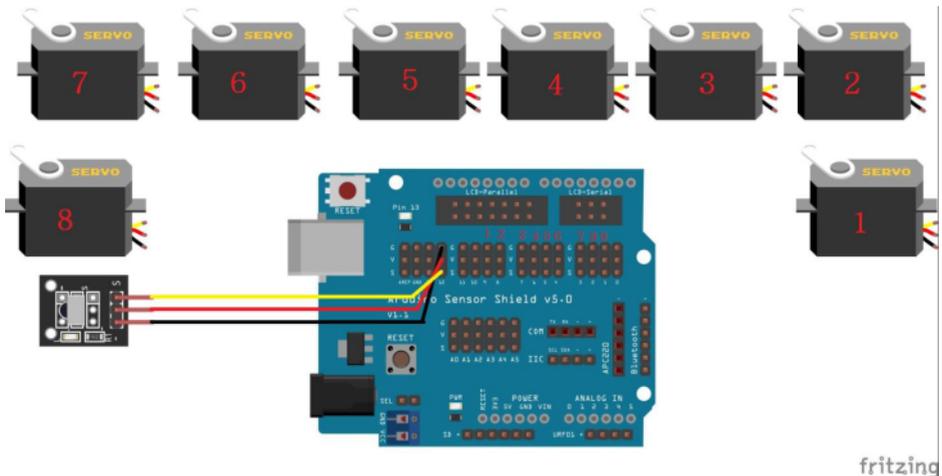


Its time top make connections between Arduino.

Please follow the instructions :

- front-left-axis : 2. Pin**
- front-left-lift : 3. Pin**
- back-left-axis : 4. Pin**
- back-left-lift : 5. Pin**
- back-right-axis : 6. Pin**
- back-right-lift : 7. Pin**
- front-right-axis : 8. Pin**
- front-right-lift : 9. Pin**

IR Module : 12. Pin

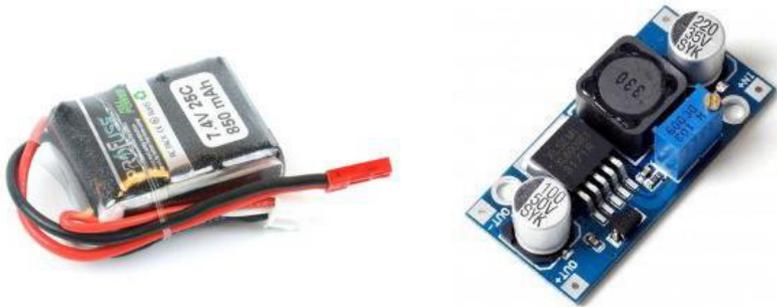


Connect the servo motors in order starting from the 2nd digital pin to the 9th digital pin as seen in the circuit diagram. Connect the IR receiver module to the 12th pin as in the diagram.

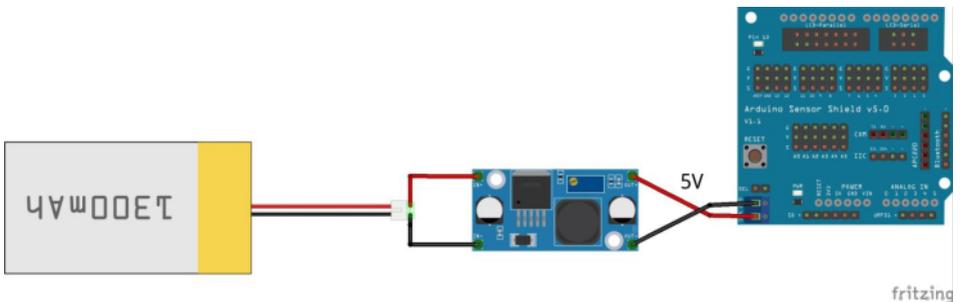
Since the spider robot works with more than one servo motor, the power of the arduinon is insufficient, for this we need to make an external power input.

You need to energize the shield with a minimum 4.8v maximum 5v power supply. It is up to you what kind of energy you will give, whether with a lipo battery or a pen battery. The important thing here is that it should not exceed 5 volts, otherwise your Arduino will be damaged.

I have shared a few battery samples with you below as an example.



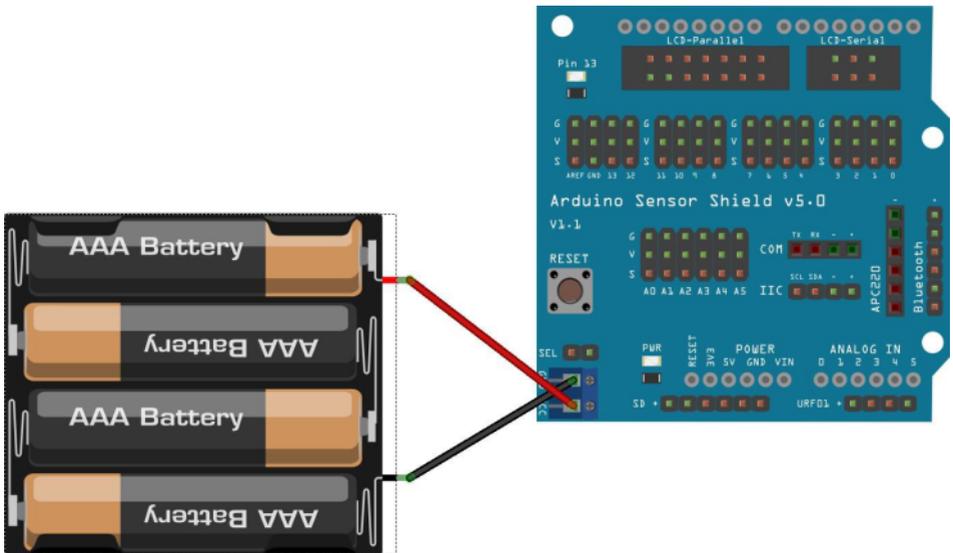
If you are going to use a lipo battery type battery on the upper side, you must use the voltage reducing circuit on the side. Because voltages greater than 5 volts will damage your card.



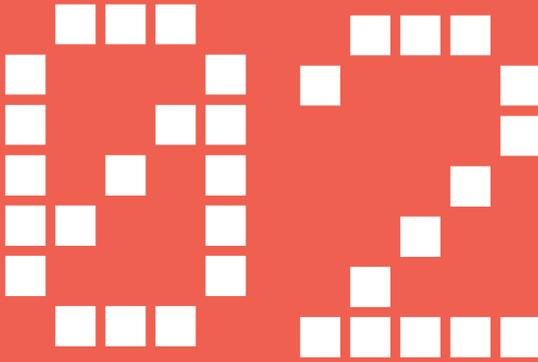
As seen in the circuit diagram, it will be sufficient to set the output of the voltage reducing circuit to 5 volts and attach it to the shield.



You can use the batteries included in the set by connecting them directly to the shield by inserting them into the 4-battery slot as seen in the connection diagram at the bottom. Because GP brand batteries are of good quality, they can give very efficient voltage output. That's why the spider is a pretty good power source for the robot.



fritzing



Software Installation

robotistan



BLOG



maker.robotistan.com

FORUM



forum.robotistan.com



YouTube



youtube.com/robotistan

We have prepared a code for you so that you can move the spider robot without any problems at first. A few commands are ready in the code, but you can revise it yourself.

```
orumcek.robot.kod | Arduino 1.8.13
Dosya Düzenle Taslak Araçlar Yardım
orumcek.robot.kod

#include <IRremote.h> // include IR Remote library
#include <Servo.h> // include servo library

//==== Globals =====

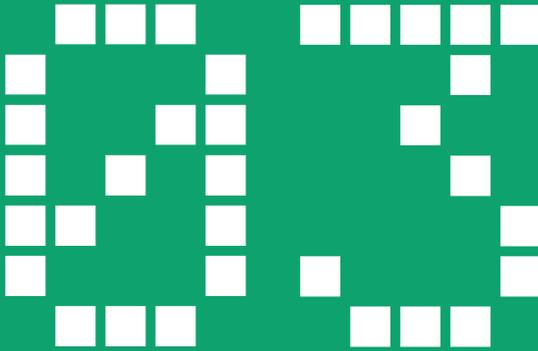
// Define USRF pins and variables
#define trigPin A3
#define echoPin A2
#define INCH 0
#define CM 1

// Define IR Remote Button Codes
#define irUp 16736925
#define irDown 16754775
#define irRight 16761405
#define irLeft 16720605
#define irOK 16712445
#define ir1 16738455
#define ir2 16750695
#define ir3 16756815
#define ir4 16724175
#define ir5 16718055
```

You can access all the codes with this links :

<https://www.kisa.link/Osmk>





Circuit Installation

robotistan



BLOG



maker.robotistan.com

FORUM



forum.robotistan.com

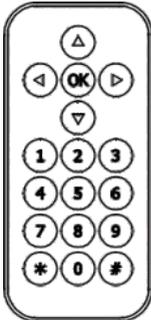


YouTube



youtube.com/robotistan

The list of the functions of the IR controller that you will use to move the robot is given below.



- up arrow : forward
- down arrow : back
- one-
- 2nd-
- 3: increase walking speed
- 4-
- 5-
- 6 : decrease walking speed
- 7-
- 8 : dance mode
- 9-
- 0 : restore all servos
- * : wave to the left
- # : wave to the right

These movements defined to the control are the movements defined in the arduino code before. You can define the idle pins of the controller in the code according to your own wishes.

Each remote has its own unique ID numbers. In order to introduce your own remote to your robot, you need to know the ID number of the buttons of your remote. In this, you need to download the code at the bottom to your Arduino first, learn the ID number of your remote's keys one by one, and copy it into your main code.

```

@oszekrobotkod | Arduino 1.8.13
Source: Oszek - Takak Angle Yaskin
oszekrobotkod

#include <IRremote.h> // include IR Remote library
#include <Servo.h> // include servo library

//===== globals =====

// Define USB pin and variables
#define trigPin A3
#define echoPin A2
#define INCH 0
#define CM 1

// Define IR Remote Button Codes
#define irUp 16736925
#define irDown 16754775
#define irRight 16761405
#define irLeft 16720495
#define irOR 16712445
#define ir1 16738455
#define ir2 16750695
#define ir3 16754615
#define ir4 16724175
#define ir5 16718055
    
```

You can access all the codes with this links :

<https://www.kisa.link/Oszk>





YouTube



youtube.com/robotistan

FORUM

robotistan



forum.robotistan.com

BLOG

robotistan



maker.robotistan.com

Robotistan Elektronik Ticaret A.Ş.

Hazırlayanlar: Yasin TAŞCIOĞLU (içerik) - Mehmet AKÇALI (Editör) - Mehmet Nasır KARAER (Grafik)
info@robotistan.com - www.robotistan.com
Tel: 0850 766 0 425