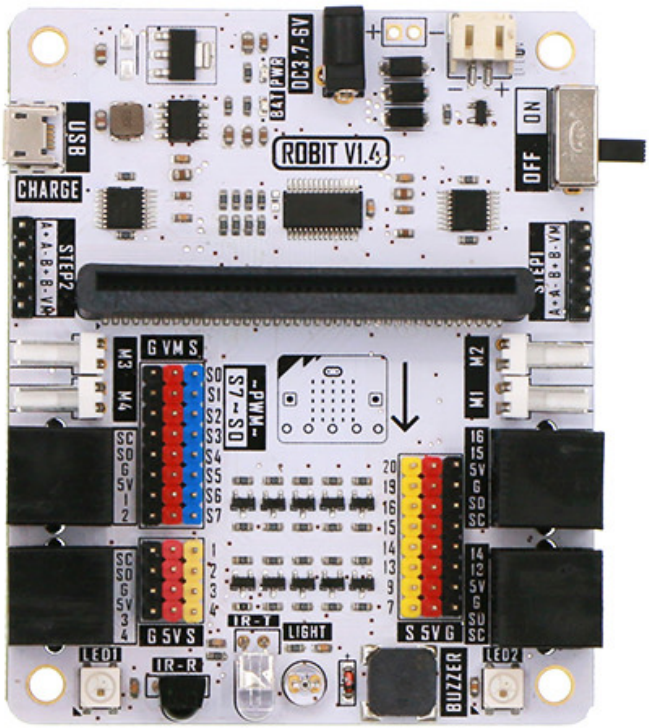
Robit User Guide

Introduction

Robit is a motherboard of smart car based on micro:bit. It is compatible with MBOT. Except for the integration of the simple and convinient RJ25 connector，motor connector and sensor on MBOT, we have extended 4 DC motor connectors, 2 stepping motor connectors(same with 4 DC motor connectors), 8 PWM signal output connectors on this board. You can use it to drive PWM signal driving devices like servo. It has 8 G-5V-S digital signal connectors(for connecting with OCTOPUS electric bricks). Robit can realize all current basic functions of MBOT. Besides, you can extend its usage with more sensors, motors, servos, stepping motors and so on.



Features

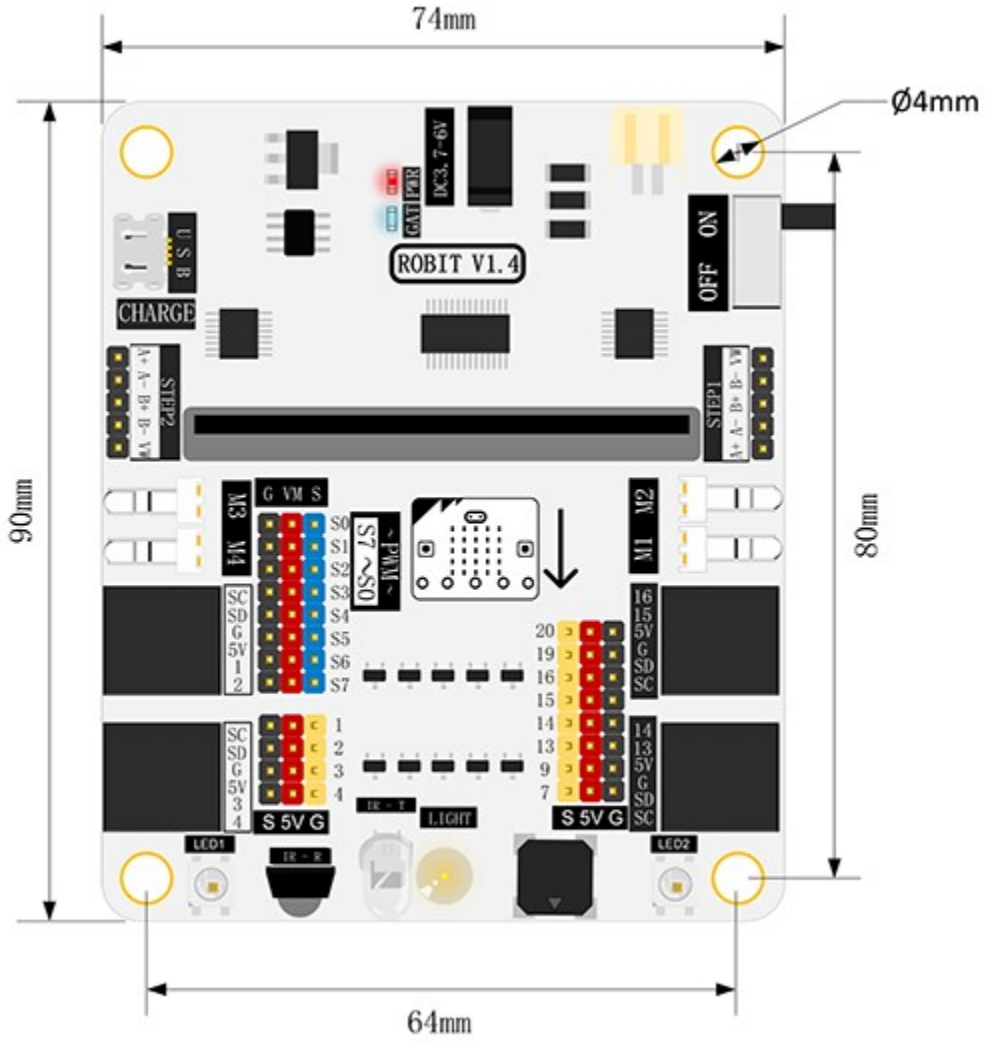
- Compatible with MBOT chassis and sensors.
- Support 4 channels of DC motor and 2 channels of stepping motors.
- With 8 PWM signal output connectors.
- With 8 G-5V-S digital signal connectors(for OCTOPUS electric brick).
- With 4 G-5V-S analog signal connectors(for OCTOPUS electric brick).
- Integrate frequently used modules like buzzer, light sensor, rainbow LED, infrared send and receive.

Parameter

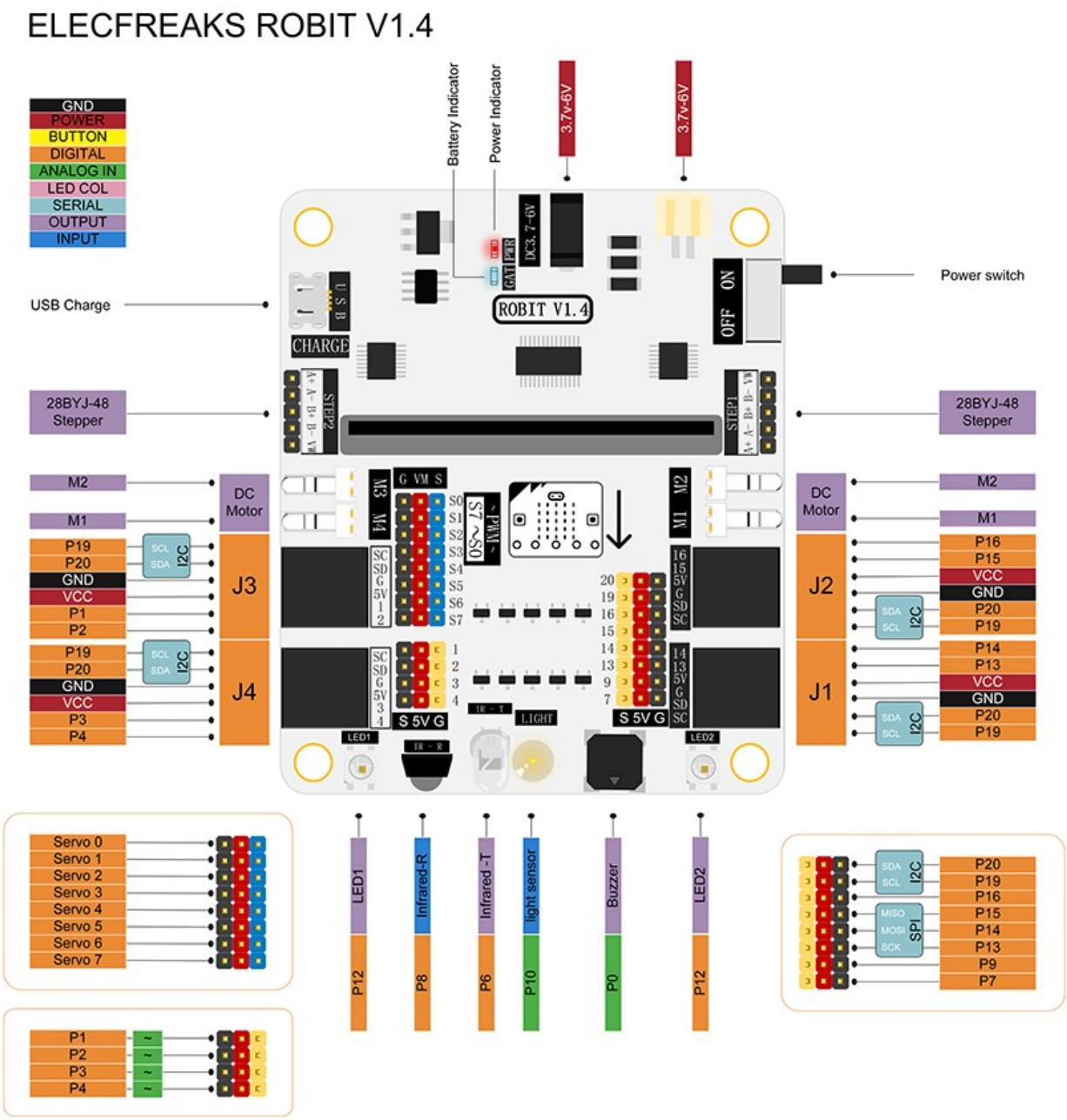
Project	Parameter
DC Power Input Voltage	DC 3.7-6V
Li-battery Input Voltage	DC 3.7-4.2V
USB Recharging Current	500mA
Extendable Analog IO Ports	4
Extendable Digital IO Ports	10
Max Stepping Motor Driven Quantity	8
DC Motor	4 Channels
Stepping Motor	2 Channels
Programmable LED Beads	2
Passive Buzzer	Support
Photocell Sensor	Support
Infrared Receive	Support
Infrared Send	Support
Dimension	90mm X 74mm

Project	Parameter
Net Weight	46g

Dimension

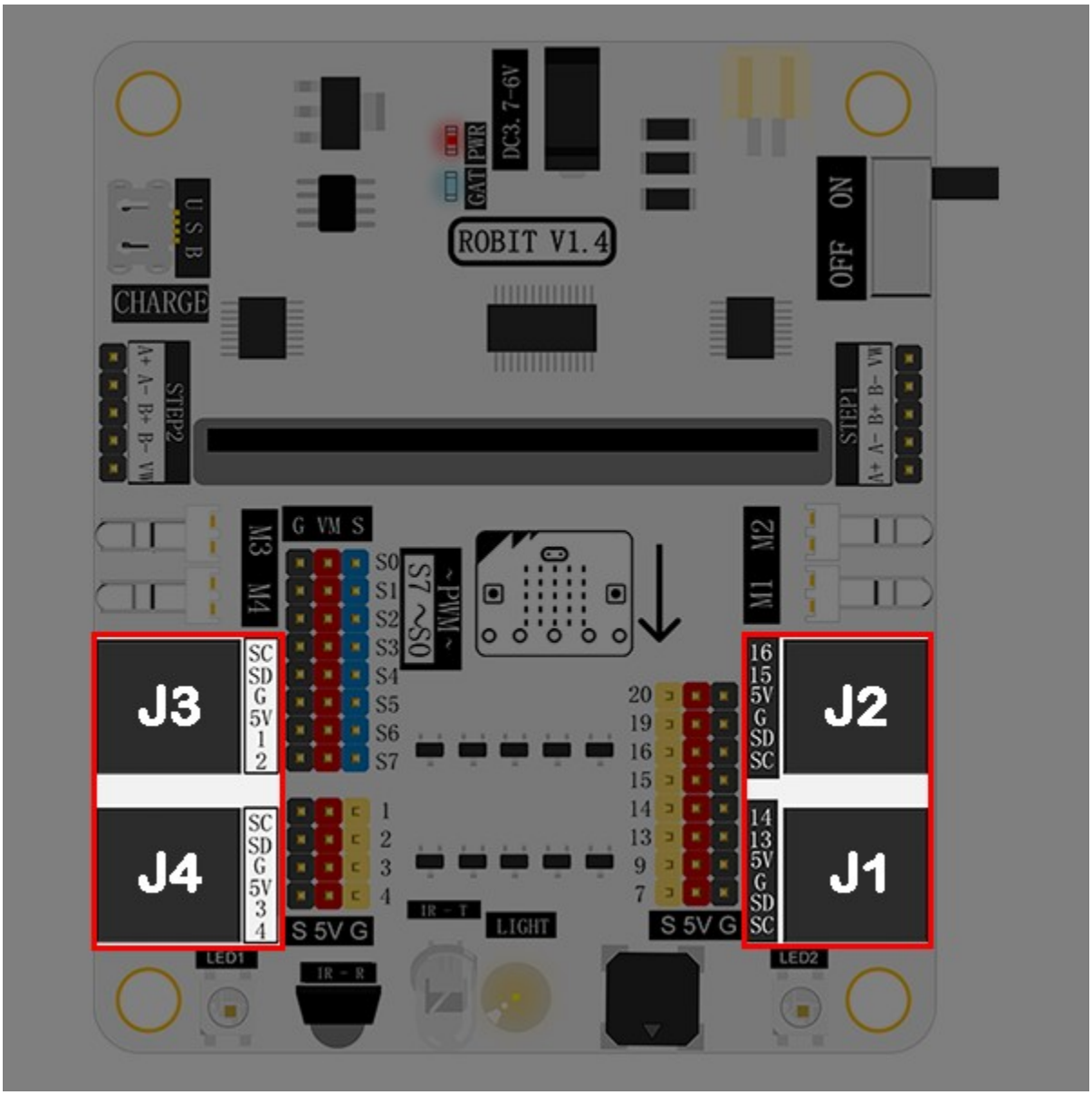


Pins & Connectors



Introduction of Major Components

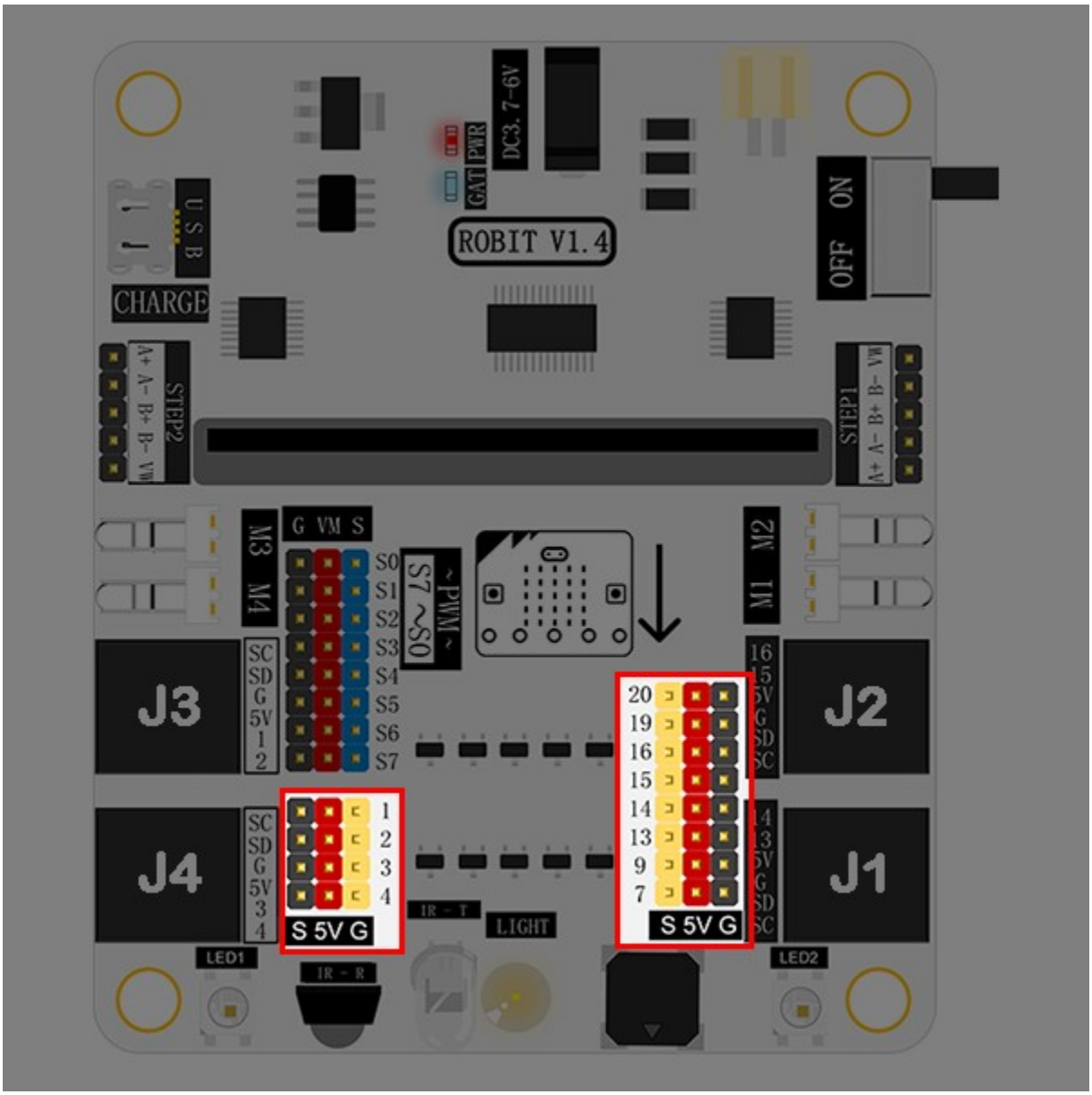
RJ25 Connector



Robit has 4 RJ25 connectors. Each RJ25 connector has 6 touch points. These points respond to power, 2 IO ports and IIC ports separately. It is compatible with some sensors on MBOT.

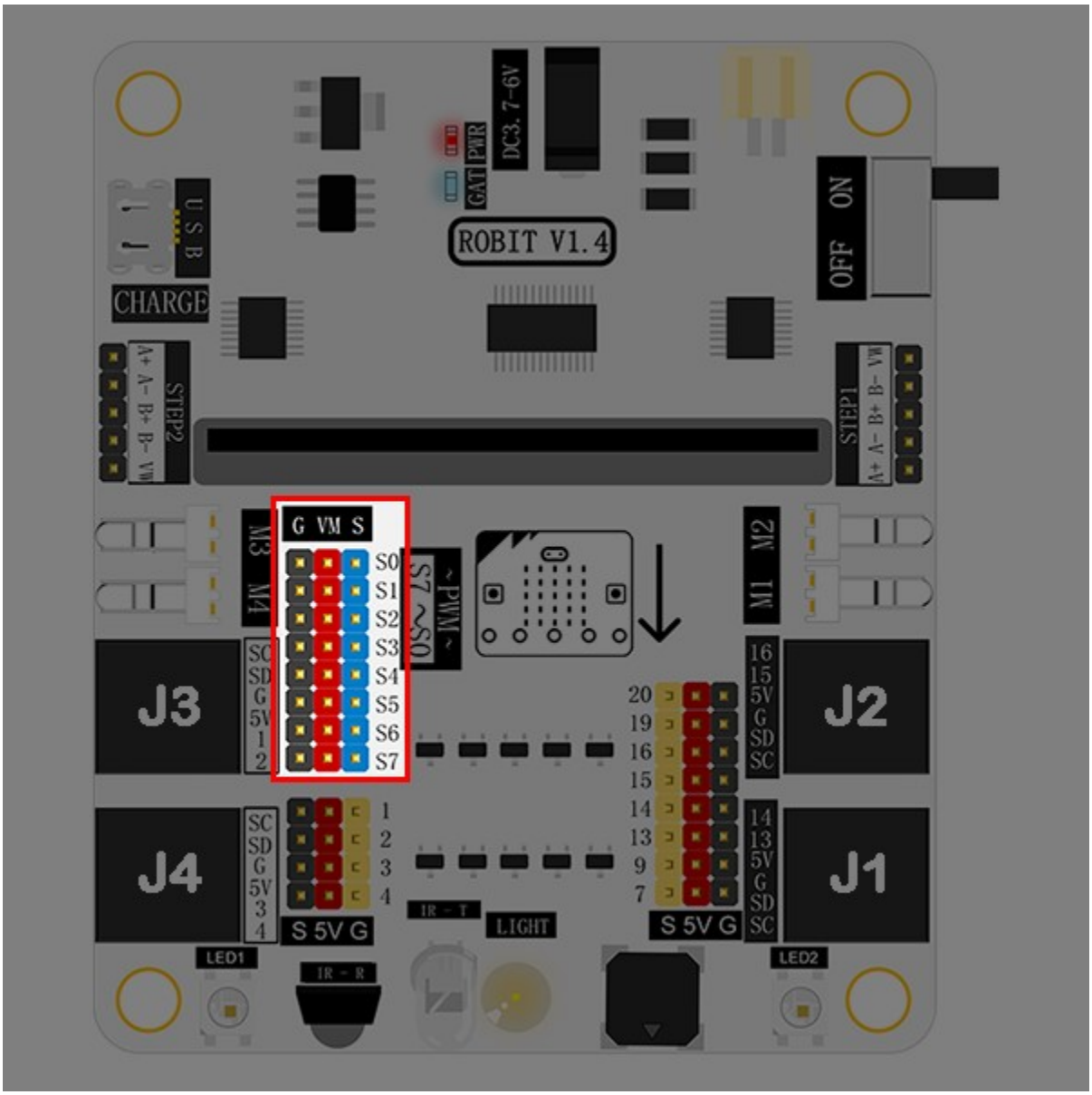
RJ25 Connector	Match Pins on micro:bit
J1	SCL(P19)/SDA(P20)/GND/5V/P13/P14
J2	SCL(P19)/SDA(P20)/GND/5V/P15/P16
J3	SCL(P19)/SDA(P20)/GND/5V/P1/P2 (Support 5V analog input sensor)
J4	SCL(P19)/SDA(P20)/GND/5V/P3/P4 (Support 5V analog input sensor)

GVS Standard Electric Brick Connector



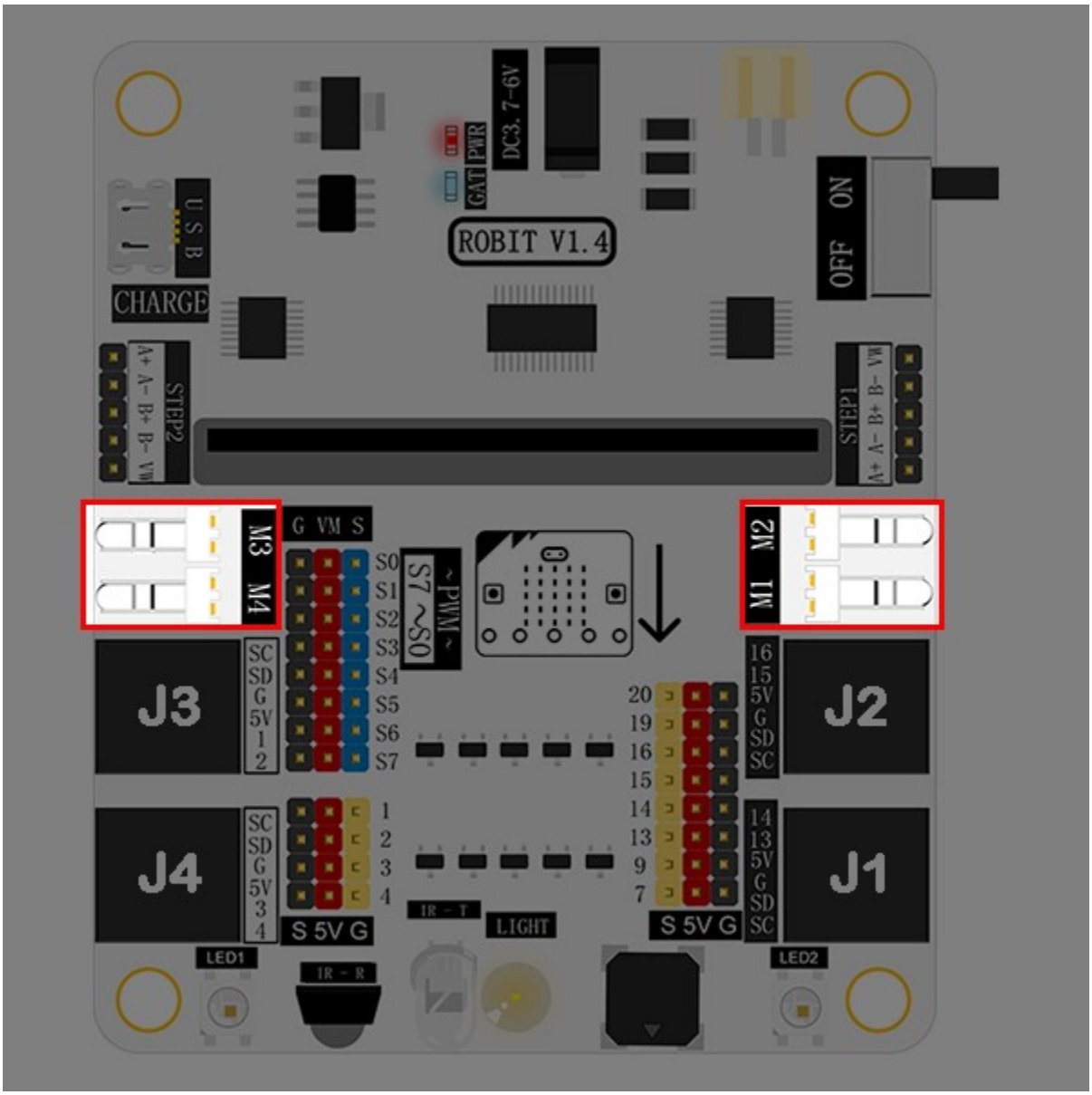
Except leading out to RJ25 connector, the IO port on micro:bit also lead out with the format of GVS. It is support 5V components. Besides, P1/P2/P3/P4 support 5V analog input sensors.

GVS Standard Servo Connector: S0~S7



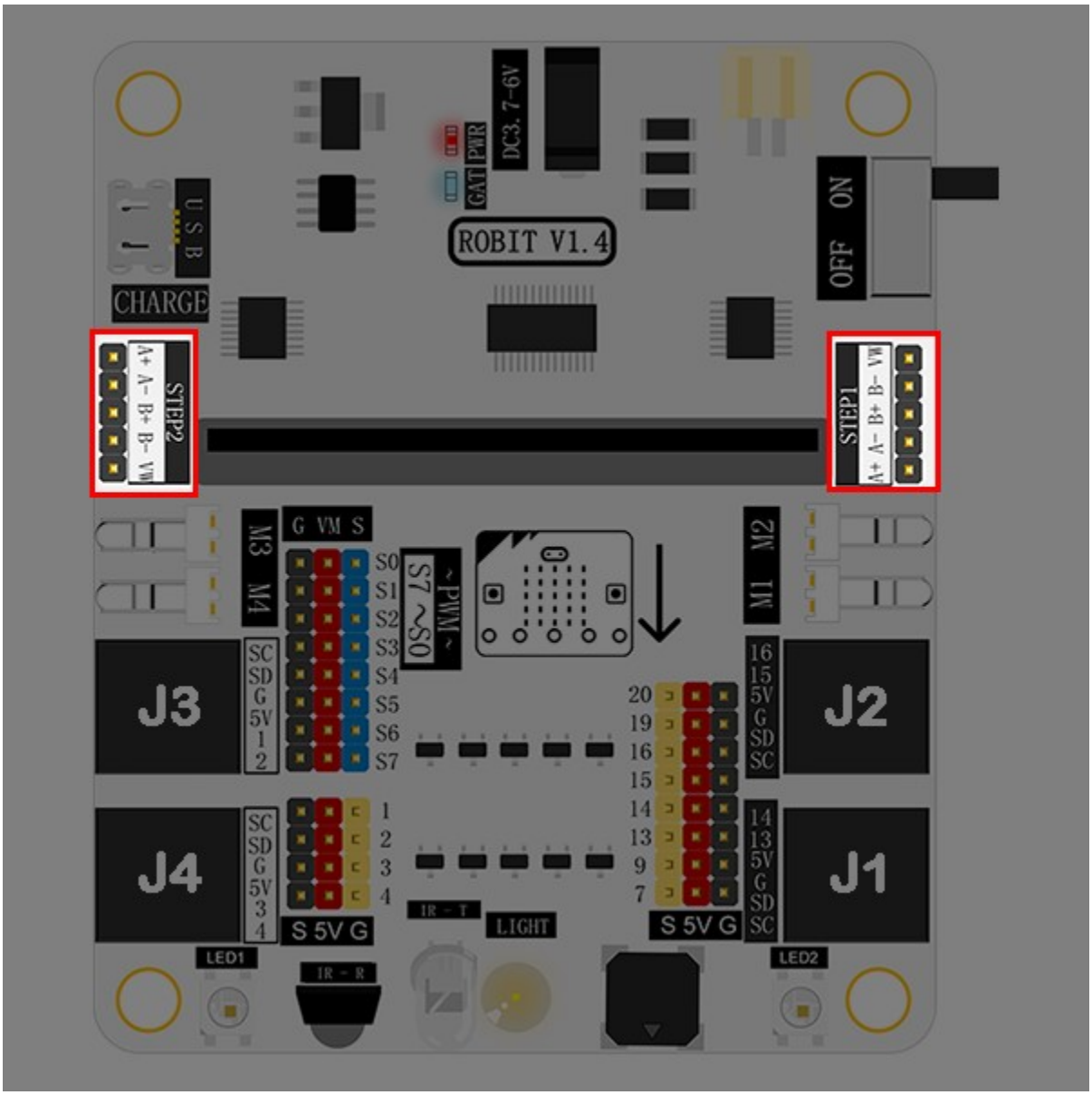
You can connect 8 servos at most. This connector leads out from the chip PCA9685 and extends from the IIC connector on micro:bit instead of normal I/O ports.

DC Motor Connector: M1~M4



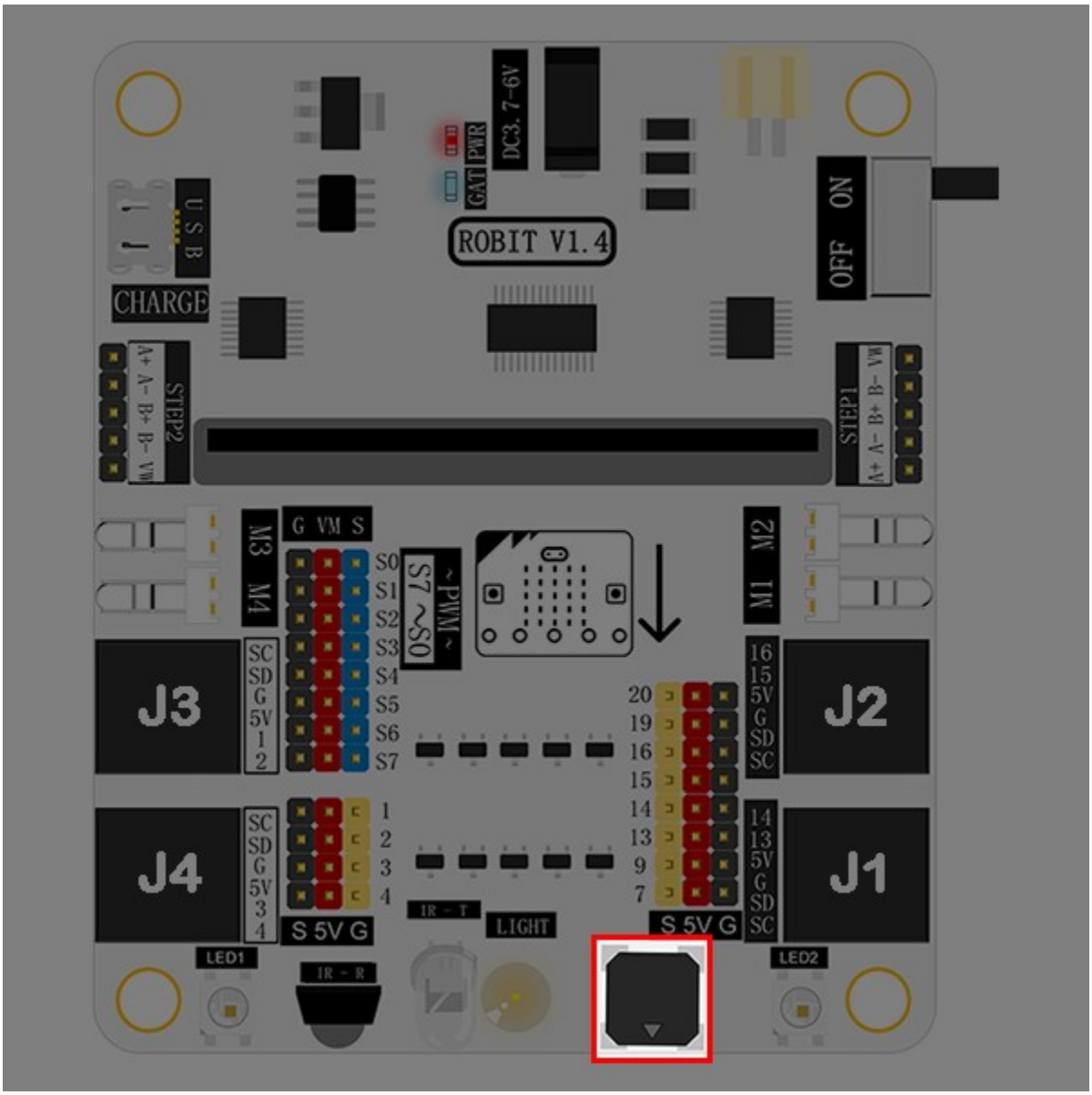
It allows you to connect 4 DC motors (max) at the same time. This connector leads out from the chip PCA9685 and extends from the IIC connector on micro:bit instead of normal I/O ports.

Stepping Motor Connector: STEP1 & STEP2



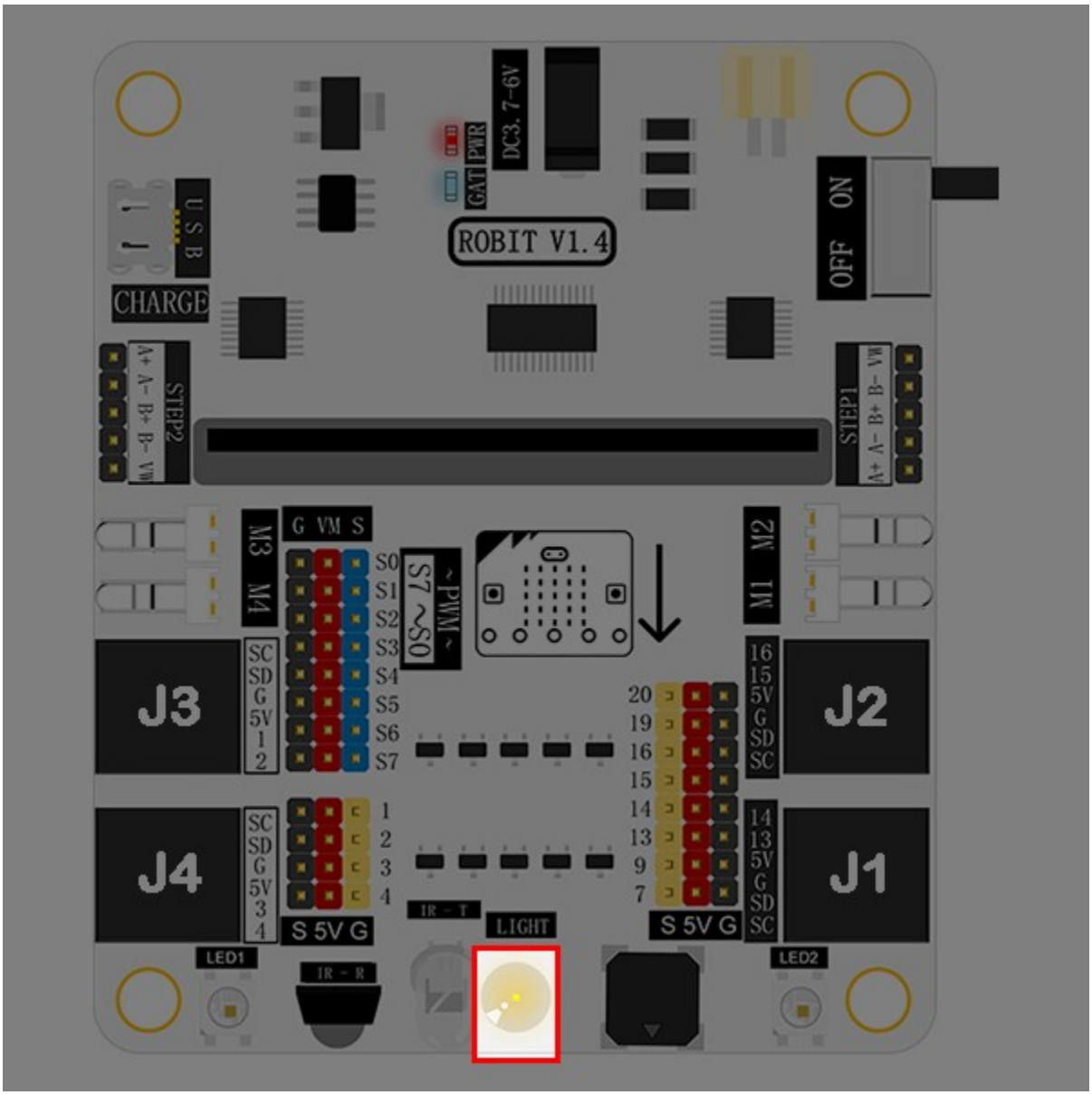
It enables you to connect 2 stepping motors(28BYJ-48-5V) at most.

Buzzer



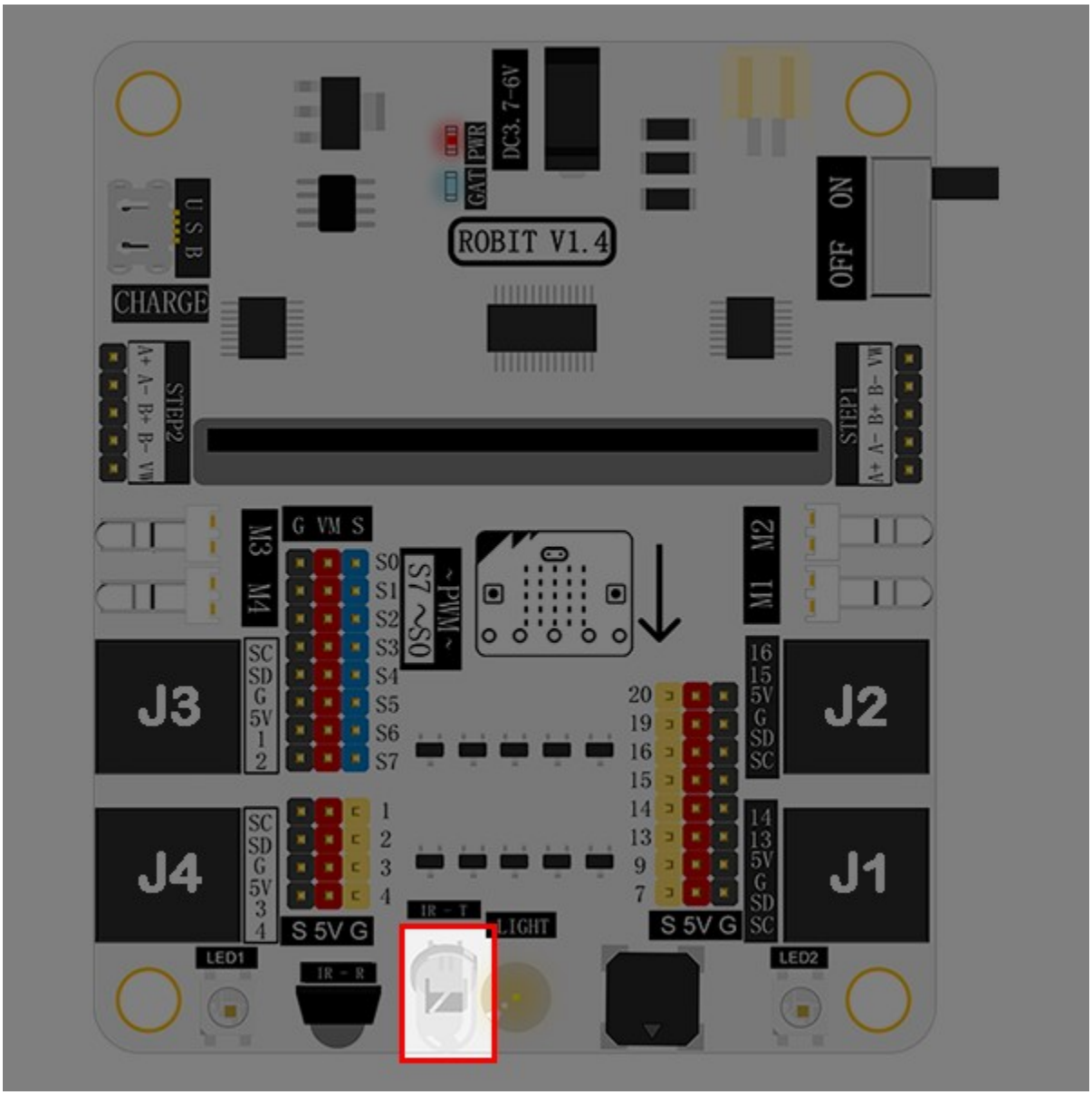
The buzzer is connected to the P0 port on micro:bit.

Light Sensor



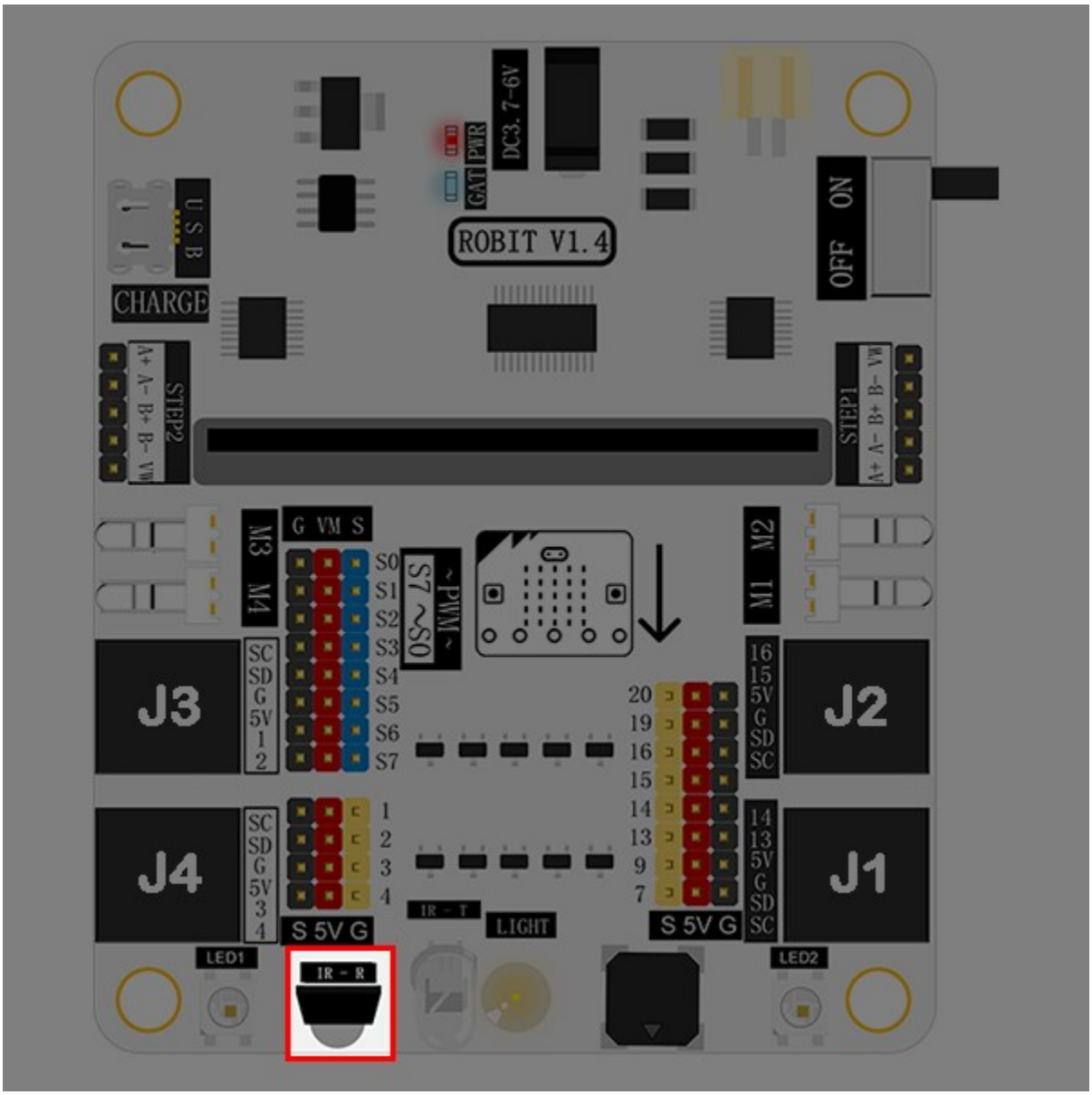
The light sensor onboard is connected to the P10 port on micro:bit.

Infrared Emitting Diode



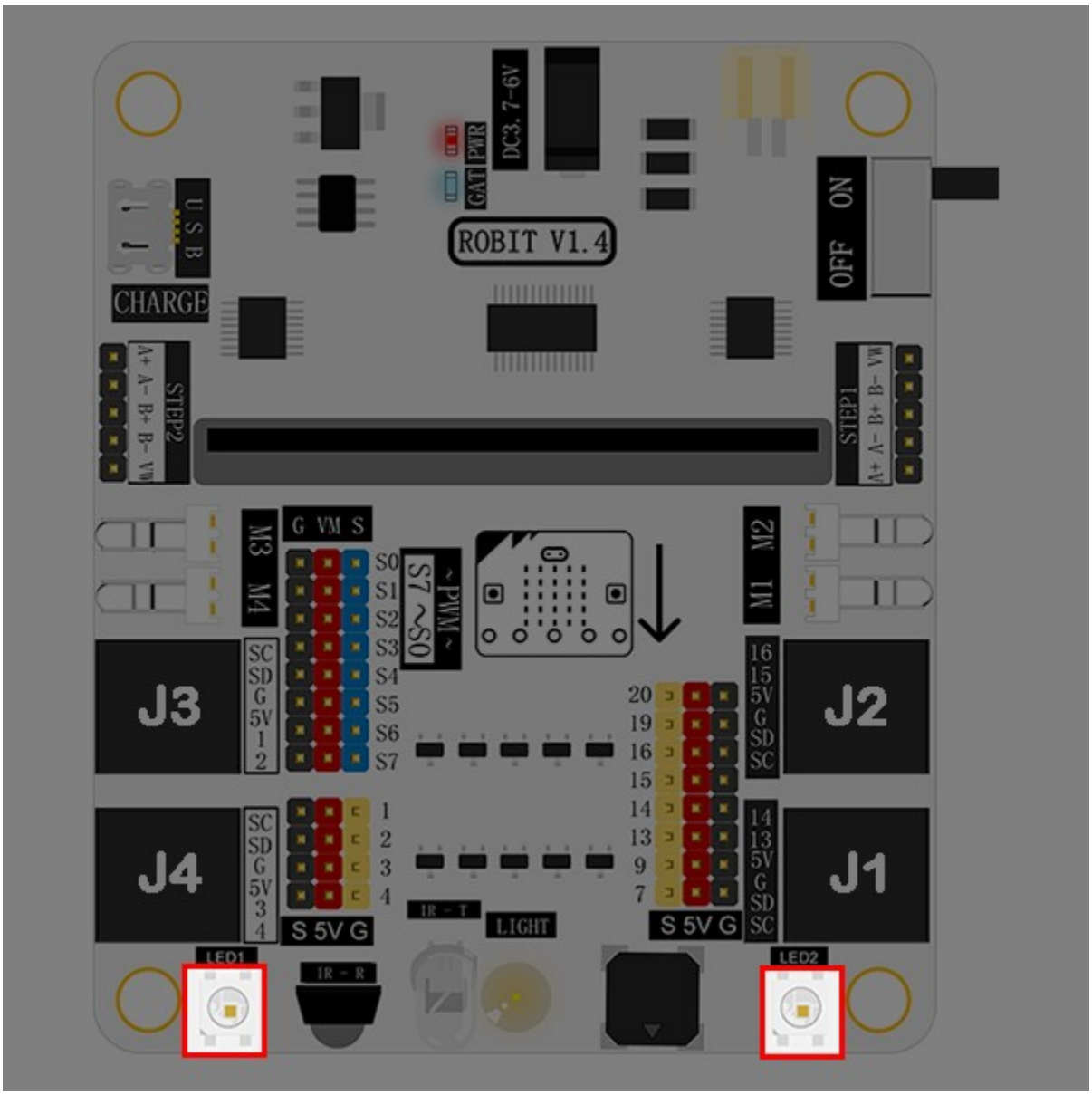
This infrared emitting diode is connected to the P6 port on micro:bit.

Infrared Receiving Diode



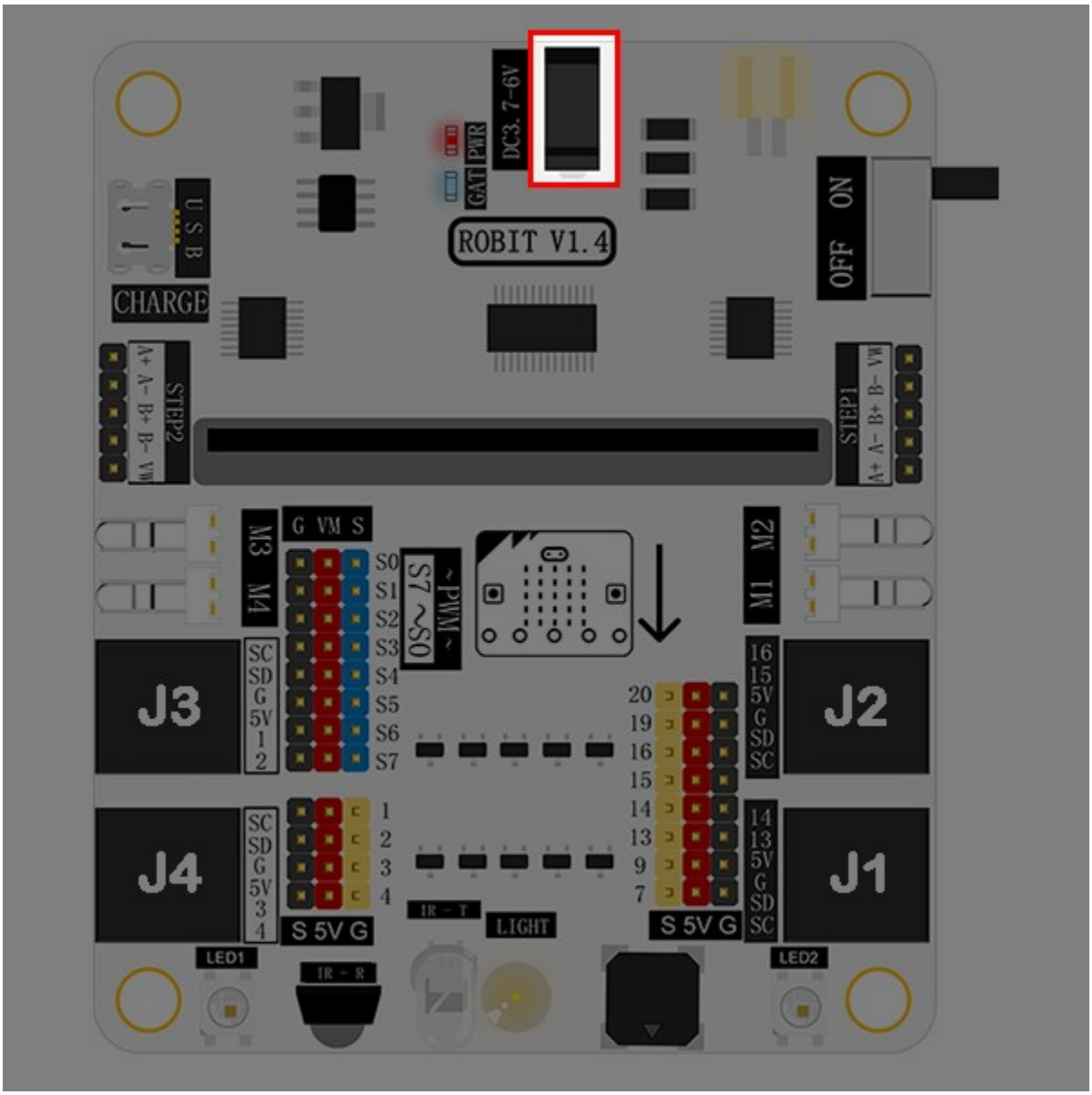
This infrared receiving diode is connected to the P8 port on micro:bit.

Rainbow LED



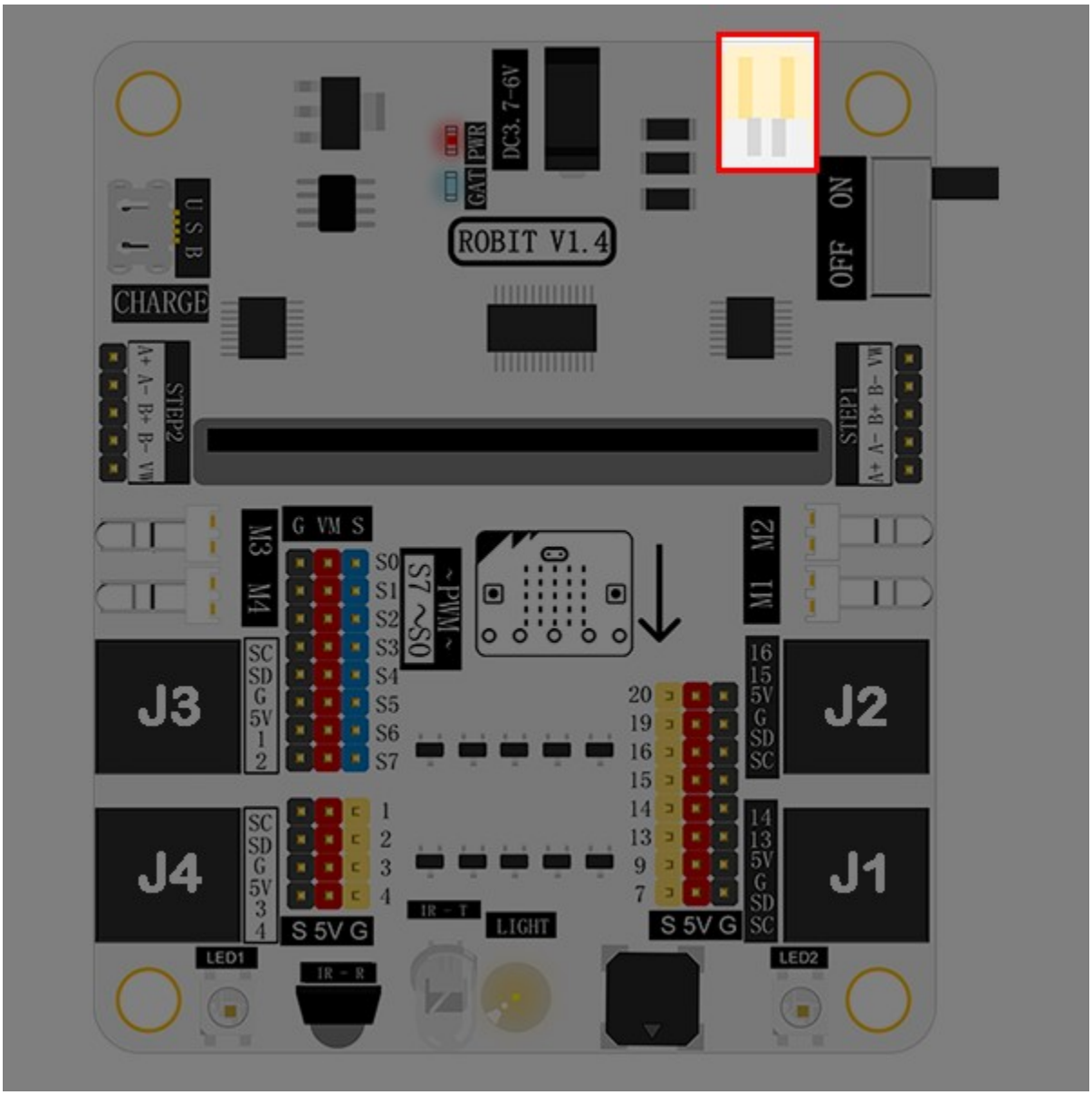
Two rainbow LED beads are connected to the P12 port on micro:bit.

DC Power Connector



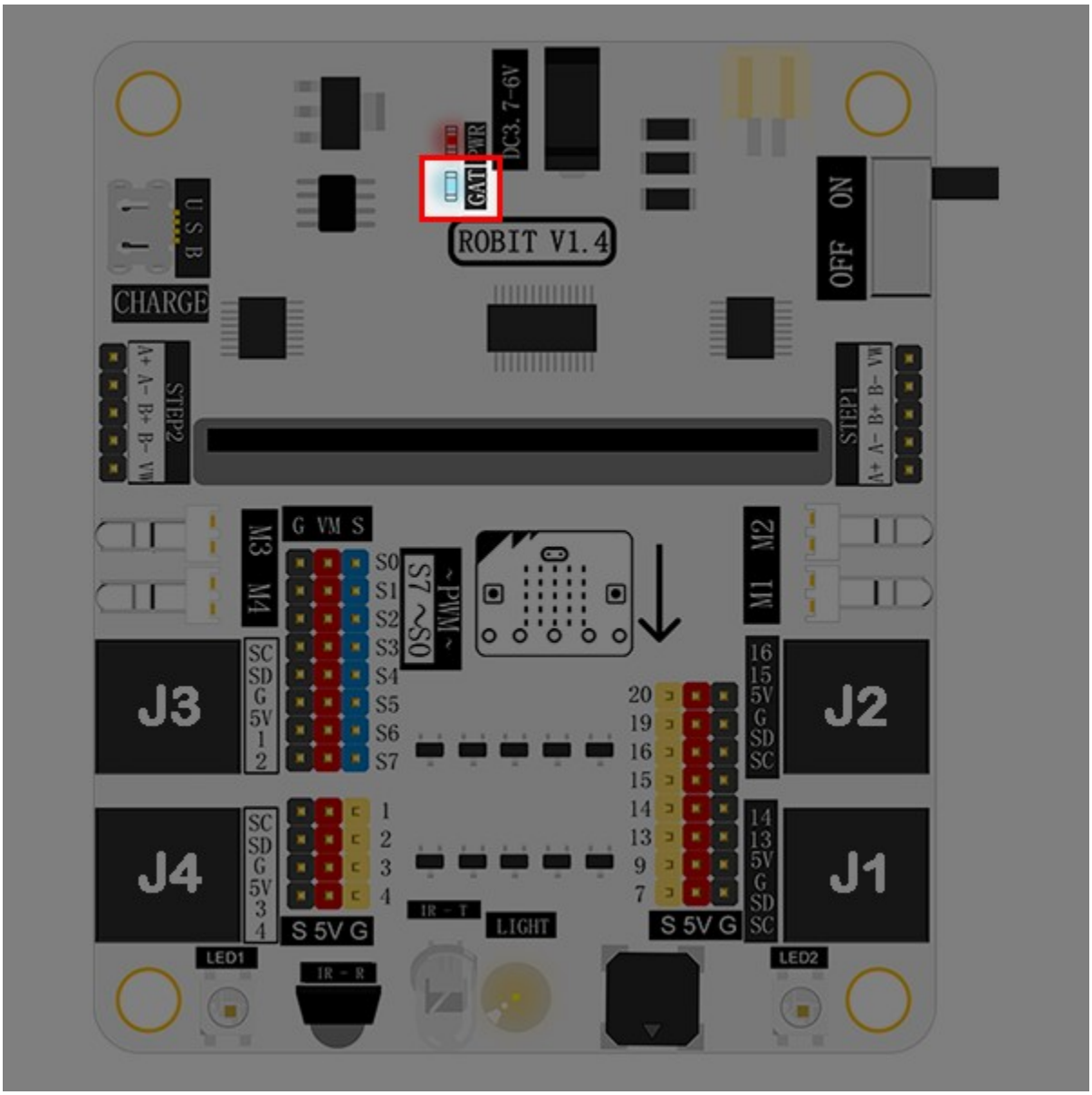
DC power connector supports 3.7V~4.2V DC power. It is usually connected to a battery holder with 4 AAA batteries.

Li-battery Connector



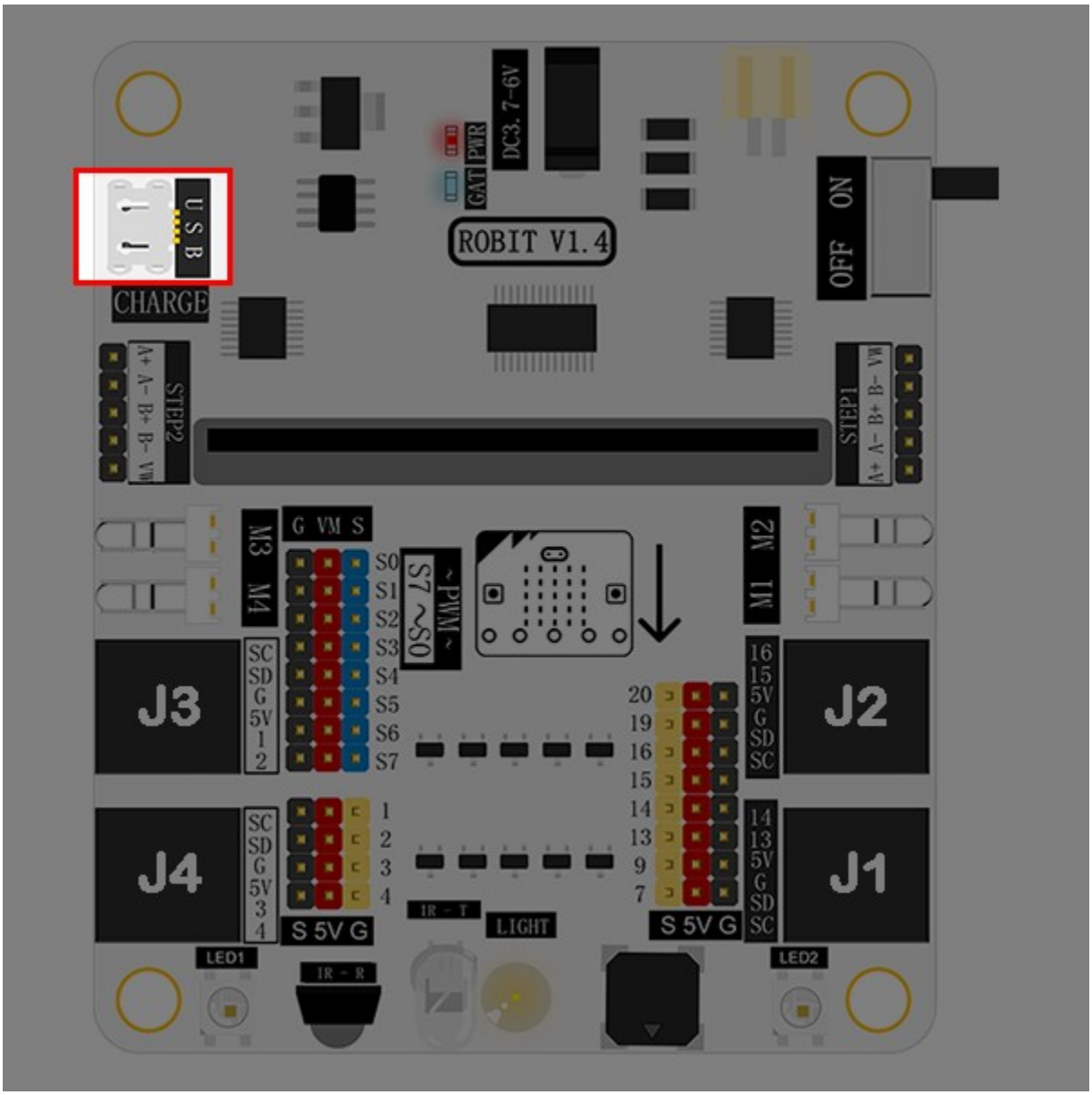
Li-battery connector supports 3.7V~4.2V li-battery.

Li-battery Indicator



This indicator tells you battery power information. It is in blinking status. Blink once means 1 grid of power. And the full power has 4 grids. That means it will blink 4 times when the battery power is full.

USB Connector

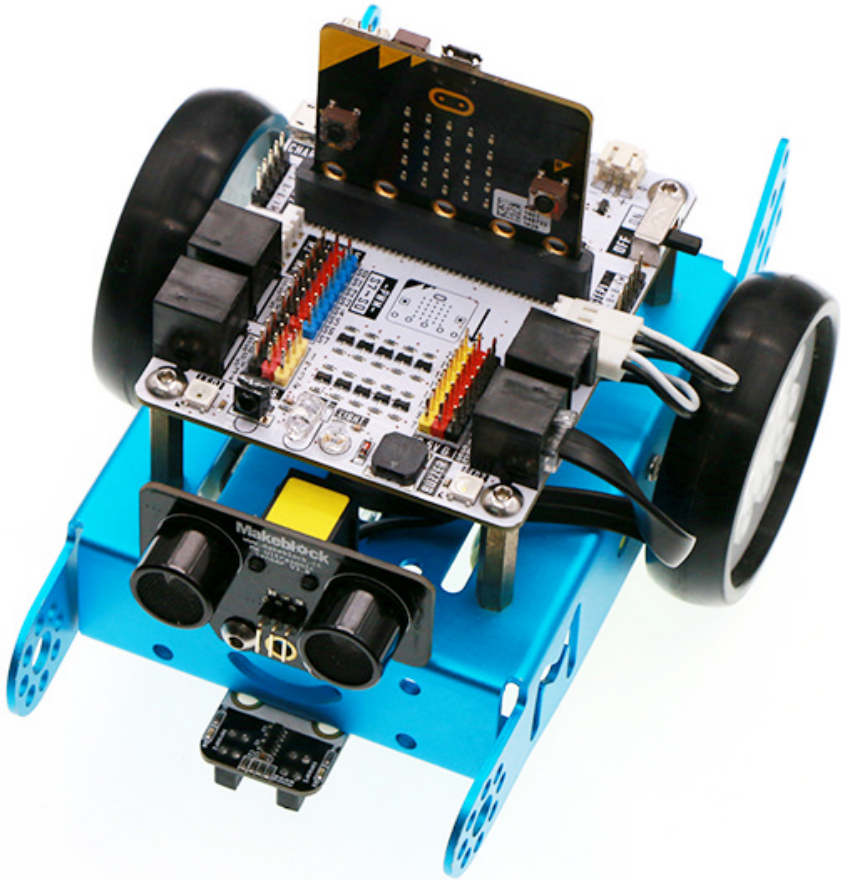


This connector is only used to charge li-battery. It doesn't support data transmit and its charging current is 500mA.

Quick Start

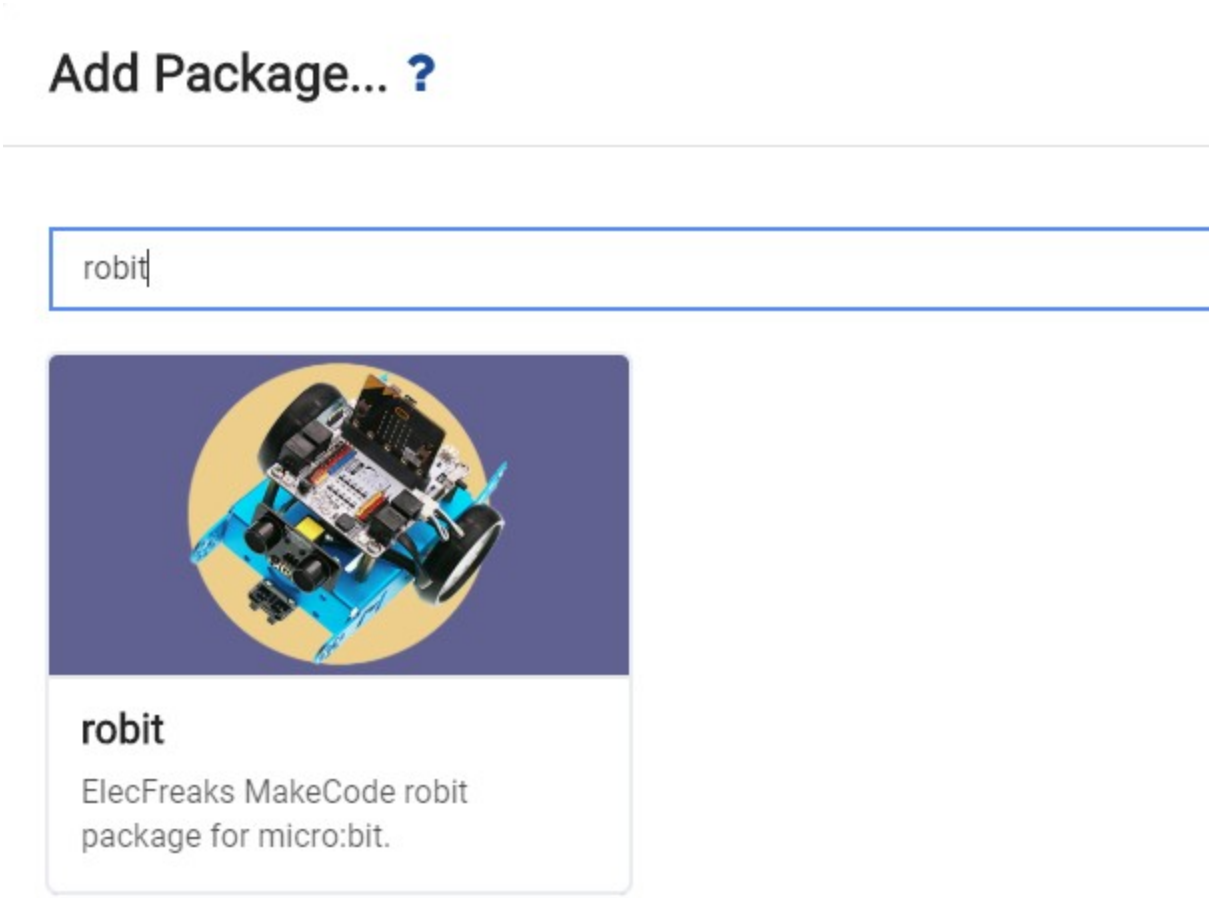
Hardware Connection

Fix robit onto mbot car.
Connect left motor to M1 port, and right motor to M2 port.
Once completed, it looks like the following picture showed.

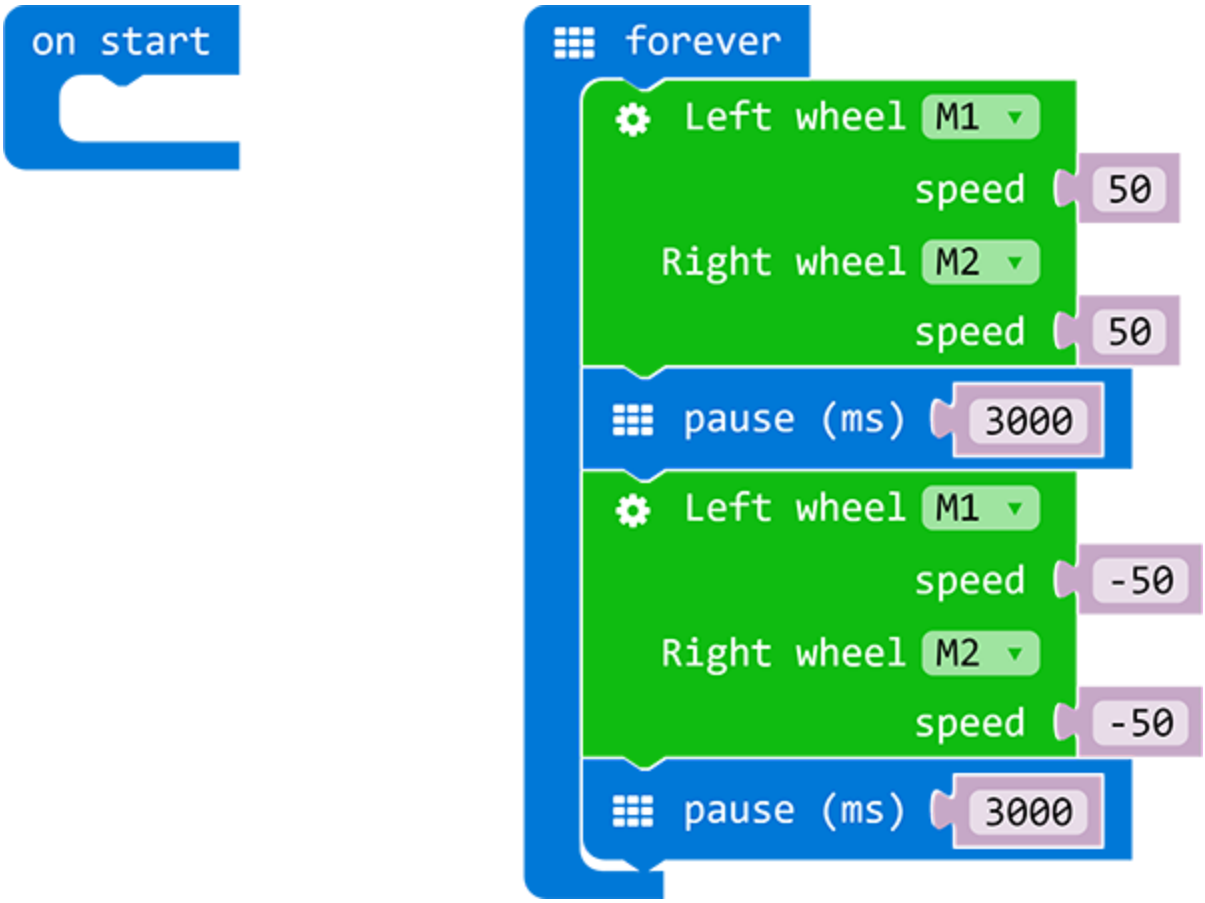


Programming

Click to open makecode, search the key word `robit` and add robit package.



Write your code to make the car forever move forth and back for 3 seconds respectively. Here's the code:



You can see the whole program from the link here:
https://makecode.microbit.org/_aXVAyx3dm585

Result

We can see our robit car moves forward for 3 seconds, and then backward 3 seconds. This round trip movement is repeated forever.

Document

WIKI

FAQ