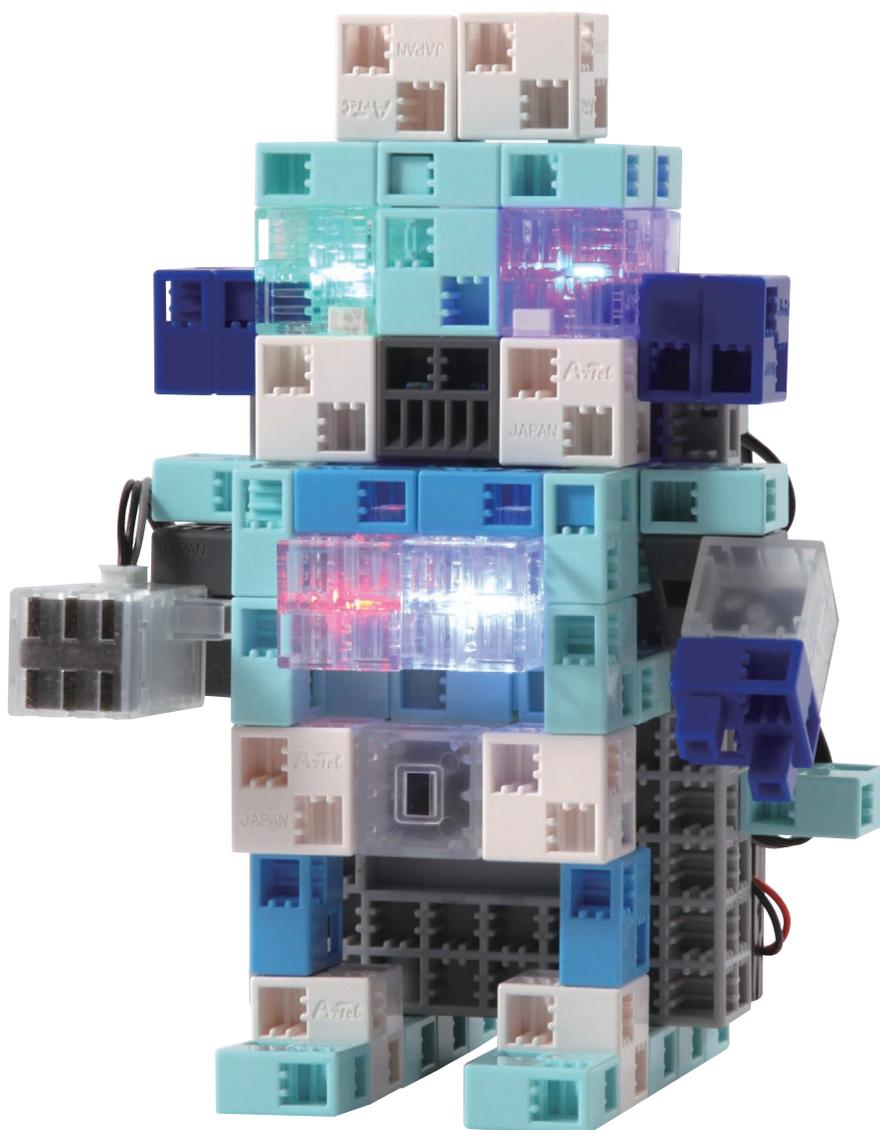


# Sensor Melody Light Robot

## Assembly Instructions



**Artec Co., Ltd.**

Address: 3-2-21 Kitakamei-cho, Yao-shi, Osaka  
581-0066 Japan

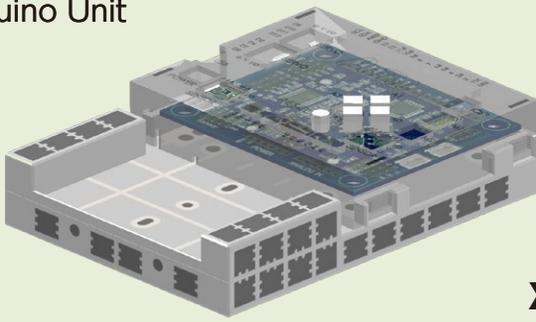
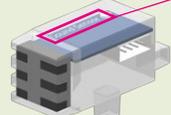
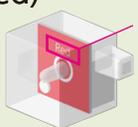
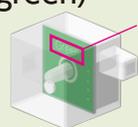
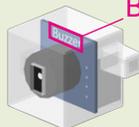
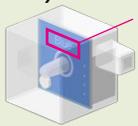
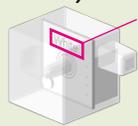
E-mail: [export@artec-kk.co.jp](mailto:export@artec-kk.co.jp)

Website: [www.artec-kk.co.jp/en](http://www.artec-kk.co.jp/en)

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Canada, and the USA.

# Sensor Melody Light Robot

## Components

<b>Studuino Unit</b>  <b>x 1</b>		<b>Battery Box</b>  <b>x 1</b>	<b>USB Cable</b>  <b>x 1</b>
		<b>Sound Sensor</b> <i>Sound Sensor</i>  <b>x 1</b>	<b>Sensor Connecting Cable</b> (three-wire 15 cm)  <b>x 7</b>
<b>LED (red)</b> <i>Red</i>  <b>x 1</b>	<b>LED (green)</b> <i>Green</i>  <b>x 1</b>	<b>Light Sensor</b> <i>Light Sensor</i>  <b>x 1</b>	<b>Buzzer</b> <i>Buzzer</i>  <b>x 1</b>
<b>LED (blue)</b> <i>Blue</i>  <b>x 1</b>	<b>LED (white)</b> <i>White</i>  <b>x 1</b>	<b>Basic Cube (white)</b>  <b>x 8</b>	<b>Basic Cube (clear)</b>  <b>x 4</b>
<b>Triangle A (gray)</b>  <b>x 4</b>	<b>Half B (blue)</b>  <b>x 5</b>	<b>Half C (light aqua)</b>  <b>x 29</b>	<b>Half D (aqua)</b>  <b>x 4</b>

## Assembly Instruction Labels

**x 1**

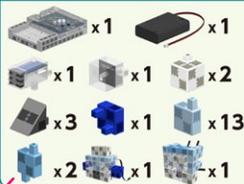
Shows the parts needed for assembly. Indicates the number of parts needed for assembly.



Indicates tips or warning when building a specific item.

**Sensor Melody Light Robot**

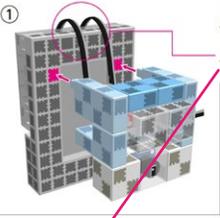
**Putting the Parts Together**



x 1 x 1 x 2  
x 3 x 1 x 13  
x 2 x 1 x 1

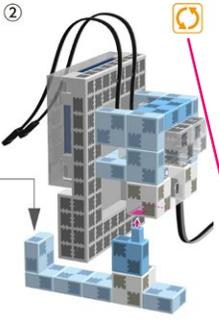


①



⚠ Make sure the Studuino unit is inserted correctly.  
⚠ LED cables should run over the Studuino unit.

②



09

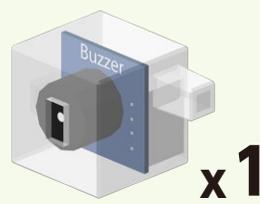
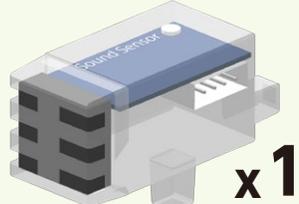
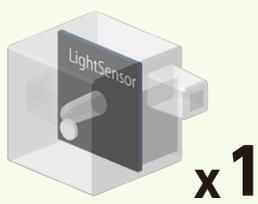
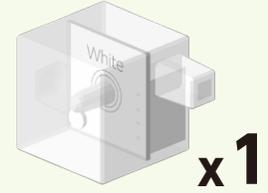
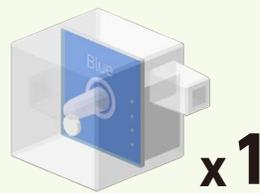
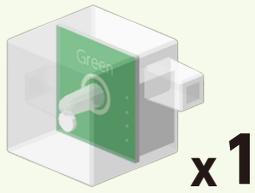
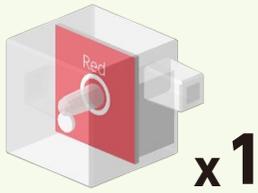
Shows an image of the completely assembled item.



Indicates when the direction of a component must be changed for assembly.

# Sensor Melody Light Robot

## Preparing for Assembly



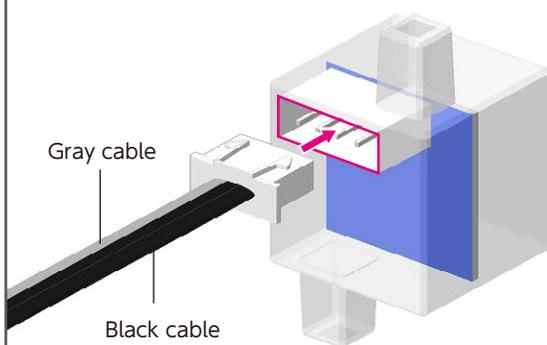
Connect the sensor connecting cable to each sensor.

Sensor Connecting Cable

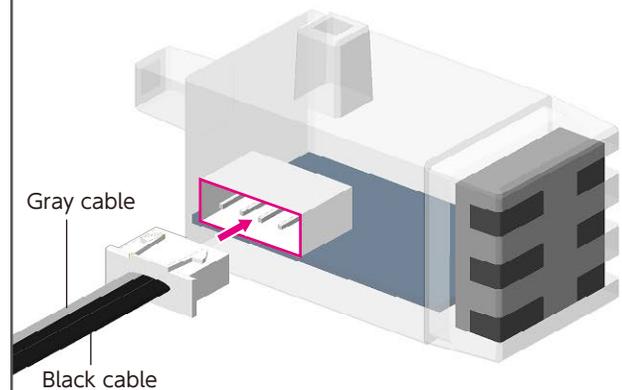


**!** Make sure the cable is inserted correctly!

Reverse Side of LED/Light Sensor/Buzzer

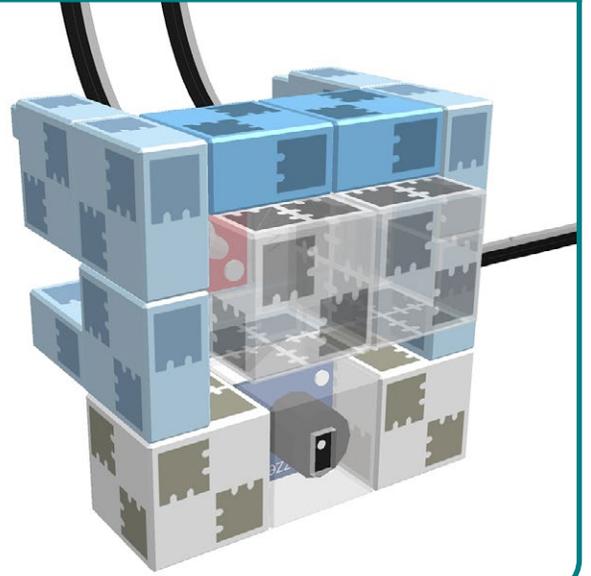


Reverse Side of Sound Sensor



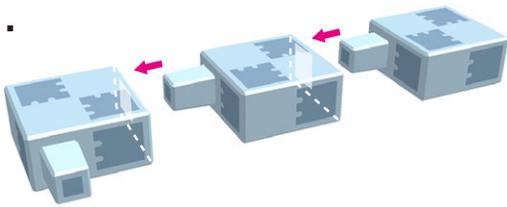
# Sensor Melody Light Robot

## Assembling the Torso

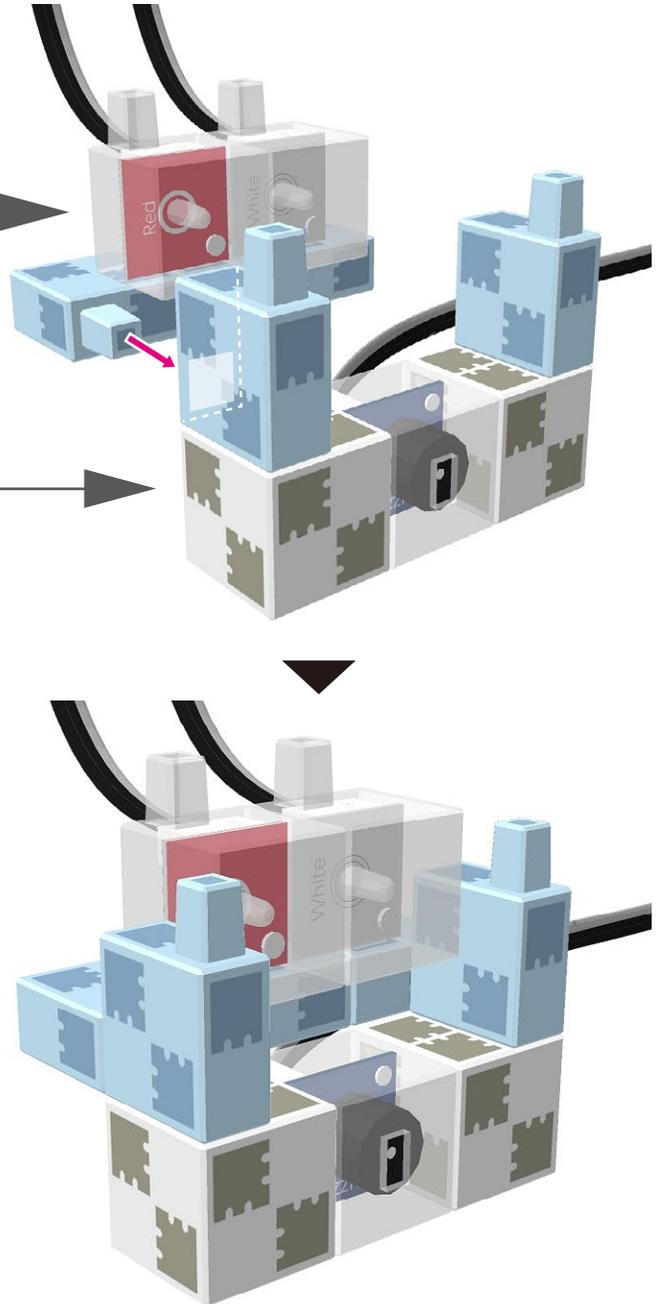
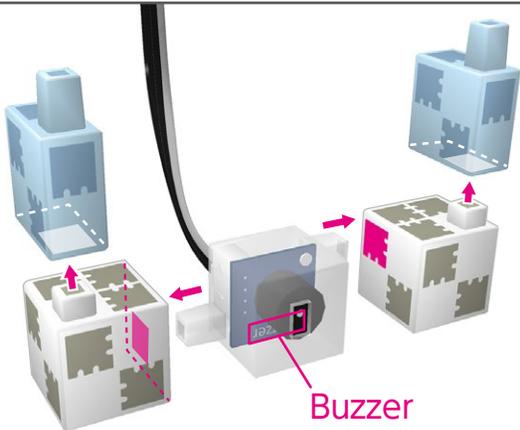
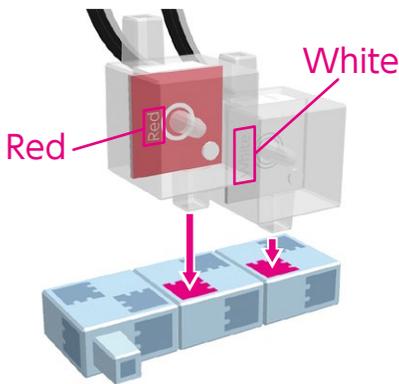


①

1.



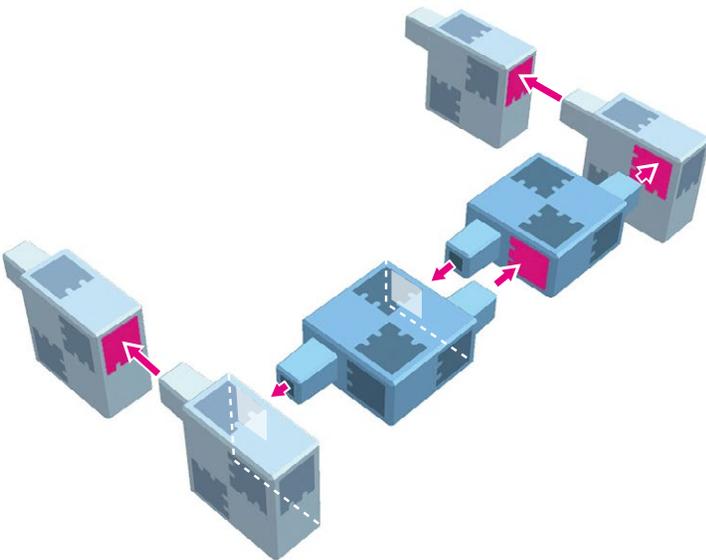
2.



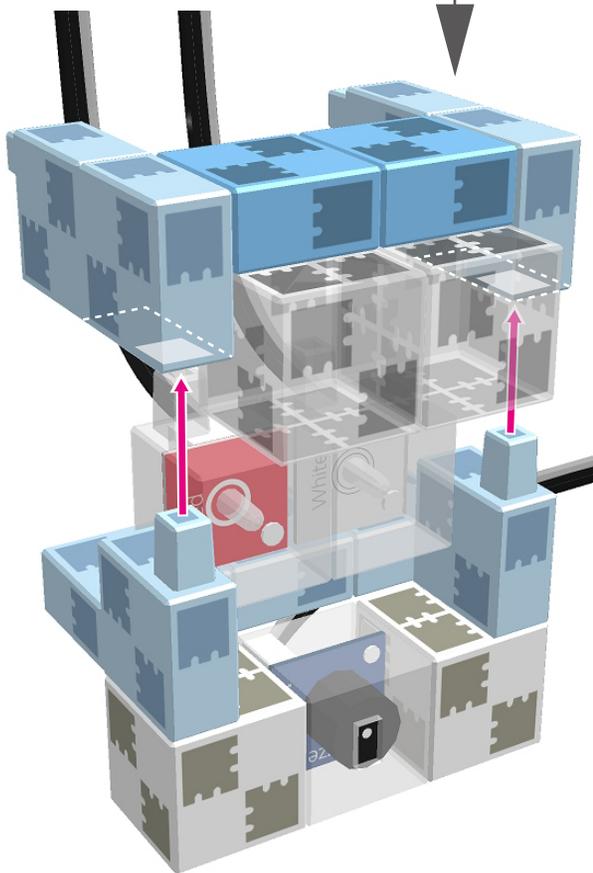
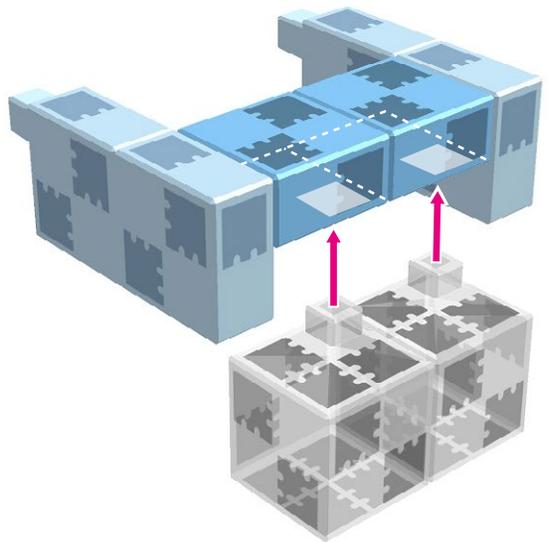
# Sensor Melody Light Robot

②

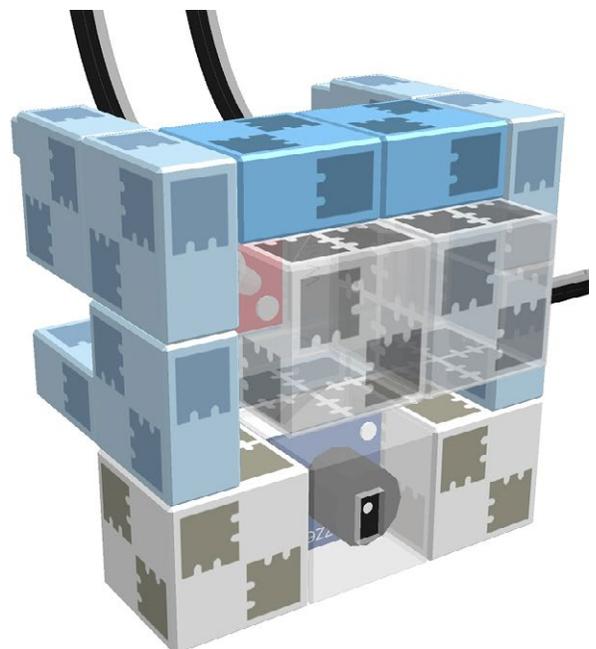
1.



2.



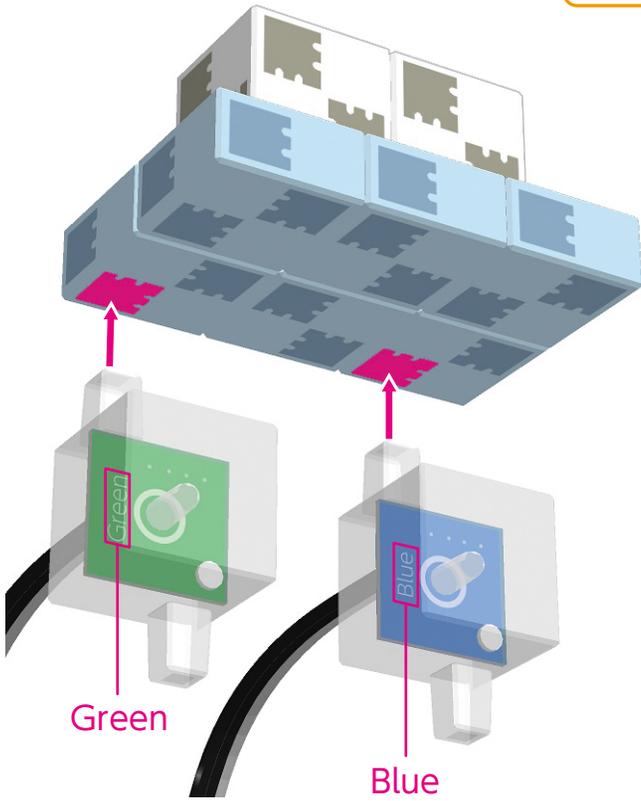
Completed Torso



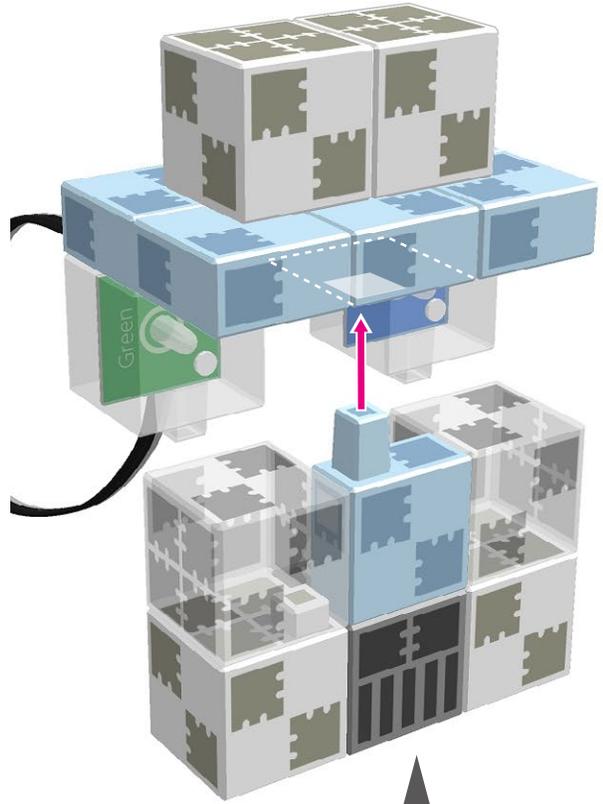


# Sensor Melody Light Robot

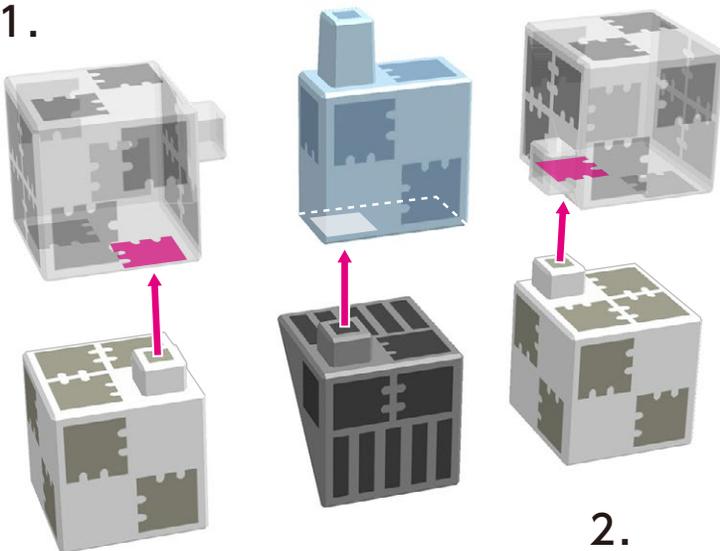
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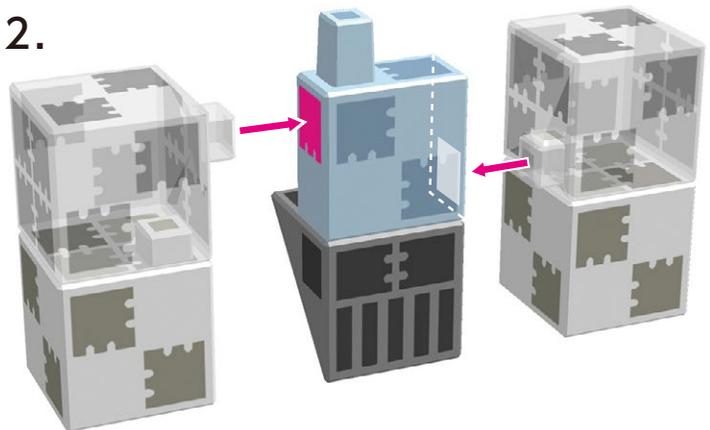
4



1.

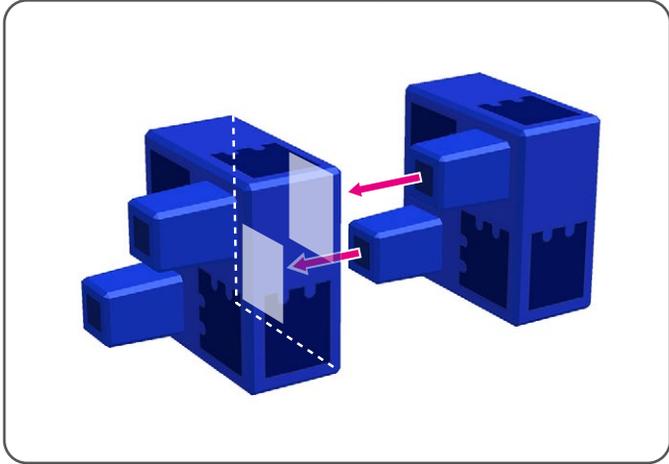
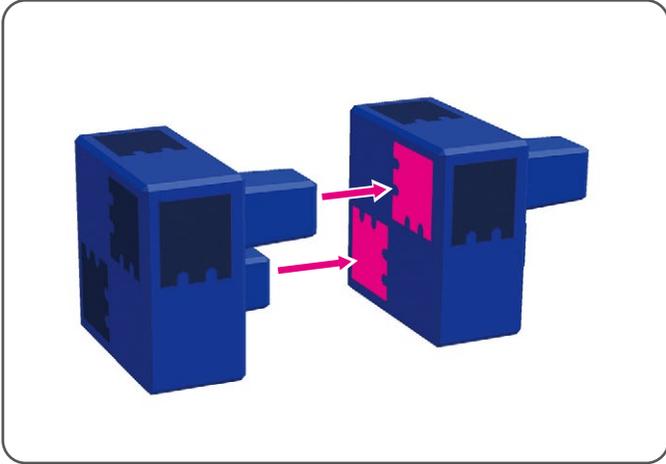
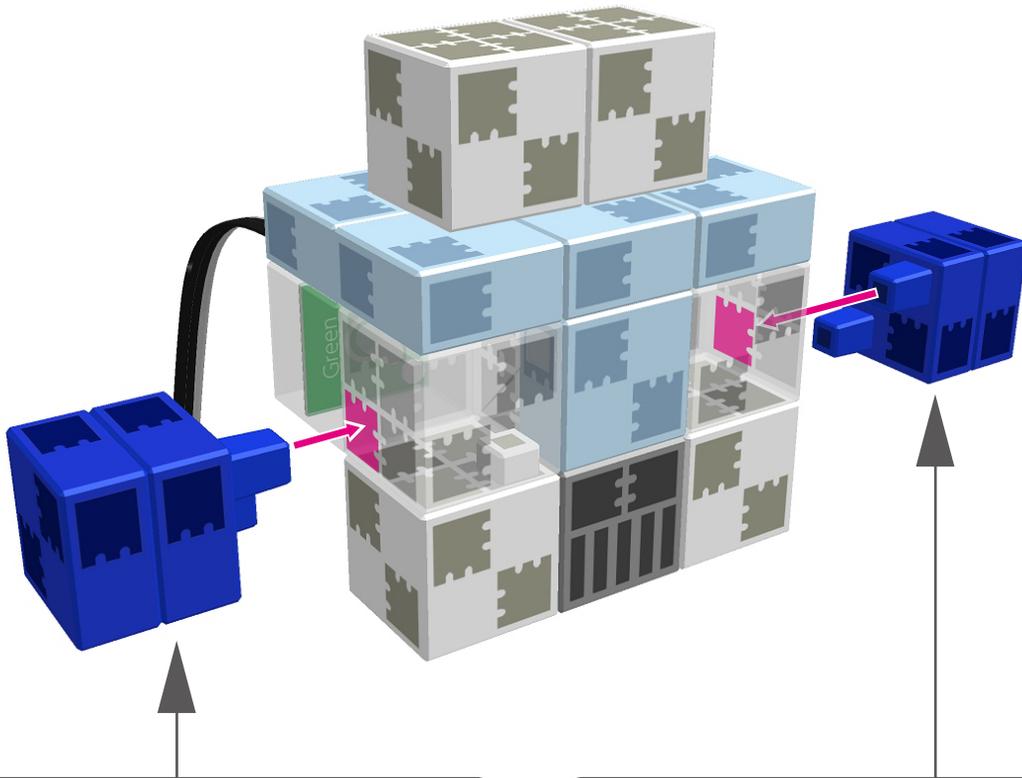


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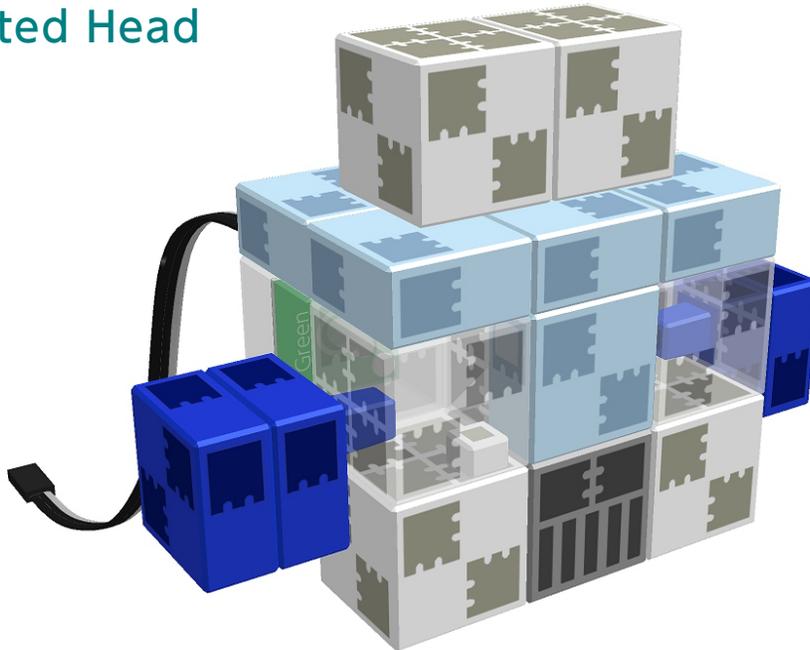


# Sensor Melody Light Robot

5

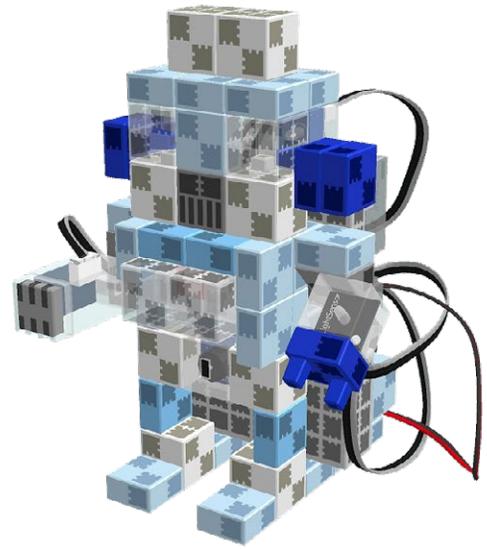
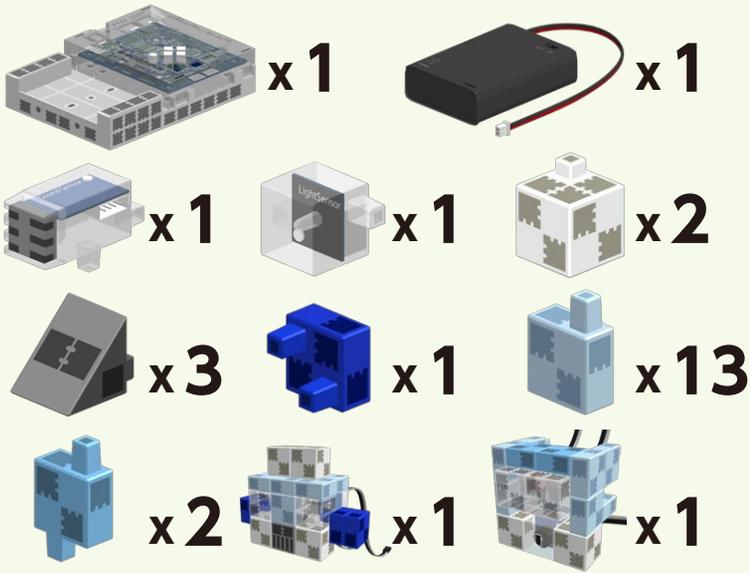


Completed Head

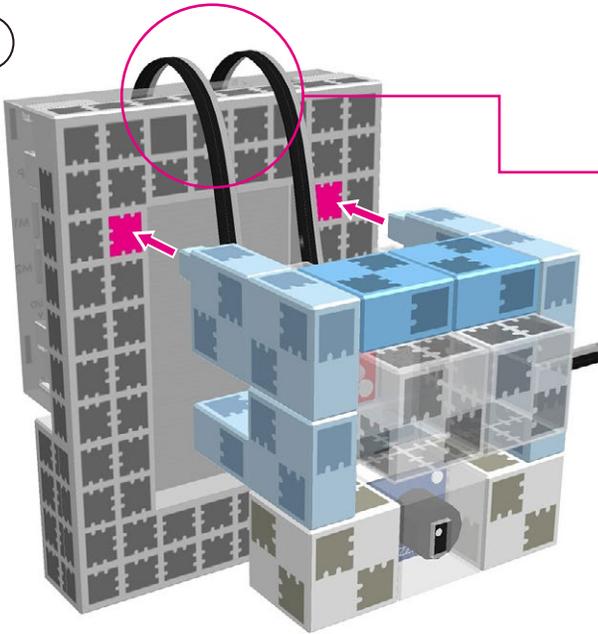


# Sensor Melody Light Robot

## Putting the Parts Together



①

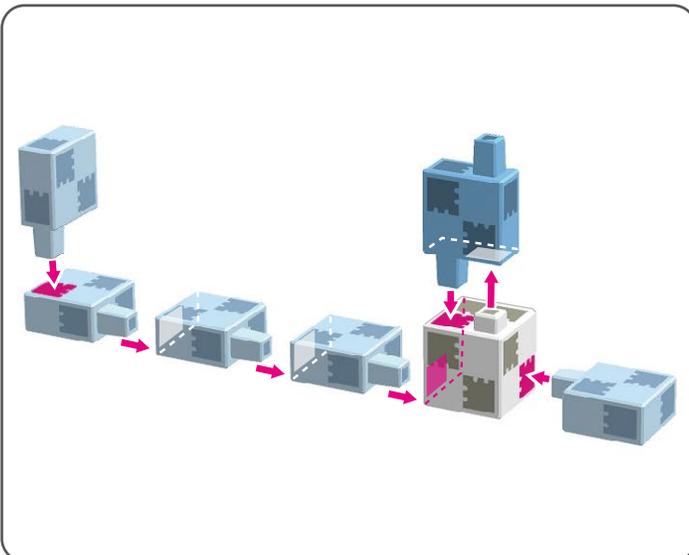
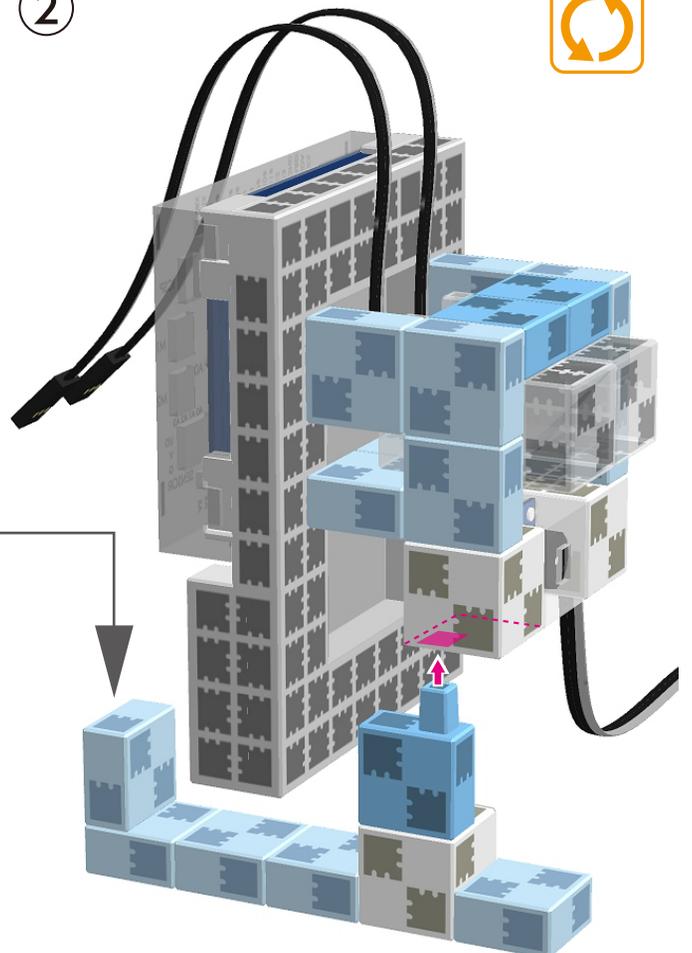


Make sure the Studino unit is inserted correctly!



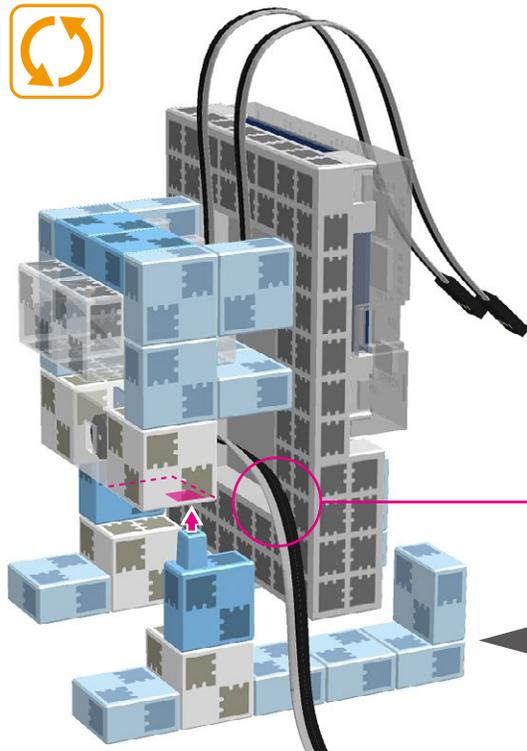
LED cables should run over the Studino unit.

②

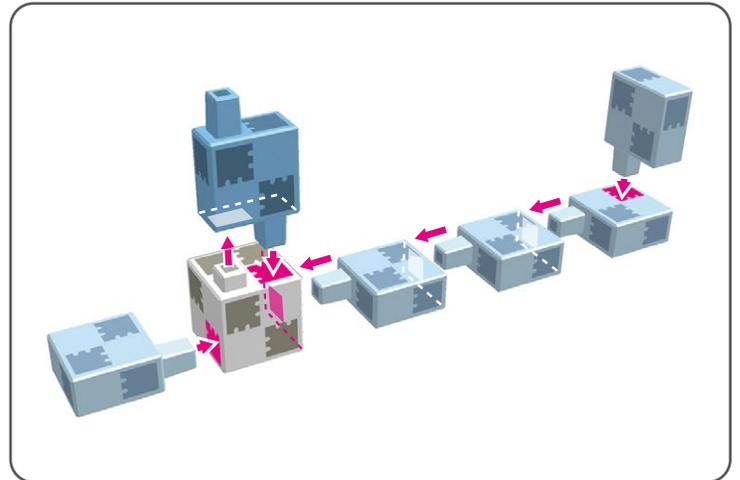


# Sensor Melody Light Robot

3

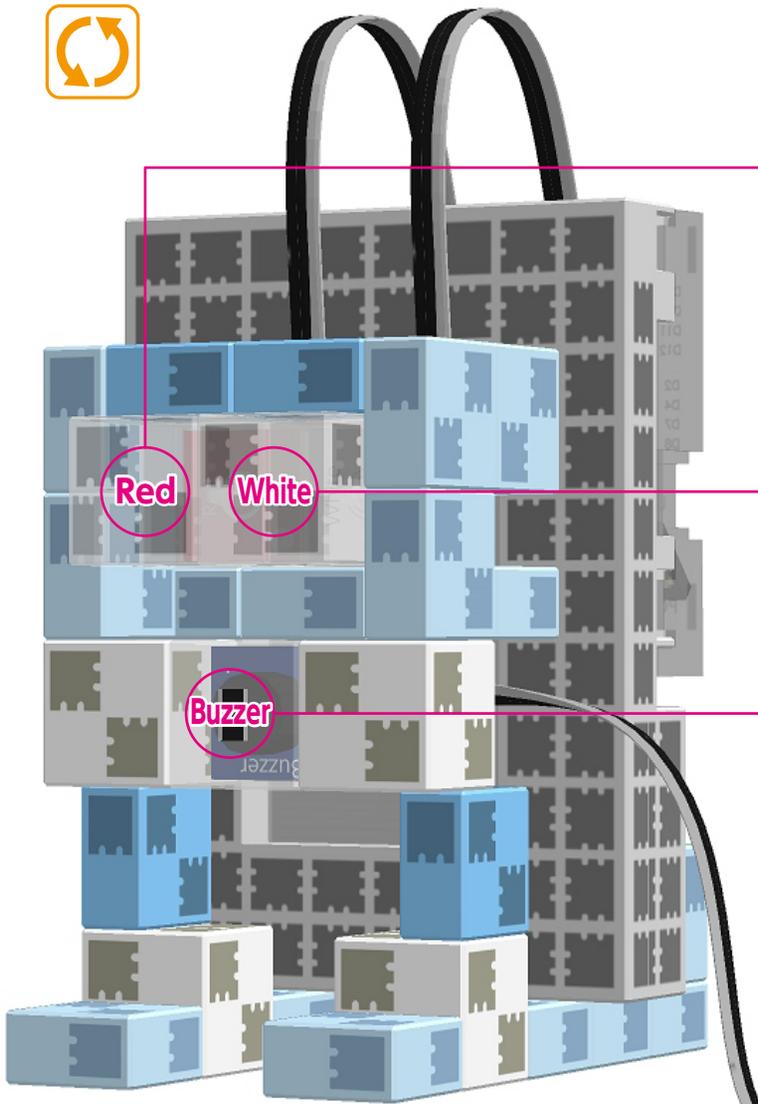


Buzzer cables should run around the Studuino unit.

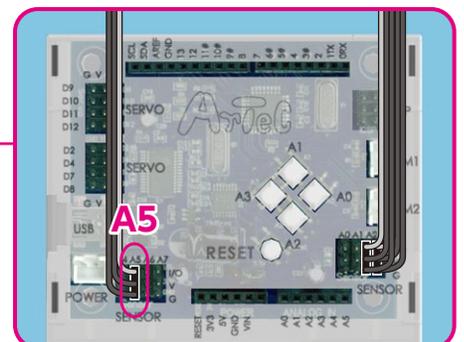
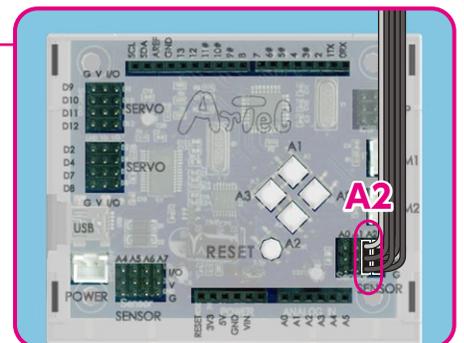
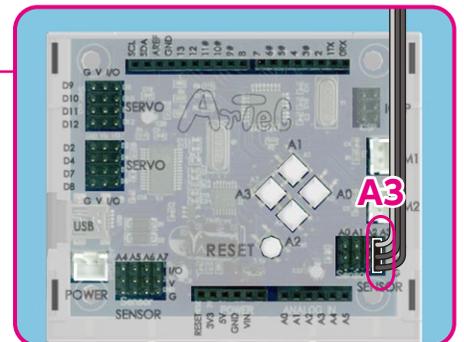


4

Connect the white LED, red LED, and buzzer to **A2**, **A3**, and **A5**.

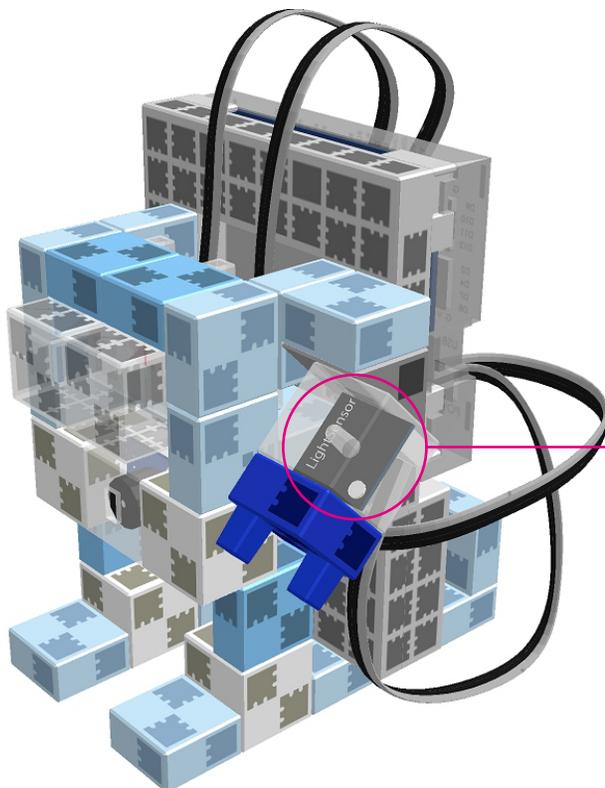
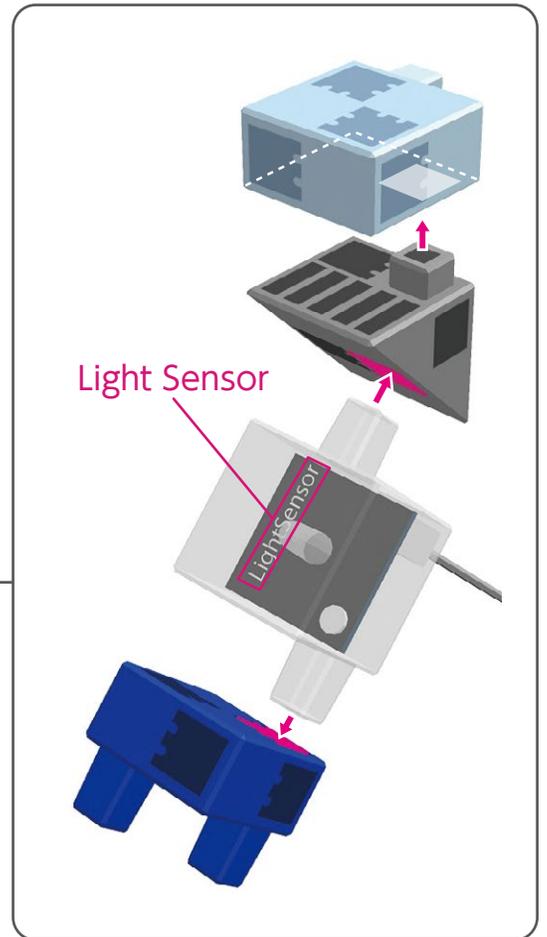
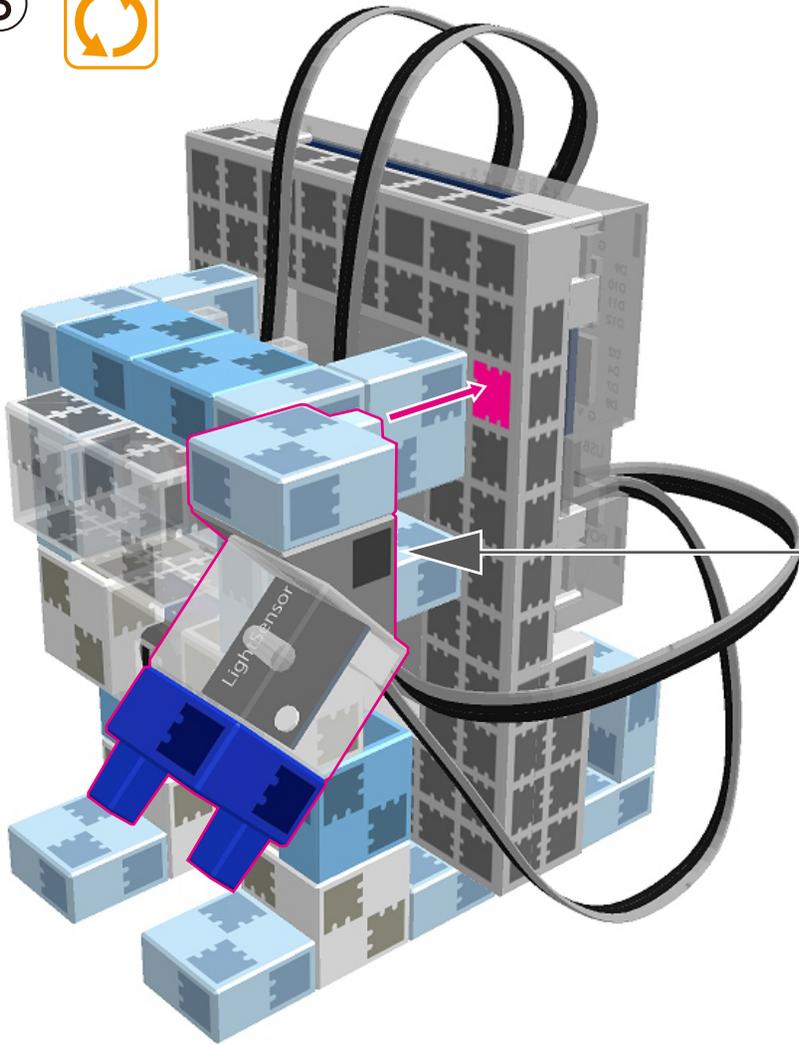


Make sure the cables are inserted correctly!

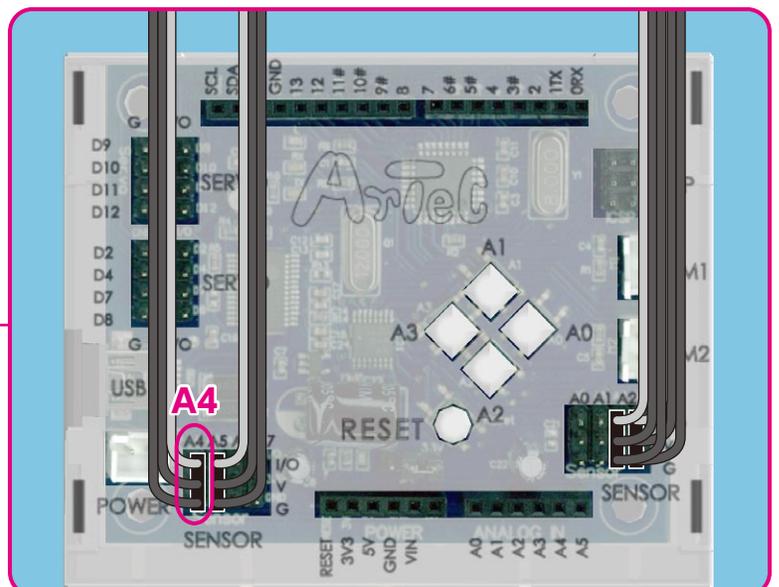


# Sensor Melody Light Robot

5



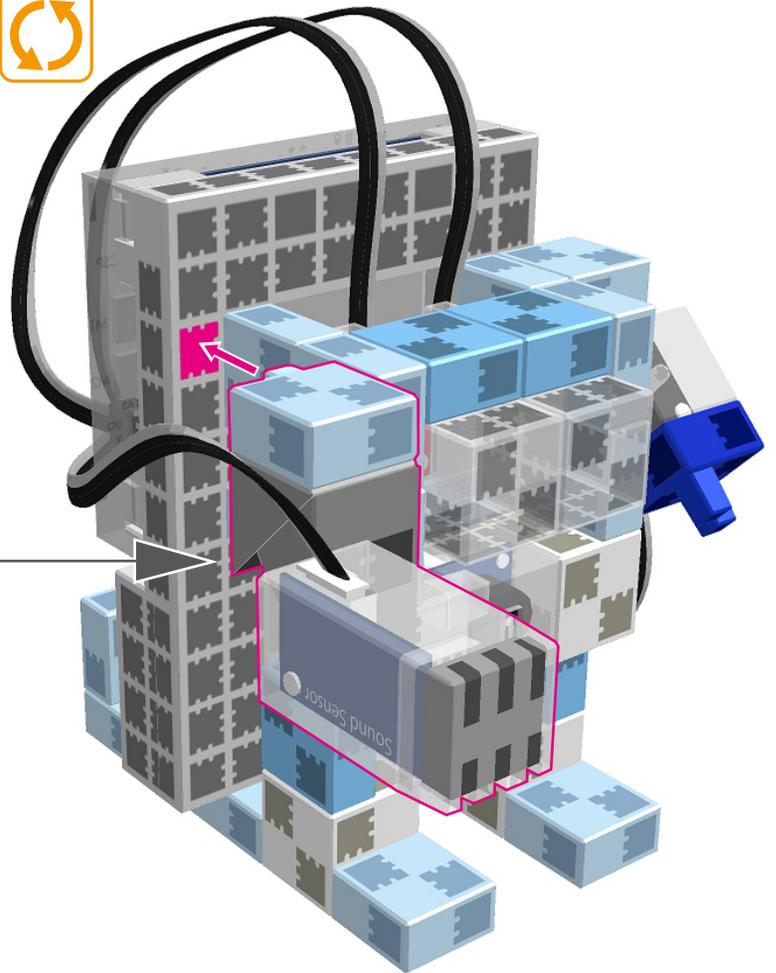
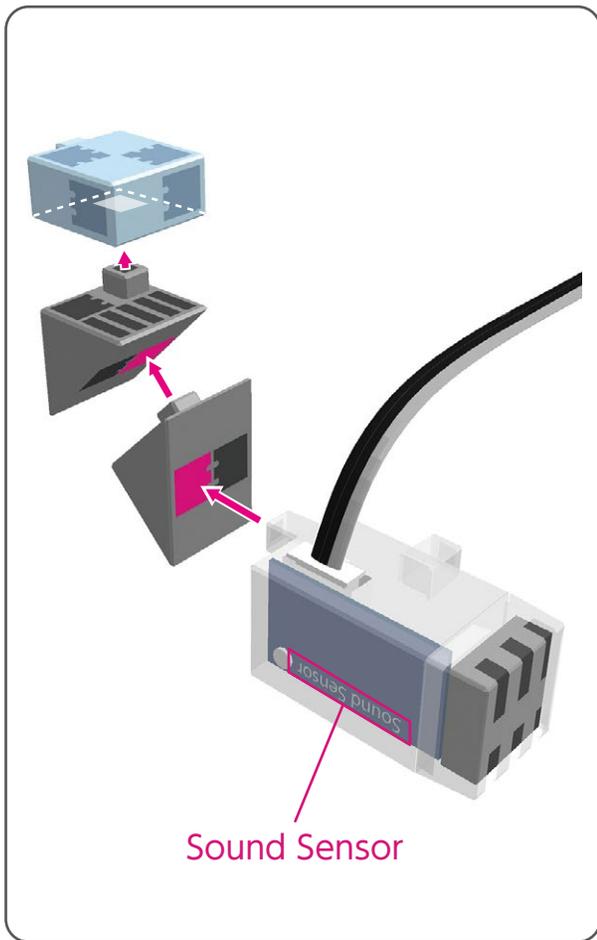
Connect the light sensor to **A4**.



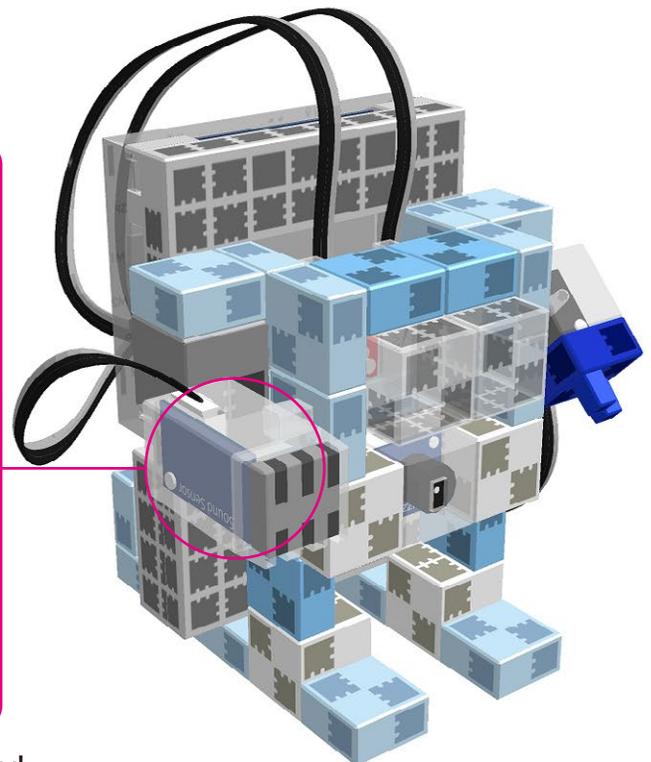
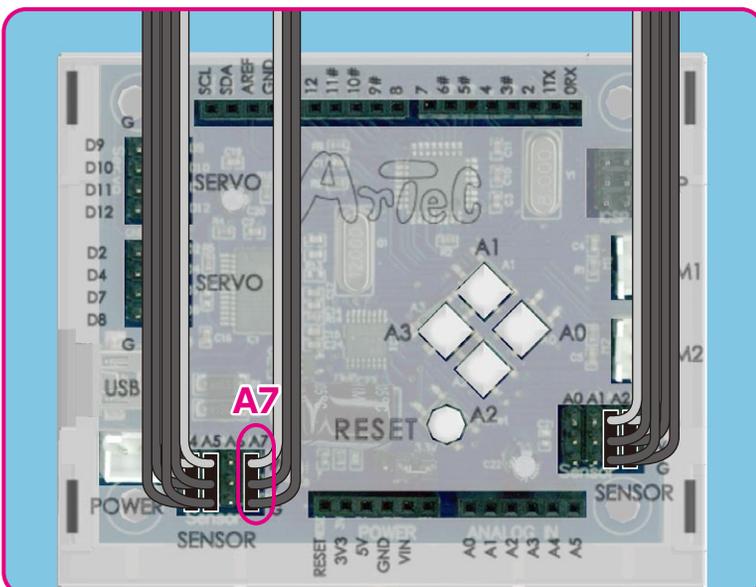
Make sure the cables are inserted correctly!

# Sensor Melody Light Robot

6



Connect the sound sensor to **A7**.

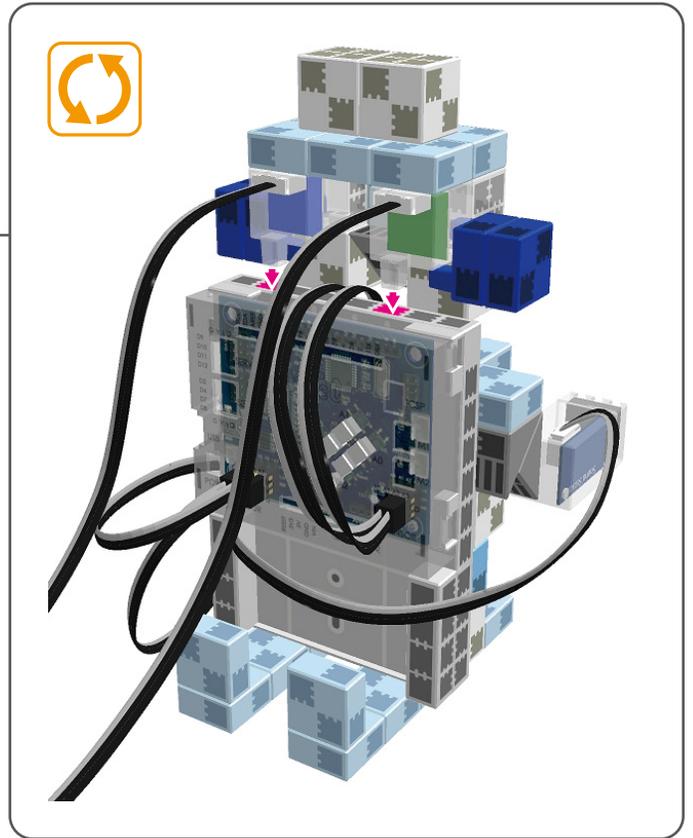
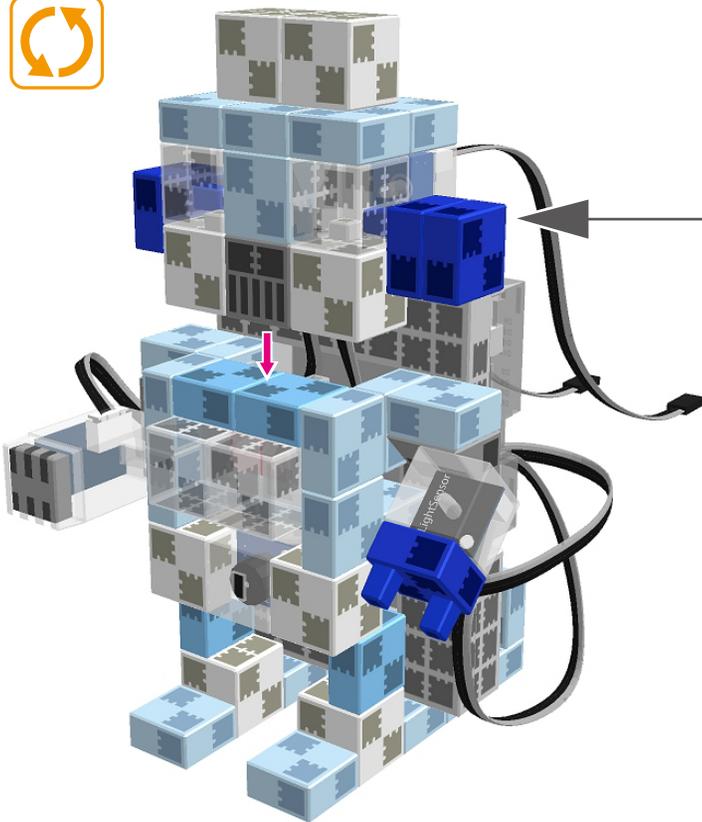


 Make sure the cables are inserted correctly!

# Sensor Melody Light Robot

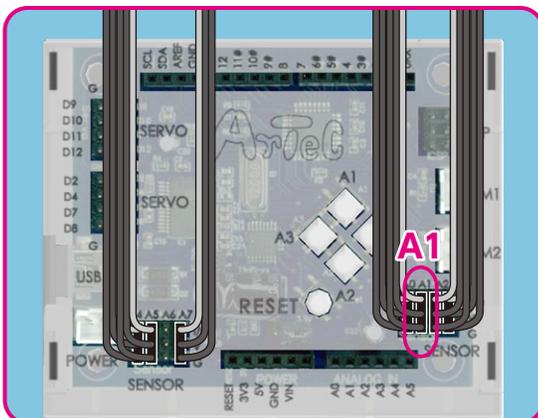
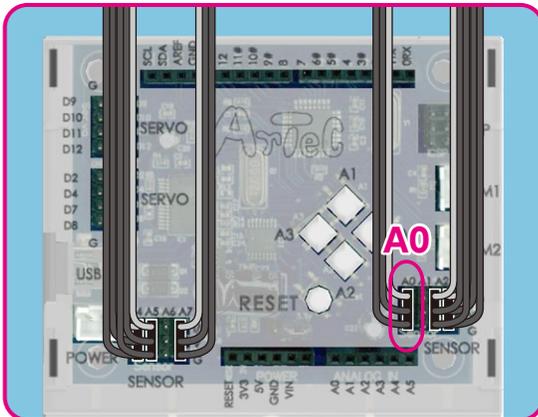
7

 Make sure not to pinch any cables between blocks.



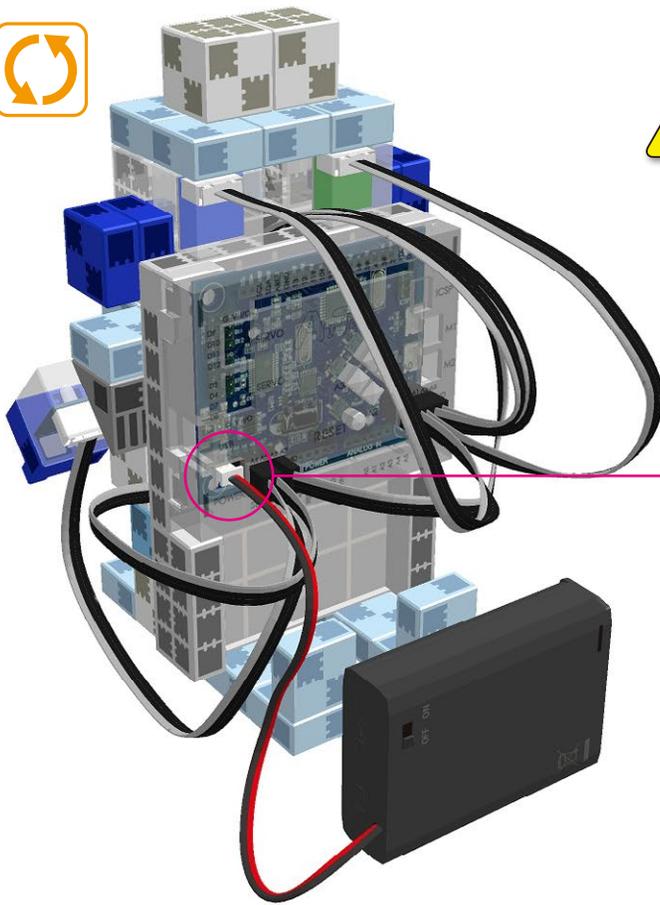
8 Connect the blue and green LEDs to **A0** and **A1**.

 Make sure the cables are inserted correctly!

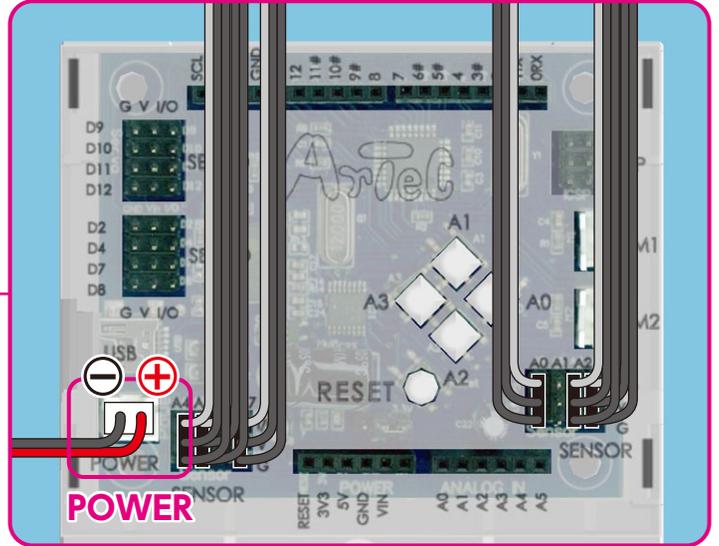


# Sensor Melody Light Robot

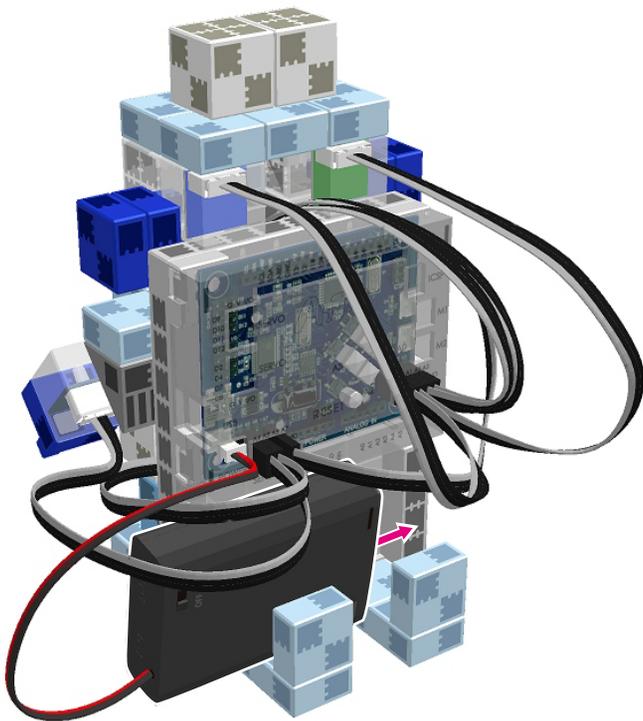
9 Connect the cables from the battery box to the **POWER** section.



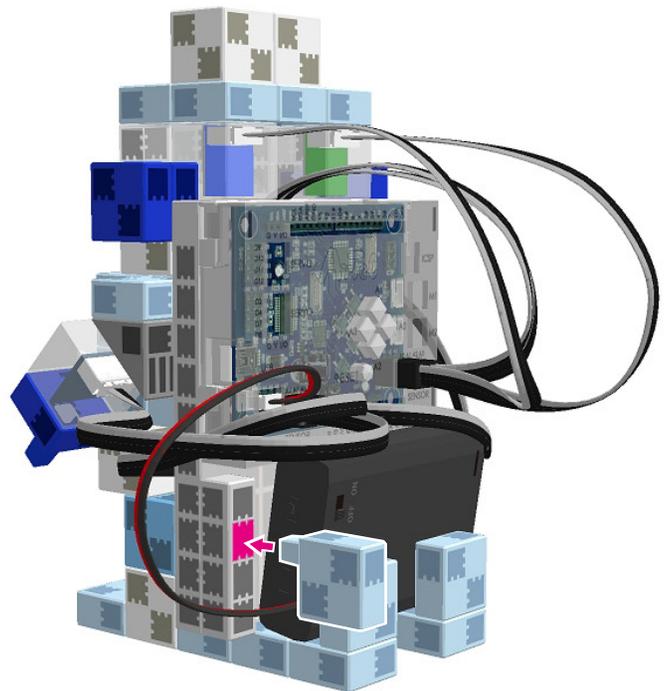
⚠ Make sure the cables are inserted correctly!



10



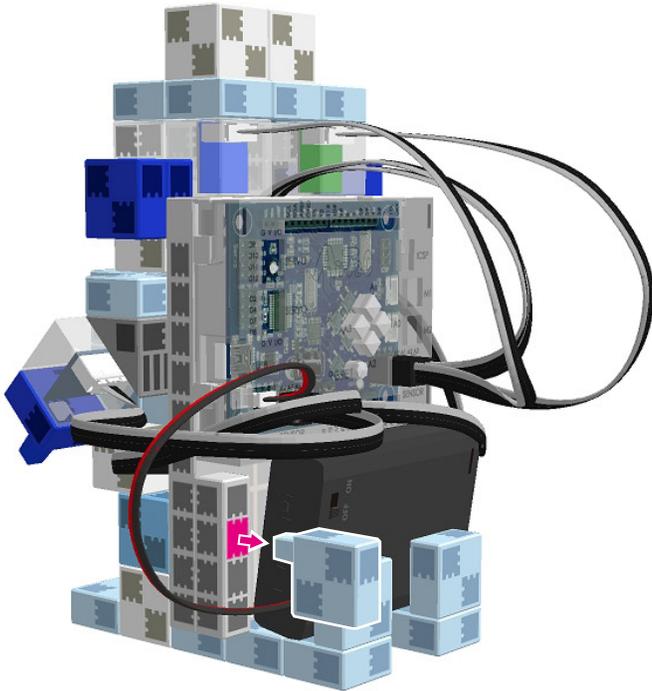
11



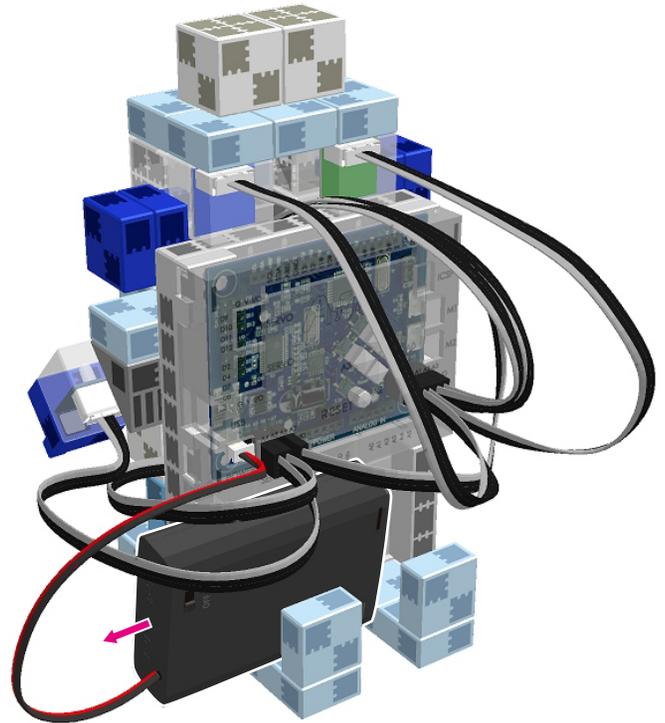
# Sensor Melody Light Robot

## Replacing the Batteries

①



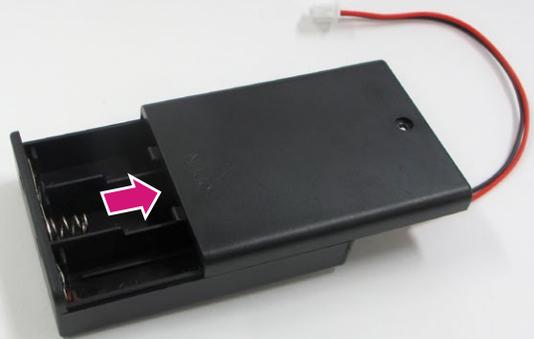
②



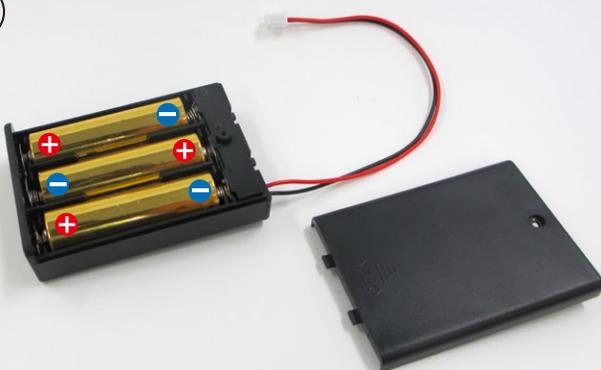
③



④



⑤



Use a screwdriver  
(Phillips #1) to open.



Insert batteries in the  
correct polarity.

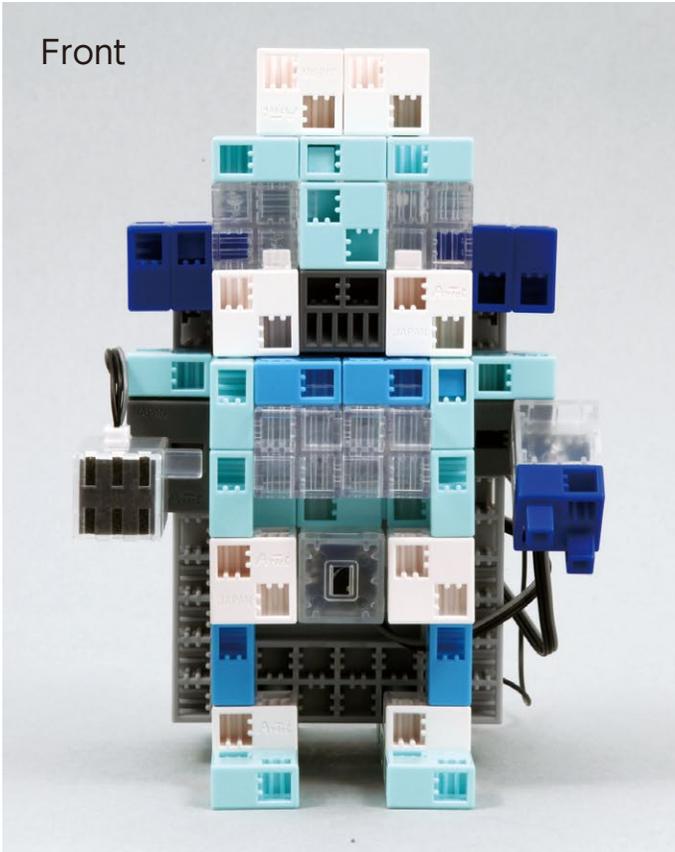
Put the lid of the battery  
box back in place.

# Sensor Melody Light Robot

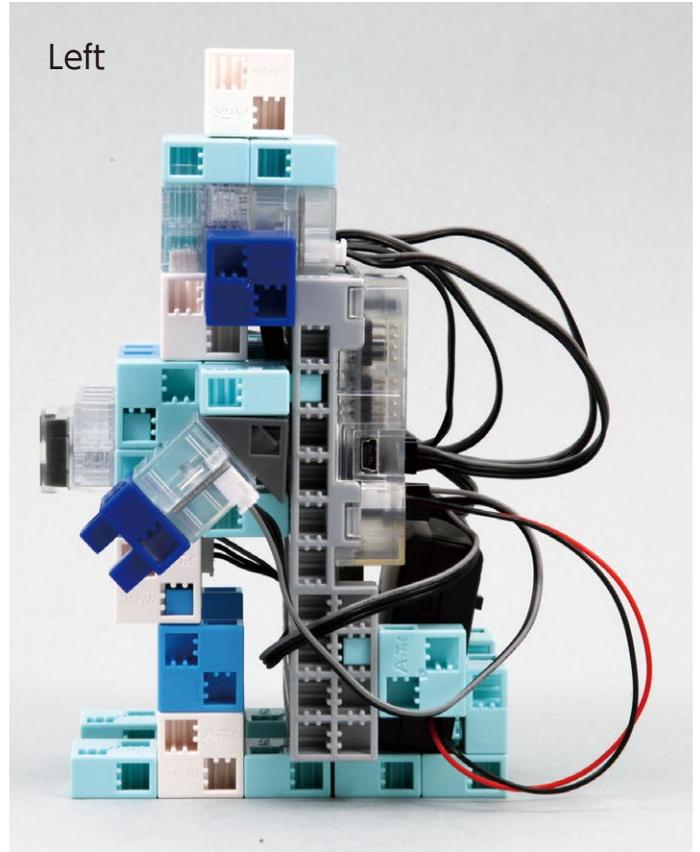
## Completed Sensor Melody Light Robot

- Before operating your robot, check the Assembly Instructions again to confirm your robot has been assembled correctly.

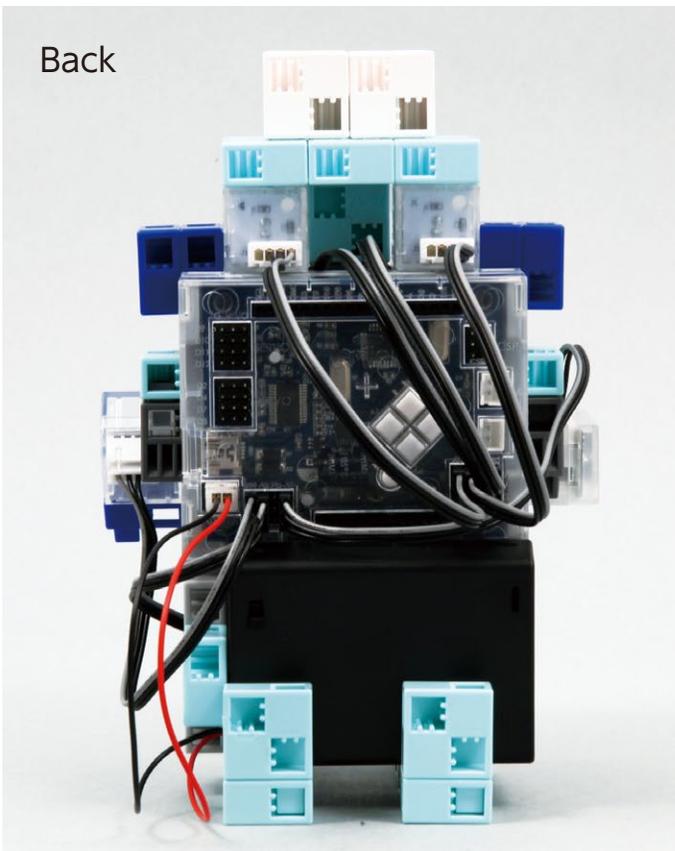
Front



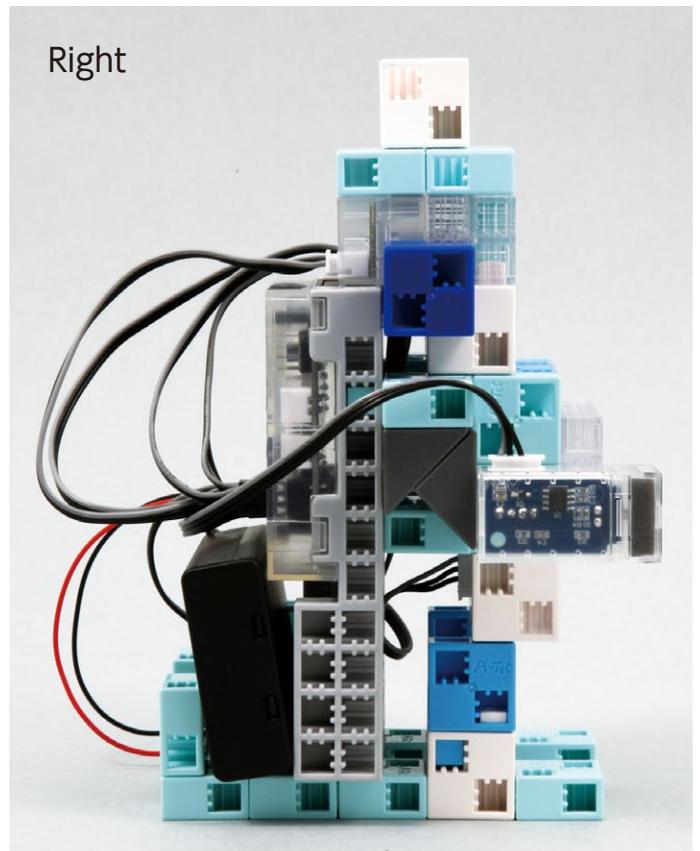
Left



Back



Right



# Sensor Melody Light Robot

## Making Your Sensor Melody Light Robot Run

Install the software from the URL below to setup the **Studuino Programming Environment**.

★ Proceed to Step 1 when software installation is complete.

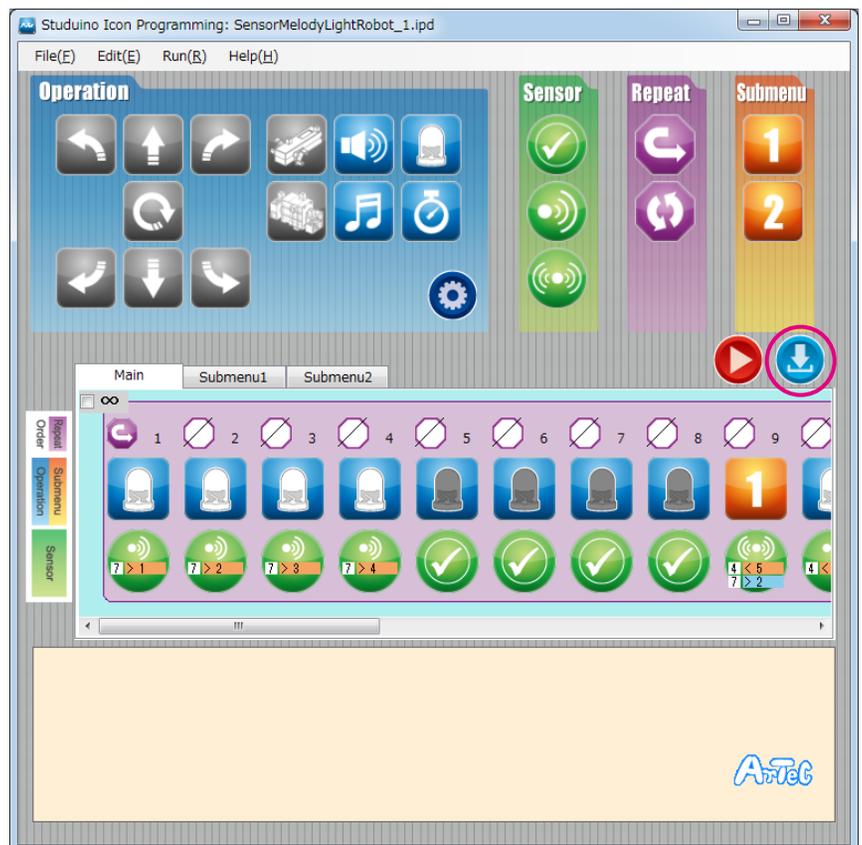
<http://www.artec-kk.co.jp/studuino/>

- ① Connect the USB cable to the PC and the Studuino unit.  
Refer to **1.3 Studuino** in **Studuino Programming Environment Manual** for more details.
- ② Download the program file **SensorMelodyLightRobot\_1.ipd** from the URL below in the **ArtecRobo** section.

<http://www.artec-kk.co.jp/artecrobo/>

- ③ Open the downloaded file.

- ④ Transfer the program to the Studuino unit by clicking the Transfer button .

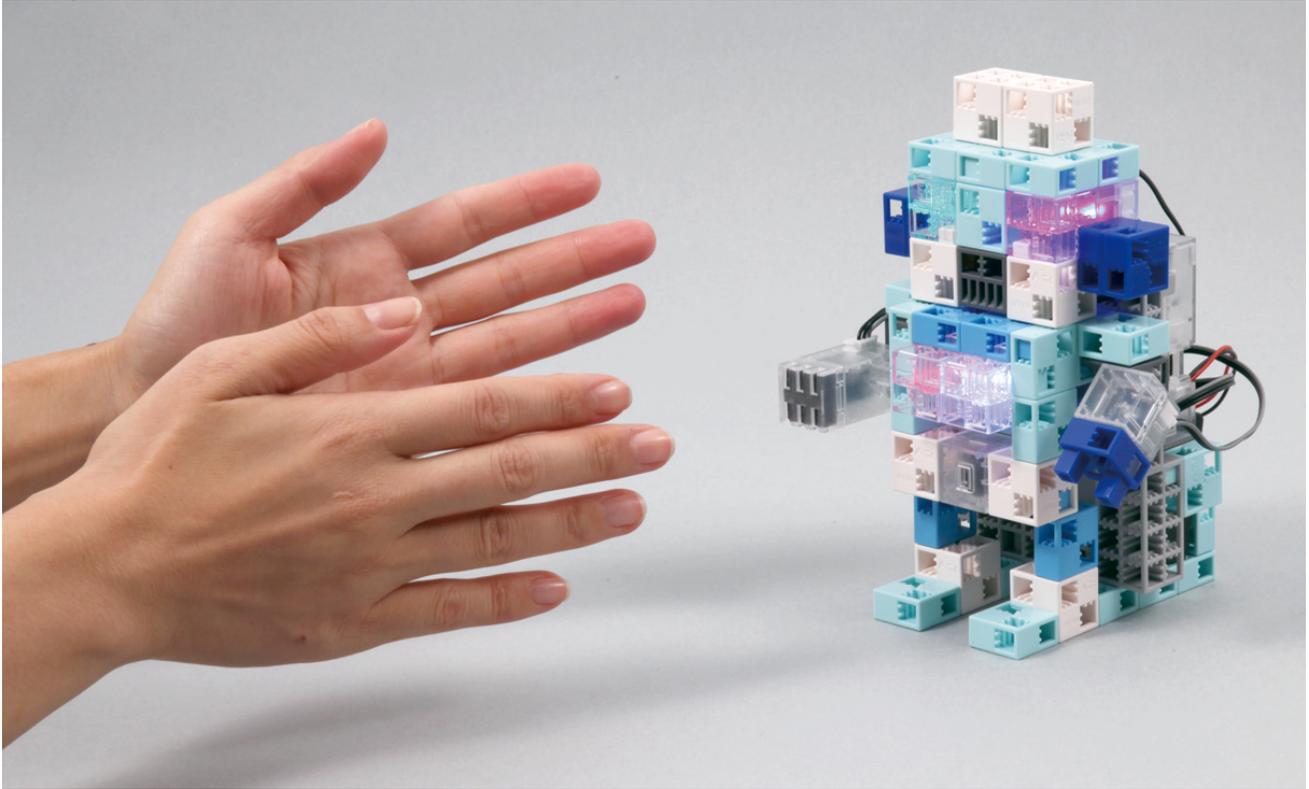


- ⑤ Remove the USB cable from the Studuino unit.

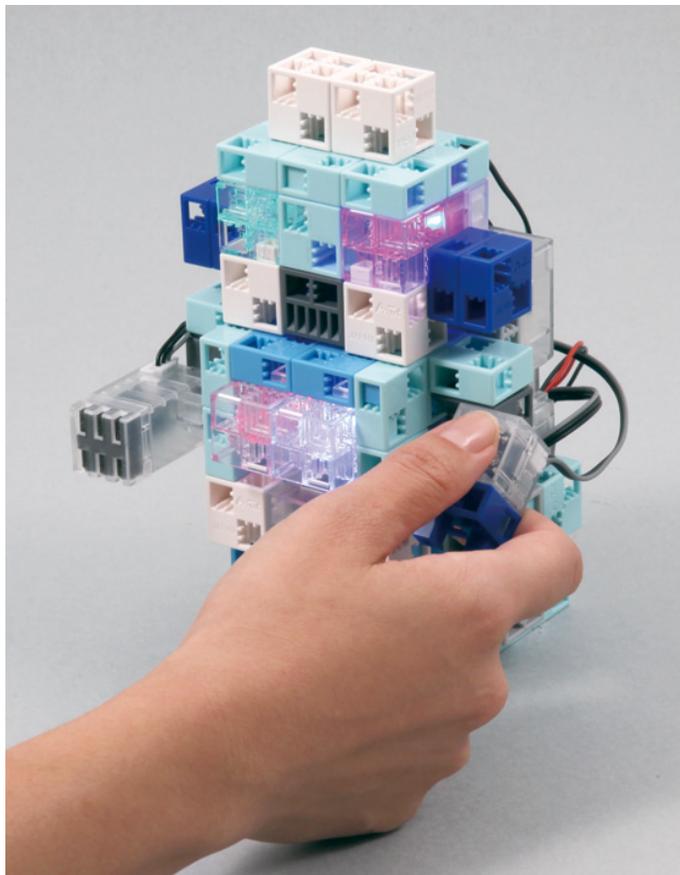
# Sensor Melody Light Robot

## Making Your Sensor Melody Light Robot Run

- ① The LEDs on your robot flash in response to sound.



- ② The light sensor in your robot will make the LEDs flash when it gets dark, and the buzzer will play music if the sound sensor hears a sound.



# Sensor Melody Light Robot

## Sensor Calibration

Some sensors may not function properly after you run the program for the first time. If the sensors are malfunctioning, calibrate the sensor settings.



Click the sensor icon in the box and you can adjust the range settings in the condition box below.

Drag the mouse left or right to adjust the range settings.

Refer to the **Condition Icon** sections in **4.4. The Attribute Field** of the **Studuino Programming Environment Manual** for more details.

# Sensor Melody Light Robot

## Working with Arduino IDE

You can use Arduino IDE to perform more complex tasks, such as making melodies play and lights flash at the same time or playing even longer songs.

Under **Use Arduino IDE**, install the software for Windows or Macintosh from the URL below.

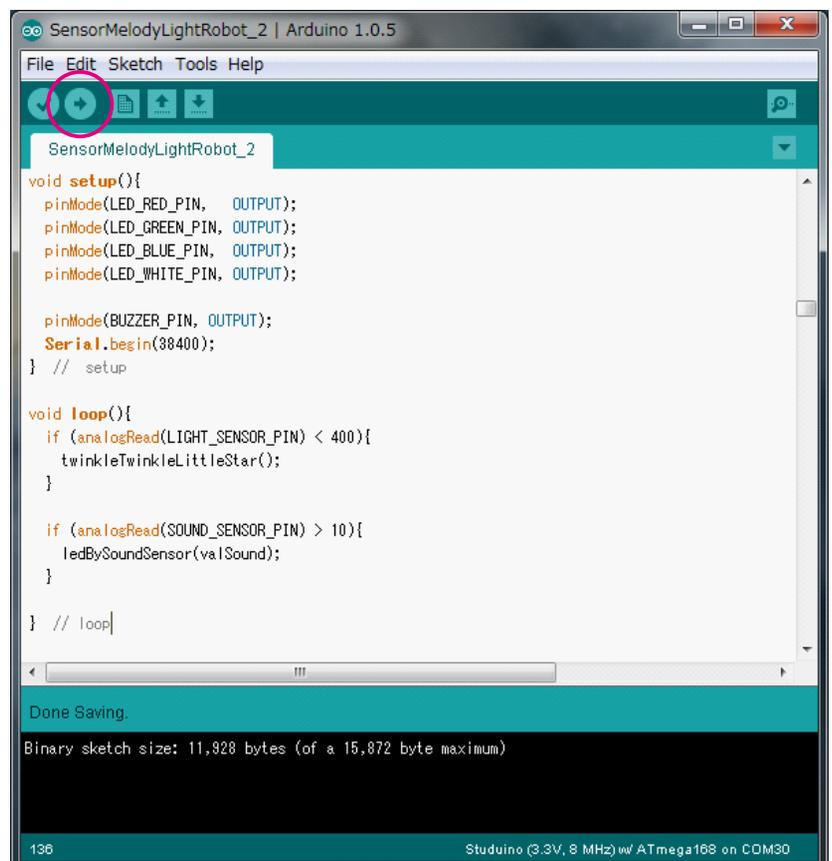
★ Proceed to Step 1 when software installation is complete.

<http://www.artec-kk.co.jp/studuino/>

- ① Connect the USB cable to the PC and the Studuino unit.  
Refer to **1.3 Studuino** in **Studuino Programming Environment Manual** for more details.
- ② Download the program file **SensorMelodyLightRobot\_2.ino** from the URL below in the ArtecRobo section.

<http://www.artec-kk.co.jp/artecrobo/>

- ③ Open the downloaded file.
- ④ Transfer the program to the Studuino unit by clicking the Transfer button .
- ⑤ Remove the USB cable from the Studuino unit.
- ⑥ How strongly the lights flash depends on the strength of the sound.
- ⑦ The light sensor in your robot will make the LEDs flash when it gets dark, and the buzzer will play music.



# Sensor Melody Light Robot

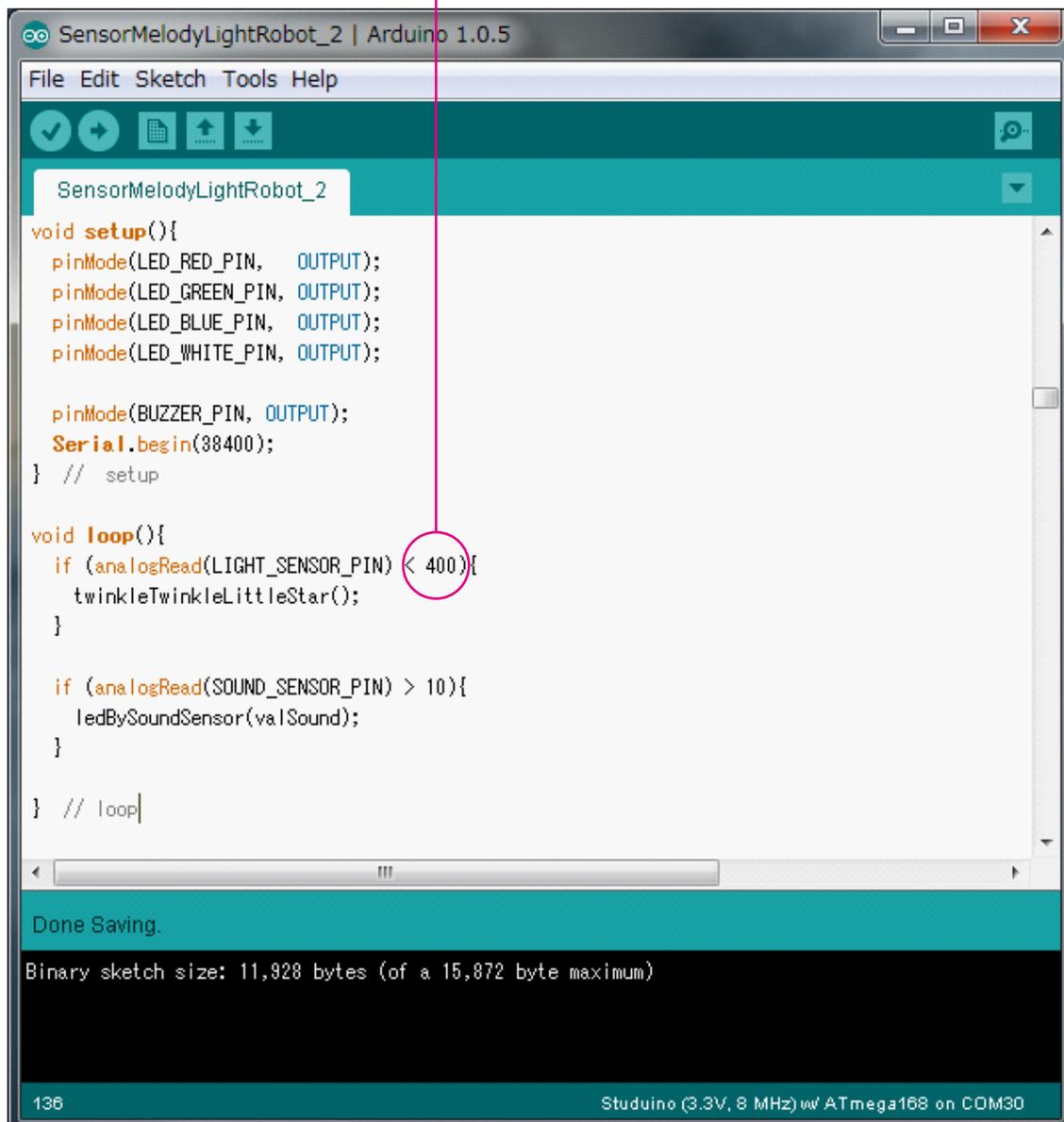
## Adjusting Values in Arduino IDE

You can change how strongly the sensors respond in a program by adjusting their value.

### ● Light Sensor

Changing the value of "if (analogRead(LIGHT\_SENSOR\_PIN) < 400)" in "loop()" will change the amount of light it will take for your robot to play a song. Changing the less than sign to a greater than sign will make your robot play songs when it's light rather than dark.

This value can be from 0-1023.



```
void setup(){
  pinMode(LED_RED_PIN,  OUTPUT);
  pinMode(LED_GREEN_PIN, OUTPUT);
  pinMode(LED_BLUE_PIN,  OUTPUT);
  pinMode(LED_WHITE_PIN, OUTPUT);

  pinMode(BUZZER_PIN, OUTPUT);
  Serial.begin(98400);
} // setup

void loop(){
  if (analogRead(LIGHT_SENSOR_PIN) < 400){
    twinkleTwinkleLittleStar();
  }

  if (analogRead(SOUND_SENSOR_PIN) > 10){
    ledBySoundSensor(valSound);
  }

} // loop
```

Done Saving.

Binary sketch size: 11,928 bytes (of a 15,872 byte maximum)

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