

Stduino IR Receiver

Manual



This manual explains the Stduino Programming Environment and how to use it. As the Stduino Programming Environment develops, this manual may be edited or revised. You can find the full manual below.

■ Installing Stduino Software

http://artec-kk.co.jp/stduino/docs/en/Stduino_setup_software.pdf

Index

1. About Your IR Receiver	1
1.1. Overview	1
1.2. Specifications	1
2. Connecting to Studuino	1
3. In the Studuino Icon Programming Environment	2
3.1. Sample Program	8
4. In the Studuino Block Programming Environment	11
4.1. IR Receiver Values	13
4.2. Sample Program Using the IR Receiver	13

1. About Your IR Receiver

1.1. Overview

Your IR (infrared) Receiver can be installed on your Studuino to receive and output data from any infrared remote control.

1.2. Specifications

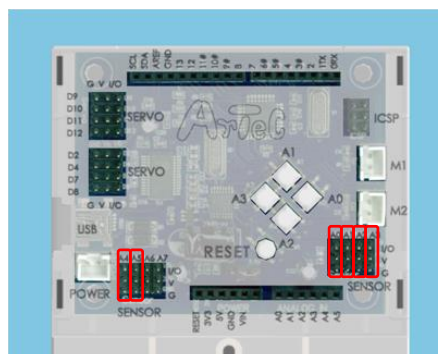
Operating Voltage	3.3-5V
Carrier Frequency	38kHz
Peak Frequency	940 nm

2. Connecting to Studuino

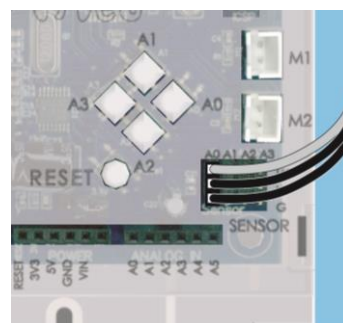
- ① Use the three-wire 15 cm or three-wire 30 cm connecting cable (products 153125 and 153126, sold separately).
- ② The white end of the cable plugs into your IR Receiver, while the black end connects to your Studuino.
- ③ Connects to A0-A5. The gray signal wire should face inward.



IR Receiver



Connects to A0-A5.

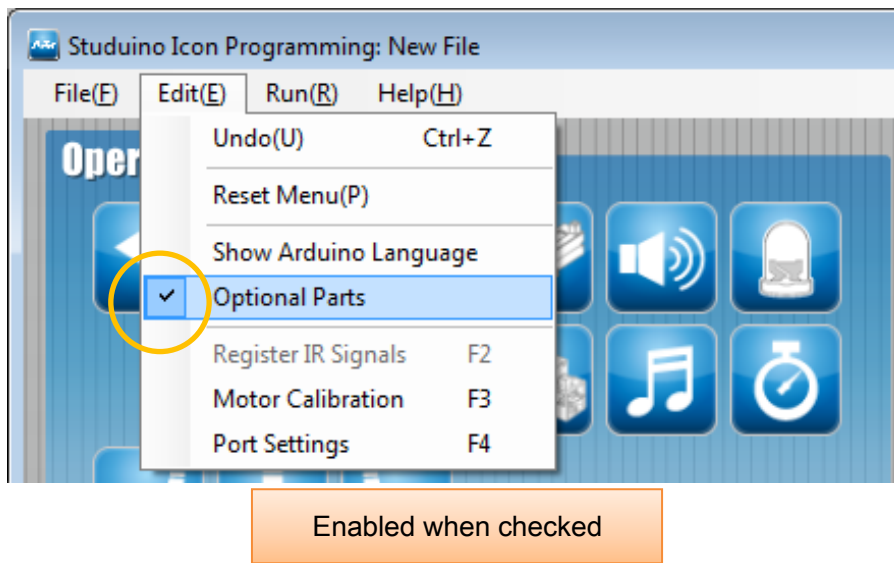


Make sure the cables are inserted correctly!

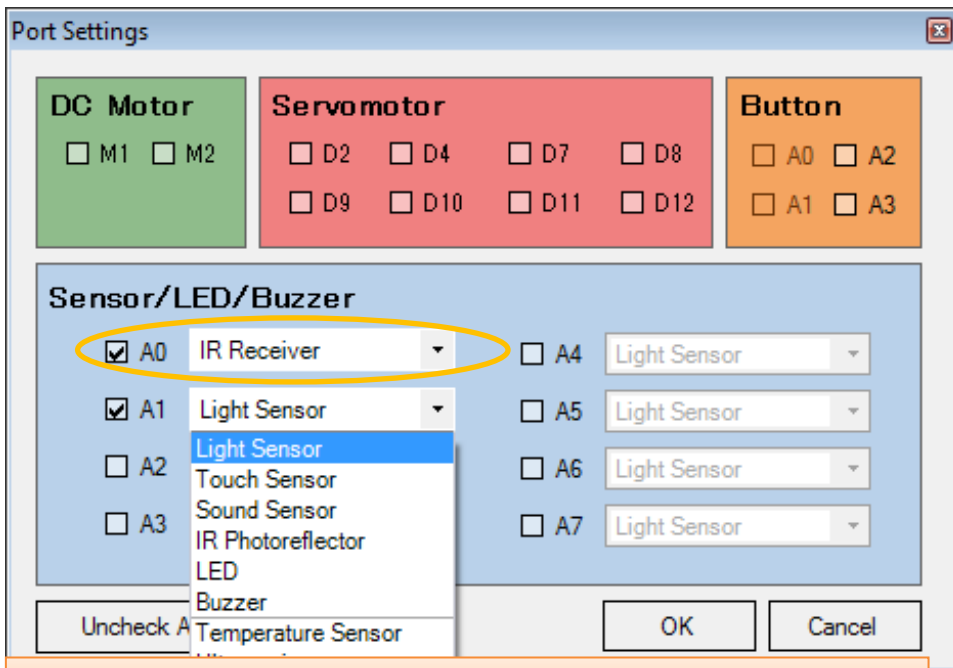
3. In the Studuino Icon Programming Environment

Familiarize yourself with the basics of the Studuino Programming Environment by reading the [Studuino Programming Environment Manual](#) and the [Icon Programming Environment Guide](#).

From the Edit menu click Optional Parts. A check will appear beside this option when enabled.

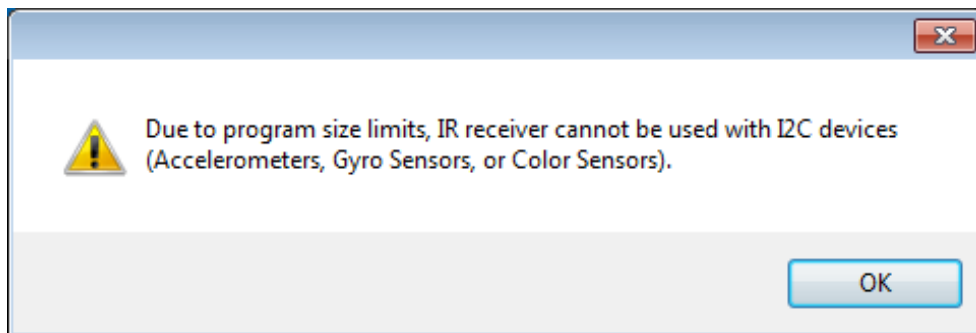


Your IR Receiver can use any connector from A0-A5. Only one IR Receiver at a time can be selected in the Port Settings dialog.

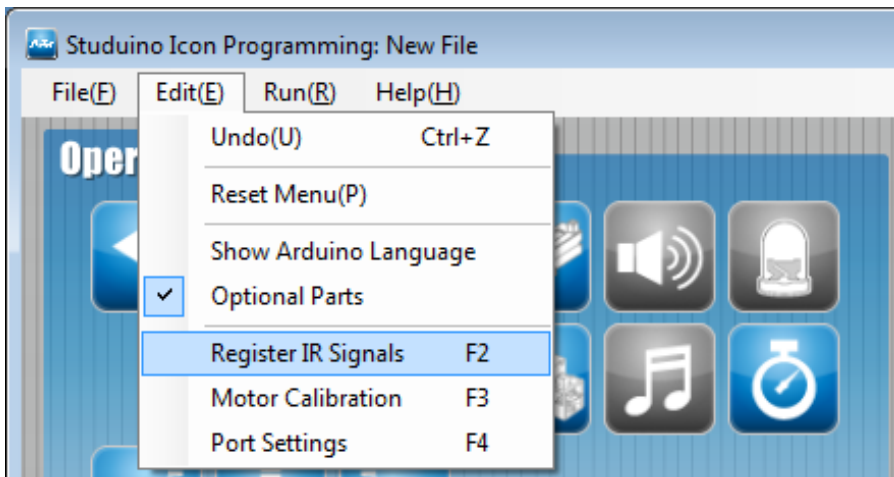


The IR Receiver cannot be selected in A1 due to being selected in A0.

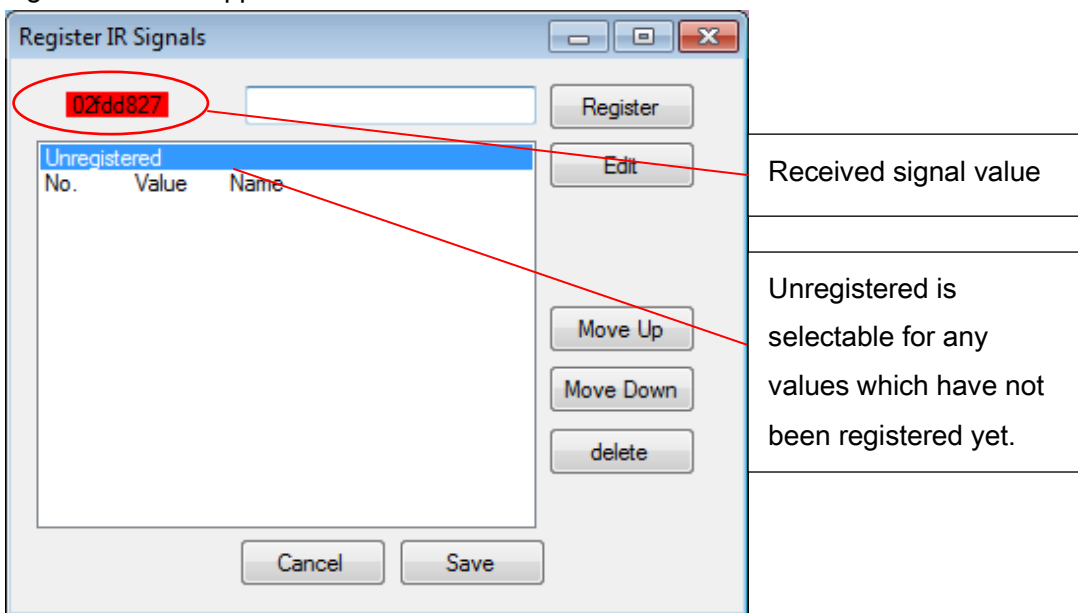
★ Programs which use both an IR Receiver and I2C device (Accelerometers, Gyroscopes, or Color Sensors) are too large for your Studuino's memory. The below message will appear if you attempt to select both an IR Receiver and an I2C device in the Port Settings dialog.



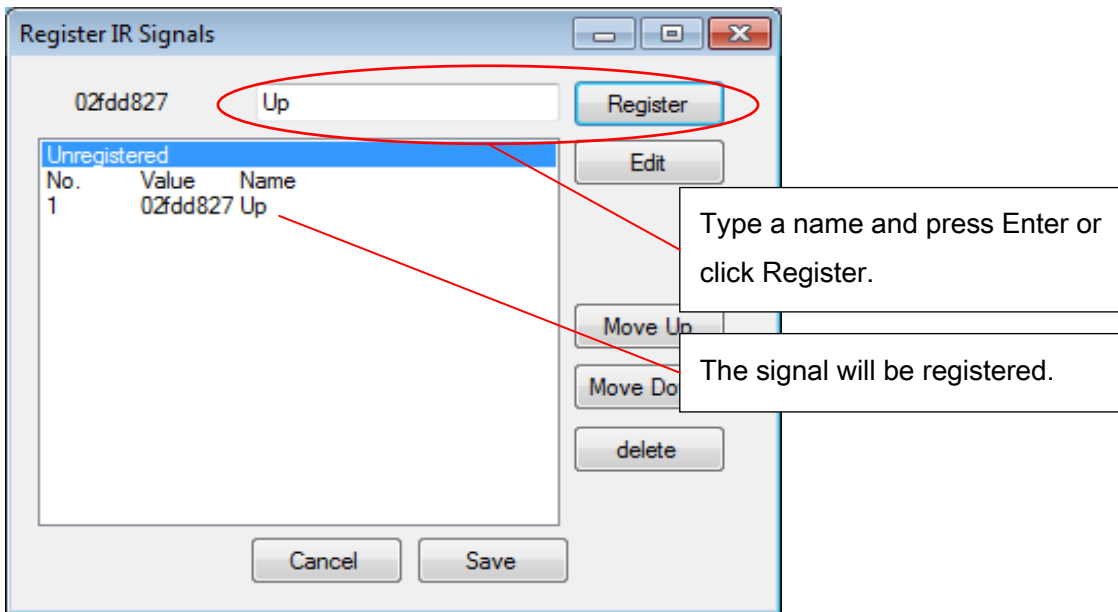
You will need to register the remote control signals you wish to use. Open the Edit menu and click Register IR Signal.



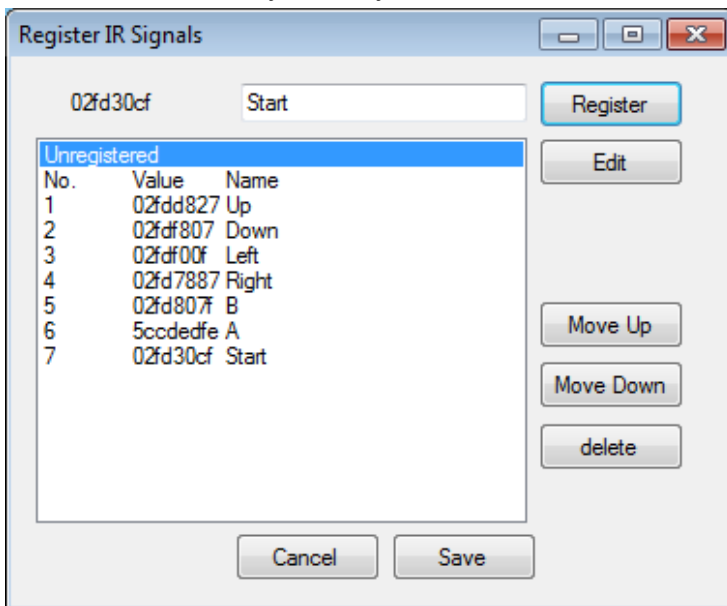
This will open the Register IR Signal screen. Press any button on the remote control and a signal value will appear.



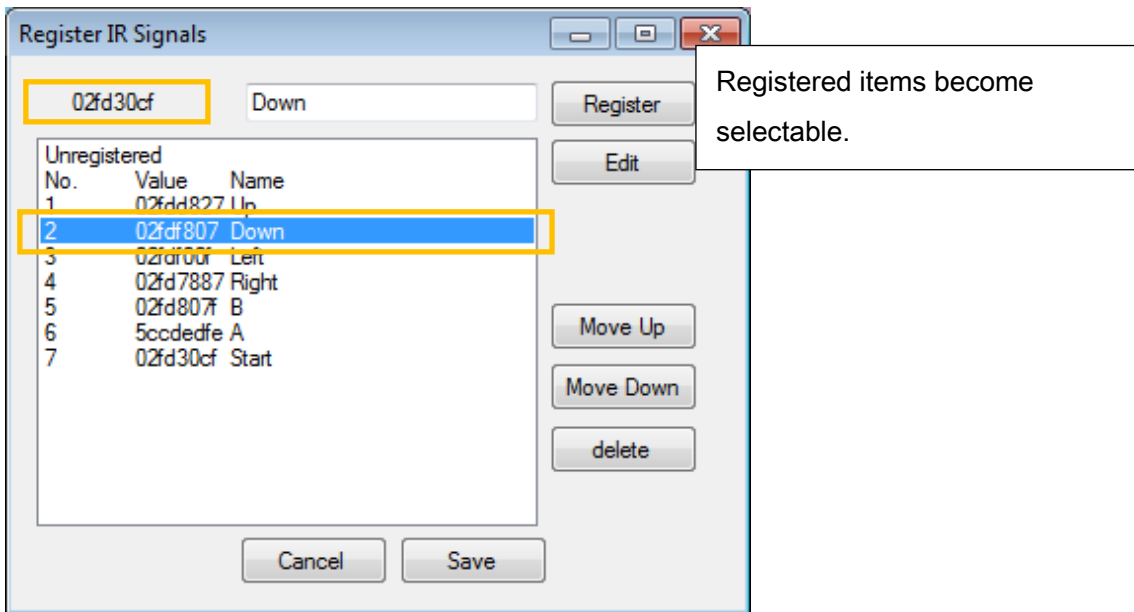
Give the value a name by typing a name in the text box and pressing Enter or clicking Register.



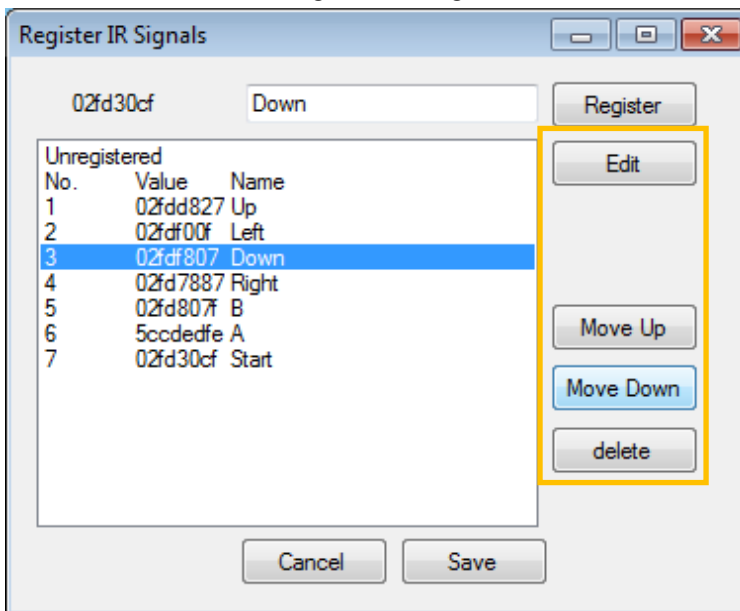
Do the same for every button you wish to use.

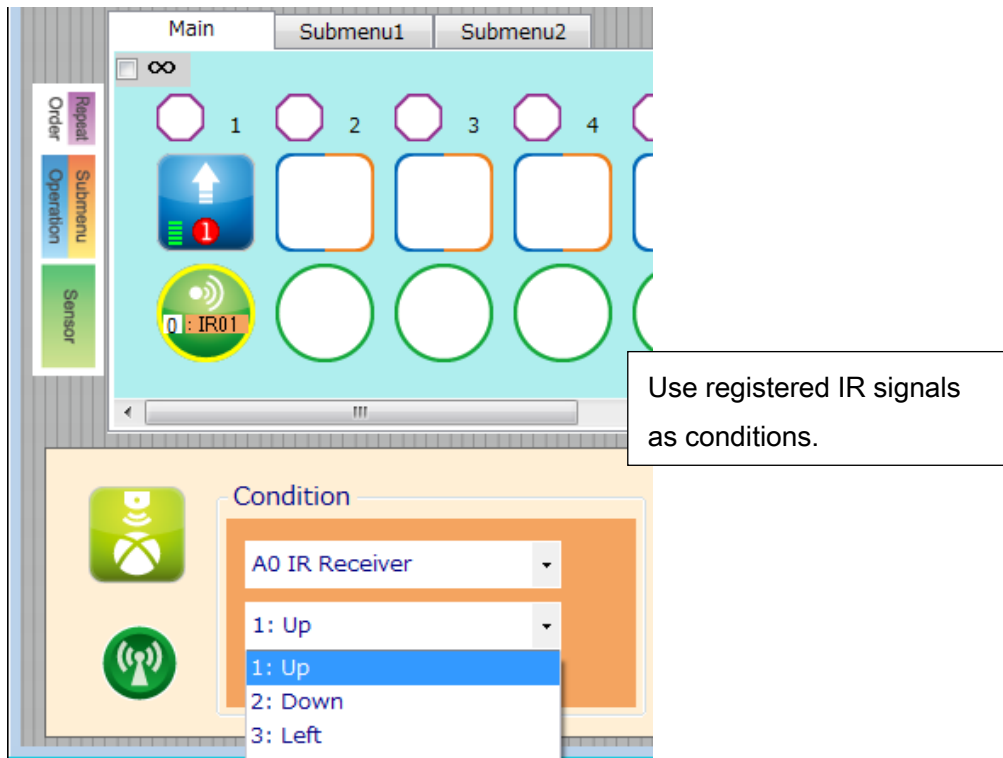


Registered signals will be added to the list as selectable items. These items can also be selected using the mouse.



Use the buttons on the right to change the order of or delete items on the list.





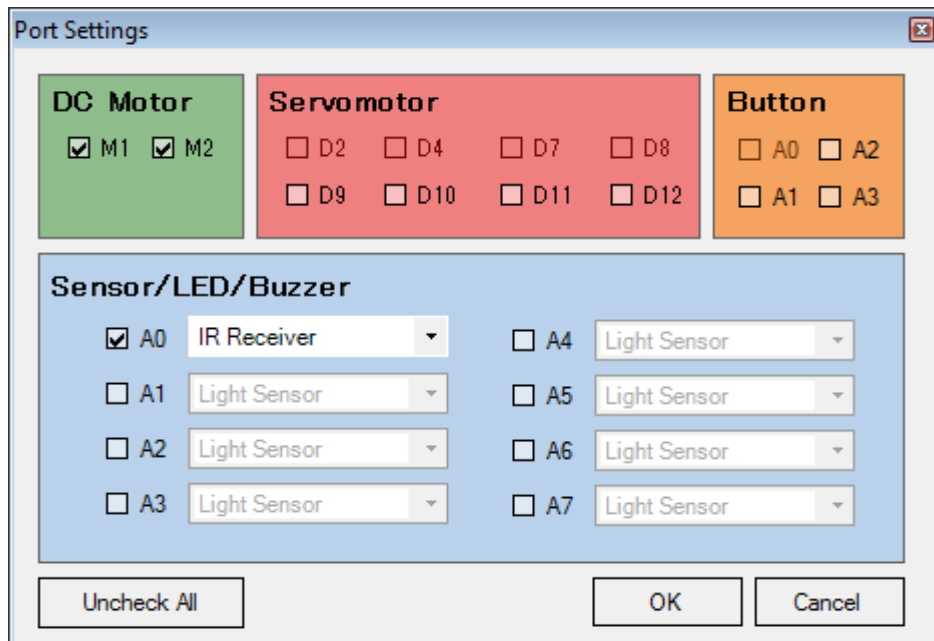
★ The Sensor Viewer does not show values for IR Receivers.

3.1. Sample Program

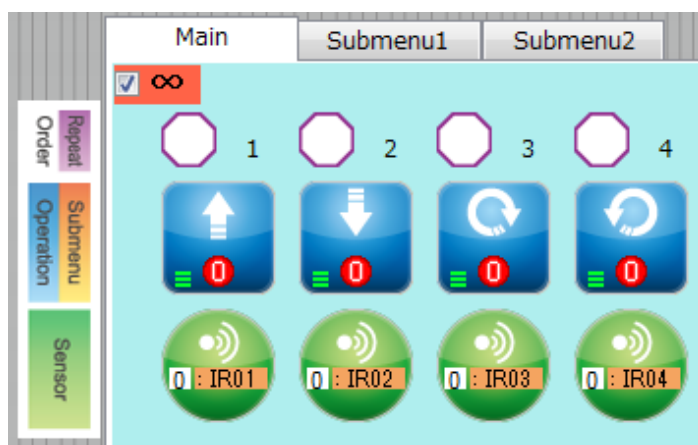
Familiarize yourself with the basics of the Studuino Programming Environment by reading the [Studuino Programming Environment Manual](#) and the [Icon Programming Environment Guide](#).

In this section we will make a program that uses the directional buttons on your remote control to make your robot turn.




- ① Open the Port Settings dialog and choose the settings shown below.






- ② Check the Repeat Indefinitely box, place icons, and set them as shown below.






No. 1

	Speed Slow ——— Fast <input type="text" value="6"/>	Time <input type="text" value="0.5"/> sec	Brake <input type="radio"/> ON <input checked="" type="radio"/> OFF
 	Condition A0 IR Receiver 1: Up		
Action: Forward, Speed: 6, Time: 0.5 sec, Brake: OFF Condition: IR Receiver = Remote Control ↑			




No. 2

	Speed Slow ——— Fast <input type="text" value="6"/>	Time <input type="text" value="0.5"/> sec	Brake <input type="radio"/> ON <input checked="" type="radio"/> OFF
 	Condition A0 IR Receiver 2: Down		
Action: Backward, Speed: 6, Time: 0.5 sec, Brake: OFF Condition: IR Receiver = Remote Control ↓			

No. 3

	Speed Slow ——— Fast <input type="text" value="6"/>	Rotation <input checked="" type="radio"/> Clockwise <input type="radio"/> Counterclockwise	Time <input type="text" value="0.5"/> sec	Brake <input type="radio"/> ON <input checked="" type="radio"/> OFF
 	Condition <input type="text" value="A0 IR Receiver"/> <input type="text" value="3: Left"/>			
Action: Right Turn, Speed: 6, Time: 0.5 sec, Brake: OFF Condition: IR Receiver = Remote Control →				

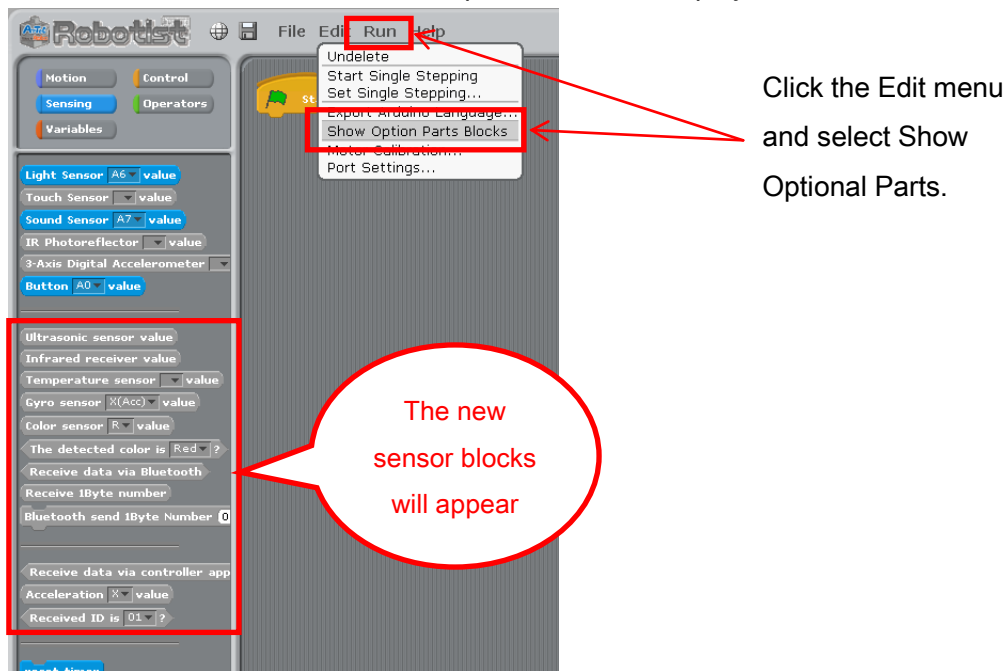
No. 4

	Speed Slow ——— Fast <input type="text" value="6"/>	Rotation <input type="radio"/> Clockwise <input checked="" type="radio"/> Counterclockwise	Time <input type="text" value="0.5"/> sec	Brake <input type="radio"/> ON <input checked="" type="radio"/> OFF
 	Condition <input type="text" value="A0 IR Receiver"/> <input type="text" value="4: Right"/>			
Action: Left Turn, Speed: 6, Time: 0.5 sec, Brake: OFF Condition: IR Receiver = Remote Control ←				

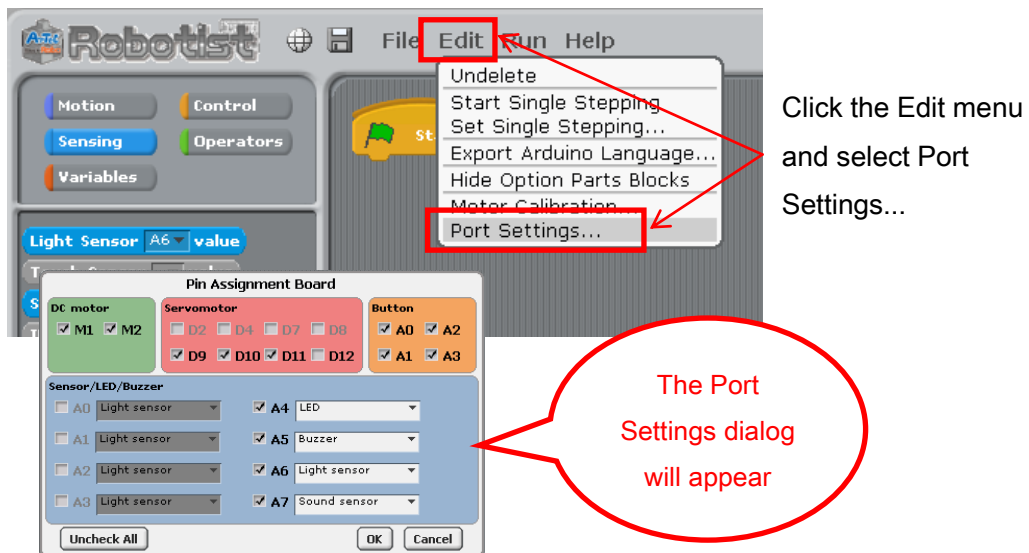
4. In the Studuino Block Programming Environment

To use your IR Receiver in the Block Programming Environment you will need to make sure the IR Receiver block is available and active. Follow the steps below to do this:

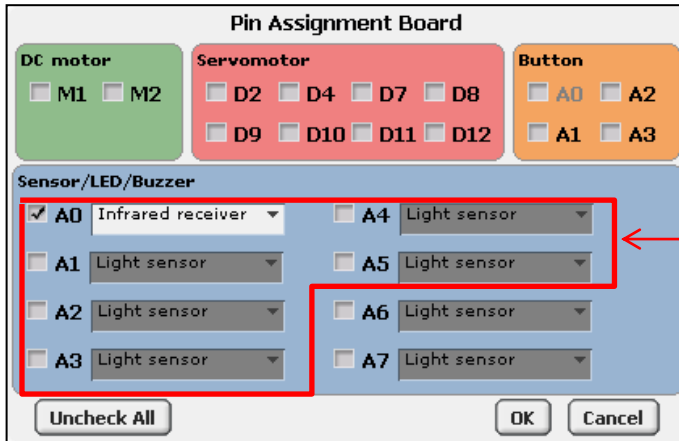
- ① From the Edit menu, choose Show Optional Parts to display the new sensor blocks.



- ② Click the Edit menu and choose Port Settings... to open the Port Settings dialog.



- ③ Your IR Receiver can use any connector from A0-A5. Under the Sensor / Buzzer / LED section of the Port Settings dialog, check any box from A0 to A5 and use the combo box to select the IR Receiver. Click OK. The following sections assume the IR Receiver is connected to A0.

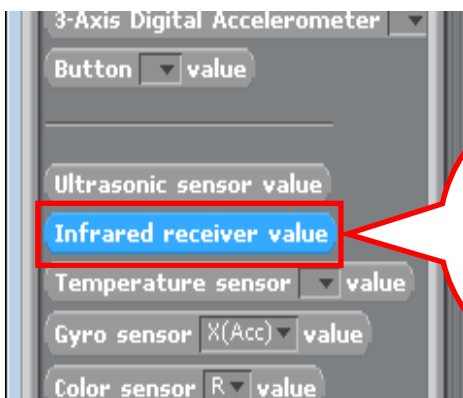


Only one port at a time from A0 to A5 can be used with an IR Receiver.

★ Programs made in the Block Programming Environment which use both an IR Receiver and I2C device (Accelerometers, Gyroscopes, or Color Sensors) are too large for your Studuino's memory. The below message will appear if you attempt to select both an IR Receiver and an I2C device in the Port Settings dialog.



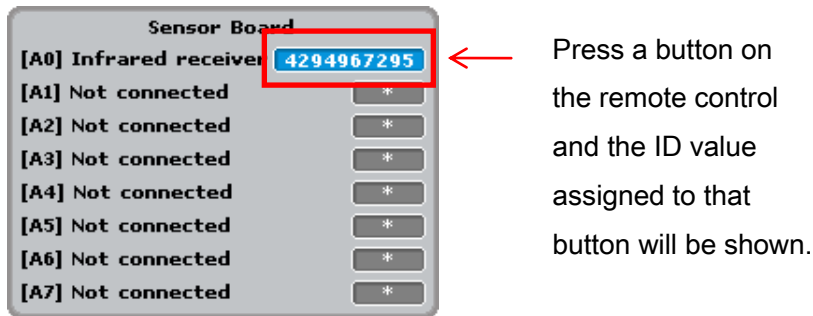
- ④ The IR Receiver block will become active.



You will now be able to use the IR Receiver block

4.1. IR Receiver Values

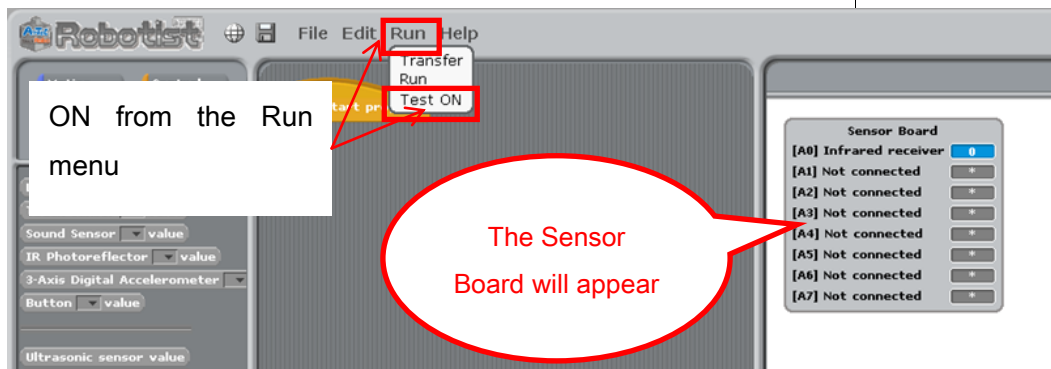
Your IR Receiver detects the ID of any button pressed on a remote control. The IR Receiver block returns the value of that ID, which is any whole number from 0-4294967296. You can see the raw value of any button ID on the Sensor Board while in Test mode.



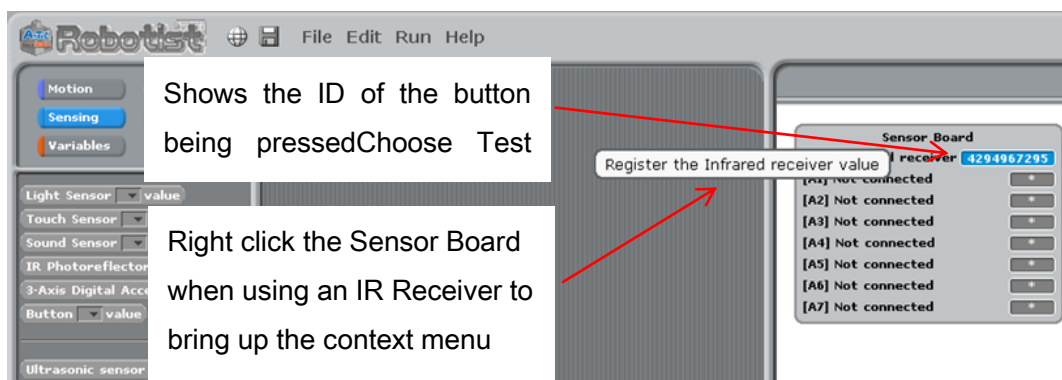
4.2. Sample Program Using the IR Receiver

The button ID values detected by your IR Receiver can be registered as constants.

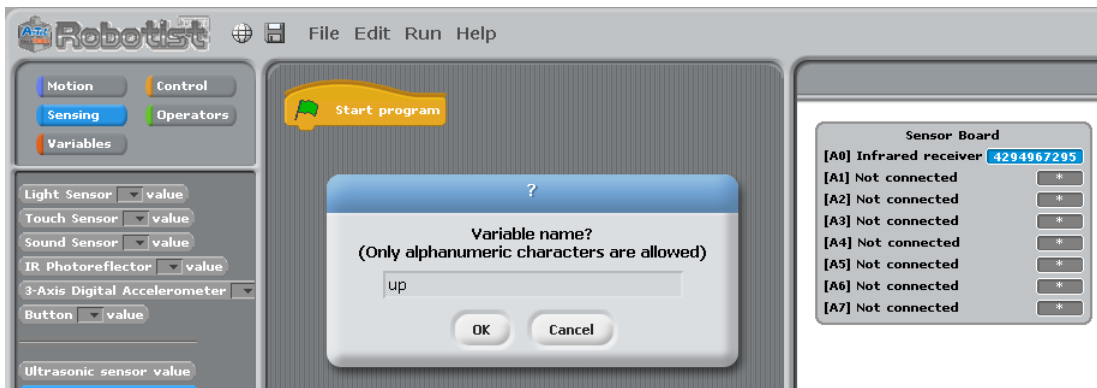
- 1 Click the Run menu and choose Test ON to show the Sensor Board.



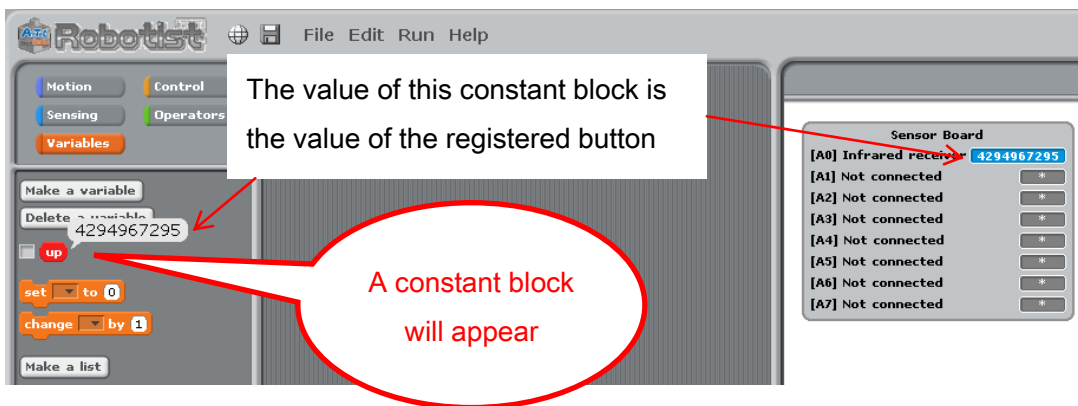
- 2 Press a button on the remote control. When the ID value appears in the Sensor Board, right click it and choose Register the IR Receiver Value.



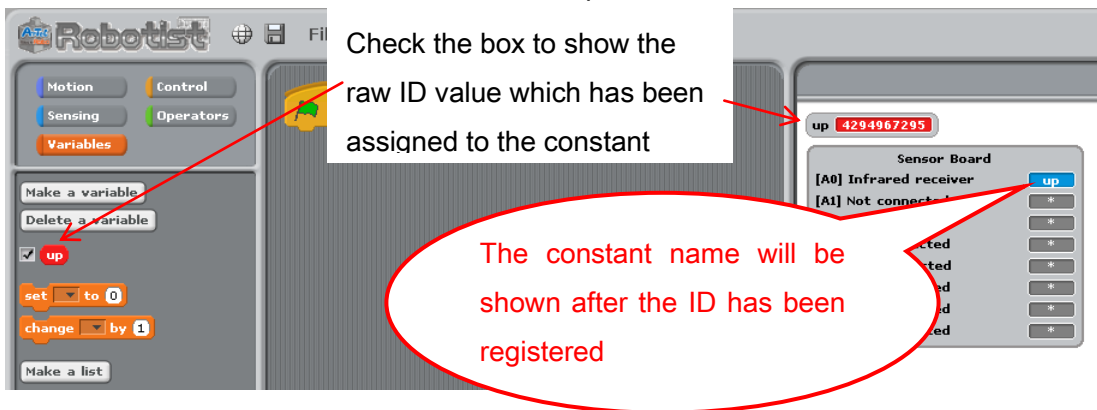
- ③ Give the button value a name and click OK.



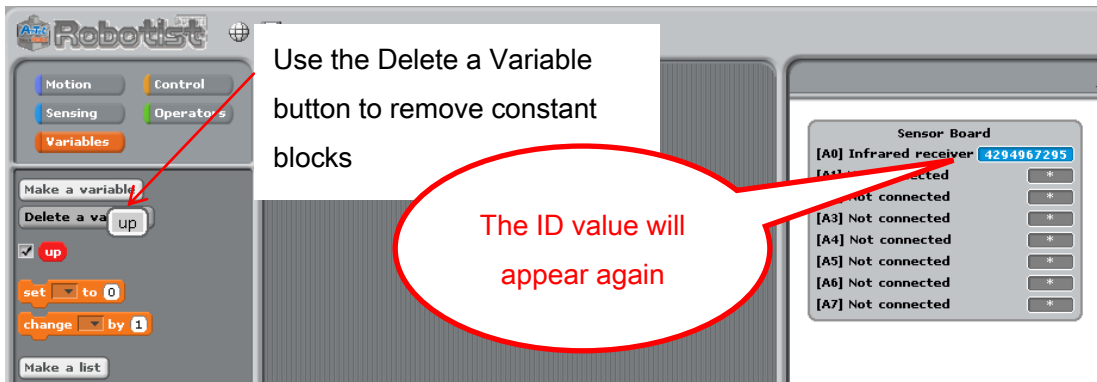
- ④ A constant block with the name you specified in step ③ will appear in the Variables palette.



- ⑤ Once a button ID has been registered the Sensor Board will show the name of the constant in place of the raw value. You can view the raw value again by checking the box next to the constant block in the Variables palette.



- ⑥ Any constant blocks you have created can be deleted using the Delete a Variable button.



The picture below shows an example program using an IR Receiver. This program uses the buttons on a remote control to make a twin-DC Motor car robot move forward and backward. The ↑ and ↓ buttons of the remote control are assigned to forward and backward constants, respectively. The first stage of the loop retrieves the value of the IR Receiver. If that value matches either one of the constants, the DC Motor will move in the corresponding direction.

