



NEUROMAKER

NeuroMaker BioSensor Kit

Quick Start Guide

Connecting to NeuroMaker Hand

How to Attach Sensors to Hand

Overview of Sensor Modules



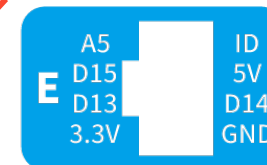
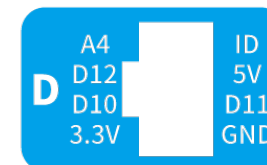
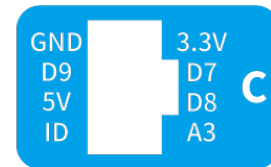
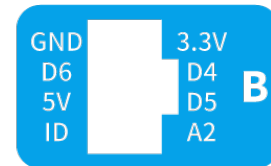
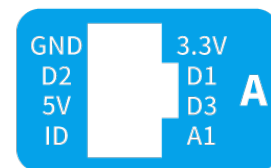
Connecting Sensors to the NeuroMaker Hand 2.0

Cables are provided at the lower layer of the BioSensor Kit packaging.



Use the medium or the short cables to connect sensors to port A, B, C, D or E.

Multiple sensors can be connected simultaneously.



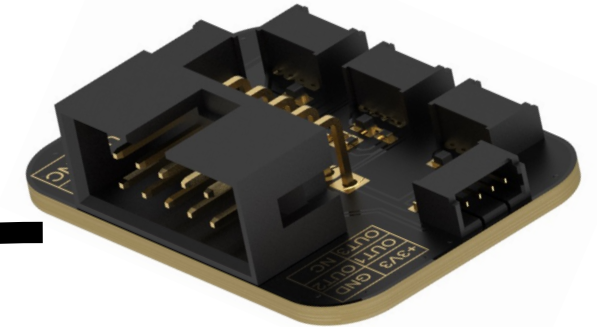
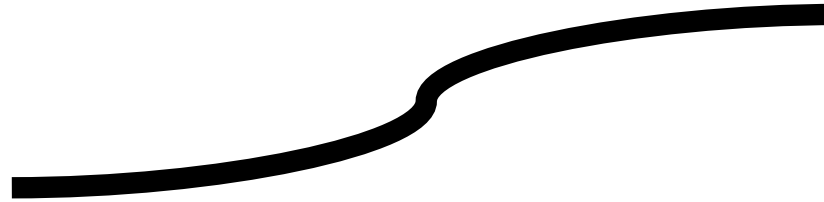
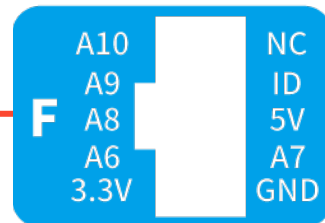
Connecting Sensors to the NeuroMaker Hand 2.0

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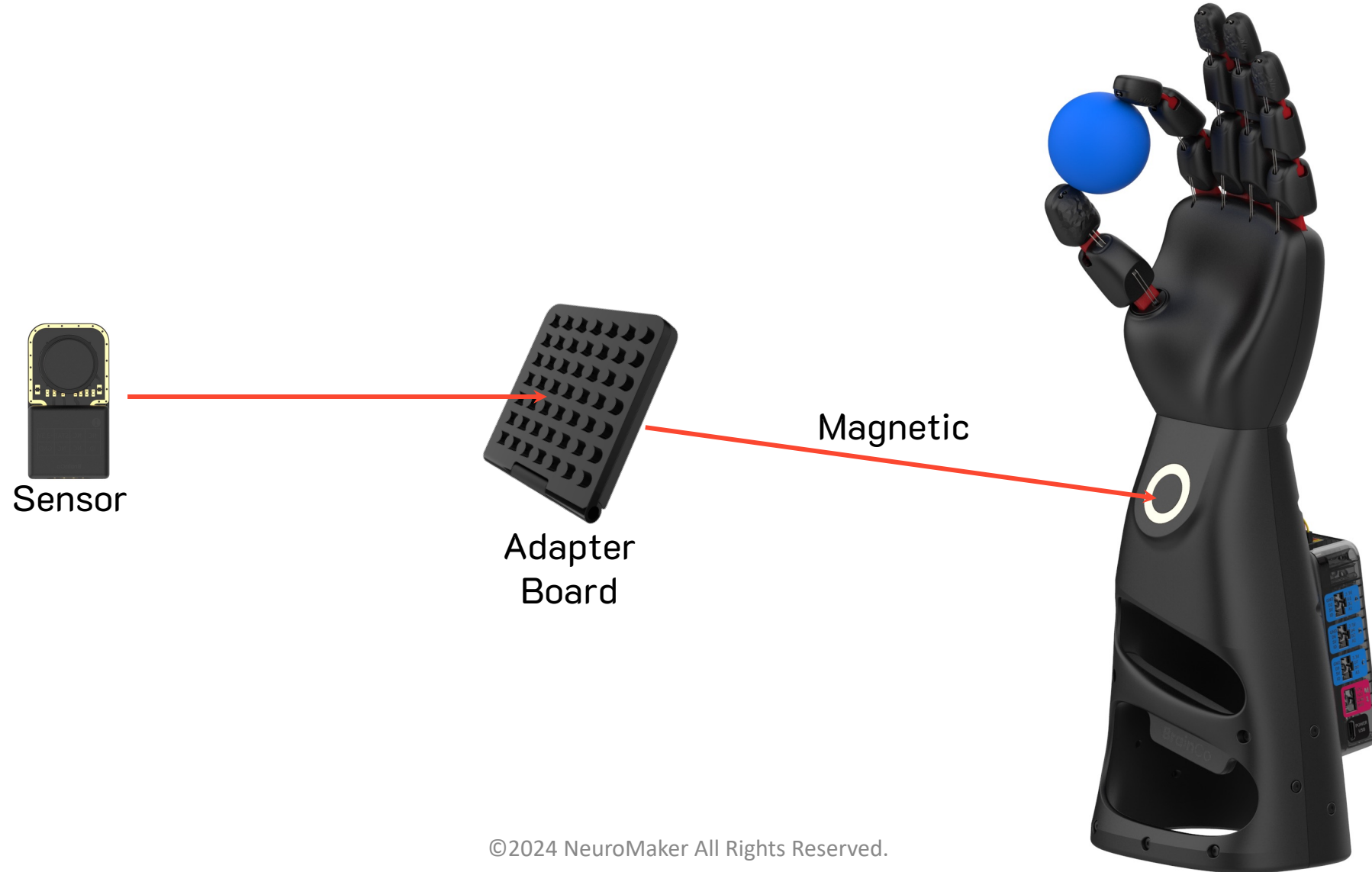
Port F is designed to work **ONLY** with the 5 Channel Flex Sensor Adapter.

Use The longest cable to connect them.



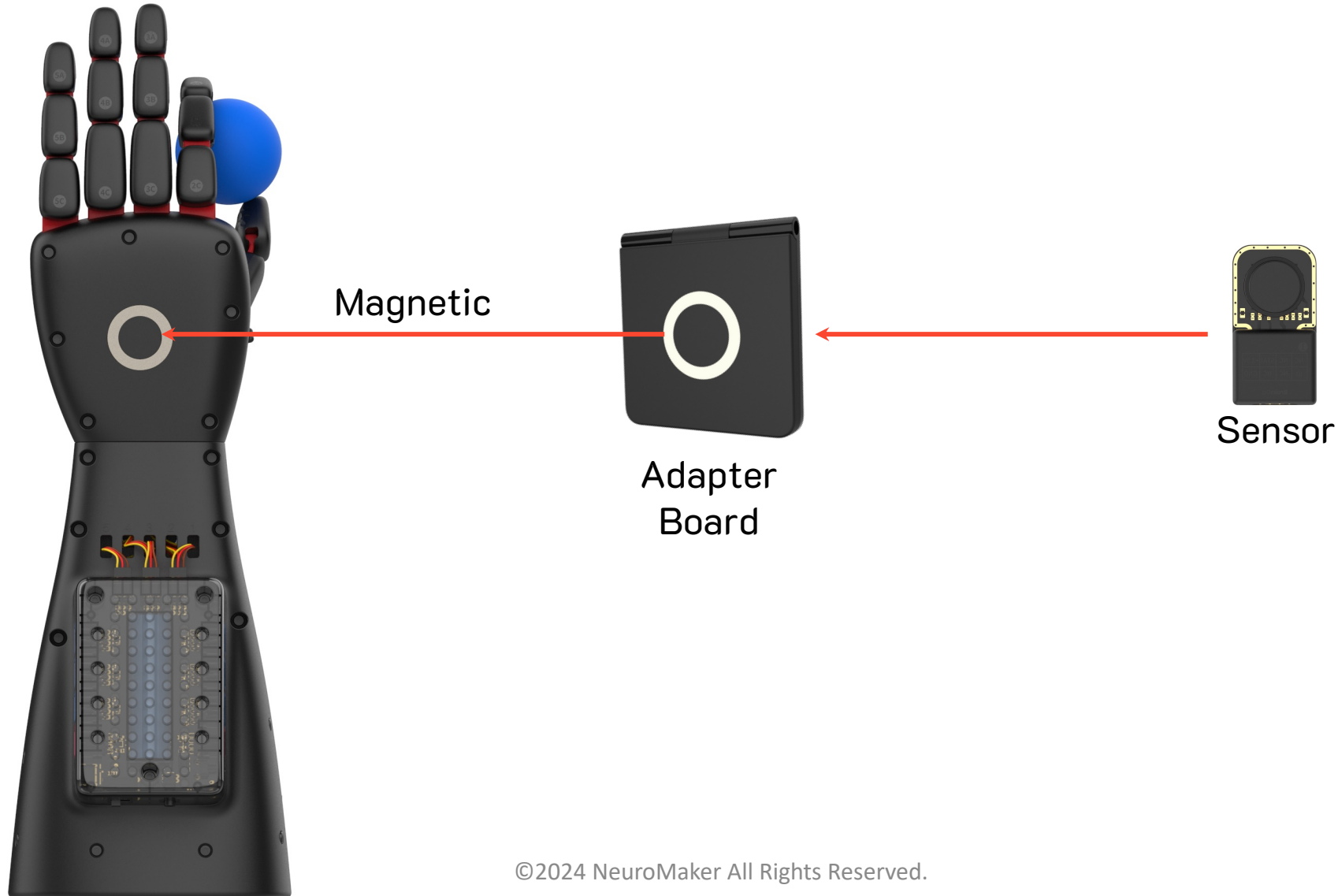
Attach Sensors to the NeuroMaker Hand 2.0

There are 3 locations on the Hand to attach BioSensors.



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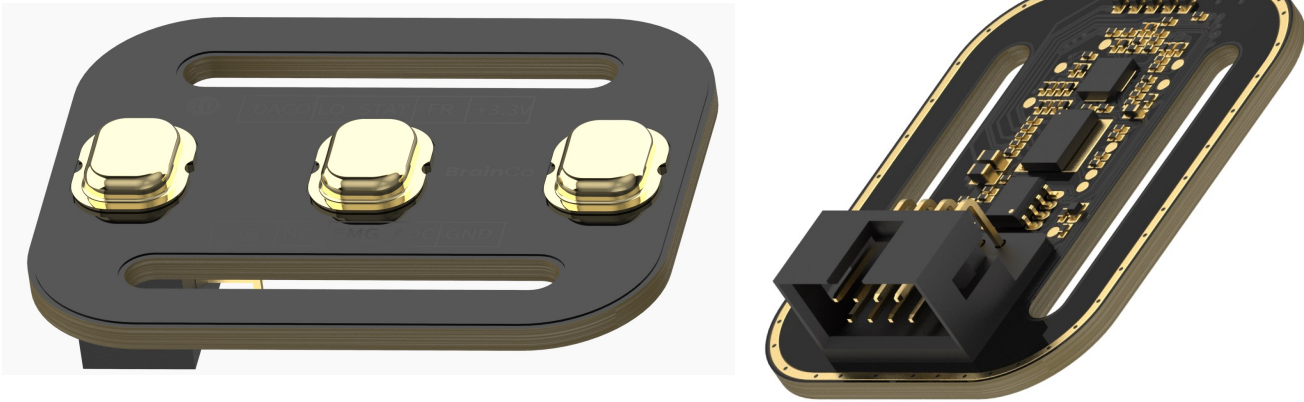


Directly attach on the
NeuroMaker Core



Sensor

EMG Sensor



Electromyography (EMG) sensors detect electrical activity produced by muscle contractions.

When integrated into prosthetic hands, these sensors translate the user’s muscular movements into signals that control the prosthetic’s movements, allowing for more natural and intuitive hand functions, and achieve remarkable levels of dexterity and responsiveness.

Compatible Ports

A, B, C, D, E

Function

Detects the intensity of muscle when placed on the human body. Returns a numerical value from 0 to 100, 100 being the most intense.

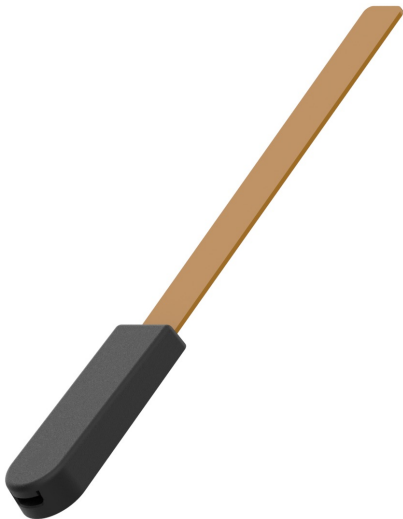
Coding Block

EMG sensor port

A ▼

muscle intensity percentage

Flex Sensor



Single Channel Flex Sensor Adapter



5 Channel Flex Sensor Adapter

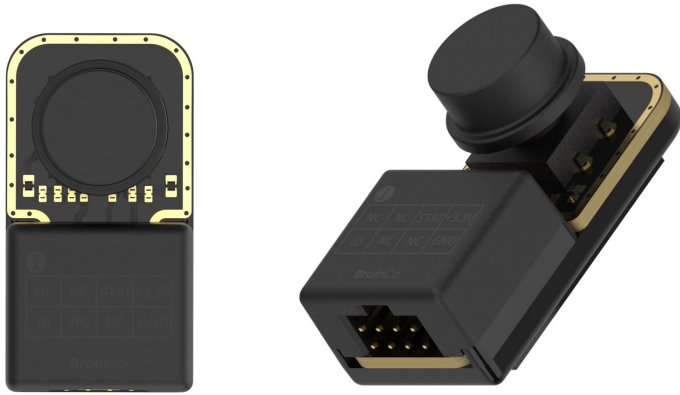


Compatible boards	Single or 5 channel flex sensor adapter
Function	Detects the degree of bending and returns a numerical value of how much it is bent.

Compatible port	A, B, C, D, E
Function	Detects the degree of bending and returns a numerical value of how much it is bent.
Coding Block	single flex sensor port A ▼ bend percentage

Compatible port	F
Function	Detects the degree of bending and returns a numerical value of how much it is bent.
Coding Block	port F flex sensor 1 ▼ bend percentage

Push Button Module



**Compatible
Ports**

A, B, C, D, E

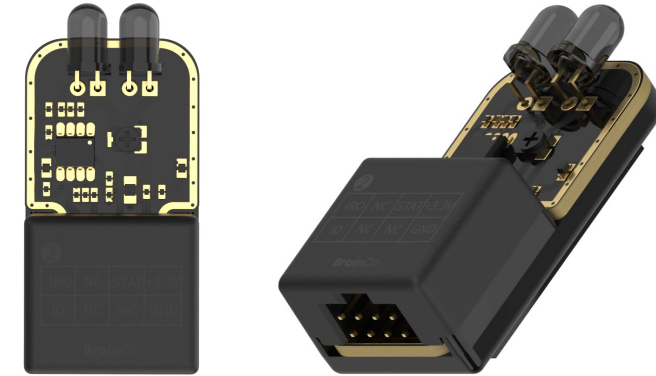
Function

Detects whether the button is pressed, in which case it returns digital HIGH.

Coding Block

button module port A ▼ pressed?

IR Obstacle Sensor



**Compatible
Ports**

A, B, C, D, E

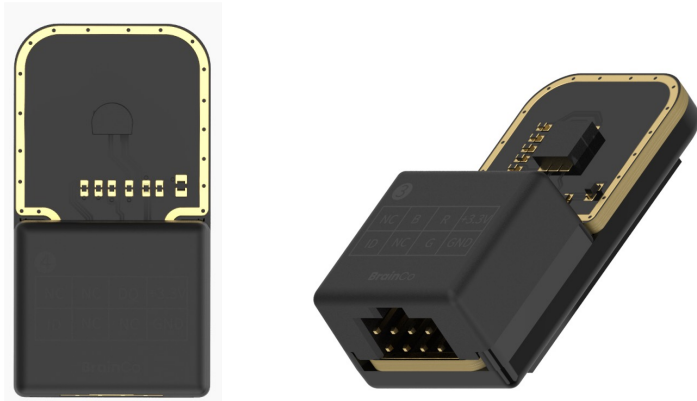
Function

Detects whether an object is in front of it. It does not know the exact distance, instead it returns a digital HIGH if an object exist in its range.

Coding Block

IR proximity sensor port A ▼ detects object?

RGB LED Module



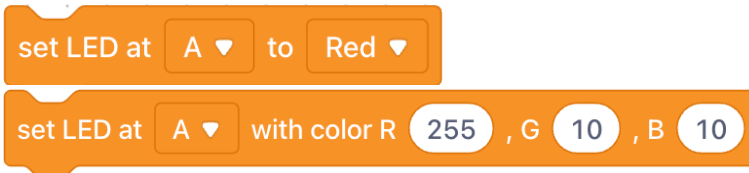
Compatible
Ports

A, B, C, D, E

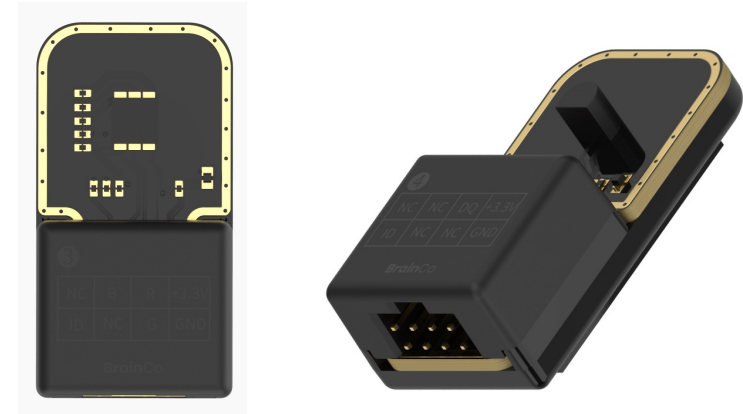
Function

Lights up and displays different colors based on the input GRB values.

Coding Block



Temperature Sensor



Compatible
Ports

A, B, C, D, E

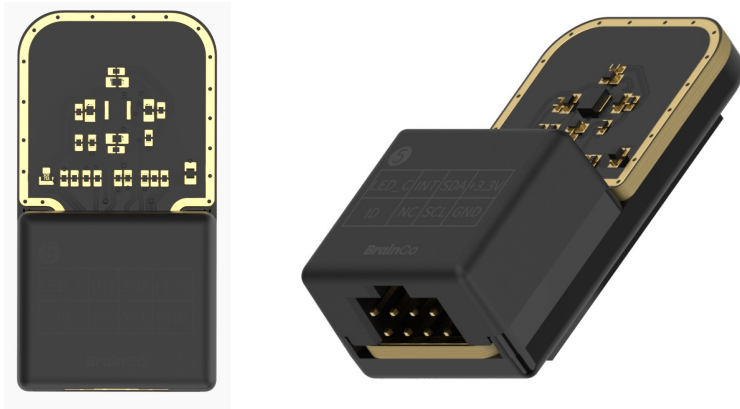
Function

Detects the ambient temperature and return this numerical value in Celsius.

Coding Block



Color Sensor



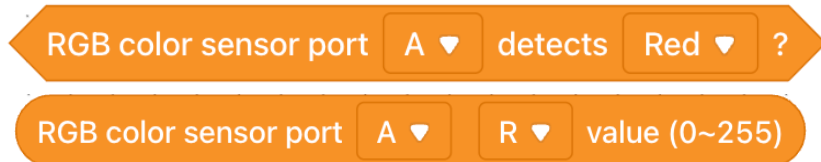
**Compatible
Ports**

A, B, C, D, E

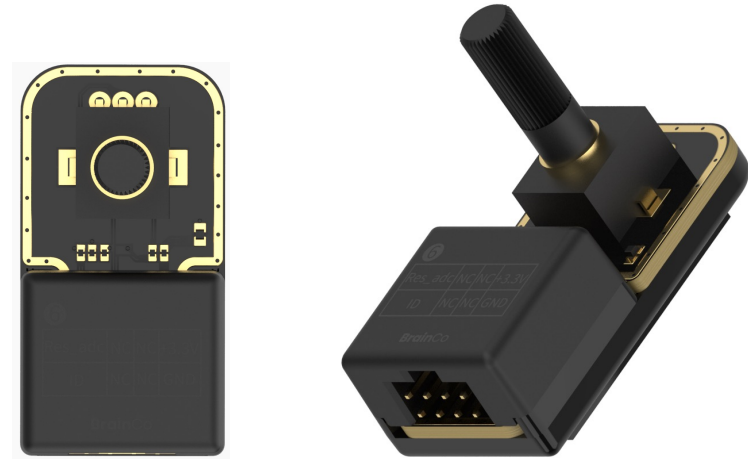
Function

Detects the color of the object in front of it.
Returns the RGB values of the detected color.

Coding Block



Rotary Encoder Module



**Compatible
Ports**

A, B, C, D, E

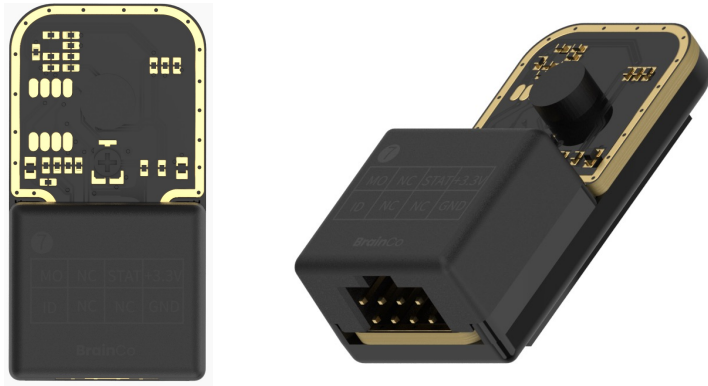
Function

Returns the percentage of the dial's position from the left. For example, rotating it to the right most position will return 100.

Coding Block



Sound Sensor



**Compatible
Ports**

A, B, C, D, E

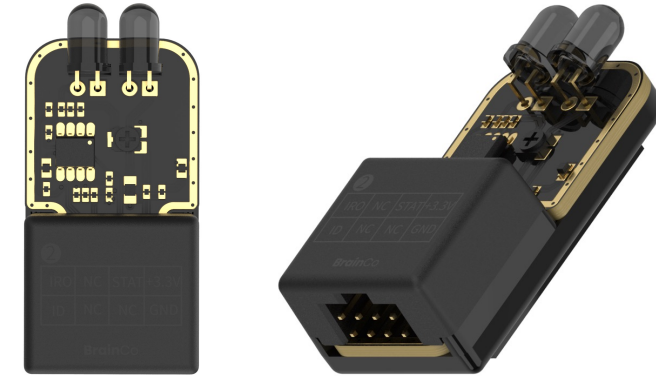
Function

Detects the volume of its surrounding sound in dB. Returns a numerical value from 0 to 100.

Coding Block

sound sensor port A ▼ volume (0~100)

Hall Sensor



**Compatible
Ports**

A, B, C, D, E

Function

Detects whether the intensity of magnetic field is stronger than its threshold, in which case it returns digital HIGH.

Coding Block

hall sensor port A ▼ magnetic field intensity

Ultrasonic Distance Sensor



**Compatible
Ports**

A, B, C, D, E

Function

Detects the exact distance to an object in front of it, and return a numerical value in mm.

Coding Block

ultrasonic sensor port A ▼ distance (mm)

IR Remote



**Compatible
Ports**

No ports needed

Function

All buttons can be programmed to achieve different functions.

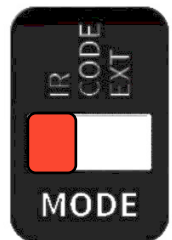
Coding Block

IR remote button Func1 ▼ pressed?

3 Ways to Use the BioSensors

Plug and Play

Connect BioSensors to the NeuroMaker Hand 2.0, and they'll start working right away. No programming needed. The IR remote is used to control them.



IR Mode

Program Them

You can program and customize each sensor when programming the NeuroMaker Hand2.0 via mBlock or Arduino C.



Programming Mode

Connect Them Elsewhere

All sensors can be powered by 3rd party Microcontrollers.

Next, proceed to the
“Use with the Hand Remote”
or
“Program the Sensors”
available at
www.neuromakerstem.com/documents

