



TI-RGB Array Setup Guide

Learn more about TI Technology through the online help at education.ti.com/eguide.

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TI-RGB Array

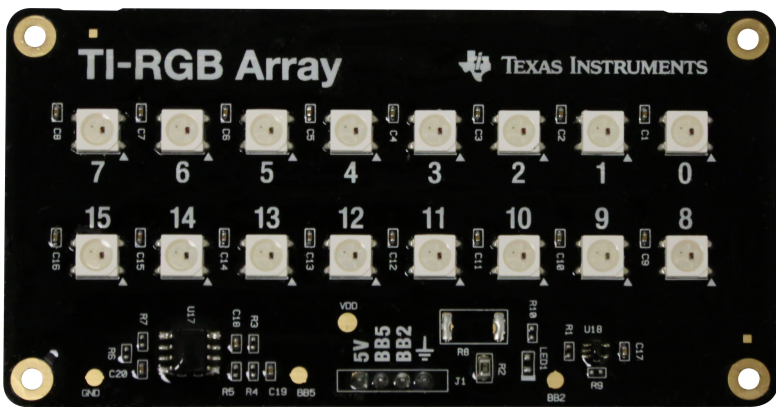
What is TI-RGB Array?

TI-RGB Array is an accessory to TI-Innovator™ Hub.

TI-RGB Array has 16 programmable RGB LEDs.

Multiple applications

- Smart greenhouse
- Binary counter
- STEAM projects
- Coding lessons



TI-RGB Array – Industrial design and markings

Top view of TI-RGB Array.



Bottom view - identifying label.



Requirements for TI-RGB Array:

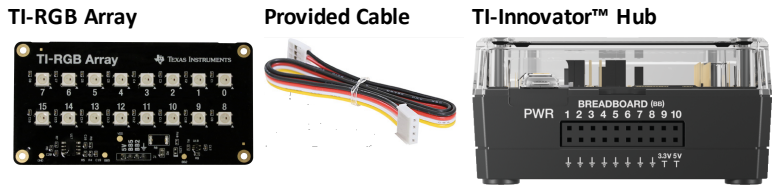
Hardware:

- Add-on TI-RGB Array to TI-Innovator™ Hub
- Use Hub Sketch v1.4 or later

Connecting the TI-RGB Array

Follow these set of steps in this order to connect and use the TI-RGB Array.

Connect the TI-RGB Array to the TI-Innovator™ Hub



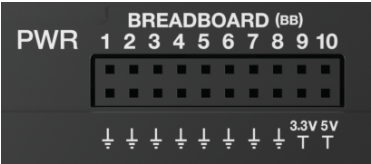
STEPS

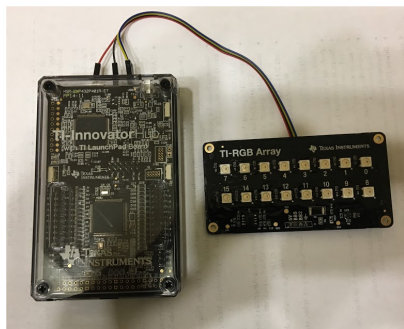
1. Connect one end of the provided cable to the TI-RGB Array port labeled:



2. Connect the corresponding wires to the usable pins on the Hub labeled:

- Red: 5V - power
- Blue : BB5 - analog out
- Yellow: BB2 - SPI signal
- Black: GND - ground





Connect the TI-Innovator™ Hub to a Graphing Calculator

The TI-Innovator™ Hub connects by a USB cable to a graphing calculator or computer. The connection lets the Hub receive power and exchange data with the host.

See complete details (page 3).

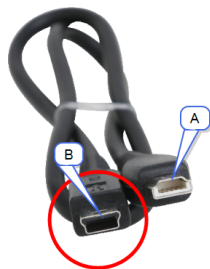
Connecting TI-Innovator™ Hub

The TI-Innovator™ Hub connects by a USB cable to a graphing calculator or computer. The connection lets the Hub receive power and exchange data with the host.

Note: Some peripherals, such as motors, may require auxiliary power. For more information, see [Using an Auxiliary Power Source](#) (here).

Connecting to a Graphing Calculator

1. Identify the "B" connector on the USB Unit-to-Unit (Mini-A to Mini-B) cable. Each end of this cable is embossed with a letter.
2. Insert the "B" connector into the **DATA** port at the bottom of the TI-Innovator™ Hub.



3. Insert the free end of the cable (the "A" connector) into the USB port on the calculator.



*Hub connected to
TI CE Graphing Calculator*



*Hub connected to
TI-Nspire™ CX Handheld*

4. Turn on the calculator if it is not already on.

The power LED on the Hub glows green to show that it is receiving power.

Connecting to a Computer Running TI-Nspire™ CX Software

1. Identify the "B" connector on the USB Standard A to Mini-B cable for Windows®/Mac®. Each end of this cable is embossed with a letter.
2. Insert the "B" connector into the **DATA** port at the bottom of the TI-Innovator™ Hub.



3. Insert the free end of the cable (the "A" connector) into a USB port on the computer.

The power LED on the Hub glows green to show that it is receiving power.



TI-RGB Array Commands

Prerequisite: Use the Send "Connect RGB" Command First

The "CONNECT RGB" command needs to be used first when using the TI-RGB Array. The "CONNECT RGB" command configures the TI-Innovator™ Hub software to work with the TI-RGB Array.

It establishes the connections to the various led binary slots on the TI-RGB Array – 0 through 15 RGB LED. It also clears the various counters and sensor values.

For additional commands see: education.ti.com/eguide

CONNECT RGB

| | |
|--------------------------------|---|
| Command: | CONNECT RGB |
| Command Syntax: | CONNECT RGB |
| Code Sample: | Send "CONNECT RGB " |
| Range: | N/A |
| Describe: | The "CONNECT RGB" command configures the TI-Innovator™ Hub software to work with the TI-RGB Array. |
| Result: | Connects the TI-RGB Array to the TI-Innovator™ Hub. The TI-RGB Array is now ready to be programmed |
| Type or Addressable Component: | All components of the TI-RGB Array. See Also: New Commands to use with TI-RGB Array |

| | |
|--------------------------------|---|
| Command: | CONNECT RGB AS LAMP |
| Command Syntax: | CONNECT RGB AS LAMP |
| Code Sample: | Send "CONNECT RGB AS LAMP" |
| Range: | N/A |
| Describe: | This command will enable the “high brightness” mode of the TI-RGB Array as long as an external power source (like the USB battery) is connected to the PWR port. Note: “AS LAMP” will need to be typed in. |
| Result: | The TI-RGB Array is now configured to be in high-brightness mode. If the external power is not connected, the “ AS LAMP ” has no effect –i.e. the brightness will be at the default level. Also note, an error will be indicated by a beep tone. |
| Type or Addressable Component: | All components of the TI-RGB Array. See Also: New Commands to use with TI-RGB Array |

SET RGB

| | |
|--------------------------------|--|
| Command: | SET RGB n r g b |
| Command Syntax: | SET RGB n r g b SET RGB eval(n) r g b |
| Code Sample: | Send "SET RGB 1 255 0 255" |
| Range: | 0-15 for 'n', 0-255 for r,g,b |
| Describe: | The SET RGB command controls the brightness and color of each RGB LED in the TI-RGB Array |
| Result: | The specific LED lights up with the specified color |
| Type or Addressable Component: | All components of the TI-RGB Array See Also: New Commands to use with TI-RGB Array See Also: SET RGB ALL |

SET RGB ALL

| | |
|--------------------------------|--|
| Command: | SET RGB ALL r g b |
| Command Syntax: | SET RGB ALL r g b |
| Code Sample: | SET RGB ALL 255 0 255 |
| | SET RGB ALL 255 0 0 |
| | SET RGB ALL eval(R) eval(G) eval(B) |
| | SET RGB ALL 0 0 0 |
| Range: | |
| Describe: | To control all the LEDs in a single command use: SET RGB ALL r g b |
| Result: | Control all LEDs in a single command |
| Type or Addressable Component: | All components of the TI-RGB Array |

READ RGB

| | |
|--------------------------------|--|
| Command: | READ RGB |
| Command Syntax: | Send "READ RGB" |
| Code Sample: | Send "READ RGB" Get c |
| Range: | 0-15 for 'n', 0-255 for r,g,b |
| Describe: | Returns the value of the current consumed by the TI-RGB Array in mA |
| Result: | |
| Type or Addressable Component: | All components of the TI-RGB Array See Also: New Commands to use with TI-RGB Array |

General Precautions

TI-RGB Array

- Do not expose the TI-RGB Array to temperatures above 140°F (60°C).
- Use only the Ribbon cable provided with the TI-RGB Array.
- When inserting the Ribbon cable into the TI-RGB Array connectors, make sure the red (dark) wire pin is inserted into the 5v hole.
- Use the TI-RGB Array no closer than 8 inches to your eyes.
- Rest your eyes periodically by focusing on an object at least 5 feet away.

General Information

Online Help

education.ti.com/eguide

Select your country for more product information.

Contact TI Support

education.ti.com/ti-cares

Select your country for technical and other support resources.

Service and Warranty

education.ti.com/warranty

Select your country for information about the length and terms of the warranty or about product service.

Limited Warranty. This warranty does not affect your statutory rights.



Texas Instruments U.S.A.
12500 TI Blvd.
Dallas, TX 75243

Texas Instruments Holland B.V.
Bolwerkdok 2
3433 KN
Nieuwegein - The Netherlands

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