



Choose Sensor Substitutes in Tinkercad Circuits



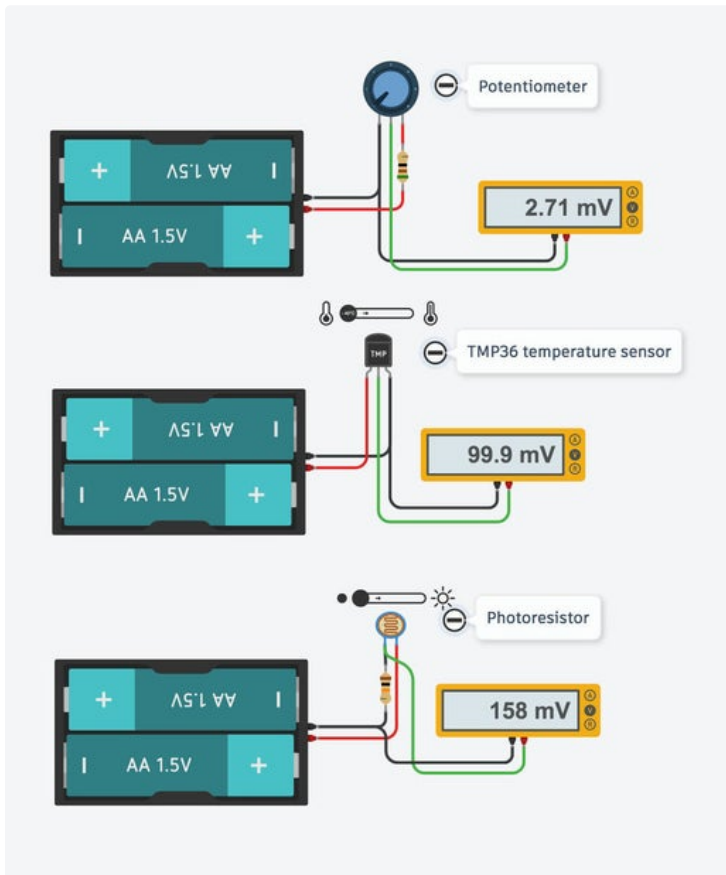
by circuits

By design, Tinkercad Circuits contains a limited library of commonly used electronics components. This curation makes it easy for beginners to navigate the complexity of the world of electronics without becoming overwhelmed. The downside is that if you're looking for a very specific part number or version of a sensor that's not included in the parts drawer, you can't create an exact replica of your circuit in the simulator.

Luckily for us all, most of the time, there's a way to represent your not-included component by substituting a similar one. Many sensors are alike and fall into a few big categories. This guide will help you pick a suitable alternative for your Tinkercad Circuit.

Supplies:

All you'll need is a computer with an internet connection and a free account on [Tinkercad.com](https://www.tinkercad.com)!



Step 1: Analog Sensors

Analog sensors output a variable voltage and resistance as they are activated. The most generic type of analog sensor is a potentiometer, and more specific types include flex sensors, photoresistors, microphones, some temperature sensors, force-sensitive resistors (pressure sensors), piezo elements, some IR distance sensors, and more. In Arduino, analog inputs are read using `analogRead()`; or the "read analog pin" block in Tinkercad.

If the analog sensor you want to use has three pins, we recommend using a potentiometer or TMP36 temperature sensor as a substitute in Tinkercad circuits, since they both also have three pins (power, ground, and signal). Note that these are slightly different from one another: a potentiometer is a purely resistive sensor, and the TMP36 expects a regulated power supply voltage (2.7-5.5V).

If your analog sensor only has two pins, the only suitable substitute in Tinkercad Circuits is the two-pin photoresistor (the piezo element in Tinkercad Circuits can only be used as an output).

Start the simulation below and click on each sensor to test out its action:

<https://www.tinkercad.com/embed/7oP78Y52Hdy>

You can also copy [this Tinkercad design](#) to your own dashboard.

Step 2: Digital Sensors

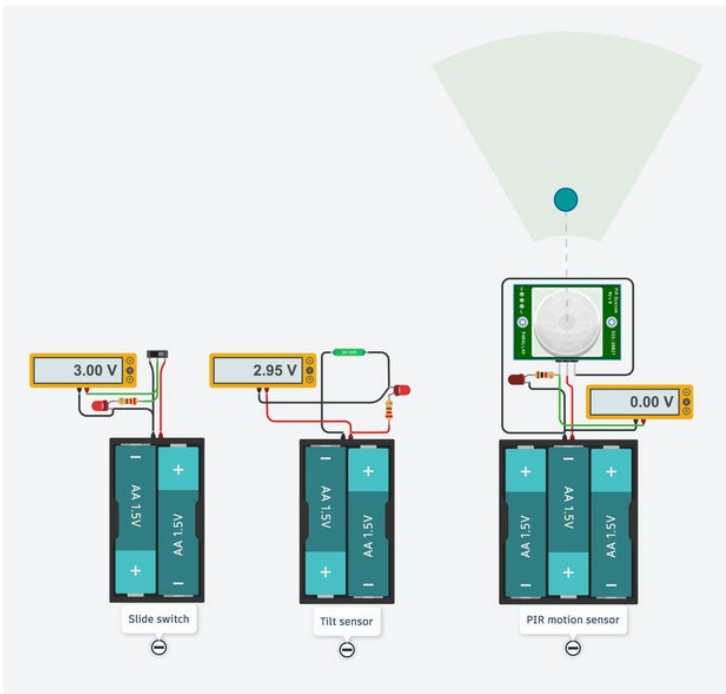
Digital sensors fall into two main categories: high/low voltage signals, and more complex digital signals.

Some sensors in this category include pushbuttons, switches, tilt balls sensors, magnetic reed switches, PIR motion sensors, and vibration switches. In Tinkercad Circuits, try out one of the numerous switch and pushbutton options, but also check out the tilt sensor and PIR motion sensor, whose simulations may more closely mimic whichever digital sensor you are trying to approximate. Arduino reads high/low voltage signals using `digitalRead()`; The Tinkercad block for digital inputs is "read digital pin". Start the simulation below and click on each sensor to test out its action:

You can also [copy this Tinkercad design](#) to your dashboard.

For more complex sensors that use data protocols such as i2c, the swap options are more limited. While you may be able to use the extra library by pasting it into your Arduino sketch, there isn't a component that can behave as your i2c device.

<https://www.tinkercad.com/embed/kJravurY2tp>



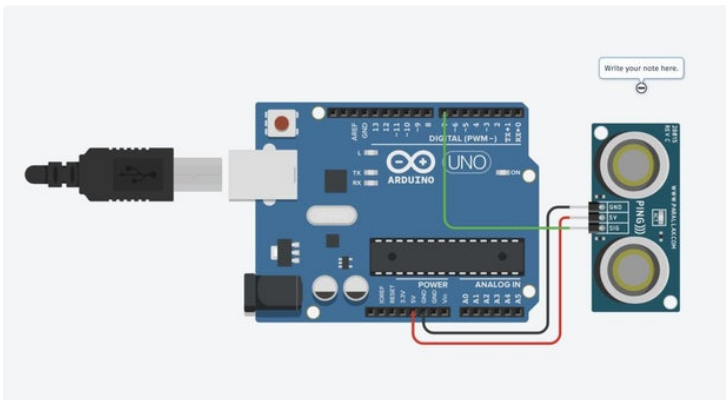
Step 3: Additional Resources

We recommend using the annotation tool to write notes on your circuit when you make a substitution. This can help communicate the intent, even though you couldn't show the exact right component.

Don't forget about the starters available in Tinkercad Circuits (in the components drawer), which can help get you up and running with many basic sensors very quickly.

To learn more about how to incorporate sensors in your Arduino projects, try out our [beginner Arduino lessons using Tinkercad Circuits](#).

Please do [send your component requests to the team!](#) Although we keep the selection of components small on purpose, we are still always looking at what we can add to make Tinkercad Circuits even better. Your feedback is a gift. Thank you!



This is quite useful, especially for beginners. Thanks for sharing with the community!