MAX30102 SENSOR

A black and white circuit board

Description automatically generated

The MAX30102 is an integrated pulse oximetry and heart-rate monitor sensor module that excels in wearable health technology due to its compact design, low power consumption, and high sensitivity. It features integrated LEDs, a photodetector, and advanced signal processing to accurately measure blood oxygen saturation (SpO2) and heart rate through the skin. With its I2C interface for easy microcontroller integration, the MAX30102 supports both medical and fitness applications, making it a versatile choice for developers of smartwatches, fitness bands, and other wearable health devices. Its ability to perform under challenging conditions, such as low perfusion and motion, further enhances its utility in continuous health monitoring.

**Wiring Summary**

* **VIN** of MAX30102 to **3.3V** of Arduino Nano 33 IoT
* **GND** of MAX30102 to **GND** of Arduino Nano 33 IoT
* **SCL** of MAX30102 to **SCL** (A5) of Arduino Nano 33 IoT
* **SDA** of MAX30102 to **SDA** (A4) of Arduino Nano 33 IoT

LIBRARY INSTALLATION

**Maxim Integrated's Official Library**

* **Library Name:** MAX30105 (often used for both MAX30102 and MAX30105 sensors)
* **Features:** This library is developed by Maxim Integrated (now part of Analog Devices), the manufacturer of the MAX30102 sensor. It provides functions for initializing the sensor, configuring its settings, and reading the raw data. Although named after the MAX30105, it is frequently used for the MAX30102 as well due to their similar functionalities.
* **How to Install:** We can install this library through the Arduino IDE Library Manager. In the Arduino IDE, go to **Sketch** > **Include Library** > **Manage Libraries...** Then, search for "MAX30105" and install the library.