Phase 2: Innovation

Air Quality Monitor

In recent years, air quality monitors have advanced and innovated more and more. Key areas of invention include the following:

Innovative sensing technologies:

In comparison to conventional sensors, new sensor technologies are being created that are more precise, sensitive, and selective. This makes a larger variety of contaminants detectable by air quality monitors at lower concentrations.

IoT-capable hardware:

Many air quality monitors today are IoT-capable, allowing for real-time data collection and transmission to the cloud. This enables the creation of new apps and services as well as real-time monitoring and analysis of the air quality.

Requirements for Air Quality Monitor Components

The fundamental elements of an air quality monitor are as follows:

Sensors:

To identify various pollutants, air quality monitors typically use a range of sensors. Particulate matter (PM) sensors, ozone sensors, nitrogen dioxide sensors, and carbon monoxide sensors are examples of common sensors.

Microcontroller:

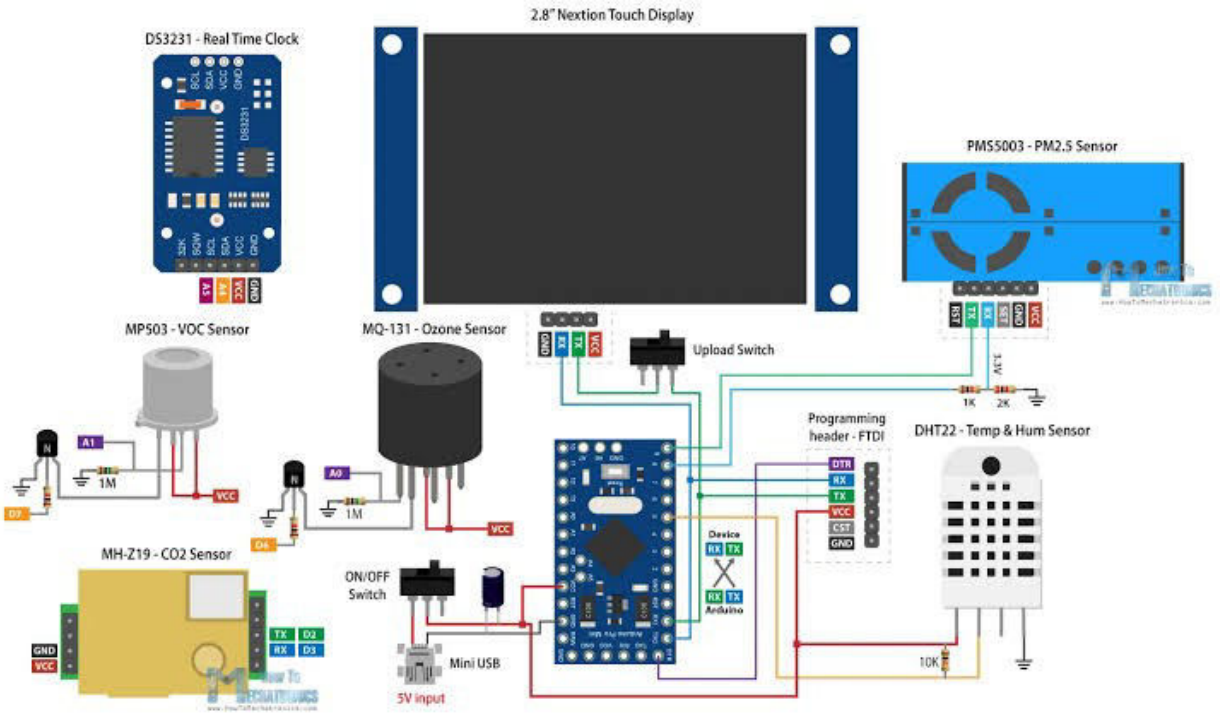
The air quality monitor's microcontroller is its brain. It is in charge of gathering and processing sensor data, as well as managing the display and communication components.

Display Module:

Information on the quality of the air is shown to the user using the display module. To quickly determine the level of air quality, certain air quality monitors additionally incorporate LED indicators.

Communication module:

Data transmission from the air quality monitor to a computer or mobile device is made possible by the communication module. Users are now able to view air quality information from a distance and follow historical changes in air quality.



Air Quality Monitor Use Cases:

A number of situations allow the usage of air quality sensors, such as:

Monitoring indoor air quality:

- Air quality monitors can be used to keep an eye on the air quality inside of residences, workplaces, and other structures. This is crucial since the quality of the air within a building can sometimes be much poorer than that of the outside.

Monitoring outdoor air quality:

- Monitoring of outdoor air quality in cities, towns, and rural regions is possible with the aid of air quality monitors. Decisions affecting public health can be made using this knowledge, which can also assist in preventing exposure to dangerous chemicals.

Monitoring industrial air quality:

- Monitoring of the air quality in industrial settings, such as factories and power plants, is possible with the use of air quality monitors. This is necessary to protect employee safety and to adhere to environmental requirements.