

Qosain Scientific PM Tracker Device Specification Sheet

Overview

The Qosain Scientific PM Tracker Device is a comprehensive tool designed to monitor environmental parameters in real-time. It measures PM1.0, PM2.5, PM10.0 (concentrations of particulate matter smaller than 1.0, 2.5 and 10.0 μ respectively), NO_x, CO₂, NH₄, temperature, and humidity, providing accurate data for research, urban monitoring, and industrial applications. The device features an OLED display, a web interface, continuous data logging to an SD card, and integration with Google Sheets for remote data storage and visualization.

Key Features

- **Real-Time Monitoring:** PM1.0, PM2.5, PM10.0, NO_x, CO₂, NH₄, temperature, and humidity data.
- **OLED Display:** Easy-to-read data graphics.
- **Web Interface:** Remote access via Wi-Fi for real-time data visualization.
- **Data Logging:** Continuous storage on SD card and Google Sheets integration.
- **Interactive Plots:** Graphs with zoom, axis adjustments, and screenshots.
- **Power Options:** USB 5V or integrated battery.
- **Custom Timestamp:** Auto (NTP)/manual selection.
- **Email Alerts:** Automated AQI status updates and threshold breach notifications.
- **Network of Devices:** For assistance with setting up and managing a network of multiple devices, please reach out to Qosain Scientific for tailored solutions and support.

Specifications

Specification	Details
Particulate Matter Parameters (Digital Laser PM2.5 Dust Sensor SSAP10)	PM1.0, PM2.5, PM10.0 ($\mu\text{g}/\text{m}^3$)
Detect Rate	50% @ 0.3 μm ~ 98% @ 5 μm
Measure Range	0 ~ 1000 $\mu\text{g}/\text{m}^3$
Output Resolution	1 $\mu\text{g}/\text{m}^3$
Environmental Sensor (DHT22)	Temperature: -40°C to 80°C Humidity: 0% to 100% RH
Gas Sensor (MQ135)	NO _x : upto 100 ppm (approx.) CO ₂ : upto 10000 ppm (approx.) NH ₄ : upto 300 ppm (approx.)
Display	OLED Display
Wi-Fi Connectivity	Yes (Local & Web Interface)
Data Storage	SD Card (16 or 32 GB), Google Sheets
Power Supply	Adapter or Battery of 5V
Firmware Programming	PRG Port
Size	Compact and Portable
Weight	Approx. 320 g
User Interface	Menu-driven via rotary encoders

Functions

- **Start Data Collection:** Real-time monitoring and data recording.
- **File Management:** View, download, and delete data files via the web interface.
- **Real-Time Visualization:** View PM data, gas levels, temperature, and humidity.
- **Settings Configuration:** Adjust timestamps (Manual or GPS).
- **Email Alerts:** Receive AQI status updates and alerts for threshold breaches.
- **Google Sheets Integration:** Automatically upload and view real-time data.

Local Network Interface

The local network interface allows users to connect to the device using its IP address over a Wi-Fi network. Key features include:

- **File Management:** View, download, and delete data files stored on the device.
- **Real-Time Visualization:** Monitor PM data, gas levels, temperature, and humidity in real-time through interactive plots.

This interface ensures seamless access to data within the local network for quick analysis and management.

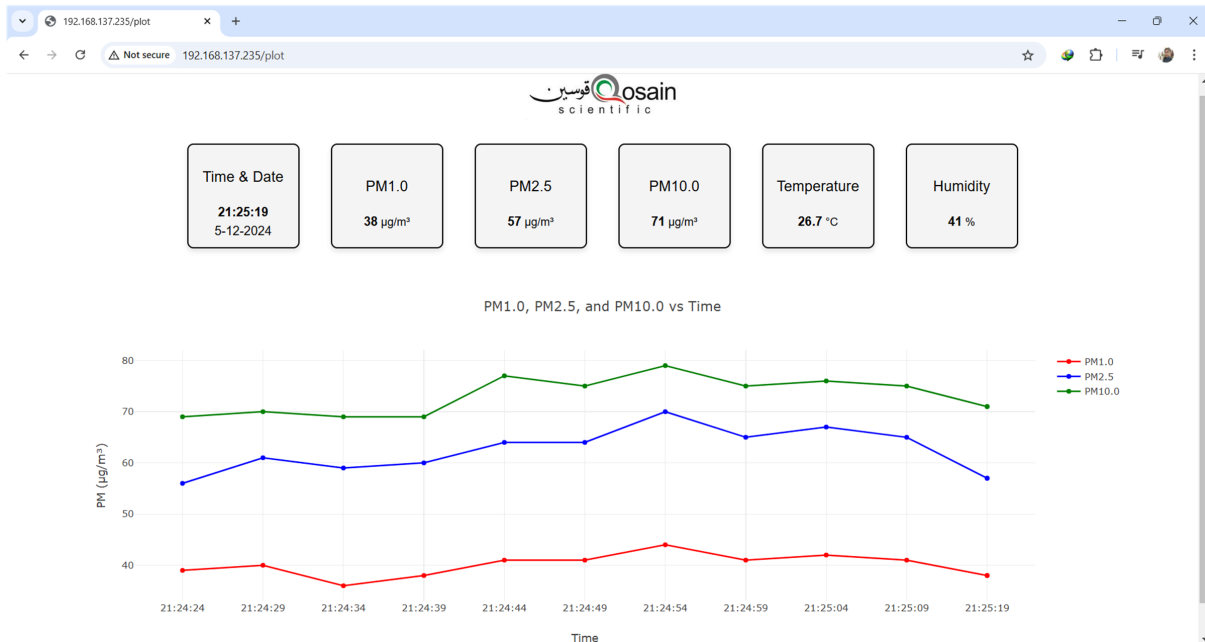


Figure 1: Real-time data visualization on the local interface

Web Interface and Google Sheets Integration

The web interface provides a seamless way to access and manage real-time data from the device. Through any modern browser, users can:

- View real-time plots and data metrics.
- Download recorded data files.
- Configure device settings remotely.

Integration with Google Sheets offers:

- Automatic data uploads for cloud storage.

- Real-time collaboration and sharing with team members.
- Easy visualization and analysis using Google Sheets tools.

Note: For more information about local and web interface, please visit https://drive.google.com/drive/folders/1ltkF6CAkunlinBbQ2oxBER8_znwmaE9d

Softwares Required to Upload Firmware

- **Software:** Visual Studio Code with PlatformIO IDE, C++ extensions.
- **Drivers:** CP210x/CH340 USB-to-UART drivers.

Resources Required for Real-time Data Viewing

- Wi-Fi connectivity.
- Any web browser.
- Google Sheets account for data access.

Contact Information

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