Overcoming Connectivity Hurdles in Air Quality Monitoring: Intermittent Data Collection via Smartphone Hotspots

In the world of air quality monitoring, where you rely on data that you can trust and getting it quickly, AirAssure™ and BlueSky™ monitors have emerged as invaluable tools. These sophisticated devices rely on Wi-Fi connectivity to efficiently transmit air quality data to the TSI Link™ cloud solution, facilitating quick access and analysis of critical information. So, what if you are using an AirAssure™ or BlueSky™ monitor in a place where the Wi-Fi is not reliable or unavailable?

While these monitors offer an internal microSD card for data storage, relying solely on this method involves device disassembly, exposure to outdoor conditions (in some cases), manual removal and insertion of the microSD card, data extraction and device reassembly—a process far from seamless. What's more, dependable Wi-Fi access is not always a guarantee, whether you're indoors or outdoors.

Recognizing the need for a faster and more user-friendly data retrieval solution, we present an elegant solution: intermittent data collection via smartphone hotspots. This method not only simplifies the data extraction process but also ensures you can access your air quality data swiftly and conveniently, even in locations where reliable Wi-Fi is scarce.

The Hotspot Advantage: Simplifying Data Retrieval and Maintenance

When it comes to data collection, using Wi-Fi via smartphone hotspots proves to be a far more efficient and reliable choice compared to the manual method of extracting data from the device's microSD card.

The manual approach consumes more time and is susceptible to errors. It requires the tedious task of aligning new data with previous exports, which might involve reformatting and manually removing duplicate data points. Furthermore, users must exercise caution to avoid unintentional deletion or corruption of the microSD card contents, as this serves as a primary backup for all recorded device data.

On the other hand, smartphone hotspots are the more efficient and convenient option for smooth data collection. Smartphone hotspots streamline the process, saving time by seamlessly integrating new data into the existing dataset. This approach also guarantees secure storage and facilitates effortless access, sharing and management, ensuring that all your data is kept up-to-date and easily accessible via TSI Link™ for both you and your assigned collaborators.

This convenience extends to all avenues of access and integration:

- **TSI Link™ UI**: Access your data effortlessly through the user-friendly TSI Link™ interface. It's designed for ease of use, allowing you to retrieve, manage and share your air quality data with just a few clicks.
- **API Data Services Integration**: Harness the power of our REST API connection to seamlessly integrate your air quality data into your existing systems or workflows, like Tableau. This feature allows you to create stunning visualizations and gain deeper insights into your air monitoring data.
- **TSI Link™ Data Analyzer Microsoft® Excel Add-In**: Make use of our Microsoft® Excel Add-In to streamline data analysis and reporting within your familiar Excel environment. It's a powerful tool for in-depth data insights.

Another advantage of utilizing smartphone hotspots is the chance to perform preventative maintenance. Being physically close to the AirAssure™ or BlueSky™ monitor allows for the execution of maintenance tasks while data is being transferred to the cloud. This dual action not only optimizes the data collection process but also ensures effective care for the device, enhancing overall operational efficiency.

All of this is made possible because AirAssure™ and BlueSky™ monitors are intelligently designed to buffer and store data internally for up to 14 days, when recording at 15-minute intervals. Once a Wi-Fi connection is established via a smartphone hotspot, the buffered data is seamlessly transferred to the TSI Link™ cloud solution. This robust system ensures that users have access to reliable and timely air quality data, further enhancing the effectiveness of air monitoring processes.

On-Site Maintenance for Optimal Performance

Regular preventative maintenance is essential to ensure your air quality monitors operate at their best. By performing routine checks and tasks, you can extend their lifespan and maintain accurate data collection. Utilizing a smartphone hotspot presents an ideal opportunity for this maintenance since you're already interacting with the device. While connected, take a few minutes to perform the following tasks:

- **Bump Checks for Sensor Drift:** Verify the accuracy of sensors by conducting bump checks, ensuring they remain calibrated and provide precise measurements.
- **Cleaning and Inspection:** Take the opportunity to clean the monitors, removing dust, cobwebs, or any other debris that might affect measurement accuracy.
- **Cable and Connection Verification:** Ensure all cables and connections are secure and properly plugged in, reducing the risk of data loss due to loose connections.
- **Firmware Updates:** While connected to Wi-Fi, you will receive notifications regarding available updates for your device. These updates can effectively resolve problems, improve security and maintain compatibility, ultimately ensuring consistent and precise device performance.

This dual-purpose approach optimizes the monitoring process, providing more reliable air quality data while ensuring the longevity of your equipment.

Practical How-To for Intermittent Data Collection

There are two ways to use your smartphone hotspot for intermittent data collection. We recommend configuring your device to connect to your smartphone's hotspot beforehand, guaranteeing a smooth and uninterrupted data transfer process. Alternatively, you have the option to modify the device's Wi-Fi connection on-site, providing versatility for different monitoring situations, such as assigning another team member for data collection or using a different smartphone.

Method 1: Pre-Deployment Setup

For the smoothest experience, set up your air monitoring device before permanently mounting it:

1. **Configure Device:** Make sure your AirAssure™ or BlueSky™ monitor is set to connect to your smartphone's Wi-Fi hotspot in advance for seamless data transfer.
2. **Return Within 14 Days:** Come back to the device within 14 days from the last data transfer. You'll notice the device light is solid white, indicating no Wi-Fi or cloud connection.
3. **Indicator Light Changes:** Once your device detects your smartphone hotspot, watch for these light changes:
   - Pulsing white: Connecting to Wi-Fi
   - Pulsing blue: Attempting TSI Link connection
   - Solid blue: Successful and stable connection
4. **View Data:** After successful connection, you can access measurement data from the device. Allow a few minutes for the device to start sending data to the cloud.

Method 2: On-Site Hotspot Connection

Use these instructions for on-site data transfer using a smartphone hotspot:

1. **Return Within 14 Days:** Return to the device within 14 days from the last data transfer. The device light will be solid white, indicating no Wi-Fi or cloud connection.
2. **Initiate Device Setup Mode:**
   - Model 8143: To enter device setup mode, slide switch away from settings gear icon and then towards the settings gear icon. The indicator light will pulse once per second.
   - Models 8144 and 8145: To enter device setup mode, disconnect and then reconnect the power to the device. The indicator light will pulse yellow.
3. **Connect to Device Wi-Fi:** Follow one of these methods:
   - Connect Manually (all models): Manually connect to the device Wi-Fi network listed on your smartphone. Enter PWD if prompted.
   - Scan QR Code (models 8144 & 8145): Use your smartphone's camera to scan the QR code at the top of the label on the back of the monitor.
4. **Access Device Setup Web Page:** Choose one of these options:
   - Manual Entry (all models): Open your smartphone's browser and enter the URL 192.168.4.1.
   - Scan QR Code (models 8144 & 8145): Use your smartphone's camera to scan the QR code at the bottom of the label on the back of the monitor.
5. **Connect to Hotspot Wi-Fi:** Select or type in your hotspot Wi-Fi network name, enter the hotspot Wi-Fi password, and click "Save."
6. **Allow Cloud Connection:** The monitor will power cycle automatically, indicated by a pulsing yellow LED light bar. Watch for these LED colors during the connection process:
   - Pulsing white: Connecting to Wi-Fi
   - Pulsing blue: Attempting TSI Link connection
   - Solid blue: Successful and stable connection
7. **View Data:** After successful connection, access measurement data from the device. Wait a few minutes for the device to begin sending data to the cloud.

Note: Data will buffer for a period of 14 days when logged at 15-minute intervals. If logging occurs at intervals shorter than 15 minutes, the buffer will fill up more quickly, resulting in a buffer period duration of less than 14 days. Make sure you test the system accordingly to determine the exact buffer duration based on the specified intervals.

In summary, utilizing intermittent data collection via smartphone hotspots not only simplifies data retrieval and maintenance but also enhances your data accessibility, sharing capabilities and integration options. Plus, with regular device maintenance, you're ensuring that your devices operate optimally, providing accurate and dependable air quality data. Your air quality data is now more powerful and easier to work with than ever before. Stay informed, maintain your devices and contribute to a healthier environment.

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