

BASIOX CONTROLS

Model: BC-VRI-MRI



Introduction

Indoor Air Quality (IAQ) plays a critical role in influencing airborne infection risks, particularly in enclosed and healthcare environments. Variations in particulate matter, gaseous pollutants, temperature, and humidity can significantly affect the conditions that enable virus transmission and mold growth.

The Microbial / Mold Risk Index (MRI) is a virtual index that indicates the likelihood of conditions favorable to bacterial, fungal, and spore-related contamination, while the Virus Risk Index (VRI) represents the potential risk level associated with airborne virus transmission under prevailing indoor air conditions. Both indices are derived from key IAQ parameters and do not represent direct detection of biological agents.

The VRI/MRI device is an advanced indoor air quality monitoring system that continuously measures critical environmental parameters and synthesizes the data to compute real-time VRI and MRI levels. With precision sensors, IoT connectivity, and cloud-based analytics, the system enables timely alerts and actionable insights to support safer, healthier indoor environments.

Key Highlights

- Measures critical indoor air quality parameters including PM1, PM2.5, PM10, temperature, relative humidity, CO₂, and TVOC
- Dynamically derives Virus Risk Index (VRI) and Mould Risk Index (MRI) from measured IAQ parameters
- IoT-enabled cloud dashboard for live monitoring and trend analysis
- Provides real-time alerts with actionable safety guidance
- Supports maintenance of optimal ventilation and indoor hygiene standards

Monitored Parameters

- The device evaluates indoor air conditions and derives the following virtual risk indices:
 1. Virus Risk Index (VRI)
 2. Mould Risk Index (MRI)
- When the calculated risk indices exceed predefined threshold levels, alerts are generated on the mobile and web applications, along with recommended safety and corrective action tips, enabling timely intervention.
- The device synthesises data from multiple indoor air quality sensors (PM1, PM2.5, PM10, TVOC, and CO₂) to dynamically compute VRI and MRI. These indices represent a methodology that helps users understand how ambient air quality conditions can be optimised to minimise the risk of airborne virus transmission and mould formation.

Parameter	Range	Resolution	Minimum Detection	Sensing Type	Expected Sensor Life
Virus Risk Index (VRI)	Level 1 to Level 5	Virtual Parameter (Derived)			
Mould Risk Index (MRI)	Level 1 to Level 5	Virtual Parameter (Derived)			

Communication & Connectivity

Parameter	Specification
Wireless Interfaces	Wi-Fi 2.4 GHz, Bluetooth, GSM (2G / 3G / 4G / 5G)
Data Interval	5 to 60 minutes (Configurable)
Data Push Protocol	HTTPS
Data Pull Protocol	HTTPS
Firmware Update	Over-The-Air (OTA)

Data Security

Item	Details
Device & App Security	HTTPS
Network Encryption	TLS
Sensitive User Data	Encrypted

Cloud Platform & Applications

The device is integrated with the Cloud Platform, providing centralised monitoring, alerts, analytics, and reporting through web and mobile applications.

Feature	Availability
Web Application	Yes
Mobile Application	Android & iOS
Multi-Device Monitoring	Yes
Report Export	CSV Format

Monitoring & Alert Features

- Near real-time alerts on threshold breaches
- Safety and corrective action recommendations
- Online / Offline device status
- Historical data trends (hourly, daily, weekly, monthly)
- Centralised dashboard for multiple devices and locations
- Multi-language support: English, Hindi, Marathi
- Location display with map and navigation support

Electrical & Mechanical Specifications

Parameter	Specification
Power Supply	5 V DC, 2 A
Data Backup	Inbuilt memory up to 24 hours
Data Consumption	Approx. 500 MB per month
Operating Temperature	–20 °C to +55 °C
Operating Humidity	0 – 95 % RH
Dimensions	125 × 125 × 40 mm
Weight	0.5 kg
Enclosure Material	ABS Plastic

Calibration & Maintenance

Each device is factory calibrated using a span calibration method and verified before shipment. Annual recalibration is recommended to ensure optimal accuracy and performance.

Typical Applications

- Hospitals and healthcare facilities
- Offices and commercial buildings
- Schools and educational institutions
- Public and institutional indoor spaces

Disclaimer

Specifications, features, and availability are subject to change without prior notice. Basiox Controls reserves the right to modify or update product details.