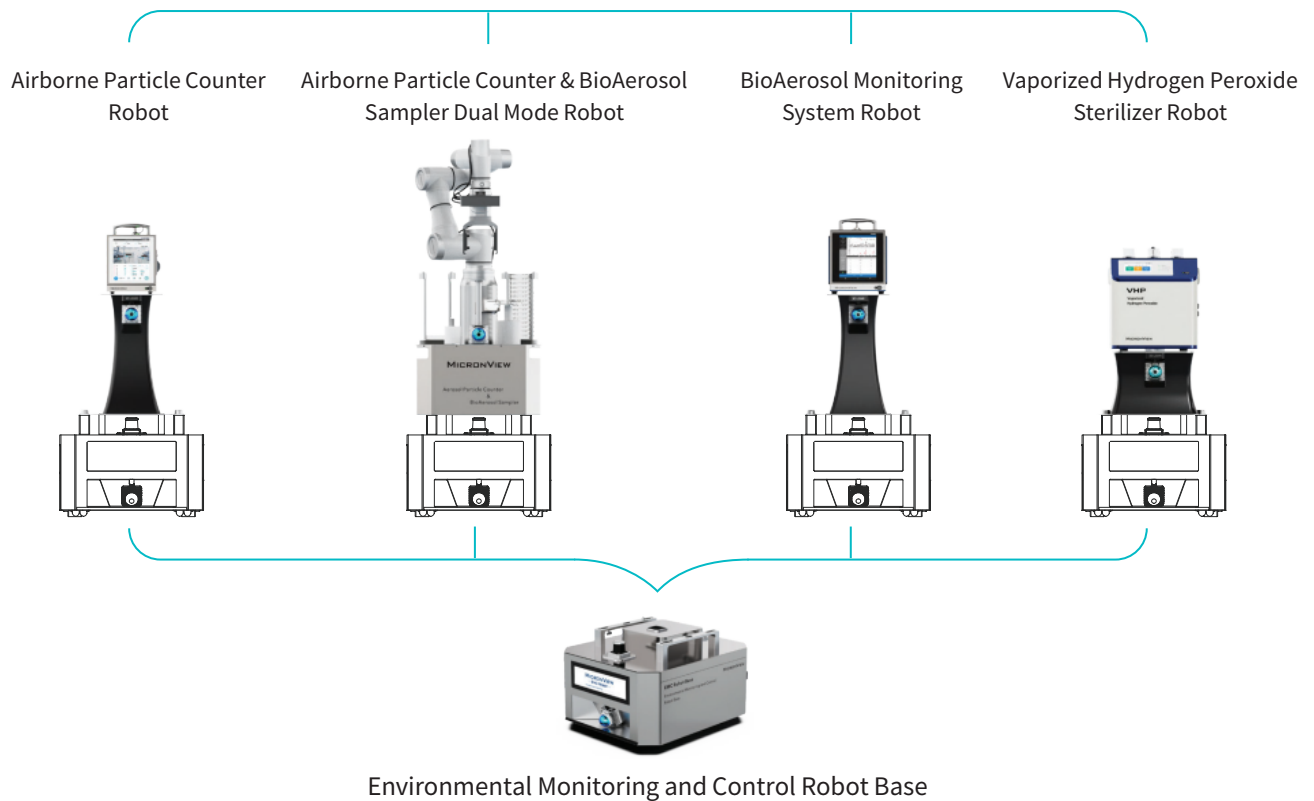




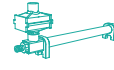
Environmental Monitoring and Control Robots

The EMC Robot series delivers cutting-edge solutions for intelligent cleanroom particle and airborne microbial detection, monitoring, and environmental disinfection, aligning with modern trends in unmanned robotics and multi-task collaboration. It addresses challenges in sterile production, such as complex sampling tasks and numerous locations, by utilizing robotic automatic sampling to maintain sterility and enhance efficiency. The embedded operating system ensures data integrity through compliance with international standards, incorporating robust controls for access, electronic signatures, and data management. This system significantly improves pharmaceutical production quality, optimizes personnel use, and supports digital transformation initiatives.



- The EMC Robot Base serves as the core, allowing different functional monitoring units to be easily swapped out, creating a fully functional robot with just one base.
- The minimalist design ensures adaptability, enabling functional unit changes within ten minutes.
- Features obstacle avoidance with SLAM algorithms and laser radar for precise navigation, including automatic sampling, disinfection, door operation, and elevator use.
- Supports remote control and data management, reducing manual operations and contamination risks in critical areas.
- Returns to home base for charging when the battery is low.

Note: SLAM (Simultaneous Localization and Mapping) allows for localization and map construction in unknown environments.



A Comprehensive Management System Creates an Optimal Monitoring

Real-time Monitoring

Real-time monitoring of execution status, data, and alert information

Zone Management

Used for establishing zone maps, sampling locations, charging station positions, etc.

Scheme Management

Used for creating, editing, and deleting sampling schemes

Task Planning

Used for creating, configuring, managing, and monitoring automated sampling tasks

Environmental Monitoring and Control Robot Management System

Data Statistical Analysis

Used for data viewing, statistical analysis, and exporting

Device Management

Registers and displays all EMC robot base and functional modules that have been connected to the system

Audit Trail

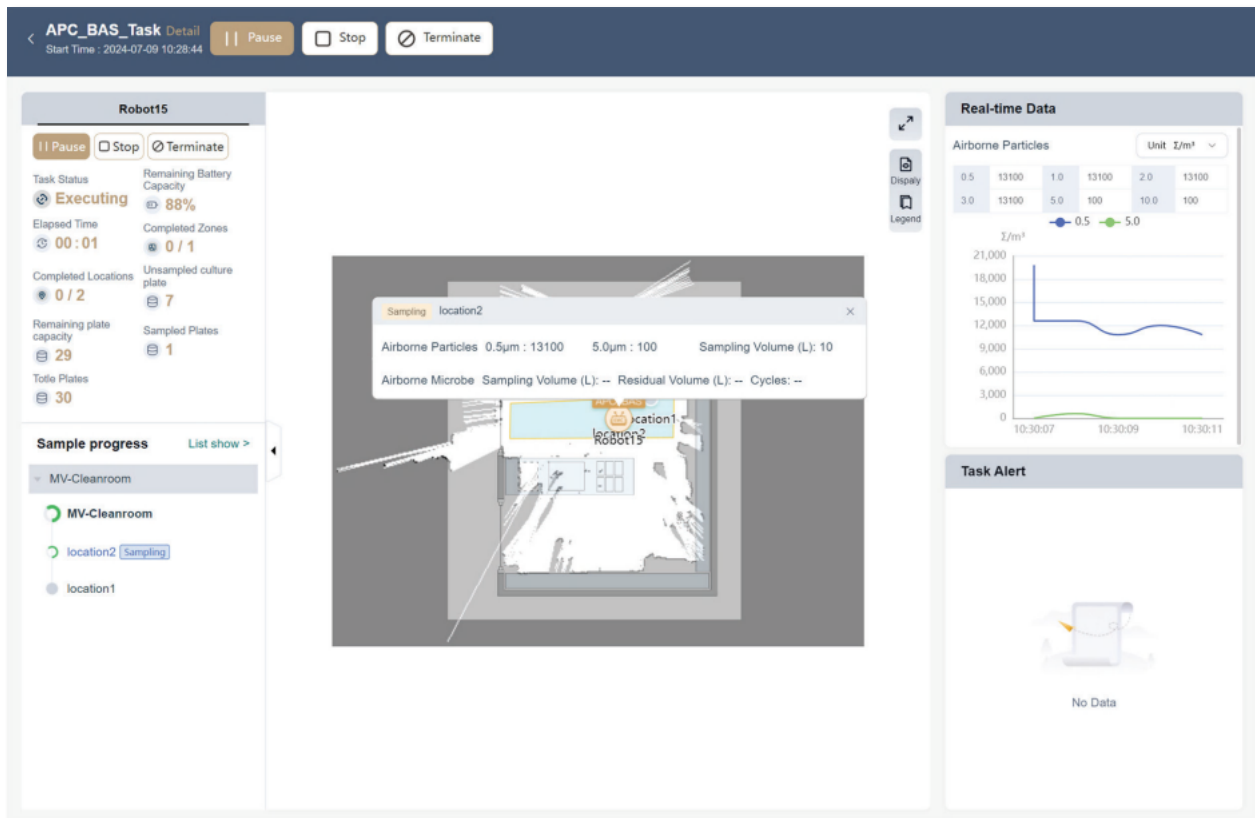
Record all operational logs of personnel to form an audit trail.

Setting

Include account and permission management, etc.

Real-time Monitoring Interface

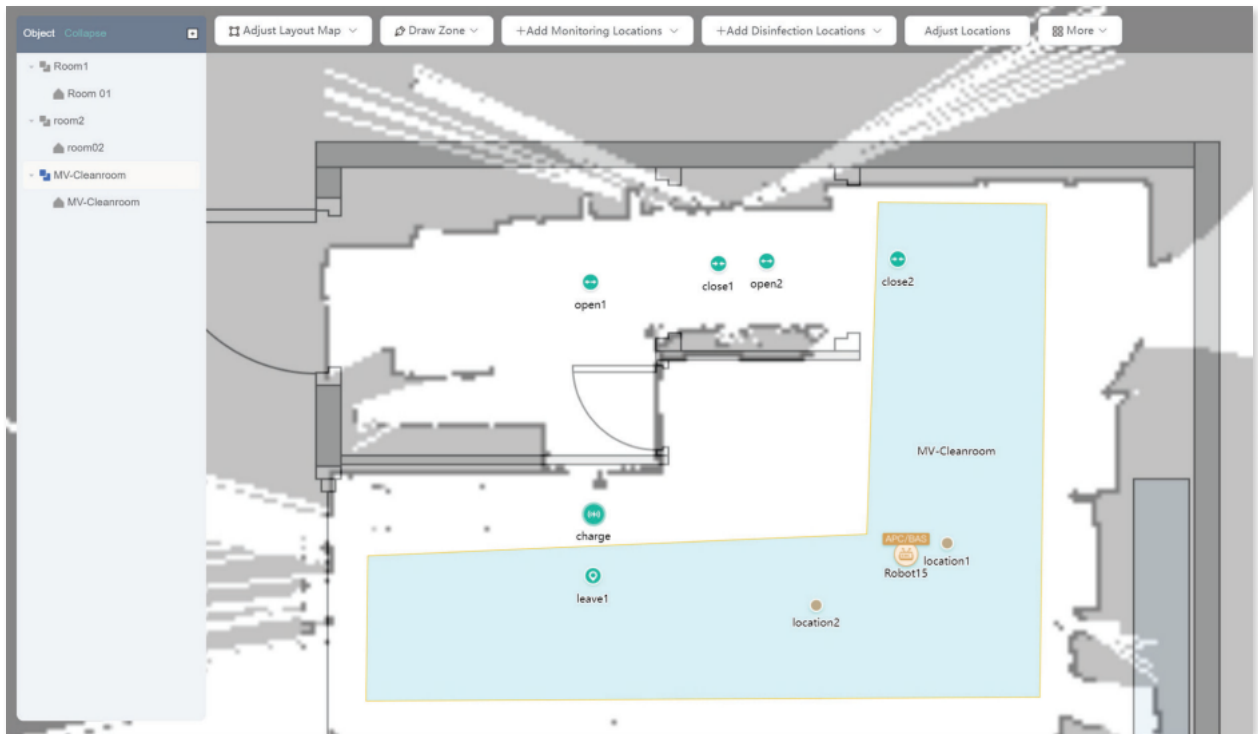
Used for the viewing of progress status, data, and alarm information in real time.





Zone Management Interface

Used for establishing zone maps, sampling locations, charging station positions, etc.



Scheme Management Interface

Used for creating, editing, and deleting sampling schemes.

Add Airborne Particles Plan

Scheme Name *

APC_Plan

Sampling Volume(L) *

100

Sampling Cycles *

3

Sampling Delay

0
h

0
min

5
s

Sampling Interval

0
h

0
min

5
s

☒ Set as default scheme

Task Management Interface

Used for creating, configuring, managing, and monitoring automated sampling tasks.

APC_BAS_Task

Delete Edit

Catalog Number	task-20240705-14	Monitoring Items	Airborne Particles/Air Sample	Task Type	Daily EM
Task Name	APC_BAS_Task	Task Execution Timing	During production	Personnel Quantity	0/Maximum Challenge Quantity
Flat dish specifications	5e9f4479-0ee4-c31-4d5f-7c456304c9d7mm	Perforated Lid Specification	280 holes \varnothing 0.6 mm	Task Frequency	Manual Start
Approver	sysadmin	Executor	sysadmin	Airborne Particles/Air Sample Executive Device	Robot15
Start Time	- - -	Working State	Pending	Dispatch Status	Successfully issued

Multitask conflict solution

Abandon this task directly

The order of location execution

The robot intelligently plans the shortest path ☒ Only to select the execution locations, the robot will automatically plan the execution order according to the shortest distance principle

Location unreachable solution

- Nearby sampling, distance 5 cm
☒ If the attempts number is set to be 0, no more sampling will be taken.
- If failed
 Wait 00:05:00, re-try sampling, re-try 0 times
☒ If the attempts number is set to be 0, go directly to the next point
- If failed
 Go to next location Current zone after sampling completed in, return to the location and try again 0 times interval - -
☒ If the attempts number is set to be 0, it is deemed that no re-harvesting attempt is made
- If failed
 Abandon the location

Data Statistical Analysis Interface

Used for data viewing, statistical analysis, and exporting.





Device Management Interface

Registers and displays all EMC robot base and functional modules that have been connected to the system.

Robot15 Detail

DeleteEditX

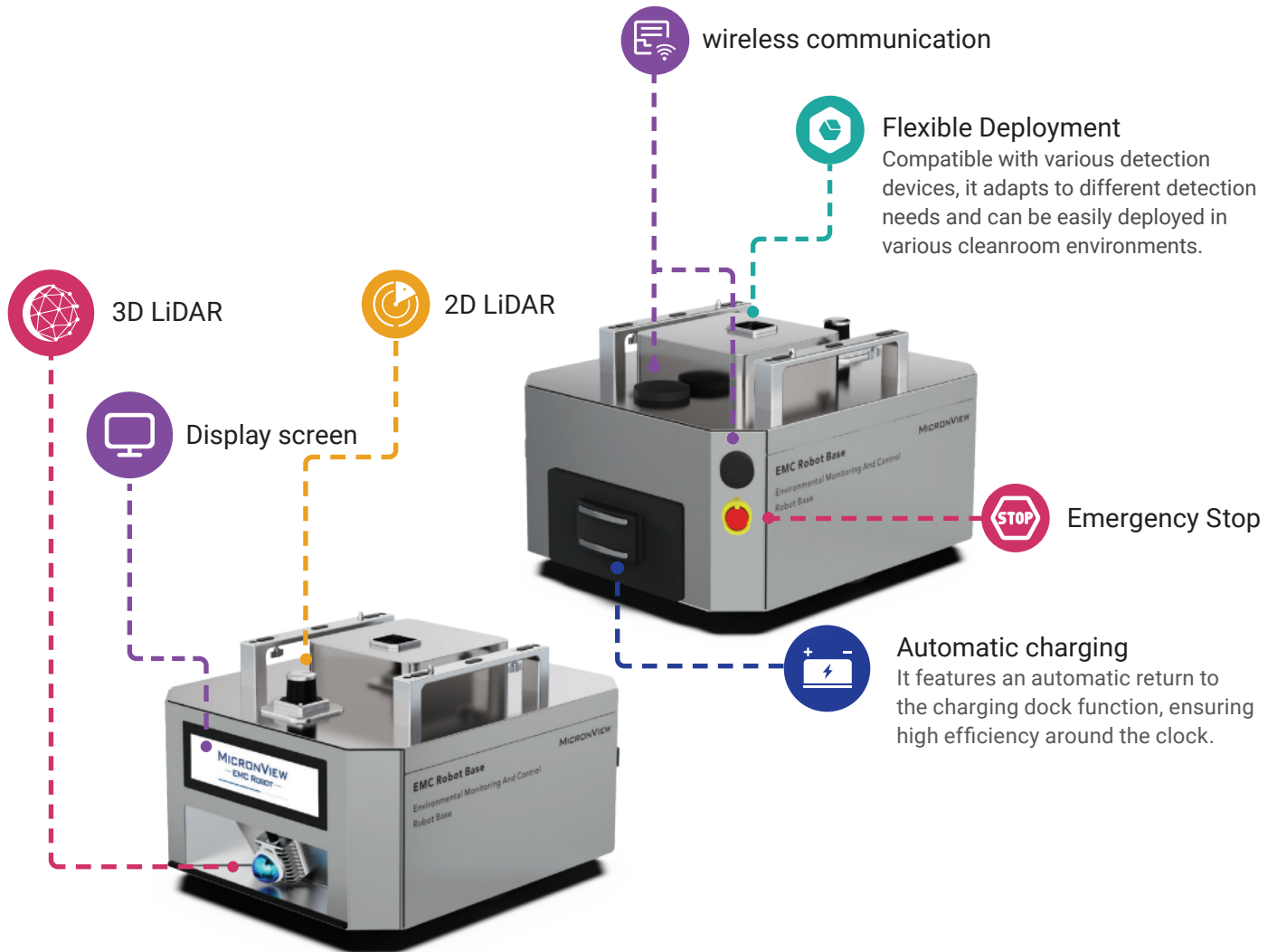
Robot Basic Information

Serial NO.	S1100015	Name	Robot15
Model	S1100	Working Status	● Standby
State	● Online	Remaining Battery Capacity	87 %
Equipped function Units	A2100001;C510B0000	IP	192.168.3.2
Manufacturers	MicronView	Release Date	---
Warranty Period	2024-07-09	Maintenance Status	● Maintenance expired
System Version	1.0.11		---

Function Unit

Serial NO.	A2100001	Name	8A2100001
Model	A210	Working Status	● Standby
State	● Online	Correlation Robot Base	S1100015
Manufacturers	micronview	Release Date	2022-02-15
Activation Date	---	Calibration Date	2022-10-25
Warranty Period	---	Maintenance Status	● Maintenance expired
System Version	3.0.2		---

Environmental Monitoring and Control Robot Base | EMC Robot Base



✓ Precision Positioning

SLAM technology achieves high-precision positioning with a navigation error of less than $\pm 5\text{mm}$, ensuring accurate detection every time.

✓ Data and Connectivity

Multiple Network Connections:

Supports IoT SIM cards, WAN connections, and an internal wireless network module, ensuring normal operation even without external networks.

Flexible Data Storage:

Supports both local and cloud storage, ensuring data security, with multiple report export formats available.

✓ Autonomous Navigation

Equipped with intelligent planning and obstacle avoidance functions, it operates independently without the need for external positioning devices.

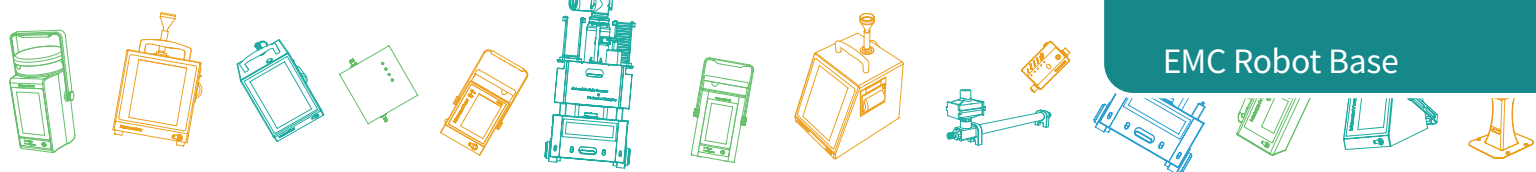
✓ Performance and Efficiency

Scheduled Tasks:

Supports scheduled task functionality, allowing preset detection times and routes, and automatically executing tasks according to the plan.

Long Battery Life:

With a single charge, it can operate continuously for up to 18 hours (the continuous working time varies depending on the modules installed).



Specification Sheet

Specification		Environmental Monitoring and Control Robot Base EMC Robot Base
Dimensions & Weight	Dimensions (H×W×D)	343×473×526 mm / 13.50×18.62×20.71 in
	Net Weight	40 kg (Incl. battery weight 14 kg)
	Maximum Load Capacity	40 kg
Material	Chassis	316L stainless steel
	Wheel	Polyurethane
Battery Performance	Battery Capacity	960 Wh (24V)
	Working Power	50 W (continuously working for about 18 hours on a full charge)
	Charging Time	5 h
	Battery Life	≥1,000 times
Cleaning		Sealed chassis, resists corrosivity of disinfectant wiping
Maximum Map Area		500 m x 500m
Ground Resolution		2 cm x 2 cm
Vehicle Performance	Cruising Speed	up to 0.7 m/s
	Passable Width	800 mm
Warranty		24 months (calculated from the date of product activation or six months after the date of manufacture, whichever comes first).

BioAerosol Monitoring System Robot | BAMS Robot

Capabilities & Features

- Evaluates particle size and biologic status simultaneously to measure both scattered and fluorescent light
- Flexible and adaptable robot platform accomplishes multiple tasks, making it well suited for a variety of user requirements



Product Introduction

The BAMS Robot features a portable BioAerosol Monitoring System and MicronView EMC robot control software, designed for easy configuration and operation. This software, accessible on tablets, smartphones, and PCs, connects wirelessly with the BAMS Robot, enabling task scheduling and work plan assignments for automated active air sampling in controlled environments.

Note: for details on BAMS, please see page 02.

Product Application

- ISO 21501-4 compliant
- Upcoming USP 1223 validation testing
- Continuous monitoring compatible with EU GMP Annex 1

Specification Sheet

Specification	BioAerosol Monitoring System Module
Flow Rate	2.83 LPM \pm 3%
Size Channels	0.5 μ m, 1.0 μ m, 2.0 μ m, 3.0 μ m, 5.0 μ m, 10.0 μ m
Power	AC 100-240 V, 50 Hz/60 Hz

Ordering Information

Name	Model	Order No.	Flow Rate
Environmental Monitoring and Control Robot Base EMC Robot Base	S110	MACHS110	N/A
BioAerosol Monitoring System Robot BAMS Robot	SM120	MACHSM120	2.83L/min \pm 3%