

BADD-20 (Bio-Aerosol Detection Device)

“Semi Real-Time Bioaerosol Monitoring Device”- next generation for indoor air safety



Key Features

- ✓ **Instant ATP Bioluminescence:** Utilizes advanced bioluminescence technology for real-time detection of Microbial ATP.
- ✓ **Zero Incubation:** Get immediate results with no need for traditional culturing
- ✓ **Smart Differentiation:** Proprietary algorithms detect Total Suspended Microbes (TSM)
- ✓ **Intuitive Reporting:** DATA is processed and displayed directly in CFU/m³ for clear, actionable insights
- ✓ **One-touch Automation:** Designed for simplicity – fully automated operation with a sing touch
- ✓ **Seamless Integration:** Native API support for effortless connection with existing building management and smart monitoring PLATFORMS

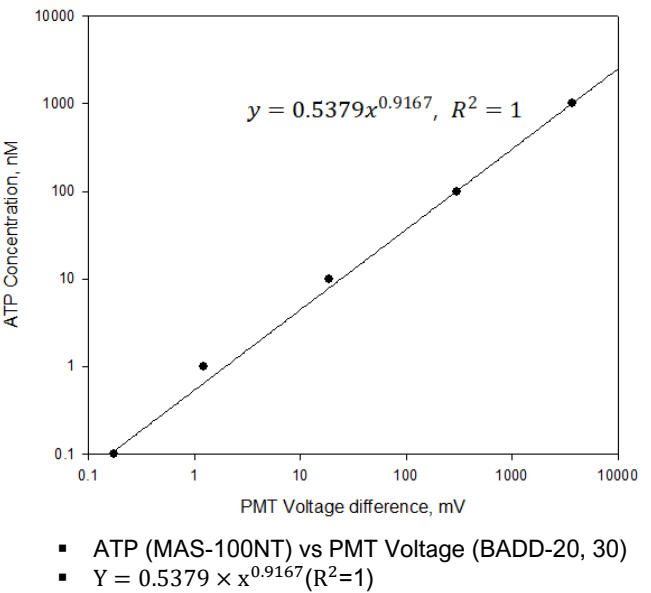
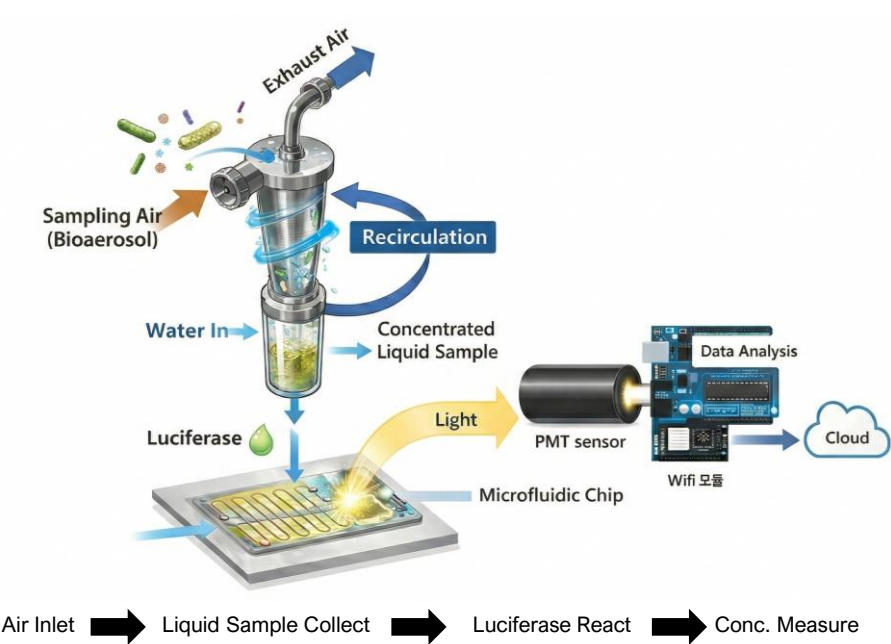
“Invisible Threats, Visible Data”

➤ Technical Specifications

BADD-20	
Flow Rate (L/min)	13 L/min
Sampling	Wet Cyclone (Capturing & Dissolving)
Concentration	≥ 50CFU (>10,000 CFU Max.)
Detecting Method	PMT sensor (Bioluminescence reaction)
Display	Mini-Computer with 10.5” Touch Screen
Size (mm)	310 x 430 x 325 (12.2 x 16.9 x 12.8 inch.)
Weight (kg)	14
Power	110 to 220 VAC (50 to 60 Hz)
Measuring Mode	Automatic
Communication	TCP/IP, Wire/Wireless LAN, USB2.0 x 2EA
Test Reagent	Luciferin-Luciferase, DI water

“Beyond Monitoring: Smart Air Control for Energy Efficiency and Bio-Safety”

➤ Principle / Empirical Formula



➤ Strategic Applications (“HACCP” Compliance)

1. Food Manufacturing & Processing

- **Fish-Cake & Frozen Food Lines (Cold Storage):** Mitigate the risk of food poisoning through continuous, real-time detection of microbial threats in the production environment
- **Bakery & Rice-Cake Facilities:** Extend the shelf-like and market circulation period of your products by maintaining optimal air purity during the cooling and packaging stages
- **Beverage Bottle Plants:** Ensure liquid product integrity by monitoring airborne contamination risks near filling and capping zones

2. Pharmaceuticals & Medical Manufacturing

- **Cleanroom & Sensitive Zones:** Maintain absolute control in vulnerable zones where medicine is exposed, satisfying the highest standards of pharmaceutical manufacturing (GMP)
- **Regulatory Compliance:** Generate precise environmental data logs to simplify audits and prove adherence to global bio-safety regulations

➤ Guideline

Country	KOREA	USA	JAPAN
In Charge	KFDA	FDA / USDA	MHLW
Regulatory	Voluntary (But Specific No. provided by HACCP)	Voluntary (Science-based)	Voluntary-base (HACCP compulsory)
Management Criteria	General Zone: ≤ 500 CFU/m' Clean Zone: ≤ 200 CFU/m' (Recommend)	N/A (Self-baseline 'Acceptable Level'- Self-set up)	N/A (Food Association Baseline; 'Clean/Dirty Zoning' same in Korea)
Management Method	Periodical Measuring/Recording Total Suspended Microbe	Environmental Monitoring upon FSMA	Periodical Measuring/Recording Total Suspended Microbe

BADD-30 (Bio-Aerosol Detection Device)

“Semi Real-Time Bioaerosol Monitoring Device”- next generation for indoor air safety

Key Features

- ✓ **Instant ATP Bioluminescence:** Utilizes advanced bioluminescence technology for real-time detection of Microbial ATP.
- ✓ **Zero Incubation:** Get immediate results with no need for traditional culturing
- ✓ **Smart Differentiation:** Proprietary algorithms distinguish between total bacterial and fungi concentrations
- ✓ **Intuitive Reporting:** DATA is processed and displayed directly in CFU/m³ for clear, actionable insights
- ✓ **One-touch Automation:** Designed for simplicity – fully automated operation with a sing touch
- ✓ **Seamless Integration:** Native API support for effortless connection with existing building management and smart monitoring PLATFORMS

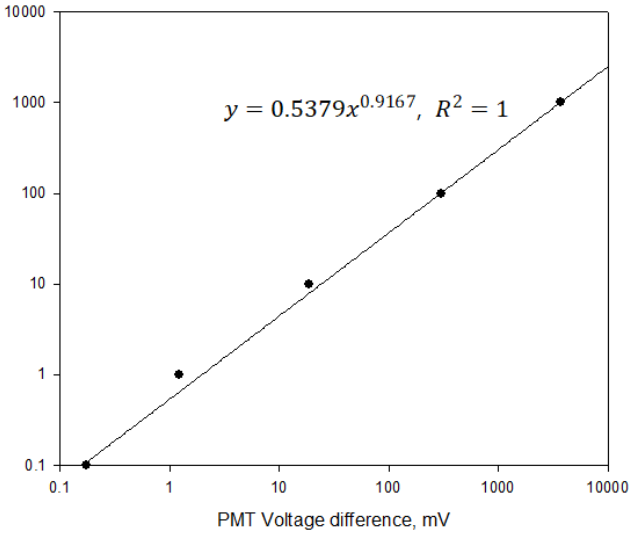
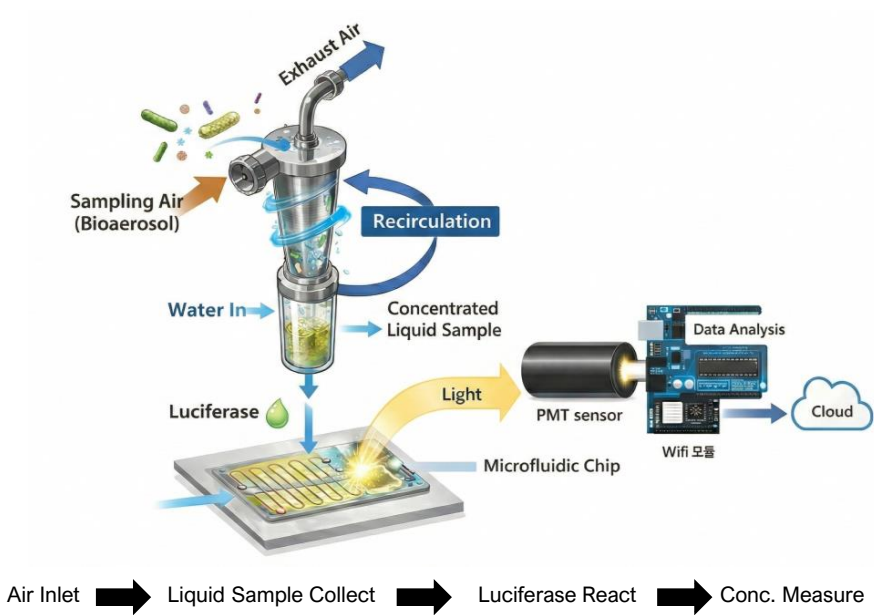
“Invisible Threats, Visible Data”

➤ Technical Specifications

BADD-30	
Flow Rate (L/min)	13 L/min
Sampling	Wet Cyclone (Capturing & Dissolving)
Concentration	≥ 50CFU (>10,000 CFU Max.)
Detecting Method	PMT sensor (Bioluminescence reaction)
Display	Mini-Computer with 10.5” Touch Screen
Size (mm)	310 x 430 x 325 (12.2 x 16.9 x 12.8 inch.)
Weight (kg)	17
Power	110 to 220 VAC (50 to 60 Hz)
Measuring Mode	Automatic
Communication	TCP/IP, Wire/Wireless LAN, USB2.0 x 2EA
Test Reagent	Lysis Buffer (Bacteria), Luciferin-Luciferase, DI water

“Beyond Monitoring: Smart Air Control for Energy Efficiency and Bio-Safety”

➤ Principle / Empirical Formula



- ATP (MAS-100NT) vs PMT Voltage (BADD-20, 30)
- $Y = 0.5379 \times x^{0.9167} (R^2=1)$

➤ Strategic Applications (Public Infrastructure)

1. Education & Senior Care (High-Sensitivity Zones)

- **Kindergartens & Schools:** Safeguard students by continuously monitoring air quality in classrooms, nurseries and dining halls – Sensitive areas prone to airborne transmission
- **Nursing Homes:** Protect the elderly and immunocompromised by identifying microbial risks early in common living and therapeutic areas

2. Public Transit & Infrastructure

- **Subway & Train Stations:** Strategic monitoring of high-traffic transit hubs to detect and prevent the spread of infectious particles in real-time
- **Infection Hot-spot Mitigation:** Identify high-risk transit bottlenecks and ensure ventilation systems are performing at optimal levels to neutralize airborne threats

3. Medical & Clinical Facilities

- **Hospitals & Clinics:** Real-time monitoring of Bacillus and other harmful germs in corridors, waiting rooms and patient areas (Provide quantitative data to support infection control protocols and reinforce patient trust)

4. Emerging Public Spaces

- **Pet Cafes & Animal Facilities:** Specialized monitoring for zoonotic (animal to human) infectious diseases, ensuring a clean and safe environment for both pets and visitors

➤ Guideline

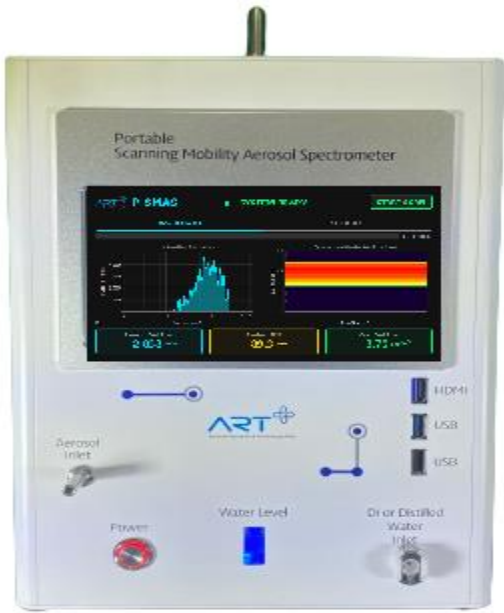
Country	Regulatory Guideline (Bacteria)		Organization
Korea	< 800 CFU/m³		Ministry of Environment
USA	< 1,000 CFU (Total)/m³		NIOSH
	< 1,000 CFU (Total)/m³		ACGIH
Hongkong	< 500 CFU (Total)/m³: Excellent < 1,000 CFU (Total)/m³: Good		Indoor Air Quality Management Group

Country	Bacteria (CFU/m³)	Fungi (CFU/m³)	Reference
Korea	800	500	Ministry of Environment
USA	500	1,000	American Conference of Governmental Industrial Hygienists
EU	500	500	European Agency for Safety and Health at Work
China	1,500	4,000	National Standard of the PR China
Hongkong	500	-	Indoor Air Quality Management Group

P-SMAS(Portable Scanning Mobility Aerosol Spectrometer)

*Lighter, Safer, Greener
Aerosol Measurement!*

- ✓ 3-in-1 System: W-CPC + DMA + Controller (for Indoor/Outdoor)
- ✓ Portable Light Weight: Only 5.4 kg, Easy to Carry
- ✓ Non-Radioactive Neutralization (Soft X-ray Ionizer)
- ✓ Ultra Fine Range: 9.31 ~ 295nm (> 64ch / decade)
- ✓ Safe: Soft X-ray (No Radioactive Isotopes)
- ✓ Eco-Friendly: WATER only (No Butanol)

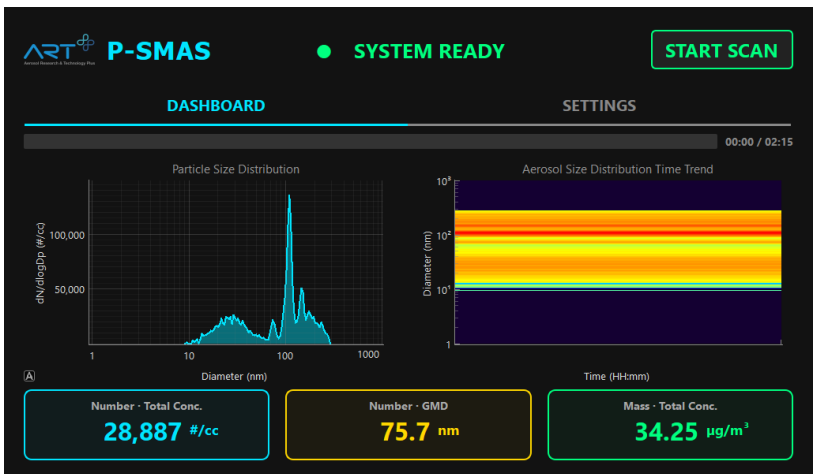
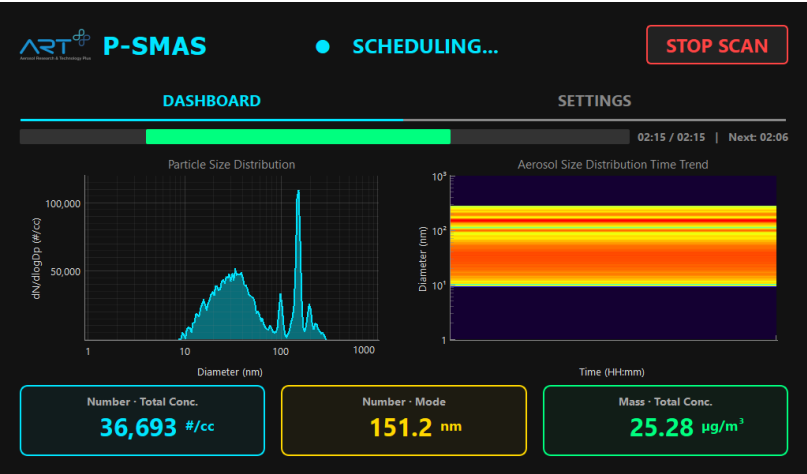


Real-time Monitoring of Nanoparticles in Cleanroom Process Air

➤ Features & Benefits

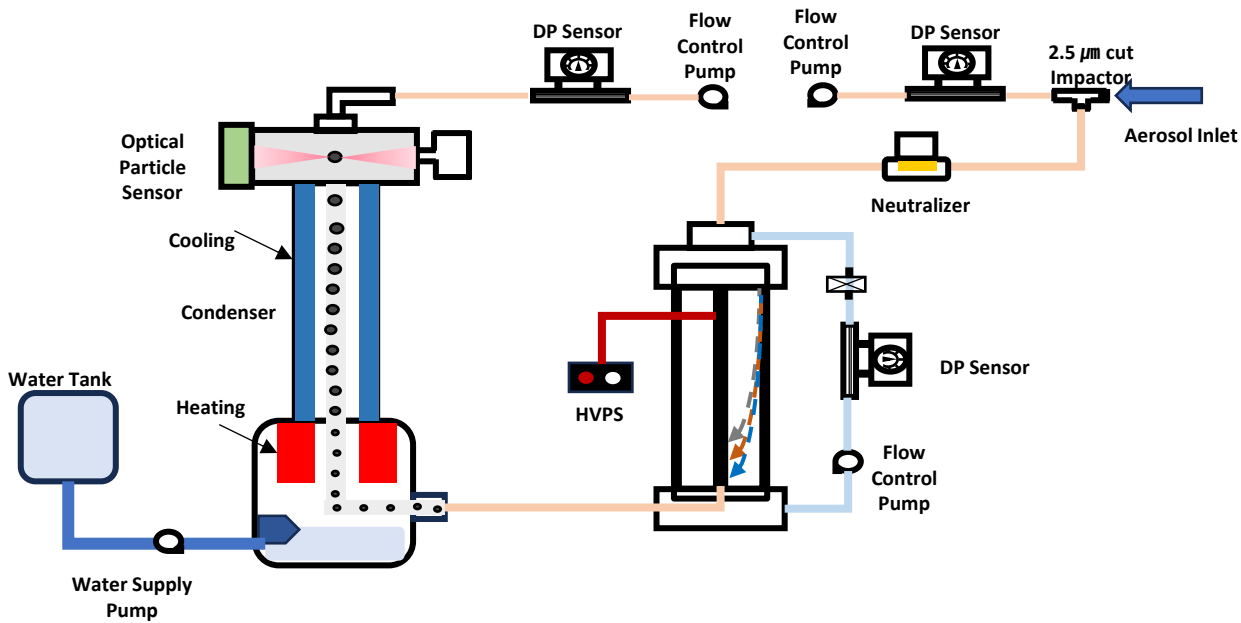
- Water-based Working Fluid: Eliminating Solvent Contamination Issues
- Flexible Process Monitoring & Real-time Integration: Mobile Tracking and Smart Connectivity
- Radioisotope-Free: Eliminating Administrative Burdens of Regulatory, Compliance and Maintenance Reporting
- Extended Service Life of Porous Media: Minimizing Replacement Cycles (When 20°C/RH40%)

▼ P-SMAS Programme Screen



P-SMAS(Portable Scanning Mobility Aerosol Spectrometer)

▽ Schematic Diagram (System Lay-out)



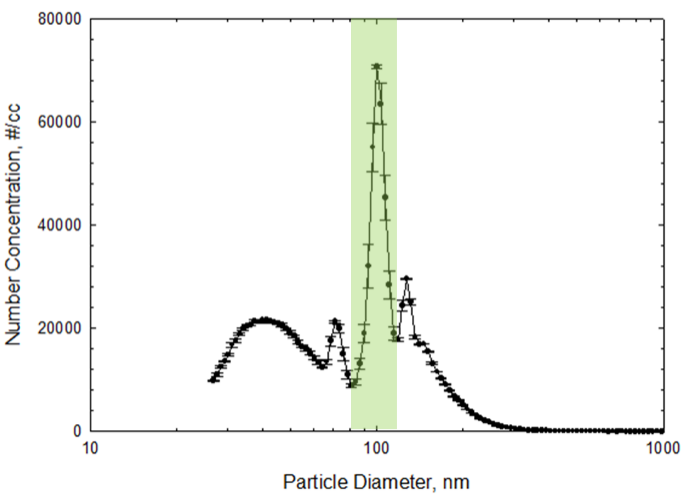
➤ Applications

- **Semiconductor Cleanrooms:** Effective Detection of 'CMP (Chemical Mechanical Planarization) Slurry'
- **High-functional Antibacterial Materials & Coating Pharmaceuticals:** 'Silver Nanoparticles (Ag)' and 'Titanium Dioxide (TiO₂)' Coating
- **Next-generation Pharmaceutical & Biotech Processes:** Drug Delivery Systems (DDS)
- **Secondary Battery & Energy Material Industries:** Conductive Additives for Cathode and Anode Coatings

➤ Specifications

- Flow Rate
 - Sampling Flow Rate: 1 lpm
 - Flow Rate: 0.12 lpm
- Particle Size Range: 10 nm ~ 300 nm
- Particle Concentration Range: 1~10⁷/cm³
- Working Fluid: Water (Deionized or Distilled)
- Measurement Time: > 150 sec (Adjustable)
- Size Resolution: > 64 ch/decade
- Stand-alone Touchscreen Control
- Neutralizer: soft X-ray
- WiFi, USB(2.0), USB(3.0), HDMI, LAN, micro-SD
- Size : 230 x 230 x 310mm (WDH)
- Weight : 5.4 kg
- Power : 14 – 19 VDC
- Windows™ Based UI
- GPS (Optional)

100nm PSL Size Distribution from P-SMAS



Thermo Scientific™ 3000 Series
Nanosphere™ Size Standards

Certified Mean Diameter : 100 nm ± 4 nm
Standard Deviation : 7.7 nm

Experimental DATA

Geometry Mean Diameter : 100.69 nm
Geometry Standard Deviation : 1.09