ART+

Aerosol Research & Technology Plus

Development & Performance Evaluation of Atmospheric Aerosol Measurement System

www.art-plus.co.kr

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Who we are

2016. 03
Established ART Plus Co., Ltd.

2016. 04
Korea-US (NASA) Air Quality Monitoring Project

2016. 05
Air filter test system (Wind tunnel) <LG Electronics>

2016. 08
Multi-function filter test system, <GBTP>

2016. 08
Hygienic Mask performance test system (AML-1652), <GBTP>

2016. 08
Selected Venture Company

2016. 11
Selected R&D institute

2016. 11
Alt-filter test system, <KIER>

2016. 12
Gas sensor tester, <Samsung Electronics>

2017. 01~
Performed Establishing Standard for Dust sensor tester in KACA

2017. 03
Operated Manufacture/Produce Factory

2017. 06
Contracted Signing of MOU with NM-AIST in Tanzania

2017. 07
Opened Branch office in 'Gwangju'

2017. 08
Dust sensor test system (ADT-1782 & 1785), <LG Electronics>

2017. 09
Dust sensor test system (ADT-1785), <Amphenol Sensing Korea>

2017. 10
Inspiratory resistance tester (ARE-1651), <KM>

2017. 12
Inspiratory resistance tester (ARE-1651), <Joeun>

2017. 12
Air filter parts/material evaluation system, <KCL>

2018. 01
Dust sensor test system (ADT-1782), <Coway>

2018. 01
Awarded 'Group Achievement Award' for completion of KORUS-AQ project by NASA

2018. 02
Dust sensor test system (ADT-1783), <KETI>

2018. 02
Hygienic Mask performance test system (AML-1652), <KCL>

2018. 03
Acquired ISO 9001 and ISO 14001 certification

What we offer

Application

01. Dust reduction & control evaluation technology

- Dust Sensor test system
- Air Filter test system
- Air Cleaner test system
- Mask Performance test system

02. Environmental Pollutants Producing System (i.e. "generators")

- Large Particle generator (KCl, NaCl, and etc.)
- Bacteria generator
- Gas generator for air cleaner deodorization test
- Smoke generator

03. Industrial Safety and Health

- Dust Sensor test system
- Mask Performance test system
- Bacteria generator
- Air Filter test system for industry, and automobiles

04. Performing government project and Consulting related to gaseous, and particulate matters

05. Global partnership and technical cooperation project (e.g. ODA [Official Development Assistant program]), and various R&D project

Product

01. Performance Evaluation System

- for Dust Sensor
- for Air Filter
- for Air Cleaner
- for Health Mask ('Yellow Sand' protection)

02. Generator

- for Large Particles (KCl, NaCl, and etc.)
- for Gaseous matters for air cleaner deodorization test
- for Smoke
- for Bacteria

• Certificate of Venture Company

• Certificate of R&D institute

• ISO 9001

• ISO 14001

Why work with us

01. Analyzing & Consulting by Experts

- We guide you in securing the reliability of measured data designed products and systems through aerosol engineering expertise.

02. User-customized Services

- We design the optimum model suitable for your environment and provide you with specialized and customized system.

03. Compliance with (inter)national standards

- Designed system conforms to the national/international standards such as ANSI/AHAM, ASHRAE, ISO, JEM, NRC, KACA, GB etc.

Dust Sensor Test System

Dust Sensor Test System

(Model. ADT-1782)

<ADT-1782> is an evaluation system in which a reference material and dust sensor are placed in a certain volume of space, and a test material or test particle having a predetermined size distribution is injected, a device that evaluates the performance of the sensor's sensing capability. The test chamber was designed to maintain uniformity of less than 10 % of the reference particle concentration for up to 10 minutes, based on the test cross-section on which the dust sensor is placed. In addition, the user's convenience is improved by automatically controlling the desired PM concentration in a single or stepwise manner, and applying an automatic control system to evaluate the performance of the dust sensor for each PM concentration. The test particles can be KCl (potassium chloride), NaCl, "Arizona Dust", JIS Dust, tobacco particles, etc., and provide a generator module for each generator to select and use various kinds of test particles according to user's requirement.

(Model. ADT-1782)

System features

- Maintain the deviation of average particle concentration within ± 10 % (PM1.0, PM2.5) at the 5 points in the center of each area and the center of all sections by dividing the test section into 4 equal parts.
- Application of Large Particle Generator with KCl designed for performance evaluation of dust sensor
- Particle concentration (single, step [multiple concentrations]) automatic-control system
- System scalability to test with various test materials
- Remote control through system exclusive control and connection with external PC
- Optimized for development of dust sensor and performance study
- **"Customized"** system can be provided with mass production equipment for fine dust sensor products

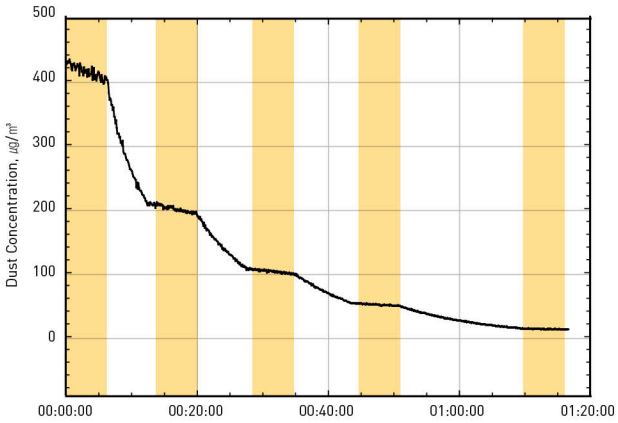
SPECIFICATION

•ADT-1782

Test Chamber Size (W, L, H)	1100 x 1100 x 2100 mm
Test Chamber Weight	200 kg
Particle Uniformity	< 10 %
Control Method	Including Control PC, Control HW / SW
Power	220 VAC, 50~60 Hz
Power Consumption	1 kW
Chamber Materials	STS 304 (Top and Bottom), Anti static Materials
Generators	Options (KCl Generator, Smoke Particle Generator, and etc)
Accessories	Options(Particle neutralizer etc.)

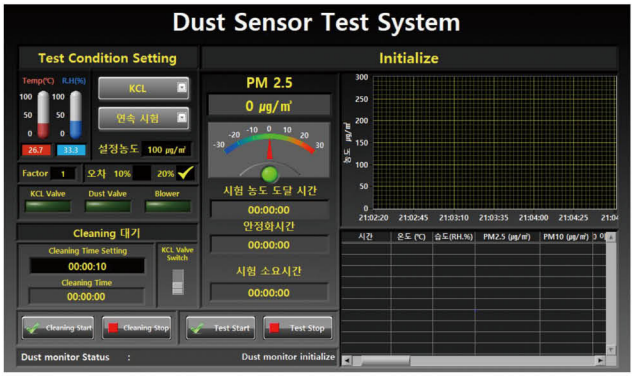
※ The generator stand can be changed according to the specifications of the generator required by the customer.
※ Accessory may be added according to customer requirements and not included in this system configuration.

• ADT-1782
Concentration control and maintain



※ : maintain and testing section for measured particle

• ADT-1782 Software Program

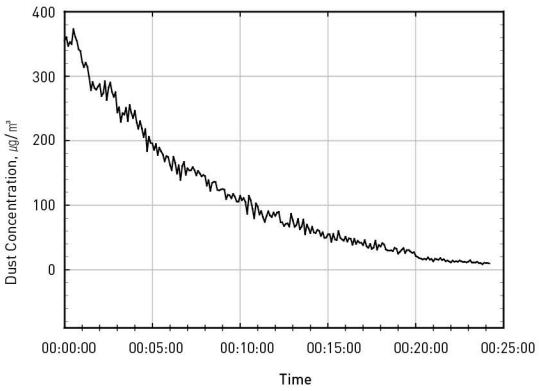


Dust Sensor Test System for Calibration

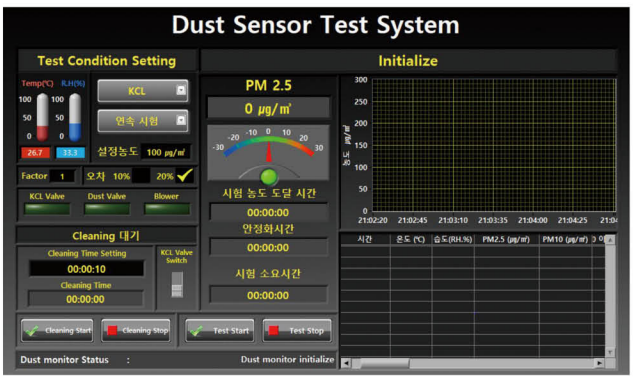
(Model. ADT-1783)

<ADT-1783> is a test system in which a "wind tunnel system" in which air velocity is kept at a low speed (0.1 ± 0.05 m/s). It is a system that evaluates whether the measurement performance of the dust densor meets the predetermined criteria by statistically processing the measured values of the reference instrument and the dust sensor while exponentially decreasing the concentration from the high to the low concentration.
The core technology of the system is the uniformity of the particle concentration in the test space and the uniformity of the air flow rate.
The deviation of the average particle concentration in the test section is less than 15 %, and it is possible to maintain the uniformity of the concentration and the flow rate by controlling the amount of generated particles and supplying amount, securing stability of air flow velocity, and uniformly controlling diffusion of particles.
It is necessary to minimize the influence of environmental factors of temperature and humidity which affect the performance of the fine dust sensor. Therefore, the fine dust performance evaluation system is designed to maintain the constant temperature and humidity environment.
In addition, a series of procedures such as particle concentration control, air flow stabilization, test progress, test result storage and test room temperature and humidity control are automatically controlled and processed through the control system and software.

• ADT-1783 Particle concentration control data

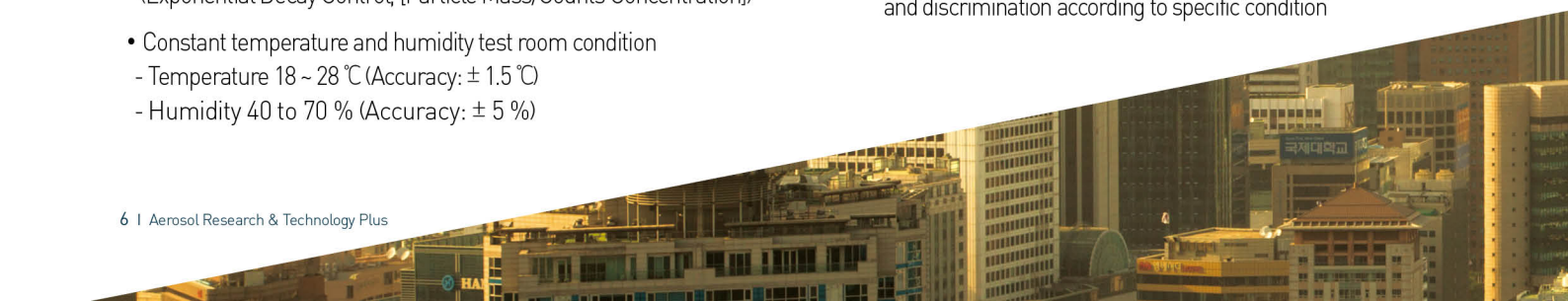


• ADT-1783 Software Program



System features

- Particle concentration uniformity: Average less than 15 % (PM 1.0 & PM 2.5)
- Particle concentration automatic control system (Exponential Decay Control, [Particle Mass/Counts Concentration])
- Constant temperature and humidity test room condition
  - Temperature 18 ~ 28 ℃ (Accuracy: ± 1.5 ℃)
  - Humidity 40 to 70 % (Accuracy: ± 5 %)
- Single control type through Built-in control PC, and remote control type through external PC connection
- Optimization of performance evaluation of dust sensor, and discrimination according to specific condition



SPECIFICATION

•Test Chamber

Size	700 x 700 x 2700 (WDH, mm)
Weight	Approx. 100 kg
Volume	0.1 ㎥
Airflow in the Chamber	Max. 0.1 ± 0.05 m/s
Particle Uniformity	15 %
Air Supply & Exhaust	HEPA Filter Unit
Material of Chamber	AL. & STS. & Anti Static Materials

•Constant Temperature & Humidity Room Chamber

Room Chamber Size	5500 x 3300 x 2500 (WDH, mm)
Test Room Size	3000 x 3000 x 2500 (WDH, mm)
Temperature	18 ℃ ~ 28 ℃ ± 1.5 ℃
Humidity	40 % ~70 % (@18 ℃ ~ 28 ℃) ± 5%
Air supply & Exhaust	HEPA Filter
Power Source	3 Phase, 380 VAC 60 Hz 24 Kw/h (Safety Factor 30 %)

•KCl Generator & Mixing Chamber

- Refer to **18~19page** Model ' AKG-1791'

•Control System

- Computer Hardware & Control Board etc.
- System control software
- User-customized interface

•Standard Measurement Instruments

- User Optional

•Accessories

- Accessories & Miscellaneous materials etc.

• Model. ADT-1783

Dust Sensor Test System for Vehicle Components

(Model. ADT-1785)

<ADT-1785> is a system that evaluates the reliability of a sensor that detects PM pollution inside a vehicle. Unlike ordinary indoor sensors, the dust sensor for automotive parts is evaluated for reliability by matching "temp." and "humid." conditions to the same as the extreme usage environment of automobiles exposed to the outside. Reliability must be measured under much higher "temp." and "humid." conditions rather than ordinary condition.

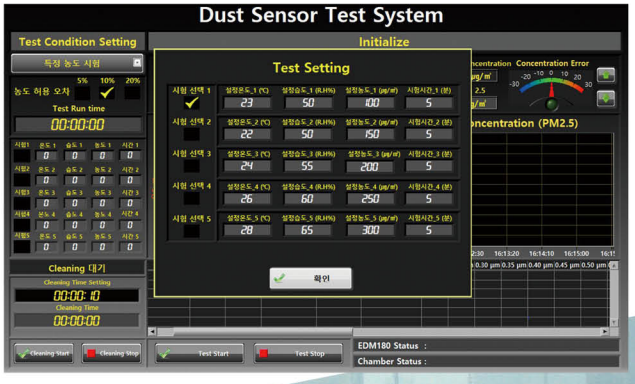
The test particles can be KCl (potassium chloride), NaCl, "Arizona Dust", JIS Dust, tobacco particles, etc., and provide a generator module for each generator to select and use various kinds of test particles according to user's requirement.

(Model. ADT-1785)

System features

- Particle concentration uniformity: less than 15 % on average
- Single particle concentration automatic-control by stages system
- Can be tested under Temp. -40 to 85 °C, and Humid. 15 % to 85 % (25 °C standard)
- Sequence test progress automatically through user input (user's selection)
- Single control type through Built-in control PC, and remote control type through external PC connection
- Optimization of performance evaluation of dust sensor, and discrimination according to specific condition

• ADT-1785 Software Program



SPECIFICATION

• Test Chamber

Temperature	-40 ℃ ~ 85 ℃ ± 1.5 ℃
Humidity	15 % ~ 85 % (@ 25 ℃) ± 1.5 %
Size	600 x 600 x 600 (WDH, mm)
Weight	Approx. 500 ㎏
Particle Uniformity	15 %
Electrical Power source	3 Phase 380 VAC, 3Wire + G 28 Kw/h
Test aerosol materials	Dust, Smoke , NaCl, KCl, Soot etc.
Particle concentration control	0 ~ 1,000 ㎍

•Control System
- Computer Hardware & Control Board etc.
- System control software
- User-customized interface

•Accessories
- Accessories & Miscellaneous materials etc.

• KCl Generator
- Refer to **18~19page** Model 'AKG-1791'

•Measurement Instruments (Standard Instruments) ;User Optional

* The generator stand can be changed according to the specifications of the generator required by the customer.

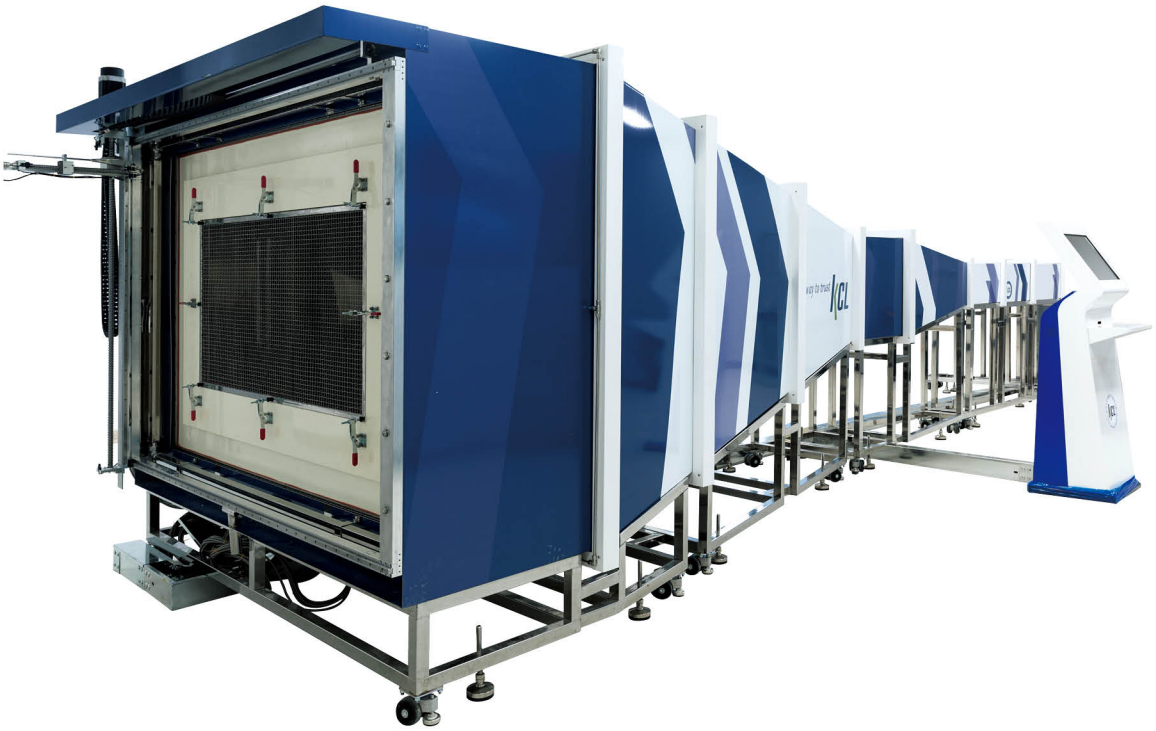
** Accessory may be added according to customer requirements and not included in this system configuration.

Air Filter Performance Evaluation System

Air filter performance evaluation system using "wind tunnel" consists of generator, neutralizer, instrument, particle feeder, control board and program. In this system, the test method, generator and instrument are different according to the type of filter, and the statistical value depends on the measured value. Therefore, it is very important to be designed and manufactured according to regulations. Test materials include KCl, NaCl, DOP and Paraffin Oil. Test items include PSE (Particle Size, Efficiency), Pressure Loss, MERV (Minimum Efficiency Reporting Value), MPPS (Most Penetrating Particle Size).
The system is categorized according to the kind of filters and regulations to be evaluated and when the customer requirements, the exterior packaging design is customized by the customer.

Features & Advantages

- Easy replacement of filter test bank
- Modular system
- High scalability & Versatile
- Automatic test procedures in accordance with your ordered standards
- Considered user identity, Supply Customized Design



U-type filter tester

(Model. MF-1712W)

• Specification

Features	Specification
Air flow rate	0.5 ~ 4.0 m/s
Type	U type or In line
Length	U type : ≥ 5.8 meter In line : ≥ 9.99 meter
Material	Stainless steel 304 or 316
Internal sectional dimension	610 X 610 ㎜
Air velocity uniformity	CV < 10 %
Particle uniformity	CV < 15 %
100% efficiency	> 99 %
Observation window	Anti static acrylic, LED lighting inside
Standards	ISO 16890 (ASHRAE52.2, EN779)
Correlation ratio	0.3 ~ 1.0 ㎛ : 0.9 ~ 1.0 1.0 ~ 3.0 ㎛ : 0.8 ~ 1.2 3.0 ~ 1 0 ㎛ : 0.7 ~ 1.3 (at number concentration > 100 ptls/min)

Straight line filter tester

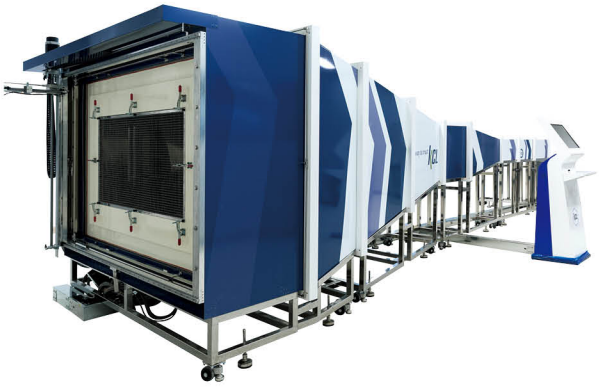
(Model. HF-1710W)

• Specification

Features	Specification
Air flow rate	0.5 ~ 3.0 m/s
Type	In line
Length	In line ≥ 7meter
Material	Stainless steel 304 or 316
Internal sectional dimension	610 X 610 ㎜
Air velocity uniformity	CV < 10%
Particle uniformity	CV < 15%
100% efficiency	> 99 %
Observation window	Anti static acrylic, LED lighting inside
Correlation ratio	0.3 ~ 1.0 ㎛ : 0.9 ~ 1.0 1.0 ~ 3.0 ㎛ : 0.8 ~ 1.2 3.0 ~ 10 ㎛ : 0.7 ~ 1.3 (at number concentration > 100 ptls/min)

HEPA filter scanning tester

(Model. HF-1711W)



• Specification

Features	Specification
Air flow rate	0.485 m/s (face velocity) , accuracy 5 %
Velocity uniformity	CV < 10 %
Particle uniformity	CV < 15 %
Sampling probe	Width of inspection opening : 18 X 50 mm Moving speed 1.0 ~ 30.0 mm/s Accuracy : 1 mm Flow : 28.3 L/min Operation : X,Y,Z 3-axis movement
Dimension	10 X 5 X 3 meter
Standard	EN1822-4

Air filter tester for Pressure Loss

(Model. PF-1714W)

• Specification

Features	Specification
Air flow rate	0.5 ~ 3.0 m/s
Type	In line
Dimension	> 7 meter, 610 x 610 mm
Material	STS 304 or 316
Velocity Uniformity	CV < 10%
Particle Uniformity	CV < 15%
Pressure range	0 ~ 1,000 Pa
Observation window	Anti static acrylic, LED lighting inside

Bacterial air filter tester

(Model. BF-1713W)

• Specification

Features	Specification
Air flow rate	0.5 ~ 2.0 m/s
Type	In line
Length	In line ≥ 5 meter
Material	Stainless steel 304 or 316
Velocity Uniformity	CV < 10 %
Particle Uniformity	CV < 15 %
Observation window	Anti static acrylic, LED lighting inside
Internal sectional area	610 X 610 ㎜
bacteriostatic device	UV-Lamp
Test Materials	Staphylococcus aureus
Standard	ASTM 1471-09

Automotive cabin air filter tester

(Model. CF-1815W)

• Specification

Features	Specification	
Air flow rate	0.23 ~ 1.05 m/s	
Velocity uniformity	CV < 10 %	
Particle uniformity	CV < 15 %	
Type	Vertical	
Dimension	Duct length	upstream vertical duct > 2800 mm
	Chamber (LWH)	600 x 300 x 925 mm
Material	Grounded Stainless steel 304 or 316	
Velocity Uniformity	CV < 10 %	
Particle Uniformity	CV < 15 %	
Air	After HEPA filtration, maintain air cleanliness	
HEPA filter	> 99.97 %	
Sampling probe	Isokinetic sampling (< 20 %)	
Standard	KS R ISO 11155-1	

Multi-purpose filter evaluation system

(Model. MPF-1616W)

(Model. MPF-1616W)

• MPF-1616W Software Program

※ If needed, it is also possible to measure biological contaminants as well as aerosol, gas etc.

Mask Performance Test System

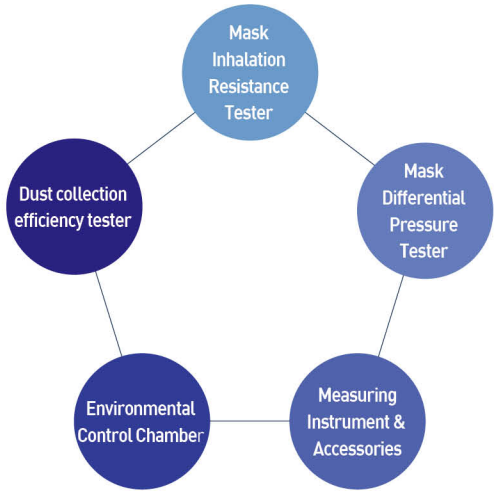
Mask Performance Test System

(Model. AML-1652)

• **Features** Meets the Guidelines for "Health Mask" standard of MFDS. In addition to equipment for measuring performance of mask, architectural and electrical elements are required.

• **Specification**

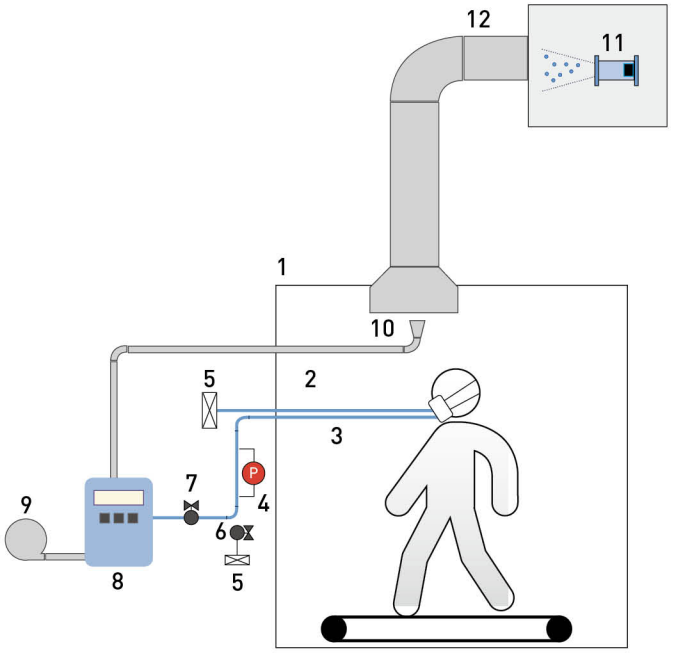
Aerosol Measurement Device	Laser photometer
Aerosol Generator	Aerosol Concentration : 8 ± 4 mg/m³ Particle Size Range : 0.02 ~ 2 μm Mass Median Diameter : 0.6 μm (measured by SMPS)
Test Room	Temp. & RH. Range : 38 ± 2.5 ℃, 85 ± 5 % RH Air supply & Exhaust : HEPA Filter Unit
Power	Single-phase 220 V 60 Hz + G
Inhalation / Exhalation time count & Hardware control	



(Model. AML-1652 Mask Performance Test System)

• AML-1652 Software Program

No.	Details
1	Testing Chamber
2	Clean Air Supply Tube
3	Mask inside Concentration Sampling (Connected to Downstream)
4	Differential Pressure Sensor: Measuring Breathing Pattern
5	HEPA Filter
6	Solenoid Valve for Inhalation
7	Solenoid Valve for Exhalation
8	Measurement (Photometer)
9	Sampling Pump for Photometer
10	Chamber Concentration Sampling (Connected to Upstream)
11	NaCl Generator
12	Controlled Air Supply Duct



(Apparatus for Mask Performance Test System)

Mask Inhalation Resistance Tester

(Model. ARE-1651)

(Model. ARE-1651)

Item	Features
Head "dummy"	Guidelines for the reference standard of "Health Mask"
Inspiratory resistance range	~ 120 Pa
Flow	30 L /min
Time	6 0 sec. / 1 no.
Result saving	Raw data (1 no. / 1 sec.) and aver.
Operating temp	0 ~ 40 ℃
Op. humid	40~70 % RH
Main function	KF80, 94, 99 Mask (facial) inspiratory resistance test
Display type	12.1" TFT XGA LED Panel (touch screen)
Op. software	Windows 7
Saving capacity	System memory (~ 4GB) DDR3 1066 SDRAM
Corresp. Port	USB x 2 , Ethernet x 1
Power	220 VAC, 6 A
Size (mm)	340 x 540 x 700 (incl. "dummy")
Weight (kg)	Approx. 35 kg

Mask Inhalation resistance tester (Model ARE-1651) is designed to meet the "Guidelines for the Standard of Health Mask" by KOREA Ministry of Food and Drug Safety tested and certified by "Gyeongbuk Techno Park", which was approved by "KOREA Ministry of Food and Drug Safety" (MFDS) as the only certification institute in Korea.

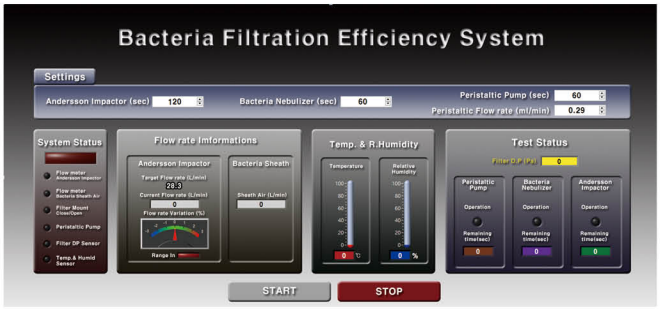
Model ARE-1651 is easy to use as less user's charges, and does not require a separate device for data measurement as built-in computer. As it is a "Touch Screen" type, can measure data and only press "Start" button, If you select the desired test conditions (KF 80, KF 94, KF 99) and input the information of the mask and save it. The measured data can be converted and processed using the built-in "Excel" program, and can be stored and transmitted to peripheral devices using USB port or Ethernet port.

• ARE-1651 Software Program

Bacterial Filtration Efficiency Evaluation System

(Model. BFET-1853)

Air Filter Bacterial Efficiency Assessment System is an evaluation system designed to protect air filter media from biological aerosols, such as respirator masks (general facial masks), medical masks, surgical caps and surgical gowns.
This test is carried out using a liquid suspension of "Staphylococcus aureus", passing the filter media through a continuous flow rate, and calculating the total bacterial count before and after passage to calculate the eradication rate.



(Compliance with ASTM F 2101-07, ASTM F2100, EN14683)

Meets ASTM F 2101-07 Bacterial Filtration Efficiency (BFE) & Military Specification 36954C Viral Filtration Efficiency (VFE)

Used by certified institute from MFDS

Control the spraying of living bacteria aerosol

Continuously generate constant flow rate to ensure reproducibility

Ensure reproducibility by ensuring constant flow rate and ability to produce bacteria of constant size

• Specification

Sampler	Six-stage cascade impactor (Anderson)
	Flow rate: 28.3 L/min
Bacteria Generation	Size: 3.0 ± 0.3 μm
	Concentration: 2200 ± 500 CFU
	Chamber dimension: 80 Ø x 600 mm (cylindrical)
Bacteria feed rate	0.5 μl/min ~ 30 μl/min (It depends on the specification of Peristaltic pump head)

Generator

Smoke Generator

(Model. FSQ-003)

• Specification

Flow rate range	1~5 L/min
Smoke Generation time per a cycle	40~50 s
Power	220 V / 50 Hz
Max output	100 W
Weight	7 kg
Dimension (LWH)	360 x 270 x 400 mm

Gas Generator for Air Cleaner Deodorization Test

(Model. GGA-1895)

• Specification

Gas type	Acetic acid, Acetaldehyde, Ammonia, Formaldehyde, Toluene
Max. Gas Concentration	100 ppm @ 30 m^3 test chamber

Time for Max. Concentration	< 30 min
Max. flow rate	20 L/min
Temp. control range	10~50 ℃
Generating type	Bubbler type

- Automated control system by touch panel computer
- Exhaust system
- Clean Air Generator

Large Particle Generator

(Model. AKG-1791)

The KCl generator (Model AKG-1791) is a device that generates micro-sized large particles (~ 15 μm), and it conforms to "filter" performance evaluation and "room air cleaner" performance evaluation test. Inclusive "aqueous solution" of KCl particles, NaCl, sucrose and other substances can be used as the test material. It is high scalability as its ease to construct various test conditions according to the user's environment with **"small-size and light-weigh large particle generator".**
Especially, it is used together with generator stand (optional) to minimize the burden of using generator column with high height and bulk due to characteristics of particle generation.

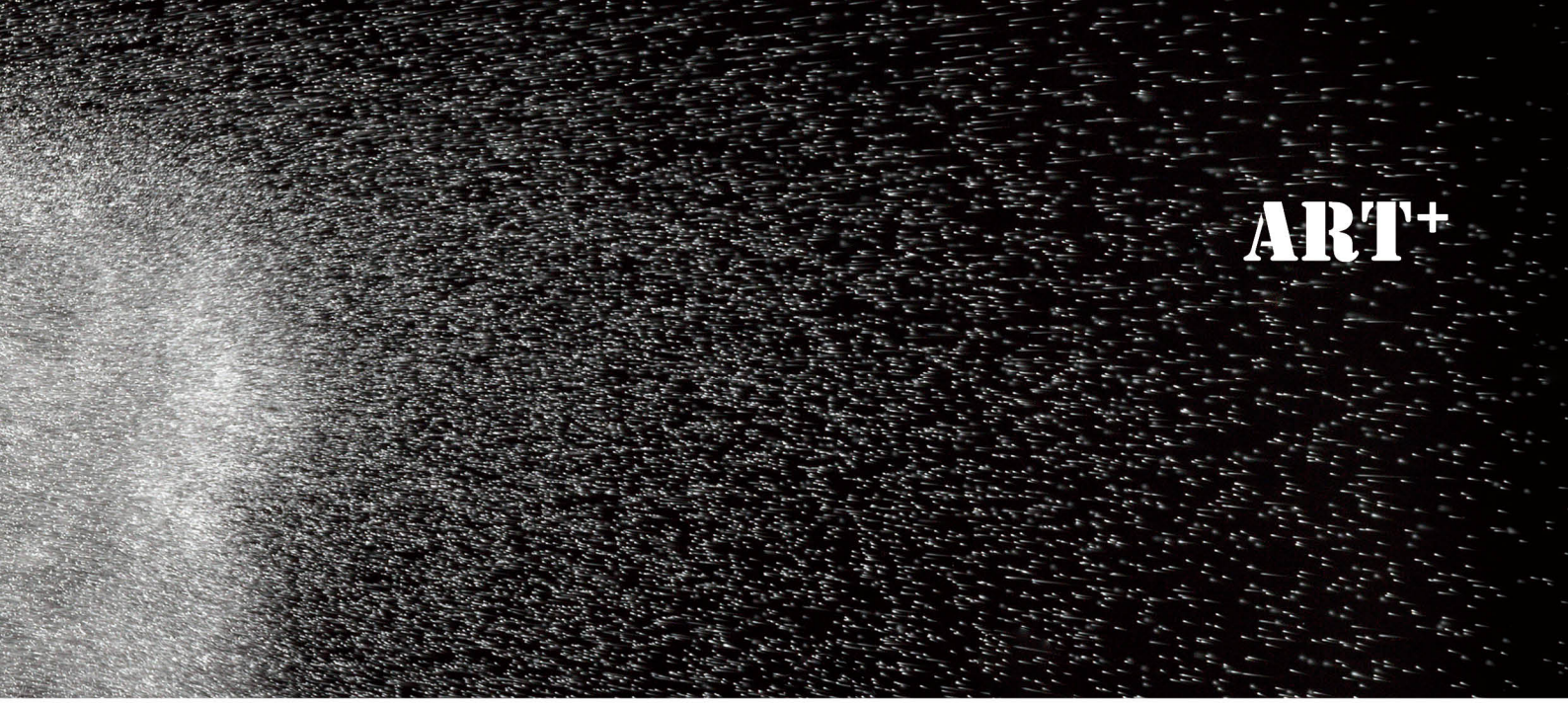
- Possible to generate various particles in the form of "aqueous solution" such as KCl, NaCl
- Applicable to KACA standard, test requirements of indoor air cleaner performance evaluation (SPS-KACA002-132)
- Meets the 'test requirements' of the ISO / TS 11155-1 cabin filter regulations
- Meets 'test requirements' of ISO 16890 (ASHRAE 52.2, EN 779), which is a medium performance ventilation filter regulation.

(Model. AKG-1791: KCl generator column & controller)

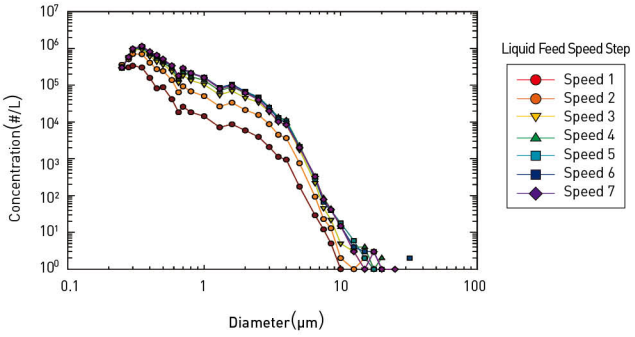
• Specification

Mode of operation	Micro spray nozzle type
Particle Source	KCl or NaCl in aqueous solution, other particle types soluble in water
Particle supply sytem	Peristaltic Pump, controllable supply flow (~1.2 ml/min)
Generated particle size range	0.1~15 μm
Generated particle flow	50 ~ 55 L/min (nominal). Up to 100 L/min
Control pressure	> 4 bar

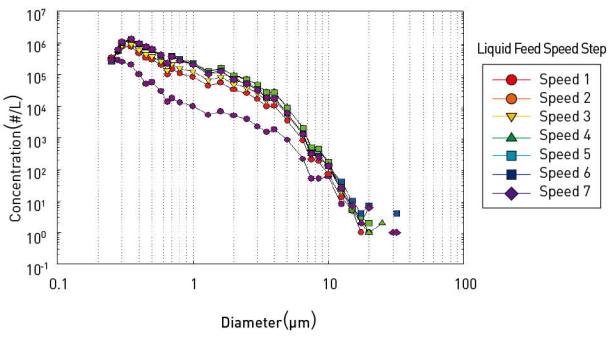
Particle concen	PM concen : ~ 8000 μg/㎥ (PM10, KCl standard)
	Number concen (Max. Number Concentration) : Appx. 10^7#/cc
Size (WDH, mm)	Controller : 400 x 600 x 350
	Column : ø 200, 512 H
Weight (kg)	25 (Include column & control box)
Power	220 VAC, 6 A
Other Components	HEPA filter, Ionizer



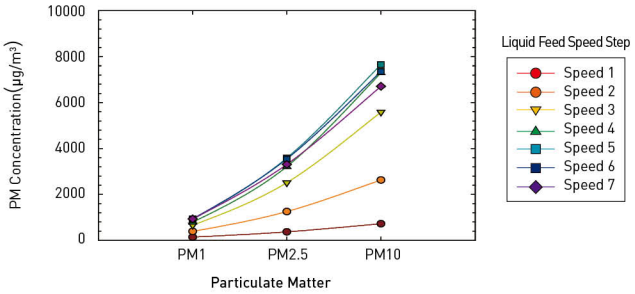
• Particle size distribution for 5wt% KCl



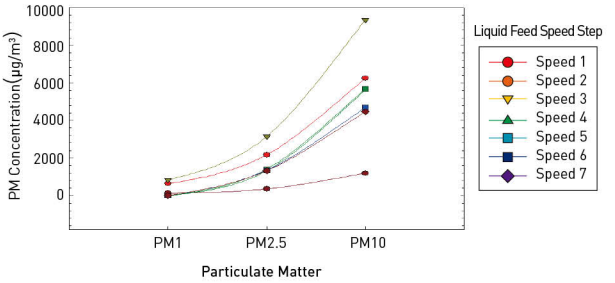
• Particle size distribution for 30wt% KCl



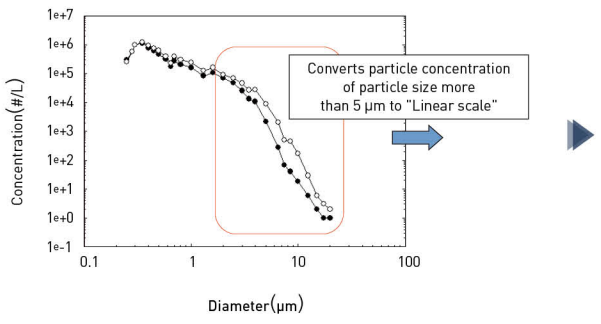
• Particulate Matter Concentration for 5wt% KCl



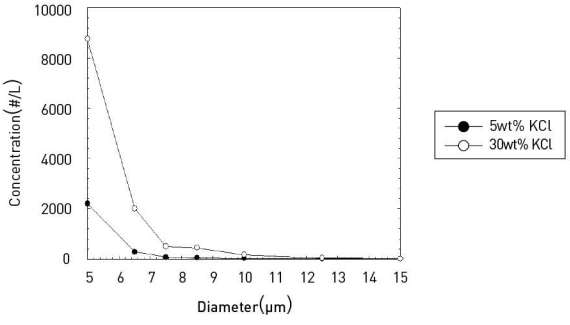
• Particulate Matter Concentration for 30wt% KCl



• Particle size distribution for 5wt%&30wt% KCl



• Particle size distribution for 5wt%&30wt% KCl



Performance Evaluation System of Air Cleaner

Application

- Evaluation of Dust Collection Efficiency for Air Cleaner
- Evaluation of deodorization performance about specific gases

Features

- Can be customized according to national performance standard (KACA, GB, JEM, AHAM)
- Designed to meet customer's requirements

• Specification

Model		APA-1731	APA-1741	APA-1751	APA-1761
Regulation		ANSI/AHAM AC-1-2002 Appendix A	SAC GB3095-2012 Appendix A & GB/T 18801-2008	JEM JEM 1467	KACA SPS-KACA002-132
Dust Collection Efficiency	Test method	Particle dust collection efficiency	Air purification amount (dust collection)test (particle, gas) Accumulative purification amount test (particle, gas)	Particle dust collection test Gas deodorization test Durability test	Purification performance (dust collection)test Gas deodorization test Ozone test
	Test particle	Smoke, pollen, dust	Smoke	Smoke	KCl
	Test chamber size	30 m^3	30 m^3	20 ~32 m^3	50 m^3 , 30 m^3 , 8 m^3
Deodorization performance	Test gas	-	Formaldehyde.	Ammonia, Acetaldehyde, Acetate	Ammonia, Acetaldehyde, Acetate, Formaldehyde, Toluene
	Test chamber Volume	-	30 m^3	1 m^3	8 m^3 , 1 m^3

Air Quality Monitoring System

PM10/PM2.5 Sequential Sampler

• Features

- Use for Sampling TSP, PM10, PM2.5 by Sequential type
- Designed for U.S. EPA Equivalent Method for PM10, PM2.5, and PM10-2.5 Sampling
- Highly accurate, reliable and mechanically simple system
- Can be loaded up to 24 ea of 47mm filters at the same time By Filter Cassette Exchanger
- Sequential sample collection according to the scheduled period, time and flow rate
- Easily download data via USB port
- Very low operating cost and maintenance fee
- Flow Accuracy ± 1.5 % through Automatic control
- Online Remote Control by PMS-NET
- Magazine Cooler (Option; -5 ℃ @ambient temp)

• Specification

Application	TSP, PM10, PM2.5
Method	Gravimetric
Sampling Time	0-999 Hours
Filters	18 (option : 24)
Filter Size	PTFE, Teflon, Quartz Φ 47 mm
Flow Control	Mass Flow Meter (Option : MFC)
Flow Control Accuracy	± 1.5 % @ 16.7 L/min
Pump Pressure / Flow	800 mbar / 40 L/min
Operating Condition	-30~ 50 ℃
Ambient Parameters	Temp: -30~ 50 ℃ / RH: 0~ 100 % RH / P: 112 ~ 860 mmHg

Memory	4 GB USB Memory (Recording Interval : 5 min)
Display	TFT-Color LCD 5.6" Touch screen
Input Signals (optional)	Wind Speed, Wind Direction
Communication (optional)	RS232, TCP/IP
Power	100 ~ 240 VAC, 50/60 Hz (1 kwh, 5 A)
Weight / Dimension	34 kg / 500 mm x 780 mm x 335 mm
Sound Level	< 40 dBA (~2 m) / < 28 dBA (~8 m)
Language	English, Chinese, Korean
Report Contents(Excel)	Ambient Temp/RH/Pressure, Filter Temp/ Pressure, Start/End time, Actual Flow rate & Accumulation, Average, Elapsed time, Events.

Aerosol Research &
Technology Plus

PM10/PM2.5 Single Sampler

• Specification

Application	TSP, PM10, PM2.5
Method	Gravimetric
Sampling Time	0-999 Hours
Filters	1 ea
Filter Size	PTFE, Teflon, Quartz Φ 47 mm
Flow Control	Mass Flow Meter (Option : MFC)
Flow Control Accuracy	± 1.5 % @ 16.7 L/min
Pump Pressure / Flow	800 mbar / 40 L/min
Operating Condition	-30~ 50 ℃
Ambient Parameters	Temp: -30~ 50 ℃ / RH: 0~ 100 % RH / P: 112 ~ 860 mmHg
Memory	4 GB USB Memory (Recording Interval : 5 min)
Display	TFT-Color LCD 5.6" Touch screen
Input Signals(optional)	Wind Speed, Wind Direction
	RS232, TCP/IP
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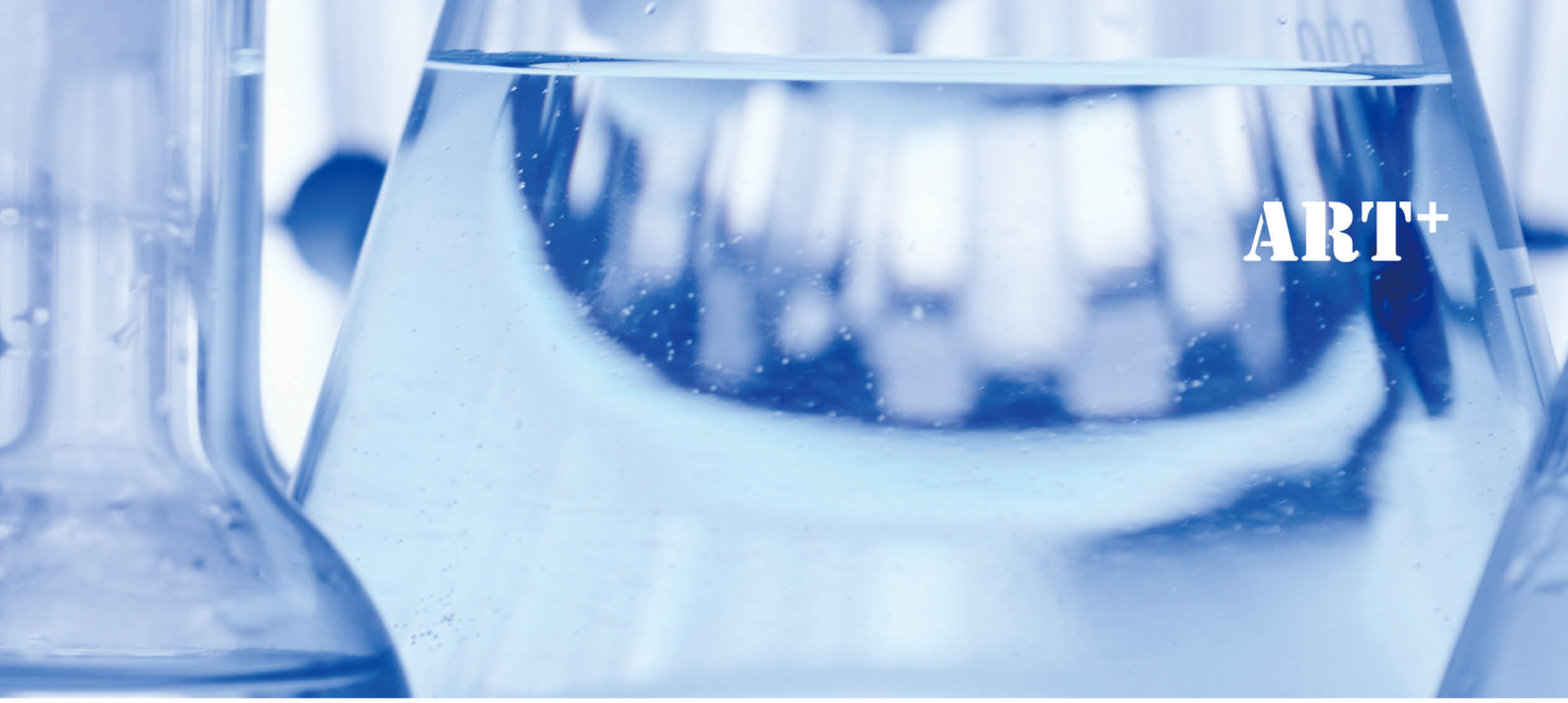
Language	English, Chinese, Korean
Report Contents(Excel)	Ambient Temp/RH/Pressure, Filter Temp/Pressure, Start/End time, Actual Flow rate & Accumulation, Average, Elapsed time, Events.

• Features

- Use for Sampling TSP, PM10, PM2.5 by Single type
- Designed for U.S EPA Equivalent Method for PM10, PM2.5, and PM10-2.5 Sampling
- Highly accurate, reliable and mechanically simple system
- Easily download data via USB port
- Very low operating cost and maintenance fee
- Flow Accuracy ± 1.5 % through Automatic control
- Online Remote Control by PMS-NET



Air Quality Monitoring System

• Measurement item

- Aerosol : Ultra fine particle (PM2.5), fine particle (PM10)
- Gas : NO_X, SO_2, C_0, O_3

• Features

- Optimal system design
- Optimized system based on technical prowess of environment and particle experts
- Achieving the best equipment utilization rate
- Supports checking of annual calibration and equivalence evaluation
- Provide system operation training

Measurement item	Instrument	Model
Fine particle	PM10 / 2.5 monitoring	BAM
	PM2.5 sampler	PMS-104
Gas	NOx	Serinus 40
	SO2	Serinus 50
	CO	Serinus 30
	O3	Serinus 10
Dilution gas calibrator		Cal3000
Zero air generator		8301 LC

* Gas detector calibration equipment.

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