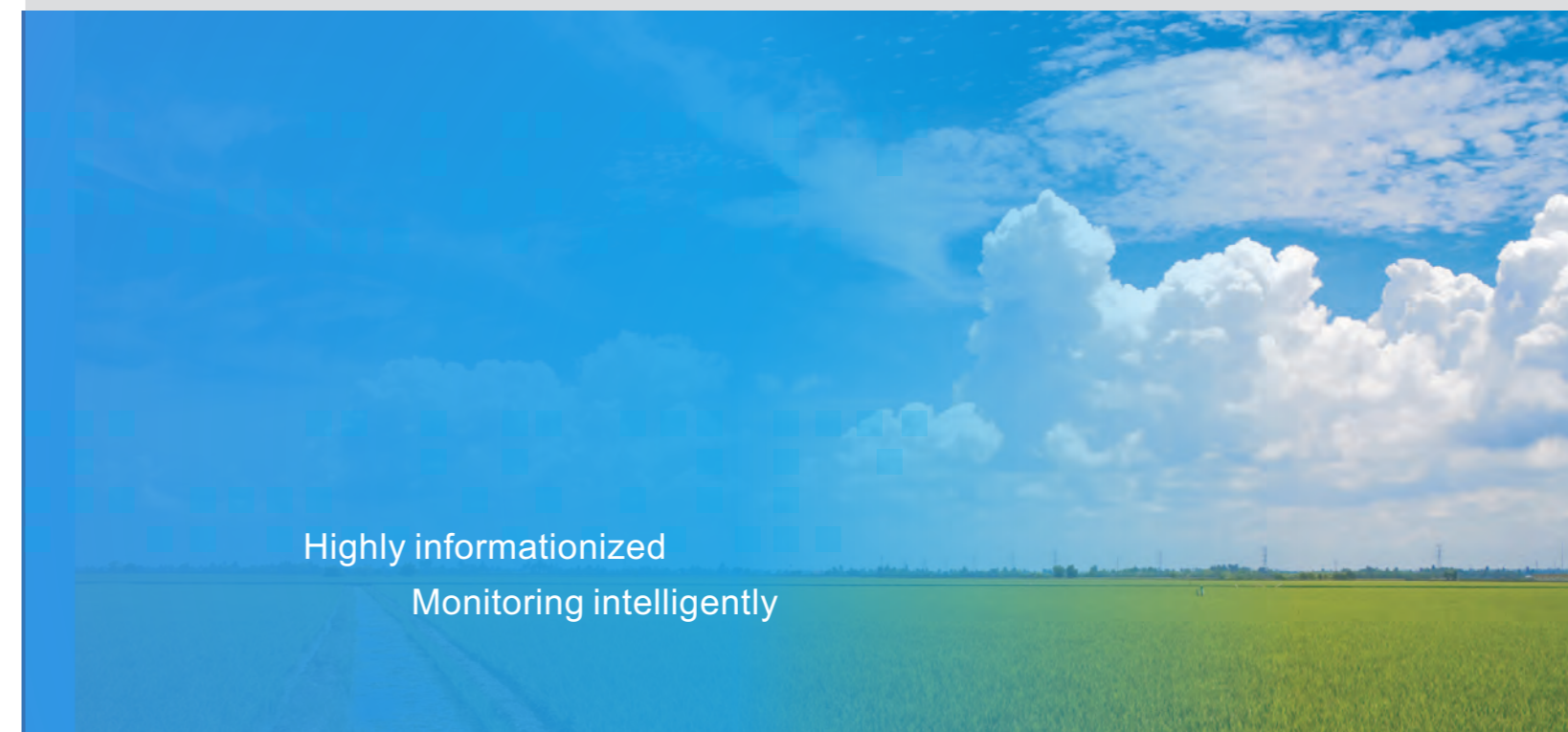


## Total solutions for automatic air quality monitoring



Highly informationized  
Monitoring intelligently

## Automatic Air Quality Monitoring System

Hotline: 800-9993-800  
400-7102-888

Jiangsu Skyray Instrument Co., Ltd.  
Add: 1888 West Zhonghuayuan Rd., Yushan,  
Kunshan, Jiangsu, China

Note: Unless otherwise noted, the experimental data of the samples are the experimental data of our company. All information about the sample is for reference only and is subject to change without notice.

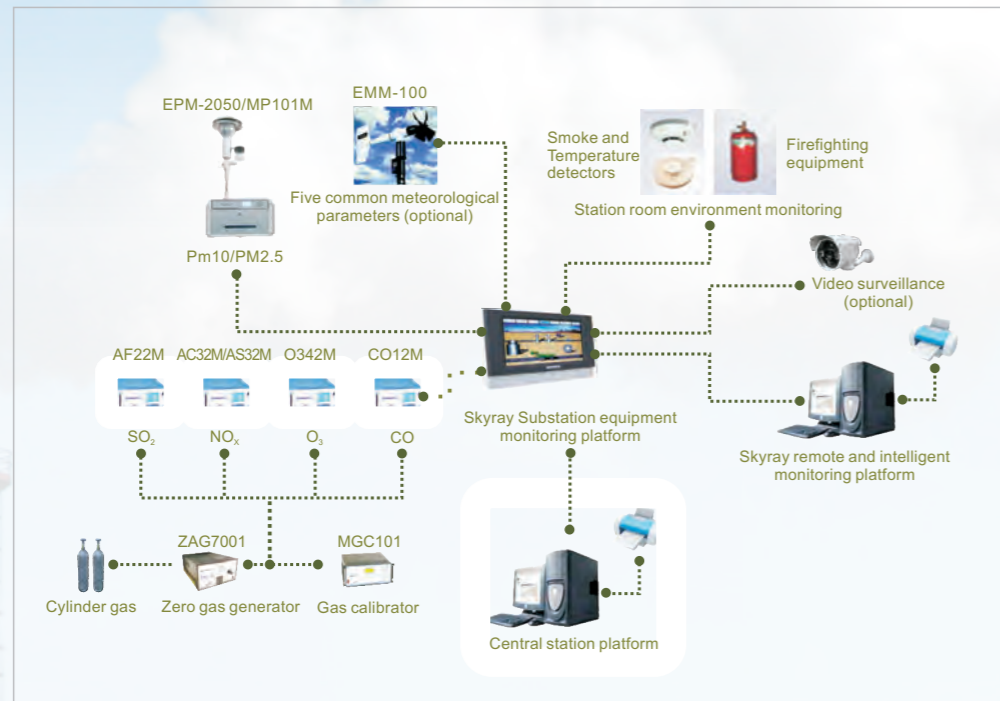
Version: TRSA 170717 B05

So far, Skyray instruments have been chosen in over 140 countries and regions in the world.

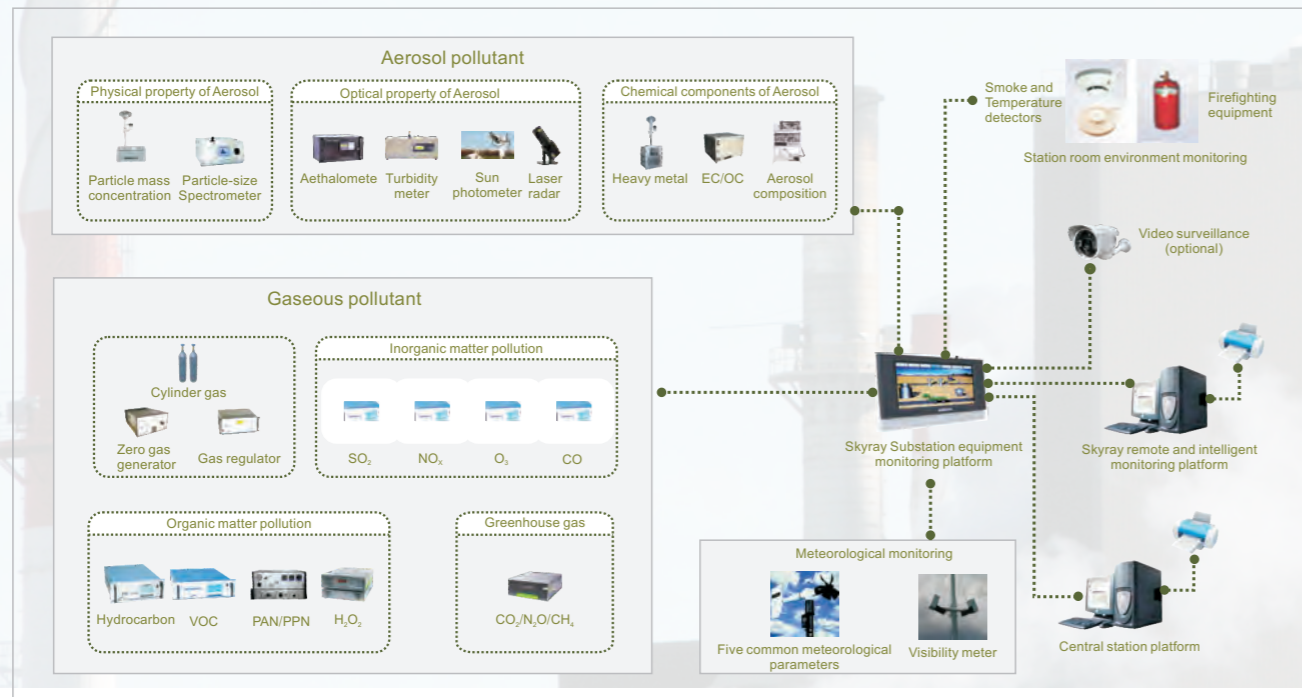
[www.skyray-instrument.com](http://www.skyray-instrument.com)

**Air Monitoring Station Diagram**

Primary Air Monitoring Station Diagram



Super Air Monitoring Station Diagram



► Gaseous pollutant monitoring

**Inorganic pollutant (Nitric oxide) AC32M**

Chemiluminescent immunoassay Nitric oxide Analyzer



Synchronously measure NO, NO<sub>x</sub>, NO<sub>2</sub> with low concentration of 0 to 20ppm, standard analytical method applied

- Programmable measurement range and measurement mean period
- High stability and high precision analyzer
- Long-life replaceable converter
- Built-in data storage for up to 6 months
- LCD display
- Interactive-menu operating software can display real time process flow
- Optional: External converter module can carry out low-concentration NH<sub>3</sub> (0-1 ppm) monitoring
- Conform to ISO 7996, EN 14211, VDI 4202 standards

**Certification:**

- TüV n°936/21205818/C (German)
- US EPA n°RFNA-0202-146 (USA)

**Inorganic pollutant (Nitrogen dioxide)AS32M**

Accurately and directly measure Nitrogen dioxide in the environment



Accurately and directly measure nitrogen dioxide in the environment, in order to provide the most accurate NO<sub>2</sub> measurement as the equivalent method

- Directly, accurately and continuously monitor NO<sub>2</sub> (0-1ppm) in the environment
- Very quick response: be able to detect accidents high-precision and within a short time
- Directly measure the sample gas-without chemical conversion, and no toxic gas emissions
- Innovative technology and convenient touch screen (optional)
- Patented cavity decay phase-shifting technology
- Different levels of NO, aerosols, other trace elements in and humidity of the atmosphere have no impact on the measurement
- Compact design, easy to use and extremely little maintenance (regular replacement of the filter)

**Inorganic pollutant (Sulfur dioxide)AF22M**

UV florescence method Sulfur dioxide Analyzer



Accurately measure 1-10ppmSO<sub>2</sub>

- Directly, accurately and continuously monitor NO<sub>2</sub> (0-1ppm) in the environment
- Programmable measurement range and measurement mean period
- Automatic measurement range
- Automatic response time
- Real time calibration
- Remote access to the analyzer
- LCD display
- Real time system process display
- Optional: Internal H<sub>2</sub>SrrRS monitoring module (Max. 1ppm)
- Conform to ISO 10498, EN 14212, VDI420 2 standards

**Certification:**

- n°TuV 936/21206773/C (German)
- US EPA n°EQSA\_0802-149 (USA)

**Inorganic pollutant (Ozone) O342M**

UV absorption method Ozone Analyzer



Accurately measure 0-10ppm ozone

- Programmable measurement range and measurement mean period
- Automatic measurement range
- Real time calibration chart display
- Built-in mean data storage for up to 6 months (extensible to one year)
- Remote access to the analyzer
- LCD display
- Interactive function menu and real time process flow display
- Optional: Internal O<sub>3</sub> generator (for range detection)
- Conform to ISO13964, EN14625, VDI4202 standards

**Certification:**

- TuV n°936/21205818/D (German)
- US EPA n°EQQA-0206-148(USA)

**Inorganic pollutant (Carbon monoxide)C012M**

NDIR gas filter correlation method Carbon monoxide Analyzer



GFC carbon monoxide analyzer is able to conduct high-precision monitoring in a lower concentration of 0-200ppm

- Low-concentration CO monitoring
- Temperature-controlled light chamber
- Automatic pressure compensation
- Sealed gas chamber
- Programmable measurement range and measurement period
- Remote access to the analyzer
- LCD display
- Real time system process display
- Optional: CO<sub>2</sub> (Max. 3000ppm) /CH<sub>4</sub> (Max. 300ppm) measurement
- Conform to ISO4224, EN14626, VDI4202 standards

**Certification:**

- TuV report n° 936/21206773/B (German)
- US EPA n°RFCA-0206-147(USA)

**MGC 101 Multi-Gas Calibrator**



- One or more high-concentration cylinder gas, manually or remotely control the air generation of multiple positions
- Dilute gas through a mass flow controller
- Internal ozone generator, GPT mode
- In line with all requirements of US EPA

**ZAG 7001 High-precision Zero Gas Generator**



- Optional CO&HC internal heating catalytic scrubber
- Purity of compressed gas:
  - Co<20ppb
  - NO<sub>2</sub>, SO<sub>2</sub>, O<sub>3</sub>, H<sub>2</sub>S < 0.5ppb
  - HC(including CH<sub>4</sub>)<20ppb

► Gaseous pollutant monitoring

Organic pollutant (Total Hydrocarbon)HC51M

FID Total Hydrocarbon Analyzer



Measure the hydrocarbon concentration of 0-1000ppm according to the hydrogen ionization flame detection principle

- Simultaneously real time and continuous monitoring THC/THC/ChVnmHC under two modes
- High sensitivity, stable FID detector
- 0-1000ppm measurement range
- LCD display
- Interactive-menu driven software
- Automatic measurement range
- Programmable measurement range and mean time
- Remote access to the analyzer
- On-site verified technology and design
- Optional: internal zero gas/external hydrogen generator, internal nmHC converter

Organic pollutant (Volatile Organic Compound)VOC72M

Volatile Organic Compound Analyzer



Measure the concentration of organic matter of 0-1000µg/m3 through gas chromatography and photoionization detector (PID)

- Measured compounds: benzene, methylbenzene, ethylbenzene, m-xylene, o-xylene, p-xylene, 1,3-butadiene
- Compact structure and fully automated, carry out measurements of the same performance as laboratory chromatographs
- Robust-structure and low-maintenance instrument
- Automatically perform all functions (sampling, analyzing and data management)
- Automatic calibration and quick inspection of chromatographic peak with relevant information quickly displayed on the screen without computer operation
- With liquid cooler in the gas chromatograph column, a stable retention time is secured even if there is temperature fluctuation
- One gas source (Nitrogen)
- Options: More than 40 other volatile organic compounds

Conform to the EN14662-3 TuV certification

Organic pollutant (PAN/PPN) Metcon PAN

PAN/PPN Analyzer



Measure Peroxyacetyl Nitrate (PAN) and peroxypropionyl Nitrate PPN in the atmosphere through gas chromatography and ECD detector

- Pre-column and main column: wide-bore capillary column
- Detector: ECD detector
- Chromatography oven: Peltier cooling and Pt100 temperature control
- Sample injection /Chromatographic column switching: Pneumatic VALCO 10-way valve, equipped with external quantitative tube
- Carrier gas/make-up gas: 99.999% nitrogen, total flow <50 mL/min
- Measurement frequency: 6 times/hour
- Calibration: Weekly
- Software: Data collection, integration and control based on Windows 7 operating system
- Upgraded for multiple times, with the calibration process thoroughly tested by institutes. The Instrument has been operating steadily in many countries around the world

Organic pollutant (H2O2) G114

Hydrogen Peroxide Analyzer



Measure Peroxyacetyl Nitrate (PAN) and peroxypropionyl Nitrate PPN in the atmosphere through gas chromatography and ECD detector

- Measurement technology: Wavelength scanning optical cavity ringdown spectroscopy (WS-CRDS)
- Simultaneously measure H2O2 and water vapor concentration, ppb-level ultra-high sensitivity, precision and accuracy, virtually no drift
- Fast, continuous, real-time measurements without human interference
- Large dynamic range, high linearity
- Field or laboratory applicable, no consumables required
- Insensitive to changes in ambient temperature
- Quick and easy installation - the configuration of entire system takes only a few minutes

Greenhouse gas (CH4/N2O/CO2) G2508

Greenhouse Gas Online Analyzer



Simultaneously measure N<sub>2</sub>O, CH<sub>4</sub>, CO<sub>2</sub>,

- The 4<sup>th</sup> generation wavelength scanning optical cavity ringdown spectroscopy (WS-CRDS)
- Ppb-level ultra-high sensitivity and extremely low drift
- Up to 1Hz of data acquisition frequency
- Insensitive to changes in ambient temperature
- Ppb-level precision enables excellent measurement of difference
- Short response time and continuously measuring provide high time resolution data
- Verified platform, easily integrated with respiration leaf chamber and other flux systems
- Very few calibration and maintenance
- Extremely narrow spectral regions, minimizing interference from other types of gases, compared to other spectroscopic technologies

► Atmospheric aerosol pollution monitoring

Physical property of aerosol (Particle mass concentration/Number concentration)MP101M-LCD



FID Total Hydrocarbon Analyzer

- Standard reference method for measuring PM10, PM2.5 and PM1 particle concentration
- Particle concentration measurement(mg/m3)
- Built-in reference membrane for calibration: factory calibration not required
- Temperature-adjustable sampling rods
- Real volume of gas flow control
- Rugged and insensitive to vibration or temperature
- Optional: CPM module for real-time optical measurement of particulate matter concentration (mg/m3)
- Particle count (nb/L)
- Automatic calibration of the CPM optical module with the reference method (P-ray method)
- Standard: ISO 10473: 2000

Certification:

- PM10: US-EPA (EQPM-0404-151), EN12341 (I-CNR087/2004, F-LCSQA)
- PM2.5: EN 14907 (F-LECES), US-EPA PM2.5 sampling head (RFPS-0498-116), J-MOE PM2.5 model approved for use

Chemical component of aerosol (Heavy metal component and concentration)EHM-X100/EHM-X200



Atmospheric Heavy Metal Online Analyzer

Precisely measure more than 30 heavy metals, such as Pb, in air particles with X-ray fluorescence method

- Measure more than 30 elements, including Pb, Cd, Hg, As, Cr, Cu, Zn, Ni, Ba, Fe, etc. Built-in p-ray module in EHM-X200 model, enabling synchronous measurement of particle mass concentration (Globally original)
- Large-power X-ray tube, ensuring extremely low detection limit to min. 10pg/m3; RSD <0.5% (verified with Pb)
- Sampling cycle adjustable within 30-1440 minutes; DHS dynamic heating; process sampling and analyzing simultaneously with sampling interval dead time, hourly mode available
- The host is designed with a 19" anti-shock case of international standard, mounted in vehicles or on fixed station,
- 20 years of XRF technological accumulation, dozens of patents integrated, ensuring automatic energy calibration, flow self-calibration, quality control for each measurement, intelligent fault diagnosis
- Multiple professional radiation-protection, certified by relevant departments

Physical property of aerosol (Particle mass concentration) EPM-2050



P-ray Particle Analyzer

Standard reference method for measuring PM10, PM2.5 and PM1 particle concentration

- Carry out measurements with P-ray method +DHS(dynamic heating system), one of the recommended monitoring methods by national environmental station and conforming to USEPA standard
- Built-in reference membrane for calibration: \ factory calibration not required
- Enrichment and measurement carried out in one same channel, completely eliminating the error caused by filter paper movement
- Full radiation protection, safe and reliable, no radiation leakage inside the instrument
- Multiple data transmission modes, including RS232/485, Ethernet, 4-20mA and so on
- Low maintenance and failure rate, just one calibration each year; paper saving mode available, ensuring at least one year life of filter paper before replacement

Certification:

- PM10/PM2.5 cutter: Verified by the Environment and health related product safety department of the Chinese Center for Disease Control and Prevention
- Applicability test of China Environmental Monitoring Station

Aerosol Chemical component Analysis (Gas and ion component) MARGA



Gas and Aerosol component Online Monitoring System

- For analysis on anions and cations in Atmospheric aerosol
- Real gas and aerosol component online monitoring system
- Monitored gas component: HCl, HNO<sub>3</sub>, HNO<sub>2</sub>, SO<sub>2</sub>, NH<sub>3</sub>
- Monitored aerosol component: Cl<sup>-</sup>, NO<sub>3</sub><sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, NH<sub>4</sub><sup>+</sup>, Na<sup>+</sup>, K<sup>+</sup>, Ca<sup>2+</sup>, Mg<sup>2+</sup>
- Unique WRD Rotary liquid cavitation device, gas collection device with self-cleaning function and more than six months of maintenance interval
- Automatic temperature-adjusting column oven, temperature changes recorded and displayed
- Gas absorption efficiency: 99.7%
- Particle collection technology, water vapor temperature automatically adjustable
- Online calibration technology; it's not required to shutdown the machine for standard working curve; auto-restore from power failure recovery
- No nitrogen required
- The only type of instrument certified by EPA

Physical property of aerosol (Particle size distribution)APS 3221



Aerodynamic Particle Size Spectrometer

High resolution aerodynamic particle size and optical scattering intensity

- Measurement technology: Individual high-speed processor is applied to detect the time-of-flight of a single particle in accelerated airflow
- Real-time measure aerodynamic diameter of particles through sophisticated time-of-flight technology, with particle size range of 0.5-20 nm
- Ability to measure particles with size of 0.37-20mm through optical scattering measurement technology
- Detect suspended particle matter and non-volatile liquids
- Output mode:
  - Digital I/O
  - Configuration analog output: BNC (0-10V)
  - Pulse analog output: BNC
  - Time-of-flight digital output: External BNC controller with 15-pin interface (3 inputs, 3 outputs), 2 analog input interface

Chemical component of aerosol (Organic carbon/Inorganic carbon) Sunset Lab, RT-4



Organic carbon/Elemental carbon Automatic Online Analyzer

For analysis on Organic carbon and Elemental carbon in the atmospheric aerosol

- The analysis process is in a full-automatic semi-continuous mode (full-automatic "Sampling-Analyzing-Sampling-Analyzing-...-..."cycle)
- Synchronous analysis on Organic carbon and Elemental carbon, automatically detecting the demarcation point between organic carbon and elemental carbon
- Analysis results are comparable to the NIOSH5040 method
- Easy to choose the default analysis methods, conforming NIOSH, IMPRO VE, STN, and user self-compiled analysis program
- Real-time monitor the accumulation of elemental carbon during sampling process by laser transmission method
- Monitor the release of organic carbon and elemental carbon on the quartz sample membrane during analyzing process by laser transmission method
- High precision optical path calibration, enhancing steady laser performance
- New long-life heating ring, the latest heating power control, more stable and durable system
- On-line monitoring, providing continuous real-time data; also available for sample membrane test as in the laboratory

► Aerosol pollution

Optical property of aerosol (Black carbon concentration/Absorptivity)  
Magee AE-31

Aethalometer



Measure the black carbon according to its absorption of light

- Conduct light absorption of black carbon aerosols with a light pipe of seven bands (370, 470, 520, 590, 660, 880, 950 nm)
- Frequency recordable: Eight recording frequency optional, 2, 3, 5, 10, 15, 20, 30, 60min
- Measurement accuracy: 0.1 µgBC/ m<sup>3</sup>, 1minute average, 3L/min flow rate
- RS232 communication
- Filter membrane: Quartz fiber
- Optional: HS mode and ER mode, applicable to clean area and severely polluted area, respectively
- Ability to use in conjunction with turbidimeter, configure the wavelength of light source as users' requirements
- Use the cyclone cutter produced by BGI, a USA company
- PM2.5-SCC-1.828, 5L / min
- PM1.0-SCC-0\_732, 2L / min

Optical property of aerosol (Optical thickness)  
CE318

Automatic Sunphotometer



Mainly applied to measure the radiance of the sun and the sky at different wavebands, different directions, different time, calculate the property of aerosol, water vapor, ozone and other components

- 9 sets of filters at 340 to 1640 nm
- The optical head contains a filter and dual optical sights to measure the irradiance of the sun and the sky
- Robot arm for automatically measuring the irradiance of the sun and the sky
- Data processing control box, for controlling the position, sequence and mode of dual-axis stepper motor, data storage and data transmission
- Intelligent data transmission and processing software, friendly interactive interface; scan and collect data at the vertical level or the main plane through the latitude and longitude, local time and the sun tracking system,
- The Automatic Measurement Mode of the sunphotometer can preset the time to measure the irradiance of direct solar radiation, halo and the radiance of the sky, settings can be modified for measurement
- Data collection and analysis software, for data processing and data inversion

Optical property of aerosol (Scattering coefficient)  
Aurora 3000

Turbidimeter



Apply to the measurement of air pollution of various causes and aerosol scattering

- Innovative Ecotech LED light source, allowing simultaneous measurement of 450nm (blue), 525nm (green) and 635nm (red), extending and deepening the analysis of particles
- Equipped with backscatter shutter for analysis on total scattering and backscatter, providing important information for studies on global atmospheric radiation balance
- Measurement range: 0.01 to 20000Mm<sup>-1</sup>
- Different standard gas to choose, automatic calibration: CO<sub>2</sub>, SF<sub>6</sub>, FM-200, R12, R-22, R-134, or customized gas
- Automatic zero/standard check (cycle set as required), automatic pressure and temperature compensation
- Built-in sample gas heater with humidity threshold set by user (RH: <30% to <90%), eliminating humidity interference

Optical property of aerosol (Aerosol distribution)  
Standard MPL

Laser Radar



Advanced laser telemetry system enables long-term and continuous observation of

- Long-term observations of vertical distribution of aerosols
- Monitor the spreading trends of volcanic ash, polar stratospheric clouds, air traffic control; more suitable for monitoring multi-layered clouds of airports than ceilometers; ability to track dust or column of smoke, or customized applications as user requirements
- Distance resolution 5/15/30/75 meters (adjustable by software)
- Minimum detection range: 100 meters, Maximum detection distance: 25 km
- Time resolution: 1s to 60min
- Laser wavelength 532nm, laser pulse energy 6-10micro joules @2500Hz
- Receiver caliber: 178 mm
- SigmaMPL software translates observation data to useful information
- Conform to ANSI Z136.1 2000 (USA), IEC60825 (EU) standards

Continuous particle auto-sampling  
PM162M

Continuous Air Particulate Matter Auto-sampling instrument



The instrument can automatically collects particulate matter on the filter with different sampling heads for TSP, PM10, PM2.5 or PM1 respectively

- PM2.5 sampling and measurement complies with the standards recommended by EU Standard Committee
- Large-capacity sampling filter system, enabling up to three weeks of particle sampling
- Mounted in a rack cabinet at 5U high
- The instrument simultaneously controls sampling temperature and the pressure sensor for real gas flow control, thus avoiding the impact of process factor of sampling probe on the measurement
- Unique temperature-controlled sampling pipeline, eliminating sampling errors (losses caused by the volatilization of semi-volatile components)
- 2 serial ports, respectively for remote access and data download

Certification:

European Union EN 12341 (LECES, n° RC/L9826)

MMS

Turnkey micro-monitoring stations, comply with ISO and EN regulations and standards



Up to five pollution gas monitoring modules can be fitted in one case.

- Continuously measure CO, CO<sub>2</sub>, O<sub>3</sub>, NO, NO<sub>x</sub> and NO<sub>2</sub> (SO<sub>2</sub> optional)
- Optional: Integrated data collection system
- Remote control, data recovery and maintenance of the instrument through USB and Ethernet TCP-IP
- MCERTs certified system
- MP101M, CPA and EPM-2050 optional for real-time measurement of particulate matter
- Mainly applied to mobile monitoring, online industrial detection, workplace monitoring, indoor air environmental monitoring, measurements and monitoring research, tunnel monitoring and traffic pollution prevention and control

Certification:

EN Approved  
ISO 7996 & EN 14211:2005(NO<sub>x</sub>)  
ISO 4224 & EN 14626:2005(00)  
ISO 13964 & EN 14625:2005(03)

► Meteorological monitoring

EMM-100

Meteorological monitor (Five parameters)



Conventional and automatic monitoring of five basic meteorological factors, including ground temperature, humidity, wind direction and wind speed

- Imported high-precision, rugged industrial meteorological sensors
- The sensors are 0-1VDC or 4-20mA output, easily connected to the control system, remote control unit, data logger and display
- All sensors are powered by 8-24VDC or 12-30VDC
- Configurable cable length as user requirements
- The electronic components of sensors are sealed with seawater-level epoxy resin, can be used for all-weather environmental protection and have a very long service life
- Display, data logger can be configured as user requirement
- Sensors can be used individually or in combination

Model 6000

Visibility Meter



Measure the visibility through the forward scattering theory

- Based on proven optical geometry theories, measurement range: 6-8 meters
- Precision: ±10% or 3meters
- Scattering angle: 42° nominal
- Light source: Infrared LED
- Analog out, configurable by user
- Analog: 0-1, 0-5, 0-10V, 4-20mA
- Alarm: 2 channels of TTL output
- Digital: RS232 or RS422, 300 to 38, 400 baud
- CE certified, conform to 47CFR15

	MP101M	EPM-2050	AC32M	O342M	CO12M	AF22M	AS32M	HC51M	VOC72M	EHM-X100 / EHM-X200	G2508	PM162M
Measured Component	Particulate Matter	Particulate Matter	NO/NOx-NO <sub>2</sub>	O <sub>3</sub>	CO/CO <sub>2</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Total Hydrocarbon	VOC/BTEX	Heavy Metal	Greenhouse Gas	Particulate Matter sampling
Measurement Range	0-100/200 /500/1000/ 2000/5000 /10000 µg /m <sup>3</sup>	0-1000/10 000 µg/m <sup>3</sup>	0-0.05 /0.1/0.2/ 0.5/1/2/5 /10/20pp m	0-0.1/0.2 /0.5/1/2/5 /10ppm	0-10/25/ 50/100/2 00ppm	0-0.1/0.2 /0.5/1/2/5 /10ppm	0-1ppm	0-10/50/ 100/500/ 1000ppm	User-defin edMax.: 1000 µg/m <sup>3</sup>	0-100 µg/m <sup>3</sup>	/	/
Detection Principle	β-ray+ light scattering	β-ray	Chemilumi nescent immunoas say	UV absorption method	NDIR gas filter correlation method	UV fluorescence method	Cavity decay phase-shifting technology spectrum absorption method	Hydrogen ionization flame(FID)	Gas chromatog raphy and photoionization detector (RD)	X-ray fluorescence spectrometry	Wavelength scanning optical cavity ringdown spectroscopy	/
Limit of Detection	0.5 µg/m <sup>3</sup>	0.5 µg/m <sup>3</sup>	0.4ppb	0.4ppb	50ppb	0.4ppb	2σ 0.1 ppb	50ppb	2σ ≤0.05 µg/m <sup>3</sup>	Min. 10pg/m <sup>3</sup>	ppb-level	/

	APS 3221	Metcon PAN	Model 6000	CE318	AE-31	G1114	RT-4	MARGA	Aurora 3000	MPL	EMM-100	MMS
Measured Component	Particle size spectra	PAN/PPN	Visibility	Solar irradiance	Black carton	H <sub>2</sub> O <sub>2</sub>	OC/EC	Aerosol anions and cations	Aerosol scattering coefficient	Aerosol distribution	Five meteorological paremeters	CO/CO <sub>2</sub> / NO-NO <sub>x</sub> / O <sub>3</sub>
Measurement Range	0.37-20 µm	50ppt-10 ppb	6m-80km	/	/	0-100 ppmv	0.2-10 00 µg C /cm <sup>2</sup>	/	/	100m-25km	/	/
Detection Principle	Time-of-flight technology	Gas chromatog raphy and ECD detector	Forward scattering theory	Optical detection	Multi-bandoptical absorption	Wavelength scanning optical cavity ringdown spectroscopy (WS-CRDS) technology	Photother mal method	Online ion chromatog raphy	Optical scattering	Laser Radar	Multiple	Multiple
Limit of Detection	0.02µm(1u m), 0.03u m(10µm)	<50ppt	/	/	0.1mg BC/ m <sup>3</sup>	100ppt	0.2 µg C	/	/	5m	/	/