

# MOBILE AIR QUALITY MONITORING SYSTEM







# MONITOR ANYTIME ANYWHERE



Go mobile and check the station's data on-the-go (internet connection required)

> 3G/4G or Satellite Comm. for internet connectivity



Check real-time data of the mobile station at the office thru web (internet connection required)

Data Acquisition System (datalogger integrated in the mobile AQMS that store and gather data from the installed sensor and



Mobile Air Quality Mobilering System Field Deplyoment



We integrate and test the modules and environmental sensors at our office and deliver the fully integrated system to you for commissioning and end-user training.

Choose the parameters you wish to measure.

Modular design makes any parameter combination possible.

Can be upgraded to add more parameters in the future.

Monitor ANYTIME - ANYWHERE.



# Don't just measure...

# KNOW WHERE the DATA

# is coming FROM

#### CORRELATE THE DATA WITH METEOROLOGICAL SENSOR PARAMETERS

in what direction was the wind blowing from, when there was a high gas concentration measured? "what are the emission sources found in that direction?"



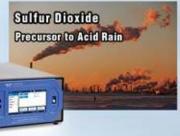
Solve the RIGHT problem

Know the TRUE source

# POLLUTANTS WHERE does | Tcome FROM ?



HOW ?
can we
MEASURE

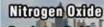


Hydrogen Sulfide

Exposure to high levels will result, to death

Carbon Monoxide
Reduce oxygen-carrying
capacity of blood





Respiratory Problem such as airway inflammation



Main component of SMOG



Synspec b.v.



### **TECHNICAL SPECIFICATIONS**

Dimension (HxWxD): 140 x 25.7 x 46.8 inches Power Requirements: 4.9A, 220 V/AC, 1127W

#### SYSTEM COMPONENTS:

#### 1. EnviDAS (Data Acquisition System)

- Runs in 32/64bit Windows Operating System.
- Microsoft SQL Server Express (Local Database)
- Standard 32 Channel license (can be upgrade to have more)
- 10 years data storage; 240GB SSD (expandable)
- Dashboard Display (real-time data viewing)
- Data Import/Export
- Telemetry (LTE, UMTS, Satellite)
- Automated Email reporting via Envista ARM Server.
- Open system architecture
- Open stock hardware

## HOW

can we

**MEASURE** 

#### 2. Particulate Analyzer

The Model T640 PM mass monitor for ambient particulate monitoring. Delivering continuous, real-time PM mass measurements using innovative broadband spectroscopy, the T640 comes with high resolution, fast response, low power, and effortless operation.

- Measurement Principle: Broadband spectroscopy using 90° white-light scattering with Polychromatic LED
- Particle size resolution: 256 sizes over 0.18  $20\mu m$  range, combined to 64 channels for mass calculation
- PM Mass Measurements: PM10, PM2.5, and PM10-2.5 simultaneously
- PM Mass Resolution Measurement Range: 0.1 10,000 μg/m3
- Mass Measurement & Display Resolution: 0.1 μg/m3 Precision ±0.5 μg/m3 (1-hr average)
- Lower Detectable Limit: <0.1 ug/m3 (1-hr average)
- Data Rate: 10s to 48hr (user selectable)
- Mass Concentration Accuracy: Exceeds US EPA PM10 FEM and Class III FEM PM2.5 performance requirements for additive and multiplicative bias compared to FRM samplers
- Flow Rate: 5.0-lpm sample flow (Standard model); 11.67-lpm optional bypass flow (with option 640x)
- Flow Accuracy: Within ±1%; (Typically within ±0.5%)
- Operating Temperature: 0 50°C, non-condensing
- Ambient Temperature: -40 60°C
- Ambient Relative Humidity: 0 100%
- Sample Humidity Control: 24VDC, 90W (max) heater controlled to 35%
   RH Weatherproof enclosure required with 0 50°C, non-condensing environmental control
- · Requires only 10-min warm-up time.
- Electrical: 100 230VAC 50/60Hz, Power consumption < 120W @</li>
   120VAC External pump 100 120VAC 60Hz or 220-240VAC 50/60Hz,
   Power (for optional bypass flow option 640x) consumption <360W @</li>
   120VAC
- Unit dimensions (HxWxD): 7" x 17" x 14" (17.8 x 43.2 x 35.6 cm)
- Unit weight: 19 lbs (8.6 kg)
- Sample heater tube height: 43" (109 cm)
- Sample heater tube weight: 6 lbs (2.7 kg)
- Certifications: US EPA PM2.5 Federal Equivalent Method EQPM-0516-236, US EPA PM2.5 Federal Equivalent Method EQPM-0516-238\*, US EPA PM10 Federal Equivalent Method EQPM-0516-239\*, US EPA PM10-2.5 Federal Equivalent Method EQPM-0516-240\* (\*with T640x option).

### **TECHNICAL SPECIFICATIONS**

#### SYSTEM COMPONENTS:

#### 3. NO/NO2/NOX Analyzer (Photolytic)

T200 Chemiluminescence analyzer combined with a patented high efficiency Blue Light Converter (BLC). The BLC, also known as photolytic converter, provides a very specific conversion of NO<sub>2</sub> with conversion efficiency similar to molvbdenum.

- Ranges Min: 0 50 ppb full scale for NO and NO.: Max: 0 4,000 ppb full scale for NO; 0-20,000 ppb full scale for NO (selectable, dual-range supported)
- Measurement Units ppb, ppm, µg/m3, mg/m3 (selectable)
- Lower Detectable Limit 0.4 ppb
- Linearity 1% of full scale
- Precision 0.5% of reading above 50 ppb



#### 4. Ozone Analyzer

Model 430 Compact O3 Analyzer. The Model 430 uses the proven UV Absorption principle, producing accurate and stable O3 measurements. The robust design and low power consumption make it ideal for monitoring applications that require long autonomy periods such as rural and remote monitoring, saturation studies, and atmospheric research. The small footprint and quiet operation make it extremely useful for indoor air quality, surveying, and industrial hygiene applications.

Ranges: 0 - 100 ppb (min), 0 - 20,000 ppb (max) (user-selectable)

Measurement Units: ppb, ppm (user-selectable)

Lower Detectable Limit: < 2 ppb</li>

Zero Drift: < 1 ppb/24 hours</li>

Span Drift: < 1% full-scale/24 hours</li>

Linearity: 1% full-scale

Precision: < 0.5 ppb or 0.5% of reading above 100 ppb</li>

Typical Power Consumption: 12VDC, 9W

Dimensions: H x W x D 4.2" x 7.1" x 10.2" (107 x 180 x 259 mm)

Weight: 5.2 lbs (2.4 kg)

Operating Temperature Range: 5 - 40°C (with US EPA approval)

• Humidity Range: 0 - 95% RH non-condensing

Certifications: US EPA Federal Equivalent Method EQOA-1015-229

#### 5. Black Carbon Analyzer

- MEASUREMENT PRINCIPLE: Continuous collection of aerosols on filter with simultaneous measurement of attenuation of transmitted light at wavelengths of 370, 470, 520, 590, 660, 880 and 950 nm. Black Carbon concentration measurement is defined by the absorption measurement at nm. Multiple wavelength analysis for source apportionment (identification of biomass smoke), studies of aerosol light absorption. radiative transfer, atmospheric optics. High data rate capability for source and emissions testing.
- DUALSPOT TECHNOLOGY: Simultaneous analysis of light absorption by aerosol deposits collected on 2 spots in parallel at different loading rates\*. Mathematical combination of data yields Black Carbon result independent of "spot loading effects" and provides additional information about aerosol composition.

\*United States Patent 8,411,272, United States Patent 9,018,583, other patents pending

 SOURCE APPORTIONMENT: Discrimination of Black Carbon from fossil fuel versus biomass combustion possible with built-in analysis by a two-component model.



### **TECHNICAL SPECIFICATIONS**

#### SYSTEM COMPONENTS:

#### 5. Black Carbon Analyzer

- SENSITIVITY: Proportional to time-base and sample flow rate settings: approximately 0.03 µg/m3 @ 1 min, 5 LPM.
- DETECTION: Detection Limit (1 hour): <0.005 μg/m3 Range: <0.01 to</li> >100 µg/m3 Black Carbon Resolution: 0.001 µg/m3 or 1 ng/m3 (user-definable display units)
- PHYSICAL SPECIFICATIONS Dimensions (HxWxD): 28 x 43 x 33 cm Weight: 21 kg • Electrical Power supply: 100-230VAC, 50/60Hz (auto-switching) • Power consumption: 25 W average • Internal Vacuum Pump: dual diaphragm, brushless motor • Modular hardware, constructed in a fully-enclosed 19" rack mount 6U chassis, hermetically sealed.

#### 6. Meteorological Sensors

Wind Speed (Ultrasonic Type)

Range: 0-75 m/s

Accuracy: ±0,20m/s or 2% (0±35m/s), 3% > 35ms

Wind Direction (Ultrasonic Type)

Range: 0-359.9°

Accuracy: ±2% > 1m/s

**Barometric Pressure** 

• Range: 600 to 1100 mbar

Accuracy: ±0.35 mbar @ 25°C, ±0.75 mbar @ 0 to55°C,

±1.5 mbar @ -40°C

#### **Ambient Temperature**

Range: -30° to 60°C

Accuracy: ±0.1°C

#### Relative Humidity

 Range: -30° to 60°C Accuracy: ±0.1°C

#### **Optional Sensors:**

#### Rainfall

- Resolution: 0.2mm
- Accuracy: ±0.5% at 0.5 in/hr, ±1% at 1-3 in/hr

#### Sound Meter

Range: 41dBA - 101 dBA

#### 7. Cooling System

Air-conditioning Unit: ¼ Horse Power (at the base/bottom of the system)















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