Pristina AQM System Summary

The AQM system installed in Pristina, Kosovo is described below:

- One site in Pristina is collecting Continuous Particulate Matter (PM 2.5 micron) for PM at 2.5 microns and less measured in micrograms/cubic meter
- The site is using two Met One Beta Attenuation Monitors (BAM), which are EPA approved FEM (Federal Equivalency Method) units according to EPA specifications. The BAM-1020 is certified Class III FEM for PM2.5 continuous monitoring (EQPM-0308-170).
- The two units are side-by-side, are calibrated using the same methods and run on the same measurement principle. The primary unit reports the data, the secondary unit is used to ensure an extra layer of data reliability and validation.
- Data is collected continuously for the hourly prescribed averages by a data logger on an Industrial PC platform running Envidas Ultimate air pollution capture software
- The data is sent to secure server where it is then sent to the EPA Airnow website.
- The EPA Airnow website will compute an Air Quality Index (AQI) value and post the data to the Airnow website
- Post Staff have been trained on maintenance and operations of all equipment with remote support from WTS, LLC

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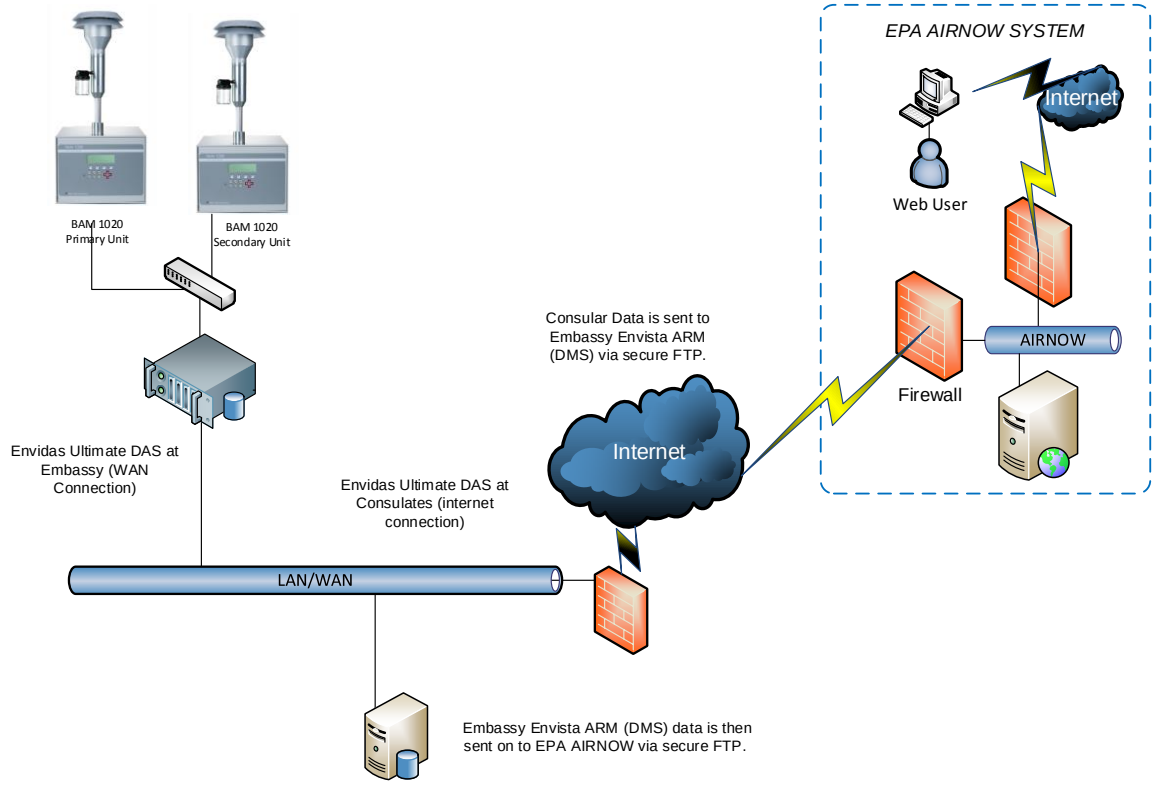

Figure 1: General System Layout for Two Logger System

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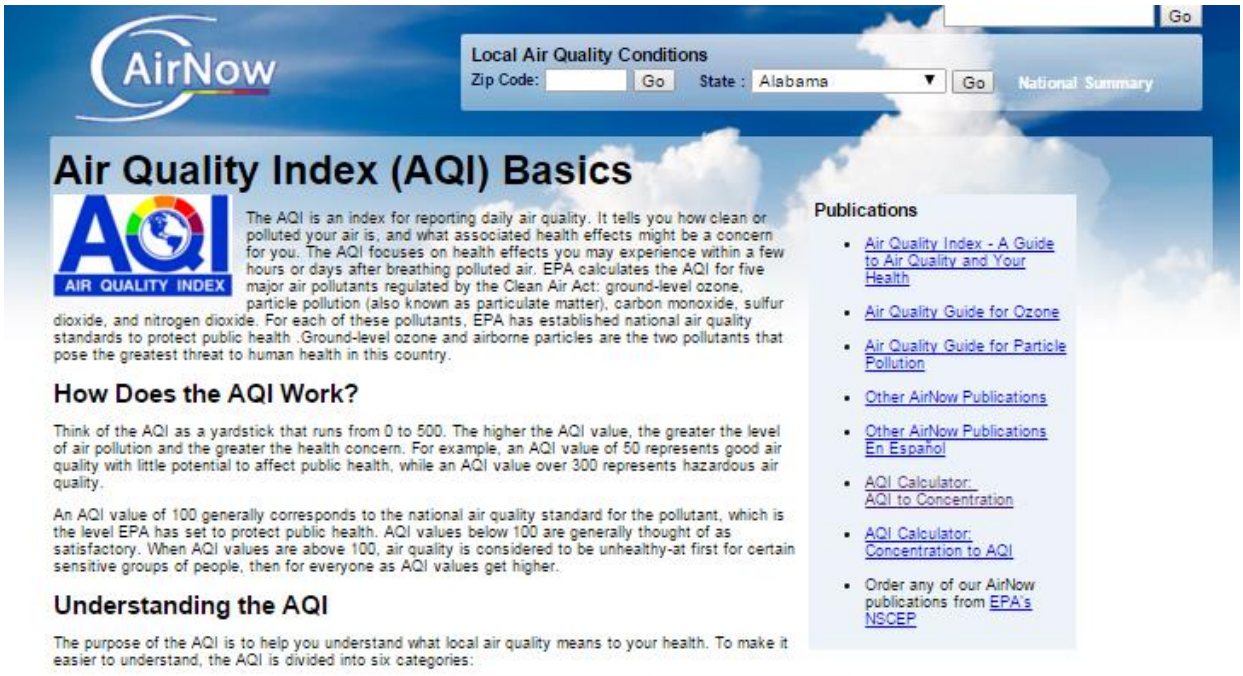
Air Quality Index

The Air Quality Index (AQI) is calculated from the highest hourly PM 2.5 value sent to the AIR Now Website.
http://airnow.gov/index.cfm?action=aqibasics.aqi



AirNow

Local Air Quality Conditions
Zip Code: Go State : Alabama Go National Summary

Air Quality Index (AQI) Basics

AQI AIR QUALITY INDEX

The AQI is an index for reporting daily air quality. It tells you how clean or polluted your air is, and what associated health effects might be a concern for you. The AQI focuses on health effects you may experience within a few hours or days after breathing polluted air. EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established national air quality standards to protect public health .Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in this country.

How Does the AQI Work?

Think of the AQI as a yardstick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI value of 50 represents good air quality with little potential to affect public health, while an AQI value over 300 represents hazardous air quality.

An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level EPA has set to protect public health. AQI values below 100 are generally thought of as satisfactory. When AQI values are above 100, air quality is considered to be unhealthy-at first for certain sensitive groups of people, then for everyone as AQI values get higher.

Understanding the AQI

The purpose of the AQI is to help you understand what local air quality means to your health. To make it easier to understand, the AQI is divided into six categories:

Publications

- Air Quality Index - A Guide to Air Quality and Your Health
- Air Quality Guide for Ozone
- Air Quality Guide for Particle Pollution
- Other AirNow Publications
- Other AirNow Publications En Español
- AQI Calculator: AQI to Concentration
- AQI Calculator: Concentration to AQI
- Order any of our AirNow publications from EPA's NSCEP

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
When the AQI is in this range:	*..air quality conditions are:*	*...as symbolized by this color:*
0-50	Good	Green
51-100	Moderate	Yellow
101-150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

Each category corresponds to a different level of health concern. The six levels of health concern and what they mean are:

- "Good" AQI is 0 - 50. Air quality is considered satisfactory, and air pollution poses little or no risk.
- "Moderate" AQI is 51 - 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
- "Unhealthy for Sensitive Groups" AQI is 101 - 150. Although general public is not likely to be affected at this AQI range, people with lung disease, older adults and children are at a greater risk from exposure to ozone, whereas persons with heart and lung disease, older adults and children are at greater risk from the presence of particles in the air. .

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- "Unhealthy" AQI is 151 - 200. Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects. .
- "Very Unhealthy" AQI is 201 - 300. This would trigger a health alert signifying that everyone may experience more serious health effects.
- "Hazardous" AQI greater than 300. This would trigger a health warnings of emergency conditions. The entire population is more likely to be affected.

AQI colors

EPA has assigned a specific color to each AQI category to make it easier for people to understand quickly whether air pollution is reaching unhealthy levels in their communities. For example, the color orange means that conditions are "unhealthy for sensitive groups," while red means that conditions may be "unhealthy for everyone," and so on.

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health warnings of emergency conditions. The entire population is more likely to be affected.
Hazardous	301 to 500	Health alert: everyone may experience more serious health effects

This page was last updated on Thursday, September 17, 2015

Figure 2: Screen shot clips from EPA AIRNOW descriptions of AQI published information that will be generated from PM 2.5 data submitted from the Pristina embassy monitoring site.

A sample of how the calculation works is shown below and this calculator is accessible at:
http://airnow.gov/index.cfm?action=resources.aqi_conc_calc

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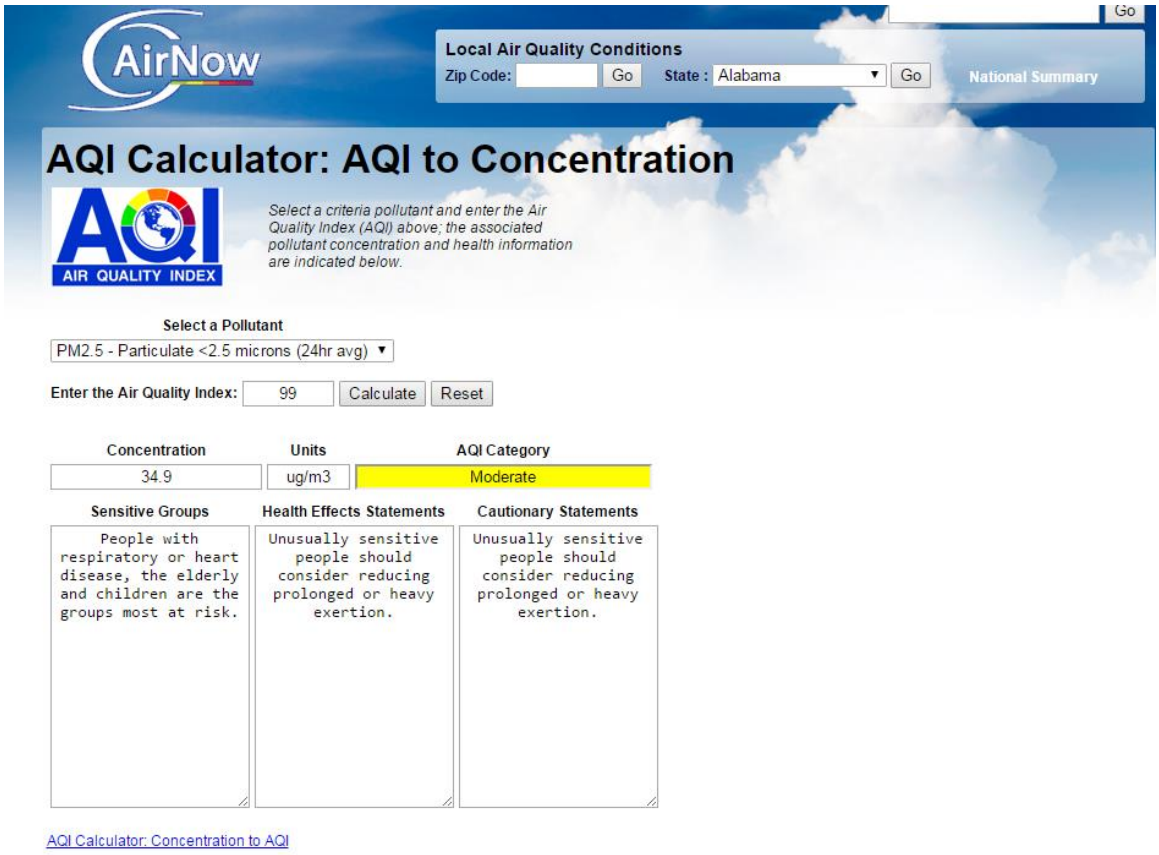

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Met One BAM 1020 FEM PM 2.5 monitor

BAM-1020
Continuous Particulate Monitor

Met One Instruments, Inc.

Features

- U.S. EPA Equivalent Method for PM_{10}, $PM_{2.5}$, and $PM_{10-2.5}$ monitoring
- Long term unattended remote operation of up to 60 days between site visits
- Very low operating costs
- Automatic Span Calibration checks
- Fast and easy field audits using common FRM audit tools
- Bench top or equipment rack mounting in mobile or stationary shelters
- Rugged anodized aluminum, stainless steel, and baked enamel construction
- Highly accurate, reliable, and mechanically simple flow system
- Hourly filter advances minimize effects on volatile compounds
- Advanced Smart Heater technology precisely controls sample relative humidity
- Integrated datalogger allows the connection of up to six meteorological sensors
- Data retrieval through RS-232 serial ports using direct PC connections, modems, printers, or digital data collection systems

Designations

The Met One Instruments Model BAM-1020 was the first instrument to obtain U.S. EPA Federal Equivalent Method (FEM) designation for continuous $PM_{2.5}$ monitoring, in addition to its longstanding EPA designation for PM_{10} monitoring. The BAM-1020 has also obtained the corresponding $PM_{2.5}$ and PM_{10} certifications in the European Union. Two BAM-1020 units can also be operated together as an EPA designated $PM_{10-2.5}$ coarse method. Met One Instruments supplies complete sampling accessory kits for compliance with each designation.

Principle

The BAM-1020 automatically measures and records airborne particulate concentration levels (in milligrams or micrograms per cubic meter) using the industry-proven principle of beta ray attenuation.Thousands of BAM-1020 units are currently deployed worldwide, making the unit one of the most successful air monitoring platforms in the world.

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Operation

At the beginning of each sample hour, a small ^{14}C (carbon-14) element emits a constant source of high-energy electrons (known as beta rays) through a spot of clean filter tape. These beta rays are detected and counted by a sensitive scintillation detector to determine a zero reading. The BAM-1020 then advances this spot of tape to the sample nozzle, where a vacuum pump pulls a measured and controlled amount of outside air through the filter tape, loading it with ambient dust. At the end of the sample hour, this dust spot is placed back between the beta source and the detector, thereby causing an attenuation of the beta ray signal which is used to determine the mass of the particulate matter on the filter tape. This mass is used to calculate the volumetric concentration of particulate matter in ambient air.

Data Collection

All data files are accessible via an industry standard two-way RS-232 serial port using common terminal programs or Met One Instruments software such as Air Plus™ and Comet.™ The data is available in a variety of formats including daily reports, last record, all data, and new records since last download. Configuration files, error logs, and flow statistics are also available. Optional Ethernet and USB data collection support is also available.

Error Handling

The BAM-1020 performs continuous user selected evaluation of a variety of criteria for data validation including flow statistics and a comprehensive set of error codes including power failures, flow failures, hardware failures, tape errors, nozzle errors, span check errors, beta count errors, and more.

Maintenance

The BAM-1020 is designed to run continuously with only monthly or bi-monthly scheduled maintenance—a single roll of filter tape will last more than 60 days. The BAM-1020 also contains a comprehensive self-test function which allows the unit to preemptively test itself for any mechanical failures in the tape control system.

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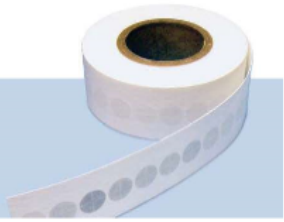
Specifications — BAM-1020

PARAMETER	SPECIFICATION
PERFORMANCE	
Operating Principle	Measures ambient particulate concentrations using beta ray attenuation
U.S. EPA Designations	Class III FEM, PM_{10} (EQPM-0798-122) $PM_{2.5}$ (EQPM-0308-170) $PM_{10-2.5}$ (EQPM-0709-185)
EU Certifications	TUV Rheinland, $PM_{2.5}$ (936/21209919/A) PM_{10} (936/21205333/A, 936/21220762/A)
PERFORMANCE	
Accuracy	Exceeds U.S. EPA Class III $PM_{2.5}$ FEM standards for additive and multiplicative bias*
Measurement Resolution	0.24 µg in 1mg range, 2.4 µg in 10mg range, 12 bit resolution
Data Resolution	1 µg/m³
Data Interval	Hourly concentration values. Met sensor averages from 1 to 60 min
Hourly Detection Limit (2σ)	< 4.8 µg/m³ (3.6 µg/m³ typical)
24 Hour Detection Limit	< 1.0 µg/m³
Range	1 mg (1000 µg) default setting. Settable from 0.1 mg to 10 mg
Measurement Cycle Time	1 hour
Flow Rate	16.7 liters per minute, actual or standard flow conditions
Filter Tape	Glass fiber filter tape, 60 days of operation per roll
Span Check	Automatic 0.8 mg span membrane verification with ±5% deviation alarms
Beta Source	^{14}C (carbon -14), 60 µCi ±15 µCi (< 2.22 x 106 Beq), half-Life 5730 years
Beta Detector Type	Photomultiplier tube with organic plastic scintillator
ENVIRONMENTAL	
Operating Temperature	0° to +50°C (inside shelter)
Ambient Temperature	-40° to +55°C (BX-596 AT sensor) -30 to +50C (BX-592). Extended range sensors available
Ambient Humidity	0 – 90% RH, noncondensing
Sample Humidity Control	Active inlet heater module with internal filter RH and temperature sensors
Enclosure	Weatherproof enclosure or shelter is required
INTERFACE	
User Interface	Standard 8x40 character LCD with dynamic keypad. Optional color touch screen
Analog Output	Isolated 0 –1 VDC output standard. 0 –10 V, 4–20 mA, 0 –16 mA switch-selectable
Serial Interface	RS-232 serial port with USB converter. Ethernet and expanded serial ports with BX-965 option
Printer Output	Output-only serial port for data or diagnostic output to a PC or serial printer
Telemetry Inputs	Clock reset (voltage or contact closure), telemeter fault (contact closure)
Alarm Contact Closures	Data error, tape fault, flow error, power failure, maintenance
Error Reporting	User-configurable available through serial port, display, and relay outputs
Memory	4369 records (182 days at 1 record/hr). Expanded memory with BX-965 option
ELECTRICAL	
Power Supply	Factory configured for 100/120 or 220/240 VAC and 50 or 60 Hz. Dedicated 15A service OK
Power Consumption 110V	262W max with Medo pump and inlet heater running (642W with Gast pump)
Power Consumption 230V	312W max with Medo pump and inlet heater running (717W with Gast pump)
PHYSICAL	
Weight	54 lbs (24.5 kg) without external accessories.
Unit Dimensions	Height = 12.25" (31 cm) Width = 17" (43 cm) Depth = 16" (40 cm).

*Slope and offset bias in linear regression with reference method samplers at low concentrations. See 40 CFR part 53.



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Standard Equipment

- Operation Manual and Quick Setup Guide
- Internal Automatic Span Membrane
- Internal Flow Sensor and Flow Controller
- Internal Filter Temperature, Pressure, and RH Sensors
- Six Channel Data Logger for Accessory Sensors
- Serial Data Cable and Modular Power Cable
- Pump Control Cable and Air Tubing
- Rack Mounting Brackets and Hardware
- Comet™ Data Collection Software
- One Roll of 460130 Glass Fiber Filter Tape

Complete Sampling Accessories Kits (Pumps Separate)

- BX-FEM$_{2.5}$ Accessories kit for EPA PM$_{2.5}$ configuration
- BX-2.5EU Accessories kit for EU PM$_{2.5}$ configuration
- BX-2.5 Accessory kit for non-regulatory PM$_{2.5}$
- BX-10 Accessories kit for EPA PM$_{10}$ configuration
- BX-10EU Accessories kit for EU PM$_{10}$ configuration
- BX-COARSE Accessories kit for EPA PM$_{10\text{-}2.5}$ dual-unit configuration

BX-965 Report Processor Option

This upgraded back panel assembly has expanded digital communications support including Ethernet, an autonomous REPORT serial port with expanded memory, and the capability to serially network two BAMs together in the PM-coarse configuration. BX-965 is recommended for all BAMs where data is collected digitally.

BX-970 Touch Screen Display

This upgraded front door assembly consists of a high visibility color touch screen display with simplified menu navigation. The system also allows BAM-1020 data to be transferred to a USB flash drive. All touch screen units also come with a BX-965 Report Processor back panel.

BX-894 Real-Time Module Option

This add-on light scatter module allows the BAM to log real-time particulate trending levels on any unused met sensor input channel, without interfering with the high accuracy beta system measurements in any way.

Individual Sampling Accessories and Options

- BX-121 & BX-122 High Capacity Gast Pump
- BX-126 & BX-127 Low Noise Medo Pump
- BX-802 EPA Louvered PM$_{10}$ Inlet
- BX-808 BGI PM$_{2.5}$ VSCC™ Cyclone
- BX-807 BGI PM$_{2.5}$ Sharp Cut Cyclone
- BX-811 BGI PM$_{1}$ Sharp Cut Cyclone
- BX-827 & BX-830 Smart Inlet Heater
- BX-803 TSP Inlet with Debris Screen
- BX-302 Zero Filter Audit Kit with Leak Valve
- BX-305 Leak Check Valve with Hose Barb
- BX-344 Inlet Cleaning Kit
- BX-308 Service Tool Kits
- BX-590 Wind Direction Sensor
- BX-591 Wind Speed Sensor
- BX-592 Ambient Temperature Sensor
- BX-593 Ambient RH sensor
- BX-594 Barometric Pressure Sensor
- BX-595 Solar Radiation Sensor
- BX-596 Ambient Temperature and Pressure Sensor
- BX-902B, BX-903, & BX-906 Weatherproof Mini Shelter Kits
- BX-801 Standard 8' Inlet Tube Kit With Roof Flange
- 8112-X Custom length inlet tubes, up to 8 feet per segment
- Inlet tube extension kits, up to 16 feet total
- Phone, cellular, radio, and satellite modem kits

Met One Instruments, Inc.

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E-mail: sales@metone.com | **www.metone.com**

Rev July 2013

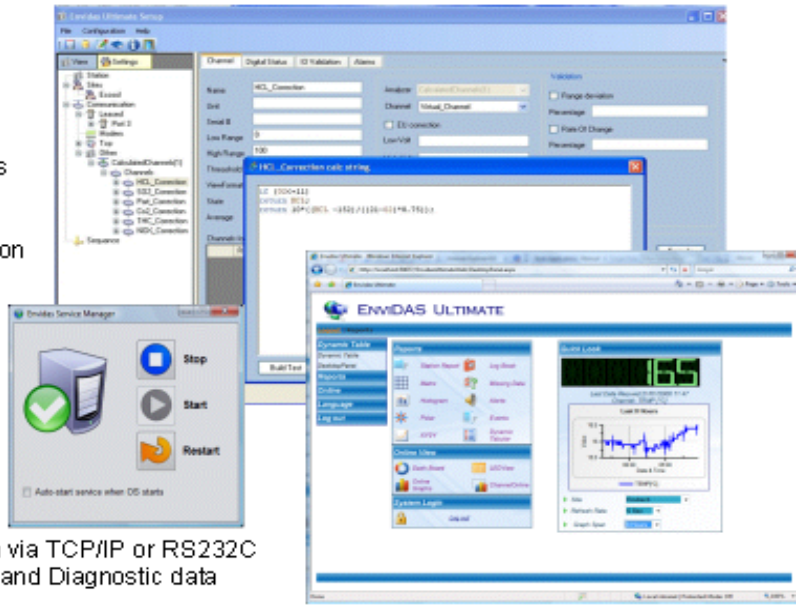
Monitoring Station Logger DAS at Jakarta Central and South site

ENVIDAS Ultimate

The Ultimate Solution for Emission, Air and Water Quality Monitoring System

A typical ENVIDAS system contains the following in a single industrial chassis:

- PC-based DAS
- Core 2 Due processor
- 1 - 64 serial ports
- 16 – 2560 Measurements
- 16 – 2560 digital outputs
- 16 - 2560 digital inputs
- Site Oriented Configuration
- Rugged platform
- SQL Data Base
- 6 USBx2 Ports
- SVGA video display
- Real Time clock
- Flexible easy-to-use
- Menu driven software
- 1U/2U/3U & 4U chassis
- Real Time Charting
- Internal WEB Site
- Analyzers Data collection via TCP/IP or RS232C
- Collect Analyzers Status and Diagnostic data



INTRODUCTION

ENVIDAS is an intelligent, multi function, high – performance data acquisition and reporting system. It is designed with affordability and versatility in mind.

ENVIDAS is a state-of-the-art system that uses nonproprietary desktop or industrial PC computer components to run flexible, environmental data acquisition software. A wide variety of data acquisition modules may be installed.

ENVIDAS software features pull-down windows based menus. Only basic knowledge of PC software operations is required for system operation.
All hardware components are open stock items available from multiple suppliers.
As the name implies, ENVIDAS is designed to help you automate your environmental data acquisition system projects and make your job easier.

The system requires an initial setup. Then it starts to run automatically, acquiring measurements, controlling processes and transferring data to the central computer room. The system has the capability of detecting errors and autonomously transmitting alarms to the central. Data values can be filtered and collected according to user-defined criteria. Local on screen display, printing and alerts transfer by e-mails and text messages (SMS) supported.

ENVIDAS has been used in support of data acquisition and control in the following areas:

- Continuous Emissions Monitoring.
- Ambient Air Quality Monitoring.
- Meteorological Monitoring.
- Water Quality Monitoring.
- Toxic Gas Monitoring.
- Radiation Monitoring.
- Noise Monitoring.

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HARDWARE

The basic ENVIDAS system include 8 analog, 16 digital inputs, 16 digital outputs and 5 RS232C communication ports.

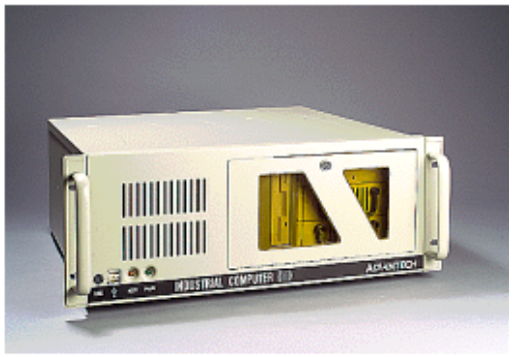
ADAM-5000/485
4-Slot Distributed DA&C System

The ADAM-5000/485 and ADAM-5000E systems conform to the EIA RS-485 communication standard. This is the industry's most widely used, balanced, bidirectional transmission line standard. RS-485 was specifically developed for industrial applications to transmit and receive data at high rates over long distances.

- Supports ADAM ASCII protocol
- RS-485 Communication for easy installation and networking
- 4 or 8 slots for up to 128 points data monitoring card control in one module
- Complete set of I/O Modules.
- Build in RS232C Communication
- 2500 VDC Communication Line isolation
- 3000 VDC Communication Power Isolation
- 3000 VDC I/O Module Isolation

Envidas IPC-510
ATX RACKMOUNT PC CHASSIS

- 19" rack mount case meets the EIA RS-310C standard
- ATX or Back plane mother board
- Field-replaceable 350-watt power supply
- Shock-absorbing mounts cushion disk drives
- Dual push-pull cooling fans generate positive air pressure inside the chassis
- Filtered cooling air reaches all cards
- Removable air filter
- Lockable door for rustproof integrity and running security
- Hold-down clamp protects plug-in cards from vibration
- Full line of industrial CPU cards



C104H
4 PORT'S RS232C BOARD

- Number of ports: 4
- I/O address: 0x0000-0xFFFF
- IRQ: 2, 3, 4, 5, 7, 10, 11, 12, 15
- Data bits: 5, 6, 7, 8
- Stop bits: 1, 1.5, 2
- Parity: none, even, odd, space, mark
- Speed (BPS): 50-115.2K

GIGABYTE ATX GA-EP45-DS3LR

- CPU: PE Dual Core 2.2 GHz
- RAM: 1024 MB DDRAM 633MHz
- Cache Memory: 4 MB
- Features SATA 3Gb/s interface with RAID function (2 ports with RAID function supported by GIGABYTE SATA2)
- Northbridge: Intel® P45 Express Chipset
- Supports 1333/1066/800/533 MHz FSB
- Supports DDR2 1333/1200/800/667 memory
- Parallel port: One enhanced parallel port, supports SPP/EPP/ECP modes
- ATX form factor, 305 x 210mm
- 2 PCI slots, 1 PCI Express X16 slot, 4 PCI Express X1 slot
- DVD Read/Write
- Serial ports: One RS-232 on-board
- 8 USB 2.0/1.1 ports
- 2 USB 2.0/1.1 connectors for additional 4 ports by cable
- Use of licensed AWARD BIOS(Dual Bios)
- PS2 Mouse Port
- Realtek 8111C Gigabit LAN Controller
- Option industrial CPU with Watch Dog system
- 15",17" or 19" LCD SVGA screen

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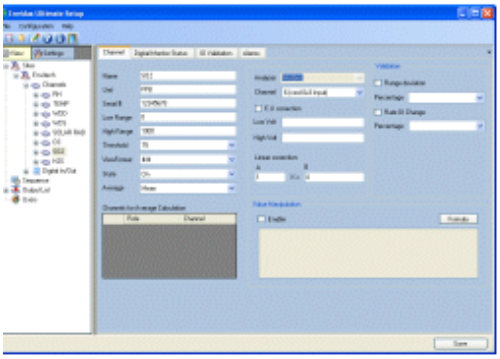
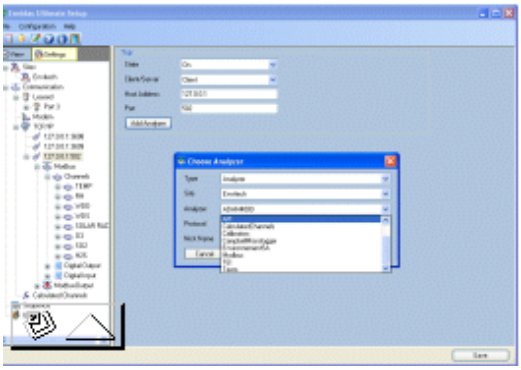
ENVIDAS SOFTWARE MAIN SPECIFICATIONS & FEATURES

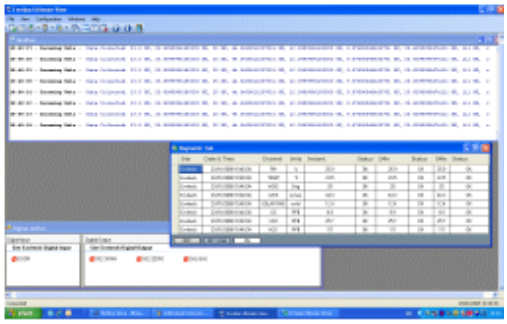
ENVIDAS supports automatic calibration control, recording and correction. The software generates calibration and data reports at different time intervals, and can transfer data via several communication devices.



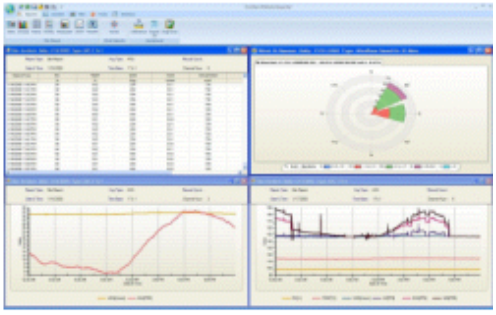
ENVIDAS software is a flexible, easy-to-use, turnkey application software that turns a PC with a data acquisition module into an intelligent environmental data acquisition system.
It has the following features:

- Multi tasking software - no data is lost during polling
- Multi-tasking software allows user interaction without interrupting data collection
- Run under Windows XP Pro., Vista Business, Windows 2003/8 Server
- Handles up to 2,560 analog inputs
- Handles 64 – 2,560 digital input channels
- Handles 64-2,560 digital output channels
- Supports up to 64 RS232C channels
- Remote access for edit or check configuration, calibration start/stop, viewing current measurements, and complete remote control





- Measuring rate: every 1, 2, 5, 10 sec' or any requested rate
- User selected average: 1, 5, 6, 15 or 60 min are typical
- Dynamic display of instantaneous values in engineering units, voltages, or any calculation
- Password protection, 3 users levels
- Calculations for math and meteorological statistics
- n Sec' sample data storage for pre configured amount of days
- Automatic calibration correction and control via relays, calibrators or analyzer remote commands



- Daily, weekly, monthly, periodic data listing textual and graphical reports
- Histogram, Wind Rose, Pollution Rose, Polar and Event Analysis reports.
- Calibration report
- System fail report
- Analyzer Digital status information report
- Analyzer Diagnostic Report
- Service Log-Book Writer and Reporter
- Complete Internal Web Site for remote reporting and On-Line Display's
- Manual data transfer by using a USB Key
- SQL Database 2005/8 Express Edition.

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- Real-Time instantaneous values graph
- Communication via RS232C to the smart analyzers (Multi-drop & Star connection available)
- Collection and reporting of analyzer status information

- Remote access feature allows the user to have direct analyzer connection from a remote location
- Calibration sequence control via RS232C , TCP/IP and Digital Outputs
- Automatic alarm messages via GSM SMS and/or e-mail transfer.
- Optional Bill Boards display support
- More than 10 years of Data Base Information

- Connection with Envista ARM data management system via telephone line (POTS, cellular, or leased line), Internet, direct serial or radio
- Error checked data transfer to Envista ARM

The following smart analyzers are supported by ENVIDAS's RS232C communication protocols:

Thermo Environment	c & i Series
Monitor Labs	9400 Series
Teledyne API	a & e Series
TE-R&P	Teom, FDMS, Partisol+
Horiba	AQM Series
Environment S.A.	M Series
MODBUS	Master & Slave
OPC	Server & Client

Other RS232C protocols available upon request

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A.9.1 Envidas Ultimate Hardware Platforms

Envidas Ultimate systems are commonly delivered on Advantech 510 industrial Workstations. A 19“monitor, keyboard and mouse are included with each system. A color inkjet printer is also supplied.

Industrial ATX 4U Rackmount System with Pentium Processor (PENTIUM 2.6G 800F 2M 775P E5300(G)

- Featuring Intel® PENTIUM 2.6G 800F 2M 775P E5300(G) processor with CPU fan installed
- Built with Intel® 945G+ICH7 chipset revision control industrial grade motherboard for long roadmap
- 4 GB installed/ 2G Dual channel DDR2 667 SDRAM
- 5 PCI, one PCI Express x16 and x1 expansion slots
- On board Dual Gigabit LAN
- 300W ATX/PFC auto-switching power supply
- 2 channel raid card installed, RAID 0/1 CARD SATA2 2CH PCI(G)
- Dual 250GB 3.5" SATA 7KRPM 8M(G) Hard Drives installed into the front accessible Mobile hard drive tray/ RACK 5.25" SATA FR&CR(G)
- IDE DVD+/-RW installed into unit
- Windows XP Professional service pack 3 installed
- Unit has standard assembly + Software Installation * Testing

System consist of the following:

LINE ITEM NUMBER	DESCRIPTION	QUANTITY
100	IPC-510-BTO System Consisting of the Following:	1
101	IPC-510MB-30ZBE IPC-510MB With 300W P/S RoHS Ver.B	1
102	P-4 ATX IMB FSB 800,VGA,2GbE,4COM	1
103	PENTIUM 2.6G 800F 2M 775P E5300(G)	1
104	2G DDR2-667 240PIN 128X8 VLP SAM(G)	2
105	Cooler I-St-775-S95W 98*92*44-SS 12V0.2	1
106	SEAGATE 250G 3.5" SATA 7KRPM 8M(G)	2
107	PROMISE RAID 0/1 CARD SATA2 2CH PCI(G)	1
108	5.25" SATA HDD Case	2
109	LG 22X IDE DVD+/-RW DL RETAIL(G)	1
110	WIN XP PRO SP3 ENGLISH W/RECOVERY CD(G)	1

System may be ordered with DR DAS LTD standard system images which includes all Windows updates, SQL Server 2005 Express, EnvidasFW and Envidas Ultimate images, Moxa drivers, Advantech drivers, and DR DAS's library of environmental and meteorological instrument manuals and support software. License keys for DR DAS LTD software must be purchased from DR DAS LTD (sales@dr-das.com). Part # IPC-510-BTO-DR-DAS.

Advantech DR DAS Ultimate PC Platform Specification

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MAIN SOFTWARE FEATURES

- Microsoft .NET C# programs for Windows Vista & XP Pro.
- Windows 2000/2003, Linux and Solaris database servers. Client-Server, Smart Client and Web applications.
- SQL Server 2005 or Oracle9i/10g DB.
- Multithreaded communication with data loggers and instruments.
- Internet and intranet networking support
- Open system architecture.
- Multi-lingual design.
- Multi-document interface.
- Completely menu-driven.
- Alert/Alarm transmission via SMS & email
- Collects data from remote stations at scheduled times or upon request.
- Manages up to 999 remote stations (9999 remote stations optional).
- Dynamic displays
- GIS dynamic map (SHP Format) viewer.
- Ad-hoc reporter designer
- On the fly QA.
- Automatic data backups
- Data analysis and reporting
- Optional equipment inventory and maintenance system.
- Optional voice information system

DYNAMIC DISPLAYS

The following *Dynamic* displays are available:

- Tabular: Display current data for one or more stations.
- Last Received: Date/Time of last data and calibration received from each station
- Dynamic GIS Map Viewer: GIS Viewer interface for data display on user supplied base GIS layer map.

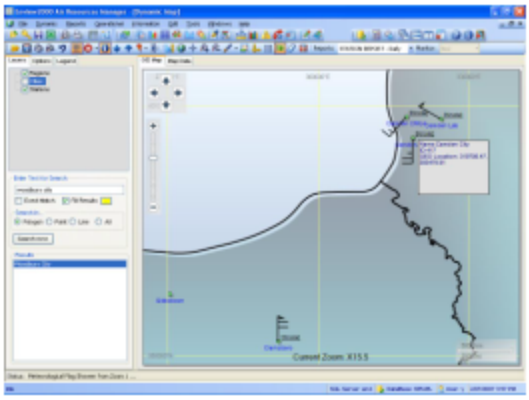

Figure 2 – GIS Viewer Dynamic Display

REPORTS & ANALYSIS

By using this feature, the user can produce text and graphical reports.

- Station Data Report –Standard tabular and graphical reports for Station values. Day, week, month and user defined (periodic) report intervals are supported. Stored data values may be averaged before being reported. Values reported may be filtered.
- Multi-Station - Reflects the same items that "Station Data Report" reflects, only for more then one station and multi parameters report.
- Group - Report that reflects a group of monitors related to one or more stations as set up by the user.
- Histogram - The frequency of occurrence for various ranges of a monitor's value.
- Index - Performance of the Air Quality Indexes value for a station or several stations.
- 2Y Time Plot - Two parameters plotted against time.

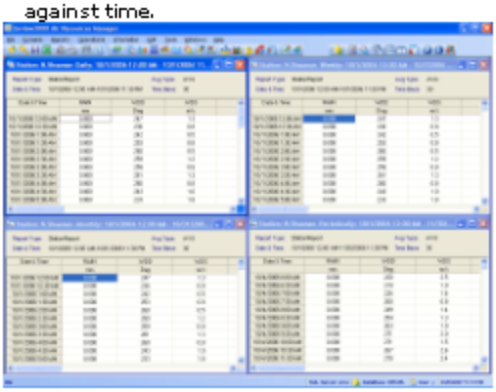

Figure 3- Daily Station Textual Report

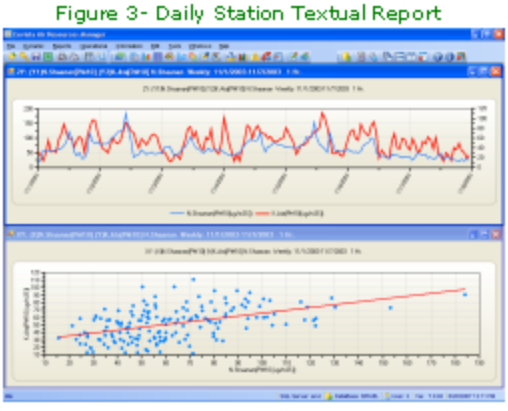

Figure 4 – Graphical Results

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The user can select the following *analysis* features:

- Analysis period of day, week, month, or year.
- Average Type Mean, Running, Running Forward, Maximum and Minimum.
- Data average interval of 1min, 5min, 6min, 10min, 15min,30min,1hr,3hr,6hr,8hr,12hr, or 24hr.
- Output to display, printer, or file (XLS, WMF, JPG and BMP format).

Figure 5 – Example of Analyses Results

- Wind Polar – Joined wind direction with average or percent of wind speed or pollution per each direction.
- Wind & Pollution Rose - Joined pollution concentration, wind direction and Speed relative frequency.
- Wind Polar Time –Wind direction against time.
- XY Time Plot – Correlation between two parameters.
- Events - Creation of an event (over value) report by scanning pre-defined period.

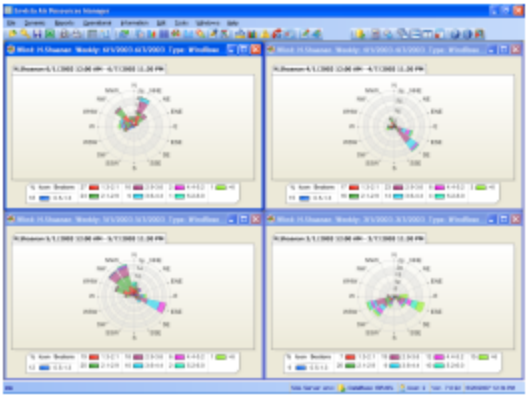

Figure 6 – Example of Wind Roses

OPERATIONAL REPORTS

By using this feature, the user can view the operational quality of the network.

- Calibration –Analyzers 2 Point, 3 Point and Multi-Points Calibration reports.
- Status- Gives information about % of the data with various status codes.
- Diagnostic - Report Diagnostic information collected from smart analyzers.
- Digital Monitor - Reports on monitor status alarms based on the digital status information retrieved from smart analyzers with serial interfaces.
- Digital I/O– Reports on digital I/O changes based on the digital input information retrieved from the digital I/O of data loggers
- Communications - Display the errors that occurred because of using the data acquisition program, by date, station and port according the relevant communication type.
- Power Off – Station power failure report
- Missing Data – Display every time that a monitor has not received data.
- Log Book – Display collected technician write notes related to analyzers services, and let the user to see these notes as a report.
- Edit History - Reports on the edits that have been made to raw station data values and/or status.
- Validity - Report of intentioned validating of monitors as done by the editor or supervisor.

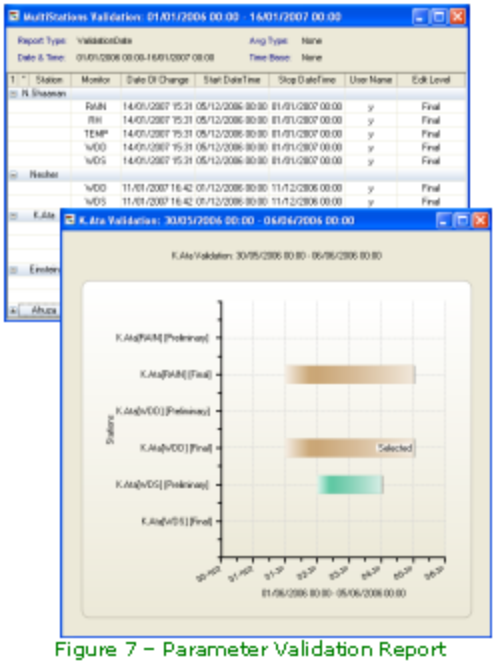

Figure 7 – Parameter Validation Report

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COMMUNICATION CENTER

The Envista CommCenter module is an intelligent communication controller that can manage large state and regional monitoring networks. It can communicate over a maximum of 128 RS232C ports in parallel as well as via TCP/IP enabled media. CommCenter can simultaneously poll, receive incoming calls from other central systems and log/process event driven incoming messages from remote stations.

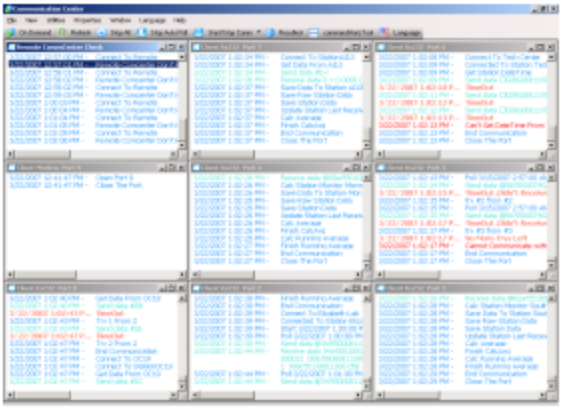

Figure 8 – CommCenter Trace Display

CommCenter can communicate with the following data loggers:

- EnviDAS for Windows & Envidas DOS
- Campbell Scientific CR 10X, 21X, 23X, 1000,
- ESC, EMC, ODESSA & DASIBI
- Met One 455, 456, 457, BAM models
- TEI, ME and Environnement S.A. Analyzers

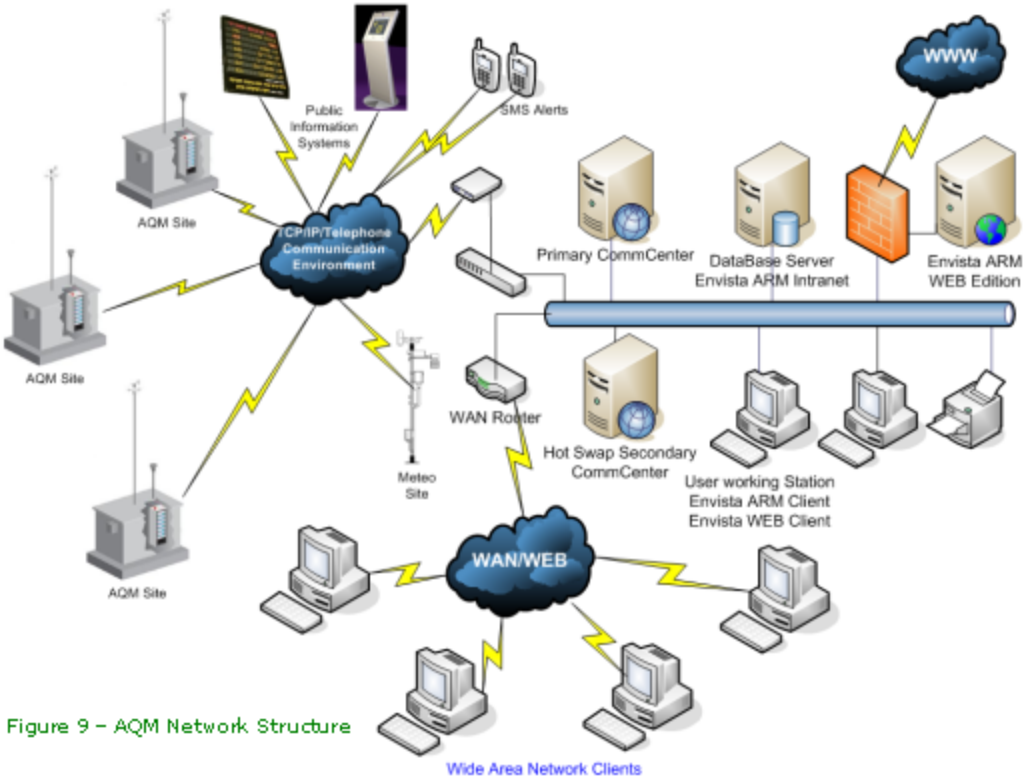

Figure 9 – AQM Network Structure

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