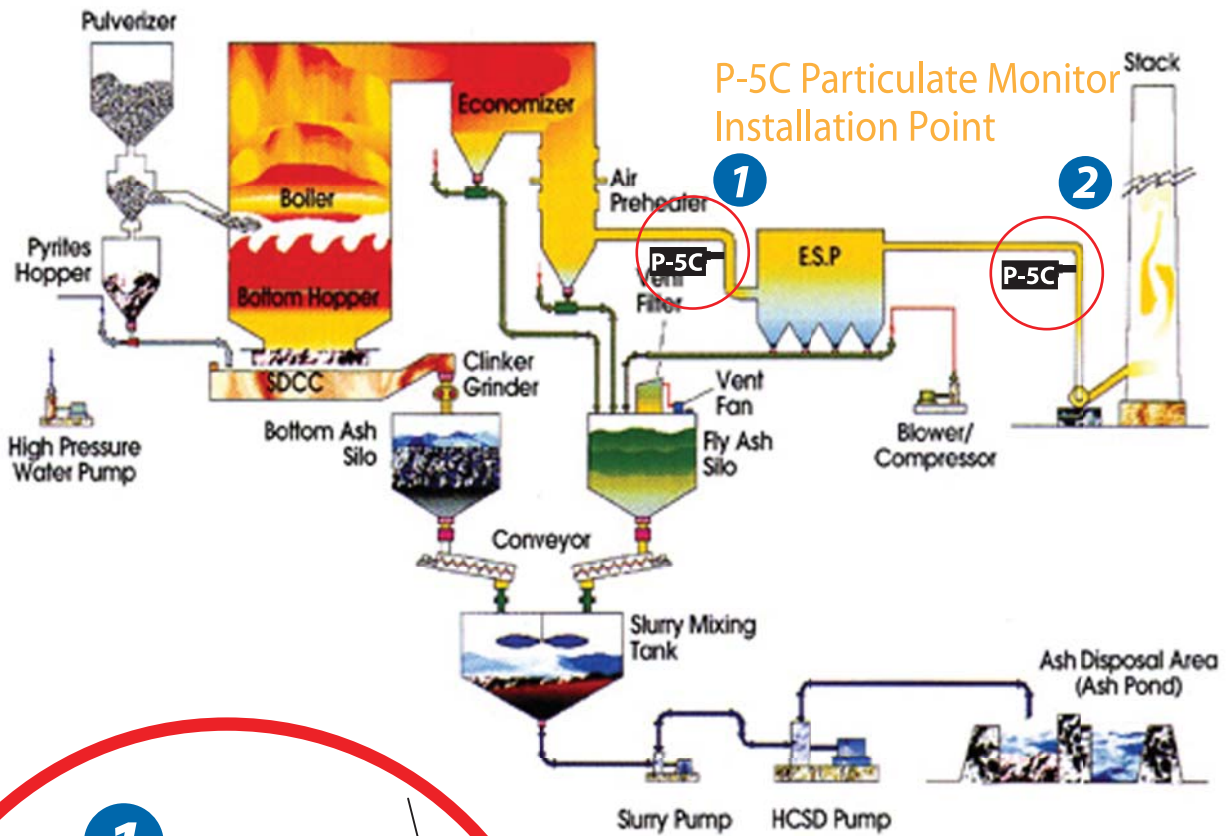


**"A Special Company
For Environmental Measuring Instrument"**



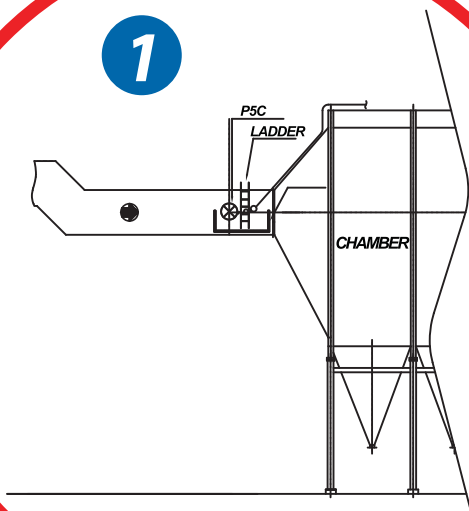
EP efficiency monitoring system

INSTALLATION DUST DETECTOR



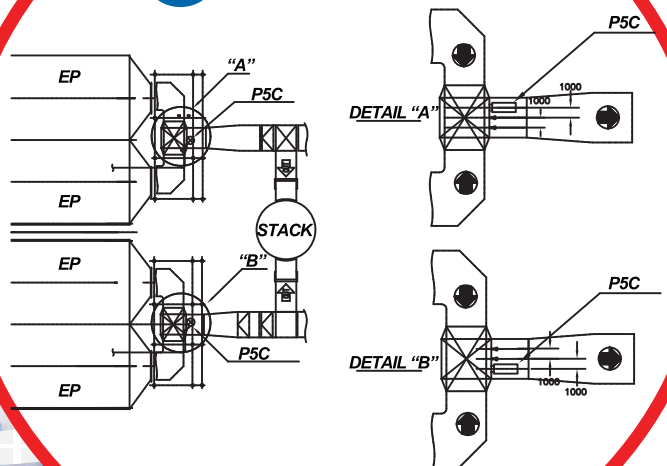
P-5C Particulate Monitor Installation Point

1

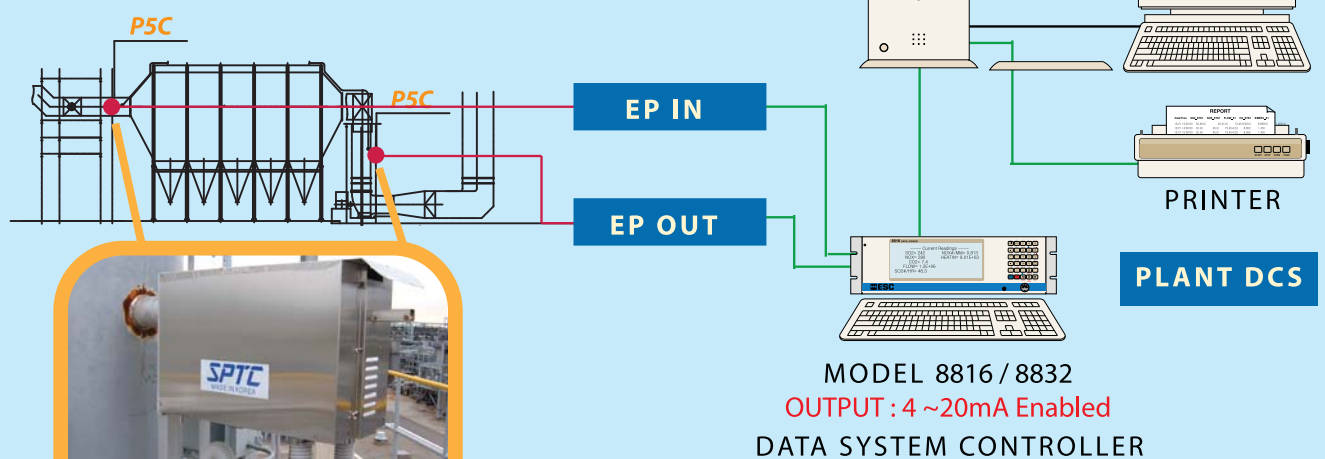


Detail : P-5C Particulate Monitor Installation Point

2



EP Efficiency Monitoring & CEM



Dust Analyzer - P5C



P-5C Particulate Monitor



Model 8816/8832 Data System Controller



E-DAS ATX / Ambient For Windows®
Advanced E-DAS Data Acquisition and Reporting Software

P-5C Particulate Monitor



The P-5C Particulate Monitor performs continuous, non-extractive mass concentration measurements - simply and reliably - in a wide variety of applications.*

Single-ended, Self-aligned Instrument

Mounts to standard ASA flange, with no requirements for alignment or opposite wall access, resulting in low installation costs.

Ready to Operate

Complete with internal zero and reference calibrations, purge system, and protective covers. Comes with integral purge system and protective covers. Installs in minutes, operated and calibrated by non-skilled plant personnel.

Rugged Design

Proven reliability for 20+ years in abrasive and/or corrosive applications.

Meets Regulatory Requirements

Has passed US EPA PS 11 Requirements. Ideal for CAM applications.

Minimal Consumables

Save time, money, and inventory stocking.

**Patented*

P-5C Particulate Monitor

*Continuous, Non-extractive Mass Concentration Measurements
Approved Specification for CAM and Consent Decree Applications*

SPTC provides data systems for monitoring source emissions; ambient air quality and meteorological sites; digital strip chart replacement systems; computerized local air quality index reporting systems; and other environmental systems.

P-5C Particulate Monitor

Specifications

MEASUREMENT RANGE

1 - 20,000 mg/Actual m³

SCALE RANGES

Dual ranging, user selectable anywhere within the measurement range.

DETECTION LIMIT 0.5 mg/Am³

STABILITY

Zero and Span Drift
Short Term (2 Hr.) - Less than 1% full scale Long Term (24 Hr.) - Less than 2% full scale

RESPONSE TIME Approximately 3 seconds

CALIBRATION

Internal system automatically performs a low level (Zero) and upscale Span cycle at intervals initiated by internal clock or by external data system command (contact closure). External calibration tube provides traceable values for reference calibrations and instrument audits.

AMBIENT TEMPERATURE -30°C to 55°C

PROCESS GAS TEMPERATURE

To + 260°C standard, to + 375°C with high temperature probe option.

PROCESS GAS PRESSURE

To + 130 mm H₂O standard
To + 375 mm H₂O w/ High Volume Purge Blower Option.

PROCESS GAS VELOCITY Instrument operation is independent of gas velocity.

POWER REQUIREMENTS

110 ± 15 Volts AC, 60 Hz, 6A.
(220 V, 50 Hz optional)

OUTPUT

4 – 20 MA, 550 ohms maximum resistance.

Installation Information

PIPE SIZE:

Mounts into standard 4" (or larger) pipes

MOUNTING FLANGE

ASA standard 4" (150#) flange (9" OD, with eight, 3/4" diameter bolt holes on 7 1/2" diameter B.C.)

PROBE LENGTH

Distance from mounting flange to center of sampling volume - 18", 36" or 60" standard

PHYSICAL DIMENSIONS

Probe length plus 30 1/2" long x 12 1/2" wide x 18" high

WEIGHT 125 - 140 pounds

Optional Equipment

1. HIGH PRESSURE PURGE SYSTEM
For process gas pressures in excess of +130 mm H₂O
2. HIGH TEMPERATURE PROBE OPTION
For temperatures from 260° C up to 375° C maximum
3. OUTPUT CABLE
Complete with connector, lengths to 500 feet.
4. Plant Air Backup

WARRANTY Twelve (12) month return-to-factory warranty.

Specifications subject to change without notice

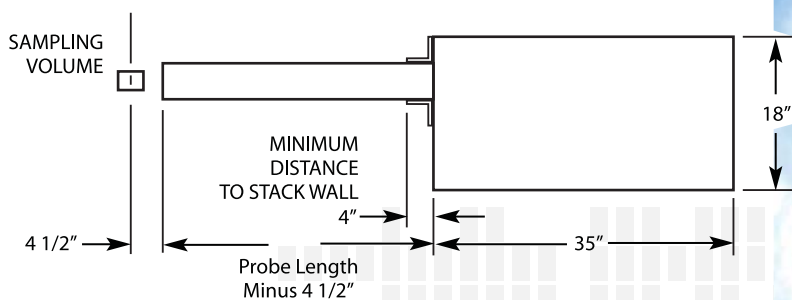


Figure 6 P-5C Dimensions

P-5C Particulate Monitor

Applications

Listed below are a few of the applications and industries to which the instrument has been successfully applied.

- MONITOR OUTPUT EMISSIONS— power and recovery boiler in lumber and paper industries.
- DETECT THE PRESENCE OF UNDESIRABLE MATERIALS— in process lines; for example, sulfuric acid mist in chemical processing plants.
- AID IN THE DESIGN AND TROUBLESHOOTING— of pollution control equipment.
- AS A CONTROL DEVICE— to minimize lost product in manufacturing process, such as metals processing plants.
- Optimum solution for Consent Decree and Compliance Assurance Monitoring (CAM) applications

Electro-Optics System

The Model P-5C Mass Concentration Monitor is an optical device utilizing an LED light source, with typical lifetimes well in excess of 100,000 hours.

The emitted beam passes through a sampling volume, optically defined and external to the instrument probe, where particulate matter causes incident light scattering. Backscattered light is then focused onto a detector and converted into an electrical output (see Figure 1). ESC's extensive development program has resulted in a unique design such that the instrument output is proportional to the mass concentration over a wide range of particle types and sizes. A second (reference) detector receives a portion of the emitted light beam, and is used in a ratio circuit to automatically compensate for any changes in emitted power.

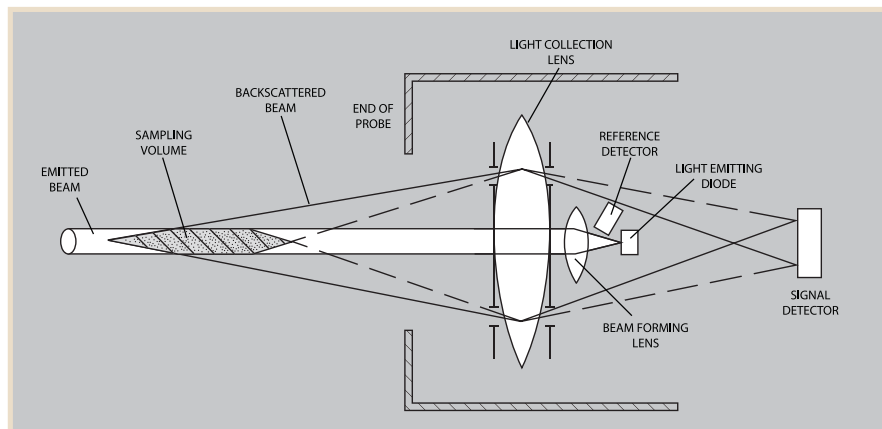


Figure 1 P-5C Optics Diagram



Figure 2 Optics Head Assembly

These components are contained in an optics head assembly (Figure 2) which is positioned inside the stainless steel probe, where it is protected from the process atmosphere, and kept cool and clean by the purge system.

System Connectivity

Serial communications with the P-5C micro controller has been enhanced to include remote capabilities. With optional RS-485 conversions to isolated copper media or fiber optic cable, the P-5 may be connected

directly to an ESC 8816 or 8832 data logger via available RS-232 or RS-485 ports. This type of connection allows the data collection system to poll the P-5C for data, initiate calibration checks, and supervise microprocessor generated digital flags. Advantages of this approach include high isolation between stack and DAS, elimination of current loop ranging issues, and no use of discrete I/O on the DAS. Interfacing to any of the ESC DAHS firmware and software is a seamless standard process of the ESC product line.



Figure 3 P-5C with Cover Removed

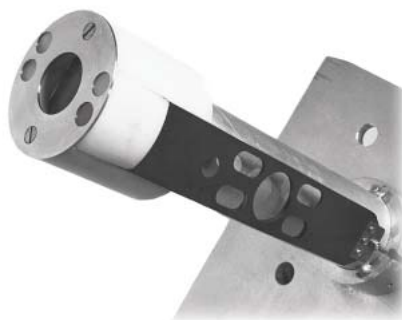


Figure 4 Closure Valve Assembly



Figure 5 Digital Control Panel

Rugged, Modular Design

When the protective covers are removed, all of the components of the system are readily accessible, as shown in Figure 3. The frame provides both a mounting base for components and a means of attachment to the stack flange, in a sturdy, all-welded assembly. Ruggedness, flexibility, and design simplicity are primary features of the system.

Purge System

Ambient air is drawn in through openings at the bottom of the instrument frame, and passes through a replaceable filter to the centrifugal blower inlet (Figure 3). The output of the blower forces air into

an aluminum purge tube, where it passes over the optics head, and out into the process gas stream, in a manner which does not disturb the external sampling volume.

Should a loss of AC power or purge flow occur, the instrument will automatically initiate a "fail-safe" retract, closing the valve on the end of the probe and removing the sensor from the stack.

Calibration

"In Situ" calibration is accomplished by means of a unique valve assembly, located at the end of the SS probe (Figure 4). In the "operate" position, the large hole in the band allows both emitted light out of and backscattered light into the optics head. As the band is moved to the right, the small hole in the center of the band allows the emitted beam out, but prevents backscattered light from reaching the detector. In this manner, a true "operational zero" is provided. Further movement of the band presents a surface of known reflectivity to the optics head, providing a "span" signal. When moved completely to the right, as shown, the band acts as a closure valve, sealing off the instrument from the process gas stream. Movement of the band is accomplished simply by means of a handwheel at the rear of the purge tube.



Typical Stack/ Duct Installation

Operation

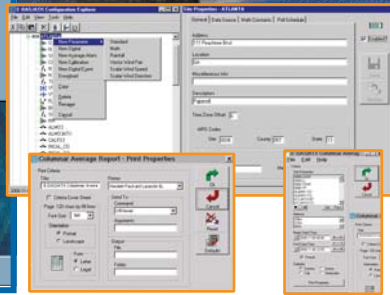
The digital control electronics are housed in a sealed box (Figure 5). An 8 line x 25 character backlit LCD displays the instrument output and status, as well as the menu driven control system. Operation of the control system is intuitive, with user-friendly menus and system prompts. Simply push the single control to access the main menu. Rotate the control to choose from any of the sub-menus for system setup, status, calibration, or maintenance. Critical system settings are password protected to prevent access by unauthorized personnel. The new electronic control system simplifies operation, provides more user information, and improves overall system performance.

To operate, turn on power, set the output ranges and perform reference and in-situ calibrations.

SOUNDS EASY? It is. Reliable, accurate results, in MINUTES!

E-DAS ATX / Ambient For Windows®

Advanced E-DAS Data Acquisition and Reporting Software



Application Features

- Use of Popular Relational Database Management Systems
- Efficient Client/Server Architecture
- Scalable Data Acquisition Server Architecture
- Advanced Functionality, Configuration, and User Customization
- Unparalleled Reliability and Accuracy

SPTC has a reputation for providing the best air and water quality monitoring systems. Now, SPTC raises the bar with the introduction of E-DAS/ATX, combining features and reliability that leverages today's advanced technology for you!

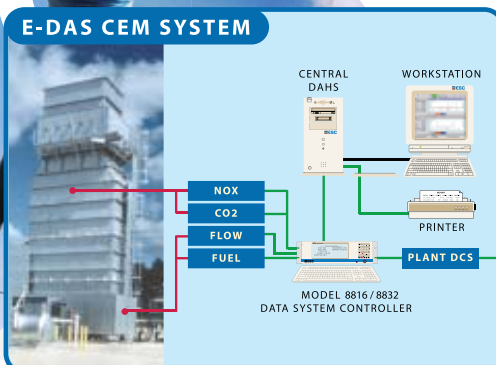
Operation Features

- Polls SPTC 8832/8816/8832 Data Loggers
- Time Synchronization among sites (servers and clients)
- Utilizes ODBC technology and a standard relational database management system (e.g. Microsoft SQL Server)
- Windows® Explorer-style configuration and menu
- Spreadsheet style data editing
- Imports from AIRS, delimited ASCII, and other formats
- Customizable menus or simplified user interface

Reporting Features

- U.S. and Canadian AQI
- AIRS and AIRS reengineered
- Daily, monthly and annual Summaries and Details
- Historical graphs
- Wind Rose / Pollution Rose
- Miscellaneous tabular and columnar formats
- All reports can be run on demand or scheduled to run automatically

E-DAS CEM SYSTEM



Advanced Features

Data Retrieval ATX is capable of coordinating simultaneous retrieval of data from multiple remote loggers via multiple modems and/or multiple directly connected loggers (LAN, radio, etc.). Retrieval is based on a user-defined schedule with automatic recovery of data missed due to downtime or communication problems. Almost every aspect of retrieval is configurable.

Time Synchronization Time-of-day is automatically synchronized across sites, servers and clients.

Database Storage & Archiving Uneditable foundation readings are stored unprocessed and separate from processed editable reporting records so that editing cannot result in data loss.

Familiar User Interface Designed to mimic popular Microsoft software with which the user is likely to be familiar, ATX has an ease of use that belies the power under the hood.

Configurability Fast and easy, ATX allows configuration of the sites, instruments, calibrations, etc. with a comfortable configuration explorer. The Configuration Genie can streamline startup by helping generate an initial configuration.

Security To control access to sensitive information, ATX allows administrators to configure per-user security and auditing based on the type of access and the type information. Special limited-function user interfaces are provided as well.

Data Editing Using a highly visual color spreadsheet style editor, ambient readings and their associated flags and codes can be edited on a per-item basis or entire regions can be batch edited. The editor can manage multiple parameters from multiple sites for varying average intervals and time periods.

Central Data Interpretation Flag interpretation and automatic code assignment can be employed while polling or during data editing. Additionally, data edits can optionally trigger invalidation of base averages or regeneration of hourly averages.

Graphical Data Display It is possible to view data in a graphical format for analysis and troubleshooting.

Reporting Standard Air Quality Reports include AIRS, AIRS reengineered, AQI, and Ozone Mapping. General tabular output is also available as well as daily, monthly, quarterly and annual summaries.

Report Output All report output can be viewed, optionally edited, then printed or channeled directly to local or remote printers. It is also possible to route report output with custom authored scripts to support e-mail, ftp, fax, network or other distribution.

Scheduled Reports Any report can be scheduled to run unassisted with specified criteria (date/time range, site, parameter, etc.) and output path.

Four-Digit Year For unambiguous data time tagging, storage and calculations.

Highly Customizable Custom menus and user interfaces can be implemented on a per-user or per-client computer basis. Specific aspects of system operation can be adjusted to suit customer needs. Customizable properties include:

- data flags, labeling and priority
- number of flags displayed per report
- fill characters for null, missing, invalid or overflow data
- name and source of 10 user-defined data flags
- label and content of the per-facility, per-site and per-parameter user-defined miscellaneous information fields

- titles, column widths, character size and page orientation of any report

- labels appearing on the splash screen and user interface

- default values that appear in newly configured items

- user-scriptable report post processing for custom report distribution via email, Internet, etc.

Data Import/Export ATX can import or export data in both simple delimited or AIRS format, allowing access to long-term data. Data can also be exported to most third-party spreadsheets. When networked to a PC running 's Computerized Local Air Index Reporting (CLAIRE) software, ATX will export AQI data to the CLAIRE system for on-demand voice reports of AQI over the telephone. Strip chart data from SPTC's Digi-Trend for Windows software can also be imported into ATX.

Advanced Technology Today's advanced technology is both powerful and affordable. ATX is engineered from the ground up to bring that technology to bear to meet today's monitoring demands. It offers the performance of a true native 32-bit application built using the most up-to-date development tools and techniques.

Platform Options ATX will run on standard personal computers (Pentium®, Pentium Pro®) running Windows® 2000 Pro/XP. The client software will run on standard personal computers (Pentium®, Pentium Pro®) running Windows® NT/2000/XP.

Use of Popular RDBMS ATX employs ODBC technology to capitalize on the power of today's popular Relational Database Management Systems. The recommended RDBMS is Microsoft SQL Server 6.5 or higher.

This offers customers a wide range of data storage options, including the convenience of plugging ATX directly into an installed RDBMS. Use of established databases provides the means for ATX users to apply flexible third party report generators and query tools directly to quality assured data.

Client Architecture The backbone of the ATX system is a true client/server architecture providing efficient distribution of processing. Client software can access server components from the server itself or via LAN, dialup networking or Internet Connection.

Scalability ATX is designed to grow along with changing monitoring requirements. It can run efficiently on modestly configured hardware or it can take advantage of volume memory, multiple processors and distributed computers to meet the most demanding requirements. The number of sites, parameters, and other configured elements is limited only by the underlying hardware resources.

Performance Tuning Parameters It is possible to customize the performance aspects of ATX to meet the full spectrum of demands, from the simplest to the most rigorous. Customizable performance parameters include:

- the CPU priority, number of cached resources, and degree of log information detail for each acquisition server component
- the size of individual port read and write buffers and the port read timeout
- modem control strings and timeouts

E-DAS ATX / Ambient For Windows®

Advanced E-DAS Data Acquisition and Reporting Software

E-DAS Ambient for Windows®

Data Acquisition and Reporting Software
for Ambient Air Quality & Meteorology

E-DAS Ambient for Windows® 98/NT/2000/XP software simplifies the task of monitoring and reporting data for air quality/meteorological and other instruments at remote locations. An E-DAS data system consists of a network of data loggers that acquire and transfer data to a central computer programmed to process, edit, archive and report the environmental data. The data system is based on a modular approach, and can handle data from a single remote site or from an entire air quality network covering a plant site or a large geographical region - such as a state or county. Both existing and new air quality monitoring sites can utilize the E-DAS Ambient for Windows® to provide a cost-effective solution to ambient air quality and meteorological data acquisition requirements.

Applications The system is used to acquire and process data from ambient air quality networks, meteorological systems and other applications where air quality or meteorological data must be acquired and processed in a timely and efficient manner. Customers include federal, state and local agencies, air quality consultants, utilities, paper mills and chemical companies. SPTC's data loggers are designed to be compatible with all major commercially available air-quality/meteorological analyzers which may be provided by the customer or by SPTC. Your choice of analyzers will vary according to regulatory requirements - usual choices include analyzers for SO₂, CO, O₃, NO_x, TSP, wind speed, wind direction, temperature, barometric pressure, rain gauges and others.

SPTC Model 8816/8832 Data Loggers Data loggers are located at each monitoring site to handle data from meteorological sensors

E-DAS ATX for Windows®

Advanced Relational Database Software
for Ambient Air Quality & Meteorology

or analyzers through analog, digital or serial input. Vector wind speed/wind direction calculations, sigma theta and control of daily zero/span are all standard features. The data logger can also monitor analyzer status to automatically control the zero/span of the analyzer or follow automatic calibrators. The data logger can be coupled with a modem, radio, satellite, or Internet link to transmit data to the central processor or can store the data on-site for retrieval by a site technician.

E-DAS Software The E-DAS software provides control of the network (up to 99 sites) through dial-up telephone lines, dedicated phone lines, cellular phones or RF telemetry (UHF, VHF, Spread Spectrum, Microwave, or Satellite Modem). The E-DAS software provides the following features:

Data Retrieval Automatic error-checked data retrieval from remote loggers at a user-defined interval with automatic back polling if data is missed due to noisy communications. Real-time telemetry is supported.

Automatic Time Control of all sites so that averages are acquired at exactly the same time.

Configurability The SPTC system allows configurations of the system (sites and instruments) which can be modified or expanded as your system needs change. Convenient password-protected configuration editors allow changes to be made quickly.

Graphical Data Display Well-organized, informative displays of data. Time histories of one or more parameters together with wind or pollution roses provide data review for analysis and troubleshooting.

Database Storage & Archiving Data is retained in raw (uneditable) and editable databases so that editing can not result in data loss.

Data Editing Either individual data values and flags or bulk data can be edited with convenient password-protected data editors.

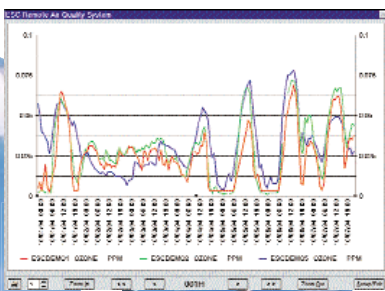
Reporting Data reporting is provided for both Air Quality and Meteorology applications. Standard Air Quality, Re-engineered AIRS, AQI, AQDHS II, or SAROAD. Daily, monthly and quarterly tabular data summaries are also printed.

Data Import/Export E-DAS can import or export data in both EPA SAROAD or AIRS format, allowing access to long-term data. Data can also be exported to most third-party spreadsheets.

Support SPTC provides unparalleled customer support. We provide call-in support via our 800 number and remote modem support to the customer's site. SPTC can provide central computers with on-site, next-business-day repair from established providers.

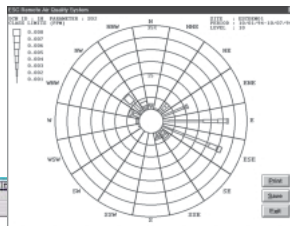
Call-In Access The E-DAS system allows call-in modem access from remote users to compare or review current values, without disturbing data acquisition at the remote sites. The user may also directly access the remote sites to view one-second scans of all instruments.

SPTC's latest software version makes it easy for agency personnel to view and report real-time data. Real-Time Data can be superimposed onto a map of the air quality monitoring network, giving a quick look at area conditions.



Trending display
of ozone data
from three sites.

SO₂ Pollution
Wind Rose



Graphical reports
are generated
with just a few
mouse clicks!

Time	SO2	CO	O3	NOx	TSP	Wind Speed	Wind Direction	Temperature	Barometric Pressure	Rain Gauges
00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
06	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
09	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
15	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
17	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
19	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
22	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
26	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
27	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Multi-parameter tabular report

Email Alarm
Configuration

Web Toolkit (E-DAS Ambient only) includes its Web Development Toolkit at no additional charge. The toolkit, used in conjunction with the Access Data Mirroring module, includes Active Server Page (.ASP) scripts and sample web pages designed to help users familiar with HTML quickly create web pages to display real-time and historical data from their E-DAS system.

AQI Summary

The EPA (Environmental Protection Agency) developed the AQI (Air Quality Index) to make reading ambient air data more understandable to the general public. When ambient air data is collected, the numbers are converted from their concentration levels into numbers on a scale. That scale is the pollutant's AQI value. Below is a list of all of the latest AQI values collected.

This AQI information was last updated on 08/16/00 at 15:00

Location	Pollutant	Interval	Air Quality	AQI Value	Average
DESK	NO2	1-Hour	Good	25	1234
DESK	NO	8-Hour	Good	4	1000
DESK	NO	1-Hour	Good	49	111
DESK	OZONE	1-Hour	Good	4	1000
DESK	CO	1-Hour	Good	49	111
DESK	NOX	1-Hour	Good	14	168
SITE02	NO2	1-Hour	Moderate	75	2345
SITE02	NO	8-Hour	Good	14	2000
SITE02	NO	1-Hour	Moderate	72	222
SITE02	OZONE	1-Hour	Good	4	1000
SITE02	CO	1-Hour	Good	49	111
SITE02	NOX	1-Hour	Good	24	266
SITE03	NO2	1-Hour	Good	25	1456
SITE03	NO	8-Hour	Good	24	3000
SITE03	NO	1-Hour	Moderate	92	300

Those familiar with HTML can create clickable area maps to help guide web users to localized data sets. The web toolkit includes a command for query of air quality index data as well, allowing an organization to quickly get important AQI data to the public.

Map Displays (E-DAS Ambient only) As new data is polled, the real-time map display will automatically update, showing in yellow or red any data that exceeds user-defined warning and exceedance limits. Now users can see at a glance what the status of the monitoring network is and whether any pollutant levels exceed preset limits. Configuring the new map feature is extremely easy. Associating points on the map with relevant sites and parameters can be done with just a few mouse clicks.

Previous Day's AQI Reports The E-DAS software also supports the ability to automatically report AQI for the previous calendar day. AQI can be reported for the last 24 hours, since midnight, for the current hour, or for the previous calendar day. This allows the system to generate AQI according to EPA's regulations which state that the AQI must be reported "daily" and "at least 5 days per week." (40 CFR 58, App. G, Secs. 3, 7)

On-line Help The full text of the E-DAS Ambient User's Manual is now available as on-line help. Simply press F1 and search by keyword or browse the index to find the subject or feature you need.

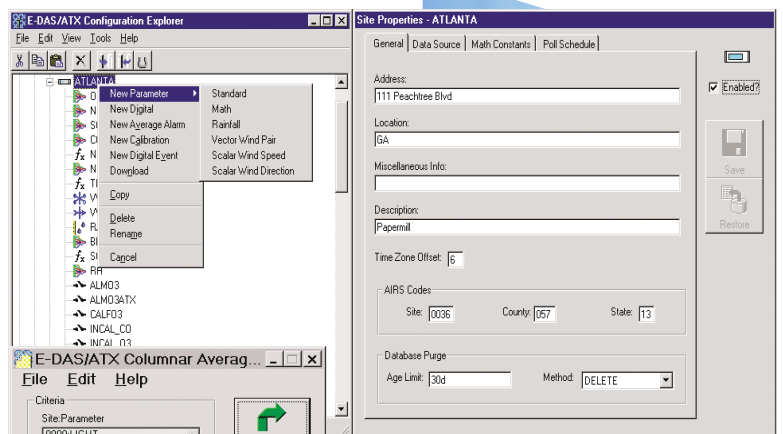
Improved Time Zone Handling With users now relying heavily on reports of current data, rather than simply on historical reports, it has become critical for the E-DAS software to recognize which time zone each site is in. Current data may consist of data that has different time stamps.

E-DAS ATX Ambient Advanced Software for Windows® NT/2000 is specifically designed to meet the needs of customers who require RDBMS-based technology and client/server architecture together with large ambient air quality monitoring networks. ATX employs ODBC technology to capitalize on the power of today's popular relational database management systems. The backbone of the ATX system is a true client/server architecture providing efficient distribution of processing. Client software can access server components from the server itself or via LAN, dialup networking or Internet Connection. Both basic (up to 20 sites) and enterprise (more than 20 sites) licenses are available.

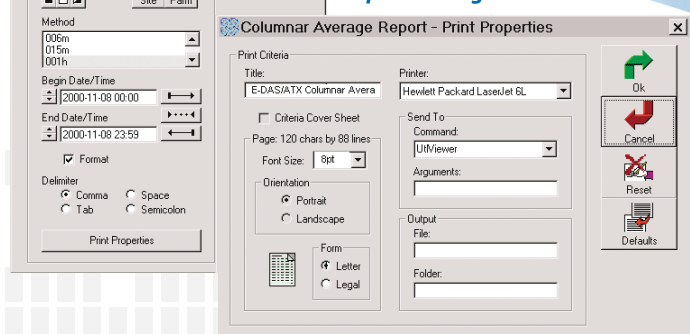
E-DAS/ATX Ambient

- Relational database foundation
- Customizable interface and toolbars
- Macro record capability for faster access to common functions

ATX Ambient Launch Pad



Report Configuration Editors



E-DAS EMR For Windows[®]

Advanced E-DAS Data Acquisition and Reporting Software

SPTC's E-DAS EMR Data Acquisition and Reporting Systems set the standard for absolutely meeting EPA's 40CFR75, 40CFR60, and NOx Budget Program regulations for emissions monitoring at your power generating plant.

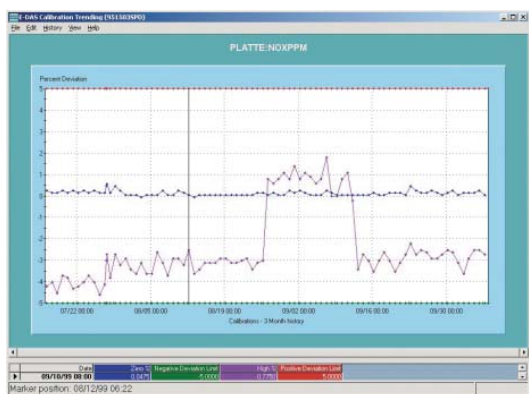
- **More than 1500 generating units in the U. S. utilize SPTC's E-DAS CEM Data Acquisition Systems**
- **SPTC's E-DAS systems lead in the replacement of original DAS systems (at over 1300 units to date)**
- **Simplify monitoring system administration, presentation displays, data QA, monitoring, daily reporting, and electronic reporting of emissions data**



E-DAS EMR for Windows[®]

Data Acquisition and Reporting Software for Stack Emissions Monitoring and Reporting under 40CFR75, 40CFR60 and the NOx Budget / SIP Call Program





Calibration Graph

Provides long-term trend of zero/span data to locate CEM problems early.

E-DAS EMR for Windows® provides rich functionality and flexibility in a data acquisition system designed to meet 40CFR75 regulations.

Highly Versatile and Cost Effective The unprecedented functionality of E-DAS EMR provides a cost-efficient solution for stack monitoring at electric utilities and other industries. Offering the greatest flexibility, a single polling/reporting computer manages data from any number of generating units and provides separate reports for individual sources. For those who need to access data remotely, our E-DAS Client software package provides multiple users access to the central DAHS system via LAN/WAN networks.

Connectivity E-DAS EMR can connect to various external devices using a variety of standard interfaces - Modbus, OPC, ODBC, OSI/PI and TCP/IP.

Windows® User Interface The software package provides a Microsoft Windows® point-and-click graphical user interface. EMR Toolboxes combine related utility functions, e.g. a single Communications Tool Box includes options to control polling, download of configuration tables, control calibrations, and view the event log. Data editors provide resizing and hiding of table columns, pull-down pick lists, shift-select, and other familiar Windows® interface capabilities. Standard OPC and PI interfaces are available (see OPC/PI brochure).



Operator Monitor Panel (OMP)

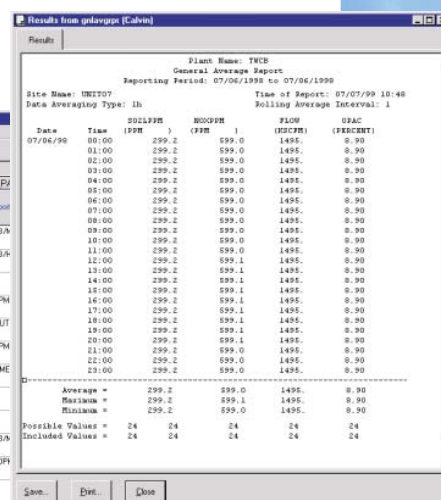
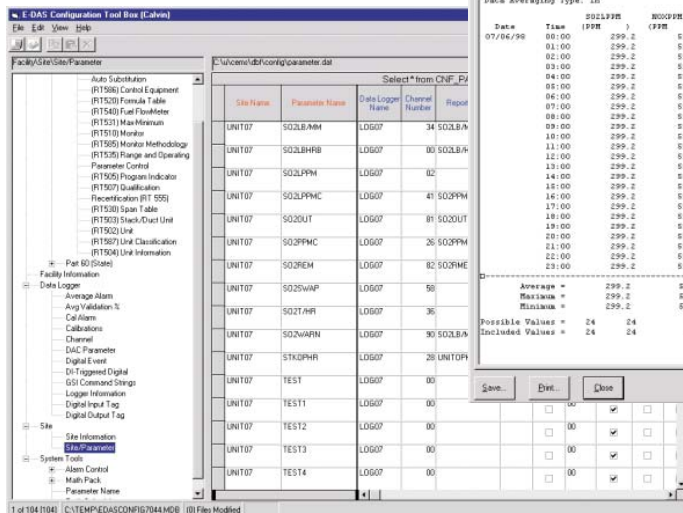
Allows system operators to select and view predefined, custom screens with a variety of data displayed, including historical data trending for single and multiple parameters.

Graphical Trends

Historical Average Data, Real-Time Average Data, or Historical Calibration Data are user-selectable for any group of parameters and averaging intervals.

Expandable Hardware Configurations

E-DAS EMR hardware is configurable, expandable and scalable to meet your specific plant reporting needs - from simple shelter systems to plant-wide emissions monitoring and reporting systems. The basic hardware configuration consists of the polling PC and a single Model 8816/8832 housed in an environmental shelter. Several sources can be monitored with a single polling computer when connected to appropriately configured Model 8816/8832 data system controllers.



Data Reports

A variety of data reports are available for printing or saving to hard disk. Routine reports can be delivered via e-mail every day!

Configuration Tool Box

The EMR system is open and designed to evolve with changing reporting requirements (mercury, particulates, etc.) with our custom programming or special vendor-only support.

E-DAS EMR For Windows®

Advanced E-DAS Data Acquisition and Reporting Software

E-DAS EMR for Windows®

Minimum PC Requirements

DAHS Computer

- Intel® Pentium III® 1GHz processor or higher
- 17" monitor (1024x768)
- 6 Gb hard drive
- CD-ROM drive
- 10/100 Mbs Ethernet network card
- 128 Mb RAM or larger
- Multi-channel serial adapter or LAN terminal server
- 56K Modem for technical support
- Uninterrupted Power Supply (UPS)
- Windows NT®, 2000, XP

Client Computer

- Intel® Pentium II® 1GHz processor
- 17" monitor (1024x768)
- 6 Gb hard drive
- CD-ROM drive
- 10/100 Mbs Ethernet network card
- 64 Mb RAM or larger
- Windows NT®, 2000, XP

Software Options

- Additional Client Licenses
- NOx Budget System Requirements
- 40CFR Part 60 Requirements
- 40CFR Part 503 Requirements
- OPC Interface
- PI Interface
- RECLAIM RTU Requirements

Specifications subject to change without notice.

Software Features

- User-configurable Operator Monitor Panel (OMP) allows operators to select and view predefined screens with various data displayed in each screen
- User-configurable custom menu
- User-configurable real-time data displays
- User-configurable alarms based on exceedance or out-of-control data
- Alarms acknowledgement toolbox with powerful filtering options and color indication for different types of alarms and their status
- User-configurable math equations
- Multiparameter real-time and historical graphical trending with scrolling and zooming features
- Calibration drift graphical trending
- Log book for general activities and scheduled or unscheduled maintenance
- System monitor that provides a system status overview with color indicators and access to many system functions
- Powerful data editors with SQL query and batch mode editing capabilities
- Task scheduling for automatic report generation and other command line tasks
- E-mail alarm and report distribution
- Spreadsheet data export/import capabilities
- EDR data import capabilities
- User-selectable EDR version (1.3, 2.0, 2.1., 2.2 or combinations) and configurable EDR record types
- QA/QC utility tools for RATA, linearity test, and flow/load ratio tests

WARRANTY Twelve (12) month return-to-factory warranty.

7147



MODEL DCM 932



MODEL 7560



MODEL 8832



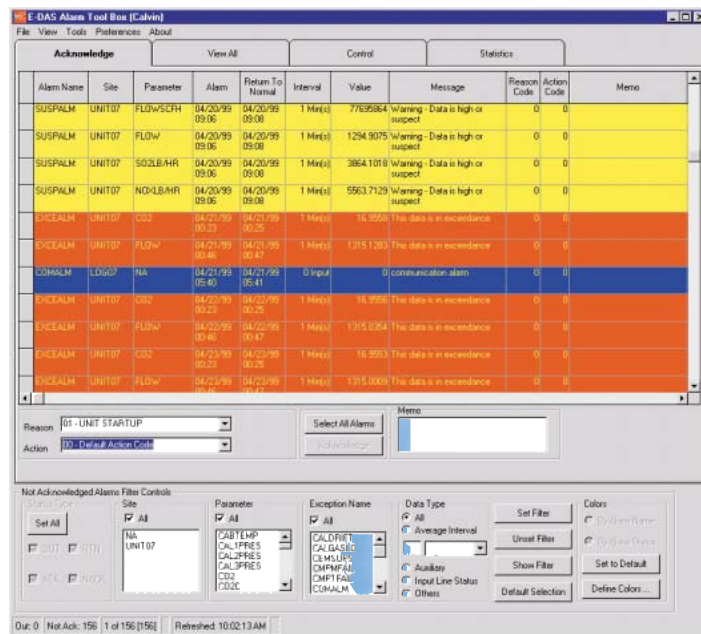
MODEL 8816



Interface with SPTC Data System Controllers or PLC Coprocessor Modules Model 8816/8832 Data System Controllers and 7560/DCM932 PLC Coprocessor Modules collect data from the analyzers (SO₂, NO_x, CO₂, etc.), processes, validates and stores data averages, and performs daily calibrations. The data system controller or PLC collects and stores data independently from the DAHS computer, allowing the DAHS computer to be taken offline for maintenance or modifications as needed with total confidence of complete and automatic data recovery. The data system controller or PLC can be easily user-configured to accommodate changes or modifications without computer programming or cumbersome ladder logic.

Plant-wide LAN/WAN Access Your data is available throughout the plant via LAN/WAN simply by adding optional E-DAS Client software to your desktop PC. You can review data, acknowledge alarms, print reports, etc. anywhere inside the plant. Multi-level security codes give you the capability to limit access by each user. A browser-only Web interface is also available from any PC on the network (See *WebView brochure for details.*)

Remote Access / Support You can easily access your data at any location equipped with a dial-up modem. Through the E-DAS Client software or pcAnywhere™, you can access the server to view real-time and historical data, alarms, etc. from a remote PC or laptop.



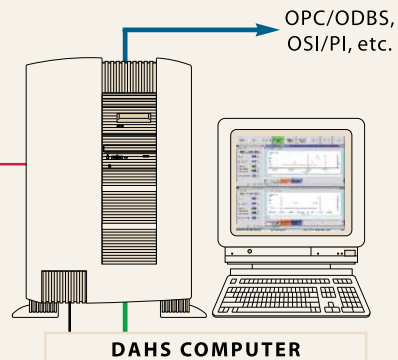
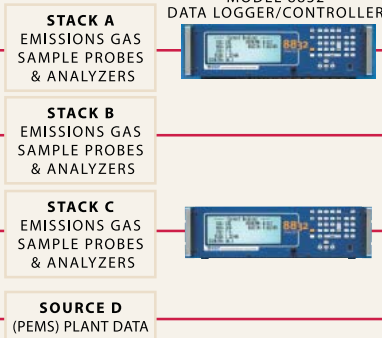
Alarm Tool Box

Acknowledge and view system alarms. Update alarms database on the server, set alarm-specific colors, set local Working Set range, set refresh options, and change alarm bell settings. Alarms can also be distributed by email to desktops, pagers, cell phones, PDA's, etc. Statistics panel displays Outstanding, Not Acknowledged, and Resolved alarms, and total of all alarms.

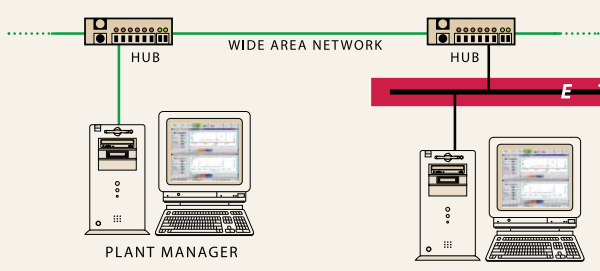
DATA ACQUISITION SYSTEM



POWER PLANT

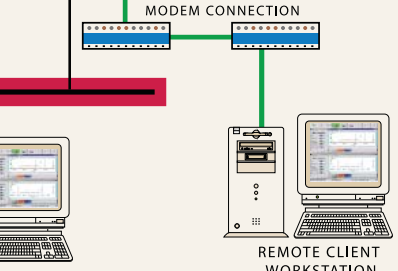


CEM SYSTEM CONNECTIVITY



WAN ACCESS

NETWORK ACCESS



DIAL-UP ACCESS

Model 8816 Data System Controller



Model 8816 Data System Controller

for CEM and Ambient Data Acquisition Systems

- 40CFR75 • 40CFR60 • NOx SIP Call
- OTC NOx Budget Program
- State/Local Permit Reporting



Designed for reliable, continuous emissions monitoring (CEM), ambient air quality and meteorological applications, the Model 8816's integrated design combines a user-friendly interface with a versatile I/O and computational system for optimum performance in your monitoring systems.

SPC



Model 8816 Data System Controller / Data Logger

Standard 8816 Equipment

- Model 8816 Data Logger**
 - CPU** 80188 EB, 16 MHz
 - ROM** 1 MByte
 - Firmware**
CEM or Ambient Firmware
 - RAM**
768 KBytes standard
(up to 40,000 data points)
 - (2) RS232C Serial Ports**
One standard / One isolated
 - Baud Rates** 300 - 19,200 bps
Software selectable
 - Battery Backup**
50 mA-Hr lithium rechargeable
(30-day minimum)
 - Operating Temperature Range**
0° C - 40° C
 - Humidity**
0 to 95% (non-condensing)
 - Dimensions**
17"W x 14"D x 5.25"H
 - Weight** less than 15 lbs.
 - Power**
115 VAC @ 60 Hz, less than 30W

Hardware Options

- LCD Front Panel Keypad & Display**
- Model 8816 Rack Mount with Slides**
- Keyboard - Full size PC type**
- Keyboard - Rack Mount Tray with Slides**
- Desktop Cabinet w/ Bale**

Memory Option

- 2MB RAM Expansion**
Up to 200,000 points

Power Options

- Power Option** 220 VAC @ 50/60Hz

Communications Options

- MODBUS Protocol Serial Interface**
Interface to PLC or plant DCS system
- External Modem with Cable**

Port Options

- Convert Isolated RS232 Serial Port to Isolated RS485**
- Additional Non-Isolated RS232 Serial Ports** (up to two)
- Parallel Printer Port**

I/O Card Options

- Current Input Card**
4-20 mA range
±0.1% accuracy @ 25° C
- Voltage Input Card**
±100mV, ±1V, ±5V, ±10V full scale
Software selectable
±0.05% accuracy @ 25°C
- Digital Status Input Card**
Monitors contact closures
- Isolated Status Input Card**
Optically isolated digital inputs
- Digital Output Card**
Relays (up to 5A)
- Analog Output Card**
4-20mA outputs with individual isolated loop supply power
- Meteorological Card**
Wind speed, wind direction, rainfall, and temperature

Additional Options

- 12-Month Extended Warranty**
After first year warranty
- Engineering Manual**
Includes full schematics and parts list

WARRANTY: Twelve (12) month return-to-factory warranty. Specifications subject to change without notice.

For **SPTC Sales & Support**, call **865 272-3526**

Model 8816 Data System Controller

Meteorological Applications

Legendary reliability in field applications make the Model 8816 a natural with its robust design and ease of use!



Ambient Air and Water Quality

Model 8816's are installed in systems operated by 39 state and 100 state and city/county air quality agencies.



The SPTC 8816 Data Logger/Controller is specifically designed to perform continuous emissions monitoring (CEM), or ambient air quality and meteorological monitoring. The built-in capabilities of the Model 8816 far exceed more expensive PLC's or PC-based data loggers, with **no customer software programming required**. The Model 8816's onboard menus select the available functions.

The Model 8816 interfaces with virtually any analog sensor output (voltage, current or serial/digital link) and is readily adapted to the newest serial-based analyzers, including pollutant gas monitors, opacity instruments, and gas chromatographs. Representing the culmination of over 20 years of experience in the field of microprocessor-based data acquisition components, each Model 8816 is backed by SPTC's reputation for quality, reliability, and uncompromising customer service.

Model 8816 Software Capabilities

Features needed specifically for ambient and CEM monitoring are built in. For example, the Model 8816 computes and stores block and rolling averages (up to 3 user-selectable averages per parameter), as well as more complex mathematical functions (lbs/mmBTU, vector wind calculations, sensor linearizations, standard deviations, etc.) using built-in math channels. It detects and reports alarms based on digital inputs, min/max analog input levels, or logger-computed parameters. Reports of averaged or historical data may be printed or displayed on the front panel 80-character x 25 line LCD display, in either tabular or graphical form.



Stack Gas Emissions

SPTC's Model 8816 is the instrument of choice for reliable continuous emissions monitoring (CEM) at more than 1600 power generating units to absolutely meet the EPA's 40CFR Part 75 and Part 60 requirements.



Model 8816 Hardware and I/O Options

The Model 8816's hardware is optimized for CEM and ambient monitoring applications. Its flexibility is based on a series of rear-mounted 8-channel I/O cards. Up to twelve I/O cards (96 total points) may be installed in combinations to tailor the Model 8816 for specific applications. These I/O cards can accept analyzer analog outputs, digitally controlled solenoids and multi-point calibrators, supply analog output signals (instantaneous, averaged, or computed) to a DCS, strip-chart recorder, or other plant systems. In addition to these features, a MODBUS interface permits bi-directional data transfer of plant operational parameters between the Model 8816 and a plant Distributed Control System (DCS). The meteorological interface card provides direct support for wind speed and direction, rainfall, and temperature sensors.

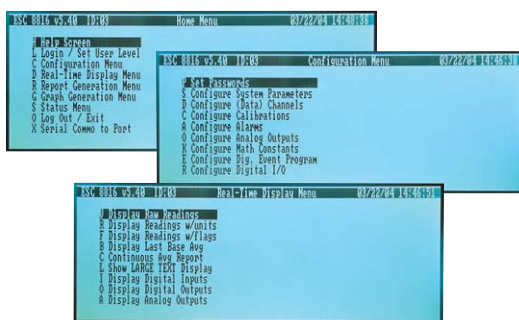
The Model 8816 can be used as a stand-alone monitoring system controller, or as a node in a multi-station monitoring system, with any of SPTC's PC-based data management software packages, such as E-DAS CEM or E-DAS Ambient. SPTC data systems simplify real-time and historical data management and automate reporting tasks to meet US EPA regulations, such as 40CFR60, 40CFR75, NOx Budget Program, OTAG, Part 503, etc. Most international regulatory requirements for stack emissions and remote air quality monitoring can also be achieved with SPTC data systems using the Model 8816.

Visit our website at www.sptckorea.com, or email your system requirements to sales@sptckorea.com. For more information, call us at 865/272-3526 from 8:30 am to 5:30 pm Eastern Time.



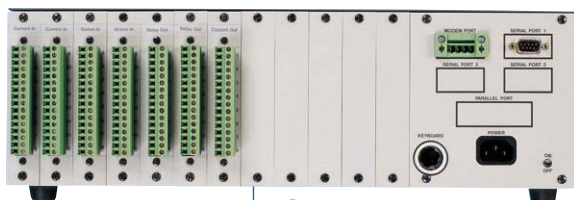
Polling Computer

Automated polling from the Model 8816 provides data collection and analysis for continuous or scheduled data acquisition and reporting.



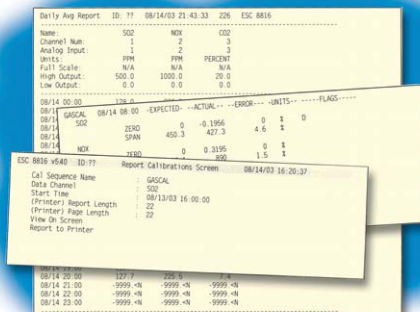
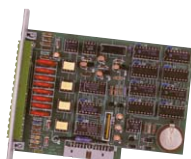
Menu-Driven Firmware

Built-in software programming provides environmental features for comprehensive ambient and continuous emissions stack gas monitoring and analysis.



I/O Options

Up to twelve 8-channel analog or digital input/output cards can be added to accomplish specific system tasks.



Reporting Capability

Generate data or calibration reports directly from the Model 8816 for instant results. Data averages can be dynamically printed as they are computed.

Model 8832 Data System Controller



Model 8832 Data System Controller

SPTC's Model 8832 Data System Controller delivers unmatched flexibility and performance in data acquisition and reporting.

Our 'next generation' design provides more processing power - increased program, configuration and long-term data storage - designed to meet your growing data system and regulatory requirements.

SPTC's advanced Model 8832 Data System Controller is designed around a high performance, 32-bit Motorola PowerPC processor running at 50MHz. Standard data storage space has been increased from 40,000 to over 100,000 data points. The configuration space has been more than tripled, allowing up to 99 channels of input or calculated values. The increased speed allows a new value to be calculated each second on any of the channels. An optional 2 MB memory card can expand long-term data storage to over 300,000 data points.

Additional capabilities of the Model 8832 include an optional color LCD display to facilitate display of alarms. A VGA video output port allows an external monitor to be connected to the Model 8832 to provide a 640x480 color viewing display. An Ethernet communications port and high speed serial communication ports not only allow for faster configuration downloads and data polling, but also enable new software versions to be loaded without an EPROM change.



Model 8832 Communications Panel



Features

CPU	Motorola MPC860 PowerQUICC	Serial Port 0	Optically isolated RS-232 or RS-485; 300 - 115.2k baud
Data Bus	32 bits	Serial Port 1	RS-232 or RS-485; 300 to 115.2k baud
Speed	50MHz	Serial Port 2	Optional RS-232; 300 to 115.2k baud
EPROM	512KB – boot functions	Serial Port 3	Optional RS-232; 300 to 38.4k baud
Flash	4MB – code storage	LCD	16 colors; 640x240
DRAM	32MB – operational data & code execution	VGA Port	Optional; 16 colors; 640x480
SRAM	2048KB – configuration & long-term data	Printer Port	Optional; Centronics general purpose
EEPROM	8192 Bytes – system settings	Channels	99 total (75 available as math channels)
PCMCIA Slot	Internal – extended configuration & long-term data storage (2 Mb initially)	Calibrations	32 total w/ 100 phases & 100 data points
Ethernet Port	TCP/IP; 10 Mbps - code download, configuration download, data polling, MODBUS TCP	Alarms	64 total (average + calibration)
		Digital Events	32 total (timed + digitally-triggered)

Specifications

Dimensions	17.00w x 5.25h x 14.00d inches (43.2w x 13.3h x 35.6d cm)	CPU	Motorola MPC860 PowerQUICC, 50MHz
Weight	Less than 15 pounds (6.8 kg)	EPROM	512KB (boot program code)
Mounting	19-inch rack	SRAM	2MB (configuration & long-term data storage)
Power	Universal 110/220VAC; 50/60 Hz; less than 60 Watts	DRAM	32MB (operational data & code execution)
Battery Backup	90 mA-hour rechargeable lithium (30 days minimum backup time)	Flash	4MB (program code storage)
Temperature	0°C to 40°C operating	EEPROM	8KB (system settings)
Humidity	0 to 95% (noncondensating)	PCMCIA	One internal slot; supports 2MB optional expansion card (extended configuration & long-term data storage)
Analog Inputs	Voltage or 4-20mA current loop available, differential with programmable gain amplifier	Serial I/O Ports	One isolated RS-232C or RS-485 port, one non-isolated RS-232C or RS-485 port and, up to two optional RS-232C ports
Resolution	14-bit	Baud Rates	300 baud to 115.2k baud on first three ports; 300 baud selectable to 38.4k baud on fourth port; software
Voltage Ranges	+/- 100mV, +/- 1V, +/- 5V, +/- 10V full scale	Data Format	8-bit word, even, odd or no parity, full duplex; 7-bit word, even or odd parity, full duplex
Input Impedance	>10 Megaohms	Printer Port	Centronics port; DB-25 connector (optional)
Front-To-Back Accuracy	+/- 0.05% full scale at room temperature (20°C) +/- 0.1% full scale over full temp range	LCD	16 colors; 640 x 240
Contact Closure Digital Inputs	Detects contact (relay) closures or voltage-to-ground transitions (to 24V); optional software debounce	VGA Output Port	16 colors; 640 x 480 (optional)
Isolated Digital Inputs	Detects open-to-voltage transitions (24V to 120V, AC or DC); optional software debounce available	Ethernet Port	TCP/IP; 10 Mbps code download, configuration download, data polling, MODBUS TCP, MODBUS Master
Scan Rate	32 channels per second		
Digital Outputs	Latching-coil relays; rated load: 5A @ 250VAC, 5A @ 30VDC		
Analog Outputs	4-20mA current loop outputs; 12-bit resolution		



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE



A Special Company For Environmental Measuring Instrument

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