

9  
John Jackson. 2D 2D 2D

ENVIRONMENTAL SYSTEMS CORPORATION  
200 Tech Center Drive  
Knoxville, TN 37912  
(423) 688-7900 FAX (423) 687-8977

1320

|         |                        |            |                     |
|---------|------------------------|------------|---------------------|
| FAX TO: | <u>Steven Schultz</u>  | FROM:      | <u>Steve Drevik</u> |
|         | <u>Royal Oak Mines</u> | DATE:      | <u>6/5/98</u>       |
|         |                        | PROJECT #: | <u>41-8041</u>      |
|         |                        | FAXED BY:  |                     |
| FAX #:  | <u>8670873-2914</u>    |            |                     |

NUMBER OF PAGES FAXED (INCLUDING THIS PAGE): 8

MESSAGE

Dear Mr. Schultz:

Attached is the information you requested regarding the Model 8816 and our E-DAS CEM for Windows software. If you need any additional information (manual, sample reports), please let me know.

October 7th.

Sincerely,  
ENVIRONMENTAL SYSTEMS CORPORATION

  
Steve Drevik  
Senior Marketing Manager

Peter

2D 2D data log.  
2D  
\$6500 2D  
\$1,500  
\$9,500  
software

Dave 2D 1 1 130 ft.

1 2D  
1 2D  
2D  
R.T.D. ? feed back mech.  
2D 2D 2D

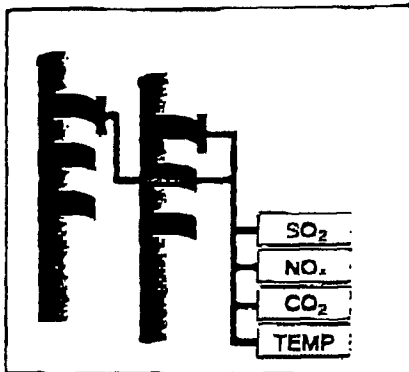
103 2D 3532 2 2  
overline

Roxmount  
data logging  
system

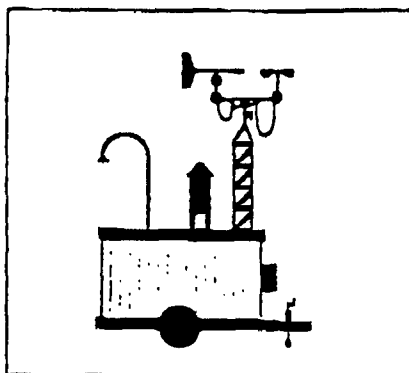
\$7,600 ?

w/out any <sup>interpreter</sup>  
software

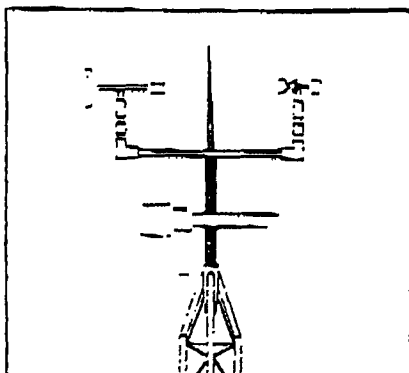
## APPLICATIONS:



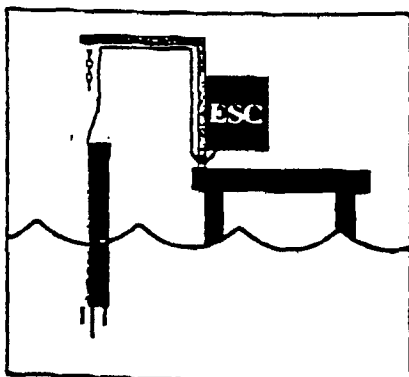
Continuous Emissions Monitoring



Ambient Air Monitoring



Meteorological

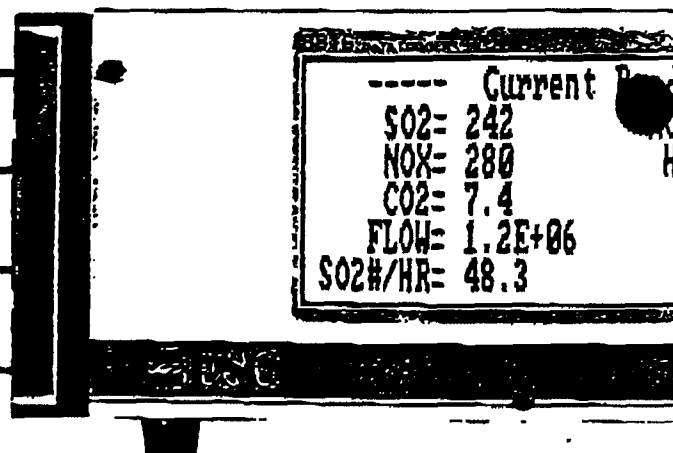


Water Quality

The ESC 8816 Data Logger Controller is the first choice for many companies today for several reasons. It was designed specifically for the task of Continuous Emissions Monitoring (CEM) and air quality/meteorological monitoring. The Model 8816 hardware/software capabilities far exceed those of most PLC's or PC platforms and no customer software programming is needed, only menu selections of the many available functions. Model 8816 interfaces with virtually any analog sensor (voltage or current) and is readily adapted to the newest generation of micro-based analyzers including stack gas monitors, opacity meters and gas chromatographs. Representing the culmination of over 10 years of ESC experience in the field of microprocessor-based acquisition components, the 8816 is also backed by ESC's reputation for uncompromising quality, reliability and customer service.

## Model 8816 Software Capabilities

Features needed specifically for CEM and ambient monitoring are built in. For example, the 8816 computes and stores block and/or averages (up to 3 user-selectable averages per parameter), as well as more complex mathematical functions (abs/min/max, sensor linearity, standard deviations, etc.) using built-in MATH-PAC equations. It detects and reports alarms based on digital inputs, min/max and input levels, or logger-computed parameters. Tabular reports



## ESC Model 8816 I

FE

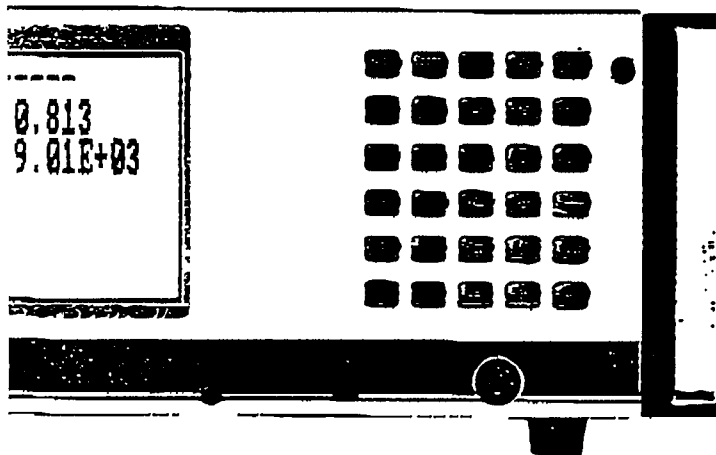
- VERSATILE I/O: To meet all monitoring, up to 96 I/O points per enclosure
- INTEGRATED, MENU-DRIVEN: accommodates multiple 8816s
- ULTRA RELIABLE: Optically isolated I/O
- HIGH DATA STORAGE CAPABILITY: 100,000 data points - battery backed
- POWER AND VERSATILITY: Designed for environmental monitoring requirements

Averaged or historical data may be printed or displayed on the front panel 80 character x 25 line LCD display in tabular or graphical form Model 8816 Hardware, I/O

The Model 8816 hardware is likewise optimized for CEM and ambient monitoring applications. The flexibility of the 8816 is based on a series of rear-mounted 8-channel I/O cards. Up to 12 I/O cards (96 total points) may be installed in any combination to tailor the Model 8816 for specific applications. These I/O cards accept analyzer analog outputs, digitally control solenoids and multi-point calibrators, supply analog output signals (instantaneous, averaged or computed) to a DCS, strip-charts, or other plant systems. Further, a hardware MODBUS interface permits bi-directional data transfer of plant operational parameters between the Model 8816 and the plant DCS.

The Model 8816 can be used as a stand-alone logger or as a node in a multi-station monitoring system where it can be used with ESC's PC-based data management software packages - E-DAS CEM, E-DAS Ambient- to simplify real-time and historical data management reporting that meets US EPA 40CFR60, 40CFR75 Part 503, etc., as well as most international regulatory requirements for stack emissions and ambient air quality monitoring.

Please contact ESC for more information on the Model 8816 and our PC-based software packages.



## Logger/Controller

### RES

and Digital I/O needs for CEM and ambient monitor-

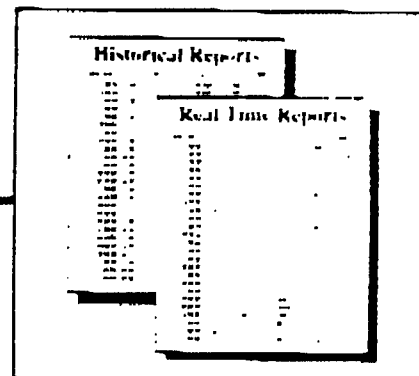
WARE: Easy setup, no programming required.

analog inputs, outputs, serial port

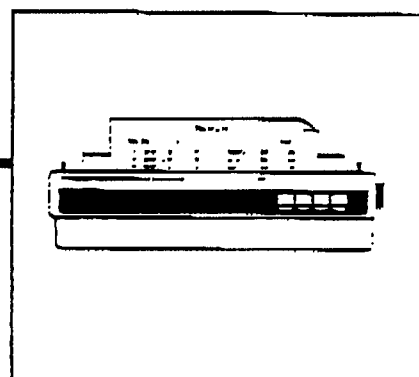
More than 40,000 data points, expandable to 200,000

and logger hardware and software meets all major

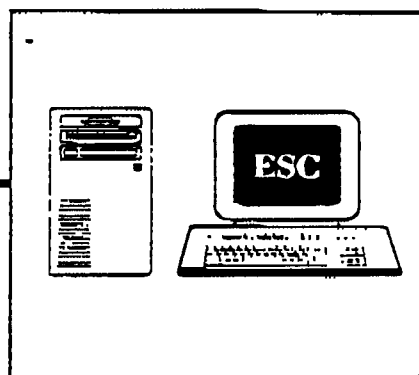
## DATA RETRIEVAL TO:



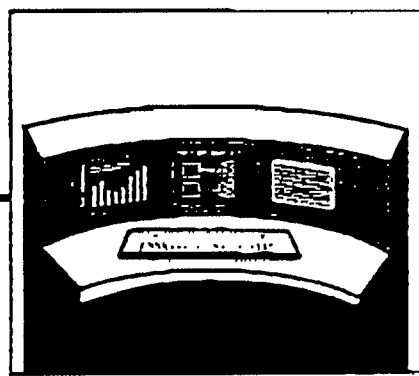
Reports



Printer



Polling Computer



Distributed Control System

**CPU:** 80188 EB, 16 MHz  
**ROM:** 512 kBytes standard  
**RAM:** 384 kBytes standard, 768 kB max  
 Up to 40,000 readings  
**Serial I/O Ports:** 2 each standard (one isolated)  
**Baud Rates:** 300 - 19200, software selectable  
**Battery Backup:** 50 mA-Hr rechargeable  
 (30-day minimum)  
**Temperature Range:** 0° C - 50° C  
**Humidity:** 0 to 95% (non-condensing)  
**Dimensions:** 17.0" W x 14.0" D x 5.25" H  
**Weight:** Less than 15 lbs.  
**Power:** 115 VAC, less than 30W

**Digital Output:**

8 isolated status inputs  
 P/N S112-3700 (Option ISCD)  
 8 latching coil relays, 5A @ 250 VAC  
 or 30 VDC: P/N S112-3300 (Option LCR)  
**Meteorological:** Wind speed, wind direction, temperature:  
 P/N S112-3600 (Option MET)

**HARDWARE OPTIONS**

**Display/Keyboard:** 25 line x 80 character front panel  
 LCD with 20-key keypad and external  
 keyboard (Option KD)  
**Plain Front Panel** (Option PP)  
**External Keyboard:** Full travel QWERTY keyboard  
 (Option PCKB)  
**RAM Expansion:** 2 MB internal RAM card  
 (Option ME2)  
**Serial I/O Ports:**  
**Isolated RS-485:** Replaces isolated RS-232C  
 (Option RS-485)  
**RS-232C:** Non-isolated - 2 available  
 (Option SP1, SP2)  
**Parallel Port:** Centronics port, DB-25 connector  
 (Option PP)  
**Rack Mount:** With slides (Option RM)

**I/O EXPANSION**

**I/O Expansion:** Up to 12 of the following modules  
 can be accommodated in the Model  
 8816 Data Logger  
**Analog Inputs:** 8 differential optically isolated  
 Voltage: P/N S112-3000 (Option VI)  
 Current: P/N S112-3100 (Option AI)  
**Analog Outputs:** 8 optically isolated 4-20mA  
 current loops: P/N S112-3500  
 (Option DAC)



*Environmental Systems Corporation (ESC) specializes in technology-based products and services relating to environmental monitoring, power production and waste management. The company is internationally recognized for its specialized expertise in data acquisition technologies. Founded in 1969, ESC is best characterized today as a "multi-conglomerate" comprised of five autonomous business units uniquely linked under one management that continually focuses on corporate growth and stability while assuring the delivery of quality products and services to its large, diverse client base. ESC is substantially employee-owned with a proven record of successful operation and commitment to both its customers and the environment.*



Environmental Systems Corporation

Products &amp; Systems Division

200 Tech Center Drive • Knoxville, Tennessee 37912

Tel: (423) 688-7900 • Fax: (423) 687-8977

E-Mail: escorp@envirosys.com

## ESC's Accurate, Dependable CEM DAS... Now With The Ease of Use of Windows

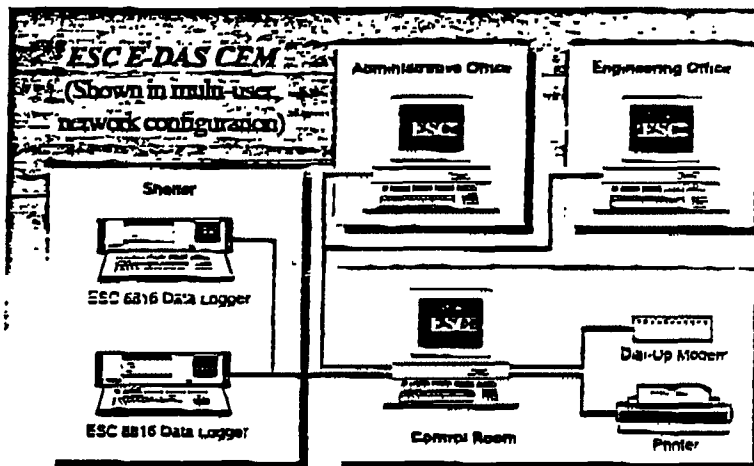
**Environmental Systems Corporation (ESC)** is internationally recognized as the leading manufacturer of data acquisition and reporting systems for continuous emissions monitoring (CEM) and ambient monitoring applications. ESC products include a comprehensive line of data loggers and applications software that are designed to meet the requirements of both federal and local regulations.

Founded in 1969, ESC has grown to 120 technical and support personnel, with a group of 60 engineers, computer scientists, and technicians dedicated to the design and manufacturing of our data acquisition systems. ESC has supplied data acquisition and reporting systems since 1978 and has earned an excellent reputation for systems that meet or exceed client requirements.

At ESC we are continually adding features and capabilities to our products. However, our main goal remains - to provide quality products and unexcelled customer support.

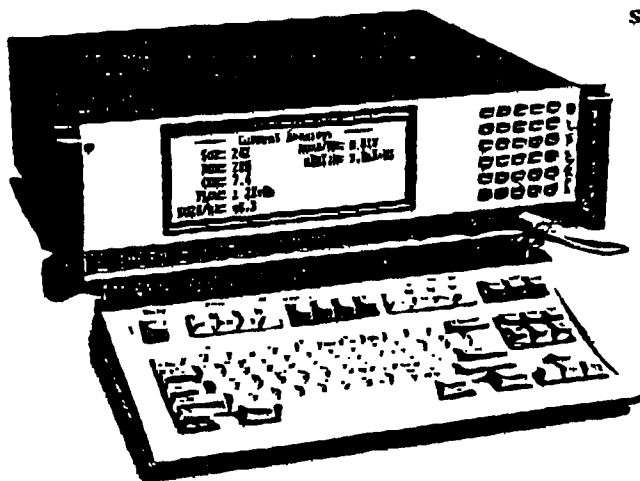
Environmental Systems Corporation (ESC), the most respected name in environmental data acquisition systems now offers a field proven continuous emissions monitoring (CEM) system for Windows™. This new system, E-DAS CEM, is backed by over ten years of CEM experience. E-DAS CEM lets you comply with virtually every federal, state or local continuous emissions monitoring requirement, now and in the future! As regulations change, ESC's flexible design can readily be adapted to meet new EPA reporting format changes. E-DAS CEM

provides powerful data acquisition, processing and reporting capabilities plus the flexibility and ease of use of Windows. Primary system functions are initiated by clicking on icons. Programs utilize standard user-friendly Windows features such as toolbars, pulldown menus, command buttons, option buttons, pick lists, and scroll bars. On-line context-sensitive help, including hypertext links for additional information on selected topics, is available. The use of a mouse is supported throughout the software.



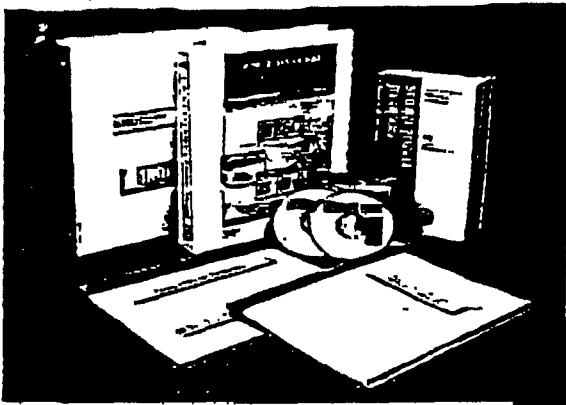
### The E-DAS CEM System

ESC's hardware package is designed around our multitasking, multi-user model 8816 data logger. This device is a sophisticated, data logger/controller that collects data, processes, validates and stores averages, and performs daily calibrations. It can easily be configured by the user to accommodate changes or new parameters. There is no need to know computer programming, no cumbersome ladder logic and no need to go back to the vendor to add or delete a sensor.



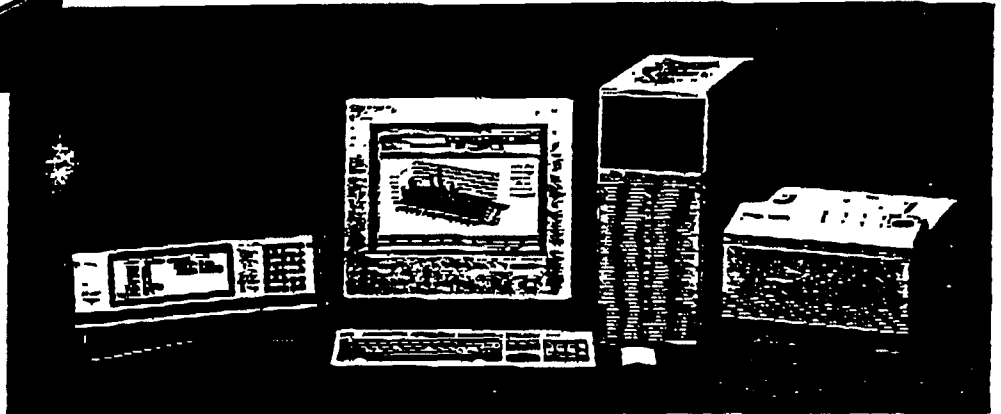
Each 8816 data logger can accept up to a total of 96 analog and digital I/O points, in increments of eight. Isolated analog inputs are provided for voltage or current (4-20 mA) input. Data averages and status information collected from one or more 8816 data loggers are passed via RS-232 or RS-485 serial

Model 8816 Data Logger



# E-DAS CEM

For WINDOWS™



E-DAS CEM is ESC's new Continuous Emissions Monitoring and Data Acquisition System, now with the ease of use of Windows. You'll appreciate the user-friendly features that include pull-down menus, toolbars, command and option buttons, pick lists, scroll bars, plus all the features you expect in a Windows-based program. Coupled with ESC's proven

record of dependability, accuracy and exceptional customer support, this new, powerful system offers the optimum in both function and ease of use. With over ten years of experience with CEM data acquisition systems, we've gained the reputation as the acknowledged leader in the field.

The ESC E-DAS CEM standard software package is designed to allow our users to meet continuous monitoring requirements for emissions from boilers and other processes. The package includes:

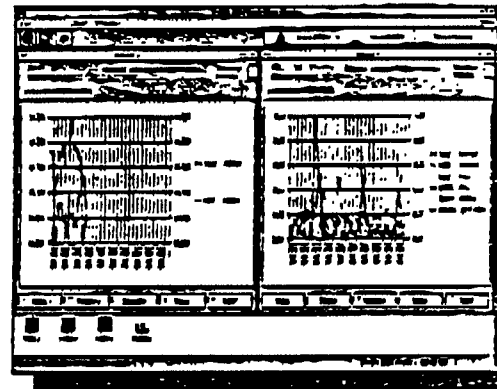
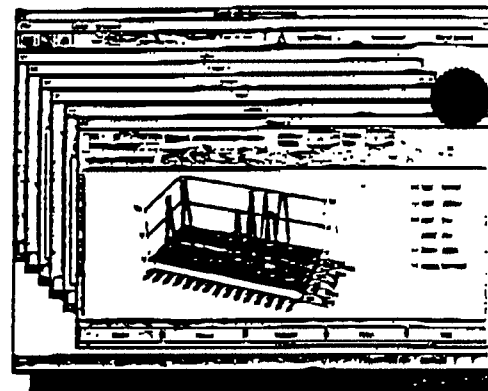
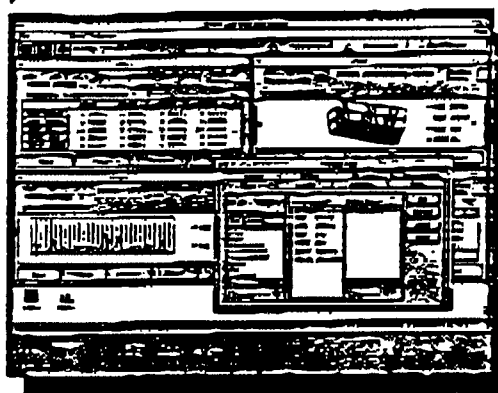
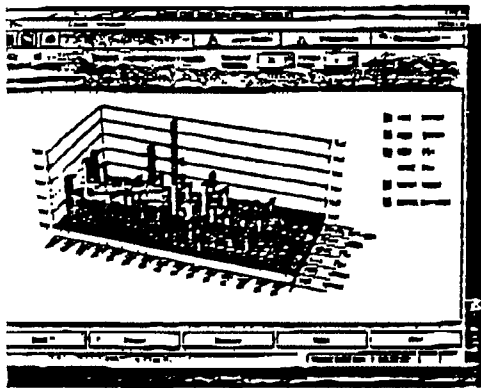
- Quarterly Compliance Reports
  - Excess Emissions Reports
  - Boiler Downtime Reports
  - Monitor Downtime Reports
  - Monitor Out-of-Control Reports
- User Configurable Design
- Multi-parameter Graphs with Scrolling and Zoom Features
- User Specified Alarming
- Calibration Drift Tracking
- Data Export Capabilities
- Call-in Assistance via Dial-up Line

In addition to all the features of the standard E-DAS CEM package, a number of options are available which allow E-DAS CEM to be tailored for the following applications:

- |   |                                      |
|---|--------------------------------------|
| ● 40 CFR 503 Sewage Sludge Incinerators | ● Title V Enhanced Monitoring        |
| ● Boiler and Industrial Furnaces (BIF)  | ● 40 CFR 63 Hazardous Air Pollutants |
| ● Municipal Waste Incineration          | ● Individual State Requirements      |
| ● Medical Waste Incineration            | ● Individual Permit Requirements     |

ESC provides CEM data systems to run on various platforms, including DOS, Windows/Windows 95/Windows NT/UNIX and VAX. Other ESC data systems are available for ambient air and meteorological applications, strip chart replacement systems, automatic air quality voice answering systems and more. Contact the ESC Products and Systems Division for more information.

*Well organized, informative displays allow operators to check system status and acknowledge alarms.*



link to a polling computer for long-term storage, additional processing, and reporting.

The polling computer is a Windows-based, multi-tasking PC system running ESC's E-DAS CEM application software. The multi-tasking capability of the system allows an operator to view data, print reports or perform other system functions without interrupting data retrieval and storage. Like the ESC 8816 data logger, this highly versatile system allows pollutant or ancillary parameters to be added or modified without changing the software. Multiple generating units or stacks can be accommodated with a single polling computer.

The PC retrieves data from each data logger every minute and compares it against user-specified limits. If excess emissions, excessive calibration drift values, or other alarm conditions are detected, an audible and visual

indication of the problem is generated. The operator can easily select a reason and action code to associate with exceedances as they are acknowledged or can edit these codes into the database at a later time.

Since the 8816 provides data collection and storage independent from the polling computer, the computer may be taken off-line for maintenance, modifications, etc. as needed with total confidence of complete data recovery. When the polling computer is put back on-line, it automatically polls for the data that was missed while the computer was off-line.

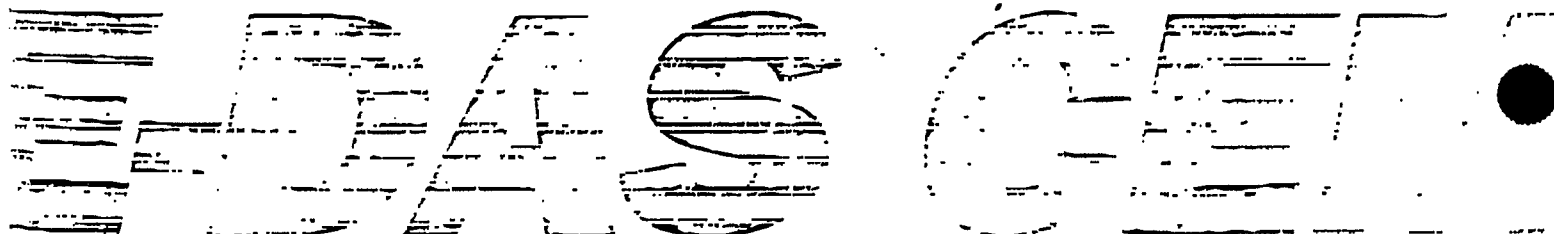
### ***Real-Time Data Display***

The real-time display provides the operator with tabular and graphical displays of current data in a format that can easily be tailored by operators to meet their specific needs. With just a few mouse clicks, operators can display a new multi-parameter graph of data for selected parameters. A couple of clicks can change a two-dimensional line graph to a three-dimensional bar chart.

Operators can resize data tables and graphs or move windows around the screens as desired to get an optimum view of the data. E-DAS CEM puts the power of Windows in your hands to work for you.

### ***Multi-user Networking***

With E-DAS CEM, multiple PC stations can easily be networked together to provide powerful multi-user functionality. Control room operators, engineers, quality assurance personnel, and administrators may then simultaneously access up-to-date information from convenient locations within the plant in order to view data, generate reports, or edit reason codes. Built-in file and record locking capabilities protect against database access conflicts between multiple users. A three-level pass-







### *Project Discussion*

ord system ensures that each user has access only to the functions appropriate for that user (e.g. configuring channels, reporting or validating data).

In addition to its unprecedented functionality, ESC's E-DAS CEM is very cost efficient for continuous emissions monitoring applications since a single polling/reporting computer can acquire data from multiple units and provide separate reports for each unit.



*Model 8816 Data Loggers Ready To Ship*

# **E-DAS CEM**

For **WINDOWS™**



*Testing E-DAS CEM System*

ESC supports a state-of-the-art design, manufacturing and testing facility in-house to insure complete control of both the quality and on-time delivery of our products.

### **Warranty**

ESC offers a one year warranty on the E-DAS CEM hardware and software. Further, we offer an annual, fixed price extended warranty that guarantees E-DAS CEM will be adapted to meet any changes to EPA's 40CFR75 verification and testing requirements that may occur during the extended warranty period.

### **Training**

Training is available on-site or at ESC's corporate headquarters. Special courses, e.g. advanced training

are available on request. All ESC instructors are experienced engineers or software experts.

### **Our People**

The final and most important part of our problem solving equation is our people. Dedicated professionals with one goal in mind - to provide the absolute best products and service in the industry. Our customer service policy is "do whatever it takes to make it right". We invite you to call us for a client list. Talk to some of our customers. Ask them about our products and services. They can verify that when we talk about absolute commitment to our customers, we mean it!



*E-DAS System Integration & Configuration*

# **WINDOWS**

P.O. 507522

3051 Perm. Transmitter

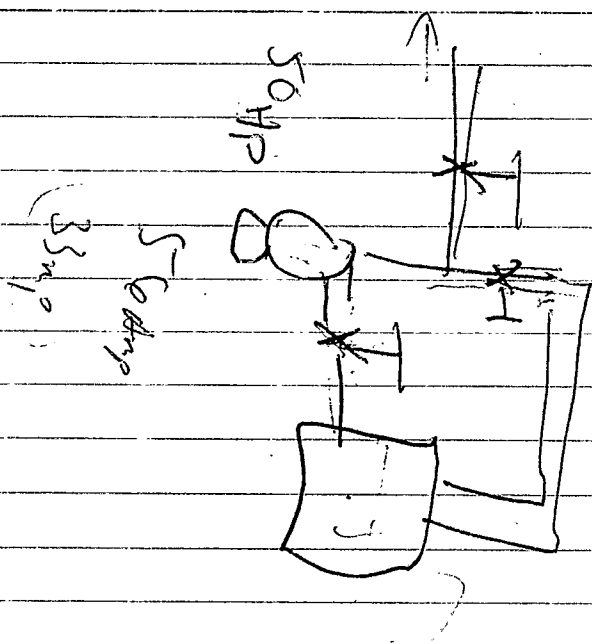
S. No. 0461212

21

CAL 0 TO 25" H<sub>2</sub>O  
0 TO 0.25

3051 C1) 1A02A1A#  
2B1C604

Output 4-20 mA



[illegible]

|  |  |
|--|--|
| <b>5 Broker Selection</b><br>Not available to all destinations<br><input type="checkbox"/> 40 FedEx International Select   | Broker's Name _____<br><br>City/State/Province/Country _____<br><br>ZIP/Postal Code _____ Phone _____  |
| <hr/>  |  |
| <b>6 Service</b> Not all services available to all destinations<br><input checked="" type="checkbox"/> FedEx International First<br>(fiscal code required) (higher rates apply)<br><input type="checkbox"/> FedEx International Economy 70 <input type="checkbox"/> FedEx International Priority Freight<br>(FedEx letter® rate not available) | <div style="text-align: center; margin-bottom: 10px;"> <input type="checkbox"/> DESCRIPTION <input type="checkbox"/> </div> <div style="font-size: 2em; font-family: cursive;">Box</div> |
| <b>7 Packaging</b> 6 <input type="checkbox"/> FedEx Letter <input type="checkbox"/> FedEx Pak <input checked="" type="checkbox"/> Other Packaging  |  |
| <hr/>  |  |
| <b>8 Special Handling</b> Not all options available to all destinations<br>Does this shipment contain dangerous goods? *<br>(One box must be checked)  |  |

☐ No    4 ☐ Yes (As per attached Shipper's Declaration)    6 ☐ Dry Ice    CA ☐ Cargo Aircraft Only    29 ☐ kg  
☐ No    8 ☐ Yes (Shipper's Declaration not required)    6 ☐ Dry Ice    10 ☐ x    15 ☐ kg

---

\*Dangerous Goods cannot be shipped in FedEx packages.

---

**9 Payment TRANSFERRATION CHARGES PAID BY:**    ☐ Oblain Recipient/Third Party FedEx Account No.    ☐ Sender    2 ☐ Recipient    3 ☐ Third Party    4 ☐ Credit Card    5 ☐ Cash/Check    Not all options available to all destinations

FedEx Account No. \_\_\_\_\_ Exp. Date \_\_\_\_\_  
 Credit Card \_\_\_\_\_

---

**DUTIES AND TAXES PAID BY:**    FedEx cannot estimate Customs charges    ☒ Sender    2 ☐ Recipient    3 ☐ Third Party    5 ☐ Cash/Check    Total \_\_\_\_\_ (\$ Excludes Customs charges)

FedEx Account No. \_\_\_\_\_ \$ \_\_\_\_\_

---

**10 Required Signature**

By giving us your shipment, you agree to the conditions on the back of this Non-Negotiable Air Waybill. Certain international treaties, including the Warsaw Convention, may apply to this shipment and limit our liability for damage, loss or delay, as described in the Conditions of Contract.


**WARNING:**    Express Administration Requirements    Declaration certifying U.S. Law prohibited.

Sender's Signature: James Lusk    Date: 9-30-98    Executed: \_\_\_\_\_

Recipient's Signature: \_\_\_\_\_

Please sign above in good order and condition. We agree to pay all charges including Customs duties and taxes as applicable and to the Conditions of Contract as stated on the reverse side of the consignment copy.

[illegible]

97 SRC  
  
 PART 151709  
 Rev. Date 7/97  
 ©1994-97 FedEx  
 PRINTED IN U.S.A.  
 Form  
 I.D. No.

☐ completed Shipper's Export Declaration form and attach here.

☐ required, however, in all cases of SAS.

**Non-Negotiable International Air Waybill**  
**©1991-97 Federal Express Corporation**

**FedEx cannot estimate Customs charges. ALL shipments can be subject to Customs charges.**