



*Air Products and Chemicals*  
INC.

ESCAMBIA PLANT  
INTEROFFICE MEMORANDUM

To: Distribution

Date: 26 March 1979

From: J. T. Kent

Copies: C. R. Simpson  
J. W. Moody

Re: Engineering Estimate  
EE 421-214-I-Rev. 3

Attached is engineering estimate and project scope  
EE 421-214-I-Rev. 3 which provides for the proposed  
relocation of the Bacharach controls for the PVC  
plant.

*John T. Kent*  
J. T. Kent

JTK:sl

attchs.

**AP00026667**

|          |       |      |                                                                                                             |                         |
|----------|-------|------|-------------------------------------------------------------------------------------------------------------|-------------------------|
|          | BY    | DATE |  Air Products and Chemicals | ENGINEERING<br>STANDARD |
| MADE     | JTK   | 3/79 |                                                                                                             |                         |
| CHECKED  | hxc/b | 3/79 |                                                                                                             |                         |
| APPROVED | hxc/b | 3/79 |                                                                                                             | EE 421-214-I-Rev.3      |
| APPROVED |       |      |                                                                                                             | PAGE 1 OF 2             |
| REV. NO. |       |      | RELOCATE BACHARACH CONTROLS<br>TO CRT ROOM                                                                  |                         |

ENGINEERING ESTIMATE EE 421-214-I-Rev.3  
TOTAL EXPENDITURE - \$65,800

#### I. INTRODUCTION

This project provides for relocating the electronics from a corrosive atmosphere to the clean environment of the CRT room in the PVC plant. Benefits include being able to monitor all the field units as well as protecting the electronics.

#### II. COST SUMMARY

The total estimated cost for the project is:

|                       |   |          |
|-----------------------|---|----------|
| Direct Capital        | - | \$46,800 |
| Indirects & Overheads | - | 19,000   |
| TOTAL                 | - | \$65,800 |

#### III. PROJECT TIMING

The total project is expected to be completed eight to ten weeks after CEA approval.

#### IV. DESIGN

- A. VCL monitor to be 40 channels mounted in a standard rack mount version 19" wide x 12" high.
- B. Alarms to tie in to a point on the existing panalarm.

  
J. T. Kent

JTK:sl

Distribution:

C. R. Simpson  
J. W. Moody

**AP00026668**

LOCATION: PVC

[illegible]

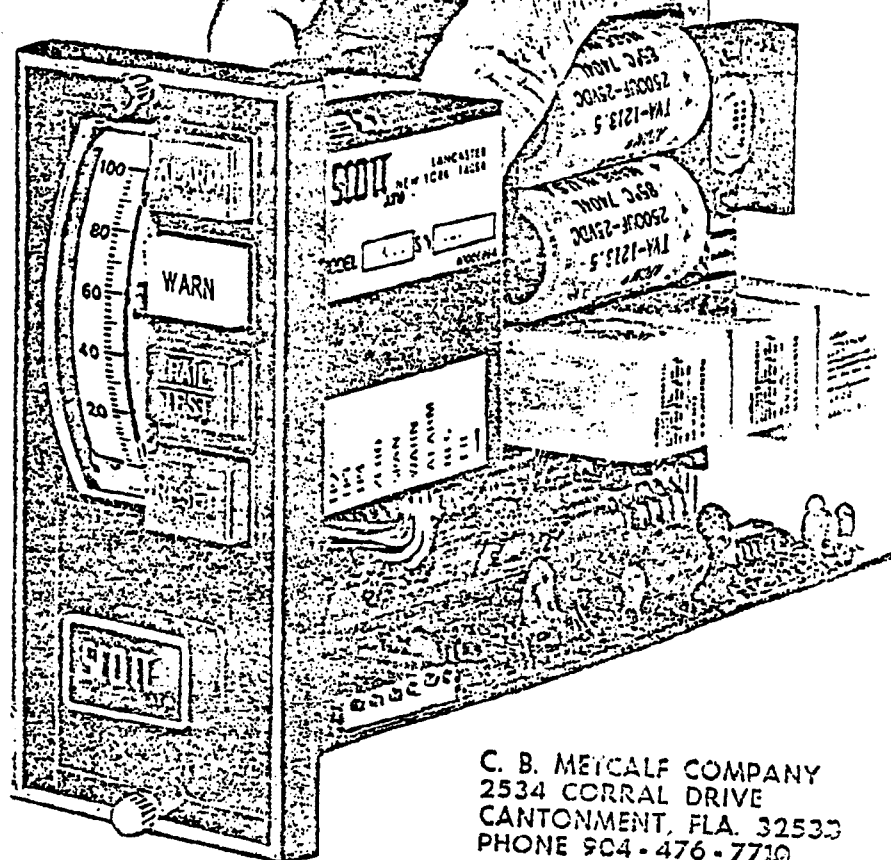
PRELIMINARY ☐ FIRM ☒

## COMPLETION

SHEET 2 OF 2 REVISION OF EE-421-214 ESTIMATE No. EE-421-214-I-02

**AP00026669**

new  
**SCOTT**  
series 9000



C. B. MEYER COMPANY  
2534 CORRAL DRIVE  
CANTONMENT, FLA. 32533  
PHONE 904-476-7710

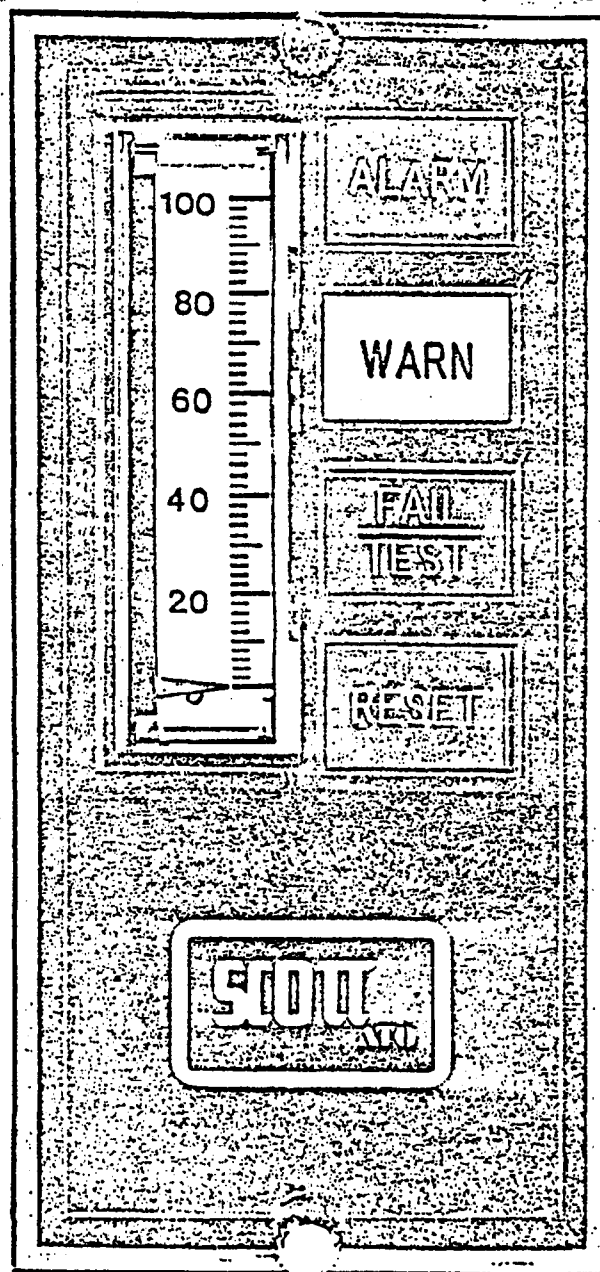
# combustible gas/vapor monitoring & detecting systems

*protect lives and plant equipment...  
with exclusive new features... improved reliability*

**AP00026670**

## OUTSTANDING ADVANTAGES

- vertical scale indicator (VSI), proven to be more easily interpreted at a glance than other types; direct-reading, 0-100% LFL (Lower Flammable Limit)
- dual programmable alarms, independently adjustable, for warning and danger levels
- flashing status lights indicate warning, danger, and fail modes
- alarm set-point display, pushbutton-actuated shows warn and alarm set-points on indicator and permits adjustment without interruption of monitoring functions
- solid state integrated circuits with COS/MOS logic



- built-in functional analysis circuit permits automatic, sequential testing of each function
- 120vAC/12vDC dual power supply
- external failure input provides auxiliary alarm capability to indicate status of other critical devices such as ventilation fans, low flow detectors, etc.
- remote reset capability
- slide-out Module with flexible-cable connections provides easy access to adjustments of alarm set points, detector voltage, span and zero, remote 0-100 millivolt output, and circuit test points

NOTE: Illustration is oversized (actual dimensions are 2-1/2" W x 5-1/4" H).

## SCOTT SERIES 9000

# flexibility of design

The requirements for protection against the hazards of combustible gases have long been recognized and well defined by individual industrial safety personnel working within the parameters of specific situations. In recent years, however, these requirements have been compounded by the imposition of new sets of stipulations by governmental and other regulatory bodies.

Scott's new Series 9000 Monitoring System is the only one of its kind created with the instrument engineer specifically in mind. Series 9000 gives him great flexibility of system design, since it is fully compatible with the increasingly varied types of warning control, and interlock circuits now encountered in providing maximum safety for personnel and capital investment. At the same time, further improvements have also been achieved in terms of electronic reliability, ease of maintenance through component and subassembly standardization, and aesthetics of the installed units.

### MANY UNIQUE OPERATING FEATURES

Consisting of two separate units, the Instrument Module and the Detector, the Scott Series 9000 Monitoring System contains many features previously unavailable.

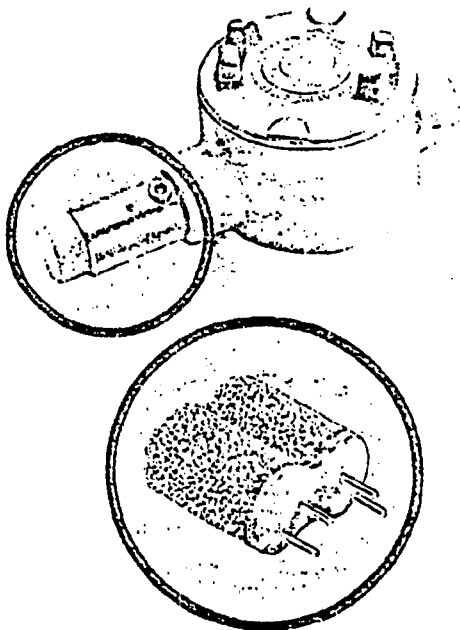
#### information-packed Instrument Module

Scott's Series 9000 Instrument Module incorporates compact solid state circuitry, with many features anticipating "tomorrow's" "state of the art," plus a number of dual-purpose indicating/controlling units. As a result, the attractively designed 2-1/2" x 5-1/4" front panel gives the operator more information and control actions than ever offered before in so small an instrument. Principal features appear in the oversize photo on page 5.

#### explosion-proof\* Diffusion Detector

The remotely-located Detector is an explosion-proof, low-energy, high-efficiency assembly containing a plug-in, diffusion type sensor. An optional explosion-proof conduit, pre-wired to a terminal block for easy, 3-wire field installation is available. Outstanding characteristics of the Detector are:

- DC-powered, low-temperature catalytic filament operation provides life expectancy of two years or better
- Plug-in sensor unit is easily field replaceable
- corrosion-resistant, sintered stainless steel flame arrestors
- exclusive, patented zero and span calibration feature permits (1) remote calibration of inaccessible detectors, and (2) verification of calibration in high ambient gas concentrations
- three-wire detector assembly with low-current, high signal to noise characteristics
- can be located up to 4000 feet from Instrument module without extra amplification, using #14 gauge unshielded wire
- designed for use in Class I, Division 1, Groups B, C, and D hazardous atmospheres

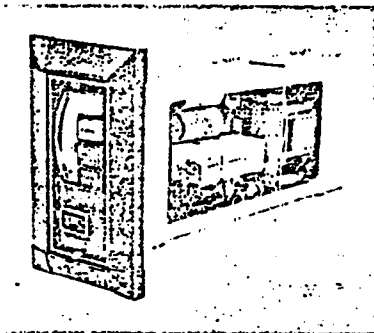


\*The term "Explosion-Proof" refers to the type of enclosure or housing as required by the National Electrical Code for use in hazardous atmospheres.

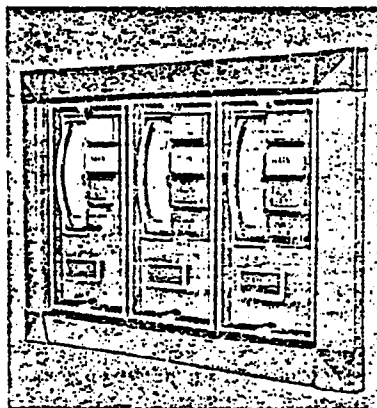
# AP00026672

**modular units offer  
many installation options**

The attractively designed basic unit in the Scott Series 9000 Monitoring System consists of a removable front panel with vertical scale indicator (VSI), pushbuttons, and visual alarm lights, plus a compact chassis, permitting panel or wall installation in a number of different configurations. Actual field applications could involve anything from a single unit mounted in an analyzer house to a conventional panel or multiple relay rack installation containing 50 or more Series 9000 Modules in a petrochemical control room, monitoring strategic points throughout a 100-acre site. Installation configurations include the following:



**single unit  
for panel mounting**  
For mounting in 2-1/2" x 6" cut-  
out with 14" available depth.

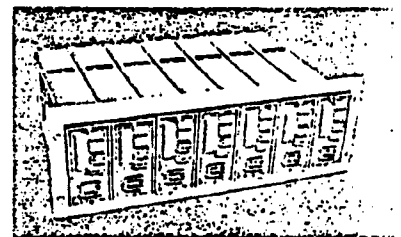


**multiple units  
for panel mounting**

Up to seven instrument modules in a horizontal row for panel mounting. Required depth 14" cutout 6" high x 2-1/2" wide per module housing. Optional bezel trim kits for neat, unified appearance.

**custom panel-mounted**

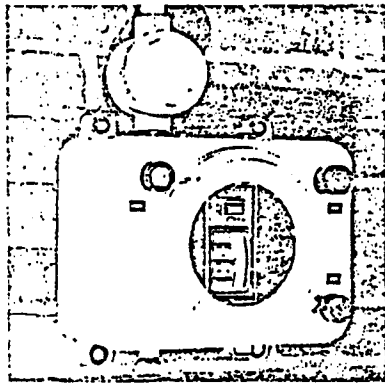
Standard instrument modules mounted and wired according to customer's individual requirements can be provided in various configurations.



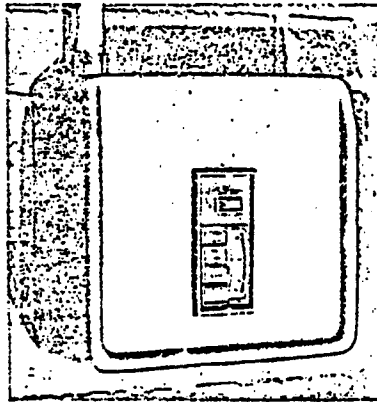
**relay rack housing**

Factory-assembled unit consisting of seven individual module housings and tray for mounting in standard 19" relay rack. Accommodates from one to seven instrument modules and/or blank panels for unused module positions.

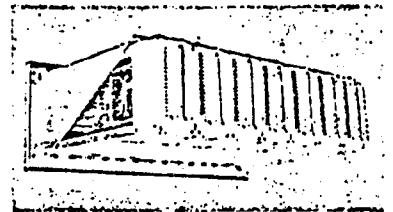
Model 9300  
explosion-proof unit,  
wall-mounted,  
A single module in an explosion-  
proof, surface-mounted housing  
(9" W x 12" H x 6-1/2" D) with  
a glass cover which permits all  
visual indicators to be seen. Re-  
set, zero, and test (functional  
analysis) operations can be ac-  
complished without removing  
the housing cover.



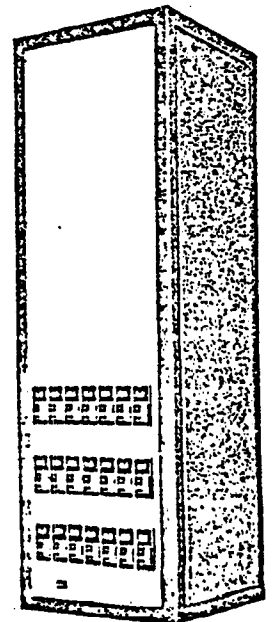
Model 9200  
general purpose enclosure,  
wall-mounted,  
A molded plastic housing (11" W  
x 11" H x 5" D) for wall or sur-  
face mounting containing one  
modular unit. Ideal for instal-  
lation where panel or relay rack  
mounting is unnecessary. Can be  
used also as a portable unit be-  
cause of its compactness, light  
weight, and ability to accept  
power from either AC outlet or  
DC service vehicle battery.



relay rack tray  
Tray for field installation of from  
one to seven individual instru-  
ment housings and modules. At-  
tractively finished blank covers  
fill unused housing spaces. Entire  
assembly mounts in standard 19"  
relay rack.



Free-standing or wall-mounted  
cabinets with modular units installed  
and pre-wired are available for  
custom-designed, system-engineered,  
application requirements.



## specifications—series 9000

### Instrument Module

Indication—vertical scale indication of Lower Flammable Limit, 0-100%, in uniform graduations

#### status lights/pushbuttons

| color  | light indicates                                                                                                                                       | pushbutton function             |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| green  | power on                                                                                                                                              | local reset                     |
| blue   | flashing for:<br>(1) electrical failure of sensor or any of the three lead wires<br>(2) low power supply voltage<br>(3) initial 35-sec. sensor warmup | functional analysis and testing |
| yellow | flashing, warning alarm status                                                                                                                        | warning alarm set-point display |
| red    | flashing, danger alarm status                                                                                                                         | danger alarm set-point display  |

status relays—warning, danger, and failure relays. DPDT 3 amp., 120VAC, non-inductive load  
general purpose standard; hermetically sealed optional warning and danger relays normally de-energized  
failure relay normally energized

#### programmable functions

latching or non-latching warning relay  
latching or non-latching danger relay  
relay actuation during functional analysis and testing

#### auxiliary remote inputs

remote reset, by contact closure  
failure mode, by contact closure

#### power requirements

120 volt AC, 50/60 Hz or 12 volt DC  
voltage variation permissible,  $\pm 10\%$   
12 watts maximum with two sensors

#### ambient temperature range

0 to 50°C  
temperature effect, less than  $\pm 3\%$  full scale over temperature range

#### vibration

10-30 Hz... 1.0mm total excursion  
31-100 Hz... 2g acceleration peak

### Detector

#### type

diffusion, for combustible gases/vapors, with catalytic type filament. For use in hazardous areas, Class 1, Division 1, Groups B, C, and D

#### construction

explosion-proof, stainless steel body and flame arrestor, containing plug-in sensor with gold plated connector pins and integral stainless steel flame arrestor  
detector assembly 3/4" NPT male  
remote calibration port 1/8" NPT

#### range

0 to 100% LFL combustible gas

#### accuracy

$\pm 3\%$

#### response time

3 seconds for 1 RC time constant with 50% LFL hydrogen

#### temperature range

-40°C to +200°C

#### vibration

10-30 Hz... 1.0mm total excursion  
31-150 Hz... 2g acceleration peak

#### power requirement

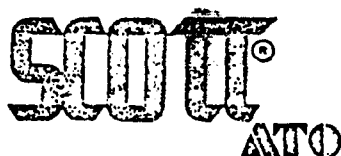
from Series 9000 Instrument Module

### special warning

*This equipment must be installed, operated, and serviced by competent, experienced personnel only and in accordance with detailed instructions provided by Scott.*

*Failure to calibrate the sensor according to instructions and/or allowing the sensor to be contaminated by harmful elements may render the sensor inoperative for its intended purpose and may permit dangerous, flammable or explosive atmospheres to occur without warning.*

*See Scott instructions for details and additional warnings.*



HEALTH/SAFETY PRODUCTS

SCOTT AVIATION

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