SE

SENSOR
ELECTRONICS

Combustible Gas Detection Products
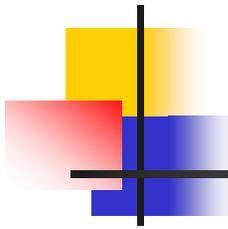
Sensor Electronics Corporation

Sensor Electronics Corporation (SEC) began in 1991 with the development of a highly intelligent gas detection system designed to reduce installation cost and provide superior gas sensing technology. The core personnel of our company have history in fire and gas detection over thirty years. The SEC gas detection products serve a wide range of industrial markets. Our vast user list identifies major companies that rely on Sensor Electronics to protect capital investments and monitor for a safe working environment for their workers. SEC has product certifications from Canadian Standards Association (CSA) Nationally Recognized Testing Laboratory.

Our ongoing research and development of new products along with special product applications, the ability to not only listen, but actually understand customers needs will continue to keep Sensor Electronics Corporation the innovative leader in the gas detection and fire protection industry.

SEC Millenium Infrared Gas Detector

❖ *Infrared Patented sensing technology*

- ❖ *Virtually maintenance free*
- ❖ *Low cost of ownership, over five years operating life*
- ❖ *Immune to poisoning and etching*
- ❖ *Explosion proof Class 1, Div. 1, Groups. B,C,D*
- ❖ *Performance Approved*
- ❖ *Explosion proof*
- ❖ *Compact & lightweight*
- ❖ *Fast response time*
- ❖ *Smart calibration*
- ❖ *Self-compensating optical bench*
- ❖ *No moving parts*
- ❖ *Heated optical chamber*
- ❖ *Low power consumption*
- ❖ *Operates in constant hydrocarbon background*
- ❖ *Operates in anaerobic atmospheres*
- ❖ *Fault indications for all failure states*
- ❖ *Routine calibrations are not required*
- ❖ *4 to 20 mA output*
- ❖ *0 to 100% LFL detection range*
- ❖ *0 to 100% Volume methane detection range*
- ❖ *Can be coupled with SEC transmitter for network applications*
- ❖ *Optional model for CO_2 (0-1% to 0-5% volume)*

SEC Millenium Internal Diagram

Detector PCB Assy

CPU PCB Assy

IR Source PCB Assy

Waveguide

Collar

Ground Stud

Sapphire Window

Sapphire Window

Wire Tube

Hydrophobic Filter

Barrel
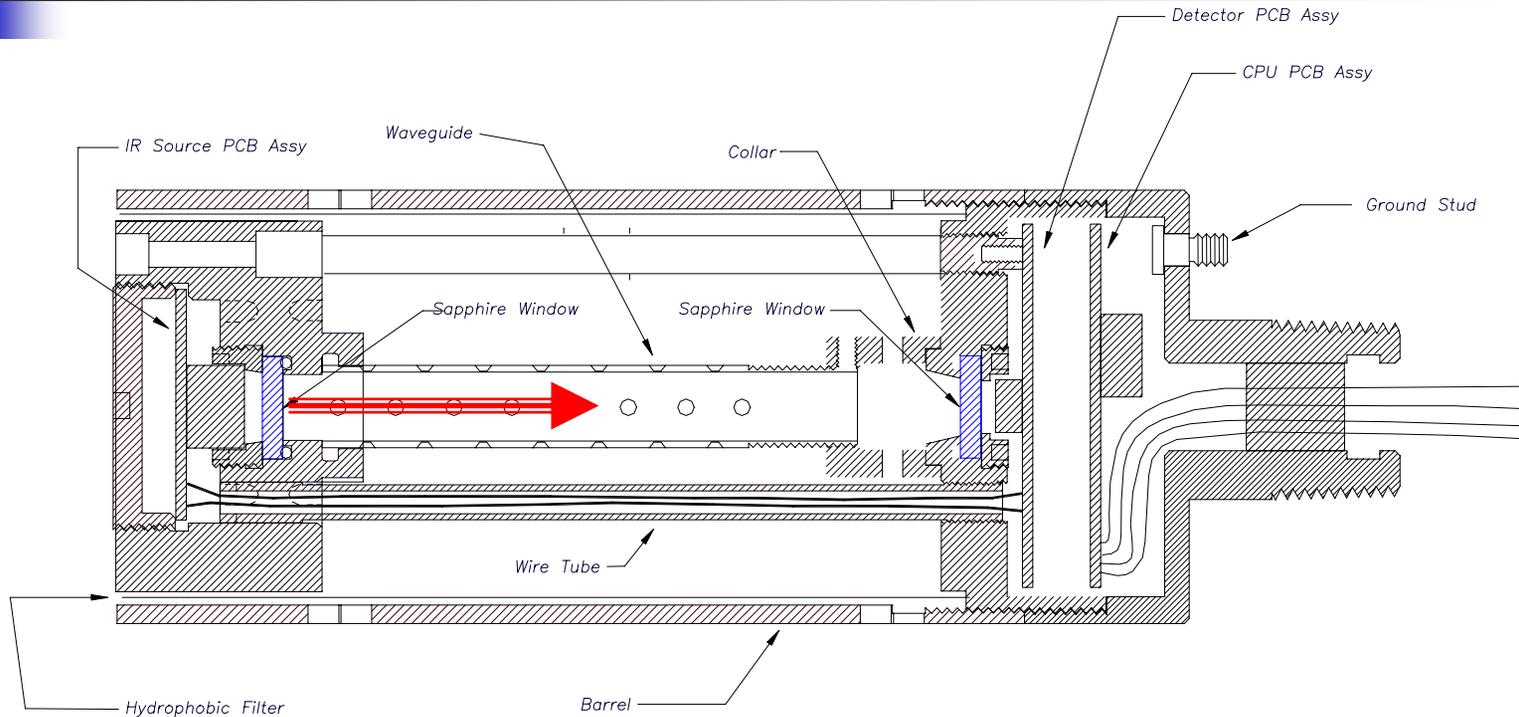
- ❖ Infrared Source
  - ❖ Black Body
    - ❖ No wear out mechanism
   - ❖ Generates heat for optical chamber

- ❖ Straight optical path
  - ❖ No Mirrors
  - ❖ No Beam Splitters
  - ❖ No Mechanical Choppers

- ❖ Dual Channel Detector
  - ❖ Automatically Self Compensates for:
    - ❖ Dirty optics
    - ❖ Temperature

SEC IR Absorption Operation
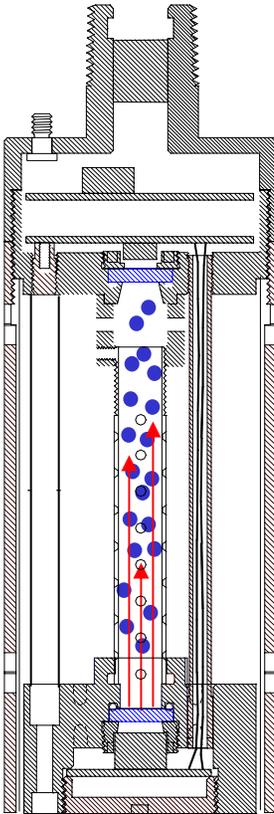
❖ *Gas molecules enter gas sensor's optical chamber*

❖ *Gas molecules absorb infrared energy*

❖ *4-20 mA output increases*

SEC 3100 "Universal" Transmitter

- *Explosion Proof*
- *Back lighted LCD Display*
- *Low Cost*
- *Plug and play toxic, oxygen and combustible gas sensors*
- *Self-check system*
- *Internal Real time clock*
- *4-20 mA output (sourced 3 wire)*
- *RS-485 Interface Modbus® (Isolated)*
- *Optional alarm and fault relays*
- *Non-intrusive programming interactive menus*
- *Non-intrusive calibration (magnetic switches)*
- *Removable, non-volatile, time stamped Data Card*
- *Optional IS barrier for toxic gas sensors*
- *Digital communication link to SEC 3000 and SEC Millenium Gas Detectors 2000 feet away*
- *Multi port housing for easy installation*

Dual Microprocessors

Display Processor
writes to the LCD,
I/O for magnetic switches, LEDS,
R/W interface to gas sensor
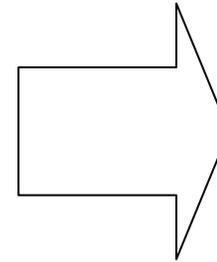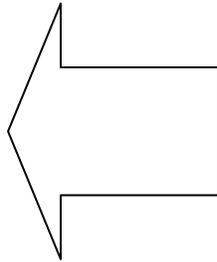
Network Processor

R/W interface to RS485 Network

The SEC 3100 uses two (2) microprocessors for added reliability.

SEC 3100 Gas Detectors

SEC 3100 Transmitter

Memory Data Card Slot
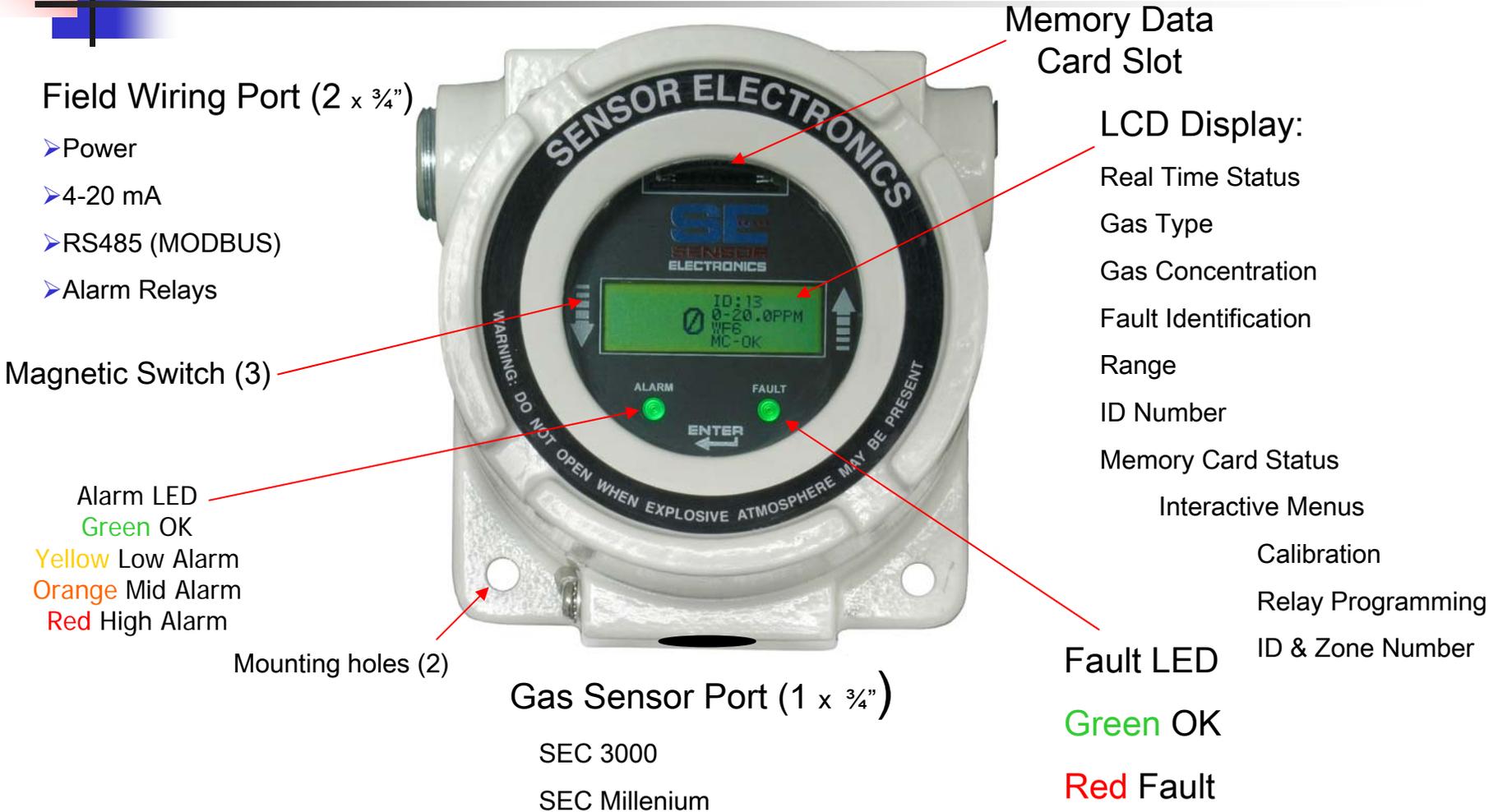
Field Wiring Port (2 x ¾")

➤ Power

➤ 4-20 mA

➤ RS485 (MODBUS)

➤ Alarm Relays

LCD Display:

Real Time Status

Gas Type

Gas Concentration

Fault Identification

Range

ID Number

Memory Card Status

Interactive Menus

Calibration

Relay Programming

ID & Zone Number

Magnetic Switch (3)

Alarm LED
Green OK
Yellow Low Alarm
Orange Mid Alarm
Red High Alarm

Mounting holes (2)

Gas Sensor Port (1 x ¾")

SEC 3000

SEC Millenium

Fault LED

Green OK

Red Fault

Data Logging

The SEC 3100 has an internal memory card for data logging. The memory card records any gas concentrations, alarms, faults, calibration date and sensor changes.
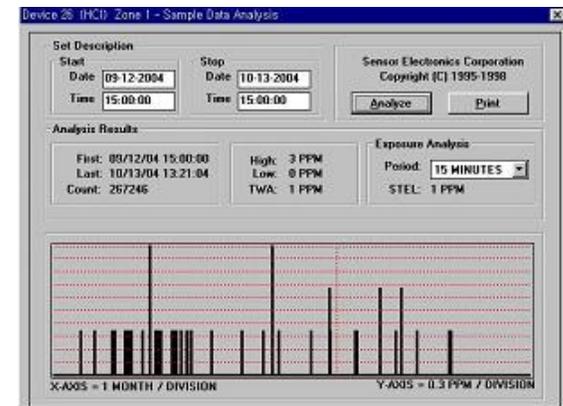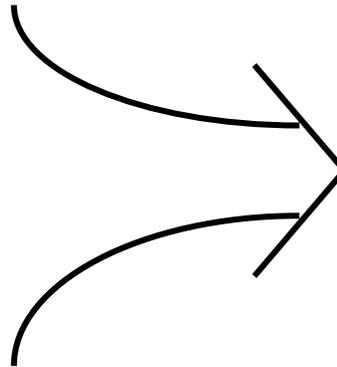
The information can read from the memory card and down loaded to a PC to generate a report. The memory card also provides data back up in case the main monitoring system fails.

SEC 3100 Combustible

The SEC 3100 can be mated to the SEC Millenium for detection of combustible hydrocarbon gases such as methane, propane, butane, hexane, isopropyl alcohol, diesel etc.
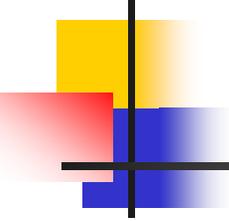
Feature Summary

SEC 3100

1. Explosion proof enclosures can be used in almost any location.
2. Gas sensors can be remotely mounted up to 2000 feet from SEC 3100.
3. Universal transmitter with "plug and play" type sensors.
4. Digital communication between gas sensor and SEC 3100 provides fast reliable communication.
5. Smart sensors provide operating parameters to "universal" SEC 3100.
6. Built in noise filters to reject RFI/EMI interferences.
7. Dual processors provide independent but interactive display and network communications.
8. Multiple outputs 4-20 mA, relays, RS485 provides the customer with a variety of installation options.
9. Self diagnostics provides internal self checks on hardware.
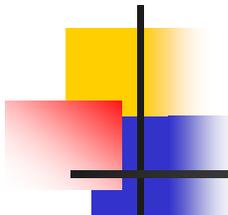
User List

Chemical

Ciba Giegy Corporation
Dead Sea Works
E.I. Dupont
Elf Atochem
ISK Biosciences
LaRoche Chemical
Makhteshim Chemical Works
Mobil Oil
Monsanto
Morton Specialty Chemicals
Pao An Fire Equipment
Parsons Electric
Quaker Chemical B.V.

Rotem Amfert Chemicals

Semiconductor

Advanced Circuits
Cypress Semiconductors
Intel
LG
Motorola
Rosemount
Samsung
Shin Etsu Semiconductor
SHQ Company

Industrial

3M Company
Aeromet
AES Warrior Run
Alliant Techsystems
Chemithon
Dunlop
Ecogas Cryogenics
Encon Services
Federal Cartridge
Federal Molding Company
Fogel Commercial Refrigeration
HazStor
Johnson Controls
Keeler Steel & Aluminum
Mitsubishi Heavy Industries
Onan Incorporated
Polycell
Sealed Air Corporation
Sony Magnetic Tape
State of Minnesota (Dept. of Health)
Sunbelt Cement Balcones Plant
Supernatant Cable Corporation
U of M Mechanical Engineering Dept.
University of Arkansas

Gas Transmission

Keyspan Energy
Calpine Power
Hanover
Maxus YPF
North Carolina Natural Gas
PSE&G Burlington Station
Shamrock Turbines

Transit

Anoka County Highway Department
Colorado DOT (Eisenhower Tunnel)
DART (Dallas Rapid Transit)
Houston Metro Transit
Long Island Railroad
Minneapolis International Airport
Pierce Transit
State Farm Insurance

Telecom

Nextel
ATT

Petrochemical

ARCO
Arctic Fire & Safety
Chevron
Clark Refining
Darien Chemical
Diagnostic Chemicals
Ibamatic S.A.
PEMEX
Petrobras
Ultramar Refinery
San Joaquin Refining
Saudi ARAMCO
Saudi ARAMCO Shell
Technip
China Oil Company

Water Treatment

Citizens Utilities Water Company
City of Detroit
City of Unalaska
County of Sacramento
Metropolitan Water District
Monte Vista Water District
NH Department of Water
Onondaga County Water
Southern California Water Co.

Medical

Boston Scientific
COSMED
Davis & Geek
Ethicon
Tyco Healthcare
Guidant
Sterigenics
Sterile Systems
XOMED
Steritech
Midwest Sterilization
PCS / CATS
Sims Portex
Sterilization Services of Tennessee
Steris Isomedix
Mentor
Cook Group
US Surgical
Sterile Technologies
Johnson & Johnson
Parter Medical
Baxter
Sterichem