A STATE OF THE ART
UNIVERSAL DETECTOR FOR AIRBORNE HAZARDS
Radiation – Chemical - Biological
Model ~ UNITECT-AIR

FEATURES:

- ALL-IN-ONE REAL-TIME CONTINUOUS AIR MONITOR
- COMBINES MULTIPLE DETECTION GOALS
- **RADIATION:** DETECTS ALPHA, BETA, GAMMA, OPTIONAL: TRITIUM, RADON
- **CHEMICAL:** MAJOR CHEMICAL TESTS CWA +TIC'S PH, ORP, AND LEAD
- **CHEMICAL:** INDICATORS OF BIOLOGICAL ACTIVITY
- **BIOLOGICAL:** DETECTS MORE THAN 6 CLASSES OF MICROBES
- NO REAGENTS REQUIRED
- ALARM THRESHOLD – USER SPECIFIED
- DATA ARCHIVE & RETRIEVAL
- SCADA COMPATIBLE
- EASY INSTALLATION
- CALIBRATION CAN BE CUSTOMIZED FOR SPECIFIC CONTAMINANTS
- REMOTE COMMUNICATIONS

UNITECT-AIR ELECTRONICS CAM-33

APPLICATION:

- Building Air
    - Room
    - Air Ducts
    - Exhaust Stacks
- Outdoor Air
    - Environmental Monitoring
    - Airborne Plumes
- High Profile Buildings:
    - Convention Centers, Sports Arenas, Government / Municipal Buildings
- Industrial Contaminates:
    - Laboratory, Power Plant, Manufacturing

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UNITECT AIR DESCRIPTION

The Unitect-Air detection system consists of three classes of sensors: Radiation, Chemical, Biological. The onboard pump pulls sample air through all 3 classes in series.

All collected data is displayed on the large monitor. The main display has multiple tabs on the front allowing the user to switch to specific screen displays for quick data overview, maintenance: scheduled and required, detailed scientific display for real-time or subsequent studies.

An exhaust hose is provided

SPECIFICATIONS:

AIR FLOW SYSTEM

	RANGE	SENSOR	MAINTENANCE	POWER
FLOW	0 to 3.0 CFM	Volumetric	None	10 – 36 VDC Input
TEMPERATURE	Ambient	RTD Ceramic	Periodic Calibration	10 – 36 VDC Input
PRESSURE	900 –1400 hpa	Diaphragm	None	10 – 36 VDC Input

OPTIONS:

- Wide range of flow rates available
- Cooler model: Cool-33 for detector and samples is used in case of higher sample or ambient temperatures.

DIMENSIONS & WEIGHT

CABINET:	29" W x 31" D x 59" H (including wheels)
CHEM PANELS:	36" W x 28" H (2 each)
BIO PANELS:	28" W x 50" H
WHEELS	5" diameter, high capacity, rugged wheels with lock and rubber tires
WEIGHT	Standard unit 375 lbs (170 kg)

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DESCRIPTION: ALPHA – BETA RADIATION DETECTION

- A ZnS (Ag) detector & Beta Scintillator which allows separate and simultaneous Alpha & Beta readouts.
- Provides integrated exposure information through USB or Ethernet.
- Measures Pu-239 or other Alpha emitters in the presence of significant or varying Radon-Thoron background.
- Count rate is read on the front panel digital display monitor.
- 6 digit display for both rate and integrated information.
- User selectable operating modes.
- Settable alarm point over the entire range with adjustable alarm delay to avoid short term transient alarms
- 3.5 CFM air pump
- Quick change 2" dia filter.
- A box of 20 pc 2" dia filters and user's manual are included
- A complete system.

UNITECT-AIR: RADIATION MODELS

Specifications	UNITECT-AIR (Standard)		UNITECT-AIR – R4	UNITECT-AIR-R6
Channels	Three		Four	Six
Activity Detected	1.	Beta-Gamma particulate,	1,2,3 plus,4 Alpha particulate	1-4 plus, 5. Tritium and 6. Carbon-14
	2.	Iodine and Radio-Chemicals		
	3.	Noble gas		

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UNITECT-AIR: RADIATION SENSORS

Activity Detected	Beta-Gamma Particulate	Iodine	Nobel Gas
Filters	2" dia	2.5" dia x 1" thick	One Liter Chamber
Filter Type	Glass Fiber Filter	TEDA Activated Charcoal Cartridge	Stainless Steel Lined
Collection Efficiency	99% Efficiency at 0.3 micron particle size	60 KeV to 3 MeV (7 MeV optional)	60 KeV to 3 MeV (7 MeV optional)

Activity Detected	Alpha Particulate	Organic Carbon-14	Tritium
Filters/Collector	2" dia	2.5" dia	Dual Ion Chamber
Filter Collector Type	Glass Fiber Filter	TEDA Activated Charcoal Disk	Stainless Steel or Nickel Lined OPTIONAL: Gold Plate Lined

UNITECT-AIR: DETECTOR & SENSITIVITY

Detector	1 Minute	1 Hour	10 Hours	1 Day	1 Week
Particulate Beta-Gamma Cs-137, Co-58, etc.	6×10^{-10} µCi/ml/min	1×10^{-11} µCi/ml 3.7×10^{-7} Bq/ml	1×10^{-12} µCi/m 3.7×10^{-8} Bq/ml	6×10^{-13} µCi/ml 2.4×10^{-8} Bq/ml	$1 \times 10{-13}$ Bq/ml $4 \times 10{-9}$ Bq/ml
Iodine I-131, etc.	3×10^{-9} µCi/ml/min	1×10^{-11} µCi/ml 3.7×10^{-1} Bq/ml	1×10^{-12} µCi/m 3.7×10^{-8} Bq/ml	6×10^{-13} µCi/ml 2.4×10^{-2} uCi/ml	$1 \times 10{-13}$ Bq/ml $4 \times 10{-9}$ Bq/ml
Gas-Standard Range Xe-133, etc	6×10^{-7} µCi/ml	1×10^{-7} µCi/ml 3.7×10^{-3} Bq/ml	2.7×10^{-8} µCi/ml 1×10^{-3} Bq/ml	1×10^{-8} Bq/ml 3.7×10^{-4} Bq/ml	$2.7 \times 10{-9}$ Bq/ml $1 \times 10{-4}$ Bq/ml

UNITECT-AIR: OPTIONAL DETECTION & RANGES

OPTIONAL DETECTORS	RANGES FROM (LOW END)	(HIGH END) 4 DECADE MODEL	6 DECADE MODEL FOR HIGH END
Tritium	10^{-7}	10^{-3}	10^{-1} µCi/cc
Inorganic C-14	10^{-8}	10^{-4}	10^{-2} µCi/cc
Organic C-14	10^{-9}	10^{-5}	10^{-3} µCi/cc
Alpha particulate	5×10^{-8}	10^{-4}	10^{-2} µCi/cc

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PARTICULATE

PART.TOTAL(Bq)	0.00
P-Bq/l	0.00

1. CONCENTRATION ALARM
2. TOTAL ALARM
3. LOSS OF SIGNAL ALARM
4. ONE SECOND ALARM
5. LOW GASS FLOW

IODINE

I.TOTAL(Bq)	0.00
I-Bq/l	0.00

1. CONCENTRATION ALARM
2. TOTAL ALARM
3. LOSS OF SIGNAL ALARM
4. EMERGENCY ALARM

NOBLE GAS

N.TOTAL(KBq)	0.00
N-KBq/l	0.00

1. CONCENTRATION ALARM
2. TOTAL ALARM
3. N1- LOSS ALARM
4. N2 - LOSS ALARM
5. N-BG-LOSS-ALARM
6. EMERGENCY ALARM

Close program before changing filter/cartridge.
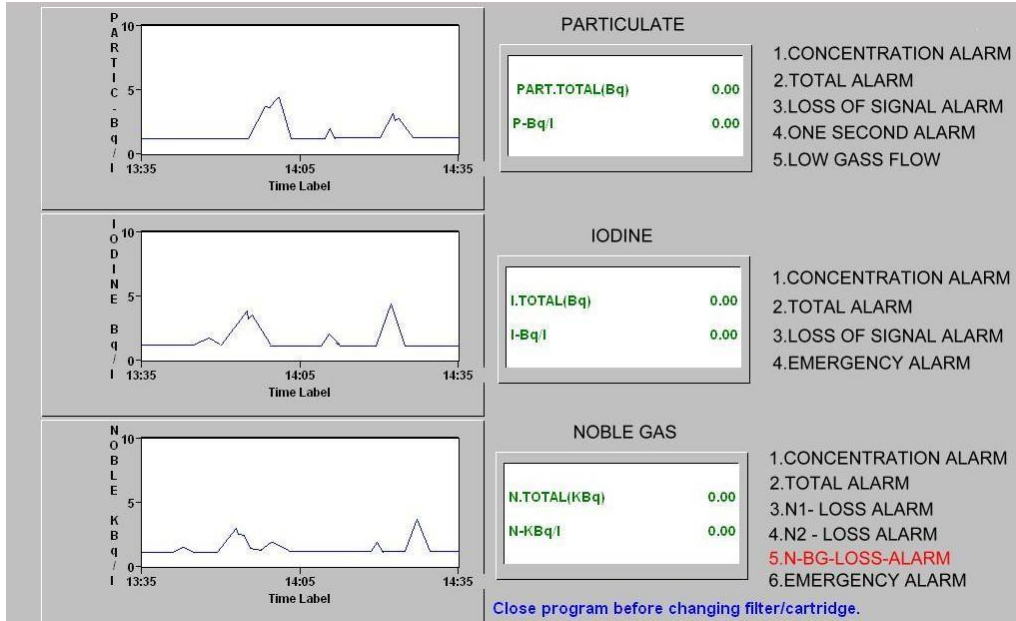
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CHEMICAL TOXIN TYPES	
Chemical Warfare Agents (CWAs) DETECTED	**Toxic Industrial Chemicals (TICs) DETECTED**
Agent VX	Boron Trichloride (BCl_3)
Agent VXR	Boron Trifluoride (BF_3)
Cyanogen Chloride (CK)	Carbon Disulfide (CS_2)
Cyclosarin	Diborane (B_2H_6)
Mustard	Ethylene Oxide (C_2H_4O)
Nerve and Blister agents:	Hemoglobin (HB)
Nitrogen Mustard	Hydrocarbons (C_{12})
Sarin	Hydrogen Chloride (HCl)
Soman	Hydrogen Cyanide (HCN)
Tabun	Hydrogen Fluoride (HF)
	Hydrogen Sulfide (H_2S)
	Nitric Acid (HNO_3)
	Phosgene ($COCl_2$)
	Phosphorus Trichloride (PC13)
	Sulfur Dioxide (SO_2)
	Others Upon Request

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UNITECT-AIR: BIOLOGICAL SENSORS

Real-Time Detection of Bioagents in Air and Genetically Modified Agents

The SmartBio Sensor (SBS) enables real-time detection of biological agents in ambient air, The system Classifies bacteria, bacterial spores, toxins and viruses while maintaining a low response to common biological and chemical interferants in the environment.

The SBS continuously samples the air and traps bioagents onto an array of semi-selective optical biosensors.

The fluorescence from the array is processed by an on-board computer to produce signal patterns that are characteristic of bioagents. The bioagents are retained on the sensor substrates for confirmatory analysis or forensic archiving.

The current SBS system uses an 8-sensor array and an integrated airborne particle counter to detect bioagent-containing clouds in real time. This detection suite affords more selectivity and greater immunity to previous based techniques. The SBS sensors will also respond to unanticipated or genetically modified organisms that could be missed by sensors designed for specific organism detection.

SPECIFICATIONS

Principal of Operation:	Multichannel fluorescence and pattern recognition
Agents Classes Detected:	Bacteria, bacterial spores, viruses, toxins
Detection Channels:	8 fluorescent chemical sensors, 2 particle counting channels
Operation Mode:	Continuous Sampling
Response Time:	Detect < 2 minutes, Classify < 5 minutes
Initial startup time	After < 10 minutes

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BIOLOGICAL DETECTION LIBRARY (TYPICAL)

MICROBIAL TYPES	MICROORGANISM	CURRENTLY CLASSIFIED
BACTERIA ROD SHAPED	Various	BACTERIA
BACTERIA COCCI	Bacillus - vegetative	BACTERIA
BACTERIA ENDOSPORES	Various	SPORES
PROTOZOA	Various	PROTOZOA
RECENT ADDITIONS TO LIBRARY	Various	Yeast Mold Virus

- **UNITECT-AIR** combines several detection goals into a single monitor.
- The **UNITECT-AIR** continuously monitors **Radionuclides** using particulate filter and charcoal filter.
- Both **Industrial and Warfare Chemicals**, as well as **Biological Threats** including Bacteria, Yeasts, Virus and Molds are monitored with detectors integrated within the **UNITECT** system.
- Additional monitoring is available and will be tailored to specific needs upon request.
- Measurements are logged 24 hr/day - 7 day/week, with alarm capability and a universal read out adaptable to mainframe infrastructure computers.
- Local and remote readout and alarm.