RAD – CHEM- BIO- UNITECT-AIR

UNIVERSAL DETECTOR FOR AIRBORNE HAZARDS

Model UNITECT-AIR

A STATE OF THE ART INTEGRATED CHEMICAL BIOLOGICAL & RADIATION AIR MONITORING SYSTEM

Real – Time
Air Monitors
TECHNICAL ASSOCIATES

APPLICATIONS

- **Room Air, Outdoor Air, Ducts or Exhaust Stacks, Airbourne Plumes**
- **High Profile Buildings: Convention Centers, Sports Arenas, Government Establishments**
- **Industrial Contaminates: Laboratory, Power Plant**

FEATURES

Combines Several Detection Goals
Real-Time, On-Line
Major Chemical Tests CWA +TIC's
pH, ORP, and Lead
Detects Alpha, Beta, Gamma, Tritium, Radon, (Optional)
Detects More Than 6 classes of Microbes

BENEFITS

All-in-One Continuous Monitor
Real-Time, On-Line
Into One Monitor
No Reagents Required
Measurements Logged 24 Hr/Day 7 Day /Week
Customer Controlled Alarm Threshold
SCADA compatible
Easy Installation
Calibration Can be Customized for Specific Contaminants
Remote Control & Communications

Technical Associates and Data Rangers

PHYSICAL PARAMETER SENSORS

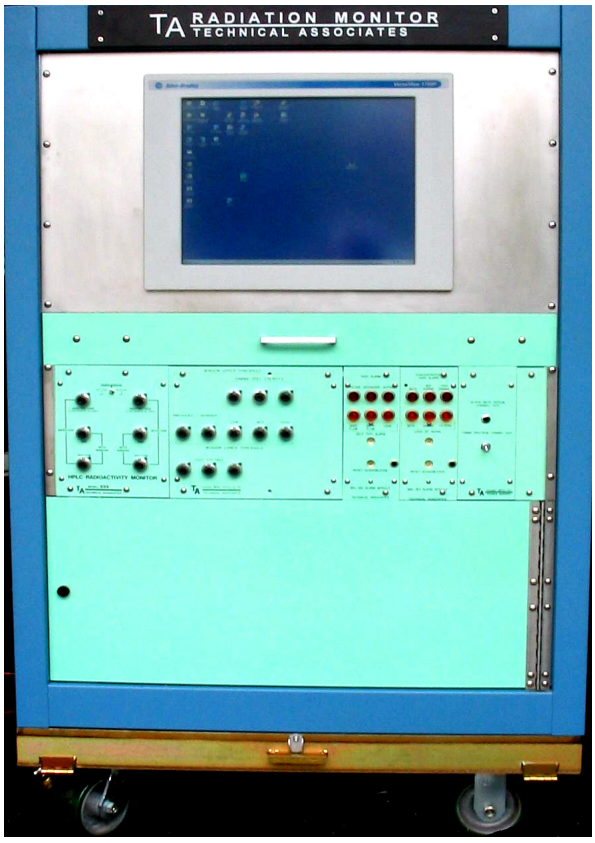
MEASUREMENT	RANGE	SENSOR	MAINTENANCE	POWER
FLOW	0 to 3.0 CFM	Volumetric	None	10 – 36 VDC Input
TEMPERATURE	Ambient	RTD Ceramic	Periodic Calibration	10 – 36 VDC Input
PRESSURE	900 –1400 hpa	Diaphragm	None	10 – 36 VDC Input

FLOW RATE

STANDARD	0-3 cfm
OPTIONAL	Wide range of flow rates available
OPTIONS	Cooler model: Cool-33 for detector and samples is used in case of higher sample or ambient temperatures.

SIZE AND WEIGHT

DIMENSIONS	
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 170kg



Cabinet Front View

CHEMICAL SENSORS
TYPICAL

TOXIN TYPES	Chemical Warfare Agents CWA's DETECTED	Toxic Industrial Chemicals TIC's DETECTED
	Nerve and blister agents such as Tabun, Sarin, Soman, Cyclosarin, Agent VX Agent VXR, Cyanogen chloride (CK), Mustard Nitrogen mustard	C12 HCI HNO3 SO2 HCN HB HF BC13 BF3 CS2 Phosgene Ammonia Ethylene Oxide Phosphorus, Trichloride (PC13) Diborane, plus others as requested

RADIATION SENSORS

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

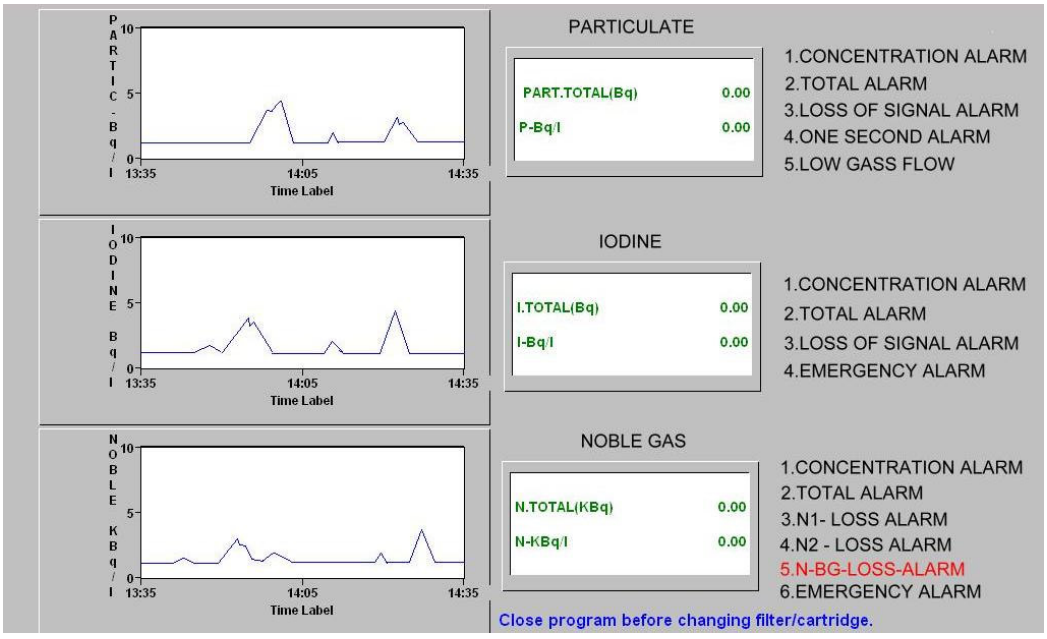
Activity Detected	Beta-Gamma Particulate	Iodine	Nobel Gas
Filters	2” dia	2.5” dia x 1” thick	One Liter Chamber
Filter Type	Glass Fiber Filter	TEDA Activated Charcoal Cartridge	Stainless Steel Lined
Collection Efficiency	99% Efficiency at 0.3 micron particle size	60 KeV to 3 MeV (7 MeV optional)	60 KeV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

RADIATION SENSORS

Type of Detector	1 Minute	1 Hour	10 Hours	1 Day	1 Week
Particulate Beta-Gamma Cs-137, Co-58, etc	6 x 10^{-10} uCi/ml/min	1x10^{-11} uCi/ml 3.7 x 10^{-7} Bq/ml	1x10^{-12} uCi/m 3.7 x 10^{-8} Bq/ml	6 x 10^{-13} uCi/ml 2.4 x 10^{-8} Bq/ml	1 x 10-13 Bq/ml 4 x 10-9 Bq/ml
Iodine I-131, etc.	3 x 10^{-9} uCi/ml/min	1 x 10^{-11} uCi/ml 3.7 x 10^{-1} Bq/ml	1x10^{-12} uCi/m 3.7x10^{-8} Bq/ml	6x10^{-13} uCi/ml 2.4 x 10-^{2} uCi/ml	1 x 10-13 Bq/ml 4 x 10-9 Bq/ml
Gas-Standard Range Xe-133, etc	6 x 10^{-7} uCi/ml	1x10^{-7} uCi/ml 3.7 x 10^{-3} Bq/ml	2.7 x 10^{-8} uCi/ml 1 x 10^{-3} Bq/ml	1 x 10^{-8} Bq/ml 3.7 x 10^{-4} Bq/ml	2.7 x 10-9 Bq/ml 1 x 10-4 Bq/ml

Measurement Ranges of Optional Detectors	From	4 Decade Model	6 Decade Model
Tritium	10^{-7}	10^{-3}	10^{-1} uCi/cc
Inorganic C-14	10^{-8}	10^{-4}	10^{-2} uCi/cc
Organic C-14	10^{-9}	10^{-5}	10^{-3} uCi/cc
Alpha particulate	5 x 10^{-8}	10^{-4}	uCi/cc



BIOLOGICAL SENSORS

Real-time detection of bioagents in air
Also detects 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 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 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

BIOLOGICAL SENSORS

BIOLOGICAL DETECTION LIBRARY TYPICAL

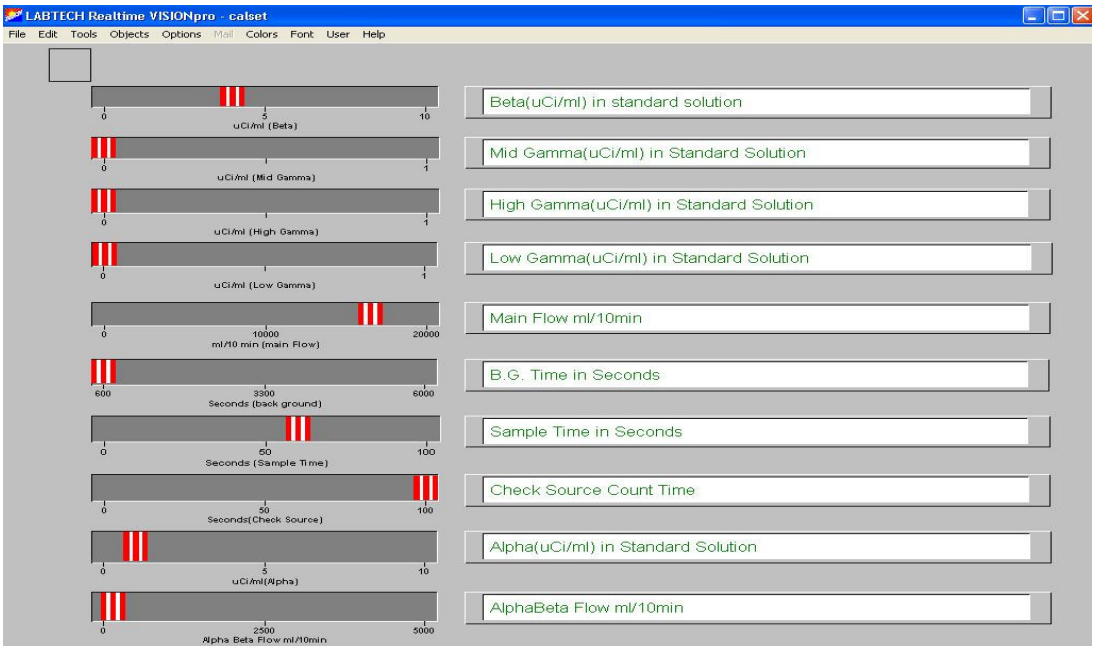
MICROBIAL TYPES	DETECTION LIBRARY MICROORGANISM	CURRENTLY CLASSIFIED AS …
BACTERIA ROD SHAPED	Various	BACTERIA
BACTERIA COCCI	Bacillus - vegetative	BACTERIA
BACTERIA ENDOSPORES	Various	SPORES
PROTOZOA	Various	PROTOZOA
RECENT ADDITIONS TO LIBRARY	Various	Yeast Mold Virus

BioSentry offers state-of-the-art based technology for continuous, on-line, real-time monitoring for airborne pathogens.

ALARM SET SCREEN

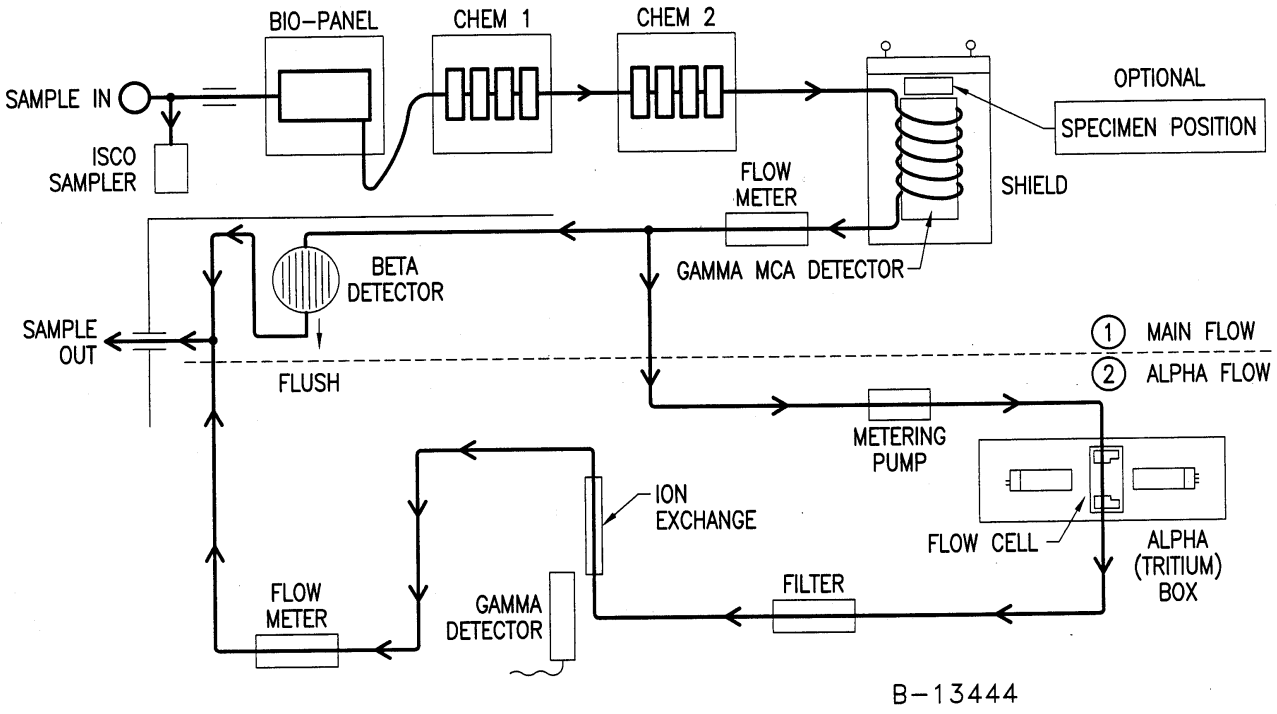
This screenshot allows the user to set all "Alarm Set Points" for all Detector Chambers.

CALIBRATION SET SCREEN



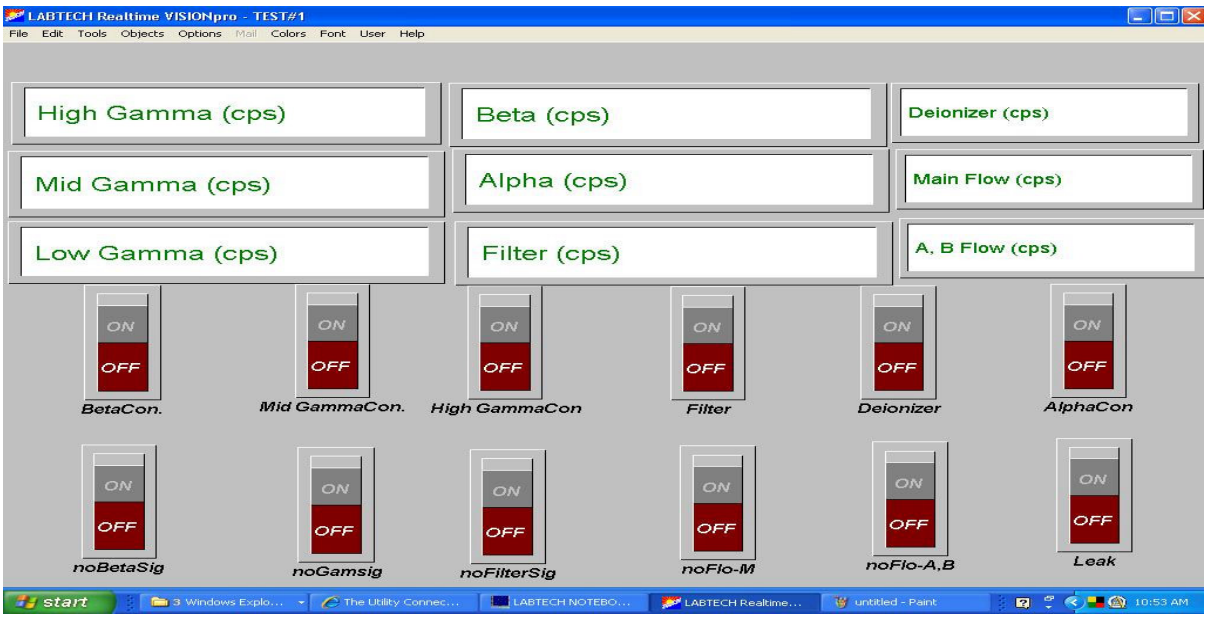
This screenshot displays & finds both Background & Source Counts, and sets Parameters.

UNITECT FLOW CHART
For Radiation-Chemical-Biological Detection



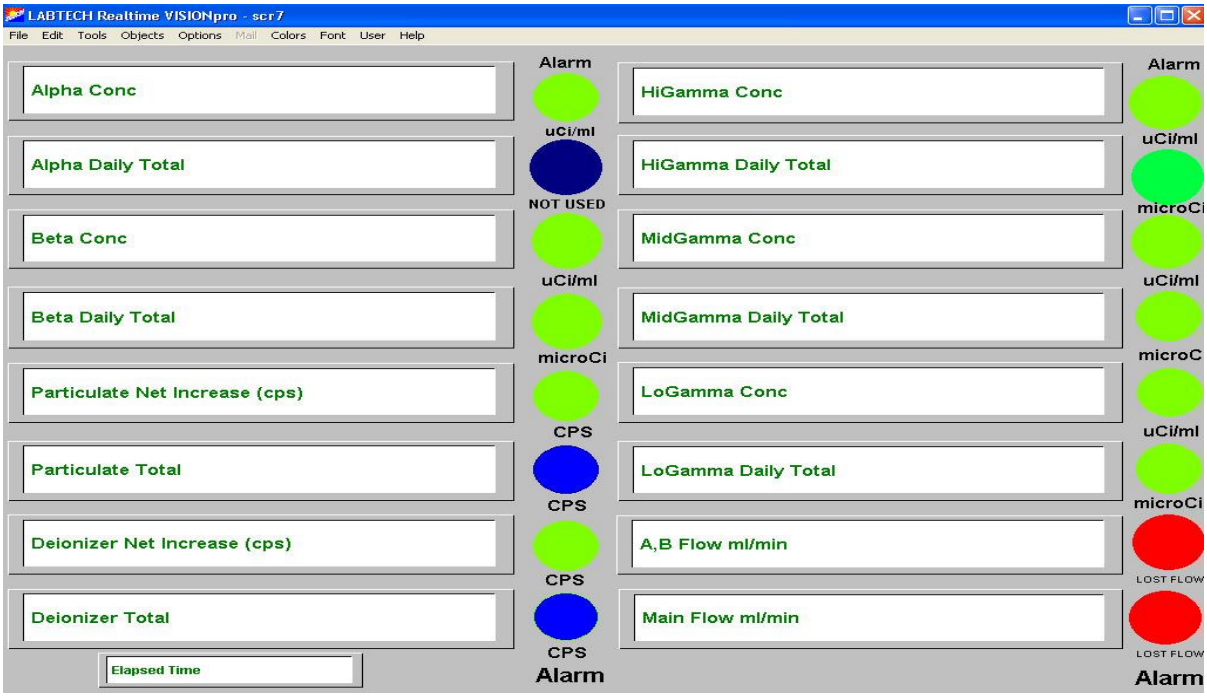
tech-associates.com

TEST SCREEN



This is **"Test Screen"** which allows the user to test Primary Detectors and Functions

OPERATE SCREEN



This screenshot displays & finds both Background & Source Counts, and sets Parameters

RAD – CHEM- BIO- UNITECT-AIR

STATE OF THE ART INTEGRATED CHEMICAL BIOLOGICAL & RADIATION WATER MONITORING SYSTEM

UNITECT-AIR combines several detection goals into a single monitor. The **UNITECT-AIR** continuously monitors **Radio Nuclides** 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.

All Chemical and Biological Technology is provided by Data Rangers LLC.

Model UNITECT-AIR

TECHNICAL ASSOCIATES
NUCLEAR INSTRUMENTS AND SYSTEMS

7051 ETON AVENUE, CANOGA PARK, CA 91303
TELEPHONE (818) 883-7043 - FAX (818) 883-6103
E-mail: tagold @nec. net - http://www.tech-associates.com/