

RAD - CHEM - BIO - UNITECT



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

APPLICATIONS

- **Military and Civilian**
- **Ground And Surface
Drinking And Wastewater**
- **Reservoirs**
- **High Profile Buildings:
Convention Centers,
Sports Arenas,
Government Establishments**
- **Industrial Contaminates:
Laboratory, Power Plant,
Agricultural**
- **Residual Treatment Additives**

FEATURES

**Combines Several Detection Goals
Into One Monitor
7 Major Chemical Tests Provided
pH, ORP, and Lead
Detects Alpha, Beta, Gamma,
Tritium, Radon, Radium and
Detects More Than 12 Different
Microbes**

BENEFITS

**All-in-One Continuous, Real-Time, On-Line
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**

PHYSICAL PARAMETERS

MEASUREMENT	RANGE	SENSOR	MAINTENANCE	COMMENTS
FLOW	0.06 gpm – 2.0 gpm	Volumetric	None	10 – 36 VDC Input
TEMPERATURE	32 -100 °F	RTD Ceramic	Periodic Calibration	10 – 36 VDC Input
PRESSURE	0 – 60 psi	Diaphragm	None	10 – 36 VDC Input

FLOW RATE

STANDARD	100 to 1,000 ml/minute
OPTIONAL	Wide range of flow rates available
SAMPLE TEMP	Up to 80 °F liquid. (Option: Up to 115 °F)
AMBIENT EMP	65 - 100 °F
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 300kg

Cabinet
Front View



CHEMICAL SENSORS

MEASUREMENT	SENSITIVITY	RANGE	SENSOR METHOD	EPA BASIC STANDARDS	MAINTENANCE TIME - ACTION	POTENTIAL COST MAINTENANCE / COMMENTS
TOTAL CHLORINE	0.01mg/liter	0.1 - 10mg/liter	Amperametric Electrode	1.0mg/liter	Replace sensor every 12 Months. Replace gel caps & add electrolyte every 2 years.	Sensor \$ 1630 Gel Cap Cartridges \$90 Electrolyte Gel \$45 2year Costs \$1900
PH	0.2	0 - 14	Amperametric Electrode Sterilizable	6.5 to 8.5	Replace Sensor every 2 years	2 year costs -\$530
CONDUCTIVITY	10uS/cm2	20mS/cm3	Amperametric Electrode	4.7 to 5.8uS/cm Depending on PH Level	Replace Sensor every 2 years. Calibrate monthly. Easy to Calibrate could be Calibrated with the chlorine schedule	2 year Costs \$630
TURBIDITY	0.001	0.00 - 10,000FN U	UV Spectrometer	0.05 to 1.0NTU	Periodic calibration & cleaning	
OXIDATION REDUCTION POTENTIAL (ORP)	1mV Resolution	-1.500mV to +1.500mV	Amperametric Electrode Sterilizable	650mV	Replace Sensor every 2 Years. Should Calibrate monthly. Replace Reference KCl Cartridge	2 year costs -\$480
TOTAL ORGANIC CARBON (TOC)	0.1mg/liter	10mg/liter to 10,000mg/l iter	UV Spectrometer	0.05mg/liter	Replace UV lamp when needed. Spare lammmps are supplied in spare parts package	
LEAD CONTENT	200 ppb	200 - 20.700 ppb(mg/liter)	Solid State Detector	Max Limit 15 ppb	Replace Sensor annually. Calibrate weekly for Best Results	2 year costs Sensor -\$1634 Other Dissolved Metals Interfere with Lead measurement

RADIATION SENSORS

DETECT	PAG LEVEL	LOWER LIMIT of SENSITIVITY	TOP OF RANGE	SENSOR / METHOD USED		MAINTENANCE for finished water
					TIME	ACTION
Alpha	U-238 3,000 pCi/l			5" dia. Dual PM Tube crushed scintillation bed of crystals	3 mo	Replace particulate filter cartridge
30 min 24 hr		25,000 pCi/l 3,000 pCi/l	2 x 10 ⁷ pCi/l			
Beta	K-40 30,000 pCi/l			5" dia. Dual PM Tube 1000ml chamber	3--6 mo	Replace particulate filter cartridge
30 min 24 hr		30,000 pCi/l 10,000 pCi/l	2 x 10 ⁷ pCi/l	1100cm ² Beta Scintillator		
Gamma	Co-58 30,000 pCi/l			MultiChannelAnalyzer Smart peak detection software	3--6 mo	Simple MCA check
30 min 24 hr		20,000 pCi/l 5,000 pCi/l	2 x 10 ⁷ pCi/l	75x75mm NaI(Tl) Crystal		
OPTIONS:		LOWER LIMIT	TOP OF RANGE			
DETECT						
Tritium		20,000pCi/l	1 x 10 ⁶ pCi/l	crushed scintillation bed of crystals		Replace ion exchange cartridge
Radon		100pCi/liter	2000pCi/liter		1-3 mo	Clean or replace vapor trap
PRE-CONDITION						
Expel Radon						Clean or replace vapor trap

For Full Listing of EPA DHS 2009 PAG Levels
See [Protective Action Guides Chart](#)

BIOLOGICAL SENSOR

MEASUREMENT	SENSITIVITY	RANGE	SENSOR METHOD	MAINTENANCE TIME - ACTION	COMMENTS
Real-time, Continuous	1,000 liter to 150/mL for Proto-zoa 500/mL to 3,000/ mL for Bacteria	Performance improves significantly as particulates in the range of 500 nm range decreases.	Multi-angle light scattering with 2D high frequency cameral yielding real-time and continuous results.	Flow Cell Cleaning up to a maximum of weekly to every 8 weeks. Takes 30 minutes to perform this task with unskilled labor.	R&D Programs in progress to systematically improve the sensitivity to the 100/L level in most potable waters.

BIOLOGICAL DETECTION LIBRARY

MICROBIAL TYPES	DETECTION LIBRARY MICROORGANISM	CURRENTLY CLASSIFIED AS ...
BACTERIA ROD SHAPED	Pseudomonas Legionella, E.coli Salmonella, Shigella	BACTERIA
BACTERIA COCCI	Bacillus - vegetative	BACTERIA
BACTERIA ENDOSPORES	Bacillus Subtilis Bacillus Globigii Bacillus Cereus	SPORES
PROTOZOA	Cryptosporidium Oocysts Giardia Cysts	PROTOZOA
FUTURE ADDITIONS TO LIBRARY	Algae (various) Yeast & Molds "Others as Requested	"UNKNOWN"



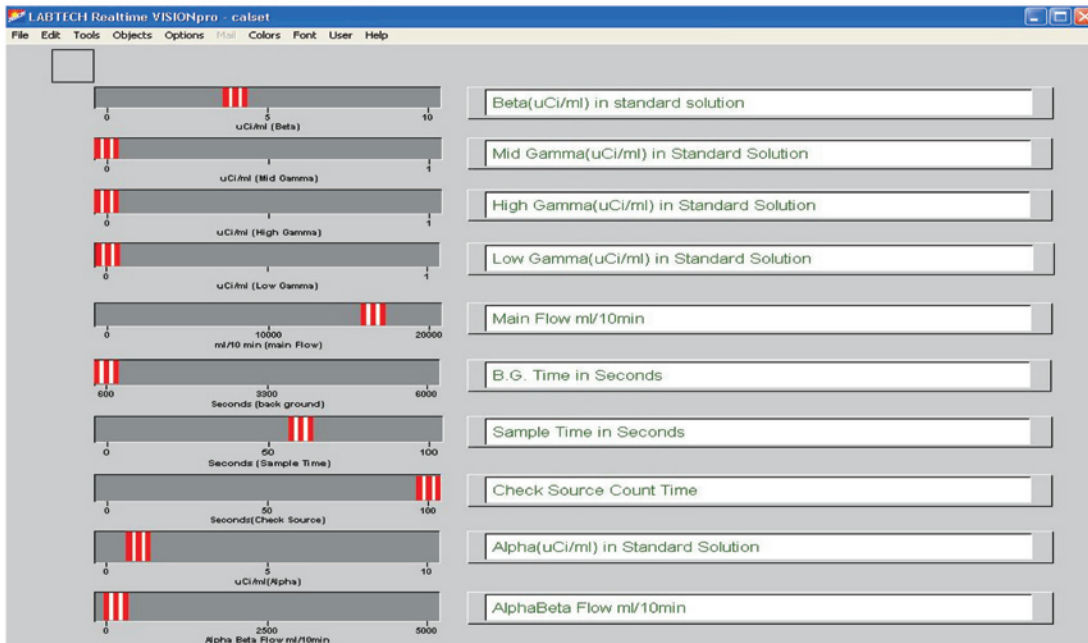
BioSentry offers state-of-the-art, laser based technology for continuous, on-line, real-time monitoring for waterborne pathogens.

ALARM SET SCREEN



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

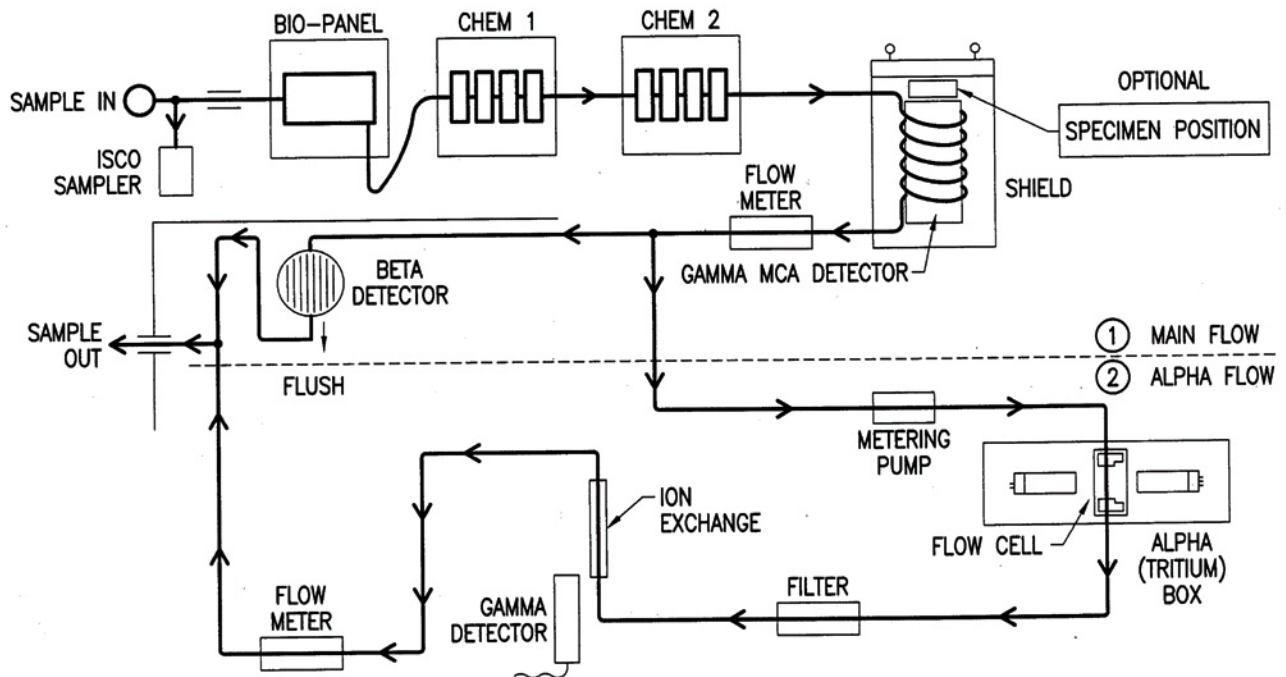
CALIBRATION SET SCREEN



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

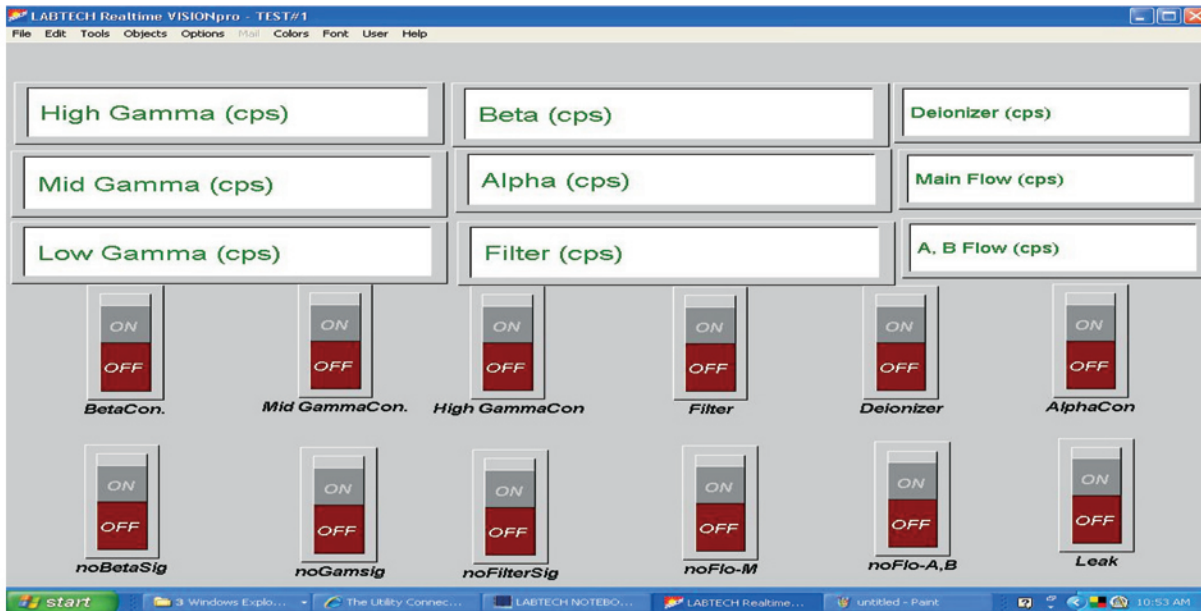
UNITECT FLOW CHART

For Radiation-Chemical-Biological Detection



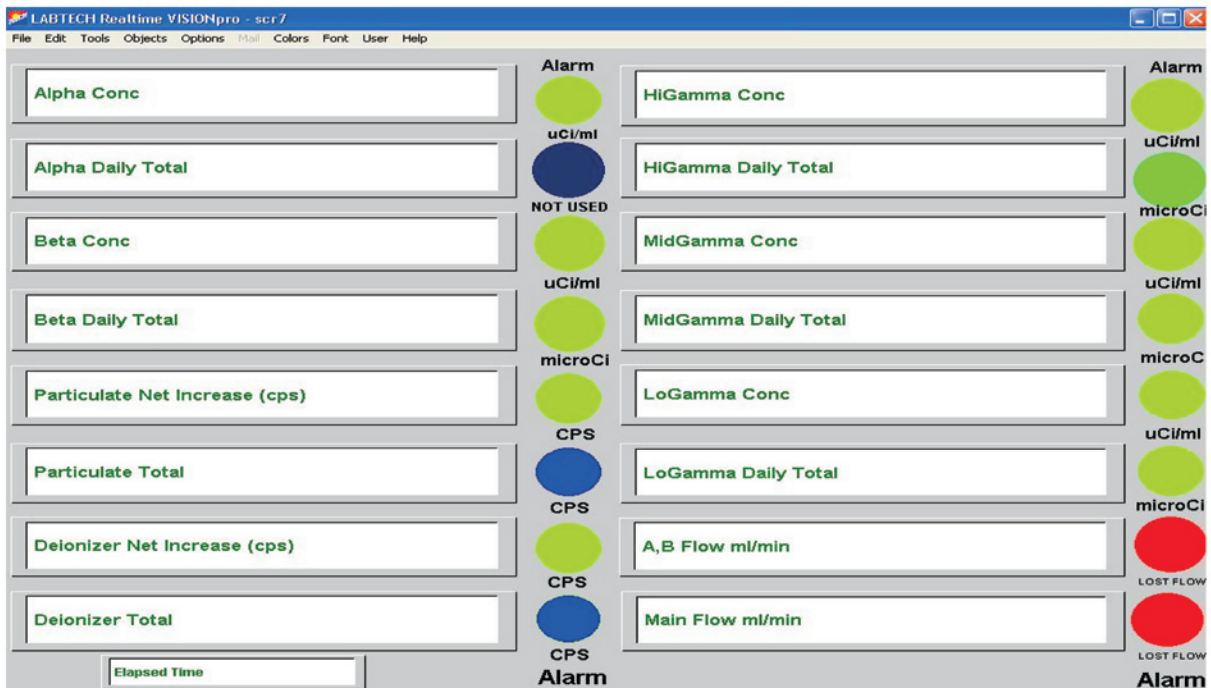
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TEST SCREEN



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

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



UNITECT combines several detection goals into a single monitor. The UNITECT-CBRN continuously monitors radio nuclides using both ion exchange resin beads and charcoal filter. Chlorine, TOC, and Nitrogen 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-CBRN (SECURITY)
Model: UNITECT-LLD (PURITY)