RAD - CHEM- BIO - UNIITECT



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



Technical Associates and Data Rangers

PHYSICAL PARAMETERS

MEASUREMENT FLOW TEMPERATURE PRESSURE

RANGE 0.06 gpm – 2.0 gpm 32 -100 °F 0 – 60 psi SENSOR Volumetric RTD Ceramic Diaphragm MAINTENANCE None Periodic Calibration None

COMMENTS

- 10 36 VDC Input 10 – 36 VDC Input
- 10-36 VDC Input

FLOW RATE

STANDARD100 to 1,000 ml/minuteOPTIONALWide range of flow rates availableSAMPLE TEMPUp to 80 °F liquid. (Option: Up to 115 °F)AMBIENT EMP65 - 100 °FOPTIONSCooler 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



tech-associates.com

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
РН	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	
OXIDATIO0N REDUCTION POTENTIAL (ORP)	1mV Resolution	-1.500mV to +1.500mV	Amperametric Electrode Sterilizable	650mV	Replace Sensor every 2 Years. Should Calibrate monthy. Replace Reference KCI 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 lammps are supplied in spare parts package	
LEAD CONTENT	200 ppb	200 - 20.700 ppb(mg/lite r)	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	36 mo	Replace particulate filter cartridge
30 min 24 hr		30,000 pCi/l 10,000 pCi/l	2 x 10 ⁷ pCi/l	1100cm² Beta Scintillator		
Gamma	Co-58 30,000 pCi/l			MultiChannelAnalyzer Smart peak detection software	36 mo	Simple MCA check
30 min 24 hr		20,000 pCi/l 5,000 pCi/l	2 x 10 ⁷ pCi/l	75x75mm Nal(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 <u>Protective Action Guides Chart</u>

BIOLOGICAL SENSOR

MEASUREMENT Real-time, Continuous	SENSITIVITY 1,000 liter to150/mL for Proto-zoa 500/mL to 3,000/ mL for Bacteria	RANGE Performance improves significantly as particulates in the range of 500 nm range decreases.	SENSOR METHOD Multi-angle light scattering with 2D high frequency cameral yielding real- time and continuous results.	MAINTENANCE TIME - ACTION Flow Cell Cleaning up to a maximum of weekly to every 8 weeks. Takes 30 minutes to perform this task with unskilled labor.	COMMENTS 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.

	I Realtime VISION	pro - ALM c. Mail: Colors, Foot	Licer Help						
				_		\ _ _			
Ó	ż	4 6 Beta uCi/ml	8	10	ALARIVIS	<u>= 1 -</u>	Beta	Con	
0	20000 E	40000 60000 Beta uCi-12 hour cyc	80000 le	100000		_	Beta	Total	
0	2	4 6 Mid Gama uCi/ml	8	10			MidG	ammaCon	
0	25000 Mid	50000 Gamma uCi-12 hour	75000 cycle	100000			MidG	ammaTotal	
0	2	4 6 Hi Gamma uCijmi	8	10			High	GammaCon	
	25000 Hi G	50000	75000	100000			High	Gamma Total	
0	Low G	500	.uCi/ml	1000			LoGa	ammaCon	
	LUW G	50000	i uci/illi	100000			LoGa	amma total	
		Low Gamma Total		100			Alpha	aCon (cps)	
	Al	pha Concentration C	PS	10000			Filter	Net Increase (cps)	
0	h	500000	5)	100000	0		Filter	Total (cps)	
	0	500		1000	I		Deio	nizer Net Increase (c	ps)
	D	eionizer Net Increas	e (cps)	40000	00		Deio	nizer Total (cps)	
📲 start	5 Wind	ows Explo 🝷 🌈	The Utility Connec	i 🛄 L	ABTECH NOTEBO	🛛 🗑 Test-LTC - Painl	2	💋 LABTECH Realtime	😰 🖞 🄇 📕 🌰 10:47 AM

ALARM SET SCREEN

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

CALIBRATION SET SCREEN

📂 LABTECH Realtime VISIONpro - calse	t		
File Edit Tools Objects Options Mail Col	ors Font User Help		
		Beta(uCi/ml) in standard solution	
uCi/mi	i (Beta)		
	,	Mid Gamma(uCi/ml) in Standard Solution	
uCi/ml (M	id Gamma)		
.		High Gamma(uCi/ml) in Standard Solution	
uCi/mi (Hi	gh Gamma)		
		Low Gamma(uCi/ml) in Standard Solution	
U UCi/mi (Le	ow Gamma)		_
		Main Flow ml/10min	
m1/10 min)	(main Flow)		
		B.G. Time in Seconds	
600 33 Seconds (b	ibo 6000 ack ground)		
		Sample Time in Seconds	
ó e Seconds (S	so 100 ample Time)		
		Check Source Count Time	
Ó Seconds(Ch	ió 100 heck Source)		
		Alpha(uCi/ml) in Standard Solution	
0 uCi/ml	5 10 (Apha)		
		AlphaBeta Flow ml/10min	
0 25 Alpha Beta F	ioo sooo Towml/10min		

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

UNITECT FLOW CHART For Radiation-Chemical-Biological Detection



TEST SCREEN

Manual Contemporation - Test -				
File Edit Tools Objects Options Mail Colors Font User Help				
High Gamma (cps)	Beta (cps)		Deionizer	(cps)
Mid Gamma (cps)	Alpha (cps)		Main Flor	w (cps)
Low Gamma (cps)	Filter (cps)		A, B Flov	v (cps)
ON OFF BetaCon. Mid GammaCon. Hi	ON OFF igh GammaCon	ON OFF Filter	ON OFF Deionizer	OFF AlphaCon
ON OFF noBetaSig		ON OFF DOFIO-M	ON OFF noFlo-A,B	ON OFF Leak
🖅 start 👘 👔 🕋 3 Windows Explo 🕞 🌈 The Utility Connec.		MABTECH Realtime	🦉 untitled - Paint	😰 🍧 🌏 🎴 🌰 10:53 AM

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

OPERATE SCREEN

LABTECH Realtime VISIONpro - scr7			
	Alarm		Alarn
Alpha Conc		HiGamma Conc	
	uCi/ml		U.Ci/m
Alpha Daily Total		HiGamma Daily Total	
	NOT USED		micro
Beta Conc		MidGamma Conc	
	uCi/ml		uCi/m
Beta Daily Total		MidGamma Daily Total	
	microCi		micro
Particulate Net Increase (cps)		LoGamma Conc	
	CPS		uCi/m
Particulate Total		LoGamma Daily Total	
	CPS		microC
Deionizer Net Increase (cps)		A,B Flow ml/min	
	CPS		LOST FLO
Deionizer Total		Main Flow ml/min	
	CPS		LOST FLO
Elapsed Time	Alarm		Alarn

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 avail-able 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: UNITCT-LLD (PURITY)



7051 ETON AVENUE, CANOGA PARK, CA 91303 TELEPHONE (818) 883-7043 - FAX (818) 883-6103





tech-associates.com