

# LABORATORY LIQUID SCINTILLATION COUNTING SYSTEM

Model Series - SSS-22-LAB

## FEATURES:

- MEASURES ALL ALPHA - BETA EMITTERS AND LOW ENERGY GAMMA EMITTERS – INCLUDING
  - TRITIUM, CARBON-14, & SULPHUR-35
- ALPHA / BETA SEPARATION
- DUAL PM TUBE DESIGN FOR COINCIDENCE VERIFICATION
- SSS-22-LAB – THREE SAMPLE HOLDER
- SETTABLE WINDOW CAN BE SET FOR ANY ISOTOPE
- SAMPLE TYPE: WATER, FOOD, SOIL, FABRIC, ETC.
- **R-232** FOR INTERFACE – EASY CONVERSION TO USB FOR USER'S PC



LAM-10DSC  
ELECTRONICS SSS-22-LAB-

## APPLICATION:

A Liquid Scintillation Counting System is useful for measurement of radionuclides in many materials including food, soil, water, blood, etc.

The **SSS-22-LAB** Manual Liquid Scintillation Counting System accurately quantitatively measures Carbon-14 and most other radioactive materials.

The **SSS-22-LAB** also measures Tritium & Exceptional for measuring low levels of Tritium, C-14, & S-35.



SSS-22-LAB  
STAINLESS STEEL  
CASE



SSS-22-LAB  
INSIDE OF CASE

## SYSTEM DESCRIPTION:

**Measuring Principal:** The most sensitive method of detecting and quantitating Beta emitting isotopes is to intimately mix the sample with liquid scintillation fluor and count each individual scintillation event with a photomultiplier counter.

**Alpha / Beta Separation.**

**Count Verification** for Tritium.

**An Energy Analyzer** further selects the pulses and delivers the true signal.

**A Detection cell** is optically coupled to selected photomultiplier tubes.

**SSS-22-LAB** has a **3 Vial Capacity** providing faster thru-put and easy comparison of sample to calibration standard vial or to background vial – **2 PM Tubes**

**A User Manual** is provided.



**TECHNICAL ASSOCIATES  
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### GAMMA BACKGROUND RADIATION REJECTION FEATURES:

- Energy analyzer window rejects pulses with energies outside the window setting
- Optional Lead Shielding around detector.

### COUNTING ASSEMBLY FEATURES:

- Excellent repeatability
- Fully light tight system
- Fail safe interlock to protect PM tubes
- High transmission optical coupling to PM tube

### PM TUBE & PRE-AMP NOISE ELIMINATION FEATURES:

- Coincidence Verification with High quality Dual PM tubes and preamps.
- Fully adjustable energy analyzer window rejects low energy pulses.
- **SSS-22-LAB:** 3 Vial capacity for faster thru-put and easy comparison of sample to calibration standard or to the background – 2 PM Tubes
  - 3 Vial capacity provides less wait time for dark adaption of phosphor.

### DATA ANALYSIS & PRESENTATION:

- Scintillation counts detected by PM tubes are processed by a fully adjustable single channel analyzer which is centered on the energy peak of the isotope being measured. This deletes both higher energy pulses from background radiation and lower energy counts from the PM tube or circuit noise. The pulses feed to a digital scaler and optional digital printer and/or user's PC..
- This process allows long count times for measurement of very minute samples.
- R232 Interface with easy conversion to USB interface to computers or data stations.

### SPECIFICATIONS:

<b>H-3 Gross Efficiency:</b>	>50% Gross, Coincidence efficiency >10% Verified.
<b>Count Times:</b>	1 sec. thru 99 sec. (1 sec. increments), and 1 min. thru 99 min. (in 1 min. increments).
<b>Voltage:</b>	0-1500 Volts - fully user settable.
<b>Readout:</b>	Digital - 6 digit LCD, (LED optional).
<b>Outputs:</b>	Standard: Serial pulse output and R-232.
<b>Power:</b>	Rechargeable Lithium batteries and AC adapter
<b>Sample Size:</b>	Accepts standard Liquid Scintillation vials 20-25 ml.
<b>SSS-22-LAB Case:</b>	<b>Stainless Steel</b> Weather-tight, easy to clean
<b>OPTIONAL:</b>	<b>SSS-22-LAB:</b> Accepts 6-7 ml vials with <b>Optional</b> adapter.
<b>Scintillation Fluors:</b>	Accepts most scintillation fluors. Perkin-Elmer Ultima Gold-LLT is recommended for H-3 counting



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MODEL SUBASSEMBLY	SSS-22-LAB ELECTRONICS	SSS-22-LAB DETECTORS
<b>MODEL</b>	<b>LAM-10DSC</b>	<b>DT-S-22P</b>
<b>Dimensions</b>	10" L x 7" W x 7"H	20" L x 16" W x 9"H
<b>Weight</b>	7 lbs	55lbs
<b># PM Tubes</b>		2
<b># Amplifiers</b>	2	
<b>Coincidence Counting</b>	Yes	
<b>Detected Emitters</b>	Alpha-Beta PLUS H-3, C-14, S-35	Alpha-Beta PLUS H-3, C-14, S-35
<b>Capacity</b>		3 Vials

### OPTIONS:

- Digital Printer Model MPM 40DT
- Set of 3 calibrated liquid standards, H-3, C-14 and S-35. User must mix TA solutions with liquid scintillant.
- Optional Interfaces and Outputs: Clear instructions with all interfaces.
- Data logging software, Model # ORO-22P
- Data acquisition interface and cable with driver, Model # DAQ-3
- Increase from 3 to 6 sample capacity

TA LIQUID SCINTILLATION COUNT RANGE			
	COUNT TIME	SSS-22-LAB pCi/L	MAX KEV BETA
<b>TRITIUM</b>	2 min	10,000	18.6
	10 min	5,0000	
	60 min	2,000	
<b>C-14</b>	2 min	1,250	156
	10 min	625	
	60 min	250	
<b>S-35</b>	2 min	1,250	167
	10 min	625	
	60 min	250	



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