

**ATOMLAB950 AND ATOMLAB930**  
*Thyroid Uptake Systems*



- *Thyroid Uptake*
- *Wipe Test*
- *Schilling Test*
- *Bioassay*
- *Hematology*
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BIODEX

# Atomlab 950



## ATOMLAB 950

# Thyroid Uptake System

### Complete, mobile, self-contained system:

- PC with high capacity hard drive, monitor, keyboard, trackball mouse and printer
- Windows® XP platform
- 1024-channel software-controlled multi-channel analyzer
- Software programs for thyroid uptake, wipe test, Schilling test, bioassay, hematology, manual MCA
- 2" x 2" NaI(Tl) detector with collimated shield (meets IAEA specifications)
- Distance measurement rod (detector-to-patient)
- Separate connections for probe and optional well counter for fast, convenient changeover
- Mobile stand with variable-height counterbalanced arm (for seated or supine patients)
- Industry exclusive two-year warranty

### Comprehensive Testing and Utility Software:

#### Thyroid Uptake Program

- Supports multiple time-stamped uptake measurements
- Auto decay correction (or recount of standard)
- User-defined uptake protocols
- On-screen spectrum acquisition and analysis
- Reports include normal ranges, notes/comments, facility/physician/technologist

#### Wipe Test Program

- Complies with current regulatory standards
- Automatic subtraction of background activity
- Stores (and reports) individual wipe data on multiple wipe locations in any defined "area" - can be customized for package/shipment wipes

#### Schilling Test Program for use with a variety of commercial kits

- Program follows manufacturer's instructions for procedures and calculations

#### Bioassay Program for individual patients or employee groups

- Report choices include single bioassay report, summary of multiple bioassays on same patient, and summary report on multiple employees (gives most current assay result for each individual, for all isotopes of interest)

#### Hematology Program for red blood cell survival, blood/plasma volume, ERPF and GFR

#### Manual MCA Program for performing sample counts and analysis beyond the scope of the standardized programs

- Expandable library of 23 commonly used isotopes - pre-programmed with LLD, ULD, regulatory alarm levels, gain
- High-resolution graphics
- Keyboard entry of alphanumeric data, trackball mouse for selecting screens, menus, and options

#### System Administration / Quality Assurance Program

- Automatic daily calibration using Cs-137 source, with report
- Automatic high voltage adjustment, with verification
- Automatic Cbi-Square test, with report
- Automatic communications test
- Administration summary QA report

All programs provide clear, concise reports for referring physicians, insurance providers, patient records and a database for physician and technologist identification.



The Atomlab 950 Thyroid Uptake System is an advanced multi-purpose spectrum analysis instrument designed for diverse nuclear medicine applications. Uptake studies, bioassays, Schilling tests, hematology tests, wipe tests, and other user-defined tasks are accomplished with speed and precision using this fully integrated computer-controlled instrument and its comprehensive selection of application software. The system's multi-channel analyzer has 1024 channels, with separate input connections for the probe and optional well counter. Engineered for mobility, durability, and operational efficiency, the Atomlab 950 handles clinical tests, safety compliance tasks, and system administration procedures quickly and accurately. Task-specific software provides step-by-step guidance throughout all procedures, automatically performs calculations, stores patient information and test results, and outputs clear, concise reports. The "Procedure Definition" screen is used to set up a facility's standardized test protocols by selecting the most appropriate program, editing program parameters to suit specific facility requirements, or by creating an entirely new procedure. When program design or modification is completed, the new program is stored for future use. A toolbar "help" button provides detailed system assistance.

The self-contained Atomlab 950 system is configured on a mobile platform with locking casters and a base that measures only 30" by 31.5" (76 x 80 cm). An upper shelf supports the computer, monitor, keyboard, and trackball mouse. A lower shelf supports the color inkjet printer. The base of the stand incorporates a shelf to hold the optional well counter. A 2" x 2" NaI(Tl) detector with collimator articulates on a counterbalanced arm. Twenty-two inches (56 cm) of vertical travel allows the probe to be positioned up to 55" (140 cm) from the floor to accommodate seated or supine patients. The probe swings more than 180° on the horizontal plane, and extends outward up to approximately 34" (86 cm) from the support column. This design makes positioning for uptake studies simple and comfortable for both patient and technologist.

## Thyroid Uptake Program

- Supports multiple time-stamped uptake measurements
- Auto decay correction (or recount of standard)
- User-defined uptake protocols
- On-screen spectrum acquisition and analysis
- Reports include normal ranges, notes/comments, facility/physician/technologist

The Atomlab 950 provides a choice of four pre-programmed uptake study protocols, with provision to modify any procedure to suit specific requirements. Atomlab software guides the user through each step of any defined procedure to count the standard, lab background, patient thyroid, and patient background, and then automatically computes uptake percentage. The system allows multiple uptakes at varied intervals for each patient. Automatic decay correction calculates elapsed time between dose count and actual patient thyroid count. It is therefore not necessary to perform thyroid counts in exact hourly increments from times of dose counts. Results are calculated either from decay-corrected dose counts or by recounting a standard. Reports show user-defined normal ranges for comparison, and have provision for entering individualized notes and comments.

### Preset Thyroid Uptake protocols:

1. **Automatic Count Time with Automatic Isotope Decay** – Atomlab Software calculates count time to satisfy a level of accuracy established by the technologist. High count rate offers the advantage of short count time when counting the capsule. Because the system calculates decayed activity of the dose, recounting a standard is unnecessary.
2. **Automatic Count Time with Recounting a Standard** – The system calculates the appropriate counting time based on the count rates and desired accuracy. A standard is maintained to recount for the decayed activity.
3. **Manual Count Time with Automatic Isotope Decay** – The technologist sets the count time for four separate counts used to calculate uptake – generally 60 seconds each. The system monitors elapsed time and calculates decayed value for administered dose.
4. **Manual Count Time with Recounting a Standard** – The technologist sets count time for four separate counts, then recounts standard and lab background, and counts the thyroid, and patient background – generally 60 seconds each.

Printed on Monday, February 02, 2004, 08:45 AM

**Detailed Uptake Report**

Your Hospital Name  
Address  
City, State, Zip  
(900) 555-1234

Patient Name: Sample Thyroid Uptake      Ref. Physician: ID: 000      Code: Radioisotope Administration      Activity (uCi):      Detector: Probe      Count Type: Manual      Date: March 23, 1999, 04:10 PM

**Uptake Results**  
Dose Count Rate (cpm): 326766  
Lab Background (cpm): 24

Run	Time	Thyroid	Lab Back	Decay Time	Decay Factor	Thyroid Count	Net Count	Rate	Uptake
1	00	326766	24	00:00:00	1.000000	326742	326718	5446.30	8.48
2	00	326766	24	00:00:00	1.000000	326742	326718	5446.30	8.48
3	00	326766	24	00:00:00	1.000000	326742	326718	5446.30	8.48
4	00	326766	24	00:00:00	1.000000	326742	326718	5446.30	8.48

Technologist: Sharon Johnson  
Comments: This is a sample uptake  
Physician:      Date:

◀ All uptakes are displayed and easily viewed. Printout reports include isotope, count rate, thyroid, patient background, lab background and final calculation on full 8 1/2 x 11 paper.

## Wipe Test Program

- Complies with current regulatory standards
- Automatic subtraction of background activity
- Stores (and reports) individual wipe data on multiple wipe locations in any defined "area" - Can be customized for package/shipment wipes

Designed for use with an optional well counter, this program was designed to comply with current government regulations for counting and reporting results of wipes taken in contamination surveys. The program automatically calculates net contamination levels after subtracting measured background activity, and reports results in user-specified units of dpm,  $\mu\text{Ci}$ , or kBq. Lower limit of detection (LLD) is automatically determined during the background count. Clicking on the "LLD Estimate" button gives the technologist a quick estimate of LLD to determine whether counting times are long enough. Specific wipe test areas may be named, added to the system database, and edited in much the same way as patient names and IDs. They may also be designated as "restricted", "unrestricted", or "sealed source". The user enters the isotopes of interest for any specific survey area, and the system counts and reports results accordingly. A detailed spectrum analysis may be performed (on demand) for any specific wipe. Each designated "area" may include up to ten separate wipe locations (or items) for testing and documenting in that area's report (i.e. Area Name - "Camera Room"; Location - "counter top", "table", "cabinet door", etc.). A "Wipe Preferences" screen allows the user to specify detector, the detector's geometric efficiency, default count times, and the activity units to be used in reports.



▲ Wipe test program screen.

Background & LLD

Count Times      Background 20 (sec)      Isotope 10 (sec)

**MEASURED in (dpm)**

Isotope Name	Background	LLD
Ba-133	104.591	116.413
Co-57	23.862	47.044
Cs-137	511.204	566.594
Wide Window	334.022	132.063

OK

▲ Lower limit of detection display.

## Bioassay Program

For individual patients or employee groups

- Report choices include single bioassay report, summary of multiple bioassays on same patient, and summary report on multiple employees (gives most current assay result for each individual, for all isotopes of interest).

This program is used to assay for any isotope for which counting efficiency has been determined. Typical applications are monitoring activity in the thyroid of staff members who are exposed to I-123, I-125, or I-131, and for long-term monitoring and reporting of patients treated therapeutically with I-131. Three report formats are provided: The Individual Bioassay Report documents a single bioassay. An Individual Bioassay History Summary lists multiple assay results on the same individual. The Employee Summary Report lists the most current count for every individual staff member. The Bioassay Program allows the contamination trigger level to be set for the facility. The system determines and displays the lower limit of detection (LLD) for each isotope of interest after counting background, allowing the technologist to change parameters to adjust the LLD. Counts per minute are converted to dpm,  $\mu\text{Ci}$ , or kBq using stored isotope efficiency values.

Individual Bioassay History Summary

Isotope	Assay Date	Background	LLD	Count	Activity	Activity (dpm)
I-123	01/12/01	100	100	1000	100	100
I-125	01/12/01	100	100	1000	100	100
I-131	01/12/01	100	100	1000	100	100

▲ Individual bioassay history summary.

Employee Bioassay Summary

Employee Name	Assay Date	Background	LLD	Count	Activity	Activity (dpm)
John Doe	01/12/01	100	100	1000	100	100
Jane Smith	01/12/01	100	100	1000	100	100

▲ Employee bioassay summary.

## Schilling Test Program

For use with a variety of commercial kits

- Program follows manufacturer's instructions for procedures and calculations

The Atomlab software includes individual programs for testing with Schilling kits. The system's "Procedure Definition" screen is used to set up the initial standardized test protocol. A "Facility Standard" Schilling Test is created by entering the type of kit to be used, the detector type, counting time, correction factor, and sample volume. (Currently, manufacturers of the kits recommend using a 4-ml sample, a correction factor of 100, and a counting time of 600 seconds.) After setup, the program guides the user through all procedural steps, automatically calculates results, and prints reports that identify the facility, technologist, patient, test parameters, including any individualized notes or comments as needed. After any count is taken, a spectrum analysis can be performed and printed in report form with the "Spectrum Analysis" program. As with all Atomlab 950 programs, all patient and test data are maintained in the system's memory for subsequent retrieval.

Schilling Test Report

Count Time (sec): 600  
 Activity (uCi): 0.24  
**26.14% Co-57 Excreted in Urine**

▲ Schilling Test report.

Schilling Test for Dicopac

Count Time (sec): 600  
 Activity (uCi): 0.24  
**Co-57/Co-60 Excreted Ratio = 0.003**

▲ Schilling Test for Dicopac.

## Hematology Program

For red blood cell survival, blood/plasma volume, ERPF and GFR

- Eliminates labor intensive calculations
- Protocols available for most commercially available kits
- Results in clear uncluttered formats

System software includes individual programs for commercially available kits including IHSA I-125, Cr-51 Blood Volume, Cr-51 Red Cell Survival, Glomerular Filtration Rate (GFR), and Effective Renal Plasma Flow (ERPF). Results are automatically calculated and available for viewing or printing in a program-specific report that identifies the facility, technologist, patient, test parameters, and includes any individualized notes or comments as needed. All patient and test data are maintained in system memory for later retrieval.

Glomerular Filtration Rate Report

Count Time (sec): 600  
 Activity (uCi): 0.24  
**Glomerular Filtration Rate = 107.8 ml/min**

▲ Sample output report of Glomerular Filtration Rate Report

Cr-51 Survival Test Report

Count Time (sec): 600  
 Activity (uCi): 0.24  
**RBC Survival (Days) = 117.7**

▲ Cr-51 survival test report.

# The Administration / Quality Assurance Program

- Automatic daily calibration with Cs-137 source, with report
- Automatic high voltage adjustment, with verification
- Automatic Chi-Square test, with report
- Automatic communications test
- Administration summary QA report
- Automatic high voltage adjustment
- Isotope efficiency calculations
- Multiple reports to document system performance
- Complete spectral analysis
- Isotope editing and entering

There are a multitude of Administration functions, each designed to minimize the time normally spent maintaining accurate use of the system. There is an automatic set of the high voltage for each detector, and also an automatic calibration program using a Cs-137 source. The system will advise the user when a daily calibration has not been performed. The Chi-Square test program automatically counts the source 10 times and performs the Chi-Square calculations. The results are displayed and can be printed in a Chi-Square report.

The isotope editing program allows the user to enter custom isotopes or variations of the preset isotopes, varying the windows, gains, and half-lives, plus the user can set the counting efficiency for each isotope. There is a built-in calculator for calculating geometric efficiency. There is also a function that calculates the current activity of a calibrated source.

Site information is entered in the administration program containing the facility name, address, and a list of the technologists and physicians in the department. Reports can be printed showing the administration program's parameters.



▲ Chi-Square report.



▲ Administration report.

# Manual MCA Program

For performing sample counts and analysis beyond the scope of the standardized programs.

- Expandable library of 23 commonly used isotopes – pre-programmed with LLD, ULD, regulatory alarm levels, gain
- High-resolution graphics
- Keyboard entry of alphanumeric data, trackball mouse for selecting screens, menus, and options

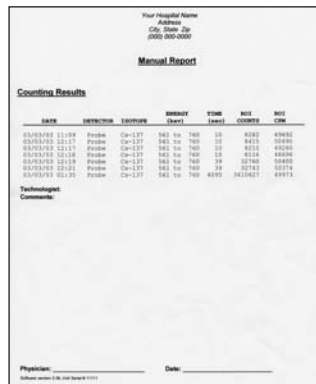
In addition to providing “standardized” programs for routine test and survey procedures, the 950 has a “manual” program to accommodate other counting and spectrum analysis tasks. The user can select from three counting methods: Preset Time, Preset ROI Counts, and Continuous Counting (counts until STOP is pressed up to a maximum of 4095 seconds). Repetitive counts can be used to build a multiple count and/or multiple isotope reports. After any count, the Spectral Analysis option can be used to produce a Spectrum Analysis Report. The monitor shows when a test is in progress, and graphically displays the spectrum, time, counts, and cpm.



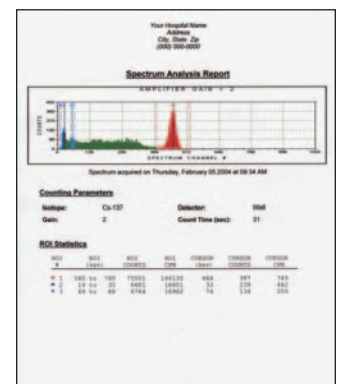
▲ Manual program count screen.



▲ Calibration report.



▲ Manual report.



▲ Spectrum analysis report.

# Thyroid Uptake System

**SPECIFICATIONS: ATOMLAB 950**

- Industry exclusive two-year warranty

**MEDICAL SPECTROMETER HARDWARE**

(call or visit the web at [www.biodes.com](http://www.biodes.com) for current specifications for computer)

**Multi-Channel Analyzer**

Channels: 1024  
 Inputs: Probe and well  
 Spectral Resolution: FWHM 10%  
 Count Rate: (Maximum) 100,000 cps  
 Count Rate Stability: 99%  
 Gross Count Rate Linearity: Within 5% up to 100,000 cps  
 Pulse Height Linearity: Within 2% (independent of detector)  
 Connectors: Signal (BNC); high voltage (MHV)  
 Power Supply: Regulated from 775-1225 VDC at 2 mAmps  
 Detector High Voltage Adjustment: Automatic H.V. adjustment for both probe & well; uses 10 µCi Cs-137

**MEDICAL SPECTROMETER SOFTWARE:**

**Programs:** Thyroid Uptake, Wipe Test, Bioassay, Schilling Test, Hematology, Administration/ QA, Manual MCA

**Radionuclides:**

**Factory Programmed:** Au-198, Ba-133, Co-57, Co-58, Co-60, Cr-51, Cs-137, Fe-59, Ga-67, Hg-197, I-123, I-125, I-131, In-111, Ir-192, K-42, Na-24, Pd-103, Se-75, Sr-85, Tc-99m, Tl-201, Yb-169.

**User Set:** Unlimited user defined isotopes, setting ROI, half life, name, efficiency and gain

**OTHER HARDWARE:**

**Probe:** 2" x 2" NaI (TI) integral line scintillation detector with tube base

**Uptake Stand:**

**Dimensions:** 42" l x 31" w x 62" h (106.7 x 78.7 x 157.5 cm)  
**Collimated Shield:** Flat field collimator meeting IAEA specifications  
**Arm:** Counterbalanced, two section arm, moves 22.5" vertically and extends 29" horizontally from stand's vertical column

Optional:

**187-246 Well Counter:**

**Detector:** 2" x 2" NaI (TI) integral line scintillation detector with a .75" diameter x 1.44" deep well (1.9 x 3.7 cm)  
**Lead Shielding:** 1" thick (2.5 cm)  
**Cover:** .125" thick (.32 cm)  
**Connectors:** Signal (BNC); High Voltage (MHV)  
**Weight:** 54 lb (24.5 kg)

**187-256 Well Counter:**

**Detector:** 2" x 2" NaI (TI) integral line scintillation detector with a .75" diameter x 1.44" deep well (1.9 x 3.7 cm)  
**Lead Shielding:** 2" thick (5 cm)  
**Cover:** .125" thick (.32 cm)  
**Connectors:** Signal (BNC); High Voltage (MHV)  
**Shipping Weight:** 166 lb (75.2 kg)

**Certification:** ETL Listed to UL 2601 Std. and CAN CSA C22.2 No. 601.1-M90, and CE marked.

**Atomlab 950<sup>PC</sup>**

- 187-140** Thyroid Uptake System, Atomlab 950, 115 VAC, Mobile, PC  
*Mobile System includes:*
  - Monitor, standard keyboard, trackball, Windows® and Atomlab 950PC software, Printer and 1024 channel multi-channel analyzer
  - 2" x 2" tube assembly and base
  - Mobile support stand with collimator

- 187-130** Thyroid Uptake System, Atomlab 950, 115 VAC, Tabletop, PC  
*Tabletop System includes:*
  - Monitor, standard keyboard, trackball, Windows® and Atomlab 950PC Software, Printer and 1024 channel multi-channel analyzer
  - 2" x 2" tube assembly and base
  - Tabletop stand with collimator

**187-145** Thyroid Uptake System, Atomlab 950, 230 VAC, Mobile, PC

**187-135** Thyroid Uptake System, Atomlab 950, 230 VAC, Tabletop, PC

Optional:

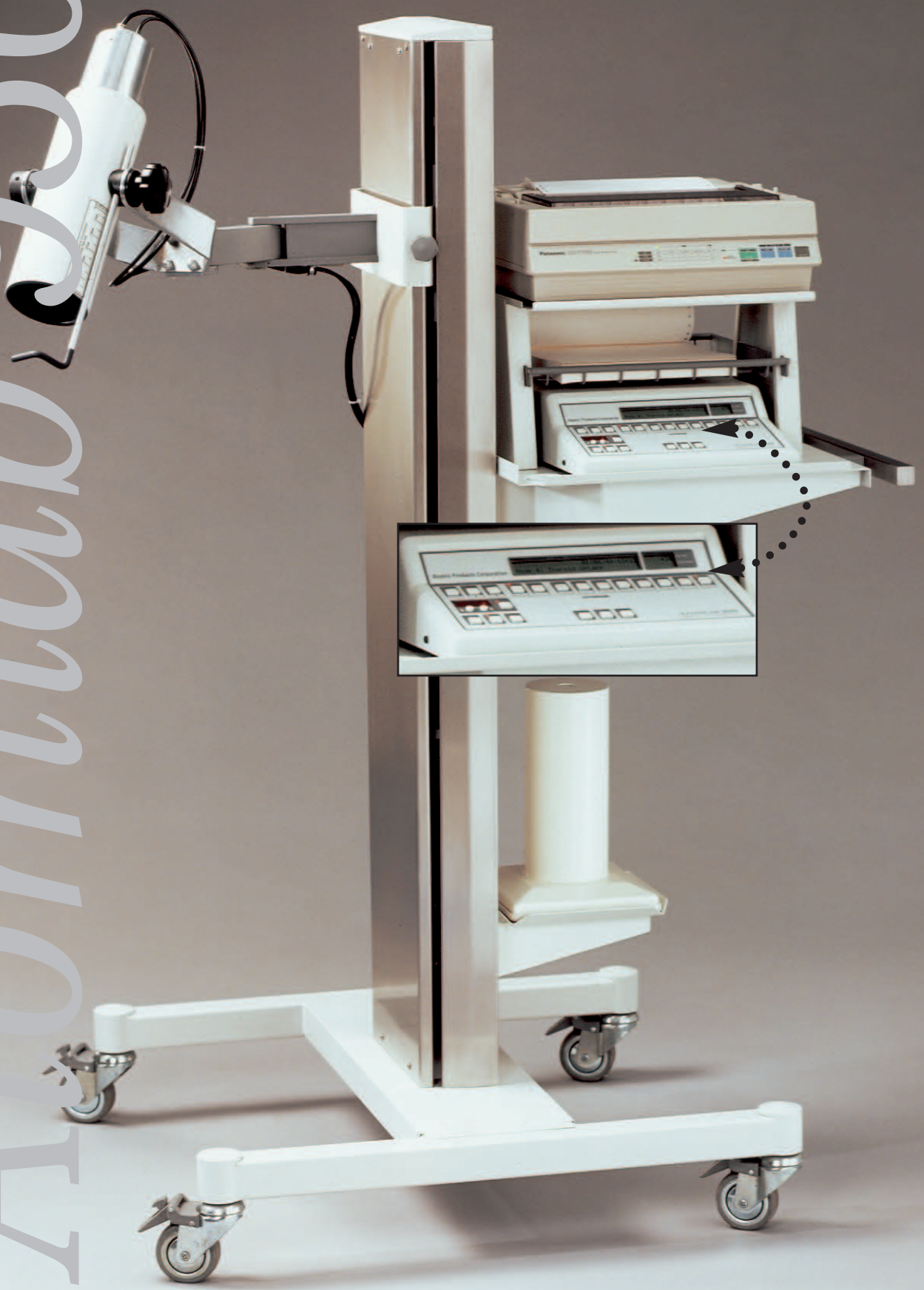
- 187-246** Well Counter, 1" lead (2.5 cm)
- 187-256** Well Counter, 2" lead (5 cm)

Related:

- 063-139** Rod Source, Cs-137, Calibrated, 0.1 µCi
- 063-100** Rod Source Set  
*Includes: Ba-133, Cs-137, Co-57, Na-22, Mn-54, Co-60 and Cd-109*
- 101-103** Check Source, Cs-137, 10 µCi\*  
*Uncalibrated, 1" dia x .25" thick (2.5 x .64 cm)*
- 043-365** Thyroid Uptake Neck Phantom,  
 (Complete with bottle carrier, capsule holder and 12 polyethylene bottles)

\*Recommended Check Source for calibration of probe and well

# Atomlab 930



## ATOMLAB 930

# Thyroid Uptake System

### Complete, mobile, self-contained system:

- Keyboard controlled microprocessor with LCD display and serial printer
- 256-channel microprocessor-controlled multi-channel analyzer
- Programs for thyroid uptake, wipe test, Schilling test, bioassay, manual MCA
- 2" x 2" NaI(Tl) detector with collimated shield (meets IAEA specifications)
- Distance measurement rod (detector-to-patient)
- Separate connections for probe and optional well counter for fast, convenient changeover
- Mobile stand with variable-height counterbalanced arm (for seated or supine subjects)
- One-year warranty

### Comprehensive Atomlab Testing and Utility Programs: Thyroid Uptake Program

- Supports multiple time-stamped uptake measurements
- Auto decay correction (or recount of standard)
- Outputs reports, stores data on 25 patients (up to four studies each)

### Wipe Test Program

- Complies with current regulatory standards
- Automatic subtraction of background activity
- Calculates and reports individual wipe data on multiple wipe locations in user-defined areas

### Schilling Test Program with reports for use with a variety of commercial kits

### Bioassay Program with report for employees and/or patients

### Manual MCA Program with report for performing sample counts and analysis beyond the scope of the standardized programs

- Pre-programmed with seven commonly used isotopes – I-123, I-125, I-131, Co-57, Cr-51, Tc-99m, Cs-137
- Provision to add a user-defined isotope, and to change any pre-programmed isotope's region of interest

### System Administration | Quality Assurance Program

- Automatic daily calibration (including chi-square) with Cs-137 source, with report
- Automatic high voltage adjustment
- Automatic power up and self test

All reports include facility name and address



▲ The Tabletop System is self-contained, requiring a minimal amount of counterspace. The 256 channel MCA is built into the Atomlab 930. Shown with optional printer shelf.



The Atomlab 930 is a versatile and cost-effective spectrum analysis system for performing uptake studies, bioassays, Schilling tests, wipe tests, and other user-defined tasks in the nuclear medicine environment. Engineered for mobility, durability, and efficiency, the 930 handles an array of clinical tests, safety compliance tasks, and system administration/QA procedures. A powerful microprocessor guides the user through procedures, automatically performs necessary calculations, and outputs clear, concise reports. The system's internal memory stores results on up to 25 patients (up to four studies per patient).

The self-contained 930 system is configured on a mobile platform with locking casters and a base that measures only 30" by 31.5" (76 x 80 cm). A two-tiered shelf supports the microprocessor/keyboard and printer. The base of the stand has a special shelf to hold an optional well counter. A 2" x 2" NaI(Tl) detector with collimator articulates on a counterbalanced arm. Twenty-two inches (56 cm) of vertical travel allows the probe to be positioned up to 55" (140 cm) from the floor to accommodate seated or supine patients. The probe swings more than 180° on the horizontal plane, and extends outward up to approximately 34" (86 cm) from the support column. This design makes positioning for uptake studies simple and comfortable for both patient and technologist, and allows the unit to be easily moved for a variety of applications or storage. The system's multi-channel analyzer has 256 channels, with separate input connections for the probe and optional well counter. The system's embedded software has specialized programs for thyroid uptake, bioassay, wipe test, Schilling test, manual (user-defined) rate counts, system administration and quality assurance, and start-up self test. Programs print out concise, easily interpreted reports.

## Thyroid Uptake Program

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### *Comprehensive Atomlab Testing and Utility Programs:*

- Supports multiple time-stamped uptake measurements
- Auto decay correction (or recount of standard)
- Outputs reports, stores data on 25 patients (up to 4 studies each)

The 930 is pre-programmed with four uptake study protocols to suit facility need or preference. Programs guide the user through each step of counting the standard, lab background, patient thyroid, and patient background, and then automatically computes uptake percentage. The system allows multiple uptakes for each patient, and automatically performs decay correction. Reports print out with patient ID number, test times and results, report date, and facility name and address. Spaces are provided for manual entry of patient name, physician and technologist names, comments, and signature.

### **Preset Thyroid Uptake protocols:**

1. **Automatic Count Time with Automatic Isotope Decay** – Atomlab Software calculates count time to satisfy a level of accuracy established by the technologist. High count rate offers the advantage of short count time when counting the capsule. Because the system calculates decayed activity of the dose, recounting a standard is unnecessary.
2. **Automatic Count Time with Recounting a Standard** – The system calculates the appropriate counting time based on the count rates and desired accuracy. A standard is maintained to recount for the decayed activity.
3. **Manual Count Time with Automatic Isotope Decay** – The technologist sets the count time for four separate counts used to calculate uptake – generally 60 seconds each. The system monitors elapsed time and calculates decayed value for administered dose.
4. **Manual Count Time with Recounting a Standard** – The technologist sets count time for four separate counts, then recounts standard and lab background, and counts the thyroid, and patient background – generally 60 seconds each.

## Wipe Test Program

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- Complies with current regulatory standards
- Automatic subtraction of background activity
- Calculates and reports individual wipe data on multiple wipe locations in user-defined areas

Designed for use with an optional well counter, this program was designed to comply with current government regulations for counting and reporting results of wipes taken in contamination surveys. The program automatically calculates net contamination levels after subtracting measured background activity, and reports results in units of dpm or  $\mu\text{Ci}$ . Lower limit of detection (LLD) is automatically determined during the background count. Specific wipe test areas may be identified, and may be designated as “restricted”, “unrestricted”, or “sealed source”. Up to six isotopes of interest may be specified for each wipe area. Each designated “area” may include up to ten separate wipe locations (or items) for testing and documenting in that area’s report. The system stores multiple isotope efficiencies.

## Bioassay Program

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### *For employees and/or patients*

This program is used to assay for I-123, I-125, and I-131 to track iodine levels in employees, and for monitoring patients treated therapeutically with I-131. A list of employee ID numbers can be stored in the system’s memory to facilitate repetitive testing. Reports are dated and time-stamped, and include facility name and address. Space is provided for entering technologist name and comments.

## Schilling Test Program

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### *For use with a variety of commercial kits*

System firmware includes individual programs for testing with Schilling kits. Programs guide the user through all procedural steps, calculate results, and print them in comprehensive reports that identify the facility and provide spaces for manual entry of patient, physician, and technologist names, comments, and other relevant information.

## Manual MCA Program

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### *For performing sample counts and analysis beyond the scope of the standardized programs*

- Pre-programmed with 7 commonly used isotopes – I-123, I-125, I-131, Co-57, Cr-51, Tc-99m, Cs-137
- Provision to add a user-defined isotope, and to change any pre-programmed isotope’s region of interest

In addition to the standardized programs for routine test and survey procedures, the Atomlab 930 has a manual program to accommodate additional counting tasks. Three counting formats are provided: Continuous Counting, Counting by Preset Time, and Counting by Preset Counts. Multiple counts can be performed and printed. After any count, a Spectrum Report with spectrum graph, test parameters, and spectrum analysis may be printed. A Manual MCA Mode Report may be printed to document any count performed.

## The Administration / Quality Assurance Program

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- Automatic daily calibration (including chi-square) with Cs-137 source, with report
- Automatic high voltage adjustment
- Automatic power up and self test - All reports include facility name and address
- Automatic calibration
- Automatic high voltage set
- Automatic Chi-Square

The system keeps an internal listing of the last calibration performed. The standard daily calibration, if not already performed, can be started from within any program. The Calibration Program allows the technologist to recalibrate as many times as desired during the course of the day and a spectrum can be printed following any calibration. During initial setup, the system performs an automatic high voltage adjustment in H.V. mode. Whenever desired, a Chi-Square Test and report can automatically be performed and printed.

# Thyroid Uptake System

**SPECIFICATIONS: ATOMLAB 930**

**MEDICAL SPECTROMETER HARDWARE:**

**Multi-Channel Analyzer**

Channels: 256

Inputs: Probe and well

Spectral Resolution: FWHM 10%

Count Rate: (Maximum) 100,000 cps

Count Rate Stability: 99%

Gross Count Rate Linearity: Within 5% up to 100,000 cps

Pulse Height Linearity: Within 2% (independent of detector)

Connectors: Signal (BNC); High Voltage (MHV)

Power Supply: Regulated from 775-1225 VDC at 2 mAmps

Detector High Voltage Adjustment: Automatic H.V. adjustment for both probe & well; uses 10  $\mu$ Ci Cs-137 as the calibration source

Amplifier Gain: Automatic/User-defined; contains built in pre-amplifier for direct connection to tube base; automatic gain switching with isotope selection: 1, 2, 4, 8, 12, 48

Radionuclide: Seven pre-selected radionuclides: I-123, I-125, I-131, Co-57, Cr-51, Tc-99m and Cs-137; also one user-identified isotope selection

Energy Level Discriminators: Preset/User-defined ILD-ULD

Clock Speed: 10 MHz (MCA)

Display: LCD 2 line

Viewing Area: 154 mm w x 15.3 mm h

Characters: 3.2 mm w x 4.85 mm h

Printer Output Port: RS-232 serial port

Processor:

-MCA Processor: DSP, 10 M.I.P.S.

-Micro Controller: 12 MHz

-(keyboard, display, printer)

Dimensions: 12" w x 14" l x 3.5" h (31 x 36 x 9 cm)

Weight: 8 lb (3.6 kg)

Power: 115/230 VAC, 50/60 Hz

Printer: Serial printer with 32K memory

**MEDICAL SPECTROMETER PROGRAMS**

**Programs:** Thyroid Uptake, Wipe Test, Bioassay, Schilling Test, Administration/QA, Manual MCA

**Radionuclides:**

Factory Programmed: I-123, I-125, I-131, Co-57, Cr-51, Tc-99m, Cs-137 and one user defined

**Wipe Test Software Choices:** Am-241, Au-198, Ba-133, Co-57, Co-58, Co-60, Cr-51, Cs-137, Fe-59, Ga-67, Hg-197, Hg-203, I-123, I-125, I-131, In-111, Ir-192, K-42, Na-24, Pd-103, Se-75, Sr-85, Tc-99m, Tl-201, Yb-169 and five user defined isotopes

**Uptake Stand:**

Dimensions: 39" l x 30" w x 62" h (99.1 x 76.2 x 157.5 cm)

Arm: Counterbalanced, two section arm, moves 22.5" vertically and extends 29" horizontally from stand's vertical column

Casters: 3" maxi-lok

Weight: 296 lb (134.3 kg)

Shipping Weight: 384 lb (174.1 kg)

**187-246 Well Counter:**

Detector: 2" x 2" NaI (TI) integral line detector with a .75" diameter x 1.44" deep well (1.9 x 3.7 cm)

Lead Shielding: 1" thick (2.5 cm)

Cover: .125" thick (.32 cm)

Connectors: Signal (BNC), High Voltage (MHV)

Weight: 54 lb (24.5 kg)

**Optional:**

**187-256 Well Counter:**

Detector: 2" x 2" NaI (TI) integral line detector with a .75" diameter x 1.44" deep well (1.9 x 3.7 cm)

Lead Shielding: 2" thick (5 cm)

Cover: .125" thick (.32 cm)

Connectors: Signal (BNC), High Voltage (MHV)

Shipping Weight: 166 lb (75.2 kg)



**Atomlab 930**

**187-010** Thyroid Uptake System,

Atomlab 930, 115 VAC, Mobile

Mobile System includes:

- 256 channel multi-channel analyzer with printer
- 2" x 2" tube assembly and base
- Mobile support stand with collimator

**187-020** Thyroid Uptake System,

Atomlab 930, 115 VAC, Tabletop

Tabletop System includes:

- 256 channel multi-channel analyzer with printer
- 2" x 2" tube assembly and base
- Tabletop stand with collimator

**187-025** Thyroid Uptake System,

Atomlab 930, 230 VAC, Mobile

**187-015** Thyroid Uptake System,

Atomlab 930, 230 VAC, Tabletop

**Optional:**

**187-246** Well Counter, 1" lead (2.5 cm)

**187-256** Well Counter, 2" lead (5 cm)

**187-912** Stand, Printer For 187-020

**Related:**

**063-139** Rod Source, Cs-137, Calibrated, 0.1  $\mu$ Ci

**063-100** Rod Source Set

Includes: Ba-133, Cs-137, Co-57, Na-22, Mn-54, Co-60 and Cd-109

**101-103** Check Source, Cs-137, 10  $\mu$ Ci

Uncalibrated, 1" dia x .25" thick (2.5 x .64 cm)

**043-365** Thyroid Uptake Neck Phantom,

(Complete with bottle carrier, capsule holder and 12 polyethylene bottles)

Visit our web site at [www.biodex.com](http://www.biodex.com) for sample output reports.



# BIODEX

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