

# RADIATION MONITORS

## **M**odel WLx Portable Working Level Radiation Monitor

The WLx is a sophisticated measurement system that features a state of the art solid state detector and employs sophisticated algorithms to determine the potential alpha energy concentration (primarily from radon and thoron progeny) in a given volume of air. The WLx is a laboratory grade, portable instrument. The error analysis capability is unique in a field instrument of this type. The servo controlled pump makes it well suited to unattended area level monitoring for extended periods in adverse environments.

### Applications:

- Simultaneous Radon and Thoron Progeny Measurement
- Radiological Protection of Personnel
- Area Monitor (Alarm Output)
- Health Physics Studies
- Building Monitoring
- Equilibrium Ratio Measurements

### Features:

- Solid state detector 25mm dia.
- Graphic display and printer
- Servo controlled pump
- RS232 port/PC software
- Barometric pressure and temperature sensors
- Volumetric air sampling
- Internal audible alarm, remote alarm contact provided
- Tamper resistant housing, portable
- Pre-programmed and User programmable measurement methods
- Simultaneous radon and thoron daughter sampling/measurement
- Reports radon and thoron WL with error approximation
- Live measurement as opposed to tail count technique
- Capability for equilibrium measurement



Model WLx

when combined with a radon gas monitor

- Detects, measures and discriminates radon and thoron progeny using spectroscopic analysis.
- User supplied batteries maintains basic operation during a power interruption
- Optional built in battery recharging circuit

### Theory of Operation:

A working level system measures the potential alpha energy in a given volume of air. This is accomplished by sampling a known air volume by the servo controlled pump through a filter. The radon and thoron progeny in the air sample are collected on a filter that faces a laboratory grade Ion implanted solid state detector. As the radon and thoron progeny decay, alpha particles are released. An alpha particle that strikes the detector releases a quantity of electrons across the semiconductor diode junction. The quantity of electrons released is proportional to the energy of the alpha particle. A multi-channel analyzer discriminates the radon and thoron progeny. Sophisticated algorithms determine the working level.

WLX

# RADIATION MONITORS

## Specifications:

### GENERAL

Mode of Operation: Multiple.  
Sample & Count Periods: User Programmable.  
Electronic Background: < 0.1 cpm

### DETECTOR

Detector: "Instrument quality" 25 mm dia. solid state.  
Detection Range: 0.001 to 50 WL  
Minimum Detectable Level: 0.001 WL - One hour continuous sample.

### POWER

Power Supply Requirements: 12 Vdc  $\pm$  20%, 0.5 A - 110/220 VAC Adapter/Charger Included.  
Battery Type(s): 6 "D cells" : Alkaline, Ni-CAD, or NiMH. - Temporary Operation and Memory Backup.

Battery Operating Time: 48 to 120 Hrs - Depending on mode of operation.  
Battery Charge Time: 16 Hrs - Ni-CAD or NiMH Batteries Only. Charge circuit must be enabled.

### FEATURES

Display: 80 Character by 4 Line Backlit Graphic Liquid Crystal Display.  
Memory: 30 Days at 1 hour intervals - For Continuous Method Only.  
Data Port: RS-232 via 9 pin D-Sub Connector.

### PUMP

Pump Flow Rate: 300 to 2000 sccm  
Pump Flow Rate Tolerance:  $\pm$ 5 sccm  
Filter type: 0.8 $\mu$ m, 25mm Millipore AAWP02500 or equivalent.

### ALARMS

Alarm Level: Programmable.  
External Alarm Output: Isolated contact, 2A nominal @ 24V.  
Integrated Audible Alarm: Piezo-ceramic (70 – 85 dB).

### ENVIRONMENTAL SENSORS

Temperature Sensor Tolerance:  $\pm$  1 °C  
Barometric Pressure Sensor Tolerance:  $\pm$  1 kPa.

### ENVIRONMENTAL

Operating Temperature Range: 0 to +50 (-32 to +122) °C (°F)  
Storage Temperature Range: -20 to +70 (-4 to + 158) °C (°F)  
Relative Humidity Range: 0 to 90 % - Non-Condensing.

### DIMENSIONS

Length: 25.4 (10) cm (in.)  
Width: 45.1 (17.75) cm (in.)  
Height: 22.9 (9) cm (in.)  
Weight: 6 (13.2) kg (lb.) - With Batteries.

- Values are nominal.
- Specifications are based on new units which have been appropriately calibrated.
- Specify charging circuit requirement at time of order.

## Ordering Information:

Model WLx: Order part number 6204610.  
Optional Thoron Calibration: Order part number 9000125.

Specifications subject to change without notice.  
Trademarks are the properties of their respective holders. All Rights Reserved.  
Datasheet: 102 Rev 2