

# ALPHA AND BETA IN AIR MONITOR - SMARTCAM

*The Lab Impex Systems (LIS) SmartCAM is a next generation Continuous Air Monitor (CAM) that gives the user unparalleled performance in terms of detectable limit, sensitivity and speed to alarm.*

The SmartCAM utilizes state-of-the-art Spectral Measurement Analysis in Real Time (SMART) Technology that provides real advances in alpha measurement techniques.

Using an isotope peak fitting algorithm proven to be more accurate than regions-of-interest or tail-fitting methods, results are faster, more accurate and more reliable than ever.

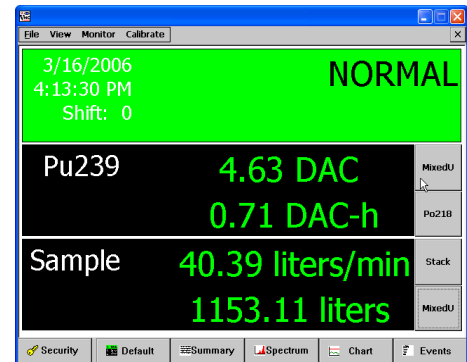
In operation, the SmartCAM continually monitors alpha and beta particulates deposited on a filter with a high efficiency detector. Air is drawn through the card-mounted filter by an external vacuum pump or distributed vacuum main.

A mass flow meter measures the air sampling rate and carefully designed flow routing ensures an optimised collection efficiency and uniformity of particulate deposition on the filter. Statistical fluctuations in activity are reduced by an advanced algorithm that allows alarm thresholds to be set throughout the range of detection without fear of false alarm events.



Information and specifications may change without notice

- **Alpha and/or Beta Continuous Air Monitor**
- **Static or Moving Filter**
- **Detachable head assembly for remote monitoring**
- **Full alpha spectral analysis with unique radon peak fitting algorithm**
- **Improved measurement quality using fixed energy spectrum, by means of air pressure and temperature continuous measurement.**
- **Optional external gamma dose-rate sensor**



Simple to navigate, touch-screen display

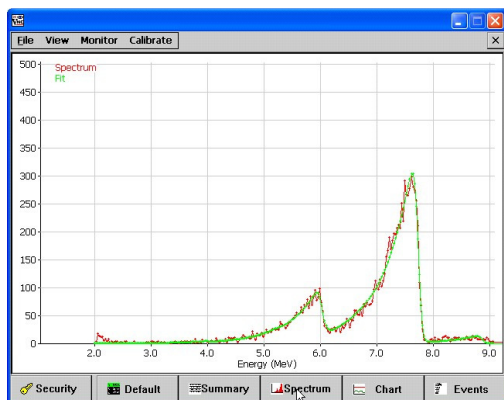
Housed in a robust stainless steel enclosure, the SmartCAM uses a Windows CE operating system and a touch screen LCD to enable the user to navigate around the system with ease.



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The SmartCAM gives a real-time spectral display

*'The continuous measurement of alpha emitters is significantly effected by changes in air density'*

To eliminate this variable from the measurement process the SmartCAM continuously measures and corrects for changes in both air temperature and absolute pressure. Eradicating this variation in spectral response produces a highly stable measurement environment for optimum radon compensation.

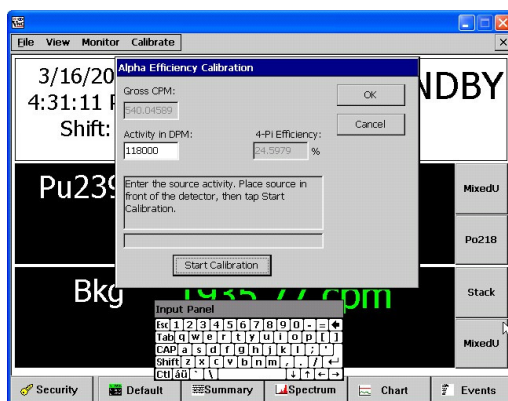
## Key Features

- Windows CE and Touchscreen LCD
- 1024 channel Analogue to Digital Converter (ADC).
- 'Peak Fit' algorithm for radon/thoron compensation
- View radon/thoron spectrum at any time
- Completely standalone (no configuration software required)
- Measurement of pressure and temperature to compensate for spectrum drift
- USB port for transfer of data to a mass storage device

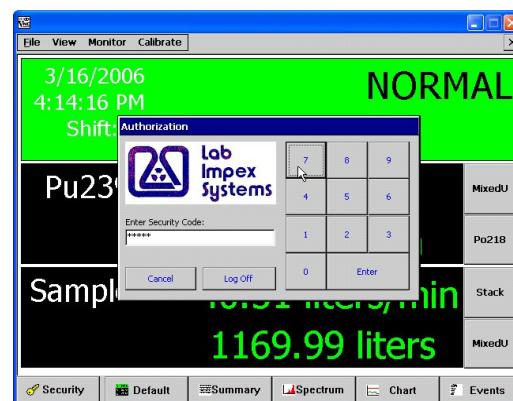
## Key Specifications

- Detector: Solid-state silicon (450 mm<sup>2</sup> active area)
- Pump: Carbon vane – 2 cfm (57 lpm)
- Filter: Fixed or Moving Filter
- High Efficiency Detector (25% Am<sup>241</sup>, 25% Sr<sup>90</sup>)
- MCA: 1024-channel ADC binned to 256-channel spectrum
- Peak-fitting algorithm for Po<sup>214</sup>, Po<sup>218</sup>, Po<sup>212</sup> plus two additional isotopes or 'Total Alpha'
- Processor: Windows CE-based PC
- Automated energy calibration and other maintenance routines

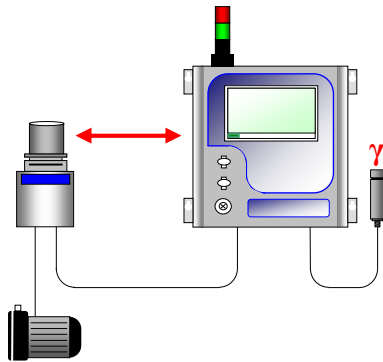
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Automated calibration routines



Passcode protected interface



## SmartCAM Flexibility – Remote Monitoring

- The SmartCAM detection head can be fixed to the side to the main enclosure, or positioned remotely, up to 20 feet away. This provides real flexibility for those clients who may wish to perform 'through-wall' or cell monitoring.
- The SmartCAM can interface to an external gamma dose-rate probe, and offer measurement and alarm on alpha, beta and gamma dose-rate.

## SmartCAM Flexibility – Filter Options

Two SmartCAM filter options are available giving users the choice of a static card mounted filter or an automatic moving filter.

The static card mount filter requires an operator replacement at frequent intervals. Using filter type GF/A, this filter gives stable spectral resolution over the duration of its use, and is the ideal choice when the sample is required to be laboratory analysed after use.

Alternatively, the SmartCAM Moving Filter Monitor (MFM) allows continuous use without the need for filter replacement at regular intervals. The MFM uses a Speclon filter type, which is proven to give the best spectral resolution properties. The MFM uses an intermittent stepper mechanism to automatically advance the roll and introduce clean filter to the detector window after a user programmable time period, or on various alarm or status conditions. Typically the MFM will support over 12 months of autonomous operation.

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SmartCAM Fixed Filter Detection Head



SmartCAM Moving Filter Detection Head

**The SmartCAM is recognized as the most technically advanced alpha / beta in air monitor commercially available – this is due to**

- Unrivalled radon-thoron rejection techniques
- Highest detector efficiency
- Highest particulate collection efficiency

**All of which contribute to the achievement of**

- The lowest possible detectable limits
- The lowest possible false alarm rate

## SmartCAM Flexibility – Physical Arrangement

The SmartCAM may be bench top or wall mounted to suit the requirements of each installation. The associated vacuum pump for the system, (type PMP-6) comes complete with a mounting bracket to allow bench top / wall mounting.

If required, the SmartCAM and PMP-6 may be mounted on a trolley/cart assembly for transportable use.

## Specifications

### Detector

2 x High resolution PIPS solid state detector with 450mm<sup>2</sup> active area

### Filter

- Card mounted GF/A or SpecIon moving filter

### Display

- Touchscreen LCD, back-lit with 132 mm X 100 mm (5¼" X 4") viewing area

### Audible Alarm Output

- 1800Hz, 80dB alarm sounder (optional audible units are available)

### Visual Alarm Output

- Xenon strobe

### Flow

- Range: 20 - 50 lpm, typically 37 lpm (1.3 cfm)

### Measurement Range

- Alpha: 1E-2 to 1E5 Bq/m<sup>3</sup> (2.7E-13 to 2.7E-6 uCi/ml)  
- Beta: 1 to 1E7 Bq/m<sup>3</sup> (2.7 E-11 to 2.7 E-4 uCi/ml)

### Detection Efficiency

- Alpha: Typically 22.5%, depending on isotope  
- Beta: Typically 22.5%, depending on isotope

### Background Compensation

- Dynamic radon compensation using peak fitting of alpha spectrum  
- Gamma background compensation

### Outputs

- RS485 /RS232  
- TCP/IP  
- Analogue (4-20mA) or digital output  
- Four way volt free relay contacts

### Environmental

- -10°C to 50°C (14°F – 122°F)

### Power

- AC single phase (90 – 264 VaC), also equipped with 30 minute back-up battery

### Physical (Base Unit)

- Width: 256 mm  
- Depth: 192 mm  
- Height: 432 mm  
- Weight: 6.5 Kg

### Physical (Static Filter Head)

- Width: 120 mm  
- Depth: 127 mm  
- Height: 272 mm  
- Weight: 3.5 Kg

### Physical (Moving Filter Head)

- Width: 256 mm  
- Depth: 182 mm  
- Height: 260 mm  
- Weight: 4.5 Kg



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