SmartCAM

Alpha Beta aerosol monitor

Key features

- Moving or static filter
- Separate head assembly for flexible installation
- Alpha spectral analysis with Radon peak fitting algorithm provides greater sensitivity
- Air density spectrum correction
- CE/NRTL marked
- MTBF > 30,000h

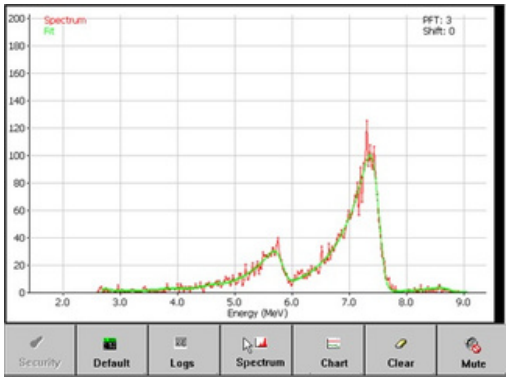
Overview

The Ultra Energy 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. It is the most technically advanced Alpha/Beta particulate aerosol monitor that can be provided under an NQA1 quality management.

The SmartCAM uses Spectral Measurement Analysis in Real Time (SMART) Technology that provides advances in Alpha measurement techniques.

Technical specifications

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



Real time spectral display

Simple to navigate touchscreen

Passcode protected interface

In operation, the SmartCAM continuously monitors Alpha and Beta particulates deposited on a filter with a high efficiency detector. Air is drawn through the filter by an external vacuum pump or distributed vacuum main.

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

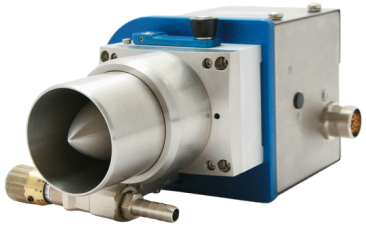
A mass flow meter measures the air sampling rate and carefully designed flow routing ensures an optimized collection efficiency and uniformity of particulate deposition on the filter.

Statistical fluctuations in activity are reduced by an algorithm that allows alarm thresholds to be set throughout the range of detection without fear of false alarm events.

The measured energy of Alpha emitters is significantly affected by changes in air density. To eliminate this variable from the measurement process the SmartCAM continuously measures and corrects for changes in air temperature and absolute pressure. Eliminating this variation produces a highly stable measurement for Radon compensation providing a more accurate measurement of the isotopes of interest. This also allows the SmartCAM to be calibrated at one atmospheric pressure (or elevation) and used at another without requiring recalibration.

- Windows CE and color 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
- Detector head optimised for minimum detector filter air gap for higher detection efficiencies
- Differential spectrum for faster spectrum change response

Technical specifications



Remote monitoring

The SmartCAM Detection Head can be fixed to the side of the main enclosure or be positioned up to 10 meters away. This provides flexibility for those who wish to perform through-wall or cell monitoring. The SmartCAM supports an external Gamma dose-rate probe, as well as offering measurement and alarms on Alpha, Beta and Gamma dose-rate.

Filter options

Two fixed filter options are available, a card mounted filter or a 47 mm diameter loose filter in a carrier tray. Fixed filters used are the industry standard GF/A. Alternatively, the SmartCAM moving filter monitor (MFM) allows continuous use without frequent filter replacement. The MFM uses a Speclon™ filter type, which is gives the best spectral resolution properties. The MFM uses an intermittent stepper mechanism to automatically advance the roll after a user programmable time period or on various alarm or status conditions. Typically the MFM will support over 12 months of autonomous operation

Technically advanced

The SmartCAM is the most technically advanced Alpha/Beta in-air monitor commercially available:

- Unrivalled Radon/Thoron rejection techniques
- Highest detector and particulate collection efficiency
- Lowest possible detectable limits and false alarm rate
- Can be mounted on a trolley/cart assembly
- Seismically qualified

Performance specifications

SmartCAM performance specifications	
Detectors	2 x High resolution solid state detectors with 450 mm2 active area.
Outputs	RS485/RS232. TCP/IP. Analogue (4-20 mA). Four volt free relay contacts rated at 3 A/250 Vac.
Filter	47 mm loose filter, card mounted GF/A or Speclon™ moving filter.
Flow	Range: 20 - 50 lpm, typically 37 lpm (1.3 cfm).
Display	Touchscreen LCD, back-lit with 132 mm x 100 mm (5.25" x 4") viewing area.
Background compensation	Dynamic Radon compensation using peak fitting of Alpha spectrum. Gamma background compensation.
Visible output alarm	LED beacon stack.
Audible alarm output	1800 Hz, 80 dB alarm sounder (optional audible units are available).
Measurement range	Alpha: 1E-2 to 1E5 Bq/m^3 (2.7E-13 to 2.7E-6 µCi/mL). Beta: 1 to 1E7 Bq/m^3 (2.7 E-11 to 2.7 E-4 µCi/mL).
Environmental	0° C to 50° C (32° F to 122° F).
Power	AC single phase 85/265 VAC, 50/60 Hz 50 VA (without pump), also equipped with 30 minute back-up battery.
Processor	Windows CE based processor.

Performance specifications

SmartCAM performance specifications	
Physical (static filter head)	• Width: 120 mm (4.75") • Depth: 127 mm (5") • Height: 272 mm (10.75") • Weight: 3.5 kg (7.7 lb)
Physical (base unit)	• Width: 256 mm (10") • Depth: 192 mm (7.5") • Height: 432 mm (17") • Weight: 6.5 kg (19 lb)
Physical (moving filter head)	• Width: 256 mm (10") • Depth: 182 mm (7.2") • Height: 260 mm (10.2") • Weight: 4.5 kg (9.9 lb)
Pump	Carbon vane – 2 cfm (57 lpm).
MCA	1024-channel ADC.
Algorithms	Peak-fitting algorithm for ^{214}Po, ^{218}Po, ^{212}Po plus two additional isotopes or 'Total Alpha' ROI.
Applicable standards	IEC 61172, IEC 60761, ANSI N42, 17B - an important part of ANSI N13.1/ISO2889 compliant systems.

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