SmartMCA Iodine

Iodine monitor

Key features

The SmartMCA air monitor is used throughout the world to:

- Assure safety in the workplace
- Offer quick responses to accident scenarios
- Measure and monitor stack releases

Overview

Ultra Energy's SmartMCA Iodine is an advanced MCA-based system for monitoring airborne concentration of radioiodine in the workplace.

The culmination of many years experience in the field of iodine analysis, the SmartMCA Iodine has applications in industrial, medical, and commercial nuclear facilities. It is designed to offer the user operational benefits in terms of measurement performance and lifetime maintenance.

Technical specifications

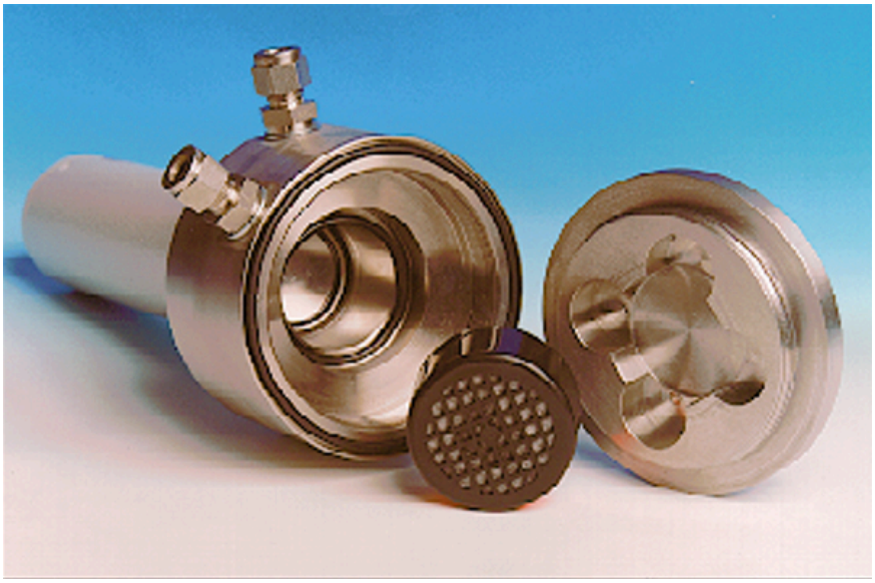
Further features

- Multichannel analyser provides better accuracy
- Large colour display and pull-down menus provide ease of use
- Fast indication of genuine release events through advanced alarm algorithm
- Designed to meet the requirements of IEC60761-4
- Various detectors available for different applications
- Photopeak drift minimised through automatic temperature stabilisation
- Onboard calibration routines ensure laptops are not required in controlled areas

The SmartMCA uses Ethernet communications and is easily integrated into larger systems. It supports area monitoring (room air) applications as well as stack monitoring applications. Analog inputs for stack flow and outputs for system integration are standard. Bespoke stack flow and stack sampling systems are available from Ultra Energy.

CGADC

The detection part of the SmartMCA Iodine is a detector called the CGADC (Continuous Gas Analysis and Detection Chamber). The CGADC combines a sensitive scintillation detector with a stainless-steel measurement chamber housing the radioiodine filtration cartridge and eliminating air by-pass.



In operation, gas is pulled through the radioiodine collection cartridge by a vacuum pump. An in-line digital flow sensor measures the flow through the filter to ensure the optimum flow rate and to determine the air volume to be used in the calculations.

Using the ROI in the MCA, the SmartMCA measures the isotope of interest accurately in real-time and uses adjacent channels for background assessment. The standard system

Technical specifications

Further features

- Large colour touchscreen
- Ethernet communications
- Analog input for stack flow
- Configurable relay outputs
- Ability to add Gamma dose rate
- Unique calculation algorithm
- Long and short response times
- Stainless steel housing with modular construction
- High intensity audio-visual alarm

includes a two-inch shielding assembly which may be skid mounted or floor standing. This offers additional protection from external sources of radiation, a lower detector background and improved ongoing accuracy.

Continuous monitoring

The SmartMCA acts as the processor and display for the system. It displays the current iodine result, generates activity/status alarms, enables the user to access parameters and compiles a database of results.

The SmartMCA Iodine is configured for the radioiodine species of choice. Isotopes include: I-123, I-125, I-129, or I-131. Detector provided is dependent on isotope selected.

Performance specifications

SmartMCA iodine in-air monitor performance specifications	
Iodine sampling	• Compatibility with TEDA impregnated or silver zeolite\filter cartridges • Stainless-steel wetted parts to limit losses/absorption • Filter cartridge collection efficiency > 95%, dependent on cartridge and sample rate
Detection	• Low background, high sensitivity scintillator, selected for the isotope of interest • High accuracy sample flow • Real-time background measurement using adjacent channels • Unique half life correction algorithm for count-rate losses of short lived iodine • Multichannel analyser with temperature stabilisation limits spectrum drift
Analysis	• Calculation and display of concentration, integrated dose, and, if connected, stack flow and stack discharge • Automatic storage of results with date and time
Station dimensions and weight	• Width 530 mm (21 inches) • Depth 710 mm (28 inches) • Height 1620 mm (64 inches) • Weight 200 kg (441 pounds)
Filter/interface	• TEDA filter cartridge • Charcoal or silver zeolite
Sample humidity	• Up to 95% RH
Sample temperature	• 0°C to 50°C (32°F to 122°F)
Sample flow	• Optimised at 37 lpm (1.3 ft3/min)

Performance specifications

SmartMCA iodine in-air monitor performance specifications	
Detectors	• NaI (Tl) detectors, LaBr3:CE, CsI(Tl) in various sizes and thicknesses
Measurement range for I-131	• 3.7 Bq/m^3 to 0.37 MBq/m^3 (1E-10 µCi/ml to 1E-4 µCi/ml)
Self testing	Continuously self-tests for: • Detector failure • Power failure • Over-range • Excessive air flow • Low air flow • Battery Status
SmartMCA dimensions	• Stainless steel enclosure height including beacon 440 mm (17”) and width 256mm (10”)
Visual display	• Status beacon, numerical and status banner on touchscreen display
System power	• AC single phase mains connection • Supply voltage 85 to 265V • Frequency 50 or 60Hz • Power consumption (typical) 40W
Outputs (optional0	• NaI (Tl) detectors, LaBr3:CE, CsI(Tl) in various sizes and thicknesses
Operating environment (indoor use)	• Operating temperature range of the complete unit is 0°C to 50°C (32°F to 122°F) • Maximum relative humidity 95% (up to30°C/84°F)
CE marking	• SmartMCS Iodine is CE marked

Performance specifications

SmartMCA iodine in-air monitor performance specifications	
Alarm facilities	• Fast, accurate warning of high activity or faults • Clearly visible from 9m (30ft) • Relay outputs for remote audio/visual alarms • Alarm thresholds and other parameters can be set by the user • Security includes a key and pass-code protection
Audible alarm output	• 1800Hz, 80dBA

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About Ultra Energy

Organizations working with nuclear and industrial technologies have a responsibility to safeguard people, the environment and infrastructure. We provide solutions that give our customers complete, long-term protection and control of safety critical systems, while helping them increase the net value derived from investments over their total lifespan.

Part of Curtiss-Wright, Ultra Energy has worked with nuclear and industrial customers for over 60 years. We're embedded in strategic national infrastructure and helping organizations develop future applications. We support continuous operation of industrial sites with protection and control solutions that monitor and manage factors such as radiation, neutrons, temperature and pressure within safety critical systems.

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