MIRION TECHNOLOGIES

Radiation Safety. **Amplified.**

iCAM/MF

Moving Filter Head for iCAM™

Nuclear | Healthcare | Homeland Security & Defense | Labs and Education | Industrial and Manufacturing

KEY FEATURES

- Automatic filter change mechanism
- Twelve months autonomous operation
- Fluoropore™ FSLW filter roll
- Filter ΔP measurement
- Retro-fittable to existing iCAMs
- For ambient sampling or remote connection via standard air inlet adaptor
- Dual PIPS® detector for ambient gamma compensation

BENEFITS

- Long term unattended operation in inaccessible or unfrequented locations
- Reduced operating costs
- Improved performance – through use of higher resolution filter

DESCRIPTION

The iCAM/MF moving filter detector head provides iCAM users with an option in filter handling. In place of the fixed, card mounted filter, which must be changed manually at regular intervals, the mechanism passes a continuous belt of filter material under the detector. Hence, when a filter change is required, instead of manual intervention being necessary, the iCAM firmware commands the mechanism to step the filter on, presenting a clean piece of filter material to the detector. The length of the filter roll, combined with the ability of the iCAM compensation algorithms to adapt to filter spectrum shape changes, allows up to twelve months operation with no manual intervention in typical applications. This renders the iCAM/MF ideal for use in hazardous or inaccessible areas where frequent personnel access is undesirable, e.g., long term unattended environmental monitoring. It also allows the iCAM to operate in high dust-loading environments, where otherwise frequent manual filter changes would be required.

The sampling head can draw an air sample either directly from the ambient air or remotely via a 1 in. bore hose or pipe connected via the standard iCAM air inlet adaptor.

The mechanism incorporates measurement of the pressure drop across the filter, to assist in determining when a filter change is necessary. The iCAM firmware (V200 or greater) can change the filter on any or all of the following conditions:

- Preset time interval
- Preset air volume
- High filter pressure drop
- Low flow
- High activity
- High radon/thoron background

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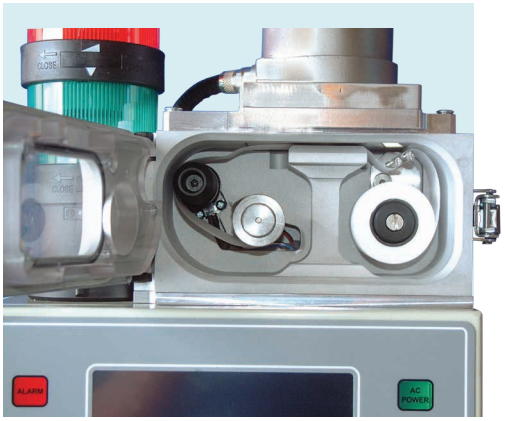
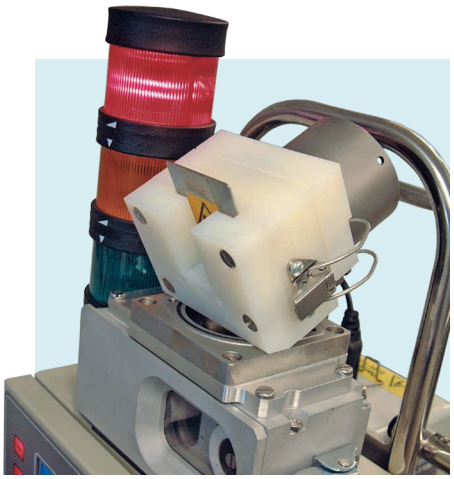
The trigger values for all these conditions are user-settable parameters.

Apart from detecting and controlling the moving filter mechanism, the iCAM detectors, firmware and display screens etc. are unchanged. The radon/ thoron compensation algorithms operate as in the standard iCAM, but there is a significant improvement in detection performance as the FSLW filter gives better resolution that the standard GFA filter:

iCAM: Minimum Detectable Alpha Activity
Aerosol Filter: Fluoropore FSWL (3 µm PTFE)
Radon Equilibrium Factor F= 0.5, 1 DAC = 0.1 Bq/m³ (2.7E-11 µCi/cc)

^{222}Rn gas (Bq/m³)	Uncomp Alpha Backgnd (DAChr)	Compensated Alpha Background Standard Deviation (DAChr)		Minimum Detectable Alpha Activity (Currie defn.) and Minimum Alarm Level (DAChr)	
		5 minute response	20 minute response	5 minute response	20 minute response
10	70	±0.4	±0.3	2	1.2
20	140	±0.5	±0.4	2.5	1.7
40	280	±0.8	±0.5	3.5	2.5
60	420	±0.9	±0.6	4.5	3.0
80	560	±1.1	±0.7	5.0	3.5





The mechanism is compatible with all existing iCAMs (Mk2 onwards) and existing fixed filter heads can be replaced with a moving filter mechanism if required.

The mechanism incorporates the same air inlet nozzle as is used on the standard fixed filter iCAM, giving excellent particulate collection performance across a wide range of particle sizes. A source jig is available which allows use of existing iCAM calibration sources with the mechanism. Alternatively customized source jigs can be produced to allow use of suitable alternative calibration sources. For sampling from discharge stacks or process ducts the standard iCAM air inlet adaptor (option ICAM/A) can be used, allowing the connection of 25 mm/1 in bore sample hose.

SPECIFICATIONS

NUCLEAR

- Typical MDA in 10 Bq/m^3 of ^{222}Rn, equilibrium factor 0.4, 0.05 µSv/hr, CT = five minutes, LT = 20 min, DT and DLT = 1 hour
- ALPHA – 2 DAChr or <0.16 Bq/m^3 (2 sigma) in concentration mode.
- BETA – 0.02 DAChr or <2 Bq/m^3 (2 sigma) in concentration mode.
- FILTER – Fluoropore FSLW on 12 m (40 ft) roll.
- AIRFLOW RANGE – 15-60 L/min. (0.5–2.1 cfm).
- FILTER ΔP range – 0-15 psi (0-1 Bar).
- FILTER STEP LENGTH – 33 mm (1.3 in.).
- FILTER CHANGE TIME – <5 s.

All other details/specifications are as per the standard iCAM – see main iCAM spec sheet for details.

PRODUCT CODES

- iCAM/MFEN – iCAM/MF with English firmware and labelling, supplied with wall mounting brackets and 2 m (6.5 ft) AC power cord with UK plug.
- iCAM/MFUS – iCAM/MF with English firmware and labelling, supplied with wall mounting brackets and 2 m (6.5 ft) AC power cord with US plug.
- iCAM/MFFR – iCAM/MF with French firmware and labelling, supplied with wall mounting brackets and 2 m (6.5 ft) AC power cord with European plug.

ACCESSORIES

- ICAM/JIGMF – Calibration jig to hold the standard iCAM calibration sources in place.
- ICAM/ROLL – Filter roll. FSLW filter 12 m x 35 mm wide.

All other details/specifications are as per the standard iCAM – see main iCAM spec sheet for details.

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