

# Tritium – C-14 Survey Meter

Model - TriCair A, B, Select

## FEATURES:

- C-14 and T<sub>2</sub>O MODES - TWO CHANNEL MEASUREMENT, SWITCH SELECTABLE
- HIGH SENSITIVITY – TO 5 $\mu$ Ci/m<sup>3</sup> (0.5 DAC) H-3
- FAST RESPONSE – 15 SECOND TIME CONSTANT
- RESPONSE TO RADON – SUPPRESSION CIRCUIT ENSURES NOISE FREE OPERATION
- NO ZERO DRIFT – BETTER THAN 1 $\mu$ Ci/m<sup>3</sup>
- RAPID WARM UP – LESS THAN 30 SECONDS

## APPLICATION:

The required radiological protection for Tritium compounds is different than that for Carbon-14. The presence of Tritium in the working environment may be an indication of a leak in the containment. Knowing this, the user of the TriCair **A, B, Select** can rapidly locate the point of release and more efficiently secure the source of leak.

## DESCRIPTION:

The TriCair **A, B, Select** can be configured as “sniffer” to provide real-time indication of C-14 And T<sub>2</sub>O concentrations allows the user to quickly Identify airborne presence of these 2 low energy Beta emitters. The TriCair **A, B, Select** Tritium and C-14 Detector has the unique ability to monitor for Tritium compounds and airborne C-14 in real time while providing gamma compensation. The two measurement channels, <sup>14</sup>CO<sub>2</sub> and <sup>3</sup>H appear on a single digital display.

## SENSITIVITY:

The sensitivity of the TriCair **A, B, Select** is better than 5  $\mu$ Ci/m<sup>3</sup> (0.5 DAC) for T<sub>2</sub>O. The sensitivity to C-14 is better than 6  $\mu$ Ci/m<sup>3</sup>.

## RADON INTERFERENCE, NOISE RESPONSE:

Unambiguous measurement of very low Tritium and C-14 levels requires a monitor that can ignore ambient Radon. The TriCair **A, B, Select** incorporates a Radon suppression circuit and therefore produces accurate and drift-free readings.

## FAST RESPONSE:

Exceptionally rapid response is due to its unique ability to ignore Radon. The instrument has an electronic time constant of only 10 seconds, a pneumatic time constant of about 12 seconds, for an overall time constant of only 15 seconds. Meter readings will reach 90% of final value with 30 seconds to a step response of aspirated Tritium or C-14.



TECHNCIAL ASSOCIATES

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## FAST WARM UP, NO ZERO DRIFT:

After applying power, the initial transient “warm up” drift effects take less than a minute. Long term drifts have been eliminated and manual zero adjustments are no longer required.

## DESICCANT COLUMN:

A desiccant column prevents the Tritium oxide from entering the C-14 Ion chamber. The indicator type desiccant changes color from blue to pink when it is exhausted. Regeneration will restore the drying capacity.

## GAMMA COMPENSATION:

The instrument has active gamma compensation with 2x2 ionization chamber geometry.



C-14 – T<sub>2</sub>O Switch



Desiccant Cartridge

Model	Tritium	Inorganic Carbon-14	Organic Carbon-14
TriCair-A	T <sub>2</sub> O	<sup>14</sup> CO <sub>2</sub>	N/A
TriCair-B	T <sub>2</sub> O	N/A	Organic C-14
TriCair-Select	T <sub>2</sub> O	<sup>14</sup> CO <sub>2</sub>	C-14 – is user selectable Organic C-14



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## SPECIFICATIONS:

TRITIUM RANGE	1 - 19,999 uCi/m <sup>3</sup> , basic sensitivity of the order of 5 uCi/m <sup>3</sup>
CARBON-14 RANGE	1 - 19,999 uCi/m <sup>3</sup> , basic sensitivity of the order of 1.0 uCi/m <sup>3</sup>
DISPLAY	0 - 19,999 digits, LCD panel meter
H3 AND C-14 MODES	Two channel measurement, switch selectable
ACCURACY, SPAN	±10 % of reading, ±2 uCi /m <sup>3</sup> , whichever is greater
NOISE LEVEL	± 2 uCi/m <sup>3</sup> (10 second electronic time constant)
ZERO STABILITY	±2uCi /m <sup>3</sup> long term
GAMMA COMPENSATION	chambers in a side by side pattern reduce errors due to external gamma radiation
ALPHA PULSE SUPPRESSION	circuit provides recognition and cancellation of airborne radon noise spikes 30 seconds to reach 90% of final reading
RESPONSE RATE ALARM (ACOUSTIC)	1. Ten position stepped attenuator set point for signal alarm 2 -1,000 uCi/m <sup>3</sup> , steady tone. An off position is included 2. Low flow produces an intermittent tone 3. Mute switch silences audible tone
ALARM (VISUAL)	Signal level: red LED - low flow: yellow LED, flashing battery: red LED
EXTERNAL CONNECTIONS	Mini DIN plug for output signal, and and for alarms
ION CHAMBER VOLUME	effective volume: 200 cm <sup>3</sup> port to port volume: 660 cm <sup>3</sup>
DUST FILTER	HEPA, in-line disposable cartridge, Pall P/N 12082
PUMP	internal rotary vane pump
FLOW RATE	nominally 1.5-2 LPM
ENVIRONMENTAL	0° C to +50° C, 0 - 95 % relative humidity BATTERIES
BATTERIES	2 "D" size NiMH batteries External jack for supplementary power input and charging
POWER CONVERTER	100-240 VAC, 50/60 Hz, .25 A to 3.3 Vdc @ 1.2 A 5.5 m O.D. x 2.1 mm I.D. Plug, center pin is positive
SIZE AND WEIGHT	7.6" [193mm] L x 5.2" [132mm] W x 6.9" [175mm] H excluding handle, 6.5 lbs (3 kg)
DESICCANT COLUMN	Clear polycarbonate cartridge of indicating desiccant



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