MIRION TECHNOLOGIES

Radiation Safety. **Amplified.**

Argos™-AB

Family of Gas Flow Whole Body Contamination Monitors

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

KEY FEATURES

- Fast personnel throughput with exceptional coverage due to optimized counting geometry, shielding and patented* detector technology
- The Argos-5AB provides the ultimate (two-step) contoured body coverage
- The Argos-3AB provides contoured body coverage with strategic positioning of detectors in an economical configuration
- Simultaneous monitoring of both sides of the hand with moveable detector for enhanced beta and alpha sensitivity
- Space-saving design minimizes overall clearance requirements and allows for easy maintenance access from the front and side of the unit
- WebRemote® enabled: provides an ergonomic and easy-to-use touch screen graphical user interface; accessible locally or via PC/tablet web browser
- Windows® 7 Embedded operating system with LAN capability and USB ports
- Same "industry-best" software and serial bus electronics across CANBERRA Argos™-TPS, Cronos®-1/4 /11, Sirius™-5 and GEM™-5 family; no re-training needed
- Compliant with IEC61098 Standard requirements
- Algorithm based on Gaussian or Bayesian statistics (compliant with the ISO 11929:2010 Standard requirements)

* Patent US 7,470,913 B1 High Efficiency and High Homogeneity Large-Area Gas-Filled Detectors

DESCRIPTION

The CANBERRA Argos-AB family of Whole Body Surface Contamination Monitors provides the ultimate user-friendly operation, with thorough and reliable detection of external contamination on personnel working in nuclear environments.

The Argos-5AB and Argos-3AB feature our most advanced gas flow detectors optimized for the best possible alpha and beta response (along with minimizing the gamma response). The detectors have been arranged in a configuration that minimizes dead space and provides optimal contour geometry and coverage for the occupant.

All Argos monitors use a sophisticated "fast following" background trending and release-limit algorithm to provide the best possible performance in a stable or varying radiation field.

With CANBERRA WebRemote software, an easy-to-use touch screen graphical user interface for industrial PC-based operation, results in improved health physics programs, better tracking of contamination and faster, more thorough personnel throughput at boundary points.

Excellent detector protection, modularity of components, and extensive diagnostics result in direct reductions in maintenance, repair, and operations costs.

CANBERRA

OVERVIEW

The Argos-AB design has been configured to contour the human body as closely as possible, improving overall detection ability. Gaps between detectors have also been minimized and detectors have been carefully arranged to pay particular attention to those parts of the body most likely to be contaminated. This arrangement results in excellent body coverage, as shown by the horizontal scan on the following page.

The Argos-3AB provides the very best option in the industry for cost effective whole body coverage by encompassing all of the excellent features of the Argos-5AB except that it has fewer detectors (18 versus 25, respectively). The removed detectors are replaced by blank plates and have been strategically chosen to cover the areas of the body least likely to be contaminated. This version provides the best value in a surface contamination monitor when the budget is limited. The Argos-3AB is easily field upgradeable to the Argos-5AB by simply installing additional detectors.

The patented detector design makes use of three independent counting sections which reduce background and detection capability. This design further enhances uniform detector response as shown in the diagram on the following page.

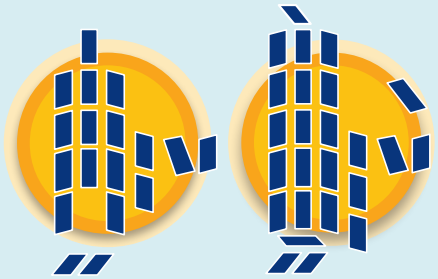
The overall benefit of CANBERRA's detector geometry and patented detector design is the reduction of count times by as much as 25% compared to similar systems.

Additionally, the Argos radon daughter rejection software is a useful tool to help reduce radon interference and minimize false alarms. The software is designed to provide the user with flexibility in setting up its parameters and related outcomes.

ELECTRONICS

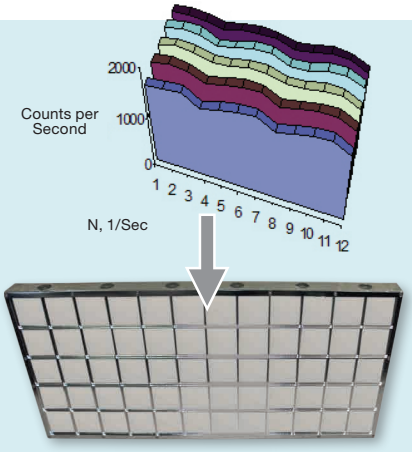
The Argos-AB computer operates on Windows 7 Embedded and uses USB flash for transferring data. Data may be retrieved either via USB or a LAN.

The High Voltage (HV), preamplification, amplification, discrimination, counting, test pulse generation and other processing electronics are mounted right on the detectors. The cables between the detectors and computer are all direct current and low voltage.



Argos-3AB Configuration
18 Detectors

Argos-5AB Configuration
25 Detectors



This diagram shows the counts detected by placing a button source in 60 different positions along and across the detector. The uniformity of response is remarkable (±8%). The huge degradation (±50%) exhibited by some of CANBERRA's competitors, particularly in the corners, has been significantly minimized.

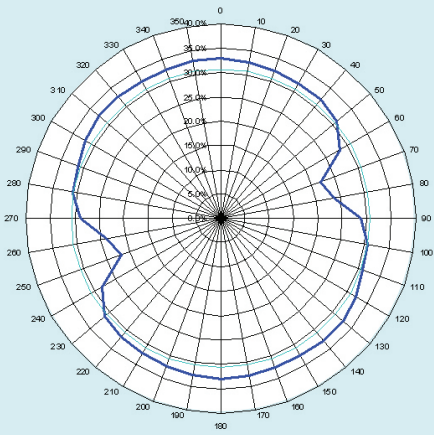
SETTING PARAMETERS

Parameter settings, testing, calibration and maintenance functions are accomplished locally or from a remote location using CANBERRA WebRemote. WebRemote enables tablet or PC connection to the Argos-AB via LAN or direct link.

Alternatively, the operator can use the standard Monitor Software, pre-installed on all Argos-AB contamination monitors, to provide local monitor access and functionality.

The following types of parameters are available for adjustment:

- Sensitivity of detection by detector and/or detection zone.
- Alpha, Beta, and Gamma alarm activity levels can be set in units of Bq, Bq/cm^2, dpm, dpm/cm^2, µCi, µCi/cm^2, nCi, nCi/cm^2, pCi, pCi/cm^2.
- False alarm and alarm confidence probability.
- HV Optimization using Figure-of-Merit (FOM) calculations.
- Fixed or variable count times (calculated and optimized as a function of the alarm level setpoint, local background levels and desired accuracy of measurement).



Argos-5AB Horizontal Scan Efficiency for ^{36}Cl, Phantom 5 cm from Center Detector.

MONITORING ASSISTANCE VIA USER INTERFACE

Indicator lights at the entry show when the monitor is ready to use. While the occupant is being monitored, messages and a countdown are delivered both audibly (multiple languages are available) and visually on the LCD screen.

Occupant positioning is verified and corrected with the aid of photoelectric sensors, visual messages and voice prompts.

Visible and audible alarms are given if contamination is detected. A "CONTAMINATED" result is shown on a large color LCD display with voice reinforcement and an LED lights up beside each contaminated detector.

The display shows the type (alpha, beta or gamma), the quantity and the location of the contamination based on which detector(s) is alarming. The system records data and date/time stamped logs showing the number of times the unit was used, parameters used, calibration settings, fault messages etc.

Up to four contact closure relays are available for remote signaling of the monitor's status (e.g. "In Operation", "Contaminated", "Clean", "Fault" etc. or some combinations thereof).

REMOTE STATUS MONITORING

A user friendly dashboard enables the status monitoring (in service, contaminated, out of service, maintenance) of multiple contamination monitors over the LAN. The dashboard is accessible from a tablet or PC web browser and requires no proprietary software installation.

Zeus gamma detectors

Argos monitor with Zeus option

Gamma Detection (Zeus™) Option

- The Zeus option adds full gamma detection capability
- Three large plastic scintillators monitor body contamination
- Smaller scintillator monitors the head
- Scintillators are shielded with 10 mm (~0.4 in.) of lead
- A 25 mm (~1.0 in.) lead curtain minimizes self-shielding effects

Other Available Options include

- ID readers
- Frisker
- WebRemote kit: software and rugged/pro/basic hardware
- Local database support
- Doors or barriers (entrance, exit or both)
- Small item monitors
- Top of shoe detector (gamma)
- Automatic movable alpha/beta head detector
- IP camera
- Spare purging detector
- Touchscreen/keyboard Options

Consult the CANBERRA Contamination Monitor Configuration Guide for details of options that will enhance the use of this monitor.

MAINTENANCE

A separate LED on each detector shows which detector is alarming and/or being addressed on the LCD screen.

For ease of diagnostics, numerous test screens are available to enable precision monitoring and changing of parameters including high voltage and discrimination thresholds for each detector. To provide further assistance, rate meters show counts seen by each detector in real-time.

The Argos-AB is designed to inherently minimize gas usage. Therefore, no "gas management system" is required.

Calibration and alarm testing of all detectors can be done in less than 30 minutes. It can be easily executed by just one person and is highly automated.

EFFICIENCY

Typical 4π efficiency, rounded to the nearest whole number, measured with a 10 cm x 10 cm plate source placed in the center of the detector. Tests performed using a button source are marked with an "*", where average values were calculated based on multiple locations on the detector.

Isotope	Efficiency on Contact, with 0.25 mm Fine Mesh	Efficiency on Contact, with 0.5 mm Fine Mesh	Efficiency on Contact, with foot grill, on 0.25 mm Fine Mesh
$^{14}C(\beta)$*	9%	8%	6%
$^{99}Tc(\beta)$	18%	16%	14%
$^{60}Co(\beta)$	16%	14%	14%
$^{137}Cs(\beta)$	29%	25%	22%
$^{36}Cl(\beta)$	29%	25%	23%
$^{90}Sr/^{90}Y(\beta)$	36%	32%	26%
$^{241}Am(\alpha)$*	20%	17%	13%
$^{235}U(\alpha)$	18%	16%	11%
$^{239}Pu(\alpha)$	19%	16%	12%

Gas Flow Proportional Detectors	LFP-579
Quantity	Argos-5AB: 25
Quantity	Argos-3AB: 18
Type	Gas Flow
Window (Note that the window assembly is field replaceable)	Multilayer Aluminized Mylar® at typically 0.8 ±12% mg/cm^2
Radiation Monitored	Alpha, Beta

Argos-AB Family of Gas Flow Whole Body Contamination Monitors

SPECIFICATIONS

Physical	Model	
	Argos-5AB	Argos-5AB Zeus
SIZE (w x h§ x d)*:	91.4 x 225 x 102 cm (36.0 x 88.6 x 40.2 in.)	92 x 229 x 104.8 cm (36.2 x 90.1 x 41.3 in.)
WEIGHT**:	321 kg (706 lb)	883 kg (1942 lb); Add 476 kg (1048 lb) for removable lead brick ingots

§ feet fully extended add 3.3 cm (1.3 in.)

* Argos-3AB and Argos-3AB Zeus are the same size as their Argos-5 counterparts

** or less for Argos-3 configurations

ELECTRICAL

Power Requirements:

- 220 V ac/50 Hz/1.0 A or 110 V ac/60 Hz/2.0 A mains 3 m (~10 ft) IEC standard cable (supplied; specify voltage and any special cable requirements on order; contact local CANBERRA affiliate for further information).

CERTIFICATION

- IEC 61098 compliant.
- ISO 11929:2010 compliant.

ENVIRONMENTAL

Temperature Range:

- Operating (meets IEC61098): 0–40 °C (32–104 °F).
- Storage: 0–50 °C (32–122 °F).

Relative Humidity:

- Operating (per IEC61098): ≤85% non-condensing at 35 °C (95 °F) maximum.
- Storage: ≤95% non-condensing.

Power Consumption:

Model	Power Consumption
Argos-3AB	160 VA
Argos-5AB	170 VA
Argos-3/5 with Door/ Barrier options*	+90 VA

* If installed and applicable; add this value to the above numbers.

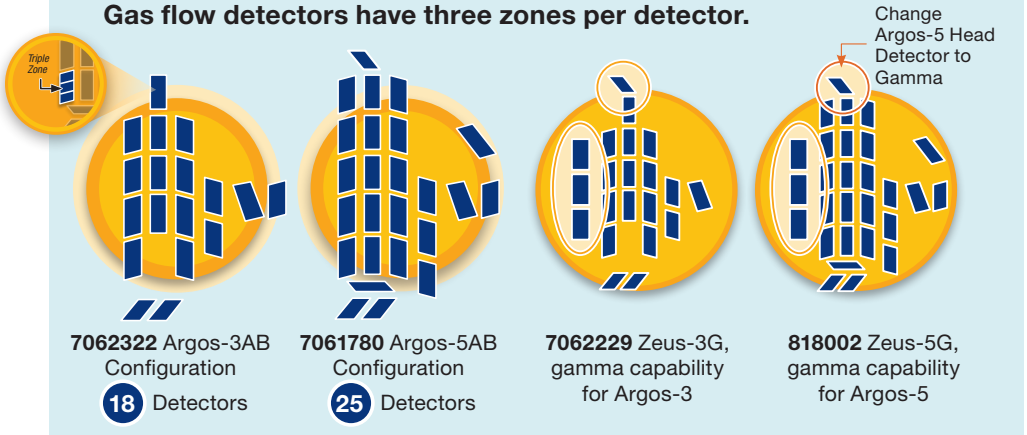
Ordering Information:

- 7062322 – Argos-3AB, 2-Step Whole Body Mon.
- 7061780 – Argos-5AB, 2-Step Whole Body Mon.
- 7062229 – Zeus 3G, Gamma Capability for Argos-3.
- 818002 – Zeus5G, Gamma Capability for Argos-5.

Options:

- WebRemote-Kit Options (For Rugged, Y=1; For PRO Y=2; For Basic, Y=3)
- WebRemote-Kit#Y – WebRemote Software and Rugged/Pro/Basic Hardware.
- CANBERRA's contamination monitors can be integrated with Horizon Supervisory Software to provide an integrated solution with CANBERRA instruments. Horizon complements the functionality of the WebRemote Contamination Monitor Interface.
- Consult the CANBERRA Contamination Monitor Configuration Guide for details of options that will enhance the use of this monitor.

Gas flow detectors have three zones per detector.



7062322 Argos-3AB Configuration 18 Detectors

7061780 Argos-5AB Configuration 25 Detectors

7062229 Zeus-3G, gamma capability for Argos-3

818002 Zeus-5G, gamma capability for Argos-5

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