



BODY CONTAMINATION MONITOR

ARGOS™-3 COMPACT

Compact Body Contamination Monitor



FEATURES

- Compact dimensions:
78.2 x 218.5 x 84.5 cm
(~30.8 x 86.0 x 33.3 in.) (W x H x D)
- 15 detectors for coverage of body, head, legs, arm, hands and feet
- Various detector combinations available:
 - alpha/beta gas-flow detectors (LFP-579)
 - beta plastic scintillation detectors (TPS-B-579)
 - alpha/beta plastic scintillation detectors (TPS-AB-579)
 - beta/gamma plastic scintillation detectors (TPS-BG-579)
- Casters/wheels available for easy relocation (optional)
- 8.4 in. touch screen display
- Featuring the identical comprehensive monitor software platform used on the other Argos-3/5, Sirius™-5, Cronos®-1/4/11 and GEM™-5 contamination monitors
- Based on Windows 10 IoT operating system
- CeMoSys™ client available

DESCRIPTION

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

The Argos-3 Compact features the most compact dimensions of all Mirion Whole Body Contamination Monitors and is therefore well suitable for locations with size constraints. It is ideal for reliable contamination control at checkpoints inside a radiologically controlled area (RCA), as a pre-monitor or at the exit of the controlled area. When equipped with optional casters (SCN 7063138) the Argos-3 Compact can be easily moved to temporary checkpoints.

The Argos-3 Compact is available in four versions:

- **Argos-3AB Compact** is equipped with our most advanced LFP-579 gas flow detectors optimized for the best possible alpha and beta response.
- **Argos-3PB Compact** is equipped with TPS-B-579 thin plastic scintillation detectors for measurement of beta contamination with no need for a gas-supply.
- **Argos-3PAB Compact** is equipped with TPS-AB-579 thin plastic scintillation detectors with state-of-the-art gas-free alpha and beta detection capability (with discrimination).
- **Argos-3PBG Compact** is equipped with TPS-BG-579 plastic scintillation detectors featuring a unique gas-free beta and gamma detection capability (with discrimination).

The 15 detectors have been arranged in a configuration that minimizes dead space and provides optimal contour geometry and coverage for the occupant.

OVERVIEW

The design of the Argos-3 Compact is based on the well-proven Argos monitor design, which 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.

ARGOS-3 COMPACT | COMPACT BODY CONTAMINATION MONITOR

The Argos-3 Compact features by default 15 detectors (compared to 18 detectors in Argos-3 unit), which provides the best compromise for cost-effective whole body coverage. The Argos-3 Compact can be easily upgraded in the field with additional detectors (up to 24 detectors in total). 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.

DETECTOR TECHNOLOGY

The Argos-3 Compact is available in four different versions which feature different detector technologies:

LFP-579 Gas Flow Detectors

LFP-579 gas flow detectors provide highly sensitive alpha and beta measurement capability with separate alpha and beta measurement channels for each detector.

The patented detector design makes use of three independent counting sections which reduce background for an optimal detection capability. This design further enhances uniform detector response.

The Argos-3AB Compact is designed to inherently minimize gas usage. Therefore, no “gas management system” is required.

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

TPS-B-579 Thin Plastic Scintillation Detectors

TPS-B-579 thin plastic scintillation detectors are gas-free detectors, specifically designed for best possible beta response and minimal sensitivity to gamma background radiation.

The need for counting gas is eliminated by using scintillation detectors with an embedded PMT to minimize dead space between detectors. The design of the TPS-B-579 detectors provides excellent signal-to-noise ratios and furthermore, the detection capability both across and along the detectors is extremely uniform. There is virtually zero edge effect degradation. The thin plastic scintillation detectors, TPS-B-579, are identical in form factor to the LFP-579 gas flow detectors.

The improvements in both geometry and detector design result in significantly reduced count times compared to other competitive systems.

TPS-AB-579 Thin Plastic Scintillation Detectors

TPS-AB-579 thin plastic scintillation detectors are state-of-the-art gas-free detectors with alpha and beta measurement capability with separate alpha and beta measurement channels for each detector.

The detectors do not require any counting gas and feature an extremely uniform detector response.

TPS-BG-579 Plastic Scintillation Detectors

TPS-BG-579 plastic scintillation detectors are unique gas-free detectors with beta and gamma measurement capability with separate beta and gamma measurement channels for each detector.

TPS-BG-579 detectors are identical in form factor to the LFP-579 gas flow and TPS-A-579/TPS-AB-579 detectors.

TPS-BG-579 detectors require minimum maintenance and repairs and their detector windows can be easily replaced in the field.

All four detector types are by design very durable and robust. Excellent detector protection, modularity of components, and extensive diagnostics result in direct reductions in maintenance, repair, and operations costs.

RADON PROGENY REJECTION FEATURE

The Argos radon progeny rejection software feature 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. The radon daughter rejection software is only available in combination with LFP-579 and TPS-AB-579 detectors.

ELECTRONICS

The Argos-3 Compact computer operates on Windows 10 IoT and uses SSD for data storage. 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.

SETTING PARAMETERS

Parameter settings, testing, calibration and maintenance functions are accomplished locally or from a remote location using the included WebRemote™ software. WebRemote software enables tablet or PC connection to the Argos system via LAN or direct link. Alternatively, the operator can use the standard Monitor Software, pre-installed on all Argos 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/cm², dpm, dpm/cm², μ Ci, μ Ci/cm², nCi, nCi/cm², pCi, pCi/cm²
- 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)

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 touch 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.

ARGOS-3 COMPACT | COMPACT BODY CONTAMINATION MONITOR

A “Contaminated” result is shown on the color touch screen display with voice reinforcement, and an LED lights up beside each contaminated detector.

The display shows the type (alpha or beta), 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.

MAINTENANCE

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

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 planar source placed in the center of the detector and in contact with the detector mesh. For comparison with instruments specifying 2π efficiency or % of emission surface rate, multiply the efficiencies in the tables by 2.

Argos-3PB Compact

Typical Efficiency	TPS-B-579 detectors, on contact, with 0.25 mm thick fine Mesh	TPS-B-579 detectors, on contact, with 0.5 mm thick fine Mesh	TPS-B-579 detectors, on contact, with foot grill, 0.25 mm thick fine Mesh
C-14 (β)	5%	5%	3%
Tc-99 (β)	16%	15%	10%
Co-60 (β)	14%	14%	11%
Cs-137 (β)	24%	25%	18%
Cl-36 (β)	25%	24%	20%
Sr-90/Y-90 (β)	32%	31%	23%
Am-241 (α)*	16%	15%	9%
Pu-239 (α)*	14%	12%	7%

*** indicates no alpha/beta discrimination.

Argos-3AB Compact

Typical Efficiency	LFP-579 detectors on contact with 0.25 mm thick fine Mesh	LFP-579 detectors on contact with 0.5 mm thick fine Mesh	LFP-579 detectors on contact with foot grill, 0.25 mm thick fine Mesh
C-14 (β)*	9%	8%	6%
Tc-99 (β)	18%	16%	14%
Co-60 (β)	16%	14%	14%
Cs-137 (β)	29%	25%	22%
Cl-36 (β)	29%	25%	23%
Sr-90/ Y-90 (β)	36%	32%	26%
Am-241 (α)*	20%	17%	13%
U-235 (α)	18%	16%	11%
PU-239 (α)	19%	16%	12%

Tests performed using a button source are marked with an “*”, where average values were calculated based on multiple locations on the detector.

Argos-3PAB Compact

Typical Efficiency	TPS-AB-579 detectors, on contact, with 0.25 mm thick fine Mesh	TPS-AB-579 detectors, on contact, with 0.5 mm thick fine Mesh	TPS-AB-579 detectors, on contact, with foot grill, 0.25 mm thick fine Mesh
C-14 (β)	2%	2%	1%
Tc-99 (β)	10%	9%	6%
Co-60 (β)	11%	10%	8%
Cs-137 (β)	20%	18%	13%
Cl-36 (β)	22%	20%	16%
Sr-90/Y-90 (β)	27%	25%	18%
Am-241 (α)	14%	13%	7%
U-235 (α)	11%	10%	4%
Pu-239 (α)	12%	11%	6%

Argos-3PBG Compact

Typical Efficiencies (§ = No Alpha/Beta separation)	TPS-BG-579 detectors, on contact, with 0.25 mm thick fine Mesh	TPS-BG-579 detectors, on contact, with 0.5 mm thick fine Mesh	TPS-BG-579 detectors, on contact, with foot grill, 0.25 mm thick fine Mesh
C-14 (β)	2%	2%	2%
Tc-99 (β)	10%	9%	7%
Co-60 (β)	8%	7%	6%
Cs-137 (β)	17%	15%	12%
Co-60 (γ)	18%	16%	17%
Cs-137 (γ)	8%	7%	7%
Cl-36 (β)	16%	14%	13%
Sr-90/Y-90 (β)	19%	17%	14%
Am-241 (α) §	13%	12%	7%
U-235 (α)§	8%	7%	2%
Pu-239 (α)§	11%	10%	5%

MECHANICAL SPECIFICATIONS

Physical	Argos-3 Compact
Size (W x H x D)	78.2 x 218.5 x 84.5 cm (30.8 x 86 x 33.3 in.)
Weight	~180-220 kg (~400-485 lb) depending on configuration

ELECTRICAL

Power Requirements:

- 220 V AC/1.0 A or 110 V AC/2.0 A 50/60 Hz mains; 3 m (~10 ft) IEC standard cable (supplied; specify voltage and any special cable requirements on order; contact local affiliate for further information).
- Power Consumption: 100 VA

CERTIFICATION

- IEC 61098 compliant
- ISO 11929:2010 compliant



ENVIRONMENTAL

Temperature Range:

- Operating (meets IEC 61098): from 0 to 40 °C (from 32 to 104 °F)
- Storage: from 0 to 50 °C (from 32 to 122 °F)

Relative Humidity:

- Operating (per IEC 61098): ≤85% non-condensing at 35 °C (95 °F) maximum
- Storage: ≤95% non-condensing

Ordering Information:

- **Argos-3ABComp** Argos-3AB Compact, 2-Step Whole Body Contamination Monitor with 15x LFP-579 gas flow detector
- **Argos-3PBComp** Argos-3PB Compact, 2-Step Whole Body Contamination Monitor with 15x TPS-B-579 thin plastic scintillation detectors
- **Argos-3PABComp** Argos-3PAB Compact, 2-Step Whole Body Contamination Monitor with 15x TPS-AB-579 thin plastic scintillation detectors
- **Argos-3PBGComp** Argos-3PBG Compact, 2-Step Whole Body Contamination Monitor with 15x TPS-BG-579 plastic scintillation detectors

Options:

- **7063138** Argos casters kit including 2x 75 mm swivel casters and 2x 75 mm rigid casters

OTHER AVAILABLE OPTIONS INCLUDE

- ID readers
- Additional detectors (up to a total of 24)
- Frisker
- Local database support
- Top of shoe detector (gamma)
- Keyboard Options

Consult the Contamination Monitor Configuration Guide for details of options that will enhance the use of this monitor. Please note that the following Argos options are NOT compatible with the Argos-3 Compact: Head detector options (such as movable head detector or gamma head detector), Zeus™ option, AccuRate®, doors and barriers, front curtain, handles, built-in small items box (an extension by a side-mounted small items box is possible).

