



MIRION
TECHNOLOGIES



Contamination Monitor Configuration Guide





About the Guide

Use this guide to learn about the basic features of Mirion’s comprehensive family of contamination monitors, as well as the wide variety of optional accessories that will enhance the use of the systems in your facility.

This guide will help clarify model numbers and related information for the systems as well as optional accessories. It also highlights options that are incompatible with others (usually due to space constraints), and those that must be purchased with additional options.

The guide contains the most commonly requested options for the following systems plus software that can be used with any of the systems.

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Unless otherwise noted as field installable/upgradeable, all options must be factory-installed. However, calibration fixtures, gas regulators, lead bricks for shielding, GEM-5 ramps and Cronos liners, plinths and slings may be ordered at any time.

We hope this guide will simplify the process of selecting the proper contamination monitor systems and accessories to best fit your needs today and for many years to come.

Detector Technologies

Section 1



Differences between Gas-Flow and TPS

Traditional gas-flow monitors offer the best efficiency and Minimum Detectable Activity for short count times, but require ongoing management of the counting gas required for their operation. Mirion's gas-flow detectors have a patented design that features three independent counting zones per detector for reduced background and more uniform detector response, leading to better overall detection capability.

With Mirion's gasless detector technology, the trade-offs between operating costs and performance have been minimized. Gasless Thin Plastic Scintillator (TPS) detectors offer excellent performance and simplified maintenance requirements typically associated with gas-free monitors. The availability of combinations of alpha/beta, beta and beta/gamma gasless solutions means that a suitable monitor can be selected for any application. The single zone design of the TPS detectors has been optimized to provide excellent signal-to-noise ratios and uniform detection capability, both across and along the detectors.

Mirion gas-flow and gasless detectors are interchangeable for Argos monitors shipped since February 2008 and for all Sirius-5 monitors. As a result, these monitors allow for field replacement of detectors when a switch of detectors is desired at a later time.

Configurations available
within the same unit

TPS

or

Gas-Flow

or

Transition from one
to another

Differences Between Gas-Flow and TPS

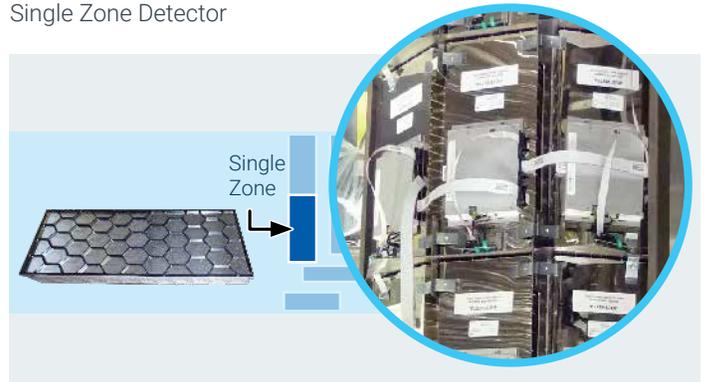
Gas-Flow

Triple Zone Detector



TPS

Single Zone Detector



BENEFITS OF GAS-FLOW SYSTEMS

- The best efficiency and Minimum Detectable Activity for the shortest count times
- Exceptional detection capability resulting from patented* triple zone detector design
- A variety of gas mixtures can be used, including: P-5, P-7.5, P-10 and Ar/CO₂
- Uniform response across detector face

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

BENEFITS OF TPS SYSTEMS

- Gas-free - no cost or worry associated with handling gas
- α/β , β/γ or β monitoring with discrimination between radiation types
- Reduced count time even in high γ background environment compared to other gasless detectors

Contamination Detected	Detector Model	Detector Type	Hand, Cuff and Foot Monitor	Whole Body Monitor
Alpha + Beta	LFP-579	Low Flow Proportional Detectors	Sirius-5AB	Argos-3/-5AB
Alpha + Beta	TPS-AB-579	Gasless Plastic Scintillation Detectors	Sirius-5PAB	Argos-3/-5PAB
Beta + Gamma	TPS-BG-579	Gasless Plastic Scintillation Detectors	Sirius-5PBG	Argos-3/-5PBG
Beta	TPS-B-579	Gasless Plastic Scintillation Detectors	Sirius-5PB	Argos-3/-5PB

These gas-flow and gasless detectors are easily interchangeable

Argos Family and Options

Argos Two-Step (front, back, side, head, hands and feet) Whole Body Surface Contamination Monitors

Argos is available in gas-flow alpha/beta or in gasless beta, alpha/beta or beta/gamma versions as part of our TPS family and with 18 or 25 detectors. The detectors may be upgraded (gas to TPS or TPS to gas) in the Argos-3/-5 systems manufactured since February 2008.

COMMON FAMILY FEATURES

- Contoured monitor design reduces body-to-detector distance to one inch on the average person
- Minimal gaps between detectors for smaller dead zones
- Virtual detector sum zones for enhanced coverage
- Common software platform simplifies training and support
- Efficient, front access, space-saving design minimizes overall clearance requirements and simplifies maintenance
- Built-in computer with Windows Embedded operating system and LAN/USB capability for easy system management
- Solid state drive for improved reliability
- Compliant with IEC 61098 Standard requirements



Argos-5

Argos-5 Configuration 25 Detectors

ARGOS-5 GAS-FLOW SYSTEM MODEL

7061780 Argos-5AB, 2-Step Whole Body Monitor

- Twenty-five (25) triple-zone Model LFP-579, 579 cm², low flow proportional detectors
- Dual channels for simultaneous and independent alpha and beta counting and alarm levels

ARGOS-5 GASLESS (TPS FAMILY) MODELS

818001 Argos-5PB, 2-Step Whole Body Monitor

- Twenty-five (25) Model TPS-B-579 TPS Plastic Scintillator detectors, 579 cm²

Argos-5PBG*, 2-Step Whole Body Monitor

- Twenty-five (25) Model TPS-BG-579 TPS Plastic Scintillator detectors, 579 cm²

Argos-5PAB, 2-Step Whole Body Monitor

- Twenty-five (25) Model TPS-AB-579 TPS Plastic Scintillator detectors, 579 cm²

* Requires CURTAINPB Front Curtain Lead Kit

Argos-3

Argos-3 Configuration 18 Detectors

ARGOS-3 GAS-FLOW SYSTEM MODEL

7062322 Argos-3AB, 2-Step Whole Body Monitor

- Eighteen (18) triple-zone Model LFP-579, 579 cm², low flow proportional detectors
- Dual channels for simultaneous and independent alpha and beta counting and alarm levels

ARGOS-3 GASLESS (TPS FAMILY) MODELS

7062324 Argos-3PB, 2-Step Whole Body Monitor

- Eighteen (18) Model TPS-B-579 Thin Plastic Scintillator detectors, 579 cm²

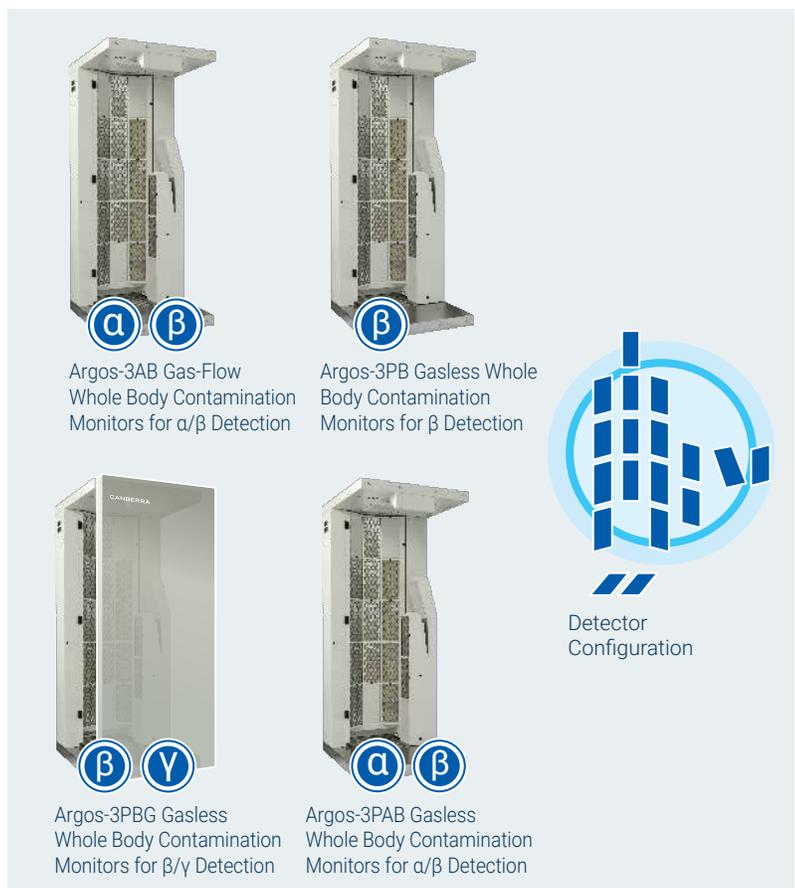
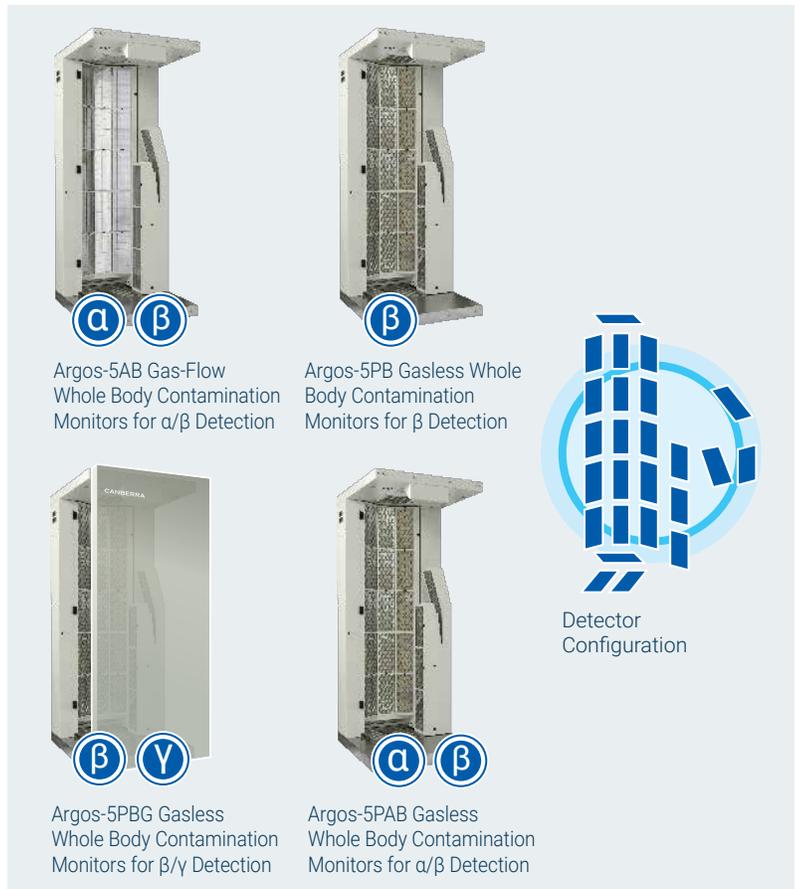
Argos-3PBG*, 2-Step Whole Body Monitor

- Eighteen (18) Model TPS-BG-579 Thin Plastic Scintillator detectors, 579 cm²

Argos-3PAB, 2-Step Whole Body Monitor

- Eighteen (18) Model TPS-AB-579 Thin Plastic Scintillator detectors, 579 cm²

* Requires CURTAINPB Front Curtain Lead Kit



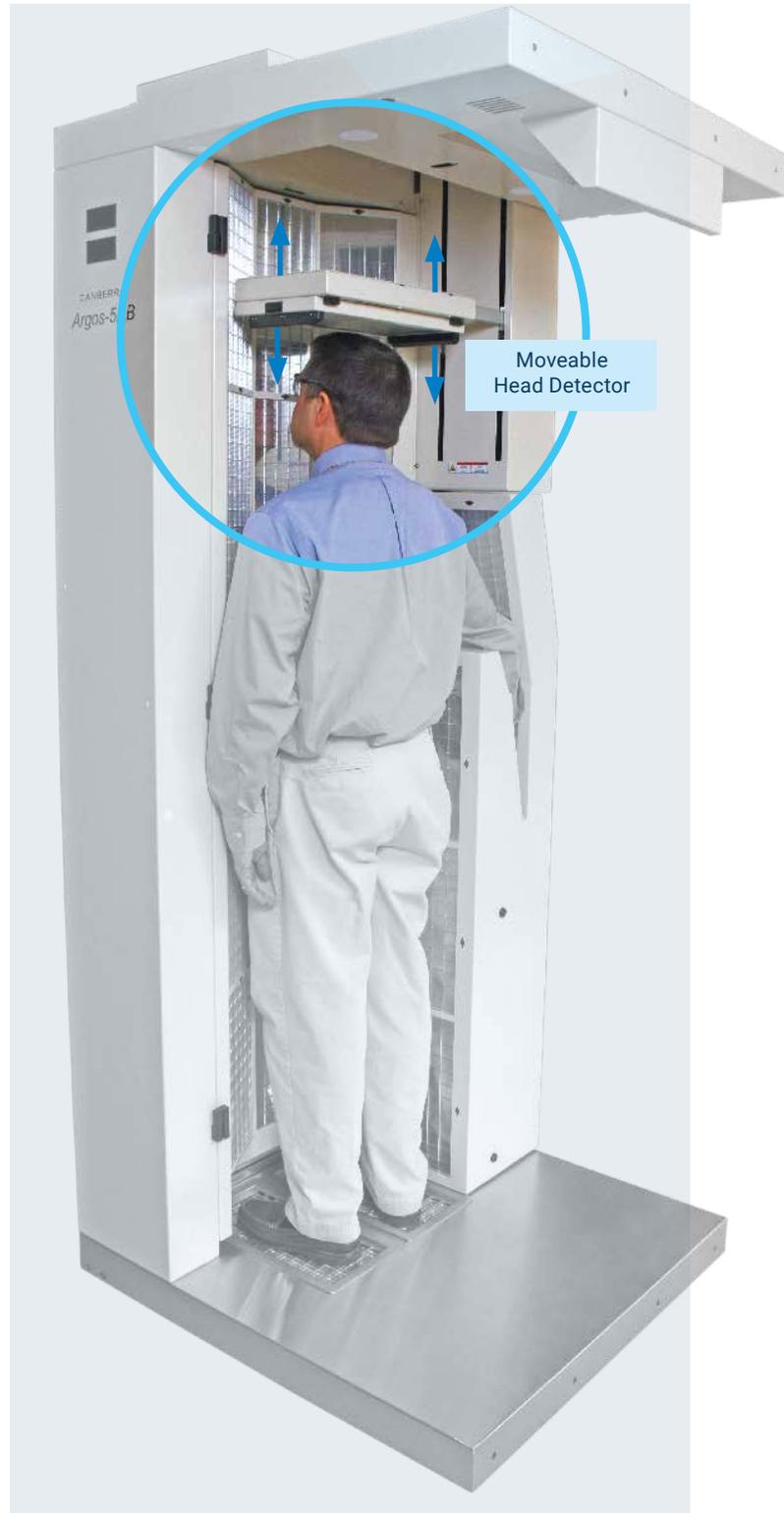
Argos Moveable Head Detector Options

Moveable Head Detector Options for Argos-3/-5 Monitors

Reliable positioning mechanism automatically positions detector at 1 cm (0.39 in) from head for complete body coverage. These options do not include the relevant head detector that will be used with the mechanism. The head detector is already included in the standard Argos-5 monitor configuration and is not required for simulator units. The detector must be added for Argos-3 systems.

BENEFITS OF MOVEABLE HEAD DETECTOR OPTION

- Minimized head-detector distance for best α/β monitoring efficiencies
- Robust and secure design
- Standard Moveable Head Detector option requires no increase in height
- Argos5-FLW-MHD-XTD Moveable Head Detector Mechanism, Argos-3/-5AB
- Argos5-TPS-MHD-XTD Moveable Head Detector Mechanism for Argos-3/-5PB, Argos-3/-5PAB, Argos-3/-5PBG
- Argos-3 requires additional Head Detector of same type as the rest of the system
- Movable Head Detector includes height mechanisms needed for AccuRate® option



AccuRate® Anthropometric Correction Option

AccuRate is Mirion's innovative solution that improves the performance of its current generation of gamma-sensitive whole body surface contamination monitors by correcting for the self-shielding effect of an individual in the monitor. The AccuRate system enables the detection of lower levels of contamination, reduces false positives and negatives, and minimizes overall personnel

monitoring effort. Its optimized analysis addresses the industry need to reduce cost, improve accuracy, and increase ALARA.

- Improves accuracy of contamination monitoring
- Helps detect lower levels of contamination
- Reduces instances of missed contamination

Comparison of detection coverage with and without AccuRate - 700 Bq (42,000 dpm or ~19 nCi) source placed in various body parts, natural background, 600 Bq (36,000 dpm or ~16 nCi) alarm level.



AccuRate-PBG Anthropometric Correction Option; Argos-3/-5PBG

- Factory installed mounting hardware and electronics to enable Anthropometric Correction on an Argos-3/-5PBG.

AccuRate-ZEUS Anthropometric Correction Option; Zeus™-3/-5G

- Factory installed mounting hardware and electronics to enable Anthropometric Correction on an Argos-3/-5(P)(A)B with Zeus-3G/-5G.

AccuRate-PBG-MHD Anthropometric Moving Head Correction Option; Argos-3/-5PBG, MHD

- Factory installed mounting hardware and electronics to enable Anthropometric Correction on an Argos-3/-5PBG with Moveable Head Detector Option (Argos5-TPS-MHDXTD) installed at same time.

AccuRate-ZEUS-MHD Anthropometric Moving Head Correction Option; Zeus-3/-5G, MHD

- Factory installed mounting hardware and electronics to enable Anthropometric Correction on an Argos-3/-5(P)(A) B with Zeus-3G/-5G and Moveable Head Detector Option (Argos5-FLW-MHD-XTD) installed at same time.

Argos Options

Purged Spare Detector

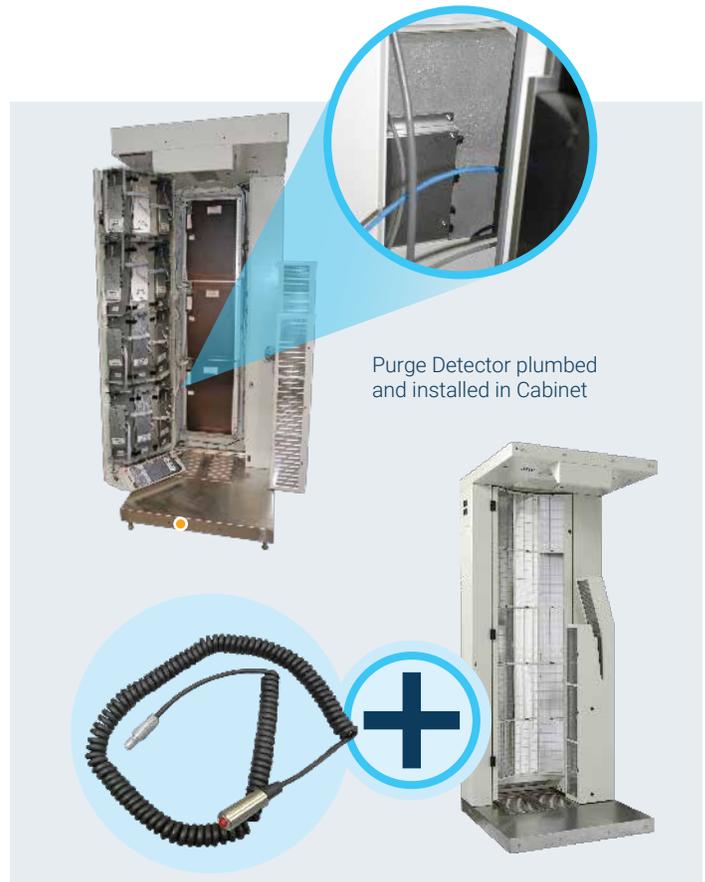
Having a purged spare detector on hand allows a damaged detector to be replaced in minutes, facilitating easy maintenance and minimizing down time for your monitors.

LFP-579D/PURGE

- Factory-installed LFP-579 Purge Detector with preamp for Argos-3/-5AB

7062325 Argos-3/-5 Simulator

- Same as Argos-3/5 except no detectors, preamps or detector LED indicators
- Includes remote switch on coiled cable to simulate a randomly-chosen contaminated detector
- Audible voice and visual prompts/alerts (including remote-controlled simulated CONTAMINATED result)
- Moveable Head Detector Simulator Options available.



Argos Side Mount 2nd Display and Lockable Keyboard Options

These options are for Argos-3/-5 only and are mutually exclusive (on same side) with sliding door, frisker or side-mounted small item monitor (SIM) options.

7063217 Side Mount 2nd LCD Display and Keyboard-Touch pad Kit

7062280 Secondary LCD Display Kit (only)

7063216 Side Mount Keyboard-Touch pad Kit (only)



Argos Options

Electric Barriers for Argos-3/-5

Must order Front Curtain (Model 816614) if Zeus-3G/-5G or Sliding Door not ordered at same time.

816651 Argos Electric Barrier, Entrance (shown)

Argos5-EBX Argos Electric Barrier, Exit

Electric Sliding Doors for Argos-3/-5

Must order Front Curtain (Model 816614) if Zeus-3G/-5G not ordered at same time. Electric sliding doors add approx. 59 mm (2.32 in) to height of monitor.

817008 Argos Sliding Door, Exit (shown)

817007 Argos Sliding Door, Entrance

817009 Dual Argos Sliding Doors - Entrance and Exit



816614 Argos-3/-5 Front Curtain Kit

- Curtain to restrict access for Argos-3/-5 (if Zeus-3G/-5G not already present or ordered at same time)

CURTAINPB Argos-3/-5 Front Curtain Lead Kit

- Provides shielding for Argos-3/-5 units with the front curtain (Model 816614)
- Consult factory before ordering for older monitors



Argos Options

Zeus Gamma Options (7062229 Zeus-3G/ 818002 Zeus-5G) for Argos-3/-5



TO ENHANCE GAMMA SENSITIVITY INCLUDING

- 3 large gamma scintillation detectors
- One 817128 Gamma Foot Detector
- One 816614 Argos-3/-5 Front Curtain Kit
- Requires CURTAINPB Argos-3/-5 Front Curtain Lead Kit

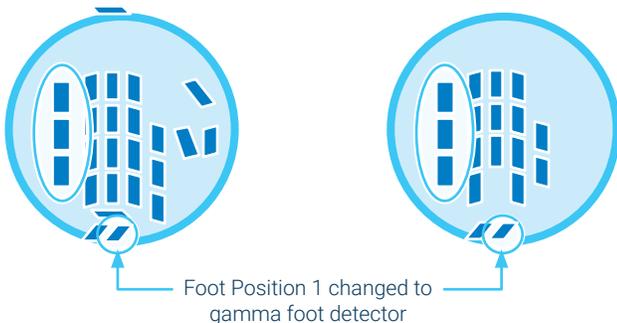
The Zeus Gamma Option provides enhanced gamma sensitivity for Argos monitors

BENEFITS OF ZEUS OPTION

- Enhancing the gamma contamination monitoring capability of your program leads to improved confidence on overall monitoring quality and reliability
- Enables passive monitoring and supports achievement of 1% or less Annual Limit of Intake (ALI)

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

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



Substitute/Additional Argos Gamma Detectors for Head or Top of Shoe

Argos-5AB-GDH Substitute Gamma Head Detector for Argos-5AB

- Substitutes LFP-579 alpha/beta detector in head position with gamma plastic scintillator detector; Argos-5AB only

Argos-5AB-GDS Substitute Gamma Top Of Shoe Detector for Argos-5AB

- Substitutes LFP-579 alpha/beta detector in top of shoe position with gamma plastic scintillator detector; Argos-5AB only

817128 Substitute Gamma Detector in Foot (Position 1 or 2)

- For use with Argos-3/-5 Contamination Monitors: Substitutes LFP-579 alpha/beta gas-flow detector or TPS-AB-579 alpha/beta or TPS-B-579 beta or TPSBG-579 beta/gamma Thin Plastic Scintillator Detector in Foot Position 1 or 2 with Gamma-only Plastic Scintillator Detector

Detector addition: LFP-579 or TPS-579 detectors can be added to the Argos-3 configuration typically in Head, Top of Shoe or Foot positions.

Detector substitution: LFP2TPS579-SUB Substitute LFP-579 with TPS-(A)B(G)-579:

- The Argos technology offers flexible solutions to substitute detectors from the standard configuration to a custom configuration. LFP-579 alpha/beta detector can be substituted with desired TPS detector (TPS-B-579 beta detector or TPS-BG-579 beta/gamma detector or TPS-AB-579 alpha/beta detector) in selected position. Factory MUST be contacted to check compatibility with current configuration; provide model and serial number of unit in question.

Argos Options

Argos Built-In Small Item Monitors

The monitor chamber is installed in the left-hand side corner post of an Argos-3/-5 and includes detectors at top and bottom. The internal dimensions of chamber are: 10 x 12.5 x 20 cm (3.9 x 4.7 x 7.9 in.).

7062059 Built-In Small Item Monitor, AB(Bot)-G(Top)

- Includes LFP-180 gas-flow alpha/beta detector – bottom; plastic scintillator gamma detector – top
- For Argos-3/-5AB Gas-Flow monitors only

7062139 Built-In Small Item Monitor, G(Bot)-G(Top)

- Includes any two plastic scintillator gamma detectors in the bottom and top positions
- For any Argos-3/-5

Consult factory for other configurations including beta/gamma and alpha/beta sensitive detectors



Argos Side-Mounted Small Item Monitors

The side-mounted chamber is installed on the entrance side corner post of an Argos-3/5 and includes detectors at the top and bottom. The approximate internal dimensions of the chamber are: 17.5 x 15 x 26 cm (6.9 x 5.9 x 10.2 in.). Mutually exclusive with entrance doors.

818065 Side-Mounted Small Item Monitor, AB(Bot)-G(Top)

- Includes LFP-579 flow proportional alpha/beta detector – bottom position; plastic scintillator gamma detector – top
- For Argos-3/-5AB

7063032 Side-Mounted Small Item Monitor, G(Bot)-G(Top)

- Includes two plastic scintillator gamma detectors in the bottom and top positions
- For any Argos-3/-5

7063031 Side-Mounted Small Item Monitor, PB(Bot)-G(Top)

- Includes TPS-579 beta thin plastic scintillator detector – bottom; plastic scintillator gamma detector – top
- For Argos-3PB or Argos-5PB

Argos-SIMPAB Side-Mounted Small Item Monitor, PAB (BOT) – G (TOP)

- Includes TPS-AB-579 alpha/beta plastic scintillator detector – bottom; plastic scintillator gamma detector – top
- For Argos-3PAB or Argos-5PAB

Argos-SIMPBG Side-Mounted Small Item Monitor, BG (BOT/TOP)

- Includes TPS-BG-579 beta/gamma plastic scintillator detectors in the bottom and top positions
- For Argos-3PBG or Argos-5PBG



Argos Options

CAL-FIXTURE-LFP



Argos-3/-5AB Calibration and Alarm Fixture Kit*

INCLUDES

7075132 One Argos-3/-5AB Triple Zone Calibration Fixture to calibrate accessible Argos-3/-5AB LFP-579 detectors with 3 sources simultaneously

- Adjustable distance of up to three sources is from 0 to 75 mm (0 to ~2.95 in.)

7074911 One Argos-3/-5 Single Calibration Fixture for use with any accessible Argos-3/-5 detectors

- Adjustable distance from 0 to 75 mm (0 to ~2.95 in.)

7075461 One Argos-3/-5 Single Thin Calibration Fixture for use with any accessible Argos-3/-5 hand detectors

- For use on contact only

* Source holder only; source not included

Additional software options and accessories for Argos monitors are included in the **Common Accessories and Software Options** section at the end of this guide.

CAL-FIXTURE-TPS



Argos-3/-5P(A)B(G) Calibration and Alarm Fixture Kit*

INCLUDES

7074911 One Argos-3/-5 Single Calibration Fixture to calibrate any accessible Argos-3/-5 detector

- Adjustable distance from 0 to 75 mm (0 to ~2.95 in.)

7084916 One Argos-3/-5 Calibration Fixture for sources up to 50.8 mm (2 in.) diameter

- Adjustable distance from 50 to 150 mm (approx. 3 to 6 in.)

7075461 One Argos-3/-5 Single, Thin Calibration Fixture for use with any accessible Argos-3/-5 hand detector

- For use on contact only

Handle Options



Standard mounting configuration is on outer left side of left corner post. Where a barrier/door options prohibit standard configuration, handle is mounted vertically on inner side of left corner post.

Argos5-HANDLE Side support handle (factory); Argos-3/-5

- Assists in stabilization of users while counting

Argos5-HANDLE-KIT Side support handle (field); Argos-3/-5

- Assists in stabilization of users while counting
- Includes mounting hardware, drill template and instructions
- Customer to provide Model(s) and Serial Number(s) of unit(s) to be retrofitted

Camera Kit

Provides event driven pictures and capture video associated with monitor use.

7062258 Argos-3/-5 IP Camera Kit

- Factory-installed IP camera for Argos-3/-5 Only



Sirius-5 and Options

Sirius-5 Hand, Cuff and Foot Surface Contamination Monitor

The Sirius-5 Hand, Cuff and Foot monitor meets the need for a robust, industrial-strength contamination control product. It is designed for the high-throughput, demanding applications found in the nuclear industry – nuclear power plants, fuel cycle facilities, nuclear waste facilities and D&D operations.

The Sirius-5 is an extension of the Canberra™ “no compromises” approach towards radiological protection. The unit is designed with extensive detector damage protection, diagnostics and an unsurpassed ease-of-maintenance that will make it the first choice for facilities where uptime and instrument availability is of major importance. Detector interchangeability between hand and foot locations – and also with Argos-3/-5 monitors – helps the facility operator minimize spare parts inventory, training and maintenance cost.

Sirius-5 is available in gas-flow alpha/beta or in gasless beta, alpha/beta or beta/gamma versions as part of our TPS family. Monitors include six detectors, and the detectors may be upgraded (gas to TPS or TPS to gas) with no modifications to the system chassis.

FEATURES

- Common software platform simplifies training and support
- Efficient, front access, space-saving design minimizes overall clearance requirements and simplifies maintenance
- Built-in computer with Windows Embedded operating system and LAN/USB capability for easy system management
- Solid state drive for improved reliability
- Compliant with IEC 61098 Standard requirements



Sirius-5



Sirius-5AB hand/cuff/foot monitor for alpha/beta contamination



- Six (6) large area low flow gas proportional LFP-579 detectors
- 1 step process for hands

Sirius-5PB hand/cuff/foot monitor for beta contamination



- Six (6) large area gasless TPS detectors
- 1 step process for hands

Sirius-5PBG hand/cuff/foot monitor for beta/gamma contamination



- Six (6) large area gasless TPS detectors
- 1 step process for hands

Sirius-5PAB hand/cuff/foot monitor for alpha/beta contamination



- Six (6) large area gasless TPS detectors
- 1 step process for hands

Sirius-5 Accessories

Sirius-5-CAST-KIT Sirius-5 Casters Kit Option

- Casters with Integrated Leveling Feet to facilitate installation at final location. Includes four 50 mm swivel casters and associated hardware to mount to Sirius-5

SIRIUS5-PURGE-DET Sirius-5 Purge detector kits available - consult price list for details

Sirius-5 SIM Sirius-5 simulator

- Same as Sirius-5 except no detectors, preamps or LED indicators
- Includes remote switch on coiled cable to simulate a randomly-chosen contaminated detector.
- Audible voice and visual prompts/alerts (including remote-controlled simulated CONTAMINATED result)



Sirius-5-CAST-KIT

Additional software options and accessories for Sirius-5 monitors are included in the **Common Accessories and Software Options** section at the end of this guide.

Gem-5 and Options

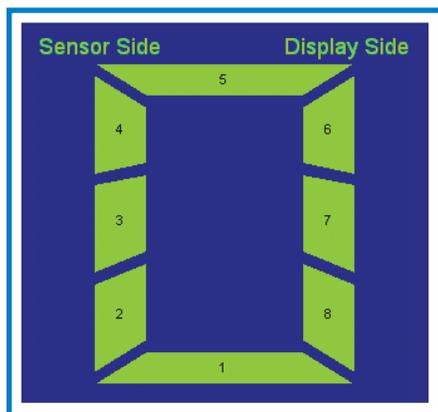
GEM-5 Gamma Exit Monitors

FEATURES

- Common software platform simplifies training and support
- Built-in computer with Windows Embedded operating system with LAN/USB capability for easy system management
- Solid state drive for improved reliability
- PC-based electronics provide full self-diagnostics

816002 GEM-5, Gamma Exit Monitor, 61 cm (24 in.) inner width

- Exceptional sensitivity via eight (8) identical large plastic scintillator detectors (three per side + one top/bottom)
- Standard portal opening width - 61 cm (24 in.); other available inner widths include:
 - 7063219 - 80 cm (31.5 in.)
 - GEM-5W93 - 93 cm (36.6 in.)
 - GEM-5W100 - 100 cm (39.4 in.)
- Large full color LCD display and annunciator lights
- Digitized voice prompts and visual prompts on the LCD display
- Bi-directional operation (i.e., approach from either direction) plus one-step, two-step or walk-through modes are software selectable
- 25 mm (1 in.) lead ingot shielding GEM5PB required



GEM-5 Options

GEM-5 Shielding Options

GEM5PB 1" Layer of lead for GEM-5 (one required, second optional)

816087 GEM-5 Top Pan/Extra Lead Kit

- Includes top pan and 9 lead ingot 25 mm (1 in.) bricks
- Adds 30 mm (~1.2 in.) to height
- Only for 61 cm (24 in.) models

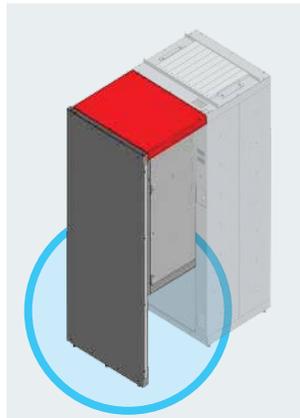
7062330 GEM-5 Bottom Extra Lead Kit

- Includes 9 lead ingot 25 mm (1 in.) bricks
- Can also be used to add a second 25 mm (1 in.) layer of lead to the top of a GEM-5 if ordered with Model 816087



816153 GEM-5 Shadow Shield Kit

- Includes curtain assembly kit with 54 lead ingot bricks and support panel to connect curtain assembly to GEM-5
- Shadow shields may be added to either side or both



7062269 GEM-5 IP Camera Kit

- Factory-installed IP camera for GEM-5 only
- Provides event driven pictures and capture video associated with monitor use



816032 Set of GEM-5 Entrance/Exit Ramps for use with standard 61 cm (24 in.) or 80 cm (31.5 in.) width GEM-5

GEM5-RP100 Set of Ramps for 100 cm (39.4 in.) or 93 cm (36.6 in.) width GEM-5



GEM-5 Options

GEM-5 Shielding Options

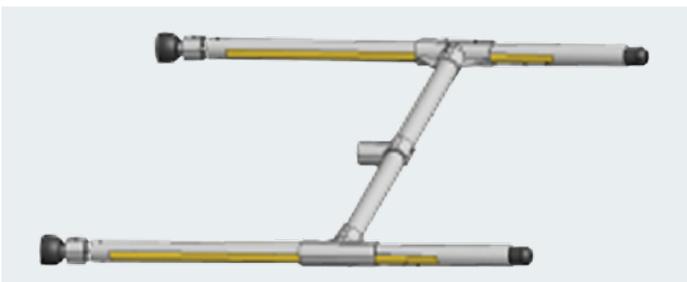
7061572 GEM-5 Simulator

- Same as GEM-5 except no detectors, preamps or lead
- Includes remote switch on coiled cable to simulate a randomly chosen contaminated detector
- Audible voice and visual prompts/alarms (including remote-controlled simulated CONTAMINATED result)



816140 GEM-5 Calibration Fixture

- Source holder only; source not included
- Fits standard 61 cm (24 in.) width GEM-5 only
- Spring-loaded expansion bars fit between the GEM-5 walls to hold source in place



Electric Barrier For GEM-5

816161 GEM-5 Electric Barrier, Entrance or Exit

- Must specify entrance or exit when ordering



Cronos Family and Options

Section 5

Cronos Gamma Object/Tool Contamination Monitors

FEATURES

- Common software platform simplifies training and support
- Built-in computer with Windows Embedded operating system and LAN/USB capability and for easy system management
- Solid state drive for improved reliability
- Six (6) plastic scintillator detectors
- 25 mm (1 in.) removable epoxy-coated lead shielding ingots must be added (one or two layers)
- User selectable one-door or two-door pass thru operation
- Weigh scale for activity/mass measurements*
- Calibration fixture (without source)
- Large full color LCD display and annunciator lights
- Digitized voice prompts and visual prompts on the LCD display
- Heavy duty casters* and fork lift channels for ease of installation

* Optional on Cronos-1



Cronos-1 Gamma Object/Tool Monitor
43 L (1.5 cu. ft) internal volume



817800 Cronos-4 Gamma Object/Tool Monitor
129 L (4.5 cu. ft.) internal volume



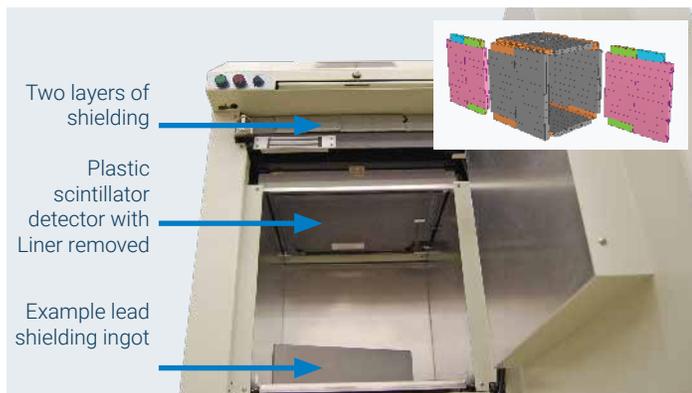
817900 Cronos-11 Gamma Object/Tool Monitor
345 L (12 cu. ft) internal volume

Cronos Options (all models)

Cronos Shielding Options

These options bring the total shielding thickness to 25 mm (1 in.) or 50 mm (2 in.). Color-coded bricks provide easy size identification. Choose one or two shielding layers. One layer is required.

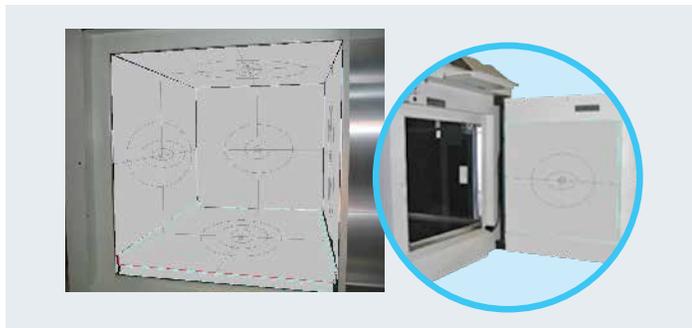
- Crn1PB** – 25 mm (1 in.) Lead Shielding for Cronos-1
- 817849** – 25 mm (1 in.) Lead Shielding for Cronos-4
- 817949** 25 mm (1 in.) Lead Shielding for Cronos-11



Cronos Removable Liner Kits

The plastic liners have preprinted center markings for calibration while the outer layers are removable for decontamination. Includes one white base layer with targets for each detector face per kit (totaling six) and three clear layers for each detector face per kit (totaling eighteen).

- 817891** Cronos-4 Removable Liner Kit
- 817991** Cronos-11 Removable Liner Kit



Cronos Simulators

CRONOS-1 SIM/CRONOS-4 SIM Cronos Simulators

- Same as standard CRONOS except no detectors, preamps or lead
- Includes remote switch on coiled cable to simulate a randomly chosen contaminated detector
- Audible voice and visual prompts/alarms (including remote-controlled simulated CONTAMINATED result) (Cronos-11 Simulator also available)

Cronos 1 Option

Crn1SCALE – Weight scale option for Cronos-1 only

- 20kg (44.1 lb) range
- 10g (0.02 lb) resolution
- Provides detection of an object left in the monitor



Additional software options and accessories for Cronos monitors are included in the **Common Accessories and Software Options** section at the end of this guide.

Cronos Options

Cronos Second LCD Kits

Color LCD screen for exit (rear) side. Includes rear start and stop buttons. Simplifies pass-through operation.

- Crn1D2** – Cronos-1 Secondary Color LCD Kit
- 817885** – Cronos-4 Secondary Color LCD Kit
- 817985** – Cronos-11 Secondary Color LCD Kit



Cronos Lifting Slings

Specially designed lifting sling device for each system.

- Crn1LFT** – Cronos-1 Lifting Sling Arrangement
- 817890** – Cronos-4 Lifting Sling Arrangement
- 817990** – Cronos-11 Lifting Sling Arrangement



Specially Designed Stands/Plinths Available for Standard and Non-Standard Heights

Installation of anchor bolts (supplied) into floor recommended for stability.

FOR NON-STANDARD HEIGHTS

- Once height is selected, it is fixed
- Desired height within available range must be specified at time of order

Crn1TAB - Cronos-1 Stand/Plinth table

- Plinth height 530 mm (21 in.)

Crn1TAB-VAR - Non-standard height Cronos-1 Stand/Plinth table

- Plinth height between 530 mm and 780 mm (21 in. and 31 in.)

817893 - Cronos-4 Stand/Plinth Table

- Plinth height is 480 mm (19 in.)

817893-VAR - Non-standard height Cronos-4 Stand/Plinth Table

- User selectable height between 480 mm and 710 mm (19 in. and 28 in.)



HEIGHT OF CRONOS TRAY TO FLOOR

Model	No Casters	With Casters	On Standard Plinth	Range with Variable Plinth
Cronos-1	230 mm (9 in.)	325 mm (12.75 in.)	760 mm (30 in.)	760 - 1010 mm (30 - 40 in.)
Cronos-4	267 mm (10.5 in.)	382 mm (15 in.)	747 mm (29.5 in.)	747 - 977 mm (29.5 - 38.5 in.)
Cronos-11	267 mm (10.5 in.)	394 mm (15.5 in.)	–	–

Additional Source Calibration Jigs

Model number is for additional jig, as one is supplied with each monitor. Sources not supplied with jig.

- Crn1JIG** – Source Calibration Jig for Cronos-1
- 817892** – Source Calibration Jig for Cronos-4
- 817992** – Source Calibration Jig for Cronos-11



Common Accessories and Software Options

Personnel ID Readers

Units include Reader and pertinent mounting hardware. Mirion recommends sending a sample of customer's ID card to factory to ensure compatibility.

7062157 Magnetic Card Reader for Argos, GEM and Cronos monitors



Sirius5-MAG Magnetic Card Reader For Sirius-5

816100 Barcode Card Reader for Argos, Cronos and GEM monitors



Sirius5-BAR Barcode Card Reader For Sirius-5

7062147 HID Compatible Proximity Card Reader for Argos, Cronos and GEM monitors



Sirius-5-PROX Proximity Card Reader For Sirius-5

7075123 Display last contaminated option



- For Sirius, Argos and/or GEM-5 monitors
- Provides the ability to display a bitmap recall of the last contamination event through activation of spare key switch position
- Field upgrade or factory installed

7075373 Language Selection Switch Option



- Factory-installed option for Argos, Sirius, GEM-5 or Cronos monitors
- Allows up to three languages to be chosen; English (default), French, German, Spanish, etc.
- Other languages may be available – contact factory for availability

81-2-350 Dual Stage Gas Regulator for P-10, P-7.5 or P-5 gas



81-2-580 Dual Stage Gas Regulator for Ar/CO2

- For use with all Argos and Sirius "AB" contamination monitors
- Input pressure gauge range: 20000 kPa (0-3000 PSI)
- Regulated output pressure: 20 kPa (0-3 PSI)

Seismic/Tie Down Options

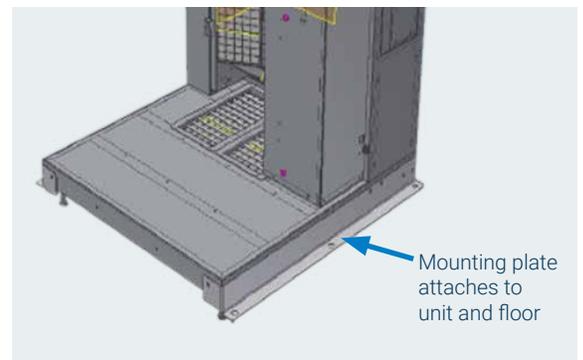
For Argos, Sirius-5, GEM-5 and Cronos

Floor mounting kits are designed specifically for each contamination monitor, and are intended to help secure the monitor base to the floor.

Each kit includes:

- Mounting hardware
- Mounting instructions

Consult Factory for Seismic analysis.



Argos and Sirius-5 Friskers

External, 100 cm² friskers are available for both gas-flow and gasless Argos and Sirius monitors to facilitate hand frisking. All friskers are supplied with necessary mounting hardware, electronics, and cabling required to connect to the monitor. Manual Frisking is helpful to confirm and locate the presence of contamination detected by the monitor.

ARGOS-FSK5 Frisker Option for Argos-3/-5AB

- 100 cm², LFP-100D detector

ARGOS5-FSKPB Beta CSP™ Smart Probe Frisker for Argos-3/-5PB

- Includes Model SB-100/A CSP PROBE (EM75862)
- CSPS™ calibration software and cable are recommended

ARGOS5-FSKPAB Alpha/Beta CSP Smart Probe Frisker for Argos-3/-5PAB

- Includes Model SAB-100 CSP PROBE (EM75864)
- Two channels; alpha and beta monitoring
- CSPS calibration software and cable are recommended

ARGOS5-FSKPBG Alpha/Beta/Gamma CSP Smart Probe Frisker for Argos-3/-5PBG

- Includes Model SABG-100 CSP PROBE (EM81933)
- Two channels alpha and beta/gamma monitoring (no discrimination between beta/gamma)
- CSPS calibration software and cable are recommended

Sirius5-FSKAB Frisker Option for Sirius-5AB

- 100 cm², LFP-100D HP detector

Sirius5-FSKPB Beta CSP Smart Probe Frisker for Sirius-5PB

- Includes Model SB-100/A CSP PROBE (EM75862)
- CSPS calibration software and cable are recommended

Sirius5-FSKPAB Alpha/Beta CSP Smart Probe Frisker for Sirius-5PAB

- Includes Model SAB-100 CSP PROBE (EM75864)
- Two channels; alpha and beta monitoring
- CSPS calibration software and cable are recommended

Sirius5-FSKPBG Alpha/Beta/Gamma CSP Smart Probe Frisker for Sirius-5PBG

- Includes Model SABG-100 CSP PROBE (EM81933)
- Two channels; alpha and beta/gamma monitoring (no discrimination between beta/gamma)
- CSPS calibration software and cable are recommended



CSPS Ordering Information:

CSP probes are ready to go out of the box and are calibrated using the normal contamination monitor software. Purchase of CSPS calibration software is recommended, however, to facilitate occasional maintenance activities such as resetting the optimum high voltage. Please select (see list below) the appropriate software along with the CSP Smart Probe PC-USB cable.

CSPS Calibration Software (select one)

EM80643 CSPS-E Instruments & Probes Calibration SW, English-Si Units

EM80642 CSPS-R Instruments & Probe Calibration SW, English-USA Units

EM78468 CSPS-F Instruments & Probes Calibration SW, French-Si Units

Canberra Smart Probe PC-USB Cable

EM78466 Canberra Smart Probe-PC USB Cable

Remote Control and Data Access Software

CRemote Remote Control Data Access LAN SW

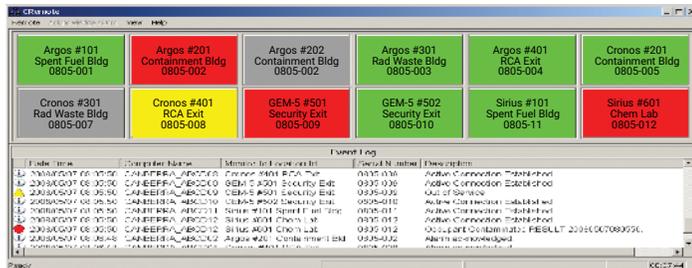
CRemote can be used with any Argos/GEM-5/Sirius/Cronos Contamination Monitors. The software provides status of up to 90 systems on the network as well as remote diagnostic and reporting tools without the need for WebRemote.

SOFT-CREMOTE Remote Control Data Access LAN SW

- Primary seat license

7062263 CRemote, Remote Control Data Access LAN SW

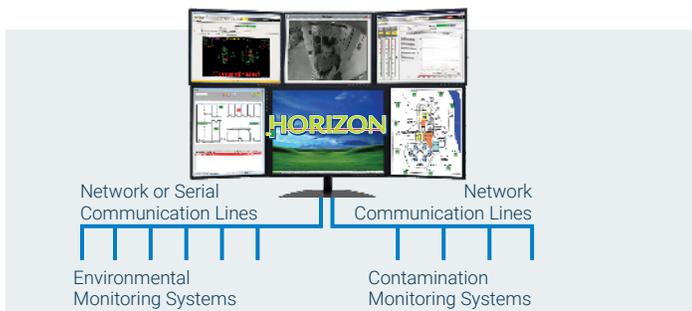
- Additional seat license



Horizon® Supervisory Software System

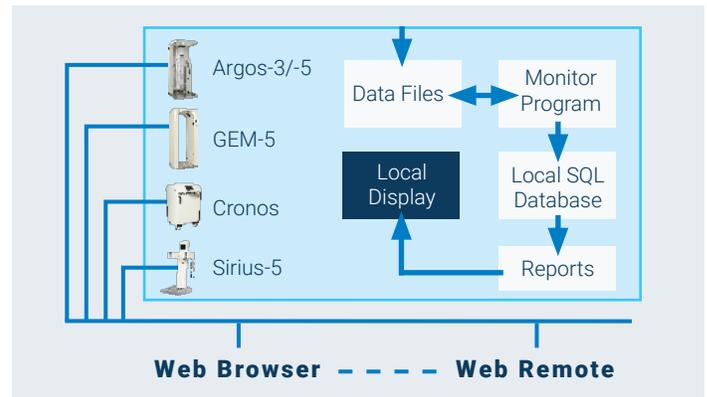
FEATURES

- Provides network access to the Mirion Contamination Monitor family as well as Environmental Monitoring systems
- Records events from all connected equipment in a central location at the site
- Web-based client application provides access to data and control functions from multiple workstations
- Allows access to individual monitor set-up screens via Web Remote
- Support for Contamination Monitor family offered in Horizon 2.0 or greater
- Consult Horizon literature and Price List for ordering information



Database Options

SOFT-LDB Local Database Support for Argos/GEM-5/ Sirius/Cronos Contamination Monitors



SOFT-LDB provides a data repository for the contamination monitor program and aids in the effectiveness of the Health Physics program by providing useful information at a glance. It includes an SQL Database with advanced reports which can be viewed locally on the monitor display or remotely using a web browser or WebRemote.

SOFT-LDB Local Database Support; Factory Installed

SOFT-LDB-KIT Local Database Support; Field Installed

- Prerequisite: Windows 7 Embedded PC

SOFT-LDB-KITPC-A Local Database Support; Field Installed

- For existing Argos-3/-5, Sirius-5 or Cronos monitors
- Includes factory configured Windows 7 Embedded PC

SOFT-LDB-KITPC-G Local Database Support; Field Installed

- For existing GEM-5 Serial and GEM-5M monitors
- Includes factory configured Windows 7 Embedded PC

Contamination Monitors Common Parts

Without a doubt, Mirion's contamination monitors are appealing thanks to their modern, ergonomic design that is based on a "no compromises" approach toward contamination detection. But our family of monitors is attractive for other reasons as well. The common platforms and detection technologies that bring you superior, reliable performance from current Argos, Sirius, GEM-5 and Cronos monitors also contribute to significant commonalities in parts and options across the family.

COMPARISON OVERVIEW CHART

Monitor Items	Item Number SCN	Item Description
Software	SOFT-MON-SERIAL	Latest Version 9.0x of MONITOR.EXE
CRemote Compatible	SOFT-CREMOTE	CRemote
Local Database Support Compatible	SOFT-LDB	Local Database (SQL) Support
Monitoring Software	SOFT-WEBREMOTE	Web Remote Software
Monitoring Software	SOFT-DASHBOARD	Dashboard Software
Touch Screen	7079104	10.4" Touch Screen
Power Supply (embedded)	7079475	Power Supply (embedded)
10.4" LCD Display	7070196	10.4" LCD Display
Sensor Board	816540	Sensor Board
Embedded Computer	7079641	Embedded Computer for Argos/Cronos/Sirius
Auxiliary Sensor Board	816696	Auxiliary Sensor Board
Head Motor Control Board	816825	Head Motor Control Board
Gamma Scintillator Assembly Zeus-3G/5G option	816550	Gamma scintillation detector assembly (includes plastic scint., PMT assembly, gamma detector board, mounting brackets)
Gamma PMT Assembly Zeus-3G/5G option	816061	Gamma PMT assembly (includes PMT, hv div board, housing, cables & connectors to hook up to gamma det. Board)
Gamma Board Assembly Zeus-3G/5G option	816112	Gamma Board Assembly
TPS detector/preamp	818050 TPS-B-579	TPS Plastic Scintillation Detector/Preamp combo
	TPS-AB-579	
	TPS-BG-579	
Window replacement kit	7071450	TPS-B-579 (SCN 818050), TPS-BG-579 or TPS-AB-579 Detector Window replacement kit (including 10x SCN 7071319 "Snap-On" Window Assembly and 1x SCN 7067599 roll of black tape)
LFP-579	780501	Gas-Flow Alpha/Beta Detector
Window replacement kit	7068273	LFP-579 Detector Window replacement kit (including 10x 780533; LFP-579 gasket-window sub-assemblies + 1x of 160202; Tube RTV5140/18120 LOCTITE)
LFP-579 Preamp	816520	Alpha/Beta Preamp Assembly with cover for use with LFP-579
LFP-100D Gas-Flow Frisker option	780401	Gas-Flow Alpha/Beta Frisker Detector
LFP-100D Preamp Gas-Flow Frisker option	816761	Alpha/Beta Preamp Assembly for use with LFP-100D
LFP-100D Control Board Gas-Flow Frisker option	816766	Alpha/Beta Control Board Assembly for use with LFP-100D
SB-100/A	EM75862	BETA Frisker probe
SAB-100	EM75864	ALPHA BETA Frisker probe
SABG-100	EM81933	ALPHA BETA GAMMA Frisker probe
CSP Frisker Control Board	7072423	CSP Frisker Control Board for use with CSP Probes connected to Argos/Sirius
CSP Probe Cable	EM77336	Generic CSP Cable for use with CSP Probes connected to Argos/Sirius



Protect What's Next™



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