



Annual Users' Conference

**ADVANCING RADIATION SAFETY.
EMPOWERING PROGRESS.**

M Resort, Henderson, NV | June 15 – June 18



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TECHNOLOGIES

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Contamination Monitors:

Applications, Key Technologies and Innovations

Ralph Bose

Product Manager – Contamination & Clearance Monitors

Mirion Connect | Annual Users' Conference 2026

Henderson, NV

**Scan QR code to log your
attendance for today's
(Thursday, June 18th)
breakout session**



Whole Body Contamination Monitors



Hand Foot Monitors



Gamma Portal Monitors



Vehicle Monitors



Tool and Object Monitors



Large Item Clearance Monitors



Conveyor Monitors



Supervision Software



- *Detector Technology Innovation – LIGHTLink®*
- *Product Innovation – Argos™ Evo
(detectors/mechanics/electronics/software)*
- *Product Innovation – Sirius™ Core (mechanics)*



- *Detector Technology Innovation – LIGHTLink®*
- *Product Innovation – Argos™ **Evo**
(detectors/mechanics/electronics/software)*
- *Product Innovation – Sirius™ **Core** (mechanics)*



Gas Flow and Thin Plastic Scintillation Detectors Recap



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LFP & TPS Detector Technology

Low Flow Proportional (LFP) Detectors

- α/β monitoring with discrimination, best efficiency and Minimum Detectable Activity for the **shortest count times overall**
- Exceptional detection capability resulting from patented triple zone detector design
- A variety of gas mixtures can be used (P-5, P-7.5, P-10*, Ar/CO₂ etc.)
- Uniform response across detector face

Thin Plastic Scintillation (TPS) Detectors

- Gas-free - no cost or worry associated with handling gas
- α/β , β/γ or β monitoring with discrimination
- Reduced count time even in high γ background environment compared to other gasless detectors.
- In addition: TPS-BG detectors feature unique β/γ anti-coincidence processing → outstanding β measurement performance in elevated gamma backgrounds – see [Application Note: "The Advantages of the TPS-BG-579 Detector Anti-Coincidence Processing"](#)

Gas-Flow
Triple Zone detector

Triple
Zone



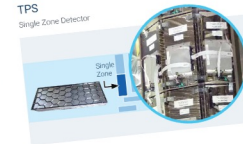
The Advantages of the TPS-BG-579 Detector Anti-Coincidence Processing

Application Note

Introduction

TPS-BG-579 plastic scintillation detectors are unique gas-free detectors with beta and gamma measurement capability. There are separate beta and gamma measurement channels for each detector. Additionally, the beta channels have anticoincidence properties with the gamma channels, which significantly improves the sensitivity of the beta channel to an elevated background. This feature allows you to reduce your count times in elevated gamma backgrounds, allowing you to process personnel quickly.

TPS
Single Zone Detector



What is Anti-Coincidence

One of the main features of the TPS-BG-579 is the Anti-Coincidence Processing. This unique feature provides outstanding β measurement performance in elevated γ backgrounds. If the γ channel is triggered at the same time as the β channel, the β count is rejected. This reduces the count time and increases the throughput of personnel monitoring. This is always enabled within the detectors through electronics and firmware.

The chart attached shows that the TPS-BG-579 has improved MDA with anti-coincidence compared to without anti-coincidence and the TPS-BG-579.

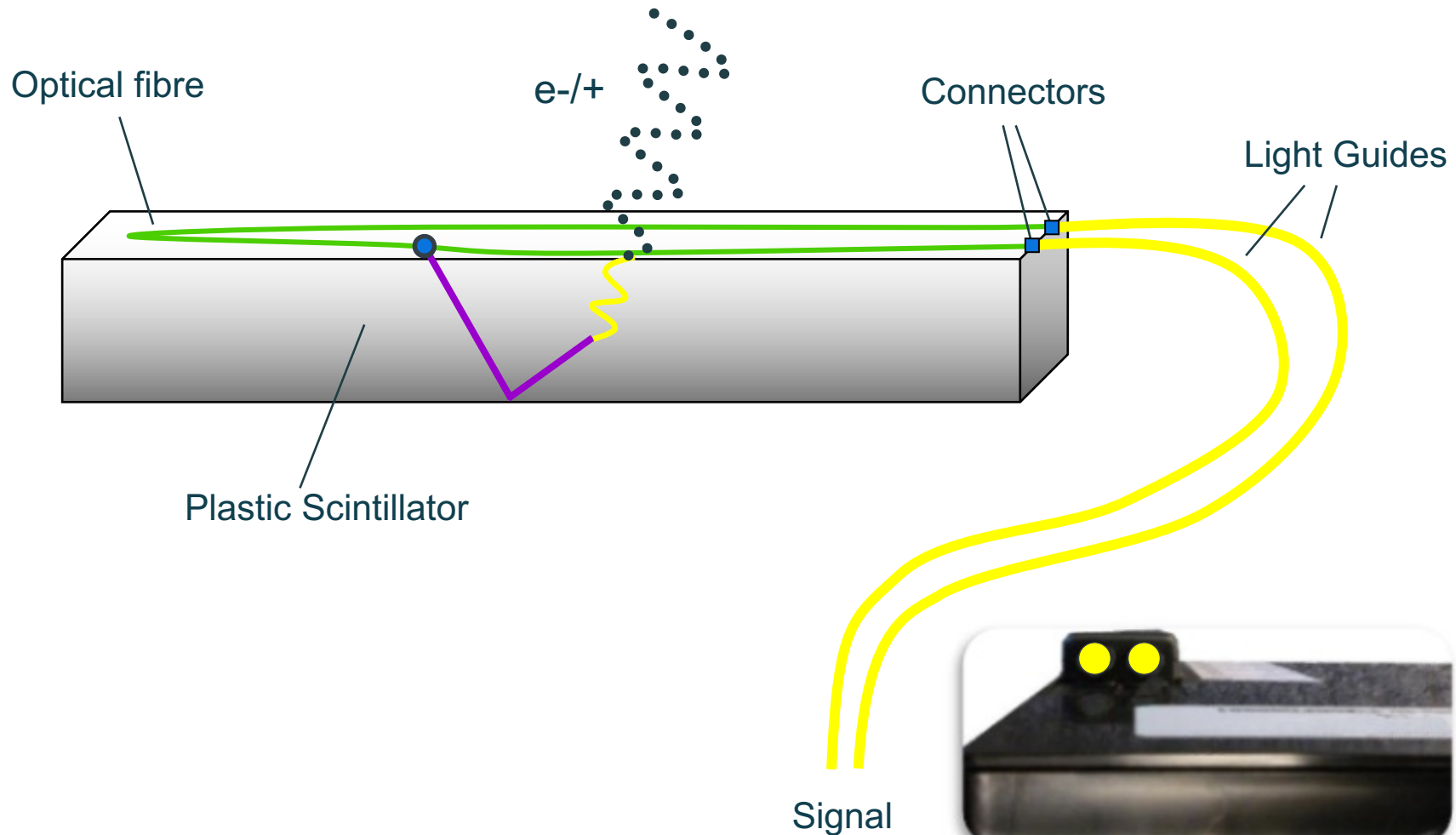
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Fibre Detector Technology Recap



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Fibre Detector Technology



Fibre Detector Technology

Advantages of Mirion Fibre Detector Technology

- *Many detectors can be connected to a single multi-channel photomultiplier*
- *Various detector types for alpha, beta, gamma and/or neutron radiation available.*
- *Excellent measurement homogeneity over the entire detector area*
- *Very low sensitivity to background radiation*
- *Minimized dead zones, only 5 mm dead zone per detector edge*
- *Especially durable and robust*
- *No electronical pieces close to detector*
- *Quick and easy exchange of detector*
- *Various sizes and dimensions possible*



LightLink® Technology Recap



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POWERED BY ***LIGHTLink***[®]



- *Next-Generation Detector Technology*
- *Reliable & Robust*
- *Hyper Accurate*
- *Easily Integrated*

Overview

COMBINING EXPERTISE & NEW TECHNOLOGY

- *Revolutionary Advancement in Radiation Detection*
- *Enhancing Radiation Detection across Diverse Applications*
- *Incorporating Improved Light Collection, Robust Silicon Photomultipliers & Latest in Readout Electronics*

Enhancing Radiation Detection

- *More Compact Detector assembly*
- *Robust Silicon Photomultipliers*
- *Removal of High Voltage Components*
- *Elimination of Light Decay*
- *Superior Light Collection Efficiency*



Enhanced Ergonomics



Greater Robustness & Longevity



Extended In-Use Time



Reduced Down-Time



Hyper-Accurate & Sensitive



Enhanced Ergonomics

- *Reduced Weight/Volume of Hand-Held Products*
- *Additional capabilities for Handling*
- *Simplified Integration into 3rd Party Systems*
- *Easier Shielding*
- *Reduced Dead Zones*



Extended In-Use Time

- *Improved Signal to Background Ratio*
 - ✓ *Reduced Measurement Time*
- *Faster Light Decay Post-Servicing increasing Up-Time*
- *Improved concept of operations for handheld applications*



Robustness & Longevity

- *Less Susceptible to Breakage*
- *Reduced Downtime due to Repair*
- *State of the Art Electronics*
- *No Dark Room Requirement for Servicing*
- *Wide range of environmental use*



Hyper Accurate & Sensitive

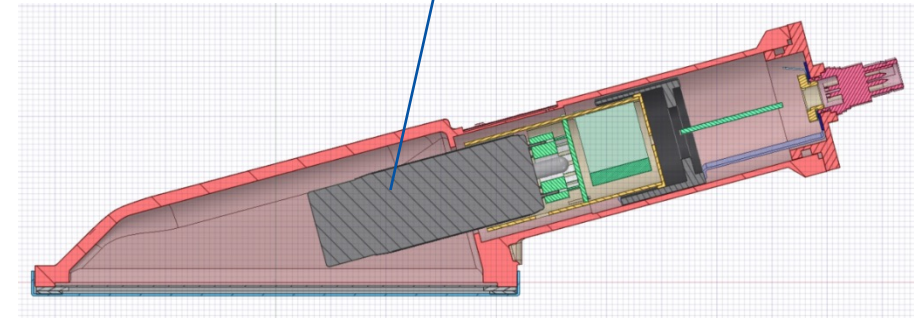
- *High Tolerance to Microphonics / Vibrations*
- *Homogeneous Response Across Detector Surface*
- *No Sensitivity to Magnetic Fields*
- *Excellent Minimum Detectable Activity*

Many Contamination Probes use PMTs*

- *Problem with PMT**

- ✗ *Breaks when dropped*
- ✗ *Requires earth magnetic protection (adding weight)*
- ✗ *Light collection*
 - *Big enclosure*
 - *Mediocre surface detection homogeneity*
- ✗ *Waiting time after entrance window replacement*
 - *Light decay to avoid burning the PMT – up to few hours*
- ✗ *Microphonics*
- ✗ *Drives handle use (no real choice!)*
- ✗ *Difficult to integrate in systems*
 - *Mechanical arrangement*
 - *Shielding*

PMT → Fragile Glass Tube

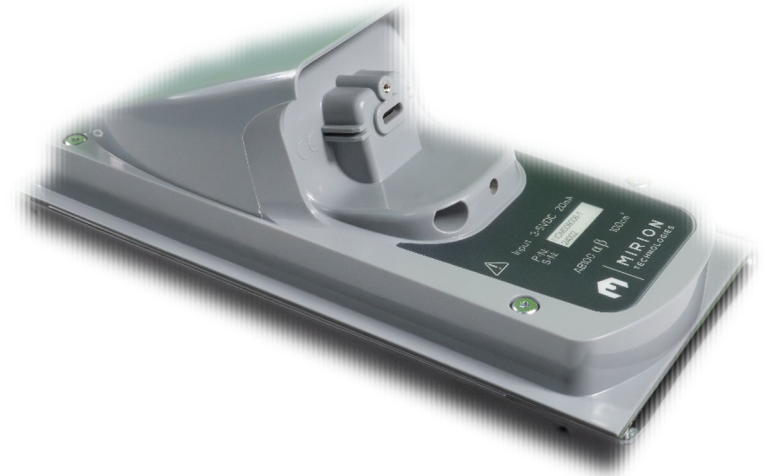


(*) *PhotoMultiplier Tubes*

MIRION Solution: CSPevo

- Integration of **LIGHTLink™** in replacement to PMT*
 - ✓ More durable in the field (Drop Proof)
 - ✓ No additional protection material needed
 - ✓ More efficient light collection
 - flat enclosure
 - Improved surface detection homogeneity
 - ✓ Entrance window replacement does not require more than 10 min before going back to operation
 - Quicker available in the field
 - ✓ No microphonics
 - ✓ Handle is designed with no constraint other than ergonomics
 - ✓ Detection module is easy to integrate into system
 - Mosaic arrangement with minimal dead area
 - Optimized shielding volume

POWERED BY
LIGHTLink®





➤ **A 100 cm² detector**

- Fragile PMT is replaced by LIGHTLink®
 - Detection area homogeneity is improved up to 85%
 - Minimized dead area with protection grid
 - Handle is designed to serve as a handle
 - ✓ No more a consequence of PMT placement
- Detector alone can be used into third party system
 - USB-C connection
 - ✓ Data transfer to host system
 - ✓ Calibration with CSPS

➤ **A set of handles to adapt to meter usage and leverage installed base**

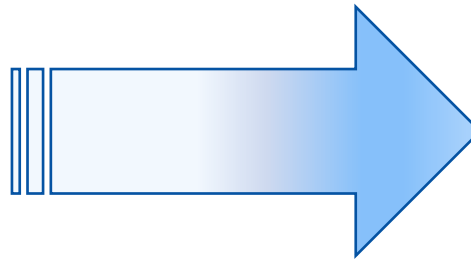
- CSPevo® is 100% compatible with CSP meter already in the field
 - No need to upgrade meter firmware
- RDS-32 based one hand configuration
 - No cable needed

FROM SAB-100 to AB-100 CSPevo



- Economical solution

- SAB-100 required additional cable
- Handle now includes the cable



One Hand Operational System

- **CSPevo®** with RDS-32
 - *No cable needed*

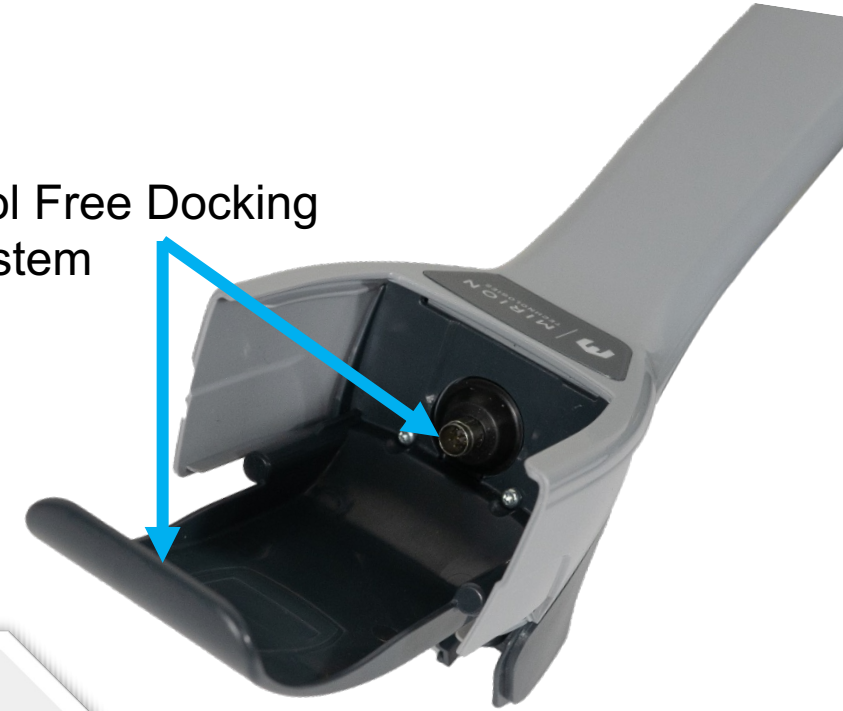


One Hand Operational System

- **CSPevo®** for RDS-32
 - One screw to lock handle on the detector
 - RDS-32 simply slides into the handle



Tool Free Docking
System



One Hand

One Probe

One System



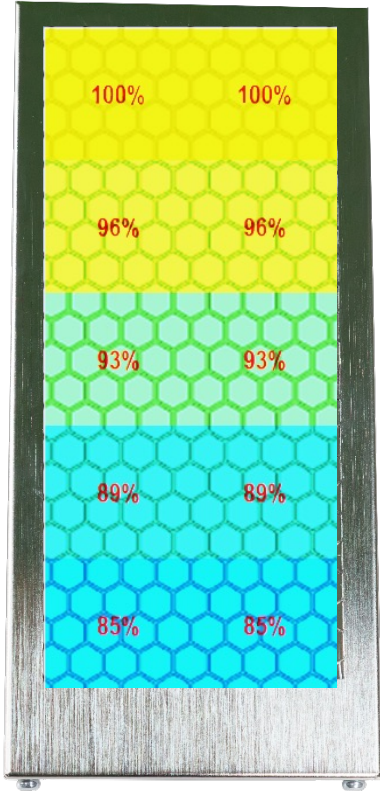
USB Connectivity

- USB-C connector
 - COTS* cable
 - Handle to Detector connection
 - Detector to PC
 - Calibration and setup with CSPA software
 - Integration into third party systems



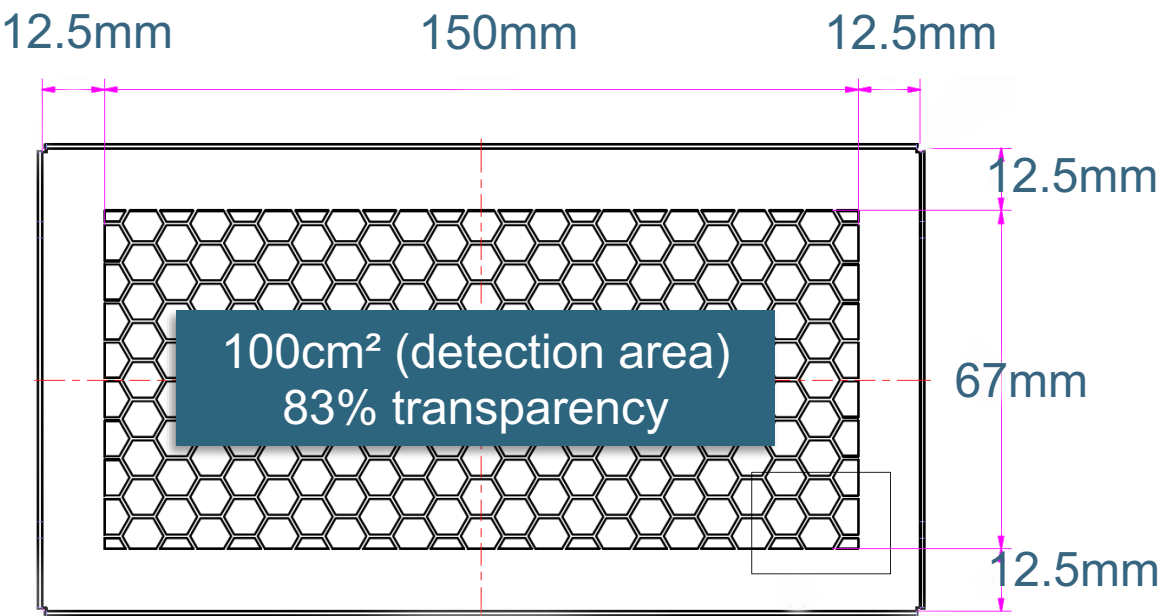
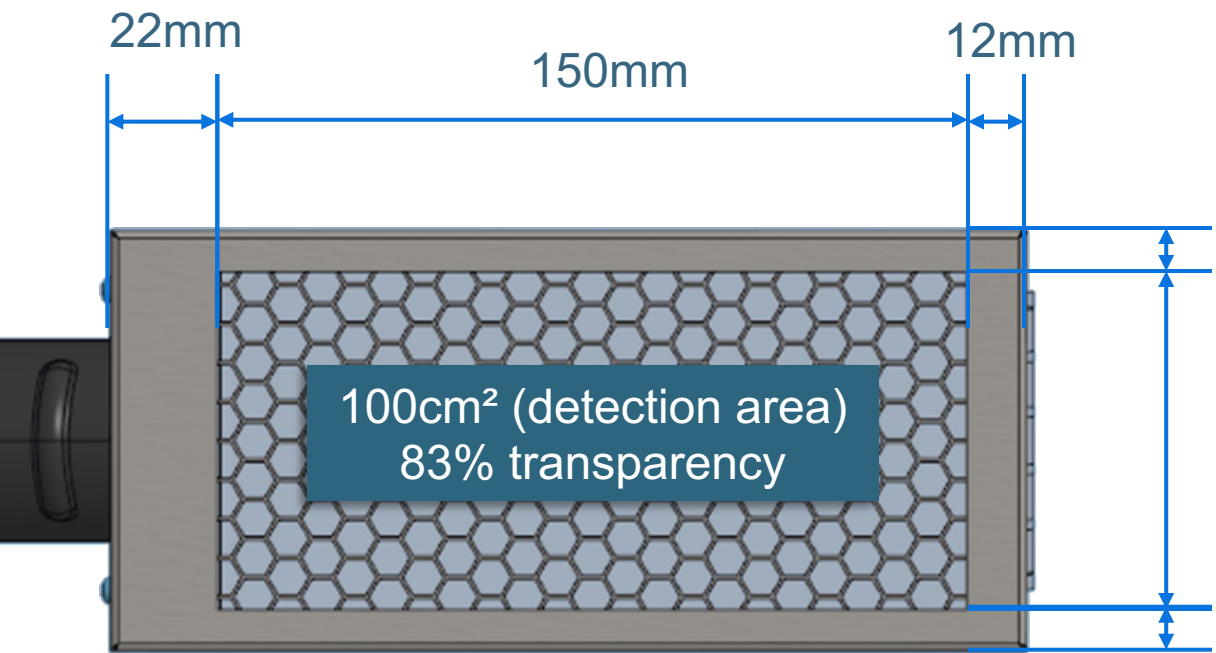
(*) Commercial Off The Shelf

Detection Area Homogeneity



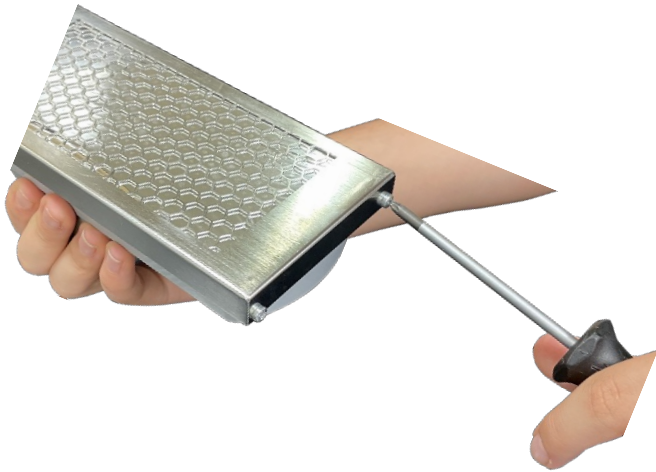
- Improved Beta detection homogeneity
 - Better than 85%
 - Referenced to IEC60325 method
 - ✓ Minimum requirement > 50%
 - Makes more consistent measurements in the field
 - Frisking or smear measurement
 - ✓ Less than 15% error regardless of position

Protection Grid



Protection Grid and Mylar®

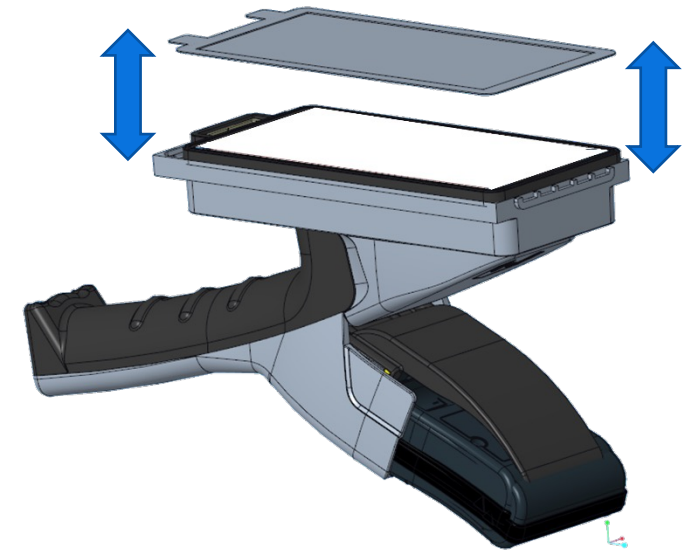
1 : Remove both screws



2 : Remove the grid



3 : Remove the Mylar® window



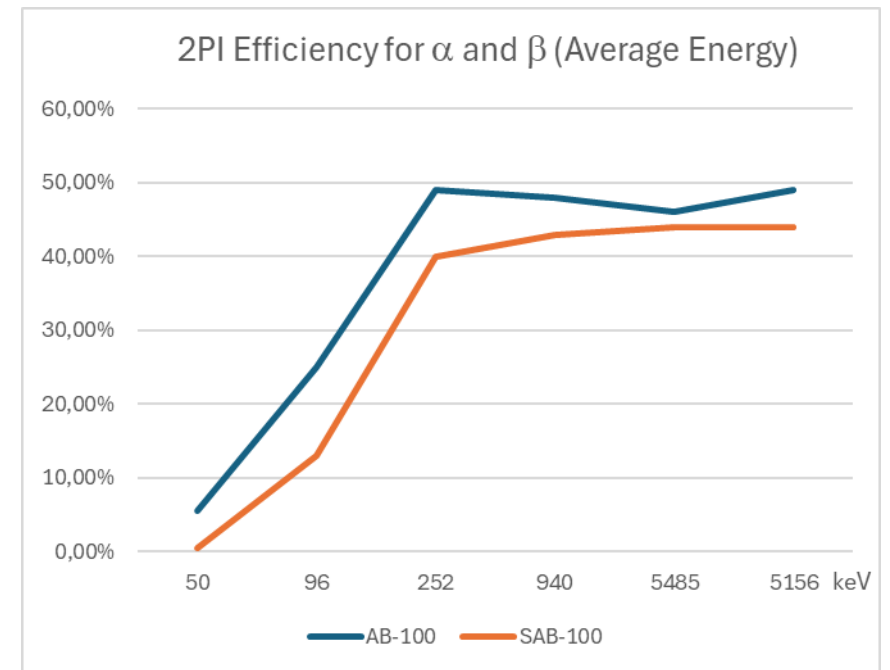
- ✓ Wait 10 minutes only after Mylar® replacement before going back to operation.
- ✗ Hours were required with PMT

- Mylar® on frame
 - No tool needed

AB-100 vs SAB-100



	AB-100 + RDS-I HANDLE	SAB-100
Weight	560 g (20 oz)	710 g (25 oz)
Beta Detection Homogeneity	> 85%	>50%
Alpha Detection Homogeneity	> 85%	>70%
Alpha Max Count-rate	10 KCPS - 600 KCPM	10 KCPS -600 KCPM
Beta Max Count-rate	100 KCPS - 6,000 KPM	
C-14 Efficiency (50 keV)	5,50%	0,50%
Co-60 efficiency (96 keV)	25%	13%
Cl-36 Efficiency (252 keV)	49%	40%
Sr/Y-90 (940 keV)	48%	43%
Am-241	46%	44%
Pu-239	49%	44%
Beta to Alpha Crosstalk	<0.1%	
Alpha to Beta Crosstalk	<5%	
Battery Life with RDS-32	180 hours	65 hours
Ingress Protection	IP53	IP20
Operational Voltage	+ 5V and +3.3V	+5V
Operating Temperature	-20°C to +50°C (-4 °F to 122 °F)	



- *Detector Technology Innovation – LIGHTLink®*
- *Product Innovation – Argos™ **Evo**
(detectors/mechanics/electronics/software)*
- *Product Innovation – Sirius™ **Core** (mechanics)*



Example:

Argos™ Evo Whole Body Contamination Monitor WBM



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Application

Whole body surface contamination monitoring at exit from radiological controlled areas (RCAs) and boundary zones in nuclear facilities (nuclear power plants, laboratories, radiopharma production, etc.) by screening the personnel for alpha, beta and/or gamma contamination.

Key Features

- Advanced Detection: Available with **21× β LIGHTLink® detectors (called “LL-B-579-S” detectors)**, **21× α/β LIGHTLink detectors (called “LL-AB-579-S” detectors)**, or 21× β/γ thin plastic scintillation detectors (called “TPS-BG-579” detectors).
- Radiological performance with LL-B-579-S LIGHTLink detectors overall superior to TwoStep-Exit™ II (TSE II).
→ **Faster measurement time and higher throughput.**
- Radiological performance with LL-B-579-S LIGHTLink detectors or LL-AB-579-S comparable to Argos™-3/-5 with TPS detectors.
Exceeds the requirements of IEC61098:2023 “Radiation protection instrumentation - Installed personnel surface contamination monitors”.



“Fully Loaded” with several Options



“Standard” with no Options

Application

Whole body surface contamination monitoring at exit from radiological controlled areas (RCAs) and boundary zones in nuclear facilities (nuclear power plants, laboratories, radiopharma production, etc.) by screening the personnel for alpha, beta and/or gamma contamination.

Key Features

- **Comprehensive software functionalities** based on improved Monitor Program software platform
- **Compact footprint:** ~89 cm x 89 cm (~35 in x 35 in)
- Common spare parts with many other Mirion Contamination Monitors.
- Large variety of options: gamma body detectors, moveable head detectors (automatic & manual), doors, barriers, small items box, dosimetry/card/barcode readers, etc. are available.



“Fully Loaded” with several Options



“Standard” with no Options

Standard LIGHTLink® detectors

- Revolutionary radiation detection technology
- Incorporating improved light collection, robust silicon photomultipliers & latest in readout electronics (including HV components) and connection with RJ45 patch cables rather than proprietary ribbon cables (computer to detectors is via USB to RS485 board with USB and RJ45 connectors)
- Superior radiological measurement performance for β radiation compared to TSE II resulting in shorter overall count times
- Particularly robust and without any high-voltage components
- Gas-free - no cost or worry associated with handling gas



“Fully Loaded” with several Options



“Standard” with no Options



Argos **Evo** with beta LIGHTLink® detectors of type LL-B-579-S:

Significantly better radiological performance compared to TSE II¹⁾.

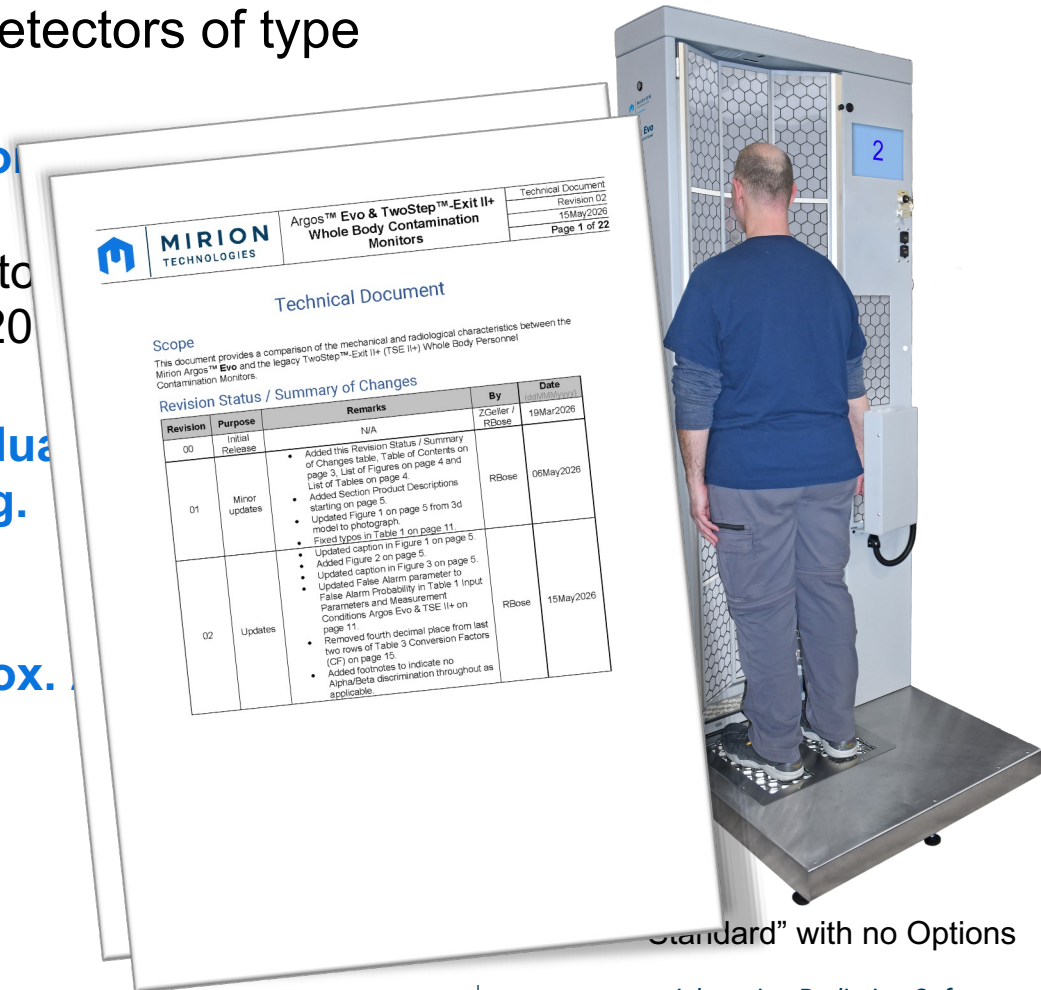
E.g. Co-60 2π efficiency for body detectors
Argos Evo: 31%, TSE II: approx. 10%-20%

Low background count-rate.

Argos **Evo** features by default **2 individual foot detectors with 2 step processing.**

→ mitigates that foot detectors are the limitation for overall measurement time.

→ reduces measurement time by **approx.**



“Fully Loaded” with several Options

“Standard” with no Options

Argos™ Evo – LL-B-579-S Performance



Argos™ Evo
POWERED BY LIGHTLink®



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Typical Efficiency	LL-B-579-S detectors, on contact, with 0.25 mm thick fine mesh (body, head, legs, arm)	LL-B-579-S detectors, on contact, with 0.5 mm thick fine mesh (hand)	LL-B-579-S detectors, on contact, with foot grill, 0.25 mm thick fine mesh (feet)
Sr-90/Y-90 (β)	42 %	38 %	29 %
Cl-36 (β)	42 %	38 %	29 %
Cs-137 (β)	39 %	36 %	28 %
Co-60 (β)	31 %	30 %	23 %
Tc-99 (β)	21 %	19 %	15 %
C-14 (β)	8 %	8 %	5 %
U-238 (α)*	38 %	37 %	22 %
Am-241 (α)*	27 %	27 %	14 %
Pu-239 (α)*	24 %	23 %	10 %
U-235 (α)*	17 %	17 %	3 %

* Indicates no Alpha/Beta discrimination.

Typical 2π efficiency (in reference to radionuclide source emission rates), rounded to the nearest whole number (rounded up or down based on the decimal value), measured with a 10 cm × 10 cm planar source placed in the center of the detector and in contact with the detector mesh (and foot grill where applicable). Please contact Mirion for comparison with equipment specifying 4π efficiency.

Note, due to LIGHTLink® detectors generally having lower backgrounds, MDAs are typically comparable to TPS detectors – and in many cases even better – resulting in lower count times depending on the ambient background radiation...



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Argos™ Evo – LL-AB-579-S Performance



Argos™ Evo
POWERED BY LIGHTLink®



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Typical Efficiency	LL-AB-579-S detectors, on contact, with 0.25 mm thick fine mesh (body, head, legs, arm)	L-AB-579-S detectors, on contact, with 0.5 mm thick fine mesh (hands)	LL-AB-579-S detectors, on contact, with foot grill, 0.25 mm thick fine mesh (feet)
Sr-90/Y-90 (B)	36%	31%	29%
Cl-36 (B)	37%	30%	25%
Cs-137 (B)	30%	27%	22%
Co-60 (B)	23%	19%	16%
Tc-99 (B)	14%	12%	12%
C-14 (B)	3%	3%	2%
Am-241 (α)	30%	26%	17%
Pu-239 (α)	27%	24%	15%
U-235 (α)	23%	21%	10%
U-238 (α)	15%	13%	4%

Typical 2π efficiency (in reference to radionuclide source emission rates), rounded to the nearest whole number (rounded up or down based on the decimal value), measured with a 10 cm × 10 cm planar source placed in the center of the detector and in contact with the detector mesh (and foot grill where applicable). Please contact Mirion for comparison with equipment specifying 4π efficiency.

Note, due to LIGHTLink® detectors generally having lower backgrounds, MDAs are typically comparable to TPS detectors – and in many cases even better – resulting in lower count times depending on the ambient background radiation...



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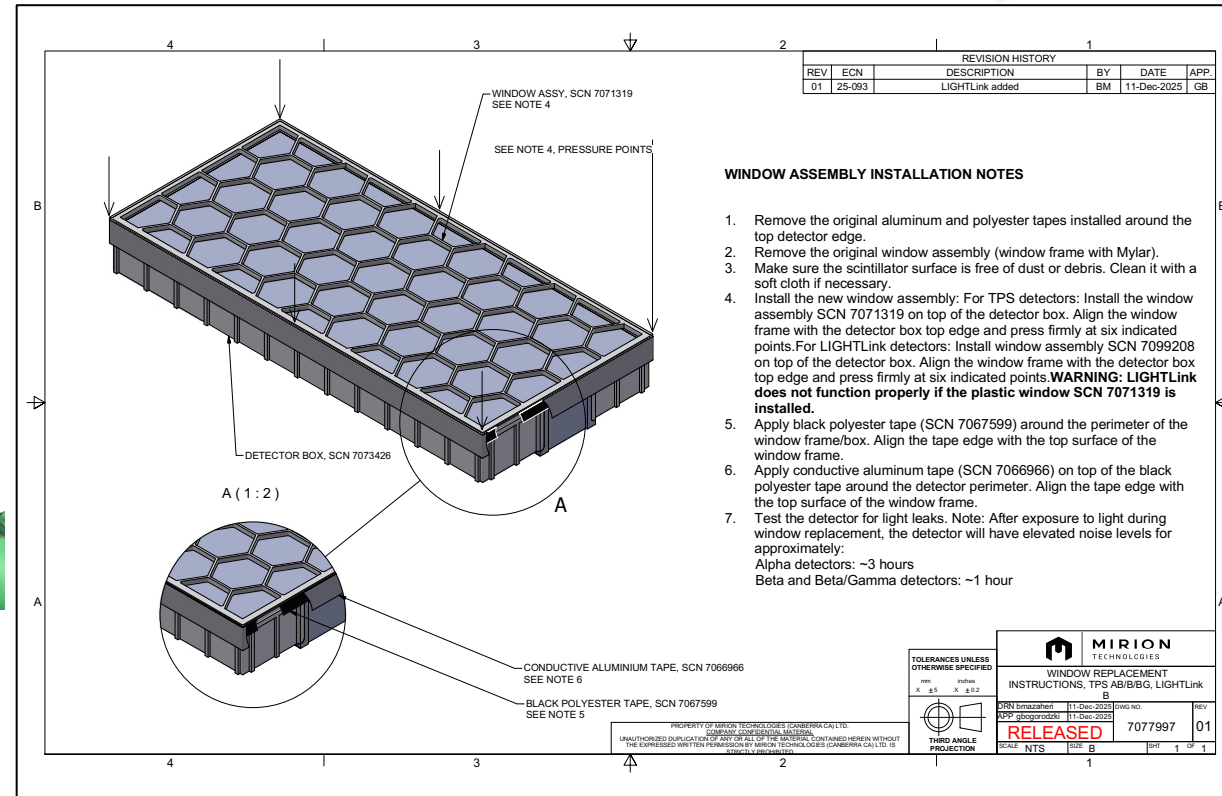
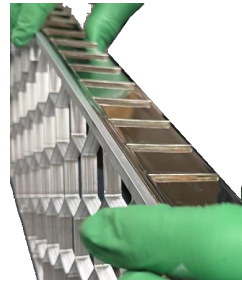
Argos™ Evo – LIGHTLink® Window Replacement



Argos™ Evo
POWERED BY LIGHTLink®



“Fully Loaded” with several Options



WINDOW REPLACEMENT KIT, TPS/LL DET. (SCN 7100877)

- Provides aluminum (silver-coloured) window assemblies
 - The aluminum window assemblies provide superior grounding and sealing
- Use Window Replacement Kit, TPS B/AB/BG Detectors instead if plastic (black-coloured) window assemblies are required.
- Includes:
 - 10× “Snap-On” Window Assembly (SCN 7099208)
 - 1× Roll of black polyester tape (SCN 7067599)

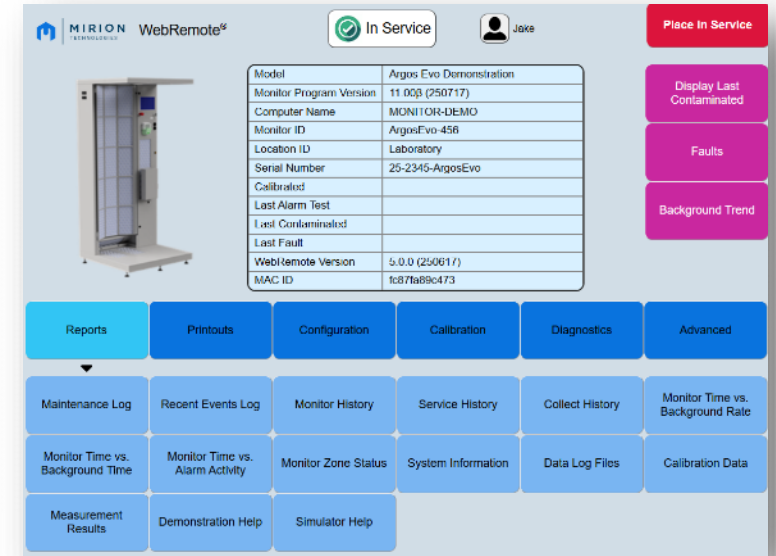


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Comprehensive Software Functionalities

Argos **Evo** is based on comprehensive and well-proven **Monitor Program** software platform (as used in ArgosTM-3/-5, SiriusTM-5, Cronos[®]-1/4/11 and GEMTM-5), with major enhancements:

- NEW** • **New ergonomic touch-screen interface** with a modern look and feel similar to original WebRemote[®]. The traditional Monitor Program interface, as known from other Argos, Sirius, Cronos and GEM-5 contamination monitors, remains available for continuity.
- Updated **WebRemote[®]** and **Dashboard** are included by default for remote control and monitoring
- Advanced measurement algorithms (including Bayesian statistics, ISO 11929:2019 compliant as a default; t (traditional algorithms are still available for continuity) deliver rapid measurement results for efficient personnel screening
- NEW** • Best-in-class **cyber security resilience**, supported by corresponding documentation



The screenshot shows the 'User Access Setting' table in the WebRemote interface. The table has columns for Role, Tab, Page, and Access. The Role is 'User1'. The Tabs are Reports, Printouts, Configuration, Calibration, Diagnostics, Advanced, Display Last Contaminated, Faults, and Background Trend. The Pages are Maintenance Log, Recent Events Log, Monitor History, Service History, Collect History, Monitor Time vs. Background Rate, Monitor Time vs. Background Time, Monitor Time vs. Alarm Activity, Monitor Zone Status, System Information, and Data Log Files. The Access column has three options: Enable (checked), Disable, and Hidden.

Role	Tab	Page	Access
User1	Reports	Maintenance Log	Enable ☒ Disable ☐ Hidden ☐
	Printouts	Recent Events Log	Enable ☒ Disable ☐ Hidden ☐
	Configuration	Monitor History	Enable ☒ Disable ☐ Hidden ☐
	Calibration	Service History	Enable ☒ Disable ☐ Hidden ☐
	Diagnostics	Collect History	Enable ☒ Disable ☐ Hidden ☐
	Advanced	Monitor Time vs. Background Rate	Enable ☒ Disable ☐ Hidden ☐
	Display Last Contaminated	Monitor Time vs. Background Time	Enable ☒ Disable ☐ Hidden ☐
	Faults	Monitor Time vs. Alarm Activity	Enable ☒ Disable ☐ Hidden ☐
	Background Trend	Monitor Zone Status	Enable ☒ Disable ☐ Hidden ☐
		System Information	Enable ☒ Disable ☐ Hidden ☐
		Data Log Files	Enable ☒ Disable ☐ Hidden ☐

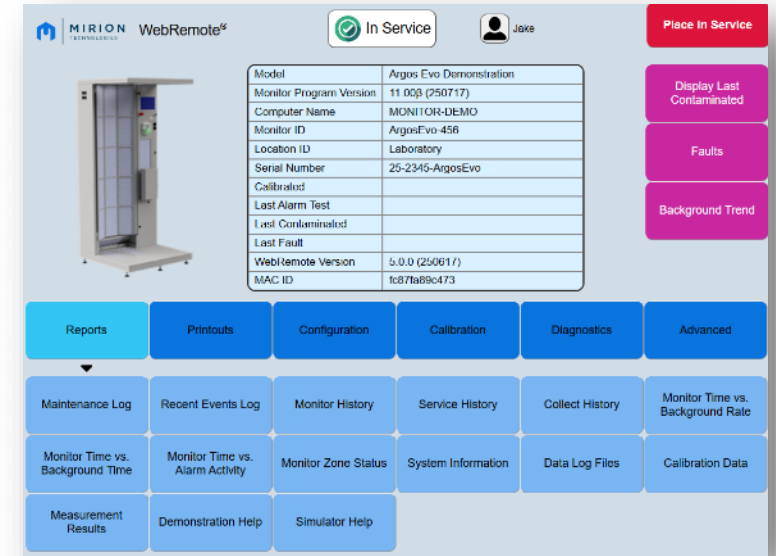
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Comprehensive Software Functionalities

Argos **Evo** is based on comprehensive and well-proven **Monitor Program** software platform (as used in ArgosTM-3/-5, SiriusTM-5, Cronos[®]-1/4/11 and GEMTM-5), with major enhancements:

- NEW** • Comprehensive **user rights management** for users with difference security access levels and configurable software access rights per user group.
- Self-contained databases with export functionalities.
- NEW** • Background processing: Advanced automatic background suppression, including management of self-shielding factors and suppression of spurious outliers.
- Comprehensive reports: Measurement Results, Calibration Data, Maintenance log, Recent Events Log, Monitor History, Service History, System Information, Monitor Time vs. Background Rate, Monitor Time vs. Background Time, Monitor Time vs. Alarm Activity.



The screenshot shows the 'User Access Setting' table, which manages permissions for different roles. The table has columns for Role, Tab, Page, and Access (with sub-columns for Enable, Disable, and Hidden). The 'User1' role is selected, and its permissions are listed across various tabs and pages.

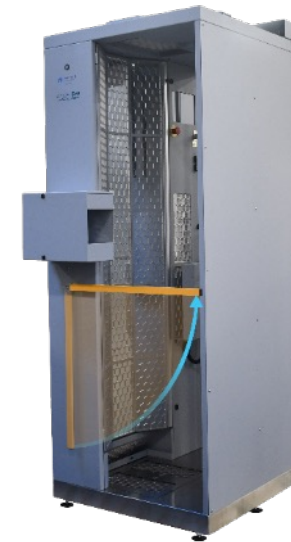
User Access Setting			
Role	Tab	Page	Access
User1	Reports	Maintenance Log	Enable ☒ Disable ☐ Hidden ☐
	Printouts	Recent Events Log	Enable ☒ Disable ☐ Hidden ☐
	Configuration	Monitor History	Enable ☒ Disable ☐ Hidden ☐
	Calibration	Service History	Enable ☒ Disable ☐ Hidden ☐
	Diagnostics	Collect History	Enable ☒ Disable ☐ Hidden ☐
	Advanced	Monitor Time vs. Background Rate	Enable ☒ Disable ☐ Hidden ☐
	Display Last Contaminated	Monitor Time vs. Background Time	Enable ☒ Disable ☐ Hidden ☐
	Faults	Monitor Time vs. Alarm Activity	Enable ☒ Disable ☐ Hidden ☐
	Background Trend	Monitor Zone Status	Enable ☒ Disable ☐ Hidden ☐
		System Information	Enable ☒ Disable ☐ Hidden ☐
		Data Log Files	Enable ☒ Disable ☐ Hidden ☐

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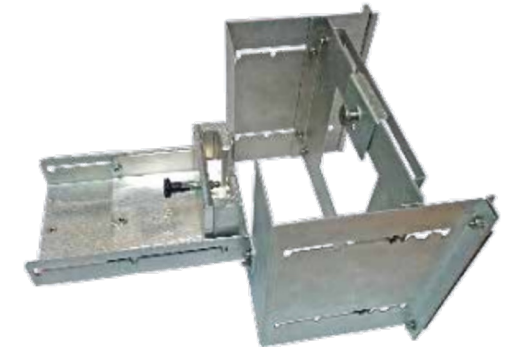
Options

- **Automatically moving entrance barrier** (p/n: 7100124)
- **Automatically moving sliding exit door** (p/n: 7099313)
- **Front curtain (back wall)** (p/n: 7099311)
required for barrier, door and moveable head detector options
- **Automatically Moveable head detector** (p/n: 7100121)
*Wide-range for occupant heights from 153cm to 205cm.
Does not include the actual detector. One additional detector is required
(see part number LL-B-579-S, 7093649, 7093647, or TPS-G-579)*
- **Manually Moveable head detector** (p/n: 7100120)
*Wide-range for occupant heights from 153cm to 205cm.
Does not include the actual detector. One additional detector is required
(see part number LL-B-579-S, 7093649, 7093647, or TPS-G-579)*
- **Gamma Thorax Detector** (p/n: 7100127)
incl. 10mm lead shielding behind and around sides of detector
- **Gamma Body Detectors** (p/n: 7100128)
*by default in leg and thorax position.
incl. 10mm lead shielding behind and around sides of each detector.*
- **Full Gamma Body Detectors** (p/n: 7100129)
*by default in leg, center and thorax position.
incl. 10mm lead shielding behind and around sides of each detector.*
- **Substitute Foot Detector in Position 1 by Gamma Foot Detector** (p/n: 7100130)
- **Small Item Monitor** (p/n: 7100131)
*Internal dimensions (W x H x D): 18.0 cm x 15.0 cm x 38.0 cm, installed on the entrance side corner post (side-mounted).
Does not include the actual detector. One or two additional detectors are required (see model or part numbers:
LL-B-579-S, LL-AB-579-S, 7093647, or TPS-G-579)*



Options

- **Top Beacon, Light & Sounder** (p/n: Argos-BECS)
- **Dual Top Beacon, Light & Sounder** (p/n: ARGOS-BECS-DUAL)
- **Integrated LDM 320W dosimeter reader** (p/n: 7098535)
*With direct data-exchange between contamination monitor and DosiServ.
Including LDMAccess software, operating on embedded computer of Argos Evo.*
- **Barcode/QR Reader** (p/n: 7097081)
- **Proximity Reader** (p/n: 7062147)
- **Magnetic Card Reader** (p/n: 7062157)
- **CeMoSys client licence** (p/n: 0009CVMS0002)
compatibility with CeMoSys™ central monitoring system (version 2.0 or above)
- **Calibration Fixture for single source** (p/n: 7074911)
Magnetic fixation, adjustable distance from 0 to 75 mm.
- **Calibration Fixture for single source** (p/n: 7075461)
Magnetic fixation, fixed distance for hand detectors.
- **Calibration Fixture for single source** (p/n: 7074911)
*for gamma source, adjustable distance from 50 to 150 mm.
required 7074911.*
- **Partial disassembly** (p/n: 7100133)
*for easier transportation to final installation location
incl. wood shipping crate*
- **Wood shipping crate** (p/n: 7100134)



Summary



- *Mirion has long-term experience with different technologies for detection of radioactive contamination*
- *Introducing LIGHTLink® as Cutting-Edge Technology from Mirion Technologies*
- *Enhancing a Wide Range of Products Ranging from Handheld Devices to Contamination Monitors*
- *Improving Industry Standards in Productivity & Reliability*
- *New Solution supporting your Health Physics daily duties*

- *Detector Technology Innovation – LIGHTLink®*
- *Product Innovation – Argos™ Evo
(detectors/mechanics/electronics/software)*
- *Product Innovation – Sirius™ Core (mechanics)*



Sirius™ Core Two Step Hand and Foot Contamination Monitor



MIRION
TECHNOLOGIES

To best meet the personnel Contamination & Clearance (C&C) hand and foot monitoring needs of customers in laboratories, radiopharmaceuticals and other medium-to-large nuclear facilities by providing a Two-Step Hand and Foot Contamination Monitor that offers minimal footprint, is easy to quickly deploy and shares radiological capabilities, software and common components with other Mirion C&C products resulting in minimal operating expenses and training efforts.



Two (2)-Step Hand & Foot (H&F) Contamination Monitor

- *A new 2-Step H&F Monitor that complements the existing lineup of Mirion H&F Monitors was developed to serve customers in labs, radiopharmaceuticals, colleges/universities, nuclear medicine, etc. at a lower footprint as well as make it as easily mobile as possible.*
- **WHY?**
- *Let's look at what have had in the past and what we have now...*



Context

- **Legacy Mirion Hand-FootFibre™ (HFF):**
 - 1-Step Hand & Foot (H&F) Contamination Monitors based on RFD Fibre Detector technology.
 - RTM110 was rationalized a while ago...
- **Legacy Mirion RTM110:**
 - 1-Step Hand & Foot (H&F) Contamination Monitors based on gas-filled or plastic scintillator detector technologies.
 - Installed base >550 units. Rationalized a few years ago...
- **Legacy Canberra / Eurisys-Mesures Product Range:**
 - 1-Step Sirius™-4/-6 Hand and Foot Contamination Monitors
 - 2-Step Sirius-2 Hand and Foot Contamination Monitors
 - Installed base >800 units (Sirius-2/-4 only)
 - All three rationalized in 2011.
- **Current Mirion Avior-2 Product Range:**
 - 2-Step AVIOR-2H/F-S Hand/Foot System (but only palms) or 1-Step AVIOR-2H/H-S Hand/Hand System (only palms of hands)



RTM110

HFF



Sirius-6

Sirius-2

Sirius-4



AVIOR-2H/F-S

AVIOR-2H/H-S

Context

- *Current Mirion Sirius-5 Product Range:*
 - *Hand, Foot & Cuff Contamination Monitors*
 - *Installed base >1100 units (Sirius-5 / Sirius-5 Compact only)*
- *Sirius-5 (legacy) and now the Sirius-5 Compact are premium solutions for one-step hand & foot monitors where space is not an issue...*



Sirius™-5



Sirius™-5 Compact

4 detector configurations

This Plastic Scintillation (Gasless)	Gas Flow	AB (LFP-579 detectors)	Sirius™-5AB	Sirius™-5AB Compact
		PAB (TPS-AB-579 detectors)	Sirius™-5PAB	Sirius™-5PAB Compact
		PB (TPS-B-579 detectors)	Sirius™-5PB	Sirius™-5PB Compact
		PBG (TPS-BG-579 detectors)	Sirius™-5PBG	Sirius™-5PBG Compact

Produce Evolution Based on Direct Customer Feedback in recent past:

- *“...make us a 2-Step monitor that has the following attributes shared with current Argos™/Sirius™...”:*
 - *Same S/W and user experience (so training time is next to nothing)...*
 - *Same radiological attributes (i.e., detectors) but in a two-step monitor to achieve lowest footprint possible...*
 - *If you are going to provide TPS detectors, make sure you have a gas-flow version to maximize alpha efficiencies...*
 - *Shared spare parts with current Argos/Sirius products...*

- *So, what was the solution?*

Two-Step Hand and Foot Contamination Monitors

- *Two-Step efficient hand and foot monitoring in areas with size constraints.*
 - *The Sirius™ **Core** is a further evolution of the well-proven Sirius-5 legacy product and now Sirius-5 Compact and delivers the same exceptional performance in a low footprint form.*
 - *The Sirius **Core** provides thorough and reliable detection of external contamination on the hands and feet of personnel working in nuclear environments. It is rugged and reliable designed for high traffic areas; is compact for areas with size constraints and maneuverable with integrated casters and handles.*
 - *Depending on your monitoring needs, Sirius monitors are currently designed to use either plastic scintillator (TPS) gasless detectors or patented* gas flow proportional detectors (LFP-579).*



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



Position 1



Turn



Position 2



Frisker

Two-Step Hand and Foot Contamination Monitors

■ Features

- *Minimal Footprint: suitable for confined locations, and maximizing available space*
- *Rugged and reliable: for high traffic areas – minimal downtime and service required*
- *Foldable Foot Detector module and two (2) built-in heavy-duty recessed corner casters and three (3) flush foldable handles strategically placed for easy transportation. Can set up temporary stations, responding to situations quickly. Wall mount hooks included.*
- *Excellent radiological performance: various detector combinations possible*
- *Comprehensive and well-proven Monitor Program software platform, including WebRemote® software and Dashboard: Ergonomic and easy to use, touch screen software, intuitive – users with limited experience can easily locate parameter settings*

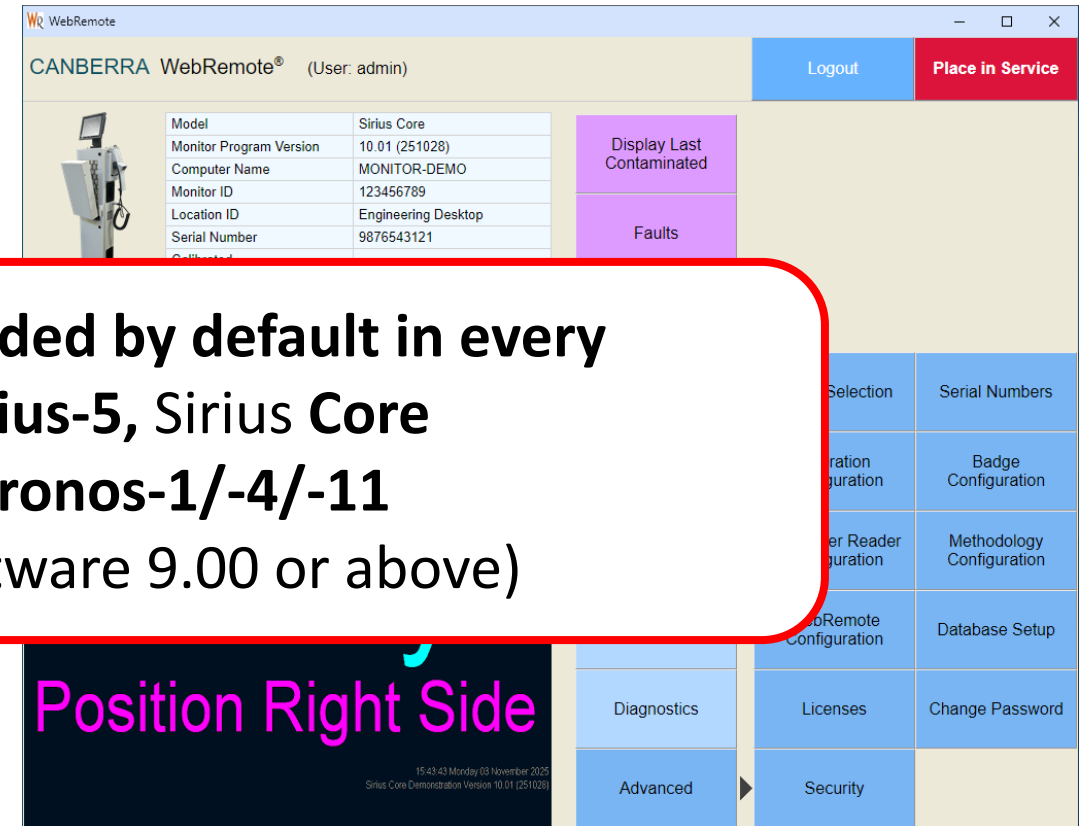


WebRemote®

Contamination Monitor Touch Screen Interface

- Available in a “Key” interface
- For local (at monitor) or network

**WebRemote® is included by default in every
Argos-3/-5, Sirius-5, Sirius Core
GEM-5 and Cronos-1/-4/-11
(with Monitor Software 9.00 or above)**

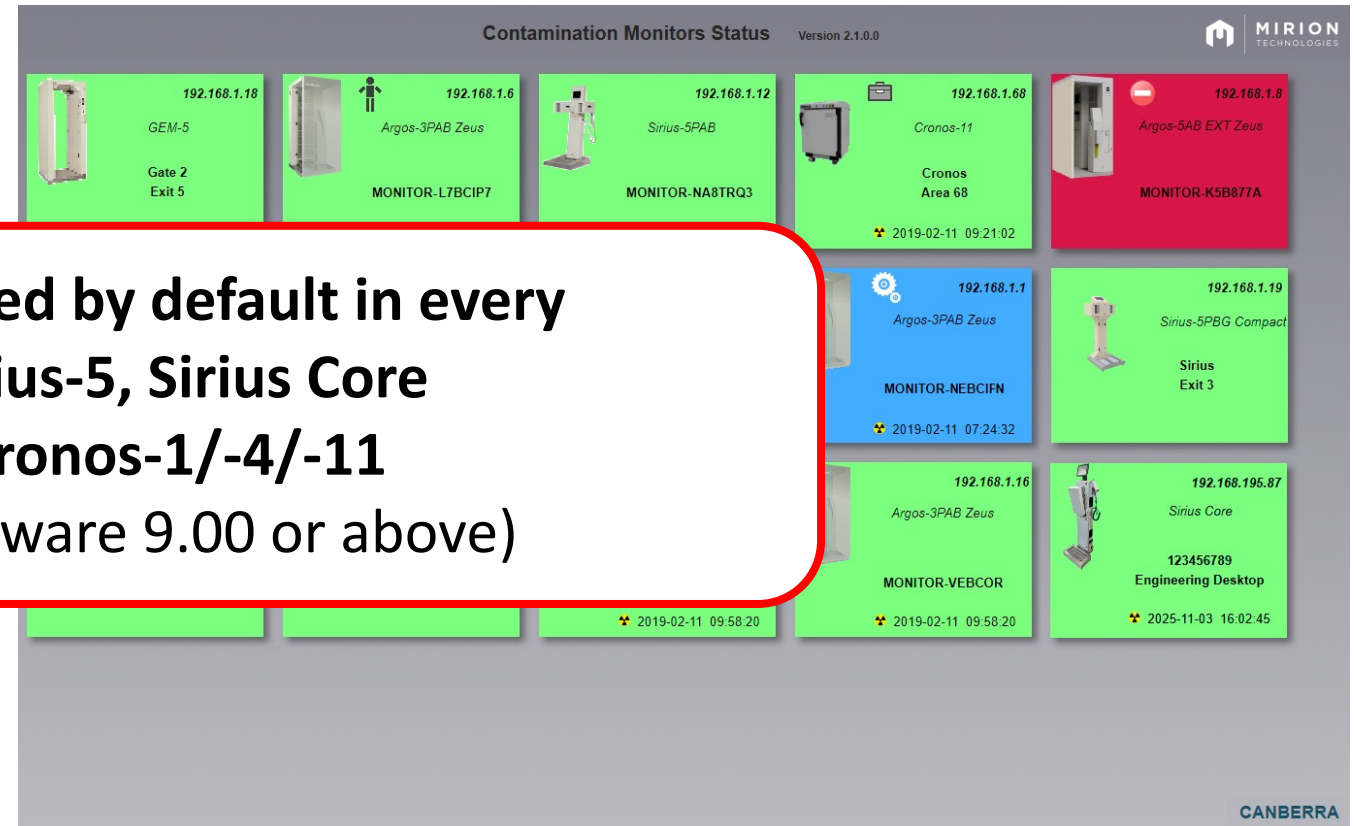


Dashboard

Contamination Monitor Status Overview

- Dashboard provides a simple overview of your contamination monitors
- Easy drill-down to monitor details
- Ability to interact with monitors via the interface
- No central server required (one contamination monitor is server)

**Dashboard is included by default in every
Argos-3/-5, Sirius-5, Sirius Core
GEM-5 and Cronos-1/-4/-11
(with Monitor Software 9.00 or above)**



Two-Step Hand and Foot Contamination Monitors

■ Features

- Four configurations are available (detector dependent) – just like Sirius™-5 legacy / Sirius-5 Compact
- Typical 4π efficiencies same as Sirius-5 / Sirius-5 Compact
- Designed for 365/24/7 operation: high uptime and minimum maintenance
- Several components and spare parts are shared with Argos™-3/-5, Argos-3 Modular, Sirius-5 legacy, Sirius-5 Compact, GEM™-5 and Cronos® 1/-4/-11 contamination monitors
- Detachable 10" touch screen display
- Windows® 11 IoT operating system with LAN capability and USB ports
- Compliant with ISO 11929:2019 and IEC61098:2003



Two-Step Hand and Foot Contamination Monitors

■ Cabinet

- Steel with rugged powder coat finish for Foot, Hands and Main Modules, stainless steel foot pan cover provide for ease of decontamination and minimum maintenance
- Approximate dimensions in operational mode (including 10" LCD Touchscreen): 151.0 × 44.9 × 44.4 cm (59.5 × 17.7 × 17.5 in.) (H × W × D)
- Approximate dimensions when collapsed into transportation mode (with touchscreen removed): 126.1 × 44.9 × 30.4 cm (49.6 × 17.7 × 12.0 in.) (H × W × D)
- Approximate weight (depending on detector type) ~31 to ~33 kg (~68 to ~72 lb) without Options
- Open Frame Computer (same as Argos™-3 Modular):
- The computer of the Sirius **Core** operates on Windows® 11 IoT operating system with LAN capability and USB ports for transferring data. Data may be retrieved either via USB or a LAN.



Two-Step Hand and Foot Contamination Monitors

■ Options

- *Alpha/Beta Frisker Opt. for Sirius **Core** which includes:*
 - *Includes 100 cm² external alpha/beta LIGHTLink® AB-100 CSPevo® Detector Probe (see CSPevo materials for more info.!)*
 - *Mounting Hardware, electronics and cable to connect to Sirius **Core** (can be reinstalled to the opposite side in the field for opposite traffic flow requirements if needed!)*
 - *Two channels with discrimination between alpha and beta radiation*



Two-Step Hand and Foot Contamination Monitors

■ Options

- *Transportation Cases*
 - *Transportation Case with Tethered Lid for Sirius™ Core*
 - *Needs two people to place a Sirius Core ergonomically and safely in / out of it.*
 - *Once the Sirius Core is placed inside, the case has two casters on one end and can be moved around by one person (but better with two).*
 - *Designed to hold the following:*
 - *Sirius Core with Foot Module Folded Up*
 - *Accessories Box (housing Detachable touch screen display removed from Sirius Core, Optional CSPevo® Frisker Detector Probe removed from Sirius Core)*
 - *Size: approx. 59.7 cm × 140.7 cm × 41.6 cm (23.5" × 55.4" × 16.4") (H × W × D)*
 - *Tare Weight: approx. 35 kg (77 lb)*



Two-Step Hand and Foot Contamination Monitors

■ Options

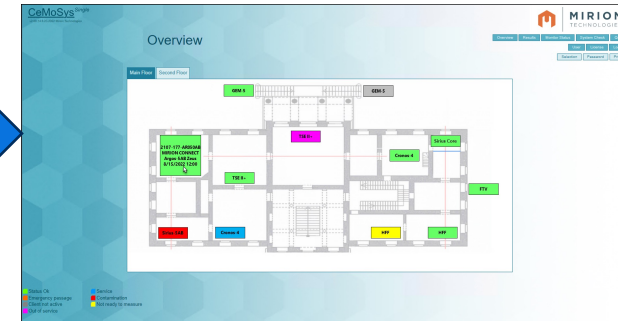
- *Transportation Cases*
 - *Transportation Case with Ramped Side for Sirius™ Core*
 - *Designed to only require one person to place a Sirius Core in / out of the case*
 - *Since the case is on five heavy duty casters (two are lockable!), it can be rolled around easily by one person (even with the Sirius Core within it).*
- *Designed to hold the following:*
 - *Sirius Core with Foot Module Folded Down in order to roll the monitor into the case*
 - *Accessories Box (housing Detachable touch screen display removed from Sirius Core, Optional CSPevo® Frisker Detector Probe removed from Sirius Core)*
 - *Size: approx. 155.6 cm × 59.7 cm × 68.3 cm (61.3" × 23.5" × 26.9") (H × W × D)*
 - *Tare Weight: approx. 91.4 kg (201 lb)*



Two-Step Hand and Foot Contamination Monitors

■ Other Options

- Foot Module Extension integrated with Foot Module for improved ergonomics
- Badge scanners
- Larger (12") LCD Touchscreen
- 7098537: Integrated LDM 320 dosimeter reader with direct data-exchange between contamination monitor and DosiServ™. Requires DosiServ™ Dose Management System
- 0009CVMS0002: CeMoSys™ Client License for interfacing with CeMoSys™ Central Monitoring System (Version 2.0 or above)



Advanced Dosimetry Integration



DMC 3000 Personal Electronic
Dosimeter and LDM 320W
Dosimeter Reader

Benefits

- **Proof** that individuals have been properly monitored for contamination
- **Save time** at exit of RCA (read-out & switch-off dosimeter in parallel to contamination monitoring)
- **Save space** (combination of dosimetry and contamination monitoring stations)
- **Identify potential sources/areas for contamination** (through analysis of job-code vs. contamination events)
→ **Understand & reduce contamination events**

Key Features

- **Direct integration** of LDM320 dosimeter reader for DMC 3000 dosimeter in Argos™ **Evo**, Argos-3/-5, Sirius™-5 (Compact), Sirius **Core** and GEM™-5 monitors
- **User ID** data stored with contamination measurement results
- **Supports management of sequences**, including configuration possibilities
- **LDMAccess software** for control of the dosimeter reader can be **run on the contamination monitor's local embedded computer**
- **Result of contamination monitoring (contaminated or clean) automatically available in DosiServ™ dose management software**

Two-Step Hand and Foot Contamination Monitors

■ Summary of Key Features

- *Smallest Footprint: Sirius™ Core's compact dimensions allow it to fit easily into tight spaces, making it ideal for labs, universities, and other facilities where floor space is at a premium.*
- *Benefit: Maximizes usable workspace and enables installation in locations where larger monitors simply won't fit.*



Two-Step Hand and Foot Contamination Monitors

■ Summary of Key Features

- *Effortless Deployment:*
 - *Designed for rapid relocation, Sirius™ **Core** can be moved by one person over short to medium distances (on smooth or lightly rough surfaces) using its built-in heavy-duty casters or transported longer distances in a choice of two types of optional protective transport case.*
 - *Wall-mounting hooks are included.*
- *Benefit: Enables quick setup for temporary, emergency, or permanent use—reducing downtime and supporting dynamic operational needs.*



Two-Step Hand and Foot Contamination Monitors

■ Summary of Key Features

- *User-Friendly Interface: Runs on Mirion's proven Monitor Program software (v10.01+), powered by Windows® 11 IoT, with WebRemote® and Dashboard for remote control and monitoring respectively.*
- *Benefit: Minimizes training time and costs for existing Argos/Sirius users which also use the Monitor Program Software.*



Two-Step Hand and Foot Contamination Monitors

■ Summary of Key Features

- *Advanced Detector Technology: Offers four detector options to suit a range of radiological environments:*

- *Gas Flow:*

- 1. Alpha/beta (with Mirion LFP-579 detectors)

- *Thin Plastic Scintillation*

- 2. Alpha/beta – TPS-AB-579
 - 3. Beta-only – TPS-B-579
 - 4. Beta/gamma – TPS-BG-579
- gamma measurement capability in elevated gamma background environments.*
- [Advantages of the TPS-BG-579 Anti-Coincidence Processing.pdf](#) for more details.



Two-Step Hand and Foot Contamination Monitors

■ Summary of Key Features

• Other Unique Features

- Open Frame Embedded Computer assembly housed in Main Post Module (same as Argos™-3 Modular for commonality of parts)
- Same proprietary electronic boards (housed in Main Post Module) as Argos-3 Modular (i.e., sensor board, etc. for commonality of parts)
- Flexible Options & Accessories
 - CSPevo® Frisker AB-100™ LIGHTLink detector
 - Card Readers and/or Dosimetry Reader integration.
 - A Foot Module Extension for those customers whose users might have difficulty balancing with one foot on the floor and one foot on the foot module.
 - CeMoSys™ connectivity.



Two-Step Hand and Foot Contamination Monitors

- Remember, the Sirius™ **Core** is designed for discerning customers who demand premium performance, full two-step coverage, and the flexibility to deploy in small or challenging spaces. It delivers advanced detection and mobility without compromising on quality—making it the ideal choice for organizations that value reliability, compliance, and operational efficiency.



- *Where do we go from here? What's Next?*
- *Further LIGHTLink® Detector Developments to enhance the whole product line...*
- *Evolutions in designs (both hardware and software) and capabilities of Whole Body Monitors ("Next Generation?" ...*
- *We are always interested in your feedback to help guide our product development into the future!*



Thank you



Survey for:

Contamination Monitors: Applications, Key Technologies and Innovations

<https://survey.ahaslides.com/s/yfrabnt>



*Please take a moment
to answer some
questions to help us
with our future
developments.*

*Use the QR Code or link at
left...*