

# Breakthrough performance without the gas



Thermo Scientific IPM96  
Whole Body Contamination Monitor



# The power of Thorough-Scan™ in a gasless contamination portal monitor

Building on the proven architecture of the Thermo Scientific™ IPM9 Series Monitors and breakthrough electronics of the Thermo Scientific Series 12 Monitors, the Thermo Scientific IPM96 Whole Body Contamination Monitor enables efficient and accurate scanning for beta/gamma contamination on the entire surface of the body using ninety-six (96) independent detection zones.

## Maximize safety controls

Total beta/gamma detection and superior performance are guaranteed with our new Thorough-Scan™ gasless scintillation detector technology. Worker's skin dose levels are kept ALARA through state-of-the-art algorithms and uniformity of the detectors, minimizing the risk of crosscontamination.

## Strengthen compliance efforts

Have confidence in compliance with Radiation Protection International Standards IEC61098 and CE Standards.

## Reduce maintenance costs

New, low-maintenance scintillation detector modules and robust detector grid design drastically reduce the routine maintenance costs commonly required with current gas systems and more traditional technology.

## Greater efficiency and productivity

96 independent detection zones represents the highest number of detectors available in the industry with a standard count time of less than 10 seconds. Additionally, the integrated Electronic Dosimeter reader enables simultaneous log-out of RCA during the whole body monitoring cycle, minimizing the time required for personnel to queue and scan.

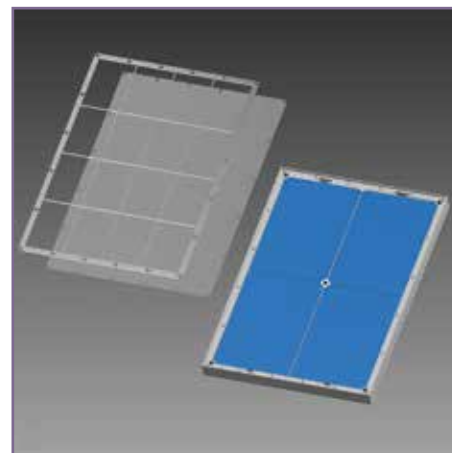
The small detection zones minimize background effects during monitoring while simultaneously achieving highly efficient detection limits and reduced count times.



The Thermo Scientific IPM96 combines trusted architecture with breakthrough technology resulting in accurate scanning, reduced operational expenses and guaranteed safety.

Current-generation whole body contamination monitors require significant resources to maintain their operation over time yet fail to achieve the highest attainable accuracy. Annual maintenance and repairs costs average \$10,000 and require onsite inventory of replacement parts and consumable gases. The IPM96 has the advanced technology and scan design needed to provide confidence that radiation controlled facilities deliver on the promise of public safety.

Thorough contamination monitoring of the body and clothing is executed with three vertical arrays of six detectors (18 total), with an active area of 600 cm<sup>2</sup>. Four (4) detectors exclusively monitor the hands. The foot detector has an active area of 570 cm<sup>2</sup>. The overhead detector comes with an auto retracting overhead pull-down head detector.

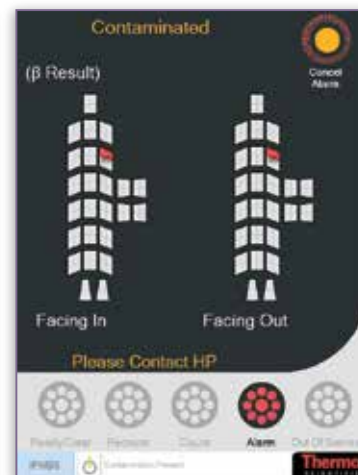
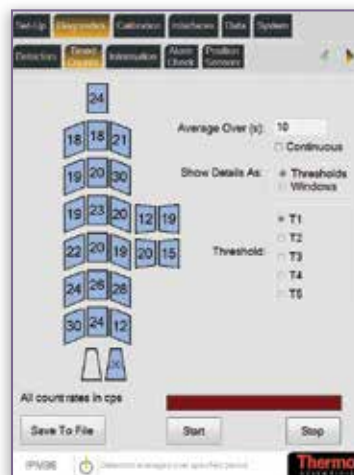


Thorough-Scan technology yields ninety-six independent detection zones for faster, more accurate scans

Replacing outdated whole body contamination monitors with innovative, state-of-the-art technology ensures reduced downtime and maintenance needs, increases accuracy of body scans, and most importantly, provides confidence that the safety of personnel, the community and business assets are protected.


## Critical features

The IPM96 supports ALARA beta/gamma personnel contamination monitoring in accordance to Radiation Protection International Standard IEC61098, as well as compliance to European CE requirements. Multilanguage voice prompts provide verbal instructions during monitoring for correct positioning, as well as actions required following alarm. Alarms may be set on individual detection zones or across multiple sum zones for greater sensitivity to distributed contamination. In the event of an alarm, a large touch screen monitor displays location of contamination. The USB security dongle allows supervisors restricted access to configuration and diagnostic modes.



Software is based on Windows™ OS platform found in the current instruments which serves to minimize training cost. Results are stored in an SQL database, providing both local and remote access. A QuickScan algorithm significantly reduces the counting time, without compromising the statistical probabilities of detection or false alarm.

## Thermo Scientific IPM96 - Specifications

Dimensions	Height 2430 mm; width 1000 mm; Depth 1220 mm ; Total floor space 1.22 m <sup>2</sup>
Weight	Gross Weight ~730 kg, Net Weight is ~600 kg
Power requirements	220~240 VAC; 50/60 Hz; Current 2.0 Amps
Environmental	Temperature Range: <ul style="list-style-type: none"> <li>• Operating: +0~40°C (32~104 °F)</li> <li>• Storage: -25~50°C (-13~122 °F)</li> <li>• Relative Humidity: 10% to 90% non-condensing</li> </ul>
Certifications	 <ul style="list-style-type: none"> <li>• IEC 61098 compliant</li> <li>• CE compliant</li> <li>• ISO 11929:2010 compliant</li> <li>• 2014/30/EU - IEC EN 61326-1:2013 Class A compliant</li> </ul>
Temperature stability:	0~40°C, efficiency ±15% according to IEC standard using CI-36
Humidity stability:	Humidity range: 10~90%, efficiency ±10% according to IEC standard using CI-36
Battery backup:	Integrated UPS - 24VDC lead acid battery (2 hours)
Central processor:	Windows® 7 Embedded OS, Ethernet: 10/100 Mbit
External alarm relay:	Relay dry contact opto coupled outputs available for Alarm and Clear

### Radiological performance

Window surface area:	Body / Hand detectors: 656 cm <sup>2</sup>	Foot detector: 630 cm <sup>2</sup>				
Sensitive surface area total C2 monitor	15718 cm <sup>2</sup> (16348 cm <sup>2</sup> with optional 2nd foot detector)					
<i>R0</i> = background count rate (cps), 10cps equivalent to 0.1 uSv/h <i>t0</i> = background count time (100s) <i>tmon</i> = sample monitoring time (10s) <i>P</i> = probability of null event on background triggering an alarm (sigma) $\epsilon$ = Efficiency (count rate / Bq)	$IEC61098-2007-A.18: A_{min} = \frac{1}{\epsilon} (P \sqrt{R0 \left( \frac{1}{t0} + \frac{1}{tmon} \right)}) + 0,05 \bullet R0$					
Sigma = 3.7	Equivalent to 0.01% false alarm probability per detection zone (0.96% for whole monitor)					
Nuclides	Body grid(Transmission rate 72%)	Head grid(Transmission rate 58%)	Foot mesh(transmission rate 43%)			
	Efficiency(4π)	MDA(Bq)	Efficiency(4π)	MDA(Bq)	Efficiency(4π)	MDA(Bq)
Sr-90	26%	17	21%	21	16%	27
Cl-36	23%	19	19%	23	14%	31
Cs-137	22%	20	18%	24	13%	34
Co-60	11%	40	9%	49	7%	63
C-14	3%	146	2%	219	2%	219
Detector uniformity:		+/- 10%				
Relative surface sensitivity CI-36, 16mmØ		