

Southern Scientific

EXPERIENCE & EXPERTISE

ON/OFF



**Wilma**  
On-line Water Monitor  
for Radionuclide Detection

# Wilma

On-line Radioactivity Monitor

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# A fully automated, on-line monitoring system for the detection of radioactivity in water and air

Wilma utilises a novel approach to streamline the time consuming process of sample collection and preparation traditionally required for detecting alpha and beta contamination via liquid scintillation counting.

Wilma is ideal for simplifying a range of applications which require routine sampling, including:

- Ground water contamination monitoring.
- Monitoring tritium levels in cooling water.
- Air monitoring.
- Drinking water and NORM monitoring.

## Key features

- Combined fluid handling system and LSC.
- Small sample volume (max. 5 ml) minimises scintillation cocktail waste production.
- Established coincidence-based liquid scintillation counting techniques gives background rates <15 cpm
- Low energy  $\beta$  counting efficiency ( $^3\text{H}$ ) >15% for a 2 ml sample (3 ml scintillation cocktail).
- Lower limit of detection for  $^3\text{H}$  is 100 Bq/L for a 60 min. count time.
- Proven detection sensitivity down to 10 nCi/L (370 Bq/L) for key environmental radionuclides  $^3\text{H}$ ,  $^{90}\text{Sr}$ ,  $^{137}\text{Cs}$  and  $^{241}\text{Am}$ .
- Configurable user alerts (e-mail/alerts).

## Simple to use

Wilma includes a touchscreen PC running user-friendly software, which allows easy configuration and monitoring of sampling and measurement cycles. Default measurement cycles can be provided to bring the instrument on-line soon after installation.

## Fully integrated system

The simple, self-contained unit combines fluid handling systems for sample collection, preparation, and disposal, with radiation detection and analysis of contamination, all within a rugged and compact housing. IP-rated enclosures are available upon request.

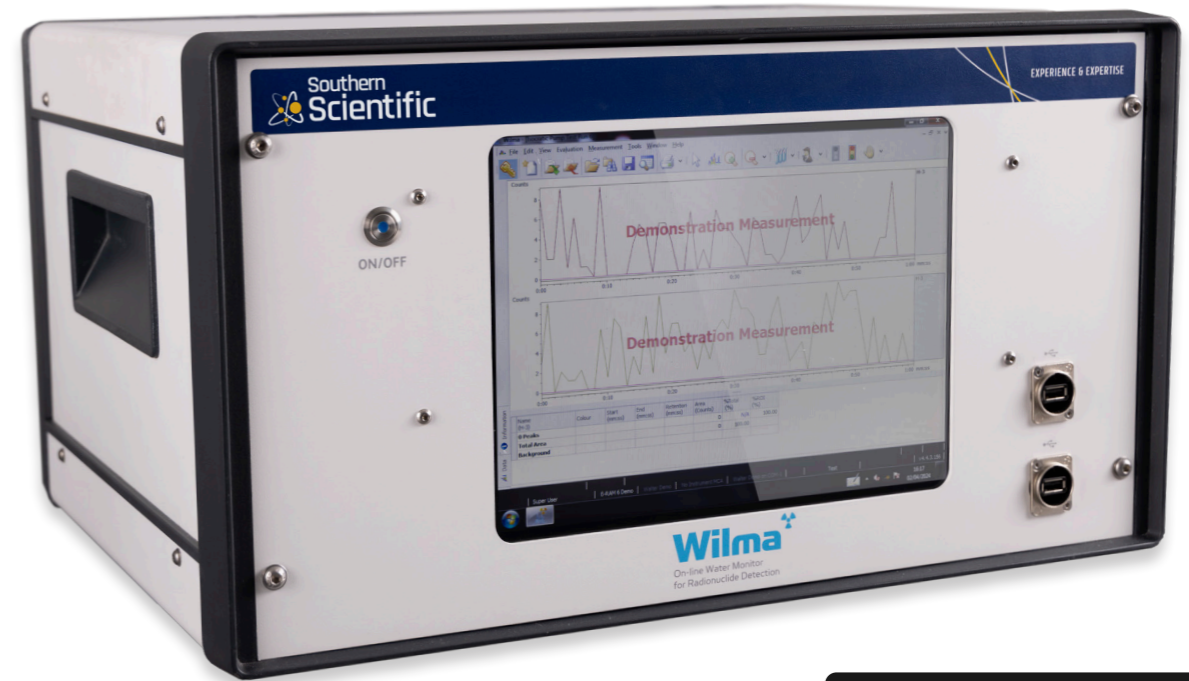
## Completely customisable

Designed, developed and built by the LabLogic Group, Wilma can be fully customised to suit any application. The system can integrate additional sensors and measurement systems, handle complex sampling and preparation routines, and integrate with external monitoring and alarm networks. We work closely with our customers in order to provide them with the most applicable solution.

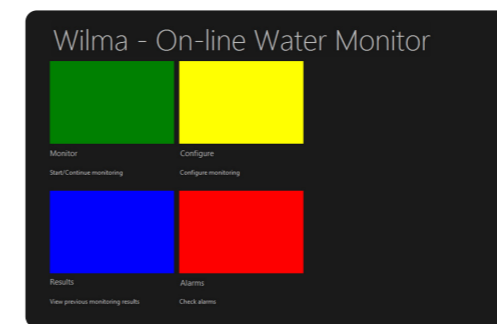
# Water Monitoring System

The Wilma Water Monitoring System combines the proven Wilma fluid handling and LSC modules with water samples at the source.

The system can be configured for remote measurements and transmit data via a secure wireless network. Ideal for campaign-based measurements, the system is mounted inside a rugged enclosure for all-weather protection.

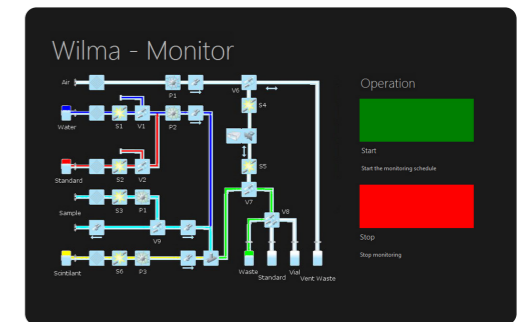


## User-friendly software

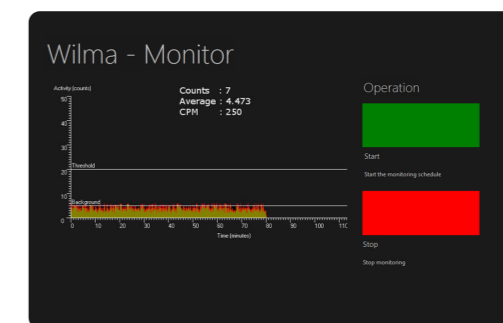


Simple home screen allows for navigation to main instrument features:

- Configuration
- Real-time Monitors
- Results Analysis
- Alarm Trigger Notification



Animated flow-path diagram shows instrument status in real-time and allows sample flow to be tracked.



Count rate monitor shows sample activity during analysis time.

# Tritium in Air Monitoring System

The Wilma Tritium in Air Monitoring System utilises the configurable Wilma fluid handling and LSC detector to automate the operation of a tritium bubbler.

The customised software includes cycles to sample water in the bottles, as well as emptying, washing and refilling them as part of the standard operating procedure. This application allows long-term, remote monitoring of tritium in air levels down to less than 10 Bq/m<sup>3</sup>, ideal for monitoring in isolated locations or areas where access is difficult.



Specifications for Wilma Monitoring System	
<b>Dimensions (mm)</b>	520 (W) x 400 (D) x 300 (H) mm (Water Monitor) 850 (W) x 500 (D) x 1230 (H) mm (Tritium in Air Monitor)
<b>Mass (kg)</b>	30 (Water Monitor) 105 (Tritium in Air Monitor, with bubbler)
<b>Power</b>	100 - 240 Vac Internal power supply output rated at 24 Vdc, 6.5A (150 W max.)
<b>Interfaces</b>	USB Ethernet option Output to external data logger (e.g. MODBUS) option
<b>Detector Geometry</b>	2 x 28 mm diameter PMTs operating in coincidence mode
<b>Detector Shielding</b>	10 mm Pb phosphor bronze Additional Pb shield options
<b>Integral Scintillation Cocktail Pump Flow Rate Range (ml/min)</b>	<0.5 to 30
<b>Integral Sample Pump Flow Rate Range (ml/min)</b>	<0.5 to 30
<b>Integral Wash Solution Pump Flow Rate Range (ml/min)</b>	<0.5 to 30
<b>Integral Standard Solution Pump Flow Rate Range (ml/min)</b>	<0.5 to 30
<b>Counting Window Discrimination</b>	Two counting channels, 0-9999 mV pulse amplitude range
<b>Background count rate (open window, luminescence subtracted) (cpm)</b>	<15
<b>Background count rate (open window, non-subtracted) (cpm)</b>	<40
<b><sup>3</sup>H Counting Efficiency (unquenched, %)</b>	>50 (>15% for quenched samples)
<b><sup>14</sup>C Counting Efficiency (unquenched, %)</b>	>90
<b>Flow Cell Ranges</b>	5 ml bulk liquid cell as standard Coiled liquid and packed solid scintillator cells available as options (100 µl to 1 ml)
<b>Flow Options</b>	Discrete sampling mode (default) Continuous sampling mode (optional) Automated wash cycle Automated standard introduction
<b>External I/O</b>	4 x USB Temperature sensor (optional) HDMI Ethernet Network Port
<b>Control Software</b>	Integrated Wilma software and user interface via industrial fanless touchscreen PC
<b>Fluid Handling</b>	Liquid manifold with integral switching valves Standard bulkhead tubing fittings for 1/8" (3.2 mm) OD tubing and M6 metric thread
<b>Options</b>	Multichannel analyser (MCA) for LSC spectra

## Service and Support

Southern Scientific has a team of fully qualified service engineers, who support customers spanning the length and breadth of the UK. We can provide factory or on-site service as required, based on single visits, planned maintenance or full support under contract. We maintain a high level of spare parts, ensuring lifetime support capability.

Our systems group can offer its service for the larger installed equipment, from initial planning to installation, completion and training. We can provide expert knowledge and experience, gained through involvement in a number of large-scale projects throughout the years.

## ISO Certified

Southern Scientific Ltd is certified to ISO9001 and ISO 13485 representing the high level of quality assurance and management that we provide at every stage of the supply process, whether a product is distributed on behalf of our trusted manufacturers or constructed in our UK workshop. This accreditation means that our customers can place an order knowing that the delivered product will be suitable for its intended use, fully compliant with EU legislation and in full working order.

All our products are CE marked.



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