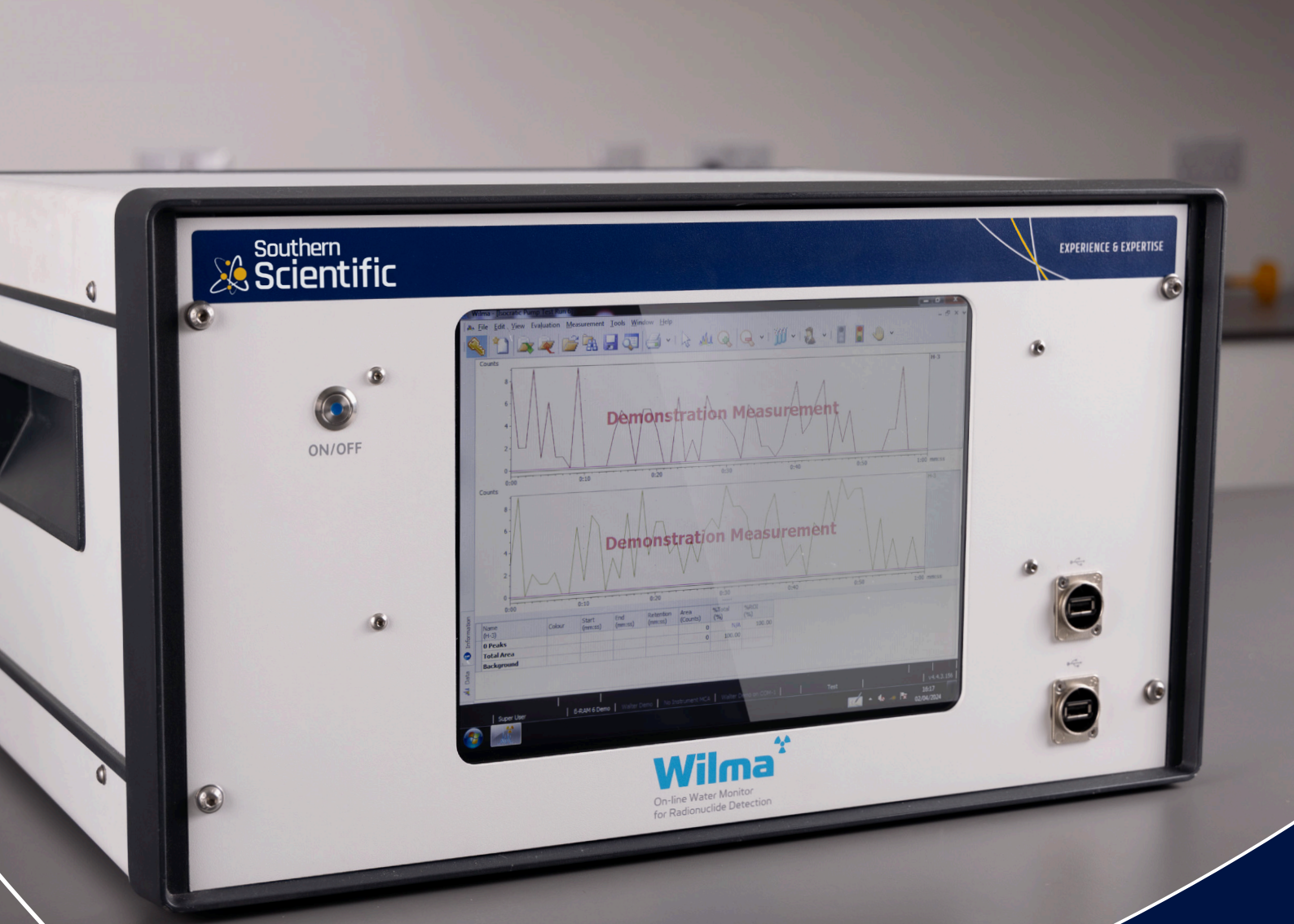


Wilma

On-line Radioactivity Monitor

www.**southernscientific**.co.uk

Southern Scientific
EXPERIENCE & EXPERTISE

Independent analysis and sampling for alphas and betas

Wilma is a fully automated on-line monitoring system for the detection of radioactivity in water and air. It automatically collects and prepares samples for liquid scintillation counting to detect and measure alpha and beta contamination, removing manual input and operation.

A single integrated system

Wilma combines fluid handling for sample collection, preparation and disposal with radiation detection and analysis into a single integrated unit. All systems are housed in a compact rugged unit that can be operated in demanding environments.

Applications

Wilma is an ideal solution where routine sampling and monitoring is required such as:

- Groundwater around Nuclear Power Plants, decommissioned reactors and isotope production facilities.
- ^{3}H in cooling water, reactor pools and effluent discharge points.
- ^{3}H in air.
- Sources of drinking water.
- NORM monitoring in industrial processes such as oil and gas production and mining.
- Monitoring of tritium related to nuclear fusion demonstrator systems.

Key features

Detection Sensitivity

Wilma has proven detection sensitivity down to 100 Bq/L (2,700 pCi/L) for a 12-hour count time and 1500 Bq/L (40,500 pCi/L) for a 60-minute count time.

Highly Customisable

Wilma can be customised for any application to maximise results. The instrument can be fitted with additional sensors, integrated with external monitors and alarms, and be configured for complex or routine sampling and preparation operations.

Independent Operation

Wilma can operate independently for as long as it has the necessary reagents. It is designed to minimise waste production and reduce the consumables required, meaning Wilma can run without manual supervision or input in excess of 30 days.

Automatic Alarm

Should samples exceed a predetermined threshold as defined by the user, automatic alarms are triggered with email alerts sent.

MCA Module

Wilma offers an optional compact MCA module (up to 2048 channels) which provides an additional sample analysis metric to allow for rapid identification of different sources of contamination if required.

Software

As an integrated instrument, Wilma has an in-built touchscreen computer running intuitive software. Gross counts, average count rates, and real-time sample spectrum acquisition are displayed. An animated flow diagram allows the instrument's status to be easily observed.

Wilma can be easily configured. Measurement cycles can be customised or one of the preconfigured default settings can be used. Users can determine flow rates, analysis time, wash cycles, and periodic calibration standard injection. Measurement cycles can also be queued, allowing a series of cycles to be run over a defined period of time over several weeks.

Fluid Handling

A liquid manifold reduces the risk of leakage, provides control of sample mixing with the scintillation cocktail, and allows easy maintenance.

Rugged Housing

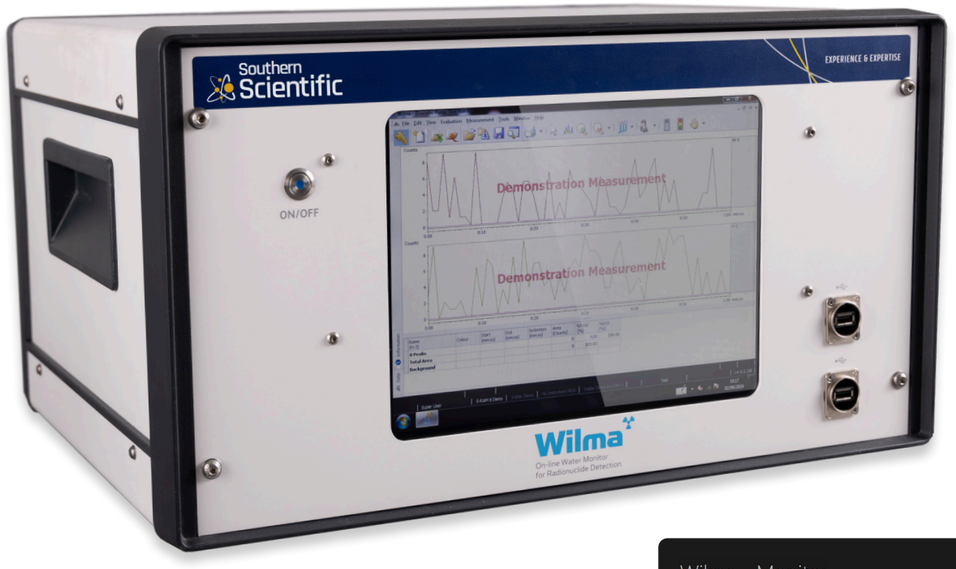
Wilma is housed in a rugged compact unit measuring 500 (W) x 520 (D) x 331 (H) mm. Everything required for operation is integrated, allowing it to be used in demanding environments.

Water Monitoring System

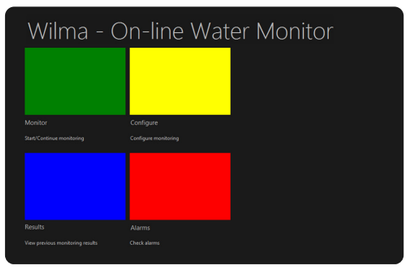
As a Water Monitoring System, Wilma combines proven fluid handling and LSC modules with water samples at the source. It can be configured for remote measurements with data sent securely via wireless network.

The system is mounted in a rugged enclosure for protection against the elements.

A modified version of Wilma can be supplied for tritium in water monitoring for nuclear fusion relevant processes.

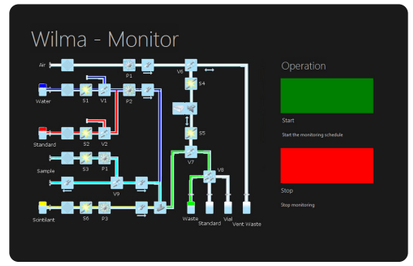


User-friendly software

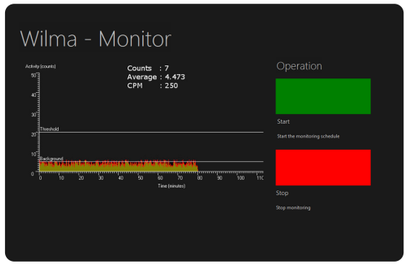


Simple home screen allows for navigation to main instrument features:

- 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

As a Tritium in Air Monitoring System, Wilma uses configurable fluid handling and a flow-through LSC detection cell to automate the operation of a tritium bubbler. The software controls cycles to sample water in the vials, as well as emptying, washing and refilling them as part of standard operating procedures.

This allows long-term remote monitoring of tritium in air at levels down to less than 10 Bq/m^3, ideal for monitoring in isolated locations or areas where access is difficult.



Specifications for Wilma Monitoring System	
Dimensions (mm)	500 (W) x 520 (D) x 311 (H) mm (Water Monitor) 850 (W) x 500 (D) x 1230 (H) mm (Tritium in Air Monitor)
Mass (kg)	30 (Water Monitor) 105 (Tritium in Air Monitor, with bubbler)
Power	100 - 240 Vac Internal power supply output rated at 24 Vdc, 6.5A (150 W max.)
Interfaces	USB Ethernet option Output to external data logger (e.g. MODBUS) option
Detector Geometry	2 x 28 mm diameter PMTs operating in coincidence mode
Detector Shielding	10 mm Pb phosphor bronze Additional Pb shield options
Integral Scintillation Cocktail Pump Flow Rate Range (ml/min)	<0.5 to 30
Integral Sample Pump Flow Rate Range (ml/min)	<0.5 to 30
Integral Wash Solution Pump Flow Rate Range (ml/min)	<0.5 to 30
Integral Standard Solution Pump Flow Rate Range (ml/min)	<0.5 to 30
Counting Window Discrimination	Two counting channels, 0-9999 mV pulse amplitude range
Background count rate (open window, luminescence subtracted) (cpm)	<15
Background count rate (open window, non-subtracted) (cpm)	<40
^{3}H Counting Efficiency (unquenched, %)	>50 (>15% for quenched samples)
^{14}C Counting Efficiency (unquenched, %)	>90
Flow Cell Ranges	5 ml bulk liquid cell as standard Coiled liquid and packed solid scintillator cells available as options (100 µl to 1 ml)
Flow Options	Discrete sampling mode (default) Continuous sampling mode (optional) Automated wash cycle Automated standard introduction
External I/O	4 x USB Temperature sensor (optional) HDMI Ethernet Network Port
Control Software	Integrated Wilma software and user interface via industrial fanless touchscreen PC
Fluid Handling	Liquid manifold with integral switching valves Standard bulkhead tubing fittings for 1/8" (3.2 mm) OD tubing and M6 metric thread
Options	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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